



BEML LIMITED
BENGALURU
R & D CENTER

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Date	18.10.2019
Rev. No.	0
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MRS1 Project
Procurement Technical Specification
of Air duct panels

	Name	Date	Signature
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1. Introduction

1.1. General

This Procurement Technical specification (PTS) specifies the technical requirements of Air duct panels of ducting system of Metro cars, to be supplied for MRS1 Project for Mumbai Metro Line-2 & 7.

BEML will carry out all required works and activities as Contractor to the Employer for MRS1 project, while the subcontractor shall be responsible for all works required in this PTS with regard to Air duct panels and shall be responsible for supporting the BEML activities as contractor for MRS1 project.

The scope of work includes all items of work which may be required to meet the performance requirements, reliable and efficient operation of trains and meeting the best international practices even if not specifically mentioned in this PTS.

1.2. Train Composition

The rake formation shall generally be as follows:

3 Car unit formation : DM – T – M –

6 Car Train formation: DM –T–M – M – T – DM

In case of 8-car formation (if required):

2 Car train formation : – T – M –

8 Car Train formation: DM – T – M – T – M – M – T – DM

where,

DM : Driving Motor Car

T : Trailer Car with pantograph

M : Non -Driving Motor Car

1.3. Climatic & Environmental Conditions

The car shall operate reliably and safely under the climatic and environmental conditions of Mumbai. Accordingly, the air duct panels shall be designed to operate with satisfactory performance under the following conditions.

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Description	Limiting Values
Maximum ambient temperature (See note below)	36°C
Minimum temperature	14.3°C
Humidity	≥ 95% RH
Rainfall	The annual precipitation is 2,078 mm with 34%(709mm) falling in the month of July
Atmosphere during hot season	Extremely dusty including bird feathers
Maximum wind speed	150 km/h
Vibration and Shocks	The sub-systems & their mounting arrangements shall be designed to withstand satisfactorily the vibration and shocks encountered in service as specified in IEC 61373 and IEC 60571
SO ₂ level in atmosphere	80 – 120 mg/m ³
Suspended particulate matter in atmosphere (TSPM)	360 – 540 mg/m ³
Flood Proofing	The traction sub-systems mounted on the under-frame will be designed to permit propulsion of the train at 10 kmph through water up to a depth of 50mm above rail level. Traction sub-systems shall be made splash proof in accordance with International Standards
Life	The Metro car is designed for min. 35 years of life. Accordingly, the subject items shall also not deteriorate in their performance for 35 years

Note:

- 1) The temperature of the metal surfaces of the vehicles when exposed directly to the sun, for long periods of time, may be assumed to rise to 70°C.
- 2) Any moisture condensation shall not lead to any malfunction or failure.
- 3) Adequate margin shall specially be built into the design particularly to take care of the higher ambient temperatures, high humidity, dusty and corrosive conditions, etc. prevailing in Mumbai area.

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1.4. Vehicle Performance Requirements

The vehicle performance requirements with fully loaded train and tangent track are as per the following table.

Item		All Corridors
Safe speed	With inflated secondary suspension	90 kmph
	With deflated secondary suspension	80 kmph
Maximum operational speed	With inflated secondary suspension	80 kmph
	With deflated secondary suspension	70 kmph
Minimum Design Average Acceleration rate for fully loaded (AW3) train on level tangent track shall be as under: 0 kmph to 40 kmph 0 kmph to 60 kmph 0 kmph to 80 kmph		1.0 m/s ² 0.75 m/s ² 0.40 m/s ²
Minimum Operational Average Acceleration rate for AW2 loaded train on level tangent track shall be as under: 0 kmph to 35 kmph 0 kmph to 60 kmph 0 kmph to 80 kmph		1.20 m/s ² 0.80 m/s ² 0.45 m/s ²
Average Service braking rate from 80 kmph to standstill for fully loaded(AW3) train on level tangent track.		1.0 m/s ²
Average Service braking rate from 80 kmph to standstill for AW2 train on level tangent track.		1.1 m/s ²
Average Emergency braking rate from 80 kmph to 0 kmph for fully loaded trains on level tangent track		1.3 m/s ²
Jerk rate (Maximum)		0.75 m/s ³
Annual running distance of one train (for design purpose)		150,000 km
Note : The specified average minimum acceleration shall be the finally achieved values inclusive of the specified jerk rate.		

