

Pre-bid queries for Tender No. CMRL/PHASE -II/SYS/ARE03/2020 Design, Manufacture, Supply, Testing, Commissioning of Standard Gauge Metro Rolling Stock (Electrical Multiple units) and Training of Personnel						
Name of the Bidder :		ABB India Ltd.				
Sl.No.	Part/ Section No.	Clause No.	Original Bid condition	Bidder's Query	CMRL Response	Addendum (Y/N)
1	PART- 2, SECTION VI - EMPLOYER'S REQUIREMENTS TECHNICAL SPECIFICATION Section 10 – HV and Propulsion System	10.11.8	Traction inverters shall be housed in a stainless container, which is mounted under floor in each of the motorized cars. The container shall house the power electronics, the monitoring devices and the traction control unit. It is connected to the vehicle via high voltage power connections, control connections and 3-phase output to the traction motors.	Please clarify if bidder can use alternate material , viz , Magnelis (Arcelor Mittal) or PosMAC(POSCO) type steel alloy material for enclosures. Other than Stainless steel / Aluminum usually used .	Tender condition prevails.	N
2	PART- 2, SECTION VI - EMPLOYER'S REQUIREMENTS TECHNICAL SPECIFICATION Section 2.2 – General Requirements	2.2.30	Fire properties of the materials used shall comply with EN 45545 part 1 to part 7 latest editions (Category 4-A, Hazard level HL3) as a minimum or better international standard applicable for similar Metro applications. Requirements of ERTS section 2.26 shall be met.	Electrical low voltage switchgear components like Power contactors, Auxiliary contactors/ relays, MPCB-Motor protection circuit breaker , Electronic protection relays, MCB, RCCB,RCBO etc shall be in compliance with international railway rolling stock standards EN-45545-2 , Protection against Fire & smoke with Category 4-A, Hazardous level HL-3.	Tender condition prevails.	N
3	PART- 2, SECTION VI - EMPLOYER'S REQUIREMENTS TECHNICAL SPECIFICATION Section 2.13 – Shock & Vibration	2.13.1.8	Where acceptable results from prior testing are not available for any item of equipment, tests shall be performed in accordance with IEC 61373 or EN 12663.	Electrical low voltage switchgear components like Power contactors, Auxiliary contactors/ relays, MPCB-Motor protection circuit breaker , Electronic protection relays, MCB, RCCB,RCBO etc shall be in compliance with international railway rolling stock standards IEC -61373, Protection against Shock and Vibration	Tender condition prevails.	N

Name of the Bidder :		Alstom – Lot 1				
Sl.No.	Part/ Section No.	Clause No.	Original Bid condition	Bidder's Query	CMRL Response	Addendum (Y/N)
1	Part 2 ERTS	14.2.2	Ethernet-based Train Backbone with redundant Train Backbone Nodes (TBNs) (at least two in each consist of network) shall be provided to achieve interoperability between consists when coupled in the train as per IEC 61375-2-5	Ethernet-based Train Backbone with redundant Train Backbone Nodes (TBNs) is not applicable as CMRL doesn't intend to run the train in multiple unit operation during normal revenue service Bidder request to delete this clause	Please refer to Addendum for revised clause.	Y
2	Part 2 ERTS	14.2.3	Ethernet Consist Network with dual-homing ladder-type topology or latest better technology (compliant with IEC 61375-3-4) shall be adopted. The ECN shall maintain redundant communication links to the ETB.	Ethernet-based Train Backbone with redundant Train Backbone Nodes (TBNs) is not applicable as CMRL doesn't intend to run the train in multiple unit operation during normal revenue service Bidder request to modify this clause as below Ethernet Consist Network with dual-homing ladder-type topology or latest better technology (compliant with IEC 61375-3-4) shall be adopted. The ECN shall maintain redundant communication links to the ETB.	Please refer to Addendum for revised clause.	Y
3	Part 2 ERTS	14.2.4	Dual-Homing End Devices (ED) All the End Devices shall support dual-homing type Ethernet connections to ECN via physically independent ports to increase system reliability and availability. All digital and analog I/O's interfacing with TCMS (directly or via an interface unit) shall also be fully redundant.	Bidder recommends TCMS with ring type topology network architecture to meet reliability targets and system availability. And all safety critical digital and analog IOs interfacing with TCMS (directly or via an interface unit) shall also be fully redundant. Bidder requests to modify the clause: All the End Devices shall support dual-homing type Ethernet connections to ECN via physically independent ports to increase system reliability and availability. All safety critical digital and analog IOs interfacing with TCMS (directly or via an interface unit) shall also be fully redundant."	Please refer to Addendum for revised clause.	Y
4	Part 2 ERTS	14.1.5	TCMS shall be minimum of SIL2 compliant for all vital and safety related control and monitoring functions including but not limited to the following hardware, software and control functions- at all levels including but not limited to hardware, software and control functionality etc. Any change in SIL level shall be subject to the hazard analysis and acceptance by CMRL, whose decision shall be final and binding SIL compliance for the below functions shall be submitted for review and approval of CMRL [CDRL 14-3]	Bidder requests to modify the clause as below: "The contractor shall maximize the use of TCMS software for safety related functions up to SIL2 and justify whenever some SIL2 (or less) safety related functions cannot be implemented. SIL allocation to functions shall be the result of the hazard analyses of the Contractor, performed during the design stage."	Tender condition prevails.	N

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Sl.No.	Part/ Section No.	Clause No.	Original Bid condition	Bidder's Query	CMRL Response	Addendum (Y/N)
			a) Vehicle Automatic Train Control operation mode (ATP, ATO, UTO etc.), b) Door Proving loop cut-out, c) PWM transmission (communication), d) PWM signal (Hardware) failure, e) Door Open Push Button, f) Direction control of train operation, g) Holding brake release, h) Speed transmission, i) Fire alarm transmission Part 2 ERTS j) ED (Electro Dynamic) brake cut-out signal transmission, k) Actual ED brake effort signal transmission l) Wheel Sliding signal transmission to Signalling, Brakes and Traction systems, m) ED brake effective signal transmission, n) Holding Brake demand signal transmission, o) Holding Brake applied status transmission; p) Deadman function q) Wheel Slip signal transmission to Signalling, Brakes and Traction systems, r) Real time remote transmission of train data as defined in RTR-DMS of ERTS Section 14.11 & 14.13.			
5	Part 2 ERTS	14.12.3 & 10.17.1	The Contractor shall provide means to record usage of actual utilized energy of train with an accuracy of ±5% for motoring and regeneration Accuracy: All energy measurements shall have accuracy within ±3% of the measurements made with Standard Wattmeter and Standard Instrument Transformers connected at appropriate test point in the Vehicle Control Circuit. This shall be validated during type tests.	As both the clauses are contradicting, Bidder understands & propose Energy measurement with accuracy of ±5%. Please confirm.	Please refer to Addendum for revised clause.	Y
6	Part 2 ERTS	14.5.9	DDU Response Time The response time for most complex DDU screen change from one TCMS screen to other TCMS screen, TCMS to CCTV screens, maneuvering from one camera image to other under full DDU loading shall be approximately 0.5 seconds. Contactor shall submit compliance details during design stage which shall be got validated during line test	Bidder request to allow screen transition time approximately 2 seconds, Bidder request to modify clause as below The response time for most complex DDU screen change from one TCMS screen to other TCMS screen, TCMS to CCTV screens, maneuvering from one camera image to other under full DDU loading shall be approximately 2 seconds. Contactor shall submit compliance details during design stage which shall be got validated during line test	Tender condition prevails.	N

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Sl.No.	Part/ Section No.	Clause No.	Original Bid condition	Bidder's Query	CMRL Response	Addendum (Y/N)
7	Part 2 ERTS	1.4.3	Based on operational requirement, rakes may have to be operated in GoA2 mode with driver / in GoA3 mode with attendant / in GoA4 (UTO). However, the Phase 2 project is planned with operations in UTO (GoA4) from the initial passenger service inauguration itself.	Bidder understand that DMC car layout shall be as per GoA4 requirement, Please Confirm.	YES.	N
8	Part 2 ERTS	12.3.2	All piping shall be of stainless steel conforming to the requirements of ISO 9329-4 and ISO 9330-6 or equivalent with flared compression fittings. The pipe fittings shall conform to the requirements of DIN 2353 or approved equal.	Bidder request to modify the clause allowing other solution as well All piping shall be of stainless-steel conforming to the requirements of ISO 9329-4 and ISO 9330-6 or equivalent with flared or flare less double compression fittings. The pipe fittings shall conform to the requirements of DIN 2353 or approved equal.	Please refer to Addendum for revised clause.	Y
9	Part 2 ERTS	11.4.13.2	The Sperling ride index of the rake at 80 km/h shall not exceed 2.50 in both vertical and horizontal directions in inflated condition of secondary suspension and 3.0 in deflated condition.	Please note that both the clauses are contradicting for Ride Index in Normal condition with New Wheel.	Tender condition prevails.	N
		&		Bidder Propose to modify the Clause 11.4.13.2 as follows (inline with Clause 11.4.13.5) :		
		11.4.13.5	The contractor shall submit calculations to confirm that ride index lateral and vertical shall not exceed 2.75 under all normal operating conditions for new cars and new track and shall not exceed 3 under all normal operating conditions for worn-out cars operated on rundown track conditions.	11.4.13.2 The Sperling ride index of the rake at 80 km/h shall not exceed 2.50 2.75 in both vertical and horizontal directions in inflated condition of secondary suspension and 3.0 in deflated condition.		
10		17.5.2.11	The bogies rotational resistance (X factor) test under inflated and deflated air spring conditions would be carried out at the manufacturer's works under tare conditions, the value of which should not exceed 0.08 at rotational speed of 0.8 degrees/second.	Bidder request to modify the clause as below : The bogies rotational resistance (X factor) test under inflated and deflated air spring conditions would be carried out at the manufacturer's works under tare conditions, the value of which should not exceed 0.08 0.1 at rotational speed of 0.8 1.0 degrees/second.	Tender condition prevails.	N
11	Part 2 ERTS	11.4.13	Derailment Safety	Bidder request to modify the clause as below Derailment Safety	Tender condition prevails.	N
			The design of the bogie, including the wheel profile, shall prevent the generation of high Lateral to Vertical force (L/V) ratios on any wheel that could result in derailment under all track conditions defined in ERTS section 2, and at all permitted car speeds over the CMRL alignment, up to 10% above the maximum speed permitted, the L/V ratio shall not exceed 1.0 under railhead coefficient of friction conditions up to and including 0.5. Yard operation and deflated secondary suspension conditions shall also be considered	The design of the bogie, including the wheel profile, shall prevent the generation of high Lateral to Vertical force (L/V) ratios on any wheel that could result in derailment under all track conditions defined in ERTS section 2, and at all permitted car speeds over the CMRL alignment, up to 10% above the maximum speed permitted, the L/V ratio shall not exceed 1.0 under railhead coefficient of friction conditions up to 0.5 0.4 . Yard operation and deflated secondary suspension conditions shall also be considered		

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12	Part 2 ERTS	11.4.18.1	<p>The bogie suspension, in conjunction with the car body, shall be designed to enable cars to operate satisfactorily on track with the maximum specified track twist. The maximum off-loading of wheels '□Q/Q' shall not exceed 50% of nominal wheel load in inflated up to maximum permissible speeds and shall not exceed 60% of nominal wheel in deflated conditions up to maximum permissible speeds. Test shall be shall conducted in accordance with ERTS clause 17.5.2.10.9</p> <p>Calculations shall be in accordance with EN14363 Method 3): Railway applications - Testing for the acceptance of running characteristics of railway vehicles</p>	<p>Bidder request to modify the clause as follows: The bogie suspension, in conjunction with the car body, shall be designed to enable cars to operate satisfactorily on track with the maximum specified track twist. The maximum off-loading of wheels 'DQ/Q' shall not exceed 50% 60% of nominal wheel load in inflated up to maximum permissible speeds and shall not exceed 60% 70% of nominal wheel in deflated conditions up to maximum permissible speeds. Test shall be shall conducted in accordance with ERTS clause 17.5.2.10.9 Calculations shall be in accordance with EN14363 Method 3): Railway applications - Testing for the acceptance of running characteristics of railway vehicles</p>	Tender condition prevails.	N
13	Part 2 ERTS	11.12.1	At both the outer ends of the Driving Motor Car, an obstruction deflection & detection device and derailment detection device (ODDD) shall be installed to detect the obstacles and push away obstacles on track to avoid derailment. All other bogies shall have derailment detection device.	<p>As this corridor is dedicated corridor for metro operation, hence there is no need of deflection device. The safety can be assured with Obstruction detection & Derailment device (ODD) device</p> <p>Bidder proposal is as follows: At the front of the DM car, an obstruction detection & derailment detection device shall be installed to detect the obstacles and push away obstacles on track to avoid derailment. All other bogies shall have derailment detection device</p>	Tender condition prevails.	N
14	Part 2 ERTS	10.13.26	The traction motor shall be connected to the single stage gear unit through a flexible coupling.	The traction motor shall be connected to the single stage / double stage gear unit through a flexible coupling. The gearbox shall be of proven service record	Please refer to Addendum for revised clause.	Y
15	Part 2 ERTS	SOD 3.1.1 & 3.1.2	<p>3.1 PASSENGER ELECTRIC MULTIPLE UNITS</p> <p>1. a) Maximum Length of the Car body (Length over body) 21638 mm b) The length of the Car body may be increased to (without exceeding the KE given in this SOD) 21840 mm c) The maximum width of the Car body 2900 mm d) Height of the Car body -(excluding pantograph) 3900 mm</p> <p>2. Minimum pantograph locked down height from Rail level 4048 mm</p>	<p>Bidder Propose to comply with the requirement- Minimum Pantograph locked down height from Rail Level – 4048mm Also shall comply with overall SOD with the following change – Please delete below clause requirement as we meet the overall allow height with pantograph d) Height of car body – (excluding Pantograph) – 3900 mm</p>	Tender condition prevails.	N

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				Please confirm.		
16	Part 2 ERTS	SOD 3.1.5 & 3.1.6	<p>5. Minimum clearance from rail level with fully worn wheel, deflated air spring and under fully loaded condition for bogie mounted equipment 75mm</p> <p>6. The Minimum clearance from rail level in worst conditions such as fully worn wheel, deflated air spring and under fully loaded condition etc for body mounted equipments 100mm</p>	Bidder understand clearance requirement given in SOD. Clause 3.1.5 & 3.1.6 as Static requirement, Please Confirm	Under all conditions.	N
17	Part 2 ERTS	7.3.10	Air filter elements shall be changeable from outside the car.	<p>Changing filter from Roof shall need specific location & arrangement for Roof access, Hence Bidder propose the change as follows based on Proven & existing solution -ed on Proven & existing solution –</p> <p>Air filter elements shall be changeable from outside or Inside the car.</p>	Tender condition prevails.	N
18	Part 2 ERTS	12.15.1	Brake Pipe (BP) controlled back-up brake system including a separate pneumatic control unit shall be provided in order to take over the control function in case of failure of electronic or electric control elements in the brake system	Bidder propose to change the clause as follows – Brake Pipe (BP) controlled back-up brake system including a separate pneumatic control unit shall be provided in order to take over the control function in case of failure of electronic or electric control elements in the brake system, Alternatively, Contractor may provide extension of EP brake and emergency brake lines from healthy train to defective train through a suitable jumper cable which can be connected manually during such eventualities	Tender condition prevails.	N
19	Part 2 ERTS	12.7.2	The associated EP brake unit shall be of the energize-to-release type and shall contain all the pneumatic items necessary to control all applications of the friction service brakes and emergency brakes on that car	Bidder Propose that except EB, all brake valves are energized to apply & de-energize to release, Please Confirm	Tender condition prevails.	N
20	Part 2 ERTS	2.25.1	Tenderers shall note that ‘SPECIFIC ENERGY CONSUMPTION (SEC)’ shall be verified in any one corridor of Phase 2 as agreed with CMRL under conditions detailed hereafter in this clause shall not exceed 48 Wh/GTKM, referred to as SECs. Also the Tenderer shall submit the simulation results for all corridors of Phase 2 in Pre-Final Design stage.	<p>CMRL to clarify on the conditions in which SEC shall be verified like mode of operation, loading condition, operation of auxiliary loads, HVAC operating condition. CMRL also to indicate the maximum operating speed on different curves with reference to the track data.</p> <p>We understand 48Wh/GTkm is very stringent.</p>	Tender condition prevails.	N

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21		10.3.1	Power shall be drawn from the overhead line by pantographs. When measured at the train's pantograph level, the Total Demand Distortion for Current (TDDI) shall be below 5% of the fundamental and Total Harmonic Distortion for Voltage (THDV) shall be below 2% of the fundamental. The method of calculation of the TDDI and THDV shall be according to IEEE 519: 2014.	The harmonic voltage distortion on the power supply system will be a function of the total injected harmonic current and the system impedance at each of the harmonic frequencies. Hence, it can also be influenced by other loads on the power supply system. The term "overall harmonic voltage levels" is not a defined parameter and not feasible to accept a 2% limit under all modes of operation for the voltage total harmonic distortion. The train will generate at total harmonic distortion of current $\leq 5\%$ at rated power.	Tender condition prevails.	N
22	Part 3 Section VIII Particular Conditions	Table: Summary of Sections (Key Date)	KD-RS-1-3 Manufacturing, Testing, Delivery (including shipment) and receipt of prototype train in Depot: Commencement Date +821 days (~27 months) 2. Delivery of trains to Depot KD-RS-2-1 6 trains (1 st Lot): CD+913 days (~30 month) KD-RS-2-1 6 trains (2 nd Lot): CD+973 days (~32 months) KD-RS-2-1 6 trains (3 rd Lot): CD+1034 days (~ 34 months) KD-RS-2-1 7 trains (4 th Lot): CD+1106 days (~36.5 months)	CMRL would like to start operation of the Phase 2 earlier and hence it would appreciate early delivery of train. Please confirm for early delivery of train is acceptable to CMRL and revise the train delivery key dates as below Prototype train in Depot: CD+ 22 months Next 6 trains (1 st Lot) in depot: CD + 24 months Next 6 trains (2 nd Lot) in depot: CD + 26 months Next 6 trains (3 rd Lot) in depot: CD + 28 months Last 7 trains (4 th Lot) in depot: CD+ 31 months	Tender condition prevails.	N
23	Part 1 Section IV	Schedule of Adjustment Data	Table A (Indian Currency) & Table B (Foreign currency) index Description - Weightage Non-adjustable – 0.33 Labor – 0.10 Stainless Steel/ Aluminum: 0.2 Carbon Steel: 0.3 Copper: 0.07	Present price adjustment formula does not represent the correct cost structure. Bidder requests to use the price adjustment formula of CMRL Phase 1 contract which is as below for both Indian and Foreign Currency. Non-adjustable – 0.33 Labor – 0.514 Stainless Steel / Aluminum: 0.045 Carbon Steel: 0.074 Copper: 0.037	Tender condition prevails.	N

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24	Part 2 ERTS	15.11.6	<p>Software System Manuals: Software system manuals shall consist the below details for all the software used in CMRL trains.</p> <p>a. Algorithm and flow charts of the software being used in CMRL trains</p> <p>b. Source code of the software being used in CMRL trains.</p> <p>c. Revisions of actual software and firmware of all the equipment of train are to be provided.</p> <p>d. For each software package and each piece of equipment that incorporates programmable devices including all software that has been prepared specifically for this application.</p> <p>e. Operational environment requirements;</p> <p>f. Operation procedures;</p> <p>g. Debugging procedures;</p> <p>h. Testing and/or simulation procedures; and</p> <p>i. Verification and / or validation procedures prior to returning to normal operation</p> <p>j. procedures to install/uninstall software, downloading of fault logs and other train data from DMS & RTR DMS system (as defined in ERTS Section 14), usage of trace files and any other required software trouble shooting details.</p> <p>k. Usage of Passenger information system with options to modify the audio visual announcements based on future requirements.</p> <p>l. Introduction and modification of advertisements, CMRL promotional videos etc. on the advertisement displays in trains.</p>	<p>Since the software is proprietary to ALSTOM, we will not be able to share the same with the Employer. The impact arising out of any violation / leakage / misuse of this source code are indeterminable with a possibility of including losses beyond the capability of being compensated. These can create huge non-quantifiable open-ended monetary risks which cannot be estimated by any Contractor at the tendering stage. Please delete the requirement of source code wherever appearing. As per the IPR clause, the Contractor is agreeable to give non-exclusive, non-transferable, royalty-free license to use the technical information provided by Alstom for the life of the supplies and for the sole purpose of their operation, repair and maintenance.</p>	Tender condition prevails.	N
25	Part-1, Section – I Instruction to Bidders (ITB)	4.1	<p>A Bidder may be a firm that is a single entity or any combination of such entities in the form of a joint venture (JV) under an existing agreement or with the intent to enter into such an agreement supported by a letter of intent. In the case of a JV:</p>	<p>Bidder understand that –</p> <ol style="list-style-type: none"> 1. Bidding by consortium comprising of Indian entity & Foreign entity is allowed. 2. Each consortium member can raise separate invoices for their respective scope. 3. Each consortium member's scope will have clear billing breakup identifying the details of currency wise split for their respective scope as per consortium agreement. 4. Each consortium member will get paid separately against invoices raised by them. 5. Consortium registration as taxable entity is not required. <p>Please confirm our understanding.</p>	Except 1 all other points "NO".	N

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26	Part-3, Section – VIII Particular Conditions (Part B: Specific Provisions)	32	Ownership of the Plant and Equipment (including spare parts) to be imported into the country where the Site is located shall be transferred to the Employer at high seas. Contractor shall maintain all insurance and bear all risks for safe handling and transport of the cars until delivery to Employer's depot site.	<p>Bidder understand that –</p> <ol style="list-style-type: none"> 1. In case of offshore supplies, employer will be importer on records (IEC of employer will be used for customs clearance). 2. In case of offshore supplies of components by foreign consortium member, employer will be importer on records of such components (IEC of employer will be used for customs clearance) and issue to local consortium member for manufacturing. 3. In case of offshore services by foreign consortium member, the GST under Reverse Charge Mechanism (RCM) for imports of services will be deposited by employer. 4. Customs Duties and GST on imports of goods / components and services for point no 1 & 3 above will be borne and paid by employer. <p>Please confirm our understanding.</p>	<p>(1) No. Contractor shall import the material by using their IEC.</p> <p>(2) No. As above</p> <p>(3) No. Since the tender is for the supply of Rolling Stock all cost involved associated with the supply shall be borne by the contractor.</p> <p>(4) The customs duty shall be paid by the contractor and should be included in the price.</p>	N
27	Part-1, Section – IV Instructions for completing the pricing document:	3.1.1	The quoted lumpsum price by the bidder is inclusive of all taxes, levies, duties, cess as per GST / Custom tariff act etc., royalty, insurance, freight and fees required to be paid by him under the Contract.	<p>Bidder understand that –</p> <ol style="list-style-type: none"> 1. Contract Price is including output GST. 2. In case of supplies by consortium member who is not supplying Rolling Stock, in such case contractor will apply GST rate as applicable on components & services as per HS code / Service Accounting Code. <p>Please confirm our understanding.</p>	<p>(1) The contract price include output GST.</p> <p>(2) As the scope of the tender is comprehensive supply of rolling stock the question of bifurcation of supply and services does not arise.</p>	N

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28	Part-1, Section – IV Instructions for completing the pricing document:	3.1.3	The Contractor shall be solely responsible to find out and ascertain whether their supplies for Chennai Metro – Phase II Project will qualify and be eligible for the concession duty benefits under Chapter 98.01 of custom Tariff Act for project Imports & shall manage the Custom Duty applicability and inclusion in their quoted price accordingly. After award of the Contract, Employer at the written request of a contractor shall facilitate the contractor for obtaining sponsoring / recommendation letter from the Ministry of Urban Development (MoUD) / GOI 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.	Bidder understand that Employer will issue required documents for claiming benefit of concessional duty under chapter 98.01 in the name of contractor and sub-contractor for imports of raw material / components by contractors & sub-contractors. Please confirm our understanding.	Project import registration shall be done by the successful contract. CMRL shall provide only project sponsorship authority approval as per Customs Notification No. 24/2017 dt. 23-06-2017 as the Sponsorship authority certificate.	Y
29	Part 1 Section IV Bidding Forms	3.3.2	Contract Price of each 3-car train-set to be supplied against quantity variation shall be derived from the contracted cost of the original tendered quantity, against Price Centres 'B', 'D', and 'F'(in case of offshore supply) or 'C', 'E' and 'F' (in case of indigenous supply).	Contract price formula for additional 3-car train is different from other rolling stock contracts in India and also it does not correctly reflect actual Manufacturing cost. Bidder request to modify this clause as below which inline option pricing followed for various other rolling stock contracts/ tenders in India Contract Price of each 3-car train-set to be supplied against quantity variation shall be 90% of the overall contract price ((A+CST+FAI+CPT+B+C+D+E+F+G+H)) of the original tendered quantity Price for each 3-car train will be Overall contract Price ((A+CST+FAI+CPT+B+C+D+E+F+G+H)) multiplied by 90% divided by 26 trains i.e., Price of one 3- car train = ((A+CST+FAI+CPT+B+C+D+E+F+G+H)) x 90% / 26	Tender condition prevails.	N

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30	Part 1 Section IV Bidding Forms	4.1	<p>Pricing Summary (BID TOTAL)</p> <p>S. No Description -Apportionment %age</p> <p>4) Price centre A – 8%</p> <p>5) Price centre CST – 3%</p> <p>6) Price centre FAI – 7%</p> <p>7) Price centre CPT – 3%</p> <p>8) Price centre B – 0%</p> <p>9) Price centre C – 55%</p> <p>10) Price centre D – 0%</p> <p>11) Price centre E – 10%</p> <p>12) Price centre F – 14%</p>	<p>Apportionment percentage for various price centers does not represent correct expense weightage. Price Center F activities are not under the control of RS contractor and hence 14% of contract amount allocated to this price center doesn't represent correctly.</p> <p>Bidder Requests to modify the apportionment as below :</p> <p>Pricing Summary (BID TOTAL)</p> <p>S. No Description -Apportionment %age</p> <p>4) Price centre A – 8%</p> <p>5) Price centre CST – 3%</p> <p>6) Price centre FAI – 7%</p> <p>7) Price centre CPT – 3%</p> <p>8) Price centre B – 0%</p> <p>9) Price centre C – 69%</p> <p>10) Price centre D – 0%</p> <p>11) Price centre E – 5%</p> <p>12) Price centre F – 5%</p>	Please refer to Addendum for revised clause.	y
31	Part 3 Section VII Particular conditions Special provision	14.2	<p>The Employer shall make an interest free advance payment for mobilization when the Contractor submits.....</p> <p>Mobilization advance shall be paid in two equal instalments as mentioned below:</p> <p>The First instalment of the Advance Payment may be paid after: (i) the Contract Agreement is signed; and (ii) the required Bank Guarantee in the specified format from banks as mentioned above is submitted.</p> <p>The Second & final instalment of the Advance Payment may be paid after: (i) the required Bank Guarantee in the specified format from banks as mentioned above is submitted (ii) the evidence for satisfactory utilization of the First instalment of mobilization is submitted; and (iii) provision of 3D virtual models.</p>	<p>Bidder request that for Second installment to remove the requirement of provision of 3D Model as pre-requisite and should be considered based on utilization of first advance payment.</p> <p>Bidder request to modify the clause as below :The Second & final instalment of the Advance Payment may be paid after: (i) the required Bank Guarantee in the specified format from banks as mentioned above is submitted (ii) the evidence for satisfactory utilization of the First instalment of mobilization is submitted; and (iii) provision of 3D virtual models.</p>	Tender condition prevails.	N

Name of the Bidder :		Alstom – Lot 1				
Sl.No.	Part/ Section No.	Clause No.	Original Bid condition	Bidder's Query	CMRL Response	Addendum (Y/N)
32	Part 3 Section VIII General Conditions and Section – VIII_Particular Conditions	1.5	Priority of Documents The documents forming the Contract are to be taken as mutually explanatory of one another. For the purposes of interpretation, the priority of the documents shall be in accordance with the following sequence:	Addendum and Replies to Queries issued form basis of Bid preparation for all Bidder, so we request CMRL to also add Addendum and Replies to Queries in the priority of document list.	Tender condition prevails.	N
33	Part-3, Section - VIII	Sl. No. 16; GCC clause 14.2	Total advance payment 10% of the Accepted Contract Amount (Excluding Provisional Sum) payable as Interest free Mobilization advance in the currencies and proportions in which the Accepted Contract	Bidder request CMRL to provide minimum Advance payment of 15% of the Accepted Contract Amount (Excluding Provisional Sum) payable as Interest free Mobilization advance in the currencies and proportions in which the Accepted Contract Amount is payable.	Tender condition prevails.	N
	Particular Conditions (Part A: Contract Data)		Amount is payable.	Mobilization advance shall be paid in two instalments with 10% as 1 st installment and 5% as 2 nd installment.		
			Mobilization advance shall be paid in two equal instalments			

