MAHARASHTRA METRO RAIL CORPORATION LIMITED

(Jointly owned company of Government of India and Government of Maharashtra)

Corrigendum – 6

Tender No. N2-57/RS-01/2025, Dated 07.03.2025

Name of Work:

Design, Manufacture, Supply, Testing, Commissioning of Passenger Rolling Stock (16 Nos of Train Sets) and Training of Personnel with Comprehensive Annual Maintenance contract (15 year) for Nagpur Metro Rail Project Phase-II.

Sr. No.	Clause No	Existing Provision	Revised Provision
1.	"Part-1, Annexure IV-A Pricing document, Annexure-1 Cost Centres/ Corrigendum 2 Sr No 10, Cost Centre No. G	Cost Center No G: UES, MS, RS, Special tools, testing and diagnostic equipment. Special jigs, fixtures and gauges for repair and maintenance and IOH spares	Cost Center No. G: UES, MS, Special tools, Jigs, Fixtures, Gauges, Testing and Diagnostic Equipment and enclosed as Attachment-1
2.	"Part-1, Annexure IV A- Bid Total and Apportionment of Lump Sum Price among Cost Centres., Bid Total	Bid Total- Apportionment of Lump Sum Price among Cost Centres	Bid Total Form updated and enclosed as attachment-3
3.	"Part-1, Annexure IV-A : Pricing Document, Annexure-1 Cost Centres, Cost Centre No. B,C,D,E,F:	Cost Center No. B,C,D,E,F:- Weeks for Completion of milestone from commencement date	Cost Center B,C,D,E,F:- Weeks for Completion of milestone from commencement date updated and enclosed as attachment-6
4.	"Part-1, Bidding Procedure Annexure IV-A: Pricing Document, Contents	Cost Centre no. G:Unit Exchange Spares, Mandatory Spares, Recommended Spares,	To be read as below:- COST CENTRE No. G:Unit Exchange Spares, Mandatory Spares, Special Tools, Jigs, Fixtures, Gauges, Testing and Diagnostic Equipment:

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(Jointly owned company of Government of India and Government of Maharashtra)

Corrigendum – 6

Tender No. N2-57/RS-01/2025, Dated 07.03.2025

Sr. No.	Clause No	Existing Provision	Revised Provision
5.	"Part-1, Bidding Procedure Annexure IV-A: Pricing Document, Annexure-1 Cost Centres, Index of Cost Centres"	G:Unit Exchange Spares, Mandatory Spares, Recommended Spares,	To be read as below:- COST CENTRE No. G:Unit Exchange Spares, Mandatory Spares, Special Tools, Jigs, Fixtures, Gauges, Testing and Diagnostic Equipment:
6.	"Part-1, ANNEXURE IV-A : Pricing Document, Annexure-1 Cost Centres/ Corrigendum 2 Sr No 2, Cost Centre. I: Comprehensive Annual Maintenance Contract	Scope of cost Centre:	"Cost Center I -Comprehensive Annual Maintenance Contract -Scope of Cost Centre" updated and enclosed as attachment-2
7.	"Part-3, Section IX: Particular Conditions of Contract (PCC), Annexure-1	Table: Summary of Sections (KEY DATES)	"Summary of Sections (KEY DATES) Annexure-1 - Weeks from commencement date" updated and enclosed as attachment-5
8.	Part-2, Works Requirement - General Specification , Chapter 16	Comprehensive Annual Maintenance Contract (CAMC)	Chapter-16 updated and enclosed as attachment-4
9.	Part-1, Annexure IV A-Pricing Document, Instructions for completing	A 5.7 The "adjustment of changes in cost" shall be limited to 10% of the portion of	Deleted

MAHARASHTRA METRO RAIL CORPORATION LIMITED
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(Jointly owned company of Government of India and Government of Maharashtra)

Corrigendum – 6

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Sr. No.	Clause No	Existing Provision	Revised Provision
	the Pricing Document, A.5 Price Variation	contract on which price variation is payable/applicable.	
10.	Part 3, Section IX: Particular Conditions of Contract (PCC)/ Corrigendum 4 Sr No 22, Clause 66. Additional Clause: Local Content	Table 1.4 b Recommended spares for Make in India	Table 1.4 b Recommended spares for Make in India updated and enclosed as Attachment 7
11.	Part 1, Annexure IV A-Pricing Document, Instructions for completing the Pricing Document/ Corrigendum 2, Sr No 76, Attachment-05 Corrigendum-02	A.1 Price Variation A.1.1 The Contract Price, shall be adjusted for increase / decrease of the price of Steel, Aluminium and Copper as per the Price Adjustment Formula detailed below:	A.5 Price Variation A.5.1 The Contract Price, shall be adjusted for increase / decrease of the price of Steel, Aluminium and Copper as per the Price Adjustment Formula detailed below:
12.	Part-1, Annexure IV A-Pricing Document, Instructions for completing the Pricing Document, A.5 Price Variation	A 5.5 Total admissible price variation amount shall be subject to a ceiling of ± 10% (Ten only) of the Contract Price excluding CAMC cost but including variation awarded as per clause A.5 of this document Contract price for the proposed ceiling will stand modified to accommodate cost of variation awarded as per this clause	A 5.5 The total admissible price variation for the supply portion shall be limited to a maximum of ± 10% of the contract value on which price variation is applicable /payable, i.e., the value of Cost Centres B, C, and G.

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Sr. No.	Clause No	Existing Provision	Revised Provision
13.	Corrigendum-4, Sr. No. 2	4. Total admissible price variation amount shall be subject to a ceiling of (+/-) 25% (Twenty Five Percentage) of the total CAMC cost.	4. Total admissible price variation amount shall be subject to a ceiling of (+/-) 50% (Fifty Percentage) of the total CAMC cost.
14.	Part-3, Section IX: Particular Conditions of Contract (PCC), Part B - Specific Provisions, Sr. No. 47, Sub-Clause 14.2, Advance Payment	Rate of interest shall be charged at "SBI Bank Rate+2% (Two percent)" simple interest. Interest will be chargeable and calculated on reducing balance method.	Rate of interest shall be charged at "RBI Bank Rate" simple interest prevailing on the date of advance and published on RBI Web Site separately under "Policy Rates". Interest will be chargeable and calculated on reducing balance method.

The other conditions shall remain same. Further modifications/amendments (if any) regarding aforesaid tender will be uploaded as and when required.

MAHARASHTRA METRO RAIL CORPORATION LIMITED NAGPUR METRO

16/07

Executive Director
(Procurement)
Maha Metro

COST CENTRE No. G: Unit Exchange Spares, Mandatory Spares, Special Tools, Jigs, Fixtures, Gauges, Testing and Diagnostic Equipment:

This Cost Centre comprises of all different types of spares.
This includes:

1. Unit exchange spares,
2. Mandatory Spares,
3. Special Tools, Jigs, Fixtures, Gauges, Testing and Diagnostic Equipment

Notes:

1. Bidder shall furnish the current unit price for spares listed in GA-1, GA-2 & GA-3 .

2. Unit exchange spare, Mandatory spares and Special Tools, Jigs, Fixtures, Gauges, Testing and Diagnostic Equipment (G1, G2 & G3) shall be made available by Maha Metro and handed over to Contractor for use during CAMC against BG of Equivalent amount in respective currency. All the spares shall be returned in good condition to Maha Metro after completion of CAMC period.

3. The costs indicated in this Cost Centre G for Milestones G1, G2 & G3 shall be the actual costs and not the apportioned costs.

4. Price variation as per clause A.5 of part-1 bidding procedure Annexure-IV-A- pricing document will be applicable on Cost Centre G

5. Supply of spares for cost center G will be as per key date indicated in the cost center G.

6. Categorization of spare in Lot 1 & Lot 2 to be submitted in Bid Document by the bidder.

COST CENTRE No. G: Unit Exchange Spares, Mandatory Spares, Special Tools, Jigs, Fixtures, Gauges, Testing and Diagnostic Equipment

Milestone No.	Work Description Milestone Activity	Foreign Currency Column A	Indian Rupees Column B	Weeks from Commencement Date
	Obtain the "Notice of No Objection" or "Notice of No Objection Subject to ____" from the Engineer for the delivery of the following:			
G1	Unit Exchange Spares **(Details to be given as per Annexure GA1)**			
	Lot-1			As per respective milestones D1/E1 of Cost Centre D/E
	Lot-2			As per respective milestones D4/E4 of Cost Centre D/E
G2	Mandatory Spares **(Details to be given as per Annexure GA2)**			
	Lot-1			As per respective milestones D1/E1 of Cost Centre D/E
	Lot-2			As per respective milestones D4/E4 of Cost Centre D/E
G3	Special Tools, Jigs, Fixtures, Gauges, Testing and Diagnostic Equipment: (Details to be given as per Annexure GA5)			
	Lot-1			As per respective milestones D1/E1 of Cost Centre D/E
	Lot-2			As per respective milestones D4/E4 of Cost Centre D/E
	COST CENTRE TOTAL			

SIGNATURE OF BIDDER

Annexure GA1

Unit Exchange Spares

(*Wherever the Unit is mentioned as 'Set', it means '3-Car Train Set' and wherever it is mentioned as 'No. / Nos.', it means 'Numbers')

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					FC	LC (INR)	FC	LC (INR)
1	Transformer		Set	1				
2	Traction Motor with half coupling		No.	2				
3	Power Converter and Inverter		Set	1				
4	Auxiliary Power Supply with Battery Charger		Set.	1				
5	Vacuum Circuit Breaker		No.	4				
6	All type of Complete Motored Bogie equipped with Traction Motors with power and earthing cables, Connector, Pins, required crimping tools, pin removal tool, wheel sets and brake units etc.		Set	1				
7	All types of Complete Trailer Bogie equipped with earthing cables, Connector, Pins, required crimping tools, pin removal tool, Wheel Sets and brake units etc.		Set	1				
8	Battery cell for 3-car unit with inter connectors and nozzles		Set	2				
9	Pantograph with base insulators, control panel & all bus bar and connecting cables with lugs and crimping tools.		Set	3				
10	All electrical monitoring control and protection panels / cubicles etc. comprising of relays, MCBs, switches, displays, pneumatic gauges, sensors duly wired used therein as applicable including Pins, connector & its Crimping and pin removal tools (list to be furnished by the Bidder)		Set	1				
11	Complete assembly of Couplers: Automatic, Semi-permanent (Each)		No.	1				
12	Gangways (set comprising of single type (used within unit) and two-halves used between unit) along with covers.		No.	2				
13	Master Controller & Mode Selector		Set.	2				
14	PWM Generator with interface panel		Set	1				
15	Complete Main Compressor Set for pneumatic system with Starter box / Control box		Set	2				
16	Complete Auxiliary motor compressor set		Set	6				
17	Air dryer		Set	1				
18	Filters for compressed air lines (Each type) (Bidder to specify)		Set	4				
19	Secondary suspension (air suspension)		No.	6				
20	Primary suspension (each type)		No.	8				
21	Disc brake unit with callipers, pads complete set excluding disc (LHS & RHS Each)		No.	4				
22	Brake control unit (electronic and pneumatic) (Each)		No	4				
23	Complete PA/PIS and CCTV set including NVR/DVR, connectors (Male & female), cards		Set	2				

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					FC	LC (INR)	FC	LC (INR)
24	Complete saloon door operating mechanism (Including different parts like motors, shaft etc.) (Bidder to specify)		No	8				
25	Saloon air-conditioning Unit		No.	4				
26	Cab air-conditioning unit		No.	4				
27	TCMS Equipment set		Set	1				
28	Surge Arrester		Nos.	4				
29	Complete battery control box		No.	2				
30	All type of boxes hang underframe (like BCU, battery box, ACCB box, CI, etc.)		Set	1				

Note: **Contractor to submit the list for Engineer's review and Engineer may add/delete/modify the list as per requirement.

Annexure GA2

Mandatory Spares

(*Wherever the Unit is mentioned as 'Set', it means '3-Car Train Set' and wherever it is mentioned as 'No. / Nos.', it means 'Numbers')

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					FC	LC (INR)	FC	LC (INR)
1	**Air Conditioning Unit**							
1.1	Microprocessor based control unit (Each type)		Nos.	4				
1.2	Set of temperature sensor (Each type)		No.	6				
1.3	Humidity Sensor		Nos.	6				
1.4	Smoke Sensor (Each type)		Nos.	8				
1.5	Fresh & Return air Damper motors (Each)		Nos.	4				
1.6	Compressor unit with motor and mounts (Each type)		Nos.	4				
1.7	Condenser & Evaporator fans with motor (Each type)		Nos.	4				
1.8	Emergency Inverter with control unit		Nos.	4				
1.9	Transformer		No.	4				
1.10	Heating Coil		No.	4				
1.11	Condenser Coil set		Nos.	2				
1.12	Evaporator Coil		Nos.	2				
1.13	HVAC filter frame (Each type)		Set	2				
1.14	High pressure switch with transducer		Nos.	2				
1.15	Low pressure switch with transducer		Nos.	2				
1.16	DC-DC Converter (Each type)		Nos.	4				
1.17	Line filter		Nos.	6				
1.18	Differential Pressure Valve		Nos.	6				
1.19	Expansion Valve (Each type)		Nos.	6				

