

**All Bidders****Amendment -V**

**Subject: Expansion of existing Manifold Room, Plant Room, Liquid Oxygen Area including pipeline distribution system and “Buy back as is where is basis” for the extended building for upcoming 500 Bedded Jai Prakash Narayan AIIMS Trauma Centre, New Delhi.**

**IFB No. : HSCC/SES/MGMS/AIIMS-TRAUMA/2015**

This has reference to above IFB No. for the Subject works.

The following Amendment may be noted which shall be treated as part of the tender document and to be submitted duly signed & stamp along with tender.

<b>Sr. No.</b>	<b>Bidder's Query</b>	<b>Clarification/Amendment</b>
1.	<p><b><u>Existing Clause of the Tender</u></b>  <b><u>Volume-I, Pre-Qualification Documents; Prequalification Criteria, Clause no. 2.2</u></b></p> <p>(ii) Experience of having successfully completed similar work during last 7 years ending last day of month previous to the one in which tenders are invited should be either of the following:</p> <p>Three similar* completed works costing not less than the amount equal to 40% of the estimated cost.  or  Two similar* completed works costing not less than the amount equal to 50% of the estimated cost.  or  One similar* completed work costing not less than the amount equal to 80% of the estimated cost.</p> <p>One completed work of any nature (either part of 2.2,(ii) or separate one costing not less than the amount equal to 40% to the estimated cost with some Central/State Government organisation/Central Autonomous body/Central Public Sector Undertaking.</p>	Tender Terms & Conditions prevails.

	<p><b>*Similar nature of works means supply, installation, testing &amp; commissioning of Medical Gas Manifold System.</b></p> <p><b><u>Requested</u></b></p> <p>“In case, the qualifying experience certificate is from Private sector/ Charitable Hospital, the vendor should submit the TDS certificate as a proof of having executed the said work.” The TDS certificate of same value as supporting document will prove the authentication of Private work completed.</p> <p>We request that TDS Certificate should be asked for the justification of the actual value of the order declared against the experience of similar nature of work.</p>	
2.	<p><b><u>Existing Clause of the Tender Pre-Qualification Criteria, 2.2 (ii), 4<sup>th</sup> Paragraph</u></b></p> <p>A Certificate from client for completion of work(s) must be submitted along with application. Own works/ Certification of agencies shall not be considered for prequalification.</p> <p><b><u>Request</u></b></p> <p>Please appreciate 99% of the tenders are floated by the Tender empowering Agencies. Complete work right from tendering, evaluation, award of work and till completion and commissioning of work the same is being looked after by agencies such as M/s HLL, M/s HSCC, M/s EIL, M/s Mecon, M/s PWD, M/s CPWD, M/s L&amp;T, V3S etc. Hence the completion certificate is also provided by the consultants, which is itself Authority to issue completion certificate on behalf of the owner. Hence this clause may please be amended as certificate of agencies should be acceptable.</p>	Tender Terms & Conditions prevails.
3.	<p><b><u>Existing Clause of the Tender Document Volume-III, Page no. GCC – Page # 47 Clause no. 54.3 Customs Clearance</u></b></p> <p>The Employer will use his best endeavours in assisting the Contractor, where required, in obtaining clearance through the Customs of Contractor's Equipment, materials and other things required for the Works. But the ultimate</p>	Tender Terms & Conditions prevails.

	<p>responsibility for getting any required customs clearance shall be of the contractor.</p> <p><b><u>Requested</u></b></p> <p>As discussed during pre-bid meeting, kindly clarify the Custom Duty Exemption Certificate will be provided by the Institute or not.</p>	
<p>4.</p>	<p><b><u>Existing Clause of the Tender Document</u></b>  <b><u>Volume-III, Page no. SCC-9, Clause no. 1.5 Time for Completion</u></b></p> <p>The successful Bidder shall complete the Works within 4(Months) <b>Calendar months</b> from Consultant's order to commence the Work.</p> <p><b><u>Requested</u></b></p> <p>We request the Delivery Schedule may please be amended as 6 (Month) Calendar months instead of 4 (Four) Calendar months as mentioned. You would appreciate that this is a Big Project and arranging such quantity of material takes lot of time and resources. The manufacturing itself takes 2 months and subsequently the shipment/transaction also takes minimum of 2 months time.</p> <p>How we can meet the 4 months delivery schedule. This is a project and not mere supply of equipments which is a tedious job and involve lot of stages and most of the items like Bed Head Panel, AGSS System, Air System, Vaccum System, Oxygen Control Panel, N2O Control Panel, Co2 Control Panel etc items are imported for which procurement only starts after approval of final drawing which is a time consuming process so we hereby request you to kindly increase the delivery schedule.</p>	<p>The completion period should be read as 6 months instead of 4 months.</p>
<p>5.</p>	<p><b><u>Existing Clause of the Tender Document</u></b>  <b><u>Volume III, Special Conditions of Contract, Page no. SCC-39, Clause no. 21.0 Terms of Payment</u></b></p> <p>For purposes of estimating the contract value of works executed for certificate of payment, the following norms</p>	<p>Payment terms may be read as</p> <p>- 70% of payment on delivery of equipments at site after inspection and passing on pro-rata basis.</p>

	<p>shall be followed:</p> <ol style="list-style-type: none"> <li>1) 65 % of the BOQ contract rates on delivery of equipments at site after inspection and passing on pro-data basis.</li> <li>2) 25% of BOQ contract rates on satisfactory take over certificate by client after erection and installation, testing and commissioning of equipments on pro-data basis.</li> <li>3) 10 % of BOQ contract rates after successful completion of trial run of 30 days from the date of handover to the client.</li> </ol> <p><b><u>Requested</u></b></p> <p>We request, the payment terms should be;</p> <ul style="list-style-type: none"> <li>- 70% of payment should be released on delivery of goods.</li> <li>- 20% of payment may please be released on installation and testing.</li> <li>- 10% payment on commissioning and successful testing and handover.</li> <li>-</li> </ul>	<ul style="list-style-type: none"> <li>- 20% of payment on installation, testing and commissioning on pro rata basis.</li> <li>- 10% payment on satisfactory handover to AIIMS Trauma.</li> </ul>
6.	<p><b><u>Existing Clause of the Tender Document</u></b>  <b><u>Volume V, Bill of Quantities (BOQ), Existing BOQ Item, 2</u></b></p> <p>Part III : Operations and Comprehensive Maintenance Charges for the complete Medical Gas Manifold System.</p> <p><b><u>Requested</u></b></p> <p>We request the Operations and Comprehensive Maintenance Charges (CMC) should be separate, as both are different things and accordingly the price should also be asked separately. Therefore Kindly delete Operation (24x7) in Part III which is added along with Comprehensive Maintenance Charges.</p> <p>Secondly, we request the Comprehensive Maintenance</p>	<p>Operation and CMC for quoting will be separate. Revised BOQ sheet is attached.</p> <p>Tender terms prevails for other queries.</p>

	<p>Charges (CMC) should be fixed/freeze. After the defect liability period, we have come across in many tenders that the bidders play with the main prices i.e. they add the CMC charges in main price bid itself and when the turn comes of CMC they raise their hands. In many states for example Rajasthan, Maharashtra etc they have fixed the Annual Maintenance Charges as 2% and Comprehensive Maintenance Charges as 4%. By doing this, apple to apple comparison of tender can be evaluated.</p> <p>Thirdly, we request the Comprehensive Maintenance Charges (CMC) should be the responsibility of the Company who has executed the entire work. We have come across that this part of the tender is outsourced to other company. Kindly ensure that same should not happen.</p>	
7.	<p><b><u>Existing Clause of the Tender Document</u></b>  <b><u>Detailed Tender Information, Last date to fill/upload the tender through e-tendering</u></b></p> <p>As mentioned, the Last date to fill/upload the tender through e-tendering is 30.03.2016, 14.30 hrs. Since this is a big and prestigious tender and most of the items are imported subsequently lot of clarifications/confirmations on technical specifications are required from foreign principals.</p> <p>Please appreciate the pre-bid held on 23.03.2016 and subsequently the bidders will submit their Technical &amp; Commercial Clarifications/suggestions.</p> <p>We sincerely request M/s HSCC to kindly provide us minimum of 15 days after Final Amendment of Tender to incorporate all the changes/amendments, enabling us to prepare and submit Competitive bid. Accordingly we request the tender may please be extended.</p>	Last date of submission of tender is 26.05.2016.
	<p><b>Technical Suggestion for MGPS - Volume IV of Tender Specification</b></p>	
8.	<p>Page 2, Technical Specification 1.a  <b>Oxygen Manifold</b>  Each header bar shall be provided with 20 numbers of cylinder pigtail connections to suit cylinder valves as per IS 3224.  <b>Our Suggestion</b></p>	Product must be European CE/UL Listed.

