

RAJENDRA INSTITUTE OF MEDICAL SCIENCES, RANCHI

Tender Notice No. 6273 / RIMS, Ranchi, Dated 18.07.2014

Tender paper for Supply & Installation of Centralised Medical Gas Pipeline Systems (O₂ / N₂O / CO₂ / Vacuum / Compressed Air) in Newly Constructed 172 bedded Superspeciality Building & 68 bedded Oncology Building at Rajendra Institute of Medical Sciences, Ranchi

Issued to

M/s _____

Against money receipt number dated :

Cashier
RIMS, Ranchi

Tender for supply & installation of Centralised Medical Gas Pipeline Systems (O₂ / N₂O / CO₂ / Vacuum / Compressed Air) in Newly Constructed Superspeciality Building & Oncology Building at Rajendra Institute of Medical Sciences, Ranchi

To,

M/s _____

Dear Sir,

Director, Rajendra Institute of Medical Sciences, Ranchi invites you to tender for supply & installation of Centralised Medical Gas Pipeline Systems (O₂ / N₂O / CO₂ / Vacuum / Compressed Air) in Newly Constructed Superspeciality Building & Oncology Building at Rajendra Institute of Medical Sciences, Ranchi

The conditions of contract which will govern any contract made are as under. Any special conditions attached in tender will also be part of the conditions

If you are in a position to quote for supply & installation in accordance with requirements stated in tender notice & tender form, you must also furnish all the information called for, along with your tender.

This tender is non transferable.

All legal matter in respect to this tender will be subject to jurisdiction of Hon'ble Jharkhand High Court, Ranchi.

The last date of submission of tender paper by registered posts / speed post only, is 30.08.2014 latest by 4:30 p.m.

Yours faithfully

Sd/-

Director

Rajendra Institute of Medical Sciences
Ranchi

**OFFICE OF THE DIRECTOR
RAJENDRA INSTITUTE OF MEDICAL SCIENCES, RANCHI
Bariatu, Ranchi – 834009 (Jharkhand)**

General Terms & Conditions

1. The terms and conditions mentioned in tender notice no. 6273 dated 18.07.2014 RIMS, Ranchi.
2. The tender should be submitted in duplicate complete with specification, literature, leaflet along with catalogues etc. leaving no room for back references.
3. Bids are to be submitted in two parts viz. (A) Technical Bid containing complete technical aspects including original EMD, Affidavit etc., except price bid & (B) Price Bid containing price elements only.
4. Technical Specification should be in the proforma / format given below :

(A) Items of main system for Liquid O₂ & Medical gas pipeline :-

Sl. No.	Item details description with full specification for which the bidders have quoted.	Quantity or volume or capacity which ever is suitable for the quoted item.	Make or manufacturer & model or size	Remarks or extra advantages of the quoted model.
1				
2				
3				

Note :

- (i) The bidders have to mention clearly dia., size, thickness, colour & other quality (like brass, aluminium, copper, M.S., S.S., PVC etc.) of pipes & other fittings.
- (ii) Number of offered out lets should be mentioned clearly.
- (iii) All the pipes must be Lloyed (UK) certified and must be stamped with British Standard (BS) certification on every pipe.
- (iv) The bed distribution in the building is (i) Superspeciality Block – 172 bedded & (ii) Oncology Block 68 bedded.
- (v) There will also be operation theatres for cardiology, CTVS, Urology, Oncology & Paediatric Surgery department in these building. Hence the tenderers have to visit the site & have to discuss technical issues with the above mentioned departments HODs before quoting their offers.
- (vi) All the bidders have also to quote for arrangement of oxygen cylinders with all its accessories for trolley patients.
- (viii) For installation of liquid oxygen tank, it will be the bidders responsibility to get NOC or certificates from the competent authority whatsoever.

Tenderers Technical Details of turn key works

(B) Civil /Electrical/Mechanical / furnishing etc works to be done (if any) by the bidders under turnkey project.

Civil & Mechanical turnkey works :-

Sl. No.	Tenderer's detailed item list/work list	Quantity offered by the tenderer
1.	Construction of shade for DG set	

2.	RCC roof area construction for installation of complete plant room.	
3	Foundation & fencing work for installation of Liquid O ₂ Tank, Compressor tank, Vacuum tank and pump etc. (As required & compatible according to the size of the bidders system	

i. Electrical works : (If any required under turnkey)

Sl. No.	Tenderer's detailed item list/work list	Quantity offered by the tenderer

Note :

1. All the electrical items including Air conditioning, Silent generators set & earthing for the medical gas plant system will have to be supplied & installed by the tenderer. Tenders without turnkey works will be summarily rejected.

ii. Furnitures works : (If any required to run the machines under turnkey)

Sl. No.	Tenderer's item list	Quantity offered by the tenderer

Note :

- (i). Before quoting the tender & before participating in the meeting the tenderers must have to visit the sites & they have to discuss with authority/faculty for location & confirmation of site.
- (ii). Before finalization of the tender, the tenderers have to arrange on site practical demonstration of their quoted machines (major equipment) to the members of technical committee on any of their pre installed sites on tenderer's own cost.
- (iii). The complete system will have 05 (five) years guarantee / warranty (with all kinds of accessories & spares) & then after under 05 years comprehensive maintenance contract with labour, all spares & accessories.
- (iv). All the bidders also have to submit their quoted technical bid in a pen drive. Name of their firms should be mentioned on the body of the pen drive.
- (v). To obtain NOC from department of Fire Safety & Explosive, Govt. of India for Installation of liquid O₂ tank shall be responsibility of the bidder.

Full signature of the
tenderer with seal

Designation :

Dated :

5

(A) Price Bid Proforma : (To be quoted in separate envelope)

A. (i) Main System

Sl. No.	Description of items to be provided by the bidders as per demand of tender	Make / Model / Size / Dimension	Quoted quantity as evaluated by the technical experts of the bidders to meet the requirement of the oncology & super specialty building & as per need of tender	Unit rate of the quoted item INR	Amount INR
1					
2					
3					
4					
5					

A. (ii) Essential accessories supplied by the firm free of cost to run the complete system smoothly.

Sl. No.	Name of accessories	Technical specification in details with manufacturer name.	Quantity	Remarks (if any)

Note :- The bidders also have to provide at least 20 oxygen cylinders with all its accessories like - mask, cylinder trolley etc. for trolley patients. They also have to supply 20 N₂O Cylinders and 08 CO₂ Cylinders in the system room.

(B). Essential consumables required to run the machine such as liquid oxygen, papers, cartridges, chemicals, gases, fuels etc. supplied by the firm for complete system to run the system smoothly.

Sl. No.	Name of consumables	Technical specification in details with manufacturer name.	Unit	Unit Rate FOR RIMS	Remarks (if any)
1.	Refilling of Liquid Oxygen tank		Per m ³		
2.	D type bulk cylinder		Per D type bulk Cylinder		
3.	Refilling of Bulk N ₂ O cylinder		Per bulk Cylinder		
4.	Refiling of CO ₂ cylinder		Per Cylinder		

(C) Bidder offered quantity and price of complete turnkey works (i.e. Civil + Electrical+ Mechanical + Furniture etc.). All the bidders have to make their own arrangements for civil construction works require to safe guard & smooth handling of their complete system. Total quoted price for turnkey works only Rs.

Note 1 : After installation of the complete system the successful bidders have to supply all the consumables (gases/liquid O₂ etc) free of cost for the first time to make the system functional or for demonstration of the installed system to the technical committee for verification & testing of the complete system.

Note 2 : The quantity & measurement of pipes & accessories which is mentioned in the BOQ may vary (increase or decrease) as per need and recommendation of the faculty / technical committee, RIMS during physical verification of the site in presence of the bidders during technical evaluation.

Note 3 : Price of consumable liquid oxygen and other medical gases (especially N₂O/CO₂) will be calculated & considered on an average approx. basis (in anticipation of approx consumption for 240 patients) and it will be considered & evaluated during price comparison. Anticipated approx monthly consumption (not real) of gases – Liquid O₂ – 15000 m³ / N₂O – 6 bulk cylinder / CO₂ - 1 to 2 bulk cylinders.

(D) Price of Comprehensive maintenance contract with all spares & labour charges after expiry of guarantee period for five years :-

Year	C.M.C. Rate in Indian Rs. (per year)
6 th Year	
7 th Year	
8 th Year	
9 th Year	
10 th Year	

Note :

- (1) Price of C.M.C. for five years will also be considered during price comparative evaluation.
- (2) Warranty as well as CMC will cover (inclusive of) all spares, accessories & turnkey works and it will also cover :-
 - i. Any kind of motor
 - ii. Plastic & glass parts
 - iii. All kind of sensors
 - iv. All kind of pipes, joints, outlets points with probe / adopter, patient masks, Oxygen Flow meter, Humidifier bottle, rubber tubes, filters, regulator, Jar, switches, coils, magnets, probes, transducers, cuffs, paddles, cables, chart recorders, patient circuits, tube, bulbs, electrodes, humidifiers, sensors, cassettes, printers & images, UPS including the replacement of batteries, Air-conditioners, fuses, transformers, monitors, cameras, stabilizers, furnitures, aprons, badges, radiation accessories, software & Hardware, chambers, phantoms & other accessories (if any) will be supplied & installed by the bidders without charging any extra cost under warranty & C.M.C.
 - v. No conditional warranty or CMC will be accepted.
 - vi. The bidders have to clearly mention all the taxes applicable on their supplied items FOR, RIMS, Ranchi in their price offer. No other taxes or duties will be paid or considered later on.

(Total amount of the complete system on turn key basis i.e. A+B+C+D = Rs.....
.....)

(in words Rs) with five years comprehensive guarantee/warranty with all accessories, spares, manpower & turnkey maintenance works.

Full signature of the tenderer with seal

Name
(in capital letters)

Designation

Sd/-
Director
Rajendra Institute of Medical Sciences
Ranchi

7. The tenderers have to mention clearly the names and technical specifications of the relevant accessories which they will supply along with the main system, free of cost in their price bid.
8. The price should be inclusive packing, carriage, installation & demonstration cost.
9. The price quoted should be valid for at least one year from the date of opening of tender.
10. The intending tenderers should produce the copy of manufacturing registration certificate. In case of authorization – original authorization certificate issued by the manufacturer in the name of Director, RIMS, Ranchi. The authorization must be valid at the time of tender opening.
11. The tenderer must enclose registration certificate of Jharkhand Sales tax/JVAT along with update respective clearance certificate or If the bidding agency is not registered under Jharkhand Sales tax department then they must give an undertaking through notary affidavit that “They will supply & install the equipment/items at fixed destination after payment of JVAT/Jharkhand Sales tax on their own & they will make their own arrangements for customs clearance in case of imported equipments. They shall not demand any document from Director, RIMS for clearance or duty exemption/waiver/relief in this regard.”
12. The tenderer should furnish the warranty / guarantee period of the complete system.
13. The tender without EMD will be ignored straightway.
14. Incomplete tender will be summarily rejected.
15. The EMD will be refunded in full to the unsuccessful tenderers after finalization of tender and in case of successful tender, the EMD will be refunded only after expiry of warranty / guarantee period / submission of security money against the work order, which ever will be earlier.
16. The full EMD shall be forfeited in case of backing out of the offer after acceptance.
17. The successful tenderer have to supply the items in accordance with the specification as finalized and approved by the purchase committee.
18. Incase of late job completion/installation/completion of the full complete project from the stipulated time frame, the liquidated damage charges/penalties shall be incorporated/charged on the bidders as follows:-
 - (i) @0.5% of the total contract value after 07 (seven days) from the stipulated date of job completion and subsequently 0.5% on every seven days (weekly) maximum upto 04 weeks.

