No.GHD/E-TENDER/2012-13/1217

Administration of Daman and Diu, O/O Medical Superintendent, Government Hospital, Daman

Date: 27 /12/2012

E-TENDER (ON LINE) NOTICE

The Medical Superintendent, Government Hospital, Daman on behalf of president of India, invites tenders for following items through on –line on http: Daman.nprocure.com from the manufacturer/Authorized Dealers/suppliers having valid License. The tender notice also available on www.nic daman.in

Sr. No.	Description Items	Estimated cost	EMD (in the form of FDR	Tender fees (Non refundable
1	Purchase of MODULAR	Rs. 4,50,00,000/-	Rs.13,50,000/-	Rs.5,000/-
_	OPERATION THEARE &			
	MEDICAL GAS PIPELINE SYSTEM			
Last dat	e of downloading of on line tender	documents: upto	17.01.2013 by 16.00	hours
Last dat	te of submission of online tender	document: upto	17.01.2013 by 16.00	hours.
	ed bidders should visit to see the	project site & works	to project site within	any working day &
hours.				
	ument downloading Start Date		: 28.12.2012	
	ument downloading End Date		: 17.01.2013	
	te & Time for Physical Tender D	ocuments Submission		
	with technical specification)		: 17.01.2013	
	Meeting		: 11.01.2013 4.00 P	
	te of submission of Online Rates		: 17.01.2013at 4.00	-
	nary Stage Bid Opening Date		: 17.01.2013 at 5.00	-
	al Stage Bid Opening Date rcial Stage Bid Opening Date (IF	DOCCIDI E)	: 17.01`.2013 at 5.0 : 21.01.2013 at 4.3	-
Bibber 1	ed after paying INR 5000/- only l Information Form.		-	-
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(Dr.B.R.Chand) Medical Superintendent Government Hospital, Daman

U.T. ADMINISTRATION OF DAMAN & DIU O/O THE MEDICAL SUPERINDENDENT, GOVERNMENT HOSPITAL, DAMAN DAMAN

No. GHD/DMN/E-Tender/2012-13/ 1217

Dated:27/12/2012

Terms and Conditions for the "MODULAR OPERATION THETARE & MEDICAL GAS PIPELINE SYSTEM" for Medical Superintendent, Government Hospital, DAMAN

Instructions to Bidders :

- 1) The rate(s) quoted should be strictly for free delivery at F.O.R DAMAN HOSPITAL and will be valid and operative for supply orders issued on or before 31.06.2013
- 2) All/Taxes/Duties/Royalties Charges payable on the sales/transport etc. within and/or outside the state shall be payable by the supplier. The rates should be quoted inclusive of all taxes, installation & commissioning charge etc.
- 3) The specification asked for should be writing on Principal Manufacturer Letter Head.
- 4) The tenderer should specify the name of the manufacturer for the items quoted by him along with catalogue of the item and complete specification for the items quoted to be submitted in the Technical Bid.
- 5) The tenderer should submit true copy of their last three years balance sheet with audit report duly certified by Chartered Accountant and that also should be not less than INR 5 crore.
- 6) The tenderer should match the quality mark certifications as given and specified in technical terms & conditions document.
- 7) The decision of the Tender Inviting Officer for acceptance/rejection of any articles supplied including the decision for quality mark certifications, standard and quality etc. as specified in technical bid document of articles shall be final.
- 8) The Tenderer should enclosed along with the Technical bid of Rs.13,50,000/-(Rupees Thirteen lakhs fifty thousand only) as EMD in form of Demand Draft/ FDR of any schedule bank at Moti Daman in favour of the officer inviting tender i.e Medical Superintendent, Government Hospital, Daman. The EMD submitted other than form mentioned above will not be accepted. Tender received without EMD will be summarily rejected.
 - 9) (a) The successful tenderer will have to pay within 10 days from the date of demand, an amount equal to 10% of the total value of articles, which may be ordered, as the amount of security deposit.

(b) Non receipt of Security Deposit within stipulated time will result in automatic cancellation of the order for supply without any intimation.

(c) However in case if any articles are received for which the Security Deposit may not have been deposited, the full Security Deposit as may be due from the supplier will be recovered from the bill(s) for such articles.

- **10)** The amount of Earnest Money paid by the successful Tenderer(s) will be adjusted against the amount of Security Deposit to be paid by the successful tenderer(s) as per condition No.07 above.
- 11)The tender should be neatly typed only on letter head carries the name of supplier and the signature of the tenderer. No overwriting, correction or erasures will be considered.
- 12)All bills should be in TRIPLICATE and should invariably mention the number and date of supply order.
- 13)All bills for amount above INR 5000/- should be pre-receipted on a Revenue Stamp of proper value. Bills for amount exceeding INR 5000/- not pre-receipted on Revenue Stamp of proper value will not be accepted for payment.
- 14) Each bill in which Sales Tax is charged must contain the following certificates on the body of the bill: <u>"CERTIFIED" that the goods on which Sales Tax has been charged have not been exempted under the Central Sale Tax Act or the Rules made there under and the amount charged on account of Sales Tax on these goods is not more than what is payable under the provisions of relevant Act or Rules made there under".</u>
- 15) The Tenders shall be submitted in two-bid system, wherein the Technical bid and Commercial Bid is to be filled in <u>www.nprocure.com</u> and the EMD and photocopy of the receipt of Tender Fee has to be submitted in Tender Box along with a covering letter. The envelope should be super scribing on the envelope as "Sealed Cover of Bid- for MODULAR OPERATION THEARE & MEDICAL GAS PIPELINE SYSTEM for Medical Superintendent, Government Hospital, DAMAN". The EMD and Tender Fees should be enclosed with Technical BID only. The last date of submission will be 17.01.2013 up to 16.00 hours
- 14) The right to accept or reject without assigning any reasons or all tenders in part or whole is reserved with the Tender Inviting Officer and his decision(s) on all matters relating to acceptance or rejection of the tenders as a whole or in part will be final and binding to all.
- 15) The Purchase committee will open the Tenders(if possible) in presence of tenderers or their representatives, if any present in the Office of the Tender Inviting Officer. The Purchase Committee will first open the technical bid and considering the technical specification of MODULAR OPERATION THEARE & MEDICAL GAS PIPELINE SYSTEM. The Committee will open the financial bid only of those firms who are qualified for technical bid as per specifications given by the department.
- 16) The tender should furnish separate declaration regarding the Blacklisting/Debarring to participate in the Government tender on stamp paper of INR 100.00. If the information provided found false the tender will be rejected and EMD shall be forfeited. The tenderer should submit an affidavit of following points about their legal status duly notarized on.
 - a) Declaration of non involvement in any litigation with any Government in India
 - b) That the tenderer is not under a declaration of ineligibility for corrupt or fraudulent practices

- c) Declaration of not been blacklisted by any Central / State / UT Government.
- d) Declaration of non-political and non-denominational organization with no affiliation to any political parties.
- 17) In case, the supplier does not execute the supply order placed with him, the EMD of the supplier will be forfeited to the Government and the contract for the supply shall terminated with no further liabilities on either party to the contract.
- 18) No separate agreement will be required to be signed by the successful tender(s) for the purpose of this contract for supply. Rates tendered/offered in response to the concerned Tender Notice shall be considered as acceptance of all above terms and conditions for supply for all legal purpose.
- 19) The tender will be accepted during working hours up to 17.01.2013 at 16.00 hours and will open on the same day if possible in the office of the Medical Superintendent, Govt. Hospital, DAMAN.

Conditions of Contract :

- 1) Orders once placed should be delivered within the given time period and item should be door delivered.
- 2) No extra charge for packing, forwarding and insurance etc. will be paid on the rates quoted.
- 4) The rates should be quoted only for the items specified in the list of requirement and should be for the items of given special make/manufacture.
- 5) Rates quoted for items other than the required specification/make/manufacture will not be considered.
- 6) The amount of Earnest Money paid by the tenderer(s) whose tenders are not accepted will be refunded to them by cheque or Demand Draft (as may be convenient to the Tender Inviting Officer if the amount is above Rs.5000/-(Rupees Five thousand only) in DD. Where this mode of payment is not possible the amount will be refunded at the cost of the tenderer.
- 7) Only on satisfactory completion of the supply order for and on payment of all bills of the supplier, as to be admitted for payment, the amount of Security Deposit/Earnest Money will be refunded after expiry of guarantee/warranty period, if any, or any such date/period as may be mutually agreed upon.
- 8) The tender inviting officer will consider extension of time for remitting the Security Deposit as demanded. However, in case of denial to consider such extension the supplier is bound to abide by the limit given and liable to make good for the loss made to the Government on account of his failure to abide by the time limit.
- 9) Railway Receipt or other transport document should be drawn in the favour of Officer Inviting tender.

- 10) Railway Receipt or other transport document should not be send by VPP or through any Bank as this being a Government Office it is not possible to clear cash demands of Post Office/Bank for delivery of RR or other transport documents unless we have agreed to it as special arrangement.
- 11) The supplies, materials etc. of inferior quality standard or of different specifications, brand, manufacturer etc other than that ordered specified and/or incomplete or broken articles will not be accepted. The supplier has to replace the same at his own cost and risk. Intimation of non-acceptance of any materials etc will be sent to the supplier within 10 days from the date of receipt of the stores and the same will be returned to the supplier at his own cost and risk, if he so desires and intimates accordingly within 15 days from the date of dispatch of intimation of the non-acceptance. However, if no communication is received within 15 days from the date of communication the tender Inviting Officer will not be responsible for any damages, loss etc. of such rejected articles.
- 12) In case of failure to replace the accepted and rejected articles from the supplies made, as mentioned in the conditions the loss undergone by the Government will be recovered from the suppliers Security Deposit/Earnest Money or payment due of any bill(s) to the extend required.
- 13) In case of failure to supply the store, materials etc. ordered for, as per conditions and within the stipulated time, the name articles will be obtained from the tenderer who offered next higher rates or from any other sources, as may be decided by the tender inviting Officer and the loss to the Government on account of such purchases(s) shall be recovered from the former suppliers Security Deposit/Earnest Money or bills payable. The suppliers shall have no right to dispute with such procedure.
- 14) The successful bidder will have to supply MODULAR OPERATION THEARE & MEDICAL GAS PIPELINE SYSTEM, which are accepted by the tender inviting authority within 15 days of issuing the order. In case of failure to supply the equipment ordered for, as per conditions and within the stipulated time, the same articles will be obtained from the Tenderer who offered next higher rates or from any other sources, as may be decided by the tender inviting Officer and the loss to the Government on account of such purchases(s) shall be recovered from the former suppliers Security Deposit/Earnest Money or bills payable. The suppliers shall have no any right to dispute with such procedure.
- 15) Extension of time limit for supplies shall be considered by the Tender Inviting Officer. The extension so granted may be with levy of compensation for delay in execution of supply order up to 5% of the cost of supplies ordered for at the discretion of the authority competent to grant extension of time limit provided such request is made well in time, depending upon the circumstances and such decision in the matter will be final.
- 16) Demurrage charges paid by the Tender Inviting Officer on account of delayed receipt of dispatch documents intimation will be recovered from the bills payable to the supplier.