	As this is a quality product. For quality assurance the product must be CE Marked with 4 digit number/UL listed.	
9.	<p>Page 7, Technical Specification 1f.  <b>High Pressure Tubing Flexible</b>  High Pressure tubing flexible having Antistatic core as per ISO with proper colour coded complete as per specifications.  <b>Our Suggestion</b>  It is mentioned that the High Pressure Flexible Antistatic core as per ISO. The ISO standard is only for colour. It should be CE marked with 4 digit number/UL listed.</p>	Product must be European CE/UL Listed.
10.	<p>Page 8, Technical Specification 2.a  <b>Nitrous Oxide Manifold</b>  Each header bar shall be provided with 8 numbers of cylinder pigtail connections to suit cylinder valves as per IS 3224.  <b>Our Suggestion</b>  For quality assurance the product must be CE Marked with 4 digit number/UL listed.</p>	Product must be European CE/UL Listed.
11.	<p>Page 13, Technical Specification 5a  <b>VACUUM (SUCTION) SYSTEM .</b>  Vacuum system shall be of system capacity 228 cfm/6460 LPM at 19" Hg as per the requirement of relevant International Standard.  <b>Our Suggestion</b>  Kindly clarify the capacity is running or standby and should be added as per relevant standard. We assume that you will add stand by Vacuum system.  The product must be CE Marked with 4 digit number/UL Listed.</p>	Working with Standby system should be provided as per the relevant international standard/European CE/UL Listed.

12.	<p>Page 14, Technical Specification 4.0  <b>AIR COMPRESSORS (IMPORTED)</b>  <u>The system shall be consisting of Oil free Compressed Air System to provide system capacity 150 scfm/4250 LPM at 10 bar.</u>  <b>Our Suggestion</b>          Kindly clarify the capacity is running or standby as it is not shown.  <u>This is a scroll technology we have adopted, max delivery pressure in scroll is 8 bar. Hence we request the range should be 8 to 10 bar.</u>          The product must be CE Marked with 4 digit number/UL Listed.</p>	Tender terms prevail.
13.	<p>Page no. 15, Technical Specifications 7.0          Distribution Piping  <b>Our Suggestion</b>          We request the Distribution Piping should be KITE marked for quality product.</p>	Tender terms prevail.
14.	<p>Page 19, Technical Specification 7.0  <b>HORIZONTAL BED HEAD PANELS (HBHP)          1800MM LONG</b></p> <p>Pre OT (Outlets- Oxygen -1, Vacuum-1, Medical Air-1), Post OT- (Outlets- Oxygen -2, Vacuum-2, Medical Air-1) Private Room/Isolation Room &amp; VIP Room (Outlets- Oxygen -1, Vacuum-1, Medical Air-1)          All down drops shall be installed at one end preferable &amp; Vertical drop installed at one end should be covered with Aluminium boxing with matching color.  <b>Our Suggestion</b>          Confirm us whether the medical gas outlet provision or is Inbuild in Bed head panel. pls clarify.          We request to kindly delete the line as it has no meaning. Now a days concealed piping is done.</p>	<p><b>Deleted lines.</b> (All Down drops shall be installed at one end preferably &amp; Vertical drop installed at one end should be covered with Aluminium boxing with matching color.)</p> <p>Gas outlets should be as per tender terms.</p>
15.	<p>Page 25, Technical Specification 17.b  <b>Ward Vacuum Units</b>          Collection bottle 500 and 2000ml with mounting arrangement.  <b>Our Suggestion</b>          We request the Collection bottle should be 500 to 1500 ml with mounting arrangement. It should be CE Marked with 4 digit number/UL listed.</p>	<p>Collection bottle should be 1000 to 1500 ml          It should be European CE /UL listed.Imported.</p>

16.	<p>Page 21, Technical Specification 17.c  <b>Theatre Vacuum Unit</b>  <b>Our Suggestion</b>  Theatre Vacuum Unit should be CE marked with 4 digit number/UL Listed has not been mentioned.</p>	Theatre Vacuum Unit should be European CE /UL listed.Imported
17.	<p><b><u>(5.2) PREQUALIFICATION DOCUMENT</u></b></p> <p>As this is for AIIMS tender the terms &amp; condition should be same as that of the AIIMS tender. In recent tenders of AIIMS, <u>It is mentioned that the firm should not stand deregistered / banned / blacklisted by any government authorities/organisation.</u> We are enclosing the copies of AIIMS orthopaedic tender same clause are mentioned in the HLL, CPWD, PWD, Railway, Central Government tender etc. Copy of some tenders are attached for your kind reference.</p> <p><b>We would request you to change this clause “that firm should not stand blacklisted / debarred by any government authorities / organisation on the date of submission of tender”.</b></p>	Tender terms & conditions prevail.
18.	<p><b><u>Volume -1, (Point-6.0), Page – 7, PREQUALIFICATION DOCUMENT</u></b></p> <p>Even though the Applicants meet the above criteria, they are subject to be disqualified, if they have:</p> <ul style="list-style-type: none"> <li>- made misleading or false representation in the form, statement and attachments submitted; /or.</li> <li>- record of poor performance such as abandoning the work, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures, etc. /or</li> <li>- The performance of any agency already worked/ working with HSCC is not found satisfactory/or</li> <li>- <u>found to have been black listed in any of the works.</u></li> </ul> <p><b><u>It should be change to the “Company should not stand blacklisted/debarred by any government authorities/organisation on the date of submission of tender”.</u></b></p>	Tender terms & conditions prevail.



19.	<p><b><u>(PAGE. NO. – 2, 1<sup>st</sup> PARA) VOLUME – IV, TECHNICAL SPECIFICATION</u></b></p> <p>The design &amp; selection of items should be of international standard like NFPA 99(latest version) standard and UL listed or DIN EN (latest version) and UL listed/CE marked or HTM 02 01 (latest version) standard and CE marked.</p> <p>It should be changed to ‘The design &amp; selection of items should be of international standard like NFPA 99(latest version) standard and UL listed <b>where ever applicable</b> or DIN EN (latest version) and UL listed <b>where ever applicable</b> /CE marked or HTM 02 01 (latest version) standard and CE marked’. <b>Because UL listed is only applicable for electronic components.</b></p>	European CE instead of CE
20.	<p><b><u>Volume-IV, Page-3, 1.b (TECHNICAL SPECIFICATION)</u></b></p> <p>The Control Panel should be made to provide Heavy Duty with a Delivery Flow Capacity of over 2000lpm at 55-60 psig.</p> <p><b>It should be changed to the Control Panel should be made to provide Heavy Duty with a Delivery Flow Capacity of over 1500-2000lpm or ±% at 55-60 psig.</b></p>	Same as Sl. No.-34
21.	<p><b><u>Volume-IV, Page-3, 1.b (Oxygen Manifold)</u></b></p> <p>Control Panel should be CE marked / UL listed.</p> <p>It should be changed to ‘Control Panel should be CE marked /UL listed <b>where ever applicable.</b></p>	Tender terms prevail
22.	<p><b><u>Volume-IV, Page-11,Para -5</u></b></p> <p>The Control Panel should be made of provide Heavy Duty with a Delivery Flow Capacity of over 2000 lpm at over 2000 lpm at 55-60 psig</p> <p><b>It should be changed to Control Panel should be made of provide Heavy Duty with a Delivery Flow Capacity of over 500-1000 lpm at 55-60 psig or ± 10%</b></p>	Same as Sl. No.-35
23.	<p><b><u>Volume-IV, Page-11,Para -6</u></b></p> <p>Control Panel should be CE marked / UL listed.</p> <p>It should be changed to ‘Control Panel should be CE marked /UL listed <b>where ever applicable.</b></p>	Tender terms prevail

