METRO RAILWAY

KOLKATA









DISASTER MANAGEMENT MANUAL

January - 2023

ISSUED BY

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Metro Railway, Kolkata

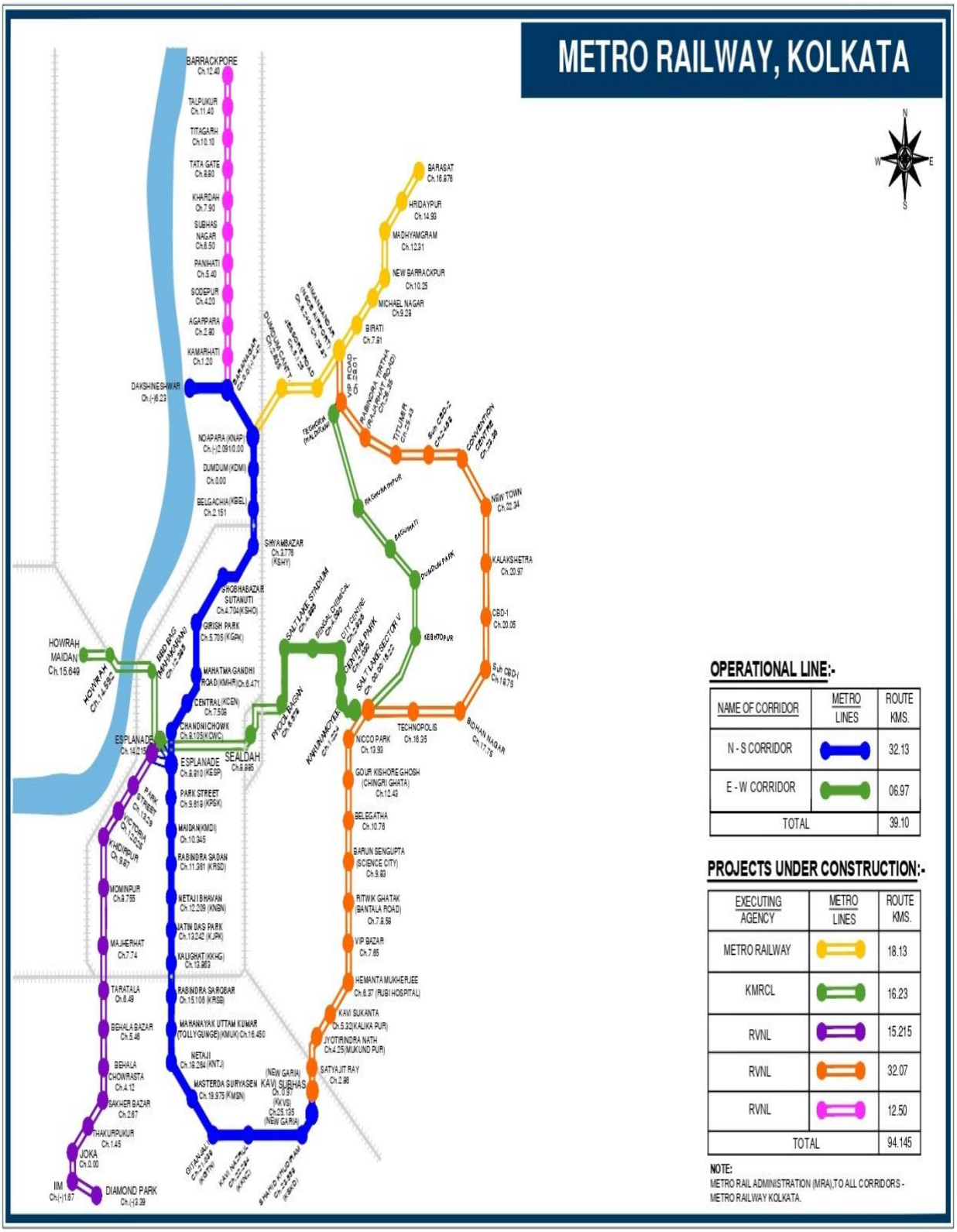
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Corridor Colours for Metro Network In Kolkata

SN	Corridor	Approved Colour
1	Noapara- KaviSubash and Noapara-Baranagar- Dakshineswar	BLUE
2	KabiSubash- Biman Bandar	ORANGE
3	East-West Corridor	GREEN
4	Joka-Esplanade	PURPLE
5	Noapara-Biman Bandar-Barasat	YELLOY
6	Biman Bandar- Barrackpore	PINK

MAP OF METRO RAILWAY, KOLKATA



PREFACE

The first corridor of Metro Railway Kolkata which is now called Blue line (North-South Corridor 31.365 km) was initially started from 24th October 1984 with a very short section from Esplanade to Bhowanipur (NetajiBhawan). The commercial service was further extended between Dum Dum to Tollygunge (MahanayakUttam Kumar) in 1995, up to Garia Bazar (KaviNazrul) in August'09 and up to New Garia (KaviSubhash) on 7th October 2010. It was further extended to Noapara on 10th July 2013. It was further extended 4.14km uptoDakhineshwar on 22th February 2021. Green Line(East – West) Metro corridor, Kolkata (Saltlake – Howrah Maidan 14.67 km project) started its operation from SaltLake Sector V to Saltlake Stadium 4.880km on 13 February 2020 ,uptoPhoolbagan 1.580 km on 4th October 2020 and was further extended 2.307km uptoSealdah on 14 July 2022. At present, service is available between Saltlake Sector V and Sealdah(total 8.887km). Purple Line Metro corridor, Kolkata (Joka – Esplanade 15.215 km project) started its operation from Joka to Taratala 7.6 km on 02 January 2023.Works have been taken in hand for further extension of the metro railway corridor between Sealdah – Howrah Maidan(Green Line), Baranagar – Barrackpore(Pink Line), Noapara - Air Port - Barasat(Yellow Line), KaviSubhash - Biman Bandar (Orange line) and Taratala- Esplanade (Purple line). They are going to be operational in near future.

The system of working of Metro Railway, Kolkata is slightly different than that of other Zones of Indian Railways. Trains are working under automatic block system, communication based train control (CBTC) system or one train only system with underground, surface or elevated stations.In all corridors traction power supply working with 3rd rail system with 750 V DC. Hence special precautions are required during maintenance work and while initiating rescue and restoration operations in case of any accident/disaster.

Keeping in view of the special features of Metro Railway, Kolkata a Disaster Management Manual was issued in April 2001 (when the commercial operation was from Dum Dum to Tollygunge) containing certain specific guidelines for tactful and efficient handling of the adverse situations which may arise due to any accident, natural calamity, stampede, fire, sabotage or any kind of terrorist activity etc. Subsequently, the commercial services have been extended in phases as mentioned above. There have also been certain up-gradations to the system over the years, and further knowledge and experience on handling breakdowns and disasters has been gained, because of which it was felt necessary to update the manual. It is hoped that the guidelines and information given in this updated Disaster Management Manual will be useful for the Railway officials. Metro Railway has issued various Codes and Manuals for guidance of its personnel operating and maintaining different subsystems like, Track, Rolling stock, Signaling, Tunnel Ventilation and Traction power supply etc. These are listed in Appendix of this Manual. Apart from these, the relevant Codes, Rules and Procedures followed by the Indian Railways are also applicable to the Metro Railway, Kolkata.

DISCLAIMER

The information provided in this document is for the purpose of general guidance of Railway officials. While preparing the Disaster Management Manual all efforts have been made to furnish authentic and correct information for general guidance of the Railway officials. However, in case of any conflict or doubt, the G&SR, Accident Manual, Codes and other Manuals issued from time to time, would override.

CHAPTER NO. 1
DISASTER MANAGEMENT MANUAL

1.1 Purpose:-

The purpose of this Manual is to establish procedures to respond to those states of emergency that may arise and impact on the operation in Metro Railway. This Manual establishes and communicates systems with stakeholders that allow Kolkata Metro Railway to prevent, prepare, respond and recover from disasters thereby minimizing the loss of human life, damage to assets, and disruption of service. Since the information contained in this Plan describes Metro Railway's management planning, assumptions and objectives along with the actions of the emergency services, it should be considered as a sensitive document.

1.2 Field Of Application:-

The Disaster Management Manual (DMM) provides Metro Railway, Kolkata with a management plan that identifies and mitigates the risks of disaster. This includes all infrastructures, premises, working systems, modes of communications, assets or goods used for the operational purposes in Metro Railway, Kolkata. DMM is applicable to all employees of Kolkata Metro rail. All the activities related with Operation and Maintenance of Metro Railway are in the scope of this Disaster Management Manual.

1.3 Objectives:-

This Disaster Management Manual:

i) Specifies instant trigger mechanism for disaster management.

ii) Specifies the role of systems, policies and procedures in preventing disasters in order to ensure that risks remain as low as reasonably practicable;

iii) Specifies the preparatory actions that are to be taken by staff of Metro Railway, Kolkata to mitigate the likelihood and consequence of a potential disaster if there is a material change to the threat as detailed in the Safety Management Plan;

iv) Requires that Metro Railway staff and other agencies understand their respective roles and responsibilities while responding to disaster in order to ensure coordination;

v) Triggers the disaster management as a quick response mechanism which, on energizing would, spontaneously set the vehicle of management into motion to disaster management process. The process and mechanism of responding are to be planned earlier and response activities should start as soon as the information is received about a disaster;

vi) Requires that actions to be taken by Metro Railway staff to coordinate, manage and control activities in response to a disaster timely, accurate and coordinated in order to reduce the casualties and asset loss to a minimum;

vii) Requires all possible assistance to be provided as necessary to the Fire Services, Police, medical and other medical personnel in reaching the affected area and carrying out their functions of rescue and relief;

viii) Details the guidelines for immediate response and rendering of assistance to the affected persons during any disaster in order to reduce the casualties to a minimum;

ix) Provides simple and clear guidance for the agencies involved to protect persons in the event of a terrorist attack or disaster which may involve extremely hazardous events;

x) Requires liaison and coordination with officials of Apex/Civic Bodies and other expert teams in handling the disaster; and

xi) Requires that all officials who are responsible to deal with the emergency situation are thoroughly conversant with their duties and responsibilities in advance.

1.3 Priorities :-

As per Metro Railway, Kolkata General Rule 2019, all staff of the Metro Railway shall deal with the accidents and emergencies expeditiously and with the following priorities:-

i) Save life, prevent further injury and alleviate suffering

ii) Protect the Metro Railway property and equipment

iii) Take steps for preservation of clues.

iv) Inform the public of the effect on train services and the availability of alternative transport facilities.

v) Restore the safe operation of the train services as quickly as Practicable; and

vi) Restore normal services.

1.4 Definitions of Disaster:-

As per the Railway Board Letter No.2003/Safety(DM)/6/2/Pt. dtd.06.01.2009: "Railway Disaster is a serious train accident or an untoward event of grave nature either on the railway premises or arising out of railway activity in that area, due to natural or man-made causes, that may lead to loss of many lives and/or grievous injuries to a large number of people, and/or severe disruption of traffic, necessitating large scale help from other Government / Non-government and Private Organizations.".

In Disaster Management Act 2005 'Disaster' means a catastrophe, mishap, calamity or grave occurrence in any area, arising from natural or manmade causes or by accident or negligence which results in substantial loss of life or human suffering or damage to, and destruction of property, or damage to or degradation of environment, and is of such a nature or magnitude as to be beyond the coping capacity the community of the affected area.

1.5.1 Disaster has been defined in this Acts under:

"Disaster means a catastrophe, mishap, calamity or grave occurrence in any area, arising from natural or man- made causes, or by accident or negligence which results in substantial loss of life or human suffering or damage to, and destruction of, property, or damage to, or degradation of,

environment, and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected area".

1.5.2 Disaster Management has been explained in this Act as under:

"Disaster Management means a continuous and integrated process of planning, organizing, coordinating and implementing measures which are:

i) Necessary or expedient for-prevention of danger or threat of any disaster mitigation or reduction of risk of any disaster or its severity or consequences.
ii) capacity-building preparedness to deal with any disaster.
iii) prompt response to any threatening disaster situation or disaster.
iv) assessing the severity or magnitude of effects of any disaster.
v) Evacuation, rescue and relief.
vi) Rehabilitation and reconstruction.

Disaster in the Railway context was traditionally a serious train accident, caused by human/ equipment failure, which may affect normal movement of train services with loss of human life or property or both. This is now extended to include natural and other manmade disasters.

1.5.3 Different types of disasters are described below, along with a few examples:

(**a**) **Natural Disaster**:-Earthquake, Flood, Cyclone, Landslide, Snow Avalanche, Tsunami & Pandemic etc.

(**b**) **Train Accident related Disaster:-** Collisions (with a huge number of casualties), Train marooned (flash floods), derailments on a bridge over a river and coaches falling down, train washed away in cyclone, derailment of a train carrying explosives or highly inflammable material, tunnel collapse on a train, fire or explosion in trains, and other miscellaneous cases etc.

(**c**) **Manmade Disasters: -** Acts of Terrorism and Sabotage, i.e. causing deliberate loss of life and/or damage to property, which includes, setting a train or Railway Installation on fire, etc.; bomb blast at Railway Station/Train, Chemical (Terrorism) Disaster, Biological, Radiological and Nuclear Disaster.

1.6 DISASTER AND ACCIDENT:

There is a difference between a Disaster and an Accident. All Disasters are not Accidents, neither are all Accidents, Disasters. Whereas Accidents are occurrences where safety has been affected, Disasters are those situations which cause acute distress to passengers.

1.6.1 NECESSITY OF DISASTER MANAGEMENT PLAN ON METRO RAILWAY:

When a Disaster occurs within Metro Railway premises, usually two or more disciplines (viz. Traffic, Engineering, Electrical, and Signal & Telecommunication etc.) are involved for the management of the situation. The Metro Railway's Accident Manual specifies the broad details of the action to be taken by various officials after an accident has taken place in Metro Railway

premises. However, it is necessary that for disasters the action to be taken be so codified that the management of the disaster is initiated without any delay and the situation is tackled in the most appropriate and efficient manner so that distress is relieved expeditiously.

The Disaster Management is up to the point of relief of distress of the passengers. This does not generally include the management of restoration of normalcy.

1.6.2 Disaster Management (As defined in Disaster Management Act 2005) "Disaster Management" means a continuous and integrated process of planning, organizing, coordinating and implementing measures which are necessary or expedient for –

(i) Prevention of danger or threat of any disaster;
(ii) Mitigation or reduction of risk of any disaster or its severity or consequences;
(iii) Capacity-building;
(iv) Preparedness to deal with any disaster;
(v) Prompt response to any threatening disaster situation or disaster;
(vi) Assessing the severity or magnitude of effects of any disaster;
(vii) Evacuation, rescue and relief;
(viii) Rehabilitation and reconstruction

1.7 Types of Disaster in Metro Railways:

Identified disaster scenarios in Metro Railways:

(i) Major fire (station, train, depot)
(ii) Train Accidents (Collision, Derailment)
(iii) Terrorist Attacks, Bomb Blasts, Indiscriminate Firing
(iv) Unmanageable Crowd, stampede
(v) Natural Calamities
(vi) Chemical, Biological, Radioactive or Nuclear attacks
(vii) Widespread Violence and Public Disturbance

Also the Manual deals with the management of disasters after the occurrence of the following types of accidents in the Metro Railway System (as per broad classification given in the Metro Railway Accident Manual).

1.7.1 Consequential Train Accidents:

(a) Collisions:

(i) Class A1: Collision involving a train carrying passengers, resulting in loss of human life and/or grievous hurt and/or damage to property to the value of Rs.2 Crore or over and/or interruption to any important through line of communication for at least 24 hours.

(ii) Class A3: Collision involving a train carrying passengers, not falling under A1 above but requiring detrainment of passengers.

(b) Derailments:

(i) **Class D1:** Derailment of a train carrying passengers resulting in loss of human life and/or grievous hurt and/or damage to property to the value of Rs.2 Crore or above and/or interruption to any important through line of communication for at least 24 hours.

(ii) **Class D2:** Derailment of a train not carrying passengers resulting in loss of human life and/or grievous hurt and/or damage to property to the value of Rupees 2 Crore or above and/or interruption to any important through line of communication for at least 24 hours.

(iii) **Class D3:** Derailment of a train carrying passengers, not falling under D1 above but requiring detrainment of passengers.

(c) Fire in Trains:

(i) **Class B1:** Fire or Explosion in a train carrying passengers, Station premises.

1.7.2 Equipment Failure:

(a) Engine & Rolling Stock:

(i) **Class J1:** Total failure of motive power hauling a train carrying passengers which requires detrainment of passengers.

(ii) **Class J3:** Parting of a train carrying passengers between stations or while running through a station.

Or

Parting of a train carrying passengers while starting from or stopping at a station.

(iii) **Class J5:** Failure of a rolling stock on running trains, such as failure of tyres, wheels, axles or braking apparatus etc. which requires detrainment of passengers.

(b) **P-Way:** Only cases requiring detrainment of passengers covered under the following categories:

(i) **Class K3:** Fracture of a rail.

(ii) **Class K5** Failure of Railway tunnel, bridge, and viaduct.

(c) **Electric Power Supply**:

(i) **Class L1:** Damage to/ or failure of 3rd rail equipment, sub-stations or any part of the Power Distribution System in an electrified section which is likely to dislocate traffic.

1.7.3 Miscellaneous:

(i) **Class N1:** Attempted wrecking of or sabotage to a train carrying passengers requiring detrainment of passengers.

(ii) **Class E1:** Train carrying passengers running over or against any obstruction not classified under Categories C (Level Crossing) but requiring detrainment of passengers.

1.7.4 Breach of Block Rules:

(i) **Class F1**: Averted Collision between trains, one or both of which is/are carrying passengers, if the situation requires detrainment of passengers.

(ii) **Class F2:** Averted Collision between a train carrying passengers and an obstruction, if the situation requires detrainment of passengers.

1.7.5 Incidents:

(a) **Fires:**

(i) **Class Q4:** Fire or Explosion within Railway premises but not involving trains.

Only those incidents of this class will be considered as disasters which affect train running or safety of passengers/intending passengers.

(ii) **Class Q5:** Fire or Explosion resulting in damage to Railway, bridge and viaducts etc. including tunnel.

Only those incidents of this class will be considered as disasters which affect train running or safety of passengers/intending passengers.

(b) **Interruption to Through Communication:**

(i) **Class R3:** Flood, breaches, landslides etc. resulting in interruption of an important through line of communication for at least 24 hours.

(ii) **Class R4:** Other cases of flood, breaches, landslides etc. resulting in interruption to traffic.

1.7.6 Classification of Disasters:

The main types of disasters can be grouped under the following heads:

HEAD		CLASSIFICATION
(i)	Fire	B1, Q4, Q5
(ii)	Flooding	R3, R4
(iii)	Electric power breakdown	L1
(iv)	Failure of ventilation	Not classified as accidents, in the Accident Manual. However, these can cause acute distress to passengers and come under the purview of disasters.
(v)	Stampede	
(vi)	Accidents involving trains	A1, A3, D1, D2, D3, F1, F2
(vii)	Sabotage	N1
(viii)	Stalling of trains due to equipment failure	J1, J3, J5, K3, K5

1.8 In the unlikely event of an Accident/ potential Emergency reported by any member of staff who notices it shall be dealt with utmost expediency by the Central Control and his Department Supervisor.

1.9 The Hooter shall be sounded as under:

- One long one short - Loco Yard Accident
- One long two short - Traffic Yard Accident
- One long three short - Fire in Metro
- One long four short - Main line blocked
- Two long four short - Medical Assistance required

CHAPTER NO. 2

FACILITIES & ORGANISATION FOR DISASTER MANAGEMENT

2. Facilities:

Facilities available in Metro Railway System OR the other agencies for assistance during management of disasters are as under.

2.1 Fire Fighting Facilities:

i) Mobile and Static fire station [including WBF&ES]
ii) Water pipe line along P-way track, with fire hydrants
iii) Water pipe line along P-way track, with fire hydrants are only tunnel section and viaduct section only at station area in E-W corridor.
iii) Water Tanks for supplying water to fire hydrants at stations.
iv) Fire extinguishers, Fire Alarms and AFX machines (Automatic Fire Extinguishers)
v) Hose pipes & Hose reels at stations and office buildings.
vi) Fire Bucket .
vii) Fire Jacket.
viii) Helmet Torch.
ix) Fire resisting clothing
x) Gas flooding system in Green Line .
xi) Fire Alarm system.
xii) Panel flooding system in Green Line .

The details are furnished in the following Annexure to this chapter:-

Annexure 2.1: Details of Mobile and static Fire Stations

Annexure 2.2: Details of Water pipe line & Fire hydrants

Annexure 2.3: Details of Water Tanks for Fire Fighting

Annexure 2.4: Details of Fire Alarms, AFX machine & Fire Extinguishers.

Annexure 2.5: Availability of Hose pipes & Breathing Apparatus at stations

2.2. Medical Facilities:

The Medical Wing of Metro Railway is under the technical control of CMD/ER and is under the administration of PCMO, Metro Railway.

(a) For Indoor medical facilities, 30 Nos. of beds are available including Operation Theatre and other sophisticated diagnostic machines. In case of critical illness, patients are being referred to B.R. Singh Hospital, Sealdah where there is a Metro Ward.

(b) For day-to-day medical activities, the following are available:

- Polyclinic type of OPD

- OPD is working from 09.00 hrs to 16.30 hrs from Monday to Fridays and from 09.00 hrs to 13.00 hrs on Saturdays.

(c) In the Policlinic type of OPD, General patients, critical patients, surgical patients, ENT patients etc are being regularly checked and followed up.

(d) Availability of doctors is as follows:

Day	Forenoon	Afternoon
Monday	PCMO, ACMS, Sr.DMO	PCMO, ACMS, Sr.DMO
Tuesday	PCMO, ACMS, Sr.DMO	PCMO, ACMS, Sr.DMO
Wednesday	PCMO, ACMS, Sr.DMO	PCMO, ACMS, Sr.DMO
Thursday	PCMO, ACMS, Sr.DMO	PCMO, ACMS, Sr.DMO
Friday	PCMO, ACMS, Sr.DMO	PCMO, ACMS, Sr.DMO
Saturday	PCMO, ACMS, Sr.DMO	----

(e) This Hospital provides expert service through honorary/part time consultants in the following fields:

Name of Clinic	Day	Time
Pediatric (PCMO)	Monday to Friday	10:00 AM – 01:00 PM
Dental	Monday to Friday Saturday	10:00 AM–01:00 PM & 02:30 PM–04:00 PM 10:00 AM – 01:00 PM
Eye	Monday to Friday Saturday	10:00 AM–01:00 PM & 02:30 PM–04:00 PM 10:00 AM – 01:00 PM
Medicine	Tuesday and Thursday	02:30 PM – 04:30 PM
Cardiology	Tuesday and Friday	10:00 AM
Neurology	Wednesday	03:00 PM
Orthopedic	Tuesday	12:00 NOON
ENT	Monday	09:30 AM
Surgery	Tuesday	02:00 PM
Gastroenterology	Thursday	09:30 AM
USG	Tuesday	09:00 AM
Gynecology	Friday Saturday	02:00 PM 09:00 AM

(f) Indoor Emergency service:

Doctor with requisite Para-medical staff is available 24 hours a day on all the days of the week in order to combat any emergency situation in the Hospital or OPD after the schedule hours.

(g) Indoor service:

Presently 30 bedded indoor service is available in the Tollygunge hospital with specialist doctors in the field of general medicines, general surgery, radiology, gastroenterology, ENT, Eye etc.

(h) First Aid Services:

First Aid boxes are provided at all the stations, trains and other vital installations. The staff is qualified in rendering the first aid.

(i) For minor injuries and ailments, first aid boxes are provided in all trains and at all the metro station/Depots.

(ii) In case of any critical injuries / illness, private and state government hospitals have tie up with the metro organization for treatment. Patients shall be referred to these hospitals and if this referral is not possible then to the nearest hospital.

(iii) The hospital network in Kolkata is widespread and the nearest hospital may not be more than one kilometer from any of the metro station.

(iv) List of stations in nearby Govt. and/or Private hospitals with address and telephone numbers, available in close proximity to the metro network is provided in this manual.

(v) One Sr. DMO, one Pharmacist, one Dresser and one Attendant are available in the First Aid Post at Noapara. The First Aid Post at Noapara is functioning 6 days a week from 10.00 hrs to 17.00 hrs on Monday to Friday and on Saturday from 10.00 hrs to 13.00 hrs.

(i) Ambulance Service:

(i) One ambulance is available round the clock at TSM Hospital, Tollygunge and one at Noapara and Central Park Deport (CPD) is kept round the clock for any emergency.

(ii) Services of any of the other nearby ambulances can be obtained at short notice.

(iii) List of Ambulance services, with address and telephone numbers, available in close proximity to the metro network is provided in this manual.

(j) Physiotherapy unit:

Recently, upgraded physiotherapy unit is being operated at Tapan Sinha Memorial Metro Railway, Hospital from Monday to Friday from 10.00 hrs to 16.30 hrs and on Saturday from 10.00 hrs to 13.00 hrs.

(k) Lockup Dispensary at Belgachhia:

One Sr. DMO along with one pharmacist and one attendant visits Belgachia Lock Up Dispensary on Tuesday and Thursday from 15.00 hrs to 17.00 hrs.

(l) Noapara Health Unit:

One Sr. DMO along with one pharmacist and one attendant visit MON-FRI(9.00-16.30) & SAT(9.00-13.00).

(m) Staff on roll at the Tollygunge Hospital:

Sl. No.	Medical Staff	On Roll
1	Chief Nursing Supd.	1
2	NS	9
3	Health & M Inspector	1
4	Pharmacist	3
5	Hospital Attendant	11
6	Physiotherapist	1
7	Dresser	4
8	Cardio Tech.	1

Sl. No.	Medical Staff	On Roll
9	Sr. NS	2
10	Chief Radiographer	1
11	Radiographer	1
12	Chief Lab Supd.	1
13	Lab Supd.	1
14	Safaiwala	1
15	Optometrist	1
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2.3 Communication Facilities:

As it is extremely difficult for a Station Master to keep watch on the various activities spread over the entire station area under his control, a number of facilities have been provided to him to enable him to discharge his duties effectively.

2.3.1 The following facilities have been provided with each Station Master in the Kolkata Metro Railway:-

(a) Control Telephone:

To enable the SM to contact the Central Control quickly and effectively, he has only to lift up the handset of the control telephone and declare his identity. On getting response from the Traffic Controller, he can transmit his message directly; similarly, the Traffic Controller can call him by a selective calling system in which a particular Station Master is contacted by giving him a ring in the control telephone by choosing his station code. This telephone cannot be used for contacting any other person.

(b) Intercom Exchange Telephone:

A Railway auto telephone is provided with a nominated number through which he can contact any subscriber of the Railway Telephone network spread over the entire Metro Railway system.

(c) P & T Telephone:

A P&T/FCT Telephone has been provided to enable the SM to contact any non-Railway organization/person like fire brigade, ambulance, police, local doctor etc. This may also be used to contact Railway persons having P&T telephones and Mobile phone.

(d) Terrestrial Trunked Radio (TETRA)

Point-to-point and point-to-multipoint transfer can be used for communication in Green Line . Digital data transmission is also included in the standard though at a low data rate. In emergency situations this feature allows direct communications underground or in areas of bad coverage.

In addition to voice and dispatch services, the TETRA system supports several types of data communication. Status messages and short data services are provided over the system's main control channel, while packet-switched data or circuit-switched data communication uses specifically assigned channels.

(e) Public Address System:

Through this system Station Master can make any announcement to the traveling public [both in train and the stations] about any emergent situation or abnormal running of trains. The central controller can also announce simultaneously at all stations in case of emergency.

(f) CCTV Monitor:

A close circuit television surveillance system has been installed in every stations which covers 100% of the public area. A number of cameras have been installed in strategic locations and their views captured by the cameras are sequentially shown in a monitor kept with the station Master. Every camera has got an identity number, through which the station Master can identify and effectively keep watch on operationally important areas of the station and can initiate emergent action in case of any need. Each train has been with 26 cameras [4 in each coach and one each in front & rear of the train].The same can be seen by the central controller.

(g) AFC Control Equipment:

A computerized control has been provided with the SM to enable him, among other functions, to control the operation of the AFC gates. Through this control, he may make gates inoperative or in case of emergency he may make all the gates free to enable faster movements of passengers through them. In case of emergency, needing quick evacuation of passengers from the station, he should set all the AFC gates free and the swing gates, which are kept normally locked, should also be opened for easy passage.

(h) Power Change-over Switch:

In case of power supply failure in SM’s service area, the Panel Operator may operate this switch (which is located in Station Control) through the use of which he may restore the power supply to all the equipments under his control by changing over to the alternate supply source.

2.3.2 In addition to the above eight facilities, which are provided, at all the Metro stations, the following additional facilities exist in panel room of Block stations.

- Control Telephone, Railway Phone, Magneto Phone for Motorman & FCT Telephone

2.3.3 BYTE communication telephones are provided with Traffic Controller, TPC and TLC for intercommunication among themselves as also with any subscriber provided with BYTE telephone unit.

2.3.4 In addition, the Motorman of a train will communicate with Traffic Controller through Tetra communication system. In case of its failure, they may establish contact with each other through the Radio Telephone with the help of the TLC. They have also been provided with Mobile phones.

2.4 ART (RRRV), RELIEF & RESCUE PREPAREDNESS:

(a) Battery Operated Locos: Battery operated locos are available for dealing with disasters is placed at depot [ETU Shed/Stabling Shed/Carshed]. These locos can take relief trains to disaster sites inside tunnel and can be used for pulling out coaches of disabled train from inside the Metro System when 3rd rail power is not available. In Green Line the relief may be provided through road on viaduct section by Re-railing Equipment or by Battery Powered Electric Loco.

(b) (i) ART & Re-railing Equipment: Accident relief train is available at KKVS & Noapara Car Sheds of Blue Line Corridor. Re-railing equipments are available at Central Park Depot [ETU Shed / Stabling Shed] for Green Line, Joka Car Depot (Purple Line) & Kavi Subash (Orange Line) . These equipments can be taken by Accident Relief Train to the site of disaster, if required.

(ii) Rail cum Road Relief Vehicle (Purple & Orange Line) :

Rail cum Road Relief Vehicle (Self-powered) is stabled at Joka & KKSO Crasheds on ART Bay (separate siding) with all Re Railing and Recue equipment's.
One Key of the Vehicle will be available with SSE/In charge of the Breakdownand another key will be with PPO/control.
The accident Relief Train shall be turned out within half an hour of the time of receipt of accident information.
In case of emergency and if situation demands, Rail cum Road Relief Vehicle should be moved immediately to the accident site.
As the self-powered Rail cum Road Relief Vehicle cannot pull a metro rake, therefore, another empty metro rake will come to pull out the disabled rake.

List of Equipment's in Rail Cum Road Relief Vehicle Purple & Orange Line

Re-Railing Equipment:

SN	Description	Quantity
1(a)	Power pack	1 No.
1(b)	Hydraulic Oil	2 Nos.
2	Hand pump	1 No.
3	Portable control table	1 No.
4	Hose paid blue/grey	6 pairs
5(a)	Telescopic Jack 600/300T closed height 400 mm ± 70 mm	2 Nos.
5(b)	Stacking set for Telescopic jack 600/300T	2 sets
5(c)	Telescopic Jack 600/300 KN closed height 225 ± 25mm	2 Nos.
5(d)	Base plate for Telescopic± jack 600/300T closed height 400 mm ± 50 mm and 600/300 KN closed height 225 ± 25 mm	4 Nos.
6(a)	Duo traversing Jack	2 Nos.
6(b)	Roller Carriage	4 Nos.
6(c)	Distance Bar (1500-2800 mm) Distance Bar (103-1830 mm)	One pair each
7(a)	Re-railing bridge 3.3m long or (2.5 m +1.0 m)	1 No.
7(b)	Re-Railing bridge 2.2 m	1 No.
7(c)	Connection element	1 Set
8(a)	Single piston step jack with claw	1 No.
8(b)	Radius plate for single piston step jack with claw	1 No.
9(a)	Lifting cable Ladder	2 Nos.
9(b)	Holding rope	2 Nos.
9(c)	D-Shackle	2 Nos.
10	Petrol Driven Generator : 3 KW, 230V, 1HP	1 No.
11	Tool Box	1 set

List of items in First Aid Box

Note:

i) First Aid Box at stations should be kept in sealed condition in a prominent place in the SM Office.

ii) First Aid Box should be checked by Doctor in charge (ADMO)once in 6 months and M.S. as and when required.

Rescue Equipment:

SN	Name of Equipment	Quantity
1	Set of six wooden extensible splints	1 Set
2	Sterile Adhesive strip dressing	20 Nos.
	(Standard size)	
3	Rubber Tourniquet	2 Nos.
4	Roller Bandages gauze	10 Nos.
	7.5cm x 4 cm	
5	Triangular bandages	4 Nos.
	130 cm x 90 cm x 90 cm)	
6	Tab. Paracetamol	20 Tabs in strips.
7	Antiseptic cream (25 gms)	1 Tube.
8	Injury Cream	1 Number
9	Safety pin set of 10	1 set
10	Tab. Diazepam	1 strip of 10
11	Cotton Wool	100 gms.
12	Scissors dressing 12 cm, Blunt / Pointed	1 Number
13	List of contents and instructions	1 Number
	Regarding treatment	
14	Card showing last date of checking replacement	1 Number

SN	Description	Quantity
1(a)	Air Bag Type-I 650x690 mm size, Capacity 300KN, 350 mm lift	2 Nos.
1(b)	Air Bag Type-II 950x950 mm size, Capacity 670KN, 500 mm lift	2 Nos.
2(a)	Petro/diesel Air Compressor : 10cfm capacity, operating pressure 9 bar	1 No.
2(b)	Air CU 8 bar deadman, lighting	1 No.
2(c)	Hose 5m long yellow	1 No.
2(d)	Hose 10m long Red	1 No.
2(e)	Hope pipe 10m yellow	1 No.
2(f)	Connection between Air Compressor and Air Cu	1 No.
2(g)	Pressure Regulator 200/300 bar working pressure 14 bar	1 No.
3	Cutter	1 No.
4	Spreader	1 No.
5	Hose Mono coupling 10m long	2 Pairs
6	Spare blade for cutter	2 Nos.
7	Chain set for spreader	2 Sets
8	Spreading cum peeling Tips for spreader	2 Nos.
9	Power pack for rescue device	1 No.

Re-railing Equipment At Green Line (CPD) LUKAS MAKE

No.	Description of items	Qty.
I	Power Pack GC 650E - 4 Power	1 No.
2	Hand pump ZPH 3/8-21)	1 No.
3	Control Table CU-4DVV	1 No.
4	High Pressure Hose Pair	6 Pairs
5	Cylinder HP 25/T185R	2 Nos.
6	Base Plate for HP 25/T	2 Nos.
7	Stacking Set for HP 25/T	2 Nos.
8	Cylinder HP 30/T500R	2Nos.
9	Base Plate for HP 30/T	2 Nos.
10	Stacking Set for HP30/T	2 Nos.
11	Cylinder LFM 63/50	2 Nos.
12	Base Plate for LFM 63	2 Nos.
13	Duo Traversing Cylinder TCI 70/90-350	2 Nos.
14	Roller Carriage RC 700/350mm	2 Nos.
15	Distance Bar 1500-2800	I Pair.
16	Hooked Wheel Stop	2 Nos.
17	Re-railing Bridge 3.3 mtr	1 No.
18	Re-railing Bridge 2.2 mtr	1 No
19	Re-railing Bridge 1.1 mtr	1 No.
20	Connection Element 140mm	1 No.
21	Claw Jack type HP50/P850R	I No.
22	Radius Plate for HP 50	I Pair
23	Lifting Belt LB 400	2 No.
24	Tilting Cylinder HP25K/400R	1 No
25	Radius Plate for HP 25 K	I Pair
26	Holding Rope HR-3	2 Nos.
27	Shackle HC- I	2 Nos
28	Axle Pusher AXP 100	1 No.
29	Cylinder LFM 10/160	1 No.

30	Piston Guard Plate for LFM	1 No.
31	Mini Lifting Air Bag V 31 Aramide	2 Nos.
32	Mini Lifting Air Bag V 40 Aramide	2 Nos.
33	Mini Lifting Air Bag V 68 Aramide	2 Nos.
34	Air compressor petrol driven type A215000	1 No.
35	Adaptor for compressor	1 No.
36	Dual Deadman Controller 8 bar	1 No.
37	Inflation Hose 10 mtr Red	2 Nos..
38	Inflation Hose 10 mtr Yellow	1 No.
39	Pulling Device PUD 200	1 No.
40	Generator Petrol Driven	1 No.
41	Hydraulic Cutter Type S 788	1 No
42	Hydraulic Spreader SP 555	1 No
43	Power Pack P 630 SG	1 No
44	Chain set KSV I I	1 Pair
45	Extension Hose air black	5 Pair

List of ART equipment's for Re-railing in Blue Line

(KNCS & KSCS: BEMCO & LUKAS MAKE)

SL NO.	Equipment Sl No.	Description of equipment	Quantity
1	1	Pump set with petrol engine	1
2	2	Portable control table	1
3	3	Portable hand pump	1
4	4	High pressure hoses(red & blue)	1 set – 9 pairs
5		Re-railing bridge	4
	5.1	4.4m length	1
	5.2	3.3m length	1
	5.3	2.2m length	1
	5.4	1.1m length	1
	5.5	Bridge coupling for joining 2 re-railing bridges	1 set
6		Roller carriage	
	6.1	Roller carriage with removable top plate	2

	6.2	Displacing jack(push/pull) capacity 17T/09T Model no. RSJ-1709-720	2
	6.3	Distance bar	1
7		Lifting belt & step jack with accessories	
	7.1	Lifting belt	2
	7.2	Step jack with claw	3
	7.3	Complete set of accessories to be used with step jack & lifting belt	3 sets
	7.3 a	Head pieces – 3kg/No.	3
	7.3 b	Round head piece with rope guide – 12kg/No.	3
	7.3c	Rocker bearing supports – 08kg/No.	3
	7.3 d	D-shackle	2
	7.3 e	Cotton hemp rope of 10m length – 02kg/No.	2
8		Telescopic jacks	14
	8.1	Telescopic jacks 637/265 KN closed ht. – 415mm Model no. RTJ65-415-2	4
	8.2	Telescopic jacks 637/265 KN closed ht. – 250mm Model no. RTJ65-250-2	2
	8.3	Telescopic jacks 1362/637 KN closed ht. – 415mm Model no. RTJ139-415-2	4
	8.4	Telescopic jacks 1362/637 KN closed ht. – 250mm Model no. RTJ139-250-2	2
	8.5	Supports sets suitable for jack model no. RTJ 139-250-2	2 sets
	8.5 a	Cylinder supports rings	4
	8.5 b	Piston support pieces	4
	8.5 c	Lifting tongue	1
9		Pulling equipment's	1
	9.1	Pulling jack	1
	9.2	Holding rope	1
	9.3	Pulling rope	1
	9.4	Rail attachments suitable for track gauge (BG)-1676mm	1
10		Hydraulic tilting jack 200-250 KN closed ht. – 550-600mm+hooked wheel stop, Model no. RTLT-400	1
11		Distributer valve	1
12		Axle pusher	1
13		Hose connector	6
14		Toolbox	1
15		Generator set	3 sets
	15 A	Petrol operated, Cap. 5.5KVA, make - HONDA	1 set
	15 B	Petrol operated Cap. 3KVA, make – HONDA type EU30IS	1 set
	15 C	Petrol operated, Cap. 6.5HP(4.8kw) make- HIMALAYA POWER	1 set
16		Lighting set	4
	16.1	Halogen lamp 500W with telescopic stand	5

	16.2	Inflatable tower light, make- ASKA(Petrol/AC operated)	1
	16.3	Hand held search light, rechargeable	2
	16.4	LED flood light, Cap. 195W make- PHILLIPS	1
	16.5	Signalling torch make- EVEREADY	1
17		Safety helmet with headlight	10
18		Cutting device	3
	18.1	Cold cutter & spreader (Uni-tool LKS 31, Cap. 10mm)	1
	18.2	HILTI make reciprocating saw Model- WSR900PS/PE	1
	18.3	Angle grinder, size 125mm make-BOSCH, Model-GWS11-125IB	1
	18.4	Gas cutting set	1 set
	18.4 a	Oxygen & acetylene cylinder	1 each
	18.4 b	Cutting torch with pipe and regulator	1
19		Aluminum ladder 8 feet and 6 feet	1 each
20		1HP De-watering pump	1
21		UMBRELLA(Normal)	6
22		AIR BAG, make-VETTER, Lifting Cap. 396KN	6
23		AIRTEX compressor, Diesel operated for VETTER AIR BAG	1
24		Raincoat (top and bottom)	9
25		Air jackets(illuminated)	20
26		Gum boot	20
27		Blanket	3
28		ART badge	30
29		Barrier tape	20 mtrs.
30		ZIP crane with chain pulley(Cap. 1T)	2
31		4-Leg chain Sling	2
32		Portable extension board	2
33		Plastic chair	10
34		Toolbox	2
35		Still camera, make- CANNON with set of rechargeable battery	1
36		Earthing clamp	2 sets
37		Manila rope	20 mtrs.
38		Pinion extractor, Model no.- CWPE 40K, make-CRIMPWEL	1 set
39		Pony wheel set(non dismantling type)	2
40		Wooden skid	6
41		Wooden block(different sizes)	65
42		Metal skid	2
43		MS plates(different sizes)	20
44		Crowbar(long)	2
45		General rule book	1
46		Disaster management manual	1
47		Accident manual	1

		Lukus equipment's	
1	2	Hydraulic power pack(Petrol operated, type- GC 650E)	1
2	3B	Control table, type- CU-2DV	1
3		High capacity hand pump ZPH 3/8-2D	1
4		Extension high pressure hose pair 10m length	6 pair
5		Re-railing bridge	
	5.A	2.20m & 140mm height	1
	5.B	1.10m and 140mm height	1
6	21A,21B	Connection element for bridges	1 set
7		Roller carriage RC 1000/350	2
8		Duo traversing cylinder TC 170/90-350	1
9		Distance bars 1030-1830mm	1
10		Telescopic jack 600/300KN HP 30/T500R(HC)	2
11		Telescopic jack 600/300KN HP 25/T185R(LC)	2
12		VETTER AIR BAG type 2V68	2
13		Air supply hose 10m(red)	2
14		Air supply hose 10m(yellow)	2
15	25	AIRTEK compressor ATS 50 HONDA diesel engine	1
16		Quick connect plug St Ni 61D(male & socket St Mu 61D female	1 each

(c) Pumps for de-watering tunnel accumulations:-

(i) Normally pumps are provided at mid-section sumps and these pumps are provided with "Liquid Level Controller" for operation. One / two or all pumps operate through liquid level controller for pumping out water from the tunnel depending upon the situation i.e. ingress and accumulation of water. These pumping installations are provided with duplicate power supply to ensure reliability.

(ii) Spare high capacity pumps are available with Metro Railway as standby; to be installed and used as and when required.

(iii) List of pumping installations is given at **Annexure 2.6.**

2.5 Dispersal Facilities:

(a) In cases of disasters, the main object is to disperse the affected persons, as early as possible, from the affected site of occurrence. This calls for proper dispersal facilities at stations so that a person can reach the surface with the least possible loss of time. In **new corridors**, both viaduct and tunnel are provided with side emergency pathways of min width of 550 mm to facilitate side evacuation from the trains. In the viaduct the pathways are on the left side of the normal direction of train operation and in tunnels it is on the right hand side. The tunnels also have cross passages between the twin tunnels within 244m [except tunnel below the River Hooghly] to facilitate evacuation through non-affected tunnel.

(b) However, mid-point shafts in between stations have staircases leading to the surface; these are very narrow and are unusable for negotiation by passengers. Moreover, the exit doors from the midpoint shaft buildings, on to the surface, are locked and the keys of the doors may not be readily available at times of disasters. Under the circumstances, the endeavor of the guiding Metro staff should always be to disperse the disaster affected persons through the nearest station.

(c) The dispersal arrangements as available at present, at platform levels and mezzanine levels, and on to the public roads on the surface are indicated in the evacuation plans at stations.

2.6 Facilities Available in Trains

2.6.1 For assistance to running staff and passengers, the following facilities are provided in Trains with train crew.

i) First Aid Box
ii) Fire extinguishers
iii) Emergency door key (for detrainment of passengers through front door)
iv) Door key (for locking of defective door)
v) Torch light (with dry cells)
vi) Motorman's tool kit
vii) Door operating facility from either end
viii) Passenger Alarm with audio-visual indication
ix) Short Circuiting device for earthing of Third Rail
x) Extendable ladder to bridge the gap between coach floor & pathway.
x) Train PA system
xi) Equipment for recorded announcement
xii) Bell code facility for communication between Motorman.

2.7 Facilities Available with Other Organizations.

2.7.1 It is often necessary to contact organizations other than metro railway for tackling disasters. The contact nos. of such organizations are available with all station controllers, Traffic controller, Traction power controller and with all members of the disaster management team.

2.7.2 The various organizations are:

i) State Govt. : Medical – Nearest Govt. Medical Hospital
Fire : Nearest Fire Station
Govt. Dept : The state Secretary and Transport secretary of the WB
State Police : State Police HQ, Kolkata
ii) Kolkata Municipal corporation: Sewage Department, Water supply department and Roadways Department.
iii) West Bengal State Electricity Distribution Corporation Limited (WBSEDCL), CESC

iv) Private Medical Hospitals
v) CTC – Calcutta Tramways Corporation
vi) Eastern Railway
vii) S-E Railway
viii) Army authorities
ix) Doordarshan /Radio/ Press

2.8 DISASTER MANAGEMENT

1. Immediately actions on call out:

(a) Those called are to report by the quickest possible means (bytaxi, if necessary) to the Site-in-charge or incident post (if one is set up), bringing with them (if in possession) a torch, helmet, gumboot and any other protective equipment that may have been supplied.

(b) The first Supervisor or officer to arrive at site is to assume command of the incident. Subsequently, he may be relieved by any other Competent Officer.

(c) The Officer-in-charge of the site should not get involved with rescue work personally. He should concern himself mainly with the organisational and administrative aspects of theincident.

2. Setting up of Incident Post:

(a) The officer-in-charge of the site should set up an incident post in the event of a major accident from which to coordinate the work of rescue and clearance.

(b) If possible, a room in a nearby Metro building should be set aside for the purpose.

(c) The requirements for furniture and stationery at the incident post should be met by the Traffic department.

(d) Any additional requirement for telephones should be met by the S&T department.

(e) The Officer-in-charge of site should nominate an inspector or a supervisor of the Traffic department to man the telephone and maintain the log. Another person should be assigned to act as a runner.

(f) Civil emergency services, voluntary organisations, public offering

help etc., should be directed to the incident post.

(g) The incident Post staff should maintain a record of all telephone calls made or received, actions and decisions taken, time particulars, and arrival and departure of personnel.

(h) The Police may depute an Incident Officer in the Metro Incident Post or set up their own incident post in a nearby room. The Metro Officer-in-charge is to liaise with the Police incident officer particularly in respect of the following matters:

1. Selection of areas for parking ambulance, shuttling bus services Metro vehicles, etc.
2. Disposal of children separated from their parents, distressed elderly person, and other distressed but uninjured person.
3. Setting up of First aid centre where persons with trivial or minor injuries can be treated.
4. Accountal of unidentified property, and the manning of a store for such property.
5. The establishment of names and addresses of witness to the incident.
6. Taking charge of the dead.
7. Disposal of dead bodies.

3. Attention to the injured:

i. In case of an accident to a passenger train, the injured passengers, if any, shall be attended to on top priority. It is the primary duty of all Metro Railway servants to render prompt assistance to the injured and arrange medical aid at the site of the accident as required and most effective medical treatment after their admission into the Hospital.

ii. All first-aid boxes equipment's and emergency tool boxes on trains and at stations shall at once be rushed to the site of the accident for rendering relief to the injured and extricating passengers from the debris. Medical aid may be rushed even by road if it can reach quicker and more conveniently.

iii. The Motorman will make announcement through P.A system requesting doctors and qualified first-aid workers, if any, amongst the passengers travelling by the same train to assist.

iv. In case of serious injuries, the nearest Civil or Military Medical Officials and/or private Medical Practitioners and Ambulances can be summoned, if the Railway Medical Officer is not available earlier or

is unable to cope up with the situation by himself.

4. Decision on nature of injuries:

Only a Qualified Medical Practitioner can say whether the injuries are simple or otherwise. If a person with slight injuries refuses to proceed for medical examination, this refusal should be taken in writing and kept as a record and the Chief Operations Manager advised. The result of the medical examination should be intimated to the Chief Operation Manager without any delay.

5. Provision of facilities to Doctors to reach site of accident:

All Metro Railway servants shall afford every facility to Doctors to enable them to reach the site of accident with the least possible delay.

6. Temporary Hospital at station near to the site of theaccident:

In case the Medical Officer considers it necessary to open a temporary Hospital at a station near the site of the accident, the Station Master must make available whatever accommodation he is called upon to provide.

7. List of non-railway Hospitals, Dispensaries:

The Control Office and Senior Section Engineer/ART must keep a list of non-railway Hospitals, Dispensaries, names of the Private Medical Practitioners and qualified first- aid workers whose help may be sought, if necessary, during relief operations. Traffic Inspectors and officers must scrutinize this list frequently to ensure that it is kept upto date and is readily available when required.

8. Addresses of Drivers of Railway Road Vehicles:

The Control office should also maintain the addresses of the Drivers of Railway Road Vehicles, so that when necessity arises, the Drivers can be located and the Railway Road Vehicles used for relief operations.

9. Turning out of Relief Train or Breakdown Van:

The Relief Train must be ready and be turned out with the least possible delay within the target time of **30 minutes** from the time Hooter in the

Car Shed is sounded. Regulation of traffic to ensure quickest passage of Accident Relief Train to the site of accident shall be done by the Control office.