- (ii) After 04 weeks @1% of the contract value on every 07 days and upto further 04 weeks (i.e. upto total 08 weeks after stipulated date of job completion)/
- (iii) After 08 weeks @2% of the contract value on every 07 days and upto further 04 weeks (i.e. upto total 12 weeks after stipulated date of job completion).
- (iv) After 12 weeks the security money and EMD will be forfeited by RIMS & the amount will be deposited in RIMS account & will be utilized for institute's development/treatment of patients.

Full signature of the tenderer
 With seal and date
 Designation.

19.. Contractor Form 'A'

Telegraph Address :-
 Telephone No. :
 Telex No. :
 Fax No.

From

 (Full name and address of the tenderer)

To

The Director
 Rajendra Institute of Medical Sciences,
 Ranchi.

Sir,

1. I / We hereby offer to supply & install the stores on turnkey basis detailed in the schedule here to such position thereof as you may specify in the supply order at the price given in the said schedule and agree to hold the order (offer) open till it is opened. I/We shall be bound by communication of acceptance within the prescribed time.
2. I / We have understood the instructions to tenderers and terms conditions of contract for contract concluded by Director, RIMS as contained in schedule & tender notice. We have thoroughly examined specification drawing or pattern quoted in the schedule here to and am/are fully aware of the nature of the stores required.
3. The following pages have been enclosed to and from part of this tender's technical bid

Yours faithfully

Signature of tenderer

Address
 Dated
 Seal.....

20. The complete job of installation of medical gas plant & uninterrupted gas supply system shall be responsibility of one & only one bidder for sake of project as well as for after

sale maintenance services. This tender will not be distributed in between or among the bidders. This tender is non transferable.

21. All documents duly completed, signed and sealed should be enclosed with your tender offer failing which your quotation will be treated as incomplete & will be rejected.

Technical compliance report duly filled and signed with seal of the bidder.

The bidders must fill all the rows/columns of this compliance report. This report will be inspected & evaluated by purchase committee and accordingly documents will be verified on the concerned page numbers.

Sl. No.	Enclosures required	Have you enclosed it? write clearly Yes or No	If yes then on page no. of this bid.
1.	Jharkhand Sales tax / VAT Registration certificate (Should be clearly visible)		Page No.
2.	Jharkhand Sales tax / VAT clearance certificate valid on the date of opening of this bid. OR If the bidding agency is not registered under Jharkhand sales tax department, then they must give an undertaking through notary affidavit that "They will supply the equipment/items at specified places after payment of JVAT/Jharkhand Sales tax on their own & they will make their own arrangements for customers clearance in case of imported equipments. They shall not demand any document from Director, RIMS for JVAT / clearance/duty exemption/waiver/ relief in this regard.		Page No.
3.	(i) Whether manufacturer or authorized dealer		
	(ii) If authorized dealer then write names of the original manufacturers and enclose the authorizations issued to you. e.g.		
	a. Authorization letter of M/s	Yes or No	On Page No.
	b. Authorization letter of M/s and so on	Yes or No	On Page No.
4.	Income Tax PAN No. (e.g. XYZA1234G) also mention clearly that PAN No. of proprietor or PAN no. of Company	Yes or No	On Page No.
5.	Demand Draft No. dated issued by (name of bank) amount Rs. in favour of Director, RIMS, Ranchi.	Yes or No	On Page No.
6.	Affidavits through first class magistrate / Notary Public, mentioning that – (a) "Our company has not been black listed or convicted in the past by any Hospital Organization or by any Government / Semi government organization / P.S.U.s / C.B.I / C.C.I & free from all kind of litigation/allegations", (b) That the firm has no vigilance case/CBI/FEMA/CCI case pending against him/supplier (Principal) (c) That the firm is not supplying the same item at lower rate quoted in the tender to any government organization or any other institute.	Yes or No	On Page No.

	(d) That the firm shall supply all the consumable gases uninterruptedly during warranty & CMC period.		
7.	Technical specifications with catalogue & dimensions of equipment, accessories & details of turnkey works. The bidders have to provide complete layout plan of the constructions & electrical works (if any) required and to be done by the bidder within their offer for installation & functioning of the complete system.	Yes or No	On Page No.
8.	Certificates of ISO/CE/BS/NFPA/HTM etc (as mentioned in tender paper for particular items) in the name of original equipment manufacturer. The certificate must be clear & showing the name of items for which it is issued to the manufacturer.	Yes or No	On Page No.
9.	I.T. return certificate & balance sheet of the bidders for last three financial years having minimum turnover of Rs. 5,00,00,000/- (Rupee Five crore only) in any one year within last three years.	Yes or No	On Page No.
10.	Bidders acceptance letter/undertaking that they shall provide five years comprehensive warranty & then after five years comprehensive maintenance contract with all spares, accessories & labour charges for complete system.	Yes or No	On Page No.
11.	Job completion or payment certificate issued by competent authority of any government hospital / PSU showing installation of Medical Gas pipeline system. The work experience should not be less than of 250 bedded hospital having work value not less than Rs. Three crores. (Priority shall be given to the bidders who have successfully completed more nos. of AMC/CMC of the similar system with satisfactory functioning in Govt. or Semi-Govt. Hospitals). The experience certificate issued by the concerned department must be enclosed in the technical bid.	Yes or No	On Page No.

Note :

1. Sales tax form JVAT-504 G / Road permit / Entry tax etc. of Govt. of Jharkhand will not be issued by authority. It will be responsibility of the bidders to arrange JVAT form 504-G or any other documents related to sales tax / entry tax on their own.
2. If any of the above enclosures are of more than one page then in the page number columns write clearly on page no. to page no.
3. Without filling the compliance report the offer will be rejected directly at the time of technical evaluation.
4. All the bidders have to provide soft copy of their technical specifications (same as they have submitted in hard copy of technical bid) in PEN drive also. PEN drive must be submitted by all the bidders at the time of opening of technical bid in front of purchase committee.

Certificate of Compliance

I Mr. / Mrs. / Miss on behalf of M/s (Name of firm / company) do hereby confirm that I have verified the above compliance report, it is duly filled. Our technical bid consists of total (No. of pages) (in words)

Signature of the Bidder
with date & seal of the firm / company

22. Please enclose photocopies of your complete registration certificate with DGS&D / NSIC / DGQA, (if any) as applicable, which should be valid on the date of tender opening.
23. Price bid of technically acceptable offers would only be opened for which either the respective firm would be invited through telephone / fax or the same may be opened with display in the notice board in case telephone message can not be passed on.
24. The following information should be given in the offer by tenderers :-
 - a. Complete configuration of the main equipments.
 - b. Relevant (must) accessories should be supplied with the equipment, if it is required for running the complete system.
 - c. Optional accessories, if any.
25. Liquidated damages shall be levied for delay in supplies as per Governing Rules.
26. Guarantee For Complete system : All quotees firms shall confirm guarantee of the complete equipments for 5 years of trouble free working from real date of handover i.e. the real date of completion of complete project including all installations, turnkey works & functioning of the complete system duly confirmed by RIMS technical committee. They will undertake repairs if needed within 03 days of intimation. They shall also indicate in their technical bids, how many precautionary physical check-up would be carried out by them during guarantee period.
27. The successful tenderer shall have to submit security deposit equal to 10% of the value of the contract in form of Bank guarantee pledged to Director, RIMS, Ranchi & valid for five years + period of installation of the complete project from the date of issue.
28. Tenders / Quotations are to be submitted in duplicate. Number of pages, leaflets / pamphlets, catalogue drawings etc. should be tied separately and marked original / duplicate. However, the tender inquiry document issued by RIMS should be attached with original copy of tender / quotation.
29. Technical bids & Price bids should be kept sealed separately superscribing the envelope "**Technical Bid**" & "**Price Bid**" and Tender Notice No. & Tenderers name with full address & telephone numbers.
30. The tenderers shall give a clear and guaranteed delivery period for completion of supply & installation.
31. Tenderers are required to answer all the question mentioned in the schedule & should return the same duly signed and filled along with form "A"
32. The tendering firms shall note that the supplies will be made in accordance with the specification mentioned in the tender.
33. Nevertheless, the purchaser shall be liable for price variation after final approval by purchase committee.
34. The tenderer has to mention clearly the quality, specification, names of companies for consumables like films & others to be used in the machines for optimum quality results. The tenderer has to assure in written about the local availability of consumables in their tender.
35. If the supplier, having been called upon by the purchaser to furnish security deposit (S.D.), failed to furnish the same within the period provided it shall be lawful for the purchaser to forfeit the E.M.D. and to cancel the contract.
36. The purchaser shall be entitled and it shall be lawful on his part to forfeit the amount of security deposit in whole or in part in the event of any default, failure or neglect on the part of the supplier in the fulfillment of performance in all respect of the contract under

references or any other contract with the purchaser or any part thereof to the satisfaction of the purchaser.

37. The security deposit shall remain in full force and effect during the period that would be taken for satisfactory performance and fulfillment of in all respects of the contract i.e. since final acceptance of the goods/equipments or any other by the consignee and be valid upto guarantee period of the equipments to be purchased.
38. After complete installation of the equipment the supplier shall inform the technical committee or the concerned authority in writing for inspection & functioning of the equipments. If the inspecting officer finds that pre-inspection of the consignment is not as required then the consignment is liable for rejection.
39. Contractor / Seller hereby declare that the goods / stores / articles sold / supplied / installed to the purchaser under this contract shall be of the best quality and workmanship and new in all respects and shall be strictly in accordance with the specification & particulars mentioned in the contract.
40. The contractor / seller hereby guarantees that the said goods / articles would continue to confirm to the description and quality aforesaid for a period of Five years from the date of final installation.
 - a. Warranty to the effect that before joining out of production for the spare parts they will give in adequate advance notice to the purchaser of the equipment so that the later may undertake the balance of the life time requirements.
 - b. Warranty to the effect that they will make available the blue prints of drawings of the spares if & when required in connection with the main equipment.
41. The following clauses are required to be confirmed :-
 - a. Free routine servicing (at least 2 visits of their engineers at site in one year) will be carried out by the firm till guarantee period.
 - b. The firms will make available full engineer support package (ESP) including essential maintenance and recommended spares for maintenance of the equipment for further 05 years after the guarantee period.
 - c. The following set of documents in respect of the equipments are also required to be supplied by the firm :-

	Literature	Distributions	Quantity
(i)	Operation instructions	With each equipment	2 sets each
(ii)	Wiring diagram	Inspecting authority (Concerned authority)	2 sets
(iii)	Maintenance service manual	Inspecting authority	2 sets
(iv)	Spare parts lists indicating cost	(Concerned authority)	2 sets

- d. The tenderers should quote the latest models. Quotations for out dated models of equipments will not be entertained.