- 17) If at any time after the order for supply of materials the Tender Inviting Officer shall for any reason whatsoever not require the whole or part of the quantity thereof as specified in the order the Tender Inviting Officer shall give notice in writing of the fact to the supplier(s) who shall have to claim to any payment of compensation what so ever on account of any profit or advantage which the supplier(s) might have derived from the supply of articles in full, but which did not derive in consequence of the full quantity of articles not having been purchased, nor shall have any claim for compensation by reasons of any alterations having been made in the original instructions which shall invoice any curtailment of the supply originally contemplated.
- 18) The Earnest Money(s)/Security Deposit(s) paid by the tender(s) earlier against any tender(s) or supply order(s) is/are not adjustable with Earnest Money or Security Deposit required by these conditions.
- 19) The tenders/offers received do not confirm with the terms and conditions of this office will be summarily rejected. If any firm desires to consider exemption from payment of Earnest Money Deposit, certified copies of its Registration with D.G.S. & D. should be attached to their tenders.
- 20) The items as mentioned in the list are the approximate estimates invited and actual purchase may more. Accordingly the successful tenderer has no right for any loss/damages with reference to approximate requirement shown in tender and actual requirement.
- 21) Supplier may ensure the goods at his own cost to safeguard the delivery of such goods dispatched by him to the consignee; the department will not be responsible for the damages or pilferage of goods during transit.
- 22) The tenderer should attached copies of certificate of experience in the field of MODULAR OPERATION THEARE, proof of fulfilling the norms of HTM 03-01, HTM 02-01, HTM 06-02, HBN 26, ISO 14644-1 & NFPA 99 certificates of the manufacturer, copy of dealership/authority letter (as per Annexure I), license for import, PAN No., User list of Tender items, Catalog of the item quoted etc. with his/their tender. The tenderers shall submit along with the tender, documentary evidence of their previous experience in carry out similar supply and of their eligibility in support of their claim for consideration in the matter of award of contract
- 23) The bidder, for all equipments not manufactured by themselves directly, Authorization letter for supply for this project should be submitted by bidder for that particular equipment.
- 24) No vendor/supplier can submit two authorization letters for the same project & equipments.
- 25) The bidder should have done similar government contract worth INR.3 Crore (Rs.Three Crore only) over the past two years
- 26) Rates should be quoted online only on commercial Bid Format issued by the department and as per the requirement asked for. Rates quoted are for Medical Superintendent, Govt. Hospital, DAMAN
- 27) The tenderer may be called for a Sample / demonstration of the items quoted for which he/she/they will be informed one week in advance for arranging the necessary Sample / demonstration in the hospital on a suitable date & time failing which the tender will be rejected.

- 28) The tenderers should give the guaranty/warranty for the period of not less than one year (12 months) from the date of installation against any manufacturing defect.
- 29)AMC:- The rates of Annual Maintenance Contract (AMC) should be for the period of three years from the expiry of Guarantee /Warranty period of one year and should written separately in the financial bid year wise. The decision to accept the tender with or without AMC is reserved with the Purchase Committee.
- 30)As and when necessary, any employee of this institution shall be given training for the use of equipments by the supplier at their cost.
- 31) The successful tenderers should install and commissioning the hospital equipment at the site suggested by the office.
- 32) The tender document shall be duly signed by the supplier.
- 33) The Tenderer has to submit the authorization letter from the principal manufacturing company as per the format prescribed in Annexure I.
- 34) The successful tenderers shall be bound to provide training if any required without any extra charges during commissioning. The tenderers shall be bound to give assurance for undertaking the annual maintenance contract after the expiry of guarantee/warranty period.

Signature & Designation of Tender Inviting Officer...

Dr.B.R.Chand Medical Superintendent, Government Hospital, DAMAN

The above terms and conditions are accepted and are binding to me/us.

Place:	Signature of tenderer
Dated:	Name of tenderer with seal of the firm
NOTE:	Please return One Copy of these terms and conditions duly signed with seal of firm along with the tender.

Place:	Signature of tenderer
Dated:	Name of tenderer with seal of the firm

ANNEXURE - I

To, Medical Superintendent, Government Hospital, Daman

Respected Sir,

We hereby declare that **M/s.** is our authorized distributor for our products in India from date and they are authorized to quote and follow up on our behalf and the said agreement is valid in force as on date;.

2. I/We undertake to supply the Modular OT/Equipment and Oxygen pipe line for which the quotations of following items are submitted by on our behalf in respect of Tender Enquiry No.

<u>Sr. No.</u>	Item No.	Name of Item
01.		

02.

03.

3. I / We have read all the terms and conditions of the tender enquiry and the same are irrevocably binding upon us till the expiry of the contract signed & executed on our behalf;

4. I/We shall notify the Medical Superintendent, Government Hospital, Daman immediately if there is any change in the agreement between M/s. and us regarding authorized distributorship of our products and further undertake to supply the items quoted by the distributor on our behalf at the quoted in the tender enquiry in case of such a change of agreement.

5. This authority is applicable only for Tender Enquiry of Medical Superintendent, Government Hospital, Daman Annual E Tender for Year 2012-13

Date:-

Signature of Authorized Signatory

<u>U.T.ADMINISTRATION OF DAMAN AND DIU</u> <u>OFFICE OF THE MEDICAL SUPERINTENDENT'</u> <u>GOVERNMENT HOSPITAL, DAMAN</u>

NO.GHD/E-TENDER/2012-2013/1217

DATED:- 27.12.2012

TECHNICAL BID FOR O.T. NO. A

Sr. No.	Description	
1	WALL SURFACES:-	SQ.
	The main requirements for any Operation theatre wall system are that they should be impact resistant, show resistance to solvents & chemicals, prevent colonising of micro-organisms or neutralise micro- organisms which come into contact with the wall surface. The surfaces should be stable – prevent cracking and movement, scrub able – amenable to cleaning & have a completely sealed finish, Biological attack resistance & have hygiene finish & lastly have Hydrothermal performance.	Mtr.
	• All wall mounted equipment should be flush-mounted and sealed into theatre wall by means of durable sterile jointing system.	
	• The wall panel design and construction should allow for the installation and support of all equipment's with provision of openings required for repair and maintenance without affecting rigidity and strength. In case require, one should be able to easily remove the wall panel for service requirements.	
	• The total distance between the inside and outside surfaces of the theatre should vary to suit the architect's layout; however the composite wall thicknesses should be 100mm or less.	
	• The cavity between the inner and outer walls should be left with minimum obstructions for the possible addition of equipment at a later date and to enable services, pipes, conduits etc, to be run within the cavity.	
	• The Sterile coating is water resistant, does not support bacteriological or fungicidal growth and is resistant to most chemicals commonly used in hospital departments. It should neutralise micro- organisms which come into contact and should prevent colonising or sporing of micro-	
	 micro-organisms. The sterile coating shows resistance to a wide range of mixed species, including stubborn pathogens such as MRSA, Acinetobacter sp, Aerobacter aerogenes, Bacillus subtitles, Escherichia coli, Listeria monocytogenes, Pseudomonas aeruginosa, Pseudomonas putida, Salmonella typimurium, Serratia marcescens, Staphylococcus Aureus. 	
	• The sterile coating should remain unaffected by radiation, its anti- microbial system should not leach out & its anti-microbial properties should last for a minimum of 10 years.	
	• The sterile coating system should be easily maintained and should withstand repeated cleaning with alkaline detergents, antiseptics and fumigation agents without any degradation to the surface finish or performance.	
	• Conform to standards HTM 08-01 / HTM 56	

2	WALL & CEILING PANELLING: The Pre-fabricated operating room should be free standing structure, constructed from composite, free standing insulated steel wall panels.	SQ. MTRS
	These panels should be produced in a double band laminator, in which two continuously moving belts of Stainless Steel 304 sheets of 0.80mm thickness are firmly bonded together by the sprayed in insulating foam, which hardens during this process. All panels should have a fifteen year de-lamination warranty.	
	The core should consist of rigid polyurethane foam, which has been injected under high pressure, with a minimum density of $40 \text{ kg} / \text{m3}$. The walls should be modular in construction, consisting of 1180 mm, 875 mm, 570 mm and 265 mm wide panels, together with corner panels 200 x 200 mm to achieve the desired false ceiling height. The thickness of the complete panel, including the core should be a minimum of 60 mm. Conform with respective certificate copy duly attached herewith having clearly mentioning of above,	
	The modular wall panels are installed upon floor using a "U" channel. Each Pre-Fabricated Operating Room may optionally include sloping ceiling panels at an angle of 45 degrees from the straight wall panel edge. This options reduces the overall volume of the room, decreasing the running costs for air- conditioning and ventilation, while at the same time maintaining the necessary height at the center of the room for the installation of ceiling mounted equipment's.	
	The inner surface of the operating theatre should be seamless, free from visible joints and sharp edges. All internal corners and panel joints should be filled with proper Epoxy filler, Sanded flush or radiused on site, ready to receive the sterile plastic finish. All panel joints should be invisible when the final plastic coating is applied.	
	All wall-mounted equipment should be flush mounted and sealed into theatre wall by means of a sterile jointing system. The wall panel design and construction should allow for the installation and support of all equipment and the provision for openings required for the installations, without affecting the rigidity and strength.	
	The internal surfaces of the theatre walls and ceiling should be sprayed with water based, non-reflective liquid plastic, to a color approved by the architect, to a minimum dry film thickness of 60 microns. The plastic coating should overlap the floor covering, ceiling system and door frames by 25 mm to provide a continuous sealed surface.	
	The sterile coating applied to a thickness of 60 microns of the already applied primer coating on the panels inner surface, should be water resistant, does not support bacteriological or fungicidal growth and should be resistant to most chemicals commonly used in hospital departments.	
	The sterile coating should remain unaffected by radiation and other ionizing radiation at levels in excess of 1,000 mrad and should be classified to class 1 when tested in accordance with the requirements as specified under BS:476:part 7 ;1971, surface spread of flame test for materials. The coating should be SILVER Ion based.	
	The coating system should be easily maintainable and should be able to withstand repeated cleaning with alkaline detergents, antiseptics and fumigation agents without any degradation to the surface finish or performance.	

The thickness of the wall panels should be a minimum of 10mm and mounted	
on the existing Wall structure using the necessary steel frame work. The Wall panels should be easily removable for catering to service related needs. Electrical Components	
Each modular panel should contain separate cable pathways for the routing of electrical services and a variety of openings and rear enclosures for the fixing of electrical components. Cable sizes for power sockets, earth and potential equalization wiring should be provided according to the specific requirements of the site. Separation of LV & ELV Supplies to BS7971, conforming to HTM 06-01 & HTM 06-02 standards. Communication Components	
Each modular panel should contain separate cable pathways for the routing of communication services and a variety of openings and rear enclosures for the fixing of components. Internal wiring is executed according to the existing valid standards, running in a separated cable pathway up to an integrated services connection point. Mechanical Components	
Medical gas outlets are connected to the wall panels from pipes running within. Piping for medical gases is segregated by means of a separate duct within the modular panel; the piping used will be medical grade copper tube according to EN737-3. The modular panel is delivered in a pre-piped configuration, including the CE-marked medical gas outlets of which all common brand types are available.	
3 ESD VINYL FLOORING The flooring should conform to standards DIN EN 1081, DIN EN 1815, EN 12466, EN 425, EN 423 & EN 433. It should be fire resistant, scratch resistant, chemical resistant & resistance to fungi – bacterial growth.	SQ. Mtrs
Vinyl is the oldest effective ESD flooring material. Solid vinyl tile (SVT) can give a facility that hospital	
look of cleanliness and shine. Facilities managers often favor vinyl floor because vinyl has a reputation for being inexpensive, simple to repair and easy to clean. The joints between individual tiles are to be welded by heat fusion process to get a seamless floor. The PVC welding bar should of the same matching color as that of the tile and a hot air gun is used for fusion of welding bar with flooring tile. Conductive flooring to be installed within the OT area to prevent damage to sensitive medical electronic equipment's, inadvertent movement of surgeons / technicians, accumulation of static dirt. Maintenance should be simple such as each individual tile can be replaced in very short down-time. The conductive flooring should ensure:	
 The protection of Electronic equipment and components The protection of people against electro-static discharge risks The protection of premises against explosive risks. The Conductive tiles should be static – conductive, flexible, homogenous vinyl floor covering with an electrical resistance of 5 x 104 ≤ Rt ≤ 106 (EN 1081). The Conductive flooring should have the following characteristics: 	
 Low accumulation of electrostatic charges to people & Equipment. Should provide an enduring resistance to static and dynamic loads Should display excellent resistance to chemical products such as detergents, acids and alkaline products. Low VOC emissions. Should have Fungistatic and bactreostatic treatment throughout the 	
total thickness of flooring.It should be non-absorbent, impervious and non-porus.	