10. Maintenance of Relief Train/Breakdown Van:

The Senior Section Engineer/ART will be overall-in-charge of the Relief Train/Breakdown Van and will be responsible for seeing that they are always fully equipped and in good running order. A quarterly inspection of the Accident Relief Train will be done by competent officers and a joint report shall be submitted to the Chief Safety Officer.

11. Staff required to attend accident:

In addition to the officers attending the accident site, SSE/RS, SSE/P.Way, SSE/S&T and TI of the concerning Section will also attend the accident site along with their staff.

12. Police Attendance:

In case of derailment of any train carrying passengers at or between stations where sabotage is suspected, arrangement will be made for the Police to visit the scene of accident as soon as possible so that they might observe what disturbances, if any, there have been on the line and to guard any material evidence affecting the cause of the accident.

13. Precautions to be observed in handling injured passengers:

Every effort must be made to extricate injured persons from debris and then they should be carried to the nearest convenient spot for rendering first-aid. Injured persons are not to be shifted at all to long distance until such time a qualified person has rendered first- aid and taken necessary precautions.

14. Supply of food and drinks to the passengers and staff at the site of accident:

The Traffic Officers will look after the comfort and need of the injured passengers. Immediate arrangement will be made for supply of drinking water, milk etc. at the site of accident. Food or cash in lieu thereof will have to be supplied/paid to staff engaged in relief operation as and when necessary under the supervision of a responsible official.

The Chief Traffic Manager is empowered to sanction expenditure for supplying food to railway staff engaged in restoration work at accident site upto an amount permissible as per schedule of powers.

15. Speed transport to injured persons to Hospital:

After rendering first-aid, all injured passengers must be transported as quickly as possible to a Railway Hospital to be decided upon by the Metro Railway Medical Officer, preference being given to seriously injured passengers. If injured persons are sent to non- railway Hospital for treatment, a Railway Medical Officer will be deputed to accompany them to the Hospital and to see that they are properly accommodated. The progress of the patients at the Hospital will be reported to the Chief Operations Manager periodically.

Timely information must be given to Civil & Military Hospitals of the number of injured persons to be shifted there and the time they are expected to arrive at the Hospitals. All local railway road vehicles will be made available for the purpose of carrying the casualties to the Hospitals. If adequate railway transport cannot be arranged, Private transport can be hired.

16. Information to relatives of injured passengers:

Relatives of injured passengers will be intimated either on phones or by most expeditious means of communication at the cost of Metro Railway and the same will be confirmed through letters.

In cases of death, the relatives of the victims of accident may beissued free passes from their places of residence to Kolkata.

17. Opening of Enquiry-cum-information Centre:

An Enquiry-cum-information Centre will be opened at Metro Rail Bhavan in all cases of accidents involving death of passengers. The centre will be manned by responsible officials who will collect and keep latest information on the progress of injured persons in the Hospitals. These officials will also be responsible to give correct information to such of those members of public who will be making anxious inquiries about the whereabouts of their relatives.

18. Arrangements for clearing the line:

The senior most Traffic officer at site will be in-charge of arrangement for conducting stranded passengers to the nearest station. The senior most Traction Engineer will look after all Electric traction matters. The senior most Traffic Officer present in the Control office will take over charge of the Control office. The senior most Signal Engineer present at the site will be in-charges of communications.

No effort should be spared in extricating the injured and the dead from under the debris. The operation for clearance of wreckage must continue

till all the injured persons are taken out.

19. Care and identification of dead bodies:

In the case of serious accident, the senior most Railway Officer on the spot should discuss the question of disposal of dead bodies withthe senior most Police Officer at the scene of accident and they should jointly determine the places for keeping the dead bodies under the control of a responsible Officer. The Police have to take charge of the dead bodies and they should be given the requisite facilities for their transport to well-protected places where they could be kept pending completion of formalities or until claimed by next ofkin. It may be stressed that respect for the dead should be the primary consideration and in any case no dead body should be keptexposed to the weather.

Identification and disposal of dead bodies should normally be the responsibility of the Police authorities. Photographs of the unidentified dead bodies may be taken by the Police authorities and displayed at all stations and other conspicuous places. Photographs of the dead bodies should also be taken by the Public Relations department of Metro Railway.

2.8.1 Organization for disaster management.

The various organizations in Metro Railway for Management of Disasters are as below :-

Organization of Disasters Management Team.

There is a standing Disaster Management Team having the following officers:-

(i)	**Chairman & Coordinator**	-	Dy. CSO/I
(ii)	Member	-	Dy. COM (O&M)
(iii)	Member	-	Dy. CSTE (M)
(iv)	Member	-	Dy. CEE (RS)
(v)	Member	-	Sr. DEN
(vi)	Member	-	Sr. DMO
(vii)	Member	-	Sr. SC/RPF.

As soon as a disaster takes place it should be the duty of the Traffic Controller to inform the Chairman and the Members regarding the situation so that the Team can start functioning in the management of the crisis.

2.9 Various Agencies to Assist:

To assist the disaster management team, the following departments will depute officers/supervisors to coordinate relief work in their respective jurisdictions:

- Public Media Relations
- Security
- Police
- Fire Services
- Traffic

2.9.1 Duties of various Agencies/Departments:

i) PR representative will disseminate discreet and accurate information to all concerned and brief the media after getting approval of PRO / Metro Railway.

ii) Security Representatives will ensure security of station / train, prompt evacuation of passengers, assisting Kolkata Police and Fire Department officials as required.

Traffic, S&T & Commercial representatives will be responsible for the following:

iii) Movement of ambulance, medical vans, doctors and paramedical staff, fire services personnel etc. to the site.

iv) Rendering of first aid and evacuation of injured to hospitals, dispersal of stranded passengers.

v) Extrication of dead bodies and their custody till handing over to the civil authorities.

vi) Opening and manning of information Centers.

vii) Payment of Ex-gratia, to injured, next of kin of the dead.

viii) Co-ordination with City Bus Service/local administration for running shuttle services.

2.10 The lines of command of the major departments involved in tackling a disaster are detailed in the following Annexure to this chapter:-

(i) **Annexure 2.7** - Traffic.

(ii) **Annexure 2.8** - Electrical.

(iii) **Annexure 2.9** - Signal & Telecommunication.

(iv) **Annexure 2.10** - Civil.

(v) **Annexure 2.11** - Fire &Security personnel.

(vi) **Annexure 2.12** - Medical.

(vii) **Annexure 2.13** - Safety

Annexure – 2.1

MOBILE & STATIC FIRE STATIONS

1.0 Mahanayak Uttam Kumar Mobile Fire Station:

This is situated at a distance of 1/4 km from Mahanayak Uttam Kumar Station towards Rabindra Sarobar Station. The sanctioned staff strength of this fire station is 23 under ASC/Fire Metro Railway. Two nos. MV Driver are working on deputation from Electrical Department.

(i) One Portable Pump

(ii) One Water Tender Fire Engine

(iii) Two Nos. portable Generators with lights.

1.1 The capacity of the Water Tank is 600 gallons, and the equipments available with the Fire Engine are as under:-

S/No	Appliances & Equipments	Quantity
1.	Fire Engine No.WB-03E-5531(with key fitted) with complete fittings	01 No.
2.	Aluminum Extension ladder 10.5m w	01 No.
3.	Suction Hose for Water Tender with Keep	08 Nos.
4.	3-Way Suction Collecting Head	01 No.
5.	Suction Wrench for Water Tender	02 Nos.
6.	Suction Strainer for Water Tender	01 No.
7.	Bucket strainer for Water Tender	01 No.
8.	Dividing Breeching	01 No.
9.	Collecting Breeching	01 No.
10.	Hydrant Stand Pipe Two Ways	01 No.
11.	Double Female Coupling	02 Nos.
12.	Hydrant Suction Hose fitted with both sides female coupling	02 Nos.
13.	Fog Nozzle with Extension Applicator	01 No.
14.	Revolving Branch Pipe	01 No.
15.	Branch Pipe Universal Diffuser	01 No.
16.	Branch Pipe	04 Nos.
17.	Suction Adapter	02 Nos.

18.	Double Female Adapter	02 Nos.
19.	Double Male Adapter.	02 Nos.
20.	Nozzle Spanner	02 Nos.
21.	Torch Light 5 Cells	01 No.
22.	Foam -making Branch Pipe with FB4 complete	01 No.
23.	Flame Prefer Lamp	01 No.
24.	Lowering Line with running hose	01 No.
25.	Long Line Manila	01 No.
26.	First Aid Box	01 No.
27.	Axe - Large	01 No.
28.	Rubber Gloves	03 Nos.
29.	Spade KEN	01 No.
30.	Pick Axe	01 No.
31.	Crow Bar	01 No.
32.	Sledge Hammer	01 No.
33.	Carpenter saw 60cm long handle	01 No.
34.	Door Breaker	01 No.
35.	Delivery Hose Pipe with fittings Male and Female Couplings	23 Nos.
36.	Asbestos suit	05 Nos.
37.	Fire Helmet	06 Nos.
38.	Fireman Axe (insulated)	02 Nos.
39.	Sly Wrench	01 No.
40.	Breathing Apparatus Set	01 No.
41.	Ceiling Hook	01 No.
42.	Canvas Bucket	10 Nos.
43.	T/W Bench	02 Nos.
44.	CO_2 fire Extinguisher 4.5k capacity	05 Nos.
45.	Hydrant Adapter Aluminium	01 No.
46.	Pump Medium	01 Nos.
47.	Fire Bell	01 No.

2.0 Noapara Mobile Fire Station:

This is situated in Noapara Car Shed which is about 3 km from Dum Dum Station. The present staff strength of this Fire station is 05 under ASC/Fire/Metro Railway. It is having one Water Tender Fire Engine. The capacity of the Water Tank is 600 gallons and the Equipments available with the Fire engine are as below:-

S/No	Appliances and Equipments	Quaintly
1.	Fire Engine No.WB-03E- 5530, Type capacity 6000 Lt. (Ashok Leyland)	01 No.
2.	Suction Hose Rubber 100x 2.5m	01 Nos.
3.	Suction Adapter 63 mm	01 No.
4.	Suction Wrench 100 mm	02 Nos.
5.	Suction Strainer 100 mm	01 No.
6.	Besket Strainer Cylinder I00 mm	01 No.
7.	Aluminum Extension Ladder 7.5 m	01 No.
8.	Fire Hooks	01 No.
9.	Fire Beater	01 No.
10.	Firemen Axe	01 Nos.
11.	Hydrant Stand Pipe 2 Ways	01 No.
12.	Torch Light 5 Cells	01 No.
13.	Aluminum Short Branch Pipe	04 Nos.
14.	Fog Nozzle	01 No.
15.	Rubber Line Delivery Hose pipe	15 Nos.
16.	Fire Buckets	01 No.
17.	Collecting Head (3 Ways)	01 No.
18.	Dividing Breaching	01 No.
19.	Collecting Breaching	01 No.
20.	V-Guard Helmet	05 Nos.
21.	Rubber Gloves	01 No.
22.	CO_2 Fire Extinguisher (4.5 kg) capacity	04 Nos.
24.	DCP Fire Extinguisher (5 kg) Capacity	05 Nos.
25.	First Aid Box	01 No.
26.	Breathing Apparatus Set	01 No.

Annexure 2.2

WATER PIPE LINE & FIRE HYDRANTS

Each commercially opened Permanent Way track of the Metro Railway System is provided with a water pipe line running parallel to it with hydrants at intervals of about 100 m for fire fighting. For double line tracks, the hydrant is located in a staggered manner so that the distance from one hydrant to another is about 50 m. These fire hydrants are maintained by the Engineering Department. The water pipe lines are connected to overhead Tanks or reservoirs and availability of water in the tanks,reservoirs & the pipe system is ensured.

The particulars of fire hydrants are as under:-

S/No	Location (KKVS TO KDSW)	No. of Fire Hydrants	Hose Reel Drum No.
1.	Kabi Subhas Carshed	04	00
2.	Kabi Subhas Station	05	03
3.	Kabi Subhas Sahid Khudiram Viaduct section	28	00
4.	Sahid Khudiram Station	16	03
5.	Sahid Khudiram Kavi Nazrul Viaduct section	21	00
6.	Kabi Nazrul Station	16	03
7.	Kabi Nazrul Gitanjali Viaduct section	23	00
8.	Gitanjali Station	16	03
9.	Gitanjali Master Da Surya Sen Viaduct section	16	00
10.	Master Da Surya Sen Station	11	03
11.	Master Da Surya Sen Netaji Viaduct section	31	00
12.	Netaji Station	11	03
13.	Netaji Mahanayek Uttamkumar Ramp	24	00
14.	Mahanayak Uttam Kumar Station	08	03
15.	Mahanayak Uttam Kumar Rabindra Sarobar Tunnel	22	00
16.	Rabindra Sarobar Station	06	02
17.	Rabindra Sarobar to Kalighat Tunnel	16	00
18.	Kalighat Station	10	02
19.	Kallighat to Jatindas Park Tunnel	08	00
20.	Jatindas Park Station	06	02
21.	Jatindas Park to Netaji Bhavan Tunnel	17	00
22.	Netai Bhavan Station	11	05
23.	Netaji Bhavan to Rabindra Sadan Tunnel	13	00
24.	Rabindra Sadan Station	04	03
25.	Rabindra Sadan to Maidan Tunnel	15	00
26.	Maidan Station	07	02
27.	Maidan to Park Street Tunnel	08	00
28.	Park Street Station	08	04
29.	Park Street to Esplanade Tunnel	16	00
30.	Metro Bhawan	26	22

31.	Esplanade Station	05	04
32.	Esplanade to Chandni Chawk Tunnel	16	00
33.	Chandni Chawk Station	08	04
34.	Chandni Chawk to Central Tunnel	08	00
35.	Central Station	14	04
36.	Central to Mahatma Gandhi Road Tunnel	19	00
37.	Mahatma Gandhi Road Station	12	04
38.	Mahatma Gandhi Road to Girish park Tunnel	14	00
39.	Girish park Station	11	04
30.	Girish park to Sovabazar Tunnel	09	00
31.	Sovabazar Station	12	04
32.	Sovabazar to Shyambazar Tunnel	12	00
33.	Shyambazar Station	10	04
34.	Shyambazar to Belgachia Tunnel	26	00
35.	Belgachia Station	10	05
36.	Belgachia to Dum Dum – Tunnel/Elevated portion	48	00
37.	Dum Dum Station	06	06
38.	Dum Dum Noapara Tunnel/Elevated portion	22	00
39.	Noapara Station	06	04
40.	Noapara Car shed	75	00
41.	Noapara Baranagar Elevated section	72	00
42.	Baranagar Station	19	10
43.	Baranagar Dakshineswar Elevated section	52	00
44	Dakshineswar Station	20	09
TOTAL		917	125

S/No	**Location (SVSA TO SDHM)**	**No. of Fire Hydrants**	**Hose Reel Drum No.**
1	Salt Lake Sector V	12	08
2	Karunamoyee	12	08
3	Central Park	10	07
4	Central Park Depot	63	22
5	City Centre	12	06
6	Bengal Chemical	12	08
7	Salt Lake Stadium	12	08
8	Phool Bagan	24	13
9	Sealdah	19	19
	TOTAL	176	92

Annexure 2.3

WATER TANKS FOR FIRE FIGHTING

Water tanks are provided at each station for ensuring that the water pipe lines feeding the fire hydrants are always full of water.

The number of water tanks, capacity and Electrical Sub-Station of each are as indicated below:-

BLUE LINE :

S/No	Location	No of water Tank	Capacity	Electrical Sub -STN.
1	KKVS Carshed	01. No	1.50 Lakh ltr.	TSS & ASS
2	KKVS Station	01. No	1.50 Lakh ltr.	TSS & ASS
3	KSKD Station	04 No.	500 Ltr.Each. & 1.00 Lakh ltr. (UG)	TSS & ASS
4	KKNZ Station	04 No.	500 Ltr. Each.	TSS & ASS
5	KGTN Station	04 No.	500 Ltr. Each	ASS
6	KMSN Station	04 No.	200 Ltr. Each.	RSS,TSS & ASS
7	KNTJ Station	04 No.	200 Ltr. Each.	TSS & ASS
8	KMUK Station	01 No.	1.30 Lakh ltr	TSS & ASS
9	KMUK yard	01 No.	1.30 Lakh ltr	------
10	KRSB Station	01 No	2.10 Lakh ltr	TSS & ASS
11	KKHG Station	01 No.	1.25 Lakh ltr	ASS
12	KJPK Station	01 No.	1.30 Lakh ltr	RSS,TSS &ASS
13	KNBN Station	01 No.	1.60 Lakh ltr	ASS
14	KRSD Station	01 No.	1.30 Lakh ltr	TSS & ASS
15	KMDI Station	-------	-------	ASS
16	KPSK Station	01 No.	1.30 Lakh ltr	TSS & ASS
17	KESP Station	01 No.	1.30 Lakh ltr	ASS
18	KCWC Station	01 No.	1.90 Lakh ltr	ASS

19	KCEN Station	01 No.	1.99 Lakh ltr	RSS,TSS & ASS
20	KMHR Station	01 No.	2.00 Lakh ltr	ASS
21	KGPK Station	01 No.	2.13 Lakh ltr	TSS & ASS
22	KGPK–KSHO (Midpoint)	01 No.	1.60 Lakh ltr	----
23	KSHO Station	01 No.	1.90 Lakh ltr	ASS
24	KSHY Station	02 No.	2.04 Lakh ltr 2.64 Lakh ltr	RSS,TSS & ASS
25	KBEL Station	01 No.	2.70 Lakh ltr	TSS & ASS
26	KBEL Qtrs. Complex	01 No.	0.65 Lakh Ltr	TSS & ASS
27	KDMI Station	02 No.	1.36 Lakh ltr 1.92 Lakh ltr	TSS & ASS
28	KNAP Station	02 No.	4.56 Lakh Ltr 4.56 Lakh ltr	RSS,TSS & ASS-3 Nos.
29	KBAR Station	05 Nos.	25000 ltr.	TSS &ASS
30	KDSW Station	05 Nos.	25000 ltr.	TSS & ASS

GREEN LINE :

1.	SVSA Station	05 Nos.	19000 ltr.	TS S& ASS
2.	KESA Station	04 Nos.	11000 ltr.	TS S& ASS
3.	CPSA Station	03 Nos.	15000 ltr.	TS S&ASS
4.	CPD (DEPOT)	02 Nos.	5.20 Lakh ltr. & 12000 ltr.	RSS,TSS& ASS
5.	CCSC Station	04 Nos.	11000 ltr.	ASS
6.	BCSD Station	05 Nos.	13000 Lakh ltr.	TS S& ASS
7.	SSSA Station	07 Nos.	13000 Lakh ltr.	ASS
8.	PBGB Station	01 Nos.	2.50 Lakh ltr.	TS S& ASS
9.	Sealdah	02 Nos.	2.80 Lakh ltr.	UG Platform area

Annexure 2.4
FIRE EXTINGUISHERS, FIRE ALARMS AND AUTOMATIC FIRE EXTINGUISHERS (AFX)

1.0 All fire extinguishers of Metro Railway are maintained by the Fire Service Wing of the Metro Railway. The locations of the fire extinguishers are given below:-

Summary of Fire Extinguishers in Metro Railway, Kolkata.

S/No	Location (N-S)	Nos.
1.	METRO RAILWAY STATIONS	638
2.	METRO RAILWAY ELECTRIC SUB –STATIONS	478
3.	METRO RAILWAY AV COMPLEXES	165
4.	METRO RAILWAY RAKES	600
5.	METRO RAILWAY OFFICE BUILDING,CAR SHEDS AND OTHER PLACES	766
6	S&T ROOM	206
	Location (E-W)	
1.	METRO RAILWAY STATIONS	291
2.	CENTRAL PARK METRO DEPOT BUILDING	164
3.	METRO RAILWAY RAKES	168
	GRAND TOTAL	**3476**

Fire extinguishers are of DCP (Dry Chemical Powder) type, CO_2 type, water type, ABC type, etc.

2.0 All Fire Alarm and AFX (Automatic Fire Extinguishing System) are maintained by outside agencies under Annual Maintenance Contracts.

(i) The locations of the **Fire Alarm Systems** in Metro Railway are as below:-

Sl. No.	Location	No. of Systems
1.	KMUK/ASS/Car Shed	01
2.	KMUK/TSS	01
3.	KRSB/TSS	01
4.	KKHG/ASS	01
5.	KJPK/RSS	01
6.	KNBN/ASS	02
7.	KRSD/TSS	01
8.	KDMI/ASS	02
9.	KPSK/TSS	01
10.	KESP/ASS	02
11.	KCWC/Sub-station (ASS)	01
12.	KCEN/Sub-station	01
13.	KMHR/ASS	02
14.	KGPK/Sub—station	01

15.	KSHO/Sub-station (ASS)	02
16.	KSHY/Sub-station(RSS)	01
17.	KBEL/TSS	01
18.	KDMI/TSS	01
19.	Noapara Sub-station(RSS,TSS&ASS)	04

(ii) The locations of the **AFX machines** are as below:-

Sl. No.	**Location**	**No. of Machines**
1.	Mahanayak Uttam Kumar Telephones Exchange	01
2.	KRSB/Sub-station	04
3.	KJPK/Sub-station	04
4.	KRSD/Sub-station	O9
5.	KPKS/Sub-station	05
6.	Chitpur Sub-stati0n	O3
7.	Chitpur AV Complex	05
8.	KBEL/Sub-station	O4
9.	KDMI/Sub-station	04
10.	KDMI/Telephone Exchange	01
11.	MB/Telephone Exchange	01

(ii) Signal equipment and Power rooms at all the stations have been provided with automatic fire and smoke detection alarm system.

FIRE EXTINGUISHERS IN METR0 RAILWAY STATIONS

Sl. No.	**Location (Station)**	**Nos. of Fire Extinguishers**	**Nos. of AFX / AFT**
1	KKVS	23	1
2	KSKD	21	1
3	KKNZ	25	1
4	KGTN	24	1
5	KMSN	24	1
6	KNTJ	23	1
7	KMUK	23	----
8	KRSB	18	----
9	KKHG	20	----
10	KJPK	20	----
11	KNBN	20	----
12	KRSD	18	----
13	KMDI	20	----
14	KPSK	20	----
15	KESP	24	----
16	KCWC	22	----

17	KCEN	21	----
15	KMHR	20	----
19	KGPK	19	----
20	KSHO	19	----
21	KSHY	19	----
22	KBEL	20	----
23	KDMI	20	----
24	KNAP	26	**1**
25	KBAR	64	----
26	KDSW	65	----
	Total	**638**	**7**
27	SVSA	37	15
28	KESA	32	15
29	CPSA	31	15
30	CPD (DEPOT)	170	--
31	CPCD	22	15
32	BCSD	33	15
33	SSSA	33	15
34	PBGB	123	40
35	SDHM	198	---
	Total	**1342**	**137**

FIRE EXTINGUISHERS IN METRO ELECTRIC SUB-STATIONS

Sl. No.	**Location of Electric Sub-station**	**Nos. of Fire Extinguishers**
1.	KKVS Sub-Station (TSS,ASS)	25
2.	KSKD Sub-Station (RSS)	17
3.	KKNZ Sub-Station (ASS)	13
4.	KGTN Sub-Station (TSS)	10
5.	KMSN Sub-Station (TSS)	28
6.	KNTJ Sub-Station (TSS)	17
7.	KMUK/Sub-station in Station (ASS)	13
8.	KMUK/Sub-station Carshed (ASS)	04
9.	KRSB/Sub-station (TSS)	10
10.	KKHG/ Sub-station (ASS)	4
11.	KJPK/ Sub-station (RSS)	14
12.	KNBN/ Sub-station (ASS)	09
13.	KRSD/ Sub-station (RSS)	13
14.	KMDI/ Sub-station (ASS)	10
15.	KPSK/ Sub-station (ASS)	09
16.	Metro Bhavan/Sub-stn.(ASS)	29
17.	KESP/ Sub-station (ASS)	12
18.	KCWC/ Sub-station (ASS)	08

19.	KCEN/ Sub-station (RSS,ASS)	25
20.	KMHR/ Sub-station (ASS)	05
21.	KGPK/ Sub-station (TSS)	08
22.	KSHO/ Sub-station (ASS)	04
23.	KSHY/ Sub-station (RSS)	36
24.	Chitpur/ Sub-station (ASS)	02
25	KBEL/ Sub-station (RSS)	31
26	KBEL/Quarter Complex/Sub-station (ASS)	04
27	KDMI/Quarter Complex/Sub-station (RSS)	07
28	Noapara/Sub-station (RSS)	39
29	Noapara/Sub-station (ASS) No-1	07
30	Noapara/Sub-station (TSS)	28
31	Noapara/Sub-station (ASS) No-2	07
32	TOL/TSMH & Pump Room	20
	TOTAL	**478**

FIRE EXTINGUISHERS IN METRO AV COMPLEXES

Sl. No.	**Location of AV Complex**	**Nos. of Fire Extinguishers**
1	KMUK / AV Complex	08
2	KRSB / AV Complex	08
3	KKHG / AV Complex	20
4	KJPK / AV Complex	08
5	KNBN / AV Complex	12
6	KRSD / AV Complex	08
7	KMDI / AV Complex	08
8	KPSK / AV Complex	05
9	KESP / AV Complex	13
10	KCWC / AV Complex	06
11	KCEN / AV Complex	05
12	KMHR / AV Complex	04
13	KGPK / AV Complex	05
14	KSHO / AV Complex	06
15	KSHY / AV Complex	18
16	KBEL / AV Complex	13
16	Chitpur CS-4 AV Complex	07
17	KDMI/Switch Room & AV. Complex	09
	Total	**165**

FIRE EXTINGUISHERS INSTALLED IN METRO RAKES/LOCOS/VANS

SL.No.	Rake No.	Cab No.	Nos. of Fire Extinguishers	Type of Fire Extinguishers
1	MR-301	3001 3002	02Nos 02Nos	ABC 4kg CO_{2+}ABC 4kg
2	MR-302	3003 3004	02Nos 02Nos	ABC 4kg ABC 4kg
3	MR-303	3005 3006	02Nos 02Nos	ABC 4kg ABC 4kg
4	MR-304	3007 3008	02Nos 02Nos	1 DCP & 1 CO_2 CO_2
5	MR-305	3009 3010	02Nos 02Nos	CO_2 ABC 4kg
6	MR-306	3011 3012	02Nos 02Nos	ABC 4kg ABC 4kg
7	MR-307	3013 3014	02Nos 02Nos	ABC 4kg ABC 4kg
8	MR-308	3015 3016	02Nos 02Nos	CO_2 CO_2
9	MR-309	3017 3018	02Nos 02Nos	CO_2 CO_2+ ABC 4kg
10	MR - 310	3019 3020	02Nos 02Nos	ABC4kg ABC 4kg
11	MR-311	3021 3022	02Nos 02Nos	ABC - 6kg ABC 4kg
12	MR-312	3023 3024	02Nos 02Nos	1 ABC 4kg+& 1 CO_2 CO_2
13	MR-313	3025 3026	02Nos 02Nos	CO_2 ABC 4kg +ABC 4kg
14	MR - 401	4601 4602	02Nos 02Nos	ABC 6kg ABC 4kg +ABC 4kg
15	MR - 402	4605 4606	02Nos 02Nos	ABC 6kg +ABC 4kg ABC 4kg
16	MR-403	4609 4610	02Nos 02Nos	ABC 4kg ABC 6kg +ABC 4kg
17	MR-404	4613 4614	02Nos 02Nos	ABC 4kg ABC 4kg
18	MR-405	4617 4618	02Nos 02Nos	ABC 6kg ABC 6kg
19	MR-406	4621 4622	02Nos 02Nos	ABC 4kg ABC 4kg

20	MR-407	4625 4626	02Nos 02Nos	ABC 6kg ABC 6kg
21	MR-408	4629 4630	02Nos 02Nos	ABC 4kg ABC 4kg
22	MR-409	4633 4634	02Nos 02Nos	ABC 6kg ABC 6kg
23	MR-410	4637 4638	02Nos 02Nos	ABC 4kg +ABC 4kg ABC 4kg
24	MR-411	4641 4642	02Nos 02Nos	ABC 4kg ABC 4kg
25	MR-412	4645 4646	02Nos 02Nos	ABC 6kg ABC 4kg
26	MR- 413	4649 4650	02Nos 02Nos	ABC 6kg +ABC 4kg ABC 4kg
27	MR-414	4653 4654	02Nos 02Nos	ABC 4kg ABC 4kg
28	MR-415	4657 4658	02Nos 02Nos	ABC 6kg ABC 6kg
29	MR-416		20nos	ABC 4KG
30	MR-417		20nos	ABC 4KG
31	**MR601 to MR 611 (E-W)**	Each cab@1	132 nos	ABC 6kg
30	Battery SPL-1	----	04 Nos.	ABC
31	Battery SPL-2	----	04 Nos.	CO2
32	Battery SPL-3	----	05 Nos.	4 DCP, 1 CO_2
33	ART VAN 030	----	03 Nos.	ABC
34	ART VAN 040	----	05 Nos.	ABC
35	ART VAN 050	----	05 Nos.	ABC
36	**224 coaches @2 nos.(N-S)**		448 nos.	ABC
	66 coaches@2 no. (E-W)		110 nos	ABC 9 kg
TOTAL			**732Nos.**	

FIRE EXTINGUISHERS IN METRO RAILWAY PREMISES

AND METRO RAILWAY FIRE STATIONS

Sl.No.	Location of Electric Sub-station	Nos. of Fire Extinguishers	Nos. of AFT
1.	KMUK/ Carshed S&T Store	3	
2	KMUK/Carshed	2	
3	KMUK/ Carshed RRI Cabin	9	
4.	KMUK/ Carshed Store	4	
5.	KMUK – Power Room Quarter Complex	2	
6	Kalighat Court	9	
7	TSMHospital/KMUK	74	
8	KRSD RPF Office	5	
9	Patipukur /Store	2	
10	KBEL/RPF POST	6	
11	Metro Bhavan Building	42	
12.	Metro Bhavan Canteen	4	
13	Metro Bhavan Lift Room	2	
14	Metro Bhavan A.C. Plant (3 rd & 4th Floor)	4	
15	Metro EDP Centre	6	
16	Metro Bhavan GM's Chamber (1-P.I)	1	
17	Metro Telephone Exchange	4	
18.	Metro Central Control Room	6	
19.	KCEN/Station S & T Room	8	
20	KDMI/ Crew Controller office	1	
21	Noapara Carshed No. 1	11	
22	Noapara Carshed No. 2	11	
23	Noapara Carshed No. 3	14	
24	Noapara Carshed No. 4	14	
25.	Noapara Carshed No.5	10	
26.	Noapara Carshed No. 8	8	
27.	Noapara Carshed No.9	9	
28	Noapara Carshed No. 33 (closed)	2	
29	Noapara Carshed No. 37 (closed)	4	
30	Noapara Control Tower (Panel + Relay room)	18	
31	Noapara S&T Store	12	
32	Noapara Admn. Building	15	
33	KMUK Fire Station	7	3
34	Noapara Fire Station	5	2
35	Central Park Depot	63	
	TOTAL	**399**	**5**

FIRE EXTINGUISHER LOCATION DETAILS IN PURPLE LINE

FIRE EXTINGUISHER IN JOKA METRO STATION				
LEVEL	**LOCATION**	**CO2 TYPE (4.5 G)**	**ABC TYPE (6KG)**	**FOAM TYPE (9L)**
Street Level	Pump room	1		1
	DG Room	1		1
Concourse Level	FHC near Gr. to concourse stair case 1	1	1	
	FHC near Gr. to concourse stair case 2	1	1	
	FHC near Gr. to concourse stair case 3	1	1	
	FHC near Gr. to concourse stair case 4	1	1	
	Out side of ticket counter	1	1	
	Office area corridor	1	1	
	Security Room	1	1	
	HSCB Room	1		
	Telecom Equipment Room	1		
	Signal Equipment Room	1		
	S&T UPS Room	1		
	Battery Room	1		
	Ticket Room	1		
	Station Control Room	1	1	
	Paid/Unpaid area near FHC (UP side)	1	1	
	Paid/Unpaid area near FHC (DN side)	1	1	
	Paid/Unpaid area near grid "F", viaduct column	1	1	
	ASS/TSS Room (LT Panel area)	2		
Platform Level	UP Platform end (towards Joka Depot end)	1	1	
	UP Platform end (towards Thakurpukur end)	1	1	
	UP Platform near grid no. E	1	1	
	UP Platform near grid no. H	1	1	
	UP Platform near grid no. K1	1	1	
	DN Platform end (towards Joka Depot end)	1	1	
	DN Platform end (towards Thakurpukur end)	1	1	
	DN Platform near grid no. E	1	1	
	DN Platform near grid no. H	1	1	
	DN Platform near grid no. K1	1	1	
	Total	**31**	**21**	**2**
1. One Fire extinguisher, dry chemical powder type, 10KG capacity shall be provided at ASS/TSS LT Panel area.				
2. One Fire extinguisher, dry chemical powder type, 10KG capacity shall be provided at DG Room.				
3. One set (4 nos Fire Buckets of 10 Litres capacity) Fire Buckets shall be provided at ASS/TSS LT Panel area.				

FIRE EXTINGUISHER IN THAKURPUKUR METRO STATION				
LEVEL	**LOCATION**	**CO2 TYPE (4.5KG)**	**ABC TYPE (6KG)**	**FOAM TYPE (9L)**
Street Level	Pump room	1		1
	DG Room	1		1
Concourse Level	FHC near Gr. to concourse stair case 1	1	1	
	FHC near Gr. to concourse stair case 2	1	1	
	FHC near Gr. to concourse stair case 3	1	1	
	FHC near Gr. to concourse stair case 4	1	1	
	Out side of ticket counter	1	1	
	Office area corridor	1	1	
	Security Room	1	1	
	HSCB Room	1		
	Telecom Equipment Room	1		
	Signal Equipment Room	1		
	S&T UPS Room	1		
	Battery Room	1		
	Ticket Counter	1	1	
	Station Control Room	1	1	
	Paid/Unpaid area near Lift (UP side)	1	1	
	Paid/Unpaid area near Lift (DN side)	1	1	
	Paid/Unpaid area near grid "J", viaduct column	1	1	
	ASS/TSS Room (LT Panel area)	2		
Platform Level	UP Platform end (towards Joka Depot end)	1	1	
	UP Platform end (towards Taratala end)	1	1	
	UP Platform near grid no. E	1	1	
	UP Platform near grid no. H	1	1	
	UP Platform near grid no. L	1	1	
	DN Platform end (towards Joka Depot end)	1	1	
	DN Platform end (towards Taratala end)	1	1	
	DN Platform near grid no. E	1	1	
	DN Platform near grid no. H	1	1	
	DN Platform near grid no. L	1	1	
	Total	**31**	**21**	**2**
1. One Fire extinguisher, dry chemical powder type, 10KG capacity shall be provided at ASS/TSS LT Panel area.				
2. One Fire extinguisher, dry chemical powder type, 10KG capacity shall be provided at DG Room.				
3. One set (4 nos Fire Buckets of 10 Litres capacity) Fire Buckets shall be provided at ASS/TSS LT Panel area.				

FIRE EXTINGUISHER IN SAKHER BAZAR METRO STATION				
LEVEL	**LOCATION**	**CO2 TYPE (4.5KG)**	**ABC TYPE (6KG)**	**FOAM TYPE (9L)**
Street Level	Pump room	1		1
	DG Room	1		1
Concourse Level	FHC near Gr. to concourse stair case 1	1	1	
	FHC near Gr. to concourse stair case 2	1	1	
	FHC near Gr. to concourse stair case 3	1	1	
	FHC near Gr. to concourse stair case 4	1	1	
	Out side of ticket counter	1	1	
	Office area corridor	1	1	
	Security Room	1	1	
	HSCB Room	1		
	Telecom Equipment Room	1		
	Signal Equipment Room	1		
	S&T UPS Room	1		
	Battery Room	1		
	Ticket Counter	1	1	
	Station Control Room	1	1	
	Paid/Unpaid area near Lift (UP side)	1	1	
	Paid/Unpaid area near Lift (DN side)	1	1	
	Paid/Unpaid area near grid "J", viaduct column	1	1	
	ASS/TSS Room (LT Panel area)	2		
Platform Level	UP Platform end (towards Joka Depot end)	1	1	
	UP Platform end (towards Taratala end)	1	1	
	UP Platform near grid no. E	1	1	
	UP Platform near grid no. H	1	1	
	UP Platform near grid no. L	1	1	
	DN Platform end (towards Joka Depot end)	1	1	
	DN Platform end (towards Taratala end)	1	1	
	DN Platform near grid no. E	1	1	
	DN Platform near grid no. H	1	1	
	DN Platform near grid no. L	1	1	
	Total	**31**	**21**	**2**
1. One Fire extinguisher, dry chemical powder type, 10KG capacity shall be provided at ASS/TSS LT Panel area.				
2. One Fire extinguisher, dry chemical powder type, 10KG capacity shall be provided at DG Room.				
3. One set (4 nos Fire Buckets of 10 Litres capacity) Fire Buckets shall be provided at ASS/TSS LT Panel area.				

FIRE EXTINGUISHER IN BEHALA CHOWRASTA METRO STATION				
LEVEL	**LOCATION**	**CO2 TYPE (4.5KG)**	**ABC TYPE (6KG)**	**FOAM TYPE (9L)**
Street Level	Pump room	1		1
	DG Room	1		1
Concourse Level	FHC near Gr. to concourse stair case 1	1	1	
	FHC near Gr. to concourse stair case 2	1	1	
	FHC near Gr. to concourse stair case 3	1	1	
	FHC near Gr. to concourse stair case 4	1	1	
	Out side of ticket counter	1	1	
	Office area corridor	1	1	
	Security Room	1	1	
	HSCB Room	1		
	Telecom Equipment Room	1		
	Signal Equipment Room	1		
	S&T UPS Room	1		
	Battery Room	1		
	Ticket Counter	1	1	
	Station Control Room	1	1	
	Paid/Unpaid area near Lift (UP side)	1	1	
	Paid/Unpaid area near Lift (DN side)	1	1	
	Paid/Unpaid area near grid "J", viaduct column	1	1	
	ASS/TSS Room (LT Panel area)	2		
Platform Level	UP Platform end (towards Joka Depot end)	1	1	
	UP Platform end (towards Taratala end)	1	1	
	UP Platform near grid no. E	1	1	
	UP Platform near grid no. H	1	1	
	UP Platform near grid no. L	1	1	
	DN Platform end (towards Joka Depot end)	1	1	
	DN Platform end (towards Taratala end)	1	1	
	DN Platform near grid no. E	1	1	
	DN Platform near grid no. H	1	1	
	DN Platform near grid no. L	1	1	
	Total	**31**	**21**	**2**
1. One Fire extinguisher, dry chemical powder type, 10KG capacity shall be provided at ASS/TSS LT Panel area.				
2. One Fire extinguisher, dry chemical powder type, 10KG capacity shall be provided at DG Room.				
3. One set (4 nos Fire Buckets of 10 Litres capacity) Fire Buckets shall be provided at ASS/TSS LT Panel area.				

FIRE EXTINGUISHER IN BEHALA BAZAR METRO STATION				
LEVEL	**LOCATION**	**CO2 TYPE (4.5 G)**	**ABC TYPE (6KG)**	**FOAM TYPE (9L)**
Street Level	Pump room	1		1
	DG Room	1		1
Concourse Level	FHC near Gr. to concourse stair case 1	1	1	
	FHC near Gr. to concourse stair case 2	1	1	
	FHC near Gr. to concourse stair case 3	1	1	
	FHC near Gr. to concourse stair case 4	1	1	
	Out side of ticket counter	1	1	
	Office area corridor	1	1	
	Security Room	1	1	
	HSCB Room	1		
	Telecom Equipment Room	1		
	Signal Equipment Room	1		
	S&T UPS Room	1		
	Battery Room	1		
	Ticket Room	1		
	Station Control Room	1	1	
	Paid/Unpaid area near FHC (UP side)	1	1	
	Paid/Unpaid area near FHC (DN side)	1	1	
	Paid/Unpaid area near grid "F", viaduct column	1	1	
	ASS/TSS Room (LT Panel area)	2		
Platform Level	UP Platform end (towards Joka Depot end)	1	1	
	UP Platform end (towards Thakurpukur end)	1	1	
	UP Platform near grid no. E	1	1	
	UP Platform near grid no. H	1	1	
	UP Platform near grid no. K1	1	1	
	DN Platform end (towards Joka Depot end)	1	1	
	DN Platform end (towards Thakurpukur end)	1	1	
	DN Platform near grid no. E	1	1	
	DN Platform near grid no. H	1	1	
	DN Platform near grid no. K1	1	1	
	Total	**31**	**21**	**2**
1. One Fire extinguisher, dry chemical powder type, 10KG capacity shall be provided at ASS/TSS LT Panel area.				
2. One Fire extinguisher, dry chemical powder type, 10KG capacity shall be provided at DG Room.				
3. One set (4 nos Fire Buckets of 10 Litres capacity) Fire Buckets shall be provided at ASS/TSS LT Panel area.				

FIRE EXTINGUISHER IN TARATALA METRO STATION				
LEVEL	**LOCATION**	**CO2 TYPE (4.5KG)**	**ABC TYPE (6KG)**	**FOAM TYPE (9L)**
Street Level	Pump room	1		1
	DG Room	1		1
Concourse Level	FHC near Gr. to concourse stair case 1	1	1	
	FHC near Gr. to concourse stair case 2	1	1	
	FHC near Gr. to concourse stair case 3	1	1	
	FHC near Gr. to concourse stair case 4	1	1	
	Out side of ticket counter	1	1	
	Office area corridor	1	1	
	Security Room	1	1	
	HSCB Room	1		
	Telecom Equipment Room	1		
	Signal Equipment Room	1		
	S&T UPS Room	1		
	Battery Room	1		
	Ticket Counter	1	1	
	Station Control Room	1	1	
	Paid/Unpaid area near Lift (UP side)	1	1	
	Paid/Unpaid area near Lift (DN side)	1	1	
	Paid/Unpaid area near grid "J", viaduct column	1	1	
	ASS/TSS Room (LT Panel area)	2		
Platform Level	UP Platform end (towards Joka Depot end)	1	1	
	UP Platform end (towards Taratala end)	1	1	
	UP Platform near grid no. E	1	1	
	UP Platform near grid no. H	1	1	
	UP Platform near grid no. L	1	1	
	DN Platform end (towards Joka Depot end)	1	1	
	DN Platform end (towards Taratala end)	1	1	
	DN Platform near grid no. E	1	1	
	DN Platform near grid no. H	1	1	
	DN Platform near grid no. L	1	1	
	Total	**31**	**21**	**2**
1. One Fire extinguisher, dry chemical powder type, 10KG capacity shall be provided at ASS/TSS LT Panel area.				
2. One Fire extinguisher, dry chemical powder type, 10KG capacity shall be provided at DG Room.				
3. One set (4 nos Fire Buckets of 10 Litres capacity) Fire Buckets shall be provided at ASS/TSS LT Panel area.				

FIRE EXTINGUISHER LOCATION DETAILS IN JOKA CAR DEPOT

FIRE EXTINGUISHER IN JOKA METRO DEPOT			
LOCATION	**CO2 TYPE (4.5 KG)**	**ABC TYPE (4KG)**	**FIRE BUCKET**
PIT WHEEL SHED		1	1
STORE WARD		1	1
ISGEC OFFICE		1	1
RVNL OFFICE		4	
ADMIN BUILDING		1	1
SHED 1		1	1
ZAMIL OFFICE		1	
DEEVEE SOLUTION		2	
ISGEC PANEL ROOM (NEAR LAB)	1	3	2
JCC OFFICE		1	
SBR OFFICE		1	1
DIESEL STORE	1		
TOTAL	**2**	**17**	**8**

FIRE EXTINGUISHER LOCATION DETAILS IN METRO STATIONS ORANGE LINE

FIRE EXTINGUISHER IN KAVI SUBHASH METRO STATION				
LEVEL	**LOCATION**	**ABC TYPE (6KG)**	**CO2 TYPE (4.5 KG)**	**FOAM TYPE (9L)**
Road Level	Pump room		1	1
	DG Room		1	1
Concourse Level	Station Control Room	2	2	
	Telecom Equipment Room		1	
	Signaling Equipment Room		1	
	S&T UPS Room		1	
	HSCB		1	
	Ticket Office	1	1	
	Ticket Office	1	1	
	ASS – TSS		6	
	Station Entry Garia End	1	1	
	Station Entry Airport End	1	1	
	Lifts	1	1	
	Lifts	1	1	
	Grid R/3	1	1	
	Grid N/PQ/1 Middle	1	1	
	Grid M-N/1 Middle	1	1	
	Grid J-K/2-3 Middle	1	1	
	Grid G – F/3 Middle	1	1	
	Grid G – F/1 Middle	1	1	
Platform Level		10	10	
		10	10	
	Middle Platform	10	10	
	Total	44	56	2
1. One Fire extinguisher, dry chemical powder type, 10KG capacity shall be provided at ASS/TSS LT Panel area.				
2. One Fire extinguisher, dry chemical powder type, 10KG capacity shall be provided at DG Room.				
3. One set (4 nos Fire Buckets of 10 Litres capacity) Fire Buckets shall be provided at ASS/TSS LT Panel area.				

FIRE EXTINGUISHER IN SATYAJIT ROY METRO STATION				
LEVEL	**LOCATION**	**ABC TYPE (6KG)**	**CO2 TYPE (4.5 KG)**	**FOAM TYPE (9L)**
Road Level	Pump room		1	1
	DG Room		1	1
Concourse Level	Station Control Room	2	2	
	Telecom Equipment Room		1	
	Signaling Equipment Room		1	
	S&T UPS Room		1	
	HSCB		1	
	Ticket Office	1	1	
	Ticket Office	1	1	
	ASS – TSS		6	
	Station Entry Garia End	1	1	
	Station Entry Airport End	1	1	
	Lifts	1	1	
	Lifts	1	1	
	Grid R/3	1	1	
	Grid N/PQ/1 Middle	1	1	
	Grid M-N/1 Middle	1	1	
	Grid J-K/2-3 Middle	1	1	
	Grid G – F/3 Middle	1	1	
	Grid G – F/1 Middle	1	1	
Platform Level		5	5	
		5	5	
	Total	**24**	**36**	**2**
1. One Fire extinguisher, dry chemical powder type, 10KG capacity shall be provided at ASS/TSS LT Panel area.				
2. One Fire extinguisher, dry chemical powder type, 10KG capacity shall be provided at DG Room.				
3. One set (4 nos Fire Buckets of 10 Litres capacity) Fire Buckets shall be provided at ASS/TSS LT Panel area.				

FIRE EXTINGUISHER IN JYOTIRINDRA NANDI METRO STATION				
LEVEL	**LOCATION**	**ABC TYPE (6KG)**	**CO2 TYPE (4.5 KG)**	**FOAM TYPE (9L)**
Road Level	Pump room		1	1
	DG Room		1	1
Concourse Level	Station Control Room	2	2	
	Telecom Equipment Room		1	
	Signaling Equipment Room		1	
	S&T UPS Room		1	
	HSCB		1	
	Ticket Office	1	1	
	Ticket Office	1	1	
	ASS – TSS		6	
	Station Entry Garia End	1	1	
	Station Entry Airport End	1	1	
	Lifts	1	1	
	Lifts	1	1	
	Grid R/3	1	1	
	Grid N/PQ/1 Middle	1	1	
	Grid M-N/1 Middle	1	1	
	Grid J-K/2-3 Middle	1	1	
	Grid G – F/3 Middle	1	1	
	Grid G – F/1 Middle	1	1	
Platform Level		5	5	
		5	5	
	Total	**24**	**36**	**2**
1. One Fire extinguisher, dry chemical powder type, 10KG capacity shall be provided at ASS/TSS LT Panel area.				
2. One Fire extinguisher, dry chemical powder type, 10KG capacity shall be provided at DG Room.				
3. One set (4 nos Fire Buckets of 10 Litres capacity) Fire Buckets shall be provided at ASS/TSS LT Panel area.				

FIRE EXTINGUISHER IN KAVI SUKANTA METRO STATION				
LEVEL	**LOCATION**	**ABC TYPE (6KG)**	**CO2 TYPE (4.5 KG)**	**FOAM TYPE (9L)**
Road Level	Pump room		1	1
	DG Room		1	1
Concourse Level	Station Control Room	2	2	
	Telecom Equipment Room		1	
	Signaling Equipment Room		1	
	S&T UPS Room		1	
	HSCB		1	
	Ticket Office	1	1	
	Ticket Office	1	1	
	ASS – TSS		6	
	Station Entry Garia End	1	1	
	Station Entry Airport End	1	1	
	Lifts	1	1	
	Lifts	1	1	
	Grid R/3	1	1	
	Grid N/PQ/1 Middle	1	1	
	Grid M-N/1 Middle	1	1	
	Grid J-K/2-3 Middle	1	1	
	Grid G – F/3 Middle	1	1	
	Grid G – F/1 Middle	1	1	
Platform Level		5	5	
		5	5	
	Total	**24**	**36**	**2**
1. One Fire extinguisher, dry chemical powder type, 10KG capacity shall be provided at ASS/TSS LT Panel area.				
2. One Fire extinguisher, dry chemical powder type, 10KG capacity shall be provided at DG Room.				
3. One set (4 nos Fire Buckets of 10 Litres capacity) Fire Buckets shall be provided at ASS/TSS LT Panel area.				