42. Price bids and technical bids should be separately sealed, covers duly superscribed. Both the bids should be in duplicate. Both these sealed bids should be put in another main envelope duly sealed & mentioning following informations.

Tender notice no. 6273 dated 18.7.2014 for the department of

Date & time of opening : 01.09.2014 at 12.30 P.M.

Sd/-
Director
Rajendra Institute of Medical Sciences,
Ranchi

Signature of Tenderer

Name (in block letters) : _____

Capacity in which tenderer is signed : _____

Address in full : _____

Dated : _____ Seal _____

**Tender No. 6273 dated 18.07.2014 Medical Gas Pipe Line for PMSSY Building at RIMS
BOQ Schedule & Technical Specifications**

BOQ should be liquid oxygen & Medical Gases pipe line system for newly constructed superspeciality & Oncology (172 + 68 = 240 bedded) hospital building at RIMS, Ranchi.

Sl. No	Item Description	Unit	Qty	Remarks
1	Liquid oxygen tank of 10,000 Ltr (1 KL) capacity complete set with vaporizer & outlets, Inlets, Pipes, fencing of tank area as per requirement of Explosive Fire safety department of Government of India	Complete set	01 Complete set	All the required civil construction, foundation etc to be done by the bidder (the agency who will supply & install the system). Main power supply upto site will be provided by RIMS & inner wiring, electrical fittings, switches, lights, fans, chair, table & other furnitures essentially required to run the system are to be supplied & installed by the bidder within this turn key project.
2.	Alternative arrangement of 10+10 bulk cylinder oxygen manifold complete system in the main supply line room with 20 pcs of filled bulk D-type Jumbo cylinders.	Complete set	01 Complete set	- do -
3.	4+4 Bulk Cylinder manifold for Nitrous Oxide complete set with 20 bulk cylinders (filled with N ₂ O gas)	Complete set	01 Complete set	- do -
4.	Vacuum system having 2 nos. of vacuum pump with 2000 ltrs capacity receiver, filters, electrical etc.	Complete set	01 Complete set	- do -
5.	Compressed air system consisting of 02 nos of Air compressors each having at least 15 HP motor with capacity of minimum 57.18 cfm at 8.2 Kg/cm ² pressure complete wet with tank, air driver, pressure reducing unit etc.	Complete set	01 Complete set	- do -
6.	AGSS system (Duplex system for Anaesthetic gas scavenging system with AGSS outlets	Complete set	01 Complete set	- do -

		O2	N2O	Air 4 Bar	Air 7 bar	CO2	Vacuum	AGSS		
7	Double Locking outlets with adoptors (unit - numbers)	273+87	8+2	40+10	7	2	241+87	7		
8	Distribution Copper pipes (Unit - mtrs.)	12 x 0.7	15 x 0.9	22 x 0.9	28 x 0.9	42 x 1.2	54 x 1.2	76 x 1.5	108 x 1.5	
		950 + 300	1850 + 670	2000 + 590	735 + 212	60 + 25	120+71	As required	As required	
9	Isolation Ball Valve (Factory Degreased with brass adaptor (unit - numbers)	10mm	15mm	22mm	28mm	42mm	76mm	54mm		
		69 pcs	78 pcs	42 pcs	18 pcs	6 pcs	3 pcs	3+2 pcs		
10	Valve Box with Valves for Medical Use (unit - numbers)	2 gases	3 gases	4 gases	5 gases					
		10+5	6+1	1+3	7+1					
11	Digital Alarm System (unit - numbers)	2 gases	3 gases	4 gases	5 gases	6 gases	Master Alarm			
		5+3	2+1	1	As Reqd.	2+1	1+1			
12	BPC Flow meter with Humedifier bottle & Adaptor (unit - numbers)	227 + 83								
13	Ward Vacuum unit with regulator and 600ml Polycarbonate Jar (unit - numbers)	227 + 83								
14	Theatre Suction unit with 2 x 2000ml Polycarbonate jar (unit - numbers)	8+2								
15	HP / AS Tubings	Kit Conversion - O2		Kit Conversion - N2O		High Pressure tubings		Low Pressure Tubing		
		7+2 pcs		8+2 pcs		120+20 mtrs.		300+100 mtrs.		
16	Pendant / Panels (unit sets)	Single Arm swivelling Pendant with Minor Table		Horizontal Bed head panel		Auto Electric Control Pannel for vacuum pump system				
		8+2 sets		32+8 sets		1+1 sets				

DISPOSITION OF OUTLETS – ONCOLOGY BLOCK

Floor	Area	No. of Bed	No of Outlets				Remarks
			Oxygen	N ₂ O	M.Air	Vacuum	
Ground	Chemotherapy	8	8	0	0	8	On Wall
First			0	0	0	0	
Second	ICU	8	8	0	8	8	On Bed Head Panel
	Pre Operative	6	6	0	0	6	On Wall
	Post Operative	5	5	0	0	5	On Wall
	OT-1		2	1	1	2	On Ceiling Pendant
	OT-2		2	1	1	2	On Ceiling Pendant
Third	6 Bed ward x 8	48	48	0	0	48	On Wall
	Private Room x 8	8	8	0	0	8	On Wall
Fourth		0	0	0	0	0	
	Total		87	2	10	87	

DISPOSITION OF OUTLETS –SUPERSPECIALITY BLOCK

Floor	Area	No. of Bed	No of Outlets				Remarks
			Oxygen	N ₂ O	M.Air	Vacuum	
Ground		0	0	0	0	0	
First	Urology & Nephrology ward		0	0	0	0	
	Private room x 4	4	4	0	0	4	On Wall
	6 Bed ward x 6	36	36	0	0	36	On Wall
Second	Cardiac ward						
	Private room x 4	4	4	0	0	4	On Wall
	6 Bed ward x 6	36	36	0	0	36	On Wall
	CTVS						
	Private room x 4	4	4	0	0	4	On Wall
	6 Bed ward x 6	36	36	0	0	36	On Wall
Third	OT-1		2	1	1	2	On Ceiling Pendant
	OT-2		2	1	1	2	On Ceiling Pendant
	OT-3		2	1	1	2	On Ceiling Pendant
	Post-Op. beds	15	15	0	0	15	On Wall
	Pre-Op. beds	4	4	0	0	4	On Wall
	Cath Lab		1	1	1	1	On Ceiling Pendant
	ICU	16	32	0	16	16	On Bed Head Panel
Fourth	Infected Nursery	3	3	0	0	3	On Wall
	Clean Nursery	5	5	0	0	5	On Wall
	Single Room x 4	4	4	0	0	4	On Wall
	6 Bed unit x 4	24	24	0	0	24	On Wall
Fifth	OT-1		2	1	1	2	On Ceiling Pendant
	OT-2		2	1	1	2	On Ceiling Pendant
	OT-3		2	1	1	2	On Ceiling Pendant
	OT-4		2	1	1	2	On Ceiling Pendant
	Post-Op. beds	15	15	0	0	15	On Wall
	Pre-Op. beds	4	4	0	0	4	On Wall
	ICU	16	32	0	16	16	On Bed Head Panel
	Total		273	8	40	241	

Note: - (1) The items & quantity list of above mentioned B.O.Q. may get rectified after pre-bid discussion. Hence all the intended bidders must have to confirm the tender paper in RIMS web side ; www.rimsranchi.org after 01.8.2014.

- (1) Actual no. of outlets will be finalized after pre bid meeting.
- (2) There may be change of terms & conditions of tender after pre bid meeting.

Central Medical Gas Supply System

TECHNICAL SPECIFICATION OF MEDICAL GAS PIPELINE SYSTEM

A. Source Equipment & Manifold Management System

1.0 Oxygen Management System

Two source gas supply as per ISO 7396-1:2007 Certification and EN 737 / NFPA 99 C standard having cryogenic gas source (Liquid Oxygen) as the primary source of supply supported by two sided cylinder supply as reserve source of supply connected in fully automatic operation from one source to the other.

1.1 Primary Supply Source: Liquid Oxygen System

This is strictly under the scope of supply of the gas supplier complying with the latest Indian Standards well as the other necessary statutory approvals to be arranged by the gas supplier.

The present scope of supply of Oxygen management system will include:

1.0 LIQUID TANK

SCOPE OF SUPPLY

- a) Design, manufacture and supply of vacuum + perlite insulated vertical storage tank of 10,000 Litre as per technical specification and flow scheme.
- b) Design, fabrication and supply of Low Pressure Atmospheric Vaporizer as per technical specification and approved GA cum foundation drawing.
- c) All the turnkey works including civil, mechanical, electrical etc. for complete installation are to be done by the bidder on their own
- (d) The bidders have to construct storage room for safe storage of their materials on their own.

DOCUMENTATION FOR STORAGE TANK

Operating and maintenance manual - 1 set along with shipment shall be given.

Quality test certificate – 1 set for Cryogenic pressure vessel shall be submitted along with the shipment. The cryogenic tank Quality certificate shall comprise of:

- a) Approval letter along with approved drawings from CCOE for inner vessel
- b) Certificate from third party inspection Agency for inner vessel
- c) Material Heat chart for inner vessel pressure parts.
- d) Mechanical properties test report for production test coupon
- e) History sheet for inner vessel
- f) Material test report for pressure parts (inner vessel)
- g) Name plate photo copy
- h) Certificate of safety valve, pressure gauge, level gauge

DOCUMENTATION FOR VAPORISER

Inspection and test reports - 1 set along with the equipment shall be provided.

Operation & Maintenance manual - 1 set along with the equipment shall be provided.

INCLUSIVE

- Civil foundation / foundation bolts, any other civil work within battery limit
- Spares, bursting disc etc for the equipment.
- Unloading, Erection and Commissioning of Equipment at site
- Inter connecting piping between tank and vaporizer and downstream of vaporizer
- Fencing, gates, fire-fighting equipment etc required on the tank yard layout.
- CCOE license for the usage of equipment
- Cold test at our Works/Site
- Liquefied gases for commissioning of the system

The design data of the system is to be provided by the tenderer after a visit to the site before submission of the tender.

1.1 General

The central oxygen supply system should comprise of a duty and a reserve cylinder bank with a manifold automatic changeover system from the duty to the reserve bank. In addition, there should also be emergency reserve supply cylinder banks connected to the mains supply by manual valves. The automatic changeover valve shall be easily manually reset when the duty bank is in order again.

1.2 Manifold for Cylinders (10 +10) as per EN/HTM0201/NFPA99 specification. CE with four digit no/UL/DIN

System should provide one Oxygen manifold extendable type size 10+10 for bulk oxygen cylinders, Manifold should be suitable to withstand a working pressure of 320 kg / cm² and will be Tested after Installation at 140 kg / cm² oxygen cylinder pressure. Manifold should also have high pressure copper annealed tail pipes with one end having Brass adaptor suitable for oxygen cylinder and other end suitable for Manifold Non-Return Valves. The NRVs should be designed without any rubber components like "O " Rings etc to avoid decomposition of rubber at high pressures . The connection is as per IS 3224-1979. Manifold should also have 20 nos brass non-return valves for individual oxygen cylinder. Manifold middle frame of 10+10 size should be made with circumferential mild steel flat duly powder coated with black colour & along with chain for individual bulk O₂ cylinder.

