

"DESIGN, MANUFACTURE, SUPPLY, TESTING, COMMISSIONING AND TRAINING OF 72 NOS. OF STANDARD GAUGE CARS FOR SURAT METRO RAIL PAHSE-1 PROJECT": Clarification to Queries received From Bidder

IFB NO: GMRC/RS2, Dated: 29-11-2021

S. N.	Part	Section	Clause No. / Item No.	Page No.	Bid Condition	Bidder's Query	GMRC's Response/ Clarification dated 11-02-2022
1	2	VII C	3.20	46 of 384	Kinematic Envelope Kinematic Envelope on tangent level track for At-grade, Elevated sections and Underground section shall be referred to as given in Schedule of Dimension(SOD), enclosed in Appendix TE.	Bidder proposes to consider the below RDSO Approved SOD: https://indianrailways.gov.in/railwayboard/uploads/directorate/Works_planning_Dte/Agra_%20Metro/KANPUR-SOD.pdf	Already clarified vide S. N. 122 of clarification dated 03-02-2022 Please follow Tender condition
2	2	VII C	10.2.1	150 of 384	The network communication technology to be adopted for all TCMS data communication links and subsystem communication interfaces shall be based on Ethernet (100 Base TX or better).	Bidder proposes to allow compliance to IEC 61375 for the communication. The Bidder proposes to amend the Clause as follows: "The network communication technology to be adopted for all TCMS data communication links and subsystem communication interfaces shall be mainly based on Ethernet (100 Base TX or better) <u>solution backbone. Different protocols (MVB, CAN etc.) may be used for local communication. The details shall be finalized during design stage.</u> "	Already clarified vide S. N. 355 of clarification dated 03-02-2022 Please follow Tender condition
3	2	VII C	10.2.3	150 of 384	Ethernet Consist Network with dual-homing ladder-type topology/dual-homing ring-type topology (compliant with IEC 61375-3-4) shall be adopted.	Bidder requests to add the following for clarity: "If two ports are not available in control electronics for Doors and HVAC sub-System, <u>having multiple control electronics communicating in Daisy Chain loop, may be connected on Ethernet with two end devices only</u> "	Already clarified vide S. N. 356 of clarification dated 03-02-2022 Please follow Tender condition
4	2	VII C	10.2.3	150 of 384	All digital and analog IOs interfacing with TCMS (directly or via an interface unit) shall also be fully redundant.	The Clause may please be modified as below in favour of optimum design. The list of IOs to be redundant may be discussed and agreed at Design stage to the satisfaction of the Engineer. Bidder requests to rephrase the clause as follows: "All <u>critical</u> digital and analog IOs interfacing with TCMS (directly or via an interface unit) shall be fully redundant. <u>Any change in above condition shall be subject to review and its acceptance by Engineer, whose decision shall be final and binding.</u> "	Already clarified vide S. N. 357 of clarification dated 03-02-2022 Please follow Tender condition
5	2	VII C	7.3.1	122 of 384	The detrainment door system shall be SIL2 compliant and shall be provided with a sealed cover door actuating mechanism. The clear width of the door way, cab partition door and ramp when operated shall not be less than 1100 mm with a headroom not less than 1900 mm so that two files of passengers can be simultaneously detrained without supervision.	For 2.9m car width accommodating 1100 mm clear opening centrally located detrainment door is not feasible. Technical reasons: Non Compliance to driver visibility requirements as per UIC 651. For 2.9m width car, clear width of 600-650mm is optimal and proven across metro industry. Bidder requests to amend the Clause as follows: The detrainment door system shall be SIL2 compliant and shall be provided with a sealed cover door actuating mechanism. The clear width of the door way cab partition door and ramp when operated shall not be less than 1100 mm <u>be sufficient to demonstrate evacuation of all passenger in AW3 conditions with Indian anthropology (male) data within 30 min without supervision and with a headroom not less than 1900mm so that two files of passengers can be simultaneously detrained without supervision.</u>	Already clarified vide S. N. 302 of clarification dated 03-02-2022 Please refer S. N. 35 of Addendum No. 3 dated 03-02-2022.
6	2	VII C	15.5.2	248 of 384	Maximum Dynamic wheel loading/unloading $\Delta Q/Q \leq 0.5$	Based on bidders experience Dynamic wheel unloading $\Delta Q/Q < 0.6$ is optimum to meet the performance. Bidder proposes to amend the Clause as follows: <u>Dynamic wheel unloading $\Delta Q/Q < 0.5$ 0.6.</u>	Already clarified vide S. N. 487 of clarification dated 03-02-2022 Please follow Tender condition
7	2	VII C	14.2.1	222 of 384	Stainless Steel other than body shell- chromium content not less than 17%, carbon content not more than 0.03% -JIS 4305 or equivalent standard.	Bidder requests to delete this requirement or restrict to major sub-systems: Stainless Steel other than body shell <u>and Traction Motor</u> - chromium content not less than 17%, carbon content not more than 0.03% -JIS 4305 or equivalent standard	Already clarified vide S. N. 465 of clarification dated 03-02-2022 Please follow Tender condition
8	2	VII C	10.5.4	155 of 384	The format/no./ contents/graphics of VDU screens shall be proposed by the Contractor during design and may have to be changed during the contract based on operational/maintenance requirements. The Contractor shall make such changes as and when required by the Engineer during the contract and shall also train Employer's engineers to design, review and execute the changes in VDU screens in post contract period. Necessary hardware and software tools with manual shall be provided for each Depot under quoted cost as per GA5 list.	Providing Full Access of the software with hardware/software tool to the Employer is difficult for the Bidder due to Intellectual Property rights. In case change in software is required, the Bidder or the Sub-System Vendor would be required to make necessary changes. Bidder proposes to amend the Clause as follows: "The format/no./ contents/graphics of VDU screens shall be proposed by the Contractor during design and may have to be changed during the contract based on operational/maintenance requirements. The Contractor shall make such changes as and when required by the Engineer during the contract <u>and shall also train Employer's engineers to design, review and execute the changes in VDU screens in post contract period. Necessary hardware and software tools with manual shall be provided for each Depot under quoted cost as per GA5 list.</u> "	Already clarified vide S. N. 366 of clarification dated 03-02-2022 Please follow Tender condition
9	2	VII C	14.18.6	239 of 384	Printed circuit board extenders shall be provided for test purposes. The Contractor shall provide detailed maintenance and troubleshooting procedures, including wave-forms at critical locations of the circuitry.	Wave form of electronic circuit is proprietary information. Bidder requests to rephrase the Clause as follows: Printed circuit board extenders shall be provided for test purposes. The Contractor shall provide, detailed maintenance and troubleshooting procedures, including wave-forms at critical locations of the circuitry. <u>Sharing critical details under ESCROW shall be permitted</u>	Already clarified vide S. N. 480 of clarification dated 03-02-2022 Please follow Tender condition

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10	2	VII C	7.2.1	114 of 384	It shall be possible for the Engineer to modify/change the parameters or closure/opening logic of door's circuit and implement the same as required by GMRC based on their operational and maintenance requirements. Full access to the software for the purpose above shall be provided.	Providing Full Access of the software with hardware/software tool to the Employer is difficult for the Bidder due to Intellectual Property rights. In case change in software is required, the Bidder or the Sub-System Vendor would be required to make necessary changes. Bidder requests to amend the clause as below: It shall be possible for The Bidder, upon request from the Engineer, to shall modify / change the parameters or closure / opening logic of door's circuit and implement the same as required by GMRC based on their operational and maintenance requirements as agreed during Design phase. Full access to the software for the purpose above shall be provided.	Already clarified vide S. N. 290 of clarification dated 03-02-2022 Please follow Tender condition
11	2	VII C	5.10.2	93 of 384	No sensor shall be installed in the gear case.	We prefer to have the speed sensor placed on the gearbox with the following points: • To get a more precise and robust wheel axle speed signal measurement • To have the tooth wheel for the speed sensor in the traction motor will reduce the active length of the motor, i.e. reduce motor performance. • When having the speed sensor located on the gearbox it is more protected from flying objects, for example stones. • It is easier to replace the speed sensor when mounted on the gearbox Request to allow speed sensor on gearbox. Please also amend requirement in section 8.8.2: Speed sensors if used shall not generally be placed on the gear case.	Already clarified vide S. N. 218 of clarification dated 03-02-2022 Please follow Tender condition
12	2	VII C	5.2.3	87 of 384	The bogie suspension, in conjunction with the car body, shall be designed to enable cars to operate satisfactorily on track with the specified track twist. The maximum off loading of wheels '□Q/Q' shall not exceed 50% of nominal wheel load in both inflated and deflated conditions up to maximum permissible speed during oscillation trials on actual track conditions. Wheel unloading test for twisted track shall be carried out as per method explained in EN 14363 under tare and fully loaded conditions. The maximum limit of wheel unloading permitted for this test is 0.6.	Based on bidder's experience Q/Q' of 60% will meet the performance required during the operations both in inflated and deflated conditions. Bidder proposes to amend the clause as following: The bogie suspension, in conjunction with the car body, shall be designed to enable cars to operate satisfactorily on track with the specified track twist. The maximum off loading of wheels '□Q/Q' shall not exceed 50% 60% of nominal wheel load in both inflated and deflated conditions up to maximum permissible speed during oscillation trials on actual track conditions. Wheel unloading test for twisted track shall be carried out as per method explained in EN 14363 under tare and fully loaded conditions. The maximum limit of wheel unloading permitted for this test is 0.6.	Already clarified vide S. N. 192 of clarification dated 03-02-2022 Please follow Tender condition
13	2	VII C	6.16.9	109 of 384	The Contractor shall furnish the maximum braking distance from a speed of 80 kmph to stop, under emergency brake application. The guaranteed maximum braking distance shall satisfy the requirements specified in table 15.1.B emergency brake application.	Bidder submits that Emergency braking (Table 15.1B) and GEBR are different. GEBR distance of 220 m is very difficult considering one car brake isolated and lower tolerances on brake equipment during GEBR. Bidder requests to amend the Clause as follows: The Contractor shall furnish the maximum braking distance from a speed of 80 kmph to stop, under emergency brake application. The guaranteed maximum braking distance shall satisfy the requirements specified in table 15.1.B emergency brake application. be calculated by Contractor and submitted to Engineer/Signalling Contractor during Interface.	Already clarified vide S. N. 273 of clarification dated 03-02-2022 Please follow Tender condition
14	2	VII C	6.16.10	109 of 384	The contractor shall provide the guaranteed emergency brake de-acceleration rate to signaling contractor during interface. The Guaranteed Emergency Brake rate shall be decided on the basis of minimum initial adhesion of 6% on the Surat Metro network, one car brake isolated and with maximum 15% emergency brake distance extension (for adhesion from 8% to 6%) due to wheel sliding.	Bidder requests to amend the Clause as follows: The Contractor shall provide the guaranteed emergency brake de-acceleration rate to signaling Contractor during interface. The Guaranteed Emergency Brake rate shall be decided on the basis of minimum initial adhesion of 6% on Surat Metro network, one car brake isolated and with maximum 15% emergency brake distance extension (for adhesion from 8% to 6%) due to wheel sliding.	Already clarified vide S. N. 274 of clarification dated 03-02-2022 Please follow Tender condition
15	2	VII C	11.2.7	175 of 384	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 m ³ /h/ person, under fully loaded train conditions. The emergency ventilation fans in the saloon shall be fed from the 110V DC supply in the event of non availability of 415V AC supply from single inverter(s) provided in each car/HVAC unit. Emergency ventilation for 60 minutes, or the time needed to fully evacuate AW3 passengers from the train from one side front egress door, whichever is higher of the two, should be provided.	Bidder proposes that the emergency ventilation fans of HVAC unit could be fed either from emergency inverter inside each HVAC or inside each car or through the APS. Bidder requests to amend the Clause as follows: 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 m ³ /h/ person, under fully loaded train conditions. The emergency ventilation fans in the saloon shall be fed from the 110V DC supply in the event of non availability of 415V AC supply from single inverter(s) provided in each car/HVAC unit. Emergency ventilation for 60 minutes, or the time needed to fully evacuate AW3 passengers from the train from one side front egress door, whichever is higher of the two, should be provided.	Already clarified vide S. N. 423 of clarification dated 03-02-2022 Please follow Tender condition

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16	2	VII C	11.4.8	177 of 384	Fresh air velocity at the HVAC outside grille face shall not be more than 2 m/s to prevent rain water from entering the HVAC along with fresh air. Similarly, mixed air velocity at the evaporator coils shall not be more than 2 m/s to prevent condensate water travelling to heating elements and supply air plenum/ducts.	There are several ways to design the HVAC structure so as to avoid water entering the HVAC through the fresh air inlet. Conversely, it may also happen that despite fresh air velocity less than 2 m/s, there may still be water ingress into the HVAC through fresh air inlet. The main point is to ensure that if any amount of water gets into HVAC, it is arrested and drained properly. Further, we will have water tightness as routine test to ensure there is no water droplets getting carried into the mixed air chamber. Similarly, there are several solutions available to arrest the water droplets in the mixed air such as water eliminator, simple metallic grille over evaporator, etc. The main point which drives water into the mixed air stream is the supply airflow quantity which we are forced to keep high in order to achieve the energy efficiency targets. Due to size constraints for HVAC unit on rail application, the dimension of evaporator cannot be so high to maintain this 2m/s velocity target. Further, it is extremely difficult to define and map the measurement points to validate the 2m/s criteria. Hence Bidder requests to delete this clause. Fresh air velocity at the HVAC outside grille face shall not be more than 2 m/s to prevent rain water from entering the HVAC along with fresh air. Similarly, mixed air velocity at the evaporator coils shall not be more than 2 m/s to prevent condensate water travelling to heating elements and supply air plenum / ducts.	Already clarified vide S. N. 430 of clarification dated 03-02-2022 Please follow Tender condition
17	2	VII C	11.10.6	180 of 384	Temperature sensors for the return air and other controls shall be solid state. The controls for the two air conditions shall be coordinated such that as the cooling load reduces, the unit can be unload in stages from full to half capacity to one unit being shut off except for the ventilation blower.	To comply to this clause, the HVAC units needs to be independently controlled by dedicated controller. Also, there maybe 4 levels of cooling by using 4 compressors per HVAC unit for temperature regulation with optimum energy efficiency. Further, as diagonal duct concept is required to cater the airflow throughout the length of the car, the independent control helps in having better temperature regulation and better passenger comfort. Therefore, it is not recommended to have any kind of co-ordination between the two HVAC units of a car. Bidder requests to amend the clause as follows: Temperature sensors for the return air and other controls shall be solid state. The controls for the two air conditions shall be coordinated such that as the cooling load reduces, the unit can be unload in stages from full to half capacity to one unit being shut off except for the ventilation blower.	Already clarified vide S. N. 435 of clarification dated 03-02-2022 Please follow Tender condition
18	2	VII C	11.10.14	181 of 384	Compressor unloading device shall be provided to cater for part load conditions and relief of high refrigerant pressure due to the ambient temperature exceeding the tunnel temperature.	Unloading devices such as hot gas bypass valves are not recommended to be used for HVAC units which have multiple compressors per refrigerant circuit. Further, HVAC unit with hot gas bypass feature will be very inefficient i.e. the COP will be too bad for unit using this feature. Bidder requests to delete this clause: Compressor unloading device shall be provided to cater for part load conditions and relief of high refrigerant pressure due to the ambient temperature exceeding the tunnel temperature.	Already clarified vide S. N. 436 of clarification dated 03-02-2022 Please follow Tender condition
19	2	VII C	11.10.15	181 of 384	In the event that all conditions revert to normal without malfunction in the system, the unloading device shall be reset and the system shall load up automatically.	Unloading devices such as hot gas bypass valves are not recommended to be used for HVAC units which have multiple compressors per refrigerant circuit. Further, HVAC unit with hot gas bypass feature will be very inefficient i.e. the COP will be too bad for unit using this feature. Bidder requests to delete this clause: In the event that all conditions revert to normal without malfunction in the system, the unloading device shall be reset and the system shall load up automatically.	Already clarified vide S. N. 437 of clarification dated 03-02-2022 Please follow Tender condition
20	2	VII C	15.22.2 iii) a) & c)	260 & 261 of 384	a) These tests shall be conducted inside a Climate Chamber for judging the cooling and heating performances of the HVAC system for Summer, Monsoon(for under tunnel ventilation), high ambient(50C & 58C), low ambient, high humidity and any other ambient conditions. All tests shall be done with fresh air dampers open and filters & evaporators clogged conditions, except that high ambient tests will be done with fresh air dampers open and filters & evaporator clean. Tests will be done as per EN 14750 and Engineer's requirements. Heating and humidifying equipment shall be provided in the car for test purposes. Testing shall be done for different passenger loads for: Regulation (doors closed)- Cooling capacity of HVACs shall be sufficiently high to demonstrate 3 complete regulation cycles during the regulation testing for AW3 passenger load. c) Parameters to be Measured and Criteria <input type="checkbox"/> Recorded Parameters Temperature, humidity, pressure, current, voltage, power (KW), energy (KW-H), refrigerant high & low pressures, etc. at various locations of the HVACs, test car, climate chamber and equipment used for creating the ambient and interior heat load conditions. Each parameter shall be recorded on a digital data logger or by the PLC of the HVAC. <input type="checkbox"/> Acceptance Criteria (i) ERTS, relevant standards and design values should be achieved. (ii) In regulation tests, the compressor switching on and off logic or frequency control logic is to be checked. (iii) Pre-cooling and pre-heating timings should be less than 30 minutes. (iv) HVAC system should be able to quickly recover average interior temperature and humidity within the average doors closed interval and shall maintain this performance	The highlighted content in this clause are contradictory to each other. As per EN 14750-2, thermal performances for regulation tests are evaluated either by considering 3 complete regulation cycles OR by considering 60 mins of continuous operation. When the compressors are regulating i.e. switching ON/OFF to maintain the desired level of thermal comfort, the variations in interior conditions are bound to happen For. Ex. the humidity inside car will start increasing rapidly once the regulating compressor is OFF and humidity will start decreasing quickly if the regulating compressor is in ON condition. Bidder requests to amend the clause as follows: (iii) Cooling Performance Test: a) Regulation (doors closed) - Cooling capacity of HVACs shall be sufficiently high to demonstrate either 3 complete regulation cycles or 60 mins continuous operation during the regulation test for AW3 passenger load. <input type="checkbox"/> Acceptance Criteria: (ii) In regulation tests, the compressor switching on and off logic or frequency control logic is to be checked there should not be large variations in interior conditions.	Already clarified vide S. N. 501 of clarification dated 03-02-2022 Please follow Tender condition

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21	2	VII C	5.1.11	87 of 384	The bogie shall be capable of negotiating main line curves of 100 m radius in mainline and 90 m radius curves in depot. The axle yaw stiffness and the rotational resistance of the complete bogie shall be such that lateral flange forces generated when negotiating the track alignments for the route specified do not lead to excessive rail wear, wheel flange wear and noise, but shall be sufficient to obviate bogie or wheel set hunting. This shall be verified during testing in main line as per test procedure prescribed by RDSO.	Bidder observed contradicting statement in Clause 3.14.1 and in clause 5.1.11 As per Clause 3.14.1, Table No 3.2: Track Structure Parameters - The minimum radius of curvature is 100 m for a ballasted track and 120 m for balastless track. Bidder understands that Ballasted track correspond to depot condition and balastless track corresponds to mainline track condition - kindly confirm bidders understanding. However, in Clause 5.1.1 - the minimum radius in mainline is 100 m and 90 m in depot condition. It's also noted, in SOD Clause 1.2.1 - the minimum radius is 120 m in mainline and 100 m in depot. Bidder propose to follow "SOD Clause § 1.2.2". Kindly confirm.	Already clarified vide S. N. 191 of clarification dated 03-02-2022 Please follow Tender condition
22	2	VII C	5.3.1	88 of 384	The bogie frames shall be of fabricated, robust construction, using weather resistant high tensile carbon steel to EN10025-5/ JIS G3114 or an approved international standard, capable of withstanding heavy duty load, the design incorporating adequate safety margins. The bogie frame construction shall be consistent with good mechanical design, be as light as possible. Use of cast steel inserts of acceptable grade in fabrication with specific prior approval of the Engineer in the bogie may be permitted.	Bidder request to amend the clause as follows: The bogie frames shall be of fabricated, robust construction, using weather resistant high tensile carbon steel to EN10025 5 / JIS G3114 or an approved international standard, capable of withstanding heavy duty, the design incorporating adequate safety margins. The bogie frame construction shall be consistent with good mechanical design, be as light as possible. Use of cast steel inserts of acceptable grade in fabrication with specific prior approval of the Engineer in the bogie may be permitted.	Already clarified vide S. N. 197 of clarification dated 03-02-2022 Please follow Tender condition
23	2	VII C	5.6.4	92 of 384	The number of seated passengers shall be taken as one per seat, and standing passengers as 10/m2 for all the above-mentioned strength analyses except for fatigue test. The fatigue load shall be decided based on actual loading which shall correspond to AW2 loading conditions. The loading cycles shall be as specified in respective standard. There shall not be any crack at the end of any stage of loading cycles. The passenger weight for this calculation shall be taken as 65 kg/person	Bidder Request to amend the Clause as follows : The number of seated passengers shall be taken as one per seat, and standing passengers as 10/m2 for all the above-mentioned strength analyses except for fatigue test. The fatigue load shall be decided based on actual loading which shall correspond to AW2 loading conditions. The loading cycles shall be as specified in respective standard. There shall not be any crack at the end of any stage of loading cycles There shall not be any crack at the end of first two loading cycles as per EN 13749. The passenger weight for this calculation shall be taken as 65kg/person.	Already clarified vide S. N. 212 of clarification dated 03-02-2022 Please follow Tender condition
24	2	VII C	8.2.26	129 of 384	Contractor shall provide a portable device (suitable mechanical arrangement attached with a force gauge of suitable range) to measure the CCD arm spring tension in situ condition in routine service check without removing CCD fixture from train.	Bidder request to amend the clause as follows : Contractor shall may provide a portable device (suitable mechanical arrangement attached with a force gauge of suitable range) to measure the CCD arm spring tension in situ condition in routine service check without removing CCD fixture from train based on Detailed Design Discussions.	Already clarified vide S. N. 315 of clarification dated 03-02-2022 Please follow Tender condition
25	2	VII C	8.2.27	130 of 384	Suitable on-board Arc measuring device for identifying such locations with recording and analysis facilities where arcing is experienced shall be supplied as part of tools. One No. of on board Set up for monitoring, recording & analyzing CCD current collection performance shall be provided for each line. The cost of these setup shall be deemed to be included in the quoted GA5 price. Necessary training shall be provided to the Engineer.	Bidder request to amend the clause as follows : Suitable on-board Arc measuring device for identifying such locations with recording and analysis facilities where arcing is experienced shall may be supplied as part of tools based on Detailed Design Discussions. One No. of on board Set up for monitoring, recording & analyzing CCD current collection performance may be provided for each line. The cost of these setup shall be deemed to be included in the quoted GA5 price. Necessary training shall be provided to the Engineer based on Design Discussions.	Already clarified vide S. N. 316 of clarification dated 03-02-2022 Please follow Tender condition
26	2	VII C	15.5.3	250 of 384	Table 15.1 B – The Limiting Values Bogie Rotational Resistance < 0.08 at 0.8 degrees per second rotational speed	Bidder Observes the Clause § 15.5.3 contradicts with clause § 5.2.6 Clause § 5.2.6 states: The bogie rotational resistance (X factor) test under inflated and deflated air spring conditions would be carried out at the manufacturer's works under AW0 and AW3 conditions, the value of which should not exceed 0.1 at rotational speed of 1 degrees/second. Thus, bidder propose to follow "Clause § 5.2.6" which is as per EN 14363 : 2016. Kindly confirm.	Already clarified vide S. N. 493 of clarification dated 03-02-2022 Please follow Tender condition
27	2	VII C	10.1.8	149 of 384	TCMS Configuration Details The Contractor shall submit the complete TCMS configuration details including but not limited to Application Software Logic, Data Acquisition Routines, Control logic, Fault Detection Algorithms, Data Storage Logic etc. Graphical interface for editing and configuring the same shall be provided and submitted for Engineer's approval during design stage.	Bidder requests to amend the Clause as follows: The Contractor shall submit the complete TCMS configuration details including but not limited to Application Software Logic, Data Acquisition Routines, Control logic, Fault Detection Algorithms, Data Storage Logic etc. Graphical interface for editing and configuring the same shall be provided and submitted for Engineer's approval during design stage.	Already clarified vide S. N. 353 of clarification dated 03-02-2022 Please follow Tender condition
28	2	VII C	10.3.4	152 of 384	Signal List Modification It shall be possible for authorized maintenance personnel to update and modify the list of data acquisition signals and its associated parameters like periodicity, task cycle, data acquisition routine etc. Suitable graphical configuration editors shall be provided for this purpose under quoted cost as per GA5 list.	It shall be possible for authorized maintenance personnel to update and modify the list of data acquisition signals and its associated parameters like periodicity, task cycle, data acquisition routine etc. Suitable graphical configuration editors shall be provided for this purpose under quoted cost as per GA5 list. (trace) to be recorded from the train temporarily for diagnostics purposes.	Already clarified vide S. N. 359 of clarification dated 03-02-2022 Please follow Tender condition
29	2	VII C	10.5.6	156 of 384	Test Mode Extension of VDU The TCMS VDU shall be connected to the Ethernet Train Bus and it shall be possible to simultaneously plug-in multiple laptops at any point on the train bus and replicate the TCMS VDU display. Suitable application software shall be developed to enable replication of TCMS VDU along with touch and/or mouse-based interaction. Such additional VDUs shall login as "Test Mode" that shall be provided in addition to the "Operator and "Maintainer" modes of the TCMS.	Bidder requests to amend the Clause as follows: Test Mode Extension of VDU The TCMS VDU shall be connected to the Ethernet Train Bus and it shall be possible to simultaneously plug-in multiple laptops at any point on the train bus and replicate the TCMS VDU display. Suitable application software shall be developed to enable replication of TCMS VDU along with touch and/or mouse-based interaction. Such additional VDUs shall login as "Test Mode" that shall be provided in addition to the "Operator and "Maintainer" modes of the TCMS.	Already clarified vide S. N. 371 of clarification dated 03-02-2022 Please follow Tender condition