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					FC	LC (INR)	FC	LC (INR)
1.20	Set of MCBs, contactor, relays, lugs, pins, etc. (Each type)		Set	2				
1.21	Drain plugs (Each type)		Set	4				
1.22	Cab HVAC booster fan assembly		No.	4				
1.23	HVAC Cover rubber gasket		Mtr	30				
1.24	Booster Fan for cab Ventilation		No	2				
1.25	Thermal Magnetic Circuit Breaker		No	2				
1.26	Speed regulating transformer for cab Ventilation		No	2				
1.27	Control switch for Cab ventilation		No	2				
2	**Brake & Pneumatics**							
2.1	PCB cards of all types for Brake electronic control unit (Each)		No.	10				
2.2	Speed Sensor		No.	8				
2.3	Set of pneumatic valves (Each type) (Bidder to specify)		Set	1				
2.4	Set of magnet valves (Each type) (Bidder to specify)		Set	1				
2.5	Set of safety valves (Each type) (Bidder to specify)		Set	1				
2.6	Set of gauges (Each type) (Bidder to specify)		Set	2				
2.7	Set of sensors (Each type) (Bidder to specify)		Set	2				
2.8	Set of Pressure switches / Governor (Each type) (Bidder to specify)		Set	2				
2.9	Set of all types of isolating cocks (Each type) (Bidder to specify)		Set	1				
2.10	Driver's brake valve (BP backup brake control unit)		No.	2				
2.11	Analogue Converter/ Charging Venting Valve/ Digital Control Loop		No.	4				
2.12	Set of Pneumatic Pipe fittings (Each type) (Bidder to specify)		Set	1				
2.13	STV Valve		No.	10				
2.14	PRV Valve		No.	4				
2.15	EBCU Memory Card		No.	8				
2.16	Horn Assembly with magnet valve (Low & High) (Each)		No.	2				
2.17	Reservoirs drain cocks (Each Type)		Set	2				
2.18	ADPS with control card		No.	4				
2.19	PBMV		No.	4				
2.20	All type of hoses (Bidder to specify)		Set	2				
2.21	Compressor Fan		Set	2				
2.22	Remote control for emergency release of parking brake		No.	4				
2.23	Timer card for Air dry unit		No	2				
3	**PA / PIS & CCTV**							
3.1	Front Train Number/ Destination Indicator		No.	4				
3.2	Passenger Information Board (External side display board)		No.	8				
3.3	Noise Monitor		No.	4				
3.4	Speaker (Cab, Internal & External) (Each)		No.	8				
3.5	Main operating Panel with Microphone		No.	4				
3.6	Auxiliary operating panel		No.	4				

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					FC	LC (INR)	FC	LC (INR)
3.7	Passenger emergency activation device		No.	8				
3.8	LCD based Route map & displays (DRM)		No.	20				
3.9	DRM Pins, connectors (male & female), crimping tool & Pin removal tool		Set	2				
3.10	Saloon, Front, Cab and rear-view cameras complete with hardware.		Set	1				
3.11	SLCD		No.	20				
3.12	SLCD Pins, connectors (Male & Female), crimping tool & Pin removal tool		Set	2				
3.13	NVR Hard Disk		No.	10				
3.14	Passenger emergency activation device indicator light		No	8				
3.15	SLCD AD Card		No	5				
3.16	MDS (CCTV Monitor)		No	2				
4	**Doors**							
4.1	Door control unit (Each Type)		No.	8				
4.2	Door leaves (LHS & RHS) (Each Type)		No.	4				
4.3	Set of rollers (Each Type)		Set	1				
4.4	Set of sensors /Limit switches of saloon doors, Cab Door (Each Type)		No	4				
4.5	Cab-saloon partition door panels locking mechanism		No.	6				
4.6	Set of sensors / switches of emergency doors		Set	4				
4.7	Cab door operating & locking mechanism		No.	6				
4.8	Complete Cab Door with operating and locking mechanism and hardware		Set	1				
4.9	Cab-saloon partition door panels with locking mechanism		Set	1				
4.10	Partition door limit switch		No	20				
4.11	Cab door, saloon door and partition door locking, Bowden cables and fittings (Each type)		Set	2				
4.12	Led Strip (Saloon Door)		Set	1				
4.13	External indicator Lamp		Set	1				
4.14	Complete Emergency door unit with mechanism		Set	2				
4.15	Emergency door operating mechanism, ratchet handle and sockets (each type)		No	4				
4.16	Emergency door all damper (Each type)		No	8				
4.17	Emergency door connecting rod and support (each type)		Set	2				
4.18	Circlip/ End fittings		Set	2				
4.19	Door connectors, pins (Male and female), terminal block, pin removal tool and crimping tool (Each Type)		Set	2				
4.20	Emergency door limit switch with mounting (Each type)		No.	8				
4.21	EED Device assembly		No	4				
4.22	End Unlocking device		No	4				

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					FC	LC (INR)	FC	LC (INR)
4.23	Door leaf carrier		No	4				
4.24	Finger protection rubber		No	10				
4.25	Peripheral Rubber		No	10				
4.26	Front Door Rubber		No	10				
4.27	Swing arm body assembly, Left and Right		No	4				
4.28	Buffer Stop (Buffering head on door leaf carrier)		No	20				
4.29	DCU MCB		No	4				
4.30	Isolating lock assembly		No	4				
4.31	EAD Device assembly		No	4				
4.32	Emergency evacuation ramp assembly		No	4				
4.33	Emergency door Locking Fork		No	4				
4.34	Emergency door Hinge pin		No	4				
4.35	Emergency door Support leg rod		No	4				
4.36	Emergency door Door lock component		No	4				
4.37	Partition Door Limit switch		No	10				
4.38	Partition Door EED Device assembly		No	10				
4.39	Partition Door lock assembly		No	10				
4.40	Partition Door Hinge		No	4				
4.41	Cab Door Closed switch		No	4				
4.42	Cab Door Isolation switch		No	4				
4.43	All type Square key lock assembly		No	30				
5	**Converter / Inverter**							
5.1	Set of PCB cards		Set	2				
5.2	Converter Power Unit		No.	2				
5.3	Set of contactors		Set	2				
5.4	Current transformer		No.	4				
5.5	Potential transformer		No.	4				
5.6	Inverter Power Unit		No.	2				
5.7	Gate Control Unit		No.	2				
5.8	DC link Charging circuit module		No.	4				
5.9	DC link capacitor		No.	4				
5.10	Earthing protection circuit module		No.	4				
5.11	All types of sensors used (traction motor, transformer, etc.)		Set	2				
6	**Auxiliary Power Supply**							
6.1	Set of PCB cards		Set	2				
6.2	Auxiliary Power Supply Unit		No.	2				
6.3	Set of Contactor (Each Type)		Set	4				
6.4	Battery Charger Unit		No.	2				
6.5	Gâte Control Unit		No.	2				

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					FC	LC (INR)	FC	LC (INR)
6.6	ACC filter capacitor unit		No.	2				
6.7	Discharging switch (Ground Switch)		No.	2				
6.8	Shore supply cable with connector		No.	2				
6.9	Power Extension box		No.	2				
6.10	Shore supply box		No.	2				
6.11	All types of sensors used in battery and APS		Set	2				
7	**Transformer**							
7.1	Oil pump		No.	4				
7.2	Radiator blower including fan		No.	4				
7.3	Set of valves and relays		Set	2				
7.4	Set of sensors / gauges		Set	2				
7.5	Breather		No.	20				
7.6	Dial type thermometer		No	4				
7.7	Complete ACCB box		No.	2				
8	**TCMS**							
8.1	Set of PCB cards (CCU, CN, RIO) (Each type)		Set	2				
8.2	Display Unit		No.	6				
8.3	Backlight of Display Unit		No.	10				
8.4	Ethernet cable connecting other sub system with connector, pins, crimping tool and pin removal tool		Set	1				
9	**Master Controller**							
9.1	Set of switches		Set	2				
9.2	Potentiometer		set	2				
10	**Pantograph**							
10.1	Control panel		No.	4				
10.2	Regulator, filter, magnetic valve, pressure switches etc. (Each type)		No.	4				
10.3	Overhead detection valve MED and ADD (Each type)		No.	4				
10.4	Pantograph pan		No.	10				
10.5	Pantograph raising cylinder		No.	4				
10.6	Air feed insulator pipe		Set	4				
10.7	Pantograph foot insulator		No.	6				
10.8	Suspension plate		No.	8				
10.9	Damper (Each Type)		No.	4				
10.10	Lower supporting rod		No.	4				
10.11	Upper supporting rod		No.	4				
10.12	Shunting wires (Each Type)		No.	10				
10.13	Inter locking key box and mechanism		Set	4				
10.14	Aluminium Horn (Each Type)		Set	2				

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					FC	LC (INR)	FC	LC (INR)
10.15	Lower arm end stop		No	6				
10.16	Upper arm end stop		No	6				
10.17	Collector head end stop		No	6				
10.18	ADD valve assembly		No	6				
10.19	Auxiliary Compressor		No	5				
11	**Vacuum Circuit Breaker**							
11.1	Control box including auxiliary contact, pressure regulator etc.		Nos.	4				
11.2	VCB pressure regulator		Nos	10				
12	**Coupler**							
12.1	Proximity Sensor (each type)		Set	2				
12.2	Set of Pneumatic hoses		Set	2				
12.3	Set of electrical jumpers with connectors		Set	2				
12.4	MR and BP Valve (Each Type) and its gaskets (each type)		No's	4				
12.5	Semi-permanent coupler supporting plate with hardware		Nos	8				
12.6	Spring each type		Nos	2				
12.7	Muff coupler fixing hardware		Set	2				
13	**Bogie**							
13.1	Set of hydraulic dampers (each type)		Set	2				
13.2	Reaction rod / traction links / axle box links/anti-roll bar/safety rope etc.		Set	1				
13.3	Complete WFL Control Unit with cable connectors, piping, hoses and pins		Set	2				
13.4	Levelling rod		No	4				
13.5	WFL nozzle		No	20				
13.6	WFL hoses		Set	2				
13.7	WFL electromagnetic valves		Set	2				
13.8	WFL oil pump		No	4				
13.9	WFL distributor valve		No.	4				
13.10	Backstop both side		No.	8				
13.11	Earth cable bogie (Each type)		Set	1				
13.12	Temperature Sensor (Traction Motor)		No	4				
13.13	PG sensor (Traction Motor)		No	4				
13.14	Heat detector (Traction Motor Terminal Box)		No	4				
14	**Electrical/Lighting system**							
14.1	Set of luminaires – Saloon Light, Grab pole light , Flasher light, console light, Cab light and gangway light etc.		Set	1				
14.2	Set of DC-DC converter (Each Type)		Set	1				
14.3	Saloon light inverter / choke (Each Type)		Set	1				
14.4	Cab light invertor/ choke (Each Type)		Set	1				

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					FC	LC (INR)	FC	LC (INR)
14.5	Connectors, pins (Male and female), terminal block, pin removal tool and crimping tool (Each Type) (Bidder to specify)		Set	2				
14.6	Set of MCBs all type (Each type)		Set	2				
14.7	Automatic power controller sensor, Dimming Controller (each type)		No.	4				
14.8	Set of housing – Saloon Light, Grab pole light, Flasher light, console light, Cab light and gangway light etc. (Each Type)		Set	1				
14.9.	Head Light (Complete Unit)		Set	2				
14.10.	Tail Light (Complete Unit)		Set	2				
14.11.	Marker Light (Complete Unit)		Set	2				
14.12.	Flasher Light (Complete Unit)		Set	2				
14.13.	Cab Light		No	4				
14.14.	Saloon door state indication lamp internal		No	10				
14.15.	Battery temperature sensor		No	5				
14.16.	Battery Fuse		No	5				
14.17.	Battery Braker		No	2				
14.18.	Battery Voltage Sensor		No	2				
14.19.	Set of Battery Box Diode		Set	2				
14.20.	Safety Key Box		No	2				
14.21.	Diode box assembly		No	1				
14.22.	Mobile/laptop charging power socket		Set	2				
14.23.	Earthing ground switch		Nos	4				
14.24.	Current Transformer		No.	2				
14.25.	Potential Transformer		No.	2				
15	**Wiper System**							
15.1.	Complete Wiper Assembly Set (Including Motor, Switch, Connecting rods, Tank)		Set	4				
15.2.	Wiper motor		No.	6				
15.3.	Wiper Pump		No.	20				
15.4.	Wiper Sélecter switch		No	10				
15.5.	Wiper Tank		Set	2				
15.6.	Wiper operating mechanism (including connecting rod, hardware, crank, water pipe, etc.)		Set	2				
15.7.	Wiper DC-DC convertor (Each Type)		No.	4				
15.8.	Wiper Nozzle (Each Type)		No.	20				
16	**Miscellaneous Items**							
16.1	Set of all hardware – mounting, bolts, washers etc. for converter / inverter		Set	2				
16.2	Set of all hardware – mounting, bolts, washers etc. for auxiliary ~~converter~~ power supply		Set	2				

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					FC	LC (INR)	FC	LC (INR)
16.3	Set of all hardware – mounting, bolts, washers, pads, etc. for pneumatic compressor		Set	2				
16.4	Set of all hardware – mounting, bolts, washers etc. for transformer		Set	2				
16.5	Set of all hardware – mounting, bolts, washers etc. for Air reservoirs		Set	2				
16.6	Set of all hardware – mounting, bolts, washers etc. for valve boxes		Set	2				
16.7	Set of all hardware – mounting, bolts, washers etc. for Door		Set	2				
16.8	Set of all hardware – mounting, bolts, washers etc. for Air conditioning unit		Set	4				
16.9	Set of all hardware – mounting, bolts, washers etc. for Traction Motor		Set	4				
16.10	Set of all connectors with pins of Make A, B, ... (Bidder to specify)		Set	1				
16.11	Set of all relays of Make A, B, ... (Bidder to specify)		Set	1				
16.12	Set of all push buttons of Make A, B, ... (Bidder to specify)		Set	1				
16.13	Set of all contactors of Make A, B, ... (Bidder to specify)		Set	1				
16.14	Set of all MCBs of Make A, B, ... (Bidder to specify)		Set	1				
16.15	Set of all indicators of Make A, B, ... (Bidder to specify)		Set	1				
16.16	Set of all fuses of Make A, B, ... (Bidder to specify)		Set	1				
16.17	Set of all type of Terminal blocks (Bidder to specify)		Set	1				
16.18	Set of All type of Diodes used in VCC (Bidder to specify)		Set	1				
16.19	Set of all type of resistors used in VCC (Bidder to specify)		Set	1				
16.20	Set of glasses of window (Each Type)		Set	3				
16.21	Set of glasses of door (cab, saloon and emergency)		Set	1				
16.22	Windshield glass		Set	10				
16.23	Draught screen including Glass & Fitting		Set	1				
16.24	Set of selector switches (Each Type) (Bidder to specify)		Set	2				
16.25	Set of Cable Glands (Each Type) (Bidder to specify)		Set	1				
16.26	Set of Connectors (Each Type) (Bidder to specify)		Set	1				
16.27	Set of Connector crimping pins(male and female), pin removal tool		Set	1				
16.28	Set of all Push Button cover (Each Type) (Bidder to specify)		Set	2				
16.29	All type of car to car inter connections jumper câbles,		Set	2				
16.30	All type of car to car inter connections jumper cables pins, crimping tools and pin removal tools .		Set	1				
16.31	Pneumatic Test fitting adoptor for guage connection (each type)		Nos	8				
16.32	TO seats and assistant TO seats with complete mechanism in cab (Each Type)		Set	2				
16.33	TO seat footrest complete assembly		Set	2				
16.34	Sun Blind complete assembly		Set	2				
16.35	TO seat footrest spring and hardware (Each Type)		No.	10				
16.36	Sun blind assembly supporting components (Each Type)		No.	10				
16.37	TO seat different parts and hardwares (Each Type)		Set	1				

SN	Description	Part No.	Unit*	Qty	Unit Cost		Total Cost	
					FC	LC (INR)	FC	LC (INR)
16.38	Sqaure key lock (Each Type)		No.	20				
16.39	Sqaure Keys (Each Type)		No.	40				
16.40	All type of hardwares used in primary spring along with tools (Each type)		No.	2				
16.41	Gangway components (Each type) (Bidder to specify)		Set	1				
16.42	All type of buzzer (Bidder to specify)		Set	2				
16.43	Center Pivot Bolt-washer		No.	12				
16.44	Fire Extinguisher (Cab and saloon)		Set	2				
16.45	230v power socket (Each Type)		Set	2				
16.46	First Aid box		No.	8				
16.47	Grab Handle		Set	2				
16.48	All push Button Cover		Set	4				

**Contractor to submit the list for Engineer's review and Engineer may add/delete/modify the list as per requirement.
*Wherever the Unit is mentioned as 'Set', it means '3-Car Train Set' and wherever it is mentioned as 'No', it means 'Numbers'.