Name of the Bidder :		Alstom – LOT 2				
Sl.No.	Part/ Section No. Section No.	Clause No.	Original Bid condition	Bidder's Query	CMRL Response	Addendum (Y/N)
1.	Part-1, Section - III Evaluation and Qualification Criteria (EQC)	Notes for the Bidder	However, in case of consortium/JV between companies and their subsidiaries where either the parent or the subsidiary or both is/are (an) Indian company/ companies registered in India, parent company shall be eligible to bid on the basis of credentials of their owned subsidiaries. Subsidiaries shall be eligible to bid on the basis of credentials of their parent company. Here it will be mandatory that the bidders must enter into a consortium/JV agreement with a token participation of such parent/ subsidiary whose credentials are being sought to be used. This consortium/JV agreement should clearly stipulate that the individual companies (i.e. the parent and the JV) shall be jointly and severally responsible and liable for the timely execution of the contract and failure to do so will make all of the them liable to the penal conditions of the contract. In such case there will be no requirement of the minimum threshold of 15% participation by each member of the consortium/JV	However, in case of consortium/JV between companies and their subsidiaries <u>or group company under common control</u> where either the parent or the subsidiary/ <u>group company under common control</u> or both is/are (an) Indian Company/companies registered in India, parent company shall be eligible to bid on the basis of credentials of their owned subsidiaries. <u>Subsidiaries or group company shall be eligible to bid on the basis of credentials of their parent company or other group company under common control.</u> Here it will be mandatory that the bidders must enter into a consortium/JV agreement with a token participation of such parent/subsidiary/ <u>group company</u> whose credentials are being sought to be used. This consortium/JV agreement should clearly stipulate that the individual companies (i.e., the parent and the JV) shall be jointly and severally responsible and liable for the timely execution of the contract and failure to do so will make all of them liable to the penal conditions of the contract. In such case there will be no requirement of the minimum threshold of 15% participation by each member of the consortium / JV.	Tender condition prevails.	N
		(iii)				
2.	General		Bid Submission date: 22nd March 2021	Bidder requests for extension of bid submission date to 30-Apr-21	Request is accepted. Please refer to Corregandum 3.	N
3.	Corrigendum 2		Clarification End Date & Time: 28-Jan-2021, 06.00 PM	Request CMRL to allow bidder to submit at least 1 set of Queries after replies to query is issued by CMRL for submitted query.	Request is accepted. Please refer to Corregandum 3.	N

Name of the Bidder :		Alstom – LOT 2				
Sl.No.	Part/ Section No. Section No.	Clause No.	Original Bid condition	Bidder's Query	CMRL Response	Addendum (Y/N)
4.	Part 3- GCC & PCC	6.7	Health and Safety	In the event of any delays in implementation of the Health & Safety programme, we request that the Engineer shall provide a cure period of fourteen (14) days to the Contractor. And Bidder also request to specify the details of all penalty applicable for any delays in implementation of the Health & Safety programme.	Tender condition prevails.	N
5.	Part 3- GCC & PCC	6.7	Health and Safety	Bidder also request to specify the details of all penalty applicable for any violation of the Health & Safety programme	Tender condition prevails.	N
6.	Part 3- GCC & PCC	8.7	Delay Damages	Bidder requests that delay damages imposed on failure of achievement of a Key Date should be reimbursed in the event of achievement of any subsequent Key Dates.	Tender condition prevails.	N
7.	Part 3- GCC & PCC	11.1	Completion of Outstanding work and Remedying defects If the works or sections not available for usage by the Employer for more than 48 hrs, then a penalty of Rs. 25,000 shall be paid by the contractor for each day till the works or sections made ready by him. The cumulative amount shall be deducted by the Employer from the subsequent bills submitted by contractor. A penalty of Rs. 2 lakh for each case shall be levied for the failure or malfunction in the works or sections during passenger operation which interrupt metro operations in the specific corridor for more than 10 mins.	Bidder requests that the cumulative amount of maximum penalties leviable under both these situations be limited to INR 500,000.	Tender condition prevails.	N
8.	Part 3- PCC	19.6	Force Majeure Optional Termination, payment and Release Either party shall not terminate the contract without the consent of other party during Force Majeure.	Bidder requests that either Party shall have the right to terminate the Contract <u>without</u> the consent of the other Party in the event of prolonged Force Majeure conditions, i.e. Force Majeure conditions continuing for a continuous period of 90 days or more.	Tender condition prevails.	N
9.	Part 3- PCC	20.5	Claims, Disputes and Arbitration Amicable Settlement Conciliation	Bidder requests for deletion of the provision of Conciliation which the Parties will have to mandatorily exhaust before they can invoke Arbitration.	Tender condition prevails.	N

Name of the Bidder :		Alstom – LOT 2				
Sl.No.	Part/ Section No. Section No.	Clause No.	Original Bid condition	Bidder's Query	CMRL Response	Addendum (Y/N)
10.	Part 3- PCC	20.5	Claims, Disputes and Arbitration	We request Client to allow Bidder to choose the Arbitrator(s) of its own choice and not confined to the Panel of Arbitrators maintained by the Employer. Contractor requests that arbitration proceedings be conducted as per the Rules of Arbitration of the International Chamber of Commerce (ICC) at New Delhi.	Tender condition prevails.	N
			Arbitration			
11.	Part 2 – Section VI	2.25.8	Specific Energy Consumption	Please specify the penalty mentioned under this clause in the event of failure of the Contractor to achieve the specific energy consumption estimate.	Please refer to Addendum for revised clause.	Y
	ERTS – System Requirements		“....If the actual specific energy consumption exceeds the estimated specific energy consumption quoted by the Contractor by more than 3%, the Contractor shall carry out rectification work on the train, within a reasonable time as agreed with CMRL. In case the Contractor fails, the penalty shall be applied as per Conditions of Contract.”			
12.	Part 1 / Section IV	Schedule of Adjustment Data	Table A (Indian Currency) & Table B (Foreign currency)	Bidder requests to amend Price Adjustment formula as per Annexure 1 below	Tender condition prevails.	N
			Non adjustable - 0.33			
			Labor - 0.10			
			Stainless steel / Aluminium - 0.20			
			Carbon steel - 0.30			
			Copper - 0.07			
13.	Part 2 _ ERTS	6.9.1	Detrainment doors shall be provided in the first and last car for emergency egress of passengers. The detrainment door shall be aesthetically designed ensuring clear view of the track from driving car. The door shall aesthetically harmonize with front and side lookout glasses of the emergency operator's desk, shall not block the front view and shall give a look of single glass. The material of front-end detrainment Door glass shall meet the specifications in ERTS Section 3.4.9.4 and ERTS Section 5.3. The visibility of the joint between the detrainment door and windshield look out glass shall be bare minimum. The detrainment door system shall be SIL2 compliant and shall be provided with a sealed cover door actuating mechanism. The clear width of the detrainment doorway and width of the ramp when operated shall be minimum 700mm with a headroom not less than 1900mm.	Bidder Propose to modify the clause as follows inline with other latest Metro projects in Country:	Tender condition prevails.	N
				Detrainment doors shall be provided in the first and last car for emergency egress of passengers. The detrainment door shall be aesthetically designed ensuring clear view of the track from driving car. The door shall aesthetically harmonize with front and side lookout glasses of the emergency operator's desk, shall not block the front view and shall give a look of single glass. The material of front end detrainment Door glass shall meet the specifications in ERTS Section 3.4.9.4 and ERTS Section 5.3. The visibility of the joint between the detrainment door and		

Name of the Bidder :		Alstom – LOT 2				
Sl.No.	Part/ Section No. Section No.	Clause No.	Original Bid condition	Bidder's Query	CMRL Response	Addendum (Y/N)
				windshield look out glass shall be bare minimum. The detrainment door system shall be SIL2 compliant and shall be provided with a sealed cover door actuating mechanism. The clear width of the detrainment doorway and width of the ramp when operated shall be minimum 700mm 600mm with a headroom not less than 1900mm.		
14.	Part 2 : ERTS	2.7.3	Passenger Capacity	Bidder requests to standardize the passenger capacity inline with other RS contracts where it requests that for 3-car train passenger capacity (seated + standees) is about 970 passengers @ 8 passenger/m2 (DMC-315 and Trailer Car-340) in similar car length in GoA4 configuration.	Please refer to Addendum for revised clause.	Y
			Total Capacity (3-car) with 8 passengers/ m2 = 1008			
15.	Part 3: GCC & SCC	SCC Sl. No. 39; GCC clause 11.3	Replace sub-clause 11.3 with the following:	Request CMRL to reinstate the GCC clause 11.3 below line	Tender condition prevails.	N
				<i>“....the Contractor's obligations under this Clause shall not apply to any defects or damage occurring more than two years after the Defects Notification Period for the Plant and/or Materials would otherwise have expired”</i>		
			.....If the Works or a Section cannot be used by reason of such defect and/or making good of such defect, the Defect Notification Period of the Works or a Section, as the case may be, shall be extended by a period equal to the period during which the Works or a Section cannot be used by the Employer because of any of the aforesaid reasons or until the reliability targets set in ERTS clause 18.6 is met, whichever is later.	Deleting the above requested clause would make Contractor Defect liability unlimited which would not be possible for any bidder to account for any such liability		
16.	Part 3: SCC	SCC Sl. No. 18; GCC 4.1	4.1.3 'Car Shell Structural Qualification Testing' Payment Security and 'First Article Inspections' Payment Security:	Considering that the Bidder has already submitted the performance Bank Guarantee and there is also provision of Retention amount, we request CMRL to	Tender condition prevails.	N

Name of the Bidder :		Alstom – LOT 2				
Sl.No.	Part/ Section No. Section No.	Clause No.	Original Bid condition	Bidder's Query	CMRL Response	Addendum (Y/N)
			The Contractor shall at the time of the submission of the invoice for payment of Car Shell Structural Qualification Testing and First Article Inspections provide a security in an amount equal to the payment for these price centers (milestones) (calculated in accordance with Price Schedule to the Contract Agreement, and in the same currency or currencies.	delete the Car Shell Structural Qualification Testing' Payment Security and 'First Article Inspections' Payment Security as adequate security is already submitted as an assurance		
			The security shall be in one of the forms of bank guarantee in the form provided in the bidding documents or in another form acceptable to the Employer. The security will become null and void when the first 35 trains are issued with the Taking-Over Certificate by the Employer.			
			The security shall be returned to the Contractor immediately after its expiration.			
17.	Part-1, Section – IV Bidding Forms	4 Price Schedules 4.1 Preamble	4.1.9 Wherever the Bidder comprises a JV/Consortium and the Bidder desires separate payments to each Member of the Consortium, the Bidder shall clearly lay down the Milestones / Currencies allocated to the different Members of the JV/Consortium, which shall be in agreement with the intended percentage share of the Members as indicated in the Consortium agreement for this Contract.	We understand that if the Bidder comprises a JV/Consortium and the Bidder desires separate payments to each Member of the Consortium the Bidder shall clearly lay down the Milestones / Currencies allocated to the different Members of the JV/Consortium, which shall be in agreement with the intended percentage share of the Members as indicated in the Consortium agreement for this Contract.	i) In respect of JVs, invoices are to be raised by the by the JV and the payments will be released to the concerned JV Bank Account. ii) In case of Consortium, invoices shall be raised by the respective members of Consortium as contemplated in the agreement and accordingly payment will be released to individual Consortium members.	N
				Accordingly, JV/Consortium shall raise invoice separately for their respective scope clearly laid down in Milestones / Currencies.		
				Kindly confirm		

Name of the Bidder :		BEML- Lot 1				
Sl No.	Part/Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL Response.	Addendum (Y/N)
1	Part-1, Section – IV BID No. Bidding Forms, BF-71	5.5	5.5 Preliminary Design [Insert and/or draw Preliminary Design in accordance with Employer's Requirement and Drawing. If Preliminary Design is not required in the bidding process, this form is deleted.]	Kindly confirm that this document need not be submitted, as the requirement of submission is not found during bidding process. Kindly clarify.	Please refer to Addendum for revised clause.	Y
2	Part-1, Section - II, Bid Data Sheet (BDS)	ITB 22.1	The Bid submission is through E-tender portal of CPP only. In addition to the original of the Bid, the number of copies to be submitted is: two (02). These copies shall be submitted within 24 hours from the date of bid submission deadline as indicated in the NIT or as amended by Corrigendum.	Since the tender is to be submitted online (which is the the original of the Bid), the requirement of 02 copies to be submitted within 24 hours is not understood. Kindly clarify.	Please refer to Addendum for revised clause.	Y
3	Part-1, Section – IV, Bidding Forms	3.1.3	The Contractor shall be solely responsible to find out and ascertain whether their supplies for Chennai Metro – Phase II Project will qualify and be eligible for the concession duty benefits under Chapter 98.01 of custom Tariff Act for project Imports & shall manage the Custom Duty applicability and inclusion in their quoted price accordingly.	As the project owner, we request CMRL to clarify whether Chennai Metro - Phase II qualifies for concession duty benefits under Chapter 98.01 of custom Tariff Act for project Imports or not.	Please refer to Addendum for revised clause.	Y
4	Part-1, Section – IV, Bidding Forms	4.3, Pg BF-21	DETAILS OF TAXES / DUTIES / LEVIES ETC. INCLUDED IN THE LUMP SUM PRICE (PRICE CENTRE WISE)	We could not find provision in the BOQ worksheet (Pricing Document) to provide the taxes and duties split-up. Therefore, we understand that split up need not be provided during bid stage, but may be provided after contract award by the winning bidder. Kindly confirm whether our understanding is correct or not.	Tender condition prevails.	N
5	Part-1, Section – IV, Bidding Forms	9, BF-115	UNDERTAKING FOR MINIMUM LOCAL CONTENT.....In case of procurement for a value in excess of Rs. 10 crores, we also undertake to submit a certificate from statutory auditor or cost auditor of the company (in the case of companies) or from a practising cost accountant or practising chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.....	We understand the statutory auditor or cost auditor certificate are to be submitted during execution stage and not during bid stage. Kindly confirm.	It shall be submitted during the Bid submission.	N
6	Part-1, Section -	2.4.2 (a),	Specific Experience	Forms EXP-2(a), EXP-2(b), EXP-2(c), EXP-2(d), EXP-	Please refer to Addendum for	Y

Name of the Bidder :		BEML- Lot 1				
Sl No.	Part/Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL Response.	Addendum (Y/N)
	III BID No. ARE03 Evaluation and Qualification Criteria (EQC)	2.4.2 (b), 2.4.2(c), 2.4.2(d)		2(e) are a new requirement and has not been sought in earlier tenders. Existing Clients have their own formats and do not accept customized formats. Hence, it is requested to accept the certificate / document proof from the existing clients capturing the requirements as per Evaluation and Qualification Criteria (EQC) and not insist on the formats. Kindly accept.	revised clause.	
7	Part-3, Section - VIII Particular Conditions (Part A: Contract Data)	SL No. 11 of PART- A : Contract Data	The Performance Security shall be in the form of a Bank guarantee, in the amounts of <u>10%</u> of the Accepted Contract Amount and in the same currency(ies) of the Accepted Contract Amount.	In line with Ministry of Finance, Govt. of India, Department of Expenditure, Procurement Policy Division, office memorandum no. F.9/4/2020-PPD dated 12 Nov 2020, we request Chennai Metro to reduce the performance security amount from the existing 10% to 3%. Kindly consider.	Tender condition prevails.	N
8	Part-1, Section – IV : Bidding Forms	SL No. 5 of BF - 22	The bidders shall note that the customs duty, GST, levels, etc. indicated in the above table are considered to be included in the lumpsum price (Price centre wise) i.e. Bid Total in INR currency and will be reimbursed by the Employer in INR, <u>upon submission proof of discharge</u> of contractor's liability subject to the ceiling of the amounts indicated in the above table.	We request Chennai Metro to reimburse GST based on BEML's application for Interim Payment Certificate / BEML tax invoice, instead of submitting proof of discharge of GST by the Contractor, as otherwise it may result in payment delays to the contractor. Kindly consider.	Tender condition prevails.	N
9	Part 1-Section III	1.1.1	Personnel The Bidder must demonstrate that..... The Bidder shall provide details of the proposed personnel and their experience records in Forms PER-1 and PER-2 in Section IV, Bidding Forms.	Since the deputation of project personnel is a dynamic process, we request the following alternative to be added at the end of clause 1.1.1: Quote Alternatively, The bidder in his bid shall have to submit an undertaking declaring that post contract award, the personnel will be positioned with requisite experience in compliance with the tender requirement Un Quote	Tender condition prevails.	N

Name of the Bidder :		BEML – Lot 2				
Sl No.	Part/Section No.	Clause No.	Original Bid Condition	Bidder's Query	GC / CMRL Response.	Addendum (Y/N)
1	Part 2-Section VI	2.7.3	At second para it is mentioned DM car = 42 seats & Trailer car = 46 seats.	There is discrepancy between the table and the para content where individual DM & T car seats are specified.	Please refer to Addendum for revised clause.	Y
		Passenger capacity	In the table the total seats mentioned as 144	Also, for 6 car passenger capacity, 3 car capacity is multiplied by 2. However, the same needs correction: 6 car capacity = capacity of 2M + 2 T + 2 DM to be considered.		
				Clause and Table need review and correction.		
2	Part 2-Section VI	3.4.7.5	Floor covering service life of 18 years shall be provided.	Service life to be changed to 15 years, as suppliers do not comply for more than 15 years.	Tender condition prevails.	N
3	Part 2-Section VI	3.4.7.9	The fire barrier standard is mentioned as BS 6853	BS 6853 is obsolete.	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
				To be changed to EN 45545-3 inline with clause 2.26.1 (iv)		
4	Part 2-Section VI	3.4.9.1.1	All glazing shall be of toughened glass and shall comply with DIN 52306 and EN 1288	Requirement to be changed to IS 2553 part 1 & 2, the standards for safety glass specification for transportation & general use.	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
5	Part 2-Section VI	3.4.9.1.4	Body-side windows shall comprise two panes of toughened glass separated by air gap.	Usually the window will be with outer laminated safety glass and inner toughened safety glass.	Please refer to Addendum for revised clause.	Y
				Request CMRL review and modify the clause.		
6	Part 2-Section VI	3.4.9.1.10	Body side windows shall have a neutral tint to complement car styling.	Request CMRL to specify the light transmission value to be maintained. Based on the light transmission window tint will be selected.	Tender condition prevails.	N
7	Part 2-Section VI	3.4.9.3.1	Windows shall be of the same construction as the body side windows.	Body side windows are fixed windows. CMRL to clarify for cab window whether fixed window or openable window to be considered.	Please refer to Addendum for revised clause.	Y
8	Part 2-Section VI	3.4.9.4.1	Glazing shall be toughened glass.	Glazing specification requirement is contradicting with clause 19.13.1	Please refer to Addendum for revised clause.	Y
				Clause need review and correction.		
9	Part 2-Section VI	3.6.3.2	Stanchions shall be arranged in two rows. they shall be placed in longitudinal rows. Stanchions shall not be placed in the center isle of the passenger compartments.	There is no clarity in the 3 clauses.	Tender condition prevails.	N
		3.6.3.4 & 3.6.3.6				
				Clauses to be reviewed and the requirement of stanchions, grab rails and grab handles to be clearly specified.		
10	Part 2-Section VI	3.14.5.1	The cab framework, together with panels although not windscreens shall prevent	The front Cab SS frame structure is covered with FRP Cab front mask, the FRP cab mask will not with stand the impact of the hollow steel cube as described.	Tender condition prevails.	N
			penetration of a sharp cornered hollow steel cube sides 70 mm to 75 mm and of	Hence the clause 3.14.5.1 shall be deleted.		

Name of the Bidder :		BEML – Lot 2				
SI No.	Part/Section No.	Clause No.	Original Bid Condition	Bidder's Query	GC / CMRL Response.	Addendum (Y/N)
			uniform thickness with a mass of 0.9 kg, projected corner-first at a speed of 160 km/h.			
11	Part 2-Section VI	3.14.5.4	At closing speeds of 10 km/h to 25 km/h, the coupler shall absorb the additional energy within its sacrificial elements for AW2 loading condition. The couplers shall progressively collapse bringing into play the anti-climb protection which shall remain fully engaged and operational under the action of vertical shear loads (upwards and downwards) equivalent to half the Crush Loading Condition Car weight. For survival zone during collision scenario, the requirements of EN15227 Section 6.3 shall apply, or an equivalent analysis, if approved by CMRL.	As per 3.14.5.3, the coupler be shall able to absorb energy within recoverable stroke (without permanent damage) upto 10kmph with AW2 loaded condition. But, as per ERTS 3.14.5.4, the coupler shall absorb the energy within its sacrificial elements(means non-recoverable stroke) from 10km/h to 25km/h. CMRL to clarify whether coupler has to be designed to withstand energy without permanent deformation upto 10kmph or upto 25kmph, under AW2 loading condition.	Tender condition prevails.	N
12	Part 2-Section VI	5.3.10	Look-out glass on both lateral sides of each emergency operator's desk.	To clarify if this look out glass is same as that of cab window of clause 3.4.9.3.	YES.	N
13	Part 2-Section VI	5.10.8	Filling up of the water tank shall be	The sentence is incomplete in this clause.	Please refer to Addendum for revised clause.	Y
14	Part 2-Section VI	6.3.14	It shall be possible for CMRL to modify or change the door system parameters, modify or change open-close logic of the door circuits and implement the same as required by CMRL 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. The documentation including but not restricted to flow charts (for complete software), signal flows, and interpretation of signal etc. shall be provided (CDRL 6-2). CMRL personnel shall be fully trained and made fully conversant by the contractor for this purpose.	The Door software is SIL2 Validated. The logic changes cannot be performed by end user. However, few parameter changes are possible via the maintenance software tool. As per door supplier, Door software is a propriety design & Cannot share all the logics and flow charts to customer	Tender condition prevails.	N
15	Part 2-Section VI	6.4.5	The device to detect and prove that passenger doors are fully closed and latched shall be capable of detecting any obstruction causing a minimum gap of 5 mm per doorway and prevent the door proving indication from being achieved, in accordance with EN-14752. This detection obstacle function shall be achievable for a minimum gap of 5 mm per doorway all along the height of the door.	As per door supplier minimum obstacle size that the door can detect rectangular bar 15mm x 100mm and Φ19mm. CMRL to review and consider rectangular bar 15mm x 100mm and Φ19mm instead of minimum gap of 5mm	Tender condition prevails.	N
16	Part 2-Section VI	6.9.10	There shall be no draught, dirt or water entering through the detainment door and it shall not generate any noise while the Train is in motion. The arrangement shall comply with BS EN 60529 IP66.	For IP 66 the door seal will not withstand the water pressure CMRL to review and consider IP65 or water tightness as per EN 14752 Annex B	Please refer to Addendum for revised clause.	Y
17	Part 2-Section VI	6.11.1	CDRL 6-2 Submit documentation such as flow	As per door supplier, Door software is a propriety	Tender condition prevails.	N

Name of the Bidder :		BEML – Lot 2				
SI No.	Part/Section No.	Clause No.	Original Bid Condition	Bidder's Query	GC / CMRL Response.	Addendum (Y/N)
			charts (for complete software), signal flows, interpretation of signal etc. shall be provided. (TS 6.3.14)	design & Cannot share all the logics and flow charts to customer.		
18	Part 2-Section VI	7.3.10	Air filter elements shall be changeable from outside the car.	Air filter elements shall be changeable from inside the saloon. (For easy maintenance & handling) CMRL is requested to review & consider.	Tender condition prevails.	N
19	Part 2-Section VI	7.4.8.1	The closing time of all the fresh air dampers shall preferably be less than 5 seconds from the receipt of smoke signal to avoid ingress of large quantity of smoke coming inside the car.	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 coming inside the car. CMRL is requested to review and consider.	Tender condition prevails.	N
20	Part 2-Section VI	7.6.6	Failure of one of the air-conditioning units on a car shall not adversely affect operation of the other car. Each air conditioning unit shall be sized to take at least sixty (60) percent of the total car cooling load	Failure of one of the air-conditioning units on a car shall not adversely affect operation of the other car. Each air conditioning unit shall be sized to take at least Fifty (50) percent of the total car cooling load. (To avoid the overdesign of HVAC unit & power consumption). CMRL is requested to change accordingly.	Tender condition prevails.	N
21	Part 2-Section VI	7.7.13	Each isolation switch shall be mounted within each saloon adjacent to each air conditioning control unit. The isolation switch shall be inaccessible to passengers.	Each isolation switch shall be mounted within each saloon adjacent to each air conditioning control unit or inside the HVAC unit. The isolation switch shall be inaccessible to passengers.	Tender condition prevails.	N
22	Part 2-Section VI	7.10.1	Conditioned air from each unit shall be directly introduced into a duct running the full length of the car and be discharged into the car through ceiling outlets. The supply air duct design shall be uniform in all cars.	Conditioned air from each unit shall be directly introduced into a duct running the full length of the car and be discharged into the car through ceiling outlets. The supply air duct design shall be uniform in all cars. (Air duct design will vary from car to car depend upon the roof equipments)	Tender condition prevails.	N
23	Part 2-Section VI	7.11.12	Even in the extremely dusty and humid environment prevailing in Chennai, the cleaning of all the VAC filters shall not be required before 12,500 kms or 30 days of train run whichever is lower.	Even in the extremely dusty and humid environment prevailing in Chennai, the cleaning of all the VAC filters shall not be required before 5000 kms or 15 days of train run whichever is lower.	Tender condition prevails.	N
24	Part 2-Section VI	17.5.3.6	Door System Design Conformance Test The body side doors shall be tested for strength and shall meet the requirements as specified in ERTS-Section 7.	Typo graphical error ERTS- Section 7 to be changed to ERTS Section 6 as Passenger Doors section is ERTS Section 6 .	Please refer to Addendum for revised clause.	Y
25	Part 2-Section VI	19.13	Glass specification standard	Glass specification to be as per IS 2553 standard.	Please refer to Addendum for revised clause.	Y
26	Part 2-Section VI	19.17	Plywood and plymetal	CMRL to clarify only plymetal / plwood floor board to be used for the floor construction. Plymetal board will not meet the requirements at clause 3.4.7.3	Please refer to Addendum for revised clause.	Y
27	Part 2-Section VI	19.20.5	Fire safety	This clause is contradicting with clause 2.26.1	Tender condition prevails.	N
28	Part 2-Section VI	19.34.6	Thermal insulation material shall have a thermal conductivity of not greater than (13	ANSI Z98.1 is not related to thermal conductivity.	Tender condition prevails.	N

Name of the Bidder :		BEML – Lot 2				
Sl No.	Part/Section	Clause No.	Original Bid Condition	Bidder’s Query	GC / CMRL Response.	Addendum (Y/N)
	No.					