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30	2	VII C	10.7.7	158 of 384	Editing Fault Configuration Logic Fault analysis and fault management algorithms, data acquisition routines and data storage logic shall be programmed and presented using Windows or equivalent user interface software and shall be fully editable by the Engineer on TCMS and OCC. Authorised maintenance personnel shall have facility to select and edit: i) event details (e.g. displayed fault text, fault level etc.), ii) list of associated parameters/trace data, iii) periodicity of the parameters/trace data, iv) time interval for pre and post event capture of parameters /trace data, v) fault detection algorithms, fault management logic and fault diagnosis rule. Complete facilities to implement the same shall be supplied.	Editing Fault Logic would not be permitted from security concerns point of view. Context variables could be shown however not allowed to be edited. Bidder requests to delete this requirement.	Already clarified vide S. N. 377 of clarification dated 03-02-2022 Please follow Tender condition
31	2	VII C	13.1.1	201 of 384	(xi) Complete tools including Software, Hardware, equipment etc. for configuring, editing and creating route /station data, announcements, messages & fonts, audio speech and interface of the system with other sub systems etc. shall be supplied in each depot under quoted cost as per GA5 list. It shall be possible for the Engineer/ Employer to configure the PA, PIS & PSSS software for implementing operational & maintenance related modifications. Software tools and portable maintenance terminal for each depot for recording and analysing interface signals shall also be provided. It shall be possible to modify/add any pre-recorded announcements in the Automatic Voice Announcement System through portable maintenance terminal. Full access to the software for the purpose above shall be provided. Any hardware/software tool required for this purpose shall also be provided under quoted cost as per GA5 list. The documentation including but not restricted to flow charts (for complete software), signal flows, and interpretation of signal etc. shall be provided. Engineer shall be fully trained and made fully conversant by the Contractor for this purpose.	Bidder requests to amend the Clause as follows: (xi) Complete tools including Software, Hardware, equipment etc. for configuring, editing and creating route /station data, announcements, messages & fonts, audio speech and interface of the system with other sub systems etc. shall be supplied in each depot under quoted cost as per GA5 list. It shall be possible for the Engineer/ Employer to configure the PA, PIS & PSSS software for implementing operational & maintenance related modifications. Software tools and portable maintenance terminal for each depot for recording and analysing interface signals shall also be provided. It shall be possible to modify/add any pre-recorded announcements in the Automatic Voice Announcement System through portable maintenance terminal. Full access to the software for the purpose above shall be provided. Any hardware/software tool required for this purpose shall also be provided under quoted cost as per GA5 list. The documentation including but not restricted to flow charts (for complete software); signal flows, and interpretation of signal etc. shall be provided. Engineer shall be fully trained and made fully conversant by the Contractor for this purpose.	Already clarified vide S. N. 456 of clarification dated 03-02-2022 Please follow Tender condition
32	2	VII C	6.17.1	109 of 384	A high integrity fast response closed loop digital brake control system shall be provided, with the brake regulation rate at $\pm 5\%$ of the deceleration demanded. The closed loop is formed by the dynamic brake and the pneumatic brake	Not possible to meet for all demand. We can able to meet $\pm 10\%$ with the stopping accuracy of 300mm, The Brake system will be fine tuned to meet the stopping accuracy.	Already clarified vide S. N. 275 of clarification dated 03-02-2022 Please follow Tender condition
33	2	VII C	6.2.10	100 of 384	The compressor shall not be made to start against back pressure. Soft start features as a built-in part of APS or direct on line shall be provided.	The Air generation unit is already provided with the drain valves, which shall depressurize the system once the compressor is stopped and hence there will not be any back pressure during the compressor start-up. A separate soft start feature is thus not required. We request to update the clause as below: "The compressor shall not be made to start against back pressure. If required, a soft start feature as a built-in part of SIV or direct on line shall be provided."	Already clarified vide S. N. 590 of clarification dated 03-02-2022 Please follow Tender condition
34	2	VII C	ERTS 4.6.4	67 of 384	For a welded construction, the camber on coach body under fully loaded condition with 10 person per square meter shall be such that the structure shall not sag below the horizontal plane throughout the vehicle's 35 years life. However, for shells fabricated with modular elements, the coach shall be built with a suitable camber under tare condition. It shall be ensured that the downward deflection of the coach in AW5 condition (with 10 person per meter square) shall be within the permitted deflection throughout the service life of thirty-five years to ensure proper operation of doors under all loading conditions. Detailed calculations shall be submitted by the contractor for the expected deflection so as to confirm that the deflection is within permissible limits under all conditions throughout the life of the coach. Tests for stresses etc. as well as other tests as per relevant standard for the method of construction deployed shall be carried out under specified loads.	Based on bidders experience, design without camber is already proven in the Indian market. Hence, Bidder requests to reword the clause as follows: For a welded construction, the camber on coach body under fully loaded condition with 10 person per square meter shall be such that the structure shall not sag below the horizontal plane throughout the vehicle's 35 years life. However, for shells fabricated with modular elements, the coach shall be built with a suitable camber under tare condition. It shall be ensured that the downward deflection of the coach in AW5 condition (with 10 person per meter square) shall be within the permitted deflection throughout the service life of thirty-five years to ensure proper operation of doors under all loading conditions. Detailed calculations shall be submitted by the contractor for the expected deflection so as to confirm that the deflection is within permissible limits under all conditions throughout the life of the coach. Tests for stresses etc. as well as other tests as per relevant standard for the method of construction deployed shall be carried out under specified loads. However, any alternate proven design without camber but meeting the requirements can also be provided.	Already clarified vide S. N. 582 of clarification dated 03-02-2022 Please follow Tender condition
35	2	VII C	ERTS 8.9.2	137 of 384	They shall be sized to perform without damaging the total electrical breakage in case of a non-receptive line.	The clause is related to the brake resistor sizing. Providing a fully rated resistor will lead to a bigger resistor, integrating which could be a challenge. However to meet the intent of providing fully rated resistor, bidder proposes to re-word the clause as follows: They shall be sized to perform without total electrical breakage in case of a nonreceptive line. For an optimal sizing of the brake resistor, in case of non-receptive line, dissipation of energy, splitted between the brake resistor and he friction brakes can also be offered.	Already clarified vide S. N. 608 of clarification dated 03-02-2022 Please follow Tender condition
36	2	VII C	ERTS 2.18.3	30 of 384	During Stationary condition, the specified limits shall be met with all auxiliary equipment operating simultaneously at maximum capacity.	ISO 3381 and 3095 standards recommend vehicle level noise test to be conducted with equipment to operate at "normal operating conditions". Bidder requests to follow the same.	Already clarified vide S. N. 572 of clarification dated 03-02-2022 Please follow Tender condition

S. N.	Part	Section	Clause No. / Item No.	Page No.	Bid Condition	Bidder's Query	GMRC's Response/ Clarification dated 11-02-2022
37	2	VII C	ERTS 3.22.1	51 of 384	Performances of the metro train in AW3 loading under normal mode shall be compliant to achieve a minimum schedule speed of 34 kmph (excluding reverse time in terminal station).	Based on bidders experience, the performances are normally designed with 6 persons standee/m ² , further achieving a minimum commercial speed of 34 kmph put undue pressure on the system. Hence, Bidder requests to be reword the clause as follows : Performances of 3-car and 6-car Metro train in Exceptional Crush load AW3 AW2 under normal conditions shall be compliant to achieve a minimum commercial speed of 34 32 kmph (excluding reverse time in terminal station).	Already clarified vide S. N. 580 of clarification dated 03-02-2022 Please follow Tender condition
38	2	VII C	ERTS 6.2.11	100 of 384	The drive motor shall conform to the requirement of IEC 60349 and the temperature rise of the windings of the motor shall be limited to temperature index of the insulation minus 70° C. The motor shall have at least IP65 protection.	Based on bidders experience IP 55 protected motor is a proven solution. Hence bidder request to reword the clause as follows: The compressor shall be directly driven by drive motor which shall conform to the requirement of IEC 60349-2 and the temperature rise of the windings of the motor shall be limited to temperature index of the insulation minus 70° C. The motor shall have at least IP65 55 protection.	Already clarified vide S. N. 591 of clarification dated 03-02-2022 Please follow Tender condition
39	2	VII C	ERTS 7.2.1 xvii	115 of 384	DCU Hardware and Software support: It shall be possible for the Engineer to modify / change the parameters or closure / opening logic of door's circuit and implement the same as required by GMRC based on their operational and maintenance requirements. Full access to the software for the purpose above shall be provided. Any hardware / software tool required for this purpose shall also be provided free of cost (two for each place Bhopal as well as Indore). The documentation including but not restricted to flow charts (for complete software), signal flows, and interpretation of signals etc. shall be provided. Training shall be provided by the OEM experts to GMRC personnel to the complete satisfaction of the Engineer. Single point uploading of software and downloading of faults / data on unit and train basis shall be ensured. The door control unit shall have a self-test function on power up that can check the system healthiness. It shall be able to provide indication of alarm status should any irregularities be detected. The results of the self-test (including the alarm status if there are irregularities detected from the door control units) shall be reported to the TCMS.	The logic and parameters are safety critical and shall not be changed after commissioning. If required only competent resource from the OEM after proper analysis shall do so. Hence, bidder proposes to reword the clause as follows: DCU Hardware and Software support: It shall be possible for the Engineer to modify / change the parameters or closure / opening logic of door's circuit and implement the same as required by GMRC based on their operational and maintenance requirements. Full access to the software for the purpose above shall be provided. Any hardware / software tool required for this purpose shall also be provided free of cost (two for each place Bhopal as well as Indore). The documentation including but not restricted to flow charts (for complete software), signal flows, and interpretation of signals etc. shall be provided. Training shall be provided by the OEM experts to GMRC personnel to the complete satisfaction of the Engineer. Single point uploading of software and downloading of faults / data on unit and train basis shall be ensured. The door control unit shall have a self-test function on power up that can check the system healthiness. It shall be able to provide indication of alarm status should any irregularities be detected. The results of the self-test (including the alarm status if there are irregularities detected from the door control units) shall be reported to the TCMS.	Already clarified vide S. N. 602 of clarification dated 03-02-2022 Please follow Tender condition
40	2	VII C	ERTS 7.2.4.3 iv	119 of 384	Irrespective of the operating mode, the train shall not be able to move unless all the saloon doors are proved closed and locked. Separate Door closed and locking shall be proved for each door leaf. Separate close and locking switches shall be provided for each door leaf. The train line circuit performing this interlock shall be a failsafe, fully redundant circuit to provide maximum protection against erroneous door locked signal. A sealed cut out switch accessible to the train operator in each cab, shall be provided to bypass the interlock, to enable a train to be taken to the next station prior to being taken out of service, to attend to the defective door. Operation shall be recorded by the Train Control Management System (TCMS). In the event the train operator has operated the cut out switch to by-pass the door closed interlock, the system shall ensure that the doors are in closed condition before actuation of traction command.	If bypassed, system will not check for door close. It has to be ensured by the train operator. Otherwise the system will stuck in a dead lock. Hence bidder requests to reword the clause as follows: Irrespective of the operating mode, the train shall not be able to move unless all the saloon doors and detainment door are proved closed and locked. Separate door closing and locking shall be proved for each door leaf. Separate close and locking switches shall be provided for each door leaf. The train line circuit performing this interlock shall be a fail-safe, fully redundant and/or double break circuit to provide maximum protection against erroneous door locked signal (circuit will be finalized during design stage as per requirement). A sealed cut out switch accessible to the train operator in each cab, shall be provided to bypass the interlock, to enable a train to be taken to the next station prior to being taken out of service, to attend to the defective door. Operation shall be recorded by the Train Control Management System (TCMS). In the event the train operator has operated the cut-out switch to bypass the door closed interlock, the system shall ensure that the doors are in closed condition before actuation of traction command.	Already clarified vide S. N. 604 of clarification dated 03-02-2022 Please follow Tender condition
41	2	VII C	ERTS 8.7.12	136 of 384	Each traction motor shall be provided with redundant thermistor for determination of temperature of stator winding. It should be possible to replace the thermistors in the depot without lifting the car. Traction motor terminal boxes shall be provided with heat-detectors/LHD linked to TCMS/fire detection & control unit (refer ERTS clause 2.20) so that their status is monitored.	As already a redundant thermistor is provided, bidder requests to reword the clause: Each traction motor shall be provided with redundant thermistor for determination of temperature of stator winding. It should be possible to replace the thermistors in the depot without lifting the car. Traction motor terminal boxes shall be provided with heat-detectors/LHD linked to TCMS / fire detection & control unit (refer ERTS clause 2.20) so that their status is monitored.	Already clarified vide S. N. 607 of clarification dated 03-02-2022 Please follow Tender condition
42	2	VII C	ERTS 2.20.1 ix	33 of 384	The system shall be able to distinguish between dusty tunnel/saloon environment and other smoke/fume sources such as diesel fumes from smoke being caused by fire.	Bidders requests to delete the clause as it wont be practically possible for a system to distinguish as asked in the clause.	Already clarified vide S. N. 575 of clarification dated 03-02-2022 Please follow Tender condition

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44	2	VII C	Section '3.20	46 of 384	Kinematic Envelope Kinematic Envelope on tangent level track for At-grade, Elevated sections and Underground section shall be referred to as given in Schedule of Dimension(SOD), enclosed in Appendix TE.	Bidder proposes to consider the below RDSO Approved SOD: https://indianrailways.gov.in/railwayboard/uploads/directorate/Works_planning_Dte/Agra%20Metro/KANPUR-SOD.pdf	Already clarified vide S. N. 122 of clarification dated 03-02-2022 Please follow Tender condition																																																																																																																																																																																																																																		
45	2	VII C	11.2.1	172 of 384	Passenger comfort conditions shall generally be defined according to ASHRAE 55. The HVAC units shall be designed to achieve car internal conditions for external environment conditions as listed in table 11.1 below: However, Contractor shall obtain data with respect to external temperatures and humidity for the last 30 years from Meteorological office for Surat during design phase and shall consider the same as per prevailing best metro rail industry practice after approval of Engineer: Table 11.1 External/internal conditions for HVAC design Note: Provision of humidity control shall be there in the HVAC. Humidity control should be done as per the comfort zone as specified in EN14750-1.	Please find below the ASHRAE weather data for Surat. <table border="1"> <thead> <tr> <th colspan="14">Annual Cooling, Dehumidification, and Enthalpy Design Conditions</th> </tr> <tr> <th rowspan="2">Hottest Month</th> <th rowspan="2">Hottest Month DB Range</th> <th colspan="6">Cooling DB/MCWB</th> <th colspan="6">Evaporation WB/MCDB</th> <th rowspan="2">MCWS/PCWID to 0.4% DB</th> </tr> <tr> <th colspan="2">0.4%</th> <th colspan="2">1%</th> <th colspan="2">2%</th> <th colspan="2">0.4%</th> <th colspan="2">1%</th> <th colspan="2">2%</th> </tr> <tr> <th>(a)</th> <th>(b)</th> <th>(c)</th> <th>(d)</th> <th>(e)</th> <th>(f)</th> <th>(g)</th> <th>(h)</th> <th>(i)</th> <th>(j)</th> <th>(k)</th> <th>(l)</th> <th>(m)</th> <th>(n)</th> <th>(o)</th> <th>(p)</th> </tr> </thead> <tbody> <tr> <td>(2)</td> <td>5</td> <td>6.3</td> <td>38.0</td> <td>22.4</td> <td>36.5</td> <td>22.7</td> <td>35.2</td> <td>23.0</td> <td>28.2</td> <td>31.7</td> <td>27.9</td> <td>31.4</td> <td>27.6</td> <td>31.1</td> <td>1.9</td> <td>0</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="10">Dehumidification DP/MCDB and HR</th> <th colspan="4">Enthalpy/MCDB</th> <th rowspan="2">Hours 8 to 4 & 12.8/20.6</th> </tr> <tr> <th colspan="2">0.4%</th> <th colspan="2">1%</th> <th colspan="2">2%</th> <th colspan="2">0.4%</th> <th colspan="2">1%</th> <th colspan="2">2%</th> </tr> <tr> <th>DP</th> <th>HR</th> <th>MCDB</th> <th>DP</th> <th>HR</th> <th>MCDB</th> <th>DP</th> <th>HR</th> <th>MCDB</th> <th>Enth</th> <th>MCDB</th> <th>Enth</th> <th>MCDB</th> <th>Enth</th> <th>MCDB</th> </tr> <tr> <th>(a)</th> <th>(b)</th> <th>(c)</th> <th>(d)</th> <th>(e)</th> <th>(f)</th> <th>(g)</th> <th>(h)</th> <th>(i)</th> <th>(j)</th> <th>(k)</th> <th>(l)</th> <th>(m)</th> <th>(n)</th> <th>(o)</th> <th>(p)</th> </tr> </thead> <tbody> <tr> <td>(3)</td> <td>27.4</td> <td>23.3</td> <td>30.2</td> <td>27.0</td> <td>22.8</td> <td>29.9</td> <td>26.7</td> <td>22.3</td> <td>29.6</td> <td>91.4</td> <td>32.0</td> <td>89.7</td> <td>31.5</td> <td>88.1</td> <td>31.0</td> <td>107</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="14">Extreme Annual Design Conditions</th> </tr> <tr> <th colspan="3">Extreme Annual WS</th> <th rowspan="2">Extreme Max WB</th> <th colspan="4">Extreme Annual DB</th> <th colspan="7">n-Year Return Period Values of Extreme DB</th> </tr> <tr> <th>1%</th> <th>2.5%</th> <th>5%</th> <th>Mean</th> <th>Standard deviation</th> <th>Min</th> <th>Max</th> <th colspan="2">n=5 years</th> <th colspan="2">n=10 years</th> <th colspan="2">n=20 years</th> <th colspan="2">n=50 years</th> </tr> <tr> <th>(a)</th> <th>(b)</th> <th>(c)</th> <th>(d)</th> <th>(e)</th> <th>(f)</th> <th>(g)</th> <th>(h)</th> <th>(i)</th> <th>(j)</th> <th>(k)</th> <th>(l)</th> <th>(m)</th> <th>(n)</th> <th>(o)</th> <th>(p)</th> </tr> </thead> <tbody> <tr> <td>(4)</td> <td>5.5</td> <td>4.7</td> <td>3.9</td> <td>29.8</td> <td>12.0</td> <td>40.9</td> <td>2.1</td> <td>1.4</td> <td>10.5</td> <td>42.0</td> <td>9.2</td> <td>42.8</td> <td>8.1</td> <td>43.6</td> <td>6.6</td> <td>44.7</td> </tr> </tbody> </table> <p>The data in the Annual Cooling, Dehumidification and Enthalpy Design conditions is to be interpreted as follows: -The dry bulb temperature corresponding to 2% annual cumulative frequency of occurrence is 35.2°C; the coincident wet bulb temperature at this dry bulb is 23°C -The dry bulb temperature corresponding to 0.4% annual cumulative frequency of occurrence is 38°C; the coincident wet bulb temperature at this dry bulb is 22.4°C ASHRAE GPC 23 recommends use of 0.4% data => in this case, the design ambient to consider would be 38°C. If we look at extreme annual dry bulb temperatures, the max is 40.9°C.</p>	Annual Cooling, Dehumidification, and Enthalpy Design Conditions														Hottest Month	Hottest Month DB Range	Cooling DB/MCWB						Evaporation WB/MCDB						MCWS/PCWID to 0.4% DB	0.4%		1%		2%		0.4%		1%		2%		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(2)	5	6.3	38.0	22.4	36.5	22.7	35.2	23.0	28.2	31.7	27.9	31.4	27.6	31.1	1.9	0	Dehumidification DP/MCDB and HR										Enthalpy/MCDB				Hours 8 to 4 & 12.8/20.6	0.4%		1%		2%		0.4%		1%		2%		DP	HR	MCDB	DP	HR	MCDB	DP	HR	MCDB	Enth	MCDB	Enth	MCDB	Enth	MCDB	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(3)	27.4	23.3	30.2	27.0	22.8	29.9	26.7	22.3	29.6	91.4	32.0	89.7	31.5	88.1	31.0	107	Extreme Annual Design Conditions														Extreme Annual WS			Extreme Max WB	Extreme Annual DB				n-Year Return Period Values of Extreme DB							1%	2.5%	5%	Mean	Standard deviation	Min	Max	n=5 years		n=10 years		n=20 years		n=50 years		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(4)	5.5	4.7	3.9	29.8	12.0	40.9	2.1	1.4	10.5	42.0	9.2	42.8	8.1	43.6	6.6	44.7	Already clarified vide S. 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46	2	VII C		172 of 384	<table border="1"> <thead> <tr> <th>Weather Conditions</th> <th>External Conditions</th> <th>Internal Conditions</th> </tr> </thead> <tbody> <tr> <td>Summer</td> <td>44°C Dry Bulb, 33% RH</td> <td>25°C Dry Bulb, 60% RH</td> </tr> <tr> <td>Monsoon</td> <td>32°C Dry Bulb, 92 % RH</td> <td>25°C Dry Bulb, 60% RH</td> </tr> <tr> <td>Winter</td> <td>11°C</td> <td>18°C</td> </tr> </tbody> </table>	Weather Conditions	External Conditions	Internal Conditions	Summer	44°C Dry Bulb, 33% RH	25°C Dry Bulb, 60% RH	Monsoon	32°C Dry Bulb, 92 % RH	25°C Dry Bulb, 60% RH	Winter	11°C	18°C	<p>Finally, it is expected that the temperature will reach 44.7°C only once every 50 years. Note that this data is the result of temperature data collection over the period between 1989 to 2010. Therefore, we would recommend to the design ambient temperature at 44°C since it already represents a significant overdesign considering the actual data (even including for the effect of global warming). As per Clause 11.2.4 and 15.21.1 (iii) (b) Table 15.3 the design external Monsoon condition mentioned in clause 11.2.1 (Table 11.1) to achieve 25°C / 60%Rh internal conditions is 32°C 92 % RH and not 32°C 85 % RH. Please confirm which clause is correct. Hence we propose to modify the clause as follows :- Passenger comfort conditions shall generally be defined according to ASHRAE 55. The HVAC units shall be designed to achieve car internal conditions for external environment conditions as listed in table 11.1 below: However, Contractor shall obtain data with respect to external temperatures and humidity for the last 30 years from Meteorological office for Surat during design phase and shall consider the same as per prevailing best metro rail industry practice after approval of Engineer: Table 11.1 External/internal conditions for HVAC design</p> <table border="1"> <thead> <tr> <th>Weather Conditions</th> <th>External Conditions</th> <th>Internal Conditions</th> </tr> </thead> <tbody> <tr> <td>Summer</td> <td>44°C 44°C Dry Bulb, 33% RH</td> <td>25°C Dry Bulb, 60% RH</td> </tr> <tr> <td>Monsoon</td> <td>32°C Dry Bulb, 92% 85% RH</td> <td>25°C Dry Bulb, 60% RH</td> </tr> <tr> <td>Winter</td> <td>11°C</td> <td>18°C</td> </tr> </tbody> </table> <p>Humidity control should be</p>	Weather Conditions	External Conditions	Internal Conditions	Summer	44°C 44°C Dry Bulb, 33% RH	25°C Dry Bulb, 60% RH	Monsoon	32°C Dry Bulb, 92% 85% RH	25°C Dry Bulb, 60% RH	Winter	11°C	18°C	Already clarified vide S. N. 611 of clarification dated 03-02-2022 Please follow Tender condition																																																																																																																																																																																																										
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S. N.	Part	Section	Clause No. / Item No.	Page No.	Bid Condition	Bidder's Query	GMRC's Response/ Clarification dated 11-02-2022
47	2	VII C	11.7.1	178 of 384	The condenser and evaporator coils shall be of copper having copper fins. Condenser fins spacing shall be no closer than 3mm and evaporator fins shall be 2.5 mm or more apart, in order to prevent dirt/dust build up. Thickness of fins shall be minimum 0.2 mm. The coil assembly shall be mounted in a stainless steel / copper alloy frame. Cleaning of condenser and evaporator coils should not be required earlier than 6 months after putting the train into revenue service. The proposed frequency of cleaning of coils Surat climate shall be furnished.	Condenser and evaporator coils are limited to only copper. Material of condenser and evaporator coil should be open. The condenser and evaporator coils shall be of copper having copper fins or with pre-coated aluminium. The coating shall ensure specified cleaning periodicity and corrosion resistance. Hence, we request to modify this clause as follows :- <i>The condenser and evaporator coils shall be of copper having copper fins or with Pre coated Aluminium. Condenser fins spacing shall be no closer than 3mm and evaporator fins shall be 2.5 mm or more apart, in order to prevent dirt/dust build up. Thickness of fins shall be minimum 0.2 mm. The coil assembly shall be mounted in a stainless steel / copper alloy frame. Cleaning of condenser and evaporator coils should not be required earlier than 6 months after putting the train into revenue service. The proposed frequency of cleaning of coils Surat climate shall be furnished.</i>	Already clarified vide S. N. 621 of clarification dated 03-02-2022 Please follow Tender condition
48	2	VII C	11.10.6	180 of 384	Temperature sensors for the return air and other controls shall be solid state. The controls for the two air conditions shall be coordinated such that as the cooling load reduces, the unit can be unload in stages from full to half capacity to one unit being shut off except for the ventilation blower.	To comply to ERTS clause 11.2.5, the HVAC units need to be independently controlled by dedicated controller. Also, there maybe 4 levels of cooling by using 4 compressors per HVAC unit for temperature regulation with optimum energy efficiency. Further, as we are using diagonal duct concept to cater the airflow throughout the length of the car, the independent control helps in having better temperature regulation and better passenger comfort. Therefore, it is not recommended to have any kind of co-ordination between the two HVAC units of a car. Hence, we request to modify this clause as follows :- <i>Temperature sensors for the return air and other controls shall be solid state. The controls for the two air conditions shall be coordinated such that as the cooling load reduces, the unit can be unload in stages from full to half capacity to one unit being shut off except for the ventilation blower.</i>	Already clarified vide S. N. 626 of clarification dated 03-02-2022 Please follow Tender condition
49	2	VII C	11.10.14	181 of 384	Compressor unloading device shall be provided to cater for part load conditions and relief of high refrigerant pressure due to the ambient temperature exceeding the tunnel temperature.	Unloading devices such as hot gas bypass valves are not recommended to be used for HVAC units which have multiple compressors per refrigerant circuit. Further, HVAC unit with hot gas bypass feature will be very inefficient i.e. the COP will be too bad for unit using this feature. Hence, we request to delete this clause :- Compressor unloading device shall be provided to cater for part load conditions and relief of high refrigerant pressure due to the ambient temperature exceeding the tunnel temperature.	Already clarified vide S. N. 627 of clarification dated 03-02-2022 Please follow Tender condition
50	2	VII C	11.10.15	181 of 384	In the event that all conditions revert to normal without malfunction in the system, the unloading device shall be reset and the system shall load up automatically.	Unloading devices such as hot gas bypass valves are not recommended to be used for HVAC units which have multiple compressors per refrigerant circuit. Further, HVAC unit with hot gas bypass feature will be very inefficient i.e. the COP will be too bad for unit using this feature. Hence, we request to delete this clause :- In the event that all conditions revert to normal without malfunction in the system, the unloading device shall be reset and the system shall load up automatically.	Already clarified vide S. N. 628 of clarification dated 03-02-2022 Please follow Tender condition
51	2	VII C	6.13.20	106 of 384	Following minimum SIL levels at train level shall be complied for the brake system. Emergency brakes SIL 4 Service brake SIL 2 Train Speed information SIL2 Holding Brake application and feedback SIL2 WSP Control SIL3 The contractor shall submit relevant certifications for the SIL levels as above as per EN standard	As per Bidder's experience, The SIL requirement for the service brake, Train speed information & Holding Brake application and feedback are usually SIL 0 and for WSP Control is SIL 2. Hence, the bidder requests to add the additional statement as highlighted below. Bidder requests to amend the Clause as follows: Following minimum SIL levels at train level shall be complied for the brake system. Emergency brakes SIL 4 Service brake SIL 2 Train Speed information SIL2 Holding Brake application and feedback SIL2 WSP Control SIL3 The contractor shall submit relevant certifications for the SIL levels as above as per EN standard. The need for SIL 2 of Service brake, train speed information and holding Brake application and feedback shall be evaluated through Hazard analysis during the design phase of the project. Any change in the SIL level shall be submitted for the customer acceptance or otherwise of the same by the Engineer,	Already clarified vide S. N. 596 of clarification dated 03-02-2022 Please refer S. N. 32 of Addendum No. 3 dated 03-02-2022.