24.	<p><b><u>Volume-IV, Page-13, 5a Vacuum (Suction) System</u></b>  Vacuum system shall be Triplex/Quadruplex Medical Vacuum System having system capacity of 228 cfm/6460 LPM at 19" Hg as per the relevant International Standard.</p> <p><b>It should be changed to Vacuum system shall be Triplex/Quadruplex Medical Vacuum System having system capacity of 220-230 cfm or ±%/6460 LPM at 19" Hg as per the relevant International Standard.</b></p>	Same as Sl. No-39
25.	<p><b><u>Volume-IV, Page-13, 5a Vacuum – Para-6 (Suction) System</u></b>  Control Panel should be CE marked / UL listed.</p> <p>It should be changed to 'Control Panel should be CE marked /UL listed <b>where ever applicable.</b></p>	Product must be European CE/UL Listed
26.	<p><b><u>Volume-IV, Page-14, Point-4, Para-1 (Air Compressor)</u></b>  The system shall be consisting of one set i.eQuadruplex/Pentaplex Oil free Compressed Air System to provide system capacity 150 Scfm/4250 LPM at 10bar at outlet with air compressors, allied equipment, suitable tank and control panel.</p> <p>It should be changed to 'The system shall be consisting of one set i.eQuadruplex/Triplex/Pentaplex Oil free Compressed Air System to provide system capacity <b>150 scfm/4250 LPM or ± 10%</b> at 10 bar outlet with air compressors, allied equipment, suitable tank and control panel.</p>	'The system shall be consisting of one set with suitable standby i.e Quadruplex/Triplex/Pentaplex Oil free Compressed Air System to provide system capacity <b>150 scfm/4250 LPM or ± 10%</b> at 10 bar outlet with air compressors as per relevant standard with allied equipment, suitable tank and control panel.
27.	<p><b><u>Volume-IV, Page-14, Point-4, Para-2 (Air Compressor)</u></b>  The medical air compressors shall be of the totally oil-less air-cooled design/ Screw/Scroll. Each compressor shall be belt driven by a suitable HP, 3 phase, 50 cycle, 415volt, motor.</p> <p><b>Reciprocating type compressor should also be allowed as per NFPA-99.</b>It should be changed to 'The medical air compressors shall be of the totally <b>oil-less air-cooled design/ Screw/Scroll/Reciprocating.</b> Each compressor shall be belt driven by a suitable HP, 3 phase, 50 cycle, 415volt, motor'.</p>	Tender terms prevail.
28.	<p><b><u>Volume-IV, Page-15, Para-3, 2<sup>nd</sup> line</u></b>  Besides meeting the requirements of the relevant standard, filtration of medical compressed air shall conform to ISO 8573.1 Class 1.3.1 of medical breathing air.</p> <p><b>It should be deleted because it is not applicable on NFPA99 because it is European Standard.</b></p>	Tender terms prevail.

29.	<p><b><u>Volume-IV, Page-23, Point 15-A</u></b></p> <p>The Duplex Medical Vacuum System must be fully compliant with the latest edition of NFPA99/HTM02-01/EN737/DIN Standard and should be suitable for anaesthesia gas scavenging for 15 nos. Operation Theatre, MRI &amp; CT Scanner, One Pump will be Standby with the other in operation.</p> <p><b>It should be changed to Capacity of the each pump should be 500-700 LPM.</b></p>	Tender terms prevail.
30.	<p><b><u>Volume-IV, Page-23, Point 15-A, 2<sup>nd</sup> Line</u></b></p> <p>The package should consist of two 'oil-less' rotary vane vacuum pumps, a control panel and a receiver all mounted on a common base frame.</p> <p><b>Claw Type vacuum pumps should be also allowed as per NFPA-99. It should be changed to the package should consist of two 'oil-less' rotary vane/Claw Type vacuum pumps, a control panel and a receiver all mounted on a common base frame.</b></p>	Tender terms prevail.
31	<p>Please Note as discussed in the meeting please specify the gas outlet should be compatible with the existing system installed in old block.</p>	Tender terms prevail.
32	<p><b>As this is tender for turnkey items and require extensive working. So please give us 5-6 week for tender submission from the date of issue of corrigendum.</b></p>	Last date of submission is extended till 26.05.2016.
33	<p><b>Technical Specification</b></p> <p><b>1. NFPA 99 VS. HTM 02-01 Specifications</b></p> <p>As you have rightly given alternate detailed specifications of both the above standards in the case of Alarm Systems and Medical Gas Outlets, we request you to kindly give alternate specifications of HTM standards, also in the case of Vacuum Plant, Compressed Air Plant, O2 Automatic Control Panel, and N2O Automatic Control Panel, and AGSS, as the present specifications are of for these equipments are as per NFPA 99 standard. For your kind perusal and ready reference we are enclosing the detailed specifications as per HTM standard for these items.</p>	Tender terms prevail.
34.	<p><b>2. Item Sr. No. 1-B- Fully Automatic Oxygen Control Panel-</b></p> <p>Flow capacity of greater than 2000 LPM is highly excessive. Please make it 1500-2000 LPM, at 50 to 70 psi which will be more than sufficient for the subject installation.</p>	1500-2000 LPM, at 50 to 70 psi.

35.	<p><b>3. Items Sr. No. 2-B- Fully Automatic Nitrous Oxide Control Panel-</b></p> <p>Flow capacity of greater than 700 LPM is highly excessive. Please make it 500-700 LPM, at 50 to 70 psi which will be more than sufficient for the subject installation.</p>	500-700 LPM, at 50 to 70 psi.
36.	<p><b>4.Item Sr. No. 3-B- Fully Automatic Nitrogen Control Panel-</b></p> <p>Flow capacity of greater than 2000 LPM is highly excessive. Please make it 1500-2000 LPM, at 50 to 70 psi which will be more than sufficient for the subject installation.</p>	1500-2000 LPM, at 50 to 70 psi.
37.	<p><b>5.Item Sr. No. 4-B- Fully Automatic Carbon Di-Oxide Control Panel-</b></p> <p>Flow capacity of greater than 500 LPM is highly excessive. Please make it 350-500 LPM, at 50 to 70 psi, which will be more than sufficient for the subject installation.</p>	350-500 LPM, at 50 to 70 psi.
38.	<p><b>6. Item Sl. No. 3- Nitrogen Manifold</b></p> <p>Please clarify if Nitrogen gas is required as power source for driving tools and drills. In that case the output pressure should be 7 bar. Whereas in items Sl. No. 3b. it is asked as 55 to 60 psi only which is 4 bar only. In case Nitrogen is required for blending with Oxygen to produce breathing air, then a separate blender/mixer would be required. Kindly elaborate.</p>	55-60 psi deleted. Tender terms prevail for the remaining query
39.	<p><b>7. Item Sr. No. 5- Vacuum system</b></p> <p>Capacity of 6460 LPM mentioned is on the lower side. It should be approximately 7000 LPM. Please amend the same. Please specify the number of vacuum pumps, which would be running to supply the desired design capacity and also the number of vacuum pumps which should be as standby. This is required in order that all bidders should be on the same platform for a fair and “apple to apple” comparison.</p>	Vacuum system shall be of suitable standby i.e Triplex/Quadruplex with standby arrangement of Medical Vacuum System having system capacity of 220-250 cfm /6225 LPM - 7075 LPM at 19” Hg as per the relevant Standard.
40.	<p><b>8. Item Sr. No. 6- Compressed Air Plant</b></p> <p>Please amend line 3 of the specifications to read as “ 4250 LPM at 10/8 bar at outlet”, as the requirement for Surgical Air is normally at 7 bar. Your BOQ also mentions the output as 8.5 bar.</p> <p>You have mentioned oil less Screw/Scroll compressors. Please mention the option of ‘Oil injected rotary Screw compressors with 4 stage filtration/Scroll compressors’. As you know Screw Compressors are oil injected with multi stage filtration system, as mentioned in HTM 02-01 standards. Please specify the number of air compressors, which would be running to supply the desired design capacity of 150 scfm, and also the number of compressors which should be as standby. This is required in order that all bidders should be on the same platform for a fair and “apple to apple” comparison. In HTM 02-01</p>	Oil Free/Oil based Air Compressor (Screw/Scroll) should be provided with proper multiple stages of filtration system (4 stages filtration system for oil injected compressor) and drying system to produce air of breathing quality as per relevant standard.  Tender terms prevail for remaining queries.