FIRE EXTINGUISHER IN HEMANTA MUKHOPADHYAY METRO STATION				
LEVEL	**LOCATION**	**CO2 TYPE (4.5 KG)**	**ABC TYPE (6KG**	**FOAM TYPE (9L)**
Road Level	Pump room		1	1
	DG Room		1	1
Concourse Level	Station Control Room	2	2	
	Telecom Equipment Room		1	
	Signaling Equipment Room		1	
	S&T UPS Room		1	
	HSCB		1	
	Ticket Office	1	1	
	Ticket Office	1	1	
	ASS – TSS		6	
	Station Entry Garia End	1	1	
	Station Entry Airport End	1	1	
	Lifts	1	1	
	Lifts	1	1	
	Grid R/3	1	1	
	Grid N/PQ/1 Middle	1	1	
	Grid M-N/1 Middle	1	1	
	Grid J-K/2-3 Middle	1	1	
	Grid G – F/3 Middle	1	1	
	Grid G – F/1 Middle	1	1	
Platform Level		5	5	
		5	5	
	Total	**243**	**36**	**2**
1. One Fire extinguisher, dry chemical powder type, 10KG capacity shall be provided at ASS/TSS LT Panel area.				
2. One Fire extinguisher, dry chemical powder type, 10KG capacity shall be provided at DG Room.				
3. One set (4 nos Fire Buckets of 10 Litres capacity) Fire Buckets shall be provided at ASS/TSS LT Panel area.				

FIRE EXTINGUISER/BUCKET INSTALLATION DETAILS IN KAVI SUBHAS CAR DEPOT

Sl No.	ITEMS (As per IS-Standard rule for installation of Fire Extinguisher/Bucket Installation)	As Per IS	Qty
1	Carbon-di-oxide type fire extinguisher of 4.5 Kgs Capacity, CO_2 Gas	15683	08
2	Dry Chemical Powder Type Fire Extinguisher of 6 Kgs Capacity (ABC)	15683	32
3	Water CO2 Type fire extinguisher (Lts. Capacity	15683	32
4	Fire Bucket Stand fabricated by MS angles to install 2 Nos. of Bucket	2546	17
5	50 Kg DCP Extinguisher	4308	08

Annexure 2.5

AVAILABILITY OF FIRE HOSE PIPES AND BREATHING APPARATUS

AT METRO RAILWAY STATIONS

(1) 12 Hose Pipes (15 m length) and 2 Branch Pipes in a box at each station of Metro Railway Kolkata.

(2) 5 nos. Full Face Mask at each underground station of Metro Railway Kolkata.

Annexure 2.6

PUMP PARTICULARS OF METRO RAILWAY

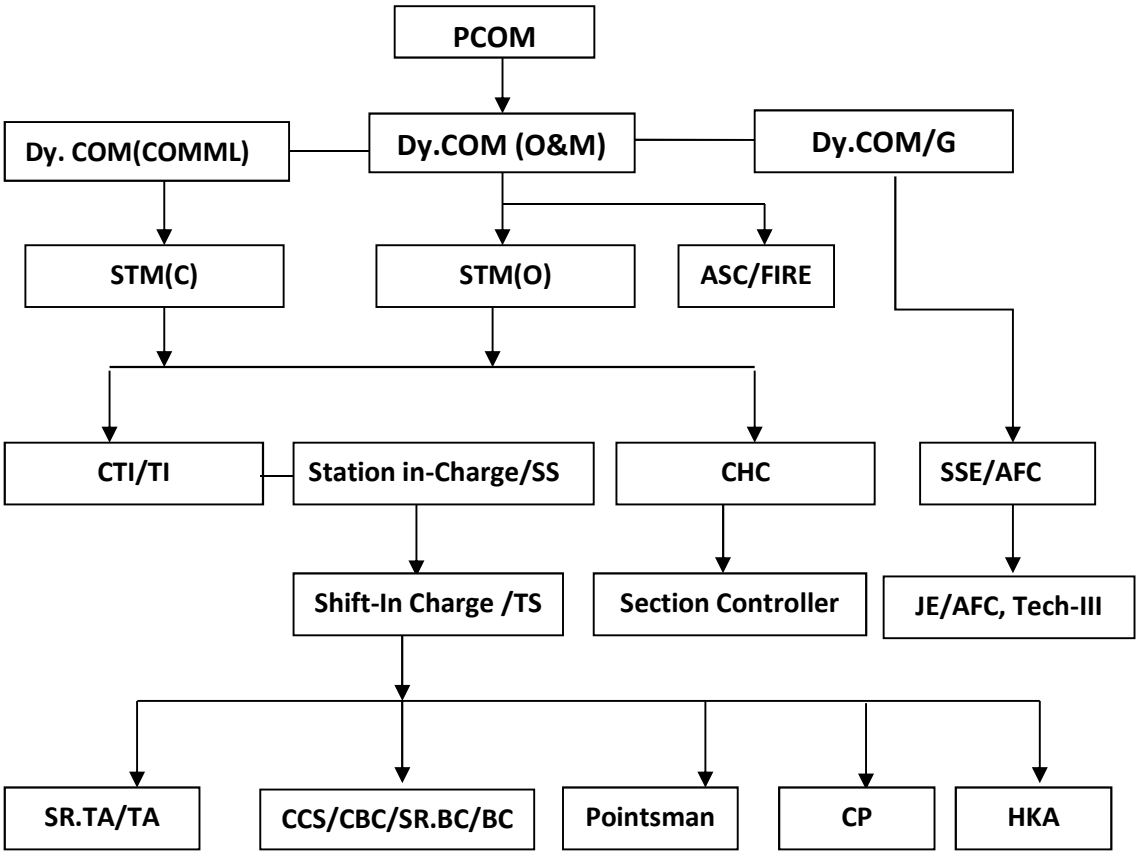
Location	Tube well pumps with capacity	Drainage pumps with capacity	Mid-point pumps with capacity
Kavi Subhash	07.5 HP (3 No) 05.0 HP (01 No.)	-----	-----
Shahid Khudiram	07.5 HP (3 No)	-----	-----
Kavi Nazurul	07.5 HP (01 No.)	-----	-----
Gitanjali	07.5 HP (01 No.)	-----	-----
Masterda Surya Sen	07.5 HP (01 No.)	-----	-----
Netaji	0 7.5 HP (01 No.)	-----	-----
TSM Hospital	0 7.5 HP (03 No.) 05.0 HP (01 No)	-----	-----
Mahanayak Uttam Kumar	07.5 HP (05 Nos.) 05 HP (1 No)	05 HP (05 Nos.)	12.5 HP (03 No) 15.0 HP (01 No)
Rabindra Sarovar	05.0 HP (02 No) 02.5 HP (02 No) 07 .5 HP (02 Nos.)	07.5 HP (01 No) 12.5 HP (04 Nos.)	12.5 HP (02 No) 15.0 HP (02 No)
Kalighat	07.5 HP (01 No) 05.0 HP (01 No)	12.5 HP (02 Nos.)	12.5 HP (02 No) 15.0 HP (02 No)
Jatin Das park	07.5 HP (01 No)	12.5 HP (03 Nos)	12.5 HP (3 Nos.)
Netaji Bhawan	07.5 HP (01 No) 02.0 HP (01 No)	12.5 HP (05 Nos) 15.0 HP (01 No)	12.5 HP (02 Nos.) 15.0 HP (02 Nos.) 0 7.5 HP (01 No)
Rabindra Sadan	05.0 HP (01 No) 02.0 HP (02 Nos).	12.5 HP (03.0 Nos.)	12.5 HP (02 Nos.) 07.5 HP (01 No.)
Maidan	----	12.5 HP (04 Nos) 15.0 HP (01 No.) 07. 5 HP (01 No.)	12.5 HP (01 Nos.) 07.5 HP (02 No)
Park Street	07.5 HP (01 No.)	07.5 HP (3 NO) 12.5 HP (04 Nos.)	12.5 HP (02 Nos.) 15.0 HP (01 No.)
Esplanade	05.0 HP (01 No.)	12.5 HP(02 Nos.)	12.5 HP(02 Nos.) 15.0 HP (01 No.) 7.5 HP (01 No.)
Chandni Chowk	-----	15.0 HP (03 No)	-----
Central	07.5 HP (01 No.)	15.0 HP (07 Nos.)	15.0 HP (02 Nos.) 07.5 HP (01 No.)
Mahatma Gandhi Road	----	15.0 HP (03 Nos.)	15 HP (03 Nos.).
Girish Park	07.5 HP (1 No.) 05.0 HP (1 No.)	15.0 HP (06 N os)	15 HP (3 Nos)

Sova Bazar	07.5 HP (1 No.)	15.0 HP (03 Nos.)	15 HP (3 Nos.)
Shyam Bazar	07.5 HP (1No)	15.0 HP (04 Nos.) 07.5 HP (01No)	15.0 HP (03 Nos.)
Belgachia	7.5 HP (05 Nos) 05 HP (01 No.)	15.0 HP (04 Nos.)	----
Dum Dum	7.5 HP (03 No)	----	20.0 HP (01 No.) 07.5 HP (2 Nos.) 15.0 HP (03 No) Underpass 15.0 HP (02 No) Bediapara
Noapara	7.5 HP (03 Nos.) 10.0 HP (1 No)	06.0 HP (1 No) 05.0 HP (2Nos.)(For RS)	
Baranagar	7.5 HP (03 Nos.)	-----	-----
Dakhineswar	7.5 HP (03 Nos.)	-----	-----

Annexure 2.7

Area of Jurisdiction

TRAFFIC DEPARTMENT



CTI -Chief Traffic Inspector

TI - Traffic Inspector

SS- Station Superintendent

TS- Traffic Supervisor

Sr.TA- Senior Traffic Assistant

TA- Traffic Assistant

CCS- Chief Commercial Supervisor

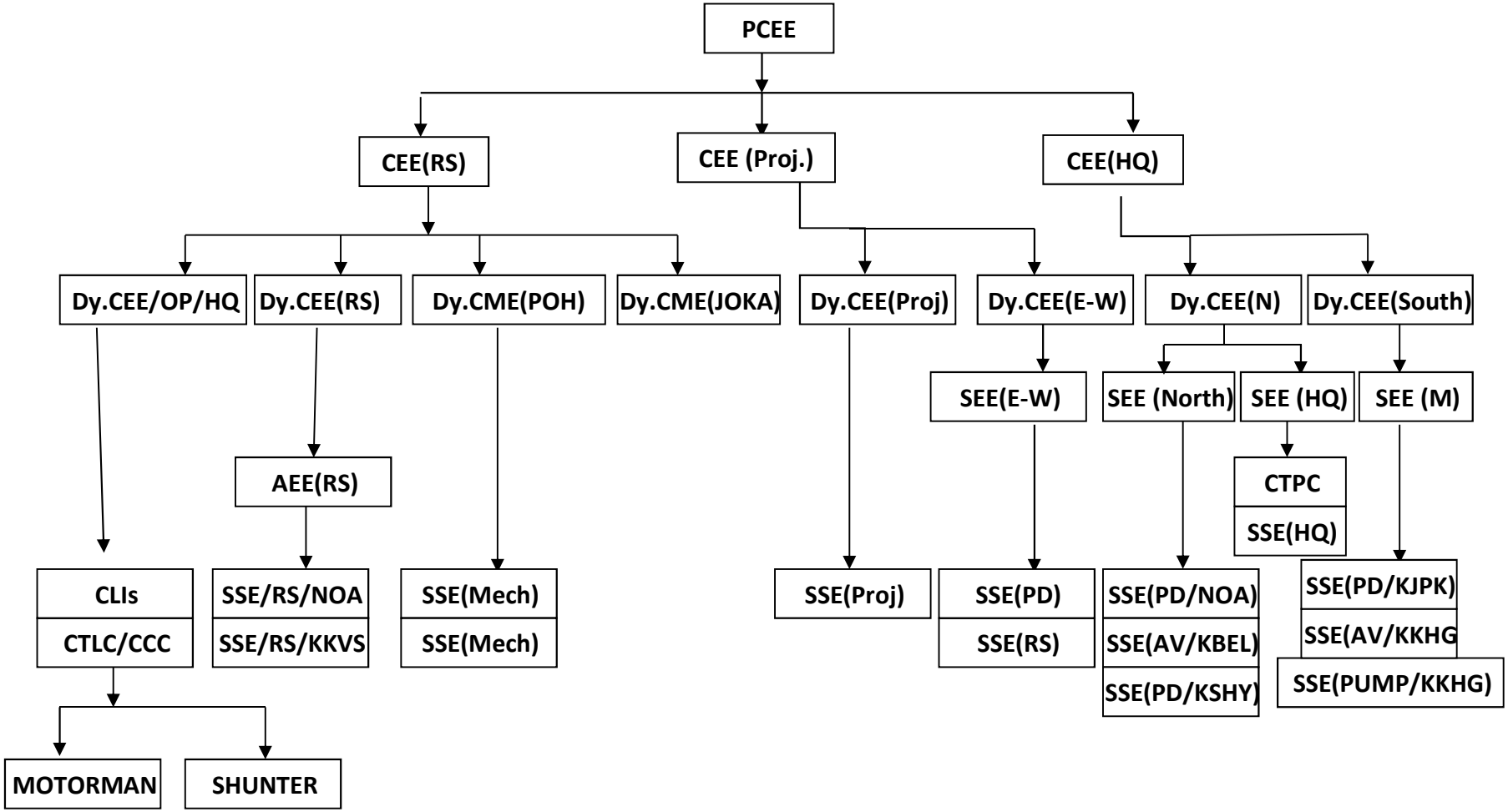
CBC –Chief Booking Clerk

Sr. BC- Senior Booking Clerk

BC –Booking Clerk

Annexure 2.8

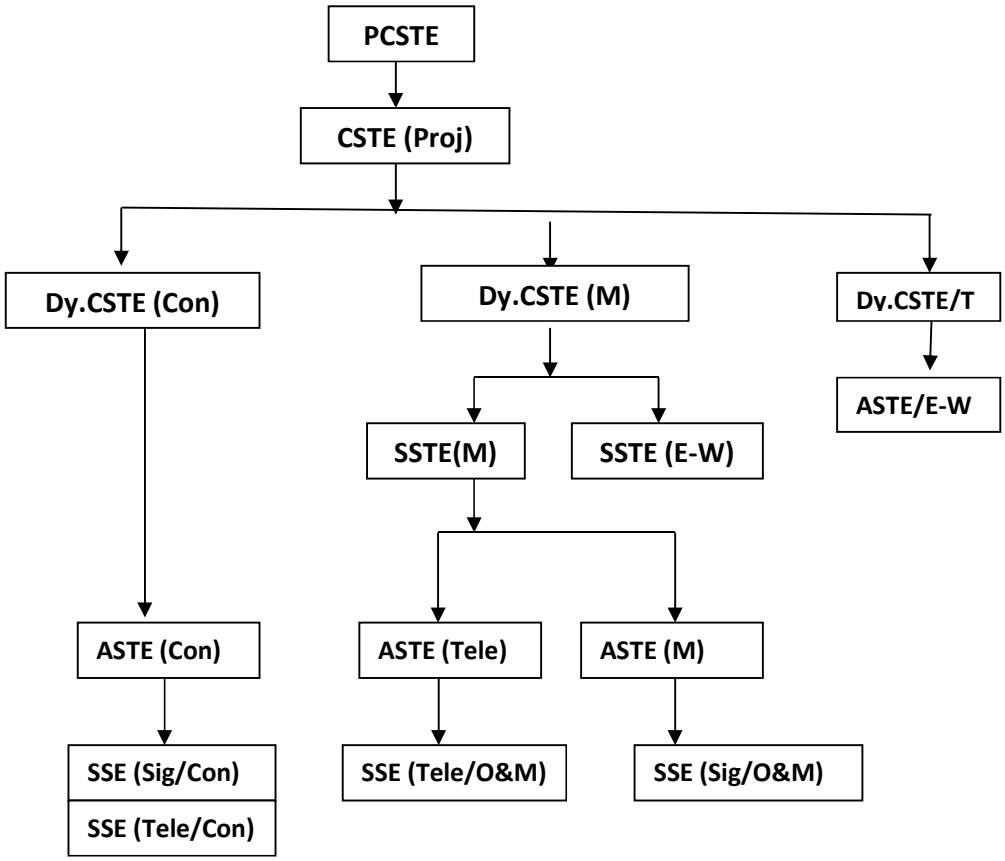
AREA OF JURISDICTION
ELECTRICAL DEPARTMENT



Annexure 2.9

AREA OF JURISDICTION

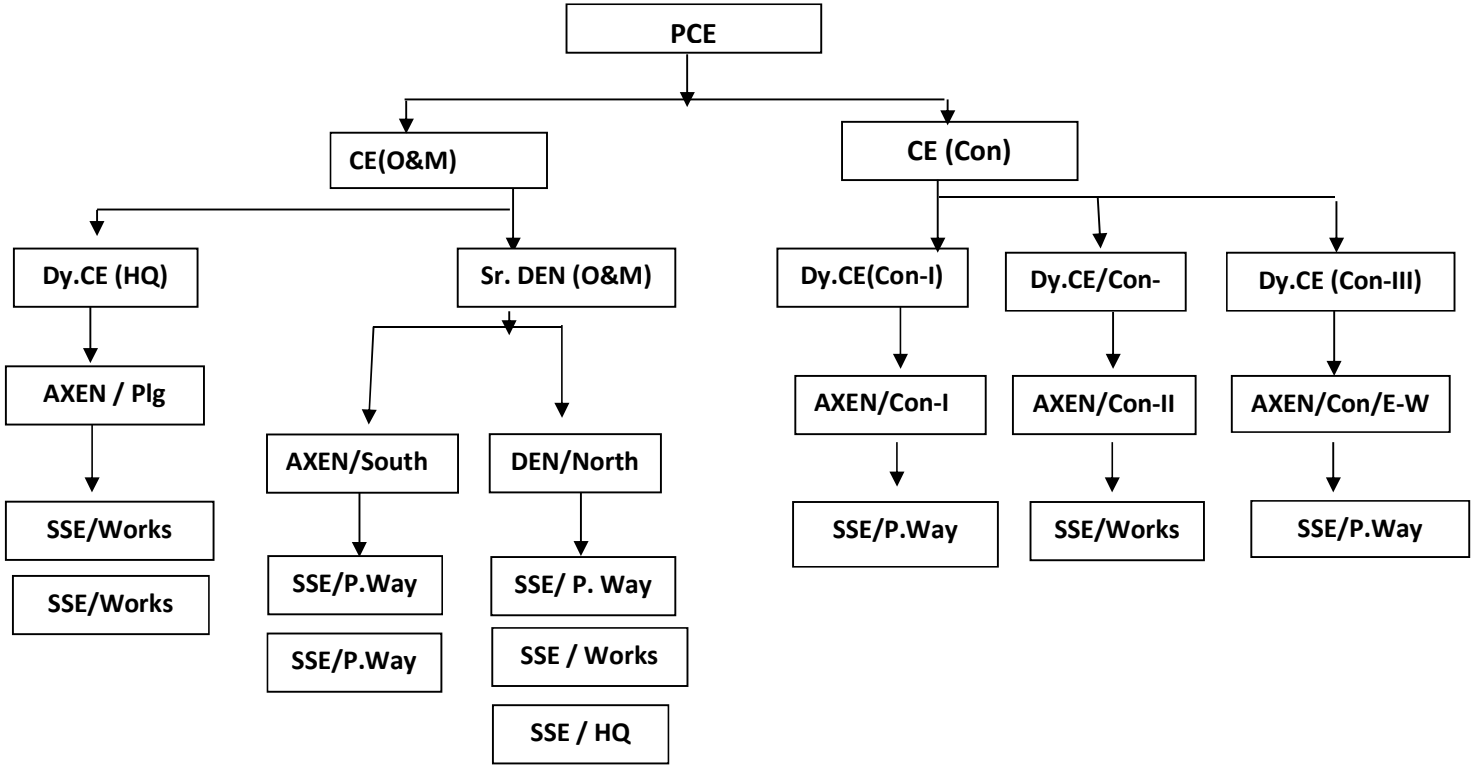
SIGNAL & TELCOM DEPARTMENT



Annexure 2.10

Area of Jurisdiction

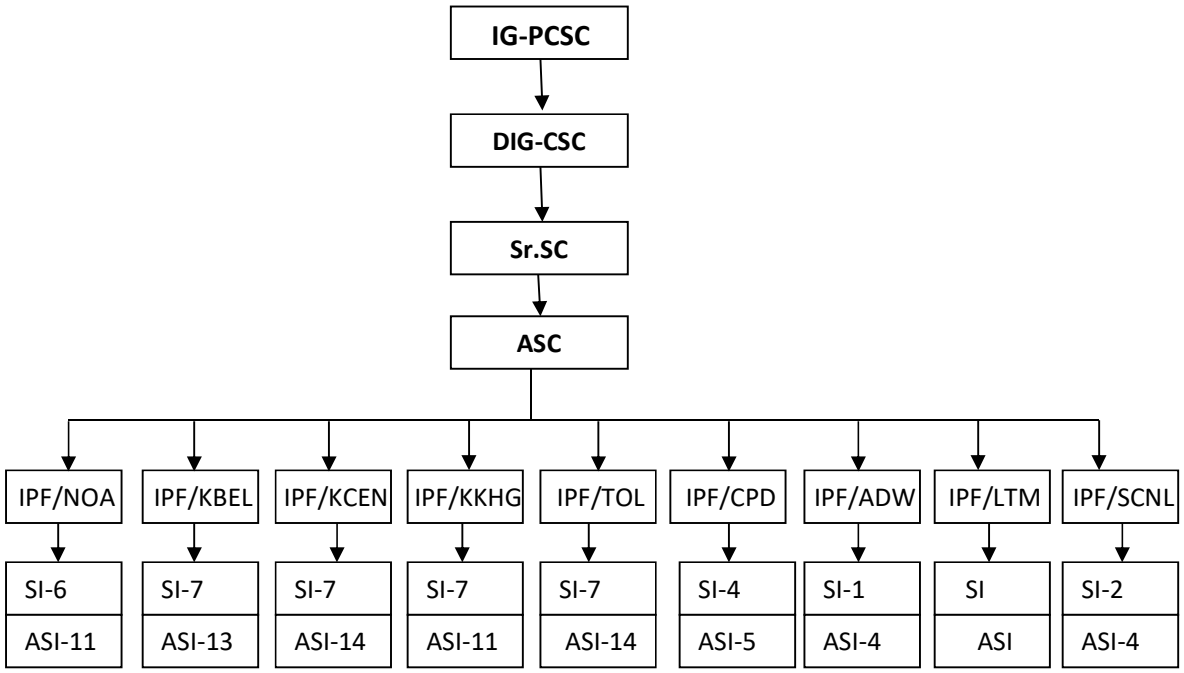
ENGINEERING DEPARTMENT



Annexure 2.11

AREA OF JURISDICTION

SECURITY DEPARTMENT



PCSC :- Principal Chief Security Commissioner

CSC :-Chief Security Commissioner

SR.SC :- Senior Security Commissioner

ASC :-Assistant Security Commissioner

IPF :- Inspector Protection Force

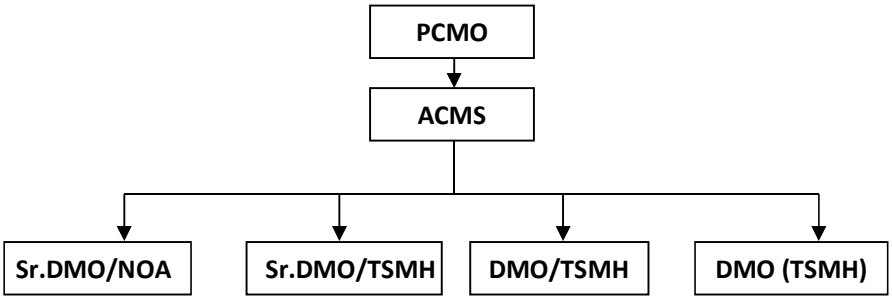
SI :- Sub- Inspector

ASI :-Assistant Sub-Inspector

Annexure 2.12

Area of Jurisdiction

MEDICAL DEPARTMENT



PCMO : Principal Chief Medical Officer

ACMS : Additional Chief Medical Superintendent

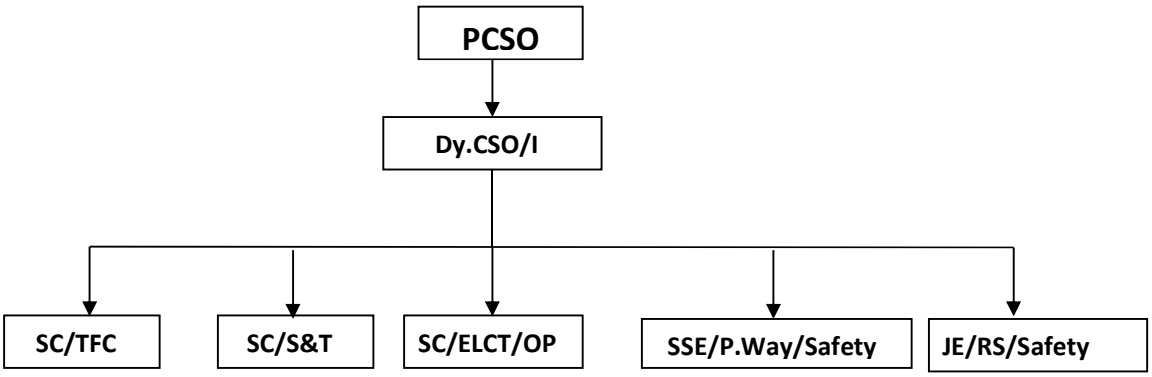
Sr.DMO : Senior Divisional Medical Officer

DMO : Divisional Medical Officer

ANNEXURE -2.13

Area of Jurisdiction

SAFETY DEPARTMENT



CHAPTER – 3
DETRAINMENT OF PASSENGERS

3.1 INTRODUCTION

Detrainment of passengers is required when a train cannot move further due to unusual circumstances such as:-

(a) Long power failure in 3rd rail system

(b) Breakdown of train or derailment

(c) Obstruction of track leading to suspension of train services

(d) Other disasters classified under Para 1.7.

3.2 PREPARATION FOR DETRAINMENT

When a train is not in a position to continue its journey and it is at a station platform fully, or partially, the Driving Motorman will inform the Traffic Controller and seek his permission for detrainment of passengers. If the train partially on the platform and for some reason, then Motorman shall manually open the platform side door(s) to detrain the passengers with the help of station staff.

Station Evacuation :

- The stations are adequately sized to meet emergency egress and fire service excess requirements.
- All stations are provisioned with stairs of sufficient width. Escalators from ground to concourse and concourse to platform or platform to ground are provided at stations wherever possible.
- These stairs and escalator together provide an escape capacity adequate to evacuate passengers in emergency from platform to street. While calculating the waiting passengers on the platform in emergency, 02 missed headways are assumed and the train arriving is assumed to be carrying full section load.
- Lifts have been provided on many stations to provide access for elderly and disabled.
- In case of emergency the AFC/PC gates are opened from SCR or booking counter remotely and barrier gates are opened for quick egress of passengers.

Mid-Section Evacuation:

In case of emergency evacuation between two stations- on the viaduct or tunnel section, adequate space is available on walkway for safe evacuation towards either side stations. The width of walkway is sufficient to ensure that a person can pass each other along the route. The route is kept free of any steps or sudden changes in level and is being kept free from obstacles. Orientation and directions signs are installed along the evacuation route and is continuously

monitored internally. In emergency situation passengers will be first de-trained on pathway and then station staff will guide them to platform. In Blue Line mid section passenger evacuation is done through emergency ladder of cabs. Passengers are detrained at track bed and evacuated to station(s) under the guidance of station staff as directed by traffic controller.

3.3 DETRAINMENT WHEN TRAIN IS FULLY ON THE PLATFORM

After receipt of the approval of detrainment from the Traffic Controller, the Driving Motorman will inform the Conducting Motorman about the decision of detrainment. The Conducting Motorman will thereafter make an announcement through the Public Address system to the passengers to detrain and he will open the platform side doors for evacuation of passengers. On complete evacuation, he will close the doors again and inform the Driving Motorman. The Driving Motorman will then contact the Traffic Controller and convey the message of completion of detrainment action and wait until further orders. Station Superintendent/Shift-in-charge will make similar announcements over the station PA system informing passengers of traffic disruption.

In case a train is held up in between two stations and cannot be moved further within the period as laid down in GR & SR 150.

3.4 TRAIN DETAINED BETWEEN STATIONS AND EVACUATION OF PASSENGERS FROM ONE/ BOTH ENDS (e.g. Blue Line)

3.4.1 Procedure for detainment of passengers in the mid-section.-

Pursuant to the condition for detrainment of passenger in mid-section stated vide GR & SR 150 when it becomes apparent that the train cannot be moved within prescribed time limit, decision for initiating emergency evacuation will be taken by Traffic Controller on duty.

In either of the events of Motorman seeking permission for detrainment of passengers or the Traffic Controller deciding suo-moto after expiry of prescribed time limit following actions will be taken:

1. Evacuation of passengers from cab(s) of the disabled train.

2. The Conducting Motorman will explain the circumstances to the passengers on the on board P.A. system and request them not to be panicked and to wait for further advice. He shall also play the specific announcement in the DTR/PIS concerned especially recorded for Disaster Management.

3. Evacuation of passengers is to be done normally to the nearest station by opening of both the cabs and lowering of both the emergency ladders. In all

cases evacuation of passengers shall be done from both cabs of the disabled train to both the adjacent stations or to the nearest station through the pathway by the side of the disabled train or through the unaffected adjacent line after taking necessary power block and fixing earthing rods for both the lines, except for the sealed tunnels where there is no space by the side of disabled train, passengers evacuated from rear end of the train shall be guided to the station in rear and those detraining from the front cab shall be guided to the station in advance.

4. Traction Loco Controller (TLC) will advice both Driving and Conducting Motorman regarding detrainment of passengers from both end of the train.

5. The Traffic Controller before granting permission for evacuation of passengers will get confirmation from the Traction Power Controller (TPC) on duty that the third rail power supply of all the running lines for the relevant section have been switched off, under exchange of private number.

6. The TPC on duty in the Central Control shall "switch off" third rail power supply of both UP & DN track of the concerned section through remote control operation and in case of failure of remote control, he will get the power "switched off" through substation, operator/SBA (switch Board Attendant) of traction substation, under exchange of private number. The TPC will then inform the Traffic Controller on duty, under exchange of private number that the traction power supply to third rail of both the lines, as demanded has already been switched off. Traffic Controller will inform the TLC on duty and station-in-charges of the adjacent stations, where passengers are to be evacuated, confirming the power block, under exchange of private number. The Train Loco Controller shall then inform the Driving Motorman of the disabled train, under exchange of private number, confirming power block of the section.

7. The Driving /Conducting Motorman shall secure the disabled train properly by applying parking brake and skids available in the cabs after receipt of confirmation of the power block.

8. The Traffic Controller shall inform the Station-in-charges of both adjacent station of the disabled train and instruct to proceed personally or to depute competent Railway personnel(s) with hand torch(es) to escort the passengers from the mid section to the platform(s) at the station(s). A minimum of two Traffic staff (one of which should be at least of the rank of Sr.TA) should proceed from both end stations with instructions about the procedure to be followed for detrainment

and escorting the passengers from the mid section to the station(s).Before proceeding, earthing of third rail at platform end (affected side both lines) should be ensured by station-in-charge.

9. Before the passengers are allowed to get down on the track bed, the Driving Motorman shall short circuit the Third Rail to the running rail (occupied by the disabled train) by means of short circuiting device supplied in the cabs to ensure de-energisation of the traction current. The Conducting Motorman shall short circuit the Third Rail to the running rail (unaffected line in opposite direction) by means of short circuiting device supplied in the cabs to ensure de-energisation of the traction current. Under no circumstances the Driving/Conducting Motorman shall allow the passengers to get down on the track-bed unless the Third Rail has been so earthed.

10. The Station-in-charge(s) shall ask the remaining Traffic staff and Security staff of the station(s) to position themselves on the platform(s), to receive the evacuated passengers and to render all sorts of assistance.

11. The Driving and Conducting Motorman should render all assistance to the passengers & ensure continuous announcement on the P.A. System to the passengers of the train about the arrangement being made/already made for their detrainment from both the cabs of the train and the station(s) to which they will be escorted by station staff.

12. In the mean time, the Traffic Control shall inform nearest police Station and Metro Railway Security Control about the incident and request them to attend at the concerned station(s) to maintain law and order.

13. Central Control may advise adjacent station(s) staff to proceed to the station(s) concerned to assist detrainment/evacuation.

14. Central Control may also ask Railway Doctors and nearest Hospitals for Ambulance and other medical assistance at the station(s) where evacuation of passengers have been planned.

15. Normally the Cab exit will be opened to lower the step ladder at both end. After testing that the step ladder(s) are properly secured, the Driving and Conducting Motorman shall open the door(s) of the cab(s) and announcement shall be made to the passengers to start detraining and also inform them that the third rail power supply has already been switched off and there is no danger

involved. However during extreme emergency Motormen can start evacuation even before arrival of station-in-charges after confirmation of power block ensuring earthing of both lines.

16. The passengers would be guided further on the ground by the Station-in-charges or by the deputed Traffic staff who shall also escort them to the concerned station(s). Special care should be taken particularly of ladies, senior citizens and children. The passengers should be advised to walk on the center of the track as far as possible and follow the Station-in-Charge(s) or the deputed Traffic staff who will be escorting them to the station(s).

17. While the passengers are detraining, the Driving as well as Conducting Motorman should keep watch on them. They should continue announcement through the on board PA system.

18. On arrival of the two Traffic staff from the station in advance, one staff will lead the passengers and the other competent staff will follow the last passenger. The Driving Motorman will remain in the cab. On arrival at the station in advance or rear as the case may be, complete arrival of passengers is to be confirmed by the competent Traffic staff, in writing, to the Shift-in-Charge/Station in-charge of the concerned station. Shift-in-Charge/Station in-charge shall intimate the same to the Traffic Controller through exchange of Private number.

19. On arrival of Traffic staff from the station in rear, the Conducting Motorman will advise the Traffic staff to lead the passengers and he will follow the last passenger to the station in rear or in advance as the case may be. On arrival at the station in rear or in advance as the case may be, complete arrival of passengers is to be confirmed by the Conducting Motorman, in writing, to the Shift-in-Charge/Station Superintendent of the concerned station. Shift-in-Charge/Station in-charge shall intimate the same to the Traffic Controller through exchange of Private number.

20. The Driving Motorman will ensure that there is no passenger left over in the disabled train and that the last passengers moving towards the station in advance and the station in rear are followed by the Traffic staff and the Conducting Motorman respectively.

21. Traffic Controller will inform the Driving Motorman regarding complete arrival of all passengers to the station in advance and rear under exchange of private number.

22. The Conducting Motorman shall walk back to the disabled train. On arrival he will talk to the Driving Motorman. They will thereafter remove shorting link between third rail and running rail, normalise the step ladder(s), close the cab exit(s) and remove the skids.

23. The Driving Motorman shall inform the Traffic Controller about the successful completion of detrainment, safe return of the Conducting Motorman, closing of cab exit(s) removing of shorting links, skids and ask the Traffic Controller to take further action to "switch on" power supply to third rail, under exchanging of private number. He will take further course of action as directed by the Traffic Controller through TLC. Traffic Controller then advice Station-in-charge of both stations to remove earthing of third rail of their stations and confirm exchanging of private number.

24. The Traffic Controller shall inform the Traction Power Controller (TPC) about the completion of the evacuation of passengers and advise him to 'switch on' third rail power supply as per requirement, under exchange of private number. The TPC in turn shall restore third rail power supply and will then inform the Traffic Controller about resumption of third rail power supply, under exchange of private number.

25. The Traffic Controller, under exchange of private number, shall inform the TLC on duty and Station-in-charge(s) concerned when third rail power supply is "switched on" again. TLC will inform the Motorman concerned about resumption of power supply under exchange of private number.

3.4.2 DUTIES AND ACTIONS TO BE TAKEN BY VARIOUS PERSONNEL IN DETRAINMENT OF PASSENGERS IN SECTION BETWEEN TWO STATIONS:

3.4.2.1 The <u>Driving Motorman</u> will do the following:-

(i) The Driving Motorman and Conducting Motorman of disabled train will discuss about the situation promptly. The Driving Motorman will advise the Conducting Motorman to secure the train by applying parking brake / skid available in the cabs after receipt of confirmation of power block under exchange of private number with the Traffic Controller.

(ii) He will advise the Conducting Motorman to explain the circumstances to the passengers through PA System and request them to wait for further advice. He

will also advise the Conducting Motorman to connect running rail and third rail through shorting links provided in both cabs.

(iii) The Driving Motorman will open the emergency door as well as lower the step ladder and properly secure the same.

(iv) He will then open the door between driving cab and passenger compartment.

(i) He will ask the Conducting Motorman to announce thorough PA System and explain the circumstances to the passengers and request them not to be panicked and to get down through front end emergency door. In case the PA System of Conducting Motorman fails, the Driving Motorman himself will make the announcement and extend all help to enable them to get down on the track safely. He should specially take care of children, ladies and old men.

(vi) The Driving Motorman should ensure that there is no passenger left behind in the disabled train and the last passenger is moving towards the station.

(vii) On arrival of the Conducting Motorman to the disabled train, the Driving Motorman will advise the Conducting Motorman to remove the shorting link between third rail and running rail, to normalize the step ladder, to close the cab exit and will wait for further instruction from the Traffic Controller.

3.4.2.2 The <u>Conducting Motorman</u> will do the following:

(i) The Driving Motorman and Conducting Motorman of disabled train will discuss about the situation promptly. On getting instruction from the Driving Motorman (only after receipt of confirmation of power block under exchange of private number with the Traffic Controller), the Conducting Motorman will secure the train by applying parking brake / skid and connect running rail and third rail through shorting links available in both cabs.

(ii) He will explain the circumstances to the passengers through the PA system and request them to wait for further advice.

(iii) On receipt of instruction from the Driving Motorman, he will announce through PA system to the passengers about the circumstances and request them not to be panicked and to get down on the track through the emergency door of front cab. In case the PA system fails, he will ask the Driving Motorman to make the announcement.

(iv) The Conducting Motorman should keep watch on the passengers, particularly on ladies, children and old men and ensure that all passengers have been detrained. Thereafter he will follow the last passenger towards the nearest station as per Traffic Control.

v) He will inform the Traffic Controller from station Superintendent / Shift-in-charge's room at the station along with the Station Superintendent /Shift-in-charge that detrainment is complete.

(vi) He will come back to the train and inform the Driving Motorman about the completion of detrainment and thereafter he will remove the shorting link between 3rd rail and running rail, pull back the step ladder and close the emergency door. He will wait for further instructions from the Driving Motorman.

3.4.2.3 The following action has to be taken by Station Superintendent / Shift-in-charge of the adjacent station of the disabled train.

(i) He will ensure from the Traffic Controller that power supply has been switched off under exchange of private number.

(ii) Frequent announcement shall be done over the station PA system by the Station Superintendent /Shift-in-charge of the affected station.

(iii) He or his nominated staff will go to the site of the stationary train from where passengers will be detrained. Before proceeding, earthing of third rail at platform end (effected side both lines) should be ensured by station-in-charge.

(iv) He or his nominated staff will guide the passengers through staircase provided at the end of the platform (and where staircase is not available the aluminium ladder shall be placed at the platform end) to come on to the platform to get out of the station, as required. He will inform the Control along with the Conducting Motorman about the completion of detrainment after the last passenger has reached station.

(v) After completion of evacuation of passengers, he will remove the aluminium ladder(s), if the same has been provided at the platform end.

(vi) He will wait for further instruction from the Traffic Controller for movement of the train.

3.4.2.4 The <u>Traffic Controller</u> will do the following:-

(i) On receipt of information from Driving Motorman about the inability of the train to proceed further, necessitating evacuation of passengers, he will ask the TPC to switch off power supply of the 3rd rail for both the lines under exchange of private number.

(ii) The Traffic Controller shall then inform the Driving Motorman of the disabled train, under exchange of private number, confirming power block of the section. He

will also inform the station-in-charge of the station, where passengers are to be evacuated, confirming the power block, under exchange of private number.

(iii) He will inform the Station Superintendent /Shift-in-charge of adjacent station of the affected train for deputing their staff with an advice to go towards the disabled train to help detrainment of passengers and bring them to the station.

(iv) In the mean time the Traffic Controller shall inform to the nearest Police Station and Metro Railway Security Control about the incident and request them to attend the concerned station to maintain law and order and he may also ask railway doctor and nearest Hospital and ambulance and for any other medical assistance.

(v) After receiving the confirmation from Shift-in-charge in respect of completion of detrainment of passengers and on receipt of information as to safe return of the Conducting Motorman, closing of cab exit, removing of short links, skids etc from Driving Motorman, being supported by private number, he will ask TPC to switch on the third rail power supply, under exchange of private number, if situation so permits.

(vi) The Traffic Controller under exchange of private number shall inform the Station-in-charge concerned and Driving Motorman that third rail power supply has been "switched on" again and he will give instructions to the Driving Motorman to start the train cautiously up to the next station and restore normal service after the section has been cleared.

3.4.2.5 The <u>TPC</u> will do the following:-

i) On receipt of request/information from Traffic Controller about the necessity of detrainment of passengers from disabled train, TPC will switch off 3rd ail power supply through remote control system by operating necessary HSCB controlling the power supply of the section.

(ii) In case of failure of remote control system, he will get the power supply to 3rd rail switched off through the substation operator by giving necessary message.

(iii) In case of communication failure to the substation, he may have to switch off power supply by switching off power to the rectifier transformers from either side of the section in question.

(iv) After switching off 3rd rail power supply/getting power supply switched off by substation operator, he will give the message about switching off of power to the third rail to the Traffic Controller on duty under exchange of private number.

(v) He will also inform the TLC that the power has been switched off from the 3rd rail of the section.

(vi) He will arrange to turn-on 100% tunnel lights/parapet lights in the affected section.

(vii) In case of tunnel section, he will arrange to run both the mid-point exhausts in the section and the tunnel intake fans at the stations on either side.

(viii) After detrainment of passengers is completed and message to the effect is received from Traffic Controller, he will, if situation so permits, restore 3rd rail power, normalize the ventilation system, tunnel/parapet lighting system and advise the Traffic Controller under exchange of private number for resuming further movement of train as required.

3.5 TRAIN DETAINED BETWEEN STATIONS & EVACUATION OF PASSENGERS THROUGH SIDE PATHWAY OPENING SALOON DOOR(s) (e.g. Green Line):

3.5.1 Train stopped between stations and evacuation of passenger on foot –

i) If a train stops between the stations due to Rolling stock failure, Traction power failure or any other reason for which train can't move, the Motorman of stranded train shall inform the Traffic Controller about the location i.e. kilometer age, particulars of the train and his identity within one minute.

ii) Traffic Controller after getting initial information from Motorman shall inform the shift-in-charges of the adjacent stations as well as Traction Power Controller (TPC) to remain in readiness for evacuation of passengers from the stranded train. The shift-in-charges of the concerned station will suitably manage the station in such occasion.

iii) If the cause for such hold up is failure of traction current and there is reason to believe that restoration of traction current is not possible within 10(ten) minutes, the Traffic Controller shall initiate the procedure of passengers' evacuation from the stranded train.

iv) If the reason for such hold up is other than traction current failure all trouble shooting efforts shall be completed and its status shall be informed to Traffic Controller over TETRA within ten minutes, so that the actual evacuation starts from eleventh (11^{th})minute of occurrence. The reason for such hold up shall be suitably informed to the passengers inside the train by Traffic Controller and Motorman.

v) In case of derailment or any other eventuality such evacuation shall be started earlier. Following procedures shall be followed for evacuation of passengers from mid-section-

vi) Traffic Controller shall obtain power block of the concerned section (both lines covering platform zones) from the TPC by exchange of private number and relay the same to the shift-in-charges of the adjacent stations as well as Motorman by exchange of private number.

vii) The shift-in-charges of adjacent stations, after opening manual secondary door (MSD) shall earth both lines of the affected sections by using earthing device and shall inform such earthing to Traffic Controller by exchange of private number.

Subsequently the Traffic Controller shall confirm the earthing of both lines to Motorman of the said train by exchange of private number over TETRA.

viii) The Motorman shall inform the passengers that evacuation shall start from the selected door and passengers to follow the next announcement.

ix) Shift-in-charge of the nearest station shall send at least two traffic staff.

x) Motorman shall open the selected door and place the ramp between the train door and the walkway by securing its fixation. Passenger shall be detrained on the walkway after arrival of the station staff. One staff shall lead the passengers to the station and the Motorman shall ensure that all the passengers have left the disabled train.

xi) After detraining of last passenger from the train, the second traffic staff shall follow them from the rear.

xii) After all the passengers have reached the station the second traffic staff shall confirm completion of evacuation in writing to the shift in-charge.

xiii) Shift-in-charge shall confirm to the Traffic Controller that the evacuation has been fully completed by exchange of private number over TETRA and accordingly the Traffic Controller shall relay the same to the Motorman.

xiv) The Traffic Controller shall inform the Shift-In-Charge(s) of the station/adjacent stations to remove the earthing device.

xv) When all the earthing devices are removed by the concerned personnel and MSD is closed, Motorman shall inform the Traffic Controller by exchange of private number, so that power block can be cancelled.

xvi) The Traffic Controller shall confirm the TPC about the completion of passengers' evacuation and then ask for cancellation of power block by exchange of private number.

xvii) After cancellation of power block, TPC shall inform Traffic Controller and Traffic Controller shall inform the Motorman and shift-in-charge(s) as well by exchange of private number.

xviii) Such evacuation of passengers to the other station except the nearest one may be considered in case of non-availability of ventilation system in the tunnel section or any structural obstruction.

xix) If a train becomes disabled between stations at such a place, evacuation of passengers to both stations may be considered by the Traffic Controller.

xx) In twin tunnel section if is not possible to move on the walkway of the tunnel of disable train due to fire or any other reason, the passenger may be evacuated using the cross passage present at an intervals of about 250mt. The whole tunnel section if provided with illuminated tunnel evacuation signage system (ITESS) to guide the passengers to move in desired direction.

3.5.2 Train stopped between stations and evacuation of passenger by Assisting Train is required –

(a) <u>Motorman</u> of disabled train will do the following:

(i) If a train stops between the stations but its mobility has not been lost, the Motorman of the stranded train shall inform the Traffic Controller about the location i.e. kilometrage, particulars of the train and his identity within one minute.

(ii) All trouble shooting efforts shall be completed and its status shall be informed to Traffic Controller within ten minutes over TETRA so that the evacuation, if required, starts from eleventh (11^{th}) minute of occurrence.

(iii) The reason for such hold up shall be suitably informed to the passengers inside the train.

(iv) If Motorman cannot isolate a defect in his train and is unable to move it under its own power, he shall secure the train and request the Traffic Controller for assistance.

(v) He shall isolate traction connections to his train.

(vi) Once the assisting train has arrived and coupling of trains is confirmed, he shall release the brakes of his train.

(vii) After complete arrival of the combined consists at the platform of the next station, he shall then detrain all the passengers at the station.

(viii) He shall exchange communication to the Motorman of assisting train over TETRA until the combined consist completely arrives at depot.

(b) <u>Motorman</u> of Assisting train will do the following:

(i) On receipt of information from Traffic Controller that his train will be utilized as an assisting train, he shall detrain all the passengers at the station. If the train has already left the station, he will drive as close to the disabled train as permitted under Coded Manual mode under cab signaling.

(ii) He shall suitably inform to the passengers inside the train about the situation through PA system.

(iii) He shall proceed with Restricted Manual mode, at reduced speed and stop about ten meters short of the stalled train.

(iv) In case it is more convenient to provide assisting train from the leading end direction, he shall detrain the passengers at the station, change the cab and proceed in the direction of the disabled train under Coded Manual mode as far as limit of authority under cab signaling and thereafter change to Restricted Manual mode and stop short of about ten meters of stalled train.

(v) He shall couple his train to the defective train by mechanical means only.

(vi) Motorman of the assisting train, if in front, shall once again change the cab and shall drive forward in Restricted Manual mode at slow speed while exchanging

communication with the front cab of defective train until the assisting train has completely reached at platform of the next station.

(vii All passengers of assisting train shall then be de-trained at the station and the combined consist worked to the depot in Restricted Manual mode at a speed not exceeding ten kilometer per hour.

(viii) He shall exchange communication with the Motorman of disabled train over TETRA until the combined consist train is completely arrives at depot.

(c) The <u>Traffic Controller</u> will do the following:

(i) On receipt of information from Driving Motorman about the inability of the train to proceed further necessitating evacuation of passengers, the Traffic Controller shall utilize the following train as an assisting train and the same shall be informed to the Motorman of the following train.

(ii) He shall instruct the Motorman of the following train to drive as close to the stalled train as permitted under Coded Manual mode under cab signaling;

(iii) He shall then instruct the Motorman of the assisting train to change to Restricted Manual mode, and to proceed at reduced speed and stop about ten meters short of the disabled train.

(iv) If the following train is at station he shall instruct the Motorman of the assisting train,to detrain the passengers at the station.

(d) The <u>Station-in-Charge/Shift-In-Charge</u> will do the following:

(i) He will ensure from the Traffic Controller that station under him is nominated for evacuation of passenger by combined consist train under exchange of private number.

(ii) Frequent announcement shall be made over the station PA system at the affected station.

(iii) He or his nominated station staff and/or platform supervisor shall open the platform screen Door/Gate manually of the affected lines by exchanging private number with Traffic Controller.

(iv) He or his nominated staff will go to the site of the stationary train from where passengers train will be coupled by Assisting train to assist the Motorman.

CHAPTER NO. 4
FIRE IN STATION, TUNNEL, VIADUCT AND TRAINS

4.1 Fire

4.1.1 Fire in Metro Railway can take place at various locations adversely affecting the system in different ways. The reasons may be unforeseen or anticipated. Fires in station area, underground tunnel, viaducts, on track and in trains can cause acute distress to passengers and require prompt disaster management to bring the situation under control.

4.1.2 Fire can be due to electrical short circuit in cables, wires or in electrical equipment. It can be due to failure of cable joints in the tunnel or due to failure of the cable itself. In Metro Coaches it can be due to short circuit faults. Fires can also be due to sabotage including bomb blasts.