S. N.	Part	Section	Clause No. / Item No.	Page No.	Bid Condition	Bidder's Query	GMRC's Response/ Clarification dated 11-02-2022
52	2	VII C	4.6.1	67 of 384	The mechanical strength of the car body structure shall comply with the requirements of EN 12663 Category PIII except for the compressive load, which shall be 1200kN applied at the end of the car body at the centreline of the coupler, and shall be compatible in respect of crashworthiness. The tensile force shall be changed in the same ratio as the compressive force in EN12663.	Based on the project experience for Metro application with dedicated tracks, compliance to EN 12663 PIII category would lead to optimum design in meeting all requirements including crash as defined in the standard and will avoid over designing of the rolling stock. Bidder requests to rephrase the Clause as follows: The mechanical strength of the car body structure shall comply with the requirements of EN 12663 Category PIII except for the compressive load, which shall be 1200kN applied at the end of the car body at the centreline of the coupler, and shall be compatible in respect of crashworthiness. The tensile force shall be changed in the same ratio as the compressive force in EN12663.	Already clarified vide S. N. 152 of clarification dated 03-02-2022 Please follow Tender condition
53	2	VII C	10.10.6 vii	162 of 384	The memory module used for the storage of data shall be removable to allow playback on other common commercially available Windows 7 or higher operating system computer	Bidder proposes to allow Event recorder crash proof Memory module data to be downloaded on another healthy Event recorder. The Bidder proposes to amend the Clause as follows: "The memory module used for the storage of data shall be removable to allow downloading of data on another healthy Event recorder or allow playback on other common commercially available Windows 7 or higher operating system computer"	Already clarified vide S. N. 384 of clarification dated 03-02-2022 Please follow Tender condition
54	2	VII C	12.2.12	185 of 384	A minimum provision of spare 10%relays, contactors, MCBs terminal blocks and contacts shall be made in the respective circuits and at their locations	Bidder requests to rephrase the clause as follows: "A minimum space provision for 10% relays, contactors, MCBs terminal blocks and contacts shall be made in the respective circuits and at their locations."	Already clarified vide S. N. 444 of clarification dated 03-02-2022 Please follow Tender condition
55	2	VII C	13.7.1 x	211 of 384	Eight programmable coloured LCD with LED backlit based route maps (at least 37 inches type screen size) shall be provided above saloon door	Bidder requests to revise the Clause as follows: Eight Four (04) programmable coloured LCD with LED backlit based route maps for the respective lines shall be provided above each alternate saloon door inside the car and Four (04) nos. sticker coloured route map with protective cover (like polycarbonate etc.) shall be provided on remaining saloon door inside the car (at least 37 inches type screen size) The size of LCD DRM / Sticker shall be such that it covers the maximum area of door coving panel) shall be provided above saloon door.-	Already clarified vide S. N. 461 of clarification dated 03-02-2022 Please follow Tender condition
56	2	VII C	14.1.7	222 of 384	The use of asbestos, lead based pigment paints, lead, urethane foam, polystyrene and viton rubber shall not be allowed.	From Eco-design point of view there is no risk in using polyurethane foam. Special care is only to be taken during manufacturing of polyurethane foam. Also, Lead is used in Soldering of PCBs, which is requested to be allowed. Bidder requests to amend the Clause as follows: The use of Asbestos and lead based pigment paints, lead, urethane foam, polystyrene and viton rubber shall not be allowed. The use of lead, urethane foam, polystyrene, and Viton rubber shall be limited to minimum	Already clarified vide S. N. 464 of clarification dated 03-02-2022 Please follow Tender condition
57	2	VII C	15.16.1	256 of 384	A complete set of brake equipment comprising all items of equipment forming the Brake System shall be assembled and shall be subjected to brake system bed test. These shall include the Brake Controller and interface with ATO equipment and a transceiver to measure force at the push rod of Brake unit. A complete series of tests shall be carried out on this rig under all service conditions to demonstrate the function of the brake system as a whole, both in manual and auto modes.	Brake system level simulation at basic unit level will be done simulating brake signal interfaces of TCMS/hardware in a dedicated test bench. It is considered as type test. Reservoir is used to simulate brake cylinder volume and corresponding brake cylinder pressure. Tread brake unit will be tested for brake force in a dedicated test bench for various pressures and to simulate wear of block/wheel for checking the functionality of automatic slack adjustment. Complete series of test will be done either in manual or auto mode. Combined test bench will increase complexity and limit checking all the functionalities of brake controls and bogie brake apart from being highly expensive. As a standard and best engineering practice, Tread brake unit will always be tested in dedicated test bench for checking the functionality of automatic slack adjustment in series manufacturing. The clause may please be suitably changed inline with the above recommendation	Already clarified vide S. N. 498 of clarification dated 03-02-2022 Please refer S. N. 59 of Addendum No. 3 dated 03-02-2022.
58	2	VII C	3.20.1	46 of 384	Kinematic Envelope on tangent level track for At-grade, Elevated sections and Underground section shall be referred to as given in Schedule of Dimension(SOD), enclosed in Appendix TE. No part of any car shall infringe the respective Kinematic Envelope, under any circumstance whether empty or fully loaded, inflated or deflated air springs on main line and Depots at all train speeds and wind speed up to 120 kmph on At-grade & Elevated corridors.	In general across India, trains are designed with wind speed of 100 kmph. Using the practical wind speed of 100 kmph will avoid the over designing. Bidder requests to amend the Clause as follows: Kinematic Envelope on tangent level track for At-grade, Elevated sections and Underground section shall be referred to as given in Schedule of Dimension(SOD), enclosed in Appendix TE. No part of any car shall infringe the respective Kinematic Envelope, under any circumstance whether empty or fully loaded, inflated or deflated air springs on main line and Depots at all train speeds and wind speed up to 120 kmph 100 kmph on At-grade & Elevated corridors.	Already clarified vide S. N. 121 of clarification dated 03-02-2022 Please follow Tender condition
59	2	VII C	3.11.1	42 of 384	The traction sub-systems mounted on the under-frame will be designed to permit propulsion of the train at 10 kmph through water up to a depth of 75mm above rail level. Traction sub-systems shall be made splash proof in accordance with International Standards. Reference Clause 5.4.3: The minimum clearance of bogie-mounted equipment from rail level for a fully loaded car under worst conditions* (*worst condition means wheels with maximum tread wear and primary springs with maximum deflection) shall not be less than 65 mm in static condition and 50 mm in dynamic condition.	These clauses are contradictory in terms of clearance above rail level, as traction subsystem (assuming gearbox) is the lowest bogiemounted equipment. 75mm of water above rail level and clearance of 65 mm above rail level means, a part of gearbox will remain submerged in the water. Bidder requests to rephrase the Clause as follows: 3.11.1 The traction subsystems / equipment mounted on the under-frame will be designed to permit propulsion of the train at 10kmph through water up to a depth of 75 50mm above rail level.	Already clarified vide S. N. 119 of clarification dated 03-02-2022 Please follow Tender condition

S. N.	Part	Section	Clause No. / Item No.	Page No.	Bid Condition	Bidder's Query	GMRC's Response/ Clarification dated 11-02-2022
60	2	VII C	4.10.8	72 of 384	All the couplers (Auto, semi-permanent) shall have the shear-off functionality. Wearing parts/plates of couplers shall give a service life of minimum fifteen years	Bidder request to have the shear-off only for Auto-coupler & semi-permanent coupler without shear-off functionality while meeting EN15227. Bidder requests to amend the Clause as follows: All the coupler (Auto coupler & Semi permanent coupler) shall have the shear-off functionality. Supplier can propose a different design with not all coupler having shear off functionality but meeting performance as per EN 15227. Wearing parts / plates of the gangway and couplers shall give a service life of minimum fifteen twelve years.	Already clarified vide S. N. 178 of clarification dated 03-02-2022 Please follow Tender condition
61	2	VII C	4.14.6	80 of 384	Grab poles and rails in the DM and T car shall be provided to cover maximum number standing passengers. As a minimum 3 rows of longitudinal bars shall be provided throughout the saloon	Since the cars are of 2.9m width, Bidder requests to amend the Clause as follows: "As a minimum 3 2 rows of longitudinal bars, making sure the maximum number of standing passengers have support shall be provided throughout the saloon."	Already clarified vide S. N. 182 of clarification dated 03-02-2022 Please follow Tender condition
62	2	VII C	5.15.5	96 of 384	The Contractor shall submit the detail of ultrasonic testing of powered & non- powered axles. The detail shall include the testing procedure and pattern used as reference for this test, which shall be used by Employer's maintenance staff/personal.	Magnetic Particle Inspection (MPI) and Dye Penetrant Test (DP), as NDT proposed during overhaul. The use of Ultrasonic testing from the axle ends, using far end and near end scanning techniques is not appropriate to ensuring axle integrity. This method would require a significant crack depth before a detectable defect could be found with reasonable certainty. The axle end equipment and bearing end cap require to be removed to undertake this testing. This creates the risk of refitting the equipment incorrectly (leading to Axle end earth equipment failure and Journal bearing failure). This risk is seen as greater than the actual risk the test is trying to mitigate. Magnetic Particle Inspection (MPI) should be undertaken at overhaul. This method can find much smaller cracks with a very high level of probability. Therefore, MPI at overhaul will control the risk of defects at axle. Dye Penetrant Test (DP) will enable to detect any line cracks externally initiated on the part. Bidder requests to amend the Clause as follows: The Contractor shall submit the detail of ultrasonic testing Magnetic Particle Inspection (MPI) and Dye Penetrant Test (DP) of powered and nonpowered axles. The detail shall include the testing procedure and pattern used as reference for this test, which shall be used by Employer's maintenance staff.	Already clarified vide S. N. 226 of clarification dated 03-02-2022 Please follow Tender condition
63	2	VII C	10.1.11	150 of 384	The cables which are intended to be used in emergency circuit for alarms and communication shall have intrinsic fire resistant property in compliance with EN 50200 for PH120 and EN 50289.	Based on bidder's experience PH120 cables for communication circuits are not available in the market, however the optimum performance can be achieved by following the standards. Bidder suggests to rephrase the clause as follows: 10.1.14 - " The cables which are intended to be used in emergency circuit for alarms and communication shall have intrinsic fireresistant properties in compliance with EN 50200 for PH120 EN 45545 and EN 50289."	Already clarified vide S. N. 354 of clarification dated 03-02-2022 Please follow Tender condition
64	2	VII C	11.4.2	177 of 384	Each unit shall be arranged on an integral stainless steel (SS316L) and all environment exposed frames/plates/sheets including bottom base sheet, removable from the car as a single complete module.	Housing material option to be provided with SS 304 as this already being used in many Indian Metro projects. Bidder requests to amend the Clause as follows: Each unit shall be arranged on an integral stainless steel (SS316L SS304) and all environment exposed frames/plates/sheets including bottom base sheet, removable from the car as a single complete module.	Already clarified vide S. N. 429 of clarification dated 03-02-2022 Please follow Tender condition
65	2	VII C	15.9.8	253 of 384	One shell out of every 4 bare shells, to be randomly selected by the Engineer, shall be subjected to water tightness test as per an agreed procedure based on IEC 61133.	Bidder propose to rephrase the clause as follows: One shell out of every 4 bare shells, to be randomly selected by the Engineer, shall be subjected to water tightness test as per an mutually agreed procedure based on IEC 61133.	Already clarified vide S. N. 495 of clarification dated 03-02-2022 Please follow Tender condition
66	2	VII C	6.2.13	100 of 384	The compressor shall be designed to achieve a minimum of 12000 hours of running time between overhauls. Routine maintenance shall not be required at a frequency more than once per year	Overhaul is dependent on operating hours as well as the years of operations. Bidder requests to amend the Clause as follows: The compressor shall be designed to achieve a minimum of 12000 hours of running time or 8 years between overhauls. Routine maintenance shall not be required at a frequency more than once per year	Already clarified vide S. N. 232 of clarification dated 03-02-2022 Please follow Tender condition
67	2	VII C	7.2.3	117 of 384	All doors on the train shall fully open within 2.0 to 2.5 seconds from initiation of the open door command including response time.	Bidder proposes 2.5 to 3 seconds from initiation of the open-door command based on hardwire connection	Already clarified vide S. N. 292 of clarification dated 03-02-2022 Please follow Tender condition
68	2	VII C	7.2.1 xiv	115 of 384	The gap between the carbody exterior and interior leaves of the door panel shall not exceed 6mm (4+ 2, - 0) and packing used shall have service life of at least 35 years.	Bidder requests to amend the Clause as follows: The gap between the carbody exterior and interior leaves of the door panel shall not exceed 7 +/- 1 mm (4+ 2, - 0) and packing used shall have service life of at least 35 years.	Already clarified vide S. N. 291 of clarification dated 03-02-2022 Please follow Tender condition
69	2	VII C	10.5.7	156 of 384	Capacitive-touch screen based VDU or better shall be provided as approved by the Engineer.	Bidder proposes to amend the Clause as follows: " Resistive / Capacitive-touch screen based VDU or better shall be provided as approved by the Engineer."	Already clarified vide S. N. 374 of clarification dated 03-02-2022 Please follow Tender condition
70	2	VII C	12.10.2	196 of 384	A Mode Selector Switch shall be provided on the train operator's console and selection of mode shall be by longitudinal, fore and aft movement.	Bidder requests to amend the Clause as follows: "A Mode Selector Switch shall be provided on the train operator's console and selection of mode shall be by rotary /longitudinal, fore and aft movement."	Already clarified vide S. N. 452 of clarification dated 03-02-2022 Please follow Tender condition

S. N.	Part	Section	Clause No. / Item No.	Page No.	Bid Condition	Bidder's Query	GMRC's Response/ Clarification dated 11-02-2022
71	2	VII C	12.4.15	188 of 384	The safety relay shall be selected to achieve the life expectancy for anticipated number of operations in 35 years. The relevant calculations shall be submitted to the Engineer during design stage. The other relays and contactors shall be selected to achieve a life expectancy of minimum 15 years before replacement of wear parts, adjustment or testing. The contact rating shall account for the anticipated number of operations over 15 years, system voltage, power factor or time constant of the load, switching current, nature of load separation, any use of contact in series, mounting orientation.	Relay's life is dependent on the circuit in which it is placed as current, voltages and cycles may vary from circuit to circuit. Bidder requests to amend the Clause as follows: 12.4.15 The safety relay shall be rated to achieve the life expectancy for anticipated number of operations in 35 years or approved by Engineer during design stage . The relevant calculations shall be submitted to the Engineer during design stage. The other relay and contactor shall be rated to achieve a life expectancy of minimum 15 years or approved by Engineer during design stage before replacement of wear parts, adjustment or testing. The contact rating shall account for the anticipated number of operations over 15 years or approved by Engineer during design stage , system voltage, power factor or time constant of the load, switching current, nature of load separation, any use of contact in series, mounting orientation.	Already clarified vide S. N. 445 of clarification dated 03-02-2022 Please follow Tender condition
72	2	VII C	12.4.16	188 of 384	All push buttons and indicators shall be uniform in style and shall be arranged, size, label properly as far as possible all push buttons and indicator lamps shall be of the same manufacturer. All push button shall be of push to light type.	Push buttons which are necessary for indication, will be aligned during the design phase. Bidder requests to rephrase the clause as follows: 12.4.16 All push buttons and indicators shall be uniform in style and shall be arranged, size, label properly. As far as possible all push buttons and indicator lamps shall be of the same manufacturer. All push button (Wherever required) shall be of push to light type.	Already clarified vide S. N. 446 of clarification dated 03-02-2022 Please follow Tender condition
73	2	VII C	12.4.17	188 of 384	All push buttons, switches and combination push buttons / indication shall have silver plated terminals and contacts. The contact shall be so designed that they will not weld in service when used within their rating and will not bounce closed while the car is in motion.	Based on bidder's experience, silver coated contacts are enough to meet the performance. Bidder requests to amend the clause as follows: 12.4.17 All push buttons switch and combination push buttons / indication shall have silver plated terminals and contacts. The contact shall be so designed that they will not weld in service when used within their rating and will not bounce closed while the car is in motion.	Already clarified vide S. N. 447 of clarification dated 03-02-2022 Please follow Tender condition
74	2	VII C	12.7.1	190 of 384	All electrical circuits shall be protected by fast acting, 10kA fault current rated MCB's	Based on bidder's experience, the fault current in auxiliary supply system is always <6KA. Bidder requests to amend the Clause as follows: 12.7.1 All electrical circuits shall be protected by fast acting, 10kA 6kA fault current rated MCBs.	Already clarified vide S. N. 448 of clarification dated 03-02-2022 Please follow Tender condition
75	2	VII C	14.2.1 (i)	222 of 384	Steel Castings - BS 3100 (grade 592) or equivalent international standard	BS 3100 is withdrawn & replaced by BS EN 10293. Bidder request to update the clause with latest standard BS EN 10293	Already clarified vide S. N. 466 of clarification dated 03-02-2022 Please follow Tender condition
76	2	VII C	14.11.7	236 of 384	Insofar as is practicable safety circuits shall be run direct to apparatus and not to terminal bars. Where it is essential that intermediate terminals be used, (for example, circuits which pass through inter-car jumpers) the terminals shall be covered and separated from others terminals. All safety circuit cables shall be coloured yellow.	The cables shall be as per EN 50264 and EN50306. We request to use yellow coloured cable markers for safety circuits. Bidder requests the clause to be amended as follows: i. Insofar as practicable safety circuits shall be run direct to apparatus and not to terminal bars. Where it is essential that intermediate terminals be used, (for example, circuits which pass through inter-car jumpers) the terminals shall be covered and separated from others terminals. All safety circuit cables shall be appropriately identified by using yellow coloured cable markers .	Already clarified vide S. N. 473 of clarification dated 03-02-2022 Please follow Tender condition
77	2	VII C	2.5.8	16 of 384	The Contractor shall prepare a Fire Safety Design Report for review and acceptance by the Engineer/Employer. This shall be submitted within 2 months of Commencement Date and revised and updated for the completion of the preliminary, pre-final and final design stages. The design and materials used in the cars shall conform to fire safety requirements of EN 45545 Part 1 to 7 (Category 4-A, Hazard level HL3) latest editions as a minimum or better international standards applicable for similar Metro for underground operations with front evacuation, subject to the acceptance of the Engineer/Employer.	Based on bidder's experience not all materials in market are complied to HL3. Bidder requests to rephrase the Clause as follows: The Contractor shall prepare a Fire Safety Design Report for review and acceptance by the Engineer. This shall be submitted within 2 months of Commencement Date and revised and updated for the completion of the preliminary, pre-final and final design stages. Materials used in the cars shall conform to fire safety requirements of EN 45545 part 1 to 7 (Category 4-A, Hazard level HL3) latest editions as a minimum or better international standard applicable for similar Metro for underground operations with front evacuation, subject to the acceptance of the Engineer. Any deviation shall be approved by the Engineer	Already clarified vide S. N. 93 of clarification dated 03-02-2022 Please follow Tender condition
78	2	VII C	5.4.10	90 of 384	The design life of secondary suspension air bags (all inclusive) shall not be less than 12 years. The air bags and its components shall not crack/shear/balloon/ burst or deteriorate in its performance during its design life.	Based on bidder's experience, design life of 12 years would be difficult to achieve, however bidder can deploy a monitoring program to check whether the life can be extended to 12 years. Bidder proposes to amend the Clause as follows: The design life of secondary suspension air bags (all inclusive) shall not be less than 12 10 years. The air bags and its components shall not crack / shear / balloon / burst or deteriorate in its performance during its design life.	Already clarified vide S. N. 206 of clarification dated 03-02-2022 Please follow Tender condition
79	2	VII C	6.7.4	102 of 384	All branches from the main reservoir pipe or control system shall be fed via self-locking cocks (coloured according to the corresponding pipe colour) with or without vent and electrical switches as appropriate. Magnet valves, reducing valves, check valves, silencer and drain plugs etc. shall be incorporated as required.	Bidder requests to amend the Clause as follows: All branches from the main reservoir pipe or control system shall be fed via self locking Isolation cocks...	Already clarified vide S. N. 247 of clarification dated 03-02-2022 Please follow Tender condition
80	2	VII C	6.26	113 of 384	Engineer shall be able to adjust/change Brake cylinder pressure and other output parameters of Brake System. Any hardware/software tool required for this purpose shall also be provided under quoted cost as per GA5 list.	Bidder requests to delete this clause. Adjusting/changing brake cylinder pressure and other parameters of the brake system is not considered to be safe and should be done by the OEM/Bidder.	Already clarified vide S. N. 288 of clarification dated 03-02-2022 Please follow Tender condition

S. N.	Part	Section	Clause No. / Item No.	Page No.	Bid Condition	Bidder's Query	GMRC's Response/ Clarification dated 11-02-2022
81	2	VII C	8.9.8	137 of 384	Brake resistor shall be naturally cooled and may be mounted under the motor cars. If they are located on the roof, precautions must be taken against overheating. Adequate heat shields shall be provided to protect the car structure. Resistor design shall be based on a non-receptive line.	Naturally cooled brake resistors will of bigger size and needs more space to accommodate. Having 03 car train we find the shortage of space to accommodate components underslung. Bidder requests to change the Clause as follows: "Brake resistor shall be naturally or forced cooled and may be mounted under the motor cars. If they are located on the roof, precautions must be taken against overheating. Adequate heat shields shall be provided to protect the car structure. Resistor design shall be based on a non-receptive line"	Already clarified vide S. N. 335 of clarification dated 03-02-2022 Please follow Tender condition
82	2	VII C	12.2.1	184 of 384	The status of relevant equipment, MCBs etc. shall be relayed to Signalling/OCC and shall have remote control facility to reset the MCBs as decided by the Engineer during design stage.	Bidder requests to rephrase the Clause as follows: The status of relevant equipment, MCBs etc. shall be relayed to Signalling / OCC and shall have remote control facility to reset the MCBs equipment as decided by the Engineer during design stage.	Already clarified vide S. N. 440 of clarification dated 03-02-2022 Please follow Tender condition
83	2	VII C	6.13.21	106 of 384	The speed measurement devices and couplings required for measurement of train speed in a fail safe manner by the Signalling and Train Control Contractor shall be installed on one non powered axle in 3 car train (DM+T+DM) which shall be: i) not used for service brake application and; ii) used for emergency brake application, whenever required. This shall be finalized by the Contractor during finalization of interface with signaling Contractor. In case signaling Contractor is not yet finalized by Employer then the design shall be finalized in consultation and with the approval of the Engineer. The train braking system shall meet the specified braking performance requirements with the above considerations.	Bidder requests to amend the Clause as follows : The speed measurement devices and couplings required for measurement of train speed in a fail-safe manner by the Signalling and Train Control Contractor shall be installed on one non-powered axle in each 3-car unit (DM+T+DM) which shall be: i. not used for service brake application if deemed necessary by brake performance and; ii. used for emergency brake application, whenever required. This shall be finalized by the Contractor during finalization of interface with signaling Contractor. In case signaling Contractor is not yet finalized by Employer then the design shall be finalized in consultation and with the approval of the Engineer. The train braking system shall meet the specified braking performance requirements with the above considerations.	Already clarified vide S. N. 262 of clarification dated 03-02-2022 Please follow Tender condition
84	2	VII C	10.12.1	164 of 384	General The Vehicle Control Circuit shall be suitably designed to ensure that Energy Consumption values at specified points are measured, recorded and made easily retrievable. The accuracy and integrity of these measurements shall be specifically ensured as the Employer intends to use the data for getting carbon credits. The measurements shall be: i. Made independently at Current Collector, Inverter Unit, Auxiliary Supply Unit and HVAC levels, ii. Made separately for traction, coasting and regeneration modes for each train, iii. Linked with Crew IDs (in non-UTO mode), iv. Segregable between mainline and depot consumptions, v. Time stamped every 5 seconds, vi. Stored in TCMS memory for 60-day period, vii. Retrievable on VDU as cumulative/integrated values with advanced filtering option.	The contribution of HVAC loads to size the auxiliary power supply (APS) unit is more than 85% of the rated capacity of the APS. So, the measurement at APS level provides good enough picture of the energy consumed for the HVAC units of the train. Further, the loads other than HVAC on the APS are fixed loads i.e. air compressor and traction auxiliary fans. The consumption of these other loads is constant. Hence, the TCMS can deduct the consumption of these other loads based on their operational status and recorded time of operation, to get the energy consumption figures for HVAC for any specific time period. If energy meters or equivalent provision is made at HVAC unit level, it will mean additional electronics and parts which would lead to not only increase in one time cost, but also increase the LCC, reduce the reliability of complete system (due to frequent interventions) and cost of spares. Bidder requests to amend the Clause as follows: The measurements shall be: <i>i. Made independently at Current Collector, Inverter Unit and Auxiliary Supply Unit and HVAC levels,</i>	Already clarified vide S. N. 407 of clarification dated 03-02-2022 Please follow Tender condition
85	2	VII C	11.2.6	173 of 384	Air Discharge Velocities: The air velocities inside ducts shall not cause excessive noise and discomfort to passengers in saloon occupancy areas, and shall generally follow internationally accepted practices. The air velocities at specified points in the car, as proposed by contractor and reviewed by Engineer, shall not exceed those set out in EN14750 or any equivalent standard. The supply air discharge velocities at any outlet grille/diffuser shall not exceed 4m/s. The air velocity at any point in the car shall not exceed 0.75 m/s. The air velocity within ducts shall not exceed 8m/s. The air intake velocity at the re-circulation and exhaust grilles shall not exceed 3m/s. Details of the Contractor's proposals shall be submitted.	The measurement of air velocity inside the duct is extremely difficult to measure even during the duct mock-up. This is due to no clear definition of measurement points. Further accessing any of the measurement locations within the duct will create gaps or leaks for the airflow resulting in inaccurate measurements. In addition, we have quantifiable parameters to measure the overall comfort of the passenger inside the saloon (thermal comfort, Acoustic/Noise comfort, etc.). Therefore, such requirement for air velocity inside the duct is not required. Bidder proposes to amend the clause as follows: Air Discharge Velocity: - The air velocities at specified points in the car, as proposed by Contractor and reviewed by Engineer, shall not exceed those set out in EN14750. The air velocity at any point in the car shall not exceed 0.75m/s. The air velocity within ducts shall not exceed 8m/s, shall not cause noise or air movement discomfort to passengers, and shall generally follow internationally accepted practice. Suitable acoustic insulation shall be provided to prevent condenser fan noise from entering the car interior through the fresh air system. The air intake velocity at the re-circulation and exhaust grilles shall not exceed 3 m/s. Details of the Contractor's proposals shall be submitted.	Already clarified vide S. N. 419 of clarification dated 03-02-2022 Please follow Tender condition
86	2	VII C	4.3.2 Table 4.1	65 of 384	Minimum Passenger Saloon Headroom: 2100mm	Bidder requests to amend the Clause and provide flexibility as follows: Minimum Passenger Saloon Headroom: 2100mm +/- 50 mm	Already clarified vide S. N. 149 of clarification dated 03-02-2022 Please follow Tender condition

