

**Madhya Pradesh Metro Rail Corporation Limited (MPMRCL)**

(A Joint Venture of Government of India and Government of Madhya Pradesh)

**CIN: U75100MP2015SGC034434**

**2<sup>nd</sup> Floor, Smart City Development Corporation Limited Office Building,  
Kalibadi Road, BHEL, Sector A, Berkheda, Bhopal – 462022, Madhya Pradesh, India**

**Website- [www.mpmetrorail.com](http://www.mpmetrorail.com)**

**Tel No.: +91-755-2475607**

**Corrigendum – 6**

**No.: 93/MPMRCL/2022**

**Date: 27.01.2022**

With reference to Tender Notification No.: 1458/MPMRCL/2021/Package IN–09, Date: 10.11.2021, regarding “Engineering, Supply, Erection, Testing and Commissioning of Power Supply Receiving Sub–Station (RSS), Traction Sub-Station (TSS), Auxiliary Sub-Station (ASS), 750 V DC 3rd Rail and SCADA System” for Indore Metro Rail Project, following corrigendum are issued in pursuant to clause 3.5 of Volume I – ITT. The corrigendum will be part of the said tender document

Sr. No.	Tender Document Reference	Clause/Sub-Clause/Para (Page No)	Clause Description (relevant portion) as existing in the Tender Documents	Clause Description (relevant portion) as amended now to be read as
1.	Volume I – Part 3: EQC	Clause No. 10.2 Work	High voltage (33 kV and above) electrical power supply work involving transmission lines / Cabling, Transformers, Switch gear, Protection system in Power Plant / Power Transmission & Distribution	High voltage (33 kV and above) electrical power supply work involving transmission lines / Cabling, Transformers, Switch gear, Protection system in Power Plant / Power

Sr. No.	Tender Document Reference	Clause/Sub-Clause/Para (Page No)	Clause Description (relevant portion) as existing in the Tender Documents	Clause Description (relevant portion) as amended now to be read as
		Experience: Sub-clause No. 10.2.1, (66/132)	works for Heavy industries like Cement, Steel, Petrochemicals, <b>Utilities and/or Electricity Authority.</b>	Transmission & Distribution works for Heavy industries like Cement, Steel, Petrochemicals, <b>Metro, Mainline Railway, Suburban Railway, Monorail, Tramways, State Utilities, Government organizations and/or Electricity Authority.</b>
2.	Volume I – Part 3: EQC	Clause No. 10.2 Work Experience: Sub-clause No. 10.2.2, (68/132)	a) RSS Construction, Supply, testing and commissioning of at least One Receiving Substation (GIS) with primary voltages 33 kV and above along with other associated works.  e) Third Rail*** Supply, erection, testing and commissioning of 600 V DC or above Third rail Traction system for Metro Rail/ Suburban Rail / <b>Main line Railways/ Mono Rail/ Tramways</b> for minimum length of 10 Route Kilometer (RKM) or 20 Track Kilometer	a) RSS Construction, Supply, testing and commissioning of at least One Receiving Substation (GIS <b>or AIS</b> ) with primary voltages 33 kV and above along with other associated works.  e) Third Rail*** Supply, erection, testing and commissioning of 600 V DC or above Third rail Traction system for Metro Rail/ Suburban Rail / <b>Main line Railways/ Mono Rail/ Tramways</b> for minimum length of 10 Route Kilometer (RKM) or 20 Track Kilometer

