



Maharashtra Metro Rail Corporation Limited

(Nagpur Metro Rail Project)

Name of Work: Supply, Installation, Testing and Commissioning of Water & Air Cooled Chillers along with associated accessories, Air Distribution system, Mechanical Ventilation System, Geo-thermal System for Metro Bhawan for Nagpur Metro Rail Project.

Corrigendum-I

Date: 04.08.2017

Tender No. : **NIEG- 08/2017**

NMRCL E-Tender Portal: <https://mahametrorail.etenders.in>

Tender No. (As uploaded in the E-Tender Portal of NMRCL): **No.100**

"Reply of Bidders Queries"

General Manager/Procurement
(Maharashtra Metro Rail Corporation Limited)

Project:- Design, Supply, installation, testing and commissioning of water & air cooled chillers along with associated, air distribution system, mechanical ventilation system, Geo thermal system for metro bhawan for nagpur metro rail project				
Maharashtra Metro Rail Corporation Limited				
Reply to Pre-bid Queries- Tender No:- N1EG-08/2017				
Sr. No.	Clause	Existing Condition	Bidder's query	MMRCL REMARK
1	ITB 14.7	The price quoted by bidders deemed to be inclusive of all kinds of duties, taxes, Cess and other levies payable as per GST, Custom Tariff act etc. and as prevailing on 28 days (Base Date) prior to final date of submission of bid	Requesting you to provide the clarity on taxation	The quoted price should be inclusive of all applicable taxes. However the bidders should give Tax breakup also.
2	Form of Bid Security	EMD Bank Guarantee Bond	Requesting you to add NWC clause as per the Banks / RBI Norms at end of BG Format Notwithstanding anything contained hereinabove; A. Our liability under this guarantee shall not exceed Rs. _____ . B. This bank guarantee shall be valid upto _____ . C. We are liable to pay the guarantee amount or any part thereof under this bank guarantee only and only if you serve upon us, a written claim or demand on or before _____ .	Agreed
3	BOQ - WC Chiller	Supplying, installing, testing and commissioning of Single/Twin compressor Water Cooled Screw Chilling Machines (VFD).	Requesting you to confirm the scope of Harmonic Filter / THID level to be maintain across filter.	VFD must be supplied with standard passive harmonic filters (line reactor/DC link/ Any other means as per OEM)
4	BOQ - WC Chiller	One chiller shall be factory tested at design conditions at three point randomly selected by the Client/Consultant. Chiller shall be AHRI certified.	Requesting you to confirm the no of person going to attend the testing	Two Persons would be attending the inspection.
5	BOQ - AC Chiller	Vibration isolators (Neoprene) to be used. E-Coat on condenser coils	Requesting you to clarify the E-Coat, As per manufacturer standards cooling coil comes with Hyperbolic / Blue Fin coating	Additional coating which is E Coat/ Epoxy coat from Factory must be provided to ensure more reliability in order to meet extreme weather conditions.
6	Specification - VRV Page 414 7.2.	Both Indoor unit and Outdoor unit shall be factory assembled, tested and filled with firs charge of refrigerant before delivery at site	Units shall be tested at factory, however will be delivered seperatly at site and refrigerant is filled after complition of copper piping works at site	Accepted. However, successful comissioning scope lies with Contractor.
7	Specification - VRV 7.3.	Outdoor Units The Noise level shall not be more then 60 dBA at normal operation	maximum noise level upto 14HP units is 60 dBA and for 18 HP unit its is around 65 dBA, however the noise level also dependent on site conditions	Kindly proceed. Variation of ± 5 db in noise level will be accepted.

