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(रेल संरक्षा आयोग)
GOVERNMENT OF INDIA
MINISTRY OF CIVIL AVIATION
(COMMISSION OF RAILWAY SAFETY)

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No. 3601/1/2021-22/PBSA-SDAH/EAST-WEST/METRO/NFC/1909

Dated: 24.03.2022

OPENING OF THE NEW STANDARD GAUGE (SG) METRO LINE FROM PHOOLBAGAN (EXCL.) TO SEALDAH METRO STATION (INCLUDING) AS A PART OF EAST-WEST CORRIDOR OF METRO RAILWAY, KOLKATA FOR PUBLIC CARRIAGE OF PASSENGER TRAFFIC.

GAUGE: SG 1435mm

Route length: 2.330(EB) Km.

AUTHORISATION

A 1.0 Metro Railway Kolkata vide their letter no. MRTS/W-30/43/DMRC-KMRC/Pt. III dated 24.02.2022, have submitted application for opening of new standard gauge Metro line from km 6.665 to km 8.995 (for East bound track) and from km 6.665 to km 8.702 (Buffer on West bound track) between Phoolbagan (Excl.) and Sealdah Metro Station (Including) (PHASE-1C) with 750V DC traction as part of East – West corridor of Metro Railway, Kolkata for public carriage of Passenger traffic. The aforesaid new line was inspected by Motor trolley/foot on 16th/17th March 2022 followed by train running trial by standard Metro train composition of six coaches in ATP mode in UP and DN direction followed by speed trial up to 90 Kmph with ATP/ATO disabled between Seladah to Phoolbagan. During the speed trial the running was generally satisfactory and no peaks >0.15g were recorded in OMS. I was accompanied by PCE, PCSTE, PCSO, PCOM, PCEE all from Metro railway Kolkata; Managing Director, Director/RS&T, Director/P&P, GM(S&T), GM(Elect I), GM(Elect II), GM(Civil), and GM(Finance) all from KMRCL and other officers from Metro Railway, Kolkata and KMRCL during the inspection. I was assisted by DyCRS/ET/LKO and DyCRS/S&T/NFC, Kolkata.

Based on the inspection and compliance submitted vide letter No. MRTS/W-30/43/DMRC-KMRC/Pt.III dated 09.03.2022 received on 14.03.2022, sample checks conducted in section during inspection, speed trials, interpretation of OMS results, perusal of the certificates submitted by the Railway Administration regarding satisfactory completion of works and confirmation of operational fitness of the line in every respect for carriage of Passengers Traffic, I am of the opinion that provisions of section 27- 2(a) of the 'The Metro Railways (Construction of Works) Act, 1978' have been substantially complied with in its construction and hence, under the powers delegated to me vide section 28 of Indian Railway Act, read with section 18 of Calcutta Metro Railway

(Operation and Maintenance) Temporary Provisions Act, 1985, and rule 22(1) of the 'Railway Opening for Public Carriage of Passengers Rule, 2000', Railway Board's Notification No. G.S.R. 625 (E) dated 21.07.2000, Notification No. G.S.R. 762(E), dated 08.10.2001 and Notification No. G.S.R. 44 (E), dated 27.01.2005 and G.S.R. 76 (E), dated 16.02.2005, hereby authorize the opening of the aforesaid Standard Gauge Metro Line for public carriage of passengers traffic at a maximum sectional speed of 80 Kmph on main line and 30 Kmph on turn out.

B This authorization is subjected to the following stipulations:

- 2.0 All temporary and permanent speed restrictions now in force or those as may be required to be imposed from time to time shall be observed.
- 3.0 General Manager/ Metro Railway Kolkata shall ensure that Permanent way and works are inspected by the Metro Railway staff as per provision contained in para 56, 63, 70 and 226 of Kolkata Metro Railway General Rules 2019, notified vide GSR 465 (E) dated 01.07.2019.
- 4.0 Sanction and deployment of trained maintenance staff as per approved yardstick for the maintenance of new assets and operation of line.
- 5.0 All the conditions stipulated by the Central Government while according approval of various sub-systems including 3rd Rail system, CBTC and rolling stock deployed on East West Metro Railway shall be complied.
- 6.0 Adequate safety critical spares of all sub-system deployed on Metro Railway such as track, third rail system, signaling and interlocking and rolling stock etc. should be maintained by Metro Railway Kolkata before commencing commercial services. Periodic check shall be made to ensure availability.
- 7.0 It shall be ensured that there is no infringement to the Schedule of Dimension for Metro Railway Kolkata.
- 8.0 **General:**
 - 8.1 Completion of all S&T, Engineering, Electrical, Third Rail Traction system related works in all respects, recording of various parameters before commissioning and ensuring their values within stipulated permissible limits.
 - 8.2 Train operators are adequately trained for this corridor and do possess the valid competency certificates for the operation of train services equipped with ATP system and necessary record shall be kept. Compliance of joints inspection of Engineering, Third rail system, Substations, S&T and rolling stock works with O&M of Metro Railway, Kolkata.

- 8.3 Adequate Tri-lingual signages are provided at all prominent locations in passenger area to properly guide passengers. Sufficient number of signage for Fire entry – exit shall be displayed at proper locations so that they are easily visible.
- 8.4 Emergency layout plan and Emergency Exit boards with direction shall be prominently displayed in concourse & platform area for usage during emergency. Gate numbers should also be indicated in Emergency Layout Plan.
- 8.5 Adequate fire protection and disaster management measures shall be deployed along with the arrangements for safe evacuation of passengers. Clearances from competent authorities shall be obtained for fire protection and disaster management measures. NOC from fire department is obtained for Sealdah station.
- 8.6 Contact numbers of all Emergency services & nearest hospitals shall be displayed in SCRs. Communications equipment should be provided at all nominated places as per the standard list.
- 8.7 All the stations shall be provided with First Aid Rooms. Standard first aid box, with list of medicines and usage booklet, shall be provided at all ASS/TSS/SCR. First Aid boxes shall be sealed by competent person with proper sealing date and signature.
- 8.8 All the works pertaining to ingress/egress to the station, emergency exits, fireman's entry, platforms, staircase, concourse, lighting and ventilations etc shall be completed at Sealdah station.
- 8.9 Adequate facilities shall be provided for differently abled persons as per provisions contained in Persons with Disabilities ACT,1995 at all entry and exit points.
- 8.10 All concerned officials shall be issued competency certificate by the competent officials appointed in this regards by GM/Metro Railway Kolkata.
- 8.11 All the works required for fire detection, suppressions and fire safety at the stations shall be completed and fire clearance of all facilities including service buildings and TSS/ASS shall be obtained from the competent authority and wherever the approval has been accorded subject to certain conditions those should be complied with.

9 Operations

- 9.1 The 'General Rules' of Metro Railway with latest correction slips and updated Station Working Rule (SWR) shall be made available at both the SCRs.

Assurance of all Station Controllers shall be taken in Assurance Register after having understood the Station Working Rules, General Rules of Metro as pertaining to them and other Station Operating instructions etc.

- 9.2 Telephone shall be provided near to emergency trip switch (ETS) provided at end of platforms, so that any passenger using ETS in emergency can also speak with SCR/OCC. Instructions in this regard shall be displayed near by.
- 9.3 A comprehensive duty list of station master with reference to all emergencies should be prepared and appended to SWR so as it serves as reference document in time of need.
- 9.4 Plan showing nearest emergency exits and pathways with directions should be prominently displayed at strategic locations, the location where the person is standing should be shown in the plan as big green dot.
- 9.5 The fire man's entry at Sealdah station was inspected, it has been placed by the side of station entry and exit which can pose challenges to fireman as it may interfere with passenger evacuation in emergency situation. The planners shall strive to achieve a completely isolated entry point for fireman with a free access at all time. Also the mimic fire panel placed at the fire entry was deficient as it did not show the path way to be followed by the fireman to reach the fire location. The location of fire fighting equipment and hydrants available in the station shall also be depicted in the plan.
- 9.6 The key of fire man entry was kept in SCR which defeat whole purpose, one set of key shall be deposited with the fire station and another set shall be kept in glass fronted panel under lock near to the door and its location informed to fire personnel and another set kept in SCR.
- 9.7 Shock treatment Charts and Contact numbers displayed in SCR are with very small font. These should be printed with proper size fonts so that they are easily readable from at least 6m distance. Station Controller should be trained to give first -aid for Shock Treatment.
- 9.8 Metro Railway shall ensure that only properly trained operators are deputed for Train operation. Their route learning and Rolling stock acquaintance shall be checked and certified by an officer of Metro Railway not below JAG.
- 9.9 Metro Rail, Kolkata should establish earthquake monitoring system and also prepare graded response level based on magnitude of the earthquake and epicenter. This should be done in 3 months' time and Metro Railway Kolkata shall submit a brief report to Commission in this regard.
- 9.10 In case of earthquake exceeding the acceleration limits to be decided by Metro Railway, Kolkata, operations shall be suspended and all trains shall