Sr. No.	Tender Document Reference	Clause/Sub-Clause/Para (Page No)	Clause Description (relevant portion) as existing in the Tender Documents	Clause Description (relevant portion) as amended now to be read as
			<p>(TKM).</p> <p>g) Stray Current Monitoring System#</p> <p>Supply, erection, testing and commissioning of Stray Current Monitoring System for Metro Rail/Suburban Rail/Main line Railways/Mono Rail/Tramways for 10 Route Kilometer (RKM) or 20 Track Kilometer (TKM).</p>	<p>(TKM).</p> <p>g) Stray Current Monitoring System (<b>SCMS</b>)#</p> <p>Supply, erection, testing and commissioning of Stray Current Monitoring System for Metro Rail/Suburban Rail/Main line Railways/Mono Rail/Tramways for 10 Route Kilometer (RKM) or 20 Track Kilometer (TKM).</p> <p><b>If Completion certificate given by client / any agency does not specifically mention SCMS, the documentary evidence of SCMS being integral part of the contract agreement can be furnished along with overall completion certificate.</b></p>

Sr. No.	Tender Document Reference	Clause/Sub-Clause/Para (Page No)	Clause Description (relevant portion) as existing in the Tender Documents	Clause Description (relevant portion) as amended now to be read as																		
3.	Volume IV – Technical Specification	Chapter-1 Sub-clause No. 1.4.9.2.8 (14/16)	<table border="1"> <thead> <tr> <th>Location</th> <th>Earth resistance (ohms)</th> </tr> </thead> <tbody> <tr> <td>RSS</td> <td>0.5</td> </tr> <tr> <td>TSS</td> <td>1.0</td> </tr> <tr> <td>ASS</td> <td>1.0</td> </tr> </tbody> </table> <p>Maximum Earth Electrode Resistance</p>	Location	Earth resistance (ohms)	RSS	0.5	TSS	1.0	ASS	1.0	<table border="1"> <thead> <tr> <th>Location</th> <th>Earth resistance (ohms)</th> </tr> </thead> <tbody> <tr> <td>RSS</td> <td>0.5</td> </tr> <tr> <td>TSS</td> <td>1.0</td> </tr> <tr> <td>ASS</td> <td>1.0</td> </tr> <tr> <td><b>SCADA Equipment at RSS/ASS/TSS</b></td> <td><b>0.5 (Clean Earth)</b></td> </tr> </tbody> </table> <p>Maximum Earth Electrode Resistance</p>	Location	Earth resistance (ohms)	RSS	0.5	TSS	1.0	ASS	1.0	<b>SCADA Equipment at RSS/ASS/TSS</b>	<b>0.5 (Clean Earth)</b>
Location	Earth resistance (ohms)																					
RSS	0.5																					
TSS	1.0																					
ASS	1.0																					
Location	Earth resistance (ohms)																					
RSS	0.5																					
TSS	1.0																					
ASS	1.0																					
<b>SCADA Equipment at RSS/ASS/TSS</b>	<b>0.5 (Clean Earth)</b>																					
4.	Volume IV – Technical Specification	Chapter-2 Sub-clause No. 2.2.4.3 (09/25)	The work shall essentially consist of but not be limited to the following: h. Connection of earthing.	The work shall essentially consist of but not be limited to the following: h. <b>Connection of Traction equipment to MET within Sub-station.</b>																		
5.	Volume IV –	Chapter-2	The work shall consist of but not be limited to the	The work shall consist of but not be limited to																		

Sr. No.	Tender Document Reference	Clause/Sub-Clause/Para (Page No)	Clause Description (relevant portion) as existing in the Tender Documents	Clause Description (relevant portion) as amended now to be read as								
	Technical Specification	Sub-clause No. 2.2.5.4 (10/25)	following: I. Supply, installation, testing & commissioning of cad weld joints/bolted joints to rails	the following: I. Supply, installation, testing & commissioning of <b>exothermic weld joints to running</b> rails.								
6.	Volume IV – Technical Specification	Chapter-3 Sub Clause No. 3.2.10 (50/55)	Table 3.9: <b>Interface with Underground Stations &amp; Tunnel Contractor</b>	<p>New Item added at S.no. 19</p> <p>Table 3.9: <b>Interface with Underground Stations &amp; Tunnel Contractor</b></p> <table border="1"> <thead> <tr> <th>Item No.</th> <th>Item Description</th> <th>Traction and Power Supply Contractor</th> <th>UG Stations &amp; Tunnel Contractor</th> </tr> </thead> <tbody> <tr> <td>19.</td> <td>Temperature in UG section</td> <td>Shall Interface for Temperature requireme</td> <td>Shall furnished the minimum and Maximum</td> </tr> </tbody> </table>	Item No.	Item Description	Traction and Power Supply Contractor	UG Stations & Tunnel Contractor	19.	Temperature in UG section	Shall Interface for Temperature requireme	Shall furnished the minimum and Maximum
Item No.	Item Description	Traction and Power Supply Contractor	UG Stations & Tunnel Contractor									
19.	Temperature in UG section	Shall Interface for Temperature requireme	Shall furnished the minimum and Maximum									