The cylinders should be supported on suitable cylinder racks providing restrain at an angle of approximately 10 degree from the vertical.

Stand by Emergency manifold with 3 cylinder with Regulator for emergency supply and future connection .

1. 3 FULLY AUTOMATIC CONTROL PANEL(OXYGEN) as per EN/HTM0201/NFPA99 CE with four digit no/UL/DIN.

- Fully Automatic switch over from running empty bank to reserve bank
- Solenoid valve control
- Switchover at 10 bar
- 2 stage pressure reduction- 5 regulators
- Continuous operation during servicing
- Audio visual alarm on switchover
- High flow- more than 2100 lpm

1.4 **TERMINAL OUTLETS (OXYGEN , NITROUS OXIDE , VACUUM & MEDICAL COMPRESSED AIR) as per EN/HTM0201/NFPA99 CE with four digit no/UL/DIN FRONT LOADING TYPE GAS OUTLETS** Double lock outlet points with front loading probe. On line service facility & will be either concealed or surface mounted with stainless steel probes .Outlets imported PB type. No rubber components.

2. CENTRAL NITROUS OXIDE SUPPLY SYSTEM (4 +4 cylinder)

General

The central nitrous oxide supply system should comprise of a duty and a reserve cylinder bank with a manifold automatic changeover system from the duty to the reserve bank. In addition, there should also be emergency reserve supply cylinder banks connected to the mains supply by manual valves. The automatic changeover valve should be easily manually reset when the duty bank is in order again.

2 X 4 Cylinder Nitrous Oxide Manifold should be suitable to withstand a pressure of 145 Kg/cm², along with high-pressure copper annealed tail pipes with SS Breading and end Brass adapter suitable for N₂O Cylinders and manifold.

Top frame comprising of high pressure copper pipes of size 1/2" NB x 15swg with high pressure brass fittings made of high tensile brass and connections through non- return valves; high pressure copper tail pipes, made of high pressure copper pipe of size 1/4" NB x 15 swg. The design of middle frames should be provided to fit both round and flat bottom cylinders safely. The manifold should be tested (hydraulically) at 3500 psig and necessary test certificates should accompany along with the supply.

The Nitrous Oxide Manifold should comply with HTM 02-01/ NFPA 99C/ EN and should be UL-listed / CE-certified with 4-digit no.

2.2 Manifold for Cylinders As per as per EN/HTM0201/NFPA99 CE with four digit no/UL/DIN

Should provide one Nitrous Oxide manifold extendable type cylinder for bulk Nitrous Oxide cylinders, Manifold should be suitable to withstand a working pressure of 320 kg / cm² and will be tested after Installation at 140 kg / cm² cylinder pressure. Manifold will also have high pressure copper annealed tail pipes with one end having Brass adaptor suitable for oxygen cylinder and other end suitable for Manifold Non-Return Valves.

The NRVs should be designed without any rubber components like “O “ Rings etc to avoid decomposition of rubber at high pressures . The connection is as per IS 3224-1979. Manifold should also have brass non-return valves for individual nitrous oxide cylinder. Manifold middle frame should be made with circumferential mild steel flat duly powder coated with black colour & along with chain for individual bulk N2O cylinder.

The cylinders should be supported on suitable cylinder racks providing restraint at an angle of approximately 10 degree from the vertical.

The manifold header should be wall mounted and incorporate renewable non-return valves to allow removal and replacement of any cylinder or tailpipes without interrupting the supply from other cylinders in the bank. The connectors and tailpipes should be of gas specific attachments. Should provide stainless steel braided flexible tail pipes with suitable connectors.

Stand by Emergency manifold and high duty regulator for emergency supply should be provided in the above system.

2.3 FULLY AUTOMATIC CONTROL PANEL(NITROUS OXIDE): as per EN/HTM0201/NFPA99 CE with four digit no/UL/DIN

- Fully Automatic switch over from running empty bank to reserve bank
- Solenoid valve control
- Switchover at 10 bar
- 2 stage pressure reduction- 5 regulators
- Continuous operation during servicing
- Audio visual alarm on switchover
- High flow- more than 2000 lpm
- Minimum 700 L/Min at 4 bar pressure.

4. VACUUM SYSTEM -

The vacuum plant should be configured as indicated on the drawings, with the major components comprising of two identical pump units, one vacuum reservoir complete with one set of bacterial filters and drainage traps.

The system should be designed to maintain a vacuum of not less than 400 mm Hg below a standard atmospheric pressure of 760-mm Hg at the furthest terminal unit.

4.1 Vacuum Pump

Vacuum Central System consists of Vacuum pumps- 2 nos air cooled type. Each pump having piston displacement- 149 Cfm. Free Air delivery to suction-approx. 90% of P.D., maximum working pressure 29" of Hg or 730mm of Hg, single stage, three cylinder, fitted with M.I. channel frame complete with V-Belt drive, belt guard etc.

Vacuum system will also have following:

Electric motor 10 HP TEFC 440 volts, 3 phase- 2nos.

2" BSP stainless steel ball valve with PTFE seat & quarter turn open able handle for pump isolation – 2 nos

Silencers at vacuum pump discharge end.

Vacuum filters size 6" dia x 12" long with drain valve and housing chrome plated.

Vacuum receiver made of M.S. material as per IS-226 and code of construction IS-2825 with drain valve- 1no

Inter connection copper piping of suitable sizes.

Vacuum gauges.

2" BSP vertical non return valve of brass /G.M.

Each pump should be provided with a built-in non-return valve and pressure switch so that inadvertent reversal should not pressurize the reservoir of the system.

The vacuum pumps should be air cooled, oil-lubricated rotary sliding vane type specifically developed for medical applications, with proven reliability.

The pump should be directly driven by a totally enclosed fan-cooled, flange mounted motor with Class F insulation suitable for 415 volt-3 p^H-50 Hz supply.

High efficiency filters should be provided for the pump exhaust. The fillers should prevent the risk of contamination arising from the discharge from the pumps.

Specification of Vacuum Pump:

1. Lubricated, Air-cooled, Reciprocating type
2. Complete with Base plate, V-belt, Belt-guard, Motor & Starter.
3. No. of Cylinders: 3 No.
4. Piston Displacement: 149.6 CFM
5. Vacuum Created: 29.2 " of Hg. (742 mm. of Hg)

4.2. Vacuum Reservoir

Vacuum reservoirs (2000ltrs water capacity) should be of mild steel vertical construction designed to comply with BS 5169 Class III, The internal shall be epoxy lined.

Accessories should include an inspection door, vacuum gauge and provision for manual draining.

5. MEDICAL COMPRESSED AIR SYSTEM

5.1 Medical Air Compressors:

The unit consists of two stationary air cooled silenced (reciprocating) oil-Free Air Compressor with critical maintenance free technology each having 57.18 scfm capacity with 15 HP electric drive.

The system should have the following accessories:-

Receiver tank of capacity 1000 ltr. With safety valve, drain valve and pressure gauge of 4 inch dial size. Air dryer, desiccant each of 60 scfm Capacity for dew Point – 40 degree centigrade.

Inter connection air piping, between the compressor, receiver and air dryer, NRV temperature gauges- After Cooler of matching capacity for reciprocating compressor. 15 Hp motor, four stage bacteria filtration.

Air compressors should be of two stages, air cooled oil free type.

Each air compressor should be sized to cater for the total design air flow estimated. However, failure of the duty compressor, or excessive demand, should bring the second compressor into operation. The compressor operating pressures should be well above the nominal supply pressure. To allow for losses in the system, the plant should be set to operate at 5.9 - 10.3 bar for the duty compressor, and 5.7 - 10.1 bar for the standby compressor. The compressor should be oil free type with carbon ring.

Compressor motor should be a totally enclosed fan cooled type with Class F insulation suitable for 415 volt-3 p^H-50 Hz supply operation.

Air inlet filters for compressors should be three stage filter.

Air receivers should be of mild steel vertical construction designed to comply with BS 5169 Class III. The internal shall be epoxy lined.

Accessories should include an inspection door, safely valve, fusible plug and provision for manual draining.

Specification of Compressor:

1. Non-lubricated, reciprocating type
2. No. of stages: 2
3. No. of Cylinders: 3
4. Motor rating: 15 HP
5. Piston Displacement: 57.18 CFM (1619 LPM)
6. Working Pressure: 8.5 Kg./ cm² Max.

5.2 Air Dryer

Air dryers should be of the twin column, heatless, desiccant type designed to BS 5169 Class III with a dew point of minus 40-degree C at atmospheric pressure.

The supply air should pass through one column while the other column is being regenerated. When the first column becomes saturated the airflow should be diverted to the second column and the moisture in the first shall be driven off by the drying effect of a bleed from the dried air pipe. The reactivation should be on a time cycle and shall have automatic depressurization of the re-activated column to prevent shock on changeover. Each air dryer should be designed to provide a desiccant bed life of not less than two years on continuous full load. Accessories should include an automatic and manual drain facility.

Pressure Reducing System

The System would have 2 nos. Pressure Regulators (one in working & one stand-by) to reduce air pressure of 8 / 10 Kg. / cm² to 4.2 Kg./ cm² required for Medical Air pipeline.

5.3 THREE TO FOUR STAGE BACTERIA FILTER.

Compressor should be incorporated with three/four stage Bacteria filters along with Pressure Reducing Station.

The filters should be made of die cast aluminum housing with epoxy powder paint on the outside and anodized surface treatment inside to prevent corrosion and ensure extra long life.

The filters should have maximum contaminant removal efficiency with minimum pressure drop. Total 4-stages of filters should be used as mention below:

Stage 1: Coalescing filters for general purpose protection, removing liquid water and oil aerosol to 0.1 mg/cum. (0.1 ppm) and particles down to 1 micron.

Stage 2: Particulate filters for dust protection, removing particles down to 0.1 micron.

Stage 3: Oil Vapour & odour removal maximum up to 0.003 mg/m³ at 21 degree C(0.003 ppm) (W) at 70 degree F.

Stage 4: High efficiency coalescing filters, removing liquid water and oil aerosol to 0.01 mg/cu.m. (0.01 ppm) and particles down to 0.01 micron.

6. PIPEWORK, VALVES AND ACCESSORIES

This section of the specification covers the materials and installation of pipes, valves and accessories. The drawings indicate schematically the size and location of piping. Piping should be set up and offset to meet field conditions and co-ordinated between trades without additional cost

6.1 Pipe Work

Copper Pipes (material): copper pipes used should be solid drawn, seamless, deoxidized, non arsenical, half hard, tempered and degreased, manufactured as per EN13348: 2001 with incorporation of amendment A1:2005

The supplier should provide Manufacturer's Test Certificate of copper pipes for physical properties and chemical composition. Further, the pipes would be tested by a reputed third party i.e. Lloyds Register Services and certificates for the same should also be furnished.