Name of the Bidder :		BEML – Lot 2				
SI No.	Part/Section No.	Clause No.	Original Bid Condition	Bidder's Query	GC / CMRL Response.	Addendum (Y/N)
	PART- 2 : Section VI		formed by the other three wheels of the same bogie as they rest on level			
			track. An alternative design and service proven load equalization test may be presented to CMRL for approval during design review.			
			During the test, the other three wheel treads shall maintain contact with the rails.			
			Additionally, with one wheel raised and lowered 51mm with respect to the plane formed by the other three wheels, the neutral wheel load of the other three wheels shall not change by more than 50 percent.			
37	Part 1- Section IV	Annexure- GA2	Brake & Pneumatics	Both can be clubbed and may be written as "Set of Pressure switches/governors"	Tender condition prevails.	N
			Sl. No. 11 Set of Pressure switches			
			&			
			Sl. No.12 Set of Pressure governors			
38	Part 2 -	12.3.2	All piping shall be of stainless steel conforming to the requirements of ISO 9329-4 and ISO 9330-6 or equivalent with flared compression fittings. The pipe fittings shall conform to the requirements of DIN 2353 or approved equal.	As per DIN 2353, the pipe fittings will be flareless compression type but ERTS clause states that "All piping shall be of stainless steel conforming to the requirements of ISO 9329-4 and ISO 9330-6 or equivalent with flared compression fittings ."	Please refer to Addendum for revised clause.	Y
	Section VI			ERTS clause may be updated accordingly.		
39	Part 2 -	12.6.7.3	The electric regenerative brake shall be independent for each Motor Car and faults on one car shall not adversely affect the braking performance on the other car. Each Car shall have independent Brake Electronics with wheel slip / slide control and each bogie shall have independent Electro Pneumatic brake control.	As the clause does not define the exact requirement, kindly confirm whether Brake Electronics shall be car control or bogie control.	Please refer to Addendum for revised clause.	Y
	Section VI					
40	Part 2 -	12.6.8.8	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. The guaranteed maximum braking distance shall satisfy the requirements specified in table 15.1.B emergency brake application.	The referred Table 15.1.B is missing from the document. Details may be added in the document.	Please refer to Addendum for revised clause.	Y
	Section VI					
41	Part 2 -	12.6.8.11	Complete friction brake system shall be tested on Brake dynamo-meter and validated during field tests.	Brake dynamometer test is applicable for the following equipments/items only:	Tender condition prevails.	N
	Section VI			· brake disc or wheel		
				· brake pads or blocks		
				· brake caliper or tread brake unit		
				For requirement to be specific, ERTS clause may be updated.		
42	Part 2 - Section VI	12.9	PRESSURE GAUGES	The required information will be shared in TCMS/OCC/DCC.	Please refer to Addendum for revised clause.	Y

Name of the Bidder :		BEML – Lot 2				
Sl No.	Part/Section	Clause No.	Original Bid Condition	Bidder’s Query	GC / CMRL Response.	Addendum (Y/N)
	No.					
43	Part 2 - Section VI	19.58.4	The following information shall be shared in TCMS / OCC / DCC	As the clause does not define the exact requirement, kindly confirm whether gauges are digital or physical type in driver's desk.		
			a) The pressure in the main reservoir.			
			b) The pressure in the brake reservoir and brake cylinder pipe			
			c) The pressure in parking brake unit			
			d) The pressure in the brake pipe.			
			The levels defined in ATA 102 are briefly stated below (for information only):				As software block diagrams, signal flow, logic are Intellectual Propriety design of vendors/sub-suppliers. Hence only indicative details can be shared. Accordingly, ERTS clause may be updated.
		a. Computer description and operation				
		b. Software architecture, basic program and functions				
		c. Detailed flow information				
		d. Annotated compiler /assembler listing				
		e. Detailed memory map and listing				
		f. Input/output port map.				
		Sufficient software documentation shall be provided to give the Engineer a full understanding of the software function and operation. Documentation shall be complete, clear and concise, and include all modifications up to final acceptance. Documentation shall include software block diagrams showing signal flow, logic, and hardware interfaces. A top level flow diagram and description of detailed operation shall be provided				

Name of the Bidder :		BEML – Lot 3				
Sl No.	Part/Section No.	Clause No.	Original Bid Condition	Bidder's Query	GC / CMRL Response.	Addendum (Y/N)
1	Part-II Section VI ERTS	ERTS 9.3.8	The four output voltages of Auxiliary converter inverter system shall be as follows: Output 1: 415 V 50 Hz 3 ph. 3 wire Output 2 230 V 50 Hz 1 ph Output 3 110 V DC Output 4 48 V DC (shall be provided if required) Output 5 24 V DC (shall be provided if required)	Auxiliary Converter will have provision of Output 1, 2 & 3. Output 4 & 5, if required will be provided via suitable rating of DC-DC converters. Clause may please be amended accordingly.	Tender condition prevails.	N
2	Part-II Section VI ERTS	ERTS 9.4.7	....Required number of depot side shore supply connector sockets, with their mating connector plugs for both ends of the shore supply cable (Train side and depot Shore supply side) along with cables of sufficient length shall be supplied and handed over to the depot Civil/MEP contractor for installation in all depots of the CMRL Phase 2. The actual number of connectors and length of connecting cables shall be finalized during the design stage for compliance...	Please confirm the quantity of mating half of connector & length of cables, at shop side which shall be considered for quoting as part of bid. Based on previous experience, 5 sets (along with 30 meters cable length) per depot is proposed. Clause may please be amended accordingly.	Please refer to Addendum for revised clause.	Y
3	Part 2 Section VI ERTS Section 1. System Description	1.3	Future 6-car rakes will have the configuration of DMC+TC+MC+MC+TC+DMC (67% traction power) for Grade of Automation-4 Unattended Train Operation.	The tender requirement is 3car with two pantographs. Considering future configuration, May please review the tender requirement and amend to supply 6car train instead of 3car so that single pantograph on Tcar, which confirms redundancy.	Tender condition prevails.	N
4	Part 2 Section VI ERTS Section 1. System Description	2.11.3	With maximum allowable wheel and rail wear, the rakes shall be able to operate in water 100 mm above top of rail, and to creep at up to 8 km/h for a distance of 120m.	Considering the worst wheel wear, under-frame will be designed to permit train movement up to a depth of 50mm above rail level. Clause may please be amended accordingly.	Tender condition prevails.	N
5	Part 2 Section VI	ERTS 10.7.2	Accuracy class for measurement Current Transformer shall be 0.5 or better as per IEC 60044-1. The current measurement shall be conducted instantaneously at the 25 kV level itself using this measurement CT. This equipment shall continuously be operated in all modes of train operation.	Whether this measuring CT is applicable for Power Quality Analysis as described in 10.11.15? Kindly clarify.	Both are different clauses for different requirements.	N
6	Part 2 Section VI	ERTS 10.11.15	Two trains on each line shall be instrumented with separate Power Quality measuring instruments, data acquisition systems and power analyzer (with provision	Kindly clarify the following:- 1) Whether the signals from measuring CT and PT mentioned in 10.7 can be used for Power quality	Please refer to Addendum for revised clause.	Y

Name of the Bidder :		BEML – Lot 3				
Sl No.	Part/Section No.	Clause No.	Original Bid Condition	Bidder's Query	GC / CMRL Response.	Addendum (Y/N)
			for permanent installation and necessary software/analysis tool) to measure, record and analyze the power quality. The measurement with these instruments shall include but not limited to Time, kW, kVAR, kVA, THD, TDD, Total PF and Displacement PF. The instruments supplied shall have the adequate capability of measuring and data acquisition to analyze higher order harmonics (up to 50th) and measure power quality parameters mentioned above with minimum accuracy of 0.1% and sampling rate of 100 kHz. Details of instruments shall be finalized during design stage. Other trains shall also have necessary provisions (suitable space, wiring etc.) for installation and recording power quality parameters as per above.	analysis. 2) we understand that sample rate is 100 kilosamples/sec. 3)we understand that minimum accuracy of 0.1% is applicable for reading voltage and current inputs by Power Quality Analyser. 4) What is the data storage requirement? 5) whether a software/analysis tool required can be installed on external PC such that once the trains comes to depot, the memory storage can be transferred to such PC for analysis?		
7	Part 2 Section VI	ERTS 14.11.1(m)	It shall be possible to replicate the RSC's console in all the maintenance laptops provided to CMRL and also at a remote location of the depot with minimum interface with Signalling & Telecom contractors. RS contractor shall develop a web based secure provision for the access of these information to authorized CMRL representatives in maintenance laptops. In these maintenance laptops and in remote web based locations, only viewing rights shall be provided without any control of train features.	We understand that maintenance laptops at remote location of the depot shall have access to RTR-DMS over communication channels provided by S&T contractor. Kindly clarify.	YES	N
8	Part 2 Section VI	ERTS 14.11.2(d)	Depot management tools, issue of work orders, issue & closure of job cards etc.shall be linked with this system. It shall be possible to issue & closure of job cards for the failures occurred in the train from the RTR-DMS operated in RSC consoles of OCC, BCC & DCCs. It shall be possible to replicate this function in PPIO room in depot maintenance workshop.	We understand that depot management tools are not required to be supplied by rolling stock contractor. Kindly clarify.	Please refer to Addendum for revised clause.	Y
9	Part 2 Section VI	ERTS 14.9.4	Required Features The laptop shall provide full testing of and interaction with the on-board TCMS at both train and car level. The following minimum capabilities shall be provided: r) Accessing depot management software, s) Accessing multiuser software, t) Accessing fracas software, u) Accessing document management system software,	We understand that (r)depot mangement tools (s) multiuser software (t) fracas software (u) document management system software are not required to be supplied by rolling stock contractor. Kindly clarify.	Please refer to Addendum for revised clause.	Y

Name of the Bidder :		BEML – Lot 3				
Sl No.	Part/Section No.	Clause No.	Original Bid Condition	Bidder's Query	GC / CMRL Response.	Addendum (Y/N)
10	Part 2 – Section VI ERTS – HV and Propulsion System	10.11.8	Traction inverters shall be housed in a stainless container, which is mounted under floor in each of the motorized cars. The container shall house the power electronics, the monitoring devices and the traction control unit. It is connected to the vehicle via high voltage power connections, control connections and 3-phase output to the traction motors.	As per ERTS 3.4.1.4.7, All equipment boxes and covers shall be of stainless steel, or alternative material if approved by CMRL. Please clarify the material to be used for the equipment.	Please refer to Addendum for revised clause.	Y
11	Part 2 – Section VI ERTS – HV and Propulsion System	10.7.1	Two AC Current Transformers, each for protection circuit operation and measurement operations shall be mounted on roof along with 25KV cable. The design, testing and operational requirements of the AC current transformers shall meet with IEC-60044-1.	Considering the car width the installation of Two CTs will be congested. Please clarify the necessity of two CTs and may amend the clause accordingly.	Tender condition prevails.	N
12	Part 2 – Section VI ERTS – Train Control Management System	14.2.2	Ethernet Train Backbone (ETB)	Since there are no requirements of coupling of two trainsets under normal operating condition, we request to amend ETB requirement clause.	Please refer to Addendum for revised clause.	Y
13	Part 2 – Section VI ERTS	2.25.8	...In case the Contractor fails, the penalty shall be applied as per Conditions of Contract.	Kindly clarify on the quantum of penalty for SEC.	Please refer to Addendum for revised clause.	Y
14	Part 2 – Section VI ERTS Appendix C	ERTS Appendix-C, 2.4.25, 2.16.1 (22), 3.4.21, 4.3.1, 4.3.6, 4.5.3	PSD related clauses	PSD Door management will require multiple signal exchange from Rolling Stock to Signalling to PSD and Vice Versa. STC contractor being the common party/intermediary between RS and PSD, for better coordination and synchronisation, PSD door management and synchronisation shall be implemented by STC contractor (Example. Implementation of Time latency etc.). Kindly clarify and update the specification suitably.	Tender condition prevails.	N

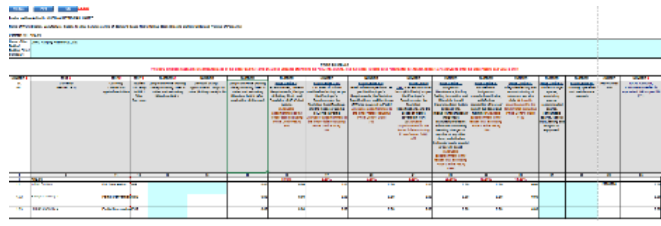
Name of the Bidder :		BEML – Lot 3				
Sl No.	Part/Section No.	Clause No.	Original Bid Condition	Bidder's Query	GC / CMRL Response.	Addendum (Y/N)
15	Part 2 – Section VI ERTS Appendix C	2.2.10	STC contractor shall be responsible for enabling and implementing any addition/ deletion of the alarms from the trains to OCC, BCC & DCC and remote commands from the OCC to train in UTO & Non-UTO modes throughout the project execution stage and during the Defect liability stages of RS and STC contracts, as advised by CMRL. Separate alarms and commands may be required to be reported/ executed from the Traffic controller and the RSC workstations. RSC workstation hardware and software shall be the responsibility of RS Contractor. And related clauses	It is recommended that RSC controller shall be responsibility of STC contractor for better coordination and compatibility with OCC/BCC STC closed servers. Kindly clarify and update the specification suitably.	Tender condition prevails.	N
16	Part 2 – Section VI ERTS Appendix C	2.2.21	STC contractor shall provide continuous location information with time stamp to the RS Contractor from the point of ATO/UTO initialization anywhere in mainline or in depot. RS Contractor shall use the same for different distance based algorithms provided in the RS.	It is recommended that STC contractor shall provide continuous location information in Chainage KM for better usability and understanding of maintenance personnel. Kindly clarify and update the specification suitably.	Tender condition prevails.	N
17	Part 2 – Section VI ERTS Appendix C	2.3.4(b)	Information of the operation of the equipment shall be transmitted to the OCC via the Signalling & train Control system. Sufficient information shall be transmitted to enable the OCC to determine the status of the equipment, sub-systems, and systems of the Trains and to issue the required control commands to the Trains via Signalling & train Control system to control the equipment or reset any equipment to meet the safety and reliability requirements specified in this specification and related clauses	It is recommended that remote reset shall be available only for non safety related equipments. Kindly clarify and update the specification suitably.	Tender condition prevails.	N
18	Part 2 – Section VI ERTS Appendix C	2.4.18	Rolling Stock shall propose a user friendly Graphical User Interface (GUI) for Rolling Stock Controller in the form of a conceptual schematic/ wireframe that shall include page layouts, arrangement of the GUI's content, interface and navigational elements, and a description of how they work together. And related clauses	It is recommended that RSC GUI shall be responsibility of STC contractor for better coordination and compatibility with OCC/BCC STC closed servers. Kindly clarify and update the specification suitably.	Tender condition prevails.	N

Name of the Bidder :		BEML – Lot 3				
Sl No.	Part/Section No.	Clause No.	Original Bid Condition	Bidder's Query	GC / CMRL Response.	Addendum (Y/N)
19	Part 2 – Section VI ERTS Appendix C	2.4.22	RS and STC Contractors shall interface to ensure that at least but not limited to following emergency conditions should result in the event based auto popup of CCTV images via CCTV network on Rolling Stock Controller's Terminal. The detail implementation shall be finalized during interface with the approval of CMRL. The utilization of bandwidth of CCTV network shall be managed dynamically	It is recommended that the utilization of bandwidth of CCTV network shall be managed dynamically shall be managed by STC contractor Kindly clarify and update the specification suitably.	Tender condition prevails.	N
20	Part 2 – Section VI ERTS Appendix C	2.4.23	Transfer and display of such images from CCTV Server to work stations at OCC, BCC, DCC & SCR (within one station vicinity of the train on either ends) shall be responsibility of STC Contractor for which RS and Telecommunications Contractor shall interface.	It is recommended that STC contractor shall have multicast facility to transfer onboard streams to different locations as and when requested. Kindly clarify and update the specification suitably.	Tender condition prevails.	N
21	Part 2 – Section VI ERTS Appendix C	2.8.1 3.7.1	IP-52 related clauses	It is recommended that STC equipments shall have self ventilation and cooling mechanism in case of IP52, further, for Equipments requiring frequent interface/interaction with Train Operator, Providing IP-52 enclosure may not be recommended. Kindly clarify and update the specification suitably.	Tender condition prevails.	N
22	Part 2 – Section VI ERTS Appendix C	2.8.2	To achieve the ATC control functions, STC Contractor shall identify any interfacing circuits specifically required for ATC operation and liaise with RS Contractor. These include but not be limited to train wake up/sleep, train start, door control, motoring, coasting, braking and emergency brake commands, etc. Door control circuit design shall allow opening of doors in stand by position of mode selector under manual responsibility in case of non-availability of door opening authorization from ATP without losing the ATP mode.	Please clarify on the line Door control circuit design shall allow opening of doors in stand by position of mode selector under manual responsibility in case of non-availability of door opening authorization from ATP without losing the ATP mode. If so, it is recommended that STC contractor shall consider standby mode position as a signaling mode. Kindly clarify and update the specification suitably.	Tender condition prevails. However, detailed discussion about this will be elaborated to the awarded contractor.	N
23	Part 2 – Section VI ERTS Appendix C	2.3.8(a)	By-pass Mode shall be provided for use in the event of failure of the ATP system. In this mode, the train speed shall be controlled entirely by the train operator, to a	Please clarify on the requirement of High speed cut out of 40Kmph, Other major running projects have provision of only 25Kmph cutout. Further RS depends on STC contractor for information of train location (whether depot or	Tender condition prevails.	N

Name of the Bidder :		BEML – Lot 3				
Sl No.	Part/Section No.	Clause No.	Original Bid Condition	Bidder's Query	GC / CMRL Response.	Addendum (Y/N)
			limit speed as 25 kmph inside the Depot and 40 kmph in Mainline. RS Contractor shall provide equipment and means to ensure that the maximum train speed remains within the above limit when the Cut-out Mode is in effect, under all circumstances. This shall be considered as Low speed cut out (25 Kmph & within depots) and High speed cut out (40 Kmph in mainline).	mainline). Kindly clarify and update the specification suitably.		
24	Part 2 – Section VI ERTS	3.6.4.2	Proven methodology in metro railways application shall be used for smoke detection (such as point smoke detector or aspiration based smoke detector). Same shall be submitted for CMRL review and approval (CDRL-20). The system shall be compliant with SIL2 requirements.	Please clarify that whether the complete Fire & Smoke detection system is required to be SIL2. Based on the global references, clause shall modified as per below; " <u>The system shall be compliant with SIL2 requirement and Any change in SIL level shall be subject to the hazard analysis of Fire & Smoke Detection System</u> ". Kindly clarify and update the specification suitably.	Tender condition prevails.	N
25	Part 2 – Section VI ERTS Appendix C	3.2.13	....Rolling Stock Contractor shall provide Live Video Players with buffering capability in train's CCTV CCH and for the advertisements displays on each car. The RS Contractor shall also provide the advertisement and live video players in hot standby pair per train. The RS Contractor shall also provide redundant suitable arrangement (video controller/ player) in OCC/DCC for transmission of live video contents and stored video contents to be played in the train.	Scope of Live video signal demodulators, converters, digital encoders etc for the processing of Live video signal input to the Live video sever/player shall be the scope of Live video signal provider / designated contractor. Kindly clarify and update the specification suitably.	Tender condition prevails.	N

Name of the Bidder :		COSMO					
Sr. No.	Part (I/II/III)	Section	Clause No.	Clause as mentioned in Bid Document	Change Requested/ Clarification required	CMRL Resposnse.	Addendum (Y/N)
1	ERTS Carbody-Part- 2	VI	3.4.7.3 (Flooring)	The non-skid floor structure shall be floating floor type comprising of aluminium or stainless steel or any other service proven material such that no repairs or replacement to the floor structure is required throught the coadal life of the car -shell, i.e. 35 years. The material of the floor structure shall be subject to CMRL`s prior approval. floor covering shall be achive low noise level inside the cars and shall be of less weight.	The non-skid floor structure shall be floating floor type comprising of aluminium or stainless steel <u>or Phenolic Composite</u> or any other service proven material such that no repairs or replacement to the floor structure is required throught the coadal life of the car -shell, i.e. 35 years. <u>Floors must be light weight, corrosion and Moisture resistant, Maintainance free and must comply to transit industry all global fire safety and toxicity standards</u> .The material of the floor structure shall be subject to CMRL`s prior approval. floor covering shall be achive low noise level inside the cars and shall be of less weight.	Tender condition prevails.	N

Name of the Bidder :		CRRC				
SI No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL / GC Reply	Addendum (Y/N)
1	Part – 1 Section-II BDS Page 40 of 208	ITB 11.2 B	The original Bank Guarantee shall be from an Indian Scheduled Commercial Bank as defined in Section 2(e) of RBI Act 1934.	Same foreign Banks also mentions in Section 2(e) of RBI Act 1934. So it is suggested to change this clause to “The original Bank Guarantee shall be from an Indian Scheduled Commercial Bank or from a Scheduled Foreign Bank as defined in Section 2(e) of RBI Act 1934.”	Tender condition prevails.	N
2	Part I Section V Eligible Source Countries Page 205 of 208	Section V-B	(i)Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority, specified in Annex-I.	It will take sometime for getting the registration. So it is suggested that the bidder from a country which shares a land border with India has already incorporated in India and the rolling stock will be manufactured in its independent manufacturing unit in India cannot be subject to the registration requirement.	Tender condition prevails.	N
3	Part I Section VI Bidding Forms Page 171 of 208	3.Litigation History	3.Litigation History	Sequence number 3 should be followed by sequence number 2. It is suggested to exchange the page 171 and page 170.	Page numbers are revised.	N
4	Part I Section II Bid Data Sheet Page 43 of 208	ITB 22.1	<u>Replace Sub-clause 22.1 with the following:</u> The Bid submission is through E-tender portal of CPP only. In addition to the original of the Bid, the number of copies to be submitted is: two (02).	Could you please tell us what does the “copy” mean? Original copies in paper or duplicate copies in paper?	Please refer to Addendum for revised clause.	Y
5	Part I Section -IV Bidding Forms Page 200 of 208	10.Form of Bid Security	or (ii) twenty-eight days after the end of the Bid Validity Period.	It is suggested to change this clause to“or (ii) twenty-eight days after the end of the Bid Validity Period, I.E. Oct. 18th,2021.”	Tender condition prevails.	N
6	Part I Section -IV Bidding Forms Page 200 of 208	10.Form of Bid Security	Consequently, any demand for payment under this guarantee must be received by us at the office indicated above on or before that date.	It is suggested to change this clause to“Consequently, any demand for payment under this guarantee must be received by us at the office indicated above on or before that date, I.E. Oct. 18th,2021.”	Tender condition prevails.	N
7	Part I Section -IV Bidding Forms Page 200 of 208	10.Form of Bid Security	This guarantee is subject to the Uniform Rules for Demand Guarantee(URDG) 2010 Revision, ICC Publication No.758.	It is suggested to change this clause to” This guarantee is subject to the Uniform Rules for Demand Guarantee(URDG) 2010 Revision, ICC Publication No.758. This guarantee is non assignable and non transferable. NOTWITHSTANDING ANYTHING CONTAINED HEREIN:	Tender condition prevails.	N

Name of the Bidder :		CRRC				
SI No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL / GC Reply	Addendum (Y/N)
				<p>1. OUR LIABILITY UNDER THIS BANK GUARANTEE SHALL NOT EXCEED USD1,697,959.00 (SAY U.S. DOLLARS ONE MILLION SIX HUNDRED AND NINETY SEVEN THOUSAND NINE HUNDRED AND FIFTY NINE ONLY).</p> <p>2.THIS BANK GUARANTEE SHALL BE VALID UPTO Oct.18th, 2021.</p> <p>3.WE ARE LIABLE TO PAY THE GUARANTEED AMOUNT OR ANY PART THEREOF UNDER THIS BANK GUARANTEE ONLY AND ONLY IF WE RECEIVE A WRITTEN CLAIM OR DEMAND ON OR BEFORE Oct.18th, 2022.BEFORE 14.00 HOURS IST THEREAFTER IT CEASES TO BE IN EFFECT IRRESPECTIVE OF WHETHER ORIGINAL GUARANTEE IS RETURNED TO US OR NOT."</p>		
8	Part – 2 ERTS-System Requirements Page 59 of 741	Clause 2.25.1	Tenderers shall note that 'SPECIFIC ENERGY CONSUMPTION (SEC)' shall be verified in any one corridor of Phase 2 as agreed with CMRL under conditions detailed hereafter in this clause shall not exceed 48 Wh/GTKM.....	According to the experience for previous India projects, it is very hard to reach 48 Wh/GTKM. So it is suggested change to this clause to" Tenderers shall note that 'SPECIFIC ENERGY CONSUMPTION (SEC)' shall be verified in any one corridor of Phase 2 as agreed with CMRL under conditions detailed hereafter in this clause shall not exceed 65 Wh/GTKM..... ".	Tender condition prevails.	N
9	Part – 3 Section VIII Particular Conditions (Part A:Contract) Page 98 of 136	Part-A – CONTRACT DATA	4.Defects Notification Period 730 days	What is the different between DNP and DLP? Do they have the same meaning?	Please refer to Addendum for revised clause.	Y
10	BOQ 635941			Does the BOQ Document only have one page? It seems that it is not a complete one.	Complete information is mentioned.	N
11	PART – 2 : SECTION VI – ERTS Page 464 of 741	Table 18-1	Gear Transmission (each) Maximum Person-Hours 6	<p>Suggest to delete this Clause.</p> <p>It is recommended to replace the gear transmission under factory conditions instead of replacing the gear transmission separately after replacing the whole standby bogie.</p>	Please refer to Addendum for revised clause.	Y

Name of the Bidder :		CRRC				
Sl No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL / GC Reply	Addendum (Y/N)
12	PART – 2 : SECTION VI – ERTS Page 464 of 741	Table 18-1	Battery box modification Maximum Person-Hours 1	Please specify the compose of "modification" activity.	Please refer to Addendum for revised clause.	Y
13	PART – 2 : SECTION VI – ERTS Page 18 of 741	Clause 2.3.2	All other equipment shall be designed for a minimum service life of 18 years subject to routine maintenance, overhaul, or replacement. Major subassemblies requiring overhaul or replacement to meet the requirements of this section shall be identified at Preliminary Design Review (PDR), Pre-Final Design Review (PFDR) and Final Design Review (FDR).	Suggest to delete the minimum service life of 18 years and modify as follows: Major subassemblies requiring overhaul or replacement to meet the requirements of this section shall be identified at Preliminary Design Review (PDR), Pre-Final Design Review (PFDR) and Final Design Review (FDR). Because not all the equipment have a minimum service life of 18 years. For example, different parts of bogie have different service lives, such as the primary suspension steel spring has 10 years service life.	Tender condition prevails.	N
14	PART – 2 : SECTION VI – ERTS Page 32 of 741	Clause 2.13.4.2	The bogie stability tests shall be carried out in accordance with the requirements of UIC 515 .	Maybe standard-UIC 515 is not correct. The bogie stability tests shall be carried out in accordance with the requirements of UIC 518-TESTING AND APPROVAL OF RAILWAY VEHICLES FROM THE POINT OF VIEW OF THE IR DYNAMIC BEHAVIOUR .	Tender condition prevails.	N
15	PART – 2 : SECTION VI – ERTS Page 48 of 741	Clause 2.15.10.5 & Clause 12.6.7.7 & Clause 12.6.7.8	“During braking, if the dynamic braking is operating and is providing all the required effort, the BCU shall maintain sufficient EP brake pressure to keep the brake pads close to the disks but shall not contribute to any braking effort or cause wear to the pads.”	Suggest to Modify as follows: “During braking, if the dynamic braking is operating and is providing all the required effort, the BCU shall maintain sufficient EP brake pressure to keep the brake pads/brake block close to the disks/wheel treads but shall not contribute to any braking effort or cause wear to the pads.” we suggest to use tread brake which is also able to satisfy requirements of Contractor.	Please refer to Addendum for revised clause.	Y
16	PART – 2 : SECTION VI – ERTS Page 46 of 741	Clause 2.15.8.20	A mechanism shall be provided to remotely isolate, from TCMS/OCC only the failed brake equipment on that rake.	Suggest to modify as follows: A mechanism shall be provided to monitor remotely isolate, from TCMS/OCC only the failed brake equipment on that rake. Because remote isolation of braking equipment will bring about the loss of braking force and there's will be a false operation.	Tender condition prevails.	N
17	PART – 2 : SECTION VI – ERTS Page 51 of 741	Clause 2.17.3.4	During Stationary condition the specified limits shall be met with all auxiliary equipment operating simultaneously at maximum capacity.	All equipment that can be operating with the stationary vehicle, including the main traction equipment where relevant, shall be operating. The auxiliary equipment shall be operated at	Tender condition prevails.	N

Name of the Bidder :		CRRC				
SI No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL / GC Reply	Addendum (Y/N)
				maximum load.		
18	PART – 2 : SECTION VI – ERTS Page 53 of 741	Clause 2.17.4	The noise limits in table 2-11 shall not be exceeded when testing according to ISO 3095 on a reference track according to above.	It is recommended that subsection 2.17.4 be deleted because there is no wayside noise testing in ISO 3095.	Tender condition prevails.	N
19	PART – 2 : SECTION VI – ERTS Page 739 of 741	APPENDIX – I	24 A failure or symptom which may endanger safe and/or normal operation of train -Wheel flat	Suggest to Delete" -Wheel flat". Because it is contradictory with 3 wheel- if wheel flat is >40 mm wide or as finalized in design.	Please refer to Addendum for revised clause.	Y
20	PART – 2 : SECTION VI – ERTS Page 61 of 741	Clause 2.26.1	The car interior shall have resistance to fire and conform to EN 45545 (Part 1 to 7), Category 4-A, Hazard level HL3 – ‘Standard for Fixed Guide way – Transit and Passenger Rail Systems’ and BS 6853 Code of practice for fire precautions in the design and construction of passenger carrying rakes or any other approved international standards.	Suggest to change "and " to "or". The car interior shall have resistance to fire and conform to EN 45545 (Part 1 to 7), Category 4-A, Hazard level HL3 – ‘Standard for Fixed Guide way – Transit and Passenger Rail Systems’ or BS 6853 Code of practice for fire precautions in the design and construction of passenger carrying rakes or any other approved international standards.	Tender condition prevails.	N
21	PART – 2 : SECTION VI – ERTS Page 61 of 741	Clause 2.26.1	(iv) Flammable materials shall be well contained with IP 65 protection.	Suggest to delete this clause. Because flammable materials cannot fully contained with IP65 Protection. The flammable materials will be tested according to EN45545-2 requirements.	Tender condition prevails.	N
22	PART – 2 : SECTION VI – ERTS Page 68 of 741	Clause 3.2.7	The car body shall have a 35-year design life and shall be watertight with the minimum use of sealant. Water tightness shall comply with IP-65.	Suggest to modify as follows: The car body shall have a 35-year design life and shall be watertight with the minimum use of sealant. Sealing of the car body shall be sufficient to satisfy the requirement of IEC 61133 or equivalent UIC standard. because IP degree is not applied for carbody standard. we will carry out rainfall test for watertightness according to IEC 61133.	Tender condition prevails.	N
23	PART – 2 : SECTION VI – ERTS Page 71 of 741	Clause 3.4.3.3	If a “plug-in” cab enclosure is used, the water tight seal between the main carbody and cab shell shall last for a minimum of 15 years under the loading and environmental conditions identified in these Technical Provisions. Joints formed primarily with caulking or sealant shall not be used	Suggest to delete "Joints formed primarily with caulking or sealant shall not be used". The sealant is needed in fastener connection.	Tender condition prevails.	N
24	PART – 2 : SECTION VI – ERTS Page 81 of 741	Clause 3.6.4	3.6.4.4 Functioning of the smoke and heat detection system shall be integrated with the TCMS/OCC.	Please confirm that the result of smoke and heat detection is displayed on TCMS screen. Reset function is achieved through TCMS.	Please refer to Addendum for revised clause.	Y