	standard, there is a provision for third system, i.e reserve, after primary and standby. Therefore the number of standby compressor is minimum two nos. This is in keeping with international standard ISO 7379, which as you know has been adopted in India as IS 12827 for MGPS.	
41.	<b>Item Sr. No. 5- Distribution Piping Indigenous</b> As the copper pipe is to be of medical grade, please mention that same should be “BSi Kite mark” certified which is important quality certification for medical grade copper pipe manufacturing process and it was specified in earlier AIIMS and HSCC tenders.	Tender terms prevail
	<b><u>CLARIFICATIONS REGARDING BILL OF QUANTITY</u></b>	
42.	<b>Part I</b> Item 1a. Oxygen manifold system- It is not mentioned how many, if at all, oxygen filled cylinders are to be supplied with the manifold.	Tender terms prevail.
43	Item 2a. Nitrous Oxide manifold system- It is not mentioned how many, if at all, Nitrous Oxide filled cylinders are to be supplied with the manifold.	Tender terms prevail.
44	Please extend the tender due date accordingly providing sufficient time for tender preparation.	Last date of submission is extended till 26.05.2016.
	<b><u>Alternative to NFPA-99 Specifications</u></b>	Tender terms prevail
45	<b>HTM 0201 specifications</b> <b>1.b Oxygen Fully Automatic Changeover Control Panel of 1500lpm to 2000lpm:</b> It should fully complies and meets with the requirements of the UK DOH Health Technical Memorandum 02-01 (HTM 02-01) standards only. It shall be provided with a copy of the certificate of origin. Automatic Changeover Manifolds shall be duly CE marked to the Medical Device Directive 93/42/EEC under the auspices of notified body no. Under this directive, med gas products are classified as Class IIb Medical Devices. It shall be provided with a copy of the certificate of origin. It should have all regulators which should be adiabatic certified. The manifold control panel shall be designed and	Tender terms prevail

certified for use with oxygen at 200 bar and 60°C. Auto-ignition testing shall be carried out and a copy of the test report shall be provided for review. Central regulator panel with cylinder headers each side. Headers are complete with gas specific cylinder tailpipes. Pre-wired for alarm connection to BMS outputs. Central regulator panel with cylinder headers each side. Headers are complete with gas specific cylinder tailpipes. Pre-wired for alarm connection to BMS outputs. All components degreased for oxygen use. Mild steel powder coated enclosure with Perspex window. The manifold control system shall be powered by an extra low voltage on board supply. The controller shall include normally closed alarm connections and two sets of BMS connections for both normally open and normally closed operation. Line pressure shall be continuously monitored by an electronic pressure switch; mechanically actuated pressure switches are not acceptable. There shall be a manual changeover button to enable selection of the duty bank. 50 W cartridge heaters with thermostat control: N2O and O2/N2O manifolds. Two non-return valves, one for each bank, shall be provided within a line pressure manifold block and shall provide gas tight isolation of each bank during maintenance and ensure supply continuity in the event of any upstream component failure. In the event of a low line pressure condition, both solenoid valves shall open to enable both banks to deliver gas and restore normal pipeline pressure. A manifold status panel shall be provided with colour coded LED indication lights for the following operating and fault indications:

- Power On (Green)
- High Line Pressure (Red)
- Low Line Pressure (Red)

	<ul style="list-style-type: none"> <li>• Reserve Low (Amber)</li> <li>• Left Bank Running (Green)</li> <li>• Left Bank Low (Amber)</li> <li>• Left Bank Empty (Amber)</li> <li>• Right Bank Running (Green)</li> <li>• Right Bank Low (Amber)</li> <li>• Right Bank Empty (Amber)</li> </ul> <p>The Interface Indicator shall be provided with colour coded LED indication lights for the following operating and fault indications:</p> <ul style="list-style-type: none"> <li>• Normal (Green)</li> <li>• Duty Bank Empty (Amber)</li> <li>• Standby Low (Amber)</li> <li>• Reserve Bank Low (Amber)</li> <li>• Pipeline Pressure Fault (Red)</li> <li>• System Fault (Red)</li> </ul> <p>In the event of a power supply failure, both solenoid valves shall open to enable gas to be supplied from both cylinder banks simultaneously until restoration of the power supply.</p>	
46.	<p><b>2.b N2O Fully Automatic Changeover Control Panel of 500lpm to 700lpm:</b></p> <p>It should fully complies and meets with the requirements of the UK DOH Health Technical Memorandum 02-01 (HTM 02-01) standards only. It shall be duly CE marked to the Medical Device Directive 93/42/EEC under the auspices of notified body no. Under this directive, med gas products are classified as Class IIb Medical Devices. It shall be provided with a copy of the certificate of origin. It should have all regulators which should be adiabatic certified. The manifold control panel shall be designed and certified for use with oxygen at 200 bar and 60°C. Auto-ignition testing shall be carried out and a copy of the test report shall be</p>	Tender terms prevail

shall be provided for review. Central regulator panel with cylinder headers each side. Headers are complete with gas specific cylinder tailpipes. Pre-wired for alarm connection to BMS outputs. Central regulator panel with cylinder headers each side. Headers are complete with gas specific cylinder tailpipes. Pre-wired for alarm connection to BMS outputs. All components degreased for oxygen use. Mild steel powder coated enclosure with Perspex window. The manifold control system shall be powered by an extra low voltage on board supply. The controller shall include normally closed alarm connections and two sets of BMS connections for both normally open and normally closed operation. Line pressure shall be continuously monitored by an electronic pressure switch; mechanically actuated pressure switches are not acceptable. There shall be a manual changeover button to enable selection of the duty bank. 50 W cartridge heaters with thermostat control: N2O and O2/N2O manifolds. Two non-return valves, one for each bank, shall be provided within a line pressure manifold block and shall provide gas tight isolation of each bank during maintenance and ensure supply continuity in the event of any upstream component failure. In the event of a low line pressure condition, both solenoid valves shall open to enable both banks to deliver gas and restore normal pipeline pressure. A manifold status panel shall be provided with colour coded LED indication lights for the following operating and fault indications:

- Power On (Green)
- High Line Pressure (Red)
- Low Line Pressure (Red)
- Reserve Low (Amber)
- Left Bank Running (Green)
- Left Bank Low (Amber)



