

**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

**Tel No.:** – +91-755-2475607

**Corrigendum – 10**

**No.: 0237/MPMRCL/2022**

**Date: 21.02.2022**

With reference to Tender Notification No.: 1427/MPMRCL/2021/Package BH&IN-02, Date: 02.11.2021, regarding “Design, Manufacture, Supply, Installation, Testing, Commissioning and Training of Standard Gauge Passenger Rolling Stock Cars (with 15 Years Comprehensive Maintenance) – 81 Cars for Bhopal and 75 Cars for Indore, including Signalling & Train Control and Telecommunication Systems (with 7 Years Comprehensive Maintenance)” for Bhopal Metro Rail Project and 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.

<b>Sr. No.</b>	<b>Tender Document Reference</b>	<b>Clause/Sub-Clause/Para (Page No)</b>	<b>Clause Description (relevant portion) as existing in the Tender Documents</b>	<b>Clause Description (relevant portion) as amended now to be read as</b>
1	Volume I	1.2, NIT	Payment of Tender Fee/ Cost of Tender Document is to be made only by RTGS, NEFT or IMPS. No other mode of payment will be accepted. The detail of bank account of MPMRCL is mentioned in para	Payment of Tender Fee/ Cost of Tender Document is to be made only by RTGS, NEFT or IMPS. No other mode of payment will be accepted. The detail of bank account of MPMRCL is mentioned in para

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
		1.4, page no. 10, NIT	1.10 of NIT. Tenders are open to nationals of all countries, who fulfil the criteria stipulated in Eligibility cum Qualification Criteria (EQC). A firm, who has paid tender fee for the tender documents in their name, can submit the tender either as an individual firm or in JV/ Consortium.	1.10 of NIT. Tenders are open to nationals of all countries, who fulfil the criteria stipulated in Eligibility cum Qualification Criteria (EQC). A firm, who has paid tender fee for the tender documents in their name, can submit the tender either as an individual firm or in JV/ Consortium. In case of foreign bidder, payment can also be made by authorized representative/third party of the Bidder. In bid submission, bidder shall submit the details of the payment along with authorization letter.
2	Volume-I	7.3.1	Prior to the expiry of the period of tender validity prescribed by the Employer, the Employer; at least ten (10) days after the evaluation results of Financial Bids are published on eProcurement portal as per sub-clause 7.1.1 above; will notify the successful Tenderer in writing, that their tender has been accepted. This letter, “the Letter of Acceptance”, shall name the sum which the Employer will pay to the Contractor in consideration of the execution, completion, maintenance and guarantee of the works by the Contractor as prescribed by the Contract, and this shall be “the Accepted Contract	Prior to the expiry of the period of tender validity prescribed by the Employer, the Employer; after the evaluation results of Financial Bids are published on eProcurement portal as per sub-clause 7.1.1 above; will notify the successful Tenderer in writing, that their tender has been accepted. This letter, “the Letter of Acceptance”, shall name the sum which the Employer will pay to the Contractor in consideration of the execution, completion, maintenance and guarantee of the works by the Contractor as prescribed by the Contract, and this shall be “the Accepted Contract Amount”. The Letter of

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
			Amount". The Letter of Acceptance will be issued under signature of the Competent Authority of the Employer. The Letter of Acceptance will be sent in duplicate to the successful Tenderer, who will return one copy to the Employer duly acknowledged and signed by the authorised signatory, within one week of receipt.	Acceptance will be issued under signature of the Competent Authority of the Employer. The Letter of Acceptance will be sent in duplicate to the successful Tenderer, who will return one copy to the Employer duly acknowledged and signed by the authorised signatory, within one week of receipt.
3	Volume II	PC, 8.1	Unless otherwise stated in the Letter of Acceptance, the Engineer shall give a Notice (Notice to Proceed) to the Contractor stating the Commencement Date, not less than 14 days before the Commencement Date.	Commencement Date shall be the date of Letter of Acceptance.
4	Volume II	PC, 13.7.3	Schedule of cost indexation during "Defect Liability and Comprehensive Maintenance Period" for Rolling Stock, Signalling & Train Control and Telecommunication: Formula for adjustment for change in cost: $P_n = 0.20 + \{0.40 \times (L_n/L_0)\} + \{0.40 \times (C_n/C_0)\}$ Where; "P <sub>n</sub> " is the adjustment multiplier to be applied to the estimated contract value, in the relevant currency(ies); "L <sub>n</sub> " is the Average of monthly Consumer Price Index for Industrial workers, as published by	Schedule of cost indexation during "Defect Liability and Comprehensive Maintenance Period" for Rolling Stock, Signalling & Train Control and Telecommunication: Formula for adjustment for change in cost: $P_n = 0.20 + \{0.40 \times (L_n/L_0)\} + \{0.40 \times (C_n/C_0)\}$ Where; "P <sub>n</sub> " is the adjustment multiplier to be applied to the estimated contract value, in the relevant currency(ies); "L <sub>n</sub> " is the Average of monthly Consumer Price Index for Industrial workers, as published by

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>Ministry of Labour &amp; Employment, Government of India, as applicable to Bhopal and Indore (Madhya Pradesh) area, for the period of work under consideration; (Refer Note 1 for equivalent indices for foreign currency portion). “<math>L_0</math>” is the Consumer Price Index for Industrial workers, as published by Ministry of Labour &amp; Employment, Government of India, as applicable to Bhopal and Indore (Madhya Pradesh) area, as on the Base Date; (Refer Note 1 for equivalent indices for foreign currency portion). “<math>C_n</math>” is the Average of monthly Whole sale Price Index for “All Commodities” (Base Year: 2011-12 = 100), as published by Office of the Economic Adviser, Ministry of Commerce and Industry, Government of India, for the period of work under consideration; (Refer Note 1 for equivalent indices for foreign currency portion). “<math>C_0</math>” is the Whole sale Price Index for “All Commodities” (Base Year: 2011-12 = 100), as published by Office of the Economic Adviser, Ministry of Commerce and Industry, Government of</p>	<p>Ministry of Labour &amp; Employment, Government of India, as applicable to Bhopal and Indore (Madhya Pradesh) area, for the period of work under consideration; (Refer Note 1 for equivalent indices for foreign currency portion). “<math>L_0</math>” is the Consumer Price Index for Industrial workers, as published by Ministry of Labour &amp; Employment, Government of India, as applicable to Bhopal and Indore (Madhya Pradesh) area, as on the Base Date; (Refer Note 1 for equivalent indices for foreign currency portion). “<math>C_n</math>” is the Average of monthly Whole sale Price Index for “All Commodities” (Base Year: 2011-12 = 100), as published by Office of the Economic adviser, Ministry of Commerce and Industry, Government of India, for the period of work under consideration; (Refer Note 1 for equivalent indices for foreign currency portion). “<math>C_0</math>” is the Whole sale Price Index for “All Commodities” (Base Year: 2011-12 = 100), as published by Office of the Economic Adviser, Ministry of Commerce and Industry, Government of</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
			<p>India, as on the Base Date; (Refer Note 1 for equivalent indices for foreign currency portion). Note 1: The adjustment multiplier for respective foreign currency shall be calculated based on the equivalent indices of the Government/ Government Authorised Agency of the country to which the currency belongs, as tendered and accepted by the Employer.</p>	<p>India, as on the Base Date; (Refer Note 1 for equivalent indices for foreign currency portion). Note 1: The adjustment multiplier for respective foreign currency shall be calculated based on the equivalent indices of the Government/ Government Authorised Agency of the country to which the currency belongs, as tendered and accepted by the Employer. The adjustment on Foreign Currency portion shall be paid as per the Wholesale Price Index or equivalent Index of the Government/Government Authorized Agency of that country to which the currency belongs. The Bidder shall propose the indices in their Technical Bid as per Attachment -1 of Corrigendum-10 (attached). The formula for the adjustment shall be as below: <math>P_n = a + b(B_n/B_o)</math> In which: <math>P_n</math> = adjustment multiplier to be applied to the Foreign currencies portion. 'a' is a fixed coefficient representing the non-adjustable portion in contractual payments (=20%) 'b' is the coefficient representing the proportion of cost element related to the execution of the Works.</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
				(=80%) 'Bn' is the current cost indices for period 'n' (to which the particular interim payment certificate relates) for Foreign Currencies portion applicable to the relevant Cost Centre. 'Bo' is the base cost indices for Foreign Currencies portion applicable to the relevant Cost Centre as on Base Date as provided in Tables of Adjustment Data.
5	VOL II GC-PC	STKDBH09 (167 of 244)	Complete manufacturing, FAT and delivery to site of all Signalling & Train Control and Telecommunication equipment for installation on mainline. - 67 weeks	Refer Attachment – 3 to Corrigendum – 10
6	VOL II GC-PC	STKDIN09 (173 of 244)	Complete manufacturing, FAT and delivery to site of all Signalling & Train Control and Telecommunication equipment for installation on mainline. - 67 weeks	Refer Attachment – 4 to Corrigendum – 10
7	Volume III, Part 1: ERGS-RS	2.2.4 (20 of 397)	In case of non-deployment of Key Personnel as mentioned in 2.3.1, the penalty shall be imposed pro-rata basis at the rate of Rs.2,00,000/- (Two lakh) per month for Key personnel with minimum 10 years of experience, Rs.3,00,000/- (Three lakh) per month for Key personnel with minimum 15 years of	In case of non-deployment of Key Personnel as mentioned in 2.3.1, the penalty shall be imposed pro-rata basis at the rate of Rs.2,00,000/- (Two lakh) per month for Key personnel with minimum 10 years of experience, Rs.2,40,000/- (Two lakh) per month for Key personnel with minimum 12 years of