move to nearest station and passengers evacuated on account of imminent danger of flooding in tunnel passing below river.

10 Engineering

- 10.1 Regular greasing of rail gauge face shall be ensured specially on curves and turnouts, automatic rail lubricator of approved type shall be installed in underground portion.
- 10.2 All welds shall be tested by USFD operators of Metro Railway and all defective welds removed from track.
- 10.3 Weld should be protected with joggle fish plate in accordance with the provisions contained in Para 6.4 and 8.14 of USFD Manual, Para 6.3 of AT welding manual and Para 307 of IRPWM.
- 10.4 Samples of AT and FBW randomly selected from the track shall be taken out for testing at Railway AT/FBW plant having facility for testing which shall include examination of heat affected zone, hardness test, porosity, transverse load/ deflection test as provided in AT/FBW manual and PCE /Metro Railway shall satisfy himself that weld meet the requirement laid down in manual and codes and report with his comments submitted to the commission.
- 10.5 Saucer drain in the center of track in the straight portion shall be provided to quickly lead away any water collected in the tunnel.
- 10.6 No buffers were provided, instead friction skid blocks were used at Sealdah Station. Standard buffers approved by RDSO shall be installed before commencement of commercial services.
- 10.7 In the Cross passages hand rail shall be provided wherever passenger have to pass through steps or entire walkway in the passage is not at uniform level.
- 10.8 The directions signages inside the tunnel provided for guidance of passengers in the event of evacuation are placed quite high above the signal cable trays and are obscured by cables, particularly in curves, these shall be shifted and fixed at human eye level above the pathway.
- 10.9 The evacuation pathway must be kept leveled and indicators must be fixed. Retro-reflective tapes shall be fixed on railing and edge of evacuation pathway on both edges in the tunnel. Additional light at foot level shall be provided on the pathway.
- 10.10 At Phoolbagan station, entrance 'C' on CIT road, several flight of steps are provided at the end of the escalator at concourse level which will impair its

capacity in case of evacuation also in the rush hours passengers on steps can not exit at same speed as the capacity of escalator which can result in stampede type of situation, the escalator should be replaced with full length escalator to floor level.

- 10.11 Honey combing in concrete has been noticed at the roof level in the box section tunnel at cross over location and at Phoolbagan end of Sealdah station Platform. Some patch repairs have been done. The concrete shall be tested in accordance with RDSO report 103. Concrete core from repair locations shall be taken out, its exact position to be decided by CE/O&M Metro Railway and subjected to test and a copy of report submitted to commission in 3 month time.
- 10.12 Metro Railway must finalize inspection procedure and schedule for inspection of underground structure and diaphragm walls within 3months of issue of this Authorization. Movement sensors shall be installed in the tunnel at few location to monitor movement in tunnel lining.