4.1.3 Universally accepted measures for fire prevention include:

i) Rigid observance of non-smoking regulations

ii) Total ban on carriage of inflammable/ explosive substance within metro premises and in trains

iii) Non accumulation of garbage in the metro station premises and inside trains

iv) All staffs posted at stations must ensure instructions are rigidly enforced by regular checks.

4.2 Fire and Smoke:

In the event of fire and / or smoke either in train, station premises, right of way or other Metro premises, every Metro Rail official whether on duty or not shall,

i) Report the occurrence to the nearest station or OCC.

ii) Take all possible steps to extinguish fire.

iii) Disconnect electric supply, if required.

iv) Prevent the fire from spreading.

v) Seek assistance of adjoining Fire stations.

4.3 Fire in Electrical Equipment:

In case of fire in electrical equipment, attempt shall be made to extinguish fire taking suitable precautions and report the matter to the nearest Station Controller/OCC. No water should be used to extinguish electrical fire. If required power supply shall be cut off immediately by sending information to Traction Power Controller. Inform to OCC or nearest station immediately for external help, if required.

4.4 Fire in a Train

The guidelines set out below to handle fire in Train and minimize the damage of property and also casualty of passenger. Since every fire incident is unique, the Motorman is to exercise quick judgment based on

i) The nature of fire whether localized or widespread in passenger area.

ii) The extent of occupation of the train-number of passengers-if the number is manageable he will ask passengers of the affected coach to move away to other coaches.

iii) Proximity of the next station – passenger evacuation and handling of emergency is much easier at station than in between stations. Motorman has to exercise his judgment about those extreme cases where the train has to be stopped forthwith to save life by prompt evacuation or taken to the next station expeditiously.

4.4.1 Duties of Motorman:

a) Fire in Train in between Station

i) In case of fire on train detected by passengers and made known to the Motorman on any of the sides or noticed by the Motorman of either side, first attempt should be to take the train, if it is in motion, to the next station without stopping it in mid-section. In case the train is unable to move due to the fire within the train, immediate action should be taken for evacuation of passengers from select side doors as per the procedure laid down for Detrainment of passenger. He should immediately inform OCC about the matter giving the details of km no., train no., rake no., coach no. etc. so that OCC may take quick and appropriate majors to deal with the situation.

ii) When fire or continued tripping in any equipment occurs in a train between station or the Motorman is informed by passengers about fire or smoke emission on any part of the train, he shall immediately inform OCC and

iii) The Motorman will assess the nature and extent of fire to decide whether the train can be safely taken to the next station. In which case he will again inform OCC and proceed to the next station addressing the passengers on board not to panic but be in readiness to vacate the train at the next station in an orderly manner giving precedence to aged, Infirm handicapped, women and children.

iv) He will also request Metro Staff travelling on the train to assist in relief work.

v) In case it appears unsafe to proceed to next station, or the train itself has become disabled, the Motorman will advise OCC of the circumstances, Fire extinguishers provided in the train shall be used to extinguish the fire.

vi) In case the fire has been extinguished, he may cautiously proceed to the next station under instruction of OCC Traffic Controller.

vii) At the next station the passengers shall be detrained and the train withdrawn from revenue operation after the fire is finally put off.

viii) If fire cannot be controlled, he will make preparations to evacuate passengers keeping OCC informed.

ix) OCC to stop movement of trains on the adjacent line to facilitate safe passenger evacuation.

b) Fire in Train at the Station Platform.

The Motorman shall open all train doors on the platform side and ask passengers to vacate the train immediately. He will inform OCC and nearest Station and take assistance from station staff as required.

4.4.2 Duties of Shift in Charge of station:

i) Station **Shift in Charge** will inform the Traffic Controller immediately about the fire so that train services can be suitably regulated if the fire is likely to affect the running of trains including adjacent line.

ii) Suspend selling of tickets and announce through Public Address System to passengers not to get on to the platform.

iii) If need be, inform OCC and evacuate station

iv) Guide the passengers for exit from station area till such time the fire is extinguished and normalcy is restored.

v) Fight the fire if possible with the help of station staff using the available firefighting equipment's keeping himself safe.

vi) Station shift in charge will ensure the proper working of TVS Fans. If not working inform to the concerning department for quick action.

4.4.3 Duties of Traffic Controller:

(i) In case of fire on train, the Chief Controller should inform the fire fighting personnel as well as the Medical Team for rushing to the station where the train has stopped, or on the stations on either side if the train has stopped in midsection for necessary assistance.

(ii) In case of train stopping at the mid-section, he should inform the TPC to switch off the third rail power on both sides for quick evacuation of passengers.

(iii) He should control all train services on both the lines.

(iv) He should inform TPC about the fire for taking necessary steps in respect of ventilation system.

(v) He should inform Station controller of station on either side and arrange for announcements over PA system to waiting passengers and also to guide detrained passengers to safety.

4.4.4 Duties of Traction Power Controller:

(i) He should switch off traction power in case of stoppage of train in mid section due to fire on train.

(ii) If the power is likely to affect the high tension cable, laid on tunnel walls he should switch off the power of the particular feeders, but ensure lighting in tunnel [all time] and viaduct [in night] through alternate supply.

(iii) He should contact the Traffic Controller and exchange Private Number stating the power has been switched off and evacuation of passengers can be started as laid down in the procedure for evacuation of passengers.

(iv) He should inform AV staff at the station on either side, to continue running station intake fans, the tunnel intake fans and both midpoint exhaust fans.

(v) He will co-ordinate with concerned Section Engineer/Works & Section Engineer (Elec. Pump) to ensure availability of water by running all concerned pumps for firefighting purpose.

4.4.5 Duties of Inspector/RPF and OCC:

(i) He will co-ordinate from Control with the available SIPF/ASI on spot, obtain details of fire and ask for necessary assistance from State Police/Fire Brigade.

(ii) He will coordinate with Traction Power Controller to ensure proper running of water pumps and availability of water in fire hydrants.

4.5 Fire Suppression System

A wet Fire Main System covers all the station areas. In addition, there are automatic sprinklers, smoke detector, heat & smoke detector, MCP (Manual Call Point) and portable fire extinguishers at various locations. If there is fire on running trains between stations then the Motorman should inform OCC immediately and announce in the train to make safe distance from fire in the train and tried to bring the train on the next station where additional staff, first aid, ambulance and other facilities shall be available easily.

ON GREEN LINE :

In Rakes portable fire extinguishers are provided two in each cab and two in passenger area of each coach which can be used whenever required. The MR600 rakes are equipped with audio visual addressable fire detection system which alerts the motorman in his cab.

Via duct and tunnel section is provided throughout with continuous fire hydrants with readily available water supply.

The station building, sub station (ASS/TSS/RSS),TER,SER,UPS etc rooms are designed and installed to detect the presence of fire/smoke. The system consists of addressable fire detection and alarm system. The system consists of fire/smoke detectors at various locations such as roof, false ceiling, under platform etc. for detection of fire. Audio fire alarm is installed at various locations to warn passengers. Fire Alarm Control

Panel (FACP), MIMIC Panel, Integrated Station Management System (ISMS) and console for fire in Station Controller Room (SCR) are provided for detection of location and quick response.

Inert Gas based fire suppression system (Gas flooding and panel flooding) is used in these locations which can be used automatically or may be used manually in case of failure of the auto system.

4.6 Fire at Metro Station Premises

4.6.1 The fire can be at the following locations**:-**

(i) In areas where the passengers enter for purchasing tickets or leaving the station after performing their train journey including staircases (and escalators/lifts, where provided). For underground stations this area includes the ground surface entries/exits. It also includes the escalators connecting the surface level to Concourse level and the Concourse level to platform floor level except for Central Park station which does not have a separate Concourse level. In Esplanade areas there are two Concourse level, lower Concourse and Upper Concourse. For all elevated Stations, it is the area where Metro tickets are sold and where the passengers disperse including the staircases/escalators/ Lifts connecting the ground surface areas to the platform areas.

(ii) The service rooms and the installations housing the ventilation and air-conditioning equipment including the station air intake/exhaust locations which are situated on the ground surface or mezzanine level and are approachable through these areas.

(iii) In platform areas including the service rooms and installations housing the ventilation and air-conditioning equipment, station air intake/exhaust locations which are situated at the platform level and are approachable from the platform. This also includes cases of fire within the station limits in the tunnel/ viaduct/ portion of track surface.

(iv) Traction and Auxiliary electrical substations situated at platform level.

4.6.2 In case of fire in areas where passengers enter/leave the station premises, the endeavor of the station staff should be to cordon of the area so that it is not approachable by intending Metro users or by Metro passengers leaving the station area.

4.6.3 Duties of the Station Shift-in-Charge.

(i) Inform the OCC about the fire and also appraise the requirement of medical assistance, if necessary.

(ii) Close the station entry and the exit from the platform near the fire location, to prevent access to the area by persons not connected with the salvage operations.

(iii) Announce through PA system to passengers to get out of the platform and use the other mezzanine or other entries for entry and exit. In some underground stations there are areas which, if affected by fire would block all the exits from the stations. In such cases the passengers should be requested to be on the platform and board the next available train for detraining at the adjacent station.

(iv) Inform fire personnel for fighting the fire.

(v) Use fire extinguishers available at the station with the help of other staff and try to extinguish the fire.

(vi) Inform the TPC about the location of the fire so that TPC takes immediate action for rushing staff for control of ventilation and power supply.

(vii) Inform electrical staff/Traction Power Controller to cut off power supply to the affected area in a manner that it does not affect PA system and signaling and train control system.

4.6.4: Duties of Traffic Controller:

(i) After receipt of the report of fire, Traffic Control should inform the Fire Brigade personnel and the Medical Team for fire fighting and medical assistance (if required).

(ii) Regulate the Train service, as required. If the fire is at a station in an area blocking all exits from the mezzanine, the Motorman of trains approaching the station should be advised to inform his passengers that they should not detrain at the affected station. The doors of the coaches would however be opened to take the waiting passengers from the platform.

(iii) After clearing the passengers available on the platform the Traffic Controller should inform the Traction Power Controller to take necessary precautions about electrical equipment available at the station and regulate the ventilation system as required, depending upon the situation of the fire.

4.6.5 Duties of Traction Power Controller:

(i) All the station intake fan should continue to run except in case of fire in station intake duct itself. The intake fan should be switched off till the fire is extinguished in the case of fire in station intake duct itself.

(ii) At first both the UPE fans should be 'Switched OFF'. After changing the damper position to outward direction, both the UPE fans should be 'Switched ON' to exhaust the smoke generated inside the station.

(iii) 2nd midpoint exhaust fan should also to be put in service in addition to first midpoint exhaust fan which is already running.

(iv) Depute the concerned AV staff and power supply staff immediately to the station and advise them for cutting of power supply to the affected location and to fight the fire with the available firefighting equipment with them.

4.7 Section working under Non- CBTC System and Fire in the tunnel, viaduct, track, surface outside limits of stations:

4.7.1 Fire in Platform Areas

If the fire is at a station in an area blocking all access to the platform, the Motormen of trains approaching the station should be advised to inform passengers that they should not detrain at the affected station. The doors of the coaches would however be opened to take the waiting passengers from the platform. The endeavor of the station staff should be to prevent access of persons on to the platform and to disperse existing passengers from the platform.

4.7.2 Duties of the Station Master/ Station Controller/Shift –in - Charge

(i) He should inform the Traffic Control immediately about the fire so that train services can be suitably regulated if the fire is likely to affect the running of train.

(ii) Suspend selling of tickets and announce through Public Address system to passengers not to get on to the platform.

(iii) Guide the passengers to go out of the station till such time the fire is extinguished and normalcy is restored and for the purpose all the gate shall be kept free for quick dispersal of the passengers from the station.

(iv) Inform the TPC about the location of the fire so that TPC takes immediate action for rushing staff for control of ventilation and power supply.

(v) Fight the fire with the help of available station staff with the available fire fighting equipments.

4.7.3 Duties of Traffic Controller:

(i) The Controller should regulate the train services depending on the situation on either side of the affected station.

(ii) Make announcement on the train and other stations (through Motorman and the Shift-in-charge(s) about the incident giving reasons for the regulation of train services.

(iii) In case the fire does not affect running of the trains, the passenger on the platform of the affected station can be taken to the next station by running the train services and announcement should be made to that effect.

(iv) Inform the fire fighting personnel and Medical Team for assistance depending on the gravity of the situation.

(v) Fire Brigade personnel of the state Govt. may also be informed for assistance.

4.7.4 Duties of the Traction Power Controller:

(i) All the station intake fan should continue to run except in case of fire in station intake duct itself. The intake fan should be switched off till the fire is extinguished in the case of fire in station intake duct itself.

(ii) At first both the under PF Exhaust fans should be 'Switched OFF'. After changing the damper position to outward direction, both the UPE fans should be 'Switched ON' to exhaust the smoke generated inside the station.

(iii) 2nd midpoint exhaust fan should also to be put in service in addition to first midpoint exhaust fan which is already running.

(iv) Depute the concerned AV staff and power supply staff immediately to take action and advise them for cutting of power supply to the affected location and to fight the fire with the available firefighting equipment with them.

4.7.5 Duties of Security Staff:

(i) Coordinate with OCC

(ii) Inform & coordinate with Security / Metro Rail Police / Local Police

(iii) Make available staff to the station, to assist in passenger evacuation, crowd control and firefighting.

4.8 Section provided with side pathway and Fire in the tunnel, viaduct, track, surface outside limits of stations :

i) This covers the areas along the metro track inside the tunnel, over viaducts, and on surface. It also includes the mid-point shafts which can be approached through tunnel including the sump areas.

ii) In case of fire areas in the area mentioned above, the incident should be immediately reported to the traffic controller by the person who locates the fire.

iii) In case of viaduct the fire fighting will be done through the fire tenders from the nearest fire station as the entire stretch of viaduct is accessible by road.

4.8.1 Duties of Motorman:

(i) In case of fire in the tunnel, the Motorman will observe the fire to assess whether he can run the train in the affected area and take his train to the next station, if possible, or stop the train short of the fire in case it is not possible to go to the next station.

(ii) When the train is stopped at the mid - section due to fire in the tunnel, he should immediately inform his Motorman about the incident and ask him to get prepared for evacuation of passengers through the selected door. In case of curve Motorman has to ascertain the doors to be opened depending on the gap between coach floor and the emergency pathway and fix the extendable ladder if necessary.

(iii) He should inform the OCC through Train Radio system and ask for switching off the third rail power;

(iv) The Traffic Controller, on receipt of such information, will inform TPC and get the power switched off. The TPC will exchange Private Number with the Motorman after switching off power, as required, for detrainment of passengers. There after detrainment of passengers will be undertaken by the Motorman as laid down procedures.

4.8.2 Duties of Traffic controller:

(i) On getting information of fire in the tunnel, train service should be regulated and trains should be stopped at the stations on either side of the location of the fire.

(ii) Passengers at the stations on either side as well as on trains should be informed on Public Address system, through Motorman and Station shift-in-charge , about the incident. If necessary, they should be asked to vacate the train and get out of the Metro system.

(iii) The fire fighting personnel should be informed for fighting the fire.

(iv) Traction Power Controller should be informed about the situation for taking necessary steps in respect of ventilation system and switching off of power supply equipments, as required.

4.8.3 Duties of Traction Power Controller:

(i) In case of fire in tunnel, due to cable failure or cable joint failure, switching operation should be done to isolate the faulty section immediately and to restore power supply through alternate sources so that lighting and traction system power can be maintained.

(ii) Inform the AV staff and other Power supply staff concerned to take necessary steps for identifying the fire and fighting the fire with the equipments available with them.

In GREEN LINE metro tunnel ventilation system(TVS) is an effective means of controlling smoke flows during emergency conditions so that a) Both passengers and employees could evacuated safely and b) Fire fighting personnel could reach an incident location without traversing a smoke filled path. In each station track way exhaust fans (TEFs) connected to the over track way exhaust (OTE) system and under platform supply fans connected to the under platform supply system are installed. During a track way fire the OTE will extract smoke above the track way. In the event of track way and tunnel fire the OTEF & TVF system will be operated.

(iii) At the station intake fan shall continue to run.

(iv) At first both the UPE fans should be 'Switched OFF'. After changing the damper position to outward direction, both the UPE fans should be 'Switched ON' to exhaust the smoke if any coming from the tunnel inside the station.

(v) 2nd midpoint exhaust fan should also to be put in service in addition to first midpoint exhaust fan which is already running.

(vi) The nearest tunnel intake fan to be 'Switched ON' from both sides.

CHAPTER NO. 5
FLOODING OF METRO TUNNELS

5.0 Flooding of Metro Tunnel.

5.1 W*ater level is below Rail Fastenings-*

(a) When a Motorman or staff finds that permanent way is likely to be affected by water, he shall immediately inform the stations and the traffic controller about the water level andthe location of flooding over available means of communication.

(b) The Traffic Controller shall inform all the Motormen in the section to be vigilant about the location specified and look out for the flow and level of water.

(c) If the water level is flowing below the rail fastenings the Traffic Controller shall instruct the Motorman to run at a speed not exceeding 25 kmph and be prepared to stop short of any obstruction.

(d) Further movement of train over the affected section to be stopped. `till the level of water comes down to normal by pumping out the ingress water by concerned department intervention.

5.2 Water level is above Rail Fastenings but below rail level:-

(a) Whenever water has risen above the fastenings level, in ballasted track the trains shall be stopped until the water level recedes below the fastening level. In ballast less track, the Motorman shall move the train at restricted speed of 5 kmph to the next station
if water Level is up to the track plinth level.

(b) After the water level recedes the track shall be examined by SSE/JE(P.Way), SSE/JE (Traction) & SSE/JE (Sig) after ensuring power block. If it is found to be safe for the passage of the train necessary fit certificate to be given to the Station Shift In-Charge and inform the Traffic Controller who shall authorize the movement of train.

5.3 Water level is above rail level: –

(a) If water has risen above the rail level no attempt shall be made to pass the train over the location. Motorman to stop the train & inform the Traffic Controller for its safe return to station in rear.

(b) After the safe return of the said train at the station Traction power shall be switched off.

(c) Now the SSE / JE (P.Way), SSE / JE(Traction) & SSE / JE (Sig) will inspect the affected track length after receding water level and ensuring power block. When the track is fit in all respect to their satisfaction a joint fit certificate shall be issued to the Station Shift- in-Charge who shall inform the Traffic Controller for resumption of normal train service.

5.4 Persons involved in tackling the Disaster

a) Motorman
b) Traffic Controller
c) Station Shift in Charge
d) Traction Power Controller (TPC)
e) SSE/JE (P.Way/P.Works)
f) SSE/JE - Electrical (pump)
g) Security Staff - RPF

5.4.1 Duties of Motorman

(a) As soon as the Motorman finds that the water level inside the tunnel at any location between stations has come above the drain, he should observe the same and note the km of the flooded location and the time of passing the location.

(b) Message of such flooding should be passed on by the Motorman to the OCC Traffic Controller immediately through the TETRA/Radio Telephone. In case the TETRA/Radio Telephone is defective the message should be transmitted by others means or on arrival at the next station.

(c) In case the Motorman finds that the water level is very high and is almost touching the bottom of the Third Rail, or the extent of flooding is such that the water level may touch the Third Rail before he is able to negotiate the flooded area, he should stop short of the location and contact the Traffic Controller through TETRA/Radio Telephone and be prepared for special instructions for detrainment of passengers by bringing back the train to rear station if possible or through the rear end of the train.

(d) While contacting the Traffic Controller or the Station Controller the Motorman should give the assessed depth of the water level below the bottom of the Third Rail.

5.4.2 Duties of Traffic Controller

(a) On receipt of any message of flooding inside the tunnel, the Traffic Controller should inform the Traction Power Controller about the situation;

(b) He should also inform the concerned section engineers in charge of the section for immediate action, requesting an urgent feedback regarding the safety of running trains.

(c) The Traffic Controller should control the train services depending on the level

of water reported by the Motorman. If the location is near the station, he should ask the SCs concerned or any other responsible staff available at the station to visit the site and inform the details of flooding condition so that train services can be controlled accordingly.

(d) In case of stoppage of train services, the Traffic Controller should inform the various stations the reason for stoppage of train services and ask the Station Controllers to announce the same over PA system at the respective station.

(d) In case the train, which has reported the flooding, is not able to proceed, the Traffic Controller should initiate action for switching off Third Rail power and order detrainment of passengers by bringing the train back to the station in rear, if possible, or detrain the passengers from the rear end of the train as per procedure.

(e) The Traffic Controller shall inform GM/PCSO/PCOM about the situation.

5.4.3 Duties of Station Shift-in-charge

(a) On receipt of information regarding flooding from the OCC, the SC shall arrange for suitable announcement through the station PA system for information of the passengers waiting at the station;
(b) In case of detrainment he shall send suitable staff to platform to guide the passengers to safety.
(c) He should arrange to get it verified whether the source of flood water is in the station area. In case it is so, the fact should be intimated to the Traffic Controller with as much detail as is possible.

5.4.4 Duties of Traction Power Controller (TPC)

(a) The TPC on duty, on getting information from the Traffic Controller, should immediately inform the supervisor and staff of the section responsible for working of the de-watering pumps to proceed to the site without delay to ensure working of pumps.

(b) He should also ensure that power supply to the pumping installation is intact.

(c) In case of any power failure detected by him, staff of the respective section should be deputed for restoration of the power supply immediately for working of pumps.

(d) He should inform the concerned officers of the Electrical Department for proper Working of pumping installation.

(e) He should mobilize staff from the nearest location by arranging transport if required to reach the site at the earliest.

5.4.5 Duties of SSE/JE (P.Way/P.Works)

(a) On receipt of information from the OCC about the flooding, the Civil Engineering supervisor in charge of the section should immediately proceed to the site with staff and necessary tools.

(b) On reaching the site he should assess the reasons for flooding and shall then inform the Traffic Controller whether or not it is safe to run trains and the action taken by him and the time required for repairs/restoration in case train service is stopped.

(c) He should ensure that the outflow at the ground level is functioning properly and that water is being pumped out from the sump. He should keep a constant watch to keep the inlet to the sumps free of all obstructing materials.

5.4.6 Duties of SSE/JE - Electrical (pump)

(a) On receipt of information from TPC, Supervisor in-charge of the pumping installation of the section will mobilize his staff to the site of flooding and then to the pumping installations from where water of that particular section is pumped out.

(b) He should ensure working of the pumps and as required he will ensure that all the sets of pumps installed are in working condition and are pumping water satisfactory.

CHAPTER 6
ELECTRIC POWER BREAKDOWN

6.1 ELECTRIC POWER BREAKDOWN:

Kolkata Metro Railway uses electrically operated rolling stock for carrying passengers. Electric power is also required for lighting, air conditioning & ventilation, pumping (drainage water and water required for firefighting), escalators & lifts, signage, for functioning of the signalling system, ticketing system, various communication systems and operation of gates and other ancillary uses. Metro Railway takes 33kV power supply from Calcutta Electric Supply Corporation(CESC)/West Bengal State Electricity Board(WBSEB) and distributes the same for its various requirements (through a network of various types of cables) including powering the 3rd rail system. Any breakdown in the power supply from **CESC/WBSEB** or in the network of cables or in the 3rd rail system affects the working of the Metro Railway system adversely.

6.2 Reasons for Electric Power Breakdown:

The various reasons that may lead to Electric power breakdown in the Metro Railway system causing disruption of train service are as follows:-

(a) Power supply failure from supply authorities at the receiving point (from **CESC/WBSEB**).
(b) Fault in the cable system 3rd rail system or in rolling stock leading to tripping of 3rd rail power.
(c) Short circuit of power cables.
(d) Fire in Substations.
(e) Failure of major equipment of the Substation i.e. Receiving Substation, Traction Substation and Auxiliary Substation.

6.3 Action to be Taken:

33 KV supply From **CESC/WBSEB** is received at 3 Metro Receiving Station viz**.** Masterda Suryasen, Jatin Das Park, Central and Shyambazar Noapara (For Nort-South Corridor) and Central Park Depot(For Green Line) . Each station is supplied through two cables fed from separate source. In case of breakdown of supply at a particular receiving point, immediate action for connecting the affected portion with other receiving point has to be taken. In case of total break drown of supply from **CESC/WBSEB**, suspension of trains is inevitable and all consequent actions have to be initiated including detrainment of passengers from trains stranded in the station/tunnel. Fire in the cable system or 3rd rail system may require suspension of train services either for the full section from Kavi Subhash to Dakhineswar and Salt lake Sector V to Sealdah partially

keeping the affected section suitably isolated. It may require detrainment of passengers also.

Fire in a substation or failure of major equipment of a substation requires its isolation and diverting power to the cable network and 3rd rail system through alternative routes. This applies to instances of short circuit in cable also.

6.4 Persons Involved in Tackling the Disaster:

(a) Traction Power Controller (TPC).

(b) Traffic Controller.

(c) SSE/JE (PD).

(d) Motorman .

(e) Shift-in-charge/Station Superintendent.

(f) Security Staff / RPF

6.5 DUTIES:

6.5.1 <u>Duties of Traction Power Controller (TPC)</u>:

(a) In case of any power failure in the Metro Railway system, TPC on duty shall come to know about the same through Supervisory Remote control system as the situation would be displayed in the Mimic Diagram Board provided in the Traction Power Panel. In case of fire in the cable system or 3rd rail system, he may get the information through the Traffic Controller or substation supervisors. TPC on duty will take the following steps in case of different types of power failure.

(b) In case of failure of power from the supply authorities to the receiving point, he will first restore the power in the affected section by resorting to switching operation of the required circuit breakers from his Remote Control panel so that the train services are not affected.

(c) After ensuring that the power supply has been restored through alternate sources, he will contact the supply authorities to ascertain the reasons for the power failure and also the expected time for resumption of power supply. He will ensure that alternate power supply in the affected section is maintained till such time the normal power supply is resumed. On resumption of normal power supply, he will normalize the system by resorting to necessary switching operation through Remote Control or through substation operator as required.

(d) In case of power failure in a particular section due to failure of cable to 3rd rail or fire in cable/3rd rail system, or short circuit, TPC will ensure that the faulty section is isolated immediately. In case isolation does not take place due to failure of required circuit breaker to operate in time, he will isolate the system. After isolation of the system, TPC will inform the power supply supervisor and officers concerned about the incident and ask them to proceed to site to arrange rectification.

(e) He will perform the necessary switching operations from the Traction Power Control Center or through substation operator to ensure alternate power supply for running of train services. In case of failure/breakdown of 3rd rail system, the section concerned will, however, have to be isolated and train services in that particular section will have to be suspended. He will inform the Traffic Controller about such breakdown who should thereafter control train services accordingly.

(f) In case of power failure due to failure of equipments in the substation or due to fire in substation, TPC should immediately isolate the particular substation both on high voltage 11 kV and 33kV supply as well as on the 75OV DC traction supply. He will then resort to switching operation at the adjacent substation to ensure that 3rd rail power be restored to the section through alternate arrangement so that train services remain unaffected. He will then inform the Traffic Controller about the situation and request him to regulate train services, as required, He will also inform the supervisor-in -charge of the section and the concerned officers about the incident and request them to proceed to the site of incident.

(g) He shall there after inform higher authorities of the incident.

6.5.2 **Duties of Traffic Controller:**

(a) On getting information regarding power breakdown from the Motorman or Shift-in-charge/Station Superintendent he shall immediately contact TPC and ascertain the position regarding gravity of the situation.

(b) lf the TPC is able to arrange alternative source of power, train services are not affected. Otherwise, the train services are to be controlled depending on the situation as fed back from the Stations & Motormen.

(c) In case detrainment of passengers is necessary, action for the same has to be initiated taking care to keep the power supply to 3rd rail system switched off.

(d) He shall arrange suitable announcement through the PA system of the station and also in the trains stalled in the sections so that there is no panic among passengers.

(e) He shall thereafter inform his supervisors.

6.5.3 **Duties of SSE/JE (PD):**

(a) In case of power failure from the **CESC/WBSEB**, supervisor in-change of the section should contact the relevant **CESC/WBSEB** substation and find out reason for the failure and the time required for restoration of supply. He will keep the TPC informed of the developments.

(b) In case of failure of 3rd rail system he should proceed to the site of incident along with his staff and rectify the defects and certify to the TPC through a message about the fitness of the 3rd rail for charging.

(c) On resumption of train services after the 3rd rail is charged, he should observe the first train passing through the section to detect any abnormality during train running. In case of any abnormality, further block should be taken and necessary further repair carried out to ensure smooth running of trains.

(d) In case of fire in a substation or failure of any major equipment in a substation he should proceed to the substation with necessary breakdown maintenance staff and attend to failure/fault as early as possible. In case of major failure, alternate power supply should be maintained as long as rectification work is not completed. When traction receiving substation is out of power due to any failure, adjacent substations should be manned by competent supervisor/staff to ensure continuity of alternate supply till such time normalcy is restored in the affected substation.

6.5.4 Duties of Motorman:

(a) The Motorman becomes aware of Traction Power breakdown through the stalling of the train. He should immediately get in touch with the TLC and await further instructions.

(b) If there is likelihood of delay in restoration, and on the advice of the Traction Power Controller, he shall arrange for detrainment of passengers as per procedure laid down in **Chapter-3**

(c) He shall frequently make suitable announcement in the train PA system and keep the commuters informed so that no panic is created.

6.5.5 Duties of Shift-in-charge/Station Superintendent:

(a) The Shift-in-charge/Station Superintendent may become aware of Electric Power breakdown by the situation in his station or through the Traffic Controller.

(b) He shall arrange suitable announcements to the waiting passengers through his station PA system.

(c) He shall assist in the detrainment of passengers as necessary.

6.5.6 Duties of Security Staff / RPF:

(i) Coordinate with OCC

(ii) Inform & coordinate with Security / Metro Rail Police / Local Police

(iii) Make available staff to the station, to assist in passenger evacuation, crowd control and firefighting.

CHAPTER NO. 7

7.1 ACCIDENT INVOLVING TRAINS

ACCIDENTS INVOLVING TRAINS:

7.1.1 Disaster causing distress to passengers can take place due to the following reasons involving trains with passengers:

(a) Derailment of a train.

(b) Collision between two trains.

(c) Stalling of a train due to equipment failures.

7.1.2 Action to be taken by the staff in each case is detailed in following paragraphs.

7.2 Derailment of a Train with Passengers (with end evacuation facility)

7.2.1 Derailment of a train may take place:-

(i) At a station.

(ii) In between two stations.

7.2.2 Derailment of a train at a station:

(a) The Driving Motorman should:-

(i) Ascertain that the train cannot move further and should thereafter inform the Traffic Controller through Radio Telephone/Emergency Telephone about the incident and take action for detrainment of passengers.

(ii) Inform the Conducting Motorman to take action for detrainment of passengers.

(iii) Announce on train Public Address system to the passengers about the derailment and request the passengers to detrain.

(b) The Conducting Motorman should:-

(i) Open the doors on the platform side.

(ii) Ask the passengers through train PA system to detrain and get out of the station.

(c) The Traffic Controller on receipt of the information about derailment should:-

(i) Inform the officials concerned about the same.

(ii) Ask the Shift-in-charge of the station concerned to detrain passengers and guide them for exit out of his station.

(d) The Station Shift-in-charge concerned on receipt of information should:-

(i) Depute his staff to assist and guide the passengers to get out of his station.

(ii) Also announce over the Station PA system for guidance of the passengers.

7.2.3 Derailment between Two Stations (with end evacuation facility):

(a) The Driving Motorman should:-

(i) Secure his train by applying the brakes, if the Train cannot move further.

(ii) Inform the Controller about the incident through Train Radio system, Emergency phone, and ask for medical and other help as needed.

(iii) Inform the Conducting Motorman and get ready for detrainment of passengers.

(iv) Take further action for detrainment of passengers through emergency door and take them to the nearest station as per rocedure laid down in **Chapter-3** for detrainment of passengers with the assistance of Conducting Motorman, as required.

(v) In case of any difficulty in detraining and taking the passengers to the nearest station, detrainment through the other end should be organized as per procedure laid down in **Chapter-3**.

(vi) Attend to passengers and render First Aid as required.

(b) The Conducting Motorman should:-

(i) Open emergency doors and lower the ladder for detrainment as detailed in **Chapter-3**.

(ii) Assist Motorman in rendering First Aid.

(iii) Assist and guide passengers to the nearest station.

(c) The Controller on receipt of the information should:-

(i) Inform the higher officials concerned.

(ii) Ask for medical assistance as required.

(iii) Ask for assistance from local Civil Authorities/Fire Brigade as required.

(iv) Regulate train services.

(d) The Station Shift-in-Charge on either side of the place of derailment should:-

(i) Depute his staff for rendering necessary First Aid.

(ii) Ask and arrange for medical assistance as required.

(iii) Announce over station PA system.

(v) Ask passengers to get down at the station and get out of the station.
(vi) Send assistance for detrainment in section.

7.3 Derailment of a Train with Passengers

7.3.1 Derailment of Train at a Station

(a) Duties of Motorman :

(i) Motorman becoming aware that his train has derailed shall stop the train immediately if not, already stopped and secure the train.

(ii) Inform passengers of the problem and action being taken.

(iii) Inform OCC providing information of Motorman identification, Location (line identification, Track (UP/DN), & Mast No, Train description (Train no. & train set no.), Adjacent track obstructed or clear & Passenger injury or presence of smoke or fire.

(iv) Announce on train Public Address system to the passengers about the derailment and request the passengers to detrain.

(b) Duties of Traffic Controller

(i) Traffic Controller shall instruct Motorman of trains approaching the derailment site on both tracks to stop their trains and report their positions.

(ii) Instruct TPC to switch off 3rd rail power and arrange for applying earthing.

(iii) Traffic Controller shall immediately notify Disaster Management Team and all concerned Metro departments, Police and security to secure the accident site and Station shift-in-Charge on the affected line for informing waiting passengers at stations about the likely delay.

(iv) Mobilize medical assistance as required.

(v) Inform the depot to be in readiness to move the rescue and relief train.

(vi) Instruct to the Shift in charge to depute staff for evacuation of passengers and providing medical aid to the injured in case of derailment between stations.

(vii) Regulate train services and inform all stations on the route about the likely dislocation in train services.

(viii) Arrange for Public Address announcements to be made to passengers in trains and on stations.

(ix) Request assistance of Kolkata Police / Security staff for crowd control at critical stations.

(x) The Traffic Controller shall protect the adjacent track to avoid second accident.

(xi) Traffic Controller shall take prompt action to stop all movements towards the derailment site.

(c) Duties of Station Shift-in-Charge-

(i) Depute his staff to assist and guide the passengers to go out of his station.

(ii) Frequent announcement shall make over through the Station PA system for guidance of the passengers.

(iii) Depute his staff for rendering necessary First Aid to injured, old age or any needy passengers.

(iv) Act as per Nominated Nodal officer for the site, and inform to OCC for any updates.

7.3.2 Derailment between Two Stations (with side evacuation facility):

(a) Duty of the Motorman:-

(i) Secure his train by applying the brakes, if the Train cannot move further.

(ii) Inform the Controller about the incident through Train Radio system, Emergency phone, and ask for medical and other help as needed.

(iii) After De-energisation of 3rd rail, Motorman will take permission for track access from TC and the place Third Rail Earthing Device on rails.

(iii) Inform the Traffic Controller and get ready for detrainment of passengers.

(iv) Take further action for detrainment of passengers through door(s) and take them to the nearest station as per procedure laid down for detrainment of

passengers with the assistance of security person if any or with any healthy passenger or any station staff if available, as required.

(v) In case of any difficulty in detraining and taking the passengers to the nearest station, detrainment through the other end should be organized as per procedure laid down procedure

(vi) Attend to passengers and render First Aid as required.

(b) Duty of the Traffic Controller

(i) Traffic Controller shall instruct Motorman of train approaching the derailment site on both tracks to stop their trains and report their positions.

(ii) Instruct TPC to switch off 3rd rail power and arrange for applying earthing.

(iii) Traffic Controller shall immediately notify Disaster Management Team and all concerned Metro departments, Police and security to secure the accident site and Station shift-in-Charge on the affected line for informing waiting passengers at stations about the likely delay.

(iv) Mobilize medical assistance as required.

(v) Inform the depot to be in readiness to move the rescue and relief train.

(vi) Instruct to the Shift in charge to depute staff for evacuation of passengers and providing medical aid to the injured in case of derailment between stations.

(vii) Regulate train services and inform all stations on the route about the likely dislocation in train services.

(viii) Arrange for Public Address announcements to be made to passengers in trains and on stations.

(ix) Request assistance of Kolkata Police / Security staff for crowd control at critical stations.

(x) The Traffic Controller shall protect the adjacent track to avoid second accident.

(xi) Traffic Controller shall take prompt action to stop all movements towards the derailment site.

(c) Duties of Station Shift-in-Charge-

(i) Depute his staff to assist and guide the passengers to go out of his station.

(ii) Frequent announcement shall make over through the Station PA system for guidance of the passengers.

(iii) Depute his staff for rendering necessary First Aid to injured, old age or any needy passengers.

(iv) Act as per Nominated Nodal officer for the site, and inform to OCC for any updates.

7.4 Collision

(a) At a station (without PSG/PSD).

(b) In between two stations.

7.4.1 Collision of trains at a station:

(a) Duty of Driving Motorman:-

(i) Inform Traffic Control on TETRA/CUG/GSMR/Radio Telephone/Emergency phone about the incident.

(ii) Inform and coordinate with Conducting Motormen if he is not injured.

(iii) Find out the extent of damage and injury to passengers and render First Aid as required with the help of Conducting Motorman.

(iv) Inform Station staff and ask for their assistance.

(v) Address the passenger on train PA system to detrain after opening of platform side door and guide the passengers to get out of the Station with the help of station staff and other persons. Arrange for detrainment of passenger as laid down in Chapter-3.

(b) Duty of Conducting Motorman:-

(i) In consultation with Driving Motorman, assist in detrainment of passengers as laid down in Chapter-.3

ii) Communicate with the Traffic Controller as required and make announcement to passengers over Train PA system for detrainment.

(c) Duty of Traffic Controller:-

(i) Arrange for detrainment of passengers as laid down in Chapter-3

(ii) Regulate train services as required in consultation with higher officials.

(iii) Ask for medical assistance as required.

(iv) Advise Shift-in-charge concerned about the incident and ask them for rendering necessary assistance for detrainment and First Aid as required.

(d) Duty of Shift-in-charge

(i) Depute their staff for detrainment of passengers as laid down in **Chapter-3.**

(ii) Assist in rendering First Aid to passengers required.

(iii) Ask medical assistance if required.

(iv) Announce over Station PA system to detrain and get out of the station.

7.4.2 Collision of trains between stations (with end evacuation facility):

(a) Duty of <u>Driving Motorman</u>:-

(i) Inform Traffic Controller on GSMR(CAB & HAND)/CUG Phone.

(ii) Should find out the extent of damage and injury to passengers and render First Aid to them.

(iii) Ask for Medical assistance if required.

(iv) Arrange for detrainment of passengers to the next station/or to stations on either side of the train and guide them to the station as per procedure laid down in Chapter-3

(v) Inform the Conducting Motorman.

(b) Duty of Conducting Motorman:-

(i) Assist the Driving Motorman in extending First Aid to injured persons.

(ii) Arrange detrainment of passengers through his cab, if required.

(iii) Assist the Driving Motorman in detraining passengers as per Procedure laid down in Chapter-3.

(v) Assist the Driving Motorman in all other operations, as required.

(c) **Duty of Traffic Controller**:-

(i) Contact the officials in charge and inform them about the accident.

(ii) Arrange medical assistance and assistance from Local Authorities, as required

(iii) Inform Shift-in-charge/Stations on either side of the place of accident.

(iv) Inform the Traction Power Controller and ensure switching off the traction power for detrainment of passengers as per procedure laid down in Chapter-3.

(v) Control the train services, as required.

(d) Duty of Station Shift-in-Charge:-

(i) Alert their staff and assist in helping passengers to get out of the station after detrainment.

(ii) Arrange for Medical assistance and First Aid, as required.

(iii) Announce through Public Address system about the accident to the passengers

7.5 Collision

7.5.1 Collision of trains at a station (with PGS/PSD):

(a) Duty of Motorman :-

(i) Inform Traffic Control on TETRA/CUG/GSMR (CAB & HAND) phone about the incident.

(ii) Inform the no. of casualties if any, condition of train and exact location at platform to the TC.

(iii) Immediately open the Train doors and PSD (if provided) of platform side.

(iv) Find out the extent of damage and injury to passengers and render First Aid as required with the help of station staff if any.

(v) Inform Station staff and ask for their assistance.

(vi) Address the passenger on train PA system to detrain after opening of platform side door and guide the passengers to exit from station with the help of station staff and other persons. Arrange for detrainment of passenger as laid down procedure.

(b) Duty of Traffic Controller:-

(i) Inform shift-in-Charge to reach the platform and assist them.

(ii) Inform to Traffic Controller about the collision and need of external help if required

(iii) Arrange for detrainment of passengers as laid down procedure.

(iv) Regulate train services as required in consultation with Traffic Controller.

(v) Ask for medical assistance if required.

(vi) Advise Station Superintendent/Station shift-in-charge concerned about the incident and ask them for rendering necessary assistance for detrainment and First Aid as required.

(c) Duty of the Station Shift-in-Charge.

(i) Alert their staff and assist in helping passengers to get out of the station after detrainment.

(ii) Arrange for Medical assistance and First Aid, as required.

(iii) Announce through Public Address system about the accident to the passengers

(iv) Announce over Station PA system to detrain and get out of the station.

7.5.2 Collision of trains between stations :

(a) Duties of Motorman

(i) In the event of collision taking place involving his train, the Motorman shall inform Traffic Controller by giving as many details as possible.

(ii) After confirmation from Traffic Controller about Switch off of Third rail and short circuiting of Third rail, he shall seek Permission from Traffic Controller for passenger evacuation as per laid down procedure.

(iii)He will inform passengers about the incident advising them about rescue and relief arrangements being made.

(iv) He shall quickly assess the situation particularly in respect of passenger's injury and again inform Traffic Controller with as much details as available seeking medical and other assistance as required.

(v) He will render first aid to passengers where ever possible.

(vi) He should await further instructions from Traffic Controller.

(b) Duties of Traffic Controller:-

(i) On receiving information about train collision the Traffic Controller shall block all movement on both the tracks to protect the site of accident.

(ii) Instruct TPC to switch off 3rd rail power and make short circuiting to the station shift-in-charge.

(iii) Inform Disaster Management Team members and other designated Personnel of Metro Railway, Kolkata.

(iv) Mobilize medical assistance as required.

(v) Inform the train depot to be in readiness to move ART.

(vi) Instruct Station Superintendent to depute staff for evacuation of passengers and providing medical aid to the injured.

(vii) Regulate train services and inform all stations on the route about the likely dislocation in train services.

(ix) Arrange for Public Address announcements to be made to passengers in trains and at stations.

(x) The Traffic Controller shall inform the Disaster Management Team members, the Police and security to secure the accident site and Station Superintendent / Station shift-in-Charge and emergency services.

(xi) Traffic controller shall inform their respective officers, maintenance / emergency team and others as applicable.

(c) Duties of Station Shift-in-Charge.

(i) The Station Shift-in-Charge on receipt of information about collision at his station shall inform Traffic Controller.

(ii) Arrange for immediate medical assistance as required.

(iii) Mobilize the staff for evacuation of passengers and rendering of first aid to the injured and their hospitalization as required.

(iv) Inform passengers waiting at the station of the likely delays.

(v) Station Superintendent/Station Shift-in-Charge will evacuate passengers as per instructions of Traffic Controller.

CHAPTER NO. 8
STAMPEDE

8.1 Stampede

Stampede is a sudden rush of a crowd of panic stricken people. It may result in injury to persons, loss of human life or extensive damage to metro property and can be cause acute distress to persons who are caught in rush.

8.2 Causes

The probable main cause leading to stampede are:-

(i) Fire or sabotage or serious accidents inside Metro station and Tunnel leading to passengers rushing out of system for safety.

(ii) Unusual rush of passengers during night service runs i.e. During Puja festivals and other festivals.

(iii) Unusual rush of passengers after big matches (Football, Cricket etc.), and political rallies.

(iv) Unusual occurrence in the Metro services, leading to heavy accumulation of passengers in a particular Metro Railway platform.

(v) Natural calamity like heavy rains, earthquake etc. leading to a rush of passengers into the Metro Railway stations.

(vi) Heavy rush of passengers in peak hours due to dislocation of other modes of city transport.

8.3 Areas Where possible Locations of Stampede can occur:

(i) Entry, Exit points leading to Metro stations.

(ii) Station, concourse in front of ticket counter and entry/exit gates leading to platforms.

(iii) Near stairs, lifts and escalators.

(iv) Passenger platforms.

(v) Foot over bridge

8.4 Action to be Taken When Stampede Occurs

Stampede can occur anywhere in station premises and as such conditions it is responsibility of station staff to control the situation. In serious cases help of security staff, police need to be taken. Medical attention may be necessary for the injured. Such

situations shall be prevented by proper announcements. The security staff shall be vigilant and take prompt action.

8.5 Persons Involved in Tackling the Stampede

(i) Station Shift – In charge and his staff
(ii) Traffic Controller.
(iii) Motorman.
(iv) Security and city police.
(v) Medical Unit.
(vi) Electrical staff at station.
(vi) Any Metro employees.

8.6 Duties

8.6.1Duties of Station Shift-in-Charge and Station Staff:-

Whenever the Shift-in-charge/Station Superintendent of a Metro Railway Station, or any of his staff, apprehends a stampede, he shall arrange to take the following steps:-

(i) He will announce through Public Address system and request the passengers to keep their cool and leave the premises in an orderly manner. lf the cause of the stampede is known, that should be explained to the passengers so that misinformation does not spread.

(ii) He will keep "free" all the entry/exit gates and also open the manual gates to facilitate quick evacuation through ISMS or EM plunger.

(iii) He will direct station staff to guide the passengers out of the station premises

(iv) He will stop booking of tickets from his station till situation comes to normal

(v) He will inform the Traffic Controller about the situation of his station through Control Telephone or other available means of communication facilities available at station.

(vi) He will ask for assistance from the Traffic Controller for RPF staff and Kolkata Police for tackling the situation and to prevent further deterioration of the situation. lf required, he will request for medical assistance.

(vii) He may request the Central Control, depending on the situation, to run trains through his station to avoid further accumulation of passengers in his station.

(viii) He may ask Traffic Controller for deputation of extra staff for assistance and/or run extra trains to clear the rush.

(ix) The direction of working of escalator shall suitably switched to facilitate early clearing of crowd and if necessary escalators may be stopped to avoid any untoward incident on running escalators.

(x) The time, duration and details of action taken must be recorded in the Station Log.

8.6.2 Duties of Traffic Controller:

(i) On receipt of message from Shift-in-charge/Station Superintendent regarding stampede, he will immediately inform the RPF control and local Police to proceed to the station concerned for control of the crowd.

(ii) He will inform the Medical Unit for mobilizing medical assistance to the concerned station.

(iii) He will direct the Motormen of the trains running in the system to run through the station if the situation so demands to reduce further accumulations of passengers in the station. In such a case he shall also inform the adjoining stations so that the over-carried passengers can be suitably informed at these two stations through PA system.

(iv) He will inform his superior officers about the situation.

8.6.3 <u>Duties of Motorman</u>:

(i) The Motorman of the trains running in the system at the time of stampede will act as per instructions given by the Traffic Controller over available means of communication.

(ii) He will run through the station on receipt of such instructions from Traffic Controller so that further accumulation of passengers into the affected station is avoided.

(iii) He will announce over PA system of the train, with the help of the Conducting Motorman, the situation and the reason for running through a particular station.

8.6.4 Duties of RPF / Kolkata Police:

(i) On receipt of information from the Traffic Controller, the RPF control will depute sufficient RPF staff to the affected station without any loss of time.

(ii) RPF on reaching the station will report to Shift-in-charge/Station Superintendent concerned and render all assistance in controlling the crowd and evacuate the station premises to restore normalcy. For this RPF will co-ordinate with Local Police if situation so demands.

8.6.5 Duties of Medical team of Metro Railway:

(i) On receipt of information of any stampede at any station, the In-charge of the Medical Unit will immediately move to the concerned station with his medical team.

(ii) On reaching the station, In-charge of the Medical Unit should report to the Shift-in-charge/Station Superintendent of the concerned station and help the station staff in rendering First Aid and other medical help as required to the passengers or staff affected by the stampede.

(iii) At this stage the In-charge of the Medical Unit may request Shift-in-charge/Station Superintendent to announce through the station PA system regarding availability of medical facility.

(iv) In case of serious injury, the person(s) affected should be removed to the nearest hospital by ambulance or any other vehicle available outside the station.

8.6.6 <u>Duties of Electrical Staff</u>:

(i) In case of any stampede or stampede - like situation, Electrical staff on duty will ensure that lights and emergency lights are in working condition and they should remain available at the switch room to ensure that lighting is proper for dispersal of passengers.

(ii) The direction of working of escalator shall suitably switched to facilitate early clearing of crowd and if necessary escalators may be stopped to avoid any untoward incident on running escalators.

(iii) All ventilation fans should be kept working normally.

8.6.7 <u>Duties of Telecom Staff at the Station</u>:

The Telecom Staff at the station should ensure that the following are in working order and they should be available there till the crisis is over:-

(i) Station PA system;

(ii) Telephone system and communication with the Central Control;

(iii) Closed Circuit TV system.

In case no Telecom Staff is available at the station, the Signal Control Staff at the Central Control may be directed to immediately depute a suitable person from any other location where such staff is available to carry out the functions stated above.

CHAPTER NO. 9
SABOTAGE

9.1 Introductory:

Sabotage is criminal interference with any part of working machinery of the Metro Railway with the object of rendering it inoperative or any criminal act intended to cause damage to Metro Railway property. Sabotage may occur anywhere in the Metro Railway's jurisdiction of action but its effect in Metro Stations in section between two stations or in running train will have profound impact in terms of human distress.