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 and Rs.4,00,000/- (Four lakh) per month for Key personnel with minimum 20 years of experience.	experience, Rs.3,00,000/- (Three lakh) per month for Key personnel with minimum 15 years of experience and Rs.4,00,000/- (Four lakh) per month for Key personnel with minimum 20 years of experience.
8	Volume III, Part 1: ERGS-RS	24.1.10. (113 of 397)	The offices shall include a fully equipped kitchens complying with regulatory requirements, suitable for the preparation of hot and cold food and drinks relevant to the intended number of occupants. The kitchen will as a minimum be provided with a refrigerator / freezer of minimum 300 litres capacity, a microwave, water boiling equipment, dishwashing facilities etc	The offices shall include a suitable pantry complying with regulatory requirements, for the preparation of hot and cold food and drinks relevant to the intended number of occupants. The pantry will, as a minimum be provided with suitable storage space, electricity, water supply and drainage.
9	Volume III, Part 1: ERGS-RS	24.1.11 (114 of 397)	Toilet facilities shall comply with regulatory requirements and as a minimum shall comprise separate male and female toilets on the basis of a male to female ratio of 9:1. Both male and female toilet facilities shall have a minimum of one shower unit and the Contractor shall provide a changing area and clothes lockers.	Toilet facilities shall comply with regulatory requirements and as a minimum shall comprise separate male and female toilets on the basis of a male to female ratio of 9:1. Both male and female toilet facilities shall provide a changing area and clothes lockers.
10	Volume III, Part 1: ERGS-RS	24.1.12 (114 of 397)	A room with seating is to be provided for drivers.	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
11	Volume III, Part 1: ERGS-RS	25.6.2 25.8.2 25.8.3 (c) 25 (Att.-2) (2)	“Force Majeure” has been replaced in all these clauses with	“Exceptional Events”
12	Volume III, Part 1: ERGS-RS	25.8.3(b) Add at end of last sentence (121 of 397)	newly added	The contractor shall ensure that train become fit for service within least possible down time which in general shall not be more than 48 hours.
13	Volume III, Part 1: ERGS-RS	26.1.1 Replace 1st sentence with the following (133 of 397)	The ‘Depot Site or Depot’ and ‘RS Maintenance Depot’ are defined in Schedule 8 of SCC of Volume 2 of the Tender document.	‘Depot Site’ shall mean the entire depot premises owned by MPMRCL for maintenance and up keeping of MPMRCL’s assets including RS Maintenance Depot whereas ‘RS Maintenance Depot’ or ‘Maintenance Depot’ shall mean part of Depot site which is given to RS Contractor on license basis for maintenance and upkeep of trainsets during the contract period.
14	Volume III, Part 1: ERGS-RS	26.3.1.24 Add at end of last sentence (137 of 397)	newly added	RS contractor shall provide soft copies (MS excel etc.) in electronic storage device(s) of relevant data as asked on monthly basis for reconciliation into MPMRCL’s Asset Management System.”
15	Volume III, Part 1: ERGS-RS	26.3.2.1 (139 of 397)	All maintenance works related to Traction, Track Installation etc. including all its fittings shall be undertaken by MPMRCL.	All maintenance works related to Civil works, E&M, fire safety, Traction, Track Installation etc. including all its fittings shall be undertaken by MPMRCL. In case the contractor provides additional items such as false ceiling/flooring, lighting, air conditioning &



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
				other electrical appliances, decorations including interior paintings etc., the maintenance and upkeep of all such items shall be the responsibility of RS contractor.”
16	Volume III, Part 2: ERGS-S&T	Appendix 19 2.10 (4 of 6)	Toilet facilities shall comply with regulatory requirements and as a minimum shall comprise separate male and female toilets on the basis of a male to female ratio of 9:1. Both male and female toilet facilities shall have a minimum of one shower unit, and the Contractor shall provide a changing area and clothes lockers.	Toilet facilities shall comply with regulatory requirements and as a minimum shall comprise separate male and female toilets on the basis of a male to female ratio of 9:1. Both male and female toilet facilities shall provide a changing area and clothes lockers.
17	Volume III, Part 2: ERGS-S&T	Appendix 19 2.11 (4 of 6)	A room with seating is to be provided for drivers.	Deleted
18	Volume III, Part 2: ERGS-S&T	Appendix 19 2.9 (3 of 6)	The offices shall include a fully equipped kitchens complying with regulatory requirements, suitable for the preparation of hot and cold food and drinks relevant to the intended number of occupants. The kitchen will as a minimum be provided with a refrigerator/freezer of minimum 300 litres capacity, a microwave, water boiling equipment, dishwashing facilities etc.	The offices shall include a suitable pantry complying with regulatory requirements, for the preparation of hot and cold food and drinks relevant to the intended number of occupants. The pantry will, as a minimum be provided with suitable storage space, electricity, water supply and drainage.

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
19	Volume III, Part 2: ERGS-S&T	Appendix 19 2.15 (4 of 6)	The contractor shall provide six (3 at Bhopal and 3 at Indore) number of four-wheelers for the Employer/Engineer use at site office of the Innova or similar type.	The contractor shall provide four (2 at Bhopal and 2 at Indore) number of four-wheelers for the Employer/Engineer use at site office, for 25 months, of 'Swift Dzire' or similar type.
20	Volume III, Part 2: ERGS-S&T	Appendix 19 4.1 (5 of 6)	The Contractor shall provide services to all offices and buildings provided for the use of the Employer and the Engineer. The services shall include signage, maintained access roads, allocated covered car parking for a minimum of 30 car spaces, standard 240 V voltage electricity, lighting, telephone lines, internet connections, air conditioning and heating, water supply, sewage disposal and waste disposal, fire detection/alarm system and the like.	The Contractor shall provide services to all offices and buildings provided for the use of the Employer and the Engineer. The services shall include signage, maintained access roads, allocated car parking for a minimum of 10 car spaces, standard 240 V voltage electricity, lighting, telephone lines, internet connections, air conditioning and heating, water supply, sewage disposal and waste disposal, fire detection/alarm system.
21	Volume III, Part 2: ERGS-S&T	Appendix 7 5.3.5 (7 of 29)	For all conversion purpose between the time and kilometer, the average speed of the train shall be considered as 35 Kmph unless there is a change in the operational plan which shall be communicated to the respective Contractors.	For all conversion purpose between the time and kilometer, the average speed of the train shall be considered as 33 Kmph unless there is a change in the operational plan which shall be communicated to the respective Contractors.
22	Volume III, Part 2: ERGS-S&T	Appendix 12 5.4.9.2 (24 of 45)	The Commercial Speeds for Bhopal and Indore Metro - are expected to be about 30 — 35 km/h:	The Commercial Speeds for Bhopal and Indore Metro - are expected to be about 28 - 33 km/h:

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	VOL III, ERGS-S&T	1.14.1. (24 of 233)	Key Personnel shall have the minimum qualifications and experience as described in the table below for Bhopal and Indore separate team.	See Attachment 5 for amended Table.
24	Volume IV, Part 1: ERTS-RS	2.22.1 (viii) (48 of 492)	Copy of software tool shall be submitted and Engineer's representative shall be trained for the use of same.	Deleted.
25	Volume IV, Part 1: ERTS-RS	2.28.1 (57 of 492)	1. 2.20.1(viii) - Noise Simulation software tools 2. 2.22.2.10 - Fire and Smoke diagnostics tool (software / hardware etc).	1. Deleted. 2. 2.24.2.10 - Fire and Smoke diagnostics tool (software / hardware etc)
26	Volume IV, Part 1: ERTS-RS	3.22.2.1 (74 of 492)	Performances of 3-car and 6-car Metro train in Exceptional Crush load AW4 (8 persons standee/m <sup>2</sup> ) under normal conditions shall be compliant to achieve a minimum commercial speed of 34 kmph (excluding reverse time in terminal station).	Performances of 3-car and 6-car Metro train in Exceptional Crush load AW3 (6 persons standee/m <sup>2</sup> ) under normal conditions shall be compliant to achieve a minimum commercial speed of 32 kmph (excluding reverse time in terminal station).
27	Volume IV, Part 1: ERTS-RS	3.24.2 (79 of 492)	Tenderers shall indicate the total runtime and the Guaranteed "Declared Schedule Speed (DSSP)" in kmph for a round trip from, one terminal station to another terminal station for each line of Bhopal metro and Indore metro, under following conditions: i. Train loaded: AW4 ii. Mode of operation: ALL OUT MODE (ATP)	Tenderers shall indicate the total runtime and the Guaranteed "Declared Schedule Speed (DSSP)" in kmph for a round trip from, one terminal station to another terminal station for each line of Bhopal metro and Indore metro, under following conditions: i. Train loaded: AW3

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
				ii. Mode of operation: NORMAL (8% coasting) MODE (ATP)
28	Volume IV, Part 1: ERTS-RS	3.24.4 (ii) (a) 3rd bullet point (80 of 492)	Achieve rate of deceleration of not less than 1.0 m/s <sup>2</sup> from at least 70 kmph running speed till 5 kmph with dynamic brake only and with blended brake from 5 kmph till the train comes to a stop. Full-Service Brake requirements for speed range of 5 kmph to 70 kmph with load not exceeding AW3 shall be met with regeneration brakes only, i.e., without any friction brake. The Regenerative braking power shall be constant from 80Kmph to 70Kmph. The regenerative power shall be used to the maximum extent possible. Deceleration for crush load shall be as specified in Table 3.7 above.	Achieve rate of deceleration of not less than 1.0 m/s <sup>2</sup> from at least 65 kmph running speed till 5 kmph with dynamic brake only and with blended brake from 5 kmph till the train comes to a stop. Full-Service Brake requirements for speed range of 5 kmph to 65 kmph with load not exceeding AW3 shall be met with regeneration brakes only, i.e., without any friction brake. The regenerative power shall be used to the maximum extent possible. Deceleration for crush load shall be as specified in Table 3.7 above.
29	Volume IV, Part 1: ERTS-RS	3.26.2.1.4 (87 of 492)	(i) For Combined test bed: AW4 loading condition. (ii) For Field Trial: 970 passengers (DMA=315, TC=340, DMB=315) for 3-Car train set, 65kg weight per passenger.	(i) For Combined test bed: AW3 loading condition. (ii) For Field Trial: AW3 loading condition.
30	Volume IV, Part 1: ERTS-RS	3.26.2.1.5 (87 of 492)	The train operation in All-Out mode shall be as per clause 3.24.4(b).	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
31	Volume IV, Part 1: ERTS-RS	3.26.2.1.6 (87 of 492)	For Combined test bed: All-Out ATP mode as per clause 3.24.2 for AW4 shall be considered. For Field Trial: All-out ATP/ATO/UTO mode as per clause TD.6.3, as decided by the Engineer during design stage shall be considered. The decision of the Engineer shall be final and binding.	For Combined test bed: NORMAL (8% coasting) MODE as per clause 3.24.2 for AW3 shall be considered. For Field Trial: NORMAL (8% coasting) MODE for AW3, as decided by the Engineer during design stage shall be considered. The decision of the Engineer shall be final and binding.
32	Volume IV, Part 1: ERTS-RS	3.26.2.2.1 (89 of 492)	Round Trip Time corresponding to Karond Square - AIIMS, Bhadbhada Square - Ratnagiri Tiraha and Ring Line Bengali Sq. – Bhawarsala – Airport – Palasia – Bengali Sq. (RTTLP, RTTLR and RTTLY) as mentioned in clause 3.24.2 for AW4 in ALLOUT mode shall be considered.	Round Trip Time corresponding to Karond Square - AIIMS, Bhadbhada Square - Ratnagiri Tiraha and Ring Line Bengali Sq. – Bhawarsala – Airport – Palasia – Bengali Sq. (RTTLP, RTTLR and RTTLY) as mentioned in clause 3.24.2 for AW3 in NORMAL (8% coasting) MODE shall be considered.
33	Volume IV, Part 1: ERTS-RS	4.18.1 (xix) (116 of 492)	Ceiling shall be of honeycomb panel to minimize noise transmission inside the saloon.	Ceiling shall be of honeycomb panel or better to minimise noise transmission inside the saloon.
34	Volume IV, Part 1: ERTS-RS	4.18.6 (v) 2 <sup>nd</sup> line (120 of 492)	As a minimum 3 rows of longitudinal bars shall be provided throughout the saloon.	As a minimum 2 rows of longitudinal bars shall be provided throughout the saloon.
35	Volume IV, Part 1: ERTS-RS	10.8.3 Add 2 <sup>nd</sup> Para (230 of 492)	Newly added.	The complete scheme of self-diagnostic tests based on 10.8.1 to 10.8.3 of TCMS and sub systems shall be developed for the purpose of deep dive checking of system's health by maintenance personnel