Annexure GA3
Special Tools, Jig, Fixtures, Gauges, Testing and Diagnostic Equipment
(*Wherever the Unit is mentioned as 'Set', it means '3-Car Train Set' and wherever it is mentioned as 'No. / Nos.', it means 'Numbers')

Mandatory special tools, jigs, fixtures, gauges, testing and diagnostic equipment

SN	System	Equipment	Part No.	Unit	Qty	Unit Cost		Total Cost	
						FC	LC (INR)	FC	LC (INR)
1.	Pantograph	Pantograph test bench equipped with contact pressure measuring system, raising & lowering times, alignment fixtures etc.		No.	2				
2.		Movable Trolley/stand with roller		No.	8				
3.		Panto lifting jig along with slings with hardware		No.	2				
4.		Consolidate Functional test system capable for testing all LRUs and LLRUs at high voltage levels which includes but not limited to HV controllers, inverters, power distribution units etc.,		No.	1				
5.	VCB	VCB test bench with handling trolley including jigs and fixtures		Set	2				
6.		VCB stand/trolley with roller		No.	4				
7.	Main transformer	BDV Kit		No.	1				
8.	Converter Inverter	Mounting / dismounting trolley & tools		No.	2				

SN	System	Equipment	Part No.	Unit	Qty	Unit Cost		Total Cost	
						FC	LC (INR)	FC	LC (INR)
9.	Traction Motor	Test bench complete with hardware / software. Assembly / disassembly tools		No.	2				
10.		Dust Blowing Kit `		No.	2				
11.		Fiber scope camera for Rotor hole inspection		No.	2				
12.		Traction Motor stand		No.	2				
13.	Auxiliary power supply with hardware / software	Portable test unit & repair jigs with tools and Test Bench for post repair commissioning.		No.	2				
14.		Mounting / dismounting trolley & tools		No.	2				
15.	Battery	Capacity measuring instrument of battery bank, charging and discharging equipment		No.	2				
16.		Insulated torque wrench		No.	2				
17.		Automatic Battery water topping up machine with pressure measuring device		No.	2				
18.		Battery Cell stand with roller		No.	2				
19.		Tool to measure the electrolyte level		No.	2				
20.		Battery cell lifting tool for removal		No.	2				
21.	Main Compressor, air supply unit, pneumatic & brakes	Compressor test bench & overhauling tools including air quality test facilities of complete system.		No.	2				
22.		Automatic Pneumatic valve test bench complete with brake electronics, Calibration		No.	2				
23.		Brake Calliper test bench		No.	2				
24.		Main compressor stand		No.	2				
25.		Main compressor trolley for mounting/dismounting in Inspection bay and repair bay. (Each)		No.	2				
26.		Pressure Regulator (0-10 Bar)		No	4				
27.	Axle	Ultrasonic testing machine for UST of axles, go gauge / no go gauge for end screw		No.	1				
28.	PA/PIS & CCTV	Portable test unit, software for PIS/CCTV changes (application level)		No.	2				
29.	Air Conditioning equipment	Portable test unit and leakage detectors		No.	2				
30.		Lifting jig / tackles along with slings and hardwares		No.	2				
31.		Oil less refrigerated changing / reclaiming unit including vacuum pump, suction equipment, leakage detector etc.		No.	2				
32.		Pressure measuring gauges		No.	2				
33.		Equipment for duct cleaning		No.	2				
34.		Air conditioning unit stand		No.	2				
35.		Air condition unit handling trolley with roller		No.	2				

SN	System	Equipment	Part No.	Unit	Qty	Unit Cost		Total Cost	
						FC	LC (INR)	FC	LC (INR)
36.		Air conditioning functional test bench (Automated BTE) with complete software and hardware solutions.		No.	1				
37.	Door	Portable test unit including drive control unit		No.	2				
38.		Alignment tool		No.	2				
39.		Special tools, pins, connectors, crimping tool, pin removal tool, Vaccum cup tool for door maintenance (Bidder to specify the list)		No.	2				
40.		Door leaf stand vertical with rollers		No.	2				
41.		Door functional test bench (Automated BTE) for electromechanical door operator and associated equipment.		No.	1				
42.	Coupler	Profile/ Wear/alignment checking gauge		No.	2				
43.		Coupler Stand		No.	2				
44.		Assembly / disassembly tools / jig		No.	1				
45.	Bogie	Battery operated tools for Assembly / Disassembly of Bogie suspensions, WFL, bearings, Components including rubber items used in transmission & suspension, connecting rods, gear case with transmission arrangement mounted on wheel set etc.		No.	2				
46.		Jig along with slings for lifting bogie (Each Type)		No.	2				
47.	Wheel	Laser Profile checking gauge with memory and card to card compatibility, Measurement gauges for wheel, back to back, brake disc thickness, diameter of wheel, flange width, flange height, etc.		No.	2				
48.	Secondary suspension	Suspension lifting jig along with slings movable		No.	1				
49.		Secondary Suspension stand		No.	2				
50.	Gangway	Gangway lifting jig along with slings		No.	2				
51.		Gangway handling trolley with roller		No.	2				
52.	Master Controller	Assembly / disassembly tools with calibration and test facilities		No.	1				
53.	Programming & Diagnostic tools	Laptop, Interface boards / accessories / software and any other item required for meeting specification requirements, uploading/down loading & trouble shooting of propulsion, Door, HVAC, Brake, PAPIS, CI, APS, WFL, Event recorder, TCMS, etc.		No.	2				
54.		Door software having facilities to edit the parameters along with laptop compatible with the available operating software and required		No.	2				

SN	System	Equipment	Part No.	Unit	Qty	Unit Cost		Total Cost	
						FC	LC (INR)	FC	LC (INR)
		hardwares/ cables/ accessories for investigation purpose							
55.		PAPIS software having facilities to edit the parameters along with laptop compatible with the available operating software and required hardwares/ cables/ accessories for investigation purpose		No.	2				
56.		HVAC software having facilities to edit the parameters along with laptop compatible with the available operating software and required hardwares/ cables/ accessories for investigation purpose		No.	2				
57.		Brake software along with laptop compatible with the available operating software and required hardwares/ cables/ accessories for investigation purpose		No.	2				
58.		CI software along with laptop compatible with the available operating software and required hardwares/ cables/ accessories for investigation purpose		No.	2				
59.		APS software along with laptop compatible with the available operating software and required hardwares/ cables/ accessories for investigation purpose		No.	2				
60.		TCMS software along with laptop compatible with the available operating software and required hardwares/ cables/ accessories for investigation purpose		No.	2				
61.		Event Recorder software along with laptop compatible with the available operating software and required hardwares/ cables/ accessories for investigation purpose		No.	2				
62.		WFL software having facilities to edit the parameters along with laptop compatible with the available operating software and required hardwares/ cables/ accessories for investigation purpose		No.	2				
63.	TCMS	Ethernet Cable Analyzer		No	2				
		"Test programs software compatible to ATS500 Functional Test system to be developed for		No	10				

SN	System	Equipment	Part No.	Unit	Qty	Unit Cost		Total Cost	
						FC	LC (INR)	FC	LC (INR)
		minimum 10 different PCBs (LRUs/LLRUs) at car body levels, which includes but not limited to controllers, information systems, network devices and signage etc."							
64.	Brake system	Hygrometer (for measuring relative humidity)		No	2				
65.	Vehicle control circuit	Pin Crimping tools for All type connectors Pins (Male and Female) used in VCC (Each Type) (Bidder to specify)		No	2				
66.	Vehicle control circuit	Pin Removal tools for All type connectors Pins used in VCC (Each Type) (Bidder to specify)		No	2				
67.	Miscellaneous	All special Sealant Gun required for glass replacement		No	2				
68.		Sound level meter digital		No	2				
69.		Air flow meter digital		No	2				
70.		Lux level meter digital		No	2				
71.		Laser temperature thermometer		No	2				
72.		Laser distance measuring device		No	2				
73.		Digital depth gauge		No	2				
74.		Pressure Gauge for Pneumatic testing along with QRC		No	2				
75.		Variable DC power supply 110-0 volt		No	2				
76.		Megger 500V - 5KV		No	2				
77.		Vibration meter		No	2				
78.		Bearing puller for HVAC motors		No	2				
79.	Supply, Installation, Testing and Commissioning of of Test & Repair facilities for all type of Printed Circuit Board.	i. Pro rack 128-128/4 system – 128 digital channels, Digital and Analog testing, Programmable power supply, Boundary scan software, Test Sequencer, IDTE Software, External Controller, Oscilloscope 2 channel 200Mhz, TPS and Test fixture set for PCBs. ii. Handheld digital Multimeter- 750 v dc, 1000 V ac, 600 Ohm to 60 MOhm, 600 Micro Amp to 20 A, 60 Hz to 10 Mhz iii. 3 D engineering Microscope- 2D/3D angel lens with 360 degree rotation 1:7 Zoom ratio, lens assembly, VGA/HDMI Monitor, camera and OSD. iv. EPROM Programmer with two type adapter- Vcc from 1.2 V to 5 V, file support up to 256 GB with OV and OC protection. v. EPROM Programmer with two type adapter- Vcc from 1.2 V to 5 V, file support up to 256		Set	1				

SN	System	Equipment	Part No.	Unit	Qty	Unit Cost		Total Cost	
						FC	LC (INR)	FC	LC (INR)
		GB with OV and OC protection. vi. LCR meter tweezer type- with test frequency 100 Hz, 120 Hz, 1 Khz, 10 Khz, 100 khz, 100 ohms impedence, Test voltage 0.2 Vrms, 0.5 Vrms, 100kHz, Resistance- 20 mili ohm to 10 Mega ohm. vii. Complete work station model viii. D-soldering station through hole component. ix. 1 KVA ups with 30 Min back up x. ESD safe wrist wrap- Anti static xi. Shoe cover dispenser xii. ESD checker and neutralizer- +/- 1999 V, +/- 10% accuracy. xiii. ESD safe Trolley xiv. ESD safe chair with IEC 61340-5-1 or equivalent compactible. xv. ESD Rack- 1200 L X 600 W X 1800 H xvi. ESD work station- W- 1500 X D 600 X H 1920 approx. xvii. ESD knee length coats- Polyster + carbon filament, with surface resistivity 105-107 Ohm/Sq. xviii. ESD PVC slip on made of polyurethane with person to ground resistance less than 36 Mega ohms. xix. Antistatic cloth gloves Coating solvent base, Foamed polyutherene, Nylon fabric. xx. ESD compatible brush with handle- 130 mm dimension with bristle 15 h X 90 I X 20 W mm. xxi. 2 channel Mixed signal Oscilloscope – 300 MHz, 2 GSa/s. xxii. 60 MHz Dual Channel Function generator. xxiii. HV DC regulated Power Supply 230 V-150 v Dc, 0 to 30 A. xxiv. LCR Meter- 20Hz-300kHz xxv. DC electronics Load- 600 W, 120 v, 120 A. xxvi. Conformal Coating Removal Machine Model Turbo Max CCR Part No. CCR-Max-CE							

**Contractor to submit the list for Engineer's review and Engineer may add/delete/modify the list as per requirement.

Attachment-2
(Corrigendum-6)

COST CENTRE NO. I: Comprehensive Annual Maintenance Contract

Scope of Cost Centre:

This Cost Centre comprises of all those obligations and activities connected with the Comprehensive annual maintenance of Rolling Stock, Supply and Maintenance of DLP spares, overhauling spares, consumables including supervision of maintenance and provision of maintenance manpower in all the Depot for Rolling stock during CAMC as specified.

1. Payment of CAMC will be made quarterly. The tenderer shall quote the Lump Sum Annual Maintenance Cost (in four quarters) for the described scope of works as per ERGS Chapter 16 during the CAMC as per the attached milestone schedule for Cost Centre I

2. For all milestones under this Cost Centre I, the tenderer shall note that the maintenance cost quoted for all four quarters of a particular year shall be the same for each quarter i.e. one-fourth of the Annual Lump Sum Maintenance Cost for that particular year.

3. The tenderer shall note that the quoted cost under this Cost Centre shall cover the overall maintenance requirement as per the described scope of work as per ERGS Chapter 16.

4. The costs indicated in this Cost Centre for all the Milestones of Cost Centre I shall be the ACTUAL COSTS and not the apportioned cost.