Name of the Bidder :		CRRC				
SI No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL / GC Reply	Addendum (Y/N)
25	PART – 2 : SECTION VI – ERTS Page 79 of 741	Clause 3.6.1.6	Anti-squeak tape shall be used between linings and any structure to which they are attached or with which they come in contact.	Please confirm that sponge bar and rubber tape is anti-squeak tape or not.	Tender condition prevails.	N
26	PART – 2 : SECTION VI – ERTS Page 83 of 741	Clause 3.6.5.15.2	Seat framing may be stainless steel with a satin finish. Frame members shall be joined together using proper welding technique. Any seat frame tubing shall have the ends plugged to prevent the entry of vermin	Suggest to use stainless steel/aluminum frame because strength of aluminum frame is able to satisfy the load requirement and it's lighter than the stainless steel.	Please refer to Addendum for revised clause.	Y
27	PART – 2 : SECTION VI – ERTS Page 100 of 741	Clause 3.15.1	The natural frequency of the first body bending mode shall be at least 1.5 times that of the bounce frequency of the bogie frame and primary suspension system,	For stainless steel carbody, it's hard to achieve 1.5 times. Vibration isolation or structure design will be adopted to avoid sympathetic vibration.	Tender condition prevails.	N
28	PART – 2 : SECTION VI – ERTS Page 116 of 741	Clause 5.4.1	.....This display shall provide Status (Working Status and Fault status) and Controls (Isolation, System controls, reset controls) as mentioned below: xiv. Train general parameters like vehicle Speed, traction voltage, battery voltage, distance travelled, energy readings, wheel slip, wheel slide, excessive jerk. xvi. Details of Digital Manometer Pressure Gauge indications of Main Pipe, Brake Pipe, Reservoir, Brake Cylinder, etc.	Suggest to cancel the display of brake pipe and reservoir details. because brake pipe connects the main reservoir and brake cylinder, the pipe pressure is deemed as the reservoir pressure.	Tender condition prevails.	N
29	PART – 2 : SECTION VI – ERTS Page 116 of 741	Clause 5.4.1	e) Selector switches / Isolation switches / By-pass switches A series of Selector / isolating / By-pass switches shall be provided in each emergency operator's desk to ensure that the following systems, as a minimum, can be manually isolated by the operator: i. Individual Bogies Isolation viii. emergency interlock release/isolation switches.	First, Suggest to delete i. individual bogies isolation. Second, please clarify the function of emergency interlock.	Please refer to Addendum for revised clause.	Y
30	PART – 2 : SECTION VI – ERTS Page 130 of 741	Clause 5.12.3	The Detrainment doors shall not infringe the Kinematic Envelope under any condition and shall be designed to avoid door jamming in the event of a train collision.	Suggest to delete" ... and shall be designed to avoid door jamming in the event of a train collision."	Tender condition prevails.	N
31	PART – 2 : SECTION VI – ERTS	Clause 6.3.14	It shall be possible for CMRL to modify or change the door system parameters, modify or change open-close logic of the door circuits and implement the same as required by CMRL 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. The documentation including but not restricted to flow charts (for complete software), signal	Suggest to modify as follows: It shall be possible for CMRL to modify or change the door system parameters, modify or change open-close logic of the door circuits based on their operational and maintenance requirements. Their modify or change shall be sent to the vehicle and door supplier for evaluation. If the modify or change is non-risk and safe, it will be implemented according to the requirement of CMRL and	Tender condition prevails.	N

Name of the Bidder :		CRRC				
SI No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL / GC Reply	Addendum (Y/N)
	Page 136 of 741		flows, and interpretation of signal etc. shall be provided (CDRL 6-2). CMRL personnel shall be fully trained and made fully conversant by the contractor for this purpose.	access to the partial software for the purpose above will be provided.		
32	PART – 2 : SECTION VI – ERTS Page 137 of 741	Clause 6.3.23	6.3.23 The door position measurement and detection shall be accurate and real time measurement of the distance moved by each leaf. Details shall be discussed and finalized during design stage. All door close and all door latching shall be independently monitored through two separate independent circuits. All door closing function and all door latching functions shall be separately monitored at the train level.	Suggest to modify as follows: The door position measurement and detection shall be accurate and real time confirmation of door closing and door latching.	Tender condition prevails.	N
33	PART – 2 : SECTION VI – ERTS Page 145 of 741	Clause 6.8.2	6.8.2 The bypass controls shall be provided to by-pass operation of any defective doors by the train operator through TCMS DDU. Provision shall also be provided in from RSC consoles of OCC, BCC & DCCs for by-passing a faulty door, remotely.	Suggest to modify as follows: The bypass controls shall be provided to by-pass operation of any defective doors by the train operator.	Tender condition prevails.	N
34	PART – 2 : SECTION VI – ERTS Page 147 of 741	Clause 6.9.2	The ramp angle shall not be more than 16.5 degrees. The ramp shall also be suitably supported on the track to ensure no tilting of the ramp on straight as well as on curved sections. Retrieval of the ramp shall be easy. Contractor shall demonstrate safe use of the emergency door and ramp in the elevated, at-grade and tunnel section on different radius curves specified in the ERTS. The door design shall be consistent with the latest applicable fire safety standards.	Suggest to modify as below: ....The ramp angle shall not be more than 25 degrees. Because the degree of 16.5 will increase the length of ramp so as to increase the collection difficulty.	Tender condition prevails.	N
35	PART – 2 : SECTION VI – ERTS Page 154 of 741	Clause 7.3.11	All airways handling conditioned air, or air to be conditioned , shall be separately ducted with adequate heat insulation layers in ducts. Temperature variations inside saloon room shall follow EN 14750 standards.	Suggest to modify as below All airways handling conditioned air, shall be ducted with adequate heat insulation layers in ducts. Temperature variations inside saloon room shall follow EN 14750 standards.	Please refer to Addendum for revised clause.	Y

Name of the Bidder :		CRRC				
Sl No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL / GC Reply	Addendum (Y/N)
36	PART – 2 : SECTION VI – ERTS Page 154 of 741	Clause 7.3.13	The air conditioning units shall be sized to cater for fully laden load of AW4 condition with all equipment being operated. The Contractor shall take into consideration to allow the effects of door opening and closing at stations and the piston and infiltration effects for the rake moving in tunnel as specified in standards.	Suggest to modify as follows: The air conditioning units shall be sized to cater for fully laden load of AW3 condition with all equipment being operated. The Contractor shall take into consideration to allow the effects of door opening and closing at stations and the piston and infiltration effects for the rake moving in tunnel as specified in standards. Second, please provide specific standards for the piston and infiltration effects.	Tender condition prevails.	N
37	PART – 2 : SECTION VI – ERTS Page 155 of 741	Clause 7.4.3	The minimum volume of fresh air supplied by the artificial ventilation shall be 2.5 liters per second per passenger at AW4 Load. This air shall be filtered. The renewal of filtered air shall be at a rate of minimum 7.5 liters per second per passenger at AW4 Load. The contractor may propose design improvements to the above parameters for CMRLs' review and approval. (CDRL 7-3)	Suggest to modify as follows: The minimum volume of fresh air supplied by the artificial ventilation shall be 2.5 liters per second per passenger at AW3 Load. This air shall be filtered. The renewal of filtered air shall be at a rate of minimum 7.5 liters per second per passenger at AW3 Load. The contractor may propose design improvements to the above parameters for CMRLs' review and approval. (CDRL 7-3). Because AW4 is the overload status, which is not normal working state, and the overload time in actual operation is short. Moreover, the air-conditioning system designed according to AW4 load has large air volume and cooling capacity, which is not energy saving and environmental protection, so we recommended to use AW3 load.	Tender condition prevails.	N
38	PART – 2 : SECTION VI – ERTS Page 156 of 741	Clause 7.4.5.3 & Clause 7.4.6.3	In the event of the system failure or power supply failure of any individual VAC unit, an emergency ventilation system (1 hour operation with battery supply) shall operate automatically to admit fresh air directly into car to maintain the required oxygen level in the fully laden car, in accordance with EN 14750. In this emergency ventilation condition, the outside fresh air shall be admitted into car at a minimum rate of 5 liters / sec /passenger (@ AW4 load). The ventilation fan shall be fed from the 110V DC supply with its dedicated inverter per each VAC unit during these conditions.	Suggest to modify as follows: In the event of the system failure or power supply failure of any individual VAC unit, an emergency ventilation system (1 hour operation with battery supply) shall operate automatically to admit fresh air directly into car to maintain the required oxygen level in the fully laden car, in accordance with EN 14750. In this emergency ventilation condition, the outside fresh air shall be admitted into car at a minimum rate of 2.3 liters / sec /passenger (@ AW3 load). The ventilation fan shall be fed from the 110V DC supply with its dedicated inverter per each VAC unit during these conditions. Kindly change the other relevant clause.	Please refer to Addendum for revised clause.	Y

Name of the Bidder :		CRRC				
SI No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL / GC Reply	Addendum (Y/N)
		& Clause 7.6.2 & Clause 7.6.3 & Clause 7.6.11		Because AW4 is the overload status, which is not normal working state, and the overload time in actual operation is short. Moreover, the air-conditioning system designed according to AW4 load has large air volume and cooling capacity, which is not energy saving and environmental protection, so we recommended to use AW3 load.		
39	PART – 2 : SECTION VI – ERTS Page 156 of 741	Clause 7.4.5.5	At the end of the emergency ventilation period, the airflow shall be not less than 5.0 l/sec/passenger (@ AW4 load) for the saloon, including the emergency operator's desk.	Suggest to modify as follows: At the end of the emergency ventilation period, the airflow shall be not less than 2.3 l/sec/passenger (@ AW4 load) for the saloon, including the emergency operator's desk.	Please refer to Addendum for revised clause.	Y
40	PART – 2 : SECTION VI – ERTS Page 156 of 741	Clause 7.4.5.8	The air conditioning system shall automatically restore normal cooling mode operation when power supply returns to normal for the individual VAC unit basis.	Suggest to modify as follows: The air conditioning system shall automatically restore normal working mode operation when power supply returns to normal for the individual VAC unit basis.	Tender condition prevails.	N
41	PART – 2 : SECTION VI – ERTS Page 157 of 741	Clause 7.4.6.3	During ventilation, the system shall deliver 100% fresh air , distributed throughout the emergency operator's desk area and saloon.	Suggest to modify as follows: During ventilation, the system shall deliver fresh air and return air distributed throughout the emergency operator's desk area and saloon.	Please refer to Addendum for revised clause.	Y
42	PART – 2 : SECTION VI – ERTS Page 157 of 741	Clause 7.4.8.1	In the event of smoke or fire existing outside the train being detected, the system shall shut off the fresh air intake to prevent the product of combustion materials being drawn into the saloon and provide a full (100%) re-circulation of return air within the saloon. Provision shall be made to automatically 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 automatically in UTO mode & non-UTO modes of operation. The closing time of all the fresh air dampers shall preferably be less than 5 seconds from the receipt of smoke signal to avoid ingress of large quantity of smoke coming inside the car. The status of	Suggest to modify as follows: The evaporative fan shall be turn off immediately when receive smoke signal to avoid ingress of large quantity of smoke coming inside the car, then shut up the fresh air dampers and turn on the evaporative fan. The status of smoke activation, dampers condition shall be displayed on the DDU TCMS. These details shall also be displayed in RSC consoles of OCC, BCC & DCCs. Please specify that who is responsible for the outside fire? the VAC system is not able to receive the	Tender condition prevails.	N

Name of the Bidder :		CRRC				
SI No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL / GC Reply	Addendum (Y/N)
			smoke activation, dampers condition shall be displayed on the DDU TCMS. These details shall also be displayed in RSC consoles of OCC, BCC & DCCs.	outer fire signal. we normally use the electrical air valves. We suggest to use electric air valve.		
43	PART – 2 : SECTION VI – ERTS Page 158 of 741	Clause 7.6.1	The air conditioning system shall have adequate capacity to maintain the specified interior temperatures under the conditions listed below. The Contractor shall take into consideration EN 14750 specifications for door opening /closing cycle and the piston and infiltration effects for the rake moving in the tunnel. External recorded annual extreme maximum temperature is 45oC in Chennai. The detailed Climatic data sheet is attached at the end of this Section (Table No. 7-1).	Suggest to modify as follows: The air conditioning system shall have adequate capacity to maintain the specified interior temperatures under the conditions listed below. The Contractor shall take into consideration EN 14750 specifications for door opening/closing cycle. External recorded annual extreme maximum temperature is 45oC in Chennai. The detailed Climatic data sheet is attached at the end of this Section (Table No. 7-1). Because there's no piston and infiltration effect in EN14750.	Tender condition prevails.	N
44	PART – 2 : SECTION VI – ERTS Page 159 of 741	Clause 7.6.2	Impact of VAC unit filter's saturation on air flow and temperature	Suggest to delete this clause because it's hard to define the filter's saturation.	Please refer to Addendum for revised clause.	Y
45	PART – 2 : SECTION VI – ERTS Page 159 of 741	Clause 7.6.6	Failure of one of the air-conditioning units on a car shall not adversely affect operation of the other car. Each air conditioning unit shall be sized to take at least sixty (60) percent of the total car cooling load.	Suggest to modify as follows: Failure of one of the air-conditioning units on a car shall not adversely affect operation of the other car. Each air conditioning unit shall be sized to take more than fifty (50) percent of the total car cooling load.	Tender condition prevails.	N
46	PART – 2 : SECTION VI – ERTS Page 215 of 741	Clause 9.4.7	Each socket shall be accompanied by a red lamp, to warn of live sockets, when a shore supply is plugged in.	Please define the supply scope of workshop power plug and socket.	Please refer to Addendum for revised clause.	Y
47	PART – 2 : SECTION VI – ERTS Page 216 of 741	Clause 9.4.10	For maintenance purpose, there shall be additional by-pass ground switch in auxiliary converter inverter box duly interlocked with safety locks. Contractor shall submit the detail document for Engineer's review during design stage. (CDRL 9-24).	It's suggested to use three-position isolation switch in high-voltage tank as the earthing switch. Additional ground switch will be set.	Tender condition prevails.	N

Name of the Bidder :		CRRC				
SI No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL / GC Reply	Addendum (Y/N)
48	PART – 2 : SECTION VI – ERTS Page 221 of 741	Clause 9.7.9	Battery Box access locks shall be interlocked with the isolation switch of the Battery Box. Battery terminals access shall only be available after the battery is isolated. Similarly, the Battery supply can be made Normalized only after Battery box is completely locked.	Suggest to delete this clause.	Tender condition prevails.	N
49	PART – 2 : SECTION VI – ERTS Page 239 of 741	Clause 10.11.15	Two trains on each line shall be instrumented with separate Power Quality measuring instruments, data acquisition systems and power analyzer (with provision for permanent installation and necessary software/analysis tool) to measure, record and analyze the power quality. The measurement with these instruments shall include but not limited to Time, kW, kVAR, kVA, THD, TDD, Total PF and Displacement PF. The instruments supplied shall have the adequate capability of measuring and data acquisition to analyze higher order harmonics (up to 50th) and measure power quality parameters mentioned above with minimum accuracy of 0.1% and sampling rate of 100 kHz. Details of instruments shall be finalized during design stage. Other trains shall also have necessary provisions (suitable space, wiring etc.) for installation and recording power quality parameters as per above.	It's suggested that the power measuring accuracy is in accordance with EN50463.	Tender condition prevails.	N
50	PART – 2 : SECTION VI – ERTS Page 241 of 741	Clause 10.11.20	Power system fluctuations within the specified voltage range or feed extensions shall not cause propulsion system shutdown leading to jerks in the train. Adequate capacity shall be built in the DC link and control parameters shall be selected and fine-tuned suitably so that in no case, system stability is adversely affected. The design shall permit to operate trains at minimum 90 seconds headway with normal feeding zone of 15km and extended feeding zone of not less than 30km without any restriction.	It's suggested that relevant parameters can be provided by vehicle to coordinate with the design of ground substation.	Tender condition prevails.	N
51	PART – 2 : SECTION VI – ERTS Page 252 of 741	Clause 10.18.3.6	10.18.3.6 A malfunction of a car's brake equipment shall activate the train's emergency brake and a mechanism shall be provided to remotely isolate, from the driver's cab, only the failed brake equipment on that car and enable release of the train's emergency brake.	Suggest to modify as follows: A malfunction of a car's brake equipment shall be alarmed and displayed in DDU so that the operator will handle the failure according to the failure level and operation advice. A mechanism shall be provided to isolate the failed brake device.	Tender condition prevails.	N
52	PART – 2 : SECTION VI – ERTS	Clause 11.1	AAR M114-90 Specification for Helical Springs, heat treated steel	we adopt mature bogie design and steel spring is applied in primary suspension system. The steel spring conform to following specifications:	ERTS allows for other equivalent standards subject to approval from CMRL. So	N

Name of the Bidder :		CRRC				
SI No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL / GC Reply	Addendum (Y/N)
	Page 1257 of 741			EN 10089:2002 Hot rolled steels for quenched and tempered springs -Technical delivery conditions EN 13298:2003 Railway applications-Suspension components-Helical suspension springs	tender condition prevails.	
53	PART – 2 : SECTION VI – ERTS Page 257 of 741	Clause 11.1	AWS D1.1 Structural Welding Code, Steel	we adopt mature bogie design and the welding conforms to EN 15085 Railway applications - Welding of railway vehicles and components	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
54	PART – 2 : SECTION VI – ERTS Page 258 of 741	Clause 11.2.4	Bogie assemblies shall have a service life of 35 years without structural repairs under standard maintenance practices and service	Suggest to modify as follows: The primary parts of bogies will have a service life of 35 years without structural repairs under standard maintenance practices and service	Tender condition prevails.	N
55	PART – 2 : SECTION VI – ERTS Page 258 of 741	Clause 11.2.9	All bogies shall have components that are interchangeable to the largest extent possible. Bogie frames shall be identical for all bogies. All similar bogies must be interchangeable without modification to the bogie assembly.	Suggest to modify as follows: All bogies shall have components that are interchangeable to the largest extent possible. Motor bogie frames shall be identical, trailer bogie frames shall be identical. All similar bogies must be interchangeable without modification to the bogie assembly.	Tender condition prevails.	N
56	PART – 2 : SECTION VI – ERTS Page 259 of 741	Clause 11.2.16	Bogie assemblies shall be easily removable from the car body for maintenance, without the use of any special tools. Car body to bogie connections shall not contain any press fit joints. Any joints on the bogie, which could become frozen or locked over time, shall be sealed from moisture and appropriate materials shall be used to prevent such conditions from occurring.	Please clarify the definition of press fit joints. We adopt mature design of center pin and rubber node for carbody and bogie connection.	Tender condition prevails.	N
57	PART – 2 : SECTION VI – ERTS Page 261 of 741	Clause 11.2.20	Fire properties of the materials used shall comply with EN 45545 part 1 to part 7 latest editions (Category 4-A, Hazard level HL3) as a minimum or better international standard applicable for similar Metro applications. Requirements of ERTS section 2.26 shall be met.	Suggest to modify as follows: Fire properties of the materials used on the bogie shall comply with EN 45545 part 1 to part 7 latest editions (Category 3-A, Hazard level HL2) as a minimum or better international standard applicable for similar Metro applications.	Tender condition prevails.	N
58	PART – 2 : SECTION VI – ERTS Page 262 of 741	Clause 11.3.2.2	Welded and bolted connections shall be analyzed in detail to demonstrate compliance with static and fatigue strength requirements of this specification.	Suggest to modify as follows: Welded connections shall be analyzed in detail to demonstrate compliance with static and fatigue strength requirements of this specification	Tender condition prevails.	N
59	PART – 2 : SECTION VI – ERTS	Clause 11.4.5.1	The primary suspension shall consist of elastomeric elements, such as chevrons or conical rubber	Steel spring is adopted in the primary suspension system.	Tender condition prevails.	N

Name of the Bidder :		CRRC				
SI No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL / GC Reply	Addendum (Y/N)
	Page 263 of 741		springs.			
60	PART – 2 : SECTION VI – ERTS Page 265 of 741	Clause 11.4.8.1	The vertical natural frequency of the primary suspension system shall in accordance with EN 14363 and shall be a “proven design”.	Suggest to delete this clause because there's no frequency requirement for suspension system in EN14363.	Tender condition prevails.	N
61	PART – 2 : SECTION VI – ERTS Page 265 of 741	Clause 11.4.9	Reservoirs 11.4.9.1 Reservoirs shall be designed, tested, and stamped in accordance with ASME Section VIII, Division I Boiler and Pressure Vessels Code for unfired pressure vessels or in accordance with the UIC or EN codes. 11.4.9.2 External vessels shall be provided with automatic drain valves. 11.4.9.3 Sections of the bogie frame that are designed to act as reservoirs shall be capable of sustaining 1.5 times the maximum operating pressure in conjunction with maximum static and dynamic loads. 11.4.9.4 The inside surfaces of pressurized structures shall be properly cleaned to remove all chips, burrs, mill scale, weld slag, and any other debris which could potentially foul height-control devices. Inside surfaces of pressurized structures shall be coated with a corrosion-inhibiting paint system.	Reservoirs will not be mounted on the bogie but on the carbody.	Tender condition prevails.	N
62	PART – 2 : SECTION VI – ERTS Page 265 of 741	Clause 11.4.11	Car body Supports/ Center Bearings Center ball or roller bearing rings without side bearings, if provided, shall be designed to allow free rotation of the bogie while providing damping to prevent bogie hunting.	We adopt mature design of center pin and rubber node for carbody and bogie connection.	Tender condition prevails.	N
63	PART – 2 : SECTION VI – ERTS Page 266 of 741	Clause 11.4.12	Side Bearings Side bearings, if used, shall be designed to allow free rotation of the bogie the maximum vertical loads. Wearing surfaces shall be self-lubricating and have a minimum life of 5 years. Design data for the side bearing shall be submitted for review and comment. The data shall include the coefficient of friction between bearing pads at all expected loads.	Suggest to delete this clause and we adopt mature design of center pin and rubber node for carbody and bogie connection.	Tender condition prevails.	N

Name of the Bidder :		CRRC				
SI No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL / GC Reply	Addendum (Y/N)
64	PART – 2 : SECTION VI – ERTS Page 267 of 741	Clause 11.4.13.3	The bogies rotational resistance (X factor) test under inflated and deflated air spring conditions would be carried out at the manufacturer's works under tare conditions, the value of which should not exceed 0.08 at rotational speed of 0.8 degrees/second . The rotational resistance shall neither cause excessive flange wear nor cause any possibility of flange climbing but shall be adequate to avoid bogie hunting on straight track. The Contractor shall show by analysis that no flange climbing occurs on any curve and moving at all possible speeds. Test shall be conducted in accordance with ERTS clause 17.5.2.11.	Suggest to modify as follows: The bogies rotational resistance (X factor) test under inflated and deflated air spring conditions would be carried out at the manufacturer's works under tare conditions, the value of which should not exceed 0.1 at rotational speed of 1 degrees/second . The rotational resistance shall neither cause excessive flange wear nor cause any possibility of flange climbing but shall be adequate to avoid bogie hunting on straight track. The Contractor shall show by analysis that no flange climbing occurs on any curve and moving at all possible speeds. Test shall be conducted in accordance with ERTS clause 17.5.2.11.	Tender condition prevails.	N
65	PART – 2 : SECTION VI – ERTS Page 267 of 741	Clause 11.4.13.5	The maximum values of acceleration measured at central pivot level are: a. Vertical acceleration 0.27g b. Lateral acceleration 0.27g The contractor shall submit calculations to confirm that ride index lateral and vertical shall not exceed 2.75 under all normal operating conditions for new cars and new track, and shall not exceed 3 under all normal operating conditions for worn-out cars operated on rundown track conditions. (CDRL 11-7)	Suggest to modify as follows: The maximum values of acceleration measured at central pivot level are: a. Vertical acceleration 0.30g b. Lateral acceleration 0.30g The contractor shall submit calculations to confirm that ride index lateral and vertical shall not exceed 2.75 under all normal operating conditions for new cars and new track, and shall not exceed 3 under all normal operating conditions for worn-out cars operated on rundown track conditions. (CDRL 11-7)	Please refer to Addendum for revised clause.	Y
66	PART – 2 : SECTION VI – ERTS Page 269 of 741	Clause 11.4.18.1	The bogie suspension, in conjunction with the car body, shall be designed to enable cars to operate satisfactorily on track with the maximum specified track twist. The maximum off-loading of wheels 'ΔQ/Q' shall not exceed 50% of nominal wheel load in inflated up to maximum permissible speeds and shall not exceed 60% of nominal wheel in deflated conditions up to maximum permissible speeds. Test shall be shall conducted in accordance with ERTS clause 17.5.2.10.9	Suggest to modify as follows: The bogie suspension, in conjunction with the car body, shall be designed to enable cars to operate satisfactorily on track with the maximum specified track twist. The maximum off-loading of wheels 'ΔQ/Q' shall not exceed 60% of nominal wheel in inflated & deflated conditions up to maximum permissible speeds . Test shall be shall conducted in accordance with ERTS clause 17.5.2.10.9	Tender condition prevails.	N
67	PART – 2 : SECTION VI – ERTS Page 270 of 741	Clause 11.5.1.3.3	The gears shall be splash oil lubricated and a sight glass shall be provided in the gear case for inspection. It shall not be necessary to change the oil earlier than 200,000km , except for the first change.	It is suggested to change the oil every year.	Tender condition prevails.	N
68	PART – 2 : SECTION VI – ERTS Page 272 of 741	Clause 11.6.1.6	Where pockets or partially enclosed spaces exist, adequate drainage must be provided such that no moisture collects.	We adopt mature box structure with good watertightness so that the water and dust cannot get in.	Tender condition prevails.	N

Name of the Bidder :		CRRC				
Sl No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL / GC Reply	Addendum (Y/N)
69	PART – 2 : SECTION VI – ERTS Page 273 of 741	Clause 11.6.3.4	Loads will be applied in accordance to UIC 515-4 and 615-4. Design life shall be taken as 10,000,000 cycles, minimum. Alternatively, loads may be applied using the relevant JIS standards, utilizing various loads and forces such as longitudinal load, traction motor load, gear load, brake load and other accessory loads that shall be considered in addition to the vertical and horizontal loads. In this case, a suitable number of cycles of fatigue load test which ensures a 35 year life as per the JIS standards , may be used for fatigue load testing. Test shall be conducted in accordance with ERTS clause 17.5.2.10.6.	Suggest to modify as follows: Loads will be applied in accordance to UIC 515-4 and 615-4. Design life shall be taken as 10,000,000 cycles, minimum. Alternatively, loads may be applied using the relevant JIS standards, utilizing various loads and forces such as longitudinal load, traction motor load, gear load, brake load and other accessory loads that shall be considered in addition to the vertical and horizontal loads. In this case, a suitable number of cycles of fatigue load test which ensures a 35 year life as per the JIS or UIC standards , may be used for fatigue load testing. Test shall be conducted in accordance with ERTS clause 17.5.2.10.6.	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
70	PART – 2 : SECTION VI – ERTS Page 274 of 741	Clause 11.6.4.2	The car body connection to the bogie shall be designed, manufactured and installed in conformance with international standards. The Contractor shall ensure that the bogie assembly does not permanently deform or separate from the car under all worst-case operating conditions and collision scenarios.	Suggest to modify as follows: The car body connection to the bogie shall be designed, manufactured and installed in conformance with international standards. The Contractor shall ensure that the bogie assembly does not separate from the car under all normal operating conditions and collision scenarios.	Tender condition prevails.	N
71	PART – 2 : SECTION VI – ERTS Page 276 of 741	Clause 11.9.11	Wheel sets comply with requirements as per UIC Codes 811, 813-1 or the AAR Wheel and Axle Manual.	Wheel sets comply with requirements of EN 13260\UIC 811\UIC813-1\ AAR Wheel and Axle Manual	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
72	PART – 2 : SECTION VI – ERTS Page 277 of 741	Clause 11.9.17	Grease lubricated sealed cartridge bearings shall be used. The bearing shall be such that no attention is required between bogie overhauls.	please clarify the length and time scheme of bogie overhauls. Suggest to modify as follows: Grease lubricated sealed cartridge bearings shall be used. The bearing shall be such that no attention is required earlier than 0.8 million km.	Tender condition prevails.	N
73	PART – 2 : SECTION VI – ERTS Page 284 of 741	Clause 12.2.2	“A brake pipe control back up for the brake system shall be provided.”	Suggest to delete this clause. The rake is equipped with functions such as emergency brake, service brake and parking brake. Emergency brake shall be applied for power failure. The failure prevention design ensures rake function and safety. Adding the brake pipe control back up will make the braking system more complex and increase failure rate. We suggest not to use brake pipe control back up.	Tender condition prevails.	N