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
				through VDU as well as for UTO when these tests are performed by the TCMS after receiving remote “wake-up” from ATC. Details to be submitted for review of Engineer.
36	Volume IV, Part 1: ERTS-RS	11.2.13 1 <sup>st</sup> & 2 <sup>nd</sup> sentence (246 of 492) & Corrigendum 3 Sr no 181 (66 of 133)	In the event of the failure of both HVACs on a car, an emergency ventilation system shall operate automatically to admit fresh air directly into the car to maintain the required CO2 level fully laden car in accordance with ASHRAE 62. The induction of outside fresh air shall not be less than 15 m3/h/person, under fully loaded train conditions.	In the event of the failure of both HVACs on a car, an emergency ventilation system shall operate automatically to admit fresh air directly into the car to limit the accepted CO2 level fully laden car in accordance with ASHRAE 62. The induction of outside fresh air shall not be less than 10 m3/h/person, under fully loaded train conditions.
37	Volume IV, Part 1: ERTS-RS	13.10.27 1 <sup>st</sup> line (315 of 492) & 2 <sup>nd</sup> last line (Corrigendum 7) Sr no 30 (12 of 16)	Automatic Track Monitoring System using high resolution Digital Line Scan Camera shall be installed in two trains (4 Cameras, 2 in each train) in each line of Bhopal-Indore metro, i.e., total six trains. The Rolling Stock Contractor shall supply, install and commission the track monitoring system at the time of delivery of two trains nominated by the Engineer for each line along with mandatory items (Including camera) & tools as approved during design stage.	Automatic Track Monitoring System using high resolution Digital Line Scan Camera (2 cameras in one train) shall be installed in four trains (one in each line of Bhopal metro and two in Indore metro). The Rolling Stock Contractor shall supply, install and commission the track monitoring system at the time of delivery of four trains nominated by the Engineer along with mandatory items (Including camera) & tools as approved during design stage.

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
38	Volume IV, Part 1: ERTS-RS	APPENDIX TE Table TE.1 (482 of 492)	S.No.31 - newly added	A workable methodology and programme for implementation of comprehensive maintenance of Rolling Stock, Special Tools, Jigs, Fixtures etc. as defined in ERGS.
39	Volume IV, ERTS, Part 2: SIG	10.9.1 (127 of 238)	<p>10.9 Troubleshooting and Maintenance simulator.</p> <p>10.9.1 The contractor shall set up Troubleshooting and Maintenance simulator. The simulator configuration shall include supply and installation of all sub-systems of Signalling and Train Control system in minimum configuration (excluding MPDMulti-Purpose Display) used on the mainline and depot. The subsystems so provided shall be interconnected in a logical fashion and interface with Computer Based Training (CBT) platform. The simulator shall emulate the following system using real sub-system and simulators</p> <ul style="list-style-type: none"> <li>a. Interlocking system</li> <li>b. Object controller including signal, point machine, Train detection</li> <li>c. Trackside ATP</li> <li>d. On-board ATP with all accessories viz balise antenna, MMI, radio antenna, radio modem etc.</li> <li>e. CATS servers at OCC/BCC</li> <li>f. Wayside controller including radio access points</li> </ul>	<p>10.9 Troubleshooting and Maintenance simulator.</p> <p>10.9.1 The contractor shall set up Troubleshooting and Maintenance simulator. The simulator configuration shall include software-based validation system of Signalling and Train Control system in minimum configuration (excluding MPDMulti-Purpose Display) used on the mainline and depot. The subsystems shall be simulated using suitable software and shall be interconnected in a logical fashion and interface with Computer Based Training (CBT) platform. The simulator shall emulate the following simulated subsystems using CBTC software used on mainline.</p> <ul style="list-style-type: none"> <li>a. Interlocking system</li> <li>b. Object controller including signal, point machine, Train detection</li> <li>c. Trackside ATP</li> <li>d. On-board ATP with all accessories viz balise antenna, MMI, radio antenna, radio modem etc.</li> <li>e. CATS servers at OCC/BCC</li> <li>f. Wayside controller including radio access points</li> </ul>

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>g. Data Communication system including Network elements viz router, switches  h. Various displays viz MPD, LVS, CATS workstation, LATS workstation, Station VDU  i. Simulation of automatic Train control following the permitted and target speed (Train's cab).  j. Timetable operation, timetable editor  k. Simulation management, configuration tool for Trainer  l. Replay function  m. Evaluation and assessment function  The simulator should be capable of being used for simulations for fault analysis and for software and configuration parameters modifications. The simulator shall have the capability to test whether any printed circuit board/sub-module is defective or not. This shall be achieved for all type of printed circuit boards/sub-modules of CBI, object controller, wayside signal, point machine (depot as well as mainline), Train detection, Trackside &amp; On-board ATP, ATO, ATS, Data communication system, radio Wayside controller, Radio access point, antennae, network elements (switches, routers etc.), power supply modules etc.</p>	<p>g. DELETED  h. Various displays viz LVS, CATS workstation, LATS workstation, Station VDU  i. Simulation of automatic Train control following the permitted and target speed (Train's cab).  j. Timetable operation, timetable editor  k. Simulation management, configuration tool for Trainer  l. Replay function  m. Evaluation and assessment function  The simulator should be capable of being used for simulations for fault analysis and for software and configuration parameters modifications.</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
40	Volume IV, ERTS, Part 2: SIG	11.3.4 (130 of 238)	Lab/Repair Centre shall include a model room comprising of minimum equipment for stations such as testing platform for CBI, ATC and ATS (mentioned in clause 3.2.1) Point Machine, Signals, Axle Counters, Radio network for CBTC etc.	Deleted
41	Volume IV, ERTS, Part 2: SIG	APPENDIX A2, 7.1.1 (147 of 238)	The S&TC system should have provision of progressive implementation of predictive maintenance. Contractor will design Signalling and Train Control System with suitable transducers to monitor health of various sub-systems and equipment's. Parameters to be monitored may be voltage, current, failure of any redundancy, tag, receive and transmit level of CBTC and other equipment's present will be submitted as part of bid proposal. All parameters will be transferred to S&TC fault management system where these may be used for predictive-maintenance.	The S&TC system should have provision of progressive implementation of condition-based maintenance. Contractor will design Signalling and Train Control System with suitable transducers to monitor health of various sub-systems and equipment's like Point Machine, cables (online ELD), LED-based signals and ECR etc. Parameters to be monitored may be voltage, current and failure of any redundancy etc. All parameters will be transferred to S&TC fault management system where these may be used for condition-based maintenance.
42	Volume IV, ERTS, Part 2: SIG	APPENDIX A2, 7.1.2 (147 of 238)	The contractor shall provide the details of predictive maintenance measures for the following Signalling and Train Control equipment's such as a. Point Machine (Main line and Depot) b. Cables (online ELD) c. Multi-Section Digital Axle Counter	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
			<ul style="list-style-type: none"> <li>d. LED based Signals and ECR</li> <li>e. Relays (for contact high resistance)</li> <li>f. On-Board equipment including under frame</li> <li>g. Power packs/converter of sub-system</li> <li>h. Networking equipment's</li> </ul>	
43	Volume IV, ERTS, Part 2: SIG	APPENDIX A2, 7.1.3 (147 of 238)	The above list is only indicative and not exhaustive. The contractor shall submit detailed predictive maintenance strategy as part of bid proposal and design stage.	Deleted
44	Volume IV, ERTS, Part 2: SIG	APPENDIX A8, 7.5.4, (166 of 238)	The system shall have provision for accommodating additional 25% of I/O cards.	The system shall have provision for accommodating additional 15% of I/O cards.
45	Volume IV, ERTS, Part 2: SIG	4.7.3 (86 of 238). Corrigendum 3 – Sr. No. – 235	<p>The Signalling and Train Control System shall conform to IEC 60529 Ed. 2.0 b, to the following levels</p> <ul style="list-style-type: none"> <li>a. IP 67 for equipment enclosure/cabinet, disconnection box and fibre optic cable splice box to be installed in cable trough or trench floor mounted, track mounted including Point motor (In Depots) and Axle counter detection point.</li> <li>c. IP 65 for trackside Signalling equipment other than Point motor (In Depots) and Axle counter detection point.</li> </ul>	<p>The Signalling and Train Control System shall conform to IEC 60529 Ed. 2.0 b, to the following levels</p> <ul style="list-style-type: none"> <li>a. IP 67 for equipment enclosure/cabinet, disconnection box and fibre optic cable splice box to be installed in cable trough or trench floor mounted, track mounted including Point motor and Axle counter detection point.</li> <li>c. IP 54 for trackside Signalling equipment.</li> <li>e. IP 52 for enclosures to be installed in equipment rooms with inert gas protection.</li> </ul>