5. Important notes are mentioned below the Cost Center table for compliance by the bidder for this cost center

6. Cost for spares mentioned in Cost Center G will be borne by Maha Metro as detailed in Part -2 Employers Requirement-General Specification-Chapter-16. Unit exchange spare, Mandatory spares and Special Tools, Jigs, Fixtures, Gauges, Testing and Diagnostic Equipment (G1,G2 & G3) shall be made available by Maha Metro and handed over to Contractor for use during CAMC against BG of Equivalent amount in respective currency. All these spares will be maintained by the contractor during CAMC period and shall be returned in good condition to Maha Metro after competition of CAMC period.

Attachment-3
Corrigendum-6

BID TOTAL

[To be Completed and Submitted by the Bidder as part of 'Schedules' under Section IV: Bidding Forms]

The Lump Sum Price of this Contract for 16/ train sets: (16 DMC+16 TC+16 DMC) is:

Rupees_____ _____ (in words) and
(In Foreign Currency(ies)): _____ (in words)

Apportionment of Lump Sum Price among Cost Centres

Cost Centre	Cost Centre* Description	Total Apportioned Amounts of Cost Centre Items	
		Foreign Currency [Col A]	Indian Rupees [Col B]
A	Preliminaries and General Requirements for Rolling Stock and Design of Rolling Stock		
B	Offshore Manufacture, Factory Testing, Inspection, Marine Insurance and Shipping to Port in India and transit Insurance from Port in India to Depot Site.		
C	Indigenous Manufacture, Factory Testing, Inspection and Dispatch, transit insurance from factory to Depot Site.		
D	Inland Transportation of offshore manufactured trains within India including handling charges at port in India, depot or at any other place, and all other incidental costs, receipt of cars in depot, formation of trains, satisfactory completion of tests and running of train in the depot.		
E	Inland Transportation of Indigenous manufactured trains within India including handling charges at depot or at any other place, and all other incidental costs, receipt of cars in depot, formation of trains, satisfactory completion of tests and running of train in the depot..		
F	Integrated Testing and Commissioning of Trains on the Section, Service trials and final commissioning.		
G	Unit Exchange Spares, Mandatory Spares, Special tools jig fixture, gauges testing and diagnostic equipment.		
H	Training, Operation and Maintenance Manuals		
I	CAMC (15 Years)		
	BID TOTAL (A to I)		

* Bidders to show Cost Centres for columns A and B where appropriate. In case of more than one foreign currency, split Column A in two sub-Columns A1 and A2.

Notes:

1. Refer Para B.5 for price apportionment at *Annexure IV A. Pricing Document*
2. It is certified that 'Annexure-1' annexed in Technical Package is a "TRUE COPY" (with prices blanked off) of the said 'Annexure-1' in the Financial Package.

SIGNATURE OF BIDDER

CHAPTER 16.

16.0 COMPREHENSIVE ANNUAL MAINTENANCE CONTRACT (CAMC)

16.1. MAINTENANCE REQUIREMENTS OF ROLLING STOCK (RS)

16.1.1. The obligations of the Contractor in respect of Maintenance Requirements of Trainsets shall include repair and rectification of the defects and deficiencies in Trainsets.The Contractor shall at all times throughout the Comprehensive Annual Maintenance Contract (CAMC) period, maintain all assets (herein referred to as CAMC Assets) falling under the categories of Rolling Stock, Spares and Tools in accordance with the provisions of the Contract, Applicable Laws, Applicable Permits and Good Industry Practices.

16.1.2. Asset categories "Spares" and “Tools” shall include all types of Spares and Consumables, Special Tools, Jigs, Fixtures, Gauges, Testing and Diagnostic Equipment, Mechanical & Electrical Measuring and Testing Equipment, Mechanical, Pneumatic and Electric Tools, test benches and any other items required for all types of maintenance activities carried out on Rolling Stock . During the Maintenance Period (CAMC), the Contractor shall, at its own cost and expense, maintain sufficient stock of Spares and Consumables(other than spares made available by Maha Metro as listed in GA1,GA2 & GA3. The Contractor shall perform and conform to the full scope of Maintenance Requirements for CAMC Assets; including the cleaning of Rolling Stock.

The Contractor shall repair or rectify any defect or deficiency set forth in clause Maha Metro of this Chapter. The Contractor shall, during the CAMC, be responsible for timely supply and installation of all Spares and Consumables, parts, assemblies, sub-assemblies other than spares made available by Maha Metro as listed in GA1, GA2 & GA3. at its own cost and expense; provided, however, that if such supply and installation have arisen on account of negligence, solely and directly attributable to Maha Metro, or on account of occurrence of a Force Majeure event, the obligations hereunder shall form part of Unscheduled Maintenance and the cost thereof shall be borne in accordance with the provisions of contract.

16.1.3. Except for the specific provisions defined in Clause 16.7, there shall be no other payments owed to the Contractor for undertaking of CAMC Works.

16.1.4. Assets including spares provided by Maha Metro or Procured by Contractor having an OEM rated design-life (As defined in contract) that will lapse during the course of the CAMC period shall be replaced by the Contractor (on or before expiry) as part of the obligations of this CAMC Contract at no additional cost to MAHA METRO.

16.1.5. In the event that MAHA METRO chooses to exercise the Option Quantity Variation the CAMC requirements and pricing structures applicable for the Base order quantity shall also be applicable to the Option order quantity. All the conditions in this chapter shall also apply to assets procured under that Option.

16.1.6. Designated Depot(s) refers to (i) Mihan & Hingna, which is the principal site for all heavy maintenance AND (ii) further Satellite Depot(s) at terminal station (mostly for inspection, Preventive Maintenance, cleaning activities and Corrective Maintenance as per requirements).

16.1.7. The Contractor to deploy their maintenance operations at further Satellite Depot facilities. The Contractor shall comply with the deployment request without any cost implications to MAHA METRO.

16.1.8. Throughout the CAMC Period, the Contractor shall remain custodian of all the deliverables for Rolling Stock . This shall include Operating Procedures and Manuals, Operating and Maintenance Manuals, Maintenance Work Instructions, Training Documentation, Equipment Illustrated Parts Catalogue and Software System Manuals.

16.1.9. The Contractor shall be responsible for the accuracy of the documents referred to in Clause 16.1.10 and shall apply all necessary updates when required. Document control and storage shall be facilitated by the Asset Maintenance Management System (AMMS) or other Maintenance Management System available with Maha Metro

16.1.10. The Contractor's Engineering Change and Configuration Management processes that are established for the DLP shall remain in place throughout the CAMC Period as well. The processes shall identify any impact to maintenance procedures or documentation.

16.1.11. Before start of CAMC Works, the Contractor shall prepare and submit detailed CAMC procedures for approval by MAHA METRO/Engineer, 6 months before starting of CAMC period.

16.2. REPAIR / RECTIFICATION OF DEFECTS AND DEFICIENCIES

16.2.1. The scope of the CAMC works is "comprehensive" in nature. This means the Contractor is required to undertake all Scheduled and Unscheduled maintenance remedial Works necessary to repair and fully rectify defects and deficiencies arising on all CAMC Assets as defined by the CAMC scope.

16.2.2. In the event that defects and/or damage cannot be expeditiously remedied at the maintenance depot facility; MAHA METRO consent shall be sought for the Contractor to remove the asset(s) from the maintenance depot for the purposes of undertaking such repairs.

16.2.3. The Contractor accepts that granting of consent to remove assets from the depot may be contingent on the Contractor increasing the Performance Security amount (equal to the full replacement value) or otherwise providing an alternative form of security as agreed by MAHA METRO.

16.2.4. **OTHER DEFECTS AND DEFICIENCIES:-** For any defect or deficiency not specified in this document, MAHA METRO may, in conformity with Good Industry Practice, specify the permissible limit of tolerance with reference to applicable Specifications and Standards. Any non-conformance beyond the permissible limit shall be repaired or rectified by the Contractor in accordance with Good Industry Practice. All equipment, supplies, as well as components, parts and systems forming part of a complete Train including the Spares and Consumables as provided by the Contractor shall be new and of utility grade quality and in full conformity with the Specifications and Standards, Designs and Drawings, Applicable Permits, Applicable Laws and the other requirements of the Contract, of suitable quality and fit for the purpose for which they are intended and be free from defects, deficiencies and defective workmanship.

16.3. Not Used

16.4 EMERGENCY REPAIRS/RESTORATION

16.4.1 In the event that any such defect, deficiency, or deterioration of an asset(s) poses a safety hazard, or risk of damage to property, the Contractor shall promptly take all reasonable measures to eliminate the risk.

16.4.2 Where total risk elimination is not reasonably practicable, the Contractor shall undertake a quantified risk assessment to identify the effectiveness of proposed risk mitigation measures and ensure that their effectiveness is to the extent that the risk is minimised and/or contained to an acceptable level.

16.5 SPARES AND CONSUMABLES

16.5.1 Throughout the CAMC period, the Contractor shall always maintain sufficient stock of all Spares and Consumables to the full extent necessary to fulfil all the obligations of the CAMC scope and in compliance with the inventory requirements defined.

16.5.2 Spares and Consumables (herein referred to only as Spares) shall include but shall not be limited to the following subcategories as applicable to Rolling Stock assets,

a) Unit exchange spares
b) Mandatory spares
c) Special Tools, Jig, Fixtures, Gauges, Testing and Diagnostic Equipment
d) Recommended spares;
e) Consumable spares;
f) Intermediate & Periodic Overhauling Spares;
g) DLP Spares and any other items required for maintenance (identified by the Contractor / MAHA METRO / OEM).

Note:

i. Spares at a, b & c will be provided by Maha Metro and spares at d, e, f &g will be provided by the contractor.

ii. The contractor will maintain separate Spare for DLP & CAMC. Contractor to ensure that spares of CAMC shall not used for DLP related works. The contractor shall provide the complete list of spares as per above for final approval of Maha-Metro / Engineer separately for DLP and CAMC. .Any spare item and its quantity, if required based on OEM recommendations or otherwise, but not included in the above list shall be deemed to be included and shall be supplied as per the provision of the contract without any extra financial implication to the employer.

iii. UES, Mandatory spares & special tools (as per cost centre G of Milestone G1, G2,G3 respectively) will be handed over to the contractor for use during CAMC against Bank Guarantee of equivalent value of respective currency. These spares will be returned back in good condition to maha metro after compleition of CAMC . The BG will be returned within a period of one month after acceptance of the returned spares by Maha Metro.

iv. Requirement of UES, Mandatory Spares and Special Tools, Jig, Fixtures, Gauges, Testing and Diagnostic Equipment over and above what is provided by Maha Metro as per list in GA1, GA2 & GA3 will be responsibility of the contractor at their own cost.

16.5.3 The cost of all Spares (regardless of category and excluding spares provided by Maha Metro) is deemed to have been included in the CAMC price centres of the quoted Contract Price.

Nevertheless, the Contractor shall also provide a Price List for the complete range of spares to allow the parties to administrate any chargeable costs which may arise from the provisions set forth in Clause 16.7.

16.5.4 The Price List shall remain applicable for the full duration of the CAMC Period;in accordance with price adjustment provisions defined in cost center G. / Part-1 **Annexure IV-A: Pricing Document** -A.5 Price variation The Contractor shall also ensure that all items remain available for purchase by MAHA METRO after the CAMC Period.

16.5.5 The spare list (other than mentioned in list GA1, GA2 & GA3) with quantity along with its Price List shall be finalized during design stage in consultation with MAHA METRO and shall form part of the CAMC Spares documents for Rolling Stock respectively.

16.5.6 The Contractor may propose changes and amendments to the CAMC documents once per year during CAMC period to adjust for changes in consumption rates as well as predicted failure rates. Acceptance of any changes proposed by the Contractor shall be at the sole discretion of MAHA METRO.

16.5.7 The Contractor shall deliver, store & Maintain the Spares at the Designated Depot(s) and shall perform all necessary preventive maintenance to preserve their condition and integrity. The Spares shall be audited by MAHA METRO on a quarterly basis until completion of the CAMC period.

16.5.8 At least three (3) months prior to the end (or early termination) of the CAMC period the Contractor shall replenish inventory levels to the quantities defined in the approved lists and handover to employer. The Contractor shall also ensure that the entire inventory is in full working / serviceable condition before handing all the Spares assets back to MAHA METRO.

16.5.9 Hand back of the inventory of Spares of CAMC & DLP procured by contractor during CAMC (as per approved list) to Maha Metro shall be at no additional cost to MAHA METRO and is deemed to have been included in the CAMC price center of the Contract price. Apart from this spares provided by Maha Metro will be returned back to Maha Metro in good condition as per note (ii) of clause 16.5.2 above.

16.5.10 The Contractor shall (during detailed design stage) provide a comprehensive breakdown of data and information for the full inventory of Spares. This shall include, but not limited to:

a) Names, addresses, telephone numbers and other particulars of OEM and their local representatives;
b) Models and part numbers;
c) Full description of spares including a note whether it is sealed unit or an assembly or sub-assembly, which can be broken down into component parts;
d) Quantity installed in the system;
e) Overall dimensions & weight including minimum packing (if any) for shelf space purposes;
f) OEM rated Design life and shelf life;
g) Interchangeability or otherwise with similar parts;
h) Normal manufacturing and shipment lead times;
i) Purchase Technical Specification with relevant drawings
j) Any other points as advised during design stage.

16.5.11 The requirement defined in Clause 16.5.9 shall prevail throughout the CAMC period, for any Spares (including child parts and sub-assemblies) which deviated from the original configuration (E.g. due to substitution cause by remedy of obsolescence) or any other reason.

16.5.12 The Contractor shall ensure that Spares are replaced at intervals that are set in accordance with the OEM's recommendations for time, distance, wear limits etc as the case may be. The Contractor shall ensure the maintenance regime has an optimized schedule, such that inspections are frequent enough to avoid components wearing beyond serviceable limits during the normal course of operation of CAMC Assets.

16.5.13 The CAMC Spares documents for Rolling Stock shall include an "Obsolescence Management Plan" chapter, which shall set out the Contractor's philosophy for how it will undertake surveillance to identify emerging obsolescence risks as early as possible. The minimum target which should always be achievable is 12 months' prior to the Spares, Parts, sub-assemblies or components being rendered as unavailable for purchase.