Sr. No.	Tender Document Reference	Clause/Sub-Clause/Para (Page No)	Clause Description (relevant portion) as existing in the Tender Documents	Clause Description (relevant portion) as amended now to be read as			
						nt to suit Traction equipments	Temperat ure of UG section
7.	Volume IV – Technical Specification	Chapter-12 Sub Clause no 12.11.8.2 (99/203)	The control and relay panel specifications (for 132 kV power supply and power transformers) have been defined in Clause-12.19 of this Chapter. Sub-clauses 12.19.5 (Protection system functions), 12.19.6 (Features of protection relays) & Para 12.9.8 (Technical Features) and <b>12.19.12 (ConstructionFeatures, as relevant)</b> shall be equally applicable to the protection relays and control panel used for 33 kV panels. Further, details of protection to be provided in the 33 kV panels are as follows	The control and relay panel specifications (for 132 kV power supply and power transformers) have been defined in Clause-12.19 of this Chapter. Sub-clauses 12.19.5 (Protection system functions), 12.19.6 (Features of protection relays) & Para 12.9.8 ( <b>PCU</b> Technical Features) shall be equally applicable to the protection relays and control panel used for 33 kV panels. Further, details of protection to be provided in the 33 kV panels are as follows			
8.	Volume IV – Technical Specification	Chapter-12 Sub Clause no 12.17.3.6.1 (137/203)	In India, the short term rating of most of the equipment is based on 1.0 second duration of fault. Therefore, 1 second may be adopted for the duration of fault in the calculations to determine the size of conductor for the earth mat. For the purpose of determining the safe step and mesh potentials, a duration of 0.5 second may be adopted. However,	In India, the short term rating of most of the equipment is based on 1.0 second duration of fault. Therefore, 1 second may be adopted for the duration of fault in the calculations to determine the size of conductor for the earth mat. For the purpose of determining the safe step and mesh potentials, a duration of 0.5 second may be			

Sr. No.	Tender Document Reference	Clause/Sub-Clause/Para (Page No)	Clause Description (relevant portion) as existing in the Tender Documents	Clause Description (relevant portion) as amended now to be read as
			it will be ensured that, on the basis of the protective gear and protective scheme provided, the fault is cleared within a period not exceeding 0.5 seconds. Cu/Copper bonded steel shall be used for RSS yard earth mat. A corrosion factor of 2 is to be considered for MS	adopted. However, it will be ensured that, on the basis of the protective gear and protective scheme provided, the fault is cleared within a period not exceeding 0.5 seconds. <b>MS round rod</b> shall be used for RSS yard earth mat. A corrosion factor of 2 is to be considered for MS
9.	Volume IV – Technical Specification	Chapter-12 Sub Clause no 12.17.3.8.1 (138/203)	A mesh made of MS/ <b>Copper bonded steel</b> round bar shall form the protection earth circuit. Earth conductors should be buried as deep as possible to keep a significant cylindrical equipotential area ensuring the earth resistance decreasing	A mesh made of MS round bar shall form the protection earth circuit. Earth conductors should be buried as deep as possible to keep a significant cylindrical equipotential area ensuring the earth resistance decreasing
10.	Volume IV – Technical Specification	Chapter-12 Sub Clause no 12.19.9.2.9 (166/203)	The protection unit should be based on phase segregated line differential principle and use advanced and proven algorithms and shall support user friendly engineering tools and disturbance handling tools. Cables required for the protection & to be laid along the route of 132kV Cable shall be in the Scope <b>and as per the requirements</b> of MPPTCL	The protection unit should be based on phase segregated line differential principle and use advanced and proven algorithms and shall support user friendly engineering tools and disturbance handling tools. Cables required for the protection & to be laid along the route of 132kV Cable shall be in the Scope of MPPTCL
11.	Volume IV – Technical	Chapter-12	The screen of screened cables shall be connected	<b>[Deleted]</b>