S. N.	Part	Section	Clause No. / Item No.	Page No.	Bid Condition	Bidder's Query	GMRC's Response/ Clarification dated 11-02-2022
87	2	VII C	11.2.9	175 of 384	Tenderers shall indicate the type of filters proposed to be used by them in the bid. The expected pressure drop across the filter shall be furnished. Details of suitable instrumentation to be used for measurement of pressure drop shall be provided in the bid. Two Nos. (One for each depot) of such measuring instruments shall be supplied by the Contractor in each of the two depots under quoted cost as per GA5 list. Pressure drop shall be measured from inside the cars and setting up of measuring instruments shall not take long time, nor need opening of any HVAC or car components	As requested in clause 11.2.14, " <i>Differential pressure measurement across fresh air/return air filter shall be used to send alert to clean/change the filters.</i> ", there is already a request for differential pressure measurement device inside HVAC as a serial part. Therefore, additional pressure measuring device as part of special tools at the depot is not required. Hence we request to delete the Sr. No. 3 of clause 11.17.1 and we also propose to modify this 11.2.15 clause as follows :- <i>Tenderers shall indicate the type of filters proposed to be used by them in the bid. However, the air filter elements shall be washable type, disposable type filter will not be permitted. The air filter shall provide effective filtering between scheduled maintenance without causing significant increase to airflow resistance. The expected pressure drop across the filter shall be furnished. Details of suitable instrumentation used for measurement of pressure drop shall be provided in the bid. Two sets of such tools shall be supplied by the Contractor in each depot. Each type / size of filter shall be interchangeable in the fleet.</i>	Already clarified vide S. N. 426 of clarification dated 03-02-2022 Please follow Tender condition
88	2	VII C	11.4.9	177 of 384	The design shall ensure easy cleaning of the drains, evaporator coils, and condenser coils without need for lifting of HVAC unit from the car roof. Filter replacement, data downloading by PTU, electrical connection cubicle, control panel cubicle LP & HP access valve etc. shall be easily accessible from inside of saloon to the maintenance personnel, but not to the passengers.	It will be extremely difficult to manage accessibility for LP and HP switches from inside the car saloon. As these components are not required to be checked or monitored frequently, we suggest to have accessibility for these switches from the roof. Bidder requests to amend the clause as follows: The design shall ensure easy cleaning of the drains, evaporator coils, and condenser coils without need for lifting of HVAC unit from the car roof. Filter replacement, data downloading by PTU, electrical connection cubicle, control panel cubicle LP & HP access valve etc. shall be easily accessible from inside of saloon to the maintenance personnel, but not to the passengers.	Already clarified vide S. N. 431 of clarification dated 03-02-2022 Please follow Tender condition
89	2	VII C	11.5.2	177 of 384	Adequate sized duct from adjacent AC to the cab shall be routed to the driving cab, control cabinets and driving console. Air turbulators/fan shall be provided in the driving console, signaling cubicles and electrical cabinets to achieve uniform cooling. Air turbulators/fan to be monitored in TCMS.	Because of the convertible cabin solution from GoA2 to GoA4 configuration, it will be difficult to use the Air turbulators installed inside the cabinets in the cabin. Instead, we propose to consider the natural effect of air diffusion (air flows from higher temp. zone to low temp. zone) to maintain acceptable temperature levels inside cubicles and electrical cabinets. Bidder requests to amend the clause as follows: Adequate sized duct from adjacent AC to the cab shall be routed to the driving cab, control cabinets and driving console. Air turbulators/fan Necessary means shall be provided in the driving console, signaling cubicles and electrical cabinets to achieve uniform cooling. Air turbulators/fan to be monitored in TCMS.	Already clarified vide S. N. 432 of clarification dated 03-02-2022 Please follow Tender condition
90	2	VII C	11.10.2	179 of 384	The microprocessor shall have extendable memory permitting logging of faults, Data logs and system events in its memory for sufficiently long durations. The memory shall be based on FIFO system The microprocessor shall have suitable interface with TCMS for data communication and display. Suitable communication shall be provided to permit logged events to a HVAC maintenance terminal. HVAC maintenance terminals along with necessary hardware and software shall be provided to each depots.	There are many controllers which have enough memory to log the faults and exceptional system events for very long time, enough to meet the lifetime of the controller itself. Therefore, we suggest to make this extendable memory requirement as optional. Bidder requests to amend the clause as follows: The microprocessor shall have enough extendable memory to permit permitting logging of faults, Data logs and system events in its memory for sufficiently long durations. The memory shall be based on FIFO system The microprocessor shall have suitable interface with TCMS for data communication and display. Suitable communication shall be provided to permit logged events to a HVAC maintenance terminal. HVAC maintenance terminals along with necessary hardware and software shall be provided to each depots.	Already clarified vide S. N. 434 of clarification dated 03-02-2022 Please follow Tender condition
91	2	VII C	11.10.20	181 of 384	The faults shall be reported to TCMS and OCC shall include but not limited to: (i) Compressor overload thermal cut-out. (ii) Ventilation blower failure. (iii) Saloon over-temperature (rising at 33°C). A sensor shall be provided in each return air grille.	As per clause 11.10.3 (iii), there is one return air temperature sensor inside each HVAC unit for temperature control. There is no provision for any sensor near the return air grille which is on ceiling panel inside car saloon. Bidder requests to amend the clause as follows: The following faults shall be reported to TCMS. i. Compressor overload thermal cut-out. ii. Ventilation blower failure. iii. Saloon over-temperature (temperature inside saloon rising at 33°C). A sensor shall be provided in each return air grille.	Already clarified vide S. N. 438 of clarification dated 03-02-2022 Please follow Tender condition
92	2	VII C	15.21.1 b vii)	259 of 384	Starting Sequence test	In order for these tests to be representative of the reality during revenue service, this test has to be done at train level and not at HVAC unit level because the compressors get started only when there is "start authorization" from the TCMS. Bidder requests to delete this clause: Starting sequence test.	Already clarified vide S. N. 500 of clarification dated 03-02-2022 Please follow Tender condition
93	2	VII C	15.22.3	261 of 384	Fresh air flow rate shall also be verified by using dummy passengers as per full passenger load and measuring interior CO2 levels with doors closed and doors open-close situation in all different types of cars.	By dummy passengers, we understand that these tests are to be carried out using CO2 bottles or CO2 cylinders for CO2 simulation / generation inside the car saloon. Please confirm. Further, as the duct and HVAC design in all cars is conceptually same, we suggest that CO2 tests are carried out only on the car meant for climatic chamber tests. Bidder requests to amend the clause as follows: Fresh air flow rate shall also be verified by using dummy passengers as per full simulating CO2 using CO2 bottles/cylinders corresponding to the CO2 emitted by AW3 passenger load and measuring interior CO2 levels with doors closed and doors open-close situation in all different types of cars the car meant for climatic chamber tests.	Already clarified vide S. N. 502 of clarification dated 03-02-2022 Please follow Tender condition

S. N.	Part	Section	Clause No. / Item No.	Page No.	Bid Condition	Bidder's Query	GMRC's Response/ Clarification dated 11-02-2022
94	2	VII C	15.23.1.4	262 of 384	Functional and running tests (to check functioning of working parts and to measure some important performance parameters). These tests shall also include measurement of conditioned air-delivery, fresh air quantity and power consumption.	The set-up for performing airflow tests is very complicated and these tests require long time for completion. Normally, Such tests are part of type test protocol. Further, the test set-up has to be prepared for each HVAC unit and therefore it is very expensive proposition to build the test set-up for every serial HVAC unit. These tests take lot of time and resources without any value addition as HVAC unit configuration is ensured through robust quality control. Considering the required time and resources for such tests, such kind of checks are not feasible to be part of HVAC unit level routine test protocol. Bidder requests to amend the clause as follows: 15.23.1 HVAC Unit Routine Tests (to be done on all units) (iv) Functional and running tests (to check functioning of working parts and to measure some important performance parameters). These tests shall also include measurement of conditioned air-delivery, fresh air quantity and power consumption.	Already clarified vide S. N. 504 of clarification dated 03-02-2022 Please follow Tender condition
95	2	VII C	15.23.2.2	262 of 384	Checks under HVAC System operation conditions (i) System operation start, (ii) Airflow checks, (iii) Interior Temperature Control checks, (iv) Failure checks using TCMS, (v) Emergency ventilation, (vi) Functioning of smoke detection units.	Airflow measurements at car level are also equally complicated as that of at unit level. Normally, such tests are part of type test protocol. Fresh air has to be measured from the roof, whereas supply air measurement has to be done below the diffusers all along the length of the car. These tests take lot of time and resources without any value addition as HVAC unit and duct configuration are ensured through robust quality control. Considering the required time and resources for such tests, such kind of checks are not feasible to be part of car level routine test protocol. Bidder requests to amend the clause as follows: Checks under HVAC operation conditions (i) System operation start; (ii)- Airflow checks; (iii) Interior Temperature Control checks, (iv) Failure checks using TCMS, (v) Emergency ventilation, (vi) Functioning of smoke detection units.	Already clarified vide S. N. 505 of clarification dated 03-02-2022 Please follow Tender condition
96	2	VII C	5.3.5	89 of 384	All fasteners for bogie mounted equipment or components shall be positively locked. Use of self locking Nuts alone shall not be acceptable. However, self locking nuts with lock washers would be acceptable.	Bidder request to amend the clause as follows : All fasteners for bogie mounted equipment or components shall be positively locked wherever required . Use of self locking Nuts alone shall not be acceptable. However, self locking nuts with lock washers would be acceptable.	Already clarified vide S. N. 199 of clarification dated 03-02-2022 Please follow Tender condition
97	2	VII C	5.3.8	89 of 384	All bogie frames shall be inspected by visual and magnetic particle methods as per instruction and testing plan. The visual and magnetic particle inspection procedures shall be verified by radiographic inspection. A full radiographic inspection shall be performed as per inspection and testing plan during series production.	Bidder request to amend the Clause as follows: All Bogie frames shall be inspected by visual and magnetic particle methods as per instruction and testing plan. The visual and magnetic particle inspection procedures shall be verified by radiographic inspection. A full radiographic inspection shall be performed as per inspection and testing plan during series production.	Already clarified vide S. N. 201 of clarification dated 03-02-2022 Please follow Tender condition
98	2	VII C	5.4.5	90 of 384	Hydraulic dampers of suitable capacity shall be provided symmetrically to control and limit the vertical and lateral oscillation of the car body. The damping factors are to satisfy the provisions given in table 15.1B. The damping factor in vertical mode, by wedge test, when tested using a wedge of 18mm thickness should be between 0.20 and 0.25. The damping factor in lateral mode when measured by "quick release side pull test" should be between 0.30 and 0.40. Suspension will not be considered acceptable if maximum acceleration and spring displacements do not decay within 2-3 cycles.	Bidder request to amend the Clause as follows: Hydraulic dampers of suitable capacity shall be provided symmetrically to control and limit the vertical and lateral oscillation of the car body. The damping factors are to satisfy the provisions given in table 15.1B. The damping factor in vertical mode shall be tested by wedge test, when tested using a wedge of 18mm thickness should be between 0.20 and 0.25. The damping factor in lateral mode when shall be measured by "quick release side pull test" should be between 0.30 and 0.40 . Suspension will not be considered acceptable if maximum acceleration and spring displacements do not decay within 2-3 cycles.	Already clarified vide S. N. 204 of clarification dated 03-02-2022 Please follow Tender condition
99	2	VII C	5.4.12	90 of 384	The primary suspension shall be designed to ensure that the creep amount in 12 years later shall not exceed 5mm under worst condition.	Bidder request to amend the clause as follows: The primary suspension shall be designed to ensure that the creep amount in 12 years 10 years later shall not exceed 5mm under worst condition.	Already clarified vide S. N. 209 of clarification dated 03-02-2022 Please follow Tender condition
100	2	VII C	5.6.1	92 of 384	The mechanical strength of the bogie frame shall comply with the requirements of UIC 615-4, UIC 515-4 or EN 13749 for static test under exceptional loads and fatigue tests. The maximum stress developed under static load shall not exceed 85% of the yield strength of the material. The dynamic effects due to the inertia of the motors and transmission shall also be simulated along with traction and braking forces.	Bidder Request to amend the Clause as follows : The mechanical strength of the bogie frame shall comply with the requirements of UIC 615-4, UIC 515-4 or EN 13749 for static test under exceptional loads and fatigue tests. The maximum stress developed under static load shall not exceed 85% of the yield strength of the material. The acceptance criteria for avoiding any permanent deformation shall also be as per EN 13749 . The dynamic effects due to the inertia of the motors and transmission shall also be simulated along with traction and braking forces.	Already clarified vide S. N. 210 of clarification dated 03-02-2022 Please follow Tender condition
101	2	VII C	5.6.2	92 of 384	The bogie frames shall be able to withstand a longitudinal shock load of 5g without failure. This shall be taken as occurring simultaneously with the fully laden vertical load.	Bidder Request to modify the Clause as follows : The bogie frames shall be able to withstand a longitudinal shock load of 5g for trailer bogie and 3g for motor bogie without failure as per EN 13749 . This shall be taken as occurring simultaneously with the fully laden vertical load.	Already clarified vide S. N. 211 of clarification dated 03-02-2022. Please follow Tender condition.
102	2	VII C	5.9.1	92 of 384	The traction motor shall be bogie frame mounted, complete with suitable drive and suspension . Mounting arrangement shall ensure that under no circumstances traction motor would fall on line during operation. Contractor shall establish during design.	Bidder Request to amend the Clause as follows : The traction motor shall be bogie frame mounted, complete with suitable drive and suspension . Mounting arrangement shall ensure that under no circumstances traction motor would fall on line during operation. Contractor shall establish during design.	Already clarified vide S. N. 215 of clarification dated 03-02-2022. Please follow Tender condition.

S. N.	Part	Section	Clause No. / Item No.	Page No.	Bid Condition	Bidder's Query	GMRC's Response/ Clarification dated 11-02-2022
103	2	VII C	5.9.2	93 of 384	Traction motors and drives shall be easily removable in a workshop, after disconnection of cables and fixings without the need to disturb the axle. Individual motors shall be removable by a vertical lift after the bogie has been removed from the vehicle body.	Clause 5.5.6 states: Wheels, axles, drive gears and axle bearings shall be assembled on axles by interference fit method. Bidder understands drives is also called as - drive gears or gearbox - kindly confirm bidders understanding. Bidder requests to amend the Clause as follows : Traction motors and drives shall be easily removable in a workshop, after disconnection of cables and fixings without the need to disturb the axle. Individual motors shall be removable by a vertical lift after the bogie has been removed from the vehicle body.	Already clarified vide S. N. 216 of clarification dated 03-02-2022. Please follow Tender condition.
104	2	VII C	5.9.3	93 of 384	Calculations indicating the natural frequency of the motor suspension system shall be submitted, and shall clearly indicate that resonance with the bogie frame is avoided.	Bidder Request to amend the Clause as follows : Calculations indicating the natural frequency of the motor suspension system shall be submitted if applicable , and shall clearly indicate that resonance with the bogie frame is avoided.	Already clarified vide S. N. 217 of clarification dated 03-02-2022. Please follow Tender condition.
105	2	VII C	5.11.7	94 of 384	The passenger load as described in Clause § 5.6.4 shall be taken for the design of the wheels, axles and axle bearings. Bearings shall be arranged not to carry any traction return current.	Bidder request that Bearing life shall be designed as per suitable curve and load spectra. Bidder request to amend the clause as follows : The passenger load as described in Clause § 5.6.4 shall be taken for the design of the wheels, axles and axle bearings . Bearings shall be arranged not to carry any traction return current.	Already clarified vide S. N. 221 of clarification dated 03-02-2022. Please follow Tender condition.
106	2	VII C	5.16.1	97 of 384	At the front of the DM car, an obstruction deflection & derailment detection device shall be installed to push away objects on track to avoid derailment along with derailment detection functionality. The actuation of the obstruction deflection & derailment detection device due to impact of the object, shall initiate the emergency brake and shall be reported to the OCC as an emergency message and shall be recorded by the TCMS. The design of obstacle deflection & derailment detection device and its mounting arrangement shall be proven and should be in use in similar metro applications. All other bogies shall have derailment detection device.	Bidder request to amend the clause as follows : At the front of the DM car, an obstruction deflection & derailment detection device shall be installed to push away objects on track to avoid derailment along with derailment detection functionality. The actuation of the obstruction deflection & derailment detection device due to impact of the object, shall initiate the emergency brake and shall be reported to the OCC as an emergency message and shall be recorded by the TCMS. The design of obstacle deflection & derailment detection device and its mounting arrangement shall be proven and should be in use in similar metro applications. All other bogies shall have derailment detection device.	Already clarified vide S. N. 227 of clarification dated 03-02-2022. Please follow Tender condition.
107	2	VII C	6.13.22	106 of 384	A proven speed sensor having 2 channel mounted on the cover of each axle box shall be provided for the following functions: i) WSP control ii) Train speed measurement iii) Any other function decided during design stage	Bidder request to amend the Clause as follows : A proven speed sensor having 2 channel mounted on the cover of each axle box a axle box shall be provided for the following functions: i) WSP control ii) Train speed measurement iii) Any other function decided during design stage	Already clarified vide S. N. 263 of clarification dated 03-02-2022. Please follow Tender condition.
108	2	VII C	6.14.2	107 of 384	Brake blending logic shall ensure priority of electric regenerative braking over pneumatic braking. If the demanded brake effort is not achievable solely by the electric regenerative brakes, the pneumatic brake system on the T cars shall provide supplementary brake effort. The Contractor shall submit full proposal for review. Electric regenerative brake fade out shall not occur above 5 kmph. For the given Brake demand signal, the Brake effort achieved shall be same during the transition from ED to friction Brake. After the speed is reduced to a very low speed, holding brakes shall be applied to prevent the train from rolling backwards at station stops and gradient.	Bidder request to amend the clause as follows : Brake blending logic shall ensure priority of electric regenerative braking over pneumatic braking. If the demanded brake effort is not achievable solely by the electric regenerative brakes, the pneumatic brake system on the Trailer and Motor cars shall provide supplementary brake effort. The Contractor shall submit full proposal for review. Electric regenerative brake fade out shall not occur above 5 kmph. For the given Brake demand signal, the Brake effort achieved shall be same during the transition from ED to friction Brake. After the speed is reduced to a very low speed, holding brakes shall be applied to prevent the train from rolling backwards at station stops and gradient.	Already clarified vide S. N. 267 of clarification dated 03-02-2022. Please follow Tender condition.
109	2	VII C	6.15.2	107 of 384	Parking brakes shall be applied in the event of loss of the main compressed air supply. The parking brakes shall be capable of release from within the cab and remotely from OCC when the compressed air supply is present. In unintended application of parking brake, manual parking brake release handle shall be for each parking brake cylinder. With no compressed air supply available, it shall be possible to release individual parking brake actuators manually from saloon. Application of parking brakes shall also be controllable from the cab and remotely from OCC. The design shall be such that the parking brakes will take effect prior to fade off of service brake and shall ensure that the combined brake effect of the pneumatic brake and parking brake is never less than the full brake effort of the parking brake alone. Parking brakes shall be directly actuated by MR pressure.	Bidder request to amend the clause as follows : Parking brakes shall be applied in the event of loss of the main compressed air supply. The parking brakes shall be capable of release from within the cab and remotely from OCC when the compressed air supply is present. In unintended application of parking brake, manual parking brake release handle shall be for each provided for parking brake cylinder at bogie or car level. The details will be finalized during design phase. With no compressed air supply available, it shall be possible to release individual parking brake actuators manually from saloon. Application of parking brakes shall also be controllable from the cab and remotely from OCC. The design shall be such that the parking brakes will take effect prior to fade off of service brake and shall ensure that the combined brake effect of the pneumatic brake and parking brake is never less than the full brake effort of the parking brake alone. Parking brakes shall be directly actuated by MR pressure.	Already clarified vide S. N. 268 of clarification dated 03-02-2022 Please refer S. N. 33 of Addendum No. 3 dated 03-02-2022.

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110	2	VII C	8.2.1	128 of 384	The power to the Vehicles shall be supplied at nominal 750 V DC Traction Supply via conductor rails through current collection equipment. Each motor car shall be provided with four parallel-wired contact rail current collector shoes, with one shoe mounted on each side of each bogie. Contact shoe shall be retracted or running position by means of impulse air pressure to the actuator. Continuous air pressure shall not be applied.	Bidder Observed the following : The Clause § 8.2.1 is contradicting with Clause § 8.2.3. Clause § 8.2.3 states: The contact shoe of the current collectors shall be lowered down by means of a pneumatic actuator. The design shall be based upon an "air-retract (lower down) spring applied" operating method. Bidder proposes to modify the Clause as follows : The power to the Vehicles shall be supplied at nominal 750 V DC Traction Supply via conductor rails through current collection equipment. Each motor car shall be provided with four parallel-wired contact rail current collector shoes, with one shoe mounted on each side of each bogie. Contact shoe shall be retracted or running position by means of impulse air pressure to the actuator. Continuous air pressure shall not be applied. The contact shoe of the current collectors shall be lowered down by means of a pneumatic actuator. The design shall be based upon an "air-retract (lower down) spring applied" operating method.	Already clarified vide S. N. 312 of clarification dated 03-02-2022. Please follow Tender condition.
111	2	VII C	8.2.9	128 of 384	The current collector shoe arrangement shall be mounted such that it shall not infringe the kinematic envelope.	Bidder request for SOD for Current Collector Shoe Interface with Third Rail at Track level. As it is not available with SOD.	Already clarified vide S. N. 313 of clarification dated 03-02-2022. Please follow Tender condition.
112	2	VII C	8.2.10	128 of 384	The current collectors shall be mounted to approved fiberglass or other dielectric bracket, with sufficient insulation and arc interruption capacity to allow mounting directly to a grounded portion of the bogie. Suitable arc shields of an approved material shall be used. a protective insulated cover shall be provided to prevent entry of foreign materials inside the current collector device.	Bidder request to amend the clause as follows : The current collectors shall be mounted to approved fiberglass or other dielectric bracket, with sufficient insulation and arc interruption capacity to allow mounting directly to a grounded portion of the bogie. Suitable arc shields of an approved material shall be used. a protective insulated cover shall be provided to prevent entry of foreign materials inside the current collector device.	Already clarified vide S. N. 314 of clarification dated 03-02-2022. Please follow Tender condition.
113	2	VII C	15.5.2	248 of 384	Table 15.1 'A' Obligatory requirements on prototype Sl.No. 1) Maximum vertical Acceleration on coach body ≤ 0.27 g Sl. No. 2) Maximum lateral Acceleration on coach body ≤ 0.27 g Sl. No. 3) Maximum Dynamic wheel loading/unloading $\Delta Q/Q \leq 0.5$ Sl. No. 4) Maximum value of RI = 3.0 in inflated and deflated condition for both vertical and lateral direction	Bidder Understands the value mentioned in "Table 15.1 'A' Obligatory requirements on prototype" - is for a Train running on track which is maintained as per maintenance tolerances specified in "Table 3.3 Track Tolerances". Whereas, the values mention by 1(a), 1(b), 2(a), 3(a) within the same clause shall be applicable to train running on new track. Kindly confirm Bidders understanding.	Already clarified vide S. N. 488 of clarification dated 03-02-2022. Please follow Tender condition.
114	2	VII C	10.1.5	148 of 384	SIL Compliance TCMS shall be SIL2 compliant for all vital and safety related control and monitoring functions including but not limited to the following hardware, software and control functions-	Bidder requests to amend the Clause as follows: TCMS shall be SIL2 compliant for all vital and safety related control and monitoring functions including but not limited to the following hardware, software and control functions signals and functions, if applicable as per Preliminary Hazard Analysis:	Already clarified vide S. N. 351 of clarification dated 03-02-2022. Please follow Tender condition.
115	2	VII C	10.5.9	156 of 384	VDU Response Time The response time for most complex VDU screen change from one TCMS screen to other TCMS screen, TCMS to CCTV screens, maneuvering from one camera image to other under full VDU loading including the conditions stipulated under 10.1.2 shall be approximately 1.0 seconds. Contactor shall submit compliance details during design stage which shall be got validated during line test.	Bidder requests to amend the Clause as follows: VDU Response Time The response time for most complex VDU screen change from one TCMS screen to other TCMS screen, TCMS to CCTV screens, maneuvering from one camera image to other under full VDU loading including the conditions stipulated under 10.1.2 shall be approximately 4.0 2.0 seconds. Contactor shall submit compliance details during design stage which shall be got validated during line test.	Already clarified vide S. N. 375 of clarification dated 03-02-2022. Please follow Tender condition.
116	2	VII C	10.6.4	156 of 384	Software Versioning Time stamping of date of software(s) as well as version of software(s) used in different sub-systems of the train and their compatibility shall be ensured by TCMS. The details of version of software(s) used in different sub-systems with time of uploading shall be displayed at the TCMS at the time of Power Up (wake up). The system shall not permit loading of incompatible software(s). Manual override in certain cases can be permitted by the Engineer, details to be finalized during design stage.	Bidder submits that TCMS could detect a change in software version while upload. A manual override would be required to upload new/different software version. Kindly confirm if this is in line with Customer expectation.	Already clarified vide S. N. 376 of clarification dated 03-02-2022. Please follow Tender condition.
117	2	VII C	10.11.1	162 of 3884	iii) Remote downloading of TCMS data (all the stored TCMS data, and data stored in event recorder) and other sub-system stored data to OCC server through wireless communication network using dedicated port on the On- board TCMS apart from the ports used for manual downloading. The contractor shall interface with the Asset and Maintenance management system (Depot Management Tool) for data integration. On availability of train in the depot, the recorded data in TCMS shall be transferred to the central server and subsequently to the Asset and Maintenance management system automatically. The data to be recorded in the central server and to be integrated with the Asset and Maintenance management system shall be discussed and finalized in interface with Asset Management system supplier. The details shall be submitted for Engineer's review. The Contractor shall be responsible for complete set up (including hardware & software), commissioning and satisfactory working of the system during DLP The Contractor shall conduct necessary interface with S&T and shall be responsible for complete set up, commissioning and satisfactory working of the system during DLP. Additionally, RS contractor shall install the RTD network in depot to enable remote downloading as per clause 10.11.1 and single point uploading/downloading as per clause 10.9.5. The facilities of remote downloading shall be in addition to the hardware downloading.	Bidder requests to amend the Clause as follows: iii) Remote downloading of TCMS data (all the stored TCMS data, and data stored in event recorder) and other sub-system stored data to OCC server through wireless communication network using dedicated port on the On- board TCMS apart from the ports used for manual downloading. The contractor shall interface with the Asset and Maintenance management system (Depot Management Tool) for data integration. On availability of train in the depot, the recorded data in TCMS shall be transferred to the central server and subsequently to the Asset and Maintenance management system automatically. The data to be recorded in the central server and to be integrated with the Asset and Maintenance management system shall be discussed and finalized in interface with Asset Management system supplier. The details shall be submitted for Engineer's review. The Contractor shall be responsible for complete set up (including hardware & software), commissioning and satisfactory working of the system during DLP The Contractor shall conduct necessary interface with S&T and shall be responsible for complete set up, commissioning and satisfactory working of the system during DLP. Additionally, RS contractor shall install the RTD network in depot to enable remote downloading as per clause 10.11.1 and single point uploading/downloading as per clause 10.9.5. The facilities of remote downloading shall be in addition to the hardware downloading.	Already clarified vide S. N. 387 of clarification dated 03-02-2022. Please follow Tender condition.