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1.5. Track structure Parameters

The MRS1 cars will operate with the track parameters as specified in the following table:

Description	Elevated and At-grade Corridor		Underground Corridor
	Ballasted	Ballast less (DFF)	Ballast less (DFF)
Track Laying Gauge	1435 mm		
Rail Type (Main Line & Depot)	60 EI (UIC 60) 880/HH	60 EI (UIC 60) 1080/HH	60 EI (UIC 60) 1080/HH
Rail Profile	UIC 861-3		
Inclination Of Rail	1 in 20		
Sleeper Spacing (Main line)	600 mm ± 10mm	600 mm ± 10mm	700 mm ± 10mm
Sleeper Spacing (Depot)	650 mm ± 10mm	Not applicable	
Ballast Cushion Depth(Main line)	300mm	Not applicable	
Ballast Cushion Depth (Depot)	250mm	Not applicable	
Standard Rail Length	13m and 18m	18m	
Rail Panel Lengths	Longer than 200m		
Minimum Radius of Curvature	200m-Underground 110m-Elevated 100m-Depot		
Minimum Turn out Radius.- (Main line)	1 in 9 - 300m radius 1 in 7- 190m radius		
Minimum Turn Out Radius Depot	1 in 7 - 190m radius		
Maximum Cant Permissible	110 mm		
Maximum Cant Desirable	110 mm		
Maximum Cant Deficiency Permissible	85mm		
Maximum Cant Deficiency Desirable	85 mm		
Maximum Permissible Cant Gradient	1 in 440		
Maximum Desirable Cant Gradient	1 in 720		
Turn-out Speed : Turnout (1 in 9) R-300	45 km/h	45 km/h	40 km/h
Turn-out Speed : Scissors (1 in 9) R-300	45 km/h	45 km/h	40 km/h
Turn-out Speed : In Depots (1 in 7) R-190	35 km/h	35 km/h	25 km/h
Turn-out Speed : Turnout (1 in 7) R-190	35 km/h	35 km/h	25 km/h
Turn-out Speed : Turnout(1 in 12) R-410	50 km/h	50 km/h	50 km/h
Turn-out Speed : Turnout(1 in 12) R-410	50 km/h	50 km/h	50 km/h

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Turn-out Speed : Turnout (1 in 8.5) R-218	30 km/h	30 km/h	30 km/h
Turn-out Speed : Turnout(1 in 8.5) R-218	30 km/h	30 km/h	30 km/h
Maximum Gradient Main Line	4%		
Maximum Gradient Depot Connection	4%		
Minimum vertical curve radius of curvature	1500m		

1.6. Current Collection System

System Particulars	For all sections and depot
Supply Voltage System	25kV AC single phase 50Hz
Current Collection	Through Pantograph

1.7. Signalling System

Item	Description
Train Control System	CBTC based On board Continuous Automatic Train Control system (CATC) consisting of i) Automatic Train Protection ii) Automatic Train Operation (ATO) iii) Automatic Train Super-vision (ATS) iv) Attended/Unattended train operation (GoA2/GoA3/GoA4)
Train Control mode	i) Automatic mode ii) Coded Manual modes iii) Restricted Manual mode iv) Run on Sight mode v) Cut-out mode vi) UTO vii) Standby

1.8. Principal Notional Vehicle Dimensions/ Leading Particulars

Description		Dimension
Gauge		1,435 mm
Maximum Length over body(including end-fairings)	DM car	22,010 mm
	T and M cars	22,010 mm
Maximum Length over couplers for all cars		23,000 mm
Maximum Width over Body		3,200 mm
Minimum Passenger Saloon Headroom		2,050 mm