All copper pipes and fittings like bends, Tees, reducers and straight couplings should be as per BS 864 and joined by silver brazing method for copper to copper. Inert gas welding technique should be used by passing Nitrogen gas inside the copper pipes during silver brazing, in order to avoid carbon deposition inside the copper pipes. Copper pipes of the diameter up to 42mm OD would be installed on the wall with the help of plastic saddles at the required span, as per HTM-0201 of U.K. and metallic white powder coated clamps should be used for pipe sizes above 54mm OD. Wherever the pipes cross brick walls, it should be covered with plastic pipes. All pipes should be protected against mechanical injury in a manner satisfactory to authorities having, jurisdiction.

The pipe manufacturer should be a licensee of BS 5750 or ISO 9000. All pipes, fittings and valves should be supplied clean and degreased. To meet this requirement, pipes up to and including 54-mm diameter should be steam cleaned internally, dried, shot blasted, and blown through with medical quality air, and individually capped at both ends after passing a visual internal inspection. Pipes above 54 mm should be similarly cleaned or solvent cleaned with an approved agent (such as methyl chloride) leaving no poisonous residues, then dried and individually capped at both ends after visual inspection. Pipes should be delivered in bundles in protective bags, which are secured and clearly labelled and identified as 'Degreased for Medical Gas Lines'. Valves and terminal units should be individually sealed in polythene bags without capping. A certificate from the manufacturer should be supplied for each coil or bundle of pipes, valves and fittings (or each batch) stating that pressure tests and degreasing have been carried out, that any solvents have been completely removed to medical gas standards, and the valves tested to the specific pressure.

All pipe jointing fittings should be end feed capillary type to BS 864 manufactured from drawn copper. For straight couplings, expanded joints may be made with copper-to-copper joints, instead of using BS 864 fittings. Other fittings for connection to copper pipes e.g., valve and control panel fittings may be of copper, brass, and gun metal or bronze.

Only copper-to-copper joints are permitted on site except threaded or flanged joints may be made where pipelines are connected to items such as valves and control equipment. No flux should be used for making joints on site. Copper to copper joints should be brazed using a silver-copper phosphorous brazing alloy to US 1845. Commercial grade carbon dioxide or nitrogen should be used as an internal inert gas shield during the brazing operation. A total of live joints should be cut out for examination to establish the quality of the joints being made on site. The insides should be clean and free from oxides and particulate matter and the minimum penetration of the brazing alloy at any point should be three times the wall thickness of the tube. If the joints examined do not conform with these requirements, then adjacent joints should be cut out and examined until the extent of faulty workmanship has been made good. Copper-to-brass or gunmetal joints should only be made under controlled conditions off site. The joints are ordinarily used to join short copper.

Pipe tails to brass, gunmetal or bronze fittings to permit their connection into the pipeline by the fluxless brazing procedure. The sub-assemblies should be degreased and individually sealed in bags or boxes before delivery to site. The brazing should be carried out using a copper-silver-zinc-brazing alloy to BS 1845 and an appropriate flux.

The pipeline should be adequately supported at sufficient intervals as tabulated herein. The supports should be of suitable material or suitably treated to minimize corrosion and prevent electrolytic action between the pipes and supports.

Outside Diameter (mm)	Maximum Intervals For Vertical Runs (m)	Maximum Intervals For Horizontal Runs (m)
12	1.2	1.0
15	1.8	1.2
22	2.4	1.8
28	2.4	1.8
42	3.0	2.4
54	3.0	2.4

Where pipes pass through walls, partitions or floors they should be fitted with sleeves of copper pipes and provided with appropriate escutcheon plates where exposed to view. The sleeves should project a distance of 25 mm beyond the surface of penetration. The annular space between the sleeve and pipe should be tightly caulked with a suitable material.

Concealed pipe work should not be sealed in until it has satisfactorily passed all visual inspections and pressure tests. Once covered, the route of the buried pipe work should be clearly and continuously marked by chalk, colored adhesive tape or otherwise during construction, to discourage the insertion of fixings into or near the pipe by other trades. Due allowance should be made in the installation for building movement at all constructional expansion joints.

The contractor should design and provide supports, brackets and hangers for all pipe work in accordance to BS 3974. The contractor should co-ordinate the tie-in of pipe supports with Structural and Architectural Works and provides additional support structures where necessary.

INSTALLATION & TESTING

Installation of piping should be carried out with utmost cleanliness. Only pipes, fittings and valves, which have been degreased and brought in polythene sealed bags, should be used at site. Pipe fixing clamps shall be of non-ferrous or non-deteriorating plastic suitable for the diameter of the pipe.

All pipe joints should be made using flux less brazing method. Inert gas welding technique would be used by passing Nitrogen gas at the flow of 6 LPM (min.) inside the copper pipes during silver brazing in order to avoid carbon disposition inside the copper pipes. All joints should be made of copper to copper and should be brazed by silver brazing filler material without flux.

Adequate supports should be provided while laying pipelines to ensure that the pipes do not sag. The spacing of supports should not exceed 1.5 meter for any size of pipe. Suitable sleeves should be provided wherever pipes cross through walls / slabs. All pipe clamps should be non-reactive to copper.

After erection, the pipes should be flushed with dry nitrogen gas and then pressure tested with dry nitrogen / Medical Air at a pressure equal to twice the working pressure for a period of not less than 24 hours. All leaks and joints revealed during testing should be rectified and re-tested till the pressure in pipes stands for at least 24 hours.

All the piping system should be tested in the presence of the engineer or his authorized representative.

PAINTING

All exposed pipes should be painted with two coats of synthetic enamel paint and colour codification should be as per IS : 2379 of 1963.

7. AREA VALVE SERVICE UNIT

Valve Box:

It should be wall mounted, Aluminum box with lockable front fibre- glass panel having ball type valves (manufactured by ISO-9001 company & factory degreased) with PTFE seat, Brass body with chrome-plated brass balls having quarter turn handle opening. Sizes suitable for 15mm OD copper pipe to 28 mm OD copper pipes should have screwed ends should have brass adopter suitable for copper pipe.

The unit should conform to HTM-02-01/ NFPA 99C/ EN and should be CE-certified / UL-listed.

8. OXYGEN BPC FLOWMETER WITH HUMIDIFIER BOTTLE as per EN/HTM0201/NFPA99 CE with four digit no. /UL/DIN

Back Pressure Compensated Flow meter should be of accurate gas flow measurement and control within a range of 0-13 litres per minute for use in a variety of respiratory therapy gas delivery system. The flow tube and shroud components should be made of good quality plastic. It should be supplied with plastic transparent reusable humidifier bottle.

9. HIGH PRESSURE TUBE FOR O₂ N₂O, COMPRESSED AIR AND VACUUM

Should be color coded for individual services i.e. white for Oxygen, Blue for Nitrous Oxide , Black for Air and Yellow for Vacuum, antistatic rubber tube as per ISO standards

10. WARD VACUUM UNIT as per EN/HTM0201/NFPA99 specification CE /UL/DIN

The vacuum unit should include vacuum regulator along with 0-760mm of Hg vacuum gauge of 2 ½” size dial, 600 ml capacity reusable plastic collection bottle with overflow safety trap with plastic slide wall mounted type.

11. THEATRE SUCTION UNIT. EN/HTM0201/NFPA99 specification (CE /UL/DIN)

It should be trolley mounted. The unit should include one regulator having, gauge and mounted on the trolley stand, having two reusable each 2000 ml plastic collection bottles mounted on the base of trolley unit and connected with regulator & low pressure tube inter connections.

12 ALARM SYSTEM

Line Pressure Area Alarm

The area control stations should be manufactured as fully compliant to the latest international standard HTM 02-01/NFPA 99 C /EN and ISO 7396-1:2007 certification.

The area control stations must be certified as per Medical Device Directives (93/42/EEC) having the CE mark/UL Listing from the certifying agency.

The Main Line pressure as well as Area line pressure alarm should micro-processor based which will monitor the pressures of medical gases like oxygen, nitrous oxide, compressed air and vacuum levels at a specific area of piped gas system in any hospital. The system should be such that if the pressure / vacuum in the gas pipeline drops below the present limit, the equipment will give an audio-visual alarm. Visual alarm should remain active even after pressing of "Mute" button. But it should come to normal condition when gas pressure / vacuum return to normal level.

Four-Channel Microprocessor Controlled Alarm for Pneumatic & Vacuum Services should have the following features:

Digital Display of Line Pressure for all the services.

- Color coded LED Display of Line pressure status (High – Caution- Normal – Caution - Low)
- Audible Alarm for High & Low pressure condition as applicable.
- Test and Alarm Acknowledge (Mute) facility.
- Small and compact design. Light Weight
- Mounted on a powder coated MS box.
- Nut & Nipples are provided for connection with pneumatic supply line.
- Low voltage internal operation with input power supply of 220V AC.
- Easy wall mounting facility.
- High / Low indication with Test facility and Mute facility

13. Single Arm Swiveling Ceiling Pendant

Description

The pendant System should be equipped with medical gas outlets, electrical outlets, provisions for low voltage devices.

Configuration

The pendant should be Single arm. One motorized arm should be of at least 1200 mm length having at least 180 kg load bearing capacity.

Should included a Service heads to accommodate at least 12 no. of Gas outlet, at least 12 no. Electrical Outlet, 4 no. Data point outlet, pair of vertical rail or rack for mounting shelves & accessories, 3 no. Shelves and other accessory as per detailed below.

Standards

The complete system should be tested and designed for compliance with the following codes:

NFPA 99, UL 60601-1: 2003 IEC 60601-1: 2006, EN 14971: 2000, EN 11197: 2004, EN/ISO 13485: 2003, EN60601-1-2

Construction:

Should be Single Arm – one motorized arm & rotate independently up to 330⁰ to 340⁰ with customer assigned stops and are accessible for future adjustments.

- **Service Head** – size should be as per utility requirement. Electrical services & Gas service may be positioned on the front and/or rear of the service head with physical separation.
- **Pneumatic Brakes** – For precise position of each arm. There should be Facility for physically overriding in emergency situations. It should have two brake- release buttons. One button operates the main or ceiling bearing and a second button controls the intermediate or arm bearing and the service head.
- **Height Adjustable Arm** – Motorized vertical movement should be minimum 600 mm range. Motor movement should be through 230V A.C

UTILITY SERVICES for Pendant

- Medical Gas Services – O2-2 no, Vac-2 no, N2O-1 no, Med Air(4 bar)-1 no .CO₂: 1 No. & AGSS: 1 No.
 - Electrical Outlet- 08 no, 5/15 amp.
 - Low Voltage Devices – Blank-4
 - Wire Basket- to be mounted on side rail of size minimum 250 mm x 150 x 100 mm- 2 no.
 - Pair of Vertical Rail or Rack of minimum 900 mm length mounted on the service head for mounting the height adjustable shelves
 - IV Pole with 4 no. hook- 1 no
 - Shelves:- (Mounted on Vertical Rail or rack),Height adjustable
- 1) Lowest shelf :- Height adjustable over vertical rail or rack , minimum size of 500 x 500 mm, Load bearing capacity- minimum 40 kg with 1 no. lockable drawer and mounting rail on left and right side - 1 no.
 - 2) Upper shelves: - Height adjustable over vertical rail or rack, minimum size of 500 x 500 mm, Load bearing capacity - minimum 40 kg - 2 nos.