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118	2	VII C	13.3.2	203 of 384	A fall back system shall also be provided to enable the communication between Train Operator/OCC & passengers with PEA in case of failure of normal communication channel. If more than one emergency device has been operated, each demand shall be independently acknowledged, and alarms shall be stored, displayed and answered sequentially.	Bidder proposes a separate ethernet ring for PACIS system which is more stable, and the PEI failures can be resolved by using the adjacent PEI as there are 4 PEIs in each car. Hence, need of Fall back system is deemed not necessary. Bidder requests to amend the Clause as follows: A fall back system shall also be provided to enable the communication between Train Operator/OCC & passengers with PEA in case of failure of normal communication channel. If more than one emergency device has been operated, each demand shall be independently acknowledged, and alarms shall be stored, displayed and answered sequentially.	Already clarified vide S. N. 458 of clarification dated 03-02-2022. Please follow Tender condition.
119	2	VII C	13.4.1.2	205 of 384	Any enclosure, if required for exterior speakers' material, shall be of at least SUS-304 or better SS grade in order to avoid any corrosion. Equipment shall be at least IP 65 or better. Full details shall also be submitted for review by the Engineer.	Bidder requests to amend the Clause as follows: Any enclosure, if required for exterior speakers' material, shall be of at least SUS-304 or better SS grade or Aluminium alloy with surface painting in order to avoid any corrosion. Equipment shall be at least IP 65 or better. Full details shall also be submitted for review by the Engineer.	Already clarified vide S. N. 460 of clarification dated 03-02-2022. Please follow Tender condition.
120	2	VII C	13.9.1 (i)	215 of 384	The Network Video Recorder (NVR) shall record the images from each camera in non-volatile memory with Solid State Drive (SSD). The NVR shall have recording capacity for at least 15 days to record all the cameras. The NVR shall have at least 2 USB 3.0 port and should have the facility to save the selected video to the pen drive.	Bidder requests to amend the Clause as follows: The Network Video Recorder (NVR) shall record the images from each camera in non-volatile memory with Solid State Drive (SSD). The NVR shall have recording capacity for at least 15 days to record all the cameras. The NVR shall have at least 2 USB 3.0 port and should have the facility to save the selected video to the pen drive or laptop via Ethernet port.	Already clarified vide S. N. 462 of clarification dated 03-02-2022. Please follow Tender condition.
121	2	VII C	13.9.1 (iii)	215 of 384	The visual images from each camera shall be recorded in non-volatile SSD memory in a video recorder without any limitation of repetitive writing of the data. The capacity of the recorder shall be atleast 15 days and shall have the provision of First In First Out (FIFO). The memory shall be expandable by simple plug in of commercially available memory media. The records shall be easily downloadable. The Contractor shall provide equipment and means for the same. At least one set of such equipment shall be provided to each depot.	Bidder requests to amend the Clause as follows: The visual images from each camera shall be recorded in non-volatile SSD memory in a video recorder without any limitation of repetitive writing of the data. The capacity of the recorder shall be atleast 15 days and shall have the provision of First In First Out (FIFO). The memory shall be expandable by simple plug in of commercially available memory media. The records shall be easily downloadable. The Contractor shall provide equipment and means for the same. At least one set of such equipment shall be provided to each depot.	Already clarified vide S. N. 463 of clarification dated 03-02-2022. Please follow Tender condition.
122	2	VII C	3.21.4	48 of 384	Passenger Capacity: AW2 AW3 Seats 136 136 Total 769 980	In line with 16 Ton Axle Load requirement, and 136 seating positions, 315 Passengers in DM car and 340 Passengers in T car are projected in 8Pax/m2 (AW3) condition. Similarly, 247 Passengers in DM car and 270 Passengers in T car are projected in 6 pax/m2 (AW2) condition. Bidder requests to revise the Clause as follows: AW2 AW3 Seats 136 136 Total 769 764 980 970	Already clarified vide S. N. 124 of clarification dated 03-02-2022. Please follow Tender condition.
123	2	VII C	4.6.1	67 of 384	The mechanical strength of the car body structure shall comply with the requirements of EN 12663 Category PIII except for the compressive load, which shall be 1200kN applied at the end of the car body at the centreline of the coupler, and shall be compatible in respect of crashworthiness. The tensile force shall be changed in the same ratio as the compressive force in EN12663. The Contractor shall carry out stress analysis of car body as well as for important structural components which affect safety and availability using the finite element method. However, the strength of the car body shall be decided during design stage by meeting EN 15227 & EN 12663 with exceptional passenger load of 10 passenger/m2.	Bidder recommends to comply with EN 12663 Category PIII including Compressive Load. Bidder requests to amend the Clause as follows: The mechanical strength of the car body structure shall comply with the requirements of EN 12663 Category PIII except for the compressive load, which shall be 1200kN applied at the end of the car body at the centreline of the coupler, and shall be compatible in respect of crashworthiness. The tensile force shall be changed in the same ratio as the compressive force in EN12663. The Contractor shall carry out stress analysis of car body as well as for important structural components which affect safety and availability using the finite element method. However, the strength of the car body shall be decided during design stage by meeting EN 15227 & EN 12663 with exceptional passenger load of 10 passenger/m2.	Already clarified vide S. N. 153 of clarification dated 03-02-2022. Please follow Tender condition.
124	2	VII C	2.8.2	19 of 384	Delay > 30 minutes, non- availability of train after successful completion of pre-departure checkout, withdrawal of train from revenue	As per Bidders experience the minimum fleet average MDBF (km) of 500,000 km is significantly high to achieve. Bidder requests to amend the Clause as follows: The minimum fleet average MDBF (km) for the clause, "Delay > 30 minutes, non-availability of train after successful completion of pre-departure checkout, withdrawal of train from revenue" shall be 500,000 125,000 km	Already clarified vide S. N. 100 of clarification dated 03-02-2022. Please follow Tender condition.

S. N.	Part	Section	Clause No. / Item No.	Page No.	Bid Condition	Bidder's Query	GMRC's Response/ Clarification dated 11-02-2022
125	2	VII C	10.1.5	148 of 384	<p>SIL Compliance</p> <p>TCMS shall be SIL2 compliant for all vital and safety related control and monitoring functions including but not limited to the following hardware, software and control functions-</p> <ul style="list-style-type: none"> • ATC (Vehicle Automatic Train Control) operation mode (ATP, ATO and UTO etc.), • Door Proving loop cut-out, • PWM transmission (communication), • PWM signal (Hardware) failure, • Door Open/close Push Button, • Direction control of train operation, • Holding brake release, • Speed transmission, • Fire alarm transmission via ATC, • ED(Electro Dynamic) brake cut-out signal transmission, • Actual ED brake effort signal transmission, • Sliding signal transmission, • ED brake effective signal transmission, • Holding Brake demand signal transmission, • Holding Brake applied status transmission; • Speed regulation in degraded modes; • Saloon doors interlocking and its status • CCD operation • HSCB rest • VVVF isolation • Smoke/fire reset • Backup control of interface between VVVF & Brake system • Parking brake control • Bypass control singals • Door isolation • Shunting and Wash/coupling modes • Emergency Door unlock 	<p>As per Bidder's experience the following hardware functions (Door Open/close Push Button, ED[Electro Dynamic] brake cut-out signal transmission, Actual ED brake effort signal transmission, ED brake effective signal transmission, VVVF isolation, CCD operation, Shunting and Wash/coupling modes) do have any safety or Hazard relevent failures and hence shall not be required to be part of SIL 2 compliant</p> <p>Bidder requests to amend the Clause as follows:</p> <p>SIL Compliance:</p> <p>TCMS shall be SIL2 compliant for all vital and safety related control and monitoring functions including but not limited to the following hardware, software and control functions-</p> <ul style="list-style-type: none"> • ATC (Vehicle Automatic Train Control) operation mode (ATP, ATO and UTO etc.), • Door Proving loop cut-out, • PWM transmission (communication), • PWM signal (Hardware) failure, • Door Open/close Push Button,- • Direction control of train operation, • Holding brake release, • Speed transmission, • Fire alarm transmission via ATC, • ED(Electro Dynamic) brake cut-out signal transmission,- • Actual ED brake effort signal transmission,- • Sliding signal transmission, • ED brake effective signal transmission,- • Holding Brake demand signal transmission, • Holding Brake applied status transmission; • Speed regulation in degraded modes; • Saloon doors interlocking and its status • CCD operation- • HSCB rest • VVVF isolation- • Smoke/fire reset • Backup control of interface between VVVF & Brake system • Parking brake control • Bypass control singals • Door isolation • Shunting and Wash/coupling modes- • Emergency Door unlock 	<p>Already clarified vide S. N. 352 of clarification dated 03-02-2022.</p> <p>Please follow Tender condition.</p>
126	2	VII C	2.8.2	20 of 384	<p>Any train shall be counted as available for reliability calculations only after a stabilization period of four months after putting the train into revenue service.</p>	<p>As per Bidder's experience the stabilization period shall be min 6 months as per regular Indian project contracts, to have sufficient growth period for reliability demonstration.</p> <p>Bidder requests to amend the Clause as follows:</p> <p>Any train shall be counted as available for reliability calculations only after a stabilization period of four six months after putting the train into revenue service.</p>	<p>Already clarified vide S. N. 99 of clarification dated 03-02-2022.</p> <p>Please follow Tender condition.</p>
127	2	VII C	9.4.1	144 of 384	<p>Each three car train shall be equipped with two sets of battery (redundant to each other) consisting of nickel cadmium cells having a nominal voltage of 110V with stainless steel cell casings. The battery shall be rated and tested in accordance with the requirements of IEC 60623 and shall also meet the requirement of IEC 60993 and EN 50547.</p>	<p>Instead of stainless steel cell casing, flame retardant polypropylene cell casings is Proposed which has better weight and insulation advantages over stainless steel.</p> <p>Bidder requests to amend the Clause as follows:</p> <p>Each three car train shall be equipped with two sets of battery (redundant to each other) consisting of nickel cadmium cells having a nominal voltage of 110V with stainless steel cell casings or Flame retardant Polypropylene cell casings. The battery shall be rated and tested in accordance with the requirements of IEC 60623 and shall also meet the requirement of IEC 60993 and EN 50547.</p>	<p>Already clarified vide S. N. 348 of clarification dated 03-02-2022.</p> <p>Please follow Tender condition.</p>
128	2	VII C	4.15.1	237 of 384	<p>iii) The gangway structure shall lock securely at top and bottom. Locking and unlocking shall be by manual means with single operation levers one each for gathering and latching functionalities. The levers shall not be easily accessible to commuters.</p>	<p>single piece & single skin gangway will be used without quick latch mechanism and side panels can be unlocked by single lever.</p>	<p>Already clarified vide S. N. 183 of clarification dated 03-02-2022.</p> <p>Please follow Tender condition.</p>
129	2	VII C	6.9.1	103 of 384	<p>A levelling control system shall be provided to ensure longitudinal and transversal control of body height under all conditions of load. In each bogie, one four-point levelling suspension system shall be provided to adjust air pressure in the air springs. In the case of failure of one air spring, the other should quickly bleed out so that the car body is lowered to its stable position. The air supply for the levelling system shall be taken from the main reservoir pipe and a separate reservoir shall be provided with each air suspension bellow. Load sensing valve shall be provided. Anti-roll bars shall be provided with air suspension units.</p>	<p>A levelling control system shall be provided to ensure longitudinal and transversal control of body height under all conditions of load. In each bogie, one four-point levelling suspension system shall be provided to adjust air pressure in the air springs. In the case of failure of one air spring, the other should quickly bleed out so that the car body is lowered to its stable position. The air supply for the levelling system shall be taken from the main reservoir pipe and a separate reservoir shall be provided with each airfor suspension system bellow. Load sensing valve shall be provided.</p> <p>Anti-roll bars shall be provided with air suspension units.</p>	<p>Already clarified vide S. N. 251 of clarification dated 03-02-2022.</p> <p>Please follow Tender condition.</p>
130	2	VII C	6.13.15	106 of 384	<p>All the pneumatic control equipment ,valves ,governors, switches, sensors etc. shall be mounted in the enclosed lockable boxes, made of stainless steel having IP65 protection.</p>	<p>Reason for change:</p> <p>The pipe mounted equipment designed for dust environmentand dose not required to be enclosed in the box. The electrical connection of the pipe mounted equipment will be IP65.</p> <p>Required change in clause:</p> <p>All the pneumatic major control equipment ,valves ,governors, switches, sensors etc. shall be mounted in the enclosed lockable boxes, made of stainless steel having IP65 protection.</p>	<p>Already clarified vide S. N. 257 of clarification dated 03-02-2022.</p> <p>Please follow Tender condition.</p>
131	2	VII C	14.15.1	237 of 384	<p>Dry heat test: The dry heat test shall be conducted for class T3 and temperature shall be considered 80oC against 70oC specified in IEC/EN. An extra performance check at 95oC shall also be carried out for 10 minutes over temperature value. LCD/LED display units may be tested into 70oC and an extra performance check at 85oC shall also be carried out for 10 minutes over temperature value.</p>	<p>Brake electronic devices only comply EN standard. That means +70°C permanently and +85°C for max. 10 minutes according to the temperature profile defined in the norm</p>	<p>Already clarified vide S. N. 474 of clarification dated 03-02-2022.</p> <p>Please follow Tender condition.</p>

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132	2	VII C	3.21.7	50 of 384	Command Response Time includes response to modulation within a mode (power, coast and brake) and transition from one mode to another, including emergency brake. Modulation within a mode shall be jerk limited. The command response time within a mode shall not exceed 300ms. Mode change dead time for transition from one to adjacent mode (motoring to coast, coast to brake, brake to coast and coast to motoring) shall not exceed 500ms, exclusive of jerk limiting for 3-Car and 6-Car Trainset. The command response time shall be measured from the time the change is initiated until the acceleration or deceleration transitions to 10 percent of the requested change. The achieved command response time as per above shall be submitted during pre-final design stage.	Two conditions influence the delay time: 1.Delay coming from the network communication 2.Jerk limitation to be applied according to the standards or to specific requirements. This does not align with the delay requirement. Since, both delay time and Jerk cannot be controlled together, priority has to be clarified in the spec to correct delay or correct jerk. EN 13452-1 standard doesn't define target values for delay time and hence the target values of 300 ms, 500 ms will have to be removed from the requirement.	Already clarified vide S. N. 125 of clarification dated 03-02-2022. Please follow Tender condition.
133	2	VII C	6.13.24	106 of 384	Each car brake electronic system shall generate the 110V/24V digital holding brake apply signal. Uses of signal shall be finalized during design stage.	Each car brake electronic system shall generate receive the 110V/24V digital holding brake apply signal. Uses of signal shall be finalized during design stage.	Already clarified vide S. N. 266 of clarification dated 03-02-2022. Please follow Tender condition.
134	2	VII C	6.2.14	100 of 384	Run hour counter shall be provided on Air compressor to record and display operating hour of air compressor. Also, running hours of compressors shall be monitored and recorded by TCMS.	The compressor management is controlled by TCMS and relevant the compressor running time is recorded and displayed by TCMS and hence separate hour counter in air compressor is not required.	Already clarified vide S. N. 233 of clarification dated 03-02-2022. Please follow Tender condition.
135	2	VII C	6.8.1	102 of 384	All driving cabs shall be fitted with analogue pressure gauge with life of more than 15 years.	Bidder requests to allow pressure gauges to be replaced as recommended by the maintenance manual.	Already clarified vide S. N. 594 of clarification dated 03-02-2022. Please follow Tender condition.
136	2	VII C	6.25	112 of 384	Contractor shall supply exhaustive documentation on complete pneumatic system, its sub systems and components, Brake electronics (hardware and software), project software details, explanation and functionality at component and system level, coloured schemes of pneumatic system, brake system, valves with coloured cut sections under different operational states. It shall also include trouble shooting and diagnostic details explaining clearly (with coloured illustrations) the logics, transition states, algorithms, signal flow and software parameters etc.	Valves with coloured cut sections forms, Software related information (algorithms, signal flow and software parameters) and hardware etc are limited to fault codes / diagnostics since SW & HW are IP protected. Maintenance manual will be shared with exploded view of valves. This can be used for training purpose.	Already clarified vide S. N. 600 of clarification dated 03-02-2022. Please follow Tender condition.
137	2	VII C	6.22.3	112 of 384	3-car shall be subjected to complete type test as per UIC 541-05 or equivalent and may have to be validated on more than two trains. Slide protection scheme shall include suitable measures for condition involving simultaneous slide in all 4 axles of any car. The type test protocol shall be agreed with the engineer and shall be in line with 15.154.	Bidder understands WSP will be validated only in one train as followed in other projects worldwide. Kindly confirm.	Already clarified vide S. N. 598 of clarification dated 03-02-2022. Please follow Tender condition.
138	2	VII C	6.2.2	99 of 384	One compressor shall have sufficient capacity to charge a completely empty 3 – car train including full air suspension inflation within 15 minutes and 6 car train in 30 minutes. The average duty cycle of each compressor without electric braking shall not exceed 45% during operation in a 3 car and 6 car train. The Contractor shall submit calculations to show that the capacity of the compressor will meet the requirement in worst conditions. The compressors capacity validation shall also be type tested on prototype 3 car train.	The average duty cycle of each compressor with electric brake shall not exceed 45% during operation. Reason for change: During revenue service we always have ED brake and the utilization of pure friction is preferably less that reduces the consumption of air which leads to low duty cycle of the compressor. Oversizing the compressor will lead failure in field and higher maintenance	Already clarified vide S. N. 589 of clarification dated 03-02-2022. Please follow Tender condition.
139	2	VII C	14.10.3 iv	233 of 384	Ducting with top access lids shall be avoided whenever possible and will not be accepted for under floor mounting.	Providing bottom access duct in the underframe will make the bottom lid as a weight bearing member. With passage of the time this may impact the ingress protection of the cable trays due to the cable load on the lid, on the west side the lid may get open during the revenue services. Hence bidder requests to delete the clause and allow to provide top lid design for the cable trays in the underframe which is proven in the industry.	Already clarified vide S. N. 635 of clarification dated 03-02-2022. Please follow Tender condition.
140	2	VII C	2.18.1 ix	29 of 384	All specified noise measurements shall be revalidated 6 months before the end of DLP on a representative train selected by the Engineer. In case of non-compliance, the Contractor shall take necessary action to correct the defect and revalidate.	To revalidate after 6 months before DLP ends, the vehicle and track needs to reach type test quality again, which means compliance with ISO 3095 for the wheel and track. New wheels and careful run-in are of course also required to maintain the wheel smoothness. Otherwise, noise performance would largely remain the same subjected to normal operation and routine maintenance of train equipment and track. Trains are designed to meet product life as required in contract. However, the actual acoustic performance of some systems may change over time due to various factors like wear and tear, maintenance activities and natural aging. Hence bidder requests to perform measurements 6 months before end of DLP for information only.	Already clarified vide S. N. 571 of clarification dated 03-02-2022. Please follow Tender condition.
141	2	VII C	2.18.5	31 of 384	For running conditions, the specified limits shall be met for the entire speed range upto 75kmph (including acceleration and deceleration) with all equipment operating simultaneously	Acceleration and Deceleration noise tests shall be performed in speed range recommended by ISO 3095:2013 for exterior noise measurements. The speed range mentioned in the standards reflect the real operating conditions. Hence the bidder proposes to reword the clause as follows: 2.22.5 (iii) For running conditions, the specified limits shall be met for the entire speed range up to 75kmph as per ISO 3095:213 (including acceleration and deceleration) with all equipment operating simultaneously.	Already clarified vide S. N. 573 of clarification dated 03-02-2022. Please follow Tender condition.

S. N.	Part	Section	Clause No. / Item No.	Page No.	Bid Condition	Bidder's Query	GMRC's Response/ Clarification dated 11-02-2022
142	2	VII C	2.18.5	31 of 384	Exterior Noise level measurement to be done at a location 7.5m horizontally from the track centreline on a horizontal plane passing through the axle centreline at any point along the length of the vehicle on either side	ISO 3095 recommends measurements at 1.2m and 3.5m from top of rail. ISO is an internationally accepted and recognised standard for measurement of vehicle noise. The microphone positions recommended in standard ensure representability to real conditions, repeatability and comparability of measured data across all projects, world wide. The height of axle centre line from top of rail may not represent any real existing condition of receiver. Hence bidder requests to reword the clause as follows: 2.22.5 (iii) Noise level measurement to be done at the locations as per ISO 3095 7.5m horizontally from the track centre-line on a horizontal plane passing through the axle centerline at any point along the length of the vehicle on either side.	Already clarified vide S. N. 574 of clarification dated 03-02-2022. Please follow Tender condition.
143	2	VII C	2.20.1	33 of 384	Alarm sounders/ Beacons shall be provided in train at a suitable location as well as in OCC.	Bidder requests not to include such devices as passenger may panic on hearing the alarm/beacons; and may lead to a stampede like situation. This also in conflict with clause 2.28.8 a. where the alarm shall be inconspicuous to the passengers. Hence Bidder requests to delete the clause.	Already clarified vide S. N. 576 of clarification dated 03-02-2022. Please follow Tender condition.
144	2	VII C	12.9 (iii)	193 of 384	The colour of the LEDs shall be white (temperature 3000K).It shall be ensured that all LEDs are selected from same bin to avoid any difference in colour and performance.	After various simulation and execution of projects with industrial design team, it is observed that appearance of the Saloon area is better with CCT of 5000K (Similar to daylight). Request to acknowledge this and update the same in ITT for better aesthetic appearance. hence the bidder requests to reword the clause as follows: The colour of the LEDs shall be white (temperature 3000K) with CCT of 5000K (Similar to daylight). It shall be ensured that all LEDs are selected from same bin to avoid any difference in colour and performance.	Already clarified vide S. N. 631 of clarification dated 03-02-2022. Please follow Tender condition.
145	2	VII C	2.20.3	34 of 384	A linear heat detector, suitable for Rolling Stock applications shall be provided in the electrical cabinets. The linear heat detector is to be actuated in case of any fire/overheating in the electrical cabinets. LHD system shall also be provided in Underframe Electrical enclosures as mentioned in different chapters of this document. Alarm from heat detectors shall be sent to the local control panel (if any) and shall be communicated to TCMS and OCC. However, final decision on use of LHD/Heat detector in Underframe Electrical enclosures will be taken during design stage.	There are various solutions that can meet the design intent as per the requirement. Bidder proposes to reword the clause as follows: Linear Heat Detectors (LHD) for Enclosures/Cubicles (Electrical cabinets): A linear heat detector suitable for Rolling Stock applications shall be provided in the electrical cabinets. The linear heat detector is to be actuated in case of any fire/overheating in the electrical cabinets. LHD shall also be provided in Underframe Electrical enclosures. Alarm from heat detectors shall be sent to the local control panel and shall be communicated to TCMS and OCC. However, final design and decision on use of LHD/Heat detector in Underframe Electrical enclosures will be taken during design stage.	Already clarified vide S. N. 577 of clarification dated 03-02-2022. Please follow Tender condition.
146	2	VII C	4.7.3	69 of 384	The Contractor shall carry out a stress analysis of the car body (including torsion mode) as well as for important structural components that affect safety or availability, using the Finite Element Method. Separate analyses shall be demonstrated and submitted for car bodies having different basic structures. The analysis shall demonstrate that all static and fatigue strength requirements of the car body and equipment mounting are met.	Based on Bidders experience, analyses done on a Hybrid model (model integrating different kind of car bodies) of the car bodies is also a proven verification and validation method for the design. Hence, bidders proposes to word the clause as follows: The Contractor shall carry out a stress analysis of the car body (including torsion mode) as well as for important structural components that affect safety or availability, using the Finite Element Method. Separate analyses shall be demonstrated and submitted for car bodies having different basic structures. The analysis shall demonstrate that all static and fatigue strength requirements of the car body and equipment mounting are met. Alternatively, analysis on a hybrid model (representative of different types of carbody) shall be demonstrated and submitted. Apart from car body structure, finite element analysis shall be performed for all the equipment's enclosure representing the structure mounted on the car body structure under proof, fatigue and modal analysis. The requirement of calculation of welded and bolted joint is explained in chapter 14 where in the output of finite element analysis in terms of stress and forces shall be used to verify the strength of welded and bolted joints. Finally, the finite element analysis shall demonstrate that, all the above requirements of the car body, equipment mounting & equipment enclosure as specified in respective sections are met.	Already clarified vide S. N. 583 of clarification dated 03-02-2022. Please follow Tender condition.
147	2	VII C	4.13.1 ii	74 of 384	Suitable driving console shall be provided at each end of the train to manually operate the train. In addition, a suitable foldable seat for Train Operator shall also be provided under the driving console, which shall be used initially for running the train under GoA2 mode as well as in case the train operating under UTO is required to be driven by the TO under emergency conditions...	Using a foldable seat can be a safety hazard as having a un-secured seat could be a safety hazard. Providing restraints in GoA4 would not be feasible. Hence, Bidder request to revise the clause as follows: Suitable driving console shall be provided at each end of the train to manually operate the train. In addition, a suitable foldable seat for Train Operator shall also be provided under the driving console, which shall be used initially for running the train under GoA2 mode as well as in case the train operating under UTO is required to be driven by the TO under emergency conditions...	Already clarified vide S. N. 584 of clarification dated 03-02-2022. Please follow Tender condition.
148	2	VII C	4.14.4	80 of 384	...Stainless steel grab handles (sample shall be got approved from Engineer during Mock up review), widely used in at least five metros worldwide, shall be used.	Freezing grab handle design to a stainless steel one wont allow to explore already proven design in the service. Hence, bidder proposes to be reword as follows: Stainless steel grab handles (sample shall be got approved from Engineer during Mock up review), widely used in at least five metros worldwide, shall be used.	Already clarified vide S. N. 586 of clarification dated 03-02-2022. Please follow Tender condition.

S. N.	Part	Section	Clause No. / Item No.	Page No.	Bid Condition	Bidder's Query	GMRC's Response/ Clarification dated 11-02-2022
149	2	VII C	5.4.20	91 of 384	Air suspension isolating cock shall be provided for each bogie to enable car levelling operation. The operation status of the air suspension isolating cock shall be reported to TCMS.	Air suspension cocks are only used during the levelling hence in bidders view the monitoring of this cock is not required. Bidder requests to reword the clause as follows: Air suspension isolation cock shall be provided for each bogie to enable car levelling operation. The operation status of the air suspension isolation cock shall be reported to the TCMS.	Already clarified vide S. N. 588 of clarification dated 03-02-2022. Please follow Tender condition.
150	2	VII C	6.5.3	101 of 384	Reservoirs shall be manufactured from stainless steel. All reservoirs shall have a device for venting and draining of the contents of reservoirs. All Reservoirs shall conform to the requirements of EN 286-3: 1994 or latest	Bidder requests to reword the clause as Aluminium offers excellent weight advantage.: Reservoirs shall be manufactured from stainless steel/ Aluminium.	Already clarified vide S. N. 592 of clarification dated 03-02-2022. Please follow Tender condition.
151	2	VII C	6.14.4	107 of 384	In the event of failure of electric regenerative brake or during fading, the friction brake shall be capable of carrying out full braking duty. Smooth and safe changeover from regenerative to EP brakes in case of failure of regenerative brakes or during fading shall be ensured.	The clause is in conflict with clause 6.13.6 where maximum speed has been limited when electric regenerative brakes are not available. Bidder proposes to align the clause with 6.13.6. Bidder proposes to reword as: In the event of failure of the electric regenerative brake or during fading, the friction brake shall be capable of carrying out full braking duty.	Already clarified vide S. N. 597 of clarification dated 03-02-2022. Please follow Tender condition.
152	2	VII C	6.23.1	112 of 384	There shall be a provision of a holding Brake release switch for abnormal conditions. The TO shall be able to release the brake using a soft option through TCMS.	Holding brakes in the exceptional cases, if required, shall only be released during troubleshooting and after having proper resources in place i.e. competent personnel, scotch block etc. This shall not be included as normal functionality. Owing to the safety hazard of this functionality, bidder proposes to delete this clause.	Already clarified vide S. N. 599 of clarification dated 03-02-2022. Please follow Tender condition.
153	2	VII C	6.25	112 of 384	...The contractor shall supply animation of complete pneumatic system, covering all pneumatic valve operations etc., demonstrating the complex pneumatic system for training purpose, which shall help in fault finding during maintenance period.	The intent can easily be met by the coloured sectional diagrams showing the different phases of the operation and flow. Hence Bidder requests to reword as follows: The Contractor shall supply animation coloured diagrams of complete pneumatic system, covering all pneumatic valve operations etc., demonstrating the complex pneumatic system for training purpose, which shall help in fault finding during maintenance period.	Already clarified vide S. N. 601 of clarification dated 03-02-2022. Please follow Tender condition.
154	2	VII C	7.2.3 viii	118 of 384	The push back feature shall be operative after the door leaves have been closed and locked. It shall be possible to manually push back each closed door leaf to enable entrapped objects such as clothing and other articles, to be withdrawn, even after the mechanical lock has engaged. The force required to push back each door leaf shall not be less than 80N nor more than 150N. However final value shall be decided during design. Expected door gap to be created by push back during intentional operation should not exceed 15mm. (the final gap shall be decided during detail design stage of the door). Every operation of push back shall be recorded with time stamp and message shall pop up in cab HMI/OCC. The complete scheme shall be of proven type in worldwide metros.	Push back feature is a purely mechanical mechanism and shall not be complicated owing to the safety aspects. Hence, bidder requests to reword the clause as follows: The push back feature shall be operative after the door leaves have been closed and locked. It shall be possible to manually push back each closed- door leaf to enable entrapped objects such as clothing and other articles, to be withdrawn, even after the mechanical lock has engaged. The force required to push back each door leaf shall neither be less than 80 N nor more than 150N. However final value shall be decided during design. Expected door gap to be created by push back during intentional operation should not exceed 15mm (the final gap shall be decided during detail design of the door). During Push-back operation, it shall be ensured that door closing switch is not getting dis-engaged. Every operation of push back shall be recorded with time stamp and message shall pop up in cab HMI/OCC. The complete scheme shall be of proven type in worldwide metros.	Already clarified vide S. N. 603 of clarification dated 03-02-2022. Please follow Tender condition.
155	2	VII C	8.2.27	130 of 384	Suitable on-board Arc measuring device for identifying such locations with recording and analysis facilities where arcing is experienced shall be supplied as part of tools. One No. of on board Set up for monitoring, recording & analyzing CCD current collection performance shall be provided for each line. The cost of these setup shall be deemed to be included in the quoted GA5 price. Necessary training shall be provided to the Engineer	Bidder propose to delete the clause as the requirement is more for a 25 kV system.	Already clarified vide S. N. 605 of clarification dated 03-02-2022. Please follow Tender condition.
156	2	VII C	10.10.6 ii	161 of 384	The recorder shall have the provision of recording at least 200 signals of the data which should be easily retrievable either by directly connecting the Window based PC or/and the storage media shall be removable type. The recorder shall have capacity for 24 hours recording of selected data. The recording shall be on a non-volatile memory capable of retaining the recorded data with time stamp and location for at least 30 days.	Bidders requests to reword the clause as follows: The recorder shall have the provision of recording at least 200 signals of the data which should be easily retrievable either by directly connecting the Window based PC or/and the storage media shall be removable type. The recorder shall have capacity for 24 hours recording of selected data. The recording shall be on a non-volatile memory capable of retaining the recorded data with time stamp and location for at least 30 days 15 days.	Already clarified vide S. N. 609 of clarification dated 03-02-2022. Please follow Tender condition.