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Locked down pantograph height for 25kV AC cars from rail level at Car Centre Line		4,048 mm
Maximum Floor height above rail level of any unloaded vehicle		1,130 mm
Minimum Floor height above rail level of fully loaded vehicle		1,100 mm
Maximum height of coupler above rail level for unloaded vehicle		815 mm
Minimum height of coupler above rail level for fully loaded vehicle		740 mm
Bogie Wheel Base	Maximum	2400 mm
	Minimum	2200 mm
Distance between bogie centres	Maximum	15,100 mm
	Minimum	14,400 mm
Wheel diameters	New	860 mm
	Fully worn	780 mm
Maximum axle load		17 Tonne (including all tolerances as per IEC 1133-1992)

2. Definitions

The following definitions are applicable to this PTS.

- **“Employer”** means Delhi Metro Rail Corporation Limited (DMRC), its legal successors and assignees.
- **“Sub-contractor”** means the Supplier who supplies the required Air duct panels to BEML for MRS1 project.
- **“Contractor”** means the persons or person appointed by the Employer to undertake the execution of the works for MRS1 project.
- **“Contract”** means the contract between Subcontractor and BEML in relation to the supply of Air duct panels for MRS1 project.
- **“Engineer”** means any person nominated or appointed from time to time by the Employer to act as the Engineer for the purposes of the Contract and notified as such in writing to the Contractor.
- **“Engineer's Representative”** means any Assistant of the Employer appointed from time to time by the Employer.
- **“BEML”** means the Contractor to procure the Air duct panels for MRS1 project cars.

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3. Qualification Criteria

- (i) The firm should be a reputed Aluminium fabricator. Company profile and product catalogue shall be submitted.
- (ii) The firm should have manufactured and supplied similar Aluminium fabricated components to Metro Rail Applications. Details of the components supplied and supporting documents for the supplies made shall be submitted.
- (iii) The firm should have requisite dedicated infrastructure facilities for the fabrication of Aluminium assemblies. The details of the infrastructure facilities shall be submitted.
- (iv) The firm should have established international quality and systems certifications like ISO-9001 / ISO -14001/ IRIS. The certificates shall be submitted.
- (v) The firm should possess qualified welders for welding Aluminium. Welder qualification certification shall be submitted.

4. Design Criteria

The Air duct panels shall comply with the following Design criteria:

- (i) Conditioned air from each unit shall be directly introduced into a duct running the full length of the car and be discharged into the car through ceiling outlets.
- (ii) Adequate sized duct from adjacent AC to the cab shall be routed to the driving cab, control cabinets and driving console. Air turbulators shall be provided in the driving console, signaling cubicles and electrical cabinets to achieve uniform cooling.
- (iii) The supply air duct shall be constructed from anodised aluminum. It shall be diagonally split for each HVAC unit to feeds one side of the car, so that even in case of failure of one HVAC, the other working HVAC will be able to cool the saloon passenger area uniformly. The duct shall be fully lagged with non-combustible insulation material to prevent the formation of condensation. The Duct shall be suitably designed to ensure that there is no leakage of supply air between the two halves of the duct. The metallic partition shall be preferred for this purpose. The design shall ensure that in the event of failure of cab end HVAC, the bleed of cool air is always available in the cab. The Contractor shall take into consideration the requirement of maintenance access for duct cleaning as and when required.

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5. Technical Requirements

The Air duct panels supplied shall comply with the environmental conditions and design criteria specified at clause 1.3 and 4 respectively and the following technical requirements.

- Panels shall be constructed from aluminium sheets to grade A5052P.
- Due care shall be taken to ensure quality of welding. Fabrication of the assembly shall be carried out by qualified welders. Welder qualification certificate shall be submitted along with the offer.
- The Air duct panels shall be manufactured using dedicated tooling and the part shall be free of tool marks & scratches.
- Aluminium Raw material shall be procured from reputed manufacturer and material test certificate from source shall be submitted.