	<ul style="list-style-type: none"> <li>• Left Bank Empty (Amber)</li> <li>• Right Bank Running (Green)</li> <li>• Right Bank Low (Amber)</li> <li>• Right Bank Empty (Amber)</li> </ul> <p>The Interface Indicator shall be provided with colour coded LED indication lights for the following operating and fault indications:</p> <ul style="list-style-type: none"> <li>• Normal (Green)</li> <li>• Duty Bank Empty (Amber)</li> <li>• Standby Low (Amber)</li> <li>• Reserve Bank Low (Amber)</li> <li>• Pipeline Pressure Fault (Red)</li> <li>• System Fault (Red)</li> </ul> <p>In the event of a power supply failure, both solenoid valves shall open to enable gas to be supplied from both cylinder banks simultaneously until restoration of the power supply.</p>	
47.	<p>3. Imported Quaduplex 7250lpm Medical Vacuum Plant 3 Phase 50 Hz (Package Unit)</p> <p>It should fully complies and meets with the requirements of the UK DOH Health Technical Memorandum 02-01 (HTM 02-01) standards only. It shall be duly CE marked to the Medical Device Directive 93/42/EEC under the auspices of notified body no. Under this directive, med gas products are classified as Class IIb Medical Devices. It shall be provided with a copy of the certificate of origin. Three identical vacuum pumps should be working and two stand by. Comprising of Pentaplex rotary vane vacuum pumps (5 x 11kw 2400kpm each), 2 x 3625lpm each working as duty and 2 x 2400lpm as standby. 4 x 15KW rotary vane vacuum pump base/floor mounted (2400 lpm flow rates of each pump). 3 x 3000 liters capacity vertical vacuum receiver tanks. 79 dBA sound pressure level. 76mm OD pipe work and 42mm is exhaust pipe. The Medical Vacuum Plant shall be fully tested. A test certificate shall be provided showing the results of the tests, including the free-air flow rate obtained at an inlet vacuum</p>	Tender terms prevail

of 450 mmHg. Type testing of plant flows or testing in component form is not acceptable. Vacuum pumps shall be air-cooled, oil lubricated rotary vane type suitable for both continuous and frequent start/stop operation at nominal inlet vacuum levels of between 475 mmHg and 650 mmHg. Rotors shall be driven by directly coupled totally enclosed fan-cooled electric motors. Pump inlets shall include a wire mesh filter and integral non-return valve to prevent oil suck back and pressure increases in the vacuum system. Each vacuum pump shall be provided with an oil mist eliminator delivering a virtually oil-free exhaust. Each pump shall be fitted with anti-vibration pads between the pump foot and mounting frame and an oil level sight glass. A pressure switch shall be included to provide an indication that the pump is operating normally once it has been called into service.

**Vacuum Pump Starter Units :** Pump starter units shall be provided with Direct-On-Line (DOL) motor starters for nominal motor powers up to 7.5 kW and Star-Delta (Wye-Delta) motor starters for motors above 7.5 kW. Each motor shall be protected by a thermal overload relay. The incoming supply shall terminate at a door interlock isolator. An ammeter shall be fitted to each starter panel indicating the current drawn by the motor. Each pump starter unit shall incorporate a 24V transformer that provides power to the Plant Control Unit such that complete control of the plant is maintained in the event of a single power supply failure. The pump starter unit shall provide LED indication lights for the following operating and fault conditions:

- Mains Supply On (Green)
- Selected (Green)
- Called For (Green)
- Operating (Green)
- Control Circuit Failed (Amber)
- Overload Tripped (Amber)
- Over Temperature, if fitted (Amber)
- Pump Fault (Amber)
- Pump Failed (Amber)

**Plant Control Unit :** The Plant Control Unit shall incorporate an intuitive menu driven display for access to operational information and service functions. A securely protected

engineer's mode shall also be provided that can only be accessed by authorised personnel to modify operational parameters. The Plant Control Unit central control system shall operate at extra low voltage and include BMS connections for plant fault, plant emergency, reserve fault and pressure fault. A mechanical backup pressure switch shall ensure continued system operation in the event of a control system or transducer malfunction. The Plant Control Unit shall incorporate an intuitive menu driven LCD display, providing easy access to system operational information and alarm resets.

The Interface Indicator shall be provided with colour coded LED indication lights for the following operating and fault indications:

- Normal (Green)
- Plant Fault (Amber)
- Plant Emergency (Amber)
- Check Status (Amber)
- Pipeline Pressure Fault (Red)
- System Fault (Red)

Vacuum Vessel(s) : 3 x 3000ltrs Vacuum vessels shall comply with BS 5169:1992 and be manufactured from heavy gauge fusion welded steel with a minimum wall thickness of 5 mm and dished ends with a minimum wall thickness of 6 mm. Total vacuum vessel volume shall be at least 100% of the plant capacity in 1 minute in terms of free air aspired at normal working pressure. Where only a single vessel is supplied it shall be connected to the bacteria filters in parallel with the pumps such that operation of the system can continue during receiver isolation for periodic internal inspection. The vessel shall include a drain valve and a 100 mm nominal diameter vacuum gauge complete with isolating valve.

Bacteria Filters :Quaduplex arrangement of bacteria filters shall be provided, incorporating high efficiency filter elements. Each filter shall be generously sized to carry the full plant design flow capacity with a pressure drop not exceeding 22 mbar (16.5 mmHg). Bacteria Filter elements shall have penetration levels not exceeding 0.005% when tested by the sodium flame method in accordance with BS 3928:1969 utilising particles in the 0.02 to 2 micron size

	<p>range. Each filter shall be provided with a differential pressure gauge. A drain flask shall be connected to each filter. Drain flasks shall be manufactured from transparent Pyrex with a polymer coating on the inner and outer surfaces in order to maintain a seal in the event of inadvertent breakage of the Pyrex flask. All drain flasks shall be suitable for sterilisation and be connected via a manual isolating valve.</p>	
<p>48.</p>	<p><b>4.0 Imported 4560lpm Quaduplex 11 Bar Medical Air Plant 3 Phase 50 Hz (Package Unit)</b></p> <p>It should fully complies and meets with the requirements of the UK DOH Health Technical Memorandum 02-01 (HTM 02-01) standards only. It shall be duly CE marked to the Medical Device Directive 93/42/EEC under the auspices of notified body no. Under this directive, med gas products are classified as Class IIb Medical Devices. It shall be provided with a copy of the certificate of origin. Medical Air Plant of 11bar for both 4bar MA4 Air supply and SA7 Air supply.</p> <p>Quaduplex (4 x 22kw SCREW compressors), with duplex drier and filtration,</p> <ul style="list-style-type: none"> <li>• 2 x 22KW (2280lpm) each screw air compressor will always be running to produce 7200lpm.</li> <li>• 2 x 22KW (2280lpm) each screw air compressor will be stand by.</li> <li>• 4 x 22KW each screw air compressor base frame mounted.</li> <li>• 3 x 1500 liters capacity vertical air receiver.</li> <li>• 2 x air dryer.</li> <li>• 68 dBA sound pressure level.</li> <li>• 42mm OD pipe work.</li> </ul> <p>Each base frame mounted screw compressor will provide 2280 lpm air flow. EMC certificate copy must be submitted. Compressors shall be directly driven by EFC IP55 energy saving CEMEP Class EFF1 high efficiency electric motor.</p> <p>Medical Air Plants are intended to provide a continuous supply of medical quality air conforming to the European Pharmacopoeia medicinal air monograph (ref. 1238), for respiratory use in healthcare facilities. The system shall be duplex such that the supply is maintained in single fault condition. Standby compressors shall be provided such that the specified volumetric flow is achieved with either one</p>	