16.5.14 The Contractor is responsible for all remedial action / upgradation required to remedy obsolescence throughout the full duration of the CAMC period and minimum 3 years after CAMC period. Obsolescence remedy shall follow the Contractor's change control process, which shall require MAHA METRO's prior authorisation for the remedial action to proceed.

16.5.15 If a proposed obsolescence remedy involves substitution of any Spares, Parts, sub-assemblies or components for an alternative; then the Contractor shall so far as is reasonably practicable ensure that the proposed substitute is of the same "form, fit and function" as its predecessor and is of equal or better quality and grade material etc.

16.5.16 Where it is the case the Contractor is unable to maintain the same "form, fit and function" and the need arises for a configuration change of any interfacing CAMC Asset, then the Contractor shall be entirely responsible to design a modification and propose it for approval by MAHA METRO through the change control process. The Contractor shall undertake this obligation as part of the CAMC Scope at no additional cost to MAHA METRO. This obligation is limited to CAMC Assets only and does not include other railway assets / integrated systems.

16.5.17 **Inventory Management:**

a) The inventory of Spares shall be according to target levels of stock holding quantity. The target level shall be proposed by the Contractor as part of the CAMC Spares documents which shall include a breakdown of inventory allocation for each of the Designated Depot(s).

b) The Contractor's proposal for target inventory levels shall also include Spares needed to perform any unscheduled maintenance tasks that are reasonably foreseeable.

c) The Contractor's proposal for target inventory levels shall be supported by data calculations that are undertaken using rail industry recognized "Spares optimization Tool" proposed by the Contractor but subject to MAHA METRO approval.

d) The Contractor shall demonstrate that the proposed quantities of Spares shall be sufficient to ensure that the Contractor is always able to perform timely repair and maintenance of the assets in conformity with the Reliability, Availability and Maintainability targets.

e) The Contractor shall continuously replenish/replace Spares and Consumables in order to sustain the target inventory levels that were proposed in the CAMC Spares documents have subsequently been agreed by MAHA METRO.

f) The physical inventory shall be held in the Contractor's own custody at the Designated Depot(s) under the Contractor's sole supervision and responsibility.

g) MAHA METRO will provide a provision of space for the custody stores at the Designated Depot(s) for the Contractor's use during the CAMC Period. The Contractor shall be responsible for necessary furniture and equip the stores at the Designated Depot(s) at no additional cost.

h) The Contractor shall develop and implement an "Inventory Management System" according to Good Industry Practice inline with Maha-Metro asset / store management system. The Contractor shall provide all information for each spare part, special tool, and special equipment such as identification, technical specification and storage / handling requirements.

i) The "Inventory Management System" module within the "Asset Maintenance Management System" (AMMS) or any other management system followed by Maha-Metro shall be interfaced with the "Spares optimization Tool" in order to enhance the continuous assessment of consumption trends needed to review the target inventory levels. Both systems shall be transparent and accessible to MAHA METRO.

j) Contractor shall maintain a minimum of three (03) month consumables spares for entire fleet throughout the CAMC period.

16.5.18 The Contractor shall also be responsible for the initial provisioning, maintenance and replenishment of any tools and/or tackles required its workforce to undertake any part of the works during the CAMC Period.

16.6 SCHEDULED MAINTENANCE

16.6.1 Scheduled Maintenance refers to all forms of Preventive Maintenance (PM) including inspection overhaul, cleaning etc.

16.6.2 Throughout the CAMC Period, the Contractor shall be responsible to ensure that the full suite of documents and procedures that are relevant to matters of Scheduled Maintenance are frequently reviewed and updated to optimize and improve the methodologies for planning and execution of the Works.

16.6.3 The Contractor shall ensure that the Scheduled Maintenance Works attain levels of Reliability and Availability for all CAMC Assets; without compromise to the safety and reliability.

16.6.4 The Contractor shall perform Scheduled Maintenance tasks at the periodic intervals defined by Maintenance Schedule and in accordance with the Maintenance Work Instructions and other relevant procedures .

16.6.5 Maintenance Intervals (as defined in the Maintenance Schedule) shall begin counting distance and time from the date of train induction for revenue for each respect CAMC Asset.

16.6.6 Throughout the CAMC Period, the Contractor shall monitor the rate of human error / maintainer error events and provide a KPI within the Monthly Report .

16.6.7 Maintenance errors shall be properly investigated by the Contractor and a report shall be submitted to MAHA METRO; including the course of remedial action(s) taken. (E.g. staff re-training, staff briefing or update to Maintenance Work Instructions etc.)

16.6.8 Planning of Scheduled Maintenance works shall be compiled by the Contractor's personnel located at the Designated Depot(s). They shall work in consultation with PPIO, to prepare a schedule of Rolling Stock to be recalled for maintenance in accordance with the requirements of CAMC . PPIO / Depot in-charge shall certify that train is FIT for Revenue service after every maintenance schedule. Train will be considered unfit in absence of this certificate. Not carrying out maintenance schedule in time will result in declaring the train unfit for service & may attract penalty.

16.6.9 The Contractor's staff shall consult PPIO / depot in-charge on a daily basis to seek opportunities to minimize downtime hours by resequencing Preventive Maintenance to better synergize with trains that will be recalled for Unscheduled Maintenance.

16.6.10 The Contractor shall also be obliged to synergize their planning of Scheduled Maintenance for CAMC Assets, with other Assets such as mainline or depot infrastructure. For avoidance of doubt, it is clarified that the scheduling of Scheduled Maintenance activities shall not impede MAHA METRO (or its representatives) from undertaking the scheduled maintenance of any other assets and/or infrastructure which comprise the Depot Premises and Line.

16.6.11 The Contractor proposes a cleaning regime to ensure the cleanliness of both the interior and exterior of the trains. It shall be subject to MAHA METRO review and acceptance.

16.6.12 Light cleaning of trains shall be planned for all trains inducted into revenue service on a daily basis; regardless of stabling location. The Contractor shall mobilise staff accordingly.

16.6.13 Heavy cleaning of trains interior and exterior shall be undertaken at a suitable interval as proposed by the Contractor but shall be subject to the approval of MAHA METRO.

16.6.14 The Contractor is required to perform the following services in rolling stock metro cars (but not limited to),

a) Internal Cleaning

i. Interior Glass Cleaning (including Door glass, draught glasses and Window glass)
ii. All FRP Cleaning (Ceilings, Panels and Cubicles)
iii. Floor Cleaning

iv. Air Conditioner - Louvers assembly Cleaning
v. Passenger Stainless Steel Doors Cleaning
vi. Gang-way Cleaning
vii. 1st Class Foam Seat Cleaning
viii. Driver Cab Cleaning
ix. Saloon Light Cleaning
x. Maps Cleaning
xi. Door Thresh hold Plate Cleaning
xii. Emergency Ramp Cleaning
xiii. Passenger Seat Cleaning
xiv. Cab - Adjustable Air condition Louvers
xv. Hand strip
xvi. Window glasses and Rubber Beading/gasket
xvii. Cab access door and Partition door
xviii. Vertical and Horizontal handrail

b) Front and rear cab masks, windshield glass and External Glass Wiping

i. Both Cab mask wiping
ii. Both Cab mask Windshield wiping
iii. External Saloon Glass wiping
iv. External Door Glass Wiping

c) Front and rear cab masks and windshield glass cleaning

I. Both Cab mask Cleaning
II. Both Cab mask Windshield Cleaning

d) Internal intensive cleaning

I. Interior Glass Cleaning (including Door glass, draught glasses and Window glass).
II. All FRP Cleaning (Ceilings, Panels and Cubicles)
III. Floor heavy Cleaning/ mechanized cleaning
IV. Air Conditioner - Louvers assembly Cleaning
V. Passenger Stainless Steel Doors Cleaning
VI. Gang-way Cleaning
VII. 1st Class Foam Seat Cleaning
VIII. Driver Cab Cleaning
IX. Saloon Light Cleaning
X. Maps Cleaning
XI. Door Threshold Plate Cleaning
XII. Emergency Ramp Cleaning
XIII. Passenger Seat Cleaning
XIV. Passenger Seat frames Cleaning
XV. Hand strip
XVI. Window glasses and Rubber Beading/gasket
XVII. Cab access door and Partition door
XVIII. Vertical and Horizontal handrail
XIX. Driver desk and FRP
XX. Cab - Adjustable Air condition Louvers

XXI. All Cubical cleaning
XXII. Heavy Cleaning of Door Threshold
XXIII. Gangway Bridge plate opened and cleaned
XXIV. Complete stain mark removal in the saloon and cab floors
XXV. Wax polishing for every 6 months to be ensured

e) External Intensive cleaning

I. Removal of Stains & Roof Cleaning (Including HVAC Panels & Pantograph area)
II. Removal of Stains & car Body Cleaning (including rain gutters)
III. Gangway Rubber Cleaning and Polishing
IV. Front Mask including windshield Cleaning.
V. All Cab Pedestrian Steps Cleaning
VI. Bogie cleaning
VII. Underframe Equipment and panels cleaning
VIII. Exterior Window Glass Cleaning
IX. Doors and windows rubber beading polishing

f) Underframe Cleaning

I. Bogie frame and Parts cleaning
II. Traction convertor, Auxiliary converter, main transformer, and battery boxes and covers
III. Car body and end under frame cleaning
IV. All other under frame covers and parts cleaning.

g) Protective floor coating

I. Intensive Floor cleaning in saloon and Cab
II. Removal of stains in saloon floor and Cab floor
III. Shine coating of Saloon and Drivers cab - 1st coat
IV. Shine coating of Saloon and Drivers cab - 2nd coat

h) Roof cleaning

I. HVAC Cover cleaning
II. Corrugated sheets cleaning
III. Pantograph area mat cleaning

i) Fumigation and Disinfection - Monthly

I. Fumigation and Disinfection Saloon area
II. Fumigation and Disinfection cab area
III. Residual chemicals/agents cleaning

16.6.15 The periodicity of train cleaning services are shown below (the details are indicative and is subject to modification and approval of MAHA METRO)

Type of cleaning service	Periodicity

Internal Cleaning	Daily
Front & rear cab masks, windshield glass and External door and window Glass Wiping	Once in 2days
Front and rear cab masks and windshield glass cleaning	Weekly
Internal intensive Cleaning	Monthly
Fumigation & Disinfection	Monthly
Seat Fabric shampooing for cushion seats	Monthly
External Intensive cleaning	Monthly
Underframe Cleaning	Quarterly
Protective floor coating	Half-Yearly
Roof Cleaning	Half-yearly
Wax cleaning	Half-yearly

16.6.16 **Planning**

a) The Contractor shall prepare and submit a detailed monthly housekeeping plan to MAHA METRO for approval.
b) All cleaning services shall be carried out as per the approved monthly plan.
c) Any cleaning services shall not affect the movement of trains, nor cause any accident to the personnel or affect the normal working.
d) Weekly Pep talk shall be given to all cleaning/housekeeping staff before dispersing them into the work by the housekeeping supervisors, to create awareness on safety procedures to be followed while working.

16.6.17 **Cleaning Methodology**

The Contractor shall submit detailed housekeeping procedures for all surfaces of metro cars for MAHA METRO's approval. The Contractor shall ensure that these details are submitted minimum 2 months before Prototype train arrival to Depot. The proposal shall include details of Chemicals required, Equipment required, Safety precaution & PPE required, Detailed methodology, Consumables required, etc.,

16.6.18 **Consumables and cleaning chemicals:**

a) Environment friendly consumables and chemicals to the extent possible shall be used. It shall be free from harmful chemical reactions, odour and shall not affect the passengers/employees, material, and equipment etc.
b) The consolidated list of consumables and chemicals proposed to be used shall be submitted to MAHA METRO for approval along with the cleaning methodology.

c) The Contractor shall store and maintain at least one month inventory of MAHA METRO approved quantity in store at designated depots during the period of contract. The stock will be audited by the MAHA METRO at least once in 3 months.
d) The contractor shall make necessary arrangements such as racks, hangers, stackers, holders etc., to properly stack the cleaning implements, at his own cost.
e) The Contractor can alter the approved quantity & type of chemical for better results after approval of MAHA METRO, at no additional cost.
f) Any additional type or quantity of consumables & chemicals as required during the execution period shall be mobilized by the contractor within the current scope of the contract without extra cost, with prior approval of MAHA METRO.
g) Relevant records on daily consumption & material inventory shall be maintained by the contractor by best industry practices.
h) Insulated Mop sticks should only be used for the cab mask, Windshield cleaning and other exterior cleaning particularly when the activity is taken place in the lines where OHE is installed.

16.6.19 **Equipment**

I. The Contractor shall propose deployment of adequate number of proven latest equipment along with technical details like make, type, capacity, etc., for MAHA METRO approval for meeting day to day metro cars cleaning.
II. The Contractor shall deploy only newly purchased equipment & shall not use any second hand / already used equipment for housekeeping services.
III. The upkeep and maintenance of such equipment shall be the sole responsibility of the contractor.
IV. All cleaning equipment shall be silent in operation and preferably be battery operated.

16.7 UNSCHEDULED MAINTENANCE

16.7.1 Unscheduled Maintenance refers to any maintenance or repair activity required to be undertaken on a CAMC Asset which would not ordinarily be scheduled in accordance with Scheduled Maintenance Programme.

16.7.2 Reasons which may give rise to a requirement for “Unscheduled Maintenance” includes, but is not limited to a Fault, unsatisfactory performance, defects, deficiencies, accident, vandalism, natural calamity, fire, riots, arson or negligence.

16.7.3 Throughout the CAMC Period, the Contractor shall be responsible to ensure that the full suite of documents and procedures that are relevant to matters of Unscheduled Maintenance are frequently reviewed and updated to optimise and improve the methodologies for planning and execution of the Works.

16.7.4 The Contractor shall ensure that repair procedures / work instructions for all foreseeable Unscheduled Maintenance tasks are included as part of the deliverables. Where a repair procedure has not been created for an Unscheduled Maintenance task, the Contractor shall create an appropriate method statement / work instruction and publish the same in the AMMS document library.

16.7.5 Lessons learned from technical investigation on CAMC Assets shall be applied to fault finding guides to ensure the highest standards are achieved by staff undertaking Corrective Maintenance (CM) as well as PREB Team interventions .