5.1. Anodizing

Duct panels shall be anodized to grade AC15 of IS:1868

5.2. Workmanship and finish

The subcontractor shall ensure following quality of Air duct panels, as a minimum.

- (i) Air duct panel shall be made conforming to the dimensions as per drawings.
- (ii) Surface of air duct panels shall be free from undulation, cracks, scratches, tool marks and any other defects that would impair usability.
- (iii) Fabrication of Air duct panels shall be carried out using proper weld Jigs and fixtures. Suitable clamping arrangement shall be used during welding so as to avoid distortion.
- (iv) The components shall be free from oil, grease, dirt, etc. before taking up for assembly & welding.
- (v) Qualified welders and Qualified welding process only shall be employed for fabricating the Air duct Panel assembly.
- (vi) Due care shall be taken to obtain good quality welds without defects and blow holes to avoid leakages.

6. Quality Assurance Program

The subcontractor shall hold ISO 9001/ IRIS certification and shall manufacture the product accordingly. The subcontractor shall submit a copy of ISO 9001 / IRIS certification along with the offer. The subcontractor shall monitor and control the Quality systems as per ISO 9001/IRIS guidelines. BEML and/or DMRC's representative may periodically conduct compliance audits of the Subcontractor's Quality management system.

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The subcontractor shall submit Quality Assurance Plan (QAP) to BEML based on ISO 9001 / IRIS guidelines.

7. Scope of Supply

7.1. Air Duct panels

The sub-contractor shall supply the Aluminium Air duct panels conforming to this PTS and applicable drawings.

The sub-contractor shall be responsible to ensure that the items supplied meet the environmental condition specified at Clause 1.3 of this document.

The Sub-contractor shall meet the system requirements for Air duct panels in accordance with Technical requirement at Clause-5, as a minimum.

7.2. Submission of Documents

The Sub-contractor shall submit the following documents conforming to the Technical Specification along with every batch of supplies

- Material test certificates
- Dimensional check sheets

7.3. Packing

The sub-contractor shall pack properly in order that in transit and after supply of the Air duct panels to the place allocated by BEML, no damage to the Air duct panels shall occur.

7.4. Marking

Each component shall be marked with corresponding drawing number with a permanent marker

8. Inspection of Air duct panels

All Air duct panels shall be inspected as per the requirements specified at Clause 5 and the test reports shall be submitted.

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8.1. Visual Inspection of panels

The Air duct panels shall be free from any surface dents, surface undulations, scratch, dislocation, tool mark, twist, warpage, etc., which impair the usability of the panels.

8.2. Dimensional Inspection of panels

The allowable dimension tolerance of the finished air duct panels shall be as per below table unless specified in the drawings

Allowable Tolerance(mm/1m)		
Thickness	Width	Length
±0.2mm	±1 mm/1m	±1 mm/1m

8.3. Type Test & Routine Test

The air duct panels shall be type and routine tested in accordance with the specifications specified at clause-5

All such tests shall be carried out at the sub-contractor's cost, wherever performed, in the presence of and to the satisfaction of BEML and DMRC, who reserves the right to witness any or all of the tests and to require submission of any or all test specifications and reports.

BEML and DMRC reserve the right to reasonably call for additional tests, if necessary.

The subcontractor shall carryout the following type tests and routine tests, as a minimum.

ITEMS	TYPE TEST	ROUTINE TEST
Visual Inspection	•	• (100% supplies)
Dimensional Inspection	•	• (100% supplies)
Anodizing coating thickness test	•	
Weight	•	
Material test	•	

The type test procedure document shall be prepared by the sub-contractor and BEML/DMRC approval shall be obtained before conducting the tests.

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8.4. First Article Inspection (FAI)

The subcontractor shall offer the air duct panels for First Article Inspection by BEML/DMRC in accordance with the BEML/DMRC approved FAI plan prior to serial production in order to confirm that the item produced fully complies with the technical specifications, System design and manufacturing process.