9.2 Action to be taken:

When sabotage has taken place in the station premises, the following action will have to be taken by the different staff:-

9.2.1 Duties of Station Superintendent /Shift-in-charge:

(a) He should visit the affected spot and assess the extent of damage inflicted on Railway property and how that may affect the passenger service.

(b) He should immediately inform the Traffic Controller about details of the happening, the time when it occurred and how it will affect the train services, passenger movement etc. He should ask for Medical assistance, if necessary and indicate the gate through which the Medical Team should enter.

(c) He, depending on the seriousness, may announce through the station PA system what has happened and what the passengers are expected to do without getting into panic.

(d) In case any Railway property is seen to be damaged, he should immediately inform the in-charge of the concerning department to immediately attend the effected spot and take suitable remedial action.

(e) In case any person is seen to be moving with doubtful intentions, he may be detained for interrogation.

(f) Passengers found near the affected zone may also be asked about their first hand knowledge of the occurrence.

9.2.2 Duties of Traffic Controller:

(a) Immediately on receipt of the sabotage information, Traffic Controller should contact the RPF and ask them to rush to the spot of occurrence and cordon off the area so that total evidence are conserved to the extent possible.

(b) Inform the Medical Department to reach the spot with necessary medicines, ambulances etc. in case of any injury to any person due to the sabotage act through the gate advised by the Shift-in-charge of the station.

(c) He should thereafter inform the COM the details of the occurrence and the action already taken by him and take directions from him for further action.

(d) Relay such directives to the persons concerned.

(e) Hold trains at the earlier station in case it is considered that the running of train through the affected station is not desirable and arrange for detrainment of passengers after proper announcements.

(f) Inform Section in-charge of Civil, Electrical and S&T Department of the incident and ask them to go to the spot immediately.

9.2.3 <u>Duties of RPF Personnel</u>:

(a) On being informed about the sabotage, they will rush to the spot and immediately cordon off the area to protect and preserve the scene of occurrence.

(b) Question any doubtful person detected earlier by the Shift-in-charge of the station or by them and if necessary, arrest them.

(c) In case of fire, immediately inform the Fire Brigade to rush to the spot for combating the fire.

9.2.4 <u>Duties of Other staff</u>:

(a) The Section Chiefs of all the three service departments viz. Civil, Electrical and S&T Department may visit the site immediately and assess the damage inflicted on equipments under their respective charges.

(b) Take suitable action, including informing their higher authorities, to restore the damage equipments/installations in least possible time.

9.3 Sabotage in Section between Two Stations:

9.3.1 Action to be taken by Motorman:

When sabotage takes place in the section between two stations, it is the Motorman of running train who will come to know about it first and his duty will be:-

(a) On noticing any unusual occurrence on track or other installation, he should immediately report to the on duty Traffic Control about the unusual sight with its location.

(b) In case it is possible to run through the spot, he should continue the journey.

(c) In case he notices a situation where train running will not be safe, he should stop the train and inform the Traffic Controller for further directive.

(d) Similar action should be taken by the Motorman in case he notices abnormality in the other track also indicating to the Traffic Controller whether passage of a train over the affected section will be safe.

(e) Take further action as per the directive of the on duty Traffic Controller.

9.3.2 Action to be taken by the Traffic Controller:

(a) On receipt of such information the Traffic Controller should immediately take action to regulate trains to prevent their running over the affected section.

(b) Inform the RPF about situation and take action to enable the RPF to make an immediate on the spot inspection.

(c) Inform the superior officers about the situation and get directive from them for further action.

(d) Take necessary action as per the directive of the superior officers.

(e) Inform Section-in-charge of Civil, Electrical and S&T Department to make an on the spot inspection to assess loss/damage etc.

(f) In case running of the train to Crashed is unsafe, control trains in earlier stations and arrange for detrainment of passengers after proper announcement.

9.3.3 Action to be taken by the RPF:

(a) On being informed, they should go to the affected spot and make a detailed assessment of loss and modus operandi adopted for sabotage. To reach the

spot, they should ask the on duty Traffic Controller for power block and go to track bed only after confirming that 3rd rail power has been switched off.

9.3.4 Action to be taken by other staff:

(a) Other concerned staff of Civil, Electrical and S&T Departments should make an immediate inspection of site, assess loss/damage and organize their repair as early as possible.

(b) Inform their superior officers about the situation and the action they are taking to rectify the situation. In case of any specific directive from superior officers, they should act according to those directives.

9.4 Sabotage in Train: Of all the sabotage actions, those happening inside a train will have most disastrous consequences and very prompt action will be necessary to restrict the damage to men and material. The following are envisaged towards sabotage activities:-

(a) Bomb in track which detonates under a train.

(b) Detonation of bomb inside a coach.

(c) Criminal interference with train running equipments which causes fire to the coaches, while on run.

(d) Other sabotage activities incapacitating the train in the section.

9.4.1 Bomb blast on track:

There may be derailment of the train with large scale damage to the train, tunnel structure as well as injury to the passengers in the train. In case of derailment, the train will immediately come to a stop. The Driving Motorman (and in case he is already injured, the Conducting Motorman), will try to contact the other Motorman and try to assess the situation and immediately inform the Traffic Controller about the occurrence and ask for immediate assistance of RPF and Medical Department. At the same time the Motorman should seek permission for detrainment of passengers.

For detraining the passengers, action, as indicated in **Chapter-III**, should be immediately taken. In case, the situation does not permit detrainment from one end, it should be arranged from both ends. The injured passengers will have to be treated locally or transferred to hospital as soon as the Medical Team arrives at the spot. In case, the motormen cannot communicate with each other, both of them should independently try to assess the situation and take action to inform the Traffic Controller and take action, as indicated above.

9.4.2 Bomb blast inside the train:

It will be the endeavour of the Driving Motorman to run the train to the next station as quickly as feasible. In case he is not able to take the train to the next station, he should stop the train and contact the Conducting Motorman to ascertain from him, if he has any knowledge of the situation. Immediately thereafter he should contact the Traffic Controller and inform him about the blast. He should seek from the Traffic Controller the assistance of RPF and Medical Department.

He should now ask Conducting Motorman to make an on the spot assessment of the situation including injury/death of passengers. The Conducting Motorman will inform the same to the Traffic Controller for immediate appropriate action. At the same time, he should take the permission of the Traffic Controller to detrain the passengers. In case one of the Driving Motormen is incapacitated or the communication between them is disrupted, then the other Motorman should take all the above actions himself. After assessing the situation and informing the Traffic Controller, the Motorman should make announcement to the passengers through train PA system about the station and should repeatedly ask them to remain calm indicating that action has already been taken to arrange for detrainment of passengers.

On arrival of the RPF and Medical Team, they should be brought inside the train through emergency cab door and the step ladder and they should be shown the affected coach/coaches so that immediate medical assistance may be given to the passengers in distress. The Motorman will thereafter arrange to de-train the passengers with the help of the RPF staff and other staff which may have already arrived at the site by this time.

9.4.3 Criminal Interference with Train Running Equipment which Cause Fire:

In case of a fire in the train due to any criminal interference with train running equipment, the matter should be dealt with as in the case for fire in a train dealt in **Chapter-IV**.

9.4.4 Other Sabotage Activities Incapacitating the Train in the Section:
In this case, arrangement should be made to detrain passengers as giving in **Chapter-3 (Detrainment of passengers in a section).**

9.4.5 Sabotage Activity in any other Area than the Station Premises or in Tunnel: In case sabotage activity has taken place in any other place than the station or tunnel, action will have to be taken by the official/officer in-charge of the place of occurrence. In that case, he will have to deal with that situation like, a Shift-in-charge, when the sabotage occurs in station area.

CHAPTER NO. 10
FAILURE OF TUNNEL VENTILATION

10.0 Ventilation Arrangement at Station and Mid-Section;

At all underground station ventilation is effected by pumping of intake air through intake shaft one and each end of the station. Two sets of intake fans are provided in the ventilation mezzanine for intake of air through an intake shaft and air is thereafter pumped into station and tunnel areas through a ducting network. For this purpose, each intake shaft has 3 nos. of intake fans, out of which 2 are for feeding the station and one for feeding the tunnel. Thus ventilation fans are provided for intake of ventilation air from outside into the station. Before the air is forced into the ducting system, it is marginally cooled to a temperature of about 27°C by use of air-conditioning plants. This cool intake air, after being drawn into the station and tunnel, gets gradually heated up. It is then exhausted by under platform exhaust ventilation fans, two in number, one at either end of the platform, and through two exhaust ventilation fans provided at the mid-section between two stations. The failure of the ventilation system for a prolonged period of time creates an unhealthy, humid hot environment inside the tunnel causing acute distress to commuters. Failure for short periods can be ignored.

The system has been designed so that intake and exhaust air quantities balance. In case of failure of any one of the ventilation fans, an imbalance is created and the pressure heads at different points change. There cannot however be a total failure of the ventilation system normally. In case of total power failure both at station and in mid-section, there can be a total failure of the ventilation arrangement. In such a case alternate power supply arrangement has to be made for working the ventilation system. The chances of total failure of ventilation system are therefore very remote.

10.1 Failure of Tunnel Ventilation;

At all underground stations ventilation is effected by pumping of intake air through intake shaft one at each end of the station. Two sets of intake fans are provided in the ventilation mezzanine for intake of air through an intake shaft and air is thereafter pumped into station and tunnel areas through Air Nozzle/Dampers.

Fans are reversible, so same vent shaft at each end can be used for pumping the air into tunnel and also can exhaust the smoke from same shaft in case of Fire. Same set of fans will be used for supply/Exhaust.

In tunnel ventilation system in case of Normal/Congested/Fire mode, air at ambient temperature is used. The atmospheric air will be supplied to tunnel and there is no provision of cooling. If Environmental Control System plant is in operation, then only ventilation air temperature can lower by mixing with it.

This system prime objective is for Human Safety and Safe Evacuation of passengers in case of train fire in tunnel. So during operating hours the system should not be in break

down and in case of Emergency can be started immediately.

On each side of station, there are two fans and in case of one fan failure, second fan can be operated and will be sufficient for supply/exhaust to one shaft in underground stations, there are two source of Power supply fed from sub stations. In case of failure one source, it is fed by other source. In any case if break down is at both sources means Grid trip. D.G set will start automatically and will fed power to ventilation fans and two Nos. fans can run in case of any emergency. The chances of total failure of ventilation system are therefore very remote.

10.2 Causes leading to Failure of Ventilation System;

The various causes leading to failure of ventilation system are as follows:

a. Failure of power to ventilation panel.
b. Defective ventilation panel.
c. Defective motor of ventilation fan.
d. Abnormal sound or breakage of ventilation fan.

10.3 Action to be Taken;

For defective ventilation panel or defective motor of ventilation fan or abnormal sound or breakage of ventilation fan action has to be initiated for rectification of defective/damaged parts. In case of power failure, alternative sources have to be tried. In case of prolonged stoppage of the ventilation system at a station, arrangement for closing the station to traffic has to be initiated. Persons involved in tackling the situation:

(a) TPC
(b) Traffic Controller
(c) Station Master/Shift-in-charge

10.3.1 Duties of TPC

(a) In case of failure of ventilation due to loss of power, he should ensure resumption of power to the particular ventilation system from an alternative source so that power supply to the ventilation system is available. He should also ensure availability of power supply from alternate source at the midsection shafts. After ensuring such availability of power supply, he will inform staff concerned at the station responsible for operation of the ventilation system to resume running of fans. Even running of either intake or exhaust fan will give partial ventilation.

(b) If intake and exhaust fans of a particular station/section cannot be started, it is a case of total failure of the ventilation system in that station/section i.e., failure of all the mid-section fans at both the mid-section points on either side of the station, Failure of both the under-platform exhaust fans at the station and Failure of all the six intake fans of the station tunnel intake.TPC should inform the Traffic Controller about the failure and if the ventilation system cannot be restored within half an hour, arrangements for closing the station for passenger entry should be initiated. Even if

the station is closed to traffic, train services need not be stopped as natural ventilation through station entry points and the piston action of train movement will ensure partial ventilation in the tunnel and normal detrainment of passengers in the station can continue.

(c) TPC shall then inform power supply supervisor in-charge of the station/section to proceed to site to find out the reasons for the total failure of power supply and take remedial measures for resumption of power even if partial. Once the power supply is resumed through one of the auxiliary transformers the ventilation fan should be fed by necessary switching operation. If need be, other services like air-conditioning, escalators etc. can be kept suspended to ensure that there is no shortage of power for working of the ventilation fans. Once the ventilation system is partially resumed (i.e. even 50%) TPC will inform the Traffic Controller for re-opening of the station for entraining passengers.

(d) In case of failure due to defects in ventilation fans, the supervisor in-charge of the ventilation system will be informed by the TPC to mobilize his gang for rectification of defects. Partial ventilation will, however, be continued and no stoppage of train services or booking of passengers need be resorted to.

(e) In case of total failure of intake fans at the station, the TPC shall arrange to operate both exhaust fans at either side of the station. All the station entries shall be kept open to ensure sucking of fresh air through station entries as well as through intake shafts due to suction head created by exhaust of air through mid-section ventilation. Both the under-platform fans should also be made operative to ensure partial ventilation and intake of air through station entry points.

(f) In case of failure of both exhaust fans at any mid-section, intake fans on either side of the mid-section exhaust are to be kept operative for intake of fresh air and drawing the same from station area in time. This will create natural exhaust of air through the station entries as well as through mid-section ventilation shaft. Under platform fans should also be made operative for exhaust of stagnant air from the station area.

10.3.2 Duties of Traffic Controller

(a) In case of prolonged total failure of ventilation system in a station and on receipt of such information from TPC, the Traffic Controller will inform the stations concerned and also officers concerned to stop booking at the particular station. Train services however need not be stopped for such failure.

(b) He shall inform the Shift-in-charge to announce stoppage of booking over PA system. Passengers arriving at the station should also be requested to quickly leave the station premises due to ventilation problem.

10.3.3 Duties of Station Shift-in-Charge

(a) He will inform the Traffic Controller of the prolonged ventilation failure and the extent of distress. On advice by the Traffic Controller, he shall arrange for closure of the station by closing the Booking Office followed by frequent announcements over PA system.

(b) He shall arrange for suitable announcements through the PA system to guide the passengers.

(c) During this time, the "next train time" indication boards should be kept off.

CHAPTER NO.- 11
ACTIONS AND COORDINATION ASPECTS DURING TERRORIST THREATS / ATTACK

11.1 The various terrorist related threats that may be faced by the Kolkata Metro Railway shall be elaborated upon so as to highlight the tasks and actions to be taken by agencies/ organization other than Kolkata Metro Railway in succeeding paragraphs.

11.1.1 Security Threats and Terrorist Attacks:

Increase in terrorist actions against public transport worldwide, indicates that public transport systems are becoming more vulnerable and potential targets for terrorists. It is clear that preventing terrorist activities is the primary responsibility of security agencies and State Police. However, concern for passenger well being and their security and adverse effects of such mishaps on the public image of the Transport System itself, requires best possible level of preparedness for prevention of such threats within Metro premises.

11.1.2 Key components of such preparatory and preventive action include:

(a) Encouraging and guiding passengers to be cautious themselves.

(b) An Awareness Programme – appealing users to be on the alert and report any suspect package.

(c) Well thought out crisis communication to prevent misinformation, confusion, panic and shock.

(d) Clear procedures and systems of communication need to be established for emergencies and regularly tested, in order to ensure a working communication during crisis situations.

(e) Frequent mock drills to test effectiveness of passenger evacuation systems including the collaboration and response of passengers.

(f) Training all front line staff to prevent dangerous situations and handle incidents.

(g) Once they have happened, act with courage, promptitude and alertness, reassuring the passengers and providing regular information for their guidance.

11.2 Duties:

11.2.1 Duties of Shift-in-charge/Station Superintendent in case of Terrorist Attack at Station:

(a) The Shift-in-charge/Station Superintendent should visit the affected spot to assess the extent of impact on human life and also how it may affect train services.

(b) He should inform the Traffic Controller about details of incident.

(c) Inform Kolkata Police and Kolkata Metro Police and depute station security staff to cordon the site to preserve the clues and leave the site undisturbed for police investigation.

(d) Record the time it occurred.

(e) Assess the extent of injuries.

(f) Observe any presence of smoke/fire.

(g) Ask for medical assistance and, fire services as required indicating the gate through which the Medical Team/Fire Services should enter. He should depute a uniformed staff to receive and guide them.

(h) Sound the whistle to draw the attention of the passenger for vacating the station premises.

(i) Depute staff to announce at 5 minutes interval, through the station PA system what has happened and what the passengers are expected to do without getting into panic.

(j) Mobilize resources to protect and Cordon the site, render first aid, evacuate the injured.

(k) In case any Metro Rail property is seen to be damaged, he should immediately inform the Section-in-charge of the Department to attend the affected spot to take suitable remedial action.

(l) In case any person is seen moving in a suspicious manner, he may be detained for interrogation.

(m) Passengers found near the affected area may also be asked about their first-hand knowledge of the occurrence and their statement with name and addresses recorded.

11.2.2 Duties of Traffic Controller/Chief Controller:

Immediately on receipt of the information about terrorist attack, Traffic Controller /Chief Controller shall:-

(a) Inform Metro Police and Security Personnel and ask them to rush to the spot of occurrence.

(b) Inform the NSG official immediately to attend the site of terrorist attack and take necessary measure.

(c) Mobilize Medical Assistance and/or Fire Services to reach the spot.

(d) Inform the Kolkata Metro Railway Officials of the incident.

(e) Hold trains at stations.

(f) Train movement shall only be resumed after confirming that the running of train through the affected station is safe. Till the position becomes clear

regular announcements to be made to passengers in train and at station of the likely delay and evacuation procedures started.

11.2.3 Duties of Security Staff:

(a) On being informed about the terrorist attack, they will promptly move to the spot and immediately cordon off the area and retaliate, if possible.

(b) Flash the message to all concerned.

(c) Escape route should be closed.

(d) The Disaster Management Team of RPF should be in place immediately.

(e) Re-enforcement should be arranged immediately.

(f) Assist station staff in passenger evacuation and crowd control.

(g) Assist Metro Police/Local Police in investigation and de-briefing, if required.

(h) Question any doubtful persons detected earlier by the Shift-in-charge or by them and, hand them over to Kolkata Metro Police.

(i) In case of fire, immediately inform the Fire Services to rush to the spot for combating the fire.

(j) Assist Station Staff in combating fire with available means.

11.2.4 Duties of Other Staff:

(a) The Section in charges of Civil, Electrical and Signal departments should proceed to the site immediately and assess the damage to equipment under their respective charges.

(b) Take suitable action informing higher authorities, to restore the damaged equipment/ installations promptly.

CHAPTER NO. 12
MEDICAL ASSISTANCE TO DISASTER VICTIMS

12.1 Immediate Steps to be taken prior To Arrival of Medical Team:

In case of disaster involving passengers or staff, the Station Master / Motorman or any Metro staff who are present at the site of such a disaster should take the following immediate steps:

(a) First Aid should be given to the disaster victim as per First Aid training given to staff. For this purpose, a first aid box will be available at every station and other installations. If after First Aid, the victim is in a position to leave Metro premises, he should be allowed to do so after recording his name and address.

(b) When the condition of the victim requires higher level of attention, he should be removed from the disaster site to the nearest available Doctor or Hospital for medical attention. The list of such Hospitals/Doctors should be available at each station in a conspicuous place in SM's room.

(c) In case a number of disaster victims are involved, medical help from Metro sources should be called through the available communication system, such as Railway Telephone, DOT telephone, Control Telephone, TPC's telephone, TLC or emergency telephone as the case may be. In case of a running train, TLC should be informed through Train Radio communication system for such assistance. On receipt of such call for help, the Controller should inform the Metro Railway Medical assistance unit about the situation and mobilize medical team suitably.

(d) Announcement should be made by Motorman through Train PA system in case of a disaster involving a Metro train in a section between stations, to the passengers traveling by that train for help of a Doctor who may be available on the running train, to attend to the disaster victims.

(e) In case of disaster victims at a station, the station PA system should be used for announcement for help of a Doctor, if available in the station premises for immediate medical assistance.

12.2 Steps to be taken for transfer of disaster victims:

(a) After arrival of the Metro Railway Medical Team at the site of the disaster, the supervisor/Motorman/Station Master available at site, should inform the

team about the condition of the disaster victims and give all assistance to the medical team, as necessary.

(b) On the advice of the Doctor of the medical team, the victims should be removed, if required, by hiring a taxi or any other vehicle to the nearest Hospital for attention.

12.3 Compensation for accident victims:

Two types of compensations are to be paid quickly in case of any accident to the victims involved in a disaster.

(a) Immediate compensation.

(b) Final compensation

The immediate compensation will have to be paid as per Metro Railway Act read in conjunction with the Indian Railways Act. Necessary action in this regard should be initiated by the station staff or supervisor in-charge of the installation where such occurrences take place. The final compensation will, however, be dealt with by the Personnel Branch of Metro Railway.

12.4 In case of bomb blast, firing and during other crisis the Station Superintendent/shift-in-Charge of the station and Metro Staff who will be present at site during the incident should take the following steps immediately: -

(a) They should call Metro Railway Medical Team, informing their control. First Aid should be given to the injured/victim as per First Aid training given to staff, for this purpose. A first aid box will be available at every station and other installation. If after First Aid, the victim is in a position to leave metro premises he should be allowed to do so after recording his name and address.

(b) When the condition of the victim requires higher level of attention he should be removed from the site to the nearest available doctor/ hospital for Medical attention. The list of such hospitals should be available at each station in a conspicuous place in Shift-in -charge Room.

(c) In case of a number of injured / victims are involved, medical help from Metro Sources should be called through the available communication system such as railway telephone, DOT Telephone, Control Telephone, TPC Telephone, TLC or emergency telephone as the case may be, in case of a running train TLC should be informed through train radio communication system for such assistance. On receipt of such call for help, the controller should inform the Metro Railway Medical assistance unit about the situation and mobilize medical team suitably.

(d) Announcement should be made by Motorman through train PA system in case of a injured involving in a Green Line Metro Train in a section between stations, to the passengers by that train for help of a Doctor who may be available on the running train to attend to the injured / victim.

(e) In case of injured / victim at the station, the station PA system should be used for announcement for help of a doctor, if available in the train / station premises for immediate medical assistance.

12.5 Steps to be taken for transfer of injured / victims:

After arrival of the Metro Medical Team at the site, the injured / victims, the supervisor/ Motorman/Shift – in – charge available at the site, should inform the team about the condition of the injured / victim and give all assistance to the medical team, as necessary. On the advice of the doctor of the medical team, the victim should be removed, if required, by hiring taxi or any other vehicle to the nearest hospital for attention. In such crisis, close liaison may be made continuously with the Police authority and ambulance.

CHAPTER NO. 13
DISASTER MANAGEMENT DRILLS

13.1 Drills:

The following drills for various types of Disaster Management should be conducted at regular intervals:

(a) Fire drill
(b) Drill for evacuation of passengers from train (detrainment drill)
(c) Drill for evacuation from station premises.
(d) Drill for re-railing of derailed coaches
(e) Drill for dealing with flood situation inside tunnel.
(f) Drill for restoration of power supply due to power failure from source or due to major equipment failure.

13.2 Fire Drills:

The fire fighting drill should be conducted in conjunction with Fire Fighting Authorities of State Government viz. State Fire Brigade. For the purpose, Assistant Security Commissioner along with Inspectors for all such work should co-ordinate with the State Fire Brigade Authorities. In this drill the following staff should take part.

(a) Staff of fire wing of Metro Railway
(b) Station Supervisor and staff working at different stations
(c) Electrical staff working in ventilation installation.
(d) Motorman working in train inside the tunnel.
(e) Senior Subordinates of Operating, Signal and Engineering Departments.

Such mock drills should be conducted once in 6 months to keep the staff of various disciplines aware of the procedures to be followed in case of fire. The mock drill should take into account the following.

(i) Information of the mock fire to OCC for initiating the procedures as indicated in the Disaster Management Plan for fires. Detrainment procedure as detailed in previous chapter no.3 should also be included in the mock drill for fire.

(ii) The fire drill should normally be conducted on a Sunday, in the morning hours when commercial services are not in operation, at a nominated place so that subsequent normal commercial services are not affected by the dill.

13.3 Detrainment Drills:

The detrainment procedure has been laid down in previous chapter no.3 of this Manual. This detrainment drill may be conducted once in 6 months to keep staff aware of the stipulated procedure of detrainment. This drill should normally be conducted on a Sunday in the morning hours when commercial services are not in operation, at a nominated place, with Metro Railway staff.

13.4 Drill for evacuation from station premises:

In case of fire, Sabotage or any other major incident, necessitating evacuation of passengers from the station, the procedure to be followed may be included in this drill. This drill is to be conducted by operating staff, security staff and air-conditioning and ventilation staff of Electrical Department working within stations. Station Manager / Station Controller of the station will have to lead the drill for such evacuation of passengers from the station. This drill should be conducted once a year and should include the following**.**

(a) Communication by the Shift-in-charge to the Traffic Controller by giving reasons for the evacuation of passengers from the station premises. Dissemination of the information to various authorities connected with the operation of evacuation i.e. RPF, local Police or other staff as required depending on the situation.

(b) Procedure to be followed by air conditioning and ventilation staff working at the station for operation of ventilation of fans.

(c) The drill should include the functions of the Electrical Department in ensuring that the lighting system, specially the emergency lighting system, is in working order.

(d) The S&T staff should ensure that channels of communication are in working order. After conclusion of the Drill, by following the laid down procedures, the difficulties encountered should be recorded for further review and rectification/ alteration of the procedures so that the situations can be more effectively tackled at the time of actual disaster.

13.5 Drill for re-railing of derailed coaches:

This drill should be conducted once in 6 months in the maintenance yard i.e. Central Park Depot. For conducting the drill, the following procedure should be followed:

(a) One Metro coach should be made to derail in the yard for the purpose of the drill. The drill should preferably be done at night, after office hours and on a line having 3rd rail.

(b) The breakdown staff along with AEE, AEN & ASTE is informed that derailment has taken place and should be directed to assemble at a

particular location. The time of intimation to the breakdown gang and the officers and the time taken by them to reach the nominated site should be recorded.

(c) On reaching the site, the breakdown staff should re-rail the coach on a nominated line with the help of available equipment. The time taken for re-railing should be recorded.

(d) After re-railing, the various parts of the coach should be checked and results recorded as per Accident Performa and the time required for taking all the measurements should be noted.

(e) The Engineering officials and staff in charge of the section should check the track and record details as per Accident proforma. Track deformation should be rectified. The time for such restoration should be recorded.

(f) The ASTE with his staff should also check the systems of communication and line-side signalling equipment and record the items checked by him.

(g) A joint fit certificate should be made out after the whole operation is over, by AEE, ASTE and AEN.

(h) During such a drill, communication with the Traffic Controller should be established by S&T staff attending the mock drill. The time for establishing such communication should also be recorded.

(i) After the completion of the drill, the time required for various operations should be analyzed and improvements, if any, effected.

13.6 Drill for dealing with the flood situation inside tunnel:

The drill should be conducted once in 6 months on a Sunday when commercial services are not in operation. Staff involved i.e. staff on the Pump Section and Power Supply Section of the Electrical Department, staff of S&T Department and Engineering Department are required to assemble at a particular place where such drills should be conducted. The station staff of either side should also be informed for participating in the drill. This drill should be conducted by creating flood situation inside the tunnel by stopping the work of pumps, opening of fire hydrants blocking the passage of sump meant for pumping out seepage of water from the tunnel. While conducting the drill, time taken by various staff to react and reach the site of incident should be recorded by TPC and Traffic Controller. During such drill, communication should be established between Traffic Control and the site of drill by S&T staff. The time taken to restore normalcy should be recorded and after restoration, a joint certificate should be issued by AEE, AEN, & ASTE. After such drill the time taken of various operations for restoration of normalcy should be recorded and analyzed so that remedial corrective measures can be taken to reduce time for attending to flood situations inside the tunnel during the actual operation.

13.7 Power failure drill:

The drill should be conducted by power supply supervisor and another concerned officials in presence of AEE in charge of power supply once in 6 months. The procedure to be followed may be one of the following**:**

(a) Creating a fault on 3rd rail causing tripping of HSCB and finding out of the fault and rectification of the same.

(b) Switching off power from a Receiving Station and restoration of power through alternate source by remote control or by issuing instruction of various sub-stations through telephonic communication in case of remote control failure.

(c) The Time required for restoration should be recorded and the result analyzed.

13.8 Types of drills to be conducted on regular measures:

(a) Fire drill

(b) Derailment drill

(c) Drill for evacuation from station premises.

(d) Drill for re-railing of derailed coaches.

(e) Drill for dealing with flood situation inside tunnel

(f) Drill for restoration of power supply.

The Dy.CSO-I of Metro Railway has been made in-charge to ensure that the drills are conducted on regular measures.

CHAPTER NO. 14
CHEMICAL DISASTER

14.1 **Introduction;**

Transportation or carrying of Chemical is prohibited in Metro Railway, Kolkata. In Metro Railway, Kolkata Terrorist can attack by using Chemical agents. This Chemical agent includes poisonous Gases, liquid or solids that have a deleterious effect on the biotic and non biotic environment. Due to the relatively easy availability of hazardous chemicals, Terrorists can procure chemical or even try to sabotage the facilities or passengers trains as it offers them an easier and often more catastrophic method anti national activity. Chemical incident and uncontrolled release of Chemical form its containment that either threatens to, or does, expose people to a chemical hazard.

Effective chemical disaster Management (CMD) is possible by the adoption of preventive and mitigation strategies as most chemical disaster are preventable in comparison to natural disaster that are difficult to predict and prevent.

14.2 Areas where chemical incident can occur.

Chemical Disaster may take place by terrorist attack at various locations. Chemical incident can occurs on the following areas of the Metro Railway system.

(a) Entry and exit points leading to Metro Stations.

(b) Stations concourse, in front of ticket counter, entry/exit gate and leading to platforms.

(c) At train.

14.3 Action to be taken when chemical incident occurs:

Chemical incidents can occurs accidentally or deliberately anywhere in station premises or passenger train. As such it is the primary duty of front line staff to protect, detect and de contaminate the incident site. In this cases the help of NDRF, local Police and RPF needs to be taken as well as medical attention may be necessary for the affected passengers.

14.4 Staff involved tackling the Disaster;

(a) Shift-in-Charge/ Station Superintendent and station staff.

(b) Traffic Controller.

(c) Motorman.

(d) RPF and Kolkata Police.

(e) Medical Unit.

14.5 Duties

14.5.1 Duties of Shift-in-Charge/ Station Superintendent and station staff.

Whenever the Shift-in Charge, Station Superintendent of Metro Railway station gets information regarding chemical occurrence from any office staff or on duty RPF or from any vulnerable sources, he shall arrange to take the following steps.

(a) He will announce through Public address system and request the passengers to keep cool and leave the premises in an orderly manner. If the cause of chemical incident is known that should be explained to the passengers so that panic does not spread.

(b) He will advise on duty operating staff and on duty RPF staff to protect the affected passengers/ site.

(c) He will inform details to the Traffic Controller regarding the incident and for seeking the help from local Police to maintain law and order, Medical team for medical assistance and NDRF for rescue operation.

(d) He may request the Traffic Controller depending on the situation, to run the train(s) through his station and/or not to send further train to avoid further accumulation of passengers in his station.

(e) He will keep "free" all the entry/exit gates and also opened the manual gates to facilitate quick evacuations for unaffected passengers.

(f) He will direct station staff to guide the passenger out the station premises.

(g) He will stop booking of tickets from his station till situation comes to normal.

(h) He will inform the Traffic Controller about the situations of his station through control telephone or other available means of communication.

14.5.2 Duties of Traffic Controller,-

(a) On receipt of message from shift-in Charge / Station Superintendent regarding chemical incident, he will immediately inform the NDRF for rescue operation, RPF and Kolkata Police to maintain law and order and Medical team for medical assistance.

(b) He will direct the Motorman of the trains running the system to run through the station and / or stop the train at the adjacent station, if the situation so demands to reduce further accumulation of passenger in the station.

(c) He will inform the superior officers about the situation.

14.5.3 Duties of Motorman,-

(a) He will run through and /or stop the train at the adjacent station or receipt of such instructions from Traffic Controller so that further accumulation of passenger into the affected station is avoided.

(b) He will announce over P.A system of the train, with the help of Conducting Motorman or self, the situation and the reason for running through a particular station.

14.5.4 Duties of RPF/Kolkata Police.

(a) On receipt of information from the Traffic Controller, The RPF control will depute sufficient RPF staff to the affected station without any loss of time.

(b) RPF on reaching the station will report to the Shift-in Charge / Station Superintendent concerned and render all assistance in controlling the crowd, protect the incident site and evacuate the station premises. For this, RPF will coordinate with Kolkata Police if situation so demand.

14.5.5 Duties of medical team.

(a) On receipt of information of any stampede at the station, the in-charge of the medical team will immediately move to the concerned station with his medical team.

(b) On reaching the station, In-charge of medical unit should report to the shift-in-Charge/ Station Superintendent to the concerned station. This team should rendered medical help as required to the passenger and medical team will coordinate with NDRF if situation so demand.

14.6 Rescue operation by NDRF team.

On reaching the station, in-charge of the NDRF team should collect details information from Shift-in Charge and starts the rescue operation for the chemical affected victims.

14.7 National Disaster Response Force (NDRF).

Ministry of Home affairs, Government of India has formed National Disaster Response Force at the Eight selection location in the country for dealing with relief and rescue operation related to all type of disaster.

As per disaster management act 2005, various Ministry and department under Government of India should joins hand for mutual assistance in case of disaster. Assistance of local Government and non Government agencies are in variable required by the railway administration from prompt relief and rescue operation.

14.8 Coordination with NDRF:

Zonal Railway should get in touch with NDRF offices at the nearby locations to have the first hand knowledge of the resources available with them and also to familiarize them with railway related disaster situations and the expose them to issues relevant to the rescue and relief of passengers during railway accident. It has also been advised associate NDRF in full exercise that is held once in every year. There are no charges for availing the services of the NDRF except the rail transportation which railways may provide at their cost for attending to rail disaster.

CHAPTER NO. 15
BIOLOGICAL DISASTER

15.1 Biological Disasters :-

Biological disasters might be caused by epidemics, accidental release of virulent microorganism(s) or Bioterrorism (BT) with the use of biological agents such as anthrax, smallpox, etc. The existence of infectious diseases has been known among human communities and civilizations since the dawn of history.

In recent times travelling has become easier for which Railways have made a significant contribution. More and more people are travelling all over the world which exposes the whole world to epidemics. As our society is in a state of flux, novel pathogens emerge to pose challenges not only at the point of primary contact but in far removed locations. The Marburg virus illustrates this. The increased interaction between humans and animals has increased the possibilities of zoonotic diseases emerging in epidemic form.

15.2 Biological Warfare (BW) and Bio-Terrorism (BT) :-

The historical association between military action and outbreaks of infections suggest a strategic role for biological agents. The advances in bacteriology, virology and immunology in the late 19th century and early 20th century enabled nations to develop biological weapons.

The Biological and Toxin Weapons Convention, however, resolved to eliminate these weapons of mass destruction. Despite considerable enthusiasm, the convention has been a non-starter.

15.3 Handling CBRN Disaster – Training :

For handling and to provide medical relief for all CBRN disaster which (include a Biological Disaster) and mitigation of BW and BT affected Railway staff, need to be incorporated in the Hospital DM Plan.

Training of a skeleton numbers of Medical Doctors in each Divisional Railway Hospital to manage CBRN casualties is to be planned.

15.4 Causes of Biological Disaster: A Biological Disaster is the disaster, which causes sickness and fatalities in human being when they come in contact with Biological hazards in the form of living organisms such as bacteria, virus, fungi etc. All communicable diseases, either of human beings or livestock are potential biological disasters. They spread widely; affect huge number of people in communities, sometimes across the geographical limits of provinces and nations. Biological Disaster has caused havoc in human settlements in form of communicable disease since times immemorial.

Biological disaster essentially appears in the form of epidemics or pandemics, which are caused by microorganisms. Different microorganism cause different types of

communicable diseases. The micro-organisms, which cause communicable disease could be categorized like as Bacteria, Virus, Rickettsia, Chlamydia , Fungi and Toxins.

15.5 Causal Phenomenon: Communicable diseases leading to biological disasters often erupt and spread duty unhygienic living conditions and individuals and families within communities. It is very natural that affluent communities are less vulnerable to biological hazards as compared to poor causes for epidemics and pandemics may be generalized as under:

1) Congested living areas with inadequate hygiene and sanitation arrangements.
2) Movement of infected personnel to non-epidemic areas carrying micro organism their incubation period.
3) Movement of non-immune persons to endemic areas.
4) Malnutrition particularly among children.
5) Ecological changes conducive to breeding of vectors.
6) Poor or insufficient water supply system leading to consumption of contaminants leading to water borne diseases.
7) Poor Health services and lack of programs for immunization and vector coordinate.

15.6 Preparedness for Mitigation: The essential protection against natural and artificial outbreaks of disease (bio-terrorism) will include the development of mechanisms for prompt detection of incipient outbreaks, isolation of the infected persons and the people they have been in contact with and mobilization of investigational and therapeutic countermeasures. In the case of deliberately generated outbreaks (bio-terrorism) the spectrum of possible pathogens is narrow, while natural outbreaks can have a wide range of pathogens. The mechanism required however, to face both can be similar, if the service providers are adequately sensitized.

1) Create a pool of well-trained medical professionals.
2) Ensure availability of vaccines and drugs.
3) Ensure adequate stocks and ready availability of diagnostic re-agents.
4) Develop an effective network of surveillance system to detect outbreak of epidemics.
5) Improve public awareness to enable people to help the administration and medical in disaster management.
6) Have a reliable and credible public information system for dissemination of fact to avoid fear and panic among masses.

15.7 Corona virus (COVID-19):

Corona virus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. Most people infected with the virus will experience mild to moderate respiratory illness and recover without requiring special treatment. However, some will become seriously ill and require medical attention. Older people and those with underlying medical conditions like cardiovascular disease, diabetes, chronic respiratory disease, or cancer are more likely to

develop serious illness. Anyone can get sick with COVID-19 and become seriously ill or die at any age.

The best way to prevent and slow down transmission is to be well informed about the disease and how the virus spreads. Protect yourself and others from infection by staying at least 1 metre apart from others, wearing a properly fitted mask, and washing your hands or using an alcohol-based rub frequently. Get vaccinated when it's your turn and follow local guidance.

The virus can spread from an infected person's mouth or nose in small liquid particles when they cough, sneeze, speak, sing or breathe. These particles range from larger respiratory droplets to smaller aerosols. It is important to practice respiratory etiquette, for example by coughing into a flexed elbow, and to stay home and self-isolate until you recover if you feel unwell.

Pandemic situation like COVID-19, Railways had played a crucial role in effective management of the pandemic in various ways. But this huge/large no. of transportation carried out in the existing system/procedures to keeping the all precaution to save the officers and employees in Metro Railway, Kolkata. Metro Railway shall be played an important role during pandemic Covid-19 to prevent the are as follows:-

1) Staff training / refresher, PME
2) Sanitizing the Station, Car Shed , Office premises and Rake.
5) Using of Mask of Passengers and Staffs
6) Maintain distance among the passengers and staff in work.
7) Passengers are allowed in the station by booking of particular slot
8) Subsequently increasing to passengers, Metro Authority also increase the head way of train to maintain the Safety protocol of COVID-19
9) Frequently counseled of staff done regarding maintaining of Covid-19 protocol.
10) Vaccination of staff and their dependents as well as mass RTPCR test done both for staff & general public.

CHAPTER NO. 16
NATURAL CALAMITIES

16.1 Introduction

Kolkata is situated at the natural origin of the South West monsoon and therefore is prone to heavy rains accompanied with cyclones, high velocity winds, storms, tempests, earthquake and even Tsunami.

16.2 Flood

The rail corridor is elevated / at grade and is not likely to be affected by floods. However, Under Ground station, ground level station are more exposed to Flood. Action taken procedure are laid down on chapter-5.

16.3 Earthquake

Keeping in to account the fact that Kolkata is located in the seismic zone-III. The entire infrastructure of Metro Railway Corridor has been designed to withstand earthquakes of the intensity of 6.5 on Richter scale. If any earth quake tremor takes place in any of the metro station, then the train(s) shall run on the following procedure.

16.3.1 Action to be taken in case of earthquake:-

(a) As soon as the tremor of earthquake is felt, Traffic controller will immediately advise all stations to control the trains at platforms and Motorman will control the train in the section(s). Trains already in sections will than be allowed to move up to stations ahead at 15 kmph with caution ready to stop short of any obstruction.

(b) All panel operators/station-in-charges, who experienced tremor of earthquake shall immediately inform the Traffic Controller by putting back the departure signal at ON condition in Manual mode. If such a tremor is experienced at platform by Motorman, he will not start train and intimate Traffic Controller.

(c) When the tremor subsides the Traffic controller shall advise the Driving Motorman of the first train with or without passenger to check the section leading to immediate next station at a speed not exceeding 15 kmph and report the status of the section to Traffic Controller.

(d) Thereafter the sections to be declared obstruction free and trains shall run normal with passengers.

(e) Continuous announcement regarding earthquake shall be made from central control, stations or by Conducting Motorman in train through P.A. System.

(f) A thorough inspection of entire section may be conducted by concerned departments after commercial service.

16.4 Cyclone:

The trains are designed to withstand very heavy wind speeds. As per India Meteorological Department, Kolkata wind zone IS: 875, falls under wind zone 1. In the event of high velocity winds Motorman and/or Shift-in-Charge shall inform Traffic Controller. If Any abnormality observed by Motorman, Shift-in-Charge or any other staff must be immediately informed to OCC/Control. Traffic Controller shall take further step in consultation with concerned department.

16.4.1 Action to be taken in case of cyclone

(a) When the Traffic Controller receives information about cyclone on viaduct section and visibility is impaired or it is felt by Motorman himself then the train will proceed cautiously up to the next station. Further movement of the train will be on the judgment of station-in-charge and/or Motorman.

(b) If situation is not permitted for commercial train service due to cyclone, the Traffic Controller shall stop the train service until the normal situation is restored.

CHAPTER NO. 17
PUBLIC DEMONSTRATION

17.1 Introduction

Considering the possibilities of disruption of revenue service / damage to metro property during public demonstrations, following roles are assigned for various staffs.

17.2 Duties of Various Staff:

17.2.1 Duties of Station Master/Shift-in-charge:

(a) The station controller on the receipt of information about disruption at the station shall inform OCC giving as many details as possible.

(b) Inform station/Line manager and control situation.

(c) Inform passenger waiting at the platform about the delay.

(d) Keep update OCC about the incident.

17.2.2 Duties of Traffic Controller/Assistant Chief Controller

(a) Immediately on receipt of the information about incident of disrupting traffic, Traffic Controller/ Assistant Chief Controller shall inform all concerned as per list of communicati*on* by OCC staff.

(b) Train movement shall only be resumed after confirming that the running of train to the affected station is safe till the position become clear regular announcements to be made to passenger in train and station of the likely delay and evacuation procedure started.

(c) If public occupy track, then Traffic Controller/Station Superintendent / Motorman should prevent entering of train in that section and inform TPC to switch off the third rail.

17.2.3 Duties of Motorman

(a) In the event of people disrupting the train movement involving his train, the Motorman shall inform OCC giving as many details as possible.

(b) In the case the adjacent track is infringed, he shall request Traffic Controller to protect the adjacent track to avoid the multiple accidents as prescribed procedures.

(c) He will inform passengers about the incident advising them to keep calm and likely delays.

(d) He shall quickly assess the situation particularly in respect of passenger and again inform OCC with as much detail as available seeking assistance as required.

17.2.4 Damage to Rolling Stock/METRO RAILWAY Property

If any Motorman or Station Master/Shift-in-charge observes any kind of damage done by mob /public to the train or stations, then that particular section should be isolated and inform to the Security In charge and Local Police.

17.2.5 Duties of RPF / Kolkata Police:

(a) On receipt of information from the Traffic Controller, the RPF control will depute sufficient RPF staff to the affected station without any loss of time.

(b) RPF on reaching the station will report to Shift-in-charge/Station Superintendent concerned and render all assistance in controlling the crowd and evacuate the station premises to restore normalcy. For this RPF will co-ordinate with Local Police if situation so demands.