S. N.	Part	Section	Clause No. / Item No.	Page No.	Bid Condition	Bidder's Query	GMRC's Response/ Clarification dated 11-02-2022
157	2	VII C	11.2.10	175 of 384	Provision shall be made to automatic shut off the fresh air intake and re-circulate the internal air of the saloon, during an emergency condition, such as fire outside the train causing excessive heat and smoke to be drawn into the vehicle. Operation of such provision shall be made from the OCC in UTO mode of operation and from operative driving console in non UTO mode of operation. The closing time of the fresh air damper shall preferably be less than 10 seconds from the receipt of smoke signal to avoid ingress of large quantity of smoke inside the car. Location of the smoke detectors and the logic for smoke signal shall be designed in such a way that possibility of false alarm is avoided. Full details of the system proposed shall be given. Provision shall be available to bypass the smoke detectors though TCMS (in non-UTO) and OCC (in UTO). Smoke detector shall be accessible from inside the saloon area including sensitivity test. Detector cleaning shall be easy and simple. Detector and system shall give an early indication to maintenance staff before the contamination level reaches to faulty level.	Bidder proposes to delete this 10 secs requirement as the proven solution does not exists. Bidder requests to reword as follows: Provision shall be made to shut off the fresh air intake and re-circulate the internal air of the saloon, during an emergency condition, such as fire outside the train causing excessive heat and smoke to be drawn into the vehicle. Operation of such provision shall also be made from the operative driving cab in non UTO mode of operation and OCC in UTO mode of operation. The closing time of the fresh air damper shall be a proven solution, preferably be less than 40 seconds from the receipt of smoke signal to avoid ingress of large quantity of smoke inside the car. Location of the smoke detectors and the logic for smoke signal shall be designed in such a way that possibility of false alarm is avoided. Full details of the system proposed shall be given. Provision shall be available to bypass the smoke detectors though TCMS (in non-UTO) and OCC (in UTO). Smoke detector shall be accessible from inside the saloon area including sensitivity test. Detector cleaning shall be easy and simple. Detector and system shall give an early indication to maintenance staff before the contamination level reaches to faulty level.	Already clarified vide S. N. 615 of clarification dated 03-02-2022. Please follow Tender condition.
158	2	VII C	13.1.1 xxii	202 of 384	Cables for PA, PIS and PSSS shall be suitably insulated, screened, armoured and overall outer sheathed. These cables shall also be of fire survival, fire retardant/resistant type. The Rolling Stock Contractor shall design and install in such a way that its integrity is ensured till it is no longer required for/during evacuation. The integrity of the cable shall also be tested as per EN50289 or equivalent. Full details of integrity duration, standards along with relevant catalogues etc. shall be submitted for review and approval.	Evacuation time will vary from situation to situation and it wont be possible to design the cables for that time period as the time period is not known. hence bidders reests to reword the clause as follows: Cables for PA, PIS and PSSS shall be suitably insulated, screened, armoured and overall outer sheathed. These cables shall also be of fire survival, fire retardant as well as resistant type. The Rolling Stock Contractor shall design and install in such a way that its integrity is ensured until no longer required for evacuation. Full details of standard along with relevant catalogue etc. shall be submitted for review and approval.	Already clarified vide S. N. 632 of clarification dated 03-02-2022. Please follow Tender condition.
159	2	VII C	13.12	220 of 384	Provision for setting up of a PA/PIS Lab in each Depot for programming of all PA, PEA and all displays including PID & DRM shall be ensured by the Contractor. Full facilities including any hardware/software tools for programming the displays and system shall be supplied to one Depot under quoted cost as per GA5 list. Employer's engineers shall be fully trained to programme, edit and interface the display panels with the system.	Based on the bidders experience, special tools are enough for the requirements as per the clause. Hence bidders reests to reword he clause as:. Provision Supply of tools for setting up of a PA / PIS Lab in each Depot for programming of all displays including PID & DRM shall be ensured by the Contractor. Full facilities Tools including any hardware / software tools for programming the displays and system shall be supplied to one Depot under quoted cost as per GA5 list. Employer's engineers shall be fully trained to programme, edit and interface the display panels with the system.	Already clarified vide S. N. 634 of clarification dated 03-02-2022. Please follow Tender condition.
160	2	VII C	15.5.4 i	250 of 384	Employer intends to appoint an independent and authorized certifier of Rolling Stock to supervise the trials and certifying the fitment of cars for inductions in revenue service.	Engagement of the external agency may further increase the approval cycle and may put the project on the risk of delaying the timelines. Already appointed GC by the employer can do this job. Hence bidder requests to delete this clause.	Already clarified vide S. N. 637 of clarification dated 03-02-2022. Please follow Tender condition.
161	2	VII C	5.2.9	88 of 384	During design stage, The contractor shall appoint an internationally reputed international consultant with the approval of Employer through Engineer starting from 8 months of the commencement date who shall also carry out validation of the design of the proposed bogie. In case contractor fails to do so as per requirement of Employer/Engineer, Employer at its sole discretion may appoint an internationally reputed consulting agency at the cost of contractor. The consultant's report shall be discussed with the contractor's design engineer and changes/improvements if required, shall be implemented by the Contractor	Engagement of the external agency may further increase the approval cycle and may put the project on the risk of delaying the timelines. Already appointed GC by the employer can do this job. Hence bidder requests to delete this clause.	Already clarified vide S. N. 587 of clarification dated 03-02-2022. Please follow Tender condition.
162	2	VII C	2.2.10	13 of 384	The contractor shall appoint an internationally reputed UTO consultant with the approval of Employer through Engineer starting from three (03) months of the commencement date. In case contractor fails to do so as per requirement of Employer/Engineer, Employer at its sole discretion may appoint an internationally reputed UTO consulting agency at the cost of contractor. The consulting agency shall assist Employer in verification and approving of the interface documents, as well as other design documents submitted by the Contractor and also for testing and commissioning etc. The consultant's report shall be discussed with the contractor's design engineer and changes/improvements if required, shall be implemented by the Contractor. Under this contract with the consulting agency, services of expup to Fifty (50) man-months can be utilized by the Employer. Similarly, the contractor shall appoint a proven Bogie consultant (5 man-months) (refer 5.2.9) and fire audit consultant (10 man months) (Refer 2.5.8).	Engagement of the external agency may further increase the approval cycle and may put the project on the risk of delaying the timelines. Already appointed GC by the employer can do this job. Hence bidder requests to delete this clause.	Already clarified vide S. N. 561 of clarification dated 03-02-2022. Please follow Tender condition.
163	2	VII C	2.5.8	16 of 384	... The Contractor shall engage an internationally reputed agency for the audit and certification of their fire safety design report, fire load calculation ,Fire Detection System and evacuation plan. In case contractor fails to do so as per requirement of Employer/Engineer, Employer at its sole discretion may appoint an internationally reputed agency at the cost of contractor. The Contractor shall obtain Engineer's/Employer's prior approval before selecting such agency. The audit report & certificate from this agency shall be submitted by the Contractor to the Engineer.	Engagement of the external agency may further increase the approval cycle and may put the project on the risk of delaying the timelines. Already appointed GC by the employer can do this job. Hence bidder requests to delete this clause.	Already clarified vide S. N. 562 of clarification dated 03-02-2022. Please follow Tender condition.

S. N.	Part	Section	Clause No. / Item No.	Page No.	Bid Condition	Bidder's Query	GMRC's Response/ Clarification dated 11-02-2022
164	2	VII C	2.13.3	26 of 384	Maintenance and overhaul demonstration training of the sub-systems shall be organized within one year of the commissioning of the first train in the depot as per the approved schedule by the Engineer. Training shall include hand-on activity by the trainees. Separate spare sub-systems shall be supplied by the contractor within the quoted cost to demonstrate major overhauling. The training imparted shall include following: <input type="checkbox"/> Detailed training notes (hard copy- two sets for each depot). <input type="checkbox"/> Soft copy in a SSD (Solid State Drive) – for trainees(10 nos.) and additional 5 nos. for submission to the Engineer. Training notes must include complete details of spare parts and details of tools & tackles required. Computer based tutorials (CBT) package shall be part of the training material, which shall cover preventive maintenance and major/minor overhaul activities. CBT Shall have 3D audio & visual of maintenance activities. CBT package shall have question bank (in sufficient numbers to choose from) for evaluation of the knowledge gained by the trainees. Contractor shall note that the above said training shall be included in quoted cost and no additional amount would be payable. Price quoted in the cost center H do not include the above said training.	As the physical maintenance trainings are anyhow provided, CBT package is not required. Hence, bidder proposes to reword the clause as follows: ...Computer based tutorials (CBT) package shall be part of the training material, which shall cover preventive maintenance and major/minor overhaul activities. CBT shall have 3D audio & visual of maintenance activities. CBT package shall have question bank (in sufficient numbers to choose from) for evaluation of the knowledge gained by the trainees. Contractor shall note that the above said training shall be included in quoted cost and no additional amount would be payable. Price quoted in the cost centre H do not include the above said training.	Already clarified vide S. N. 570 of clarification dated 03-02-2022. Please follow Tender condition.
165	2	VII C	6.8.1	102 of 384	All driving cabs shall be fitted with analogue pressure gauge with life of more than 15 years.	Bidder requests to allow pressure gauges to be replaced as recommended by the maintenance manual.	Already clarified vide S. N. 594 of clarification dated 03-02-2022. Please follow Tender condition.
166	2	VII C	6.25	112 of 384	Contractor shall supply exhaustive documentation on complete pneumatic system, its sub systems and components, Brake electronics (hardware and software), project software details, explanation and functionality at component and system level, coloured schemes of pneumatic system, brake system, valves with coloured cut sections under different operational states. It shall also include trouble shooting and diagnostic details explaining clearly (with coloured illustrations) the logics, transition states, algorithms, signal flow and software parameters etc.	Valves with coloured cut sections forms, Software related information (algorithms, signal flow and software parameters) and hardware etc are limited to fault codes / diagnostics since SW & HW are IP protected. Maintenance manual will be shared with exploded view of valves. This can be used for training purpose.	Already clarified vide S. N. 600 of clarification dated 03-02-2022. Please follow Tender condition.
167	2	VII C	6.22.3	112 of 384	3-car shall be subjected to complete type test as per UIC 541-05 or equivalent and may have to be validated on more than two trains. Slide protection scheme shall include suitable measures for condition involving simultaneous slide in all 4 axles of any car. The type test protocol shall be agreed with the engineer and shall be in line with 15.154.	Bidder understands WSP will be validated only in one train as followed in other projects worldwide. Kindly confirm.	Already clarified vide S. N. 598 of clarification dated 03-02-2022. Please follow Tender condition.
168	2	VII C	6.2.2	99 of 384	One compressor shall have sufficient capacity to charge a completely empty 3 – car train including full air suspension inflation within 15 minutes and 6 car train in 30 minutes. The average duty cycle of each compressor without electric braking shall not exceed 45% during operation in a 3 car and 6 car train. The Contractor shall submit calculations to show that the capacity of the compressor will meet the requirement in worst conditions. The compressors capacity validation shall also be type tested on prototype 3 car train.	The average duty cycle of each compressor with electric brake shall not exceed 45% during operation. Reason for change: During revenue service we always have ED brake and the utilization of pure friction is preferably less that reduces the consumption of air which leads to low duty cycle of the compressor. Oversizing the compressor will lead failure in field and higher maintenance	Already clarified vide S. N. 589 of clarification dated 03-02-2022. Please follow Tender condition.
169	2	VII A	9.1.2	47 of 66	9.1.2 The Tenderer shall list the cost for each component module of the Training in terms of man-months (1 man-month is equal to 30 working days) in Pricing Document.	Please clarify One man month is equal to in terms of working man days in a month. The requirement for 30 working days need to be re verified as the Trainings are done generally 6 man days in a week and hence calculated maximum 26 man days equal to one man month.	Already clarified vide S. N. 554 of clarification dated 03-02-2022. Please follow Tender condition.
170	3	VII A	9.4.1(ii)	49 of 66	9.4.1(ii) Level two training shall consist of advance training of maintenance, software functions and overhaul and repair concepts. These shall include modification of control and monitoring functions, software functions and software loading and overhauling and repair of critical equipment's.	Advance Trainings generally does not form part of Stage-1 Trainings as the name implies as advance training and these aspects are covered generally during Stage-2 training by the respective systems/Sub systems OEMs.	Already clarified vide S. N. 555 of clarification dated 03-02-2022. Please follow Tender condition.
171	4	VII B	APPENDIX 9: Simulator 1.5	36 of 67	1.5 Standalone independent controller Workstation (SICW) a) Standalone independent controller workstation (SICW) shall be equipped with all features of DSW, IWS and complete data base of trouble shooting directory and generation of response file. b) Suitable training facility for the rolling stock controller of OCC for assigned duties in GoA4 mode of operation.	Kindly clarify on the number of screens to be provided for the SICW	Already clarified vide S. N. 557 of clarification dated 03-02-2022. Please follow Tender condition.
172	5	VII B	APPENDIX 9: Simulator 1.6	36 of 67	1.6 General Provisions: i) Simulator and software packages shall capable and support for additional modules in future for different kind of Rolling Stock, which will operate in the same corridor	The Train and Vehicle Configuration supported by the Simulator and Software Package will be based on the main Rolling Stock Contract only. Any configuration changes in the train will be incorporated into the simulator within the stipulated time period. Kindly clarify on the different Rolling Stock, as the provided information is not sufficient.	Already clarified vide S. N. 558 of clarification dated 03-02-2022. Please follow Tender condition.
173	6	VII B	APPENDIX 9: Simulator	38 of 67	General Query	Kindly clarify on the number of set of Simulator Packages to be submitted.	Already clarified vide S. N. 560 of clarification dated 03-02-2022. Please follow Tender condition.
174	2	VII C	6.7.6	102 of 384	Flexible hoses shall be kept to a minimum, and be proven in EMU metro service. Burst hose protection shall be provided to increase the integrity of the air supply system against rupturing of inter-car flexible hoses. Double hose burst protection valve shall be provided in the flexible connections in the parking brake piping along with test reports in compliance with the latest international standard for acceptance of engineer	Bidder requests to modify the clause as below: Flexible hoses shall be kept to a minimum, and be proven in EMU metro service. Burst hose protection shall be provided to increase the integrity of the air supply system against rupturing of inter-car flexible hoses. Double hose burst protection valve shall be provided in the flexible connections in the parking brake piping along with test reports in compliance with the latest international standard for acceptance of engineer.	Already clarified vide S. N. 593 of clarification dated 03-02-2022. Please follow Tender condition.

S. N.	Part	Section	Clause No. / Item No.	Page No.	Bid Condition	Bidder's Query	GMRC's Response/ Clarification dated 11-02-2022
175	2	VII C	6.13.1	104 of 384	Brake valves shall be designed and validated for heavy duty cycles required for intensive brake blending. No change of valves or components except rubber items shall be required for at least 15 years beyond DLP. Contractor shall assess the cyclic load under worst service conditions appearing together and validate the same on a test bench.	There are certain parts like filters and wearable parts needs to be replaced before 15 years	Already clarified vide S. N. 595 of clarification dated 03-02-2022. Please follow Tender condition.
176	2	VII C	10.12.1	164 of 384	General The Vehicle Control Circuit shall be suitably designed to ensure that Energy Consumption values at specified points are measured, recorded and made easily retrievable. The accuracy and integrity of these measurements shall be specifically ensured as the Employer intends to use the data for getting carbon credits. The measurements shall be: i) made independently at CCD, traction inverter, auxiliary inverter and HVAC levels, ii) made separately for traction, coasting and regeneration modes for each train, iii) linked with Crew IDs(in non-UTO mode), iv) segregable between mainline and depot consumptions, v) time stamped every 5 seconds, vi) stored in TCMS memory for 60-day period, vii) retrievable on VDU as cumulative/integrated values with advanced filtering option	The contribution of HVAC loads to size the auxiliary power supply (APS) unit is more than 85% of the rated capacity of the APS. So, the measurement at APS level provides good enough picture of the energy consumed for the HVAC units of the train. Further, the loads other than HVAC on the APS are fixed loads i.e. air compressor and traction auxiliary fans. The consumption of these other loads is constant. Hence, the TCMS can deduct the consumption of these other loads based on their operational status and recorded time of operation (as per clause 10.5.2(VI)), to get the energy consumption figures for HVAC for any specific time period. If energy meters or equivalent provision is made at HVAC unit level, it will mean additional electronics and parts which would lead to not only increase in one time cost, but also increase the LCC, reduce the reliability of complete system (due to frequent interventions) and cost of spares. So, we propose to modify only the sentence highlighted below from the clause 10.12.1 i) as follows :- The measurements shall be: i. Made independently at Current Collector, Inverter Unit and Auxiliary Supply Unit and HVAC levels,	Already clarified vide S. N. 610 of clarification dated 03-02-2022. Please follow Tender condition.
177	2	VII C	11.2.6 (i)	173 of 384	Air Discharge Velocities: The air velocities inside ducts shall not cause excessive noise and discomfort to passengers in saloon occupancy areas, and shall generally follow internationally accepted practices. The air velocities at specified points in the car, as proposed by contractor and reviewed by Engineer, shall not exceed those set out in EN14750 or any equivalent standard. The supply air discharge velocities at any outlet grille/diffuser shall not exceed 4m/s. The air velocity at any point in the car shall not exceed 0.75 m/s. The air velocity within ducts shall not exceed 8m/s. The air intake velocity at the re-circulation and exhaust grilles shall not exceed 3m/s. Details of the Contractor's proposals shall be submitted	The measurement of air velocity inside the duct is extremely difficult to measure even during the duct mock-up (as requested in clause 11.5.7). This is due to no clear definition of measurement points. Further accessing any of the measurement locations within the duct will create gaps or leaks for the airflow resulting in inaccurate measurements. In addition, we have quantifiable parameters to measure the overall comfort of the passenger inside the saloon (thermal comfort, Acoustic/Noise comfort, etc.). Therefore, such requirement for air velocity inside the duct is not required. Hence we propose to modify the clause as follows :- Air Discharge Velocities: The air velocities inside ducts shall not cause excessive noise and discomfort to passengers in saloon occupancy areas, and shall generally follow internationally accepted practices. The air velocities at specified points in the car, as proposed by contractor and reviewed by Engineer, shall not exceed those set out in EN14750 or any equivalent standard. The supply air discharge velocities at any outlet grille/diffuser shall not exceed 4m/s. The air velocity at any point in the car shall not exceed 0.75 m/s. The air velocity within ducts shall not exceed 8m/s. The air intake velocity at the re-circulation and exhaust grilles shall not exceed 3m/s. Details of the Contractor's proposals shall be submitted	Already clarified vide S. N. 612 of clarification dated 03-02-2022. Please follow Tender condition.
178	2	VII C	11.2.14	176 of 384	Employer expects that an energy efficient system comparable with the best available in the market shall be provided. Good energy efficiency shall be achieved in cooling and de-humidification operations of the HVAC. Contractor shall furnish Energy Efficiency Ratio (EER) for the offered system. In cooling mode, the Coefficient of Performance (COP) of HVAC shall be at least 2.5 in summer ambient conditions under all loading conditions from AW0 to AW3 which may be achieved by utilizing variable frequency control (if required) of compressors or any other control mechanism. The COP shall be validated as per IS8148, ASHRAE 37 or any other relevant standard, as agreed by the Engineer. The Contractor shall submit the record of proven system already functional in any metros with the specified COP. The Contractor shall furnish expected power consumption and COP of the HVACs per car for peak Summer, Monsoon and Winter ambient conditions for AW0, AW1, AW2 and AW3 passenger loads.	As per Air Enthalpy method described in ASHRAE 37, the cooling capacity of HVAC is tested under controlled environment where stabilized mixed air temperature (weighted average of temperature and airflow for fresh air and return air) is fed to HVAC unit keeping the fresh air dampers closed. Several parameters are measured as per clause 15.2.1.1 (III-b). During such tests, the number of operating compressors remain constant. Hence, the COP is only possible to be evaluated under such controlled & uniform environment during unit level tests. As the passenger loads are not defined uniformly and AW3 is the design point for HVAC unit as per clause 11.2.1 to 11.2.3. As compressors regulation is not possible to be tested at unit level and COP is defined only for tests at unit level, achieving same target of COP for all the loads is not possible. Recently DMRC has also updated RS17 w.r.t the same clause as per below. We request GMRC to do the same. (only change further done in comparison to modified clause of DMRC RS17 is proposal to remove winter from below highlighted sentence as COP and cooling capacity parameters are not applicable for heating conditions. Instead, power consumption specific to winter conditions can be requested.) Hence we propose to modify the clause as follows :- Employer expects that an energy efficient system comparable with the best available in the market shall be provided. Good energy efficiency shall be achieved in cooling and de-humidification operations of the HVAC. Contractor shall furnish Energy Efficiency Ratio (EER) for the offered system. In cooling mode, the Coefficient of Performance (COP) of HVAC shall be at least 2.5 in summer ambient conditions under all loading conditions from AW0 to AW3 AW3 loading conditions which may be achieved by utilizing variable frequency control (if required) of compressors or any other control mechanism. The COP shall be validated as per IS8148, ASHRAE 37 or any other relevant standard, as agreed by the Engineer. The Contractor shall submit the record of proven system already functional in any metros with the specified COP. The Contractor shall furnish expected power consumption and COP of the HVACs per car for peak Summer, Monsoon and Winter ambient conditions for AW0, AW1, AW2 and AW3 passenger loads.	Already clarified vide S. N. 616 of clarification dated 03-02-2022. Please refer S. N. 68 of Addendum No. 3 dated 03-02-2022.

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179	2	VII C	11.2.6 (vii)	174 of 384	d)The dampers shall be reset by the train driver via the TCMS if the system resumes normal. e) The dampers shall be capable of being reset locally from the saloon if remote reset has failed.	Regarding clause 11.2.6 (vii) (d), for external smoke mode, in case of GoA4 operation (without train driver), how does the dampers get reset after no smoke is present? We suggest that fresh air damper should be reset automatically without any manual intervention i.e., by the TCMS once "no smoke sensation" signal is provided by the smoke sensor. Regarding clause 11.2.6 (vii) (e), the exact expectation is to be updated as it is contradictory with 11.2.6 (vii)(d). If priority is TCMS based reset for the dampers, then why remote reset is required?	Already clarified vide S. N. 613 of clarification dated 03-02-2022. Please follow Tender condition.
180	2	VII C	11.9.1	179 of 384	Electrical switchgear and control equipment for the system shall be located in a sealed cubicle, which shall be an integral part of the HVAC package unit. The cabinet shall be accessible from the inside the vehicle. The cubicle shall have IP65 protection. The electric switches, contactors and relays etc. should be proven in Metro train application and shall comply to IEC 60077-1,-2. The cables shall be halogenfree compliant to EN 45545 Part 1 to 7 in respect of flammability, smoke emission and toxicity requirements.	We normally prefer to have the electrical cubicle located inside the HVAC unit. This cubicle has provisions to access the electrical switchgear and control electronics. There is also provision provided for ventilating this cabinet in order to release heat and avoid moisture built-up. Further, the components are individually IP rated and also sand & dust tested especially for the electronic parts. If we have IP 65 protection, we need to provide forced ventilation to such cubicle which increase the design complexity and accordingly the cost. This will increase LCC. The location of cubicle is such that air gets filtered at fresh air inlet and also at return air inlet to the HVAC unit. So, the cubicle is dust protected. Lastly, the complete HVAC is tested for water tightness and so each serial unit is also checked for water ingress protection. So, we fully comply to the clause 11.10.8 "The control equipment shall be arranged to prevent overheating and ingress of water and dirt to meet the requirements." Hence we propose to modify the clause as follows :- Electrical switchgear and control equipment for the system shall be located in a sealed cubicle, which shall be an integral part of the HVAC package unit. The cabinet shall be accessible from the inside the vehicle. The cubicle shall have IP65 protection. The electric switches, contactors and relays etc. should be proven in Metro train application and shall comply to IEC 60077-1,-2. The cables shall be halogenfree compliant to EN 45545 Part 1 to 7 in respect of flammability, smoke emission and toxicity requirements.	Already clarified vide S. N. 623 of clarification dated 03-02-2022. Please follow Tender condition.
181	2	VII C	11.4.8	177 of 384	Fresh air velocity at the HVAC outside grille face shall not be more than 2 m/s to prevent rain water from entering the HVAC along with fresh air. Similarly, mixed air velocity at the evaporator coils shall not be more than 2 m/s to prevent condensate water travelling to heating elements and supply air plenum/ducts.	There are several ways to design the HVAC structure so as to avoid water entering the HVAC through the fresh air inlet. Conversely, it may also happen that despite fresh air velocity less than 2 m/s, there may still be water ingress into the HVAC through fresh air inlet. The main point is to ensure that if any amount of water gets into HVAC, it is arrested and drained properly. Further, we will have water tightness as routine test to ensure there is no water droplets getting carried into the mixed air chamber. Similarly, there are several solutions available to arrest the water droplets in the mixed air such as water eliminator, simple metallic grille over evaporator, etc. The main point which drives water into the mixed air stream is the supply airflow quantity which we are forced to keep high in order to achieve the energy efficiency targets. Due to size constraints for HVAC unit on rail application, the dimension of evaporator cannot be so high to maintain this 2m/s velocity target. Further, it is extremely difficult to define and map the measurement points to meet this 2m/s criteria. Hence we request to delete this clause. Fresh air velocity at the HVAC outside grille face shall not be more than 2 m/s to prevent rain water from entering the HVAC along with fresh air. Similarly, mixed air velocity at the evaporator coils shall not be more than 2 m/s to prevent condensate water travelling to heating elements and supply air plenum / ducts.	Already clarified vide S. N. 617 of clarification dated 03-02-2022. Please follow Tender condition.
182	2	VII C	11.4.9	177 of 384	The design shall ensure easy cleaning of the drains, evaporator coils, and condenser coils without need for lifting of HVAC unit from the car roof. Filter replacement, data downloading by PTU, electrical connection cubicle, control panel cubicle LP & HP access valve etc. shall be easily accessible from inside of saloon to the maintenance personnel, but not to the passengers.	It will be extremely difficult to manage accessibility for LP and HP switches from inside the car saloon. As these components are not required to be checked or monitored frequently, we suggest to have accessibility for these switches from the roof. Hence, we request to modify this clause as follows :- The design shall ensure easy cleaning of the drains, evaporator coils, and condenser coils without need for lifting of HVAC unit from the car roof. Filter replacement, data downloading by PTU, electrical connection cubicle, control panel cubicle LP & HP access valve etc. shall be easily accessible from inside of saloon to the maintenance personnel, but not to the passengers.	Already clarified vide S. N. 618 of clarification dated 03-02-2022. Please follow Tender condition.