16.7.6 Deliverables shall include a procedure detailing how structural integrity assessments will be undertaken in the event of crash damage.

16.7.7 The Contractor expressly agrees to promptly attend to any CAMC Assets requiring an “Unscheduled Maintenance” intervention and to as far as it is reasonably practical swiftly rectify and/or remedy the

CAMC Asset, without pause or delay for reasons such as apportioning attribution for cause, liability or cost.

16.7.8 MAHA METRO shall establish a fair and reasonable attribution process that is unified across all assets areas and also serving the respective Contractors which may be responsible for maintenance of other railway systems. The Contractor shall in good faith agree to perform joint investigations together with other parties whenever it is the case that a Fault(s) has arisen on an integrated system (such as Signalling, PSD or Telecoms and other contractor).

16.7.9 The attribution process shall overseen by MAHA METRO, who will take the final decision on the outcome. The outcome shall be final and binding on the Contractor.

16.7.10 The Contractor shall as far as reasonably practicable minimize the downtime for Unscheduled Maintenance to avoid any adverse effect on the overall Train Operation Plan.

16.7.11 "Fault" refers to any CAMC Asset suffering a defect, faulty design, faulty materials, bad workmanship, improper operation or maintenance which was attributable to matters for which the Contractor is responsible or failure by the Contractor to comply with any other obligation or negligence of, or for any other reason which is not solely and directly attributable to MAHA METRO or occurrence of a Force Majeure Event."

16.7.12 Any and all Unscheduled Maintenance shall form part of the Contractor's Maintenance Obligations and shall be performed under the scope of CAMC. The cost and expense for such Unscheduled Maintenance shall be borne as follows:

(a) Unscheduled Maintenance due to Fault(s): The Contractor shall bear the cost and expense towards undertaking any and all Unscheduled Maintenance arising on account of Fault(s).

(b) Where Unscheduled Maintenance is found to be solely and directly attributable to MAHA METRO; the Contractor shall determine the cost of equipment & time required to carry out the necessary repair works. Maha Metro will pay the amount against the cost of equipment. The basis of that assessment including all calculations used to determine the repair cost & time shall be submitted to MAHA METRO in support of any claim by the Contractor. MAHA METRO can however ask the Contractor to review its assessment of cost or repair time based on its own experience, good industry practices and/or other inputs from third party suppliers / manufacturers. The Contractor shall unconditionally accept its obligation to reveal all internal costing and pricing details in order to substantiate any such claim(s).

(c) Unscheduled Maintenance due to the occurrence of a Force Majeure event: the cost shall be borne by the Parties and the Train Operation Plan shall be suitably revised to reflect the reduced number of Trainset(s) due to Unscheduled Maintenance for only such time period as may be decided by MAHA METRO.

16.7.13 Notwithstanding anything to the contrary contained in this Contract, the Contractor shall, upon arrival of Rolling Stock at the Designated Depot(s) for carrying out Unscheduled Maintenance, commence the repair thereof as soon as may be possible; except where the Trainset is determined to be fit for condemnation, as the case may be.

16.7.14 The Contractor shall attend the fault within 1 (one) hour and the same shall be completed within 08 (eight) hours of the arrival of Rolling Stock, for any Unscheduled Maintenance, furnish to MAHA METRO in reasonable detail the particulars of defects, deficiencies or damages and the estimated time of repair thereof.

16.7.15 MAHA METRO at its sole discretion may at any time inspect the Rolling Stock to verify the defect, deficiency or damage rectified by the Contractor in a Trainset during an Unscheduled Maintenance.

16.7.16 **Condemnation of Rolling Stock:**

i. The Parties agree that in the event of the cost of repair of Rolling Stock or Car thereof, as the case may be, arising out of any reason or event not attributable to the Contractor, including gross negligence, Accident, natural calamities, vandalism, arson, riots or any event of a nature analogous to the foregoing, is more than 50% (fifty per cent) of its depreciated Book Value, the Contractor may, in its discretion, withdraw such Rolling Stock or Car from the Fleet.

ii. Maha Metro Termination of Maintenance Obligations The Parties expressly agree that the obligations of the Parties with respect to Rolling Stock or Car thereof which is withdrawn or condemned, as the case may be, in accordance with the provisions as above shall be deemed to be terminated and the obligations of the Parties including the obligations of Contractor to meet the Required Availability and MAHA METRO's obligation to make payment under Price Centre for Maintenance, shall be reduced accordingly on pro-rata basis. Notwithstanding anything contained in this Contract including Force Majeure, no payment shall be made by MAHA METRO to the Contractor with respect to such condemned or permanently withdrawn Rolling Stock or Cars thereof, under this clause..

iii. The Contractor shall perform maintenance works as per the maintenance procedure and issue a fitness certificate. PPIO / depot in-charge shall at its sole discretion shall undertake audits on a randomly selected basis to verify the work carried out by the Contractor on the CAMC Asset which the certificate was issued against.

16.7.17 **OBLIGATIONS REGARDING RISK OF LOSS OR DAMAGE**:

16.7.18 The Contractor shall bear the risk of loss in relation to each Car arising from the performance of its obligations under this Contract throughout the Contract Period. If the Contractor claims that any damage in the Cars is attributable to MAHA METRO, then MAHA METRO shall at its own cost and expense engage an independent third party to conduct a root cause analysis of the damage. If the root cause analysis report identifies the damage is attributable to solely any act or omission of MAHA METRO, the amount claimed towards the loss shall be assessed by MAHA METRO and borne by MAHA METRO, only upon submission of relevant documents in support of the Contractor's claim to the satisfaction of MAHA METRO. However, any findings of the investigations conducted by the Railway Statutory Authority / independent thirdparty for analysing the cause of the failure/Accident resulting into loss shall be binding on both the Parties. If the root cause analysis report identifies the damage is solely attributable to any act or omission by the Contractor, then any cost or expense incurred by MAHA METRO in engaging an independent third-party assessor shall be deducted from the Contractor's payment. The findings of the report submitted by an independent third party shall be final and binding to both parties.

16.7.19 **Waste Management:**

The contractor shall provide a well-structured waste management program / plan which incorporates the key components like, Waste Generation, Waste Storage, Waste Collection, Waste Transportation, Waste Treatment, Waste Disposal, Recycling and Resource Recovery, Public Awareness and Education, Policy Integration and Collaboration, Monitoring, Evaluation etc., and shall comply to the local body and government norms.

The contractor is required to implement Waste Management System where the system shall follow comprehensive strategies to efficiently manage wastes from their origin until their final disposal like dispose, reduce, reuse, prevent waste etc., and to be more eco friendly.

This includes waste disposal and their methods for various types of wastes like Organic Waste, Hazardous Waste, Solid Waste, Liquid Waste, Recyclable Waste etc.

16.8 PROMPT RESPONSE AND EMERGENCY BREAKDOWN (PREB)

16.8.1 The Contractor is required to form a PREB team, who shall be deployed to the mainline to attend emergencies, breakdowns or any other form of Unscheduled Maintenance which may arise on Rolling Stock.

16.8.2 The PREB team shall consist of at least 10 fully trained staff per shift who shall be strategically located throughout the network, so as to always ensure that incidents will be attended by PREB staff within 30mins of receiving a request to attend an incident.

16.8.3 The Contractor shall propose a deployment plan to MAHA METRO for review and acceptance. The plan will provide details of manpower, resources, deployment locations and a procedure for effectively managing matters such as callout and logistics to mobilise staff.

16.8.4 PREB Team personnel shall also be trained in the use of the Relief and Rescue Vehicle (RRV) and it's onboard Re-railing & Rescue Equipment (RRE). They shall be appropriately trained and also be equipped with any other maintenance tools, special tools required to facilitate recovery of failed trainsets.

16.8.5 The PREB Team shall apply all reasonable effort to rectify, reset, or make temporary repairs to defects and deficiencies they attend to on the mainline.

16.8.6 The PREB Team shall liaise with OCC / MAHA METRO to ensure they are adequately informed in advance about the status of trainsets they will attend. They shall follow instructions provided and assist with train rescue or recovery if required.

16.8.7 The emergency response and breakdown procedures followed by MAHA METRO shall be provided after the award of the Contract. The Contractor shall ensure that all PREB Team staff are well versed on the correct procedures and will carry out period assessments to uphold a high level of competency.

16.9 Epidemic Defect Warranty

16.9.1 The Contractor shall agree that if any identical defect or deficiency occurs on more than 10% (ten per cent) of the equipment or parts of the Trainsets in any rolling period of 36 (thirty six) months commencing from the second year of Supply, such defect or deficiency shall be deemed to be an epidemic defect (the "Epidemic Defect") and the Contractor shall promptly take corrective actions for such Epidemic Defect under an epidemic defect warranty to be maintained by the Contractor for the CAMC (the "Epidemic Defect Warranty").

16.9.2 If during the Contract Period, Maha-Metro notifies the Contractor that an Epidemic Defect has occurred, the Contractor shall remedy such Epidemic Defect on all Trainsets and undertake such other work and measures as may be necessary for enabling the Trainsets to continue in operation in conformity with the Maintenance Obligations until such defects are rectified. Within 30 (thirty) days of having been notified of such Epidemic Defect by Maha Metro, the Contractor shall submit to MAHA METRO a programme for rectification of the Epidemic Defect as soon as practicable and the Contractor and Maha Metro shall negotiate and agree to such programme in good faith, within a period of 30 (thirty) days after receipt of such programme.

16.10 OPERATIONS MANAGEMENT BY MAHA METRO

16.10.1 MAHA METRO shall, at all times, operate the Rolling Stock in accordance with MAHA METRO's Operation plan. The Contractor through its Maintenance Personnel at the Depot shall closely liaise with PPIO for all the operational aspects of the Rolling Stock for example its induction, scheduled / unscheduled withdrawal, Line Failures, Train Operators (TO) reports etc.

16.10.2 For guidance of the operating staff of MAHA METRO, the Contractor shall provide an Operations and Maintenance Manuals to MAHA METRO. The Contractor shall be also responsible for the training of TO's, Instructors, Supervisors and MAHA METRO's other officers and staff associated with the Trains operational management including but not limited to controllers (herein after referred as Rolling Stock Controllers (RSC)), nominated officers and staff deployed by MAHA METRO in the Depot for assessment/reconciliation of the Maintenance work etc. Contractor to nominate staff to support RSC of maha metro during revenue operation/testings.

16.11 MAINTENANCE REPORT / MONITORING OF MAINTENANCE

16.11.1 An initial Failure Analysis Report (FAR) shall be submitted to MAHA METRO within 24 hrs of notification of any incident or failure.

16.11.2 A Daily Fleet Status Report shall be submitted to MAHA METRO. The report shall cover the health of Rolling Stock and shall also include a statistical summary detailing the number of available trains, number of trains inducted in to service, number of unavailable trains, brief details of any trains held on depot as well as target dates for the release of unavailable trains.

16.11.3 No later than 7 (seven) days after completion of maintenance (regardless of category) the Contractor shall prepare a detailed report, which shall minimally contain the following info:

a) An analysis of the defects and deficiencies affecting the performance or safe operation of each Trainset.

b) Time of arrival of Rolling Stock in the Maintenance Depot or the arrival of the PREB Team at the site of the failure and/or emergency breakdown.

c) Time of departure of Rolling Stock from the Maintenance Depot or the time of rectification of malfunction by the PREB Team at the site of failure and/or emergency breakdown.

d) The above details shall be verified with MAHA METRO and may be referenced for the calculation of Availability of Rolling Stock.

16.11.4 **Monthly Report**

a) During the CAMC Period, the Contractor shall, no later than 7 (seven) days after the end of each month submit the monthly report.

b) The format / content of the monthly report shall align with, but not be limited to the requirements defined in this Chapter. The same shall be proposed by the Contractor for review and acceptance by MAHA METRO.

c) This report shall state in reasonable detail a summary of all maintenance services performed by the Contractor on CAMC Assets.

d) The report shall also include Key Performance Indicators to measures relevant success factors for CAMC Assets, such as; compliance to Maintenance Requirements, Operational Performance, asset condition and OHSE metrics.

e) A summary of the key operational hurdles, including, but not limited to a running count of own goals / maintenance errors, 'no-fault found' outcomes, repeated defects etc.

f) The report shall mostly cover the period of the preceding month, except for tracking of trend metrics in which case a suitable time period (E.g. 6 – 48 months') shall be mutually agreed between the Contractor and MAHA METRO.

g) The report shall include full details of the Contractor's corrective and/or mitigating strategies for addressing problem areas and to improve all aspects of performance.

h) Five (5) days after submission of monthly report, a Monthly Maintenance Review meeting shall be convened at MAHA METRO's premises.

16.11.5 **The Inspection**

MAHA METRO shall be entitled to inspect the Rolling Stock after any Scheduled Maintenance or Unscheduled Maintenance, cleaning, daily activities etc., as the case may be, for evaluating the compliance of Rolling Stock versus the Maintenance Obligations. MAHA METRO shall produce a report of such inspections (the "Maintenance Inspection Report") stating in reasonable detail the defects or deficiencies, if any, with particular reference to the Maintenance Obligations and notify the Contractor of the same for taking remedial measures in accordance with the provisions of this Contract.

16.11.6 **Tests**

For determining that the maintenance of Rolling Stock conforms to the Maintenance Obligations, MAHA METRO may require the Contractor to carry out, or cause to be carried out, the Tests specified by it in accordance with standards specified in this Contract. The Contractor shall, with due diligence, carry out or cause to be carried out all such tests in accordance with the instructions of MAHA METRO and furnish the results of such tests to MAHA METRO within 15 (fifteen) days of such tests being conducted.

16.11.7 **Remedial measures**

a) The Contractor shall repair / rectify all defects or deficiencies and record the full details of the intervention as per the requirements set forth in the Maintenance Inspection Report or in the Test results.
b) Post intervention, the Contractor shall also carry out a sufficient level of testing to ensure the CAMC Assets are safe to resume operational service and compliant with the Maintenance Requirements and all relevant Safety Requirements.
c) In the event that remedial measures result in CAMC Assets being rendered non-compliant with the requirements under this Contract, MAHA METRO shall be entitled to recover Damages from the Contractor under and in accordance with the provisions of GCC.