<p>reserve compressor on standby where an automatic backup manifold of sufficient capacity is provided, or two compressors not running if the backup manifold is unable to deliver the medical air system design flow. Medical Air Plants shall be supplied fully tested and comply with the United Kingdom Department of Health (DoH) publication HTM 02-01 and NHS Model Engineering Specification C11. The entire Medical Air Plant shall be factory tested. A test certificate shall be provided showing the results of the tests, including the free-air flow rate obtained at normal working pressure. Type testing of plant flows or testing in component form is not acceptable. Penlon Medical Gas Solutions Medical Air Plants are CE marked to the Medical Device Directive 93/42/EEC under the auspices of notified body no. 0088 (Lloyd's). Under this directive, Medical Air Plants are classified as Class IIb Medical Devices.</p> <p><b>Medical Air Compressors</b></p> <p>Compressors shall be oil injected rotary screw compressors suitable for both continuous and frequent start/stop operation at a nominal outlet pressure of 1100 kPa (11 bar). Compressors shall be supplied with a block and fin style after cooler with a dedicated quiet running fan to maximise cooling and efficiency. A multistage oil separator capable of achieving 2ppm oil carry over shall be fitted to minimise contamination and maintenance. EFF1 (CEMEP) rated TEFC, IP55 class F electric motors shall be used and incorporate maintenance-free greased for life bearings. Motors with lower efficiency ratings are not acceptable. A mechanical back-up facility shall ensure continued operation in the event of a control system malfunction. The control system shall normally employ automatic rotation of the lead compressor to maximise life and ensure even wear.</p> <p>Compressor shall be provided with Star-Delta (Wye- Delta) motor starters and each motor shall be protected by a thermal overload relay. The incoming supply shall terminate at a door interlock isolator. An ammeter shall be fitted to each starter panel indicating the current drawn by the motor.</p> <p><b>Purification Module</b></p> <p>The duplexed filter and dryer module shall incorporate high efficiency oil filters, heatless regenerative desiccant dryers,</p>	<p>Oil Free/Oil based Air Compressor (Screw/Scroll) should be provided with proper multiple stages of filtration system (4 stages filtration system for oil injected compressor) and drying system to produce air of breathing quality as per relevant standard.</p> <p>Tender terms prevail for remaining queries</p>
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impregnated activated carbon filters and bacteria filters. Contaminants in the delivered air downstream of the bacteria filters. Each dryer tower shall have the water concentration in the delivered air continuously monitored by a dedicated sensor providing an alarm indication for high dew point on the respective dryer as backup to the alarm provided by the hygrometer with digital display. The outlet air pressure shall be regulated through a duplex arrangement of non-relieving pressure regulators and protected from over-pressure by duplex pressure safety valves. The output of the both dryers shall be joined to a common pipe prior to entering the pressure regulators to allow either pressure regulator to be used with either dryer.

#### **Plant Control Unit**

The central control system shall provide an intelligent human machine interface incorporating on board flash memory and real-time clock for recording operational parameters in the in-built event log. The central control system shall operate at low voltage and include BMS connection for plant fault, plant emergency, reserve fault and pressure fault. Visualisation of plant inputs, outputs and status through a web browser, using a simple Ethernet connection shall be available. The central control unit shall incorporate a user friendly 5.7" high-definition colour display with clear pictograms and LED indicators, providing easy access to system operational information.

#### **Digital Dew Point Display**

The purification module shall incorporate a ceramic dew point hygrometer with an accuracy of  $\pm 1$  °C in the range -20 to -80 °C atmospheric dew point and 4-20 mA analogue output. Aluminium oxide or palladium wire sensors are not acceptable. An alarm condition shall trigger on the dryer control panel if the dew point exceeds a -46 °C atmospheric (67 ppm v/v) set point. Volt-free contacts shall be included to enable the dew point alarm signal (Plant Emergency) to be connected to a central medical gas alarm system and/or building management system (BMS).

#### **Air Receiver(s)**

Air receivers shall comply with BS EN 286-1;+A2 2005 and be manufactured from heavy gauge fusion welded steel with a minimum wall thickness of 5 mm and dished ends with a

	<p>minimum wall thickness of 6 mm. Total air receiver volume shall be at least 50% of the plant capacity in 1 minute in terms of free air delivered at normal working pressure. Air receiver shall be connected to the dryer in parallel such that operation of the system can continue during receiver isolation for periodic internal inspection. The receiver assembly shall be fitted with a pressure safety valve set at 11 bar. The receiver shall be further protected by a fusible plug and include a 100 mm nominal diameter pressure gauge complete with isolating valve.</p> <p>Each air receiver shall be fitted with an electrically actuated drain valve with integral solid-state timer providing user adjustable opening time and actuation frequency. The valve shall be fitted with a manual test button and LED indication lights to show operating status. The drain shall be protected from blockage by debris with a strainer. Float type mechanically actuated drain valves are not acceptable. Drain valves to be connected locally to a single phase supply.</p>	
49.	<p><b>11. Imported Duplex AGSS System 2920lpm 3 Phase 50Hz.</b>  It should fully complies and meets with the requirements of the UK DOH Health Technical Memorandum 02-01 (HTM 02-01) standards only. It shall be duly CE marked to the Medical Device Directive 93/42/EEC under the auspices of notified body no. Under this directive, med gas products are</p>	

classified as Class IIb Medical Devices. It shall be provided with a copy of the certificate of origin. Duplex AGSS System - Twin stand alone AGSS pumps of 3 phase 2920l/min capacity each with built in flow indication and pressure regulation valve. Mounted on single frame with control panel and separate warning label. One pump will be standby with the other in operation.

- 2 x 3KW Nominal Motor per blower
- 1 x DOL starter.
- 54mm service connection.
- Weight 120Kg

Anaesthetic Gas Scavenging (AGS) Plants are intended to provide a continuous low level vacuum supply to pipeline systems in healthcare facilities for the removal of waste anaesthetic gases captured from patient breathing circuits via AGS receivers. The plant shall be a duplex configuration such that the vacuum supply is maintained in single fault condition. The stated volumetric flow rate shall be delivered with one blower on standby. AGS Plants shall comply with BS EN ISO 7396-2 and United Kingdom Department of Health (DoH) publications HTM 02-01, HTM 2022 and NHS Model Engineering Specification C11. The entire AGS Plant shall be skid mounted, fully assembled and factory tested as a complete system. A test certificate shall be provided showing the results of all tests, which shall include the free-air flow rate obtained with the system delivering a working pressure of -125 mbar gauge. Type testing or testing in component form is not acceptable.

Regenerative Blowers :Two equally sized regenerative blowers shall be provided. Blowers shall be oil-less, air cooled side channel regenerative type, suitable for both continuous operation and frequent start/stop. The motor shall be directly coupled to a fully enclosed impeller with contact free operation. All bearings shall be sealed and greased for life, requiring no further lubrication in service. Each pump shall be provided with a 'Mode Select' switch incorporated into the plant control unit to enable the pump to be run continuously (in hand operation) or automatically as and when required by the plant control unit. Each motor shall also be afforded protection by means of a thermal overload relay with a manually reset function.



Plant Control Unit :The plant control unit shall incorporate a transformer to provide a nominal 24 V a.c. electrical supply to all internal controls and remote start switches and an interlock isolator shall be integrated into control panel door. The plant control unit shall be provided with neon indicator lights for the following operating and fault conditions:

- Power On (Green)
- Standby Run (Amber)
- Pump Failed (Red)

The plant control panel shall include a switch to enable manual selection of the duty pump; the other thereby being designated as standby. Pressure at the pipeline interface shall be continuously monitored by a pressure switch with diaphragm sensing element and shall be adjustable between -25 and -100 mbar gauge pressure and shall be factory set to -65 mbar gauge pressure. If the duty blower fails or is unable to cope with the system demand, the standby blower shall be called to operate and a 'Standby Run/Duty Failed' indication shall illuminate on the plant control panel and each remote start switch. If both blowers fail or the system is otherwise unable to maintain a pipeline vacuum level above the pressure switch set point, a 'System Failed' indication shall be initiated. The vacuum level at the plant inlet shall be displayed on 63 mm nominal diameter pressure gauge mounted on the plant control unit. The pressure gauge shall have a scale range of 0 to -400 mbar gauge pressure and have an accuracy of +/-2% or better across the middle half of the scale range. Swing type check valves shall be installed in the pipes connected to the blower inlet ports. At the pump outlets, each exhaust pipe shall be provided with a polymer coated autoclavable Pyrex drain flask at the lowest point.

**11a.Imported AGSS Plastic Remote Indicator**

It should fully comply and meets with the requirements of the UK DOH Health Technical Memorandum 02-01 (HTM 02-01) standards only. It shall be CE marked with the notified body number specified. It shall be provided with a copy of the certificate of origin. It shall be provided with a copy of the certificate of origin. It should be flush mounted, white ABS 24 volt on/off room controller indicating 'red' plant failed, 'amber' duty pump failed and 'green' mains airflow on.