Sr. No.	Tender Document Reference	Clause/Sub-Clause/Para (Page No)	Clause Description (relevant portion) as existing in the Tender Documents	Clause Description (relevant portion) as amended now to be read as												
	Specification	Sub Clause no 12.20.8.4 (179/203)	to earth and continuity shall be ensured													
12.	Volume IV – Technical Specification	Chapter-13 Sub Clause No. 13.3.1.6.1 (17/21)	In tunnels, the cables shall be laid on the bracket supports, under the walkway, provided on the tunnel walls. The cable support brackets, pipes for track crossing in tunnels shall be provided by other Designated Contractors, for which the BH-08 Contractor will have to interface. In some cases where the cable trench is not available. The Contractor shall provide suitable means for secured cable laying on hangers, cable support brackets, trays etc. with approval of the Engineer. Cables shall be laid in trefoil formation.	In tunnels, the cables shall be laid on the bracket supports, <b>opposite</b> the walkway, provided on the tunnel walls. The cable support brackets, pipes for track crossing in tunnels shall be provided by other Designated Contractors, for which the BH-08 Contractor will have to interface. In some cases where the cable trench is not available. The Contractor shall provide suitable means for secured cable laying on hangers, cable support brackets, trays etc. with approval of the Engineer. Cables shall be laid in trefoil formation.												
13.	Volume IV – Technical Specification	Chapter-15 Sub-Clause N\o. 15.3.3.1 (14/112)	<p><b>Table 15.1: DC High Speed Switchgear Rating</b></p> <table border="1"> <thead> <tr> <th>SN</th> <th>Description</th> <th>High Speed DC Switchgear Rating</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	SN	Description	High Speed DC Switchgear Rating				<p><b>Table 15.1: DC High Speed Switchgear Rating</b></p> <table border="1"> <thead> <tr> <th>SN</th> <th>Description</th> <th>High Speed DC Switchgear Rating</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	SN	Description	High Speed DC Switchgear Rating			
SN	Description	High Speed DC Switchgear Rating														
SN	Description	High Speed DC Switchgear Rating														



Sr. No.	Tender Document Reference	Clause/Sub-Clause/Para (Page No)	Clause Description (relevant portion) as existing in the Tender Documents			Clause Description (relevant portion) as amended now to be read as		
			2	Voltage		2	Voltage	
			c.	Rated Insulation voltage	1500 V	c.	Rated Insulation voltage	<b>1800 V</b>
			e.	Power frequency withstand voltage rms 50 Hz 1 min to earth and between phases	8.3 kV	e.	Power frequency withstand voltage rms 50 Hz 1 min to earth and between phases	<b>6.9 kV (to earth and between phases – indoor)</b> <b>8.3 kV (across an isolating distance if applicable – indoor)</b>
14.	Volume IV – Technical Specification	Chapter-15 Sub Clause no. 15.5.4.1 (49/112)	It is envisaged that the Rectifier Transformer shall be designed for 33kV cable connections from the top for at grade/elevated corridor stations. In underground stations and in depots the 33kV cable connection shall be from bottom. <b>However, other arrangements shall also be acceptable subject to the conditions indicated in Clause in turn Clause 14.2 of Chapter 14</b>			It is envisaged that the Rectifier Transformer shall be designed for 33kV cable connections from the top for at grade/elevated corridor stations. In underground stations and in depots the 33kV cable connection shall be from bottom.		