The Subcontractor shall ensure that the produced air duct panels is compliant to all requirements prior to inviting for testing and FAI. The pre-test result prior to official testing/FAI shall be submitted with the invitation letter to request BEML/ DMRC witness.

At the FAI, the subcontractor shall make available all pertinent design and manufacturing process documentation, test records, material certifications, etc.

During FAI ,if any inspections or tests indicate that specific hardware or documentation does not meet the specified requirements, the appropriate items shall be repaired, replaced, upgraded or added by the Subcontractor at their own cost, as necessary to correct the noted deficiencies. After correction of deficiency, all tests necessary to verify the effectiveness of the corrective action shall be repeated.

If FAI has to be repeated due to non-compliances/ deficiencies noticed, the cost towards the same and the cost towards BEML/DMRC visit to subcontractor's place for witness of RE-FAI shall be to subcontractor's responsibility.

Upon acceptance of the FAI by BEML/DMRC, the subcontractor is then free to proceed to manufacture all pertinent hardware. The hardware must meet or exceed the quality standards set at the FAI, and must incorporate any comments made by BEML/DMRC at the FAI.

Subcontractor shall note that BEML/DMRC FAI clearance will not relieve the subcontractor's responsibility towards design, development, testing, manufacture and supply during the revenue service.

9. Appendices

- Vendor Approval form
- Technical offer Submittals Check List

10. Submittals with Technical Offer

The Subcontractor shall provide as a minimum, the following along with the technical offer.

1. Complete technical offer for the Air-duct system
2. Supporting documents for Qualification Criteria compliance (Clause 3).

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3. Details of infrastructure facilities for Air duct assembly production.
4. Details of weld jigs & Fixtures available for Air duct assembly production.
5. Welder qualification certificates & Welding process qualification (WPS) for Aluminium welding.
6. Duly filled Vendor approval form along with supporting documents including QAP & ITP for MRS1 project, company profile with infrastructure facilities, product range etc., and satisfactory revenue service performance certificate from end user/Metro corporations for Air duct system.
7. Clause-wise compliance against the PTS Doc No. GR/TD/4865.
8. Compliance to the tender drawings.

Date:

Proforma No: MRS1/BEML/V.NNO/CAT- __/_____/M/ _____

CHECKSHEET FOR SUBMISSION OF DOCUMENTS FOR NOTICE OF NO OBJECTION FOR SUB-CONTRACTOR/VENDOR FROM DMRC			
ITEMS:			
Category	A	Items manufactured outside India and proposed to be used in all MRS1 trains.	<input type="checkbox"/>
	B	Items manufactured outside India and proposed to be used in all MRS1 trains but likely to be localised after some part quantity from OEM (shall be declared by BEML).	<input type="checkbox"/> Equivalent Localisation Quantity : __ Trainsets
	C	Locally manufactured items proposed to be used in all MRS1 trains.	<input type="checkbox"/>
1	Proforma for Submission of documents		<input type="checkbox"/> YES <input type="checkbox"/> NO
2	Vendor Details	Annexure-I	<input type="checkbox"/> YES <input type="checkbox"/> NO
3	Sub-Vendor Detail	Annexure-I	<input type="checkbox"/> YES <input type="checkbox"/> NO
4	Certificate from BEML	Annexure-II	<input type="checkbox"/> YES <input type="checkbox"/> NO
5	Copy of technical purchase specification of BEML		<input type="checkbox"/> YES <input type="checkbox"/> NO
6	Inspection and Test Plan		<input type="checkbox"/> YES <input type="checkbox"/> NO
Note:	1	Incomplete documents will not be reviewed by DMRC.	
	2	Items used in DMRC's existing rolling stock do not automatically qualify for use unless specifically approved by DMRC for this project.	
<div style="display: flex; justify-content: space-between; align-items: flex-end; padding-top: 20px;"> (BEML Limited) _____ (Proposed Vendor) </div>			