**15b CO2 Fully Automatic Changeover Control Panel of 500lpm to 700lpm:**

It should fully comply and meet with the requirements of the UK DOH Health Technical Memorandum 02-01 (HTM 02-01) standards only. It shall be duly CE marked to the Medical Device Directive 93/42/EEC under the auspices of notified body no. Under this directive, medical gas products are classified as Class IIb Medical Devices. It shall be provided with a copy of the certificate of origin. It should have all regulators which should be adiabatic certified. The manifold control panel shall be designed and certified for use with oxygen at 200 bar and 60°C. Auto-ignition testing shall be carried out and a copy of the test report shall be provided for review. Central regulator panel with cylinder headers each side. Headers are complete with gas specific cylinder tailpipes. Pre-wired for alarm connection to BMS outputs. Central regulator panel with cylinder headers each side. Headers are complete with gas specific cylinder tailpipes. Pre-wired for alarm connection to BMS outputs. All components degreased for oxygen use. Mild steel powder coated enclosure with Perspex window. The manifold control system shall be powered by an extra low voltage on board supply. The controller shall include normally closed alarm connections and two sets of BMS connections for both normally open and normally closed operation. Line pressure shall be continuously monitored by an electronic pressure switch; mechanically actuated pressure switches are not acceptable. There shall be a manual changeover button to enable selection of the duty bank. 50 W cartridge heaters with thermostat control: CO2 manifolds. Two non-return valves, one for each bank, shall be provided within a line pressure manifold block and shall provide gas tight isolation of each bank during maintenance and ensure supply continuity in the event of any upstream component failure. In the event of a low line pressure condition, both solenoid valves shall open to enable both banks to deliver gas and restore normal pipeline pressure. A manifold status panel shall be provided with colour coded LED indication lights for the following operating and fault indications:

- Power On (Green)
- High Line Pressure (Red)
- Low Line Pressure (Red)

<ul style="list-style-type: none"> <li>• Reserve Low (Amber)</li> <li>• Left Bank Running (Green)</li> <li>• Left Bank Low (Amber)</li> <li>• Left Bank Empty (Amber)</li> <li>• Right Bank Running (Green)</li> <li>• Right Bank Low (Amber)</li> <li>• Right Bank Empty (Amber)</li> </ul> <p>The Interface Indicator shall be provided with colour coded LED indication lights for the following operating and fault indications:</p> <ul style="list-style-type: none"> <li>• Normal (Green)</li> <li>• Duty Bank Empty (Amber)</li> <li>• Standby Low (Amber)</li> <li>• Reserve Bank Low (Amber)</li> <li>• Pipeline Pressure Fault (Red)</li> <li>• System Fault (Red)</li> </ul> <p>In the event of a power supply failure, both solenoid valves shall open to enable gas to be supplied from both cylinder banks simultaneously until restoration of the power supply.</p>	
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Bidder should follow the tender terms & condition for the unanswered queries.

**The bid submission date is extended from 12.05.2016 to 26.05.2016 and bid security should be valid for 180 days from the date of bid submission ie. from 26.05.2016.**

All other terms & conditions remain unchanged.

Chief General Manager  
For & on behalf of Director (AIIMS)

**JAI PRAKASH NARAYAN (JPN)  
AIIMS TRAUMA CENTRE NEW  
DELHI**

**e- TENDER**

**FOR**

**Expansion of existing Manifold Room, Plant Room, Liquid Oxygen Area including pipeline distribution system and “Buy back as is where is basis” for the extended building for upcoming 500 Bedded Jai Prakash Narayan AIIMS Trauma Centre, New Delhi**

**VOLUME –V**

**BILL OF QUANTITIES (BOQ)**

**February 2016**



( Consultants & Engineers for Mega Hospitals & Laboratories )  
E - 6 (A), Sector - I, NOIDA ( U.P. ) - 201 301 ( INDIA )

PHONE : 0120-2542436, 2542437 FAX : 0120-2542447  
E- mail : [www.hsccltd.co.in](http://www.hsccltd.co.in)

**Tender No. HSCC/SES/MGMS/AIIMS-Trauma/2015**

BILL OF QUANTITY								
Name of the Bidder								
The prices are to be quoted in the below mentioned form and shall include the Supply, installation, testing, commissioning of <b>Medical Gases Manifold System</b> including Operation & maintenance for <b>1 year Defect Liability Period and 4 years Operation &amp; maintenance</b> at site including all the equipments, ancillary materials as specified and all such items whatsoever which may be required to fulfill the intent and purpose as laid down in the specifications, conditions and or the drawings.								
<b>PART – I</b>								
Item No.	Description	2	Unit 3	Qty 4	Unit Rate (In Figure) Rs.	5	Unit Rate in words 6	Amount Rs 7
<b>1</b>	<b>OXYGEN SYSTEM</b>							
1a	Oxygen Manifold of 20+20 Cylinders capacity(Bulk cylinder D Type). The Oxygen Manifold should be hydraulically tested to 3500 psig pressure. The Oxygen Manifold shall be complete with all accessories etc as required complete as per specifications.	Set		1				
1b	Fully Automatic Control Panel for the Oxygen Manifold system complete with all accessories etc. complete as per specifications <b>(Imported)</b>	Set		1				
1c	10 Cylinder Emergency Oxygen Manifold with a high flow regulator with gauges and safety valves complete with all accessories etc. as required complete as per specification	Set		1				
1d	Terminal (Oxygen) outlets with probes/adapters complete as per specifications .	Nos		85				
1e	Liquid Medical Oxygen Storage Tank with 20 KL Tank complete as required with all accessories as per technical specification	Lot		1				
1f	High Pressure tubing flexible having Antistatic core as per ISO with proper colour coded complete as per specifications.	mtr		255				
<b>2</b>	<b>Nitrous Oxide System</b>							
2a	Nitrous Oxide Manifold of 8+8 Cylinder capacity(Bulk cylinder D Type). The Nitrous Oxide Manifold should be hydraulically tested to 3500 psig pressure. The N2O manifold shall be complete with all accessories etc. and complete as per specifications	Set		1				
2b	Fully Automatic Control Panel for N2O system and complete with all accessories etc. as required and complete as per specifications <b>(Imported)</b>	Set		1				
2c	4 Cylinder Emergency Nitrous Oxide complete with high flow regulator with gauges, safety valve and other accessories etc. complete in all respect complete as per specifications	Set		1				
2d	Nitrous Oxide Terminal Outlets with probes/adaptors complete as per specifications.	Nos.		0				
2e	High Pressure tubing flexible having Antistatic core as per ISO with proper colour coded complete as per specifications.	mtr		27				
<b>3</b>	<b>Nitrogen System</b>							
3a	Nitrogen Manifold of 10+10 Cylinders capacity(Bulk cylinder D Type). The Oxygen Manifold should be hydraulically tested to 3500 psig pressure. The Oxygen Manifold shall be complete with all accessories etc as required complete as per specifications.	Set		1				

3b	Fully Automatic Control Panel for the Oxygen Manifold system complete with all accessories etc. complete as per specifications <b>(Imported)</b>	Set	1			
3c	5 Cylinder Emergency Oxygen Manifold with a high flow regulator with gauges and safety valves complete with all accessories etc. as required complete as per specification	Set	1			
3d	Nitrogen Terminal Outlets with probes/adaptors complete as per specifications <b>Imported</b>	Nos.	0			
3e	High Pressure tubing flexible having Antistatic core as per ISO with proper colour coded complete as per specifications.	mtr	15			
<b>4</b>	<b>Carbon di Oxide System</b>					
4a	Carbon di Oxide Manifold of 2+2 Cylinder capacity(Bulk cylinder D Type). The Nitrous Oxide Manifold should be hydraulically tested to 3500 psig pressure. The CO2 manifold shall be complete with all accessories etc. and complete as per specifications	Set	1			
4b	Fully Automatic Control Panel for CO2 system and complete with all accessories etc. as required and complete as per specifications <b>(Imported)</b>	Set	1			
4c	1 Cylinder Emergency Carbon di oxide complete with high flow regulator with gauges, safety valve and other accessories etc. complete in all respect complete as per specifications	Set	1			
4d	Carbon di Oxide Terminal Outlets with probes/adaptors complete as per specifications <b>Imported</b>	Nos.	0			
4e	High Pressure tubing flexible having Antistatic core as per ISO with proper colour coded complete as per specifications.	mtr	0			