Name of the Bidder :		CRRC				
SI No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL / GC Reply	Addendum (Y/N)
74	PART – 2 : SECTION VI – ERTS Page 285 of 741	Clause 12.3.2	“All piping shall be of stainless steel conforming to the requirements of ISO 9329-4 and ISO 9330-6 or equivalent with flared compression fittings. The pipe fittings shall conform to the requirements of DIN 2353 or approved equal.”	Suggest to modify as follows: “All piping shall be of stainless steel conforming to the requirements of ASTM 269 or equivalent with flared compression fittings. The pipe fittings shall conform to the requirements of DIN 2353 or approved equal.”	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
75	PART – 2 : SECTION VI – ERTS Page 286 of 741	Clause 12.3.6	“Burst hose protection shall be provided for hoses.”	Suggest to modify as follows : “Burst hose protection shall be provided for hoses against rupturing of inter-car flexible.”	Tender condition prevails.	N
76	PART – 2 : SECTION VI – ERTS Page 287 of 741	Clause 12.4.2	12.4.2 The compressors on a rake shall be synchronously controlled, ensuring that the duty cycle for each compressor is the same.	Suggest to modify as follows: the compressors(braking system) on a rake shall adopt same control strategy, ensuring that the duty cycle for each compressor is the same in a certain period of time. Please clarify that the synchronously control means the control strategy or the start.	Tender condition prevails.	N
77	PART – 2 : SECTION VI – ERTS Page 288 of 741	Clause 12.4.8.4	12.4.8.4 All failures of the air dryer unit shall be displayed in the TCMS/OCC.	Suggest to modify as follows: Failures of the air dryer unit shall be displayed in the TCMS/OCC. The brake supplier can only provide working status of air dryer unit.	Tender condition prevails.	N
78	PART – 2 : SECTION VI – ERTS Page 294 of 741	Clause 12.9	The following information shall be shared in TCMS / OCC / DCC b) The pressure in the brake reservoir and brake cylinder pipe d) The pressure in the brake pipe.	Suggest to delete clause b) and d). Because the pressure in the brake pipe can't be detected. Brake pipe connected with the main cylinder pipe and brake cylinder pipe. Brake pipe pressure is considered same as the reservoir pressure.	Please refer to Addendum for revised clause.	Y
79	PART – 2 : SECTION VI – ERTS Page 296 of 741	Clause 12.13.4	12.13.4 Provision shall be available to activate all the above isolating valves and switches to isolate the defective equipment from TCMS or remotely from OCC (CDRL 12-7)	suggest to modify clause 12.13.4 as follows: Provision shall be available to activate all the above isolating valves and switches to monitor the defective equipment from TCMS or remotely from OCC (CDRL 12-7)	Please refer to Addendum for revised clause.	Y
80	PART – 2 : SECTION VI – ERTS Page 297 of 741	Clause 12.16.3	12.16.3 The extended EP brake lines shall be in the form of coded hardwire brake lines. The connection shall be easily accessible, flexible and self-lockable.	Suggest to modify as follows: The extended EP brake lines shall be in the form of hardwire brake lines. The connection shall be easily accessible, flexible and self-lockable.	coded meaning identification.	N

Name of the Bidder :		CRRC				
SI No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL / GC Reply	Addendum (Y/N)
				Please clarify what is coded hardwire and its function.		
81	PART – 2 : SECTION VI – ERTS Page 288 of 741	Clause 12.5.1	“Reservoirs shall be manufactured in accordance with EN 286-3 or equivalent standard.”	Suggest to modify as follows: “Reservoirs shall be manufactured from stainless steel, other requirements shall conform to the requirements of EN 286-3 standard.” Because the material specified in EN 286-3 for reservoir is carbon steel, which has conflict with the stainless steel carbody.	Please refer to Addendum for revised clause.	Y
82	PART – 2 : SECTION VI – ERTS Page 289 of 741	Clause 12.5.6	“All reservoirs shall have an associated automatic drain device and, where applicable, an additional manual device for venting/draining the contents of the reservoir.”	Suggest to modify as follows: “All main reservoirs shall have an associated automatic drain device and, where applicable, an additional manual device for venting/draining the contents of the reservoir.”	Tender condition prevails.	N
83	PART – 2 : SECTION VI – ERTS Page 291 of 741	Clause 12.6.8.8	“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. The guaranteed maximum braking distance shall satisfy the requirements specified in table 15.1.B emergency brake application.”	“ table 15.1.B ” is not found.“The guaranteed maximum braking distance shall satisfy the requirements specified in table 15.1.B emergency brake application” is repeated description	Please refer to Addendum for revised clause.	Y
84	PART – 2 : SECTION VI – ERTS Page 292 of 741	Clause 12.6.8.11	“ Complete friction brake system shall be tested on Brake dynamo-meter and validated during field tests. ”	Suggest to modify as follows: “Complete friction brake system shall be tested. Performance of foundation brake device shall be tested on Brake dynamo-meter and validated during field tests.”	Tender condition prevails.	N
85	PART – 2 : SECTION VI – ERTS Page 296 of 741	Clause 12.15.1& Clause 12.15.2	“Brake Pipe (BP) controlled back-up brake system including a separate pneumatic control unit shall be provided in order to take over the control function in case of failure of electronic or electric control elements in the brake system.”	Suggest to delete this clause. The rake is equipped with functions such as emergency brake, service brake and parking brake. Emergency brake shall be applied for power failure. The failure prevention design ensures rake function and safety. Adding the brake pipe control back up will make the braking system more complex and increase failure rate. We suggest not to use brake pipe control back up. Please confirm.	Tender condition prevails.	N
86	PART – 2 : SECTION VI – ERTS	Clause 13.7.5	13.7.3.7 Each power amplifier shall feed 50% of the speakers in the same car and 50% in the adjoining car,	Suggest to modify as follows:	Please refer to Addendum for revised clause.	Y

Name of the Bidder :		CRRC				
Sl No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL / GC Reply	Addendum (Y/N)
	Page 310 of 741		to ensure that in the event of a single power amplifier failure, at least half of the speakers are still operative in the car.	Each power amplifier shall feed 50% of the speakers in the same car and 50% in other cars, to ensure that in the event of a single power amplifier failure, at least half of the speakers are still operative in the car. Because the 3-car rake is uneven number. Is it acceptable to adopt 2 amplifiers for each car?		
87	PART – 2 : SECTION VI – ERTS Page 415 of 741	Clause 17.5.2.10.5	All bogie frames, and other primary structural members, shall be qualified by radiographic inspection of all critical welds.	All bogie frames, and other primary structural members, shall be qualified by nondestructive test inspection of all critical welds.	Tender condition prevails.	N
88	PART – 2 : SECTION VI – ERTS Page 415 of 741	Clause 17.5.2.10.6	A fatigue test shall be performed to verify the design will meet the requirements defined in ERTS clause 11.6.3. The proposed test arrangement and table of loads and cycle frequency shall be submitted to CMRL for review and approval. The test shall be run for a suitable number of cycles of fatigue load test which ensures a 35 year service life as per the JIS standards and the results shall be submitted to CMRL. Damage equivalence of 10,000,000 cycles must be demonstrated by the results of this test .	A fatigue test shall be performed to verify the design will meet the requirements defined in ERTS clause 11.6.3. The proposed test arrangement and table of loads and cycle frequency shall be submitted to CMRL for review and approval. The test shall be run for a suitable number of cycles of fatigue load test which ensures a 35 year service life as per the JIS or UIC standards and the results shall be submitted to CMRL. Damage equivalence of 10,000,000 cycles must be demonstrated by the results of this test	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
89	PART – 2 : SECTION VI – ERTS Page 415 of 741	Clause 17.5.2.10.9	Additionally, with one wheel raised and lowered 51mm with respect to the plane formed by the other three wheels, the neutral wheel load of the other three wheels shall not change by more than 50 percent.	Additionally, with one wheel raised and lowered 51mm with respect to the plane formed by the other three wheels, the neutral wheel load of the other three wheels shall not change by more than 60 percent. Becasue The maximum off-loading of wheels 'ΔQ/Q' is not more than 60% in EN 14363:2016 standard.	Tender condition prevails.	N
90	PART – 2 : SECTION VI – ERTS Page 416 of 741	Clause 17.5.2.11	The bogies rotational resistance (X factor) test under inflated and deflated air spring conditions would be carried out at the manufacturer's works under tare conditions, the value of which should not exceed 0.08 at rotational speed of 0.8 degrees/second.....	The bogies rotational resistance (X factor) test under inflated and deflated air spring conditions would be carried out at the manufacturer's works under tare conditions, the value of which should not exceed 0.1 at rotational speed of 1 degrees/second..... Because the bogie rotational resistance (X factor) will not exceed 0.1 at rotational speed of 1 degrees/second in EN 14363:2016	Tender condition prevails.	N
91	PART – 2 : SECTION VI – ERTS Page 441 of 741	Clause 17.11.15	Following drawings to be furnished for information – [CDRL 17-21] (viii) Drawings for third rail current collector	Suggest to delete Drawings for the pantograph because no third rail current collector is applied in this project.	Please refer to Addendum for revised clause.	Y

Name of the Bidder :		CRRC				
SI No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL / GC Reply	Addendum (Y/N)
92	PART – 2 : SECTION VI – ERTS Page 454 of 741	Clause 18.5.4.7	The Contractor shall perform a Fault-Tree Analyses (FTAs) that quantify the probability of each Category I and II hazard identified in the PHAs.	Suggest to modify as follows: The Contractor shall perform a Fault-Tree Analyses (FTAs) that quantify the probability of undesired events whose severity are Category I and II hazard identified in the PHAs. The Contractor shall develop a FTA Top Events List for approve by CMRL.	Tender condition prevails.	N
93	PART – 2 : SECTION VI – ERTS Page 458 of 741	Clause 18.6.6.1	b)The levels of minimum MDBF for all the Type 1 failures, shall be calculated on every month basis for all revenue trains in operation in the specific period ranges as defined in Table 2.	Please specify the "given time period" for monthly MDBF calculate of Level 1 and Level 2. For the running mileage may be small, we suggest to use 6 months for MDBF indicator.	The monitoring period shall be as per Table 2, and it moves on for every month.	N
94	PART – 2 : SECTION VI – ERTS Page 464 of 741	Clause 18.7.5.3	In addition to the above, the Contractor shall design the car such that the component change-out requirements listed in Table 18-1 can be met.	Please specify the compose of "change-out" activity. Whether the diagnose, access, test time are include.	Change-out means "Removal of defective component and replacement with new".	N
95	PART – 2 : SECTION VI – ERTS Page 465 of 741	Clause 18.7.6.2	The restoration shall not require more than two service personnel	Suggest to delete this clause because Part of the maintenance work requires more than 2 persons, such as door mechanism replacement.	Tender condition prevails.	N
96	PART – 2 : SECTION VI – ERTS Page 496 of 741	Clause 19.7.3	High strength castings shall be tested, inspected, and accepted in accordance with AAR requirements. High strength castings, and Low alloy nickel castings, shall comply with, and be tested, inspected, and accepted in accordance with AAR M-201.	Suggest to modify as follows: High strength castings shall be tested, inspected, and accepted in accordance with EN or ISO standards requirements. High strength castings, and Low alloy nickel castings, shall comply with, and be tested, inspected, and accepted in accordance with EN or ISO standards. We adopt mature bogie scheme, the bogie meets the requirements of EN or ISO standards after long-term line operation verification.	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
97	PART – 2 : SECTION VI – ERTS Page 496 of 741	Clause 19.7.4	General-purpose steel castings shall comply with ASTM A27, either Grade 65-35 or Grade 70-36.	Suggest to modify as follows: General-purpose steel castings shall comply with EN or ISO standards requirements.	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
98	PART – 2 : SECTION VI – ERTS Page 496 of 741	Clause 19.7.5	Low alloy nickel castings shall comply with AAR requirements.	Suggest to modify as follows: Low alloy nickel castings shall comply with EN or ISO standards requirements.	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
99	PART – 2 : SECTION VI – ERTS Page 497 of 741	Clause 19.9.1	Structural heat-treated alloy steel suitable for welding may be used for sub-structures not exposed to atmospheric corrosion. Heat treated alloy steel used for structural purposes shall comply with ASTM A514, Grade F. The use of all alloys is subject to CMRL approval.	Suggest to modify as follows: Structural heat-treated alloy steel suitable for welding may be used for sub-structures not exposed to atmospheric corrosion. Heat treated alloy steel used for structural purposes shall comply with EN or ISO standards requirements.	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N

Name of the Bidder :		CRRC																
SI No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder’s Query	CMRL / GC Reply	Addendum (Y/N)												
				The use of all alloys is subject to CMRL approval.														
100	PART – 2 : SECTION VI – ERTS Page 497 of 741	Clause 19.9.3	Structures of heat treated alloy steel shall be so designed that the principle stresses to which any part is subjected shall not exceed the following percentages of yield strength of the material used, under full dynamic conditions with a maximum load <table border="1"><tr><td></td><td>Bogie Frame</td><td>All Other</td></tr><tr><td>Tension and Compression</td><td>39%</td><td>50%</td></tr><tr><td>Shear</td><td>25%</td><td>31%</td></tr><tr><td>Bearing</td><td>62%</td><td>62%</td></tr></table>		Bogie Frame	All Other	Tension and Compression	39%	50%	Shear	25%	31%	Bearing	62%	62%	Indicators do not apply.	Tender condition prevails.	N
					Bogie Frame	All Other												
				Tension and Compression	39%	50%												
Shear	25%	31%																
Bearing	62%	62%																
Frame stress requirements, in accordance with ERTS 11.3.5.																		
101	PART – 2 : SECTION VI – ERTS Page 506 of 741	Clause 19.19.5	Dimensions of elastomers shall comply with ASTM D1055.	Suggest to modify as follows: Dimensions of elastomers shall comply with EN standards ,ISO standards or ASTM D1055 .	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N												
102	PART – 2 : SECTION VI – ERTS Page 510 of 741	Clause 19.25.1.2	All fasteners shall be stainless steel, dichromate, or zinc-plated steel, depending on the specific application. Zinc plating on steel fasteners shall conform to ASTM B 633 Type II – yellow, or equivalent standard, for non-exposed fasteners.	Suggest to modify as follows: All fasteners shall be carbon steel ,alloy steel,stainless steel, dichromate, or zinc-plated steel, depending on the specific application. Zinc plating on steel fasteners shall conform to ASTM B 633 Type II – yellow, or equivalent standard, for non-exposed fasteners. We adopt mature bogie scheme, bolt strength grade is generally 8.8 grade ,10.9 grade or higher according to design requirements ,8.8 grade bolt material is carbon steel, below 8.8 grade is stainless steel, and above 8.8 grade is alloy steel. Fasteners meet EN or ISO standard requirements.	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N												
103	PART – 2 : SECTION VI – ERTS	Clause 19.25.1.5	All threaded fasteners shall comply with ANSI B1.1 class 2 requirements, unless otherwise specified or	Suggest to modify as follows:	ERTS allows for other equivalent standards subject	N												

Name of the Bidder :		CRRC				
SI No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL / GC Reply	Addendum (Y/N)
	Page 510 of 741		approved.	All threaded fasteners shall comply with EN standards ,ISO standards or ANSI B1.1 class 2 requirements, unless otherwise specified or approved.	to approval from CMRL. So tender condition prevails.	
104	PART – 2 : SECTION VI – ERTS Page 510 of 741	Clause 19.25.1.8	All exposed bolts and nuts shall be stainless steel, unless otherwise specified.	Suggest to modify as follows: All exposed bolts and nuts shall be stainless steel ,carbon steel or alloy steel , unless otherwise specified.	Tender condition prevails.	N
105	PART – 2 : SECTION VI – ERTS Page 511 of 741	Clause 19.25.4.2	Carbon steel bolts shall comply with ASTM A325. Alloy steel bolts shall comply with ASTM A354 or ASTM A490, as applicable.	Suggest to modify as follows: Carbon steel bolts shall comply with EN standards ,ISO standards or ASTM A325 requirements. Alloy steel bolts shall comply with EN standards ,ISO standards, ASTM A354 or ASTM A490 , as applicable.	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
106	PART – 2 : SECTION VI – ERTS Page 512 of 741	Clause 19.25.4.5	19.25.4.5 Anti-seize compounds shall be used on all stainless steel fasteners threaded into stainless steel, or using stainless steel nuts.	Suggest to use anti-seize compounds or check washer or slotted nut for anti-loose of stainless steel fasteners.	Tender condition prevails.	N
107	PART – 2 : SECTION VI – ERTS Page 522 of 741	Clause 19.29.6.3	19.29.6.3 Welding inspection procedures and welding inspector qualifications tests shall be in accordance with AWS D1.1 and the applicable requirements of the AWS Welding and Brazing Handbook. The Contractor shall use and demonstrate the use of personnel qualified to perform weld inspection. An AWS Certified Welding Inspector (CWI) shall be utilized for inspection or oversight of welding inspection .Non- destructive examination procedures and qualifications of nondestructive testing personnel shall be in accordance with the applicable requirements of the AWS Structural Welding Codes, and American Society for Nondestructive testing Recommended Practice No. SNT-TC-1A. Other European or International Standards may be used if the Contractor demonstrates equivalency of these standards.	In accordance with EN15095 qualification requirement, the welding inspectors possess relevant qualifications such as VT/PT/MT/UT/RT qualifications of ISO971.	Tender condition prevails.	N
108	PART – 2 : SECTION VI – ERTS Page 526 of 741	Clause 19.32.7.4	“Automatic Drain cocks along with manual operation shall be provided at the low points of all reservoirs.”	Suggest to modify as follows: “Drain cocks along with manual operation shall be provided at the low points of all reservoirs.”	Tender condition prevails.	N
109	PART – 2 : SECTION VI – ERTS Page 533 of 741	Clause 19.42.1	19.42.1 Terminations and connections throughout the car shall be with insulated ring tongue connectors of the compression (crimp) type.	Not all terminations are with pre-insulation. The terminals of connectors are not insulated. Please clarify the specific scope of insulation.	Tender condition prevails.	N
110	PART – 2 : SECTION VI – ERTS	Clause 19.46.5	19.46.5 Conduits that contain three or more conductors shall be sized such that the sum of the cross-sectional		Tender condition prevails.	N

Name of the Bidder :		CRRC				
SI No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL / GC Reply	Addendum (Y/N)
	Page 535 of 741		area of the wires and cables does not exceed 40 percent of the cross sectional area of the conduit. For two conductors, a limit of 30 percent shall be used. For a single conductor, a limit of 53 percent shall be permitted.	The proportion of cross-sectional area of the wires and cables for the cross sectional area of the conduit is a bit lower. For the proportion specified in EN50353-2014 ,the proportion of wires and cables area will not exceed 60% percent of conduit area, while the cables or bracket area will not exceed 80% of conduit area.		
111	PART – 2 : SECTION VI – ERTS Page 740 of 741	APPENDIX – I	17 Emergency operator's desk -Any defect in master controller or any operator's desk controls even if no delays are reported.	Suggest to modify as follows: Emergency operator's desk -Any defect in master controller or any operator's desk controls leading delays are reported. The design of the control equipment of the emergency operator's desk takes into account the necessary redundancy, and some equipment failures do not affect the operation of the train, and should not be included in the reliability assessment of the train.	Sentence to be corrected as "EN or ISO". Please refer Point No. XXXX in Corrigendum 3	N

Name of the Bidder :		FAIVELY				
Sl No.	Part/Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL Response.	Addendum (Y/N)
1	Part 2 Section VI,	2.2.20	When fully mated, the connectors for internal use (i.e. fitted within the car body) shall achieve a seal rated to at least IP 65 in accordance with EN 60529 if the sealing is not provided by the cabinet or similar. Connectors fitted externally to the Car body shall achieve a seal rated to at least IP 66.	Why IP65 is required for the connectors which are inside the carbody? Electric parts which are inside the carbody are not exposed to water.	Chennai area is dusty and to avoid the water penetration. Furthermore, this clause is met in Phase 1 contract. So the Tender condition prevails.	N
2	Part 2 Section VI, 6 Passenger doors	6.2.1	6.2.1 Each Coach shall have minimum of 8 electrically powered, preferably plug type biparting doors, 4 on each body side, conforming to EN 14752. The contractor may propose an alternate door type for review and approval by CMRL. The free passing through height of open doors shall be 1900 mm minimum. The minimum door passage width shall be 1400 mm. The number and width of doors shall enable short stopping dwell times.	Why is plug door preferred? External sliding type is more reliable, cost efficient and more commonly used in India (already in use on Chennai Phase 1)	Plug type doors are better in noise reduction, Water proof and aesthetic.	N
3	Part 2 Section VI, 6 Passenger doors	6.3.7	6.3.7 During all door operations and under all power supply conditions, door movements shall be smooth, controlled and devoid of jerks or any violent motion. Linear motor drive may preferably be used for door operation in case of Sliding Door.	Why is linear motor driver preferred? Very few vendors have this technology available and cost is high for no specific added value.	It has high reliability, less maintenance and low noise.	N
4	Part 2 Section VI, 6 Passenger doors	6.3.15	Opening and closing time of the passenger doors shall be adjustable in the range of 1.5 to 4.5 seconds.	Suggest the opening time no less than 2.5s due to noise consideration, suggest the closing time no less than 3.3s, otherwise the close force would be over the criteria in EN14752.	Tender condition prevails.	N
5	Part 2 Section VI, 6 Passenger doors	6.3.18	Each door leaf shall have a glass window meeting the requirements of ERTS section 3.4.9. Replacement of door glass window shall be possible without removal/detachment of door leaf from the train	We suggest removing the door panel and then replace the window glass, consider the dry time of the glue, it only takes 2people*30min to dismount and mount the door panel.	Tender condition prevails.	N
6	Part 2 Section VI, 6 Passenger doors	6.4.5	The device to detect and prove that passenger doors are fully closed and latched shall be capable of detecting any obstruction causing a minimum gap of 5 mm per doorway and prevent the door proving indication from being achieved, in accordance with EN-14752. This detection obstacle function shall be achievable for a minimum gap of 5 mm per doorway all along the height of the door.	Why not follow EN14752 standard? (3 height points to be tested), the obstacle dimensions 10x50mm	Tender condition prevails.	N

Name of the Bidder :		FAIVELY				
Sl No.	Part/Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL Response.	Addendum (Y/N)
7	Part 2 Section VI, 6 Passenger doors	NA	NA	We do not see any mention of push-back function, which is usually required on metro projects in India. Not needed?	Tender condition prevails.	N
8	7. VENTILATION AND AIR CONDITIONING	7.1.1	Environmental conditions for the equipment on board the train shall conform to EN 50125-1.	Please clarify temperature class, Humidity class, Solar radiation level, altitude class etc., to be applied for Chennai city as per EN 50125-1.	Data included in ERTS, refer Table 7-1	N
9	7. VENTILATION AND AIR CONDITIONING	7.4.3	The minimum volume of fresh air supplied by the artificial ventilation shall be 2.5 liters per second per passenger at AW4 Load. This air shall be filtered. The renewal of filtered air shall be at a rate of minimum 7.5 liters per second per passenger at AW4 Load. The contractor may propose design improvements to the above parameters for CMRLs' review and approval. (CDRL 7-3).	There is a contradiction with Min. Fresh air volume in this clause. Fresh air volume of 2.5 liters/sec/passenger and 7.5 liters/sec/passenger are mentioned. Fresh air flow requirement of 2.5 liters/sec/passenger is realistic and match with requirements as per EN 14750.	Please refer to Addendum for revised clause.	Y
10	7. VENTILATION AND AIRCONDITIONING	7.6.1	The air conditioning system shall have adequate capacity to maintain the specified interior temperatures under the conditions listed below. The Contractor shall take into consideration EN 14750 specifications for door opening/closing cycle and the piston and infiltration effects for the rake moving in the tunnel. External recorded annual extreme maximum temperature is 45°C in Chennai. The detailed Climatic data sheet is attached at the end of this Section (Table No. 7-1).	We understand that VAC system sizing shall be done as per clause 7.6.3 "An average temperature of 25° C and relative humidity of 60% shall be automatically maintained within the saloon and emergency operator's desk with AW4 loading until an outside ambient design condition of 38°C and RH of 36.2% for summer, and 35°C and 70% RH in winter". Please clarify.	Please refer to Addendum for revised clause.	Y
11	7. VENTILATION AND AIRCONDITIONING	7.6.3	An average temperature of 25° C and relative humidity of 60% shall be automatically maintained within the saloon and emergency operator's desk with AW4 loading until an outside ambient design condition of 38°C and RH of 36.2% for summer, and 35°C and 70% RH in winter".	Please clarify Solar load in W/m2 to be considered in Summer (38°C DB and RH of 36.2%) and Winter (35°C and 70% RH) conditions for VAC system sizing.	Tender condition prevails.	N
12	7. VENTILATION AND	7.6.5	When the external ambient temperature exceeds the values specified at paragraph	There is a contradiction between clauses 7.6.5 and 7.3.15.	Tender condition prevail.	N

Name of the Bidder :		FAIVELY				
Sl No.	Part/Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL Response.	Addendum (Y/N)
	AIRCONDITIONING		<p>7.6.3, then the air conditioning shall be designed to maintain the temperature difference between the interior temperature and ambient temperature at not less than 10°C up to the ambient temperature of 42°C. From 42°C to 48°C of ambient temperature, the air conditioning units shall continue to operate at full load maximum capacity in cooling mode without interruption or degradation and shall maintain constant internal temperature of 33°C. Beyond 48°C ambient temperature, the air conditioning system shall go into ventilation mode.</p> <p>The VAC units shall continue to operate at maximum capacity at condenser inlet temperatures up to 48°C and de-rated capacity up to 58° as mentioned above.</p>	<p>In clause 7.6.5, it is mentioned that VAC shall continue to operate at maximum capacity at condenser inlet temperatures up to 48°C and de-rated capacity up to 58°C.</p> <p>Whereas in clause 7.3.15, it is mentioned that compressors shall run in ventilation mode beyond 48°C till 58°C.</p> <p>We propose to update clause 7.6.5 according to 7.3.15 i.e. Full capacity till 48°C and ventilation mode till 58°C and unit switch OFF >58°C.</p>		
13	7. VENTILATION AND AIRCONDITIONING	7.3.15	The Contractor shall provide hermetically sealed compressors proven in Metro service. Compressors shall be suitable for continuous operation at high ambient exterior temperatures up to 48°C and in forced ventilation beyond 48°C to 58°C exterior ambient temperatures.	Please refer clarification requested in clause 7.6.5.	Tender condition prevail.	N
14	7. VENTILATION AND AIRCONDITIONING	7.9.1	The condenser and evaporator coils shall be made of copper and having copper fins. Cleaning of condenser and evaporator coils should not be required earlier than 6 months.	We propose to update the requirement as “shall be made of copper and having copper or pre-coated Aluminium fins”. Al fins with coating are being used in metros such as Lucknow & Kochi.	Tender condition prevail.	N
15	7. VENTILATION AND AIRCONDITIONING	7.9.2	The condenser and evaporator fan motors shall work on 415V, 3 phase, 50Hz supply. However, in case of auxiliary supply failure, the evaporator fan motors shall be fed from the inverter. Dual speed motor may be used. The fan motors shall be minimum of IP 56 protection. There shall be separate MCBs for each evaporator fan motor and each condenser fan motor	For Supply air fan motor alone, we propose to update the requirement as “minimum IP54” since Supply air fan motor will be in closed AHU chamber.	Tender condition prevail.	N
16	7. VENTILATION AND	7.11.1	Fresh air should be filtered for human comfort and safety, in accordance with	Please clarify if Metallic filter frames + Synthetic filtering media (meeting required Fire performance)	Tender condition prevail.	N