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183	2	VII C	11.5.7	178 of 384	Computational Fluid Dynamic (CFD) analysis tools should be used to optimize the air distribution and temperatures within the car. This study should be undertaken to confirm that all the design air velocity and airflow rate values are being achieved, temperature variations inside car are reasonable and are following the EN 14750 guidelines. This shall be validated in duct mock-up before finalization of duct design. The completion and submission of CFD analysis shall be a pre-requisite for issuance of NOC for Pre-Final design.	Instead of preparing duct for duct mockup, we propose GMRC to consider test reports of the actual duct with material used in serial production from the previous projects where same duct design has been implemented. If the design of the duct is similar to our past projects, we would prefer to verify the changes through CFD which is also requested in clause 11.5.7. Hence we request to delete this clause :- Computational Fluid Dynamic (CFD) analysis tools should be used to optimize the air distribution and temperatures within the car. This study should be undertaken to confirm that all the design air velocity and airflow rate values are being achieved, temperature variations inside car are reasonable and are following the EN 14750 guidelines. This shall be validated in duct mock-up before finalization of duct design. The completion and submission of CFD analysis shall be a pre-requisite for issuance of NOC for Prefinal design.	Already clarified vide S. N. 620 of clarification dated 03-02-2022. Please follow Tender condition.
184	2	VII C	11.5.2	177 of 384	Adequate sized duct from adjacent AC to the cab shall be routed to the driving cab, control cabinets and driving console. Air turbulators/fan shall be provided in the driving console, signaling cubicles and electrical cabinets to achieve uniform cooling. Air turbulators/fan to be monitored in TCMS.	Because of the convertible cabin solution from GoA2 to GoA4 configuration requested through clause 12.2.1 it will be difficult to use the Air turbulators installed inside the cabinets in the cabin. Instead, we propose to consider the natural effect of air diffusion (air flows from higher temp. zone to low temp. zone) to maintain acceptable temperature levels inside cubicles and electrical cabinets. Hence, we request to modify this clause as follows :- Adequately sized duct from adjacent AC to the cab shall be routed to the driving cab, control cabinets and driving console. Necessary means shall be considered / provided in the driving console, signalling cubicles and electrical cabinets to achieve uniform cooling. Air turbulators/fan to be monitored in TCMS.	Already clarified vide S. N. 619 of clarification dated 03-02-2022. Please follow Tender condition.
185	2	VII C	11.7.2	178 of 384	The condenser and evaporator fan motor shall work on 415V, 3 phase, 50Hz supply. However, in case of auxiliary supply failure, the evaporator fan motor shall be fed from the inverter. Dual speed condenser fan motor may be used. The fan motors shall have IP 66 protection as per IEC 60529. There shall be separate MCBs for condenser fan and supply air fan.	Fan motors cannot comply to IP66 protection. There are no solutions available globally which can comply to this requirement. Hence, we request to modify this clause as follows :- <i>The condenser and evaporator fan motor shall work on 415V, 3 phase, 50Hz supply. However, in case of auxiliary supply failure, the evaporator fan motor shall be fed from the inverter. Dual speed condenser fan motor may be used. The fan motors shall have IP 66 protection as per IEC 60529. There shall be separate MCBs for condenser fan and supply air fan.</i>	Already clarified vide S. N. 622 of clarification dated 03-02-2022 Please refer S. N. 69 of Addendum No. 3 dated 03-02-2022.
186	2	VII C	11.10.5	180 of 384	The temperature sensor control through programmable logic controller shall be easily accessible from saloon to facilitate maintenance.	We understand that this clause is requesting for accessibility to the HVAC controller from inside the saloon. Please confirm.	Already clarified vide S. N. 625 of clarification dated 03-02-2022. Please follow Tender condition.
187	2	VII C	11.10.17	181 of 384	Local Control: A control panel for each air conditioning (A/C) unit shall be provided. The panel shall include a switch with "On" and "Off" positions where "On" position implies automatic operation. Further selection of mode of operation may be done through the PLC. Panel shall also include relays to motor circuit breakers for the compressor, fan and blower motors; and fault indicator lights for maintenance. Energizing an A/C unit shall include the compressor, condenser fan and ventilating blower. Shut down of an A/C unit shall initiate 'pump down' of the system before cut-out, if required for the used type of compressor	As per clause 11.10.2, the HVAC units will be capable of being controlled from the OCC in UTO mode of operation and from driving console in non UTO mode of operation. Facilities for remotely cutting-out and resetting of a faulty air-conditioning unit will be provided in OCC in UTO mode of operation and in the train operator's driving console in non UTO mode of operation. Facilities for remotely selecting any particular air conditioning unit during maintenance will also be provided in the train operator's cab. When all these remotely controlled features are already available, why do we need an additional physical mode switch feature on the HVAC unit? This feature creates complexities in design of control panel and also adds not only one time cost, but also increases LCC due to additional components. Hence, we request to modify this clause as follows :- Local Control: A control panel for each air conditioning (A/C) unit shall be provided. The panel shall include a switch with "On" and "Off" positions where "On" position implies automatic operation. Further selection of mode of operation may be done through the PLC. Panel shall also include relays to motor circuit breakers for the compressor, fan and blower motors; and fault indicator lights for maintenance. Energizing an A/C unit shall include the compressor, condenser fan and ventilating blower. Shut down of an A/C unit shall initiate 'pump down' of the system before cut-out, if required for the used type of compressor	Already clarified vide S. N. 629 of clarification dated 03-02-2022. Please follow Tender condition.

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188	2	VII C	11.10.2	179 of 384	<p>The microprocessor shall have extendable memory permitting logging of faults, Data logs and system events in its memory for sufficiently long durations. The memory shall be based on FIFO system The microprocessor shall have suitable interface with TCMS for data communication and display. Suitable communication shall be provided to permit logged events to a HVAC maintenance terminal. HVAC maintenance terminals along with necessary hardware and software shall be provided to each depots.</p> <p>The units shall be capable of being controlled from the OCC in UTO mode of operation and from driving console in non UTO mode of operation. Facilities for remotely cutting-out and resetting of a faulty air conditioning unit should be provided in OCC in UTO mode of operation and in the train operator's driving console in non UTO mode of operation. It shall be possible to check the status of HVAC including dampers and emergency inverter under UTO self test.</p> <p>High Pressure (HP) and Low Pressure (LP) values shall be monitored by TCMS for which pressure sensors shall be provided. Ports shall be provided to measure HP and LP pressures in the depot while testing the HVAC working at unit level after removal from car. HP and LP cut-off pressure values shall be kept as per standards and established norms. Very small LP cut-off pressure value, resulting in too low temperature of refrigerant in evaporator coils and ice formation of condensate water, shall not be acceptable.</p>	<p>There are many controllers which have enough memory to log the faults and exceptional system events for very long time, enough to meet the lifetime of the controller itself. Therefore, we suggest to make this extendable memory requirement as optional. Hence, we request to modify this clause as follows :-</p> <p>The microprocessor shall have enough extendable memory to permit permitting logging of faults, Data logs and system events in its memory for sufficiently long durations. The memory shall be based on FIFO system The microprocessor shall have suitable interface with TCMS for data communication and display. Suitable communication shall be provided to permit logged events to a HVAC maintenance terminal. HVAC maintenance terminals along with necessary hardware and software shall be provided to each depots. The units shall be capable of being controlled from the OCC in UTO mode of operation and from driving console in non UTO mode of operation. Facilities for remotely cutting-out and resetting of a faulty air conditioning unit should be provided in OCC in UTO mode of operation and in the train operator's driving console in non UTO mode of operation. It shall be possible to check the status of HVAC including dampers and emergency inverter under UTO self test.</p> <p>High Pressure (HP) and Low Pressure (LP) values shall be monitored by TCMS for which pressure sensors shall be provided. Ports shall be provided to measure HP and LP pressures in the depot while testing the HVAC working at unit level after removal from car. HP and LP cut-off pressure values shall be kept as per standards and established norms. Very small LP cut-off pressure value, resulting in too low temperature of refrigerant in evaporator coils and ice formation of condensate water, shall not be acceptable</p>	<p>Already clarified vide S. N. 624 of clarification dated 03-02-2022. Please follow Tender condition.</p>
189	2	VII C	11.10.20	181 of 384	<p>The faults shall be reported to TCMS and OCC shall include but not limited to:</p> <ol style="list-style-type: none"> Compressor overload thermal cut-out. Ventilation blower failure. Saloon over-temperature (rising at 33°C). A sensor shall be provided in each return air grille. 	<p>As per clause 11.10.3 (c), there is one return air temperature sensor inside each HVAC unit for temperature control. There is no provision for any sensor near the return air grille which is on ceiling panel inside car saloon.</p> <p>Hence, we request to modify this clause as follows :-</p> <p>The faults shall be reported to TCMS and OCC shall include but not limited to:</p> <ol style="list-style-type: none"> Compressor overload thermal cut-out. Ventilation blower failure. Saloon over-temperature (temperature inside saloon rising at 33°C). A sensor shall be provided in each return air grille. 	<p>Already clarified vide S. N. 630 of clarification dated 03-02-2022. Please follow Tender condition.</p>
190	2	VII C	15.21.1 (III)	258 of 384	<p>..</p> <p>..</p> <p>b) Cooling and heating capacity tests</p> <p>All the above cooling tests shall be conducted for 3 hours in steady state conditions, except for extreme ambient test at 58°C, which will be conducted for 1 hour in steady state and low load test to be conducted for 4 hours in steady state. More tests can be added by Engineer.</p> <p>Cooling Capacity tests under summer & monsoon ambient conditions will have to be conducted to check COP as per ERTS clause 11.2.14 COP in summer shall be minimum 2.5 in all operating conditions. COP shall be measured under all combinations of compressor's operation, i.e. different no. of compressors working & different operating frequency steps in case of variable frequency control pertaining to different loading conditions AW0, AW1, AW2 & AW3.</p> <p>..</p> <p>..</p> <p>Acceptance criteria:</p> <p>..</p> <p><input type="checkbox"/> There should not be much difference in cooling capacities measured from evaporator side and condenser side;</p> <p>..</p> <p>..</p>	<p>After achieving stabilized parameters for indoor and outdoor conditions, we propose to consider internationally accepted 1 hour time duration of steady state operation and to take reading every 10 mins to have total 7 measurements for evaluating the mean during this time. Time duration mentioned for extreme ambient test and low load test is OK as these are extreme operating conditions on high pressure side and low pressure side respectively.</p> <p>As per section 7.3.2 of ASHRAE standard 37, " The outdoor air enthalpy method may be used when testing air cooled equipment that is rated as having a total cooling capacity less than 40 kW (135,000 Btu/h) and that does not use remote liquid chillers." Use of this method, however, is subject to the additional requirements and apparatus arrangement limitations specified in 8.6 and, if the equipment uses a remote outdoor coil(s), to the line loss adjustments described in 7.3.3.4 and 7.3.4.4.". As HVAC unit for Surat is of higher cooling capacity than 40kW, condenser side cooling capacity evaluation is not applicable.</p> <p>Hence, we request to modify this clause as follows :-</p> <p>..</p> <p>..</p> <p>b) Cooling and heating capacity tests</p> <p>All the above cooling tests shall be conducted for at least 1 hour 3 hours in steady state conditions, except for extreme ambient test at 58°C, which will be conducted for 1 hour in steady state and low load test to be conducted for 4 hours in steady state. More tests can be added by Engineer.</p> <p>Cooling Capacity tests under summer & monsoon ambient conditions will have to be conducted to check COP. As per ERTS clause 11.2.14 COP in summer shall be minimum 2.5 in all operating conditions. COP shall be measured under all combinations of compressor's operation, i.e. different no. of compressors working & different operating frequency steps in case of variable frequency control pertaining to different loading conditions AW0, AW1, AW2 & at AW3 loading condition.</p> <p>..</p> <p>Acceptance criteria:</p> <p>..</p> <p><input type="checkbox"/> There should not be much difference in cooling capacities measured from evaporator side and condenser side;</p> <p>..</p>	<p>Already clarified vide S. N. 638 of clarification dated 03-02-2022. Please follow Tender condition.</p>
191	2	VII C	15.21.1 (vii)	259 of 384	<p>Starting sequence test.</p>	<p>In order for these tests to be representative of the reality during revenue service, this test has to be done at train level and not at HVAC unit level because the compressors get started only when there is "start authorization" from the TCMS.</p> <p>Hence, we request to delete this clause as follows :-</p> <p>Starting sequence test.</p>	<p>Already clarified vide S. N. 639 of clarification dated 03-02-2022. Please follow Tender condition.</p>

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192	2	VII C	15.21.1 (viii)	259 of 384	External and internal smoke tests.	Internal smoke tests are not possible at HVAC unit level because the train environment cannot be replicated at HVAC OEM's premises. The internal smoke sensors are not installed inside HVAC unit. Hence, we request to modify this clause as follows :- External and internal smoke tests.	Already clarified vide S. N. 640 of clarification dated 03-02-2022. Please follow Tender condition.
193	2	VII C	15.21.1 (x)	260 of 384	Thermal expansion valve superheat test.	Please confirm that these tests need to be performed along with cooling performance tests at design points mentioned in clause 15.21.1 (iii) (b). We can record the superheat values during these tests. There need not be any additional tests to be done separately.	Already clarified vide S. N. 641 of clarification dated 03-02-2022. Please follow Tender condition.
194	2	VII C	15.22.2	260 of 384 (iii) Cooling Performance Test: Regulation (doors closed)- Cooling capacity of HVACs shall be sufficiently high to demonstrate 3 complete regulation cycles during the regulation testing for AW3 passenger load.. <input type="checkbox"/> Acceptance Criteria: .. b. In regulation tests, there should not be large variations in interior conditions.	The highlighted content in this clause are contradictory to each other. As per section 7.4 of EN 14750-2, thermal performances for regulation tests are evaluated either by considering 3 similar consecutive control cycles OR by considering 60 mins of continuous stabilized operation. When the compressors are regulating i.e. switching ON/OFF to maintain the desired level of thermal comfort, the variations in interior conditions are bound to happen For. Ex. the humidity inside car will start increasing rapidly once the regulating compressor is OFF and humidity will start decreasing quickly if the regulating compressor is in ON condition. Therefore this 3 complete regulation cycles requirement during regulation tests is not in accordance to the requested acceptance criteria of not having large variations in interior conditions. Hence, we request to modify this clause as follows :- (iii) Cooling Performance Test: Regulation (doors closed) - Cooling capacity of HVACs shall be sufficiently high to demonstrate either 3 complete regulation cycles or 60 mins continuous operation during the regulation testing for AW3 passenger load. <input type="checkbox"/> Acceptance Criteria: .. b. In regulation tests, there should not be large variations in interior conditions. ..	Already clarified vide S. N. 642 of clarification dated 03-02-2022. Please follow Tender condition.
195	2	VII C	15.22.3	261 of 384	Fresh air flow rate shall also be verified by using dummy passengers as per full passenger load and measuring interior CO2 levels with doors closed and doors open-close situation in all different types of cars.	By dummy passengers, we understand that these tests are to be carried out using CO2 bottles or CO2 cylinders for CO2 simulation / generation inside the car saloon. Please confirm. Further, as the duct and HVAC design in all cars is conceptually same, we suggest that CO2 tests are carried out only on the car meant for climatic chamber tests. Hence, we request to modify this clause as follows :- Fresh air flow rate shall also be verified by dummy passengers as per full simulating CO2 using CO2 bottles/cylinders corresponding to the CO2 emitted by AW3 passenger load and measuring interior CO2 levels with doors closed and doors open-close situation in all different types of cars the car meant for climatic chamber tests .	Already clarified vide S. N. 643 of clarification dated 03-02-2022. Please follow Tender condition.
196	2	VII C	15.23.1.4	262 of 384	Functional and running tests (to check functioning of working parts and to measure some important performance parameters). These tests shall also include measurement of conditioned air-delivery, fresh air quantity and power consumption.	The set-up for performing airflow tests is very complicated and these tests require long time for completion. Normally, Such tests are part of type test protocol. Further, the test set-up has to be prepared for each HVAC unit and therefore it is very expensive proposition to build the test set-up for every serial HVAC unit. These tests take lot of time and resources without any value addition as HVAC unit configuration is ensured through robust quality control. Considering the required time and resources for such tests, such kind of checks are not feasible to be part of HVAC unit level routine test protocol. Hence, we request to modify this clause as follows :- (iv) Functional and running tests (to check functioning of working parts and to measure some important performance parameters). These tests shall also include measurement of conditioned air-delivery, fresh air quantity and power consumption.	Already clarified vide S. N. 644 of clarification dated 03-02-2022. Please follow Tender condition.

S. N.	Part	Section	Clause No. / Item No.	Page No.	Bid Condition	Bidder's Query	GMRC's Response/ Clarification dated 11-02-2022
197	2	VII C	15.23.2.2	262 of 384	Checks under HVAC System operation conditions (i) System operation start, (ii) Airflow checks, (iii) Interior Temperature Control checks, (iv) Failure checks using TCMS, (v) Emergency ventilation, (vi) Functioning of smoke detection units.	Airflow measurements at car level are also equally complicated as that of at unit level. Normally, such tests are part of type test protocol. Fresh air has to be measured from the roof, whereas supply air measurement has to be done below the diffusers all along the length of the car. These tests take lot of time and resources without any value addition as HVAC unit and duct configuration are ensured through robust quality control. Considering the required time and resources for such tests, such kind of checks are not feasible to be part of car level routine test protocol. Hence, we request to modify this clause as follows :- 5.23.2.2 Checks under HVAC System operation conditions (i) System operation start, (ii) Airflow checks, (iii) Interior Temperature Control checks, (iv) Failure checks using TCMS, (v) Emergency ventilation, (vi) Functioning of smoke detection units.	Already clarified vide S. N. 645 of clarification dated 03-02-2022. Please follow Tender condition.
198	2	VII C	2.8.1 iv)	19 of 384	Pattern Failure: Repeated occurrence of three or more relevant failures of the same replaceable part, item or equipment in same manner in identical or equivalent applications when they occur at a rate which is inconsistent with the predicted failure rate of the part, item or equipment. The detailed methodology for identification of pattern failures shall be finalized during the design stage. The decision of the Engineer shall be final.	As per Bidder's experience the pattern failure can consider the identical application only and not the equivalent applications. Bidder requests to amend the Clause as follows: iv)Pattern Failure: Repeated occurrence of three or more relevant failures of the same replaceable part, item or equipment in same manner in identical or equivalent applications when they occur at a rate which is 30 % more than inconsistent with the predicted failure rate of the part, item or equipment, measured over a moving window of 3 months. The detailed methodology for identification of pattern failures shall be finalized during the design stage. The decision of the Engineer shall be final.	Already clarified vide S. N. 564 of clarification dated 03-02-2022. Please follow Tender condition.
199	2	VII C	2.8.1 iii)	18 of 384	Service Failure: Any relevant failure or combination of relevant failures during revenue service operations, simulated revenue operations, or during pre-departure equipment status checkouts to determine availability for revenue service, which results in one of the following: <input type="checkbox"/> Non-availability of the train to start revenue service after successful completion of pre-departure checkout; <input type="checkbox"/> A delay less than 3 minutes from the Schedule / Time table as noted at the destination station for the one way trip. <input type="checkbox"/> A delay equivalent to or exceeding 3 minutes but less than 30 minutes from the Schedule / Time table as noted at the destination station for the one way trip <input type="checkbox"/> A delay equivalent to or exceeding 30 minutes from the Schedule / Time table as noted at the destination station for the one way trip. <input type="checkbox"/> Withdrawal of the train from revenue services; <input type="checkbox"/> Train Rescue.	As per Bidder's experience the service failure can consider a delay equal to or exceeding 3 minutes and not the delay less than 3 minutes. Bidder requests to amend the Clause as follows: Service Failure: Any relevant failure or combination of relevant failures during revenue service operations, simulated revenue operations, or during pre-departure equipment status checkouts to determine availability for revenue service, which results in one of the following: <input type="checkbox"/> Non-availability of the train to start revenue service after successful completion of pre-departure checkout; <input type="checkbox"/> A delay less than 3 minutes from the Schedule / Time table as noted at the destination station for the one way trip. <input type="checkbox"/> A delay equivalent to or exceeding 3 minutes but less than 30 minutes from the Schedule / Time table as noted at the destination station for the one way trip <input type="checkbox"/> A delay equivalent to or exceeding 30 minutes from the Schedule / Time table as noted at the destination station for the one way trip. <input type="checkbox"/> Withdrawal of the train from revenue services; <input type="checkbox"/> Train Rescue.	Already clarified vide S. N. 563 of clarification dated 03-02-2022. Please follow Tender condition.
200	2	VII C	2.8.1 vi)	19 of 384	Reliability Verification Period: The period after four months of induction of first train into revenue service till the end of DLP.	As per Bidder's experience the period after six months of induction of first train into revenue service shall be considered for Reliability verification period.. Bidder requests to amend the Clause as follows: Reliability Verification Period: The period after four six months of induction of first train into revenue service till the end of DLP.	Already clarified vide S. N. 566 of clarification dated 03-02-2022. Please follow Tender condition.
201	2	VII C	2.8.1 viii)	19 of 384	Deboarding: The design shall ensure that passenger deboarding cases in operational trains are bare minimum and avoided to the extent possible. Any deboarding incidence will invite penalty not exceeding Rs 15 lakh. Engineer/Employer's decision to impose the penalty shall be final.	As per Bidder's experience the deboarding penalty is expected to be Rs 2 lakhs Bidder requests to amend the Clause as follows: Deboarding: The design shall ensure that passenger deboarding cases in operational trains are bare minimum and avoided to the extent possible. Any deboarding incidence will invite penalty not exceeding Rs 15 lakh 2 lakh. Engineer/Employer's decision to impose the penalty shall be final.	Already clarified vide S. N. 567 of clarification dated 03-02-2022. Please follow Tender condition.
202	2	VII C	2.8.2 ii)	19 of 384	The fleet average levels of MDBF, shall be calculated every month and shall be as specified in table 2.1, shall be achieved for a moving widow of every 3 months.	As per Bidder's experience, as like in any other rolling stock tenders, the MDBF, Shall be calculated for a moving window of every 6 months. This is because MDBF demonstration shall have minimum accumulation of mileage. Bidder requests to amend the Clause as follows: The fleet average levels of MDBF, shall be calculated every month and shall be as specified in table 2.1, shall be achieved for a moving widow of every 3.6 months.	Already clarified vide S. N. 568 of clarification dated 03-02-2022. Please follow Tender condition.
203	3	IX	General		Sub Clauses in PC are referred to GC Due to the FIDIC copyrights, these FIDIC General Conditions are not included in these Tender Documents which contain instructions on how these conditions can be acquired.	Request you to kindly provide G.C.C	Already Clarified vide S. N. 514 of clarification dated 03-02-2022. Please follow bid conditions.

S. N.	Part	Section	Clause No. / Item No.	Page No.	Bid Condition	Bidder's Query	GMRC's Response/ Clarification dated 11-02-2022
204	3	IX	14.2 of Part-A	5	Total Advance Payment: 10% Percentage of the Accepted Contract Amount	Inline with other MetroRail operators (viz, DMRC, UPMRC, CMRL) request you to kindly pay Mobilisation advance of 15% of the Contract Value in two stages. 10% in the first instalment and 5% in second instalment. The first instalment shall be paid after the award of Letter of Acceptance, submission of the Securities like Performance Security and Advance Payment Bank Guarantee and signing of the Contract Agreement. The second instalment shall be paid after satisfactory utilisation of the first instalment.	Already Clarified vide S. N. 524 of clarification dated 03-02-2022. Please follow bid conditions.
205	3	IX	14.2 of Part-B	25	Advance Bank Guarantee: Advance Bank guarantee in amounts and currencies equal to 110% of the advance payment	Inline with other MetroRail operators (viz, DMRC, UPMRC, CMRL) request you to kindly accept Bank guarantee for an amount equal to the Mobilisation Advance (i.e, 100% of Advance amount) Also Once 50% of Mobilization advance has been recovered, request you to kindly allow option to reduce ABG by the amount recovered	Already Clarified vide S. N. 540 of clarification dated 03-02-2022. Please follow bid conditions.
206	3	VIII	14.2	42	Advance Recovery: Recovery shall start once 10% of contract price in respective currencies is paid. Amount recovered shall be 25% of the Interim Payments in respective currencies till advance payment paid in these respective currencies is recovered.	Inline with major metro rail operators, request you to kindly amend the clause as under The recovery of the Mobilisation Advance Payment shall be done in respective currencies and shall commence when 20% of the original contract value of the work has been paid in respective currencies (in addition to the Mobilisation advance) and shall be recovered by deduction of 25% of the amount of each Interim Payment	Already Clarified vide S. N. 512 of clarification dated 03-02-2022. Please follow bid conditions.
207	3	IX	14.3 (c) of Part-A	5	Percentage of Retention: 10% Limit of Retention Money: 5% of Accepted Contract Value SectionX: Retention Money Guarantee	Kindly clarify whether retention amount will be 10% of every Milestone payment & the amount will be recovered up to 5% of Total Contract Value & Half of the Retention money will be certified for payment on TOC & other half of the retention money will be paid against retention money guarantee (if PBG at the time of TOC is less than second half of the Retention amount)? Inline with other Major Metro operators like DMRC, UPMRC, CMRL etc, employer shall kindly not deduct any any amount against interim payments for Retention	Already Clarified vide S. N. 525 of clarification dated 03-02-2022. Please follow bid conditions.
208	3	IX	14.7 of Part-A	5	Time for Payment of Interim Payment Certificates: 72 Days	Inline with Table: Methodology for Working out Monthly Cash Flow, Section IV: Qualification & Bidding Forms, release of interim payment to the contractor from IPC shall be 28 days only. Kindly confirm	Already Clarified vide S. N. 527 of clarification dated 03-02-2022. Please follow bid conditions.
209	3	IX	14.7 of Part-B	26	Payment: All payments to the contractor for the foreign currency portion shall be through a Letter of Credit. All bank charges of Employer's Banker shall be borne by the Employer and that of Contractor's Banker shall be borne by the Contractor. The charges towards confirmation (if required by the Contractor) shall be borne by the contractor	Bidder requests that the choice of Payment of foreign currencies through Letter of Credit (L/C) or direct payment made to Bank account through RTGS/NEFT should be left to bidder. Please modify the clause accordingly.	Already Clarified vide S. N. 542 of clarification dated 03-02-2022. Please follow bid conditions.
210	3	IX	1.1.3.7 of Part-A	1	Defects Notification Period: 24 months from the date of issue of Taking Over certificate for the last train set of the base quantity	Request you to kindly modify the clause as under 24 months from the date of issue of Taking Over certificate for the last train set of the base quantity in GoA2 mode or 12 month from the date of issue of Taking Over certificate for the last train set of the base quantity in GoA4 mode whichever is later	Already Clarified vide S. N. 515 of clarification dated 03-02-2022. Please follow bid conditions.
211	3	IX	4.2 of Part-A	2	Performance Security	Request you to kindly add the following Clause: Release of Performance Security: 1) On issue of Taking Over Certificate of the last trainset by the Project Manager as per contract provisions, one half (50%) of the Performance Security shall be refunded to the Contractor 2) The balance amount shall become due and shall be paid to the Contractor on signing of the Performance Certificate after the expiry of the final Defects Liability Period	Already Clarified vide S. N. 519 of clarification dated 03-02-2022. Please follow bid conditions.
212	1	IV	A - 1.1.1 of PS1	142	The contract price shall be inclusive of all Central/State/Local Taxes (except GST which will be paid extra as applicable), duties, levies, cess and all other incidental charges required to fulfil the tender conditions including statutory deductions viz., TDS towards Income Tax/GST/Labour Cess and any other taxes etc. and except Customs duty. Customs duty on i) imported complete finished trains; ii) imported equipment and parts/components required for indigenous manufacture of the trains; iii) imported finished Spares, Special tools, Jigs, Fixtures, Gauges, Testing and Diagnostic Equipment. iv) finished imported components and equipment installed in the indigenously manufactured Spares; shall be reimbursed in accordance with following provisions contained in this sub clause	Request you to also confirm that Contract price excludes the Customs Duty on imports of raw-material / parts / components / spares imported by sub-contractor where bill of entry is filed in the name of sub-contractor.	Already Clarified vide S. N. 34 of clarification dated 03-02-2022. Please follow bid conditions.