Sr. No.	Tender Document Reference	Clause/Sub-Clause/Para (Page No)	Clause Description (relevant portion) as existing in the Tender Documents	Clause Description (relevant portion) as amended now to be read as												
15.	Volume IV – Technical Specification	Chapter-16 Sub Clause No. 16.2.3.1 Page (9/44)	<p><b>Table 16.3: Third Rail System</b></p> <table border="1"> <thead> <tr> <th>S.N.</th> <th>Description</th> <th>Rating</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>Nominal current rating of the conductor rail at 40 degree C (without exceeding 45 degree C heat rise).</td> <td>4500 A</td> </tr> </tbody> </table>	S.N.	Description	Rating	3	Nominal current rating of the conductor rail at 40 degree C (without exceeding 45 degree C heat rise).	4500 A	<p><b>Table 16.3: Third Rail System</b></p> <table border="1"> <thead> <tr> <th>S.N.</th> <th>Description</th> <th>Rating</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>Nominal current rating of the conductor rail at <b>45</b> degree C (without exceeding 45 degree C heat rise).</td> <td>4500 A</td> </tr> </tbody> </table>	S.N.	Description	Rating	3	Nominal current rating of the conductor rail at <b>45</b> degree C (without exceeding 45 degree C heat rise).	4500 A
S.N.	Description	Rating														
3	Nominal current rating of the conductor rail at 40 degree C (without exceeding 45 degree C heat rise).	4500 A														
S.N.	Description	Rating														
3	Nominal current rating of the conductor rail at <b>45</b> degree C (without exceeding 45 degree C heat rise).	4500 A														
16.	Volume IV – Technical Specification	Chapter-16 Sub Clause no. 16.2.4.9.1 (18/44)	The entire conductor rail, including all ramps, expansion joints and cable terminals shall be covered by an insulated protective cover to protect against the weather and to avoid unintentional contact by staff working/walking on the line. Each cover system shall be designed for high standards of electrical performance, fire and smoke properties, and long life. The covers shall be coloured yellow.	The entire conductor rail, including all ramps, expansion joints and cable terminals shall be covered by an insulated protective cover to protect against the weather and to avoid unintentional contact by staff working/walking on the line. Each cover system shall be designed for high standards of electrical performance, fire and smoke properties, and long life. <b>The contractor shall propose suitable colour of covers for Conductor rail and its accessories by considering environmental conditions for Engineer's review and approval.</b>												

Sr. No.	Tender Document Reference	Clause/Sub-Clause/Para (Page No)	Clause Description (relevant portion) as existing in the Tender Documents	Clause Description (relevant portion) as amended now to be read as
17.	Volume IV – Technical Specification	Chapter-16 Sub Clause no. 16.2.4.10.1 (19/44)	An insulated Joint Assembly is used in order to separate the different power section along the track. These shall be provided at various locations for the purpose of sectioning of the conductor rail being powered from different traction substations. This is an insulated joint used to separate different sections provided by two different substations	An insulated Joint Assembly is used in order to separate the different power section along the track. These shall be provided at various locations for the purpose of sectioning of the conductor rail being powered from different traction substations. This is an insulated joint used to separate different sections provided by two different substations. <b>In place of insulated joint, the contractor may use the gap solution to separate different feeding sections of two different TSSs.</b>
18.	Volume IV – Technical Specification	Chapter-16 Sub Clause no. 16.3.1.5.3.1 (26/44)	One rail per 100 rails shall be subject to an ultrasonic examination to ensure the absence of any voids in the aluminum to steel interface. The Engineer may require more frequent testing if voids are found in the test rails	One rail per 100 rails shall be subject to an ultrasonic examination <b>or any other applicable test as per Industry practice</b> to ensure the absence of any voids in the aluminum to steel interface. The Engineer may require more frequent testing if voids are found in the test rails.
19.	Volume IV – Technical Specification	Chapter-18, Sub Clause 18.4.1.15, Page	To transmit RSS data (analogue data, metering data and CBs Operating Status only) to MPPTCL State Load Dispatch Centre (SLDC) through	Deleted