Date:

Proforma No: MRS1/BEML/V.NNO/CAT- __ / ____ /P1/ ____

**PROFORMA FOR SUBMISSION OF DOCUMENTS FOR NOTICE OF NO OBJECTION FOR SUB-CONTRACTOR/VENDOR
FROM DMRC**

1	Item description				
2	Vendor particulars along with proposed manufacturing unit submitted in Annexure-I	<input type="checkbox"/> YES <input type="checkbox"/> NO			
3	Technical Specification & Inspection Plan	—			
3.1	Enclosed copy of Technical Purchase Specification of BEML	<input type="checkbox"/> YES <input type="checkbox"/> NO			
4	Details of experience/ satisfactory performance to establish compliance with ERTS 3.2.2.				
The Information shall be submitted in following format:					
S.No.	Mass Rapid Transit System where proposed sub-system/equipment/component has been used	Country	Quantity Used	Period in satisfactory Revenue Service [from/to] (Min 3 yrs in each MRTS)	Manufacturing Unit
	1	2	3	4	5
1	1				
	2				
	3				
2	1				
	2				
	3				
3	1				
	2				
	3				
4	1				
	2				
	3				
4.1	Based on above, is the proposed item compliant with ERTS 3.2.2				<input type="checkbox"/> YES <input type="checkbox"/> NO
4.2	Is the proposed manufacturing unit compliant with ERTS 3.2.2				<input type="checkbox"/> YES <input type="checkbox"/> NO
4.3	Confirmation that the subsystems used in MRS1, as proposed herein, shall have NO CHANGE in source, manufacturing unit, components, specification, material etc. from those approved unless got specifically approved from DMRC.				<input type="checkbox"/> CONFIRMED <input type="checkbox"/> NOT CONFIRMED
4.4	Information submitted herein as above is certified as correct, strictly in accordance with the MRS1 contract conditions and has been verified by BEML. In case any information is found to be factually incorrect or at variance with contract conditions at any stage, BEML commits to replace the concerned 'sub-system' in complete fleet as per the instructions of engineer, which shall be final and binding. In such case, BEML shall not be eligible either for seeking any claim whatsoever or for seeking extension of contract delivery period.				<input type="checkbox"/> CONFIRMED <input type="checkbox"/> NOT CONFIRMED
4.5	Confirmation that DMRC may depute a team of Engineers (around six) at Sub-contractor/vendor's office for requisite duration with a view to expedite finalization of designs in accordance with contract 'MRS1' conditions ERGS 5.11.3.				<input type="checkbox"/> CONFIRMED <input type="checkbox"/> NOT CONFIRMED
5	Notwithstanding the vendor approval communicated by DMRC on the proposal of BEML, responsibility for manufacture, testing, supply, commissioning and quality control shall continue to rest solely with BEML and BEML will be solely responsible for meeting all contractual requirements.				<input type="checkbox"/> CONFIRMED <input type="checkbox"/> NOT CONFIRMED
<div style="display: flex; justify-content: space-between;"> (BEML Limited) _____ (Proposed Vendor) </div>					

Date:

Proforma No: MRS1/BEML/V.NNO/CAT-___/_____/P2/____

6	Category B - Sourcing from facilities in India after supply of agreed quantity from approved manufacturing unit.	
6.1	In case OEM wants to use manufacturing facilities in India (other than his own) for items for which the OEM has been approved, it shall enter into an agreement with such selected Indian equipment manufacturer and obtain prior approval from DMRC. No change in composition, rating, type, model no., manufacturing process, quality standards, design, etc. and make of the components used in assemblies/sub-assemblies of such equipment as manufactured by the approved parent vendor shall be made without specific prior approval of the Engineer.	
6.2	In case the vendor uses his own facilities for indigenization after part supply of equipment from the approved manufacturing unit, no change in design, component type/make, quality standards, manufacture procedure, sourcing of materials etc. shall be made without specific prior approval of the Engineer.	
6.3	In case OEM wishes to change/make/type specifications, etc. of any sub-components for supplies to be sourced from Indian facility, specific prior approval of the Engineer shall be obtained for changes made, model, specification, etc. Responsibility for obtaining such prior approval shall rest solely with the contractor.	
6.4	In case of local manufacturing of carbody or any other item(s) manufactured by BEML/OEM and used in initial trains, BEML shall be exclusively responsible for all quality assurance and inspection and their implementation and also ensure provision of physical partition as per the ERGS 1.1.7	
7	Category C- Locally Manufactured Items	
7.1	Does the manufacturing unit satisfy ERTS 3.2.2	<input type="checkbox"/> YES <input type="checkbox"/> NO
7.2	If not, basis/justification for proposal to be submitted for DMRC review	<input type="checkbox"/> YES <input type="checkbox"/> NO
8	BEML confirms that in terms of ERTS 3.2.2, they would seek Notice of No Objection for Sub-Contractor/Vendor from DMRC notwithstanding the item(s) being used in DMRC's existing rolling stock.	<input type="checkbox"/> YES <input type="checkbox"/> NO
9	BEML shall submit Certificate as per enclosed Annexure-II confirming:	
9.1	Compliance with Clause 6.6 of ERGS and GCC Clause 5.8 regarding supply of software tools/documents/materials etc.	
9.2	Compliance with Clause 8.12 of ERGS regarding supply of all drawings, specifications, patterns etc. in case the manufacture of these items is discontinued by the proposed vendor.	
10	Commitment from the vendor that in case of any future procurement action by DMRC, he shall quote directly to DMRC.	
11	Commitment from the Vendor to provide technical support through permanent positioning of Vendor's staff at depots for meeting DLP obligations as per ERTS clause 3.2.5.	
12	BEML commits that the vendor shall be complying with all relevant contract clauses.	
<div style="display: flex; justify-content: space-between; align-items: flex-end; padding-top: 20px;"> <div>(BEML Limited)</div> <div>_____ (Proposed Vendor)</div> </div>		

Date:

Proforma No: MRS1/BEML/V.NNO/CAT- __ / ____ /A1/ ____

Annexure-I	
SUB-Contractor/VENDOR/SUB-SUPPLIER DETAILS	
1	Vendor/Sub-supplier OEM Name
2	Details of item proposed to be sourced
3	Sourcing by: <div style="display: flex; justify-content: space-between;"> (a) BEML <input type="checkbox"/> (b) Proposed Main vendor <input type="checkbox"/> </div>
4	Marketing Office/Head Office
4.1	Complete address (including website)
4.2	Contact person details in Head Office
	<ul style="list-style-type: none"> Name Designation Telephone Fax Mobile Email
5	Details of proposed compliant plant/manufacturing unit from where item is proposed to be sourced
5.1	Complete address (including website)
5.2	Contact person details
	<ul style="list-style-type: none"> Name Designation Telephone Fax Mobile Email
5.3	Supply details of the manufacturing unit for the proposed item or item with similar design.
5.4	It is confirmed that the proposed manufacturing unit and the vendor are fully compliant with ERTS 3.2.2
5.5	We commit that in case of any future procurement action by DMRC, the proposed vendor shall quote directly to DMRC without any involvement of BEML.
5.6	We confirm that we will provide technical support through permanent positioning of our staff at depots for meeting DLP obligations as per ERTS clause 3.2.5.
5.7	We have carefully gone through all relevant clauses of the MRS1 Contract and shall fully abide by the contract conditions and decisions communicated by DMRC during contract execution without exception.
<div style="display: flex; justify-content: space-between; margin-top: 20px;"> (BEML Limited) _____ (Proposed Vendor) </div>	

Date:

Proforma No: MRS1/BEML/V.NNO/CAT- ___/___/A2/___

Annexure-II

**Certificate for compliance with Contract conditions regarding
Software requirements.**

This is certified that in the contract between BEML and _____ (proposed vendor) for supply of _____, specific conditions for confirming total compliance with the following contract condition/clauses have been included and agreed to between BEML and _____ (proposed vendor):

(a) Clause 6.6 of ERGS and GCC 5.8

It is certified that we shall provide full access of application software(s) and any other software /hardware tools to DMRC which they may specifically require for the intended purpose specified in this specification. For all commercial software BEML shall provide all available documentation for the application and maintenance of that software.