16.11.8 **Responsibility of the Contractor**

a) It is expressly agreed between the Parties that any inspection carried out by MAHA METRO or the submission of any Maintenance Inspection Report by MAHA METRO as per these provisions shall not relieve or absolve the Contractor of its obligations and liabilities hereunder in any manner whatsoever.

b) It is further agreed that the Contractor shall be solely responsible for adherence to the Key Performance Indicators as mentioned in contract.

16.11.9 **Technical Records**

a) The Contractor shall maintain records of the maintenance and repairs it carries out using the Asset Maintenance Management System.

b) The Contractor shall provide for MAHA METRO, on request with such access it reasonably requires including inputs, outputs, downloads, print outs and analysis and any other information from the AMMS, TCMS or any other relevant management information system deployed by the Contractor for management of CAMC Assets.
c) The Contractor shall keep and maintain clear, adequate and accurate records and documentation on a per Trainset basis to show to MAHA METRO's reasonable satisfaction that the Maintenance Obligations have been and are being carried out in accordance with the Maintenance Programme, Maintenance Requirements of Rolling Stock, Safety Requirements, all Applicable Laws, Applicable Permits and Specifications and Standards, mileage information, the date of the next maintenance service due and the reasonable requirements of MAHA METRO. The Contractor will maintain records of the maintenance and repairs it carries out in accordance with this chapter.

16.12 SUPPLY OF DIAGNOSTIC MAINTENANCE LAPTOPS

16.12.1 At the start of the CAMC Period, the Contractor shall supply twenty (20) diagnostic maintenance laptops of the same specification given in contract , which will be handed over to MAHA METRO.

16.12.2 The full quantity of laptops shall be replaced every five (5) years, throughout the CAMC Period.

16.13 ACCESS AND MONTHLY AUDIT

16.13.1 To verify performance of and compliance with this Contract, MAHA METRO shall be entitled, to inspect or witness at reasonable notice any aspect of the provision of the Maintenance Obligations

and to inspect the Maintenance Reports and any of the records required to be kept by the Contractor. Where such inspection reasonably requires the attendance or participation by the Contractor and/or its sub-Contractor, the Contractor shall provide such attendance or participation by appropriately qualified individuals at its own cost. No such inspection shall however unreasonably disrupt the commercial and industrial operation of the Contractor.

16.13.2 The Spares shall be held and maintained in the Designated Depot(s) stores by the Contractor and the same shall be audited by MAHA METRO on a Monthly basis. If an audit reveals that stock levels are non-compliant with the approved list, then notification will be issued to the Contractor.

16.14 PERSONNEL

16.14.1 The Contractor shall be fully responsible to ensure the availability of adequately competent manpower for carrying out all maintenance and overhauling activities during the CAMC period to meet the Availability targets.

16.14.2 The Contractor shall follow MAHA METRO's competency procedure, which will be updated from time to time. The Contractor shall undertake training of their manpower and undertake routine assessment of their staff to ensure their competency is upheld at all times.

The Contractor shall submit the deployed staffs CV and competency certificate to MAHA METRO for approval. Evidence of staff training, competency assessment and valid certification shall be periodically submitted to MAHA METRO for endorsement. Only personnel who hold all the requisite approvals shall be allowed to work in the Designated Depot(s) to undertake train maintenance.
The Contractor shall deploy a tracking system to ensure that no staff shall undertake any Works once their certified competency has lapsed. The tracking system shall automatically issue reminders / warnings to ensure effective management.

16.14.3 **The Contractor shall submit for MAHA METRO approval** - The CAMC Management Plan that explicitly defines the Contractor's maintenance organization, project Controls and planning / scheduling methodologies. The CAMC Management Plan shall include:

An organization chart that clearly identifies the lines of authority of all departmental managers and of the following key staff at site for this contract other than mention in Key staff requirements 4.1 Staffing Schedule and Organization Chart of Bidding forms

No.	Position	Total Work Experience (Minimum number of years)	Experience in Similar Works * (Minimum number of years)	Qualification
1	Chief Maintenance Engineer			Electrical / Mechanical Engineering Degree
2	Maintainace Manager (1 for each depot)	12	7	Electrical Engineering Degree

3	Failure Investigation Specialist	12	7	Electrical / Mechanical Engineering Degree
4	Maintenance Engineer (Minimum 5 in each depot)	5	5	Electrical / Mechanical Diploma with 10 year of exp Min. or B.E with
5	Inventory Planning & Procurement Manager	10	5	
6	Procurement Manager	5		
7	Asset Maintenance Management System (AMMS Specialist).	5		Engineering graduate in Computer science

* Only time served in a role / designation which has direct involvement in similar responsibilities, duties and industrial sector will be counted as experience in similar Works.

a) Resumes for each of the key staff members identified above.

b) A description of the duties and responsibilities of each key staff member. The scope of responsibilities for those staff and the reporting lines between individual staff. The documents which each senior staff member is authorized to sign on behalf of the Contractor shall also be defined.

c) A resource plan for the CAMC Period shall be submitted 180 days prior to arrival of the prototype train and shall cover the full CAMC period until its completion. The plan shall show levels of staffing to be provided at each phase for each discipline and functional area.

d) Each member in the Contractor's Staffing Proposal, including the Key Personnel shall be proposed to MAHA METRO. They shall be allocated to this Contract on a full-time basis, until the activities that he is responsible for have already been completed or have to be carried out off-site. Should it be necessary to replace any staff before the activities he is responsible for have been carried out, the Contractor shall submit the CV of the proposed substitute to MAHA METRO Notice of No Objection, at least 30 days before the proposed change. The substitute shall not be less qualified or experienced than the person he is replacing.

e) A description of the methodology to be used to track and control program progress against the program schedule.

f) Contractor is responsible for arranging sufficient resources other than mentioned in staffing schedule and CAMC manpower to carry the CAMC work properly. Maha Metro/Engineer will regularly evaluate the manpower requirement and availability at site monthly.

g) Non availability of Key staff for more than a months as listed above and in staff schedule may attract penalty of @ 10000/- per day for item 1 & 2, for others @5000/- per day.

h) The following functional positions shall be filled on a full-time basis till closure of CAMC of last train:-

   i. **Failure Investigation Specialist** – with responsibility but not limited to of all the Failure investigation reports, root cause analysis of faults, etc. Individual (must be minimum engineering graduate in

Electrical / Electronics/ Mechanical) shall have at least 12 years' experience in Rolling Stock. Out of which at least 7 years he shall worked in Maintenance of Metro Rolling Stock. This person shall be mobilized to MAHA METRO depot premises 180 days prior to arrival of prototype train until completion of CAMC period.

ii. **Asset Maintenance Management System (AMMS) Specialist** - with the responsibility but not limited to configuration of Rolling Stock assets, maintaining warranty information, tracking the maintenance capaigns, Job card creations, etc. Individual (must be an engineering graduate in Computer science /Information technology) shall have at least 10 year experience in information management system in large infrastructure projects. Out of which at least 5 years shall be in implementation of AMMS of the metro Rolling stock or Computer maintenance management system like Maximo, SAP, Trimble E2M / R2M or others. This person shall be mobilized to MAHA METRO depot premises 60 days prior to commencement of CAMC works until completion of CAMC period.

iii. **Inventory Planning and Procurement Manager** - with the responsibility but not limited to of Planning and Procuring the required spares, consumables, etc. Individual (must be a science graduate with post-graduation in Inventory planning & management) shall have at least 10 years' experience in large infrastructure projects in the domain of Inventory planning and procurement. Out of which at least 5 years shall be in planning, coordination, and execution of Metro Rolling Stock Maintenance. This person shall be mobilized to MAHA METRO depot premises 180 days prior to commencement of CAMC works until completion of CAMC period.

16.15 DEFECTS LIABILITY AFTER CAMC

Liability for defects after Termination

I. Not less than 30 (thirty) months nor more than 36 (thirty six) months prior to the expiry of the Contract Period, or in the event of earlier Termination of this Contract, immediately upon but not later than 15 (fifteen) days from the date of issue of Termination Notice, the Contractor and Maha Metro shall conduct a joint inspection (the "**Initial Inspection")** of the Project Assets. In the event of earlier Termination of this Contract, the Contractor shall be responsible for all defects and deficiencies in the Trainsets for a period of 180(one hundred and eighty) days after Termination, and it shall have the obligation to repair or rectify, at its own cost, all defects and deficiencies observed by Maha Metro in the Trainsets during the aforesaid period.

II. Within 90 (ninety) days after the completion of the Initial Inspection, the Contractor shall provide to Maha Metro a report on the condition of the Project Assets and a notice setting out the Contractor's proposals as to the works required to comply.

III. Maha Metro may, within 90 (ninety) days after receipt of the notice from the Contractor in accordance with contract, by notice to the Contractor object to the proposals giving details of the grounds for such objection.

IV. If no contract is reached between the Contractor and MAHA METRO within 90 ninty) days ofreceipt of such notice, then either the Contractor or MAHA METRO may refer the matter to the Disputes Resolution Procedure.

V. Upon contract, or determination in accordance with the Disputes Resolution Procedure as to what the scope of the renewal works shall be, the Contractor shall carry out the renewal works at its own cost.

VI. Not less than 9 (nine) months nor more than 12 (twelve) months prior to the expiry of the Contract Period, the Contractor and MAHA METRO shall conduct a joint inspection (the "**Second Inspection**") of all elements of the Project (whether or not the Renewal Works have been carried out).

VII. Within 30 (thirty) days after the completion of the Second Inspection, the Contractor shall provide to MAHA METRO a report on the condition of the Project and a notice setting out any revisions or additions to the renewal works required in order to ensure compliance with the Handover Requirements.

VIII. MAHA METRO may, within 30 (thirty) days after receipt of the notice from the Contractor in accordance with contract, by notice to the Contractor object to the proposed revisions giving details of the grounds for such objection.

IX. If no contract is reached between the Contractor and MAHA METRO within 30 (thirty) days ofreceipt of such notice, then either the Contractor or MAHA METRO may refer the matter to the Dispute Resolution Procedure.

16.16 **HANDOVER REQUIREMENTS**

16.16.1 Upon Termination or expiry of the Contract Period, the Contractor shall comply with and conform to the following Handover requirements (the "**Handover Requirements**"), no later than 15 (fifteen) days from the date of Termination or expiry of the Contract Period, as the case may be:

(a) Notify to Maha metro forthwith the location and particulars of all "Project Assets" herein defined as Trains, spares, tools, plants, test benches, etc. including Civil Infrastructure,building etc. under Contractor possession either handover by Maha Metro or installed,deployed or commissioned by Contractor for the purpose of maintenance.

(b) Deliver forthwith the actual or constructive possession of the Project Assets, along with the infrastructure therein, free and clear of all Encumbrances;

(c) All Project Assets including the structure and equipment shall have been cured of all defects and deficiencies as necessary and have a minimum residual life at the lowerof 5 (five) years; after CAMC, so that the Project is compliant with the Specifications and Standards as per specifications of this Contract;

(d) Cure all Trainset of all defects and deficiencies so that the Trainset are compliant with the Maintenance Obligations; provided that if such defects and deficiencies have arisen on account of Accident, vandalism, arson, riot or natural calamity occurring no earlier than 120 (one hundred and twenty) days prior to such Termination or expiry of the Contract Period, Maha Metro shall grant to the Contractor such additional time, not exceeding 240 (two hundred forty) days, as may be reasonably required for repair andrectification thereof;

(e) Deliver and transfer relevant records, reports and Intellectual Property pertaining to the Trainsets and all software (including asset managemet system software) and manuals pertaining thereto, and complete "as built" Drawings as on the Termination Date so as to enable Maha Metro to operate and maintain the Trainsets and execute such deeds of conveyance, documents and other writings as Maha Metro may reasonably require in connection therewith. For avoidance of doubt, the Contractor represents and warrants that the Intellectual Property shall be adequate and complete for the operation and maintenance of the Trainsets and shall be assigned or licensed to Maha Metro free of any Encumbrance;

(f) Transfer and/or deliver all Applicable Permits in respect of the Project Assets including Trainsets to the extent permissible under Applicable Laws;

(g) execute such deeds of conveyance, documents and other writings as Maha Metro may reasonably require for conveying, divesting and assigning all the rights, title and interest of the Contractor in respect of the outstanding insurance claims to the extent due and payable to Maha Metro;

(h) execute such deeds of conveyance, documents and other writings as Maha Metro may reasonably require for conveying, divesting and assigning all the rights, title and interest of the Contractor in the Maintenance Depot and Trainsets;

(i) comply with all other requirements as may be prescribed or required under Applicable Laws for completing the Handover and assignment of all rights, title and interest of the Contractor in the Trainsets, Maintenance Depot and Insurance Cover, free from all Encumbrances, absolutely unto Maha Metro or to its nominee; and pay all dues pending towards its staff and/or Contractors, energy and water consumption charges etc. and any other amounts due and payable under this Contract.

16.16.2 Subject to the exercise by Maha Metro of its rights under this Contract or any of the Project Contracts to perform or procure the performance by a third party of any of the obligations of the Contractor, the Parties shall continue to perform their obligations under this Contract notwithstanding the giving of any Termination Notice until the Termination of this Contract becomes effective in accordance with its terms.

16.16.3 Inspection and cure

Not earlier than 3 (three) months before the expiry of the Contract Period but not later than 15 (fifteen) days before such expiry, or in the event of earlier Termination of this Contract, immediately upon but not later than 15 (fifteen) days from the date of issue of Termination Notice, Maha Metro shall verify, in the presence of a representative of the Contractor, compliance by the Contractor with the Handover Requirements set forth and agreed by Maha Metro in relation to the Project Assets and, if required, cause appropriate tests to be carried out at the Contractor's cost for determining the compliance therewith. If any shortcomings in the Handover Requirements are found by either Party, it shall notify the other of the same and the Contractor shall rectify the same at its cost.

16.17 Penalty During Defect Liability & CAMC Period

Maintenance during Defects Liability Period & CAMC Period .Contractor shall ensure restoration / rectification / replacement, within reasonable time, to the satisfaction of Engineer. The Engineer in case of the delay as deems fit shall be empowered to carry out the maintenance at the risk and cost of the Contractor.