HORIZONTAL BED HEAD PANEL

1. The panel should be made of High Strength Anodized Aluminum Profiles.
2. The Rail would be provided separately.
3. The chamber of Medical Gas Outlets should be made of anodized aluminum and available in customized color.
4. The panel should be designed to have provision to accommodate the following.
 - a). Gas Outlets, Electrical Sockets / Switches.
 - b). Nurse Call
 - c). Audio Unit
 - d). Room Lighting
 - e). AC Control Knob
 - f) In-built Reading Lamp
5. The unit should comply with HTM 02-01/ NFPA 99C/ EN and should be UL-listed / CE-certified.

14. ANESTHETIC GAS SCAVENGING SYSTEM (AGS SYSTEM)

The AGS system should be a dedicated, specifically designed active extraction and disposal system for waste anesthetic gas. It should provide a maximum flow rate of 130 l/min with a 1 kPa resistance to flow, and a minimum of 80 l/min with a 4 kPa resistance to flow at each terminal unit, irrespective of the number of terminal units in use. The AGS system should use dedicated radial blowers in a duplex configuration. The AGS pump assemblies should be skid mounted and included on the skid should be the simplex or duplex pump(s), motor control unit(s) with starter/isolator, moisture drain flask and flexible connector(s) to connect the plant to the pipeline. Each pump should include an electric motor and directly coupled impeller assembly. Impeller bearings in the pump(s) should not require lubrication. The pump(s) should be air cooled and rated for continuous operation.

Vacuum/Flow Regulating Valve

A vacuum/flow regulating valve should be provided, comprised of a spring-loaded plate valve and inlet silencer. The plate should control air ingress into the pipeline system, thereby controlling the vacuum level within. The number and installed position of the regulating valves fitted to the system should be determined by the pipeline designer. The vacuum/flow regulating valve should ensure a maximum vacuum of 200mb below atmospheric pressure is not exceeded.

Control System

Each motor control panel should incorporate an emergency panel isolation switch facility, which controls all electrical power to the exhauster unit, remote start switch panels and system indication lights. All control and status indication circuitry should be limited to 24V a.c. A green 'POWER ON' indicator should be fitted to the starter/isolator panel, and should illuminate whenever power is available to the 24V control and indication circuit. A 'HAND/OFF/AUTO'

switch should be provided to control operation of the pump, running the pump continuously when selected to 'HAND'. When selected to 'AUTO', control of the pump should be passed to the remote start switch panels. Operation of any of the remote start switches should activate the pump. The pump should continue to run until all remote switches are selected 'OFF'.

preventing operation until the system is manually re-set. Operation of the overload device should also break the circuit to the remote start switch panels, extinguishing the green running indicator.

Duplex installations should be used to remote start switches that include an amber 'PLANT FAULT' indicator. This should illuminate, if either pump is set to 'HAND', or if one of the overloads trip. A red 'PLANT EMERGENCY' indicator should also be provided and should illuminate on all remote start switch panels if the vacuum level falls below the pressure switch set point level when the pump has been called.

Where a duplex system is installed each pump should be controlled by a separate motor control panel to enable servicing of either pump or control gear whilst maintaining system operation.

Terminal Units

Terminal unit should be provided with an adjustable orifice to allow balancing of the terminal unit flows during commissioning. Venturi style terminal units are not acceptable. Terminal units should not be connected to the medical vacuum system.

The system should comply with HTM 02-01 with CE-certified with 4-digit no. / NFPA-99C with UL-listed.

15. CONTROL PANEL FOR VACUUM PUMP & AIR COMPRESSOR

Electrical control panel of cubical type for vacuum pumps and air compressor along with automatic switch gear system motors for two vacuum pumps of 10 HP & two 15 HP of air compressor. All starters of the motors fitted with single phase preventer & overload relay. Panel to be fabricated from 14 SWG CRCA sheet duly epoxy coated in grey color. Panel should have metering like digital volt meter, amp meter, Mains MCCB 160 amp with handle. Each circuit will have hours meter, ampere meter starter & indication status. Control Circuit controlled by a miniature circuit breaker. Each circuit with semi auto & fully auto mode selector switch, both the system to have duplex and cascading mode of operation by means of single switch.

Incoming MCCB TPN 35 KA 160 Amps with operating handle 1 no – make L&T/Siemens/Havels

Automatic star delta starter with single phase preventer for 3 phase 415 volts 15 Apms in 10 HP/15HP AC motor make L&T / Siemens/ Havels

Ammeter with selector switch digital type 0-200 Amps, Voltmeter with selector switch digital type 0-500 V. Hour meter of suitable capacity & MCB TPN 0-20 Amps two nos.

Duplex cascading vacuum / air system to provide for automatic start & stop at 400 mm Hg and 600 mm Hg respectably. In case of Air Compressor set for automatic start; stop at 6 kg/cm² and 7.5 kg/cm². Provision make so that when one pump/compressor stops the 2nd pump set to automatic start on the next starting impulse & vice versa. In the event any pump fails in the system, the system should automatically revert to the other pump.

16. MANIFOLD ROOM:

The equipments are required to be housed in a spacious & airy room, called Manifold Room/ Plant Room. Normally Gas equipments (like Oxygen Gas Manifold, Control panel, Nitrous Oxide Control Panel & its manifold etc.) are kept separated from Vacuum Pump & Air Compressor. Hence there is a need for two separate rooms.

The room which houses Vacuum Pump & Air compressor will have provision for 415 V, 3 ϕ electrical connection. For other room which houses Gas manifolds & Control Panel will require 220V & 1 ϕ electrical connection. It is noteworthy to mention herein that Gas Manifold & Control Panel is completely pneumatic system & electrical connections are required here for its display & indicating system only. (Plan for Manifold room is enclose)

17. ELECTRICAL WORKS

17.1 General

The main electric supply upto working site will be provided by the hospital authority and the bidders have to install or arrange all electrical works necessary for the proper functioning of all systems and items of equipment on their own.

Wherever applicable, all electrical works, materials and equipment should comply with the requirements of the most recent revisions of the regulations promulgated by the British Standard Institution,

All items of equipment should be of first grade with regard to design, manufacture and safety. Uniformity of type and manufacturer of switchgear, controls, fittings and accessories should be maintained throughout the whole of the installation.

The control circuits of a system should be connected to the same phase but as far as it is possible, the electrical loads should be balanced between the three phases of supply. The D.G. Set must be offered of suitable capacity to cover complete system may be one or two units.

17.2 Earthing

All metal parts of control panel enclosures, cable trays, trunking, conduits, equipment and motors should be effectively earthed.

The copper sheathing of the MICC cable may be used in all ear-thing conductor where permitted by the Wiring Regulations.

All metal pipe work should be effectively earthed to meet IEE regulations.

18. PAINTING AND LABELLING

18.1 General

All pipe work, valves, fittings, hangers, conduits, and other equipment should be painted. Paints, primers and enamels should be of the best quality, ready mixed and brought to the site in unopened containers.

All surfaces or materials and equipment installed should be suitably painted. All painting should be done by experienced tradesmen with first class quality primers and paints brought to site in the manufacturer's sealed containers. All coats of paint on any one item should be of the same type and make and shall be applied as recommended by the manufacturers.

No paint work should be carried out on site without adequate precautions taken to prevent spoiling the appearance of walls, floors and other equipment. The contractor shall be responsible to make good any such spoiled surfaces to the entire satisfaction of the R1C.

Metal surfaces within the building should be thoroughly cleaned of all grease, rust, scale, welding flux and the like. The surface should then be given one chromate type priming coat and two (2) finishing coats of the specified colour. The finishing coats should be full gloss enamel and free of brush marks as possible. All exposed pipes including pipes in enclosures and ceiling voids should be painted.

For zinc galvanised surface, aluminium and copper surfaces, all initial coat of etching primer should be applied prior to the application of zinc chromate primer followed by 2 finishing coats.

Metal surfaces exposed to weather should be thoroughly cleaned of all grease, rust, scale, welding flux and the like. The surface should then be given one coat of heavy duty anti-corrosive primer. The second coat should be an anti-corrosive protecting coating. The final coat should be a heavy duty anti-corrosive gloss enamel of the specified colour.

18.2 Identification of Pipeline

All pipe work throughout the building should be provided with identification markings in accordance to BS 1710 and BS 4800.

The identification colour for all services pipe should be applied by wrapping around the pipe an adhesive band of the identification colour over a length of about 150 mm (6") depending on the diameter of the pipe.

Self-adhesive band tapes should be applied to oil and dirt free surfaces only. The length of the tape will be trimmed to suit the circumference of pipe, allowing for a 15mm minimum overlap and the tape applied by wrapping smoothly around the pipe, overlapping on the blind side.

The identification colour bands, identification plates, badges or lettering in general should be located at intervals of not more than 4.5m (15') on horizontal pipe and every

floor on vertical pipes and should be placed at all junctions, branches, at both sides of valves, service appliances, bulkheads, wall penetrations and at any other place where identification is necessary.

The position of all identification colour bands, supplementary colour bands, identification plates, badges should be such that they are readily visible and where letterings is used it should be so placed that it can be read without difficulty from a convenient point of viewing the piping.

All valve body should be painted with the similar basic identification colour of the pipe that the fluid conveys. Handwheels GREEN for normally open and RED for normally closed.

18.3 Colour Code Indications should be as per IS:2379:1990 Table -5

- (a) The finishing identification colours of pipeline and gas outlets shall be as tabulated herein. The remaining portions of pipeline shall be of basic colour if concealed and colour similar to surrounding wall and ceiling if exposed Electrical conduits shall be painted in orange colour.

Item	Pipe Contents	Basic Colour of the pipe Colour (Approx. 150mm)	Colour Bands (Approx. 100mm)
1.	Oxygen	yellow	White
2.	Nitrous oxide	yellow	French blue & Signal Red
3.	Medical air	Sky Blue	white & black
4.	Medical vacuum	Sky Blue	Black
5	Carbon Dioxide	Yellow	Light grey

- (b) Electrical panels should be painted in grey color.
- (c) Tanks, equipment and plinths should be dark grey
- (d) Supports and brackets should be of color similar to surrounding wall and ceiling if exposed and black if concealed.

18.4 Labeling And Direction of Flow

According to the complexity of the installation and to the variety of fluids conveyed all equipment and pipe work and like should be identified and labeled.

No equipment and pipe work should be accepted without adequate identification and labeling. All equipment should be comprehensively labeled as follows:

(a) Pipe work

The direction of flow should be indicated by an arrow situated in the proximity of the basic identification color band of same adhesive material. Color should be black in white background.

The length of the arrow shall be:

- (i) For pipes 50 mm (2") internal diameter and under, the arrow should be not less than 75 mm (3").

(b) Equipment

All equipment such as pumps, compressors, tanks, filters, etc should be comprehensively labeled with all the relevant information in block letters.

(c) Electrical Panels

Each item of electrical and control equipment should be neatly labeled. Labels are to be in the form of black filled uppercase lettering on an approval white background and should be neatly attached by screws to the panel below the equipment they identify.

All contactors, switches, pushbutton stations, indicators, etc should be adequately labeled and identified.