IMPORTED PLANAIR VENTILATION CEILING / PLENUM / AIR &	Set
LIGHT DIFFUSER / LAMINAR FLOW - CONFORMING TO	
STANDARD HTM 03-01 & HTM 60	

4

The Planair ceiling ventilation system should dilute the bacteria generated by the operating team and patient in the theatre and to create an Air flow pattern that carries contaminated air away from the operating table & entering surgical wounds. It should be designed such that filtered, sterile air flows through the operating zone without an admixture of indoor air. The germs and aerosols released by occupants are displaced into adjacent room zone and removed with the exhaust air.

The main components that the Laminar flow should be having is a rectangular air outlet housing with air outlet frame and air discharge element on the underside and two housings on the top side each with a built in HEPA filter. The air discharge element should be a fine - meshed fabric for laminar displacement flow. The air discharge element should be split with a feed through for the Surgical light. The element should be removable or can be folded downwards for easy accessibility to the housing interior for cleaning and disinfection. It should be also easily accessible to the HEPA filters which can be easily replaced when required to do so.

The complete Laminar flow system should be Pre-manufactured and preassembled unit, modular in design, having connection box and filter frame. The construction should consist of four units' modular in design with filter frames and variable connection hoods for the supply air, The air discharge element should be made of fine-mesh laminar fabric (polyester) with a surrounding stainless steel frame. The air outlet housing should be made of stainless steel and the filter housing of powder coated steel sheet. The Laminar air distribution element should be modular in design, divided into four parts with a minimum number of bars, individually foldable, covered with monofilament polyamide from one side, fixed without screws. It should have a connection for differential pressure measurement. The Laminar flow should be of following characteristics:

1) Planair Pleanum Size : 2800mm x 2800mm with 4000CFM capacity Laminar Air Flow

2) Planair Pleanum Size : 1800mm x 1800mm with 2000 CFM capacity Laminar Air Flow

The system should be certified according to DIN 1946-4 (12-2008), tested to DIN 4799, having horizontally arranged terminal HEPA filters of H 14 type with grip protection on both sides; filter exchange from pure air side, filter tested and certified according to DIN EN 1822-1.

5	DOOR AND FRAME	
	Hermetically Sealed Sliding Door – Automated	Set
	• Automated operated hermetically sealing sliding main door on OT, of appropriate size, 2100mm (H) X 1000 (W) and 2100mm (H) X 1500 (W)	
	• Having a track system wherein the door blade is guided under a 45° angle with approximately 6mm deep indentations at the closed position.	
	• Having a special inside & outside Stainless Steel lever handle that lifts out the door blade from its hermetic closing position, thus allowing even very heavy doors to be opened effortlessly, manually.	
	• Encased within an extruded anodized 2.5 mm thick aluminum profile frame all around the door blade with solid high pressure laminate on both sides.	
	• Should have special nylon top rollers with double roller bearings, to enable the door to slide smoothly & silently.	
	• The door blade to have a special 3-tier specially designed 3 side heavy duty replaceable EPDM gasket, for the hermetic sealing on the wall	

	 frame. The bottom sealing should be with a 2-tier heavy duty EPDM gasket to flush with the finished floor. The door core should be 60 mm thick, built up with 4 mm thick HPL (High pressure compact laminate) skin on both sides of the door to provide better strength and rigidity. Having between the two sides of laminates – CFC free, high density polyurethane puff (density 40 Kg / m3), thickness 52mm. Vision panels - double glazed, laminated safety glass, flush finished on both sides with door blade should be provided in the doors. The automation controller for the door should be microprocessor based with regulated electro-mechanical sliding door drive. The automation should be able to operate a door with maximum door weight of 250Kg. The wall frame should be high grade aluminum extrusion with natural anodized 15 micron finish wall frame profile. The wall frame profile should be 3 sided blind fixed with cladding on wall cut-out section from inside and outside of the room. The automation should have variable / adjustable opening & closing speeds, with opening speed adjustable between 120mm / sec 800mm / sec. 	
	• The automation / door can be controlled/operated using either push-button switch, Kick switch or Sensor (touch less – infra-red) switches OR all in combination.	
6	Double Leaf SS Door Double Leaf Stainless Steel Door Single Side Open Flush Door with 49mm thickness of both door leafs, having size of 1800mm x 2100mm with view window of 300mm x 300mm duly complete with clean view glass, The Door should be having .8mm thick SS304 sheet on both faces while door core should be of PU, The Door should be hinge mounted and should complete with all necessary accessories i.e.Door closer, D type SS Door Handle etc.	SET
7	7Single Leaf Stainless Steel Single Side Open Flush Door with 49mm thickness, having size of 1000mm x 2100mm with view window of 300mm x 300mm duly complete with clean view glass, The Door should be having .8mm thick SS304 sheet on both faces while door core should be of PU, The Door should be hinge mounted and should complete with all necessary accessories i.e.Door closer, D type SS Door Handle etc.	SET
8	WALL MOUNTED ITEMS: Imported Operation theatre control panel It should be a digital control panel consisting of a computer and a touch screen managed by a PLC. It should integrate all controls, signals and alarms of the operation theatre and offer several services addressed to the	Set
	 maintenance staff. The information management system should be managed by the programmable software – PLC and the visual and control parameters by the PC / Touch screen, IP64 protected, 15" (inches) in size. It should have a digital microphone and speakers, a 300K pixel camera, ambient light sensor and a wireless LAN 802.11 a Bluetooth V2.0. Following frequent used functions should be available a) Controls: □ General Light Switch control, 3 controls in number, having dimming facility □ Temperature and humidity display □ Operation theater status – occupied / free / cleaning □ Stopwatch control □ OT surgical light switch (depending upon the make ,model of the light) 	

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9	 b) Alarms: Electrical Alarm (visual & Acoustic) Gases Alarm repeater (Visual & Acoustic) UPS charging status c) Communications: Telephone / IP Telephone if line available Ethernet connection SMS Alarms Video - Conference facility d) Signals: Digital Inputs / Outputs: 14 Nos / 10 Nos. Analogue : (0-10V) Inputs / Outputs (2 Nos. / 1 Nos. X-ray viewing screens (two plates) The theatre should be equipped with a twin plate X-Ray Viewing Screen, recessed in the wall and designed to provide a high level of control luminance, without flicker, from a unit that is easy to clean and maintain. The X-Ray viewing screen illumination should be by LED lamps, controlled by dimming ballast. The front panel diffuser is of a glare free type, sealed flush with the inside face of the operating theatre wall (or may as an option be integrated within the control panel fascia). The LED lamps should provide a uniform level of illumination across the entire front panel. 	EACH
	 Access for maintenance and lamp changing is from the front of the panel. All internal wiring is terminated in connectors with screw and clamp spring connections. Individual fuses or miniature circuit breakers protect all internal circuits. All internal wiring is of high temperature resistance and secured by propriety cable clips 	
	It is flush mounted and sealed into theatre wall by means of a sterile jointing system.	
10	 Equipment Storage Unit Equipment Storage Unit to be provided in operating theatre of dimensions approved by the user. It should be flush mounted into the theatre wall with a sterile jointing system. The cabinets should be made of Stainless Steel AISI 304 material. Doors of cabinet should open right to left and made of clear safety glass. It is suitably partitioned / shelved to allow storage of common endoscopic equipment's. It has the facility of secure locking. Conform to standard HTM 63 	EACH
11	Operating List - Writing Board	EACH
	 It is flush mounted with a sterile jointing system, 1.50mm thick, white laminate board, bonded to a 2mm steel sheet for additional rigidity. 	
12	 Cascade Pressure Stabilizer Cascade pressure stabilizers should be a range of multi-bladed units specifically designed to control room air pressures in critical areas, such as operating theatre suites. Each stabilizer should comprise of carbon steel housing with up to 	EACH

	 four Grade 304 Stainless steel blades, which pivot upon sealed for life bearing assemblies. Balancing is carried out utilizing a proven balance weight assembly. These stabilizers should be accurate to a range of 1 Pascal over their working range of 5-35Pa. 	
13	Hatch Box A hatch should be provided to remove waste material from the operation theatre to dirty linen area just adjacent to the operation theatre. Each hatch should be equipped with two doors and the door should be operated electronically. The hatch should be designed in such a way that only one door should be opened at one time. The UV light should be so installed that it is kept on while both the doors are closed, this UV light should automatically turn "OFF" in case of opening of either of the doors. There shall be indicators on both sides of the OT such that door open / close status can be monitored from both ends.	EACH
14	Clean-room illuminators Lamp covered with translucent Plexiglas with high transmission level (higher than 80%), held in a frame of white shell sheet, with integrated screw angles for fastening the lights to the panel system. Including closed mounting frame for the built-in LED lamps; the connection between the illuminator and the ceiling hollow space should be completely airtight. Clean-installed light should non-hygroscopic and be of IP 54 grade. Dimensions should approximately be 600 x 300mm (length x width).	EACH
15	Surgical Scrub Sink The Surgical Scrub Sink should be made of Stainless Steel of grade AISI 304. It should be destined to be used for operating theatres, where high hygienic standards are to be maintained. It should be free standing sink with wall mounted possibility, having a depth of 300 mm. It should be two bay, having standard 2 x drain traps, water and soap dispensers activated by sensor, water and soap time adjustable, water thermostat – temperature adjustable and having chrome faucets. It should have open able front panel with two latches for maintenance purposes, having approximate dimensions of 1600 (L) x 635 (w) x 1271 (H) in mm.	EACH
16	 AHU - AIR HANDLING UNIT (DOUBLE SKIN TYPE) Type The air-handling units are of double skin construction, draw-thru type comprising of various sections such as Pre-filter section, coil section, as shown on drawings and included in schedule of quantities. Unit must be able to work satisfactory in exposed atmosphere conditions. Casing Double skinned panels are fabricated with anodized extruded aluminum extrusion frame work bolted together with sandwich panel having powder coated 0.70 mm sheet for outer skin and plain GP 0.63 mm sheet for inner skin. 43 mm thick PUF insulation material is injected between the two panels (with U value no greater than 0. 85 W / m2/k) The entire frame duly painted is mounted on sheet steel channel based. The panels are sealed to the framework by heavy-duty 'O' ring gaskets held captive in the framed extrusion. All panels are detachable or hinged. Hinges are made of die cast aluminum with stainless steel pivots, handles are made of hard nylon and be operational from both inside and outside of the unit. All fixing and gaskets shall be concealed. 	SET

Motor and Drive

Fan motors are highly efficient and work on $440 \pm 10\%$ volts, 50 cycles, three phase with explosion proof type with class F installation, with IP 55 protection. Motors are especially designed for quiet operation and motor speed does not exceed 1440 rpm. Drive to fan is provided through belt-drive arrangement. Belts are of the oil-resistant type.

Fan

Fan are of centrifugal type, conforming to AMCA 210 and are double width, double inlet with forward- inclined airfoil blades, specially designed and suitable for the required operating pressure. Fan casing are made from galvanized steel sheet. Fan shaft is grounded C 40 carbon steel and supported in self-aligning plumber block operating less than 75% of first critical speed, grease lubricated bearings.