IMPORTANT TELEPHONE NUMBERS

18.1 ADMINISTRATIVE OFFICERS OF METRO RAILWAY:

Sl No.	Name & Designation	Rly.	P&T Phone No.	CUG. Mob. No.
ADMINISTRATION				
1	General Manager	55000	2226-7220	9007041000
2	Secy. to General Manager	55002	2226-3036	9007071001
3	DGMG	55004	2255-5004	9007041004
4	Sr.PRO	55015	2226-3959	9007041906
TRAFFIC				
5	PCOM	55700	2226-4227	9007041900
6	Dy.COM (COMML)	556007	2217-5986	9007041902
7	Dy.COM(O&M)	55701	2217-7679	9007041926
8	ASC/Fire	55680	2229-1197	9007041928
ELECTRICAL				
9	PCEE	55400	2226-4673	9007041300
10	CEE(Proj)			9007041305
11	CEE(HQ)	55403	2217-4394	9007041301
12	CEE/RS	53500	2532-6061	9007041302
13	Dy.CEE/Con	55407	2227-1064	9007041367
14	Dy.CEE/M (Cord-)	55480	2217-2794	9007041312
15	Dy.CEE/OP	55406	2227-6490	9007041303
16	Dy.CEE (P)	55405	2217-1753	9007041314
17	Dy.CME	53562	----	9007041307
18	Dy.CEE (Joka)	53506	2556-8701	9007041318
19	Dy.CEE(E-W)	---	-----	9007041308
20	Dy.CEE/RS/NOA	53517	2532-8062	9007041306
S&T				
20	PCSTE	55500	2226-4720	9007041800
21	CSTE (Proj)	55502	2288-5320	9330903800
22	Dy.CSTE(M)	55506	2226-7892	9007041802
23	Dy.CSTE(Tele)	55505	2227-3922	9007041801
Engg.				
24	PCE	55200	2217-0675	9007041200
25	CE(Con)	55201	2217-1754	9007041201
26	CE(O&M)	55208	2217-1615	9007041205
27	Dy.CE(Con-I)	---	---	9007041203
28	Dy.CE(Con-II)	---	---	9007041207
29	Dy.CE(Con-III)	---	---	9007041209
30	Sr.DEN	55214	2227-2076	9007041202
31	Dy.CE/HQ	55211	2228-0129	9007041217

Sl No.	Name & Designation	Rly.	P&T Phone No.	CUG. Mob. No.
SECURITY				
32	PCSC (DIG)	27100	2248-8365	9002020700
33	Sr.SC	55736	2226-3271	9007041750
34	ASC	55730	2226-2130	9007041702
MEDICAL				
35	PCMO	54422	2381-3722	9007041500
36	ACMS	54451	---	9007041501
37	ACMS	54443	---	9007041508
38	Sr.DMO	54420	---	9007041503
39	Sr.DMO	53626	---	9007041502
SAFETY				
40	PCSO	55007	---	9007958400
41	Dy.CSO/I	55701	2217-7679	9007041904

18.2 METRO STATIONS WITH NEAREST POLICE STATIONS & FIRE STATION

(a) BLUE LINE :

METRO STATION	POLICE STATION		FIRE STATION	
KDSW	Belgharia	2553-1717	Baranagar	25102101
KBAR	Baranagar	2531-9300	Baranagar	25102101
KNAP	Baranagar	25319300	Noapara Carshed (Metro)	2255-3603 2255-3601
KDMI	Sinthi	2530-0853 2532-5383	Dumdum	2251-4309
	Cossipore	25432100 2556-6434	Cossipore	2241-4545
KBEL	Ultadanga	6292258302 2356-6264 2356-6263	Cossipore	2241-4545
KSHY	Shyampukur	2533-2100 2555-7585 2533-5606	Central avenue	2241-4545 2241-4646
			Canal West	2350-8898 2360-6999
KSHO	Shyampukur	2533-2100 2555-7585 2533-5606	Central avenue	2241-4545 2241-4646
KGPK	Girish Park	2219-8041	Central avenue	2241-4545 2241-4646
KMHR	Jorasanko	2269-7279 2218-0100	Central avenue	2241-4545 2241-4646
KCEN	Bowbazar	2215-5100 2211-4813	Central avenue	2241-4545 2241-4646
KCWC	Bowbazar	2215-5100 2211-4813	Central avenue	2241-4545 2241-4646
	Hare Street	2211-8760	Fire Brigade HQ	2252-1165
KESP	New Market	2217-7397 2283-6100 2283-7550	Central	2241-4545 2241-4646 2252-1165
KPSK	Shakespeare Sarani	2281-2541 2281-7100	Fire Brigade HQ	2252-1165
KMDI	Maidan	2223-2462 2248-0100	Fire Brigade HQ	2252-1165
KRSD	Bhowanipur	2455-8092	Kalighat	2454-4527
KNBN	Bhowanipur	2455-8092	Kalighat	2454-4527
KJPK	Bhowanipore	2455-8092	Kalighat	2454-4527
KKHG	Kalighat	2454-0176 2454-0177	Kalighat	2454-4527

KRSB	Charu Market	2424-9900 24991996	Kalighat	2454-4527
KMUK	Regent Park	2381-3162 2311-0563	Masterda Surya Sen	2431-0007
KNTJ	Regent Park	2381-3162 2311-0563	Masterda Surya Sen	2431-0007
KMSN	Bansdroni	2410-1022 2311-0595	Bansdroni	2431-0007
KGTN	Bansdroni	2410-1022 2311-0595	Bansdroni	2431-0007
KKNZ	Patuli	2462-5195 2462-4122	Patuli	2436-0685
KSKD	Patuli	2462-5195 2462-4122	Patuli	2436-0685
KKVS	Pancha Shyor	6292258802	Patuli	2436-0685
	Patuli	2462-5195 2462-4122		

(b) GREEN LINE :

METRO STATION	**POLICE STATION**		**FIRE STATION**	
SVSA	Bidhannagar east Electronicx Comp	03323590849 03323679779	Bidhannagar Sector V	03323576026
KESA	Bidhannagar east Bidhannagar north	03323590849 03323373343	Bidhannagar Sector V	03323576026 03323575293
CPSA	Bidhannagar north	03323373343	Sector V	03323575293
CCSC	Bidhannagar HQr Bidhannagar HQr	03323357023 03323410465	Bidhannagar	03323576026
BCSD	Phoolbgan	03323200920	Sector V	03323575293
SSSA	Phoolbgan	03323200920	Manicktala	03323207489
PBGB	Phoolbgan	03323200920	Manicktala	03323207489

(c)NEAREST POLICE STATIONS IN PURPLE LINE

Sl No	Name	Address	Contact No.
1	THAKURPUKUR P.S.	123/117, Diamond Harbour Road Kolkata – 700063 Email: ps.thakarpukur@kolkatapolice.gov.in	2493 6680 2461 6004
2	BEHALA P.S.	131, Diamond Harbour Road Kolkata – 700034 Email: ps.behala@kolkatapolice.gov.in	2396 7350 2397 505*
3	TARATALA P.S.	63, Taratala Road Kolkata – 700088 Email: taratalaps@kolkatapolice.gov.in	2401 1881 2401 2796

NEAREST FIRE SERVICE STATIONS OF GOVT. OF WEST BENGAL FOR PURPLE LINE

Sl No	Name	Address	Contact No.
1	Behala Fire Station	Diamond Harbour Road, Barisha Kolkata - 700008	2497 6285
2	Lal Bazar Fire Station	Lal Bazar Street Kolkata - 700001	7947122273
3	Metro Railway Fire Service	Mahanayak Uttam Kumar Metro Station, Tollygunge Kolkata - 700040	2255 4411 2377 5430

18.3 METRO STATION WITH NEAREST HOSPITAL/ NURSING HOME & AMBULANCE

METRO STATION	HOSPITAL/ NURSING HOME		AMBULANCE	
KDSW	Sagar Dutta Hospital Baranagar State Gen	033-25531316 033-25315021	Indian Red Cross Society	22483636 9432259178 9830023653 (St.Jhon)
KDSW	Sagar Dutta Hospital Baranagar State Gen	033-25531316 033-25315021	Indian Red Cross Society	22483636 9432259178 9830023653 (St.Jhon)
KBAR	Sagar Dutta Hospital Baranagar State Gen	033-25531316 033-25315021	Indian Red Cross Society	22483636 9432259178 9830023653 (St.Jhon)
KNAP	South Dumdum Municipality/Hosp.	25598387	Noapara Health Unit M.Rly	22553616 9830023653
KDMI	South Dumdum Municipality/Hosp.	25598387	Noapara Health Unit M.Rly	22553616
	R,G, Kar Hospital	2555-8838 2555-7575 2555-7676	Sri Arabindo Nursing Training	8902176844
KBEL	R,G, Kar Hospital	2555-8838 2555-7575 2555-7676	Kalindi Bahumukhi janakalyan	25228234
KHSY	R.G, Kar Hospital	2555-8838 2555-7575 2555-7676	ST.JHON	9830023653
KSHO	R,G, Kar Hospital	2555-8838 2555-7575 2555-7676	Medical College	2255-1614 2255-1501 9830023653 (St.Jhon)
KGPK	Medical college	2212-3741 2255-1614	Medical College	2255-1614 2255-1501 9830023653 (St.Jhon
KMHR	Medical college	2212-3741 2255-1614	Medical college	2255-1614 / 2255-1501 9830023653 (St.Jhon

KCEN	Medical college	2212-3741 2255-1614	Medical college	2255-1614 2255-1501 9830023653 (St.Jhon
KCWC	Medical college	2212-3741 2255-1614	Medical college	2255-1614 2255-1501 9830023653 (St.Jhon
KESP	Medical College	2212-3741 2255-1614	Indian Red Cross Society	22483636 9432259178 9830023653 (St.Jhon)
	SSKM Hospital	2204-1224		
KPSK	SSKM Hospital	2204-1224	Indian Red Cross Society	22483636 9432259178 9830023653 (St.Jhon)
KMDI	SSKM Hospital	2204-1224	Indian Red Cross Society	22483636 9432259178 9830023653 (St.Jhon)
	Shambhunath Pandit Hospital	2302-2819 2302-2820		
KRSD	SSKM Hospital	2204-1224	Indian Red Cross Society	22483636 9432259178 9830023653 (St.John)
	Shambhunath Pandit Hospital	2302-2819 2302-2820		
KNBN	SSKM Hospital	2204-1100 2204-1224	St. John	2476-1935 9830023653
	Tapan Sinha Memorial Hospital	54000,54423 54426	Tapan Sinha Memorial Hospital	54426 033-225-54426
KJPK	Chitta Ranjan	2476-5101	Indian Red Cross Society	22483636 9432259178 9830023653 (St.John)
KKHG	M.R Bangur	2473-3354	Indian Red Cross Society	22483636 9432259178 9830023653 (St.John)
KRSB	M.R Bangur	2473-3900 2473-3354	Indian Red Cross Society	22483636 9432259178 9830023653 (St.John)
KMUK	Tapan Sinha Memorial	54000 (Rly)	Tapan Sinha Memorial	54426 (Rly)

	M.R Bangur	2473-3900 2473-3354	Indian Red Cross Society	22483636 9432259178 9830023653 (St.John)
KNTJ	Tapan Sinha Memorial	54000 (Rly)	Tapan Sinha Memorial	54426 (Rly)
KMSN	Tapan Sinha Memorial	54000(Rly) 2255-4426	Tapan Sinha Memorial	8335806225 22554426
	M.R Bangur	2473-3900 2473-3354	Indian Red Cross Society	22483636 9432259178 9830023653 (St.John)
KGTN	Tapan Sinha Memorial	54000(Rly) 2255-4426	Tapan Sinha Memorial	8335806225 033-22554426
	M.R Bangur	2473-3900 2473-3354 8820702070	M.R Bangur	2473-3900 2473-3354
KKNZ	Tapan Sinha Memorial M.R Bangur	54000(Rly) 2255-4426 2473-3900 2473-3354 8820702070	Indian Red Cross Society	22483636 9432259178 9830023653 (St.John)
KSKD	Bagha Jatin Hospital	2412-2593	Indian Red Cross Society	22483636 9432259178 9830023653 (St.John)
	Pearless	2462-2394		
KKVS	Peerless	2462-2394		
	Bagha Jatin Hospital	2412-2593	Indian Red Cross Society	22483636 9432259178 9830023653 (St.John)

METRO STN.	**HOSPITAL NURSING HOME**		**AMBULANCE**	
SVSA	Anandolok ILS	033-23592931 033-402065200	RLY./CPD	9007041352 9831232569
KESA	Appolo	033-23202122	RLY./CPD	9007041352 9831232569
CPSA	Bidhannagar Municipality Sub div	033-23373953	Piyali	9007747563 8420958776
CCSC	Bidhannagar Municipality Sub div	033-23373953	Life - care	(033)24754628
BCSD	R.G.Kar hospital	033-23373953	Life - care	(033)24754628 7908595851

SSSA	I.D Beleghata	033-23032248	Life - care	7908595851 033-24754628
PBGB	Appolo	033-23202122	Life - care	7908595851 9883388033

NEAREST HOSPITAL/ NURSING HOME & AMBULANCE PURPLE LINE

Sl No		Address	Contact No.
1	Kasturi Medical Research Centre	5, Diamond Harbour RoadKolkata – 700104 URL: www.kasturimedicalcentre.com	
2	ESI Hospital & Medical College, PGIMSR, ESIC,Govt. Hospital	5 CA, Diamond Harbour RoadKolkata – 700104 URL: www.esic.nic.in	2467 1764
3	Apollo Clinic Taratala	26, Diamond Harbour RoadKolkata – 700038 URL: www.apolloclinic.com	2445 8576
4	Bharat Sevashram Sangha Hospital	Diamond Harbour Road Kolkata – 700104	7947434422 7947152989
5	Swadesh Basu Hospital	Diamond Harbour Road Kolkata – 700063	7947151346
6	Narayana Memorial Hospital	Diamond Harbour Road Behala, Kolkata – 700063	7947133483
7	Tapan Sinha MemorialHospital	Tollygunge Metro RailwayStation Kolkata - 700040	2255 4473
8	Vidyasagar State Govt.Hospital	54, Brahmo Samaj Road,Behala, Kolkata - 700034	7947423393
9	B.P.Poddar Hospital & Medical Research Ltd.	71/01, Block-G Humayun Kabir SaraniKolkata - 700053	7947418062

18.4 KOLKATA POLICE AND SUPPORTING RESCUE RELIEF AGENCIES:

1	**N S G**	
	29 Special Composite Group, NSG, Action Area -III, New Town, Rajarhat, Kolkata-743502	03329623508
2	**NDRF**	
	Office of the Commandant, 2BN NDRF Near RRI ,Post – Mohonpur, Dist. - Nadia	03329516721 9474116775
3	**West Bengal**	
	Relief Commissioner Govt. of WB	2214-3674
	Kolkata Police HQ, Control Room, Lalbazar.	2250-5000-09/ 5090/ 5099/ 5188/ 5265 Hot line-22555491 (Rly)
	Commissioner of police	2214-5060/5424
	Spl.Addl. Commissioner of Police (o) For Metro Railwy/Kolkata.	2214-5509/1307, 2250-5262
4	Metro Bhavan Control Room (PBX)	2226-7280/86
	Metro Railway Police Contro Room (Esplanade station)	2228-1208/2264, 2255-57996
	Kolkata Police Lalbazar Exchange	2250-5000-9
	Special Branch Control Room	2282-3565/3240/3260, 2283-7016/ 7017
	Security Manager Indian Airlines	033-25119101
	IGP (Law & order)	2414-5401/5417

CENTRAL CONTROL (Park Street)	55716,53200,54234,55096 & 033-2226-4817
OCC (CPD)	61066, 61060, 10606,10600,033-23377777, 033-23405600
TPC (KPSK)	55717, 54030,53043 & 0332226-4574
TLC (KPSK)	54240, 53040, 55734 & 0332226-4817
SECURITY	55191, 55193 & 033-2217-6370 & 9007041789
WOMENS HELP-LINE	9007041908

18.5 IMPORTANT TELEPHONE NUMBERS GREEN LINE

IMPORTANT NUMBERS (OCC)			
NAME	**Railway**	**DLC NUMBER**	BSNL
Chief Controller	10606	61066	033-2337-7777/033-2334-1122
Traffic Control	10600	61060	033 23405600[I/C]
TPC	10607	61067	033 23405607[I/C]
RS/CNL	10601	61061	
SIGNAL/CNL		61062	
AFC/CNL	10603	61063	
TELE/CNL		61065	

IMPORTANT NUMBERS (DEPO)		
NAME		**DLC NUMBER**
DCC	10701	61071

IMPORTANT NUMBERS (STATION)		
SALT LAKE SECTOR V (SVSA)		
Ext No.	**Directory Name**	**Phone No.**
11301	SVSA SCR	033-23405611
11300	SVSA SCR	
61120	SVSA TER	033-23405619
61121	SVSA SER	033-23405627
11121	SVSA TSS	
61113	SVSA TSS	

KARUNAMOYEE (KESA)		
Ext No.	**Directory Name**	**Phone No**
12301	KESA SCR	033-23405612
12300	KESA SCR	
61220	KESA TER	033-23405620
61221	KESA SER	033-23405628
12121	KESA TSS	
61213	KESA TSS	

BSNL NUMBERS- PARK (CPSA)		
Ext No.	**Directory Name**	**Phone No.**
13301	CPSA SCR	033-23405613
13300	CPSA SCR	
61320	CPSA TER	033-23405621
61321	CPSA SER	033-23405629
13121	CPSA TSS	
61313	CPSA TSS	

BSNL NUMBERS- CITY CENTRE (CCSC)		
Ext No.	**Directory Name**	**Phone No.**
14301	CCSC SCR	033-23405614
14300	CCSC SCR	
61420	CCSC TER	033-23405622
61421	CCSC SER	033-23405630
14121	CCSC TSS	
61413	CCSC TSS	

BSNL NUMBERS- BENGAL CHEMICAL (BCSD)		
Ext No.	**Directory Name**	**Phone No.**
15301	BCSD SCR	033-23405615
15300	BCSD SCR	
61520	BCSD TER	033-23405623
61521	BCSD SER	033-23405631
15121	BCSD TSS	
61513	BCSD TSS	
61525	BCSD RSS	

SALT LAKE STADIUM (SSSA)		
Ext No.	**Directory Name**	**Phone No.**
16301	SSSA SCR	033-23405616
16300	SSSA SCR	
61620	SSSA TER	033-23405624
61621	SSSA SER	033-23405632
16121	SSSA TSS	

61613	SSSA TSS	
61625	SSSA RSS	
PHOOL BAGAN (PBGB)		
Ext No.	**Directory Name**	**Phone No.**
17301	PBGB SCR	033-23405617
17300	PBGB SCR	
61720	PBGB TER	033-23405625
61721	PBGB SER	033-23405633
17121	PBGB TSS	
61713	PBGB TSS	
61725	PBGB RSS	

NOTE: *There are one RCP and one portable TETRA set in each station Control Room (SCR)*

18.6 IMPORTANT TELEPHONE NUMBERS BLUE LINE

Stn.	SM		Panel	Sub STN	Relay Room	OFC Room
	Rly.	FCT Phone				
KDSW	**53691**	**8100102393**	**53692**	**53696**	53694	
KBAR	53681	**8100102392**	**53682**	**53686**	53684	
KNAP	53581	6289812890	53591	53644/ 53530	53594/ 53595	
KDMI	53206	6289812891	53211	53017	53264	53000
KBEL	53212	8100164687	53208	53021	53267	53228
KSHY	53213	6291324009	53209	55477/ 53013	53223	53027
KSHO	53216	6291324012		53051	53273	53003
KGPK	53218	6291324029	53219	53039	53271	53004
KMHR	55621	6291324032		55627	55629	55597
KCEN	55608	6291324034	55609	55467		55595
KCWC	55600	6291324035		55606	55604	55589
KESP	55781	6291324038	55782	55790	55792	55580
KPSK	55771	6291324047		55775	55779	55581
KMDI	55761	6291324048	55762	55767	55793	55793
KRSD	55751	6291324052		55754	55757	55583
KNBN	55741	6291324054	55742	55746	55737	55749
KJPK	54226	6289812885		54077	54333	55585
KKHG	54233	6291324064	54235			54125
KRSB	54236	6291324068	54228	54086	54354	55587
KMUK	54225	6291324072	54238	54037		54343

KNTJ	54258	6291324074	54259	54025		54353
KMSN	54262	6291324076		54026		54355
KGTN	55876	6291324077	55877	55824		55878
KKNZ	55871	6289812882		55823		55870
KSKD	55866	6291324082	55867	55822		55902
KKVS	55861	6291324084	55862	55821	55891	55900
GMTY- 53629, CT- 53591, RRI- 55880						
CC/KKVS- 55850, CC/KDMI- 53028						

Section CNL	55716, 699, 2226- 4817
TLC	55734, 53040, 54240, 641, 2288-2248
COMM	53200, 55738
SCNL	55191, 55193, 55690, 677, 182(2217-6370, 2226-1503)
ENGG	55718
CHC	54234
	138(2288-0053, 2288-0054)
	10720(2227-3171, 2227-3168)
	HL-LalBazar police(2288-0333==2214-1915)
	HL-WB Fire(2288-0444==2252-2002)
CLI	55734
CTPC	55464

18.7 IMPORTANT TELEPHONE NUMBERS PURPLE LINE

SL NO	STATION NAME	LOCATION	PHONE NO	INTERCOM
1	JOKA	TOM	03323405754	754
2		SCR	03323405756	756
3		TER	03323405755	755
4		EFO	03323405757	757
5		ASS/TSS	03323405758	758
1	THAKURPUKUR	TOM	03323405748	748
2		SCR	03323405749	749
3		TER	03323405751	751
4		EFO	03323405750	750
5		ASS/TSS	03323405752	752
1	SAKHER BAZAR	TOM	03323405742	742
2		SCR	03323405743	743
3		TER	03323405744	744
4		EFO	03323405745	745
5		ASS/TSS	03323405746	746
1	BEHALA CHOWRASTA	TOM	03323405736	736
2		SCR	03323405737	737
3		TER	03323405739	739
4		EFO	03323405741	741
5		ASS/TSS	03323405738	738
1	BEHALA BAZAR	TOM	03323405730	730
2		SCR	03323405732	732
3		TER	03323405731	731
4		EFO	03323405733	733
5		ASS/TSS	03323405734	734
1	TARATALA	TOM	03323405726	726
2		SCR	03323405725	725
3		TER	03323405712	712
4		EFO	03323405727	727
5		ASS/TSS	03323405728	728
1	OCC		03323405700	700
2			03323405701	701
3			03323405703	703
4			03323405704	704
	POLICE		100 or 112	
	AMBULANCE		102	
	FIRE STATION		101	
	MEDICAL HELPLINE		1091	

18.8 IMPORTANT TELEPHONE NUMBERS ORANGE LINE

SL NO	STATION NAME	LOCATION	PHONE NO	INTERCOM
1	KAVI SUBASH	TOM	03323405714	714
2		SCR	03323405713	713
3		TER	03323405716	716
4		ASS/TSS	03323405715	715
1	SATYAJIT RAY	TOM	03323405720	720
2		SCR	03323405719	719
3		TER	03323405723	723
4		ASS/TSS	03323405721	721
1	J.N.NANDI	TOM	03323405759	707
2		SCR	03323405706	706
3		TER	03323405769	709
4		ASS/TSS	03323405708	708
1	KAVI SUKANTA	TOM	03323405753	724
2		SCR	03323405710	718
3		TER	03323405775	740
4		ASS/TSS	03323405711	722
1	HEMANTA MUKHOPADHYAY	TOM	03323405747	729
2		SCR	03323405729	735
3		TER	03323405781	717
4		ASS/TSS	03323405735	747
1	OCC		03323405700	
2			03323405701	
3			03323405703	
4			03323405704	
	POLICE		100 or 112	
	AMBULANCE		102	
	FIRE STATION		101	
	MEDICAL HELPLINE		1091	

NEAREST HOSPITAL/NURSING HOME & AMBULANCE

ORANGE LINE:

Sl No	Name	Address	Contact No.
1	Peerless Hospital	360, Pancha Sayar Rd, Sahid Smirity Colony, Pancha Sayar, Kolkata, West Bengal 700094 Email ph.enquiry@peerlesshospital.com / corporate@peerlesshospital.com	(033) 40111222
2	Rabindranath Tagore International Institute of Cardiac Sciences	124, Eastern Metropolitan Bypass, Premises No: 1489, Mukundapur Kolkata, West Bengal – 700099 email.rtiics@narayanahealth.org	09903 335544, 080 6750 6860
3	Apex Institute of Medical Sciences	1219, Sammilani Park Rd, near Big Bazar, Hiland Park, Survey Park, Santoshpur, Kolkata, West Bengal 700075 e-mail apeximskolkata@gmail.com	(033) 71256666
4	MEDICA Super Specialty Hospital	127 Mukundapur, E.M. Bypass, Kolkata, W.B. Pin: 700099 e-mail contactus@medicahospitals.in	(033) 66520000
5	AMRI Hospitals Mukundapur	30, Pano Rd, behind Metro Cash n Carry, Purba Jadavpur, Mukundapur, Kolkata, West Bengal 700099	(033) 66800000
6	Ruby General Hospital	576, Anandapur Main Rd, Golpark, Sector I, Kasba, Kolkata, West Bengal 700107 Email - ruby@rubyhospital.com	(033) 66871800/66011800
7	Fortis Hospital, Anandapur	730, Eastern Metropolitan Bypass, Anandapur, East Kolkata Twp, Kolkata, West Bengal 700107 e-mail :- enquiry.kolkata@fortishealthcare.com	(033) 6628 4444
8	Desun Hospital	Desun More, Kasba Golpark, E.M. Bypass, Kolkata- 700 107 e-mail desun@desunhospital.com	(033) 71222000

NEAREST POLICE STATIONS ORANGE LINE:

Sl No	Name	Address	Contact No.
1	PATULI P.S.	H-10, Baishnabghata - Patuli Township, PO - Panchasayar, Kolkata - 700094 Email: ps.patuli@kolkatapolice.gov.in	(033) 6292258606/24625195/8100796502
2	SURVEY PARK P.S.	D 50/2 East Rajapur, Kolkata - 700075 Email: ps.surveypark@kolkatapolice.gov.in	(033) 6292258803/24368052/8100796515
3	PURBA JADAVPUR P.S.	:FCR2+M7F, Purba Jadavpur Police Station Rd, Satyajit Kanan, Mukundapur, Kolkata, West Bengal 700099 Email ps.pjadavpur@kolkatapolice.gov.in	(033) 2401 1881 2401 2796
4	KASBA P.S.	27A, Bosepukur Rd, Tal Bagan, Bosepukur, Kasba, Kolkata, West Bengal 700042 Email ps.kasba@kolkatapolice.gov.in	(033) 6292258601/24420164/81007964

NEAREST FIRE SERVICE STATIONS ORANGE LINE:
GOVT. OF WEST BENGAL

Sl No	Name	Address	Contact No.
1	Baisnabghata Patuli Fire Station.	Baishnabghata Patuli Township Rd, Baishnabghata Patuli Twp, Patuli, Kolkata, West Bengal 700094	(033) 2436 0685/M-8584027157.
2	Gariahat Fire Station	25, Suniti Chatterjee Sarani, Golpark, Hindustan Park, Kalighat, Kolkata, West Bengal 700029	(033) 2464 2841/M-85840271
3	Lal Bazar Fire Station	Lal Bazar Street Kolkata - 700001	7947122273
4	Metro Railway Fire Service	Mahanayak Uttam Kumar Metro Station, Tollygunge Kolkata - 700040	(033) 2255 4411/2377 5430

GENERAL FEATURES

BLUE LINE

STATIONS	:	26
Underground	:	15
Elevated	:	09
Surface	:	02

Distance between stations

Average	:	1.186 kms
Maximum	:	2.151 kms (DumDum – Belgachia)
Minimum	:	0.600 km (Central – Chandni Chowk)
GAUGE	:	1676 mm (BG)
Length in operation	:	31.365 kms
Underground	:	15.672 kms
Viaduct	:	14.968 kms
Surface	:	0.725 km
Gradient	:	1 in 50 on running line &1 in 27 on approach to NOAPARA Carshed
Sharpest Curve	:	200 m radius (8.75 Deg.) 23 curves sharper than 8 deg.
Coach	:	BG Bogie & MG shell
Max speed	:	55 kmph
Rakes	:	13 nos MR300 series, 17 nos. MR400 series
Rake capacity	:	3170 passengers for MR300 series3033 passengers for MR400 series.
No of coaches/Rake	:	8 coaches.
System of Working	:	Automatic Signalling System
Traction	:	Third Rail (750Volt DC)

GREEN LINE (SVSA-SDHM SECTION) :

Stations	:	12
Underground	:	02 (in service)
	:	04 (under construction)
Elevated	:	06

Distance between stations :

Average	:	1.096 kms
Maximum	:	2.307 kms (SSSA to PBGB)
Minimum	:	0.794 kms (BCSD to SSSA)
Gauge	:	1435 mm (SG)
Length in operation	:	6.580kms
Underground	:	1.270kms
Viaduct	:	5.310kms
Coach	:	SG Bogie& SG shell
Max speed	:	80 kmph
Rakes	:	14 nos. MR600 series. 09 nos. commissioned
Rake capacity	:	2064 passengers for MR600 series
No of coaches/Rake	:	6 coaches
System of Working	:	CBTC(Communication Based Train Control)System
Traction	:	Third Rail (750Volt DC)

PURPLE LINE (KJKA-KTRT SECTION)

STATIONS	:	06 (All non-interlocked)
Elevated	:	06

Distance between stations

Maximum	:	1.456 kms (KJKA – KTKP)
Minimum	:	1.222 km (KTKP – KSKB)
GAUGE	:	1673 mm (BG)
Length of the section	:	7.6 kms upto buffer end of KTRT (KJKA CH.(-)404.00 to KTRT buffer end CH. 7.234)
Viaduct	:	6.52 kms excluding stations
Gradient	:	Joint line 1 - 1 in 51.282 on running line & Joint line 2 - 1 in 51.653
Sharpest Curve	:	Joint line 1 – 5.030 degree & Joint line 2 4.970 degree
Coach	:	BG Bogie & MG shell
Max design speed	:	80 kmph
Rake capacity	:	3033 passengers for MR400 series.
No of coaches/Rake	:	8 coaches.
System of Working	:	One train only system (No signals)
Traction	:	Third Rail (750Volt DC)
Platform length/height	:	180m/1.03m above rail
Track	:	a) 60 kg 108 CHH (110 UTS) CWR b) Ballast less track c) Pandrol fastening system @1667 nos. per km in straights & curves

ORANGE LINE (KKSO-KHMD SECTION)

STATIONS	:	05 (All non-interlocked)
Elevated	:	05
Distance between stations		
Maximum	:	1.890 kms (KKSO – KSJR)
Minimum	:	1.048 km (KKSK – KHMD)
GAUGE	:	1676 mm (BG)
Length of the section	:	5.399 km (centre of Kavi Subhash station, Ch: 0.971 KM to centre of Hemanta Mukhopadhyay station, Ch: 6.370 KM). Buffer at Kavi Subhash end - Ch. 0.838 Km and Buffer at Hemanta Mukhopadhyay end - Ch. 6.931 Km.
Viaduct	:	4.722 Km (From Abutment: A1 Ch:1.489 Km to buffer end of Hemanta Mukhopadhyay Ch: 6.931 Km excluding stations)
Gradient	:	Joint Line 1-1 in 35.940 & Joint Line 2-1 in 36.106
Sharpest Curve	:	Joint Line 1: 5.753 degree & Joint Line 2: 5.833 degree
Coach	:	BG Bogie & MG shell
Max design speed	:	80 kmph
Rake capacity	:	3170 passengers for MR300 series3033 passengers for MR400 series.
No of coaches/Rake	:	8 coaches.
System of Working	:	One train only system (No signals)
Traction	:	Third Rail (750Volt DC)
Platform length/height	:	180m/1.03m above rail
Track	:	a) 60 KG (110 UTS) HH RAIL new converted to CWR. b) Ballast less track c) Double Resilient fastening system of M/s Pandrol @1667 nos. per km on straights & curves.

GENERAL FEATURES

Station Distance KM Metro Railway, Kolkata BLUE LINE:

Sl. No	Station Name	Station Code	KM. From KDMI
1.	DAKKHINESWAR	KDSW	(-)6.230
2.	BARANAGAR	KBAR	(-)4.471
3.	NOAPARA	KNAP	(-)2.088
4.	DUMDUM	KDMI	0.000
5.	BELGACHIA	KBEL	2.151
6.	SHYAMBAZAR	KSHY	3.776
7.	SHOVABAZAR SUTANUTI	KSHO	4.704
8.	GIRISH PARK	KGPK	5.704
9.	MAHATMA GANDHI ROAD	KMHR	6.471
10.	CENTRAL	KCEN	7.508
11.	CHANDNI CHOWK	KCWC	8.105
12.	ESPLANADE	KESP	8.810
13.	PARK STREET	KPSK	9.618
14.	MAIDAN	KMDI	10.345
15.	RABINDRA SADAN	KRSD	11.361
16.	NETAJI BHAVAN	KNBN	12.209
17.	JATIN DAS PARK	KJPK	13.242
18.	KALIGHAT	KKGH	13.863
19.	RABINDRA SAROVAR	KRSB	15.106
20.	MAHANAYAK UTTAM KUMAR	KMUK	16.450
21.	NETAJI	KNTJ	18.264
22.	MASTERDA SURYA SEN	KMSN	19.986
23.	GITANGALI	KGTN	21.039
24.	KAVI NAZRUL	KKNZ	22.284
25.	SAHID KHUDIRAM	KSKD	23.559
26.	KAVI SUBHASH	KKVS	25.135

Point Zone Stations with Reversing Facilities:

KDSW, KBAR, KNAP, KDMI, KGPK, KCEN, KMDI, KMUK and KKVS

GREEN LINE :

Sl. No	Station Name	Station Code	KM. From SVSA
1.	SALTLAKE SECTOR-V	SVSA	0.000
2.	KARUNAMOYEE	KESA	1.225
3.	CENTRAL PARK	CPSA	2.031
4.	CITY CENTRE	CCSC	2.936
5.	BENGAL CHEMICAL	BCSD	4.085
6.	SALT LAKE STADIUM	SSSA	4.880
7.	PHOOL BAGAN	PBGB	6.580
8	SEALDAH	SDHM	8.887
9.	ESPLANADE	KESP	Under construction
10.	MAHAKARAN	MKNA	
11.	HOWRAH METRO	HWHM	
12.	HOWRAH MAIDAN METRO	HWMM	

Point Zone Stations with Reversing Facilities:
SVSA, CPSA, SSSA and SDHM (CROSS OVER)

PURPLE LINE

Sl No	Station Name	Station Code	Chainage KM	Inter-Station Distance KM
1	JOKA	KJKA	-0.003	0.00
2	THAKURPUKUR	KTKP	1.453	1.456
3	SAKHER BAZAR	KSKB	2.675	1.222
4	BEHALA CHOWRASTA	KBCR	4.128	1.453
5	BEHALA BAZAR	KBBR	5.463	1.335
6	TARATALA	KTRT	6.498	1.035
7	MAJHERHAT	KMJH	Under construction	
8	MOMINPUR	KMMP		
9	KHIDDIRPUR	KDDP		
10	VICTORIA	KVCT		
11	PARK STREET	KPSK		
12	ESPLANADE	KESP		

ORANGE LINE

Sl No	Station Name	Station Code	Chainage KM	Inter-Station Distance KM
1	KAVI SUBHASH	KKSO	0.971	0.00
2	SATYAJIT RAY	KSJR	2.861	1.890
3	JYOTIRINDRA NANDI	KJNN	4.254	1.392
4	KAVI SUKANTA	KKSK	5.350	1.068
5	HEMANTA MUKHOPADHYAY	KHMD	6.370	1.048
6	VIP BAZAR	KVIB		Under construction
7	RITWIK GHATAK	KRWG		
8	BARUN SENGUPTA	KBST		
9	BELEGHATA	KBGA		
10	GOUR KISHOR GHOSH	KGKG		
11	NALBAN	KNLN		
12	IT CENTRE	KITC		
13	NABADIGANTA	KNBG		
14	NAZRUL TIRTHA	KNLT		
15	SWAPNABHOR	KSPB		
16	BISWA BANGLA CONVENTION CENTRE	KBCC		
17	SHIKSHA TIRTHA	KSST		
18	MOTHER'S WAX MUSEUM	KMWM		
19	ECO PARK	KECP		
20	MANGALDEEP	KMBP		
21	CITY CENTRE – 2	KCCT		
22	CHINAR PARK	KCNP		
23	VIP ROAD	KVIR		
24	JAI HIND	KJHD		

GENERAL FEATURES

RAKES OF METRO RAILWAY, KOLKATA

- MR – 100 SERIES : 8 COACH NON AC ICF/BHEL MAKE (NOT IN COMMERCIAL SERVICE)
- MR – 200 SERIES : 8 COACH NON AC ICF/BHEL MAKE (NOT IN COMMERCIAL SERVICE)
- MR – 300 SERIES : 8 COACH AC ICF/BHEL MAKE
- MR – 400 SERIES : 8 COACH AC ICF/MEDHA MAKE
- MR – 500 SERIES : 8 COACH AC DALIAN /CRRC MAKE (UNDER TRIAL)
- MR – 600 SERIES : 6 COACH AC BEML MAKE

RAKES OF BLUE LINE

MR-300 (BHEL AC) – 13nos

Year of Introduced	No. of coach	Driving Motor Coach	Motor coach	Trailer coach
2010-2013	8	2	4	2

- **RAKE FORMATION MR – 300 (ICF/BHEL) :**

DMC-1	MC-1	TC-1	INV-1	INV-2	TC-2	MC-2	DMC-2

UNIT 1 UNIT 2

3025	3425	3625	3225	3226	3626	3426	3026

0 : DMC – DRIVING MOTOR COACH (WITH INVERTER)
4 : MC – MOTOR COACH WITH COMPRESSOR
6 : TC – TRAILER COACH (WITH COMPRESSOR)
2 : INV – INVERTER COACH (WITH MOTOR)

MR-400 (Medha) – 18nos

Year of Introduced	No. of coach	Driving Motor Coach	Motor coach	Trailer coach
2019-2022	8	2	4	2

- **RAKE FORMATION MR – 400 (ICF/MEDHA) :**

DTC-1	MC-1	MC-2	TC-1	TC-2	MC-3	MC-4	DTC-2

BU – 1 BU – 2 BU – 3 BU – 4

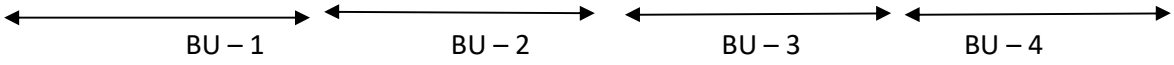
BU – BASIC UNIT

4625	4025	4027	4627	4628	4028	4026	4626

6 : DTC/TC – DRIVING TRAILER COACH/ TRAILER COACH
0 : MC – MOTOR COACH

- MR – **5**00 (CRRC/DALIAN) :

DTC-1	MC-1	TC-1	MC-2	TC-2	MC-3	MC-4	DTC-2



BU – BASIC UNIT

5601	5001	5603	5003	5604	5004	5002	5602

ANALYSIS OF COACH NUMBER –

5	**6**	0	1
RAKE SERIES	**TYPE OF COACH**	**COACH NUMBER**	

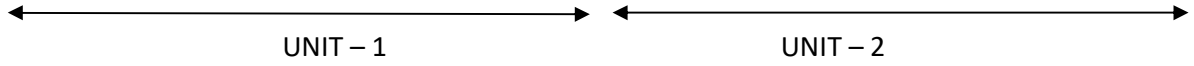
TYPE OF COACH –

6 : DTC/TC – DRIVING TRAILER COACH/ TRAILER COACH

0 : MC – MOTOR COACH

- MR – **6**00 (BEML) :

DMC-1	TC-1	MC-1	MC-2	TC-2	DMC-2



B1106	B3106	B2106	B2206	B3206	B1206

ANALYSIS OF COACH NUMBER –

B	**1**	**1**	0	6
RAKE MAKE	**TYPE OF COACH**	**UNIT NO.**	**RAKE NO.**	

TYPE OF COACH –

1 : DMC – DRIVING TRAILER COACH

2 : MC – MOTOR COACH

3 : TC – TRAILER COACH

ACCIDENT RELIEF TRAIN IN METRO RAILWAY:

Sl.No.	ART No.	Battery Loco No.	Location
1.	050	010	KKVS Crashed (N-S)
2.	040	030	NOAPARA Crashed (N-S)
3.	TMLP* & RRE **	BPEL #	Central Park Depot (E-W)
4.	RRRV***	Self Powered	Joka Car Depot

* TMLP: Truck Mounted Lifting Platform, ** RRE: Rail road equipment, *** RRRV: Rail Cum Relief Vehicle, # BEPL: Battery Powered Electric Loco

GENERAL FEATURES

5.1 POWER SUPPLY

Sl. No.	Subject	Quantity
1	Number of Receiving cum Traction cum Auxiliary Substations (33 kv/11 kv /415 ac /750 dc).	4 Nos.
2	Number of Traction cum Auxiliary Substations (11 kv / 415/ V ac / 750 V dc)	12 Nos
3	Number of Auxiliary and mid-section Substations (11 kv /415 ac)	34 Nos
4	Number of emergency battery lighting sets (250 Ah/220 V)	77 sets

5.2 Anticipated maximum power demand when fully operational 30 MVA

5 .3 Number of underground pumping station 53 Nos.

5.4 VENTILATION AND AIR- CONDITIONING

5.4.1 Main Parameters.

Sl. No.	Subject	Parameters
1	Maximum permissible temperature at stations	30 ^{0}C
2	Maximum permissible temperature in running tunnels	32.8 ^{0}C
3	Maximum relative humidity at stations	87 %
4	Maximum relative humidity at tunnels	77 %
5	Maximum air velocity in tunnels	1 m/s
6	Maximum air velocity in stations	2.5 m/s
7	No of air changes i) Station	12 times per hour
	ii) Tunnel	12 times per hour

5.6 SIGNALLING & TELECOMMUNICATION

5.6.1. Blue Line

Sl. No.	Subject		Parameters
1	**Type of signalling now in operation**		Automatic Signalling System (Three aspect Colour light)
2	**Track Supervision (Dual Detection)**	i)	MSDAC
		ii)	AFTC
3	Interlocking		Standard – II(R)
4	No. of stations	26	18 Block & 8 Non-Block
5	Interlocking type	15	Panel Interlocking (PI)
		02	Route Relay Interlocking (RRI) Carsheds
		04	Electronic Interlocking (EI) 03 Stn. 01 Carshed
6	Protection & Warning System		TPWS Level – 1. From KKVS – KDSW (the entire Blue Line)

5.6.2 Green Line

Sl. No.	Subject		Parameters
1	**Type of signalling now in operation**	i)	Communication Based Train Control (CBTC) System
2	**Line Supervision**	i)	MSDAC
3	**Telecommunication**	i)	Automatic dialing (analogue & digital) & Direct Line Consol (DLC) telephone for administrative and operating functions.
		ii)	TETRA (RCP & portable) in SCR, Cab, OCC & Car shed for operational purpose.
		iii)	Intercom telephone at platform for passenger interface with SCR.
		iv)	Closed Circuit Television at stations, OCC, Depot & Car shed for surveillance.
		v)	Trip telephone (HOT line) at platform for communication with TPC
		vi)	Emergency telephone used for inside tunnel to contact with nearest SCR or OCC
		vii)	Public address system (PAS) in train, station, car Depot & OCC.
		viii)	Master Clock System (MCS) in station & car depot.
		ix)	Provision of walkie-talkie 2 (Nos.) for point to point contact (short distance) in ART Van.
		x)	Passenger Information and Display System (PIDS) in station area.

5.6.3 TELECOMMUNICATION BLUE LINE

GSMR	Train Radio System is functional at 26 Sites as on date.GSMR mobile hand sets are provided to all associated with O & M.
Tetra System	Radio communications provided from KDSW to KNAP along with Metro Bhawan
Optical Fibre Cable Communication System	Backbone support to all Telephone Exchanges , SCADA, Data logger, MSDAC, Railnet, PA, TTIB, CCTV and Control Telephones
Electronic Telephone Exchange	ISDN Exchanges are installed at 5 locations KMUK, KDMI, KKVS KNOA Admin Building and Metro Bhawan. All the auto telephones and hotlines are provided through these exchanges. All the Exchanges are interconnected connected via E1 through OFC system
CCTV Surveillance System	All 26 stations and Metro Bhawan are provided with on & average 25 CCTV cameras per location. Total 669 Nos of cameras are installed (Fixed: 593, PTZ:76)
Motorman CCTV System:	All 26 stations are provided with MCCTV system to facilitate the Driver/ Guard to ensure safety of commuters during entry and exit from train.
Train Management system (TMS)	At Central Control Room, video wall running through Real time data acquisition from FIUs installed at Relay Rooms of all Stations.
Train Time Indication Boards	26 Sites are functional as on date. Different types of boards such as SLDF, DLSF , Welcome Board and Motorman TTIBs are installed at Platforms , Booking Counters, Entry/ Exit Gates for display train timings and Service status.
PA system	Digital PA system provided at 26 Stations . Local announcement at all zones by Station Master of each station and Central Announcement from Central control at Metro Bhawan to all stations can also done.
Railnet System	At Metro Bhawan, Officers Quarters, Service Buildings, Carsheds and TSM Hospitals.
Section Control	26 Sites are functional as on date for emergency communication system between Central Control and at all station on Omni bus circuit

5.7 RFID basis Automatic Fare Collection and Passenger Control System

i) POST (Point of Sale Terminal): To issue tokens
ii) Card Reader: To issue different types of cards
iii) Entry Gate: Entry of passengers
iv) Exit Gate: Exit of passengers
v) Bi-directional Gate: Entry and exit of passengers
vi) Stn. Server: To supervise the working of above
vii) Central Server : To link all above machines. at Data Center

5.8 CIVIL ENGINEERING

5.8.1 : BLUE LINE

5.8.1.1 Method of Construction

a)	Reinforced concrete box by cut and cover method	13.874 km
b)	Driven tunnels with CI or RC lining	1.232 km
c)	Elevated length carried over Reinforced Concrete Girders	1.584 km
d)	Elevated length over PSC box girders	7.673 km
e)	Surface / Through	3.385 km

5.8.1.2 Platforms

a) Length 170.0 m

b) Type and width

i) Dum Dum : 2 side platforms 5.0 m & 7.0 m wide
ii) Central : One Island platform 8.26 m wide, 2 side platforms, each 4.13 m wide
iii) Park Street : 2 side platforms each 5.5 m wide
iv) Mahanayak Uttam Kumar : 2 side platforms each 6.0 m wide
v) Netaji, Masterda Surya Sen, Gitanjali, Kavi Nazrul, Shahid Khudiram : 2 side platforms each 2.9 m – 7.6 m wide.
vi) Kavi Subhash : 2 side platform each 3 m – 11 m wide
vii) Others : Island platforms 10.26 m and 6.2 m wide

c) Height above Rail Level 1.03 m

5.8.1.3 Depth of Station

a) Underground Stations
Depth from Ground Level
To Platform Level:

i)	Maximum (at Central Station)	12.854m
ii)	Minimum (at Park Street) station	6.920m

b) Elevated Station Height above
Ground Level to Platform Level:

i)	Maximum (at Kavi Nazrul Station)	12.353m
ii)	Minimum (at Dum Dum Station)	6.957 m

5.8.1.4 Box/Tunnel Dimension (Min.)

a) Box Section:-

- Tangent Track	8.19 m x 4.64 m	Internal dimensions
- Curved Track (200m Radius)	9.04 m x 4.715 m	

b)

Bored Tunnel for	5.10 m	Inner diameter
single track	5.50 m	Outer diameter

5.8.1.5 Horizontal Alignment

a)	Minimum radius of curvature in block section	200 m
b)	Minimum radius of curvature at stations	1000 m

5.8.1.6 Gradient Abstract

i)	Steepest grade in running line	1 in 50
ii)	Steepest grade in connection to Car Depot	1 in 25

5.8.1.7 Curve Abstract

a) Ratio of Curve Length to total length:

i)	Kavi Subhash to Dum Dum	: 47.41 %
ii)	Dum Dum to Kavi Subhash	: 46.17 %

b) Ratio of Curve Lengths of Radius
400 m and less to total length:

i)	Kavi Subhash to Dum Dum	: 24.36 %
ii)	Dum Dum to Kavi Subhash	: 23.59 %

c) Average amount of curvature per km:

i)	Kavi Subhash to Dum Dum	: 474.1 m
ii)	Dum Dum to Kavi Subhash	: 461.7 m

5.8.1.8 Track Structure:

a) Main tracks are ballast-less and consist of 60 kg rails with elastic fasting on concrete bed.

b) In depots, the track consists of 44.61 kg/m (90 R) rails on sleepers resting on ballast.

c) 1 in 10 points and crossings on wooden sleepers resting on ballast or ballast-less bed for running lines and 1 in 8 ½ for car Depot (KKVS – 18 Nos).

5.8.2 GREEN LINE

5.8.2.1 Method of Construction

a) Reinforced concrete box /circular tunnel by cut and cover method : 13.874 km 0.955 km

b) Driven tunnels with CI or RC lining : 1.232 km

c) Elevated length carried over Reinforced Concrete Girders : 1.584 km 5.625km

d) Elevated length over PSC box girders : 7.673 km

e) Surface / Through : 3.85km 7.14 Tkm (CPD Yard)

5.8.2.2 Platforms

a) Length : 140.0 m (Elevated and underground)

b) Type and width

Sector-V	:	Platform width Min 3.5m, Max 5.1 m; Overall width – concourse 40.83m and platform 20.66m
Karunamoyee	:	Platform width Min 3.5m, Max 4.2m; Overall width – concourse 27.05m and platform 14.28m
Central Park	:	Platform width Min 3.25m, Max 4.5 m; Overall width – concourse 52.05m and platform 31.55m
City Centre	:	Platform width Min 4.2m, Max 4.5m; Overall width – concourse 26.85m and platform 14.885m
Bengal Chemical	:	Platform width Min 3.5m, Max 5.0m; Overall width – concourse 34.0m and platform 19.0m
Salt Lake Stadium	:	Platform width Min 3.5m, Max 4.5m; Overall width – concourse 40.5m and platform 20.0m
Phoolbagan	:	South side platform 6.1m wide; One island platform 11.6m wide
Sealdah	:	North side platform 5.7m wide; Middle island platform 11.45m wide

c) Height above Rail Level : 1.0805m to 1095 m

5.8.2.3 Depth of Station

a) Underground Stations;
Depth from Ground Level
to Platform Level:

i)	Maximum (at Sealdah station)	:	15.75 m
ii)	Minimum (at Phoolbagan) station	:	15.01 m

b) Elevated Station Height above;
Ground Level to Platform Level:

i)	Sector V	:	13.925m
ii)	Karunamoyee	:	13.83m
iii)	Central Park	:	9.33m
iv)	City Centre	:	13.53m
v)	Bengal Chemical	:	13.63m
vi)	Salt Lake Stadium	:	13.73m

5.8.2.4 Box/Tunnel Dimension (Min.)

a) Box Section:-
- Tangent Track : 8.19 m x 4.64 m Internal dimensions
- Curved Track : 9.04m x 4.715 m
(200m Radius)

b) Bored Tunnel for single track: 5.8 m Inner diameter; 5.55m Outer diameter

5.8.2.5 Horizontal Alignment

a)	Minimum radius of curvature in block section	:	225 m
b)	Minimum radius of curvature at stations	:	1000m
c)	Minimum radius of curvature in Viaduct section	:	117.9m (minimum allowed 120m as per SOD)

5.8.2.6 Gradient Abstract

For phase -I

i)	Steepest grade in running line	:	1 in 29
ii)	Steepest grade in connection to Car Depot	:	1 in 32

For Phase – II

i)	Steepest grade in running line	:	1 in 34
ii)	Steepest grade in connection to Car Depot	:	1 in 32

5.8.2.7 Curve Abstract

a) Ratio of Curve Length to total length:
Phase- I

i)	Sealdah to Salt Lake Sector V	:	37.28 %
ii)	Salt Lake Sector V to Sealdah	:	39.12 %

For Phase-II

i) Howrah Maidan to Sealdah (East bound) : 56.71 %

ii) Sealdah to Howrah Maidan (West Bound) : 54.44 %

b) Ratio of Curve Length of Radius 400 m and less to total length:

For Phase-I

i) Sealdah to Salt Lake Sector-V(EB) : 23.92 %

ii) Salt Lake Sector-V to Sealdah (WB) : 23.17 %

For Phase –II

i) Howrah Maidan to Sealdah (EB) : 48%

ii) Sealdah to Howrah Maidan (WB) : 45.77%

c) Average amount of curvature per km:

For Phase -I

i) Sealdah to Salt Lake Sector-V(EB) : 372.80 m

ii) Salt Lake Sector-V to Sealdah (WB) : 391.20 m

For Phase-II

i) Howrah Maidan to Sealdah (EB) : 567.10 m

ii) Sealdah to Howrah Maidan (WB) : 544.40 m

i) Salt Sector-V to Sealdah : 372.80 m

ii) Sealdah to Howrah Maidan : 567.10 m

5.8.2.8 Track Structure:

a) Main line tracks are ballast-less and consist of 1080 HH 60 kg [60E1(UIC60)] Grade rails Fixed DRBA fastening system. Track laid on cast-in-situ plinth or track slab designed as plinth beam or slab type BLT with derailment guard.

b) In depots, 880 Grade 60 E1 (UIC60) rails has been provided over PSC sleepers with ERC Mk-III fastening with ballast cushion of 300mm.

c) Scissor Cross Over with T.O.- 1 in 9 (R-300m), Point and crossings 1 in 9 (R-190m), 1 in 7 (R-190m) in main line are laid on track slab and points and crossings 1 in 7 (R-140m) laid on PSC TO sleeper over ballast.

b) Check rail of Section UIC 52 Kg rail are provided on mainline where radius is 190mm or less.

APPENDIX "G"

RULES FOR WORKING OF TRAINS IN ELECTRIFIED SECTIONS

(FOR ONE TRAIN ONLY SYSTEM)

750V DC TRACTION STATION WORKING RULES FOR JOKA STATION

(FOR ONE TRAIN ONLY SYSTEM)

1.0 The general principles governing operation and maintenance of traction equipment operated on 750V DC will be guided by these rules. This Rules Book shall be kept in each station and all the staff dealing with safe working shall make themselves thoroughly familiar with the **GR 10.01 to 10.08 and SR 10.01, 10.02(2)** and **10.5(5)** and concern clauses of PDSR for Metro Railway issued by Chief Electrical Engineer dt.30.09.1990.

Brief reference to important rules required to be followed by station staff in their day to day work has been given in this appendix. These are, however, illustrative and not exhaustive.

2.0 General Safety Precaution:

2.1. All cables, conductor Rail and electrical equipment shall be regarded as being alive all time and consequently dangerous for human life, save and except in cases where the Conductor Rail and electrical equipment has been specially made dead in accordance with the provisions of these Rules.

2.2. All staff is warned usual direct or indirect contact with live portion of 750V Conductor Rail with any conducting materials as it is dangerous and impairs safety.

2.3. No work on 750V DC line (Conductor Rail) or its immediate vicinity of any live equipment shall be carried out unless a regular Permit to work (PTW) is obtained from the authorized traction staff and line is made dead and earthed as per rule.