11 Electrical:

- 11.1 Sufficient number of Staff Caution notices, Public caution notices, Danger Board, and Protected Area Board, as per the Kolkata Metro Railway General Rules 2019, should be provided at all prominent as well as prescribed locations including Stations, TSS, ASS, Pump rooms and DG Room.
- 11.2 All the bonds must be provided as per the schedule of bonding. This includes provision of bonds to all metallic structures, emergency evacuation path way, RCC slabs on track and platform etc. Earth Resistance values of all the installations shall be maintained within permissible limit
- 11.3 Fire extinguishers and fire hose shall be available as per the prescribed norms at all nominated places included ASS/TSS/SCR. Adequacy of fire detection and suppression systems provided in TSS and ASS shall be certified and ensured by Metro Railways.
- 11.4 Adequate lighting shall be provided at the platforms, emergency pathway and in the concourse at Sealdah station so that passenger safety is not jeopardized. The illumination level in concourse at Sealdah station concourse during emergency operation was checked and at one location it was found only 10 lumen with lux meter. Lighting level during emergency shall be checked in the public area and additional lights shall be provided wherever needed.
- 11.5 All the conditions stipulated in EIG sanction for energization of the section and rolling stock must be complied with.



- 11.6 Protective relay settings for TSS and ASS shall be approved by Metro Railways. Settings should be based of simulations as well as practical trials and experience. If needed, provision of different relay settings should be made in case of feed extension for proper protection in case fault is at the farthest end.
- 11.7 The DG room at Sealdah metro station is not suitable for 2500KVA DG and very little space is left for access and operation of LT panel. Effort should be made to make this room more spacious with easy accessibility of all controls. Alternatively, DG may be installed outdoor with proper safety and security measures.
- 11.8 Auto start feature of DG set and UPS system for emergency power supply shall be ensured at all the time. Proper records of periodical checking of proper functioning of DG set auto-start and UPS shall be maintained. Commissioning of switching panels at all the ASS shall be ensured and proper transfer of load from one transformer to other and then to DG set shall be ensured.
- 11.9 Working of all the Escalators, lifts and fans shall be ensured at all the stations and indications of the same shall be correctly available at the SCR on indication panel. Lift alarm shall be checked and made functional for all lifts at Sealdah station.

Correspondence test between each equipment at site and indication panel in SCR shall be repeated and it should be ensured that it is correctly depicted in the control panel. Also, in case any equipment is not working and or its behavior is not as expected in the mode selection menu, an exception report shall be created and forwarded to concerned supervisor for attention.

- 11.10 The operators working in traction section of OCC were not issued with competency certificate instead only assurance in register are kept, which is in violation of rule 3 of CEA rules. All person engaged for the purpose to operate and carry out the work on electrical lines 750V DC and apparatus connected to it, shall be issued with competency certificate by designated official of Metro Railway nominated by GM/Metro and record of their training shall be kept and their competency periodically renewed after due examination.
- 11.11 Adequate no of trilingual signages properly lit shall be provided at all prominent locations in passenger area to properly guide passengers. Sufficient number of signages for fire entry - exits shall be displayed at proper locations so that they are easily visible repeater shall be provided wherever necessary.
- 11.12 Operation of TVS is not fully automated. It should be implemented before commercial operation. Smoke test in the tunnel was done in the manual

mode and smoke movement was on expected lines and evacuation signages came on.

- 11.13 During inspection it was found that spacing of support of third rail was not as per approved drawing and variation in spacing was up to 1m. The explanation of KMRCL was that as per design it can be up to 5.4m and found lesser hence acceptable, which is not accepted, since it will affect wear pattern of the third rail due to varying deflection and pressure applied by TRCC. Metro Railway shall take punitive action against the contractors and ensure that construction drawings are diligently followed and any deviation shall have approval of the authorized person before works are undertaken.
- 11.14 Lift and Escalator certificate from authorized lift and escalator inspector shall be displayed in all lifts and escalators and a copy kept in the SCR.

12 Signaling:

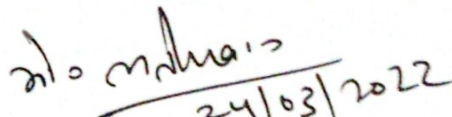
- 12.1 Before start of commercial operation, SAG officers of Metro Railway must certify that signaling and interlocking works have been carried out in accordance with the documents approved by central government/ authorized official on its behalf.
- 12.2 All stipulations / conditions imposed by Independent Safety Assessor (ISA) shall be complied with. Safety Certificate from Signaling and Train control supplier in respect of signaling and train control system shall be obtained.
- 12.3 Provision of earthing to all electrical equipment's and signals as per IRSEM and regular checking of earthing system by S&T and Electrical staff should be ensured.
- 12.4 Insulated tools should be supplied to signal maintainers including Crank Handles.
- 12.5 Maintenance procedure of Axle Counters, interlocking and CBTC shall be approved by competent authority.
- 12.6 Public address system in all the train running in the section should be synchronized as per station time table and announcement should be trilingual.
- 12.7 Clocks of EI System, Data Logger, CBTC, SCADA, Voice Logger at Stations and at OCC should be synchronised with GPS Clock.