Cooling Coils

DX coils have 12.5 to 15 mm dia tubes minimum 24G thick with sine wave aluminum fins firmly bonded to copper tubes assembled in zinc coated steel frame. Face and surfaces areas are such as to ensure rated capacity from each unit and such that the air velocity across the coil does not exceed

150 meters per minutes. Each coil is factory tested at $21-kg/m^2$ air pressures under water. Tube is

Hydraulically / mechanically expanded for minimum thermal contact resistance with fins. Fin spacing is 4 - 5 fins per cm.

Filters

Each unit is provided with a factory assembled filter section containing washable synthetic type air filters having anodized aluminum frame. The media is supported with HDP mesh. Filter banks are easily accessible and designed for easy withdrawal and renewal of filter cells. Filter banks face velocities do not exceed 100 m/minutes. Differential pressure switch is to be fixed across the filter as part of AHU's system.

Ducting

The duct supply system should be free of construction debris. Ducting shall be made of Aluminum with curves & bends where indicated for easy flow of air and ensured to be air tight by applying silicon sealant after fabrication. Hangers shall be provided to ducts & shall be suspended by means of G.I. coated rods & these shall not be more than 2.5mtrs apart. Thermal insulation with 9mm XPE for supply & return air ducts. Joints will be lapped with Nitrile rubber tape for better insulation.

Air Cooled Package Chiller / Condensing Units.

Compressor

The compressor shall be of screw, scroll / reciprocating type, hermitic, in accordance with ARI 520, direct driven with capacity control arrangement. The compressor casing shall be of cast iron and designed for 450 psig or higher. The compressor shall incorporate rolling element bearing to support rotating assembly. The rotor shall be higher steel alloy. We prefer the use of Copeland USA Compressors Hermetic Compressors.

Refrigerant circuit components shall include flexible pipe connectors, hot gas muffler, high side pressure switch, liquid line shut-off valves, suction and discharge shut-off valves, filter drier, moisture- indicating sight glass, electronic or thermostatic expansion valve (EXV), heavy duty pressure gauge with cocks to monitor suction, discharge and oil pressure and complete operating charge of refrigerant and compressor oil.

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	Motor Compressor motor shall be of Hermetic / semi-hermetic direct drive, squirrel cage, two pole, induction type, refrigerant cooled motor suitable for 415V / 50 Hz. 3 phase supply. Hot gas motor cooling is not acceptable. We prefer the use of Copeland USA Compressors Hermetic Compressors.					
	Condenser Condenser shall be Air Cooled type. Tubing shall be copper, Aluminum fins high efficiency type. Tubes shall be nominal 19mm. Outer diameter and thickness shall not be less than 22 g. and rolled into rube sheets and shall be individually replaceable and also tubes shall be coated with corrosion resistant coating. Condenser fans shall be direct coupled to motor and protected against overloading and with minimum					
	1.15 service factor.					
	Condenser shall design to allow isolating refrigerant charge when servicing the compressor.					
	 With maintain the above said technical specifications, The Air Handling Unit with Air Cooled Package Chiller / Condensing Units should have following capacity: 1) 17.5 tr with 5000CFM 2) 11 tr with 3500 CFM 					
17	Imported Ceiling Pendants	SET				
	The idea of using ceiling mounts is such that they can be easily swiveled in place to have medical equipment or gases readily available for patient treatment or care. The benefits should translate to flexible positioning and optimal space utilization & in addition hygiene and safety advantages. In nutshell it should eliminate cable clutter and above all the unrestricted movement of all components in the space around the place of use. They should be CE marked / approved.					
18	Surgical Pendant	SET				
	The surgical arm shall be double arm, each arm length of 800mm length. The arm should be able to swivel around each joint by 330 degrees. It should be able to withhold a weight of not less than 150kg. The surgical pendant should have the following features:					
	 Distributor heads / consoles should be modular of length 1100mm & capable of accepting a range of shelves (3 Nos.) and a drawer with a top shelf, each having weight carrying capacity of at least 30kg. The distributor head should have 10 universal electrical sockets, 1 set of RJ45 / RJ11 connectors, have 					
	 2 * Infusion poles with 4 bottle holders. Five medical gas outlet terminals: 1 * O₂ : 2 * Vac : 2 * Air (4 bar) OR 2 * CO₂: 1 * O₂ : 1* Vac : 1 * Air 					
19	Anesthesia pendant	SET				
	 The arm of pendant shall be single arm of length of 800 mm. The arm should be able to swivel around each joint by 330 degrees. It should be able to withhold a weight of not less than 150kg. The pendant should have the following features: Distributor heads / consoles should be modular of length 800mm long approx. & capable of accepting a range of shelves (2 Nos.) and a drawer with a top shelf, each having weight carrying capacity of at 					
	drawer with a top shelf, each having weight carrying capacity of at					

 least 30kg. The distributor head should have 8 universal electrical sockets, 1 set of RJ45 / RJ11 connectors, have 2 Infusion poles with 4 bottle holders. Five medical gas outlet terminals: 2 * O₂ : 2 * N₂O : 1 * Air (4 bar) :1* Vac 20 SPECIFICATIONS FOR ELECTRO HYDRAULIC TABLE > Electro Hydraulic operated eight function remote control table up and down, trendelenbreg and reverse trendelenberg, right lateral, left lateral, backrest, up & down. 	ACH
of RJ45 / RJ11 connectors, have 2 Infusion poles with 4 bottle holders. • Five medical gas outlet terminals: 2 * O₂ : 2 * N₂O : 1 * Air (4 bar) :1* Vac 20 SPECIFICATIONS FOR ELECTRO HYDRAULIC TABLE > Electro Hydraulic operated eight function remote control table up and down, trendelenbreg and reverse trendelenberg, right lateral, left	АСН
holders. • Five medical gas outlet terminals: 2 * O₂ : 2 * N₂O : 1 * Air (4 bar) :1* Vac 20 SPECIFICATIONS FOR ELECTRO HYDRAULIC TABLE E. > Electro Hydraulic operated eight function remote control table up and down, trendelenbreg and reverse trendelenberg, right lateral, left E.	ACH
• Five medical gas outlet terminals: 2 * O₂ : 2 * N₂O : 1 * Air (4 bar) :1* Vac 20 SPECIFICATIONS FOR ELECTRO HYDRAULIC TABLE ▶ Electro Hydraulic operated eight function remote control table up and down, trendelenbreg and reverse trendelenberg, right lateral, left	ACH
:1* Vac 20 SPECIFICATIONS FOR ELECTRO HYDRAULIC TABLE E. > Electro Hydraulic operated eight function remote control table up and down, trendelenbreg and reverse trendelenberg, right lateral, left E.	ACH
20 SPECIFICATIONS FOR ELECTRO HYDRAULIC TABLE E. ▶ Electro Hydraulic operated eight function remote control table up and down, trendelenbreg and reverse trendelenberg, right lateral, left E.	ACH
Electro Hydraulic operated eight function remote control table up and down, trendelenbreg and reverse trendelenberg, right lateral, left	ACH
down, trendelenbreg and reverse trendelenberg, right lateral, left	
lateral, backrest, up & down.	
· · · · ·	
Should be Remote control table with corded remote.	
Power supply should be 220 v, 5 amps and three pin plug point.	
Remote cord and main plug should come from head end of the table	
(i.e) from the bottom of the base, to facilitate the anesthetist	
> Table should have 100mm central lock castors for longitudinal and	
lateral movements, the castors should be made of polyurethane and	
molded to prevent water and rust entering inside.	
> Braking should be effective and should have a dead lock when	
broken; it should be on the head end side of the table, to facilitate the	
anesthetist, and one brake on the tail end for better stability.	
Leg bed should be two pieces right and left and should be detachable	
and abductable and also should move up & down.	
\succ Table top should have five sections; it should be breakable into	
inverted v-shape from the head side.	
\succ Trendelenberg and lateral mechanism should be concealed with	
bellows; column should be straight without any projection on right or	
left.	
\blacktriangleright Table column size should be 280mm x 280mm.	
> Table should have provision to view spine ap and lateral c-arm.	
> Polyurethane detachable cushion top should be provided on the table	
top.	
> Base covers should be covered with impact, shock resistant, fire	
resistant and disinfectant free material. Base should be broader in the	
head end.	
> The column casing, table top frame, traction bars and all accessories	
made of non-corrosive steel. The main column should be covered with	
non-corrosive stainless steel.	
➤ Inbuilt battery back up should be provided.	
\succ The table top should be reversible, the headrest attachments should fix	
to the tail side and the tail side attachment should fix to the head side.	
The table should have a provision to fix top leg traction attachment.	
 The table should have manual pre sector for all positions. 	
 In case of electrical components failure, the table should be operated 	
manually by mechanical pedaling for all positions.	
 The table should be capable of taking off centered load from neck to 	
toe should be screened in to C-Arm without any disturbance.	
 Should be ISO 9001, ISO 13485 Approved. 	
 The entire vertebral column should be viewed without any hindrance. 	
 Patient sitting position, with Tendlenburg maximum should be 	
possible.	
 Minimum height 27" preferred. 	
 Should adapt Mayfield sugitha and Lyela retractor. 	
	ACH
• Dual Dome Ceiling mount structure with use of multiple LEDs	
 Output Lux intensity of 1,20,000 Lux at 1 meter in one dome (size) 	
cm: 61x52x11) and 60,000 lux at 1 meter in another dome(size cm:	
38x32x10)	
 Total Power consumption of less than or equal to 200 watts 	
 Color temperature of the LED to be equal to daylight color temperature – 5500 k 	
• Life of LED - 50,000 hours or more	

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	• Six motions in each arm to achieve all positions and angles	
	• More than 1100 mm up-down movement for both Domes	
	• All five rotary motions in each arm to have stopper less design for	
	continuous rotation	
	• Wide reach of more than 2 meters in all direction from center for both	
	arms to cover majority of Operation room area	
	• Wide operating voltage range from 90 v to 260 v to cover mains	
	voltage fluctuations	
	• User selectable intensity variation with digital display from 0 % to 100% individual for each dome	
	100 %, individual for each dome	
	 Digital Display of Life of LED used in hours for each dome Quarter yoke sets in domes for easy handling 	
	 Quarter yoke sets in domes for easy handling Availability of Direct battery operation option 	
	 Provision of Camera at the center of Main Dome 	
	 Sterilisable & detachable Plastic handle at the center of the each dome 	
	for focus adjustment	
	 To have ISO 13485 & ISO 9001 certification 	
	 with German Spring Arm 	
	 Intensity variable from 0-100% 	
22	Specifications of Ceiling mounted Single dome LED OT Lights:	EACH
	1. Single Dome Ceiling mount structure with use of multiple LEDs	
	2. Output Lux intensity of 90,000 Lux at 1 meter in one dome (size cm:	
	61x52x11)	
	3. Total Power consumption of less than or equal to 90 watts	
	4. Color temperature of the LED to be equal to daylight color	
	temperature -5500 k	
	 Life of LED - 50,000 hours or more Six motions to achieve all positions and angles 	
	6. Six motions to achieve all positions and angles7. More than 1100 mm up-down movement of dome	
	8. All five rotary motions to have stopper less design for continuous	
	rotation	
	9. Wide reach of more than 2 meters in all direction from center to cover	
	majority of Operation room area	
	10. Wide operating voltage range from 90 v to 260 v to cover mains	
	voltage fluctuations	
	11. User selectable intensity variation with digital display from 0 % to	
	100 %	
	12. Digital Display of Life of LED used in hours	
	13. Quarter yoke sets in dome for easy handling	
	 Availability of Direct battery operation option Sterilisable & detachable Plastic handle at the center of the dome for 	
	focus adjustment	
	16. To have ISO 13485 & ISO 9001 certification	
	17. with German Spring Arm	
	18. Intensity variable from 0-100%	
	MEDICAL GAS PIPELINE	
23	OXYGEN MANIFOLD SYSTEM	EACH
	4 x4 gas manifold are extendable & non extendable type with choice of size	
	of cylinders bank for bulk 'd' type jumbo cylinders, manifold is suitable to with stand a working pressure of 140kg/cm manifold have high pressure	
	with stand a working pressure of 140kg/cm manifold have high pressure copper annealed tail pipes with one end having brass adapter suitable for	
	cylinders. Manifold have brass non-return valves for individual cylinders	
	(cylinders must be provides by the Govt. Hospital).	
24	OXYGEN MANIFOLD SYSTEM	EACH
	2 x2 cylinder emergency manifold with pressure reducing systems extendable	
	& non extendable type with choice of size of cylinders bank for bulk 'd' type	
	jumbo cylinders, manifold is suitable to with stand a working pressure of	
	140kg/cm manifold have high pressure copper annealed tail pipes with one	
		•