2.4. No work shall be undertaken on Conductor Rail or its associated equipment or in Zone within 1(one) meter from conductor rail. The work should be carried out in accordance with instructions issued in this regard by Chief Electrical Engineer.

2.5. No Metro Railway employee excepting those authorized is allowed to go to the track bed in any of the alignments as third rail is always alive/ charged.

3.0 Section Diagram:

3.1.For feeding arrangement indicating the sectioning diagrams which have been dedicated to carry 750V DC for electric traction purposes Diagram No. RVNL/KOL/JOKA-MAJERHAT/SYSTEM/01(Revision-Q) should be followed. The diagram indicates the position of controlling circuit breakers, isolators and substations. The limit of an electrical section is indicated by arrow mark with Map. The arrow mark at the end of each electric section indicates the position of the slope rails.

3.2. For all purposes connected with train movement and power block, Diagram No. RVNL/KOL/JOKA-MAJERHAT/SYSTEM/01(Revision-Q) is the only authorized document to be referred to.

4.0 Operation of Switches:

4.1 All switching operations shall be carried out in accordance with the instruction of the Traction Power Controller.

5.0 Procedure for Power Block Working:

Power Block are of three different types:

a) Pre-arranged / normal power block;

b) Emergency power block;

c) Local power block.

5.1 Such power block is granted for the purpose of carrying out scheduled maintenance by various departments on planned basis. Each Department is expected to send their requirement of weekly power block Programme to TPC as per instruction in force.

5.2 Granting of Normal Power Block:

5.2.1 One Supervisor from branch, not below the rank of JE, is to be nominated to collect all maintenance works scheduled to be carried out from that department for the 10 days period.

5.2.2 The 10 days programme, to be carried out during non-commercial hours, is to be submitted to a nominated supervisor of Electrical branch on every 1st, 11th, 21st of each month for execution of works on 11th, 21st, and 01st of the next 10 days periods.

5.2.3 After collection of all the programmes from all the departments the nominated supervisor of Electrical Department will submit a consolidated statement of works proposed to Dy.COM-II for his perusal and approval by 3rd, 13th, and 23rd every month. In absence of Dy.COM-II it is to be put up to STM-I.

5.2.4 The approved programmes are to be circulated to all concerned including Traffic Controller by 5th, 15th, 25th for execution of works from 11th, 21st of the month and 1st of the next month.

5.2.5 As per the above programme Supervisors from Civil, Electrical and S&T departments will make out a message in PTW -1, asking permission – to work from one of the PD (Power Distribution) Supervisors (not below the rank of JE), stationed at (name of Maint. Depot) --------- under exchange of private number, with the following details:

(i) Requisition No.

(ii) Nature of work

(iii) Location

(iv) Date/Time (From…….. to …….)

(v) Name of the Maint. Depot

(vi) Name of the supervisor (vii) No. of workers

5.2.6 All supervisors entrusted to take PTW and grant PTW must have an authorized Private Number Sheet.

5.2.7 The PD(Electrical) Supervisors stationed at (Name of Maint. Depot) will communicate the requisitions to Traction Power Controller on duty at Central Control, Metro Rail Bhavan under exchange of private numbers.

5.2.8 The Traction Power Controller on duty will keep the Section Controller on duty advised in writing about the requisitions placed by the supervisors.

5.2.9 Then the Traction Power Controller on duty will arrange power block through remote control or in co-ordination with the sub-stations and will communicate the same to the 3rd rail supervisors stationed at the above 4 locations under exchange of private number.

5.2.10 The PD (Power Distribution) Supervisors, after getting confirmation of power block will arrange earthing of the 3rd rail on either end before issue of Permission – to – work in PTW-2.

5.2.11 The PD (Power Distribution) Supervisors will issue PTW-2 under exchange of private numbers with the concerned supervisors indicating date and time from which PTW has been issued and date & time PTW is to be returned clearly indicating that PTW is to be returned only after removal of men and materials from the site of works and track is free from obstruction for safe restoration of train movement.

5.2.12 Work at each location is to be supervised by a competent supervisor.

5.2.13 After complete of work a cancellation advice is to be issued by the concerned supervisor in the prescribed form PTW-3, under exchange of private number with the concerned PD (Power Distribution) Electrical Supervisor with date and time.

5.2.14 The concerned supervisors must confirm that the work has been completed, men and materials have been removed from the site of work and the track is free from obstruction for restoration of train movement.

5.2.15 After complete cancellation of permission – to – work and ensuring removal of men and materials from the site of works and confirming track free from obstruction the concerned 3rd rail supervisors will pass on a power block cancellation message to Traction Power Controller in a prescribed format PTW-7, under exchange of private number. In the message they should confirm that men and materials under their charge have been removed from the site of work and earths have been removed. Power in the sections may be charged.

5.2.16 On receipt of the power block cancellation message from the PD (Power Distribution) Supervisors, Traction Power Controller on duty will arrange to switch on the feeders.

5.2.17 After charging of the 3rd rail in the sections Traction Power Controller will issue a “Line Safe Certificate” to Section controller on duty.

5.2.18 After receiving the “Line Safe Certificate” from Traction Power Controller the Section Controller on duty will plan to run Up and Down Pilot Trains.

5.2.19 For maintenance works at Joka, Thakurpukur, Sakherbazar, Behala Chowrasta, Behala Bazar, Taratala and Joka Yards/Car sheds requisition for PTW may be addressed to Car Shed Supervisors not below the rank of JE.

5.2.20 All concerned (Supervisors asking PTW, PD (Power Distribution) 3rd rail Supervisors granting PTW, TPC and SCNL) are to maintain Registers to record the above activities during the power block. Format of the Registers of the Supervisors and Central Control is to be designed to record all above activities in clear and convincing manner right from asking PTW to restoration of normal train running.

5.3. EMERGENCY POWER BLOCK:

5.3.1.Emergency Power Block can be imposed during any time by the supervisors of Civil, Electrical and S&T in the grade of Rs (5000-8000) (RSRP) and above or Sr.TS / TS or Motorman on telephone and the conductor rail will be switched Off from the substation after getting advice from the TPC. If any emergency power block is required which has not been programmed, the co-coordinating supervisor shall give the particulars in the proforma mentioned under Para 5.2.1 above and avail the permit-to-work by following the procedure mentioned above.

5.3.2. In exceptional and rare case and in a grave emergency situation, where emergency power block procedure cannot be duly followed, emergency switching off of power supply the conductor rail may be restored to by the TPC or the substation operator on advice from any Metro Railway supervisory staff including those of the Traffic Department. In such a situation, it is the responsibility of the concerned supervisory staff requisitioning emergency switching off of the power supply to ensure that power supply to the third rail has actually been switched off and the conductor rail is dead before physical contract with the conductor rail to establish by any person or work in the vicinity of the conductor rail is permitted. It is imperative that duration of such interruptions to power supply to be kept to the barest minimum. The above mentioned supervisory staff, after satisfying himself that the grave situation is over limit the conductor rail and the track has been cleared of all infringements, that damages, if any, have been repaired by respective Departmental staff and that the affected site has been cleared of men and materials, will advise the TPC or substation operator to restore the power supply by exchanging private numbers. Application of normal power block procedure will be restored from this stage onwards. In all such cases, a report must be sent to the Chief Electrical Engineer, Metro Railway through proper channel, justifying such a course of action.
5.3.3.Power supply by exchanging private numbers. Application of normal power block procedure will be restored from this stage onwards. In all such cases, a report must be sent to the Chief Electrical Engineer, Metro Railway through proper channel, justifying such a course of action.

5.3.4.The emergency power block will be endorsed only in case of extreme emergency which may endanger human life, train or any other equipment, property or disruption to traffic.

5.3.5.The Motorman of a stranded train in the section shall issue a message to TPC through communication circuit at his disposal for imposition of power block either for attending the defective train or evacuation of the passengers. On getting the power block, the motorman shall earth the rail as per extent procedure. In case the power block has been imposed by any agency other than motorman, the earthing of the line shall be done in consultation with TPC.

6.0 LOCAL POWER BLOCK

The power block on the conductor rail of "Secondary Lines" such as sidings, yards, shades etc. Arranged by Sr.TA/ TS, Yard Master or JE/SSE of concerned shed, come under this category.

7.0 TRAFFIC BLOCK

However, power block is taken on any section; traffic block shall also be taken simultaneously, i.e. during pendent of power block there should no movement allow in or out of the section, under power block. In special circumstances when movement of self-propelled vehicle like Battery locomotive is required, this may be done by piloting or restricted speed.

8.0 PROTECTION AT THE TIME OF POWER BLOCK

8.1 All section over which a power block has been granted shall be protected against entry of Metro Coaches during the period of the block as per annexed sheet no. A.

8.2 Before introducing a single line working the Sr.TS/TS/Sr.TA on duty shall ensure from the Traction Power Controller that there is no power block on the route on which single line working is being introduced.

9.0 BREAKDOWN OF ELECTRIC EQUIPMENT:

9.1 All breakdown or defects noted or reported on the conductor rail or any other electrical equipment shall immediately be reported to the Traction Power Controller. Temporary caution order should be launched to the motorman on duty led by the Traction Power Controller observing the existing rules regarding issue of caution order.

10.0 FIRE AND ACCIDENT:

10.1 Regarding accident and fire on or adjacent to any electrical equipment refer SR 6.12, 6.12(1), 6.12(3) and PDSR (6.1& 5.1- 5.3.1)

11.0 ELECTRIC SHOCK:

11.1 Station Master shall exhibit prominently the instructions issued regarding the treatment of a person suffering from electric shock in the station and shall ensure that all class III staff are familiar with these instructions (as per electric shock treatment chart).

POWER BLOCK AT JOKA DEPOT.

1.0 Normal Maintenance Power Block :

1.1 Issue of P.T.W. for normal maintenance is restricted during commercial hours.

1.2 The procedure of Normal Power Block is indicated in Para 5.2 and emergency power block as mentioned in Para 5.3 should be followed.

2.0 Procedure for Power Block at JOKA Depot

2.1 Power to conductor rail on DN line between Joka (Esplanade end Neutral Section) DN Platform (inclusive) and Joka Depot DN Neural Section is fed from Single end by 750 V DC through cables from high speed circuit breaker (HSCB) 112DB03 at Joka /RSS. Power to conductor rail on UP line between Joka (Joka Depot end Neutral Section) to UP Joka Depot end neutral Section (exclusive Joka UP Platform) is fed from both end through cables from high speed circuit breaker (HSCB) at Joka/RSS 112DB04.
Emergency power supply feed can be extended on DN line Joka- Joka Depot section by 112DS03 & 112DB05 from Joka/RSS and on UP line between UP Joka Depot Neutral Section to Joka Station Depot End Up Neutral Section by 112DS04 & 112DB05 from Joka/RSS .

2.2 Third option is available for extension of feed by closing Bridging HSCB. For Joka DN PF (inclusive) to Joka Depot Neutral Section 750 Volts DC feed can be extended from Taratala -Joka DN line by closing 112BCP01 at Joka/RSS. Similarly UP line 750 Volts DC feed can be extended from Joka – Taratala UP line to Joka Depot-Joka UP line to by closing 112BCP02 at Joka /RSS.

2.3 The sequence of switching operation/cancellation of power block from the section mentioned in Para 13.1 shall be carried as per Annexed sheet – A.

2.4 All the operation and information regarding taking and releasing P.T.W. in the above section should be confirmed by the parties and the PD (Power Distribution) supervisor who will be available at (Joka Depot) by exchanging private number as Para 5.2.5.

2.5 All the operation and information regarding taking and releasing P.T.W. in the above section should be confirmed by the parties and the PD (Power Distribution) supervisor who will be available at (JOKA DEPOT) by exchanging private number as Para 5.2.5.

3.0 **The Standard Operating Procedure for emergency discharge of traction power through EMERGENCY TRIPS SWITCH (ETS) has been outlined. These trip switches are separate for different Yard line and Car shed line and are located at suitable location of Yard line.**

Following procedure shall be observed for switching off third rail traction power by use of ETS in emergency situation:

3.1 This Procedure Order shall be read in conjunction with Metro Railways General Rules (Part I &Special Instruction (if any) in force. Only competent Railway staff are authorized to use this device and every care must be taken to guard against unauthorized use.

3.2 This trip switch shall be used in emergency **when safety of train movement is endangered or when a potential hazard is noticed which may damage Railway asset i.e fire/arcing/water flowing over track etc. Or to prevent injury . Emergency Trips Switch(**ETS) shall also be used as safety device against unwanted / accidental charging of third rail in any emergency.

3.3 During any emergency condition which requires instant discharging of third rail power, Depot staff shall "switch off" the third rail power by breaking the window glass of ETS or opening the locking arrangement of ETS and pushing the mushroom push button (Red colour) placed inside the Emergency Tripping box located at suitable location of elementry 3rd rail section. He shall immediately inform the Traction Power Controller (TPC) by direct call telephone placed near the Emergency tripping Box and confirm the reason for switching off the traction power by application of Push Button of ETS.

3.4 Depot supervisor shall convey clear information to the TPC by most expeditious means, when and where traction power must be switched off whenever so warranted to ensure safety.

3.5 ETS shall also be used by Depot staff to switch off the third rail traction power of required section on receipt of an emergency request from TPC under exchange of Private Number.

3.6 Before switching off the third rail traction power by use of ETS, competent Railway staff shall ensure that all trains are brought to safe location as far as practicable and train movement is regulated accordingly.

3.7 On receipt of information from Depot about local switching off of traction power, TPC will monitor train movement so as not to allow trains to enter the affected section. He will also report the incident to higher officials expeditiously and prepare incident log for the same for further investigation. Normal train movement shall only resume on confirmation of fitness of track from the station concerned.

3.8 TPC (Traction Power Controller) shall not switch on traction power again until the circumstances have been investigated at the spot and the cause of emergency has been found to have been removed, repaired or potential hazard has ceased to exist.After ascertaining that normalcy has been restored Depot Supervisor shall reset ETS and confirm the same to TPC under exchange of Private number.Thereafter TPC shall switch ON traction power and advise Chief Controller. Chief Controller shall ensure that normal train movement is restored.

EFFECTS OF ETS OPERATION AT JOKA DEPOT

STATION NAME	Operation of ETS	Section Dead (No 750 DC power on 3rd rail)
JOKA DEPOT	113ETS-1A	LINE-1 (Test Track)
	113ETS-1B	LINE-1 (Test Track)
	113ETS-1C	LINE-1 (Test Track)
	113ETS-1D	LINE-1 (Test Track)

	113ETS-2A	LINE-2,3 ,28 to 34,Stabling Line 1 to 6
	113ETS-2B	LINE-2,3 ,28 to 34,Stabling Line 1 to 6
	113ETS-2C	LINE-2,3 ,28 to 34,Stabling Line 1 to 6
	113ETS-2D	LINE-2,3 ,28 to 34,Stabling Line 1 to 6
JOKA DEPOT	113ETS-3A	LINE-21 to 27, Stabling Line 7 to 13.
	113ETS-3B	LINE-21 to 27, Stabling Line 7 to 13.
	113ETS-3C	LINE-21 to 27, Stabling Line 7 to 13.
	113ETS-04	STINGER LINE-1,2 & 3
	113ETS-05	STINGER LINE-4,5 &6
	113ETS-06	STINGER LINE-4,5 & 6
	113ETS-7A	LINE-4 & LINE 13 to 20.
	113ETS-7B	LINE-4 & LINE 13 to 20.
	113ETS-7C	LINE-4 & LINE 13 to 20.
	113ETS-8A	LINE-5,6 & LINE-8 to 12
	113ETS8B	LINE-5,6 & LINE-8 to 12
	113ETS-8C	LINE-5,6 & LINE-8 to 12

JOKA DEPOT ZONE(Joka-Esplade Line.):

WORKING RULE OF ELECTRICAL TRACTION FOR DOWN AND UP LINE, JOKA YARD AND JOKA CAR SHED LINE.

(For one Train Only System)

Section Blocked	Protection against entry of Metro Coaches.		Switching operation sequences	
	Longitudinals	Tranverse	For granting power Block	For cancellation of Power Block
DN line conductor Rail in between Joka Esplanade end neutral section to Joka Depot Neutral section (Inclussive Joka DN Platform)	No train should start from Taratala DN Platform towards Joka DN Platform.	No transeverse movement is possible from UP line to DN line Joka Depot end Cross over.	OPEN/OFF i) 112DB03 at Joka/RSS. Confirm that i)112BCP01 at Joka /RSS is in open condition. ii) 112IM03 is in open condition. iv)confirm that TD15A & TD15B (Bridging Isolator at Joka Depot) are in open condition. v) confirm that 112DS03 is in open condition.	Close/ON i) 112DB03 at Joka/RSS. Confirm that i)112BCP01 at Joka /RSS is in open condition. ii) 112IM03 is in close condition. iv)confirm that TD15A & TD15B (Bridging Isolator at Joka Depot) are in open condition. v) confirm that 112DS03 is in open condition.
UP line conductor Rail in between Joka Depot Neutral section to Joka, Joka Depot end Neutal Section.(Joka UP platform exclusive).	No Longitudinal movement is possible in this section. No train should start from Joka Depot towards Joka UP P.F.	No transeverse movement is possible from DN line to UP line in between Joka & Joka Depot and Vice-Verse	Open/OFF i) 112DB04 at Joka /RSS and ii) confirm that i)112IM04 is in open position. ii) 112BCP02 is in open condition. iii)TD14A & TD14B are in open condition.	Close/ON i) 112DB04 at Joka /RSS and ii) confirm that i)112IM04 is in Close position.ii) 112BCP02 is in open condition. iii) TD14A & TD14B are in open condition. viii) 112DS04 is in open condition.

			iv) 112DS04 is in open condition.	
Yard Line No.3, from Joka depot neutral section ,113TD14B to Neutral Section Between Line no.3 and Line No 4 near Curve No.2	No Longitudinal movement is possible in this section. No train should start from Joka Depot towards Joka UP P.F. and vice-verse	No transeverse movement is possible from DN line to UP line in between Joka & Joka Depot and Vice-Verse	Open/Off: i)113DB02 at Joka Depot TSS. Confirm that i)113IM02 is in open condition. ii) 113TD02 is in open condition. iii) 113DS02 is in open condition. iv) 113TD14B is in open condition.	Close/On: i)113DB02 at Joka Depot TSS. Confirm that i)113IM02 is in close condition. ii) 113TD02 is in close condition. iii) 113DS02 is in open condition. iv) 113TD14B is in open condition.
Joka Yard Line No.4 from Joka Depot Neutral Section ,113TD15B to Neutral section between line no 4 and Line no 20 at the car shed end of curve no 2 ,	No Longitudinal movement is possible in this section. No train should start from Joka Depot towards Joka UP P.F. and vice-verse	No restriction for transverse movement from DN line to UP line in between Joka station & Joka Depot neutral section and Vice-Verse	Open/Off: i)113DB10 at Joka Depot TSS. Confirm that i)113IM10 is in open condition. ii) 113TD07 is in open condition. iii) 113DS10 is in open condition. iv) 113TD15B is in open condition.	Close/On: i)113DB10 at Joka Depot TSS. Confirm that i)113IM10 is in close condition. ii) 113TD07 is in close condition. iii) 113DS10 is in open condition. iv) 113TD15B is in open condition
Joka Yard Line No. 18, Line No.19, Line No 20, from Neutral Section between Line no 4 & Line No. 20 upto metal road	No Longitudinal movement is possible in this section. No train should start from Joka	No restriction for transverse movement from DN line to UP line in between Joka	Open/Off: i)113DB10 at Joka Depot TSS. Confirm that i)113IM10 is in open condition. ii)	Close/On: i)113DB10 at Joka Depot TSS. Confirm that i)113IM10 is in close condition. ii) 113TD08 is in close condition.

at the entry/exit of Stinger Line No. 1 and Stinger Line No.2. of Car Shed Line.	Depot towards Joka UP P.F. and vice-verse	& Joka Depot and Vice-Verse	113TD08 is in open condition. iii) 113DS10 is in open condition.	iii) 113DS10 is in open condition.
Car Shed Stinger Line no.1. from Car shed metal Metal road to end of Car shed upto Buffer end.	No Longitudinal movement is possible in this section. No train should start from Joka Station to Stinger Line No.1. and vice-verse	No restriction for transverse movement from DN line to UP line in between Joka & Joka Depot and Vice-Verse	Open/Off: i)113DB11 at Joka Depot TSS. Confirm that i)113IM11 is in open condition. ii) 113TD11 is in open condition. iii) 113DS11 is in open condition. iv) Disconnector of Stinger DB (113TD11A) is in open condition.	Close/On: i)113DB11 at Joka Depot TSS. Confirm that i)113IM11 is in close condition. ii) 113TD11 is in close condition. iii) 113DS11 is in open condition. iv) Disconnector of Stinger DB (113TD11A) is in close condition.
Car Shed Stinger Line no.2. from Car shed metal Road to end of Car shed upto Buffer end.	No Longitudinal movement is possible in this section. No train should start from Joka Station to Stinger Line No.2. and vice-verse	No restriction for transverse movement from DN line to UP line in between Joka & Joka Depot and Vice-Verse	Open/Off: i)113DB11 at Joka Depot TSS. Confirm that i)113IM11 is in open condition. ii) 113TD11 is in open condition. iii) 113DS11 is in open condition. iv) Disconnector of Stinger DB (113TD11B) is in open condition.	Close/On: i)113DB11 at Joka Depot TSS. Confirm that i)113IM11 is in close condition. ii) 113TD11 is in close condition. iii) 113DS11 is in open condition. iv) Disconnector of Stinger DB (113TD11B) is in close condition.

N.B. :

In one Train Only System:

1) only Car Shed Stinger Line No 1 and Stinger Line No. 2 will be utilized for rake stabling and rake testing.

2)Yard Line No 19, part of Line no 18, Line No.20 will be utilized for rake intake and rake offering from Stinger Line 1 and Stinger Line No.2.

3) Yard Line No. 4 will be utilized for reception and offering rake directly from DN main line and to main line.

4) **Yard line no 3 will be utilized for reception and offering rake directly from UP main line and to main line.**

5) Three Nos. Transfer line will be utilized for transfer of rake from Yard Line No.3 and Yard Line No.4.

6) Part of Line No.4, Single line will be available for reception and offering of rake from main UP & DN line and vice-verse.

POWER BLOCK AT JOKA STATION.

1.0 Normal Maintenance Power Block :

1.1 Issue of P.T.W. for normal maintenance is restricted during commercial hours.

1.2 The procedure of Normal Power Block is indicated in Para 5.2 and emergency power block as mentioned in Para 5.3 should be followed.

2.0 Procedure for Power Block at JOKA station

2.1 Power to conductor rail on DN line between Joka (Esplanade end Neutral Section) DN Platform (inclusive) and Joka Depot DN Neural Section is fed from Single end by 750 V DC through cables from high speed circuit breaker (HSCB) 112DB03 at Joka /RSS. Power to conductor rail on UP line between Joka (Joka Depot end Neutral Section) UP Platform (inclusive) & Taratala, Joka end neutral section is fed from both end through cables from high speed circuit breaker (HSCB) at Joka/RSS 112DB02 and Taratala/TSS 107DB04.
Emergency power supply feed can be extended on DN line Joka- Joka Depot section by 112DS03 & 112DB05 from Joka/RSS and on UP line (Joka Platfom inclusive) Joka-Taratala Section by 112DS02 & 112DB05 from Joka/RSS and 107DS04 and 107DB05 at Taratala/RSS.

2.2 Third option is available for extension of feed by closing Bridging HSCB. For Joka DN PF (inclusive) to Joka Depot Neutral Section 750 Volts DC feed can be extended from Taratala -Joka DN line by closing 112BCP01 at Joka/RSS. Similarly UP line 750 Volts DC feed can be extended from Joka Depot-Joka UP line to Joka – Taratala UP line by closing 112BCP02 at Joka /RSS.

2.3 The sequence of switching operation/cancellation of power block from the section mentioned in Para 13.1 shall be carried as per Annexed sheet – A.

2.4 All the operation and information regarding taking and releasing P.T.W. in the above section should be confirmed by the parties and the PD (Power Distribution) supervisor who will be available at (JOKA DEPOT) by exchanging private number as Para 5.2.5.

3.0 **The Standard Operating Procedure for emergency discharge of traction power through EMERGENCY TRIPS SWITCH (ETS) has been outlined. These trip switches are separate for UP and DN line and are located at both ends of the platforms (Up & DN) as well as in Shift-in-Charge's room.**

Following procedure shall be observed for switching off third rail traction power by use of ETS in emergency situation:

3.1 This Procedure Order shall be read in conjunction with Metro Railways General Rules (Part I &Special Instruction (if any) in force. Only Shift-in-charge and competent Railway staff are authorized to use this device and every care must be taken to guard against unauthorized use.

3.2 This trip switch shall be used in emergency **when safety of train movement is endangered or when a potential hazard is noticed which may damage Railway asset i.e fire/arcing/water flowing over track etc. orto prevent injuryto passenger intruding on tracks without authority**. **Emergency Trips Switch(**ETS) shall also be used as safety device against unwanted / accidental charging of third rail in any emergency.

3.3 During any emergency condition which requires instant discharging of third rail power, Station staff shall "switch off" the third rail power by breaking the window glass of ETS or opening the locking arrangement of ETS and pushing the mushroom push button (Red colour) placed inside the Emergency Tripping box located at both ends of each platform (UP & Down) and SCR office. He shall immediately inform the Traction Power Controller (TPC)by direct call telephone placed near the Emergency tripping Box and confirm the reason for switching off the traction power by application of Push Button of ETS.

3.4 Shift-in-Charge shall convey clear information to the Central Control & TPC by most expeditious means, when and where traction power must be switched off whenever so warranted to ensure safety.

3.5 ETS shall also be used by Shift-in-Charge to switch off the third rail traction power of required section on receipt of an emergency request from TPC under exchange of Private Number.

3.6 Before switching off the third rail traction power by use of ETS, competent Railway staff shall ensure that all trains are brought to platform as far as practicable and train movement is regulated accordingly.

3.7 On receipt of information from station about local switching off of traction power, Chief Controller will monitor train movement so as not to allow trains to enter the affected section. He will also report the incident to higher officials expeditiously and prepare incident log for the same for further investigation. Normal train movement shall only resume on confirmation of fitness of track from the station concerned.

3.8 TPC (Traction Power Controller) shall not switch on traction power again until the circumstances have been investigated at the spot and the cause of emergency has been found to have been removed, repaired or potential hazard has ceased to exist.After ascertaining that normalcy has been restored SCR Room shall reset ETS and confirm the same to TPC under exchange of Private number.Thereafter TPC shall switch ON traction power and advise Shift-in-Charge and Chief Controller. Chief Controller shall ensure that normal train movement is restored.

EFFECTS OF ETS OPERATION AT JOKA STATION

STATION NAME	Operation of ETS	Switch off HSCB	Section Dead (No 750 DC power on 3rd rail)
JOKA	112ETS-01 or 112ETS-03 (DN Platform) or 112ETS-05(SCR room)	112DB03 will be tripped in case both DB is in ON condition. When 112BCP01 (bridging HSCB) is ON, it will be tripped.	From DN line of Joka (included DN platform of KJKA Station) to KJKA-KJKA Depot Neutral section (excluded KJKA Depot beyond Neutal Section) will be dead.
	112ETS-02 or 112ETS-04 (UP Platform) or 112ETS-06(SCR room)	112DB02 & 111DB04 will be tripped in case both DB is in ON condition. When 112BCP02 & 111BCP02 (bridging HSCB) is ON, it will be tripped.	From KJKA UP platform included (from neutral section at KJKA Depot end) to KTPK Neutral Section (Excluding KTKP UP PF) will be dead.

JOKA ZONE(Joka-Esplade Line.):

WORKING RULE OF ELECTRICAL TRACTION FOR DOWN AND UP LINE.

(For one Train Only System)

Section Blocked	Protection against entry of Metro Coaches.		Switching operation sequences	
	Longitudinals	Tranverse	For granting power Block	For cancellation of Power Block
DN line conductor Rail in between Joka Esplanade end neutral section to	No train should start from TARATALA DN Platform towards Joka DN Platform.	No transeverse movement is possible from UP line to DN line Joka Depot end Cross over.	OPEN/OFF i) 112DB03 at Joka/RSS. Confirm that i)112BCP01 at Joka /RSS is in open condition. ii) 112IM03 is in open condition. iv)confirm that TD15A &	Close/ON i) 112DB03 at Joka/RSS. Confirm that i)112BCP01 at Joka /RSS is in open condition. ii) 112IM03 is in close condition. iv)confirm that TD15A &

Joka Depot Neutral section (Inclussive Joka DN Platform)			TD15B (Bridging Isolator at Joka Depot) are in open condition. v) confirm that 112DS03 is in open condition.	TD15B (Bridging Isolator at Joka Depot) are in open condition. v) confirm that 112DS03 is in open condition.
UP line conductor Rail in between Joka, Joka Depot end Neutral section to Taratala, Joka end Neutal Section.(Joka UP platform inclusive and Taratala UP platform exclusive).	No Longitudinal movement is possible in this section. No train should start from Joka Depot towards Joka UP P.F.	No transeverse movement is possible from DN line to UP line in between Joka & Taratala and Vice-Verse	OPEN/OFF i) 112DB02 at Joka /RSS and ii) 107DB04 at Taratala /RSS.iii) confirm that i)112IM02 is in open position.(iv) 107IM04 is in open condition. v) 112BCP02 is in open condition. vi) 107BCP02 is in open condition. vii) 112DS02 is in open condition. viii) 107DS04 is in open condition.	Close/ON i) 112DB02 at Joka /RSS and ii) 107DB04 at Taratala /RSS. confirm that i)112IM02 is in Close position.(iv) 107IM04 is in Close condition. v) 112BCP02 is in open condition. vi) 107BCP02 is in open condition. vii) 112DS02 is in open condition. viii) 107DS04 is in open condition.

N.B. :

1)Bridging HSCB at Behala Bazar (108BCP01 & 108BCP02), Behala Chowrasta (109BCP01 & 109BCP02), Sakher Bazar (110BCP01 & 110BCP02) & Thakurpukur (111BCP01 & 111BCP02) are in close position.

2) DN line Conductor Rail, Section from Taratala Esplanade end Neutral Section to Joka Esplanade Neutral Section to be treated as one elementary section.

3) UP line Conductor Rail, Section from Joka, Joka Depot end Neutral Section to Taratala, Joka end Neutral Section to be treated as one elementary section.

POWER BLOCK AT THAKURPUKUR STATION.

1.0 Normal Maintenance Power Block :

1.1 Issue of P.T.W. for normal maintenance is restricted during commercial hours.

1.2 The procedure of Normal Power Block is indicated in Para 5.2 and emergency power block as mentioned in Para 5.3 should be followed.

2.0 Procedure for Power Block at THAKURPUKUR station

2.1 Power to conductor rail on DN line between Taratala, Esplanade end Neutral Section (Taratala DN Platform inclusive) and Joka, Esplanade end Neutral Section (Joka DN Platform exclusive) is fed from double end by 750 V DC through cables from high speed circuit breaker (HSCB) 107DB03 at Taratala/RSS and by 112DB01 at Joka/RSS. Power to conductor rail on UP line between Joka, Joka depot end Neutral Section (Joka UP Platform inclusive) & Taratala, Joka end neutral section (Taratala UP platform exclusive) is fed from both end through cables from high speed circuit breaker (HSCB) at Joka/RSS 112DB02 and Taratala/RSS 107DB04.

Emergency power supply feed can be extended on DN line Taratala – Joka section by 107DS03 & 107DB05 from Taratala /RSS and 112DS01 & 112DB05 at Joka/RSS and on UP line Joka - Taratala Section by 112DS02 & 112DB05 from Joka /RSS and 107DS04 and 107DB05 at Taratala /RSS.

2.2 Third option is also available for extension of feed by closing Bridging HSCB. For Taratala DN PF (inclusive) to Joka Neutral Section, (Joka DN PF exclusive) ,750 Volts DC feed can be extended from Joka Depot -Joka DN line by closing 112BCP01 at Joka /RSS. Similarly

UP line 750 Volts DC feed can be extended from Joka Depot-Joka UP line to Joka- Taratala UP line by closing 112BCP02 at Joka/RSS.

2.3 The sequence of switching operation/cancellation of power block from the section mentioned in Para 13.1 shall be carried as per Annexed sheet – A.

2.4 All the operation and information regarding taking and releasing P.T.W. in the above section should be confirmed by the parties and the PD (Power Distribution) supervisor who will be available at (JOKA DEPOT) by exchanging private number as Para 5.2.5.

3.0 **The Standard Operating Procedure for emergency discharge of traction power through EMERGENCY TRIPS SWITCH (ETS) has been outlined. These trip switches are separate for UP and DN line and are located at both ends of the platforms (Up & DN) as well as in Shift-in-Charge's room.**

Following procedureshall be observed for switching off third rail traction power by use of ETS in emergency situation:

3.1 This Procedure Order shall be read in conjunction with Metro Railways General Rules (Part I &Special Instruction (if any) in force. Only Shift-in-charge and competent Railway staff are authorized to use this device and every care must be taken to guard against unauthorized use.

3.2 This trip switch shall be used in emergency **when safety of train movement is endangered or when a potential hazard is noticed which may damage Railway asset i.e fire/arcing/water flowing over track etc. orto prevent injuryto passenger intruding on tracks without authority**. **Emergency Trips Switch(**ETS) shall also be used as safety device against unwanted / accidental charging of third rail in any emergency.

3.3 During any emergency condition which requires instant discharging of third rail power, Station staff shall "switch off" the third rail power by breaking the window glass of ETS or opening the locking arrangement of ETS and pushing the mushroom push button (Red colour) placed inside the Emergency Tripping box located at both ends of each platform (UP & Down) and SCR office. He shall immediately inform the Traction Power Controller (TPC)by direct call telephone placed near the Emergency tripping Box and confirm the reason for switching off the traction power by application of Push Button of ETS.

3.4 Shift-in-Charge shall convey clear information to the Central Control & TPC by most expeditious means, when and where traction power must be switched off whenever so warranted to ensure safety.

3.5 ETS shall also be used by Shift-in-Charge to switch off the third rail traction power of required section on receipt of an emergency request from TPC under exchange of Private Number.

3.6 Before switching off the third rail traction power by use of ETS, competent Railway staff shall ensure that all trains are brought to platform as far as practicable and train movement is regulated accordingly.

3.7 On receipt of information from station about local switching off of traction power, Chief Controller will monitor train movement so as not to allow trains to enter the affected section. He will also report the incident to higher officials expeditiously and prepare incident log for the same for further investigation. Normal train movement shall only resume on confirmation of fitness of track from the station concerned.

3.8 TPC (Traction Power Controller) shall not switch on traction power again until the circumstances have been investigated at the spot and the cause of emergency has been found to have been removed, repaired or potential hazard has ceased to exist.After ascertaining that normalcy has been restored SCR Room shall reset ETS and confirm the same to TPC under exchange of Private number.Thereafter TPC shall switch ON traction power and advise Shift-in-Charge and Chief Controller. Chief Controller shall ensure that normal train movement is restored.

<u>EFFECTS OF ETS OPERATION AT THAKUR PUKUR STATION</u>

STATION NAME	Operation of ETS	Section Dead (No 750 DC power on 3rd rail)
THAKUR PUKUR	111ETS-01 or 111ETS-03 (DN Platform) or 111ETS-05(SCR room)	From DN line of Thakur Pukur (included DN platform of KTKP Station) to KJKA Neutral section (excluded DN platform of KJKA station) will be dead.
	111ETS-02 or 111ETS-04 (UP Platform) or 111ETS-06(SCR room)	From KTKP UP platform including (from neutral section at KJKA end) to KSKB Neutral Section (Excluding KSKB UP PF) will be dead.

THAKURPUKUR ZONE(Joka-Esplade Line.):

WORKING RULE OF ELECTRICAL TRACTION FOR DOWN AND UP LINE.

(In one Train Only System)

Section Blocked	Protection against entry of Metro Coaches.		Switching operation sequences	
	Longitudinals	Tranverse	For granting power Block	For cancellation of Power Block
DN line conductor Rail in between Taratala, Esplanade end neutral section to Joka, Esplanade end Neutral section (Inclussive Taratala DN Platform) And (exclusive Joka Dn PF.)	No train should start from Taratala, towards Joka DN Platform.	No transeverse movement is possible from UP line to DN line in between Taratalaa and Joka via Cross over and vice-verse	Open/OFF: i) 107DB03 at Taratala /RSS. ii)112DB01 at Joka/RSS Confirm that: i)112BCP01 at Joka /RSS is in open condition. ii) 107IM03 is in open condition. iv)107BCP01 at Taratala /RSS is in open condition. v) 107DS03 is in open condition. vi)112DS01 is in open condition. vii)112IM01 is in open condition.	Cose/ON: i) 107DB03 at Taratala /RSS. ii)112DB01 at Joka/RSS Confirm that: i)112BCP01 at Joka /RSS is in open condition. ii) 107IM03 is in close condition. iv)107BCP01 at Taratala /RSS is in open condition. v) 107DS03 is in open condition. vi)112DS01 is in open condition. vii)112IM01 is in close condition.
UP line conductor Rail in between Joka, Joka depot end Neutral section to Taratala, Joka end Neutal Section.(	No Longitudinal movement is possible in this section. No train should	No transeverse movement is possible from DN line to UP line in between Joka	Open/OFF i) 112DB02 at Joka /RSS and ii) 107DB04 at Taratala /RSS.	Close/ON i) 112DB02 at Joka /RSS and ii) 107DB04 at Taratala /RSS.

Joka UP platform inclusive and Taratala UP platform exclusive).	start from Joka towards Taratala UP P.F.	& Taratala and Vice-Verse	Confirm that: i)112DS02 is in open position. ii) 112IM02 is in open position iii)107IM04 is in open position (iv) 107DS04 is in open condition. v) 107BCP02 is in open condition. vi) 112BCP02 is in open condition.	Confirm that: i)112DS02 is in open position. ii) 112IM02 is in close position iii)107IM04 is in close position (iv) 107DS04 is in open condition. v) 112BCP02 is in open condition. vi) 107BCP02 is in open condition.

N.B. :

1)Bridging HSCB at Behala Bazar (108BCP01 & 108BCP02), Behala Chowrasta (109BCP01 & 109BCP02), Sakher Bazar (110BCP01 & 110BCP02) & Thakurpukur (111BCP01 & 111BCP02) are in close position.

2) DN line Conductor Rail, Section from Taratala Esplanade end Neutral Section to Joka Esplanade Neutral Section to be treated as one elementary section.

3) UP line Conductor Rail, Section from Joka, Joka Depot end Neutral Section to Taratala, Joka end Neutral Section to be treated as one elementary section.

4)All feeder HSCBs,feeder IMs, 5th feeder (DB05) will be in open condition.

POWER BLOCK AT SAKHERBAZAR STATION.

1.0 Normal Maintenance Power Block :

1.1 Issue of P.T.W. for normal maintenance is restricted during commercial hours.

1.2 The procedure of Normal Power Block is indicated in Para 5.2 and emergency power block as mentioned in Para 5.3 should be followed.

2.0 Procedure for Power Block at SAKHERBAZAR station

2.1 Power to conductor rail on DN line between Taratala, Esplanade end Neutral Section (Taratala DN Platform inclusive) and Joka, Esplanade end Neutral Section (Joka DN Platform exclusive) is fed from double end by 750 V DC through cables from high speed circuit breaker (HSCB) 107DB03 at Taratala/RSS and by 112DB01 at Joka/RSS. Power to conductor rail on UP line between Joka, Joka depot end Neutral Section (Joka UP Platform inclusive) & Taratala, Joka end neutral section (Taratala UP platform exclusive) is fed from both end through cables from high speed circuit breaker (HSCB) at Joka/RSS 112DB02 and Taratala/RSS 107DB04.

Emergency power supply feed can be extended on DN line Taratala – Joka section by 107DS03 & 107DB05 from Taratala /RSS and 112DS01 & 112DB05 at Joka/RSS and on UP line Joka - Taratala Section by 112DS02 & 112DB05 from Joka /RSS and 107DS04 and 107DB05 at Taratala /RSS.

2.2 Third option is also available for extension of feed by closing Bridging HSCB. For Taratala DN PF (inclusive) to Joka Neutral Section, (Joka DN PF exclusive) ,750 Volts DC feed can be extended from Joka Depot -Joka DN line by closing 112BCP01 at Joka /RSS. Similarly UP line 750 Volts DC feed can be extended from Joka Depot-Joka UP line to Joka- Taratala UP line by closing 112BCP02 at Joka/RSS.

2.3 The sequence of switching operation/cancellation of power block from the section mentioned in Para 13.1 shall be carried as per Annexed sheet – A.

2.4 All the operation and information regarding taking and releasing P.T.W. in the above section should be confirmed by the parties and the PD (Power Distribution) supervisor who will be available at (JOKA DEPOT) by exchanging private number as Para 5.2.5.

3.0 **The Standard Operating Procedure for emergency discharge of traction power through EMERGENCY TRIPS SWITCH (ETS) has been outlined. These trip switches are separate for UP and DN line and are located at both ends of the platforms (Up & DN) as well as in Shift-in-Charge's room.**

Following procedureshall be observed for switching off third rail traction power by use of ETS in emergency situation:

3.1 This Procedure Order shall be read in conjunction with Metro Railways General Rules (Part I &Special Instruction (if any) in force. Only Shift-in-charge and competent Railway staff are authorized to use this device and every care must be taken to guard against unauthorized use.

3.2 This trip switch shall be used in emergency **when safety of train movement is endangered or when a potential hazard is noticed which may damage Railway asset i.e fire/arcing/water flowing over track etc. orto prevent injuryto passenger intruding on tracks without authority**. **Emergency Trips Switch(**ETS) shall also be used as safety device against unwanted / accidental charging of third rail in any emergency.

3.3 During any emergency condition which requires instant discharging of third rail power, Station staff shall "switch off" the third rail power by breaking the window glass of ETS or opening the locking arrangement of ETS and pushing the mushroom push button (Red colour) placed inside the Emergency Tripping box located at both ends of each platform (UP & Down) and SCR office. He shall immediately inform the Traction Power Controller (TPC)by direct call telephone placed near the Emergency tripping Box and confirm the reason for switching off the traction power by application of Push Button of ETS.

3.4 Shift-in-Charge shall convey clear information to the Central Control & TPC by most expeditious means, when and where traction power must be switched off whenever so warranted to ensure safety.

3.5 ETS shall also be used by Shift-in-Charge to switch off the third rail traction power of required section on receipt of an emergency request from TPC under exchange of Private Number.

3.6 Before switching off the third rail traction power by use of ETS, competent Railway staff shall ensure that all trains are brought to platform as far as practicable and train movement is regulated accordingly.

3.7 On receipt of information from station about local switching off of traction power, Chief Controller will monitor train movement so as not to allow trains to enter the affected section. He will also report the incident to higher officials expeditiously and prepare incident log for the same for further investigation. Normal train movement shall only resume on confirmation of fitness of track from the station concerned.

3.8 TPC (Traction Power Controller) shall not switch on traction power again until the circumstances have been investigated at the spot and the cause of emergency has been found to have been removed, repaired or potential hazard has ceased to exist.After ascertaining that normalcy has been restored SCR Room shall reset ETS and confirm the same to TPC under exchange of Private number.Thereafter TPC shall switch ON traction power and advise Shift-in-Charge and Chief Controller. Chief Controller shall ensure that normal train movement is restored.

EFFECTS OF ETS OPERATION AT SAKHER BAZAR STATION

STATION NAME	Operation of ETS	Section Dead (No 750 DC power on 3rd rail)
SAKHER BAZAR	110ETS-01 or 110ETS-03 (DN Platform) or 110ETS-05(SCR room)	From DN line of Sakher Bazar (included DN platform of KSKB Station) to KTKP Neutral section (excluded DN platform of KTKP station) will be dead.
	110ETS-02 or 110ETS-04 (UP Platform) or 110ETS-06(SCR room)	From KSKB UP platform included (from neutral section at KTKP end) to KBCR Neutral Section (Excluding KBCR UP PF) will be dead.

SAKHERBAZAR ZONE(Joka-Esplade Line, Line-3):

WORKING RULE OF ELECTRICAL TRACTION FOR DOWN AND UP LINE.

(For one Train Only System)

Section Blocked	Protection against entry of Metro Coaches.		Switching operation sequences	
	Longitudinals	Tranverse	For granting power Block	For cancellation of Power Block
DN line conductor Rail in between Taratala, Esplanade end neutral section to Joka, Esplanade end Neutral section (Inclussive Taratala DN Platform) And (exclusive Joka Dn PF.)	No train should start from Taratala, towards Joka DN Platform.	No transeverse movement is possible from UP line to DN line in between Taratalaa and Joka via Cross over and vice-verse	Open/OFF: i) 107DB03 at Taratala /RSS. ii)112DB01 at Joka/RSS Confirm that: i)112BCP01 at Joka /RSS is in open condition. ii) 107IM03 is in open condition. iv)107BCP01 at Taratala /RSS is in open condition. v) 107DS03 is in open condition. vi)112DS01 is in open condition. vii)112IM01 is in open condition.	Cose/ON: i) 107DB03 at Taratala /RSS. ii)112DB01 at Joka/RSS Confirm that: i)112BCP01 at Joka /RSS is in open condition. ii) 107IM03 is in close condition. iv)107BCP01 at Taratala /RSS is in open condition. v) 107DS03 is in open condition. vi)112DS01 is in open condition. vii)112IM01 is in close condition.

UP line conductor Rail in between Joka, Joka depot end Neutral section to Taratala, Joka end Neutal Section.(Joka UP platform inclusive and Taratala UP platform exclusive).	No Longitudinal movement is possible in this section. No train should start from Joka towards Taratala UP P.F.	No transeverse movement is possible from DN line to UP line in between Joka & Taratala and Vice-Verse	Open/OFF i) 112DB02 at Joka /RSS and ii) 107DB04 at Taratala /RSS. Confirm that: i)112DS02 is in open position. ii) 112IM02 is in open position. iii) 107IM04 is in open position.(iv) 107DS04 is in open condition. v) 107BCP02 is in open condition. vi) 112BCP02 is in open condition.	Close/ON i) 112DB02 at Joka /RSS and ii) 107DB04 at Taratala /RSS. Confirm that: i)112DS02 is in open position. ii) 112IM02 is in close position. iii) 107IM04 is in close position. (iv) 107DS04 is in open condition. v) 112BCP02 is in open condition. vi) 107BCP02 is in open condition.

N.B. :

1)Bridging HSCB at Behala Bazar (108BCP01 & 108BCP02), Behala Chowrasta (109BCP01 & 109BCP02), Sakher Bazar (110BCP01 & 110BCP02) & Thakurpukur (111BCP01 & 111BCP02) are in close position.

2) DN line Conductor Rail, Section from Taratala Esplanade end Neutral Section to Joka Esplanade Neutral Section to be treated as one elementary section.

3) UP line Conductor Rail, Section from Joka, Joka Depot end Neutral Section to Taratala, Joka end Neutral Section to be treated as one elementary section.

4)All feeder HSCBs,feeder IMs,5th feeder (DB05) will be in open condition.

POWER BLOCK AT BEHALA CHOWRASTA STATION.

1.0 Normal Maintenance Power Block :

12.1.1 Issue of P.T.W. for normal maintenance is restricted during commercial hours.

12.1.2 The procedure of Normal Power Block is indicated in Para 5.2 and emergency power block as mentioned in Para 5.3 should be followed.

2.0 Procedure for Power Block at BEHALA CHOWRASTA station

2.1 Power to conductor rail on DN line between Taratala, Esplanade end Neutral Section (Taratala DN Platform inclusive) and Joka, Esplanade end Neutral Section (Joka DN Platform exclusive) is fed from double end by 750 V DC through cables from high speed circuit breaker (HSCB) 107DB03 at Taratala/RSS and by 112DB01 at Joka/RSS. Power to conductor rail on UP line between Joka, Joka depot end Neutral Section (Joka UP Platform inclusive) & Taratala, Joka end neutral section (Taratala UP platform exclusive) is fed from both end through cables from high speed circuit breaker (HSCB) at Joka/RSS 112DB02 and Taratala/RSS 107DB04.

Emergency power supply feed can be extended on DN line Taratala – Joka section by 107DS03 & 107DB05 from Taratala /RSS and 112DS01 & 112DB05 at Joka/RSS and on UP line Joka - Taratala Section by 112DS02 & 112DB05 from Joka /RSS and 107DS04 and 107DB05 at Taratala /RSS.

2.2 Third option is also available for extension of feed by closing Bridging HSCB. For Taratala DN PF (inclusive) to Joka Neutral Section, (Joka DN PF exclusive) ,750 Volts DC feed can be extended from Joka Depot -Joka DN line by closing 112BCP01 at Joka /RSS. Similarly UP line 750 Volts DC feed can be extended from Joka Depot-Joka UP line to Joka- Taratala UP line by closing 112BCP02 at Joka/RSS.

2.3 The sequence of switching operation/cancellation of power block from the section mentioned in Para 13.1 shall be carried as per Annexed sheet – A.

2.4 All the operation and information regarding taking and releasing P.T.W. in the above section should be confirmed by the parties and the PD (Power Distribution) supervisor who will be available at (JOKA DEPOT) by exchanging private number as Para 5.2.5.

3.0 **The Standard Operating Procedure for emergency discharge of traction power through EMERGENCY TRIPS SWITCH (ETS) has been outlined. These trip switches are separate for UP and DN line and are located at both ends of the platforms (Up & DN) as well as in Shift-in-Charge's room.**

Following procedureshall be observed for switching off third rail traction power by use of ETS in emergency situation:

3.1 This Procedure Order shall be read in conjunction with Metro Railways General Rules (Part I &Special Instruction (if any) in force. Only Shift-in-charge and competent Railway staff are authorized to use this device and every care must be taken to guard against unauthorized use.