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
			e. IP 52 for enclosures to be installed in equipment rooms with inert gas protection.	
46	Volume IV, Part 3: ERTS TEL,	6.2.1.4 (bb) (77 of 279)	View of each station exterior entrance with one PTZ camera 10m high with video analytics for i. camera tampering detection ii. unattended baggage detection	Deleted
47	Volume IV, Part 3: ERTS TEL,	6.2.1.4.c.vi (73 of 279)	facial recognition	Deleted
48	Volume IV, Part 3: ERTS TEL,	6.2.1.4.g.iv (74 of 279)	facial recognition	Deleted
49	Volume IV, Part 3: ERTS TEL,	6.2.1.4.h.iv (74 of 279)	facial recognition	Deleted
50	Volume IV, Part 3: ERTS TEL,	6.2.1.4.dd.v. (77 of 279)	facial recognition	Deleted
51	Volume IV, Part 3: ERTS TEL,	6.2.1.19. (79 of 279)	The Security CCTV shall have a video analytic for facial recognition in crowded area including real-time video analytic to capture a face with real-time	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
			comparison to database of minimum 50,000 stored records.	
52	Volume IV, Part 3: ERTS TEL,	6.4.13.4. (86 of 279)	The Contractor shall design the CCTV System with the facial recognition analytic specifically designed to capture multiple faces in a dense moving crowd.	Deleted
53	Volume IV, Part 3: ERTS TEL,	6.2.1.4, (cc) (77 of 279)	100% view of floor of interior of each station lift with one fixed camera with video analytics for i. camera tampering detection ii. unattended baggage detection	Deleted
54	Volume IV, Part 3: ERTS-TEL,	7.1.3.8 (108 of 279)	The Contractor shall design the Station PAS with user-scheduled automatic checks of 100 Volt speaker lines capable of reporting to PAS NMS an open or shorted speaker transformer and an open or shorted speaker.	The Contractor shall design the Station PAS with automatic checks of 100 Volt speaker lines capable of reporting to PAS NMS an open or short circuit fault.
55	Volume IV, Part 3: ERTS-TEL,	22.8.1.2 (238 of 279)	96-fibre cables for future use. a. Consisting of cable physical path-1 in from Depot Administration Building CER to last Station TER to Station 01 TER. b. Consisting of cable physical path – 2 in from Depot Administration building CER to last Station TER to station 01 TER	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
56	Volume IV, Part 3: ERTS-TEL,	14.5.2 (205 of 279)	The Contractor shall print photo ID of staff on Contactless Smart Cards for Metro staff use in ACIDS. 1000 smartcards will be supplied by AFC contractor.	The Contractor shall print photo ID of staff on Contactless Smart Cards for Metro staff use in ACIDS. 1000 smartcards will be supplied by ACIDS contractor.
57	Volume IV, Part 3: ERTS-TEL,	7.1.3.15. (108 of 279)	The Contractor shall design the PAS for stations to mute only nearby-to-microphone loudspeakers, not entire loudspeaker zone, to prevent acoustical feedback.	Deleted
58	Volume IV, ERTS, Part 2: SIG	3.4.8.1 (37 of 238)	Point machines on the main line shall be electric type with high thrust and shall conform to IRS S-24 or International Standards and Point machine in depot shall be electric, shall conform to IRS S-24 standard and sourced from Indian supplier and shall already be proven in Metro rail environment. The decision of the Engineer for acceptance of the proposed machines shall be final and binding. The Contractor shall submit the point machine specification and design and one sample machine for approval of the Engineer.	Point machines on the main line shall be electric type with high thrust and shall conform to IRS S-24 or International Standards and Point machine in depot shall be electric, shall conform to IRS S-24 standard and shall already be proven in rail environment. The decision of the Engineer for acceptance of the proposed machines shall be final and binding. The Contractor shall submit the point machine specification and design and one sample machine for approval of the Engineer.
59	Volume IV, ERTS, Part 2: SIG	3.4.8.2 (37 of 238)	Main line & depot Point machines shall be non-trailable type. Main line point machines shall be used in conjunction with additional external mechanical locking arrangement. For Mainline Point	Main line & depot Point machines shall be non-trailable type. Main line point machines shall be used in conjunction with additional external mechanical locking arrangement. For Mainline Point

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
			Machine shall be Electric; operating on 3-Phase 380/400 V AC Point or suitable machines shall be capable of operating points with Curved / thick web section with UIC HH 60 (60 kg/m) stock rail and 73 kg/m or 90kg/m thick web section. Generally, 1:9/1:7 turnouts for standard gauge will be used. Nominal Switch opening at Toe will be 160 mm. Depot Point Machine shall be electric; operation on 3-Phase 380/400 V AC or 110V DC.	Machine shall be Electric; operating on 3-Phase 380/400 V AC Point or suitable machines shall be capable of operating points with Curved / thick web section with UIC HH 60 (60 kg/m) stock rail and 73 kg/m or 90kg/m thick web section. Generally, 1:9/1:7 turnouts for standard gauge will be used. Nominal Switch opening at Toe will be 160 mm. Depot Point Machine shall be electric; operation on 3-Phase 380/400 V AC or 110V DC and sourced from Indian supplier.
60	Corrigendum-07	Attachment – 4 APPENDIX VIII (1 of 12)	Note: The summary of equipment has been prepared for easy reference by the bidders. This summary indicated in this appendix is the minimum tentative quantity for the above systems. Being design-built contract, any additional items or enhancement of any quantity to complete the scope of work for all Telecommunication systems including the above systems, in line with practices of other metro and various tender drawings, shall be borne by the Tenderer without any additional cost.	Refer Attachment – 2 to Corrigendum – 10 for amended APPENDIX VIII
61	Corrigendum-07	Attachment - 4 APPENDIX VIII (1 OF 12)	7. CCTV System (Including Video wall)	Refer Attachment – 2 to Corrigendum – 10 for amended APPENDIX VIII

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
62	Corrigendum-07	Attachment – 4 7. Closed Circuit Television System (CCTV) (10 of 12)	1. CCTV Servers (Primary, Secondary + Spare) 5. CCTV Wall Monitors (Spare)	Refer Attachment – 2 to Corrigendum – 10 for amended APPENDIX VIII and Table under 7. Closed Circuit Television System (CCTV).
63	Corrigendum-07	Attachment – 4 3. Emergency Help Point System (EHPS) (5 of 12)	4. EHPS Dispatcher Workstation with Button Box Nos. 74 72 146	Refer Attachment – 2 to Corrigendum – 10 for amended APPENDIX VIII and Table under 3. Emergency Help Point System (EHPS).
64	Volume IV, ERTS, Part 3: TEL	12.1.6 (183 of 279)	The contractor shall provide the radio infrastructure for bi-directional transmission of data/ at OCC, DCC, BCC. Redundant radio units shall be provided on Train and wayside for On-board CCTV transmission. On-board CCTV and CBTC shall each use one of the available ISM bands (2.4 GHZ, 5.8 GHZ). CBTC should use preferably 2.4 GHZ band. The data transmission from wayside to OCC may use same switching network, the technology used to stream On-Board CCTV Video shall be based on IEEE 802.11n or latest radio standards. The compression algorithms and frame transfer rate shall be put up to Engineer for review.	The contractor shall provide the radio infrastructure for bi-directional transmission of data at OCC, DCC, BCC. Redundant radio units shall be provided on Train and wayside for On-board CCTV transmission which shall be different from the redundant radio units used for CBTC transmission. The Onboard CCTV system, i.e., VTS (Video Transmission System) shall use 2.4 GHz ISM band / 5 GHz band. There shall be separate data transmission (Switching network) from wayside to OCC for CBTC traffic. Also, there shall be separate data transmission (Switching network) from wayside to OCC for VTS system.

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>Provision shall be made for displaying an optimum number of live streams from a Train at OCC, BCC, DCC &amp; Security Control Room considering minimum 25 FPS 4 CIF or latest. Minimum number of cameras to be viewed shall be confirmed during design stage after approval of Engineer, in case where more than Optimum cameras from a train is required for live streaming, throughput generated by each camera will be proportionately reduced (increasing video compression). The display system at OCC should be capable of displaying as many live streams from different Trains on the line as the operator wants to see by selecting multiple windows on one or more MMI. Contractor shall ensure to optimize the available bandwidth to ensure quality and quantity of video is not compromised. The contractor shall provide the On-board CCTV management software for selection and decoding of the incoming data stream for on-board CCTV.</p>	<p>The technology used to stream On-Board CCTV Video shall be based on IEEE 802.11ac or latest radio standards. The compression algorithms and frame transfer rate shall be put up to Engineer for review.</p> <p>Provision shall be made for displaying an optimum number of live streams from a Train at OCC, BCC, DCC &amp; Security Control Room considering minimum 25 FPS 4 CIF or latest. Minimum number of cameras to be viewed shall be confirmed during design stage after approval of Engineer, in case where more than Optimum cameras from a train is required for live streaming, throughput generated by each camera will be proportionately reduced (increasing video compression). The display system at OCC should be capable of displaying as many live streams from different Trains on the line as the operator wants to see by selecting multiple windows on one or more MMI. Contractor shall ensure to optimize the available bandwidth to ensure quality and quantity of video is not compromised. The contractor shall provide the On-board CCTV management software for selection and decoding of the incoming data stream for on-board CCTV.</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
65	Volume IV, ERTS, Part 2: SIG	2.1.3.1. (136 of 238)	The TDMS is the subsystem that provides the interface to Rolling stock Train Control & Management System (TCMS). It shall provide the health monitoring; Train event recording and control of the Train initialization functions.	The TDMS is the subsystem that provides the interface to Rolling stock Train Control & Management System (TCMS). It shall provide the health monitoring; Train event recording and control of the Train initialization functions. Alternatively, this functionality can be achieved through the ATO subsystem as well.
66	Volume IV, ERTS, Part 2: SIG	11.3.7 (130 of 238)	Failing the above shall attract a penalty of INR 1.0 crore on the S&TC Contractor.	Deleted
67	Volume IV, ERTS, Part 2: SIG	3.8 (139 of 238)	3.8. Interlocking Interlocking shall be provided in accordance with the requirements of the Indian Railway Signal Engineering Manual (SEM) or any other International Specifications. Interlocking system shall be based on Entrance-Exit Principle. Signals shall be located on all tracks as defined in the TS. Signal control circuits shall prevent conflicting Train movements within the local interlocking plant and between adjacent track interlocking units. The conditions to permit a signal to display proceed aspect for a particular route is described in the following:	3.8. Interlocking Interlocking shall be provided in accordance with the requirements of the Indian Railway Signal Engineering Manual (SEM) or any other International Specifications. Interlocking system shall be based on Entrance-Exit Principle. Signals shall be located on all tracks as defined in the TS. Signal control circuits shall prevent conflicting Train movements within the local interlocking plant and between adjacent track interlocking units. The conditions to permit a signal to display proceed aspect for a particular route is described in the following:

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>a. The route must be set, and the route locking must be affected (all the sub routes/ elements locked);</p> <p>b. All the points in protection must be set, locked and detected in the protection position (flank and trap protection);</p> <p>c. Opposing route signals display a red aspect;</p> <p>d. The timing release of the route is not in process;</p> <p>e. The track section(s) between the origin signal and the destination signal is (are) clear (For Green aspect);</p> <p>f. Overlap is set and locked (For Green aspect);</p> <p>Origin of route signal shall be replaced to danger and disengaged as a precondition to route release. The automatic replacement shall not apply when the route has been set to operate in fleet mode. An automatic replacement shall be applied by occupying the berth track section and the first track section beyond the signal.</p> <p>Nothing in the paragraph shall be construed as relieving the Contractor from providing the locking required in the SEM of any working Metro of India with similar Technology.</p> <p>A route is defined by its origin and its destination.</p>	<p>a. The route must be set, and the route locking must be affected (all the sub routes/ elements locked);</p> <p>b. All the points in protection must be set, locked and detected in the protection position (flank and trap protection);</p> <p>c. Opposing route signals display a red aspect;</p> <p>d. The timing release of the route is not in process;</p> <p>e. The track section(s) between the origin signal and the destination signal is (are) clear (For Green aspect);</p> <p>f. Overlap is set and locked (For Green aspect);</p> <p>Origin of route signal shall be replaced to danger and disengaged as a precondition to route release. The automatic replacement shall not apply when the route has been set to operate in fleet mode. An automatic replacement shall be applied by occupying the berth track section and the first track section beyond the signal.</p> <p>Nothing in the paragraph shall be construed as relieving the Contractor from providing the locking required in the SEM of a working Metro of India with similar Technology.</p> <p>A route is defined by its origin and its destination.</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
			<p>Routes could be set by route control if all the following applicable conditions are met: All conflicting routes are not set; a. The route locking section/ route elements must not be locked in the opposite direction of the considered route; b. All points required for the route, flank protection and trapping are set in the correct position or are free to be moved; c. The opposite overlap (downstream a signal origin of an opposite route) must be free, if it is in the same section of track of the last switch of the considered route; Route locking section (sub route/ elements): When the route is set, all the sub routes/ elements of the considered route are locked if points have been set in the correct position. It is a condition for locking a route. Route locking: A route is locked only if the route is controlled and all sub routes/elements are locked and all overlaps are eventually locked. Application of Train Operated Route Release (TORR): Train operated route release (TORR) is the release of a route after the passage of a Train without further action from the Controller. TORR</p>	<p>Routes could be set by route control if all the following applicable conditions are met: All conflicting routes are not set; a. The route locking section/ route elements must not be locked in the opposite direction of the considered route; b. All points required for the route, flank protection and trapping are set in the correct position or are free to be moved; c. The opposite overlap (downstream a signal origin of an opposite route) must be free, if it is in the same section of track of the last switch of the considered route; Route locking section (sub route/ elements): When the route is set, all the sub routes/ elements of the considered route are locked if points have been set in the correct position. It is a condition for locking a route. Route locking: A route is locked only if the route is controlled and all sub routes/elements are locked and all overlaps are eventually locked. Application of Train Operated Route Release (TORR): Train operated route release (TORR) is the release of a route after the passage of a Train without further</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
			<p>must be inhibited if a route is set to work in fleet mode.</p> <p>Route locking release by manual control: When the Controller has decided to release a route; he engages the “route cancellation”. There is such a control for each route. When this process is engaged, the interlocking realizes the following actions:</p> <ul style="list-style-type: none"> <li>a. The origin of route signal is replaced to danger;</li> <li>b. If the approach locking is free, the route is immediately released;</li> <li>c. Or if the approach locking is locked, the route is released after time delay.</li> </ul> <p>Approach locking shall be provided for all routes governed by main signals and shall be continuously effective from the approach track, which shall commence from an adequate distance in rear of the signal. Approach locking shall lock all switches within a route governed by a clear signal and will not allow a set route to be released for a period not less than 90 seconds on the mainline and not less than 45 seconds in depot, when a cleared signal is put to stop.</p> <p>Route shall ordinarily be released by the passage of Trains over the route in a sequential manner.</p>	<p>action from the Controller. TORR must be inhibited if a route is set to work in fleet mode.</p> <p>Route locking release by manual control: When the Controller has decided to release a route; he engages the “route cancellation”. There is such a control for each route. When this process is engaged, the interlocking realizes the following actions:</p> <ul style="list-style-type: none"> <li>a. The origin of route signal is replaced to danger;</li> <li>b. If the approach locking is free, the route is immediately released;</li> <li>c. Or if the approach locking is locked, the route is released after time delay.</li> </ul> <p>Approach locking shall be provided for all routes governed by main signals and shall be continuously effective from the approach track, which shall commence from an adequate distance in rear of the signal. Approach locking shall lock all switches within a route governed by a clear signal and will not allow a set route to be released for a period not less than 90 seconds on the mainline and not less than 45 seconds in depot, when a cleared signal is put to stop.</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
			<p>Sectional release of route (elements) shall be provided as necessary.</p> <p>Overlap is the distance between the Point to protect (junction of TC or point) and the Operating Stopping Point (signal). Overlap shall always be ensured by the Signalling and Train Control System for the safe braking distance.</p> <p>Fouling protection shall be provided to prevent a Train from approaching an interlocking where an overrun could corner a Train. Once a route has been set, the infringement of the Fouling Point of any point or crossing in the route by any Train shall cause an emergency stop command to be sent to any Train approaching or within the set route.</p> <p>Fleeting controls to make signals in the normal running direction operate in the automatic model shall be provided at each interlocking. These controls shall allow an interlocking signal to be automatically re-cleared behind a Train.</p>	<p>Route shall ordinarily be released by the passage of Trains over the route in a sequential manner. Sectional release of route (elements) shall be provided as necessary.</p> <p>Overlap is the distance between the Point to protect (junction of TC or point) and the Operating Stopping Point (signal). Overlap shall always be ensured by the Signalling and Train Control System for the safe braking distance.</p> <p>Fouling protection shall be provided to prevent a Train from approaching an interlocking where an overrun could corner a Train. Once a route has been set, the infringement of the Fouling Point of any point or crossing in the route by any Train shall cause an emergency stop command to be sent to any Train approaching or within the set route.</p> <p>Fleeting controls to make signals in the normal running direction operate in the automatic model shall be provided at each interlocking. These controls shall allow an interlocking signal to be automatically re-cleared behind a Train.</p>
68	VOL IV, Part 2 ERTS-SIG	8.1 b. (166 of 238)	Two sets of two out of two hardware with identical or diverse hardware and common or diverse software. Failure of hardware will facilitate	Two sets of two out of two hardware with identical or diverse hardware and common or diverse software. Failure of hardware will facilitate

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
			automatic changeover in a fail-safe manner without affecting Train operation.	automatic changeover in a fail-safe manner without affecting Train operation. Redundancy of I/O cards is not mandatory. However, redundancy of I/O cards may be applicable if it is insisted upon by statutory authority.
69	Volume IV, ERTS, Part 2: SIG	11.3.2 (130 of 238)	As part of Transfer of Technical know-how, the contractor shall set up of a fully equipped LAB/Repair Centre at the Depot. All furniture and equipment's needed for this shall be supplied by the Contractor. Building for the Lab/Repair Centre shall be provided by the Civil Contractor on behalf of MPMRCL.	As part of Transfer of Technical know-how, the contractor shall set up of a fully equipped LAB/Repair Centre at the Depot. All furniture such as working tables, chairs, storage bins, racks, almirahs as necessary and equipment's including Digital Axle Counter Tool Kit, OTDR, Optical Power Meter, Digital Multimeter needed for this shall be supplied by the Contractor. Space for the Lab/Repair Centre shall be provided by the Civil Contractor on behalf of MPMRCL.
70	Volume IV, ERTS, Part 2: SIG	11.3.3 (130 of 238)	Required Jigs and testing tools shall be provided in LAB/Repair Centre.	Jigs if required, and testing tools and equipment such as Digital Axle Counter Tool Kit, OTDR, Splicing Machine and Special Tools and Equipment mentioned in BOQ Cl. No. BHST4.1A.d shall be provided in LAB/Repair 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
71	BOQ_1017 95	BHSTBOQ BHST1.1	<p>Signalling &amp; Train Control</p> <p>(Factory testing and supply of complete integrated Signalling &amp; Train Control System, Plant and Mandatory Spare parts as per Scope of Facilities defined in Vol III, Vol IV Requirement).</p>	<p>Signalling &amp; Train Control</p> <p>(Factory testing and supply of complete integrated Signalling &amp; Train Control System and Plant as per Scope of Facilities defined in Vol III, Vol IV Requirement).</p> <p>Note: This Corrigendum shall prevail over the description given in Excel Workbook BOQ_101795.</p>
72	BOQ_1017 95	BHSTBOQ BHST2.1	<p>Signalling &amp; Train Control and PSD/PED Interface System</p> <p>(Factory testing and supply of complete integrated Signaling &amp; Train Control System and PSD/PED Interface System, Plant and Mandatory Spare parts as per Scope of Facilities defined in Part2 Employer's Requirement).</p>	<p>Signalling &amp; Train Control and PSD/PED Interface System</p> <p>(Factory testing and supply of complete integrated Signaling &amp; Train Control System and PSD/PED Interface System and Plant as per Scope of Facilities defined in Part2 Employer's Requirement)</p> <p>Note: This Corrigendum shall prevail over the description given in Excel Workbook BOQ_101795.</p>
73	BOQ_1017 95	BHSTBOQOT BHST1.2	<p>Telecommunication</p> <p>(Factory testing and supply of Telecommunication System, Plant and Mandatory Spare parts as per Scope of Facilities defined in Employer's Requirement).</p>	<p>Telecommunication</p> <p>(Factory testing and supply of Telecommunication System and Plant as per Scope of Facilities defined in Employer's Requirement).</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
				Note: This Corrigendum shall prevail over the description given in Excel Workbook BOQ_101795.
74	BOQ_1017 95	INSTBOQ INST2.1	<p>Signalling &amp; Train Control and PSD/PED Interface System</p> <p>(Factory testing and supply of complete integrated Signaling &amp; Train Control System and PSD/PED Interface System, Plant and Mandatory Spare parts as per Scope of Facilities defined in Part2 Employer's Requirement).</p>	<p>Signalling &amp; Train Control and PSD/PED Interface System</p> <p>(Factory testing and supply of complete integrated Signaling &amp; Train Control System and PSD/PED Interface System and Plant as per Scope of Facilities defined in Part2 Employer's Requirement)</p> <p>Note: This Corrigendum shall prevail over the description given in Excel Workbook BOQ_101795.</p>
75	BOQ_1017 95	INSTBOQOT INST2.1	<p>Signalling &amp; Train Control and PSD/PED</p> <p>(Factory testing and supply of complete integrated Signaling &amp; Train Control System and PSD/PED System, Plant and Mandatory Spare parts as per Scope of Facilities defined in Part2 Employer's Requirement).</p>	<p>Signalling &amp; Train Control and PSD/PED</p> <p>(Factory testing and supply of complete integrated Signaling &amp; Train Control System and PSD/PED System and Plant as per Scope of Facilities defined in Part2 Employer's Requirement).</p> <p>Note: This Corrigendum shall prevail over the description given in Excel Workbook BOQ_101795.</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
76		New Clause	General	Location of BCC for Indore Metro is proposed at Palasia Station instead of Vijay Nagar Square Station.

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**

**Attachment -1 to Corrigendum – 10**

**LETTER OF TENDER (LOT)**

**Appendix – 32**

**Equivalent Indices Proposed for Foreign Currencies**

We hereby propose following equivalent indices for foreign currency component(s) of “Defect Liability and Comprehensive Maintenance Period”, with respect to GC/ PC Sub-Clause 13.7 [Adjustments for Changes in Cost].

Indices proposed for Labour Component Equivalent to the Indian Index “Consumer Price Index for Industrial workers, as published by Ministry of Labour & Employment, Government of India, as applicable to Bhopal and Indore (Madhya Pradesh) area”				
Currency	Country of Origin	Source of Index	Title/ Definition of Index	Value as on Base Date <i>[Insert Date]</i>
USD				
EURO				

Indices proposed for Commodities Component Equivalent to the Indian Index “Whole sale Price Index for “All Commodities” (Base Year: 2011-12 = 100), as published by Office of the Economic Adviser, Ministry of Commerce and Industry, Government of India”				
Currency	Country of Origin	Source of Index	Title/ Definition of Index	Value as on Base Date <i>[Insert Date]</i>
USD				
EURO				

We have enclosed relevant extracts of above proposed indices as on Base Date.

**Table of Adjustment Data:**

The indices for foreign currencies and weightings shall be taken for this purpose as provided in the PC (13.7.3).