S. N.	Part	Section	Clause No. / Item No.	Page No.	Bid Condition	Bidder's Query	GMRC's Response/ Clarification dated 11-02-2022
213	1	IV	A - 1.1.3 of PS1	143	The bidder shall be solely responsible to find out and ascertain whether their supplies under this tender will qualify and be eligible for availing concessional duty benefits under Chapter 98.01 of Customs Tariff Act for Project Imports. After award of contract, at the written request of the Contractor, GMRC can facilitate the contractor with sponsoring/ recommendation Letter for getting themselves registered for availing Project Import Benefits. However, the responsibility to avail the concessional benefits under Project Import or otherwise as extended in accordance with the law of the land shall solely rest with the contractor. The payment of basic custom duty shall however be restricted to the concessional rate of duty applicable under Project Import. The contractor shall also ensure completion of all formalities including closure of Project Import etc., if any, with the custom authorities in terms of the Regulations	Please confirm following points – 1. In case concessional duty benefit under chapter 98.01 is not available to employer and / or employer unable to provide with sponsoring / recommendation letter and in case contractor is required to imports by paying full customs duty. In such case employer will reimburse applicable customs duty as paid by contractor for imports of components , spares etc. 2. The employer will provide necessary documents for concessional duty benefit in the name of contractor and sub-contractor for imports by contractor and sub-contractor.	Already Clarified vide S. N. 36 of clarification dated 03-02-2022. Please follow bid conditions.
214	1	IV	A - 1.1.3 (h) of PS1	144	This may also be noted that the reimbursement of the Custom Duty on goods shall be limited to the lower of the Invoice value/ BOE Value OR accepted BOQ price on such goods	Request Employer to delete the below as mentioned: This may also be noted that the reimbursement of the Custom Duty on goods shall be limited to the lower of the Invoice value/ BOE Value OR accepted price on such goods.	Already Clarified vide S. N. 43 of clarification dated 03-02-2022. Please follow bid conditions.
215	3	IX	4.2 (A) of Part-B	13	Within 30 days of the date of Letter of Acceptance of the Bid, the Contractor shall submit to the Employer: (a) An Undertaking in the approved format from a parent company, the identity of which shall have been submitted in writing to the Employer prior to acceptance of the Bid and against which the Employer shall have raised no objection. (b) A written Guarantee in the approved format from a parent company, the identity of which shall have been submitted in writing to the Employer prior to acceptance of the Bid and against which the Employer shall have raised no objection.	We request that this provision of submitting Parent Company Guarantee/Undertaking be waived off in case the bidder is an entity incorporated in India and has the requisite credentials for meeting the eligibility criteria on its own or through specialised subcontractors.	Already Clarified vide S. N. 538 of clarification dated 03-02-2022. Please follow bid conditions.
216	3	IX	4.2 of Part-A	2	Performance Security:The Performance Security will be in the form of a demand guarantee in the amount(s) of 10 percent of the Accepted Contract Amount for the Design-Build and in the same currency(ies) of the Accepted Contract Amount	As per Circular No. F.9/4/2020-PPD, Government of India, Ministry of Finance, Department of Expenditure, Procurement Policy Division, Quantum of Security deposit has been reduced to 3% of the value of contract for all existing contracts & all tenders/contracts issued/ concluded til 31 .12.2021 should also have the provision of reduced Performance Security. Thereby request you to kindly reduce the quantum of PBG to 3% of the Contract Value	Already Clarified vide S. N. 520 of clarification dated 03-02-2022. Please follow bid conditions.
217	1	II	17.4	10 of 24	Cost Centre 'F':Deleted	As per the referred Clause, Cost Centre F is deleted. There by we understand that the Scope of Simulator & Automatic wash plant in price schedule is not applicable. Thereby request you to kindly modify the price schedule accordingly	Already Clarified vide S. N. 11 of clarification dated 03-02-2022. Please refer S. N. 2 of Addendum No. 3 dated 03-02-2022.
218	1	IV	Pricing Document Sheet 2B4	2B4	Details of Taxes & Duties (Tax Bifurcation) in INR Note2: In the Tax schedule, Contractor shall furnish component wise tax details	As per the Tender conditions, Output GST shall be paid extra as applicable & Customs duties as under will be reimbursed: i) imported complete finished trains; ii) imported equipment and parts/components required for indigenous manufacture of the trains; iii) imported finished Spares, Special tools, Jigs, Fixtures, Gauges, Testing and Diagnostic Equipment. iv) finished imported components and equipment installed in the indigenously manufactured Spares; Thereby , we understand that the details of Customs duties, GST sought in the referred price schedule need not be provided during bid stage & request you to kindly amend the price schedule accordingly: Else kindly elaborate with an illustration on how this needs to be filled. As per our understanding, Out GST details of the Train & Customs duties details of Imported Parts will have to be provided	Already Clarified vide S. N. 52 of clarification dated 03-02-2022. Please follow bid conditions.
219	1	IV	Pricing Document Sheet CCC	CCC	Cost Centre No C:: Indegenious Manufacture, Despatch, Transportation, Delivery and receipt of Cars in Depot	In CCC sheet of price schedule, currently there is provision to enter cost only up to eighteenth indigenously manufactured 3 car train. Request you to amend the price schedule with provision up to 24th indigenously manufactured 3 Car Train	Already Clarified vide S. N. 47 of clarification dated 03-02-2022. Please refer S. N. 11 of Addendum No. 3 dated 03-02-2022.
220	1	IV	Pricing Document Sheet CCD	CCD	Cost Centre D: 50% payment on respective milestones in GoA2 mode & 50% payment on respective milestones in GoA4 mode	Request you to kindly add another column to enable us provide two milestones (one for GoA2 commissioning & another for GoA4 commissioning)	Already Clarified vide S. N. 48 of clarification dated 03-02-2022. Please follow bid conditions.
221	3	IX	Attachment to Part-A Contract Data	7	PROPOSED KEY DATE SCHEDULE FOR BID 'GMRC/RS2'	Request you to propose key dates for Simulator (if in scope)	Already Clarified vide S. N. 534 of clarification dated 03-02-2022. Please follow bid conditions.
222	1	IV	Pricing Document Sheet CCG: SL. N.8	Sl. No. 8 of CCG	Employer may exercise the option to procure individual Spares listed in Annexures GA1 to GA6 by the bidder at any time within five years of the date of issue of Performance Certificate. Procurement Price in such case shall be calculated by percentage of increase/decrease per annum (with minimum duration as one month) as quoted by the Contractor in Annexures GA1 to GA6.	Employer may exercise the option to procure individual Spares listed in Annexures GA1 to GA6 by the bidder at any time within five years of the date of issue of Performance Certificate. Procurement Price in such case shall be calculated by percentage of increase/decrease per annum (with minimum duration as one month) as quoted by the Contractor in Annexures GA1 to GA6 from the date of issue of TOC.	Already Clarified vide S. N. 50 of clarification dated 03-02-2022. Please follow bid conditions.

S. N.	Part	Section	Clause No. / Item No.	Page No.	Bid Condition	Bidder's Query	GMRC's Response/ Clarification dated 11-02-2022
223	1	IV	A - 1.1.1 of PS1	142	The contract price shall be inclusive of all Central/State/Local Taxes (except GST which will be paid extra as applicable), duties, levies, cess and all other incidental charges required to fulfil the tender conditions including statutory deductions viz., TDS towards Income Tax/GST/Labour Cess and any other taxes etc. and except Customs duty. Customs duty on i) imported complete finished trains; ii) imported equipment and parts/components required for indigenous manufacture of the trains; iii) imported finished Spares, Special tools, Jigs, Fixtures, Gauges, Testing and Diagnostic Equipment. iv) finished imported components and equipment installed in the indigenously manufactured Spares; shall be reimbursed in accordance with following provisions contained in this sub clause.	In case of bidding by consortium consists of Indian entity and foreign entity. Please confirm following points – 1. With respect to GST, if one of the consortium member's scope is only services or supply of spares / components then rate of GST will be applicable as per HS Code of Goods or Service Accounting Code for services. In such case GST rate for such consortium member who is not supplying RS will be as per HS code of goods or Service Accounting Code of services. 2. In case of offshore supplies by foreign consortium member to DMRC. Customs Duties on such offshore supplies (BCD + SWS + GST) paid in the name of Employer will be excluded from contract price. 3. Contract price excludes the Customs Duty on imports of raw-material / parts / components / spares imported by sub-contractor where bill of entry is filed in the name of sub-contractor. 4. Reimbursement of Customs Duty for imports in the name of contractor and sub-contractor attracts GST. GST on such reimbursement will be paid as actuals to contractor.	Already Clarified vide S. N. 35 of clarification dated 03-02-2022. Please follow bid conditions.
224	1	IV	A - 1.1.3(a) of PS1	143	The bidder shall be solely responsible to find out and ascertain whether their supplies under this tender will qualify and be eligible for availing concessional duty benefits under Chapter 98.01 of Customs Tariff Act for Project Imports. After award of contract, at the written request of the Contractor, GMRC can facilitate the contractor with sponsoring/ recommendation Letter for getting themselves registered for availing Project Import Benefits. However, the responsibility to avail the concessional benefits under Project Import or otherwise as extended in accordance with the law of the land shall solely rest with the contractor. The payment of basic custom duty shall however be restricted to the concessional rate of duty applicable under Project Import. The contractor shall also ensure completion of all formalities including closure of Project Import etc., if any, with the custom authorities in terms of the Regulations.	Please confirm following points – 1. In case concessional duty benefit under chapter 98.01 is not available to employer and / or employer unable to provide with sponsoring / recommendation letter and in case contractor is required to imports by paying full customs duty. In such case employer will reimburse applicable customs duty as paid by contractor for imports of components , spares etc. 2. The employer will provide necessary documents for concessional duty benefit in the name of contractor and sub-contractor for imports by contractor and sub-contractor.	Already Clarified vide S. N. 37 of clarification dated 03-02-2022. Please follow bid conditions.
225	1	IV	A - 1.1.3(c) of PS1	143	It may be noted that the imported items required to be delivered directly viz., Plants & Machinery, equipments, spares, tools, jigs and fixtures etc. at GMRC's depot/sites from the Indian Port shall be considered on Delivered Duty Paid (DDP-upto destination at GMRC depot) etc. basis. During execution of the contract the Employer reserves the right and at his sole discretion may instruct the contractor for supplies on Free On Board (FOB-Port of Origin to be named) basis with sale taking place on High Seas or otherwise and the Engineer's instruction shall be final and binding from the date of issue of such instructions. Financial implication, if any, on account of the instruction not being followed in letter and spirit by the contractor shall solely borne by the contractor. However, The responsibility, risk and liabilities arising on account of import and delivery of these goods at site i.e. Freight, transportation, insurance, unloading, custom clearance, inland transportation, unloading at site as specified by the Employer etc. lie with the contractor	In case of bidding by consortium consist of Indian entity and foreign entity, please confirm following points – 1. In case of offshore supplies by foreign consortium member then transfer of ownership of such goods will be on CIF / CIP port of entry into India. 2. Employer will be importer on records for such offshore supplies and Employer's IEC will be used for Customs Clearance.	Already Clarified vide S. N. 38 of clarification dated 03-02-2022. Please follow bid conditions.
226	1	IV	A - 1.1.3 (d) & (e) of PS1	143	Custom Duty Payment- The Contractor shall maintain details of concessional Custom Duty deposited with the authority and submit the following for reimbursement of Custom Duty:- i) Bills of Entry ii) Challan for deposit of Custom Duty iii) Declaration that the Contractor/Sub-contractors/Sub-vendors have neither claimed the deemed export benefit nor they will claim the same. iv) Declaration that the Contractor has not claimed the deemed export benefit.	In case of Customs duties paid in the name of contractor and sub-contractor, Bill of Entries for customs duties paid in the name of contractor and sub-contractor can be submitted for claiming the reimbursement of custom duty paid in the name of contractor and sub-contractor. Please confirm the same.	Already Clarified vide S. N. 39 of clarification dated 03-02-2022. Please follow bid conditions.
227	1	IV	A - 1.1.3 (d) & (e) of PS1	143	GST Payment- The Contractor shall maintain details of IGST/CGST/SGST/UTGST deposited with the authority and submit the following for reimbursement of GST:- i)Tax invoice in the name of Employer. ii)GSTR-1 return filed with authorities with the relevant abstract showing the details of invoices pertaining to Gujarat Metro Rail Corporation Limited or the form of return as amended by the Central / State Government time to time. iii)GSTR-3B return or any other form of return prescribed by the authorities. iv)Copy of Challans in regard to deposit of GST. v) Certificate of Chartered Accountant in regard to turnover of the Contract or relating to GMRC project and deposit of due taxes with respective tax authorities	Input GST credit can also be used for payment of output GST. In case of output GST on supplies to employer is paid by using input tax credit, the same will be reimbursed to Employer. In such case the challan for duty payment is not required. Please confirm the same.	Already Clarified vide S. N. 40 of clarification dated 03-02-2022. Please follow bid conditions.
228	1	IV	A - 1.1.3 (f) of PS1	144	In case of foreign supplier, the GST under reverse charge mechanism as applicable will be deposited by the Employer separately with the appropriate authority as per IGST/CGST/SGST/UTGST Act.	In case of bidding by consortium consists of Indian entity and foreign entity. Please confirm that in case of offshore supplies by foreign consortium member, employer will be importer on records and customs clearance will be done in the name of employer. Customs duties on such offshore supplies will be paid in the name of employer. Please confirm the same.	Already Clarified vide S. N. 41 of clarification dated 03-02-2022. Please follow bid conditions.
229	1	IV	A - 1.1.3 (h) of PS1	144	This may also be noted that the reimbursement of the Custom Duty on goods shall be limited to the lower of the Invoice value/ BOE Value OR accepted BOQ price on such goods. No taxes and duties shall be reimbursed on wastage, theft etc.	There will not be any BOQ price for imports of raw material or components. Hence, in case of imports of raw-material or components by contractor and sub-contractor the customs duties for such raw-material or components will be reimbursed to the lower of Invoice value / BOE value. Please confirm the same.	Already Clarified vide S. N. 42 of clarification dated 03-02-2022. Please follow bid conditions.

S. N.	Part	Section	Clause No. / Item No.	Page No.	Bid Condition	Bidder's Query	GMRC's Response/ Clarification dated 11-02-2022
230	1	IV	A - 1.2 of PS1	145	With reference to the GC Sub Clause 13.6, the Contract Price shall be adjusted only to take into account any new taxes or any statutory variation in Custom Duty and GST on finished product/ item during the contractual completion period shall be to the Employer's account for which the Contractor shall furnish documentary evidence in support of their claims. However, any increase in the cost due to new taxes or change in the existing taxes introduced during the extended contractual completion period due to the Contractor's fault (as per GC sub clause 8.5) shall be to the Contractor's account	Please confirm that change in law will cover changes in interpretation. Please confirm coverage of any new taxes output supplies and services. Also change in law due to introduction of new tax or change in tax rate to cover inputs/ input services	Already Clarified vide S. N. 44 of clarification dated 03-02-2022. Please follow bid conditions.
231	1	IV	B - 2 of PS1	146	The 'BID TOTAL LUMP SUM PRICE' for the whole of Works shall be apportioned by the Bidder among the various Cost Centres, except Cost Centre 'G' and 'H' , which shall be the actual cost. The apportioned amount for each Cost Centre will be further distributed among various Milestones included in that Cost Centre, separately for foreign currency and for the Rupee portion. Wherever the bidder comprises of a joint venture or consortium and the bidder desires separate payments to each member of the joint venture or consortium, the bidder shall clearly lay down the Milestones/Currencies allocated to the different members of the Joint Venture or Consortium, which shall be in agreement with the intended percentage share of the members as indicated in the Joint Venture/Consortium agreement for this contract	In case of bidding by consortium consists of Foreign entity and Indian entity. Please confirm following points – 1. Each consortium member will have separate billing schedule as per respective scope of work in consortium agreement. 2. Each consortium member will be allowed to raise separate invoicing as per their scope of work & billing schedule. 3. Each consortium member will get paid separately to their respective bank account against the invoices raised by them. 4. Consortium will not be required to be registered as a taxable entity.	Already Clarified vide S. N. 45 of clarification dated 03-02-2022. Please follow bid conditions.
232	3	VIII	7.7	27	Each item of Plant and Materials shall, to the extent consistent with the mandatory requirements of the Laws of the Country, become the property of the Employer at whichever is the earlier of the following times, free from liens and other encumbrances: (a) when it is delivered to the Site; (b) when the Contractor is paid the value of the Plant and Materials under Sub-Clause 8.11 Payment for Plant and Materials after Employer's Suspension; or when the Contractor is paid the amount determined for the Plant and Materials under Sub-Clause 14.5 [Plant and Materials intended for the Works].	In case of bidding by consortium consists of Foreign entity and Indian entity, in case of offshore supplies by foreign consortium member the ownership of such offshore material will be transferred on High Seas or outside India. Please confirm the same.	Already Clarified vide S. N. 509 of clarification dated 03-02-2022. Please follow bid conditions.
233	1	IV	A - 1.1.1 of PS1	142	The contract price shall be inclusive of all Central/State/Local Taxes (except GST which will be paid extra as applicable), duties, levies, cess and all other incidental charges required to fulfil the tender conditions including statutory deductions viz., TDS towards Income Tax/GST/Labour Cess and any other taxes etc. and except Customs duty. Customs duty on i) imported complete finished trains; ii) imported equipment and parts/components required for indigenous manufacture of the trains; iii) imported finished Spares, Special tools, Jigs, Fixtures, Gauges, Testing and Diagnostic Equipment. iv) finished imported components and equipment installed in the indigenously manufactured Spares; shall be reimbursed in accordance with following provisions contained in this sub clause	We understand that - 1. Contract price excludes the Customs Duty on imports of raw-material / parts / components / spares imported Contractor and by sub-contractor where bill of entry is filed in the name of Contractor or by sub-contractor respectively. 2. The reimbursement of customs duty will be made against documentary evidence as a. In case of imports in the name of contractor – i. Proof of customs duty payment by Contractor & ii. Bill of entry filed in the name of Contractor b. In case of imports in the name of sub-contractor i. Proof of customs duty payment by sub-contractor & ii. Bill of entry filed in the name of sub-contractor 3. Reimbursement of Customs Duty for imports in the name of contractor and sub-contractor attracts GST. GST on such reimbursement will be paid as actuals to contractor. Please confirm our understanding.	Please follow bid conditions.
234	1	IV	A - 1.1.3(a) of PS1	143	The bidder shall be solely responsible to find out and ascertain whether their supplies under this tender will qualify and be eligible for availing concessional duty benefits under Chapter 98.01 of Customs Tariff Act for Project Imports. After award of contract, at the written request of the Contractor, GMRC can facilitate the contractor with sponsoring/ recommendation Letter for getting themselves registered for availing Project Import Benefits. However, the responsibility to avail the concessional benefits under Project Import or otherwise as extended in accordance with the law of the land shall solely rest with the contractor. The payment of basic custom duty shall however be restricted to the concessional rate of duty applicable under Project Import. The contractor shall also ensure completion of all formalities including closure of Project Import etc., if any, with the custom authorities in terms of the Regulations.	We understand that – 1. The employer will provide necessary documents for concessional duty benefit in the name of contractor and sub-contractor for imports by contractor and sub-contractor. 2. Alternatively, if employer issues recommendation letter and other documents for concessional duty benefit in the name of contractor then employer will include the names of sub-contractor and items to be imported by sub-contractor in that letter. Please confirm our understanding.	Already Clarified vide S. N. 36 & 37 of clarification dated 03-02-2022. Please follow bid conditions.
235	2	VII A	1.1.6	5 of 66	For the cars manufactured (manufacture also includes assembly of Cars) in India (onshore factory), an essential condition for complying with the bid is that the Contractor shall establish facilities either independently or with an Indian Partner for local manufacture of coaches in India. In case local manufacture is undertaken in the facilities of the local partner, Quality control (total) and testing at works shall be the responsibility of the member of consortium based on whose credentials the bidder has qualified for this bid. The bidder shall submit detailed proposal indicating details of the Indian Partner (if any), the place of manufacture in India, work schedule etc. in the bid. For the manufacture of cars in India in addition to the details submitted in the bid, the Contractor shall submit detailed proposal for approval by Employer within 6 (six) months of award of contract.	We understand that as per the provisions of this Clause 1.1..6 of ERGS, the bidder is permitted to tie-up with a "Indian Partner" to undertake the manufacturing of Rolling Stock at its facilities in India. The bidder would meet the eligibility criteria of the tender on its own. However, such a "Indian Partner" is not required to be a member of the Consortium at the bidder level and can be proposed as a subcontractor to undertake the manufacturing of Rolling Stock. An MoU to this effect would be submitted our bid. Please confirm our understanding. In such a case, we request Employer to confirm that: (i) Employer will provide necessary documents for availing concessional duty benefits under Chapter 98.01 of Customs Tariff Act in the name such "Indian Partner" for the imports by the local partner to avail Project Import Benefits (ii) Any limit of subcontracting of works will not apply in case of such a "Indian Partner"	Already Clarified vide S. N. 648 of clarification dated 03-02-2022. Please follow bid conditions.

S. N.	Part	Section	Clause No. / Item No.	Page No.	Bid Condition	Bidder's Query	GMRC's Response/ Clarification dated 11-02-2022
236	3	IX	8.7 of Part-A	4	Section 8.7 Maximum Amount of Delay Damages 10% of the Accepted Contract Amount payable in the currencies and proportions in which the accepted Contract amount is payable. 8.7 & 14.15(b) Delay Damages for the Works (v) There is no maximum limit in levy of LD for delays in individual Key Dates. However, maximum limit for cumulative LD for complete Contract shall not exceed 10% of the total Contract Price.	Contractor request to include the delay damages on account of designated contractor to be included in overall cumulative LD for complete contract as Proposed clause: Section 8.7 Maximum Amount of Delay Damages 10% of the Accepted Contract Amount (including delay damages on account of Designated Contractor) payable in the currencies and proportions in which the accepted Contract amount is payable. 8.7 & 14.15(b) Delay Damages for the Works v) There is no maximum limit in levy of LD for delays in individual Key Dates. However, maximum limit for cumulative LD for complete Contract shall not exceed 10% of the total Contract Price (including delay damages on account of Designated Contractor)	Already Clarified vide S. N. 522 of clarification dated 03-02-2022. Please follow bid conditions.
237	3	IX	1.1.3.7 of Part-A	1	Defects Notification Period 24 months from the date of issue of Taking Over certificate for the last train set of the base quantity of '72 cars'. The Defects Liability Period for the increased quantity (if quantity variation option is exercised) shall be 24 months from the date of issue of Taking Over Certificate for the last train set of the increased quantity.	Contractor requests that change the DNP period as below: Proposed clause: 24 months from the date of issue of Taking Over certificate for the each last train set of the base quantity of '72 cars'. The Defects Liability Period for the increased quantity (if quantity variation option is exercised) shall be 24 months from the date of issue of Taking Over Certificate for the each last train set of the increased quantity.	Already Clarified vide S. N. 516 of clarification dated 03-02-2022. Please follow bid conditions.
238	3	VIII	19.1	57	In this Clause, "Force Majeure" means an exceptional event or circumstance: (b) which such Party could not reasonably have provided against before entering into the Contract, Force Majeure may include, but is not limited to, exceptional events or circumstances of the kind listed below, so long as conditions (a) to (d) above are satisfied (iii) riot, commotion, disorder, strike or lockout by persons other than the Contractor's Personnel and other employees of the contractor and Subcontractors,	Please confirm if COVID will be included for the purpose of FM relief or not, since next lockdown is never known and the contractor can't be sure of its suppliers' county legislations too. Contractor propose to include epidemics/pandemics, quarantine restrictions in exceptional events and remove clause (b) from Force Majeure definition	Already Clarified vide S. N. 513 of clarification dated 03-02-2022. Please follow bid conditions.
239	3	X	Performance Bank Guarantee template Advance Payment Guarantee template Retention Bond template	4, 6 & 8	•Performance Bank Guarantee template •Advance Payment Guarantee template •Retention Bond template	We witnessed that format of the performance bond or any other bank guarantee doesn't have "NWC" clause, as banks are not comfortable issuing any guarantee due to change in statutory provisions. Propose to include Notwithstanding anything contained herein: -Our liability under this guarantee shall not exceed Rs. -This bank guarantee shall be valid up to We are liable to pay the guarantee amount or any part thereof under the bank guarantee only and only if you serve upon us a written claim or demand on or before (date of expiry of guarantee)	Please follow bid conditions.
240	3	VIII	13	38	Variations & Adjustments	Contractor requests that the Variations requests by the Employer be limited to 15 % of the Accepted Contract Amount	Already Clarified vide S. N. 511 of clarification dated 03-02-2022. Please follow bid conditions.
241	2	VII A	1.1.6	5 of 66	For the cars manufactured (manufacture also includes assembly of Cars) in India (onshore factory), an essential condition for complying with the bid is that the Contractor shall establish facilities either independently or with an Indian Partner for local manufacture of coaches in India. In case local manufacture is undertaken in the facilities of the local partner, Quality control (total) and testing at works shall be the responsibility of the member of consortium based on whose credentials the bidder has qualified for this bid. The bidder shall submit detailed proposal indicating details of the Indian Partner (if any), the place of manufacture in India, work schedule etc. in the bid. For the manufacture of cars in India in addition to the details submitted in the bid, the Contractor shall submit detailed proposal for approval by Employer within 6 (six) months of award of contract.	We understand that as per the provisions of this Clause 1.1.6 of ERGS, the bidder is permitted to tie-up with a "Indian Partner" to undertake the manufacturing of Rolling Stock at its facilities in India. The bidder would meet the eligibility criteria of the tender on its own. However, such a Indian Partner is not required to be a member of the consortium at the bidder level and can be proposed as a subcontractor to undertake the manufacturing of the Rolloing stock. An MoU to this effect would be submitted with our bid. Please confirm. In Such Case, we request Employer to confirm that: 1. Employer will provide necessary documents for availing concessional duty benefits under Chapter 98.01 of custom duty Act in the name such "Indian Partner" for the imports by the local partner to avail Project Import enefits. 2. Any Limits of subcontracting of works will not apply in case of such a "Indian Partner".	Already Clarified vide S. N. 648 of clarification dated 03-02-2022. Please follow bid conditions.
242	3	IX	Additional Cluase	32	Safe Custody Bank Guarantee (Additional Clause) The Contractor shall submit a Safe Custody Bank Guarantee in the format given in Section X. Contract Forms against payments to be made for Plant and Equipment delivered at site. The amount of safe custody Bank Guarantee shall be equal to 95% percent of the amount due as per relevant clause wherever applicable. The value of the Safe Custody Bank Guarantee would be adjusted for the equipments already commissioned. Ownership of Plant and Material (7.7) Replace the GC Sub-Clause 7.7 with provisions as under: The plant, goods and material not finally taken over as per GC Clause 10 but payment against which have been made in part or full against Indemnity Bond / Safety Custody Bank Guarantee will remain under the Contractor's custody. The Contractor shall be responsible for its safety and will bear all the risks till taken over by the Employer	Contractor requets to delete the requirement for the safe custody and relevant clauses whenever appearing including under PCC - additional clauses, ownership of Plants & Materials.	Already Clarified vide S. N. 545 of clarification dated 03-02-2022. Please follow bid conditions.

S. N.	Part	Section	Clause No. / Item No.	Page No.	Bid Condition	Bidder's Query	GMRC's Response/ Clarification dated 11-02-2022
243	1	II	23.1	15 of 24	The deadline for Bid submission (for both offline submission (submission of Hard copies and soft copies) and online submission (through e-procurement method)) is: Date: 21-02-2022 Time: 15:00 Hrs (IST) at the following address, which shall be the controlling address for the purposes of the timely submission of the Bid: Attention: Sr. DGM (Civil & Proc.) Address: Gujarat Metro Rail Corporation (GMRC) Limited, Block No.1, First Floor, Karmayogi Bhavan, Behind Nirman Bhavan, Sector 10/A, Gandhinagar City: Gandhinagar ZIP Code: 382010 Country: India	we request for an extension in the current bid submission date of 21st February 2022 by 6 weeks	Please follow bid conditions.