Labeling shall be in black and should be approximately 10 mm (3/8") high.

Warning Signs

Warning signs should be installed conforming to ISO 9001-2000.

19. TESTING AND COMMISSIONING

19.1 General

The Company should provide necessary equipment, services (excluding water and electricity), including consumables and labor and provide the facilities for the testing, setting and commissioning of the systems.

When directed by the authority or when the situations of the site favor tests to be carried out on completed sections or parts as the installation work progresses.

Advance notice for the final testing should be given fourteen (14) days before the final testing.

Testing and commissioning of the whole medical gas installation should comprise of the following:

- ☞ Pressure-test, for leakage in pipelines only.
- ☞ Check valve tightness and correct valve zoning.
- ☞ Test relief valve operation.
- ☞ Pressure-test, for leakage in complete installation.
- ☞ Check for satisfactory mechanical operation and non-inter changeability of each terminal unit by means of test probes.

- ☞ Check for cross connections (sometimes referred to as 'anti-confusion test' or 'continuity test').
- ☞ Check flow rate and pressure at each terminal unit.
- ☞ Check total flow rate and delivery pressure.
- ☞ Check satisfactory operation of manifold changeover valves.
- ☞ Check satisfactory operation of liquid oxygen, compressed air and vacuum plants and all manifolds.
- ☞ Check performance of gas alarm systems.
- ☞ Purge the completed installation with Nitrogen and check the internal cleanliness of the system.
- ☞ Purge the completed installation with the working gas.

19.2 Pressure Tests

Pressure testing for leakage should be carried out in two stages for pressure gas systems and in three stages for vacuum systems. The first pressure test covers the completed pipelines and isolating valves only. The other pressure tests cover the whole installation, including terminal units and theatre fittings.

☞ Sectional Tests

For pressure gas systems, the completed pipelines with all ends scaled and all valves open, should be tested to twice the working pressure or a gauge pressure of 10.5 bar (150 psi) whichever is the greater. This pressure should be held for 24 hours and no leak shall occur during this period.

For vacuum system the completed pipelines with all ends sealed and all valves open, should be tested at a gauge pressure of 6.9 bar (100 psi). This pressure should be held for 24 hours and no leak shall occur during this period.

On completion of the pressure test on the pipeline all isolating valves shall be tested for 15 minutes at a gauge pressure of 6.9 bar (100 psi) for tightness by closing them in sequence and releasing the pressure on the downstream side. No leak shall occur during these valve tests.

On completion of the isolating valve tightness tests the pressure on pressure gas systems may be reduced for the purpose of testing the safety valves. The service safety valve should be fitted and this should be tested to ensure that it discharges safely at 1-25% of the working pressure.

☞ Complete Installation Tests

For pressure gas systems, with all terminal units and theatre fittings connected, the whole installation should be tested at the working pressure, which should be held for 24 hours. No leak should occur during this period but a loss of up to 0.15 bar (2 psi) may be accepted on a pipeline having more than about 50 terminal units.

For vacuum system, with all terminal units and theatre fittings connected, the whole installation should be tested at a gauge pressure of 0.7 bar (10 psi), which should be held for 24 hours. No leak should occur during this period but a loss of up to 0.15 bar (2 psi) may be accepted on a pipeline having more than about 50 terminal units.

After the initial drying out of the pipeline by the operation of the vacuum plant, the completed vacuum system should then be tested. The system shall be exhausted to a vacuum of 210 mm Hg absolute and after the initial drying out of the pipeline, the pressure shall not increase by more than 10 mm Hg in one hour. This test pressure should be held for 24 hours. A pressure rise in excess of 10 mm Hg per hour should require remedial work and further tests.

19.3 Cross Connections Tests

Each system (oxygen, nitrous oxide, compressed air and vacuum) shall be tested in turn, preferably at the same session, for correct connections of pipe work to terminals.

The medical compressed air plant may be used to supply the test gas but air from ordinary industrial lubricated compressors should not be used. If no medical compressed air plant is available the supply may be obtained from cylinders of medical quality air.

The system under test should be connected at the normal working pressure. The other systems should be isolated at their source of supply but all other isolating valves on all systems should be OPEN.

Every room should be checked to ensure that the test air is delivered from every terminal unit bearing the name of the 'gas' and is not delivered from any other terminal unit.

A gauge pressure of 0.7 bar (10 psi) is usually adequate when vacuum systems are tested in this manner.

19.4 Total Flow Rate and Delivery Pressure Tests

The test; should be carried out by providing an appropriate number of small metered leaks while further typical flow rate and pressured tests are taken at vulnerable and representative points in the installation e.g. in the theatre suite, the labour ward, the intensive care area, etc. The total leak rate should be approximately equal to the total design flow.

The total flow tests on oxygen, nitrous oxide and medical gas installations shall not be conducted with these gases but with medical quality compressed air at a gauge pressure of 4.1 bar (60 psi).

The minimum acceptable pressure on the test instrument gauge during these tests should be as tabulates herein.

Service	Flow Rate (l/min. at STP)	Min. Pressure At Back of Terminal Unit (psi)	Min. Acceptable Pressure on Gauge of Test Unit-bar (psi)
Medical gases	40/20/153.9	57	56.5
Surgical Air (7 BAR)	250	100	95
Medical Air (4 BAR)	120	57	56
Medical vacuum	40/20	400 mm Hg	300 mm Hg

19.5 Manifold Changeover Valve Tests

The action of the manifold changeover valve should be tested by connecting a small cylinder of the working gas or of medical quality compressed air on each side of the manifold and discharging it to a carefully sited leak whilst the operation of the pressure gauges and changeover valve is checked. Each half of the manifold shall be tested in this manner. This test should be carried out on every automatic manifold during the period when the flow rate tests are in progress.

19.6 Plant Operation Tests

The following checks should be carried out before the alarm system is tested:

- ☞ For manifold installations check operation of all valves.
- ☞ For compressed air and vacuum plants check for correct rotation and current at full load. Check for excessive vibration and noise. Check operation of all automatic devices. Check effectiveness of changeover to reserve manifold. Check effectiveness of all pressure regulating, relieving and warning devices. Check operation of all automatic traps, test trap by-pass valves. Check consumption of air used in the description stage. Check dew point of delivered air.
- ☞ Check that each item of plant is capable of operating continuously at its maximum continuous rating.
- ☞ Check accuracy of all pressure gauges and thermometers.
 - ☞ Check insulation resistance and effectiveness of earthing of all electrical items.

19.7 Alarm Systems Tests

This test should be carried out simultaneously with the test of the manifold changeover valve. Pressure loss conditions should be simulated by controlling the isolating valves and all gas alarm points should be tested to be functioning correctly.

There must be provision of pressure alarm device at various stages near Plant, O.Ts & ICU wards to alert for leakage or any fault during supply of gases & air.

20. SERVICE AND MAINTENANCE

20.1 General

Bidder will carry out regular maintenance and provide emergency services for the whole medical gas installation during Defects Liability warranty Period of 5 years from the date of handing over to hospital as well as during CMC period of further 5 years. It will depute its Technical person within 6 hours from the time of registering a service call.

Training would be provided to the respective hospital staffs for day to day service.

All maintenance works should be recorded in a log book provided by the contractor to record the date, time and details of each maintenance service carried out. All materials needed for carrying out service and maintenance including consumables should be provided by the contractor.

During the Defects Liability Period all equipment and works installed by Bidder should be guaranteed against defective material and workmanship. Any parts or components not performing satisfactorily should be replaced without charge.

All major parts replaced as a result of defective equipment, workmanship or material should be fully guaranteed for guarantee period of 5 years as well as for CMC period from date of replacement. The contractor shall provide performance bond to cover up to the end of Defects Liability Period of the replaced equipment. The value of the performance bond should be equivalent to the cost of the equipment.

20.2 Monthly Service and Maintenance

Bidder shall make at least one inspection each month during warrantee period and at the time of such inspection perform the normal maintenance service comprising all systems including :

- ☞ Check all automatic changeover equipment.
- ☞ Check operation control for air compressors, vacuum pumps and liquid oxygen plant.
- ☞ Check dryers, separators, and condition of all filters. Replace as necessary.
- ☞ Check all pressure gauges and switches for correct pressure readings and settings.
- ☞ Check all pressure regulating devices for proper operation.
- ☞ Test all gas alarm panels, warning lights and alarms.
- ☞ Check the operation of all safety devices and clean, adjusts and lubricate as necessary.
- ☞ Lubricate vacuum pumps and check oil level (Oil to be supplied by the user).
- ☞ Check the tension of all V- belts, and adjust as necessary.
- ☞ Check all bolts and nuts for tightness, and tighten as necessary,
- ☞ Check and test all outlets.
- ☞ All other maintenance in accordance with equipment manufacturer's recommendations.

BILL OF QUANTITY : RAJENDRA INST. OF MEDICAL SCIENCES, RANCHI

Sr. No.	Description	Unit	Qty
A	Medical Grade Copper Tube / Piping:		
	All Copper Pipes must be duly Medical Grade, seamless, fully degreased and half-hard (Designated to R250). It should confirm and meets with the latest BS EN13348:2001 standard. Chemical Composition as per CU.DHP to 1190-1 and CW024A to EN 1412. Maximum total Carbon Content 0.20 Mg/dm ² . It should be third party certified by Lloyds Register of Services.		
1	12 mm. OD X 1 MM. Thick.	Mtr.	1250
2	15 MM. OD X 1MM. Thickness	Mtr.	2520
3	22 MM. OD x 1 MM. Thickness	Mtr.	2590
4	28 MM. OD x 1 MM. Thickness	Mtr.	947
5	42 MM. OD X 1.2 Mm. Thickness	Mtr.	85
6	54 MM. OD X 1.2 MM. Thickness	Mtr.	191
B	Oxygen System		
1	Liquid oxygen tank of 10,000 Ltr (1 KL) capacity complete set with vaporizer & outlets, Inlets, Pipes, fencing of tank area as per requirement of Explosive Fire safety department of Government of India	Set	1
2	Arrangement of 10+10 bulk cylinder oxygen manifold complete system in the main supply line room .	Set	2
3	Fully Automatic Oxygen Control Panel Fully complies and meets with HTM 02-01/ NFPA 99C / EN (UL- Certified/CE-marked with 4-digit CE No.)	No.	2
4	Double-locking O ₂ Outlet Points with Probe/Adapter as per Technical Specification Fully complies and meets with HTM 02-01/ NFPA 99C / EN (UL- Certified/CE-marked with 4-digit CE No.)	No.	370
5	Oxygen Flow meter complete with Humdifier Bottle as per Technical Specification Fully complies and meets with HTM 02-01/ NFPA 99C / EN (UL- Certified/CE-marked with 4-digit CE No.)	No.	310
6	Pipeline Conversion Kit complete with High Pressure Rubber Colour Coded tube: Oxygen- White Colour	No.	9
C	Nitrous Oxide System		
1	Arrangement of 4+4 bulk cylinder nitrous manifold complete system in the main supply line room along with Single-cylinder Emergency system	Set	2
2	Fully Automatic N ₂ O Control Panel Fully complies and meets with HTM 02-01/ NFPA 99C / EN (UL- Certified/CE-marked with 4-digit CE No.)	No.	2
3	Double-locking N ₂ O Outlet Points with Probe/Adapter as per Technical Specification Fully complies and meets with HTM 02-01/ NFPA 99C / EN (UL- Certified/CE-marked with 4-digit CE No.)	No.	10
4	Pipeline Conversion Kit complete with High Pressure Rubber Colour Coded tube: Nitrous Oxide- Blue Colour	Mtr.	8
D	Compressed Air System		
1	Compressed air system consisting of 02 nos of Air compressors each having at least 15 HP motor with capacity of minimum 57.18 cfm at 8.2 Kg/cm ² pressure complete wet with 1000 Litre W.C.tank, air drier, pressure reducing unit etc.	Set	2
2	3-Stage Breathing Air Filter	Set	2
3	Double-locking Medical Air Outlet Points with Probe/Adapter as per Technical Specification Fully complies and meets with HTM 02-01/ NFPA 99C / EN (UL- Certified/CE-marked with 4-digit CE No.)	No.	50
4	Double-locking Surgical Air Outlet Points with Probe/Adapter as per Technical Specification Fully complies and meets with HTM 02-01/ NFPA 99C / EN (UL- Certified/CE-marked with 4-digit CE No.)	No.	7