A	B	C	D	E	F
Index Code	Index description	Source of Index	Base Value	Bidder's related Foreign Currencies	Bidder's proposed weighting
			Bidder to provide Value as on Base Date		0.8

**Stamp and Signature of Authorized Signatory**

**Attachment - 2 to Corrigendum-10**

Volume IV: Part 3, ER-TS - TEL

**APPENDIX VIII  
SUMMARY OF EQUIPMENTS FOR  
BHOPAL METRO (PURPLE LINE AND RED LINE) AND  
INDORE METRO (YELLOW LINE) PROJECTS OF MPMRCL  
FOR TELECOMMUNICATION SYSTEMS**

<b>S. No</b>	<b>SYSTEM</b>
1.	FOTS & OA/IT System
2.	Telephone System (TEL)
3.	Emergency Help Point System (EHPS)
4.	Public Address System (PAS)
5.	Passenger Information Display System (PIDS)
6.	Time Distribution System (TDS)
7.	CCTV System
8.	Access Control & Intrusion Detection System (ACIDS)

**Note:** The summary of equipment has been prepared for easy reference by the bidders. This summary indicated in this appendix is the tentative quantity for the above systems. Being design-built contract, any additional items or enhancement of any quantity to complete the scope of work for all Telecommunication systems including the above systems, in line with practices of other metro and various tender drawings, shall be borne by the Tenderer without any additional cost.

## 1. FOTS & OA-IT

Sl. No.	Item Description	UOM	QTY for Bhopal	QTY for Indore	Total QTY
1	Fully redundant Central Core Switches for FOTS and associated accessories	Nos.	4	4	8
2	Layer 3 Distribution switches for FOTS and associated accessories for stations, RSSs, Depots, TERs, etc	Nos.	64	62	126
3	Layer 2 Access PoE Switches 24-port for FOTS and associated accessories for TERs, Stations, Depots, etc.	Lots	1 Lot	1 Lot	2 Lots
4	Layer 2 Access non-PoE Switches 24-port for FOTS and associated accessories for Stations, Depots, etc.	Lots	1 Lot	1 Lot	2 Lots
5	Central Core Switches for OA & IT and associated accessories.	Nos.	2	2	4
6	Access switches for OA & IT and associated accessories for stations, Depots, etc.	Nos.	32	31	63
7	Network Management System along with servers, workstations and associated accessories for FOTS.	Nos.	2	2	4
8	Network Management System along with servers, workstations and associated accessories for OA & IT System.	Nos.	2	2	4
9	Routers, Firewalls & Unified Threat Management Systems for Cyber Security	Lots	1 Lot	1 Lot	2 Lots
10	96 Fibres Armoured Cable for Stations, depots, etc	Kms	67	69	136
11	24 Fibres Armoured Cable for Stations, depots, RSS etc	Kms	72	74	146
12	HDPE Telecom Duct (40/33mm) for stations, depots, etc	Kms	234	230	464
13	19" Rack, Cable managers, Optical Distribution Frames, Distribution boards, Patch panels, Loop boxes for fibre, Power Cables, Data Cables, Pigtails, Patch Cards, Connectors, Terminations etc. as per requirements of TS for stations, SCR, OCCs, TERs, depots, RSSs, FOTS – OA&IT etc.	Lots	1 Lot	1 Lot	2 Lots
14	FOTS Equipment for Telecom Workshop training	Lots	1	1	2
15	Any Other Items necessary for meeting fully the Contract Requirements as per TS.	Lots	1 Lot	1 Lot	2

## 2. Telephone System (TEL)

Sl. No.	Item Description	UOM	QTY for Bhopal	QTY for Indore	Total QTY
1	EPABX system complete with fully redundant Server and wired with Analog cards, digital cards, Ethernet ports, etc and associated accessories	Nos	4	4	8
2	Network Management System along with Servers, Workstations & Central Telephone System and associated accessories for Telephone System	Sets	2	2	4
3	Full Features IP Telephone	Nos	46	46	92
4	Standard Features IP Telephone	Nos	545	529	1074
5	Hot Line Telephones for OCC and	Nos	8	8	16
6	TEL Laptop PCs with application software and accessories	Nos	2	2	4
7	One unit of each type of TEL Test Jig as per Para 4.6.2 of Telecom TS	sets	1	1	2
8	TEL Equipment for Telecom Workshop training	Lots	1 Lot	1 Lot	2 Lots
9	19" Rack, Cable managers, Optical Distribution Frames, Distribution boards, Patch panels, Loop boxes for fibre, Power Cables, Data Cables, Pigtails, Patch Cards, Connectors, Terminations etc. as per requirements of TS for stations, OCCs, TERs, depots, RSSs, etc.	Lots	1 Lot	1 Lot	2 Lots
10	Any Other Items necessary for meeting fully the Contract Requirements as per TS.	Lots	1 Lot	1 Lot	2 Lots

### 3. Emergency Help Point System (EHPS)

Sl. No.	Item Description	UOM	QTY for Bhopal	QTY for Indore	Total QTY
1	EHPS Server	Nos.	2	2	4
2	EHPS NMS	Nos.	2	2	4
3	EHPS Telephones	Nos.	267	275	542
4	EHPS Dispatcher Workstation with Button Box (if required in case of number of Buttons not sufficient)	Nos.	74	72	146
5	EHPS Button Box	Nos.	60	58	118
6	EHPS Laptop PCs	Nos.	2	2	4
7	Hand Specialized Tools	Nos.	2	2	4
8	Test Jig	Nos.	1	1	2
9	EHPS Directional Tunnel Signs	Nos.	50	82	132
10	EHPS Equipment for Telecom Workshop Training	Lots	1 Lot	1 Lot	2 Lots
11	19" Rack, Cable managers, Optical Distribution Frames, Distribution boards, Patch panels, Loop boxes for fibre, Power Cables, Data Cables, Pigtails, Patch Cards, Connectors, Terminations etc. as per requirements of TS for stations, OCCs, TERs, depots, RSSs, etc.	Lots	1 Lot	1 Lot	2 Lots
12	Any Other Items necessary for meeting fully the Contract Requirements as per TS.	Lots	1 Lot	1 Lot	2 Lots

#### 4. Public Address System (PAS)

Sl. No.	Item Description	UOM	QTY for Bhopal	QTY for Indore	Total QTY
1	PAS Server for OCC/Station	nos.	32	31	63
2	Digital Voice Announcer and Recorder	nos.	32	31	63
3	PAS Work Station for Station PAS	nos.	34	33	67
4	Desktop Controllers for Station PAS	nos.	38	37	75
5	PAS NMS	nos.	2	2	4
6	Desktop controllers with microphone for Depot PAS	nos.	17	17	34
7	PAS Speakers (Ceiling, Wall-mount, Projection, Horn)	nos.	5828	5653	11481
8	PAS laptop PCs with application software complete with all software and accessories	nos.	2	2	4
9	Portable Sound Level Measurement Devices	nos.	2	2	4
10	One test jig of each type recommended by the manufacturer for maintenance of the PAS equipment.	sets	1	1	2
11	PAS Equipment for Telecom Workshop Training	sets	1	1	2
12	19" Rack, Cable managers, Optical Distribution Frames, Distribution boards, Patch panels, Loop boxes for fibre, Power Cables, Data Cables, Pigtails, Patch Cards, Connectors, Terminations etc. as per requirements of TS for stations, OCCs, TERs, depots, RSSs, etc.	Lots	1 Lot	1 Lot	2 Lots
13	Amplifiers, Special Microphones and any other Items necessary for meeting fully the Contract Requirements as per TS.	Lots	1 Lot	1 Lot	2 Lots



## 5. Passenger Information Display System (PIDS)

Sl. No.	Item Description	UOM	QTY for Bhopal	QTY for Indore	Total QTY
1	PIDS NMS Server	nos.	2	2	4
2	PIDS/PAS Central Server	nos.	2	2	4
3	PIDS Workstations	sets	38	37	75
4	PIDS Single Sided Displays for Concourse	sets	63	61	124
5	PIDS Double Sided Displays for Platforms	nos.	120	116	236
6	PIDS Laptop with accessories and software to configure and maintain the PIDS	nos.	2	2	4
7	Any other type of instrument used for maintenance of PIDS	sets	1	1	2
8	PIDS Test jig of each type recommended by the manufacturer for maintenance of the PIDS equipment	sets	1	1	2
9	PIDS Equipment for Telecom Workshop Training complete including Server, NMS, Workstations, displays and all accessories and software	Lots	1 Lot	1 Lot	2 Lots
10	19" Rack, Cable managers, Optical Distribution Frames, Distribution boards, Patch panels, Loop boxes for fibre, Power Cables, Data Cables, Pigtails, Patch Cards, Connectors, Terminations etc. as per requirements of TS for stations, OCCs, TERs, depots, RSSs, etc.	Lots	1 Lot	1 Lot	2 Lots
11	Any Other Items necessary for meeting fully the Contract Requirements as per TS.	Lots	1 Lot	1 Lot	2 Lots

## 6. Time Distribution System (TDS)

Sl. No.	Item Description	UOM	QTY for Bhopal	QTY for Indore	Total QTY
1	TDS Central Server	nos.	4	4	8
2	TDS NMS Server	nos.	2	2	4
3	Hours-minutes Analog display clocks	nos.	122	120	242
4	Hours-minutes-seconds Digital display clocks	nos.	575	557	1132
5	Outdoor Facade clocks 1 - 2 meters diameter	nos.	4	4	8
6	TDS laptop PCs with application software	nos.	2	2	4
7	Test jig of each type recommended by the manufacturer for maintenance of the TDS equipment	sets	1	1	2
8	TDS Equipment for Telecom Workshop Training	sets	1	1	2
9	19" Rack, Cable managers, Optical Distribution Frames, Distribution boards, Patch panels, Loop boxes for fibre, Power Cables, Data Cables, Pigtails, Patch Cards, Connectors, Terminations etc. as per requirements of TS for stations, OCCs, TERs, depots, RSSs, etc.	Lots	1 Lot	1 Lot	2 Lots
10	Any Other Items necessary for meeting fully the Contract Requirements as per TS.	Lots	1 Lot	1 Lot	2 Lots

## 7. Closed Circuit Television System (CCTV)

Sl. No.	Item Description	UOM	QTY for Bhopal	QTY for Indore	Total QTY
1	CCTV Servers (Primary, Secondary)	nos.	4	4	8
2	CCTV Recording Server	nos.	32	31	63
3	CCTV Wall Monitors	sets	1	1	2
4	CCTV NMS	nos.	2	2	4
5	Operations CCTV Workstation	nos.	22	22	44
6	Security CCTV Workstations	nos.	84	82	166
7	IP Cameras	nos.	3414	3317	6731
8	Station TER Video Server	nos.	31	30	61
9	CCTV laptop PCs with application software complete with all software and accessories necessary to configure and maintain the CCTV System	nos.	2	2	4
10	CCTV portable CCTV monitors intended for testing of 2MP IP cameras in the field and adjusting the pan, tilt, zoom and focus of the fixed cameras	nos.	4	4	8
11	CCTV portable signal generators intended for testing the resolution of HDMI monitors of the CCTV System	nos.	2	2	4
12	CCV Hand tools for removing and entering the camera enclosure.	nos.	5	5	10
13	CCTV Light level measurement instruments capable of measuring the CCTV camera lowest light level specification	nos.	2	2	4
14	CCTV Test jig of each type recommended by the manufacturer for maintenance of the CCTV equipment.	sets	1	1	2
15	CCTV Equipment for Telecom Workshop Training	Lots	1 Lot	1 Lot	2 Lots
16	19" Rack, Cable managers, Optical Distribution Frames, Distribution boards, Patch panels, Loop boxes for fibre, Power Cables, Data Cables, Pigtails, Patch Cards, Connectors, Terminations etc. as per requirements of TS for stations, OCCs, TERs, depots, RSSs, etc.	LS	LS	LS	LS
17	Any Other Items necessary for meeting fully the Contract Requirements as per TS.	LS	LS	LS	LS