 A) compact and fully automatic manifold control system for oxygen n2o and co2 B) designed with both safety and continuity of flow supply at a constant pressure via two banks f botted gas cylinders with following status monitoring C) a-bank in use (green indicator) D) B-bank ready for use (yellow indication) E) control panel has build in led display to indicate normal, low for line pressure F) the control panel includes pressure gauge (63mm) to indicate the gas pressure of each header ad pipe line distribution pressure G) capable to provide a distribution flow rate in excess of 1500 lpm H) the control panel incorporate safety puncture in case pressure excess 100 psi I) Oxygen Failure Alarm System with Indication 			
 A) compact and fully automatic manifold control system for oxygen n2o and co2 B) designed with both safety and continuity of flow supply at a constant pressure via two banks f botted gas cylinders with following status monitoring C) a-bank in use (green indicator) D) B-bank ready for use (yellow indication) E) control panel has build in led display to indicate normal, low for line pressure G) capable to provide a distribution pressure (63mm) to indicate the gas pressure of each header ad pipe line distribution pressure G) capable to provide a distribution flow rate in excess of 1500 lpm H) the control panel incorporate safety puncture in case pressure excess 100 psi D Oxygen Failure Alarm System with Indication Z 3 zize manifold n2o complete with 4 pc tail pipes extendable & non extendable type with choice of size of cylinders bank for bulk 'd' type jumbo cylinders, manifold is suitable to with stand a working pressure of 140kg/cm manifold have high pressure copper annealed tail pipes with one end having brass adapter suitable for cylinders must be provides by the Govt. Hospital). 27 N2O MANIFOLD SYSTEM 2 cylinder emergency point with pressure copper annealed tail pipes with one end having brass adapter suitable for cylinders. Manifold have brass non-return valves for individual cylinders (cylinders must be provides by the Govt. Hospital). 28 Automatic n20 control panel (aluminum body) A) compact and fully automatic manifold control system for oxygen n20 B) designed with both safety and continuity of flow supply at a constant pressure via two banks f botted gas cylinders with following status monitoring C) a-bank in use (green indicator) D) B-bank ready for use (yellow indication) E) control panel has build in led display to indicate normal, low for line pressure A com		return valves for individual cylinders (cylinders must be provides by the	
 26 N2O MANIFOLD SYSTEM 2 x 2 size manifold n2o complete with 4 pc tail pipes extendable & non extendable type with choice of size of cylinders bank for bulk 'd' type jumbo cylinders, manifold is suitable to with stand a working pressure of 140kg/cm manifold have high pressure copper annealed tail pipes with one end having brass adapter suitable for cylinders. Manifold have brass non-return valves for individual cylinders (cylinders must be provides by the Govt. Hospital). 27 N2O MANIFOLD SYSTEM 2 cylinder emergency point with pressure reducing systems extendable & non extendable type with choice of size of cylinders bank for bulk 'd' type jumbo cylinders, manifold is suitable to with stand a working pressure of 140kg/cm manifold have high pressure copper annealed tail pipes with one end having brass adapter suitable for cylinders. Manifold have brass non-return valves for individual cylinders (cylinders must be provides by the Govt. Hospital). 28 Automatic n2o control panel (aluminum body) A) compact and fully automatic manifold control system for oxygen n20 B) designed with both safety and continuity of flow supply at a constant pressure via two banks f botted gas cylinders with following status monitoring C) a-bank in use (green indicator) D) B-bank ready for use (yellow indication) E) control panel includes pressure gauge (63mm) to indicate the gas pressure of each header ad pipe line distribution pressure G) capable to provide a distribution flow rate in excess of 1500 lpm H) the control panel incroporate safety puncture in case pressure excess 100 psi 	25	 A) compact and fully automatic manifold control system for oxygen n2o and co2 B) designed with both safety and continuity of flow supply at a constant pressure via two banks f botted gas cylinders with following status monitoring C) a-bank in use (green indicator) D) B-bank ready for use (yellow indication) E) control panel has build in led display to indicate normal, low for line pressure F) the control panel includes pressure gauge (63mm) to indicate the gas pressure of each header ad pipe line distribution pressure G) capable to provide a distribution flow rate in excess of 1500 lpm H) the control panel incorporate safety puncture in case pressure excess 100 psi 	SET
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	28	 Automatic n2o control panel (aluminum body) A) compact and fully automatic manifold control system for oxygen n2o B) designed with both safety and continuity of flow supply at a constant pressure via two banks f botted gas cylinders with following status monitoring C) a-bank in use (green indicator) D) B-bank ready for use (yellow indication) E) control panel has build in led display to indicate normal, low for line pressure F) the control panel includes pressure gauge (63mm) to indicate the gas pressure of each header ad pipe line distribution pressure G) capable to provide a distribution flow rate in excess of 1500 lpm H) the control panel incorporate safety puncture in case pressure excess 100 psi 	SET

9	Air con	+	system C	il Free				· •	-	7.5 hp motor	EACH
	mounted air receiver tank capacity, 1000liter complete and Lubric stage air compressors								icating 1wo		
	H.P.	No. of	-	cement		pressure		r.p.m.		nk capacity iter	
	7.5	cyl. 2	c.f.m 27	l.p.m. 756	Psi 175	Kg/c	m2	550	100)0ltr	
		<u>ll air d</u> cal-Date					, P 1	rocess-l	Data, 1	<u>Filer Date,</u>	SET
	No cfc a Desicca	teed dew refrigerar int immol	its oilized to			ing					
A B	Purge s	simplicity aving con ewpoint n	ntrol (op		l)						
	Flow	v cfm	End conr	nection b	-			s (mm)	D	Weight	
	30	1	/2"		H S	H 310	W 105	50	D 780	Kgs 70	
	30		/2		C	510	10.	50	780	70	
	Atmosp 3.2 Adsorb Size: 2 Desicca No. of a Quantit Diamete Straight Thickne Adsorb Top & 1	ant: Active to 6 mm ant: Ife: 1 adsorber: y of adsorber of Adsorber of Adsorber t head of ers of Ad er Shell: Bottom b	w point: Ad vated alu year 2 Nos. rbant: 3 orber: 0 adsorber sorber: 3 Aluminin	- 40 deg Isorber Imina Kg per ' D 101 n : 515 m 3 mm um IS 63	Tower nm m 3400			-		Data	
	Cycle ti Drying Regene Repress Filter I Pre filte	omponent ime : 4 time per ration tim surising ti Data	4 min tower ne per toy me per to	: 2 1 wer : 1.3 ower	min 5 min : 0	.5 min					
	Filterin Efficier	g media ncy : 9 s : 2	: B 99.9 %	orosilica	ate fibe	er					