8	Specification - VRV	Heat Exchanger Aluminum fins shall be covered by anti-corrosion resin film	As per Manufacturer the cooling coil comes with Bule Fin coating and anti corrosin coating will be done at site after installation of unit	Noted, kindly include the same in your price bid.
9	BOQ - AHUs	All AHU with 4/6 row deep cooling coil unless specified otherwise. SS 304 construction end plates to be provided	Can we consider GI frame for cooling coils	Kindly follow the tender specifications
10	BOQ - AHUs	Minimum 20-25 mm (WC) external static pressure shall be considered. However, actual total static pressure shall be calculated and confirmed by the vendor at the time of bidding	Requesting you to confirm whether tender is design built Lumsum or BOQ item rate If its is BOQ item rated we shall quote as per the static given in tender / BOQ and detailed static calculation for all units will be done during detailed engineering after award of works	Kindly note that we have specified external static pressure required for duct losses, diffusers etc. However, internal static pressure of unit is based on the vendor design. You may select the unit accordingly.
11	BOQ - AHUs - 7.9	AHU's shall be provided with mixing box with thermal brake profile and should be suitable for outdoor application.	Do we have to consider AHUs with Canopy for outdoor application	All the AHU's located open to atmosphere shall have rain protection canopy. You may kindly refer item No.7 of HVAC BOQ.
12	Specification - Axial Fan - page 408	Casing - Fan Casing, motor mount and Straightening Vanes	Requesting you to confirm whether you required Tube axial or Vane axial, as specification call for straighting vanes i.e. Vane Axial	Follow Tube axial flow fan
13	Specification - Axial Fan - page 408	Suspension brackets for ceiling suspension shall be welded to the casing for connection to hanger bolts	As per manufacturer it will be bolted to the casing	Kindly follow as per OEM.
14	Specification - Axial Fan - page 408	casing shall be bonderized, primed and finish coated with enamel paint	Do it required ? If yes it will be done at site	The casing has to be powder coated by OEM.
15	Specification - Axial Fan - page 408	Rotor- Extended grease leads for external lubrication shall be provided	As motor are self lubricated types, no external grease leads are required	Noted
16	Specification - Axial Fan - page 408	Motor-	Motor- Fans upto 630mm dia are selected with 1440 RPM and Fans above 630mm dia less then 1000 RPM	Kindly follow as per tender specifications
17	BOQ - SISW FAN - 13	Housing shall be constructed of 14 gage sheet steel welded construction. It shall be rigidly reinforced and supported by structural angles.	The Housing shall be consturcted as per the manufacturing standard of approved make	Kindly follow as per OEM. In case of Smoke fan, follow motor rpm given for normal axial fans.
18	BOQ, Section D, item no. 2	Supply and fixing of external insulation on supply & return air ducts	Requesting you to confirm whether what is to be consider XLPE / Nitrile Rubber	You may kindly consider as per the tender specifications and make list.

19	Approved makes		In addition to tender makes, requesting you to consider following makes Pump - Wilo Matter & Platt Ahus - Citizen Fans - Nicotra, Air Flow DOAS - Appidi System Jet Fans - Kruger , Nicotra Air Washer - All Ahu makes	Kindly follow as per the list of makes
20	1.1 & 2.4	Screw compressor	we are considering Screw compressor having capacity control with slide valve mechanism as per tender	Kindly follow the BOQ.
21	1.3 & 2.7 Starter	For constant speed chillers, the starter shall be unit mounted and either close transition star delta type or soft starter to ensure the starting current does not exceed twice the full load current at specified voltage and frequency. The maximum starting current shall be equal to full load current for VFD chillers	The starter for water cooled & air cooled chiller will be star delta type as per specifications. The specification mentions VFD we assume VFD to be used for Pumps as pumps are of variable flow type. Also the specifications mentions to consider soft tarter to minimise initial inrush current. So shall we consider softstarter with chiller for both air cooled & water cooled instead of VFD on compressor as it solves the purpose of minimizing the inital inrush current. Pl advice to proceed	VFD to be considered for Air Cooled and Water Cooled Chiller as mentioned in BOQ.
22	1.7 & 2.11	Factory testing	Request you to pl provide the testing parameters required to be checked during the factory testing so as to check if it can be fulfilled	Test to be carry out at 4 Point at site conditions.
23	1.2 & 2.6	Compressor motor	The tender mentions PF of 0.95, pl advice if we need to consider power factor correction accessory with the machine. Besides reducing the absorbed reactive power, the use of this accessory also allows the maximum absorbed current to be lowered.	Generally, with VFD chiller power factor of chiller to be maintained 0.95. In case, VFD is not able to meet 0.95, then power factor correction is required.
24		Software selection	Do we need to submit the software selection of the machines along with the offer, pl advice	Yes, to be submitted
25	5.8	Outdoor Air intake (DOAS)	Pl advice if the DOAS system has be EUROVENT certified product with EC Fans & heat recovery wheel & controls. We request you to pl approve Swegon as a brand for DOAS system as we are one of the well renowned brand in manufacturing of such systems. We also have Instalaltions in India for the same. Attached are the details of same for ref.	Swegon make is acceptable.