3.2 This trip switch shall be used in emergency **when safety of train movement is endangered or when a potential hazard is noticed which may damage Railway asset i.e fire/arcing/water flowing over track etc. orto prevent injuryto passenger intruding on tracks without authority**. **Emergency Trips Switch(**ETS) shall also be used as safety device against unwanted / accidental charging of third rail in any emergency.

3.3 During any emergency condition which requires instant discharging of third rail power, Station staff shall "switch off" the third rail power by breaking the window glass of ETS or opening the locking arrangement of ETS and pushing the mushroom push button (Red colour) placed inside the Emergency Tripping box located at both ends of each platform (UP & Down) and SCR office. He shall immediately inform the Traction Power Controller (TPC)by direct call telephone placed near the Emergency tripping Box and confirm the reason for switching off the traction power by application of Push Button of ETS.

3.4 Shift-in-Charge shall convey clear information to the Central Control & TPC by most expeditious means, when and where traction power must be switched off whenever so warranted to ensure safety.

3.5 ETS shall also be used by Shift-in-Charge to switch off the third rail traction power of required section on receipt of an emergency request from TPC under exchange of Private Number.

3.6 Before switching off the third rail traction power by use of ETS, competent Railway staff shall ensure that all trains are brought to platform as far as practicable and train movement is regulated accordingly.

3.7 On receipt of information from station about local switching off of traction power, Chief Controller will monitor train movement so as not to allow trains to enter the affected section. He will also report the incident to higher officials expeditiously and prepare incident log for the same for further investigation. Normal train movement shall only resume on confirmation of fitness of track from the station concerned.

3.8 TPC (Traction Power Controller) shall not switch on traction power again until the circumstances have been investigated at the spot and the cause of emergency has been found to have been removed, repaired or potential hazard has ceased to exist.After ascertaining that normalcy has been restored SCR Room shall reset ETS and confirm the same to TPC under exchange of Private number.Thereafter TPC shall switch ON traction power and advise Shift-in-Charge and Chief Controller. Chief Controller shall ensure that normal train movement is restored.

<u>EFFECTS OF ETS OPERATION AT BEHALA CHOWRASTA STATION</u>

STATION NAME	Operation of ETS	Section Dead (No 750 DC power on 3rd rail)
BEHALA CHOWRASTA	109ETS-01 or 105ETS-03 (DN Platform) or 105ETS-05(SCR room)	From DN line of Behala Chowrasta(included DN platform of KBCR Station) to KSKB Neutral section (excluded DN platform of KSKB station) will be dead.
	105ETS-02 or 105ETS-04 (UP Platform) or 105ETS-06(SCR room)	From KBCR UP platform included (from neutral section at KSKB end) to KBBR Neutral Section (Excluding KBBR UP PF) will be dead.

BEHALA CHOWRASTA ZONE(Joka-Esplade Line, Line-3):

WORKING RULE OF ELECTRICAL TRACTION FOR DOWN AND UP LINE.

(For one Train Only System)

Section Blocked	Protection against entry of Metro Coaches.		Switching operation sequences	
	Longitudinals	Tranverse	For granting power Block	For cancellation of Power Block
DN line conductor Rail in between Taratala, Esplanade end neutral section to Joka, Esplanade end Neutral section (Inclussive Taratala DN Platform) And (exclusive Joka Dn PF.)	No train should start from Taratala, towards Joka DN Platform.	No transeverse movement is possible from UP line to DN line in between Taratalaa and Joka via Cross over and vice-verse	Open/OFF: i) 107DB03 at Taratala /RSS. ii)112DB01 at Joka/RSS Confirm that: i)112BCP01 at Joka /RSS is in open condition. ii) 107IM03 is in open condition. iv)107BCP01 at Taratala /RSS is in open condition. v) 107DS03 is in open condition. vi)112DS01 is in open condition. vii)112IM01 is in open condition	Cose/ON: i) 107DB03 at Taratala /RSS. ii)112DB01 at Joka/RSS Confirm that: i)112BCP01 at Joka /RSS is in open condition. ii) 107IM03 is in close condition. iv)107BCP01 at Taratala /RSS is in open condition. v) 107DS03 is in open condition. vi)112DS01 is in open condition. vii)112IM01 is in close condition.
UP line conductor Rail in between Joka, Joka depot end Neutral section to Taratala, Joka end Neutal Section.(	No Longitudinal movement is possible in this section. No train should	No transeverse movement is possible from DN line to UP line in between Joka	Open/OFF i) 112DB02 at Joka /RSS and ii) 107DB04 at Taratala /RSS.	Close/ON i) 112DB02 at Joka /RSS and ii) 107DB04 at Taratala /RSS.

Joka UP platform inclusive and Taratala UP platform exclusive).	start from Joka towards Taratala UP P.F.	& Taratala and Vice-Verse	Confirm that: i)112DS02 is in open position. ii) 112IM02 is in open position. iii) 107IM04 is in open position.(iv) 107DS04 is in open condition. v) 107BCP02 is in open condition. vi) 112BCP02 is in open condition.	Confirm that: i)112DS02 is in open position. ii) 112IM02 is in close position. Iii) 107IM04 is in close position. (iv) 107DS04 is in open condition. v) 112BCP02 is in open condition. vi) 107BCP02 is in open condition.

N.B. :

1)Bridging HSCB at Behala Bazar (108BCP01 & 108BCP02), Behala Chowrasta (109BCP01 & 109BCP02), Sakher Bazar (110BCP01 & 110BCP02) & Thakurpukur (111BCP01 & 111BCP02) are in close position.

2) DN line Conductor Rail, Section from Taratala Esplanade end Neutral Section to Joka Esplanade Neutral Section to be treated as one elementary section.

3) UP line Conductor Rail, Section from Joka, Joka Depot end Neutral Section to Taratala, Joka end Neutral Section to be treated as one elementary section.

4) All feeder HSCbs, feedersIMS & 5th feeder (DB05) will be in open condition.

POWER BLOCK AT BEHALA BAZAR STATION.

1.0 Normal Maintenance Power Block :

1.1 Issue of P.T.W. for normal maintenance is restricted during commercial hours.

1.2 The procedure of Normal Power Block is indicated in Para 5.2 and emergency power block as mentioned in Para 5.3 should be followed.

2.0 Procedure for Power Block at BEHALA BAZAR station

2.1 Power to conductor rail on DN line between Taratala, Esplanade end Neutral Section (Taratala DN Platform inclusive) and Joka, Esplanade end Neutral Section (Joka DN Platform exclusive) is fed from double end by 750 V DC through cables from high speed circuit breaker (HSCB) 107DB03 at Taratala/RSS and by 112DB01 at Joka/RSS. Power to conductor rail on UP line between Joka, Joka depot end Neutral Section (Joka UP Platform inclusive) & Taratala, Joka end neutral section (Taratala UP platform exclusive) is fed from both end through cables from high speed circuit breaker (HSCB) at Joka/RSS 112DB02 and Taratala/RSS 107DB04.

Emergency power supply feed can be extended on DN line Taratala – Joka section by 107DS03 & 107DB05 from Taratala /RSS and 112DS01 & 112DB05 at Joka/RSS and on UP line Joka - Taratala Section by 112DS02 & 112DB05 from Joka /RSS and 107DS04 and 107DB05 at Taratala /RSS.

2.2 Third option is also available for extension of feed by closing Bridging HSCB. For Taratala DN PF (inclusive) to Joka Neutral Section, (Joka DN PF exclusive) ,750 Volts DC feed can be extended from Joka Depot -Joka DN line by closing 112BCP01 at Joka /RSS. Similarly UP line 750 Volts DC feed can be extended from Joka Depot-Joka UP line to Joka- Taratala UP line by closing 112BCP02 at Joka/RSS.

2.3 The sequence of switching operation/cancellation of power block from the section mentioned in Para 13.1 shall be carried as per Annexed sheet – A.

2.4 All the operation and information regarding taking and releasing P.T.W. in the above section should be confirmed by the parties and the PD (Power Distribution) supervisor who will be available at (JOKA DEPOT) by exchanging private number as Para 5.2.5.

13.4 All the operation and information regarding taking and releasing P.T.W. in the above section should be confirmed by the parties and the PD (Power Distribution) supervisor who will be available at (JOKA DEPOT) by exchanging private number as Para 5.2.5.

3.0 **The Standard Operating Procedure for emergency discharge of traction power through EMERGENCY TRIPS SWITCH (ETS) has been outlined. These trip switches are separate for UP and DN line and are located at both ends of the platforms (Up & DN) as well as in Shift-in-Charge's room.**

Following procedureshall be observed for switching off third rail traction power by use of ETS in emergency situation:

3.1 This Procedure Order shall be read in conjunction with Metro Railways General Rules (Part I &Special Instruction (if any) in force. Only Shift-in-charge and competent Railway staff are authorized to use this device and every care must be taken to guard against unauthorized use.

3.2 This trip switch shall be used in emergency **when safety of train movement is endangered or when a potential hazard is noticed which may damage Railway asset i.e fire/arcing/water flowing over track etc. orto prevent injuryto passenger intruding on tracks without authority**. **Emergency Trips Switch(**ETS) shall also be used as safety device against unwanted / accidental charging of third rail in any emergency.

3.3 During any emergency condition which requires instant discharging of third rail power, Station staff shall "switch off" the third rail power by breaking the window glass of ETS or opening the locking arrangement of ETS and pushing the mushroom push button (Red colour) placed inside the Emergency Tripping box located at both ends of each platform (UP & Down) and SCR office. He shall immediately inform the Traction Power Controller (TPC)by direct call telephone placed near the Emergency tripping Box and confirm the reason for switching off the traction power by application of Push Button of ETS.

3.4 Shift-in-Charge shall convey clear information to the Central Control & TPC by most expeditious means, when and where traction power must be switched off whenever so warranted to ensure safety.

3.5 ETS shall also be used by Shift-in-Charge to switch off the third rail traction power of required section on receipt of an emergency request from TPC under exchange of Private Number.

3.6 Before switching off the third rail traction power by use of ETS, competent Railway staff shall ensure that all trains are brought to platform as far as practicable and train movement is regulated accordingly.

3.7 On receipt of information from station about local switching off of traction power, Chief Controller will monitor train movement so as not to allow trains to enter the affected section. He will also report the incident to higher officials expeditiously and prepare incident log for the same for further investigation. Normal train movement shall only resume on confirmation of fitness of track from the station concerned.

3.8 TPC (Traction Power Controller) shall not switch on traction power again until the circumstances have been investigated at the spot and the cause of emergency has been found to have been removed, repaired or potential hazard has ceased to exist.After ascertaining that normalcy has been restored SCR Room shall reset ETS and confirm the same to TPC under exchange of Private number.Thereafter TPC shall switch ON traction power and advise Shift-in-Charge and Chief Controller. Chief Controller shall ensure that normal train movement is restored.

EFFECTS OF ETS OPERATION AT BEHALA BAZAR STATION

STATION NAME	Operation of ETS	Section Dead (No 750 DC power on 3rd rail)
BEHALA BAZAR	108ETS-01 or 108ETS-03 (DN Platform) or 108ETS-05(SCR room)	From DN line of Behala Bazar (included DN platform of KBBR Station) to KBCR Neutral section (excluded DN platform of KBCR station)
	108ETS-02 or 108ETS-04 (UP Platform) or 109ETS-06(SCR room)	From KBBR UP platform including (from neutral section at KBCR end) to KTRT Neutral Section (Excluding KTRT UP PF) will be dead.

BEHALA Bazar ZONE(Joka-Esplade Line, Line-3):

WORKING RULE OF ELECTRICAL TRACTION FOR DOWN AND UP LINE.

(For one Train Only System)

Section Blocked	Protection against entry of Metro Coaches.		Switching operation sequences	
	Longitudinals	Tranverse	For granting power Block	For cancellation of Power Block
DN line conductor Rail in between Taratala, Esplanade end neutral section to Joka, Esplanade end Neutral section (Inclussive Taratala DN Platform) And (exclusive Joka Dn PF.)	No train should start from Taratala, towards Joka DN Platform.	No transeverse movement is possible from UP line to DN line in between Taratalaa and Joka via Cross over and vice-verse	Open/OFF: i) 107DB03 at Taratala /RSS. ii)112DB01 at Joka/RSS Confirm that: i)112BCP01 at Joka /RSS is in open condition. ii) 107IM03 is in open condition. iv)107BCP01 at Taratala /RSS is in open condition. v) 107DS03 is in open condition. vi)112DS01 is in open condition. Vii) 112IM01 at Joka RSS is in open condition.	Cose/ON: i) 107DB03 at Taratala /RSS. ii)112DB01 at Joka/RSS Confirm that: i)112BCP01 at Joka /RSS is in open condition. ii) 107IM03 is in close condition. iv)107BCP01 at Taratala /RSS is in open condition. v) 107DS03 is in open condition. vi)112DS01 is in open condition. Vii) 112IM01 at Joka RSS is in close condition.
UP line conductor Rail in between Joka, Joka depot	No Longitudinal movement is possible in this	No transeverse movement is possible from	Open/OFF i) 112DB02 at Joka /RSS and ii)	Close/ON i) 112DB02 at Joka /RSS and ii)

end Neutral section to Taratala, Joka end Neutal Section.(Joka UP platform inclusive and Taratala UP platform exclusive).	section. No train should start from Joka towards Taratala UP P.F.	DN line to UP line in between Joka & Taratala and Vice-Verse	107DB04 at Taratala /RSS. Confirm that: i)112DS02 is in open position. ii) 112IM02 in open position iii) 107IM04 is in open posirion.(iv) 107DS04 is in open condition. v) 107BCP02 is in open condition. vi) 112BCP02 is in open condition.	107DB04 at Taratala /RSS. Confirm that: i)112DS02 is in open position. ii) 112IM02 in close position iii) 107IM04 is in close posirion. (iv) 107DS04 is in open condition. v) 112BCP02 is in open condition. vi) 107BCP02 is in open condition.

N.B. :

1)Bridging HSCB at Behala Bazar (108BCP01 & 108BCP02), Behala Chowrasta (109BCP01 & 109BCP02), Sakher Bazar (110BCP01 & 110BCP02) & Thakurpukur (111BCP01 & 111BCP02) are in close position.

2) DN line Conductor Rail, Section from Taratala Esplanade end Neutral Section to Joka Esplanade Neutral Section to be treated as one elementary section.

3) UP line Conductor Rail, Section from Joka, Joka Depot end Neutral Section to Taratala, Joka end Neutral Section to be treated as one elementary section.

4) All feeder HSCBs, Feeder IMs, 5th feeder (DB05) will be in open condition.

POWER BLOCK AT TARATALA STATION.

1.0 Normal Maintenance Power Block :

1.1 Issue of P.T.W. for normal maintenance is restricted during commercial hours.

1.2 The procedure of Normal Power Block is indicated in Para 5.2 and emergency power block as mentioned in Para 5.3 should be followed.

2.0 Procedure for Power Block at TARATALA station

2.1 Power to conductor rail on DN line between Taratala/Esplanade end Neutral Section (Taratala DN Platform inclusive) and Joka/Esplanade end Neutral Section (Joka DN Platform exclusive) is fed from double end by 750 V DC through cables from high speed circuit breaker (HSCB) 107DB03 at Taratala /RSS and by 112DB01 at Joka /RSS. Power to conductor rail on UP line between Taratala, Joka end Neutral Section (Taratala UP Platform inclusive) & Taratala Esplanade end Cross over, is fed from both end through cables from high speed circuit breaker (HSCB) at Taratala /RSS 107DB02.

Emergency power supply feed can be extended on DN line between Taratala – Joka section by 107DS03 & 107DB05 from Taratala/TSS and 112DS01 & 112DB05 at Joka /RSS and on UP line Joka - Taratala Section by 112DS02 & 112DB05 from Joka /RSS and 107DS04 and 107DB05 at Taratala /RSS.

2.2 Third option is also available for extension of feed by closing Bridging HSCB. For Taratala DN PF (inclusive) to Joka Neutral Section 750 Volts DC feed can be extended from Taratala Cross over –Taratala DN line by closing 107BCP01 at Taratala /RSS. Similarly UP line 750 Volts DC feed can be extended from Joka - Taratala UP line to Taratala—Taratala Esplanade end cross over UP line by closing 107BCP02 at Taratala/RSS.

2.3 The sequence of switching operation/cancellation of power block from the section mentioned in Para 13.1 shall be carried as per Annexed sheet – A.

2.4 All the operation and information regarding taking and releasing P.T.W. in the above section should be confirmed by the parties and the PD (Power Distribution) supervisor who will be available at (JOKA DEPOT) by exchanging private number as Para 5.2.5.

3.0 **The Standard Operating Procedure for emergency discharge of traction power through EMERGENCY TRIPS SWITCH (ETS) has been outlined. These trip switches are separate for UP and DN line and are located at both ends of the platforms (Up & DN) as well as in Shift-in-Charge's room.**

Following procedureshall be observed for switching off third rail traction power by use of ETS in emergency situation:

3.1 This Procedure Order shall be read in conjunction with Metro Railways General Rules (Part I &Special Instruction (if any) in force. Only Shift-in-charge and competent Railway staff are authorized to use this device and every care must be taken to guard against unauthorized use.

3.2 This trip switch shall be used in emergency **when safety of train movement is endangered or when a potential hazard is noticed which may damage Railway asset i.e fire/arcing/water flowing over track etc. orto prevent injuryto passenger intruding on tracks without authority**. **Emergency Trips Switch(**ETS) shall also be used as safety device against unwanted / accidental charging of third rail in any emergency.

3.3 During any emergency condition which requires instant discharging of third rail power, Station staff shall "switch off" the third rail power by breaking the window glass of ETS or opening the locking arrangement of ETS and pushing the mushroom push button (Red colour) placed inside the Emergency Tripping box located at both ends of each platform (UP & Down) and SCR office. He shall immediately inform the Traction Power Controller (TPC)by direct call telephone placed near the Emergency tripping Box and confirm the reason for switching off the traction power by application of Push Button of ETS.

3.4 Shift-in-Charge shall convey clear information to the Central Control & TPC by most expeditious means, when and where traction power must be switched off whenever so warranted to ensure safety.

3.5 ETS shall also be used by Shift-in-Charge to switch off the third rail traction power of required section on receipt of an emergency request from TPC under exchange of Private Number.

3.6 Before switching off the third rail traction power by use of ETS, competent Railway staff shall ensure that all trains are brought to platform as far as practicable and train movement is regulated accordingly.

3.7 On receipt of information from station about local switching off of traction power, Chief Controller will monitor train movement so as not to allow trains to enter the affected section. He will also report the incident to higher officials expeditiously and prepare incident log for the same for further investigation. Normal train movement shall only resume on confirmation of fitness of track from the station concerned.

3.8 TPC (Traction Power Controller) shall not switch on traction power again until the circumstances have been investigated at the spot and the cause of emergency has been found to have been removed, repaired or potential hazard has ceased to exist.After ascertaining that normalcy has been restored SCR Room shall reset ETS and confirm the same to TPC under exchange of Private number.Thereafter TPC shall switch ON traction power and advise Shift-in-Charge and Chief Controller. Chief Controller shall ensure that normal train movement is restored.

EFFECTS OF ETS OPERATION AT TARATALA STATION

STATION NAME	Operation of ETS	Section Dead (No 750 DC power on 3rd rail)
TARATALA	107ETS-01 or 107ETS-03 (DN Platform) or 107ETS-05(SCR room)	From DN line of Taratala (included DN platform of KTRT Station) to KBBR Neutral section (excluded DN platform of KBBR station)
	107ETS-02 or 107ETS-04 (UP Platform) or 107ETS-06(SCR room)	UP platform of KTRT included (from neutral section at KBBR end) to KTRT cross over at Esplanade end will be dead.

TARATALA ZONE(Joka-Esplade Line, Line-3):

WORKING RULE OF ELECTRICAL TRACTION FOR DOWN AND UP LINE.

(For one Train Only System)

Section Blocked	Protection against entry of Metro Coaches.		Switching operation sequences	
	Longitudinals	Tranverse	For granting power Block	For cancellation of Power Block
DN line conductor Rail in between Taratala, Esplanade end neutral section to Joka, Esplanade end Neutral section (Inclussive Taratala DN Platform)	No train should start from Taratala Esplanade end Cross over towards Taratala DN Platform.	No transeverse movement is possible from UP line to DN line in between Taratala and Joka via Cross over and vice-verse.	Open/OFF: i) 107DB03 at Taratala /RSS. ii)112DB01 at Joka /RSS Confirm that: i)112BCP01 at Joka /RSS is in open condition. ii) 112IM01 is in open condition. iv)107BCP01 at Taratala /RSS is in open condition. v) 107DS03 is in open condition. vi)112DS01 is in open condition. vii)107IM03 is in open condition.	Close/ON: i) 107DB03 at Taratala /RSS. ii)112DB01 at Joka /RSS Confirm that: i)112BCP01 at Joka /RSS is in open condition. ii) 112IM01 is in close condition. iv)107BCP01 at Taratala /RSS is in Open condition. v) 107DS03 is in open condition. vi)112DS01 is in Open condition. vii)107IM03 is in Close condition.
UP line conductor Rail in between Taratala, Joka end Neutral section to	No Longitudinal movement is possible in this section. No	No transeverse movement is possible from DN line to UP	Open/OFF i) 107DB02 at Taratala /RSS and Confirm that:	Cloe/ON i) 107DB02 at Taratala /RSS and Confirm that: i)107IM02 is in close

Taratala, Esplanade end Cross over (Taratala UP platform inclusive).	train should start from Joka**Joka** towards Taratala UP P.F.	line in between Taratala Esplanade end cross over & Taratala UP P.F. and Vice-Verse	i)107IM02 is in open position. vi) 107BCP02 is in open condition. vii) 107DS02 is in open condition.	position. vi) 107BCP02 is in open condition. vii) 107DS02 is in open condition.

N.B. :

1)Bridging HSCB at Behala Bazar (108BCP01 & 108BCP02), Behala Chowrasta (109BCP01 & 109BCP02), Sakher Bazar (110BCP01 & 110BCP02) & Thakurpukur (111BCP01 & 111BCP02) are in close position.

2) DN line Conductor Rail, Section from Taratala Esplanade end Neutral Section to Joka Esplanade Neutral Section to be treated as one elementary section.

3) UP line Conductor Rail, Section from Joka, Joka Depot end Neutral Section to Taratala, Joka end Neutral Section to be treated as one elementary section.

4) 5th feeder (DB05) will be in open condition.

750V DC TRACTION STATION WORKING RULES

FOR KAVI SUBHASH STATION (FOR ONE TRAIN ONLY SYSTEM)

1.0 The general principles governing operation and maintenance of traction equipment operated on 750V DC will be guided by these rules. This Rules Book shall be kept in each station and all the staff dealing with safe working shall make themselves thoroughly familiar with the GR 10.01 to 10.08 and SR 10.01, 10.02(2) and 10.5(5) and concern clauses of PDSR for Metro Railway issued by Chief Electrical Engineer dt.30.09.90.

Brief reference to important rules required to be followed by station staff in their day to day work has been given in this appendix. These are, however, illustrative and not exhaustive.

2.0 General Safety Precaution:

2.1. All cables, conductor Rail and electrical equipments shall be regarded as being alive all time and consequently dangerous for human life, save and except in cases where the Conductor Rail and electrical equipment has been specially made dead in accordance with the provisions of these Rules.

2.2. All staff is warned usual direct or indirect contact with live portion of 750V Conductor Rail with any conducting materials as it is dangerous and impairs safety.

2.3. No work on 750V DC line (Conductor Rail) or its immediate vicinity of any live equipment shall be carried out unless a regular Permit to work (PTW) is obtained from the authorized traction staff and line is made dead and earthed as per rule.

2.4. No work shall be undertaken on Conductor Rail or its associated equipment or in Zone within 02(Two) meter from conductor rail. The work should be carried out in accordance with instructions issued in this regard by Chief Electrical Engineer.

2.5. No Metro Railway employee excepting those authorized is allowed to go to the track bed in any of the alignments as third rail is always alive/ charged.

2.6 In case of Emergency, ETS can be operated by Railway employee or Passenger.

2.7 Caution notice shall be prominantly and permanently fixed near all vulnerable locations.

3.0 Section Diagram :

3.1. For feeding arrangement indicating the sectioning diagrams which have been dedicated to carry 750V DC for electric traction purposes Diagram No. RVNL/KOL/KAVI SUB.-HEM.MUK/SYSTEM/01(Revision-Q), should be followed. The diagram indicates the position of controlling circuit breakers, isolators and substations. The limit of an electrical section is indicated by arrow mark with Map. The arrow mark at the end of each electric section indicates the position of the slope rails.

3.2. For all purposes connected with train movement and power block, this diagram No. RVNL/KOL/KAVI SUB.-HEM.MUK/SYSTEM/01(Revision-Q), is the only authorized document to be referred to.

4.0 Operation of Switches :

4.1 All switching operations shall be carried out in accordance with the instruction of the Traction Power Controller.

5.0 Procedure for Power Block Working :

Power Block are of three different types :

a) Pre-arranged / normal power block;

b) Emergency power block;

c) Local power block.

5.1 Such power block is granted for the purpose of carrying out scheduled maintenance by various departments on planned basis. Each Department is expected to send their requirement of weekly power block Programme to TPC as per instruction in force.

5.2 Granting of Normal Power Block :

5.2.1 One Supervisor from branch, not below the rank of JE, is to be nominated to collect all maintenance works scheduled to be carried out from that department for the 10 days period.

5.2.2 The 10 days programme, to be carried out during non-commercial hours, is to be submitted to a nominated supervisor of Electrical branch on every 1st, 11th , 21st of each month for execution of works on 11th , 21st , and 01st of the next 10 days periods.

5.2.3 After collection of all the programmes from all the departments the nominated supervisor of Electrical Department will submit a consolidated statement of works proposed to Dy.COM-II for his perusal and approval by 3rd, 13th, and 23rd every month. In absence of Dy.COM-II it is to be put up to STM-I.

5.2.4 The approved programmes are to be circulated to all concerned including Traffic Controller by 5th, 15th, 25th for execution of works from 11th, 21st of the month and 1st of the next month.

5.2.5 As per the above programme Supervisors from Civil, Electrical and S&T departments will make out a message in PTW -1, asking permission – to work from one of the PD (Power Distribution)Supervisors (not below the rank of JE), stationed at (name of Maint Depot)--------- under exchange of private number, with the following details:-

(i) Requisition No. (ii) Nature of work

(iii) Location (iv) Date/Time (From…to …)

(v) Name of the (vi) Name of the supervisor

(vii) No. of workers.

5.2.6 All supervisors entrusted to take PTW and grant PTW must have an authorized Private Number Sheet.

5.2.7 The PD(Electrical) Supervisors stationed at (name of Maint. Depot) will communicate the requisitions to Traction Power Controller on duty at Central Control, Metro Rail Bhavan under exchange of private numbers.

5.2.8 The Traction Power Controller on duty will keep the Section Controller on duty advised in writing about the requisitions placed by the supervisors.

5.2.9 Then the Traction Power Controller on duty will arrange power block through remote control or in co-ordination with the sub-stations and will communicate the same to the 3rd rail supervisors stationed at the above locations under exchange of private number.

5.2.10 The PD(Power Distribution) Supervisors, after getting confirmation of power block will arrange earthing of the 3rd rail on either end before issue of Permission – to – work in PTW-2.

5.2.11 The PD(Power Distribution) Supervisors will issue PTW-2 under exchange of private numbers with the concerned supervisors indicating date and time from which PTW has been issued and date & time PTW is to be returned clearly indicating that PTW is to be returned only after removal of men and materials from the site of works and track is free from obstruction for safe restoration of train movement.

5.2.12 Work at each location is to be supervised by a competent supervisor.

5.2.13 After complete of work a cancellation advice is to be issued by the concerned supervisor in the prescribed form PTW-3, under exchange of private number with the concerned PD (Power Distribution),Electrical Supervisor with date and time.

5.2.14 The concerned supervisors must confirm that the work has been completed, men and materials have been removed from the site of work and the track is free from obstruction for restoration of train movement.

5.2.15 After complete cancellation of permission – to – work and ensuring removal of men and materials from the site of works and confirming track free from obstruction the concerned 3rd rail supervisors will pass on a power block cancellation message to Traction Power Controller in a prescribed format PTW-7, under exchange of private number. In the message they should confirm that men and materials under their charge have been removed from the site of work and earths have been removed. Power in the sections may be charged.

5.2.16 On receipt of the power block cancellation message from the PD (Power Distribution) Supervisors, Traction Power Controller on duty will arrange to switch on the feeders.

5.2.17 After charging of the 3rd rail in the sections Traction Power Controller will issue a "**Line safe certificate"** to Section controller on duty.

5.2.18 After receiving the "**Line safe certificate" from** Traction Power Controller the Section Controller on duty will plan to run Up and Down Pilot Trains.

5.2.19 For maintenance works at Kavi Subhas, Satyajit Roy,Jatindra Nath Nandi, Kavi Sukanta,Hemanta Mukherjee and Kavi Subhas Yards/Car sheds requisition for PTW may be addressed to Car Shed Supervisors not below the rank of JE.

5.2.20 All concerned (Supervisors asking PTW, PD (Power Distribution) 3rd rail Supervisors granting PTW, TPC and SCNL) are to maintain Registers to record the above activities during the power block. Format of the Registers of the Supervisors and Central Control is to be designed to record all above activities in clear and convincing manner right from asking PTW to restoration of normal train running.

5.3. <u>Emergency Power Block:</u>

5.3.1.Emergency power block can be imposed during any time by the supervisors of Civil, Electrical and S&T in the grade of Rs (5000-8000) (RSRP) and above or Sr.TS / TS or Motorman on telephone and the conductor rail will be switched Off from the substation after getting advice from the TPC. If any emergency power block is required which has not been programmed, the co-coordinating supervisor shall give the particulars in the proforma mentioned under Para 5.2.1 above and avail the permit-to-work by following the procedure mentioned above.

5.3.2. In exceptional and rare case and in a grave emergency situation, where emergency power block procedure cannot be duly followed, emergency switching off of power supply the conductor rail may be restored to by the TPC or the substation operator on advice from any Metro Railway supervisory staff including those of the Traffic Department. In such a situation, it is the responsibility of the concerned supervisory staff requisitioning emergency switching off of the power supply to ensure that

power supply to the third rail has actually been switched off and the conductor rail is dead before physical contract with the conductor rail to establish by any person or work in the vicinity of the conductor rail is permitted. It is imperative that duration of such interruptions to power supply to be kept to the barest minimum. The above mentioned supervisory staff, after satisfying himself that the grave situation is over limit the conductor rail and the track has been cleared of all infringements, that damages, if any, have been repaired by respective Departmental staff and that the affected site has been cleared of men and materials, will advice the TPC or substation operator to restore the power supply by exchanging private numbers. Application of normal power block procedure will be restored from this stage onwards. In all such cases, a report must be sent to the Chief Electrical Engineer, Metro Railway through proper channel, justifying such a course of action.

5.3.3. Power supply by exchanging private numbers. Application of normal power block procedure will be restored from this stage onwards. In all such cases, a report must be sent to the Chief Electrical Engineer, Metro Railway through proper channel, justifying such a course of action.

5.3.4. The emergency power block will be endorsed only in case of extreme emergency which may endanger human life, train or any other equipment, property or disruption to traffic.

5.3.5. The Motorman of a stranded train in the section shall issue a message to TPC through communication circuit at his disposal for imposition of power block either for attending the defective train or evacuation of the passengers. On getting the power block, the motorman shall earth the rail as per extent procedure. In case the power block has been imposed by any agency other than motorman, the earthing of the line shall be done in consultation with TPC.

6.0 LOCAL POWER BLOCK

The power block on the conductor rail of "Secondary Lines" such as sidings, yards, shades etc. Arranged by Sr.TA/ TS, Yard Master or JE/SSE of concerned shed, come under this category.

7.0 TRAFFIC BLOCK

However, power block is taken on any section; traffic block shall also be

taken simultaneously, i.e. during pendent of power block there should no movement allow in or out of the section, under power block. In special circumstances when movement of self propelled vehicle like Battery locomotive is required, this may be done by piloting or restricted speed.

8.0 PROTECTION AT THE TIME OF POWER BLOCK

8.1 All section over which a power block has been granted shall be protected against entry of Metro Coaches during the period of the block as per annexed sheet no. A.

8.2 Before introducing a single line working the Sr.TS/TS/Sr.TA on duty shall ensure from the Traction Power Controller that there is no power block on the route on which single line working is being introduced.

9.0 BREAKDOWN OF ELECTRIC EQUIPMENT

9.1 All breakdown or defects noted or reported on the conductor rail or any other electrical equipment shall immediately be reported to the Traction Power Controller.Temporary caution order should be launched to the motorman on duty led by the Traction Power Controller observing the existing rules regarding issue of caution order.

10.0 FIRE AND ACCIDENT

10.1 Regarding accident and fire on or adjacent to any electrical equipment refer SR 6.12, 6.12(1), 6.12(3) and PDSR (6.1& 5.1- 5.3.1)

11.0 ELECTRIC SHOCK

11.1 Station Master shall exhibit prominently the instructions issued regarding the treatment of a person suffering from electric shock in the station and shall ensure that all class III staff are familiar with these instructions (as per electric shock treatment chart).

12.0 POWER BLOCK AT KAVI SUBHASH STATION.

12.1 Normal Maintenance Power Block :

12.1.1 Issue of P.T.W. for normal maintenance is restricted during commercial hours.

12.1.2 The procedure of Normal Power Block is indicated in Para 5.2 and emergency power block as mentioned in Para 5.3 should be followed.

13.0 Procedure for Power Block at KAVISUBHASH station:

(One Train Only System)

13.1 Power to conductor rail on DN line KAVISUBHASH Platform area only from Biman Bandar end Neural Section is fed from single end by 750 V DC through cables from high speed circuit breaker (HSCB) 201DB03 at KAVI SUBHASH /TSS. Power to conductor rail on UP line between KKVS (Platform inclusive) & Hemanta Mukherjee UP neutral section (KKVS end) is fed from both end by 750 V DC through cables from high speed circuit breaker (HSCB) at KAVI SUBHASH /TSS 201DB02 and Hemanta Mukherjee /RSS 205DB04.

Emergency power supply feed can be extended on DN line by 201DS03 & 201DB05 from KKVS/TSS and on UP line (KKVS Platform inclusive) to neutral section of Hemanta Mukherjee (KKVS end) by 201DS02 & 201DB05 from KKVS/TSS and 205DS04 and 205DB05 at Hemanta Mukherjee /RSS.

13.2 Third option is available for extension of feed by closing Bridging HSCB. For KKVS DN PF 750 Volts DC feed can be extended from Hemanta Mukherjee –Kavi Subhash DN line by closing 201BCP01 at KKVS/TSS. Similarly UP line 750 Volts DC feed can be extended from Hemanta Mukherjee -KKVS UP line by closing 205BCP02 at Hemanta Mukherjee /RSS.

13.3 The sequence of switching operation/cancellation of power block from the section mentioned in Para 13.1 shall be carried as per Annexed sheet – A.

13.4 All the operation and information regarding taking and releasing P.T.W. in the above section should be confirmed by the parties and the PD(Power Distribution) supervisor who will be available at (Kavi Subhash Car Shed) by exchanging private number as Para 5.2.5.

14.0 **The Standard Operating Procedure for emergency discharge of traction power through EMERGENCY TRIPS SWITCH (ETS) has been outlined. These trip switches are separate for UP and DN line and are located at both ends of the platforms (UP & DN) as well as in Shift-in-Charge's room.**

Following procedure shall be observed for switching off third rail traction power by use of ETS in emergency situation:

14.1 This Procedure Order shall be read in conjunction with Metro Railways General Rules (Part I &Special Instruction (if any) in force. Only Shift-in-charge and competent Railway staff are authorized to use this device and every care must be taken to guard against unauthorized use.

14.2 This trip switch shall be used in emergency **when safety of train movement is endangered or when a potential hazard is noticed which may damage Railway asset i.e fire/arcing/water flowing over track etc. orto prevent injuryto passenger intruding on tracks without authority**. **Emergency Trips Switch(**ETS) shall also be used as safety device against unwanted / accidental charging of third rail in any emergency.

14.3 During any emergency condition which requires instant discharging of third rail power, Station staff shall "switch off" the third rail power by breaking the window glass of ETS or opening the locking arrangement of ETS and pushing the mushroom push button (Red colour) placed inside the Emergency Tripping box located at both ends of each platform (UP & Down) and Shift-in-charge's office. He shall immediately inform the Traction Power Controller (TPC)by direct call telephone placed near the Emergency tripping Box and confirm the reason for switching off the traction power by application of Push Button of ETS.

14.4 Shift-in-Charge shall convey clear information to the Central Control & TPC by most expeditious means, when and where traction power must be switched off whenever so warranted to ensure safety.

14.5 ETS shall also be used by Shift-in-Charge to switch off the third rail traction power of required section on receipt of an emergency request from TPC under exchange of Private Number.

14.6 Before switching off the third rail traction power by use of ETS, competent Railway staff shall ensure that all trains are brought to platform as far as practicable and train movement is regulated accordingly.

14.7 On receipt of information from station about local switching off of traction power, Chief Controller will monitor train movement so as not to allow trains to enter the affected section. He will also report the incident to higher officials expeditiously and prepare incident log for the same for further investigation. Normal train movement shall only resume on confirmation of fitness of track from the station concerned.

14.8 TPC (Traction Power Controller) shall not switch on traction power again until the circumstances have been investigated at the spot and the cause of emergency has been found to have been removed, repaired or potential hazard has ceased to exist.After ascertaining that normalcy has been restored Shift-in-Charge shall reset ETS and confirm the same to TPC under exchange of Private number.Thereafter TPC shall switch ON traction power and advise Shift-in-Charge and Chief Controller. Chief Controller shall ensure that normal train movement is restored.

EFFECTS OF ETS OPERATION AT KAVI SUBHASH STATION

STATION NAME	Operation of ETS	Switch off HSCB	Section Dead (No 750 DC power on 3rd rail)
KAVI SUBHASH	202ETS-01 or 202ETS-03 (DN Platform) or 202ETS-05(Shift incharge room)	201DB03 will be tripped in case DB is in ON condition. When 201BCP01 (bridging HSCB) is ON, it will be tripped.	Only DN line of Kavi Subhash will be dead.
	202ETS-02 or 202ETS-04 (UP Platform) or 202ETS-06(Shift Incharge room)	201DB02 & 202DB04 will be tripped in case both DB is in ON condition. When 202BCP02 (bridging HSCB) is ON, it will be tripped.	UP platform of Kavi Subhash to KSIR Neutral Section (excluded of UP PF of KSIR) will be dead.

KAVISUBHASH ZONE(Kavi Subhash- Biman Bandar Line.):

WORKING RULE OF ELECTRICAL TRACTION FOR DOWN AND UP LINE.

(One train only System)

Section Blocked	Protection against entry of Metro Coaches.		Switching operation sequences	
	Longitudinals	Tranverse	For granting power Block	For cancellation of Power Block
KKVS DN Platform area	No train should start from Hemanta Mukherjee DN Platform towards KKVS DN Flatform.	Transeverse movement is not possible from DN line to UP line and Vice-Verse in between Hemanta Mukherjee and Kavi Subhash	OPEN/OFF i) 201DB03 at KKVS/TSS. Confirm that 201BCP01 at KKVS/TSS is in open condition. ii) 201IM03 is in open condition. iii) 201DS03 is in open condition.	Close/ON i) 201DB03 at KKVS/TSS. Confirm that 201BCP01 at KKVS/TSS is in open condition. ii) 201IM03 is in close condition. iii) 201DS03 is in open condition.
DN line conductor Rail in between Hemanta Mukherjee DN line Neutral Section at Biman Bandar end) to KKVS Dn line Neutral Section at Biman Bandar end (Hemanta Mukherjee station DN Platform inclusive) and KKVS DN Platform	No train should start from Hemanta Mukherjee DN Platform towards Kavi subhash DN Flatform.	No transeverse movement is possible from UP line to DN line in between Hemanta Mukherjee and Kavi Subhash and Vice-Verse	OPEN/OFF i) 205DB03 at Hemanta Mukherjee /RSS and ii) 201DB01 at KKVS/TSS.iii) confirm that 205IM03 is in open position.(iv) confirm that 201IM01 is in open condition. v) confirm that 205BCP01 is in open condition.	CLOSE/ON i) 205DB03 at Hemanta Mukherjee /TSS and ii) 201DB01 at KKVS/TSS.iii) confirm that 205IM03 is in close position.(iv) confirm that 201IM01 is in close condition. v) confirm that 205BCP01 is in open condition.

exclusive). |			vi)confirm that 201BCP01 is in open condition. vii)Confirm that 205DS03 is in open condition. viii)Confirm that 201DS01 is in open condition.	vi)confirm that 201BCP01 is in open condition. vii)Confirm that 205DS03 is in open condition. viii)Confirm that 201DS01 is in open condition.
UP line conductor Rail in between KKVS UP PF (platform inclusive) to Hemanta Mukherjee KKVs end Neutal Section.(Hemanta Mukherjee UP platform exclusive).	No Longitudinal movement is possible in this section.	No transeverse movement is possible from DN line to UP line in between KKVS and Hemanta Mukherjee (KKVS end Neutral Section) and Vice-Verse	OPEN/OFF i) 205DB04 at Hemanta Mukherjee /RSS and ii) 201DB02 at KKVS/TSS.iii) confirm that 205IM04 is in open position.(iv) confirm that 201IM02 is in open condition. v) confirm that 205BCP02 is in open condition. vi)Confirm that 201DS02 is in open condition. vii)Confirm that 205DS04 is in open condition. viii) confirm that 201BCP02 is in open condition.	CLOSE/ON i) 205DB04 at Hemanta Mukherjee /RSS and 201DB02 at KKVS/TSS ii) confirm that 205IM04 at Hemanta Mukherjee /RSS is in close condition iii) confirm that 201IM02 at KKVS/TSS is in close position. iv) confirm that 205BCP02 at Hemanta Mukherjee /RSS (Bridging HSCB) , is in open condition. v) confirm that 201BCP02 is in open condition. vi)Confirm that

				201DS02 is in open condition. vii)Confirm that 205DS04 is in open condition.

N.B. :

1)Bridging HSCB at Satyajit Roy (202BCP01 & 202BCP02), Jatindranath Nandi (203BCP01 & 203BCP02), Kavi Sikanta (204BCP01 & 204BCP02) are in close position.

2) DN line Conductor Rail, Section from Hemanta Mukherjee Biman Bandar end Neutral Section to Kavi subhash Biman Bandar end Neutral Section to be treated as one elementary section.

3) UP line Conductor Rail, Section from KKVS UP P.F. to Hamanta Mukherjee KKVS end Neutral Section to be treated as one elementary section.

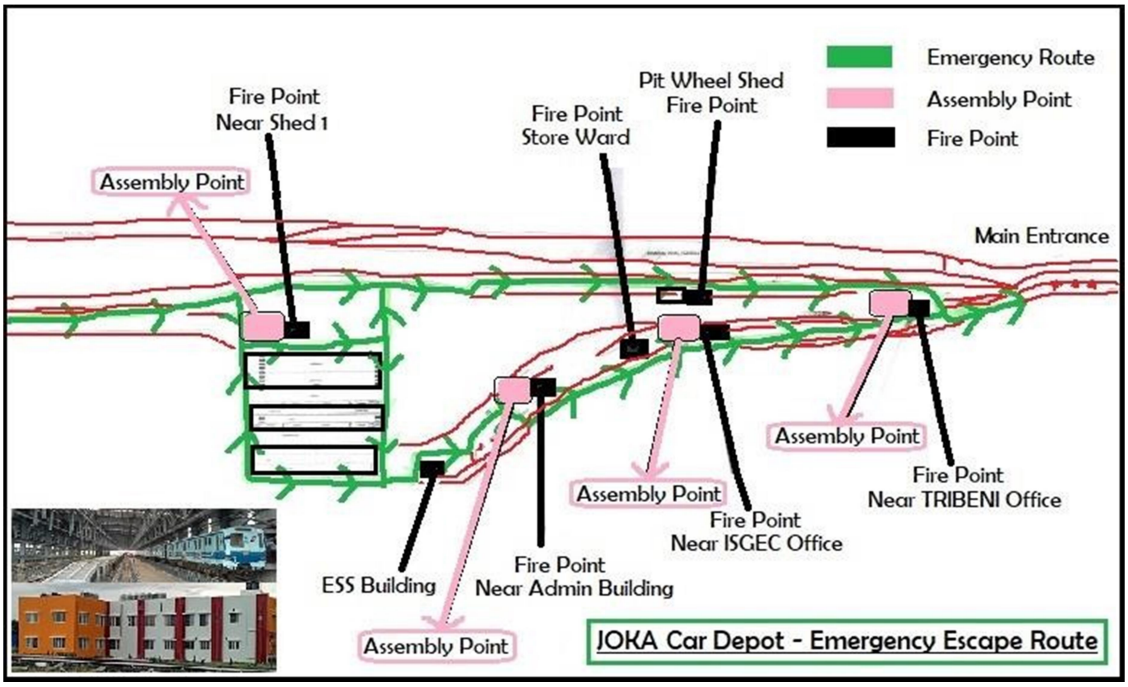
4) No feeder HSCBs at Satysjit Roy/TSS (202DB01 to 202DB04) including By-pass HSCBs (202DB05) and IMs(202IM01 to 202IM04) and No DS (202DS01 to 202DS04) would be in close condition.

5) No feeder HSCBs at Jatindra Nandi/TSS (203DB01 to 203DB04) including By-pass HSCBs (203DB05) and IMs(203IM01 to 203IM04) and No DS (203DS01 to 203DS04) would be in close condition.

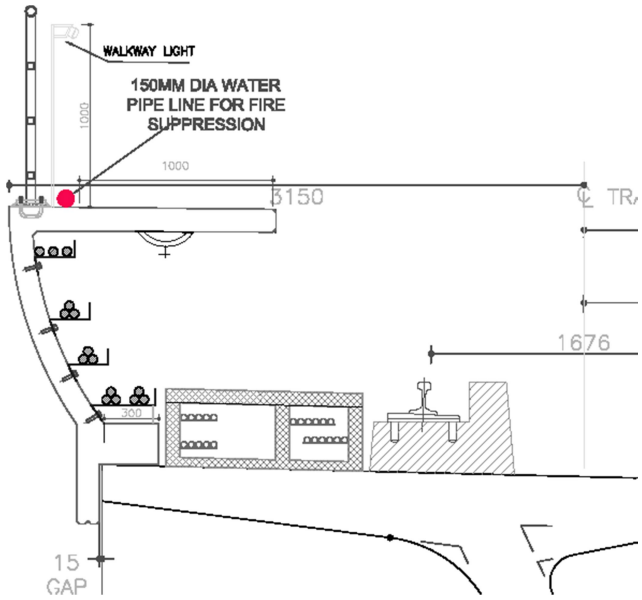
6) No feeder HSCBs at Kavi Sukanta/TSS (204DB01 to 204DB04) including By-pass HSCBs (204DB05) and IMs(204IM01 to 204IM04) and No DS (204DS01 to 204DS04) would be in close condition.

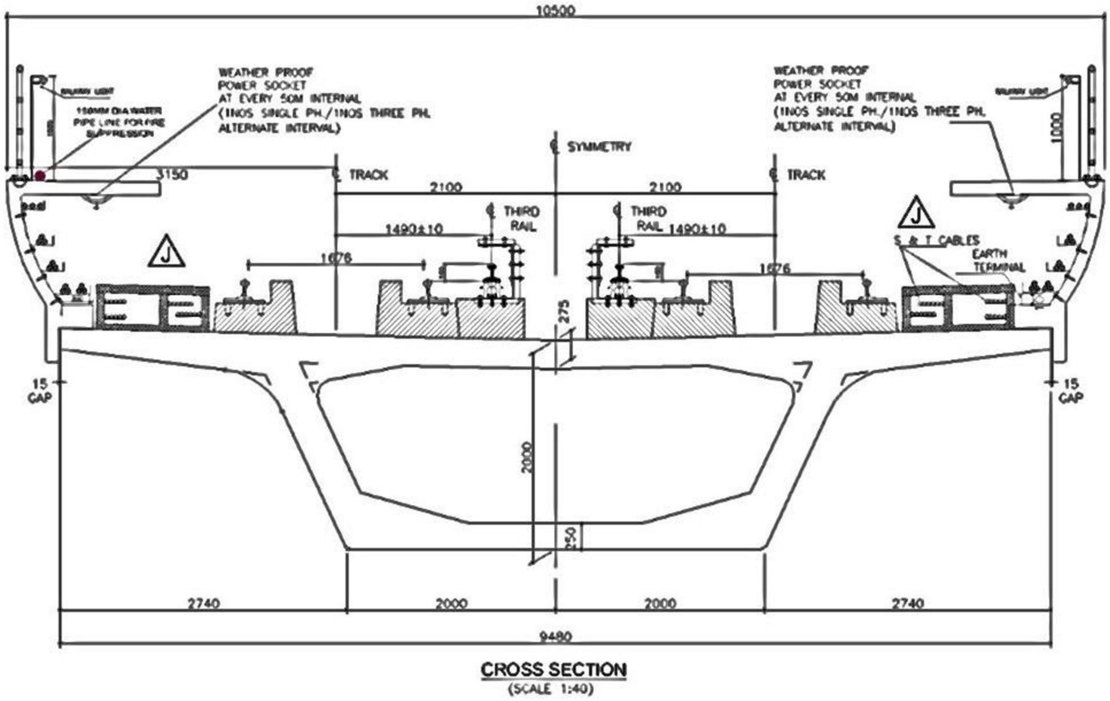
7) At both the Neutral Section between DN Main line to Kavi Subhash Depot Track Disconnector (TD09A & TD09B) and (TD10A & TD10B) Should be Kept in Open Condition.

EMERGENCY ESCAPE ROUTE IN JOKA CAR DEPOT



Cross section of viaduct





CROSS SECTION
(SCALE 1:40)