Filtering media : Sintered Bronze Electrical – Data Controller Controller : Custom made Micro controller based system Input voltage : 85 – 265 V AC, 50 / 60 Hz., 20 Watts Max. Output : 2 Exhaust & 1 Drain valve 24 V / 8 Watts Solenoid coils Display : 3 LED indicating Drain, Tower 1 & Tower 2 Status Enclosure : IP 55 Protection, ABS plastic Connection : DIN 43650 Micro 31 VACUUM PUMP SYSTEM Technical specification:- Bore & stroke 3" & 3" x 2 ¾" Bore & stroke 3" & 3" x 2 ¾" R.P.M. 960 P.D. 21.6 Max. working pressure (psig / kg / cm2) 29.6" barometer reading ar the sea level Vacuum tank (liters 500ltr) Motor HP required 2 Scope of supply - Suction air filter - Vacuum pump with v.sheave along with electrically mounted on the vacuum tank - Regulation : ASSC vacuum switch of standard co. make - Vacuum pump & motor pulley, v-belts belt guard, motor slide rail etc. - Vacuum pump with v. sheave along with electrical mounted on the vacuum tank - Motor of standard co. with ISI and ISo standard along with DO			1
Electrical - Data Controller : Custom made Micro controller based system Input volage : 85 - 265 V AC, 50 / 60 Hz, 20 Waus Max. Output : 2 Exhaust & 1 Drain valve 24 V / 8 Watts Solenoid coils Display : 3 LED indicating Drain, Tower 1 & Tower 2 Status Enclosure : IP 55 Protection, ABS plastic Connection : DIN 43650 Micro SET Technical specification:- Bore & stroke 3" & 3" x 2 34" R.P.M. 960 P.D. 21.6 Max. working pressure (psig / kg / cm2.) 29.6" barometer reading at the sea level Vacuum tank (liters 500ltr) Motor HP required 2 Scope of supply Scope of supply - Suction air filter - Vacuum pump with v sheave along with electrically mounted on the vacuum tank - Vacuum pump with v sheave along with electrical mounted on the vacuum tank - Vacuum pump with v sheave along with electrical mounted on the vacuum tank - Vacuum pump with v sheave along with electrical mounted on the vacuum tank - Vacuum pump with v sheave along with electrical mounted on the vacuum tank - Vacuum pump with v sheave along with electrical state: - Vacuum pump et motor pulley, v-belts belt guard, motor slide rail etc. - Vacuum pump with v sheave along with electrical state: - Vacuum pump et motor pulley.		Micron rating : 25 microns	
Controller :Custom made Micro controller based system Input voltage: :S = 265 V AC, 50 / 60 Hz., 20 Watts Max. Output ::1 Exhaust & I Drain valve 24 V 8 Watts Solenoid coils Display ::3 LED indicating Drain, Tower 1 & Tower 2 Status Enclosure: ::P 55 Protection, ABS plastic Connection: :DIN 43650 Micro 31 VACUUM PUMP SYSTEM Technical specification:- Bore & stroke 3" & 3" x 2 34" R.P.M. 960 P.D. 21.6 Max. working pressure (psig / kg / cm2) 29.6" barometer reading are the sea level Vacuum tank (titers 500tr) Motor HP required 2 Scope of supply - Suction air filter Vacuum nump with v.sheave along with electrically mounted on the vacuum tank - Notor of standard co. with ISI and ISO standard along with DOL starter of standard co. With ISI and ISO standard along with DOL starter of standard co. CE marked only 32 COPPER PIPING WITH REQUIRED Running Meter Copper and Copper alloys-Seamless round tube for a medical gases or vacuum, materials conforming to manufacturers as per BS.EK:13348:2001-A1:2005 Running Meter Copper nation Gystem under vacuum * Oxygen, Nitrous Oxide, Nitrogen, Helium, Carbon Dioxide, Xenon * Air for Breaulting <			
Input voltage : 85 - 265 V AC, 50 / 60 Hz, 20 Watts Max. Output : 2 Exhaust & 1 Drain valve 24 V / 8 Watts Solenoid coils Display :: 3 LHD indicating Drain, Tower I & Tower 2 Status Enclosure : IP 55 Protection, ABS plastic Connection : DIN 43650 Micro 31 VACUUM PUMP SYSTEM Technical specification:- Bore & stroke 3" & 3" x 2 40" R.P.M. 960 P.D. 21.6 Max. working pressure (psig / kg / cm2) 2.9.6" barometer reading at the sea level Vacuum tank (liters 500ltr) Motor HP required 2 Scope of supply Suction air filter - Vacuum pump with v.sheave along with electrically mounted on the vacuum tank - Vacuum pump with v.sheave along with electrical mounted on the vacuum tank - Vacuum pump with v.sheave along with electrical mounted on the vacuum tank - Motor of standard co. With ISI and ISo standard along with DOL starter of standard co. CE marked only 32 COPPER PIPING WTH REQUERED COPPER PIPING WTH REQUERED Copper al Opsper alloys-Sealmess round tube for a medical gases or vacuum, materials conforming to manufacturers as per BS:EN: 13348:2001-A1:2005 Copper pipe of this European standard are suitable for distributing the following medical gases intended to be used at operating pressure up to 2000kpa and for system under vacuum			
Output : 2 Exhaust & 1 Drain valve 24 V / 8 Watts Solenoid coils Display : 3 LED indicating Drain, Tower 1 & Tower 2 Status Enclosure : IP 55 Protection, ABS plastic Connection : DIN 43650 Micro 31 VACUUM PUMP SYSTEM Bore & stroke 3" & 3" x 23" R.P.M. 960 P.D. 21.6 Max. working pressure (psig / kg / cm2) 29.6" barometer reading ar the sea level Vacuum tank (liters Soluti) Motor HP required 2 Scope of supply - Suction air filter - Vacuum pump with v.sheave along with electrically mounted on the vacuum tank - Regulation : ASSC vacuum switch of standard co. make - Vacuum pump with v. sheave along with electrical mounted on the vacuum tank - Vacuum pump with v. sheave along with electrical mounted on the vacuum tank - Motor of standard co. with ISI and ISo standard along with DOL starter of standard co. With ISI and ISo standard along with DOL starter of standard co. With ISI and ISO standard core as per BS:EN: 3348: 2001+A1:2005 Copper and Copper alloys-Scamless round tube for a medical gases or vacuum, materials conforming to manufacturers as per BS:EN: 3348: 2001+A1:2005 Copper spie of this European standard are suitable for distributing the following medical gases intended to be used at operating pressure up to 2000kpa and for system under		5	
Display : ILED indicating Drain, Tower 1 & Tower 2 Status Enclosure : IP 55 Protection, ABS plastic Connection : DIN 43650 Micro 31 VACUUM PIMP SYSTEM Technical specification:- Bore & stroke 3" & 3" x 2 4" R.P.M. 960 P.D. 21.6 Max. working pressure (psig / kg / cm2) 29.6" barometer reading at the sea level Vacuum tank (liters 500ltr) Motor HP required 2 Scope of supply . Suction air filter • Vacuum pump with v. sheave along with electrically mounted on the vacuum tank • Regulation : ASSC vacuum switch of standard co, make • Vacuum pump with v. sheave along with electrical mounted on the vacuum tank • Motor of standard co. with ISI and ISo standard along with DOL statter of standard co. CE marked only 32 COPPER PIPING WITH REQUIRED COPPER PIPING SIZE TO BE USED As per (BSEN) 13348 as per HTM-02.01 Copper and Copper alloys-Seamless round tube for a medical gases or vacuum, materials conforming to manufacturers as per BS:EX:13348:2001+A1:2005 Copper pipe of this European standard are suitable for distributing the following medical gases intended to be used at operating pressure up to 2000kpa and for system under vacuum * Ari for Driving surgical tools * Air for Dri			
Enclosure :P 55 Protection, ABS plastic Connection :DIN 43650 Micro 31 VACUUM PUMP SYSTEM Technical specification:- Bore & stroke 3" & 3" x 2 ¾" R,P.M. 960 SET 29.6" barometer reading at the sea level Vacuum tank (liters 500ltr) Motor HP required 2 Scope of supply Section air filter - Vacuum pump with v.sheave along with electrically mounted on the vacuum tank Regulation : ASSC vacuum switch of standard co. make - Vacuum pump with v. sheave along with electrical mounted on the vacuum tank Neare along with electrical mounted on the vacuum tank - Vacuum pump & with v. sheave along with electrical mounted on the vacuum tank Notor of standard co. with ISI and ISo standard along with DOL starter of standard co. CE marked only 32 COPPER PIPING WITH REQUIRED COPPER PIPING WITH REQUIRED COPPER PIPING WITH REQUIRED COPPER algases intended to be used at operating pressure up to 2000kpa and for system under vacuum Running Meter * Oxygen, Nitrous Oxide, Nitrogen, Helium, Carbon Dioxide, Xenon * Air for Breathing * Specific mixture of these above mentioned gases * Air for Driving surgical tools * Anaesthetics gases and vaporous * Vacuum Mandatory Inspection Requirements: Chemical Composition Cehmical Composition of copper pipe shall conform to the following requirements. The analytical methods shall be carried out by Direct Emission Spectrometer. Mandatory Inspection Requirements: Chemical Composition Cehmical Compositio		Output : 2 Exhaust & 1 Drain valve 24 V / 8 Watts Solenoid coils	
Connection : DIN 43650 Micro SET 31 VACUUM PUMP SYSTEM Technical specification: Bore & stroke 3" & 3" x 2 ¾" R.P.M. 960 P.D. 21.6 Max. working pressure (psig / kg / cm2) 29.6" barometer reading at the sea level Vacuum tank (liters 5001r) Motor HP required 2 Scope of supply Section air filter • Vacuum pump with v.sheave along with electrically mounted on the vacuum tank Regulation : ASSC vacuum switch of standard co. make • Vacuum pump with v.sheave along with electrical mounted on the vacuum tank Regulation : ASSC vacuum switch of standard co. make • Vacuum pump & motor pulley, v-belts belt guard, motor slide rail etc. Vacuum pump with v. sheave along with electrical mounted on the vacuum tank • Motor of standard co. with ISI and ISo standard along with DOL starter of standard co. CE marked only 32 COPPER FITINGS SIZE TO BE USED As per (BSEN) 13348 as per HTM-02.01 Copper and Copper alloys-Seamless round tube for a medical gases or vacuum, materials conforming to manufacturers as per BS:EN:13348:2001+A1:2005 Copper pipe of this European standard are suitable for distributing the following medical gases intended to be used at operating pressure up to 2000kpa and for system under vacuum * Oxygen, Nitrous Oxide, Nitrogen, Helium, Carbon Dioxide, Xenon * Air for Breathing * Specific mixture of these above mentioned gases * Air for Driving surgical tools * Anaesthetics gases and vaporous * Vacuum Mandatory Inspection Requirements: Chemical Composition Cehmical Composition of copper pipe shall conform to the following requirements. The analytical methods sha		Display : 3 LED indicating Drain, Tower 1 & Tower 2 Status	
Connection : DIN 43650 Micro SET 31 VACUUM PUMP SYSTEM Technical specification:- Bore & stroke 3" & 3" x 2 ¼" R.P.M. 960 P.D. 21.6 Max. working pressure (psig / kg / cm2) 29.6" barometer reading ar the sea level Vacuum tank (liters 5001tr) Motor HP required 2 Scope of supply SET 5 Suction air filter Suction air filter 6 Vacuum pump with v.sheave along with electrically mounted on the vacuum tank Regulation : ASSC Vacuum switch of standard co. make 7 Vacuum pump & motor pulley, v-belts belt guard, motor slide rail etc. Vacuum pump with v. sheave along with electrical mounted on the vacuum tank 8 Regulation : ASSC Vacuum switch of standard co. make Wacuum tank 9 Motor of standard co. With ISI and ISo standard along with DOL starter of standard co. CE marked only Rumning 32 COPPER FIFING WITH REQUIRED COPPER FIFING SIZE TO BE USED As per (BSEN) 13348 as per HTM-02.01 Rumning Copper and Copper alloys-Seamless round tube for a medical gases or vacuum, materials conforming to manufacturers as per BS:EN:13348;2001+A1:2005 Rumning * Oxygen, Nitrous Oxide, Nitrogen, Helium, Carbon Dioxide, Xenon * Air for Breathing * Specific mixture of these above mentioned gases * Air for Driving surgical tools * Aacsthetics gases and vaporous * Vacuum * Vacuum * Oxygen, Nitrous Oxide, Nitrogen, Helium, Carbon Dioxide, Xenon * Vacuum * Jisme outer dia 0,9mm thick.			
Technical specification:- Bore & stroke 3" & 3" x 2 ¾" R.P.M. 960 P.D. 21.6 Max. working pressure (psig / kg / cm2) 29.6" barometer reading at the sea level Vacuum tank (liters 500lt) Motor HP required 2 Scope of supply Scotion air filter • Vacuum pump with v.sheave along with electrically mounted on the vacuum tank • Regulation : ASSC vacuum switch of standard co. make • Vacuum pump with v.sheave along with electrical mounted on the vacuum tank • Regulation : ASSC vacuum switch of standard co. make • Vacuum pump & motor pulley, v-belts belt guard, motor slide rail etc. • Vacuum pump & motor pulley, v-belts helt guard, motor slide rail etc. • Vacuum pump & motor pulley, v-belts helt guard, motor slide rail etc. • Vacuum pump & motor slide rail etc. • Vacuum pump & motor pulley, v-belts helt guard, motor slide rail etc. • Vacuum pump & motor pulley. v-belts helt guard, motor slide rail etc. • Vacuum pump & motor slide rail etc. • Vacuum pump & motor slandard co. with ISI and ISo standard along with DOL starter of standard co. CE marked only 32 COPPER PIPING WITH REQUIRED Copper alloys-Seamless round tube for a medical gases or vacuum, materials conforming to manufacturers as per BS:EN:13348.2001+A1:2005 Copper pipe of this European standard are suitable for distributing the following medical gases intended to be used at operating pressure up to 2000kpa and for system under vacuum * Oxygen, Nitrous Oxide, Nitrogen, Helium, Carbon Diox			
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 Bore & stroke 3" & 3" x 2 ¾" R.P.M. 960 P.D. 21.6 Max. working pressure (psig / kg / cm2.) 29.6" barometer reading ar the sea level Vacuum tank (titers 5001r) Motor HP required 2 Scope of supply - Suction air filter - Vacuum pump with v.sheave along with electrically mounted on the vacuum tank Regulation : ASSC vacuum switch of standard co. make - Vacuum pump & motor pulley, v-belts belt guard, motor slide rail etc. - Vacuum nump & motor pulley, v-belts belt guard, motor slide rail etc. - Vacuum nump & motor pulley, v-belts belt guard, motor slide rail etc. - Vacuum nump & motor pulley, v-belts belt guard, motor slide rail etc. - Vacuum nump & motor pulley, v-belts belt guard, motor slide rail etc. - Vacuum mark Motor of standard co. With ISI and ISo standard along with DOL starter of standard co. CE marked only 32 COPPER PIPING WITH REQUIRED As per (BSEN) 13348 as per HTM-02.01 Copper and Copper alloys-Seamless round tube for a medical gases or vaccuum, materials conforming to manufacturers as per BS:EN:13348:2001+A1:2005 Copper pipe of this European standard are suitable for distributing the following medical gases intended to be used at operating pressure up to 2000kpa and for system under vacuum * Oxygen, Nitrous Oxide, Nitrogen, Helium, Carbon Dioxide, Xenon * Air for Driving surgical tools * Anaesthetics gases and vaporous * Vacuum Mandatory Inspection Requirements: Chemical Composition Cehmical Composition of copper pipe shall conform to the following requirements. The analytical methods shall be carried out by Direct Emission Spectrometer. Copper + Silver: min. 99.90% Phosphorous : min. 0.015%, Max 0.040% 1) 35mm outer dia, 0.9mm thick. 3) 22mm outer dia, 0.9mm thick. 4) 15mm outer dia 0.9mm thick.			
R.P.M. 960 P.D. 21.6 Max. working pressure (psig / kg / cm2) 29.6" barometer reading ar the sea level Vacuum tank (liters 500ltr) Motor HP required 2 Scope of supply Suction air filter Vacuum pump with v.sheave along with electrically mounted on the vacuum tank Regulation : ASSC vacuum switch of standard co. make Vacuum pump with v.sheave along with electrical mounted on the vacuum tank Motor of standard co. with ISI and ISo standard along with DOL starter of standard co. CE marked only 32 COPPER PIPING WITH REQUIRED COPPER HITTINGS SIZE TO BE USED Copper and Copper alloys-Seamless round tube for a medical gases or vacuum, materials conforming to manufacturers as per BS:EN:13348.2001+A1:2005 BCopper pipe of this European standard are suitable for distributing the following medical gases intended to be used at operating pressure up to 2000kpa and for system under vacuum * Oxygen, Nitrous Oxide, Nitrogen, Helium, Carbon Dioxide, Xenon * Air for Breathing * Specific mixture of these above mentioned gases * Air for Driving surgical tools * Anaesthetics gases and vaporous * Vacuum Mandatory Inspection Requirements: Chemical Composition of copper pipe shall conform to the following requirements. The analytical methods shall be carried out by Direct Emission Spectrometer.			
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3) 22mm outer dia 0.9mm thick.4) 15mm outer dia 0.9mm thick.			
4) 15mm outer dia 0.9mm thick.		,	
		3) 22mm outer dia 0.9mm thick	
		4) 15mm outer dia 0.9mm thick.	
		4) 15mm outer dia 0.9mm thick.	