### 8. Access Control and Intrusion Detection System (ACIDS)

Sl. No.	Item Description	UOM	QTY for Bhopal	QTY for Indore	Total QTY
1	ACIDS Access Control and Intrusion Detection Workstations	nos.	11	11	22
2	ACIDS Alarm Annunciator Panels	nos.	65	63	128
3	ACIDS Server	nos.	2	2	4
4	ACIDS Logging Printer	nos.	6	6	12
5	ACIDS Access Control Points complete with ruggedized CSC Reader, Exit unlock button and electric strikes	nos.	780	757	1537
6	ACIDS NMS	nos.	2	2	4
7	ACIDS Laptop PC with Application Software and accessories to maintain ACIDS system	nos.	1	1	2
8	ACIDS Smartcards	nos.	1000	1000	2000
9	ACIDS Test Jigs	nos.	1	1	2
10	ACIDS Equipment for Telecom Workshop Training	Lots	1 Lot	1 Lot	2 Lots
11	19" Rack, Cable managers, Optical Distribution Frames, Distribution boards, Patch panels, Loop boxes for fibre, Power Cables, Data Cables, Pigtails, Patch Cards, Connectors, Terminations etc. as per requirements of TS for stations, OCCs, TERs, depots, RSSs, etc.	Lots	1 Lot	1 Lot	2 Lots
12	Any Other Items necessary for meeting fully the Contract Requirements as per TS.	Lots	1 Lot	1 Lot	2 Lots

**Attachment - 3 to Corrigendum-10**

<b>1.2A: Schedule of Key Dates for Section: Bhopal Metro Rail Project</b>			
<b>Key Date</b>	<b>Description of Key Date</b>	<b>Time to achieve (in number of Weeks from the Commencement Date)</b>	<b>Delay Damages payable due to failure to complete (per calendar day)</b>
	<b>Design</b>		
STKDBH01	Complete preliminary definition of Interface requirements between Signalling & Train Control, and Telecommunication (S&T) system with all related interfacing civil works and systems	17	0.05% of total amount apportioned for Cost Centres A and B (i.e., BHSTCCA and BHSTCCB)
STKDBH02	Complete Preliminary Design Submission of S&T system	26	0.05% of total amount apportioned for Cost Centres A and B (i.e., BHSTCCA and BHSTCCB)
STKDBH03	Complete Definitive Design Submission of Signalling & Train Control system (Including agreed interface details)	38	0.05% of total amount apportioned for Cost Centres A and B (i.e. BHSTCCA and BHSTCCB)
STKDBH04	Complete Final Design of Signalling & Train Control system (including agreed interface details)	45	0.05% of total amount apportioned for Cost Centres A and B (i.e. BHSTCCA and BHSTCCB)
STKDBH05	Complete Definitive Design Submission of Telecommunication System (Including agreed interface details)	38	0.05% of total amount apportioned for Cost Centres A and B
STKDBH06	Complete Final Design Submission of Telecommunication System (Including agreed interface details)	52	0.05% of total amount apportioned for Cost Centres A and B (i.e. BHSTCCA and BHSTCCB)
	<b>Manufacturing, FAT and Delivery</b>		

<b>1.2A: Schedule of Key Dates for Section: Bhopal Metro Rail Project</b>			
<b>Key Date</b>	<b>Description of Key Date</b>	<b>Time to achieve (in number of Weeks from the Commencement Date)</b>	<b>Delay Damages payable due to failure to complete (per calendar day)</b>
STKDBH07	Complete manufacturing, FAT and delivery of Signalling & Train Control and Telecommunication train borne equipment to Rolling Stock car building factory for:	-	-
STKDBH7.1	Prototype Train Set (Train Set Number 1)	70	0.1% of apporportioned amount of Cost Centre C (i.e. BHSTCCC)
STKDBH7.2	Train Set Number 2, 3, 4, 5, 6 and 7	78	
STKDBH7.3	Train Set Number 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 and 20	108	
STKDBH7.4	Train Set Number 21, 22, 23, 24, 25, 26 and 27	170	
STKDBH08	Complete manufacturing, FAT and delivery to site of all Signalling & Train Control and Telecommunication equipment for installation in Depot for Bhopal Line Revenue Service	59	0.1% of apporportioned amount of Cost Centre C (i.e. BHSTCCC)
STKDBH09	Complete manufacturing, FAT and delivery to site of all Signalling & Train Control and Telecommunication equipment for installation on mainline.		
STKDBH9.1	<b>Purple Line Priority Corridor (AIIMS to Subhash Nagar)</b>	<b>67</b>	0.1% of apporportioned amount of Cost Centre C (i.e. BHSTCCC)
STKDBH9.2	<b>Red Line</b>	<b>82</b>	
STKDBH9.3	<b>Balance Purple Line (including Underground section)</b>	<b>118</b>	
	<b>Installation, Testing and Commissioning for Signalling &amp; Train Control and Telecommunication Train Borne Equipment</b>		
STKDBH10	Complete joint installation and testing of Signalling & Train Control and Telecommunication train borne equipment at the Rolling Stock car building factory for:	-	-
STKDBH10.1	Prototype Train Set (Train Set Number 1)	70	0.1% of total amount apporportioned for Cost Centres D and E (i.e.
STKDBH10.2	Train Set Number 2 and 3	80	
STKDBH10.3	Train Set Number 4 and 5	90	
STKDBH10.4	Train Set Number 6 and 7	100	

<b>1.2A: Schedule of Key Dates for Section: Bhopal Metro Rail Project</b>			
<b>Key Date</b>	<b>Description of Key Date</b>	<b>Time to achieve (in number of Weeks from the Commencement Date)</b>	<b>Delay Damages payable due to failure to complete (per calendar day)</b>
STKDBH10.5	Train Set Number 8 and 9	110	BHSTCCD and BHSTCCE)
STKDBH10.6	Train Set Number 10 and 11	120	
STKDBH10.7	Train Set Number 12 and 13	130	
STKDBH10.8	Train Set Number 14 and 15	140	
STKDBH10.9	Train Set Number 16 and 17	150	
STKDBH10.10	Train Set Number 18, 19 and 20	164	
STKDBH10.11	Train Set Number 21 and 22	174	
STKDBH10.12	Train Set Number 23 and 24	184	
STKDBH10.13	Train Set Number 25, 26 and 27	198	
	<b>Installation, Testing and Commissioning and Revenue Service</b>		
STKDBH11	Complete installation and testing of Fibre Optic Transmission System (FOTS) & UPS for Revenue Service and make it available to Interfacing Contractors for their systems testing with OCC/BCC, for:		
STKDBH11.1	Depot, Purple Line Priority Corridor (AIIMS to Subhash Nagar)	75	0.1% of total amount apportioned for Cost Centres D and E (i.e. BHSTCCD and BHSTCCE)
STKDBH11.2	Red Line	90	
STKDBH11.3	Balance Purple Line (including Underground section)	126	
STKDBH12	Complete installation and site acceptance tests (including interface testing with OCC/DCC) of Signalling and Telecommunication equipment's for:	-	-
STKDBH12.1	Depot, Purple Line Priority Corridor (AIIMS to Subhash Nagar)	81	0.1% of total amount apportioned for Cost Centres D and E (i.e. BHSTCCD and BHSTCCE)
STKDBH12.2	Red Line	99	
STKDBH12.3	Balance Purple Line (including Underground section)	135	
STKDBH13	Complete installation and Partial acceptance tests of S&T system (including OCC & BCC), for:	-	-

<b>1.2A: Schedule of Key Dates for Section: Bhopal Metro Rail Project</b>			
<b>Key Date</b>	<b>Description of Key Date</b>	<b>Time to achieve (in number of Weeks from the Commencement Date)</b>	<b>Delay Damages payable due to failure to complete (per calendar day)</b>
STKDBH13.1	Depot, Purple Line Priority Corridor (AIIMS to Subhash Nagar)	89	0.1% of total amount apportioned for Cost Centres D and E (i.e. BHSTCCD and BHSTCCE)
STKDBH13.2	Red Line	113	
STKDBH13.3	Balance Purple Line (including Underground section)	149	
STKDBH14	Complete System Acceptance Testing of S&T system's (including OCC & BCC), for:	-	-
STKDBH14.1	Depot, Purple Line Priority Corridor (AIIMS to Subhash Nagar)	95	0.1% of total amount apportioned for Cost Centres D and E (i.e. BHSTCCD and BHSTCCE)
STKDBH14.2	Red Line	123	
STKDBH14.3	Balance Purple Line (including Underground section)	159	
STKDBH15	Complete Integrated Testing and Commissioning of S&T system with all interface Rail Systems and submission of final O&M Manuals, for:	-	-
STKDBH15.1	Depot, Purple Line Priority Corridor (AIIMS to Subhash Nagar)	99	0.1% of total amount apportioned for Cost Centres D and E (i.e. BHSTCCD and BHSTCCE)
STKDBH15.2	Red Line	128	
STKDBH15.3	Balance Purple Line (including Underground section)	164	
STKDBH16	Complete Service Trial with all certification for Revenue Service, for:	-	-
STKDBH16.1	Depot, Purple Line Priority Corridor (AIIMS to Subhash Nagar)	111	0.1% of total amount apportioned for Cost Centres D and E (i.e. BHSTCCD and BHSTCCE)
STKDBH16.2	Red Line	157	
STKDBH16.3	Balance Purple Line (including Underground section)	182	
STKDBH17	Completion of all contract responsibilities including: Testing, commissioning and Integrated testing & commissioning of other Rolling stocks and Completion of the period of Supervision of Maintenance during Revenue	218	0.1% of Total Lump Sum Price of Bhopal Metro Rail Project System



<b>1.2A: Schedule of Key Dates for Section: Bhopal Metro Rail Project</b>			
<b>Key Date</b>	<b>Description of Key Date</b>	<b>Time to achieve (in number of Weeks from the Commencement Date)</b>	<b>Delay Damages payable due to failure to complete (per calendar day)</b>
	Operation and issue of the performance certificate in accordance with GCC.		