5	High Pressure Anti-static Colour Coded tube: Air- Black Colour	Mtr.	60
E	Medical Vacuum Plant System		
1	Twin Vacuum Pumps having 149cfm System each having 10 HP Motor, Silencer, Filter, NRV, and common Receiver of 2000 litres capacity	Set	2
2	Bacterial Filter	Set	2
3	Double-locking Vacuum Outlet Points with Probe/Adapter as per Technical Specification Fully complies and meets with HTM 02-01/ NFPA 99C / EN (UL- Certified/CE-marked with 4-digit CE No.)	No.	328
4	Ward Vacuum Unit with one Vacuum regulator and alongwith 600ml polycarbonate Jar conforms to HTM 02-01/ NFPA 99C / EN (UL- Certified/CE-marked)	No.	310
5	Theatre Vacuum Unit with one Vacuum regulator mounted on a trolley alongwith 2 x 2000ml polycarbonate Jars conforms HTM 02-01/ NFPA 99C / EN (UL- Certified/CE-marked)	No.	10
6	High Pressure Anti-static Colour Coded tube: Vacuum- yellow Colour	Mtr.	90
7	LP Tubing (non Silicon)	Mtr.	400
F	Electrical Control Panel for Vacuum System with Duplex & cascading Facility with Cabling & Wiring	No.	2
G	Zonal Valve Box with Ball Valves conforming to HTM 02-01/ NFPA 99C/ EN (CE-certified / UL-listed)		
1	1 Gas + 1 Vacuum (15 X 22 Mm.) Service	No.	15
2	2 Gas + 1 vacuum (15 X 15 X 22 MM.) Service	No.	7
3	3 Gas + 1 vacuum (15 X 15 X15 X 22 MM.) Service	No.	1
4	4 Gas + 1 vacuum (15 X 15 X15 X15 X 22 MM.) Service	No.	7
H	Field valve: Ball Valves with Brass Adapter	No.	
1	10 MM.	No.	69
2	15 MM.	No.	78
3	22 MM.	No.	42
4	28 MM.	No.	18
5	42 MM.	No.	6
6	54 MM.	No.	5
I	Gas Alarm System conforming to HTM 02-01/ NFPA 99C/ EN (CE-certified / UL-listed)		
1	Area Alarm 2 Gases	No.	8
2	Area Alarm 3 Gases	No.	3
3	Area Alarm 4 Gases	No.	1
4	Area Alarm 5 Gases	No.	2
J	Master Alarm System as per Technical Specification	No.	1
K	Bed Head Panel conforming to HTM 02-01/ NFPA 99C/ EN (CE-certified / UL-listed)		
1	Bedhead panel for ICU Areas, 1500mm length, with provision of Gas outlets & provided with electrical sockets & accessories complete as per enclosed tender technical specifications.	No.	40
L	Ceiling Pendants		
1	Single Arm pendant as per Technical Specification conforming to HTM 02-01/NFPA 99C/ EN (CE-certified with 4-digit number / UL- Listed)	No.	10
M	AGSS System Duplex conforming to HTM 02-01/NFPA 99C/ EN (CE-certified with 4-digit number / UL-Listed)	Set	2
N.	D G Set	Set	2
O	Manifold room	Set	as per requirement of deptt.

OFFICE OF THE DIRECTOR
RAJENDRA INSTITUTE OF MEDICAL SCIENCES, RANCHI & 834009, JHARKHAND

Tender Notice No. 6273/RIMS, Ranchi, Dated : 18.07.2014

NOTICE INVITING TENDER

Sealed offers are invited in two bid system (Technical & Price Bids) by speed post / registered post only from original equipment manufacturer or authorized dealer for supply and installation of Liquid Oxygen Tank, Medical Gas Pipe Line system, and Regular supply of Liquid Oxygen & other medical gases for newly constructed superspecialty & Oncology buildings at RIMS, Ranchi on turnkey basis. Tender will not be accepted by hand or any other agency.

Important dates & informations for Tenders		
1.	Pre bid meeting for discussion on various technical issues regarding tender	On 25.07.2014 from 12:30 P.M onwards at RIMS Conference hall. All the intending bidders must attend the pre-bid discussion meeting for clarification of their queries & requirements of RIMS. No claims regarding technical issues will be considered after finalization of tender paper.
2.	Date of issue of tender documents	From : 01.08.2014 to 22.08.2014 (The intended bidders may purchase tender document on any working day upon payment of –Rs. 10,000/- (Rupee Ten Thousand only) (non refundable) in cash to the RIMS Cashier.
3.	Last date of submission of sealed tender documents (Only by speed post / Registered post)	On 30.08.2014 till 04:30 P.M. (At RIMS, Ranchi)
4.	Opening of technical bid & discussion on technical issues.	On 01.09.2014 at 12:30 P.M onwards in RIMS administrative conference hall, in front of purchase committee. All the bidders or their duly authorized representative must represent the tender opening for discussion & queries of purchase committee.

Note: For rest terms and conditions of the tender please visit RIMS website www.rimsranchi.org
In case of lack of any essential required documents the tenders will be rejected - The list of essential required documents which must be submitted with technical bid of the bidders :

- i. Photocopy of JVAT (Sales tax) Registration certificate in Jharkhand State.
- ii. Photocopy of JVAT/Sales tax clearance certificate of Jharkhand State, valid at the time of opening of technical bid.

OR

If the bidding agency is not registered under Jharkhand sales tax department, then for above (i) & (ii) paras they must give an undertaking through notary affidavit that “They will supply the equipment/items at RIMS, Ranchi after payment of JVAT/Jharkhand Sales tax on their own & incase of imported goods, they will make their own arrangements for custom clearance. They shall not demand any document from RIMS for JVAT/custom clearance/duty exemption/waiver/relief in this regard”.

- iii. Manufacturing certificate or original copy of authorization of original equipment manufacturer in the name of bidder for bidding on their behalf. (Photocopy or fax copy will not be valid).
- iv. I.T. PAN no. of the bidder.
- v. Earnest money in form of Demand Draft issued by any nationalized bank only amounting Rs. 8,00,000/- (Rupee Eight lakhs only) in favour of Director, Rajendra Institute of Medical

Sciences, Ranchi.

- vi. Affidavits through first class magistrate / Notary Public, mentioning that –
 - (e) “Our company has not been black listed or convicted in the past by any Hospital Organization or by any Government / Semi government organization / P.S.Us / C.B.I / C.C.I & free from all kind of litigation/allegations”,
 - (f) That the firm has no vigilance case/CBI/FEMA/CCI case pending against him/supplier (Principal)
 - (g) That the firm is not supplying the same item, at lower rate quoted in the tender, to any government organization or any other institute.
 - (h) That the firm shall supply all the consumable gases uninterruptedly during warranty & CMC period.
- vii. Technical specifications with catalogue & dimensions of equipment, accessories & details of turnkey works with line diagram measurement for their offered turnkey works & quantity of items under turnkey. The bidders have to provide complete layout plan of the constructions & electrical works (if any) required and to be done by the bidder within their offer for installation & functioning of the complete system.
- viii. Certificates of ISO/CE/BS/NFPA/HTM etc (as mentioned in tender paper for particular items) in the name of original equipment manufacturer. The certificate must be clear & showing the name of items for which it is issued to the manufacturer.
- ix. I.T. return certificate & balance sheet of the bidders for last three financial years having minimum turnover of Rs. 5,00,00,000/- (Rupee Five Crores only) in any one year within last three years.
- x. Bidders acceptance letter/undertaking that they shall provide five years comprehensive warranty & then after five years comprehensive maintenance contract with all spares, accessories & labour charges for complete system.
- xi. Work experience for providing similar nature of work in any govt./semi govt./PSUs hospital having minimum 250 indoor beds for at least two years of continuous service. The experience certificate issued by the concerned department must be enclosed in the bid.

Other terms & conditions of tender :

1. Technical part should contain the documents & request for proposal and all such details as mentioned in the term of reference or tender paper.
2. Financial part should contain the financial bid inclusive of equipment, accessories, all admissible turnkey works, warranty, guarantee, C.M.C., taxes etc and the prices of consumable gases such as-Liquid O₂/N₂O/CO₂ must be offered in separate sheet in the price bid.

(Note:- (i) The offered price will be valid for a minimum period of two years.

(ii) No price escalation for hardware's/accessories/equipment/turnkey etc will be acceptable during warranty/guarantee or CMC period, whatever circumstances may be.

(iii) Price escalation will be considered only for consumable medical gases, but only atleast after two years from the date of handover of the complete project.

3. Details with respect to terms and conditions & list of items and submission of such proposal can be obtained from “Term of Reference” i.e. tender document/paper & on RIMS website - www.rimsranchi.org

4. If required by the technical committee, all the tenderers have to organize practical demonstrations of the same model/machine/plant at their nearest installation site to the nominated technical team of RIMS, Ranchi on tenderer's own cost before finalization of technical evaluation report.
6. The undersigned reserves the right to accept or reject in part or as a whole any of the proposal received without assigning any reason thereof.
7. Any legal matter related to this tender shall be under jurisdiction of Hon'ble Jharkhand High Court, Ranchi.
8. Before participating the pre-bid, the bidders may visit the site at RIMS, Ranchi and may have discussion with the concerned Faculty / H.O.Ds regarding their requirements & quarries. All the bidders have to lay the pipeline in between the existing false ceiling and roofs. All the works under this tender shall be awarded to a single bidder on turnkey basis. i.e. in any case work will not be distributed in between or among the bidders.
9. Price Bid of only those bidders will be considered who will qualify the technical documents parts as well as technical specification parts.
10. No payment shall be made in advance, whatever circumstances may be.
11. The bidding prices will be valid at least for two years or the next tender whichever is earlier. If there will be government holiday on any last day of the above schedule, the tender process will continue on the just next working day.

Sd/-
Director
Rajendra Institute of Medical Sciences
Ranchi.