33	VALVE WITH VALVE BOX AND PRESSURE GAUGE It will be wall mounted M.S. box with powder coated and lockable front glass panel having ball type valves with PTFE seat, brass body nickel plating	SET
	valves having quarter turn handle opening size suitable for 12mm od copper	
	pipe to 28 mm od copper pipe will have screwed ends will have brass	
	adapters suitable for copper pipe, thevalve box door can not be closed during valve close position. These valves will be manufactured by an iso 9001	
	certified company.	
	1) 4 Services	
	2) 3 Services	
	3) 2 Services	
34	FLOOR ISOLATION STANDARD VALVE (BALL VALVE WITH BRASS NUT & NIPPLE)	Each
	35MM	Each
	28MM	
	22MM	
	15MM	
35	AREA LINE PRESSURE ALARM	Each
	Area line pressure alarm upto 3 gases	
	Area line pressure alarm upto 2 gases	
	The medical gas alarms will have displays for various fault indications and	
	capable of monitoring a maximum of 4 to 5 medical gas services by means	
	pressure switches,	
	Which detect deviations from the normal operating limits of either pressure or	
	medical vacuum	
	Each gas services will be displayed by colored normal low high pressure conditions. Medical vacuum systems will be displayed in the normal & low	
	vacuum condition only	
	Failure indicators will be displayed by flashing lights and normal indication	
	will be study.	
	An audible warning will sound simultaneously with any failure indication at a	
	mute facility will be provided. A maintenance mute switch will be provided internally to the panel for use during maintenance, which results in prolonged	
	pipeline or plant shutdown. This facility will automatically reset when the	
	gas service returns to normal.	
	The alarm panel will have a test facility to prove the integrity of the internal	
	circuit, and microprocessor based electronic circuit led and audible warning	
	The elements accurate devices for each and for showing the	
	The alarm is equipped with separate gauges for each gas for showing the pressure and it complies to htm 2022 standard.	
	OXYGEN GAS OUTLET	
36	GAS OUTLET POINT	Each
	• Allows plugging of oxygen flowmwter & probes from front.	
	Bears weight of the metal BPC flowmeter & humidifier	
	• Push to insert and press to release mechanism for flowmeter & probes	
	• Locating terminal unit pin & probe notch gives maximum stability to	
	the flowmeter unit	
	• Non-interchangeability between Probes & terminal outlets for	
I	different services; possibility of error in making connection is avoided	Each
I II	Front Loaded outlet point (Oxygen vaccum Air Nitrous)Front Loaded outlet point Probe Only (Oxygen Vacuum Air Nitrous)	Each
III	BPC Flow Meter	Each
IV	Humidifier Bottle	Each
V	Front Loaded Key use for Ventilator (Air, Oxygen)	Each

37	Central ward suction ward Vacuum Unit (600ml, 1000ml, 2000ml) with	Set
51	Regulator	501
	The system should be wall mounted type operated by central vacuum. It includes vacuum regulator range form 0-760mm hg. Use can vary negative pressure as per patient requirement. Vacuum gauge sizes 2" and 600ml capacity autoclavable plastic jars with overflow safety trap will be provided. Ward suction units should be provided with required high and low pressure	
20	tubing 600ml unit with	TT •
38	Theatre suction trolly unit with regulator Theatre vacuum unit: - it will be trolley mounted. The unit will include one regulator having meter mounted in the trolley stand, having two re-usable each 2000ml plastic collections bottles mounted on base of trolley unit and connected with regulator and low pressure tube inter connections. The base of the trolley is fitted on castor wheel arrangement to move the system one place to another place easily.	Unit
39	High Pressure Tubing – 6mm I.D. Grey for Air Yellow for Vacuum Blue for Nitrous Oxide White for Oxygen	Per Mtr.
40	Low Pressure Tubing – 6mm I.D. Grey for Air Yellow for Vacuum Blue for Nitrous Oxide White for Oxygen	Per Mtr.
41	ELECTRICAL CONTROL PANEL AIR Electrical Control Panel Equipped for Duplex & Cascade system. For Compressor	Each
42	ELECTRICAL CONTROL PANEL VACCUM Electrical Control Panel Equipped for Duplex & Cascade system. For Vacuum Pump	Each
43	Master Alarm for PlantThe medical gas alarms will have displays for various fault indications and capable of monitoring a maximum of 4 to 5 medical gas services by means pressure switches, Which detect deviations from the normal operating limits of either pressure or medical vacuumEach gas services will be displayed by colored normal low high pressure	Each
	conditions. Medical vacuum systems will be displayed in the normal & low vacuum condition only Failure indicators will be displayed by flashing lights and normal indication will be study.	
	An audible warning will sound simultaneously with any failure indication at a mute facility will be provided. A maintenance mute switch will be provided internally to the panel for use during maintenance, which results in prolonged pipeline or plant shutdown. This facility will automatically reset when the gas service returns to normal.	
	The alarm panel will have a test facility to prove the integrity of the internal circuit, and microprocessor based electronic circuit led and audible warning	
	The alarm is equipped with separate gauges for each gas for showing the pressure and it complies to htm 2022 standard.	

44	ICU BED HEAD PANEL-5FEET	SET
	 The construction of the wall section is made of extruded aluminum The extruded aluminum structural lower channel will include a vertical integrate equipment mounting track to support optical track mounted equipment. Optional equipments like I,v, hook infusion pole utility basket, monitor tray etc. can be install into the track at any location along the extruded aluminum channel. Gas outlets/ switch -socket/monitor socket/ nurse call system can be fitted on middle portion of the bed console unit after cutting the aluminum sheet as per hospital requirements. Bed Head Panel for ICU 5 Feet Long made of High strength extruded Aluminum profile with powder coated with colour. Each Bed Head Panel have provision for O2-2., Vac-2, Air-4-1 and 5/15amp Switch socket 4nos with Optional Railing and IV Stand, Ward Vacuum and Infusion pump stand 	
44-A	Optional Equipments At Extra Cost	
Ι	I.V. Hook	
II	Syringe Pump Pole	
III	Utility Basket	
IV	Monitor Tray	
V	Aluminum Channel (Railing)	
VI	Ward Vacuum Stand	
VII	Infusion Pump Stand	

<u>U.T.ADMINISTRATION OF DAMAN AND DIU</u> <u>OFFICE OF THE MEDICAL SUPERINTENDENT'</u> <u>GOVERNMENT HOSPITAL, DAMAN</u>

NO.GHD/E-TENDER/2012-2013/

DATED:- 27.12.2012

FINANCIAL BID FOR O.T. NO. A

Sr. No.	Description		Qty.	Rate Each	Total Cost
1	WALL SURFACES:-	SQ.			
2	WALL & CEILING PANELLING:	Mtr. SQ.			
		MTRS			
3	ESD VINYL FLOORING	SQ. Mtrs			
4	IMPORTED PLANAIR VENTILATION CEILING / PLENUM / AIR & LIGHT DIFFUSER / LAMINAR FLOW – CONFORMING TO STANDARD HTM 03-01 &	Set			
~	HTM 6				
5	DOOR AND FRAME	C . t			
C	Hermetically Sealed Sliding Door – Automated Double Leaf SS Door	Set			
$\frac{6}{7}$		SET SET			
1	Single Leaf Stainless Steel Single Side Open Flush Door with 49mm thickness,	SEI			
8	WALL MOUNTED ITEMS:	Set			
9	X-ray viewing screens (two plates)	Nos			
10	Equipment Storage Unit	Nos.			
11	Operating List - Writing Board	Nos.			
12	Cascade Pressure Stabilizer	Nos.			
13	Hatch Box	Nos.			
14	Clean-room illuminators	Nos.			
15	Surgical Scrub Sink	Nos.			
16	AHU - AIR HANDLING UNIT (DOUBLE SKIN TYPE)	LOT			
17	Imported Ceiling Pendants	SET			
18	Surgical Pendant	SET			
19	Anesthesia pendant	SET			
20	SPECIFICATIONS FOR ELECTRO HYDRAULIC TABLE	NOS.			
21	Specifications of Ceiling mounted Dual dome LED OT Lights:	NOS.			
22	Specifications of Ceiling mounted Single dome LED OT Lights:	NOS			
	MEDICAL GAS PIPELINE			1	
23	OXYGEN MANIFOLD SYSTEM 4 x4 gas manifold				
24	OXYGEN MANIFOLD SYSTEM				
<u>4</u> 7					
	2 x2 cylinder emergency manifold				