13 Rolling Stock :

- 13.1 Platform Screen Doors and Rolling Stock Doors interlocking is not yet implemented at Sealdah Station. It may create passenger commotion during rush hours if the train door are opened and PSD are not open. This interlocking shall be implemented as per prescribed norms before commercial operation.
- 13.2 Before commencing commercial operation, all the prescribed train tests must be done by SAG officers of Metro Railway, between Phoolbagan and Sealdah stations, results recorded and accepted by PCSTE, PCEE and PCSO of Metro Railway.
- 13.3 All the rakes put in commercial service shall pass the DOOR obstruction test with 10x60 mm block. During inspection test was demonstrated with 15 mm thick piece. At insistence, the test was repeated with 5mm piece and door operated correctly. Effort shall be made to standardise and adopt the door obstruction gap of 5mm.
- 13.4 Rubber conical springs are provided at primary level and rubber air springs at secondary level. These are in proximity to TRCC and will be susceptible to fire. The rubber springs used shall be tested in accordance with requirements of EN 45545-2 read in conjunction with applicable operating condition viz HL2/HL3 and report submitted to the commission.
- 13.5 Track side hot box detector shall be installed which should relay the data to OCC in real time basis, it shall be done in six month time.
- 13.6 Arrangements shall be made to record the conversation between passenger and train operator/OCC. Also, announcements made by OCC and Train operator shall be recorded which can be used for training and investigation purposes.
- 13.7 The health of communication and announcement system provided between OCC and the passenger is presently checked only during monthly checks, its health shall be checked daily before putting the rake in commercial service. Modalities of checking it by the train operator at random coach in the train shall be put in vogue since it is an important safety feature. This test can be condoned if recording of announcement feature with time stamp is commissioned in the coaches in which case a welcome announcement can be made by OCC at commencement of service.
- 13.8 During the test of missing beacons, it was found that emergency brakes are applied only when 5 beacons are missed and accumulated error exceeds the preset value. Possibility of degraded speed operations at 25 Kmph in case 2 consecutive beacons are missing shall be explored and implemented.

- 14 The maintenance facilities for all associated infrastructure such as track, third rail system, signaling and interlocking, Platform Screen Doors, Rolling Stock and track side equipment including ATP shall be established and requisite trained and competent manpower shall be deployed for effective maintenance of assets.
- 15 Rolling stock as per joint safety certificate and sanctioned by Ministry of Railways for East- West Metro line are permitted to run on this section at their sanctioned speed or the maximum speed of the section now permitted or the speed proposed in joint safety certificate whichever is the least, in ATP mode of operation.
- 16 Public carriage of passenger on the aforesaid section shall be commenced within three months from date of issue of this authorization otherwise Metro Railway administration shall approach the Commission for revalidation of this sanction.
- 17 Any dilution in the stipulation as detailed above Suo-moto by Railway administration shall automatically render this authorization invalid.
- 18 Immediate intimation should be given to the Commission for compliance of the conditions/stipulations of this Authorization prior to introduction of train services in the section.


24/03/2022
(Mohammad Latief Khan)

Commissioner of Railway Safety
Northeast Frontier Circle, Kolkata.

No.: 3601/1/2021-22/PBSA-SDAH/EAST-WEST/METRO/NFC

Dated: 24.03.2022.

Copy forwarded to the following for information and necessary action:

1. The Chief Commissioner of Railway Safety, Ashoke Marg, Lucknow.
2. The Secretary (Works), Railway Board, Ministry of Railways, Rail Bhawan, New Delhi.
3. The General Manager, Metro Railway, Kolkata.
4. The Managing Director, KMRCL, Kolkata.