26	Approved makes		In addition to tender makes, requesting you to consider Chiller of Christopia Energy Systems Pvt. Ltd. We have supplied the Chillers to ISRO, BHEL, TCS, Hyundai, IIT Bombay, Central Mall, Taj Hotel etc.	Tender conditions Prevail
27	Completion Period	24 Weeks from the date of issue of LOA	We would request you to provide completion period of 52 (Fifty Two) weeks instead of 24 (Twenty Four) weeks since most of the High side equipments and Air distribution materials are to be import from other countries as per the approved makes given which itself takes time (around 12-14 Weeks) to deliver those material at site after approval from consultant or approving authority. It means that material part itself takes around 20 weeks to reach at site and after that the installation/erection part will come in picture. So it is hardly possible to complete the entire project by 24 Weeks. Also HVAC contractor is also dependent on other agencies like plumbing/ fire fighting/ electrical/ LV systems/ False ceiling vendors as we have to co-ordinate with most of the agencies and in many cases, we get front/clearances after some vendors work has been done. After getting completion of erection work, HVAC contractor will need at	Tender conditions Prevail
28	Average Annual Construction Turnover		Minimum average annual construction turnover of INR 200 million equivalent calculated as total certified payments received for contracts in progress and/or completed within the last 5 (five) years. Note: 1. Last five years shall be 2012-13 to 2016-17. In case of Companies, which follows Financial Year as Calendar Year (January to December), data for the year 2016 shall be treated equivalent to the data of FY 2016-17 and so on.	Tender conditions Prevail



29	Specific Construction & Contract Management Experience		A minimum number of **similar Works specified below that have been done satisfactorily and completed as a prime contractor, joint venture member3 carried out by tenderer during the Last Five years (i.e. 2012- 13, 2013-14, 2014-15, 2015-16 & 2016-17) in Government, Semi-Govt. & Govt. undertaking Organizations/ Private Companies, those who are listed in BSE/NSE /Educational Institution recognized by respective statutory authority. Have received minimum Rs. 80 Million from a Single Contract Work for Execution of Water & Air Cooled Chillers/ VRV/F system along with associated accessories, Air Distribution system, Mechanical Ventilation System, Geo-thermal System works. OR Have received minimum Rs. 100 Million from Two Contract Works for Execution of Water & Air Cooled Chillers/ VRV/F system along with associated accessories, Air Distribution system, Mechanical Ventilation System, Geo-thermal System works. OR Have received minimum Rs. 120 Million from	Tender conditions Prevail
30	HVAC Approved Make List- Factory Fabricated ducts- Ductofab/ Rolastar/ Eco Duct/ Asawa		We request you to add Metatech make under approved Make List. Profile Enclosed for your reference.	Tender conditions Prevail
31	HVAC Approved Make List Variable Refrigerant Flow System Toshiba/ Daikin/ Mitsubishi/ Midea		We request you to add LG as approved make.	LG make is acceptable.
32	Geothermal System		We suggest geothermal system shall be of closed loop type with hybrid of closed circuit cooling tower for regeneration for better life of the system.	Tender conditions Prevail
33	Geothermal System- Approved Make List		We request you to approve Agape Ecotech for geothermal system & Weifang Palconn Plastics Technology Co. Ltd. for PEX pipes in approved make list.	acceptable, subject to meet qualifying requirement