<b>5</b>	<b>VACUUM SYSTEM</b>					
5a	Vacuum system shall be Triplex/Quadruplex Medical Vacuum System having system capacity of 228 cfm/6460 LPM at 19" Hg as per the relevant International Standard etc complete as per specifications. <b>(Imported)</b>	Nos	1			
5b	Vacuum Outlets with probes/adaptors complete as per specifications <b>Imported</b>	Nos.	82			
5c	Low Pressure tubing flexible having Antistatic core as per ISO with proper colour coded complete as per specifications.	mtr	246			
<b>6</b>	<b>AIR COMPRESSOR</b>					
6a	The system shall be consisting of one set i.e Quadruplex/Pentaplex Oil free Compressed Air System to provide system capacity 150 Scfm/4250 LPM at 8.5bar with all compressors, allied equipment, suitable tank and control panel. complete in all respect and as per specifications <b>(Imported)</b>	Nos	1			
6b	Medical Air (4 bar) Outlets with probes/adaptors complete as per specifications <b>Imported</b>	Nos	52			
6c	Surgical Air (10 bar) Outlets with probes/adaptors complete as per specifications <b>Imported</b>	Nos	0			
6d	High Pressure tubing flexible having Antistatic core as per ISO with proper colour coded complete as per specifications.	mtr	27			
<b>7</b>	<b>DISTRIBUTION PIPING (Indigenous)</b>					
	Medical graded Copper pipes shall be solid drawn, tempered, seamless, phosphorous deoxidized, non-arsenic and degreased for oxygen service. The chemical composition shall be as per BS-6017: 1981 Table 2, Cu-DHP grade. Distribution Copper Pipe manufactured as per BSEN:13348 2008 complete with dew point apparatus and carbon monoxide monitoring facility as per specifications.					
a	76.1 mm ODx 1.5mm thk	Metre	50			
b	54mm ODx 1.2mm thk	Metre	70			
c	42mm ODx 1.2 mm thk	Metre	700			
d	28mm ODx 0.9 mm thk	Metre	1500			
e	22m Odx 0.9 mm thk	Metre	2400			
f	15mm ODx 0.9 mm thk	Metre	2500			
g	12mm ODx 0.7 mm thk	Metre	800			

<b>8</b>	<b>ALARM (Imported)</b>					
	<b>Master Alarm</b>	Nos	1			
	<b>Area Alarms</b> for all critical areas The alarm system shall be complete with pressure sensors, indications alarms etc. and with all accessories as required as per specifications.					
a	5 S	Nos	5			
c	3 S	Nos	5			
d	2 S	Nos	4			
<b>9</b>	<b>HORIZONTAL BED HEAD PANEL(Imported)1800mm Long</b>					
	Bed head panels for installation of outlets with provision for mounting necessary gas outlets. The bed head panel shall be provided with electrical points, switches, wiring etc The panels shall be made in extruded aluminium profiles with powder coating and shall accommodate the gas outlets, electrical sockets etc. complete as per specifications.	Set	52			
<b>10</b>	<b>HORIZONTAL BED HEAD CONSOLE for Ward (Imported)</b>					
	Bed head panels for installation of outlets with provision for mounting necessary gas outlets. The bed head panel shall be provided with electrical points, switches, wiring etc The panels shall be made in extruded aluminium profiles with powder coating and shall accommodate the gas outlets, electrical sockets etc. complete as per specifications.	mtr	150			
<b>12</b>	<b>VALVE BOX (Imported)</b>					
a	Valve Box - 2 Gas Services	Nos	12			
b	Valve Box - 3 Gas Services	Nos	6			
d	Valve Box - 5 Services	Nos	5			



<b>13</b>	<b>ISOLATION VALVE</b> complete as per specifications.					
a	22mm	Nos	52			
b	15 mm	Nos	104			

14	<b>GAS OUTLETS (Imported)</b>				
	As mentioned with respective gases				
15	<b>LOW PRESSURE SILICON TUBING</b> complete as per specifications	mtr	100		
16	<b>ANESTHESIA GAS SCAVENGING SYSTEM (IMPORTED)</b>				
16a	The Duplex Medical Vacuum System must be fully compliant with the latest edition of NFPA 99/HTM02-01/DIN Standard and should be suitable for anaesthetic gas scavenging for 15 nos. Operation Theatres, MRI & CT Scanner, One pump will be standby with the other in operation complete as per specifications	Nos	1		
16b	AGSS Outlets with probes/adaptors complete as per specifications	Nos	0		
17	<b>ELECTRICAL DISTRIBUTION PANEL</b>				
	Panel shall be wall mounted and fabricated from 16/14 SWG CRCA Sheet duly powder coated etc complete as per specifications.	Nos	1		
18	<b>ACCESSORIES</b>				
18a	<b>Oxygen Flowmeter</b> with Humidifier (0-15 litres/minute) with adapter, tubing etc. complete with all the required accessories and shall be complete as per specifications(Imported)	Nos	135		
18b	<b>Ward Vacuum Unit</b> wall mounted type complete with all accessories as required and as per specifications.	Nos	114		
18c	<b>Theatre Vacuum Unit</b> The vacuum regulator will be step-less adjustable and have large vacuum gauge providing Digital/Analogue indication of the suction supplied by the regulator. Safety trap will be provided inside the jar to safeguard the regulator from overflowing etc complete with all accessories as required and as per specifications.	Nos	18		
19	<b>CIVIL CONSTRUCTION OF PLANT ROOM AND MANIFOLD ROOM</b>				
	Construction of Manifold room (45'x30') and Plant Room (30'x30') complete including foundations, brick works, reinforced concrete work, Kota Flooring, plastering, Painting aluminium frame and flush shutters 30mm thick for doors, aluminium frame and shutters with 4mm thick clear float glass and aluminium grill for windows, painting, roofing in Powder coated CGI sheets over truss and purlins, water supply and Toilet, internal electrical installations, power and telephone conduit and wiring, external service connection etc complete as per standard CPWD Specifications.	Nos	1		
a	<b>Manifold Room (45' x 30')</b>	SQFT	1200		
b	<b>Plant Room (35'x 30')</b>	SQFT	900		
20	<b>LIQUID OXYGEN AREA FOR 20KL TANK</b>				

	<b>Liquid Oxygen Area</b> (Suitable to the requirement as per CCE) surrounded with industrial typed Fencing of height 2mtrs. fabricated from Angle posts and 10 swg Diamond Mesh welded into MS frame from ISA 75x75x8 And Double leaf Gate 5mtr x 2mtrs of same material of Fencing. Gate should have lock and key arrangement from outside and should be opened outside. A 9Kg DCP Fire Extinguisher and sand Bucket should be provided at one corner of the installed area. Electrical Earthing Point and Electrical Power socket and proper lighting should be provided. A Hard Stand with Anti Crash Barrier of 1.2mtr height-3 Nos of area 9.5mtrx 5.0 mtrs should be provided in the Liquid Oxygen Area. RCC Hard Stand should be suitable for 40 MT Tank. Thickness of Concrete 150mm and the slope 1:200. Size of Concrete Plinth should be suitable to 20 KL LMO Tank . Proper signages should be fitted at the proper location. 1/2" water Tap with 6m Hose shall be provided at the installed area.	Nos	1				
21	<b>TURNKEY WORKS</b>	Lot	1				
<b>PART-II</b>							
<b>Item No</b> <b>1</b>	<b>Description</b>	<b>2</b>	<b>Unit</b> <b>3</b>	<b>Qty</b> <b>4</b>	<b>Unit Rate In Rs</b> <b>( in Figure)</b>	<b>Unit Rate in words in Rupees</b> <b>6</b>	<b>Amount (Rs.)</b> <b>(In Figure)</b>
1	<b>Operation Charges</b> for the complete Medical Gas Manifold system including Liquid Oxygen system during one year Defect Liability Period as per the contract.			1			



TOTAL (PART-I)					
TOTAL (PART-II)					
TOTAL (PART-III)					
TOTAL (PART-IV)					
<b>Grand Total Amount (PART I +PART II + PART III) - PART IV (in Figures) :-</b>					
<b>Grand Total in Words: Rupees</b>					