Complete documentation along with the software to be supplied by BEML and its Vendor(s) shall comprise of Signal flow diagram, flow charts, functional blocks, details of signals, interpretations so as to enable engineer to debug and implement vehicle/train level modifications based on DMRC's experience, operational & maintenance requirements. Full access to the application software to DMRC shall be provided for this purpose.

It shall be possible for DMRC to modify/change various parameters/logics used in the software and implement the changes on trains. Full facilities including any software/hardware tools, simulation/test bench which are essential for this purpose shall be supplied.

It is committed to supply the software/hardware etc. within the scope specified in respective clauses of ERTS relevant for the proposed item/vendor and we would be fully complying with GCC 5.8

(b) Clause 8.12 of ERGS:

It is certified that _____ (proposed vendor) will supply all drawings, specifications, patterns and any other information required by DMRC for arranging such items in case the manufacture of these items is discontinued within 10 years by the proposed vender.

(BEML Limited)

_____ (Proposed Vendor)

Undertaking for Supply of Special tools, Jigs and Fixtures under Contract 'MRS1'

To Delhi Metro Rail Corporation Ltd.

We _____ (proposed Vendor) hereby confirm that, we shall supply the Special tools, Jigs and Fixtures for Mumbai Metro Line 2 & 7, in accordance with the Contract provisions of Contract 'MRS1'.

BEML Limited

(sign, Name & designation with stamp)

Proposed Vendor

(sign, Name & designation with stamp)

Undertaking for Technical/Service Support

To Delhi Metro Rail Corporation Ltd.


We _____ (proposed Vendor) shall provide Technical/Service support during Commissioning and post Commissioning period, till completion of the Defect Liability Period, for Mumbai Metro Line 2 & 7, 'MRS1' Project from their local office in India.

BEML Limited

(sign, Name & designation with stamp)

Proposed Vendor

(sign, Name & designation with stamp)

	TECHNICAL OFFER SUBMITTALS CHECK SHEET	Project MRS1
Aggregate	Air duct Panels	PTS DOC No.: GR/TD/4865
BEML Enquiry/ RFQ Reference :		

Sl. No.	DETAILS	SUBMITTED	NOT SUBMITTED
1	Complete technical offer for the Air-duct system	<input type="checkbox"/>	<input type="checkbox"/>
2	Supporting documents for Qualification Criteria compliance	<input type="checkbox"/>	<input type="checkbox"/>
3	Details of infrastructure facilities for Air duct assembly production	<input type="checkbox"/>	<input type="checkbox"/>
4	Details of weld jigs & Fixtures available for Air duct assembly production.	<input type="checkbox"/>	<input type="checkbox"/>
5	Welder qualification certificates & Welding process qualification (WPS) for Aluminium welding.	<input type="checkbox"/>	<input type="checkbox"/>
6	Duly filled Vendor approval form along with supporting documents including QAP & ITP for MRS1 project, company profile with infrastructure facilities, product range etc., and satisfactory revenue service performance certificate from end user/Metro corporations for Air duct system	<input type="checkbox"/>	<input type="checkbox"/>
7	Clause-wise compliance against the PTS Doc No. GR/TD/4865	<input type="checkbox"/>	<input type="checkbox"/>
8	Compliance to the tender drawings	<input type="checkbox"/>	<input type="checkbox"/>

Note : Incomplete submissions are liable for Rejection.

Signature of the Bidder with Seal