Name of the Bidder :		FAIVELY				
Sl No.	Part/Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL Response.	Addendum (Y/N)
	AIRCONDITIONING		internationally accepted norms. The fresh air filter element shall be provided before the fresh air damper and fixed in a metallic frame. Usage of synthetic filters shall be avoided.	can be used.		
17	7.VENTILATION AND AIRCONDITIONING	7.11.2	Even in the extremely dusty and humid environment prevailing in Chennai, the cleaning of all the VAC filters shall not be required before 12,500 kms or 30 days of train run whichever is lower. All the VAC filters shall have sufficient effectiveness to ensure that dust deposition in the air duct is bare minimum and cleaning of duct is not required in between major overhauls.	Please clarify the dust concentration to be considered for filter cleaning calculations. Also, dust grain size distribution required for accurate selection of filter grade required and prediction of filter cleaning interval.	Tender condition prevail.	N
18	7.VENTILATION AND AIRCONDITIONING	7.4.5.5	At the end of the emergency ventilation period, the airflow shall be not less than 5.0 l/sec/passenger (@ AW4 load) for the saloon, including the emergency operator's desk.	Fresh Air flow requirement of 5.0 l/sec/passenger is higher than the requirements mentioned in EN 14750-1, Cat B. This will lead to battery oversizing in Emergency mode. We propose to update the requirements to 2.5 l/sec/passenger so that to reduce energy consumption as well as keeping CO2 level under safe limit.	Please refer to Addendum for revised clause.	Y
19	7.VENTILATION AND AIRCONDITIONING	7.6.12	During the failure of one auxiliary converter inverter, the VAC system attached to the specific auxiliary converter inverter shall enter degraded mode of operation. In this degraded mode of VAC system, 50% VAC units of each car shall be continuously powered from healthy Auxiliary converter inverter of train and other 50% VAC units of each car shall operate in Emergency ventilation mode on 110V DC supply. This shall be achieved by connecting power supply of alternate VAC unit of each car to alternate auxiliary converter inverter. This requirement shall be properly interfaced with Auxiliary converter inverter design and train wiring of ERTS Section 9.	Please clarify scope of supply for Car level wiring between the 2 VAC systems inverters. We propose this wiring scope of supply must be taken care by car builder.	Tender condition prevail.	N
20	7.VENTILATION AND AIRCONDITIONING	7.12.1	EMERGENCY INVERTER	Option can be provided to use DC supply air fans to eliminate the requirement of emergency inverter. In this case 110V DC supply needs to be provided to supply air fans in both normal & emergency conditions.	Tender condition prevail.	N

Name of the Bidder :		FAIVELY				
Sl No.	Part/Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL Response.	Addendum (Y/N)
21	7.7 Controls	7.7.17	Single point uploading & Downloading in TCMS from Train.	It can be possible only if we select through the Ethernet Communication. We can Comply for it.	Tender condition prevail.	N
22	7.12 Emergency inverter	7.12.1	EMI adequate capacity	If Can't provide +110V DC Supply for Supply Air fans. EMI can be provided 1.25 times of the rated SAF's capacity.	Tender condition prevail.	N
23	7.4.8 Smoke Mode	7.4.8.2	Smoke mode activation during cooling Mode	During internal Smoke Mode, RAD will be closed, and rest of the unit will be on Cooling Mode. During external Smoke Mode, FAD will be closed, and rest of the unit will be on Cooling Mode.	YES.	N
24	2	Table 2.7	Emergency braking rate from 80 kmph to 0 kmph for fully loaded train on level tangent track - 1.3 m/s2	As per clause 2.14.3.3 stopping distance of 223m is given with minimum average emergency brake rate 1.0 m/s2. Table 2.7 gives Emergency braking rate 1.3 m/s2. Please clarify stopping distance is primary requirement and deceleration values are for reference only	YES.	N
25	2	2.14.3.2	For a normal operation of service brake (nominal 1 m/s2) on level track from maximum speed, the rake shall brake to a standstill from 80km/h in 247m (+0, -10%) under any Loading Conditions up to AW4. The Contractor shall demonstrate by calculations the minimum adhesion level, required to achieve the stopping distance. Reaction times (dead times of control electronics) are excluded in the measurement of the stopping distance. Reaction time should be less than 300 ms.	As per table 2.7 Service braking rate is given as 1.0 m/s2. Clause 2.14.3.2 required to meet service brake rate (nominal 1 m/s2) and stopping distance 247m. Please clarify deceleration is primary requirement and stopping distance as reference. Regarding Reaction time, please clarify is it the time at which brake demand is received by Brake control Unit (from TCMS at car level) and start to trigger actuation of EP valves for application of brake. Since, deceleration or stopping distance is safety critical parameter, this requirement of Reaction time can be deleted or given as guidelines.	Tender condition prevails.	N
26	2	2.15.9.3	The system shall be designed to be Fail Safe to ensure that any failure of the system shall not render it ineffective for friction brake control. If a failure of the slide protection system occurs while braking, the system shall not reduce the level of braking below the commanded level for more than three (3) seconds. Alternatively, the contractor must demonstrate fail safe proven design to CMRL	Requirement is not clear "below the commanded level" means in deed that WSP is not active anymore after 3 s, but in 3 s the system is not always able to compensate sliding fully. Hence, this will lead to flat wheels. As per UIC 541-05, the time given is 10 s. Typically, 8 s is applied in various projects. Please clarify	Tender condition prevails.	N

Name of the Bidder :		FAIVELY				
Sl No.	Part/Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL Response.	Addendum (Y/N)
27	2	2.15.9.5	The wheel slip protection equipment provided shall be operable in all traction and braking modes, except brake pipe controlled backup brake, and under all varying Car passenger load, adhesion and speed combinations.	Usually slip protection required during traction and slide protection required during braking mode. As per the clause during "braking modes" (is this means regenerative braking?). Please clarify. Wheel slide protection system will actuate in all friction braking mode when active	Please refer to Addendum for revised clause.	Y
28	12	12.3.1	Each rake shall be fitted with a compressed air supply system, which shall comprise of oil free air compressors. One air compressor shall be provided for each motor car.	As per the requirement, Two compressors provided in each motor car in 3 car train. When the train is extended to 6 car with 2 additional motor cars, as per this requirement additional two compressor is required. CMRL may clarify suitable number of compressors for 6 cars than restricting at every motor car. This will unnecessarily result in very low duty. Request to please clarify	Please refer to Addendum for revised clause.	Y
29	12	12.4.1	a) The time required to charge up to full main reservoir line pressure of any rake consist with all reservoirs and equipment at zero pressure, shall be less than ten (10) minutes and full air suspension inflation shall be achieved in a further five (5) minutes.	It is with both compressors on or with single compressor. Usually, during charging all the compressors will be running. Please clarify to avoid any ambiguity	Tender condition prevails.	N
30	12	12.6.7.10	All the pneumatic control equipment, safety valves, governors, switches, sensors etc. in the underframe shall be provided in IP53 or higher compliant lockable boxes for dust control. The enclosed lockable boxes shall be made of stainless steel.	Pipe mounted equipment shall also be allowed without lockable box. Applicability of IP53 shall be clarified to items kept under lockable box.	Tender condition prevails.	N
31	12	12.7.6	The Brake control unit shall have provision for logging of selectable parameters / signals and faults with related data. Provision shall be available for continuous logging or logging triggered by a particular event of user selectable parameters (up to 20 at a time) for a period of up to 24 hrs. The memory shall be adequate to store the above data including additional minimum 20000 incidents.	Please allow the recorded trace of all the relevant variables without restricting to some selectable parameters. After downloading, relevant parameters can be used for analysis. The clause may be clarified to allow all relevant parameters and not selectable parameters. This will give higher flexibility while analyzing any traces.	Please refer to Addendum for revised clause.	Y
32	12	12.8.5	The parking brake force on individual axles shall not be so large as to inhibit emergency rake recovery or to give rise to locked wheels during recovery. The maximum wheel/rail adhesion level to be assumed for the "push-out" requirement shall be 0.1.	When the parking brake is applied, and recovery will taking place the adhesion limit can go more than 0.1 as Rail wheel adhesion is not a controllable parameter. Considering this, either adhesion can be 0.16 or this requirement need not be restrictive / deleted. Please clarify.	Please refer to Addendum for revised clause.	Y

Name of the Bidder :		FAIVELY				
Sl No.	Part/Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL Response.	Addendum (Y/N)
33	12	12.18.1	The following maximum brake operating timing shall be achieved on all cars of a train. The maximum time for a brake application from full application to 90% of full Brake Cylinder Pressure (BCP) and for brake release from full Brake Cylinder pressure to 10% shall not exceed the following	<p>Clause no. 2.14.1.5 state "Maximum equivalent response time taken into account for the calculations is for service and emergency braking shall be compliant with EN 13452-1."</p> <p>As per EN 13452-1 the operating time shall be calculated as equivalent response time and NOT 90% of full Brake Cylinder Pressure.</p> <p>CMRL may please clarify / amend this clause to call for brake application timing as per EN 13452-1 as defined in clause 2.14.1.5</p>	Tender condition prevails.	N
34	16	16.12.1.5	<p>The Contractor shall submit all documentation as required elsewhere in this contract. Without limitation, the Contractor shall also provide additional information or documentation related to the design and production of the cars if requested to do so by CMRL. In the event that the Contractor deems specific documents to be proprietary, the Contractor must demonstrate to CMRL's satisfaction that the documents are proprietary, and shall enter into a suitable confidentiality agreement that is acceptable to CMRL. For the purpose of this paragraph, confidentiality agreements related to proprietary documentation shall provide CMRL with sufficient access to readily verify</p> <p>compliance with contract requirements and shall provide the Contractor with appropriate commercial protection for sensitive information.</p>	<p>Sensitive / proprietary documents shall be auditable at contractor's premises and allowed to put under ESCROW account. Agreement at every sub-systems will only increase the documentation with no added value.</p> <p>CMRL may please consider this point and clarify the allowing to put under ESCROW as done by other Metro corporations.</p>	Tender condition prevails.	N
35	17	17.5.3.4.1	<p>A braking tread brake block and/or disc pad, if used, and caliper assembly shall be tested on a dynamometer to verify the brake-system capacity with both cold and hot tread brake block and/or disc initial conditions. The block and/or disc and shoe surface temperature shall be measured and recorded throughout the test.</p> <p>At the completion of this test, the tread brake unit and/or brake disc and caliper assembly shall remain in an undamaged, fully operable condition.</p>	"If brake components other than the block and/or disk brake components are used, such components shall be subject to equivalent thermal capacity testing."	Tender condition prevails.	N

Name of the Bidder :		FAIVELY				
Sl No.	Part/Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL Response.	Addendum (Y/N)
			If brake components other than the block and/or disk brake components are used, such components shall be subject to equivalent thermal capacity testing.	This sentence is misleading as the thermal capacity of other components in the brake system will be far lower than thermal capacity of Brake block. Hence, CMRL may please clarify or delete the sentence “If brake components other than the block and/or disk brake components are used, such components shall be subject to equivalent thermal capacity testing.”		
36	3.14.10	3.14.10.1	Crashworthiness Analysis For 25 km/h	Hope this needs to be consider for couplers also.	YES.	N
37	4.6	4.6.1	Electrical coupler	Pin details needs to be provided for E-head Type of coupler?	Details will be shared by RS Contractor during design phase.	N

Name of the Bidder :		MELCO			
No.	Clause No	Description of the clause	Bidder's query	CMRL Resposnse.	Addendum (Y/N)
1	Part-1 Section III 2.5	<p>The designer of Traction converter-inverter shall be considered as the integrator of the Propulsion system and shall individually have experience of minimum ten (10) years in the Design and Manufacturing of Traction converter-inverter for Metro rolling stock AND the system supplied have been in satisfactory revenue operation for at least four (4) years in minimum aggregate 300 cars comprising of both powered and non-powered cars, supplied against minimum three (3) different contracts in the Metros (i.e. MRT, Metro-lite, LRT, LRV, Tramway, Suburban Railways, EMU or high speed railways). Integrator of the propulsion system shall have the entire responsibility for any warranty obligations and design modifications of propulsion system during the contract period for which it should have adequate past experience. Besides, other suppliers must qualify for respective scope of work against the eligibility criteria as per the eligibility conditions mentioned in the respective tenders of the metros</p> <p>(or)</p> <p>Manufacturer of the Propulsion Equipment (Traction Converter-Inverter, Auxiliary Converter-Inverter and Traction Motor) proposed by the Bidder as a subcontractor for supply of the Propulsion equipment against this Bid, shall have minimum ten (10) years experience in the field of Design and Manufacturing of the Propulsion Equipment AND do the Propulsion Equipment Designed, Manufactured and Supplied by the said manufacturer have been in satisfactory revenue operation for at least four (4) years in minimum aggregate 300 cars comprising of both powered and non-powered cars, supplied against minimum three (3)different contracts in the Metros (i.e. MRT, Metrolite, LRT, LRV, Tramway, Sub-urban Railways, EMU or high speed railways).</p>	<p>We are confident that the qualification for Propulsion would be very critical for CMRL. We observe that the criteria of - "Experience outside Country of Origin or In India" is not included in CMRL tender.</p> <p>Hence, to ensure the quality level of Propulsion at par or better than other Metro systems in India, we suggest CMRL to consider addition as below:</p> <p>"...minimum ten (10) years in the Design and Manufacturing of Traction converter-inverter for Metro rolling stock AND the system supplied have been in satisfactory revenue operation for at least four (4) years in minimum aggregate 300 cars comprising of both powered and non-powered cars, supplied against minimum three (3) different contracts in the Metros (i.e. MRT, Metro-lite, LRT, LRV, Tramway, Suburban Railways, EMU or high speed railways) of minimum two (2) different countries outside country of origin or in India.</p> <p>OR ....shall have minimum ten (10) years experience in the field of Design and Manufacturing of the Propulsion Equipment AND do the Propulsion Equipment Designed, Manufactured and Supplied by the said manufacturer have been in satisfactory revenue operation for at least four (4) years in minimum aggregate 300 cars comprising of both powered and non-powered cars, supplied against minimum three (3)different contracts in the Metros (i.e. MRT, Metrolite, LRT, LRV, Tramway, Sub-urban Railways, EMU or high speed railways) of minimum two (2) different countries outside country of origin or in India."</p>	Tender condition prevails.	N
2			<p>Bidder understands that in case Auxiliary Converter and Traction Motor are outsourced, the supplier of outsourced Auxiliary Converter & Traction Motor shall also comply to Section 3 Eligibility criteria and produce appropriate End User Certification issued in favour of the outsourced supplier. Kindly confirm.</p>		
3	Part-1 Section III 2.5	Form Sys	<p>The bidder understands that if all the relevant information, as required in Sys Bid Form Format, is available in an existing End-User Certificate, the same Certiftcae could be submitted and would be accepted by CMRL. Kindly confirm.</p>	Please refer to Addendum for revised clause.	Y

Name of the Bidder :		MELCO			
No.	Clause No	Description of the clause	Bidder's query	CMRL Resposnse.	Addendum (Y/N)
4	Part-3 Section VIII Part-A S. No. 4 & 35.	Defects Notification Period - 730 days The Defect Notification Period shall begin with Taking-Over of Works or Section except for parts and systems/sub-system of Works, which require corrective action. Defect notification period for such parts and systems/sub-systems shall	The bidder understands that Warranty Period is reffered as DLP (Defect Liability Period) in Part-1 and DNP (Defect Notification Period) in Part-3 and both terminologies mean Warranty period. Kindly confirm.	Please refer to Addendum for revised clause.	Y
5		commence only after completion of corrective action up to the satisfaction of the Engineer/Employer.	The bidder understands that Warranty Period is defined as 730 days (2 years) from date of Taking over of Works, which is interpreted as on Each Trainset basis, where, Warranty for each trainset will begin from Taking over of the train and ideally shall last till 730 days from taking over. Kindly confirm.	Yes.	N
6	Part-2 Section IV ERTS Appendix C S. No. 24	The DCCs shall be available in each of three depots of CMRL phase 2 project. i.e., Madhavaram, Poonamalle & SIPCOT	Kindly confirm the Rolling Stock for this tender would be placed across all 3 depots or a specific depot. This is reuired to plan for Warranty spares/service.	Tender condition prevails.	N
7	1.3.6 (x)	(x) Following types of cars and configuration shall be adopted DMC: Driving Motor car, TC: Trailer car with pantographs and DMC : Driving Motor cars. The rake formation shall generally be as follows: 3 Car unit formation: *DMC – TC –DMC* (67% traction)6 Car train formation : *DMC– TC – MC – MC – TC – DMC* (67% traction)Where: * automatic couplers having mechanical and pneumatic and electrical head. Other Car to Car connections with Semi-permanent couplers. – Semi-permanent couplers	1. Please confirm if the purpose of Elecrical head is for automatic rescue operation only?(Please check if automatic rescue operation is possible without electrical head in auto coupler)2. TCMS network should be connected via Auto coupler with other car?(We understand that coupled train operation is not required)	Tender condition prevails.	N
8	1.4.3	Based on operational requirement, rakes may have to be operated in GoA2 mode with driver / in GoA3 mode with attendant / in GoA4 (UTO). However, the Phase 2 project is planned with operations in UTO (GoA4) from the initial passenger service inauguration itself.	There is the mentioned that the "Phase 2 project is planned with operations in UTO (GoA4) from the initial passenger service inauguration itself." However, is there any possibility that the initial passenger service operation will be started with the GoA2 like other UTO Projects in India?	Tender condition prevails.	N

Name of the Bidder :		MELCO			
No.	Clause No	Description of the clause	Bidder's query	CMRL Resposnse.	Addendum (Y/N)
9	2.2.14	The rake shall be designed and manufactured to operate successfully within the environments of CMRL's dedicated right-of-way.	<p>Melco believes the followings. Please confirm.</p> <ul style="list-style-type: none"> - Rakes manufactured for Line 3 shall operate successfully in Line 3 - Rakes manufactured for Line 4 shall operate successfully in Line 4 - Rakes manufactured for Line 5 shall operate successfully in Line 5 <p>Note 1. Considering the possiblity of different Rolling Stock suppliers for each Line, interchanges of Rakes to different lines many not be feasible. (If same rolling stock supplier, depending on car builder design, interchange maybe possible by updating configuration and software without hardware changes)</p> <p>Note 2. Considering the possiblity of different Signalling suppliers for each Line, interchanges of Rakes to different lines many not be feasible. (If same rolling stock supplier, depending on car builder design, interchange maybe possible by updating configuration and software without hardware changes)</p> <p>In addition, Melco believes that the Rake manufactured for Line 4 under the Phase 2 contract will not couple with the Rake manufactured for other Lines to make the connection between each TCMS Networks.</p>	<p>Note 1 : No. Note 2 : No. Two different RS supplied trains shall be coupled for Rescue operation.</p>	N
10	2.2.26	This Rolling Stock contract is only for JICA Funded project of Phase 2 and there might be a possibility of having multiple Rolling Stock Contractors for all the three corridors of Phase 2 along with its extensions. The Contractor as above shall ensure that all requirements of the Technical Specification and Compatibility between the Rolling Stock is ensured, for the system such as (but not limited to) Traction system, Coupler System, Pneumatic supply extension, Door pitch, etc., are properly satisfied.	<p>Melco believes the followings. Please confirm.</p> <p>Compatibility between the Rolling Stocks of different corridors -</p> <ol style="list-style-type: none"> 1. Traction System: Same hardware is possible if rolling stock supplier and interfaces (e.g. Brake system) are same (software might be different depending on design and signalling supplier requirements). Compatiblity cannot be ensured if rolling stock suppliers are different since Traction Systems are different. <p>Note 1. Coupler System: Car builder scope (Common Rescue procedure to be defined by all rolling stock contractors)</p> <p>Note 2. Pneumatic supply extension, Door pitch : Car builder scope</p> <p>Note 3. Coupled train operation for revenue service is not required as per ERTS. e.g.: (DM-T-DM)+(DM-T-DM)</p> <p>In addition, Melco believes that the Rake manufactured for Line 4 under the Phase 2 contract will not couple with the Rake manufactured for other Lines to make the connection between each TCMS Networks.</p>	<p>Note 1 : Yes. Note 2 : Yes. Note 3 : No.</p>	N

Name of the Bidder :		MELCO			
No.	Clause No	Description of the clause	Bidder's query	CMRL Resposnse.	Addendum (Y/N)
11	2.11.2	As the Chennai Metro lines will have elevated and underground portions, there may be sudden change in the ambient temperature to rolling stock. The equipment shall be designed to take care of such thermal shocks.	Please clarify the detail of thermal shock level.	Tender condition prevails.	N
12	2.11.6	The Water used in Chennai for washing is likely to have a high level of dissolved matter which may aid corrosion.	Please clarify the name and concentration of the pollutant.	Contractor can visit the site and assess their queries.	N
13	2.14.1.2	The control system shall prevent line voltage oscillation and instability of the traction equipment.	The line voltage oscillation depends on strength of power station and catenary impedance. This requirement should be managed by the ground-side equipment and should be deleted from this section.	Tender condition prevails.	N
14	2.14.2.6	Means shall be provided to isolate locally each set of traction equipment in the rake. In case of failure of one converter, only one bogie shall be isolated and the rake shall be capable of continuing to work until the peak period is over.	How to treat the peak period and clearance of peak period during isolation? Please clarify the total maximum operating time that includes clearance of peak period after 1 bogie is isolated. Also, please describe the frequency of occurrence in a year.	Peak period timings is 7am to 10am and 5pm to 8pm	N
15	2.15.1.4	The controlling cab shall be the cab in which the mode selector switch is set first (in any mode other than an "Off" or "Standby"). The rake shall become fully operational within 5 seconds when a controlling cab, which was previously in "Standby" mode, has been activated. Refer ERTS Section 5.0 - Emergency Operator's Desk	What means fully operational ?? Without giving the TBC handle demand and only activating mode selector handle, train cannot be fully operational.	It is ready for movement as per the requirement.	N
16	2.25.1	Tenderers shall note that 'SPECIFIC ENERGY CONSUMPTION (SEC)' shall be verified in any one corridor of Phase 2 as agreed with CMRL under conditions detailed hereafter in this clause shall not exceed 48 Wh/GTKM, referred to as SECs. Also the Tenderer shall submit the simulation results for all corridors of Phase 2 in Pre-Final Design stage.	Please consider to revise the SEC limits as per MHOUD Metro standard requirements, as follows. However after simulation studies upon receipt of missing corridor line profile (especially Line 4), we will seek for further clarification, if any. Tenderers shall note that 'SPECIFIC ENERGY CONSUMPTION (SEC)' shall be verified in any one corridor of Phase 2 as agreed with CMRL under conditions detailed hereafter in this clause shall not exceed 50 Wh/GTKM , referred to as SECs. Also the Tenderer shall submit the simulation results for all corridors of Phase 2 in Pre-Final Design stage.	Tender condition prevails.	N
17	2.28	The design of Rolling Stock, all its sub-systems & its relevant components shall support for the Unattended Train Operation (UTO) in Grade of Automation-4 (GoA4) in the CMRL Phase 2 corridors defined in ERTS Section 1. Trains shall be operated in GoA4 UTO mode from the initial stage of commissioning and revenue operations. Hence all the feed-backs, information and train controls which are available on TCMS screen shall also be available in OCC (operational control Centre) and DCC (Depot Control Centre) for smooth operation of passenger service.	Same clarification with above. There is the mentioned that the "Trains shall be operated in GoA4 UTO mode from the initial stage of commissioning and revenue operations. ". However, is there any possibility that the initial passenger service operation will be started with the GoA2 like other UTO Projects in India?	Your understanding is WRONG. Tender condition prevails.	N

Name of the Bidder :		MELCO			
No.	Clause No	Description of the clause	Bidder's query	CMRL Resposnse.	Addendum (Y/N)
18	5.5.7	The Train shall be capable of being driven manually in the forward direction up to a speed limited by the traction control unit of train, i.e. 25 Kmph in Depot and 40 Kmph in Mainline during non-supervision condition of signaling system. During this condition, the traction control unit of train shall activate the train's emergency brake if the permitted speeds are exceeded.	Please check if this clause can be updated as below, since EB application from traction control unit may not be feasible: "The Train shall be capable of being driven manually in the forward direction up to a speed limited by the TCMS and traction control unit of train, i.e. 25 Kmph in Depot and 40 Kmph in Mainline during non-supervision condition of signaling system. During this condition, the traction control unit of train shall cut-out the traction and BECU shall apply Full Service Brake if the permitted speeds are exceeded."	Please refer to Addendum for revised clause.	Y
19	9.2.6	The design life of the auxiliary converters shall be a minimum of 35 years and be capable of operation for a period of 18 years without major maintenance.	Please define major maintenance. PCBs and soldered components shall be replaced within 12 years. Please consider to revise it as following: "The design life of the auxiliary converters shall be a minimum of 35 years and be capable of operation for a period of 10 years without major maintenance. "	Tender condition prevails.	N
20	9.9.8	The system for the detection and protection from earth fault currents at each individual voltage level and for each individual car shall be designed as specified in ERTS Clause 9.4.5 (b)	Requirement is not completely clear. Please revise the sentence for better understanding.	Tender condition prevails.	N
21	9.4.6	The box for auxiliary converter shall be such that to avoid any corrosion throughout the service life on any account the box shall last for the life time of the auxiliary converter unit without needing any attention. The box shall be of stainless steel material.	Aluminium box is light weight and proven reliable in many Indian metro projects like DMRC etc.Primer and paint can avoid the corrosion throughout servicelife of box.Please consider to revise it as following:"The box for auxiliary converter shall be such that to avoid any corrosion throughout the service life on any account the box shall last for the life time of the auxiliary converter unit without needing any attention. The box shall be of stainless steel material or aluminium box with paint. "	Please refer to Addendum for revised clause.	Y
22	9.4.5	(x) Synchronous fault detector	In case of Power extension concept is applied, this failure does not happen. Please consider to either delete it or revise it as following: "(x) Synchronous fault detector (if synchronous operation is applied)	Please refer to Addendum for revised clause.	Y

Name of the Bidder :		MELCO			
No.	Clause No	Description of the clause	Bidder's query	CMRL Resposnse.	Addendum (Y/N)
23	9.3.8	The design and installation of the auxiliary converter inverter shall ensure continuous operation of the auxiliary supplies, not with-standing any interruption to the 25 KV main traction supply on any section of the train . The Contractor shall submit calculations to verify auxiliary electrical system's failed-train rescue capability.	MELCO understands that "any section" means either upline or downline and at any point of live catenary line. This does not include Neutral section. Please confirm. If it includes neutral section, size of APS box will become very large and makes it unfit for the train.	Please refer to Addendum for revised clause.	Y
24	9.3.10	The AC output voltage of three-phase supply shall be regulated within $\pm 5\%$ of the nominal voltage and output frequency within 48 Hz to 52 Hz over the full load range. At individual Auxiliary converter inverter level, Total Harmonic Distortion (THD-I) in current shall be limited to 8% and Total Harmonic Distortion (THD-V) in voltage shall be limited to 3% under all operating conditions for the individual Auxiliary Converter Inverter. Phase to phase imbalance shall not exceed more than 1% between phases. The converter shall be designed and constructed in accordance with the requirements of IEC 61287 and IEC 60146.	The condition of the output current changes depending on the load. Why is this specification required for APS?	Please refer to Addendum for revised clause.	Y
25	9.4.9	Smoke detectors and Heat detectors /LHD/other better heat detection systems shall be provided inside the Auxiliary Converter Inverter boxes, battery charger and in Battery charger box.	Heat detectors are sufficient for detecting fire in APS box. Please consider to revise it as following: Smoke detectors or Heat detectors /LHD/other better heat detection systems shall be provided inside the Auxiliary Converter Inverter boxes, battery charger and in Battery box.	Please refer to Addendum for revised clause.	Y
26	10.8.2	The overall harmonic current levels viewed at the pantograph shall be according to ERTS clause 10.3.1. The KVA rating of the transformers shall be specified at a line voltage of 22.50 KV and shall be designed to deliver the power corresponding to the continuously rated traction motor currents, after accounting for the efficiency and the power factor of the traction motor, converter, inverter and auxiliary inverter.	Please check this clause shall be changed as below. This change will avoid the huge size transformer design & helps in overall weight reduction to improve energy consumption. The overall harmonic current levels viewed at the pantograph shall be according to ERTS clause 10.3.1. The KVA rating of the transformers shall be specified at a line voltage of 22.50 KV and shall be designed to deliver the power corresponding to the RMS current of traction motor at most sever condition , after accounting for the efficiency and the power factor of the traction motor, converter, inverter and auxiliary inverter.	Tender condition prevails.	N

Name of the Bidder :		MELCO			
No.	Clause No	Description of the clause	Bidder's query	CMRL Resposnse.	Addendum (Y/N)
27	10.8.8	The KVA rating of the transformer shall be designed to deliver the power to meet the continuous load including the emergency operational requirements specified and 10% extra over maximum load for 30 minutes. The overloading of transformer for typical run shall be specified and type tested. Short time ratings shall be submitted along with the justification. The temperature arise limit for the transformer winding shall be maximum temperature index of insulation minus 65 o C.	Please check this clause shall be changed as below. The MTr temperature rise limits are specified as per 10.8.3 Below mentioned limits are applicable for Traction motor. Not for MTr. The KVA rating of the transformer shall be designed to deliver the power to meet the continuous load including the emergency operational requirements specified and 10% extra over maximum load for 30 minutes. The overloading of transformer for typical run shall be specified and type tested. Short time ratings shall be submitted along with the justification. The temperature arise limit for the transformer winding shall be maximum temperature index of insulation minus 65 o C.	Tender condition prevails.	N
28	10.8.9	g) Heat detectors/LHD on low voltage/high voltage terminal boxes linked to TCMS/fire detection & control unit (refer ERTS clause 2.20) so that their status is monitored. The above information shall also be logged in TCMS and shall be transmitted to RSC consoles of OCC < BCC <& DCCs	Please consdier to change the clause as below. Becasue the Fire unit & Control unit is independent from MTr. Heat detectors/LHD on low voltage/high voltage terminal boxes linked to TCMS/ fire detection & control unit (refer ERTS clause 2.20) so that their status is monitored. The above information shall also be logged in TCMS and shall be transmitted to RSC consoles of OCC < BCC <& DCCs	Tender condition prevails.	N
29	10.11.1	There shall be one Converter-Inverter per bogie in each motor car. The Converter-Inverter shall be of proven design, four quadrant IGBT (or SiC or any other latest metro rail proven technology) based unit, with VVVF control. The equipment shall conform to IEC 61287-1. Natural or forced air/water cooling shall be adopted. However, if forced air/water cooling is offered, complete details of the arrangement including the method of dust filtration shall be furnished. The tenderer shall provide the details of variation of power factor with power. The tenderer shall also provide the details of variation of power with catenary voltage.	Please consdier to change the clause as below. There shall be one Converter-Inverter box per bogie in each motor car. The Converter-Inverter shall be of proven design, four quadrant IGBT (or SiC or any other latest metro rail proven technology) based unit, with VVVF control. The equipment shall conform to IEC 61287-1. Natural or forced air/water cooling shall be adopted. However, if forced air/water cooling is offered, complete details of the arrangement including the method of dust filtration, if applicable , shall be furnished. The tenderer shall provide the details of variation of power factor with power. The tenderer shall also provide the details of variation of power with catenary voltage.	Please refer to Addendum for revised clause.	Y