34	Approved makes		<p>LG was in approved make list for previous tender. Also, We believe following projects themselves speak for why we should be included in the make list</p> <ul style="list-style-type: none"> - Sena Bhavan (5200HP) - North Block (3074 HP) - Delhi Metro(3000HP) – <p>Completion certificate attached</p> <ul style="list-style-type: none"> - Ircon Lucknow- Administrative building (2028HP with AHU) - Chennai Metro(400HP) <p>Also, our product matches the specifications required in tender. We request, for inclusion of LG as a make in VRF System</p>	Refer response given in Point No. 31
35	Specification : 1.6 Performance	The chiller shall be running satisfactorily up to 15% of full load.	Chiller shall be running up to 25% of full load capacity.	Voltas make is acceptable
36	Specification : 1.2 Compressor motor	The minimum required efficiency and power factor..	Offered chiller provides automatic displacement power factor correction and keep power factor > 0.95 at all the loads.	Noted
37	Specification : 1.6 Performance	Chiller shall be capable for receiving variable primary flow in the range of 100 - 40% at least and must allow flow variation of 30% per minute.	Offered chiller shall be capable for variable primary flow in the range of 100 - 40% and allow flow variation of 50% per minute.	Not applicable as Constant Primary pumping system is designed.
38	BOQ point no.1.6	Evaporator : Max. pressure drop - 15 Ft.	We request you to kindly allow pressure drop of < 20 ft.	We suggest you to reselect the Evaporator size to minimize pressure drop.
39	BOQ point no.1.7	Condenser : Max. pressure drop - 15 Ft.	We request you to kindly accept pressure drop of < 20 ft.	We suggest you to reselect the Condenser size to minimize pressure drop.
40	BOQ point no.1.8	Minimum COP at AHRI condition shall be 5.5, IPLV - 0.37Maxim lkw/TR - 0.75, minimum NPLV - 0.40	We request you to kindly accept pressure drop performance as minimum IPLV of 0.38 Kw/TR and NPLV of 0.41 Kw/TR.	Noted and acceptable
41	2. 2 Quality Assurance program	ASME Code	Evaporator shall be designed and manufactured as per GB code. We request you to kindly accept the same.	Noted and acceptable
42	2.4 compressors	Capacity control system capable of reducing unit capacity to 10% of full load for 2 compressors..	Chiller can unload up to 17% capacity. Request you to kindly accept the same as being multi chiller plant room, chance of chiller unloading up to 10% shall be remote.	Noted and acceptable
43	2.4 compressors	Chiller shall be capable for variable primary flow in the range of 100 - 40% at least and must allow flow variation of 30% per minute.	Offered chiller shall be capable for variable primary flow in the range of 100 - 25% and allow flow variation of 10% per minute.	Not applicable as Constant Primary pumping system is designed.
44	2.6 Electric motor	The efficiency and power factor shall be not less than..	Offered chiller provides automatic displacement power factor correction and keep power factor > 0.95 at all the loads.	Noted

45	BOQ point no.2.6	Evaporator : Max. pressure drop - 15 Ft.	We request you to kindly allow pressure drop of < 20 ft.	We suggest you to reselect the Evaporator size to minimize pressure drop.
46	BOQ point no.2.8	Minimum COP at AHRI condition shall be 3.5 IPLV - 0.67Maxim lkw/TR - 1.45, minimum NPLV - 0.70	We request you to kindly accept pressure drop performance as minimum COP of 3.48 and NPLV of 0.71 Kw/TR	Noted and acceptable



PART-II ADDENDUM/CORRIGENDUM-1
 DESIGN,SUPPLY,STORAGE,INSTALLATION,TESTING AND COMMISSIONING OF NRF/VRV AIR-CONDITIONING SYSTEM ALONG WITH GEO THERMAL STATIONS FOR -
 METRO BHAWAN FOR NAGPUR METRO RAIL PROJECT

S.NO	Part	Section	Page No.	Clause No	Bid Condition	Addendum/Corrigendum to be read as
1	4	Financial Bid & BOQ	875	2.8	Minimum COP at AHRI conditions shall be 3.5, IPLV - 0.67, Maximum I kW/ TR - 1.45, Minimum NPLV - 0.70	Minimum COP at AHRI conditions shall be 3.48 , IPLV -0.67, Maximum I kW/ TR - 1.45, Minimum NPLV - 0.71
2	4	Financial Bid & BOQ	875	1.8	Minimum COP at AHRI conditions shall be 5.5, IPLV - 0.37 Maximum I kW/ TR - 0.75, Minimum NPLV - 0.40	Minimum COP at AHRI conditions shall be 5.5, IPLV - 0.38 Maximum I kW/ TR - 0.75, Minimum NPLV - 0.41