Sr. No.	Tender Document Reference	Clause/Sub-Clause/Para (Page No)	Clause Description (relevant portion) as existing in the Tender Documents	Clause Description (relevant portion) as amended now to be read as
		(9/213)	wireless communication over Web network with Firewall protection for the purpose of remote viewing only. No control shall be possible from SLDC.	
20.	Volume IV – Technical Specification	Chapter-18 Sub Clause 18.5 Page (9/213)	RTU shall be provided with Touch Panel with sub-station mimic for local control of power supply equipment from RTU.	Deleted
21.	Volume IV – Technical Specification	Chapter-18 ,Sub Clause 18.5 Page (9/213)	Maintenance Planning System at OCC for acquiring real time fault details & operational count of an equipment for scheduled or break down maintenance of an equipment.	Deleted
22.	Volume IV – Technical Specification	Chapter 18 Sub Clause 18.5 x; Page (10/213)	Signalling system interface to SCADA system	Signalling system interface to SCADA system with IEC 60870-5-104 Protocol.

Sr. No.	Tender Document Reference	Clause/Sub-Clause/Para (Page No)	Clause Description (relevant portion) as existing in the Tender Documents	Clause Description (relevant portion) as amended now to be read as
23.	Volume IV – Technical Specification	Chapter-18, Sub Clause 18.18.5.2, Page (71/213)	NMS shall be a set of dedicated server and network management software. The NMS shall have simple browser-based user interface to provide all the required information of SCADA dedicated network nodes. The NMS shall not impact the availability and performance of SCADA system.	NMS shall be a set of dedicated server and network management software <b>in OCC</b> . The NMS shall have simple browser-based user interface to provide all the required information of SCADA dedicated network nodes. The NMS shall not impact the availability and performance of SCADA system.
24.	Volume IV – Technical Specification	Chapter-18 Sub Clause 18.23.7.1 Page (88/213)	The SCADA System selected shall support integration of RTU of other make and model over IEC 608705-104. It shall also be capable to exchange information with other SCADA system over IEC 60870-5-104, <b>OPC DA/UA</b> and other standard communication protocols.	The SCADA System selected shall support integration of RTU of other make and model over IEC 60870-5-104. It shall also be capable to exchange information with other SCADA system over IEC 60870-5-104 and other standard communication protocols
25.	Volume IV – Technical Specification	Chapter-18 Sub Clause 18.27.2.2 Page (95/213)	It shall enable local station control via a local human machine interface (HMI) display with 70” LED and control software package, which shall contain an extensive range of supervisory control and data acquisition (SCADA) functions	It shall enable local station control via a local human machine interface (HMI) display with <b>24”</b> LED and control software package, which shall contain an extensive range of supervisory control and data acquisition (SCADA) functions
26.	Vol-VI:	Tender drawing	TYPICAL SCADA CONTROL CENTRE	TYPICAL SCADA CONTROL CENTRE

Sr. No.	Tender Document Reference	Clause/Sub-Clause/Para (Page No)	Clause Description (relevant portion) as existing in the Tender Documents	Clause Description (relevant portion) as amended now to be read as
	Tender Drawings	–	ARCHITECTURE (OCC/BCC) Drg. No. I202-BIG-TRP-00-DWG-SCDLYT1-00605/R00.	ARCHITECTURE (OCC/BCC) Drg. No. I202-BIG-TRP-00-DWG-SCDLYT1-00605/ <b>R01</b> .

The other conditions will remain the same.

Further modifications/amendments (if any) regarding aforesaid tender will be uploaded as and when required.

**Managing Director**  
**Madhya Pradesh Metro Rail Corporation Limited**  
**Bhopal**