Name of the Bidder :		MELCO			
No.	Clause No	Description of the clause	Bidder's query	CMRL Resposnse.	Addendum (Y/N)
30	10.11.10	Wheel Slip/Slide control during powering and electrical regenerative braking shall be provided using speed sensor less vector control subject to its proven design in Metro Transits System. Uncontrolled slip/slide should be clearly recorded in TCMS, OCC & DCC as critical fault.	Please consdier to change the clause as below. Wheel Slip/Slide control during powering and electrical regenerative braking shall be provided using speed sensor / sensor less vector control subject to its proven design in Metro Transits System. Uncontrolled slip/slide should be clearly recorded in TCMS, OCC & DCC as critical fault.	Tender condition prevails.	N
31	10.11.14	The stipulations of EN 50388 and IEC 62313 shall be complied. Further, the control system shall ensure that the train as an electrical system shall always behave as an inductive load with power factor near to unity (not leading) under all operating conditions of powering mode, regenerative braking mode and coasting mode at all passenger loads and train speeds. The Contractor shall include validation of the same as a part of combined test bed and on mainline test.	The stipulations of EN 50388 and IEC 62313 shall be complied. Further, the control system shall ensure that the train as an electrical system shall always behave as an inductive load with power factor near to unity (not leading) under all operating conditions of powering mode, regenerative braking mode and coasting mode at all passenger loads and train speeds. The Contractor shall include validation of same in maximum load condition as a part of combined test bed and on mainline test.	Tender condition prevails.	N
32	10.11.17	The box for the power converter - inverter shall be of stainless steel so as to avoid any corrosion in service on any account and the box shall last for the lifetime of the converter / inverter unit without needing any attention. The IP protection level of Converter box and that of aux. converter shall not be less than IP 65. The connectors shall have IP 67 protection. The cooling arrangement shall ensure no dust deposition on the component and associated electronics. The box cover which may have to be removed for maintenance shall be suitable secured against falling. Hinged opening cover arrangement shall be preferred.	The box for the power converter - inverter shall be of stainless steel so as to avoid any corrosion in service on any account (or) Al (Rivet structure)+paint with proven experience in India metro projects and the box shall last for the lifetime of the converter / inverter unit without needing any attention. The IP protection level of Converter box and that of aux. converter shall not be less than IP 65. The connectors shall have IP 67 protection. The cooling arrangement shall ensure no dust deposition on the component and associated electronics. The box cover which may have to be removed for maintenance shall be suitable secured against falling. Hinged opening cover arrangement shall be preferred.	Please refer to Addendum for revised clause.	Y
33	10.11.25	LED based lighting arrangement shall be provided in the Converter Inverter box for maintenance purpose. Its fail safe interlocking with the box cover shall be ensured. Contractor shall submit the detail document for CMRL's review during design stage.	LED based lighting arrangement shall be provided in the Converter Inverter box for maintenance purpose. Its fail safe interlocking with the box cover shall be ensured. Contractor shall submit the detail document for CMRL's review during design stage. Power of lighting system (DC 24V) shall be supplied from out of CI box in order to light it without control power of CI box for safety.	Tender condition prevails.	N
34	10.11.28	The psophometric current of one 3 car train at full rated power shall not exceed 5 amp.	The psophometric current of one 3 car train at full rated power shall not exceed 5 amp. (defined in ITU-T O.41)	Please refer to Addendum for revised clause.	Y
35	10.12.11	xx. Calculated Speed Fault	xx. Calculated Speed Fault / Speed Sensor Fault (This change is inline with 10.11.10 request)	Tender condition prevails.	N

Name of the Bidder :		MELCO			
No.	Clause No	Description of the clause	Bidder's query	CMRL Resposnse.	Addendum (Y/N)
36	14.1.5	SIL Compliance TCMS shall be minimum of SIL2 compliant for all vital and safety related control and monitoring functions including but not limited to the following hardware, software and control functions- at all levels including but not limited to hardware, software and control functionality etc. Any change in SIL level shall be subject to the hazard analysis and acceptance by CMRL, whose decision shall be final and binding SIL compliance for the below functions shall be submitted for review and approval of CMRL [CDRL 14-3]	Please check if this clause can be updated as below, since all the specified functions my not be TCMS scope or many not require SIL2 at TCMS level as per different design concepts and hazard analysis of car-builder: "TCMS shall be minimum of SIL2 compliant for all vital and safety related control and monitoring functions determined by the Hazard Analysis according to IEC 62278 RAMS requirements. Any change in SIL level of the following hardware, software and control functions- at all levels including but not limited to hardware, software and control functionality etc shall be subject to the hazard analysis and acceptance by CMRL, whose decision shall be final and binding SIL compliance for the below functions shall be submitted for review and approval of CMRL [CDRL 14-3]"	Tender condition prevails.	N
37	14.2.1	(a) 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) or latest better network technology	Please check if following can be included in this ERTS clause to specify standard train control network: "(a) The network communication technology to be adopted for all TCMS data communication links and subsystem communication interfaces shall be based on Ethernet (100Mbps at Full-Duplex (No Auto Negotiation) or better) as per "IEC 61375-2-3 Ethernet Train Communication Network" standard or latest better network technology"	Tender condition prevails.	N
38	14.2.1	(c) The train network shall be compliant for allowing single point software upload of all sub-systems of the train from TCMS itself.	Please check if this clause can be updated since under single point upload sub-systems shall comply to upload their software by connecting to maintenance port of TCMS network and "TCMS itself" is unclear: "(c) The train network shall be compliant for allowing single point software upload of all sub-systems of the train from any of the maintenance port allocated in each car "	Tender condition prevails.	N
39	14.2.1	(e) When cars are coupled or uncoupled, the network shall automatically reconfigure itself for the new train configuration. The configuration shall identify each car in the new train by its car number.	1. TCMS network should be connected via Auto coupler other car?(We understand that coupled train operation is not required)Please check if this clause can be deleted.	Please refer to Addendum for revised clause.	Y

Name of the Bidder :		MELCO			
No.	Clause No	Description of the clause	Bidder's query	CMRL Resposnse.	Addendum (Y/N)
40	14.2.2	Ethernet Train Backbone (ETB) Ethernet-based Train Backbone with redundant Train Backbone Nodes (TBNs) (at least two in each consist of network) shall be provided to achieve interoperability between consists when coupled in the train as per IEC 61375-2-5. The data transmission medium in Ethernet-based Train Backbone shall be doubled to support redundancy (if required by CMRL). It shall be possible that number and type of connected consist networks in existing 3- car train can vary during operation by insertion of "MC+MC+TC" cars in the middle of the train to form a 6-car train in future as defined in ERTS Section 1	We understand that coupled train operation is not required. Please check if this clause can be deleted and include the 6 car extension in Clause 14.2.3 since 6 car operation can be achieved without the use of additional ETBN hardware.	Please refer to Addendum for revised clause.	Y
41	14.2.3	Ethernet Consist Network (ECN) Ethernet Consist Network with dual-homing ladder-type topology or latest better technology (compliant with IEC 61375-3-4) shall be adopted. The ECN shall maintain redundant communication links to the ETB.	Please include 6-car extension in this clause: "Ethernet Consist Network (ECN) Ethernet Consist Network with dual-homing ladder/ring type topology or latest better technology (compliant with IEC 61375-3-4) shall be adopted. The ECN shall maintain redundant communication links to the Ethernet-based Train Bus compliant to international and railway industry standards such as TRDP in IEC 61375-2-3. The data transmission medium in Ethernet-based Train Bus shall be doubled to support redundancy. It shall be possible that number and type of connected consist networks in existing 3- car train can vary during operation by insertion of "MC+MC+TC" cars in the middle of the train to form a 6-car train in future as defined in ERTS Section 1"	Please refer to Addendum for revised clause.	Y
42	14.2.4	Dual-Homing End Devices (ED) All the End Devices shall support dual-homing type Ethernet connections to ECN via physically independent ports to increase system reliability and availability. All digital and analog I/O's interfacing with TCMS (directly or via an interface unit) shall also be fully redundant	Please check if this clause can be updated as below, since equivalent redundancy can be achieved without dual homing connections (when subsystems have internal communication networks): "All the End Devices shall support dual-homing type Ethernet connections or equivalent redundant connections with ECN via physically independent ports to increase system reliability and availability. All digital and analog I/O's interfacing with TCMS (directly or via an interface unit) shall also be fully redundant"	Please refer to Addendum for revised clause.	Y

Name of the Bidder :		MELCO			
No.	Clause No	Description of the clause	Bidder's query	CMRL Resposnse.	Addendum (Y/N)
43	14.3.1	Network Interfaced Systems TCMS shall schedule, initiate and control data acquisition, processing and analysis by interfacing with all microprocessor/ microcontroller based on-board systems. These systems shall include, as a minimum: a) Signalling System, b) Platform Screen Door System, c) VAC System, d) Auxiliary Power Supply System, e) Brake System, f) On-Board Communication System (PAPIS & CCTV), g) Doors, h) Propulsion System, i) High Voltage System, j) Train Radio, k) Lighting System, l) Wayside Wireless Communication, m) Fire Detection system. All interface signals with ATP, ATP & UTO and selected interface signals with other onboard systems shall be monitored and recorded with time stamp.	Please check if the heading of this clause can be changed as below since some interfaces like "Lighting Systems", "Wheel Flange Lubricator System" can be interfaced via hardwire: "Network Interfaced Systems or Hardwire Interfaced Systems " Please update b) as shown below: "b) Platform Screen Door System via signalling system" Please check if this clause can be updated as below since signals from TCMS to signalling might not be necessary to record: " All signals from Signalling to TCMS and selected interface signals with other onboard systems shall be monitored and recorded with time stamp"	Please refer to Addendum for revised clause.	Y
44	14.3.3	Communication Protocol Details The software and communication protocols used throughout the TCMS and the interfaces to subsystems shall be compliant to a common standard or standards. Contractor shall submit details of the communication protocols used in their design clearly indicating how the requirements of monitoring and control are complied with. The Contractor shall also define the dual-homing compliant communication protocols for all EDs. Further details along with any hardware/software tools required shall be submitted during design stage.	Please check if this clause can be updated as below to specify standard Train Communication network: The software and communication protocols used throughout the TCMS and the interfaces to subsystems shall be compliant to IEC 61375-2-3 Train Communication Network . Contractor shall submit details of the communication protocols used in their design clearly indicating how the requirements of monitoring and control are complied with. The Contractor shall also define the dual-homing compliant or equivalent redundant communication protocols for all EDs. Further details along with any hardware/software tools required shall be submitted during design stage.	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N

Name of the Bidder :		MELCO			
No.	Clause No	Description of the clause	Bidder's query	CMRL Resposnse.	Addendum (Y/N)
45	14.4.4	OCC Remote Controls TCMS shall have provision for receiving and implementing remote control commands from OCC console and Depot Control console. Necessary interface with Signalling & Telecom Contractors shall be ensured. All the controls available in TCMS shall also be provided from OCC console and Depot Control console for the train operation in UTO mode. These controls shall also include the over-riding of the UTO commands related to Train sub-system functioning during UTO mode.	Please check if this clause can be updated as below (to clarify the information source to TCMS since signalling is a seperate contract): "TCMS shall have provision for receiving and implementing remote control commands from OCC console and Depot Control console via Signalling Network . Necessary interface with Signalling & Telecom Contractors shall be ensured. All the controls available in TCMS which are necessary for UTO operation shall also be provided from OCC console and Depot Control console for the train operation in UTO mode. These controls shall also include the over-riding of the UTO commands related to Train sub-system functioning during UTO mode."	Please refer to Addendum for revised clause.	Y
46	14.5.2	cc) Push Button record: All operations of Train operator including pressing of push buttons etc. shall be recorded with time stamp and be made available on DDU.	Please check if this clause can be updated as below (since there are many VDU buttons which might not be important to record for example, buttons for the VDU screen transition): "cc) Push Button record: All important operations of Train operator including pressing of push buttons etc. shall be recorded with time stamp and be made available on DDU."	Tender condition prevails.	N
47	14.5.5	DDU Access Control LevelsThe level of access to distinct screens shall be controlled for the train operator and maintenance personnel. At least three levels shall be defined which shall be user name and password protected. The details shall be reviewed by CMRL.	DDU accesss control can be based on the different types of users accessing the DDU:- Operator Mode: For Train Fleet operation- Maintainer Mode: For Train MaintenancePTU shall be used for testing and trouble shooting by connecting external laptop. PTU can also include VDU functionality and with three access levels according to the different user test engineer/maintainer etc.Test Mode extension of VDU can be provided via PTU (Portable Terminal Unit) instead of DDU. Please check if this DDU clause can be updated to " atleaset Two levels "	Tender condition prevails.	N

Name of the Bidder :		MELCO			
No.	Clause No	Description of the clause	Bidder's query	CMRL Resposnse.	Addendum (Y/N)
48	14.5.7	DDU Hardware Capacitive-touch screen-based DDU or better shall be provided as approved by CMRL. The display screen shall be of coloured Light Emitting Diode (LED) type, suitable for use in rugged railcar environment. DDU shall be equipped with brightness, sharpness, intensity and contrast controls etc.	" sharpness, intensity and contrast controls" might not be required and brightness control might be sufficient according to UIC612-01. Please check if this clause can be updated to include the standard as below: "Capacitive-touch screen-based DDU or better shall be provided as approved by CMRL. The display screen shall be of coloured Light Emitting Diode (LED) type, suitable for use in rugged railcar environment. DDU shall be equipped with brightness controls and comply with UIC612-01 or equivalent international standards. "	Tender condition prevails.	N
49	17.5.2.14	Traction Motor Qualification Testing: The first motor and two others selected at random by CMRL shall be given an IEEE Standard 11 and Standard 112 or IEC 349 "type" test by the manufacturer, including a heat run, to demonstrate the motor capability and power rating. One motor shall be tested for acoustic noise, under load and at various speeds as well as sweep through speeds. Overall noise level and pure tone noise shall be measured	As the requirement on ERTS 2.15.3 and ERTS 10.13 related to traction motor, the traction motor is designed, manufacture and test in full accordance with the requirement of IEC 60349-2 , there for MELCO propose to change the ERTS as the below: ERTS 17.5.2.14 Traction Motor Qualification Testing: The first motor and two others selected at random by CMRL shall be given an IEC60349-2 IEEE Standard 11 and Standard 112 or IEC 349 "type" test by the manufacturer, including a heat run, to demonstrate the motor capability and power rating. One motor shall be tested for acoustic noise, under load and at various speeds as well as sweep through speeds. Overall noise level and pure tone noise shall be measured.	Tender condition prevails.	N
50	17.5.2.15	Qualification Testing of Other Motors of train: The first motor of each type and an additional one of each type selected at random by CMRL shall be given an IEEE Standard 112 or IEC 349 "type" test by the manufacturer, including a heat run, to demonstrate the motors' capability and power rating	ERTS 17.5.2.15 Qualification Testing of Other Motors of train: The first motor of each type and an additional one of each type selected at random by CMRL shall be given an IEC60349-2 IEEE Standard 112 or IEC 349 "type" test by the manufacturer, including a heat run, to demonstrate the motors' capability and power rating.	Tender condition prevails.	N
51	17.6.4.1	Each motor shall be given a "routine" test by the manufacturer in accordance with IEC Publication 349. Motor balance shall be dynamically tested in accordance with NEMA MG 1-12.06.	ERTS 17.6.4.1 Each motor shall be given a "routine" test by the manufacturer in accordance with IEC60439-2 IEC Publication 349 . Motor balance shall be dynamically tested as the vibration test in accordance with IEC60349-2 NEMA MG 1-12.06 .	Tender condition prevails.	N

Name of the Bidder :		MELCO			
No.	Clause No	Description of the clause	Bidder's query	CMRL Resposnse.	Addendum (Y/N)
52	19.58 Software Requirements	19.58.1 The Contractor and/or supplier providing any microprocessor-based equipment shall submit a Software Quality Assurance Plan for CMRL approval [CDRL 19-35] complying with IEEE 730 and containing, as a minimum, the following documentation requirements: a. Software Requirements Specification b. Software Design Description c. Software Verification and Validation Plan d. Software Verification and Verification Report e. User Documentation f. Source code shall be written in a high-level language such as "C and shall be provided to CMRL." 19.58.2 The Software Design Description, in (b) above, shall comply with IEEE 1016. 19.58.3 The final Software Design Description shall include details required by ATA 102, through all levels to level 6. 19.58.4 The levels defined in ATA 102 are briefly stated below (for information only): a. Computer description and operation b. Software architecture, basic program and functions c. Detailed flow information d. Annotated compiler/assembler listing e. Detailed memory map and listing f. Input/output port map. Sufficient software documentation shall be provided to give the Engineer a full understanding of the software function and operation. Documentation shall be complete, clear and concise, and include all modifications up to final acceptance. Documentation shall include software block diagrams showing signal flow, logic, and hardware interfaces. A top level flow diagram and description of detailed operations shall be provided	19.58.1-19.58.4 request to change based in EN50128 requirements as below. This is followed mostly in majority of international projects including India. 19.58.1 Software shall be written in a structured manner and fully documented during all stages of its design and development, with at least two levels of documentation above the source code level. 19.58.2 This shall meet the requirements of EN 50126-2: Dependability for Guided Transport Systems - Part 2: Safety, EN 50128: Railway Applications: Software for Railway Control and Protection Systems, and EN 50129: Safety-related Electronic Railway Control and Protection Systems. Any deviation from this requirement will be subject to review by Engineer in design stage. 19.58.3 The Contractor shall submit its Software Quality Plan for review by the Engineer before work commences on software design. The software quality plan shall clearly state the controls and practices used in the software life cycle from specification through to in-service operation. 19.58.4 Independent review, verification and testing, using real and synthetic data, shall be performed at the software module and system level. The Engineer may audit the Contractor against the Software Quality Plan at any stage in the Contract. The Contractor shall ensure that all software is fully de-bugged prior to final review by the Engineer. Sufficient software documentation shall be provided to give the Engineer a full understanding of the software function and operation. Documentation shall be complete, clear and concise, and include all modifications up to final acceptance. Documentation shall include software block diagrams showing signal flow, logic, and hardware interfaces. A top level flow diagram and description of detailed operation shall be provided.	Tender condition prevails.	N
53	19.6	STAINLESS STEEL	Request to modify 19.6 section as below, because ASTM steels availability is limited in several countries due to several international standards followed in railway application. Stainless steel complies with ASTM standard or a similar standard which is used in railway for similar applications.	Tender condition prevails.	N

Name of the Bidder :		MELCO			
No.	Clause No	Description of the clause	Bidder's query	CMRL Resposnse.	Addendum (Y/N)
54	19.8.1	Rivet steel shall comply with ASTM A31 or ASTM A502. Exposed rivets shall be concentric to the shank and free from rings, fins, pits, and burrs. All rivets removed and replaced shall have the holes reamed round to the size required such that the next larger rivet may be driven accurately. Rivets exposed to view shall be austenitic stainless steel or aluminum, as appropriate to the material being joined.	Rivet steel shall comply with ASTM A31 or ASTM A502 or, a proven rivet steel used in railways for similar applications. Exposed rivets shall be concentric to the shank and free from rings, fins, pits, and burrs. All rivets removed and replaced shall have the holes reamed round to the size required such that the next larger rivet may be driven accurately. Rivets exposed to view shall be austenitic stainless steel, steel or aluminum, as appropriate to the material being joined.	Tender condition prevails.	N
55	19.12.3	Gaskets shall comply with ASTM D1056. Foam gaskets shall comply with ASTM D1056, Class B.	Gaskets shall comply with ASTM D1056. Foam gaskets shall comply with ASTM D1056, Class B. Otherwise, gaskets used in other railways for similar applications	Tender condition prevails.	N
56	19.25.1.2	All fasteners shall be stainless steel, dichromate, or zinc-plated steel, depending on the specific application. Zinc plating on steel fasteners shall conform to ASTM B 633 Type II – yellow, or equivalent standard, for non-exposed fasteners.	All fasteners shall be stainless steel, dichromate, or zinc-plated steel, depending on the specific application. Zinc plating on steel fasteners shall conform to ASTM B 633 Type II – yellow, ISO standard , or equivalent standard, for non-exposed fasteners.	Tender condition prevails.	N
57	19.26.6	Any rivet that is removed shall be replaced with the next larger size rivet, after the hole is reamed to the appropriate size.	Size of rivet hole follow the rivet manufacturer's recommendation.	Tender condition prevails.	N
58	19.28.1.7	At least two coats of paint shall be applied, with appropriate surface preparation between coats.	One primer and one top coat are applied with appropriate surface preparation between the primer and top coat.	Tender condition prevails.	N
59	19.28.5.b	The exterior surfaces of undercar equipment enclosures and apparatus made from carbon steel shall be prepared, primed and painted as specified in the above mentioned sections. The interior and exterior surface of all control equipment enclosures shall be coated with an approved insulating, thermosetting, resin-based, powder conversion coating. The interior of the boxes shall be white and the exteriors shall match the undercar paint scheme.	The exterior surfaces of undercar equipment enclosures and apparatus made from carbon steel shall be prepared, primed and painted as specified in the above mentioned sections. The interior and exterior surface of all control equipment enclosures shall be coated with an approved liquid paint-insulating, thermosetting, resin-based, powder conversion-coating. The interior of the boxes shall be white and the exteriors shall match the undercar paint scheme. Interior and exterior color is the same, and the color matches the under car paint scheme.	Tender condition prevails.	N
60	19.35.1	Wire sizes, insulation requirements, materials, shielding methods, and identification of wire and cable used for primary, auxiliary, control, and communications applications shall be based on the current carrying capacity, voltage drop, mechanical strength, temperature, and flexibility requirements of AAR, ASTM, ICEA, NFPA, MIL, or NFPA 70 specifications.	Wire sizes, insulation requirements, materials, shielding methods, and identification of wire and cable used for primary, auxiliary, control, and communications applications shall be based on the current carrying capacity, voltage drop, mechanical strength, temperature, and flexibility requirements of AAR, ASTM, ICEA, NFPA, MIL, or NFPA 70 specifications, or equivalent standard.	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N

Name of the Bidder :		MELCO			
No.	Clause No	Description of the clause	Bidder's query	CMRL Resposnse.	Addendum (Y/N)
61	19.61.18	All paint and coatings shall conform to the fire-retardation requirements of ASTM D1360. Waivers for coatings less than 0.004 inch [0.1 mm] thick will be accepted, providing full details are submitted for approval.	All paint and coatings shall conform to the fire-retardation requirements of ASTM D1360, EN45545 or the equivalent standard . Waivers for coatings less than 0.004 inch [0.1 mm] thick will be accepted, providing full details are submitted for approval.	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
62	19.61.19	All plastic materials shall be capable of passing ASTM E162 Radiant Panel Test with (IS) not exceeding 100.	All plastic materials equiped in the exterior of the equipment enclosures shall be capable of passing ASTM E162, EN45545 or the equivalent standard Radiant Panel Test with (IS) not exceeding 100.	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
63	19.61.17.1	Electrical insulation on wire and cables shall meet the flammability requirements of IEEE 383.	Electrical insulation on wire and cables shall meet the flammability requirements of IEEE 383, EN45545 or the equivalent standard .	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
64	19.61.17.2	Electrical insulation shall have a (DS) not greater than 50 within 4 minutes when tested in accordance with ASTM E662.	Electrical insulation equiped in the exterior of the equipment enclosures shall have a (DS) not greater than 50 within 4 minutes when tested in accordance with ASTM E662, EN45545 or the equivalent standard .	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
65	19.61.15.1	Elastomers shall meet the requirements of NFPA 130 or BS 6853.	Elastomers equiped in the exterior of the equipment enclosures shall meet the requirements of NFPA 130 or BS 6853 , EN45545 or the equivalent standard .	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
66	19.61.15.2	In addition, when tested in accordance with ASTM E662, elastomers shall have a (DS) of no greater than 100 at 1.5 minutes and 200 at 4 minutes.	In addition, when tested in accordance with ASTM E662, EN45545 or the equivalent standard , elastomers equiped in the exterior of the equipment enclosures shall have a (DS) of no greater than 100 at 1.5 minutes and 200 at 4 minutes.	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
67	19.61.11.1	All materials shall have a maximum flame propagation index (IS) of 35, when tested in accordance with ASTM E162, Radiant Panel Test, except as indicated otherwise.	All materials equiped in the exterior of the equipment enclosures shall have a maximum flame propagation index (IS) of 35, when tested in accordance with ASTM E162, EN45545 or the equivalent standard , Radiant Panel Test, except as indicated otherwise.	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N

Name of the Bidder :		MELCO			
No.	Clause No	Description of the clause	Bidder's query	CMRL Resposnse.	Addendum (Y/N)
68	19.61.11.2	All materials shall have a maximum (DS) of 100 at 90 seconds and 200 at 4 minutes, when tested in accordance with ASTM E662 in both flaming and nonflaming modes, except as indicated otherwise.	All materials equiped in the exterior of the equipment enclosures shall have a maximum (DS) of 100 at 90 seconds and 200 at 4 minutes, when tested in accordance with ASTM E662, EN45545 or the equivalent standard in both flaming and nonflaming modes, except as indicated otherwise.	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
69	19.61.11.3	All materials shall have a maximum (DM) of 300 within 4 minutes, when tested in accordance with ASTM E662.	All materials equiped in the exterior of the equipment enclosures shall have a maximum (DM) of 300 within 4 minutes, when tested in accordance with ASTM E662, EN45545 or the equivalent standard .	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
70	19.61.4	All materials used in the car, except for materials used in small quantities that would not contribute significantly to fire propagation or to smoke or toxic gas generation, shall be highly fire resistant and shall produce as little smoke emissions and toxic products of combustion as possible in conjunction with other required qualities. Toxic gas generation shall be tested to BS-6853 and shall not exceed the following values:	All materials used in the car, except for materials used in small quantities that would not contribute significantly to fire propagation or to smoke or toxic gas generation, or except for materials equiped in the exterior of the equipment enclosures shall be highly fire resistant and shall produce as little smoke emissions and toxic products of combustion as possible in conjunction with other required qualities. Toxic gas generation shall be tested to BS-6853, EN45545 or the equivalent standard and shall not exceed the following values:	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
71	19.44.1	Communications wire and cable shall consist of twisted pairs of not less than 0.75 mm ² Cross sectional area of conductor soft annealed, tinned copper.	Communications wire and cable shall consist of twisted pairs of not less than 0.5 mm² Cross sectional area of conductor soft annealed, tinned copper.	Tender condition prevails.	N
72	19.37.8	Electrical circuits and associated cabling shall be designed with clearance and creepage distance between voltage potentials and Car body ground in accordance with the environmental conditions to which the circuits and cabling will be subjected, and in accordance with NFPA 130, Chapter 4.	Electrical circuits and associated cabling shall be designed with clearance and creepage distance between voltage potentials and Car body ground in accordance with the environmental conditions to which the circuits and cabling will be subjected, and in accordance with NFPA 130, Chapter 4, IEC60077-1 or the equivalent standard .	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
73	19.6.2	Stainless steel shall be AISI type 201, 301, 301L, 301LN, 302, 304, 304L, 316, 316L or 347 in accordance with the intended function	Stainless steel shall be AISI type 201, 301, 301L, 301LN, 302, 304, 304L, 316, 316L or 347 in accordance with the intended function or similar standard which is used in railway for simimar application .	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
74	19.7.4	General-purpose steel castings shall comply with ASTM A27, either Grade 65-35 or Grade 70-36	General-purpose steel castings shall comply with ASTM A27, either Grade 65-35 or Grade 70-36, or similar standard which is used in railway for similar applications .	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N