**Attachment - 4 to Corrigendum-10**

<b>1.2B: Schedule of Key Dates for Section: Indore Metro Rail Project</b>			
<b>Key Date</b>	<b>Description of Key Date</b>	<b>Time to achieve (in number of Weeks from the Commencement Date)</b>	<b>Delay Damages payable due to failure to complete (per calendar day)</b>
	<b>Design</b>		
STKDIN01	Complete preliminary definition of Interface requirements between Signalling & Train Control, and Telecommunication (S&T) system with all related interfacing civil works and systems	17	0.05% of total amount apportioned for Cost Centres A and B (i.e., INSTCCA and INSTCCB)
STKDIN02	Complete Preliminary Design Submission of S&T system	26	0.05% of total amount apportioned for Cost Centres A and B (i.e., INSTCCA and INSTCCB)
STKDIN03	Complete Definitive Design Submission of Signalling & Train Control system (Including agreed interface details)	38	0.05% of total amount apportioned for Cost Centres A and B (i.e., INSTCCA and INSTCCB)
STKDIN04	Complete Final Design of Signalling & Train Control system (including agreed interface details)	45	0.05% of total amount apportioned for Cost Centres A and B (i.e., INSTCCA and INSTCCB)
STKDIN05	Complete Definitive Design Submission of Telecommunication System (Including agreed interface details)	38	0.05% of total amount apportioned for Cost Centres A and B (i.e., INSTCCA and INSTCCB)
STKDIN06	Complete Final Design Submission of Telecommunication System (Including agreed interface details)	52	0.05% of total amount apportioned for Cost Centres A and B (i.e., INSTCCA and INSTCCB)

<b>1.2B: Schedule of Key Dates for Section: Indore Metro Rail Project</b>			
<b>Key Date</b>	<b>Description of Key Date</b>	<b>Time to achieve (in number of Weeks from the Commencement Date)</b>	<b>Delay Damages payable due to failure to complete (per calendar day)</b>
	<b>Manufacturing, FAT and Delivery</b>		
STKDIN07	Complete manufacturing, FAT and delivery of Signalling & Train Control and Telecommunication train borne equipment to Rolling Stock car building factory for:	-	-
STKDIN7.1	Prototype Train Set (Train Set Number 1)	70	0.1% of apportioned amount of Cost Centre C (i.e. INSTCCC)
STKDIN7.2	Train Set Number 2, 3, 4, 5, 6 and 7, 8 and 9	92	
STKDIN7.3	Train Set Number 10, 11, 12, 13, 14, 15, 16 and 17	138	
STKDIN7.4	Train Set Number 18, 19, 20, 21, 22, 23, 24, and 25	184	
STKDIN08	Complete manufacturing, FAT and delivery to site of all Signalling & Train Control and Telecommunication equipment for installation in Depot for Indore Line Revenue Service	59	0.1% of apportioned amount of Cost Centre C (i.e. INSTCCC)
STKDIN09	Complete manufacturing, FAT and delivery to site of all Signalling & Train Control and Telecommunication equipment for installation on mainline.		
STKDIN9.1	<b>Yellow Line Priority Corridor (Gandhi Nagar to Mumtaz Bag)</b>	<b>67</b>	0.1% of apportioned amount of Cost Centre C (i.e. INSTCCC)
STKDIN9.2	<b>Yellow Line Corridor (Mumtaz Bag to Railway Station)</b>	<b>82</b>	
STKDIN9.3	<b>Balance Yellow Line (including Underground section)</b>	<b>118</b>	
	<b>Installation, Testing and Commissioning for Signalling &amp; Train Control and Telecommunication Train Borne Equipment</b>		
STKDIN10	Complete joint installation and testing of Signalling & Train Control and Telecommunication train borne equipment at the Rolling Stock car building factory for:	-	-

<b>1.2B: Schedule of Key Dates for Section: Indore Metro Rail Project</b>			
<b>Key Date</b>	<b>Description of Key Date</b>	<b>Time to achieve (in number of Weeks from the Commencement Date)</b>	<b>Delay Damages payable due to failure to complete (per calendar day)</b>
STKDIN10.1	Prototype Train Set (Train Set Number 1)	70	0.1% of total amount apportioned for Cost Centres D and E (i.e. INSTCCD and INSTCCE)
STKDIN10.2	Train Set Number 2 and 3	94	
STKDIN10.3	Train Set Number 4 and 5	104	
STKDIN10.4	Train Set Number 6 and 7	116	
STKDIN10.5	Train Set Number 8 and 9	128	
STKDIN10.6	Train Set Number 10 and 11	140	
STKDIN10.7	Train Set Number 12 and 13	152	
STKDIN10.8	Train Set Number 14 and 15	164	
STKDIN10.9	Train Set Number 16 and 17	176	
STKDIN10.10	Train Set Number 18 and 19	188	
STKDIN10.11	Train Set Number 20 and 21	200	
STKDIN10.12	Train Set Number 22 and 23	212	
STKDIN10.13	Train Set Number 24 and 25	224	
	<b>Installation, Testing and Commissioning and Revenue Service</b>		
STKDIN11	Complete installation and testing of Fibre Optic Transmission System (FOTS) & UPS for Revenue Service and make it available to Interfacing Contractors for their systems testing with OCC/BCC, for:		
STKDIN11.1	Depot, Yellow Line Priority Corridor (Gandhi Nagar to Mumtaz Bag)	75	0.1% of total amount apportioned for Cost Centres D and E (i.e. INSTCCD and INSTCCE)
STKDIN11.2	Yellow Line Corridor (Mumtaz Bag to Railway Station)	90	
STKDIN11.3	Balance Yellow Line (including Underground section)	126	
STKDIN12	Complete installation and site acceptance tests (including interface testing with OCC/DCC) of Signalling and Telecommunication equipment's for:	-	-
STKDIN12.1	Depot, Yellow Line Priority Corridor (Gandhi Nagar to Mumtaz Bag)	81	0.1% of total amount apportioned for Cost Centres D and E (i.e.
STKDIN12.2	Yellow Line Corridor (Mumtaz Bag to Railway Station)	99	

<b>1.2B: Schedule of Key Dates for Section: Indore Metro Rail Project</b>			
<b>Key Date</b>	<b>Description of Key Date</b>	<b>Time to achieve (in number of Weeks from the Commencement Date)</b>	<b>Delay Damages payable due to failure to complete (per calendar day)</b>
STKDIN12.3	Balance Yellow Line (including Underground section)	135	INSTCCD and INSTCCE)
STKDIN13	Complete installation and Partial acceptance tests of S&T system (including OCC & BCC), for:	-	-
STKDIN13.1	Depot, Yellow Line Priority Corridor (Gandhi Nagar to Mumtaz Bag)	89	0.1% of total amount apportioned for Cost Centres D and E (i.e. INSTCCD and INSTCCE)
STKDIN13.2	Yellow Line Corridor (Mumtaz Bag to Railway Station)	113	
STKDIN13.3	Balance Yellow Line (including Underground section)	149	
STKDIN14	Complete System Acceptance Testing of S&T system's (including OCC & BCC), for:	-	-
STKDIN14.1	Depot, Yellow Line Priority Corridor (Gandhi Nagar to Mumtaz Bag)	95	0.1% of total amount apportioned for Cost Centres D and E (i.e. INSTCCD and INSTCCE)
STKDIN14.2	Yellow Line Corridor (Mumtaz Bag to Railway Station)	123	
STKDIN14.3	Balance Yellow Line (including Underground section)	159	
STKDIN15	Complete Integrated Testing and Commissioning of S&T system with all interface Rail Systems and submission of final O&M Manuals, for:	-	-
STKDIN15.1	Depot, Yellow Line Priority Corridor (Gandhi Nagar to Mumtaz Bag)	99	0.1% of total amount apportioned for Cost Centres D and E (i.e. INSTCCD and INSTCCE)
STKDIN15.2	Yellow Line Corridor (Mumtaz Bag to Railway Station)	128	
STKDIN15.3	Balance Yellow Line (including Underground section)	164	
STKDIN16	Complete Service Trial with all certification for Revenue Service, for:	-	-
STKDIN16.1	Depot, Yellow Line Priority Corridor (Gandhi Nagar to Mumtaz Bag)	111	0.1% of total amount apportioned for Cost Centres D and E (i.e. INSTCCD and INSTCCE)
STKDIN16.2	Yellow Line Corridor (Mumtaz Bag to Railway Station)	157	
STKDIN16.3	Balance Yellow Line (including Underground section)	182	
STKDIN17	Completion of all contract responsibilities including: Testing,	218	0.1% of Total Lump Sum Price

<b>1.2B: Schedule of Key Dates for Section: Indore Metro Rail Project</b>			
<b>Key Date</b>	<b>Description of Key Date</b>	<b>Time to achieve (in number of Weeks from the Commencement Date)</b>	<b>Delay Damages payable due to failure to complete (per calendar day)</b>
	commissioning and Integrated testing & commissioning of other Rolling stocks and Completion of the period of Supervision of Maintenance during Revenue Operation and issue of the performance certificate in accordance with GCC.		of Indore Metro Rail Project System

**Attachment - 5 to Corrigendum-10**

**VOL III ERGS – S&T**

**1.14. Key Staff**

1.14.1. Key Personnel shall have the minimum qualifications and experience as described in the table below for Bhopal and Indore separate team. The Contractor's mobilisation plan shall include, as a minimum, details of the following Contractor Key Personnel, first preference will be given to Degree holders from sl.no 4 to 11, but Diploma holders having additional 5 years' experience can be considered, but the final decision shall be taken by the Engineer.

No	Position	Minimum Numbers	Educational Qualification	Total Work Experience (Years)	Experience in Similar Works (Years)
1	Project Manager (S&T)	1	Graduate Engineer (E&C, E&E, CS, Instrument. etc)	20	10
2	Deputy Project Manager (Signal)	1	Graduate Engineer (E&C, E&E, CS, Instrument etc.)	15	7
3	Deputy Project Manager (Telecom)	1	Graduate Engineer (E&C, E&E, CS, Instrument etc.)	15	7
4	Lead Signal Design Engineer (Planning, designing, monitoring)	1	Graduate Engineer (E&C, E&E, CS, Instrument etc.)	10	5
5	Lead Telecom Design Engineer (Planning, designing, monitoring)	1	Graduate Engineer (E&C, E&E, CS, Instrument etc.)	10	5
6	Lead Signal Engineer (Installation, Testing & commissioning) (See Note)	3 (CBTC – 2 DTG - 1)	Graduate Engineer (E&C, E&E, CS, Instrument etc.)	7	3
7	Lead Telecomm Engineer (Installation, T&C)	3	Graduate Engineer (E&C, E&E, CS, Instrument etc.)	7	3
8	Interface Manager (S&T)	1	Graduate Engineer (E&C, E&E, CS, Instrument etc.)	10	5
9	Quality Assurance Manager(S&T)	1	Graduate Engineer (E&C, E&E, CS, Instrument etc.)	10	5

No	Position	Minimum Numbers	Educational Qualification	Total Work Experience (Years)	Experience in Similar Works (Years)
10	RAMS Engineer (S&T)	1	Graduate Engineer (E&C, E&E, CS, Instrument etc.)	7	3
11	Store Keeper	1	BSc / Graduate in any discipline / Diploma	5	2

**Note:**

Deployment of these positions shall be made in accordance to the Access Dates for implementation of all Corridors respectively for Bhopal and Indore.