The contractor shall be penalized in case of poor workmanship/Non-conformance related to Rolling Stock Maintenance of Maha Metro

Sl. no	Description	Penalty (Rs)
a.	If any damage to any of the surface or property in depot & metro cars while performing Maintenance services.	At actuals + 20% overhead charges.
b.	Any Accidents/ Incidents happened during Maintenance service	At actuals + 20% overhead charges.
c.	Damage, theft, loss, missing of sanitary, water supply equipment & other fittings	At actuals + 20% overhead charges.
d.	In case any Train withdrawn from mainline due to poor maintenance without passenger deboarding case.	50,000 per incident

e.	Un-Fit trains on account of the Contractor is more than one train at any point of time on any day of the year.	5,000 per train per day
f.	Train Non induction to revenue service due to pre departure check failure / poor maintenance.	25000 per case.
g.	Failure to complete corrective maintenance within 48 hrs.	20000 per case
h.	If major equipment like VCB, Pantograph, Traction Motor, Transformer, Converter Inverter unit, Brake control and Brake electronics, TCMS, APS(Auxiliary Power System) or any complete system is not working for more than 24 Hrs.	10000/- per day in CAMC

Attachment-5
Corrigendum-6

Annexure I

Table: Summary of Sections (KEY DATES)

The Contractor will be required to achieve the following Key Dates (KD) to be calculated from the commencement date of Work

Key Date	Description of Stage	Weeks from Commencement Date
1	Preliminary Design Completion (Milestone A11)	24
2	Pre-final Design Completion (Milestone A 13)	35
3	Completion of mock-up in the works of Contractor (Milestone A14)	54
4	Final Design Completion (Milestone A15)	50
5	**Final Design Document delivery (Milestone A16 / A17)**	
5.1	Final Design Document Delivery (Milestone A16)	60
5.2	As Built Drawing Delivery (Milestone A17)	156
6	**Prototype Train**	
6.1	Dispatch of prototype train (Milestone B1/C1)	84
6.2	Delivery and receipt of prototype train (Milestone D1/E1)	90
6.3	Testing and commissioning in Depot of Prototype Train set (Milestone F1)	94
7.	**Deleted**	
8	**Delivery in nominated Depot, testing & commissioning etc.**	
8.1	2 Train Sets (excluding one prototype train) (TS 2&3)	100
8.2	5 Train Sets (TS 4,5,6,7 & 8)	112
8.3	5 Train Sets (TS 9,10,11,12 &13)	124
8.4	3 Train Sets (TS 14 ,15, 16)	136
9	**Integrated Testing, Commissioning and Service Trials**	
9.1	Prototype Train (including oscillation trials) (Milestone F1)	98

Key Date	Description of Stage	Weeks from Commencement Date
9.2	2 Train Sets (TS 2&3)	106
9.3	5 Train Sets (TS 4,5,6,7 & 8)	118
9.4	5 Train Sets (TS 9,10,11,12 &13)	130
9.5	3 Train Sets (TS 14 ,15 &, 16)	140

Notes:

1. The nominated Depot and Line for delivery and commissioning of train sets / cars will be advised within 60 weeks of issuance of LOA.

2. Employer at its sole discretion may advise the Contractor about the change of Depot and Line any time six months before the scheduled Key Date for 'Delivery'

3. Engineer at his sole discretion will decide about substantial completion of work regarding Key Dates '1', '2', '4', and '5'.

4. All Key Dates are Minor key dates except Key Date Nos. 9 (9.1 to 9.5) which are Major Key Dates

5. Refer to Pricing Document (Annexure IV-A of Part 1 of Bidding Documents) for Milestones indicated with each Key Dates above

6. The Key Dates are indicative and may be slightly altered and/or converted into calendar dates (instead of weeks from commencement date) at the time of issue of LOA or signing of Contract Agreement as per the then requirement of Employer duly keeping the overall project progress in view. Such alteration in KD may also involve expediting certain activities of certain sections etc.

COST CENTRE No. B: Offshore Manufacture

Milestone No.	Work Description	Apportioned Amount		*Weeks for completion of Milestone from Commencement Date
		Foreign Currency	Indian Rupees	
	Milestone Activity	**Column A**	**Column B**	
	Obtain the "Notice of No Objection" or "Notice of No Objection Subject to ____" from the Engineer after: - Issue of Inspection Certificate on satisfactory completion of all Factory Tests / running - Marine Insurance - Documents for shipment to Indian Port(receipt of train) - Transit insurance from Port in India to Depot Site in Nagpur . for:			
B1	First 3-car train (prototype)			84
B2	Obtain as above for 2nd 3-car train			92
B3	Obtain as above for 3rd 3-car train			92
B4	Obtain as above for 4th 3-car train			106
B5	Obtain as above for 5th 3-car train			106
B6	Obtain as above for 6th 3-car train			106
B7	Obtain as above for 7th 3-car train			106
B8	Obtain as above for 8th 3-car train			106
B9	Obtain as above for 9th 3-car train			118
B10	Obtain as above for 10th 3-car train			118
B11	Obtain as above for 11th 3-car train			118
B12	Obtain as above for 12th 3-car train			118
B13	Obtain as above for 13th 3-car train			118
B14	Obtain as above for 14th 3-car train			132
B15	Obtain as above for 15th 3-car train			132
B16	Obtain as above for 16th 3-car train			132
	COST CENTRE TOTAL			

Notes:

1. The apportioned amounts (both foreign currency and local currency) shall be same for all Milestones relevant to the cost centre.

2. It is certified that 'Annexure-1' annexed in Technical Package is a "TRUE COPY" (with prices blanked off) of the said 'Annexure-1' annexed in the Financial Package.

3. *This is indicative milestone. Contractor will have to plan suitably to insure compliance of related K D of delivery in nominated depot mentioned in summary of section-Contract Data

SIGNATURE OF BIDDER

COST CENTRE No. C: Indigenous Manufacture

Milestone No.	Work Description	Apportioned Amount		*Weeks for completion of Milestone from Commencement Date
		Foreign Currency	Indian Rupees	
	Milestone Activity	**Column A**	**Column B**	
	Obtain the "Notice of No Objection" or "Notice of No Objection Subject to ____" from the Engineer after: - Issue of Inspection / Clearance Certificate on satisfactory completion of all Factory Tests - Transit insurance - Dispatch Documents for:			
C1	First 3-car train (prototype)			84
C2	Obtain as above for 2nd 3-car train			92
C3	Obtain as above for 3rd 3-car train			92
C4	Obtain as above for 4th 3-car train			106
C5	Obtain as above for 5th 3-car train			106
C6	Obtain as above for 6th 3-car train			106
C7	Obtain as above for 7th 3-car train			106
C8	Obtain as above for 8th 3-car train			106
C9	Obtain as above for 9th 3-car train			118
C10	Obtain as above for 10th 3-car train			118
C11	Obtain as above for 11th 3-car train			118
C12	Obtain as above for 12th 3-car train			118
C13	Obtain as above for 13th 3-car train			118
C14	Obtain as above for 14th 3-car train			132
C15	Obtain as above for 15th 3-car train			132
C16	Obtain as above for 16th 3-car train			132
	COST CENTRE TOTAL			

Notes:

1. The apportioned amounts (both foreign currency and local currency) shall be same for all Milestones relevant to this cost centre.

2. It is certified that 'Annexure-1' annexed in Technical Package is a "TRUE COPY" (with prices blanked off) of the said 'Annexure-1' annexed in the Financial Package.

3. *This is indicative milestone. Contractor will have to plan suitably to ensure compliance of related K D of delivery in nominated depot mentioned in summary of section-Contract Data

SIGNATURE OF BIDDER

COST CENTRE No. D: Inland Transportation in India, Delivery and Testing in the Depot of offshore manufactured trains

Milestone No.	Work Description	Apportioned Amount		*Weeks for completion of Milestone from Commencement Date
		Foreign Currency	Indian Rupees	
	Milestone Activity	**Column A**	**Column B**	
	Obtain the "Notice of No Objection" or "Notice of No Objection Subject to ____" from the Engineer after: - Dispatch of cars from Port in India - Receipt of cars in the Depot in Nagpur - Formation of train, obtaining certificate of satisfactory completion of functional tests and running of train in the Depot for:			
D1	First 3-car train (prototype)			90
D2	Obtain as above for 2nd 3-car train			100
D3	Obtain as above for 3rd 3-car train			100
D4	Obtain as above for 4th 3-car train			112
D5	Obtain as above for 5th 3-car train			112
D6	Obtain as above for 6th 3-car train			112
D7	Obtain as above for 7th 3-car train			112
D8	Obtain as above for 8th 3-car train			112
D9	Obtain as above for 9th 3-car train			124
D10	Obtain as above for 10th 3-car train			124
D11	Obtain as above for 11th 3-car train			124
D12	Obtain as above for 12th 3-car train			124
D13	Obtain as above for 13th 3-car train			124
D14	Obtain as above for 14th 3-car train			136
D15	Obtain as above for 15th 3-car train			136
D16	Obtain as above for 16th 3-car train			136
	COST CENTRE TOTAL			

Notes:

1. The apportioned amounts (both foreign currency and local currency) shall be same for all Milestones relevant to the cost centres.

2. It is certified that 'Annexure-1' annexed in Technical Package is a "TRUE COPY" (with prices blanked off) of the said 'Annexure-1' annexed in the Financial Package.

3. *This is indicative milestone. Contractor will have to plan suitably to insure compliance of related K D of delivery in nominated depot mentioned in summary of section-Contract Data

SIGNATURE OF BIDDER

COST CENTRE No. E: Inland Transportation in India, Delivery and Testing in the Depot of Indigenously manufactured trains

Milestone No.	Work Description	Apportioned Amount		*Weeks for completion of Milestone from Commencement Date
		Foreign Currency	Indian Rupees	
	Milestone Activity	**Column A**	**Column B**	
	Obtain the "Notice of No Objection" or "Notice of No Objection Subject to ____" from the Engineer after: - Dispatch of cars from Factory in India; - Receipt of cars in the Depot in Nagpur; - Formation of train, obtaining certificate of satisfactory completion of functional tests and running of train in the Depot. for:			
E1	First 3-car train (prototype)			90
E2	Obtain as above for 2nd 3-car train			100
E3	Obtain as above for 3rd 3-car train			100
E4	Obtain as above for 4th 3-car train			112
E5	Obtain as above for 5th 3-car train			112
E6	Obtain as above for 6th 3-car train			112
E7	Obtain as above for 7th 3-car train			112
E8	Obtain as above for 8th 3-car train			112
E9	Obtain as above for 9th 3-car train			124
E10	Obtain as above for 10th 3-car train			124
E11	Obtain as above for 11th 3-car train			124
E12	Obtain as above for 12th 3-car train			124
E13	Obtain as above for 13th 3-car train			124
E14	Obtain as above for 14th 3-car train			136
E15	Obtain as above for 15th 3-car train			136
E16	Obtain as above for 16th 3-car train			136
	COST CENTRE TOTAL			

Notes:

1. The apportioned amounts (both foreign currency and local currency) shall be same for all Milestones relevant to this cost centre.

2. It is certified that 'Annexure-1' annexed in Technical Package is a "TRUE COPY" (with prices blanked off) of the said 'Annexure-1' annexed in the Financial Package.

3. *This is indicative milestone. Contractor will have to plan suitably to insure compliance of related K D of delivery in nominated depot mentioned in summary of section-Contract Data

SIGNATURE OF BIDDER

COST CENTRE No. F: Integrated Testing and Commissioning of Trains and Service Trials

Milestone No.	Work Description	Apportioned Amount		Weeks for completion of Milestone from Commencement Date
		Foreign Currency	Indian Rupees	
	Milestone Activity	**Column A**	**Column B**	
	Obtain the "Notice of No Objection" or "Notice of No Objection Subject to ____" from the Engineer after: - Completion of Integrated Testing and Commissioning in the Depot; - Completion of Integrated testing and Commissioning on the section in conjunction with Designated Contractors; - **Instrumentation Tests of First train , conducting oscillation trials as per requirement of Statutory Authorities, compilation of test Results, obtaining sanction of Statutory Authorities for fitness of train for carriage of passengers in respect of Prototype Trains only.* - Service Trials • Repeat instrumentation test on few train if required for:			
F1	First 3-car train (prototype)			98
F2	Obtain as above for 2nd 3-car train			106
F3	Obtain as above for 3rd 3-car train			106
F4	Obtain as above for 4th 3-car train			118
F5	Obtain as above for 5th 3-car train			118
F6	Obtain as above for 6th 3-car train			118
F7	Obtain as above for 7th 3-car train			118
F8	Obtain as above for 8th 3-car train			118
F9	Obtain as above for 9th 3-car train			130
F10	Obtain as above for 10th 3-car train			130
F11	Obtain as above for 11h 3-car train			130
F12	Obtain as above for 12th 3-car train			130
F13	Obtain as above for 13th 3-car train			130
F14	Obtain as above for 14th 3-car train			140
F15	Obtain as above for 15th 3-car train			140
F16	Obtain as above for 16th 3-car train			140
	COST CENTRE TOTAL			

** These are applicable to Prototype Trains only

Notes:

1. The apportioned amounts (both foreign currency and local currency) shall be same for all Milestones relevant to the cost centre.

2. The minimum amount that shall be apportioned in this cost centre shall not be less than 10 % of the total of the amount apportioned in Cost Centres ‘A’. ‘B’, ‘C’, ‘D’, ‘E’ and ‘F’.

3. It is certified that ‘Annexure-1’ annexed in Technical Package is a “TRUE COPY” (with prices blanked off) of the said ‘Annexure-1’ annexed in the Financial Package.

SIGNATURE OF BIDDER

Attachment-7

Corrigendum 6

Table-1.4 b Recommended Items for Make In India	
1	Floor Cover
2	Floor Board
3	Dampers
4	Brake Electronics
5	Auxiliary Motors
6	Bearings (other than Axle bearing)
7	Wipers
8	Primary & Secondary Springs
9	PCBs used in different equipment
10	Driver Desk Pannel (FRP)
11	Public Address (P/A)/Public Information System (PIS)
12	CCTV
13	Stainless Steel- All Type
14	Cab Mask
15	DC-DC Converter