Name of the Bidder :		MELCO			
No.	Clause No	Description of the clause	Bidder's query	CMRL Resposnse.	Addendum (Y/N)
75	19.12.3	Gaskets shall comply with ASTM D1056. Foam gaskets shall comply with ASTM D1056, Class B	Gaskets shall comply with ASTM D1056 or similar standard which is used in railway for similar application. Foam gaskets shall comply with ASTM D1056, Class B	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
76	19.25.1.5	All threaded fasteners shall comply with ANSI B1.1 class 2 requirements, unless otherwise specified or approved.	All threaded fasteners shall comply with ANSI B1.1 class 2 requirements or other similar standard , unless otherwise specified or approved.	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
77	19.25.4.2	Carbon steel bolts shall comply with ASTM A325. Alloy steel bolts shall comply with ASTM A354 or ASTM A490, as applicable.	Carbon steel bolts shall comply with ASTM A325. Alloy steel bolts shall comply with ASTM A354 or ASTM A490, or other similar standard as applicable.	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
78	19.25.4.3	Nuts shall comply with ASTM A194	Nuts shall comply with ASTM A194 or other similar standard	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
79	19.29.1.2	All welding practice not specifically covered in this section shall be in accordance with the applicable requirements and recommendations of EN-3834-2 or the American Welding Society (AWS)	All welding practice not specifically covered in this section shall be in accordance with the applicable requirements and recommendations of EN-3834-2 or the American Welding Society (AWS) or the similar standard which is used in railway for similar application.	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
80	19.29.2.2	Welder qualification tests and welder range of qualifications shall be in accordance with the applicable AWS Structural Welding Code (D1.1, D1.2, D1.3, and D1.6) or EN 287-1.	Welder qualification tests and welder range of qualifications shall be in accordance with the applicable AWS Structural Welding Code (D1.1, D1.2, D1.3, and D1.6) or EN 287-1 or the similar standard which is used in railway for similar application.	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
81	19.29.3.1	All welding practices, Procedure Qualification Record (PQR) and Welding Procedures Specifications (WPS) not specifically covered in other sections shall comply with AWS-D1.1, AWS-D1.2, or AWS-D1.3 or AWS D1.6 and the AWS Handbook as appropriate	All welding practices, Procedure Qualification Record (PQR) and Welding Procedures Specifications (WPS) not specifically covered in other sections shall comply with AWS-D1.1, AWS-D1.2, or AWS-D1.3 or AWS D1.6 and the AWS Handbook as appropriate or the similar standard which is used in railway for similar application.	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
82	19.29.3.2	Weld joint configuration and fit-up tolerances shall comply with the requirements AWS D1.1, D1.2, D1.3, and D1.6, as applicable.	Weld joint configuration and fit-up tolerances shall comply with the requirements AWS D1.1, D1.2, D1.3, and D1.6, as applicable or the similar standard which is used in railway for similar application.	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N

Name of the Bidder :		MELCO			
No.	Clause No	Description of the clause	Bidder's query	CMRL Resposnse.	Addendum (Y/N)
83	19.33.13	All lubricants shall conform to applicable ANSI and ASTM specifications.	All lubricants shall conform to applicable ANSI and ASTM specifications or other similar standard.	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
84	19.35.1	Wire sizes, insulation requirements, materials, shielding methods, and identification of wire and cable used for primary, auxiliary, control, and communications applications shall be based on the current carrying capacity, voltage drop, mechanical strength, temperature, and flexibility requirements of AAR, ASTM, ICEA, NFPA, MIL, or NFPA 70 specifications	Wire sizes, insulation requirements, materials, shielding methods, and identification of wire and cable used for primary, auxiliary, control, and communications applications shall be based on the current carrying capacity, voltage drop, mechanical strength, temperature, and flexibility requirements of AAR, ASTM, ICEA, NFPA, MIL, or NFPA 70 specifications or other similar standard.	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
85	19.41.6	Connectors shall comply with MIL-C-5015 or approved equal.	Connectors shall comply with MIL-C-5015 or other similar standard or approved equal.	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
86	18.1	Cited References	EN / IEC standards are usually followed in worldwider projects. If admisible, kindly consider to delete other cited references in this clause.	Tender condition prevails.	N
87	10.4.1	A roof-mounted single Vacuum Circuit Breaker (VCB) of proven design shall be provided for the car 25 KV AC system and located close to the one pantograph. There shall be a 25 KV cable connection between two pantographs and shall be connected to single VCB...	There shall be a 25 KV cable connection between two pantographs and shall be connected to single VCB. 'Please clarify if above sentence means 2 pantographs - 1 VCB set is prepared on 1 rake (3 cars train) .	YES.	N
88	2.14.1.11	The round trip running time, under All-out Mode, for AW4 train loaded condition for 3-car train with one bogie of one motor coach (for 3-car train) & one motor coach (for 6-car train) cut-out, shall not be more than the scheduled round trip time as declared by the Contractor vide ERTS 1.4.5. In such case the operation may be high TE mode. Under such operation conditions the temperature rise of the propulsion equipment shall not exceed the respective thermal ratings and the train shall be able to start and move on a UP gradient of 4%.	The round trip running time, Under All-out Mode, for a round trip & AW4 train loaded condition for 3-car train with one bogie of one motor coach (for 3-car train) & one motor coach (for 6-car train) cut-out, shall not be more than the scheduled round trip time as declared by the Contractor vide ERTS 1.4.5. In such case the operation may be high TE mode. Under such operation conditions the temperature rise of the propulsion equipment shall not exceed the respective thermal ratings and the train shall be able to start and move on a UP gradient of 4%.	Please refer to Addendum for revised clause.	Y

Name of the Bidder :		Siemens				
Sl.No.	Part/ Section No.	ClauseNo.	Original Bid condition	Bidder's Query	CMRL Resposnse.	Addendum (Y/N)
1	Part_2_ERTS / 11.3.5	11.3.5.1	The mechanical strength of the bogie frame shall comply with the requirements of UIC 615-4, UIC 515-4 or JIS E 4207 for static test under exceptional loads and fatigue tests.	The bogie development is widely based on EN standards therefore we kindly request to add the EN 13749, see our proposal below. 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.	ERTS allows for other equivalent standards subject to approval from CMRL. So tender condition prevails.	N
2	Part_2_ERTS / 11.4.5	11.4.5.1	The primary suspension shall consist of elastomeric elements, such as chevrons or conical rubber springs.	This clause exclusively calls for elastomeric springs only which differs to clause 11.4.2 where elastomeric springs are preferred only. Please kindly change the wording: conical rubber springs or alternatively helical springs ... to enable also helical spring. Helical springs have the benefit of small creep over lifetime.	Tender condition prevails.	N
3	Part_2_ERTS / 6.3	6.3.15	a) Opening and closing time of the passenger doors shall be adjustable in the range of 1.5 to 4.5 seconds.	Referring to b)-d) All doors shall open within 2.0 – 2.5 or close within 2.5 – 3.5 seconds. Please kindly explain the meaning of a).	clause (b) & (d) refers for normal operation time and (a) refers for adjustable time range.	N

Name of the Bidder :		Titagarh																																				
Sl. No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL Resposnse.	Addendum (Y/N)																																
1	Part-1; Section - II; Bid Data Sheet (BDS)	ITB 22.2 Replace Sub-clause 22.2 with the following	All document that are necessary to be filled shall be duly filled, signed, scanned and uploaded on the E-tender portal by the authorized signatory on behalf of the Bidder with his digital signature (DSC).	We request CMRL to consider this clause as - "All document that are necessary to be filled shall be duly filled, signed, scanned and uploaded on the E-tender portal by the authorized signatory on behalf of the Bidder." The authorized signatory might not have a Digital Signature mapped under his name.	Tender Condition Prevails.	N																																
2	Part-1; Section - III; Evaluation and Qualification Criteria (EQC)	Cl. No. 1.1.1 Personnel	<div>The Bidder must demonstrate that it has the personnel for the key positions that meet the following</div> <table><tr><th>No.</th><th>Position</th><th>Total Work Experience (Minimum number of years)</th><th>Experience in Similar Works (Minimum number of years)</th></tr><tr><td>1</td><td>Project Manager (to be Contractor's Representative under GC 4.3)</td><td>20</td><td>10</td></tr><tr><td>2</td><td>Engineering Manager</td><td>20</td><td>10</td></tr><tr><td>3</td><td>Interface Manager</td><td>15</td><td>7</td></tr><tr><td>4</td><td>Chief Maintenance Engineer</td><td>12</td><td>7</td></tr><tr><td>5</td><td>Project Quality Manager</td><td>15</td><td>7</td></tr><tr><td>6</td><td>Project OHSE Manager</td><td>15</td><td>7</td></tr><tr><td>7</td><td>Testing and Commissioning Manager</td><td>10</td><td>5</td></tr></table> <div>The Bidder shall provide details of the proposed personnel and their experience records in Forms PER-1 and PER-2 in Section IV, Bidding Forms.</div>	No.	Position	Total Work Experience (Minimum number of years)	Experience in Similar Works (Minimum number of years)	1	Project Manager (to be Contractor's Representative under GC 4.3)	20	10	2	Engineering Manager	20	10	3	Interface Manager	15	7	4	Chief Maintenance Engineer	12	7	5	Project Quality Manager	15	7	6	Project OHSE Manager	15	7	7	Testing and Commissioning Manager	10	5	We request CMRL to kindly consider and remove the Key Management Personnel requirement from Evaluation and Qualification Criteria. This may be submitted by the bidder under Technical Bid.	Tender Condition Prevails.	N
No.	Position	Total Work Experience (Minimum number of years)	Experience in Similar Works (Minimum number of years)																																			
1	Project Manager (to be Contractor's Representative under GC 4.3)	20	10																																			
2	Engineering Manager	20	10																																			
3	Interface Manager	15	7																																			
4	Chief Maintenance Engineer	12	7																																			
5	Project Quality Manager	15	7																																			
6	Project OHSE Manager	15	7																																			
7	Testing and Commissioning Manager	10	5																																			
3	Part- 1; Section - IV: Bidding Forms	Sl. No. 4; Cl. No. 4.2 Pricing Summary (BID TOTAL)	Allowable apportionment to Price Centre A: 8%	We request CMRL for allowable apportionment to Price Centre A to be 10% and the remaining Price Centres may be apportioned accordingly.	Tender Condition Prevails.	N																																
4	Part-1; Section - IV Bidding Forms	9. UNDERTAKING FOR MINIMUM LOCAL CONTENT		Please confirm if the self- certificate of 60% of Minimum Local Content signed by the authorised signatory as per the tender document will be valid during the tendering stage and until 15 days of issue of LoA.	It is valid for the Project time.	N																																
5	Part-3 Section - VIII Particular Conditions (Part B: Specific Provisions)	Sl. No. 4; Cl. No. 4.2 Pricing Summary (BID TOTAL)	The Defect Notification Period shall begin with Taking-Over of Works or Section except for parts and systems/sub-system of Works, which require corrective action.	Please Confirm if the DNP Period will start from the Taking Over Certificate of each train.	Please refer to Addendum for revised clause.	Y																																
6	Part-3, Section - VIII Particular Conditions (Part A: Contract Data)	Sl. No. 16; Sub Cl. No. 14.2 Total Advance Payment	10% of the Accepted Contract Amount (Excluding Provisional Sum) payable as Interest free Mobilization advance in the currencies and proportions in which the Accepted Contract Amount is payable. Mobilization advance shall be paid in two equal instalments.	We request CMRL to consider 20% as Advance Payment	Tender Condition Prevails.	N																																

Name of the Bidder :		Titagarh				
Sl. No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL Resposnse.	Addendum (Y/N)
7	Part 2 – Section VIERTS – Pneumatic and Brake Equipment	12.3.2	All piping shall be of stainless steel conforming to the requirements of ISO 9329-4 and ISO 9330-6 or equivalent with flared compression fittings. The pipe fittings shall conform to the requirements of DIN 2353 or approved equal.	We request CMRL to reconsider this clause as "All piping, fittings, fixtures shall be of stainless steel conforming to the requirements of SUS 316 or equivalent with flare-less double compression fittings. " Flareless Double compression offers better sealing.	Please refer to Addendum for revised clause.	Y
8	Part 2 – Section VIERTS – System Requirements	2.25.8	If the actual specific energy consumption exceeds the estimated specific energy consumption quoted by the Contractor by more than 3%, the Contractor shall carry out rectification work on the train, within a reasonable time as agreed with CMRL. In case the Contractor fails the penalty shall be applied as per Conditions of Contract.	We request CMRL to kindly reconsider the clause as "If the actual specific energy consumption exceeds the estimated specific energy consumption quoted by the Contractor by more than 5% , the Contractor shall carry out rectification work on the train, within a reasonable time as agreed with the Engineer. In case the Contractor fails, the penalty shall be applied as per Conditions of Contract.	Tender Condition Prevails.	N
9	Part 2 – Section VIERTS – Carbody	3.2	The car structure material shall be Stainless Steel or Aluminum. Stainless steel shall conform to ASTM GR 301L or equivalent. Aluminum shall conform to ALCOA Specification Covering Use of Aluminum in Passenger Carrying Railroad Vehicles Aluminum Association Aluminum Standards and Data. The end under frame may be constructed of LAHT steel to satisfy the strength requirements. Collision posts (if used) may be of stainless steel or LAHT steel to satisfy the strength requirements.	We propose Aluminum grade of EN standard will be used. ALCOA is US grade. EN standard is used in India and the same is proposed	Please refer to Addendum for revised clause.	Y
10	Part 2 – Section VIERTS – Car Body	3.4.4.1 - Roof	The roof structure, including the sheathing, shall be capable of sustaining, without permanent deformation, loads from car-washing equipment and concentrated loads of 250 lbf [1,112 N] over a 0.5 ft ² [0.05 m ²] area, as might be applied by a maintenance technician carrying tools during equipment repairs.	We propose the roof structure shall be designed to support the HVAC equipment, pantograph, VCB, surge arrester, ducts, conduit, lighting fixtures, headlining, stanchions and other equipment, and shall, in addition, have sufficient strength to support, without permanent deformation, concentrated loads of 1000N, applied by personnel working on the roof at increments of 750mm apart. The minimum thickness of roof sheet shall not be less than 1.0mm for stainless steel cars. Higher load will increase the car body weight. 1000N will be sufficient. This may be at discretion of the designer, complying to the specifications.	Tender Condition Prevails.	N
11	Part 2 – Section VIERTS – Car Body	3.4.6.1; Gangway	An open gangway, split or one-piece, shall be provided between the ends of interconnecting Cars. Gangway doors are not desired.	We propose double piece double skin with interior panels shall be provided between the ends of interconnecting Cars. Gangway doors are not desired.	Noted.	N

Name of the Bidder :		Titagarh				
Sl. No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL Resposnse.	Addendum (Y/N)
12	Part 2 – Section VI ERTS – Car Body	3.4.6.12 Gangway	The gangway and the Car structure, to which it is attached, shall withstand all operating loads without permanent deformation or damage.	We propose the coupler shall provide adequate support to the gangway with passengers. Alternative gangway support systems may be proposed. Full details shall be provided. This may be as per the vehicle design of the bidder and hence request not to specify.	Tender Condition Prevails.	N
13	Part 2 – Section VI VIERTS – Car Body	3.4.8.2	The height of the side door threshold shall be 3.2 mm maximum above the top surface of the finished floor, with a maximum slope toward the outside of the car of 25 mm in 305 mm.	We request CMRL to remove this clause as it is a non-critical item and might not be spcified.	Tender Condition Prevails.	N
14	Part 2 – Section VI ERTS – Car Body	3.4.8.3	The door threshold may extend beyond the nominal car width at floor height by not more than 38 mm. Beyond the doorway, on both sides of the doorway, the extension strip shall gradually slope towards the sidewall to form a horizontal ramp. The threshold extension shall be designed, constructed and installed to shear off if impacting any wayside structures without causing additional damage to the car structure.	The door threshold may extend beyond the nominal car width at floor height Shall be permissible limit.. Beyond the doorway, on both sides of the doorway, the extension strip shall gradually slope towards the sidewall to form a horizontal ramp. The threshold extension shall be designed, constructed and installed to shear off if impacting any wayside structures without causing additional damage to the car structure. This is a non-critical item and may not be specified.	Tender Condition Prevails.	N
15	Part 2 – Section VI ERTS – Car Body	3.5.2.3	Overall carbody heat transfer shall not exceed 80 kJ/hr/°C/m of car length and shall be verified through testing as specified in ERTS 17.	We propose, the Aluminum carbody shall be designed to have high thermal insulation to reduce the heat loss and heat transfer coefficient (K value) of the carbody excluding glazing/windows shall be kept within 1.6-2.5W/(m2K). As heat transfer may not be specified. Heat transfer coefficient range may be give, the bidder will comply.	Tender Condition Prevails.	N
16	Part 2 – Section VI ERTS – Car Body	3.6.5.5	The seats shall provide an adequate level of comfort, have a good appearance and be scuff and vandal resistant. The width of seats shall not be less than 450mm. The depth shall be a minimum of 670 mm, including leg room. The depth of the seat shall be minimized to provide maximum standing room and shall be approved by CMRL.	We propose the seats shall provide an adequate level of comfort, have a good appearance and be scuff and vandal resistant. The width of seats shall follow Indian Anthropometric Dimension including leg room. The depth of the seat shall be minimized to provide maximum standing room and shall be approved by CMRL. Specifying the bigger seats, will affect the standing in area in the coach and hence the capacity. It is more acceptable to follow IAD specification, which are standard.	Tender Condition Prevails.	N

Name of the Bidder :		Titagarh				
Sl. No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL Resposnse.	Addendum (Y/N)
17	Part 2 – Section VI ERTS – Car Body	3.13.14	Alternatively, if an aluminum carshell is proposed it shall comply with the latest international standards for aluminum materials and construction for metro railcars. Aluminum materials used for carbody extrusions will be of the 6000 series alloy. Extrusions for structural parts will mostly be made from 6005A (AlMgSi0.7), 6082 (AlMgSi1) may be chosen for extrusions in areas with increased strength requirements. Heat treatment will be defined according to strength requirements. Non-structural parts with low stress levels will be made from 6060 (AlMgSi0.5). Table: Designation of Materials for Car Body Structure	We request CMRL to reconsider the clause as "Alternatively, if an aluminum carshell is proposed it shall comply with the latest international standards for aluminum materials and construction for metro railcars. And shall meet all the strength and load conditions." In each flatpack more than one type of material is used. So we request not to mention a specific item against each flatpack. We request CMRL to consider “material of proven grade” or in maximum “EN 6xxx series or suitable material”.	Please refer to Addendum for revised clause.	Y
18	Part 2 – Section VI VIERTS – Car Body	3.13.20.3	The appearance of the car exterior must be of a modern and aesthetically pleasing profile. Emphasis is placed on the style on the car exterior as the metro wades through the most important part of the city. The car exterior finish with stainless steel or aluminum body shall not require paint for protection.	We propose the appearance of the car exterior must be of a modern and aesthetically pleasing profile. Emphasis is placed on the style on the car exterior as the metro wades through the most important part of the city. The car exterior finish with stainless steel body shall not require paint for protection. Aluminum body shall be protected with paint. The Employer at its sole discretion may however decide during the design finalisation stage for partial or complete painting of the Aluminium carbody. Aluminium car body has to be painted. This will prevent corrosioon of the carbody material given Chennai is a Saline Area. Also, painting of carboyd is standard practice worldwide.	Please refer to Addendum for revised clause.	Y
19	Part 2 – Section VI ERTS – Car Body	3.14.5.3	The energy of a car loaded to AW2 loaded condition travelling at up to 10 km/h, colliding with a stationary Car (with brakes applied), shall all be absorbed within the recoverable stroke of the coupler resilient element and the motions of the Cars involved shall be stopped with no structural damage to any Car.	We request CMRL to reconsider this clause as The energy of a car loaded to AW2 loaded condition travelling at up to 5 km/h , colliding with a stationary Car (with brakes applied), shall all be absorbed within the recoverable stroke of the coupler resilient element and the motions of the Cars involved shall be stopped with no structural damage to any Car.	Tender Condition Prevails.	N

Name of the Bidder :		Titagarh				
Sl. No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL Resposnse.	Addendum (Y/N)
20	Part 2 – Section VI ERTS – Car Body	3.14.5.4	At closing speeds of 10 km/h to 25 km/h, the coupler shall absorb the additional energy within its sacrificial elements for AW2 loading condition. The couplers shall progressively collapse bringing into play the anti-climb protection which shall remain fully engaged and operational under the action of vertical shear loads (upwards and downwards) equivalent to half the Crush Loading Condition Car weight. For survival zone during collision scenario, the requirements of EN15227 Section 6.3 shall apply, or an equivalent analysis, if approved by CMRL.	We request CMRL to kindly remove this clause	Tender Condition Prevails.	N
21	Part 2 – Section VI ERTS – Passenger Doors	6.2.2	The two door panels at each passenger doorway shall be synchronously controlled and shall provide a door clear opening width of equal spacing of not less than 1.4 m. Since platform screen doors (PSD) will be used at all stations with full height PSDs in underground stations and half height PSDs in elevated stations, the location, interdoor distance & size of the door panels are important for the PSD equipment supplier. Contractor shall coordinate with PSD contractor as part of interface.	We request CMRL to reconsider the clause as The two door panels at each passenger doorway shall be synchronously controlled with anti drag feature and LED indicator strip and shall provide a door clear opening width of equal spacing of not less than 1.4 m. Since platform screen doors (PSD) will be used at all stations with full height PSDs in underground stations and half height PSDs in elevated stations, the location, interdoor distance & size of the door panels are important for the PSD equipment supplier. Contractor shall coordinate with PSD contractor as part of interface.	Tender Condition Prevails.	N
22	Part 2 – Section VI ERTS – Passenger Doors	6.2.9	Limit switches used shall be of high reliability and with IP 65 protection. Life of the limit switches shall be at least 15 years. The Contactor shall furnish details during Pre-Final Design Stage.	We request CMRL to delete this clause as it is an Electrical item and these are easily removable items.	Tender Condition Prevails.	N
23	Part 2 – Section VI ERTS – Section 10 HV & Propulsion System	10.13.10	The motor bearing maintenance inspection interval (excluding lubrication if required) shall exceed 1.2 million kilometres and the bearing shall have a design life of minimum 2.1 million kilometres.	We request CMRL to reconsider the motor bearing maintenance inspection interval (excluding lubrication if required) shall exceed 1.0 million kilometres and the bearing shall have a design life of minimum 2.1 million kilometres.	Tender Condition Prevails.	N
24	Part 2 – Section VI ERTS – Bogie Assembly	11.4.2	Elastomeric springs are preferred by CMRL and shall have a minimum amount of "creep". Elastomeric springs shall be subject to an approved program of preloading or exercising at assembly of the bogie to compensate for the deflection caused by initial "creep" of the elastomer. Provision shall be made in the bogie design to compensate for "creep" and keep the bogie properly levelled and trammed.	We request CMRL to delete this clause as the condition of creep speed is limiting. The bidder will offer bogie as per bidder's design wherein will comply with comfort requirement.	Tender Condition Prevails.	N

Name of the Bidder :		Titagarh				
Sl. No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL Resposnse.	Addendum (Y/N)
25	Part 2 – Section VI ERTS – Communications	13.4.3	The CCH shall interface with all audio and visual communication equipment and shall provide the following functions: a) Control and reset any passenger emergency intercom of the train. b) Select and control operator’s desk-to-desk communications c) Control PIS announcements d) Play independent and automatic route related audio & visual announcements e) Display CCTV footages of train along with their selection controls f) Act as DDU in case of failure of DDU.	We request CMRL to remove point "f".	Please refer to Addendum for revised clause.	Y
26	Part 2 – Section VI ERTS – Train Control Management System	14.5.5	DDU Access Control Levels The level of access to distinct screens shall be controlled for the train operator and maintenance personnel. At least three levels shall be defined which shall be user name and password protected. The details shall be reviewed by CMRL.	Kindly reconsider it as "DDU Access Control Levels The level of access to distinct screens shall be controlled for the train operator and maintenance personnel. At least two levels shall be defined which shall be user name and password protected. The details shall be reviewed by CMRL."	Tender Condition Prevails.	N
27	Part 2 – Section VI ERTS – Train Control Management System	14.5.6	Test Mode Extension of DDU The TCMS DDU 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 DDU display. Suitable application software shall be developed to enable replication of TCMS DDU along with touch and/or mouse-based interaction. Such additional DDUs shall login as “Test Mode” that shall be provided in addition to the “Operator and “Maintainer” modes of the TCMS.	We request CMRL to remove this clause	Tender Condition Prevails.	N
28	Part 2 – Section VI ERTS – Train Control Management System	14.5.8	CCTV Display Redundancy Full redundancy shall be available between DDU of TCMS and CCTV. In case of failure of TCMS DDU, full functionality of TCMS DDU shall be available in CCTV DDU and vice-versa. CCTV images can be displayed on the TCMS DDU on demand or event generated. The TCMS DDU shall have provision of displaying multiple screens as per the requirements.	We request to modify the clause as: Full redundancy shall be available between DDU of TCMS and CCTV. CCTV images can be display on the TCMS DDU on demand or event generated. The TCMS DDU shall have provision of displaying multiple screens as per the requirements.	Please refer to Addendum for revised clause.	Y

Name of the Bidder :		Titagarh																							
Sl. No.	Part/ Section No.	Clause No.	Original Bid Condition	Bidder's Query	CMRL Resposnse.	Addendum (Y/N)																			
29	Part 2 – Section VI ERTS – Train Control Management System	14.10.6.2	The Contractor shall supply one event recorder for each train, easily removable, mounted in a car in an approved location. a) Redundancy: Redundant event recorder compliant with GM/RT 2472:2002 shall be provided for the train. The event recorder shall be redundant to each other and shall be type tested to demonstrate the integrity of recorded data and ability to extract data following an incidence.	Wr request CMRL to reconsider the clause as "The Contractor shall supply one event recorder for each train, easily removable, mounted in a car in an approved location. a) Redundancy: Event recorder compliant with GM/RT 2472:2002 shall be provided for the train. The event recorder shall be type tested to demonstrate the integrity of recorded data and ability to extract data following an incidence."	Tender Condition Prevails.	N																			
30	Part 2 – Section VI ERTS – Train Control Management System	14.10.6.7	The method of downloading data from the event recorder shall be standard wireless means with adequate anti-hacking protection. Additionally, a HDMI or latest compatible interface shall be provided for downloading the data.	We request CMRL to modify the clause as: The method of downloading data from the event recorder shall be standard wireless means with adequate anti-hacking protection. Additionally, a latest compatible interface shall be provided for downloading the data.	Tender Condition Prevails.	N																			
31	Part 2 – Section VI ERTS – Section 17 Test Program	17.6.13	The Contractor shall subject each car to a complete test for water tightness. Water tightness shall comply with IP-65. All exterior appointments or car body seams that may affect water tightness of the car body—such as destination signs, indication lights, crew switches, Doors, VAC, windows, front & rear end cabins and all equipment —shall be installed at the time of this test. At a minimum, the test shall meet the following specifications:	We request CMRL to reconsider the clause as "The Contractor shall subject each car to a complete test for water tightness. All exterior appointments or car body seams that may affect water tightness of the car body—such as destination signs, indication lights, crew switches, Doors, VAC, windows, front & rear end cabins and all equipment —shall be installed at the time of this test. At a minimum, the test shall meet the following specifications:"	Tender Condition Prevails.	N																			
32	Part 2 – Section VI ERTS – Section 18 Systems Assurance	18.6.6.1	<div>The Reliability calculation shall be as per the below requirements:<table><tr><th>Level</th><th>Fleet Reliability</th><th>Type 1 Failure Minimum MDBF</th></tr><tr><td>Level 1</td><td>Six (6) months period after passeng service induction date of first train</td><td>80,000 Km</td></tr><tr><td>Level 2</td><td>Twelve (12) months period after passenger service induction date of first train</td><td>1,25,000 Km</td></tr></table></div>	Level	Fleet Reliability	Type 1 Failure Minimum MDBF	Level 1	Six (6) months period after passeng service induction date of first train	80,000 Km	Level 2	Twelve (12) months period after passenger service induction date of first train	1,25,000 Km	<div>We request the reliability calculation to be as follows:<table><tr><th>Duration</th><th>Minimum fleet average MDBF (3-car fleet)</th></tr><tr><td>After 12 months of start of revenue service</td><td>80000</td></tr><tr><td>After 18 months of start of revenue service</td><td>100000</td></tr><tr><td>Failure causing a delay greater than 60 minutes or requiring detrainment of passengers at a station or cancellation of train prior to passenger service</td><td>2,400,000</td></tr><tr><td>Critical failure (Withdrawal of train from passenger service causing detrainment of passengers on track)</td><td>8,000,000</td></tr></table></div>	Duration	Minimum fleet average MDBF (3-car fleet)	After 12 months of start of revenue service	80000	After 18 months of start of revenue service	100000	Failure causing a delay greater than 60 minutes or requiring detrainment of passengers at a station or cancellation of train prior to passenger service	2,400,000	Critical failure (Withdrawal of train from passenger service causing detrainment of passengers on track)	8,000,000	Tender Condition Prevails.	N
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