25	Automatic oxygen control panel (aluminum	SET		
	body)			
26	N20 MANIFOLD SYSTEM			
	2 x 2 size manifold N2O complete with 4 pc			
	tail pipes			
27	N20 MANIFOLD SYSTEM			
	2 cylinder emergency point with pressure			
	reducing systems			
28		SET		
20	Automatic n2o control panel (aluminum	SET		
	body			
29	COMPRESSED AIR SYSTEM	Each		
30	Medical air dryers with Absorber-Date,	Each		
	Process-Data, Filer Date, Electrical-Date			
	Specification as under			
30.A	Purge saving control (optional)	Each		
30.B	Co & dewpoint monitor (optional)	Each		
31	VACUUM PUMP SYSTEM	SET		
32		0L1		
	COPPER PIPING WITH REQUIRED	R.		
I	35mm outer dia, 1.2mm thick	R. Meter		
п	20mm auton die 0.0mm thiele	R.		
11	28mm outer dia, 0.9mm thick.	п. Meter		
III	22mm outer dia 0.9mm thick.	R.		
111	22mm outer dia 0.9mm thick.	Meter		
IV	15mm outer dia 0.9mm thick.	R.		
1.	10mm outer dia 0.0mm thick.	Meter		
v	12mm outer dia 0.7mm thick.	R.		
•		Meter		
33	VALVE WITH VALVE BOX AND			
	PRESSURE GAUGE			
I	4 services	Each		
II	3 services	Each		
III	2 services	Each		
34	FLOOR ISOLATION STANDARD VALVE	Latin		
01	(BALL VALVE WITH BRASS NUT & NIPPLE)			
I	35MM	Each		
I	28MM	Each		
III	20MM 22MM	Each		
IV		Each		
	15MM	Each		
35	AREA LINE PRESSURE ALARM	El.		
I	Area line pressure alarm upto 3 gases	Each		
II	Area line pressure alarm upto 2 gases	Each		
	OXYGEN GAS OUTLET			
36	GAS OUTLET POINT	Each		
I	Front Loaded outlet point (Oxygen vaccum	Each		
	Air Nitrous)			
II	Front Loaded outlet point Probe Only	Each		
	(Oxygen Vacuum Air Nitrous)			
III	BPC Flow Meter	Each		
IV	Humidifier Bottle	Each		
V	Front Loaded Key use for Ventilator (Air ,	Each		
	Oxygen)			
37	Central ward suction ward Vaccum Unit			
	with Regulator			
I	600ml unit with regulator	Set		
I II				
	1000ml unit with regulator	Set		
III	2000ml unit with regulator	Set		

38	B Theatre suction trolly unit with r	regulator	Unit			
39		<u> </u>	Per Mtr.			
4(
41			Each			
42			Each			
	VACCUM					
43	8 Master Alarm for Plant		Each			
44	ICU BED HEAD PANEL-5FEET	1	SET			
44-	A Optional Equipments At Extra C	ost				
Ι	I.V. Hook	I.V. Hook				
IJ	Syringe Pump Pole		Each			
II	Utility Basket		Each			
П	Monitor Tray		Each			
V	Aluminum Channel (Railing)		Each			
V.	Ward Vacuum Stand		Each			
VI	I Infusion Pump Stand		Each			
	annual maintenance Contract (AMC) of	-	d of three y	ears fro	m the	
expi	ry of Guarantee /Warranty period of on	e year		1		_
						_
1	O.T. No. A	First year				4
		Second Year				4
		Third Year				4
		Total				

<u>U..T.ADMINISTRATION OF DAMAN AND DIU</u> <u>OFFICE OF THE MEDICAL SUPERINTENDENT'</u> <u>GOVERNMENT HOSPITAL, DAMAN</u>

NO.GHD/E-TENDER/2012-2013/

DATED:- 27.12.2012

TECHNICAL BID FOR O.T. NO. B

Sr. No.	Description	
1	WALL SURFACES:-	SQ. Mtr.
	The main requirements for any Operation theatre wall system are that they should be impact resistant, show resistance to solvents & chemicals, prevent colonising of micro-organisms or neutralise micro- organisms which come into contact with the wall surface. The surfaces should be stable – prevent cracking and movement, scrub able – amenable to cleaning & have a completely sealed finish, Biological attack resistance & have hygiene finish & lastly have Hydrothermal performance.	
	• All wall mounted equipment should be flush-mounted and sealed into theatre wall by means of durable sterile jointing system.	
	• The wall panel design and construction should allow for the installation and support of all equipment's with provision of openings required for repair and maintenance without affecting rigidity and strength. In case require, one should be able to easily remove the wall panel for service requirements.	
	• The total distance between the inside and outside surfaces of the theatre should vary to suit the architect's layout; however the composite wall thicknesses should be 100mm or less.	
	• The cavity between the inner and outer walls should be left with minimum obstructions for the possible addition of equipment at a later date and to enable services, pipes, conduits etc, to be run within the cavity.	
	• The Sterile coating is water resistant, does not support bacteriological or fungicidal growth and is resistant to most chemicals commonly used in hospital departments. It should neutralise micro- organisms which come into contact and should prevent colonising or sporing of	
	 micro-organisms. The sterile coating shows resistance to a wide range of mixed species, including stubborn pathogens such as MRSA, Acinetobacter sp, Aerobacter aerogenes, Bacillus subtitles, Escherichia coli, Listeria monocytogenes, Pseudomonas aeruginosa, Pseudomonas putida, Salmonella typimurium, Serratia marcescens, Staphylococcus Aureus. 	
	• The sterile coating should remain unaffected by radiation, its anti- microbial system should not leach out & its anti-microbial properties should last for a minimum of 10 years.	
	• The sterile coating system should be easily maintained and should withstand repeated cleaning with alkaline detergents, antiseptics and fumigation agents without any degradation to the surface finish or performance.	
	• Conform to standards HTM 08-01 / HTM 56	

	WALL & OFTIMO DANELLING.	50
2	WALL & CEILING PANELLING: The Pre-fabricated operating room should be free standing structure, constructed from composite, free standing insulated steel wall panels.	SQ. MTRS
	These panels should be produced in a double band laminator, in which two continuously moving belts of Stainless Steel 304 sheets of 0.80mm thickness are firmly bonded together by the sprayed in insulating foam, which hardens during this process. All panels should have a fifteen year de-lamination warranty.	
	The core should consist of rigid polyurethane foam, which has been injected under high pressure, with a minimum density of $40 \text{ kg} / \text{m3}$. The walls should be modular in construction, consisting of 1180 mm, 875 mm, 570 mm and 265 mm wide panels, together with corner panels 200 x 200 mm to achieve the desired false ceiling height. The thickness of the complete panel, including the core should be a minimum of 60 mm. Conform with respective certificate copy duly attached herewith having clearly mentioning of above,	
	The modular wall panels are installed upon floor using a "U" channel. Each Pre-Fabricated Operating Room may optionally include sloping ceiling panels at an angle of 45 degrees from the straight wall panel edge. This options reduces the overall volume of the room, decreasing the running costs for air- conditioning and ventilation, while at the same time maintaining the necessary height at the center of the room for the installation of ceiling mounted equipment's.	
	The inner surface of the operating theatre should be seamless, free from visible joints and sharp edges. All internal corners and panel joints should be filled with proper Epoxy filler, Sanded flush or radiused on site, ready to receive the sterile plastic finish. All panel joints should be invisible when the final plastic coating is applied.	
	All wall-mounted equipment should be flush mounted and sealed into theatre wall by means of a sterile jointing system. The wall panel design and construction should allow for the installation and support of all equipment and the provision for openings required for the installations, without affecting the rigidity and strength.	
	The internal surfaces of the theatre walls and ceiling should be sprayed with water based, non-reflective liquid plastic, to a color approved by the architect, to a minimum dry film thickness of 60 microns. The plastic coating should overlap the floor covering, ceiling system and door frames by 25 mm to provide a continuous sealed surface.	
	The sterile coating applied to a thickness of 60 microns of the already applied primer coating on the panels inner surface, should be water resistant, does not support bacteriological or fungicidal growth and should be resistant to most chemicals commonly used in hospital departments.	
	The sterile coating should remain unaffected by radiation and other ionizing radiation at levels in excess of 1,000 mrad and should be classified to class 1 when tested in accordance with the requirements as specified under BS:476:part 7 ;1971, surface spread of flame test for materials. The coating should be SILVER Ion based.	
	The coating system should be easily maintainable and should be able to withstand repeated cleaning with alkaline detergents, antiseptics and fumigation agents without any degradation to the surface finish or performance.	

	The thickness of the wall panels should be a minimum of 10mm and mounted on the existing Wall structure using the necessary steel frame work. The Wall panels should be easily removable for catering to service related needs. Electrical Components	
	Each modular panel should contain separate cable pathways for the routing of electrical services and a variety of openings and rear enclosures for the fixing of electrical components. Cable sizes for power sockets, earth and potential equalization wiring should be provided according to the specific requirements of the site. Separation of LV & ELV Supplies to BS7971, conforming to HTM 06-01 & HTM 06-02 standards. Communication Components	
	Each modular panel should contain separate cable pathways for the routing of communication services and a variety of openings and rear enclosures for the fixing of components. Internal wiring is executed according to the existing valid standards, running in a separated cable pathway up to an integrated services connection point. Mechanical Components	
3	Medical gas outlets are connected to the wall panels from pipes running within. Piping for medical gases is segregated by means of a separate duct within the modular panel; the piping used will be medical grade copper tube according to EN737-3. The modular panel is delivered in a pre-piped configuration, including the CE-marked medical gas outlets of which all common brand types are available. ESD VINYL FLOORING The flooring should conform to standards DIN EN 1081, DIN EN 1815, EN 12466, EN 425, EN 423 & EN 433. It should be fire resistant, scratch resistant, chemical resistant & resistance to fungi – bacterial growth.	SQ. Mtrs
	Vinyl is the oldest effective ESD flooring material. Solid vinyl tile (SVT) can give a facility that hospital	
	look of cleanliness and shine. Facilities managers often favor vinyl floor because vinyl has a reputation for being inexpensive, simple to repair and easy to clean. The joints between individual tiles are to be welded by heat fusion process to get a seamless floor. The PVC welding bar should of the same matching color as that of the tile and a hot air gun is used for fusion of welding bar with flooring tile. Conductive flooring to be installed within the OT area to prevent damage to sensitive medical electronic equipment's, inadvertent movement of surgeons / technicians, accumulation of static dirt. Maintenance should be simple such as each individual tile can be replaced in very short down-time. The conductive flooring should ensure:	
	 The protection of Electronic equipment and components The protection of people against electro-static discharge risks The protection of premises against explosive risks. The Conductive tiles should be static – conductive, flexible, homogenous vinyl floor covering with an electrical resistance of 5 x 104≤ Rt ≤ 106 (EN 1081). 	
	 The Conductive flooring should have the following characteristics: Low accumulation of electrostatic charges to people & Equipment. Should provide an enduring resistance to static and dynamic loads Should display excellent resistance to chemical products such as detergents, acids and alkaline products. Low VOC emissions. Should have Fungistatic and bactreostatic treatment throughout the statement throughout the st	
	total thickness of flooring.It should be non-absorbent, impervious and non-porus.	

IMPORTED PLANAIR VENTILATION CEILING / PLENUM / AIR &	Set
LIGHT DIFFUSER / LAMINAR FLOW - CONFORMING TO	
STANDARD HTM 03-01 & HTM 60	

4

The Planair ceiling ventilation system should dilute the bacteria generated by the operating team and patient in the theatre and to create an Air flow pattern that carries contaminated air away from the operating table & entering surgical wounds. It should be designed such that filtered, sterile air flows through the operating zone without an admixture of indoor air. The germs and aerosols released by occupants are displaced into adjacent room zone and removed with the exhaust air.

The main components that the Laminar flow should be having is a rectangular air outlet housing with air outlet frame and air discharge element on the underside and two housings on the top side each with a built in HEPA filter. The air discharge element should be a fine - meshed fabric for laminar displacement flow. The air discharge element should be split with a feed through for the Surgical light. The element should be removable or can be folded downwards for easy accessibility to the housing interior for cleaning and disinfection. It should be also easily accessible to the HEPA filters which can be easily replaced when required to do so.

The complete Laminar flow system should be Pre-manufactured and preassembled unit, modular in design, having connection box and filter frame. The construction should consist of four units' modular in design with filter frames and variable connection hoods for the supply air, The air discharge element should be made of fine-mesh laminar fabric (polyester) with a surrounding stainless steel frame. The air outlet housing should be made of stainless steel and the filter housing of powder coated steel sheet. The Laminar air distribution element should be modular in design, divided into four parts with a minimum number of bars, individually foldable, covered with monofilament polyamide from one side, fixed without screws. It should have a connection for differential pressure measurement. The Laminar flow should be of following characteristics:

1) Planair Pleanum Size : 2800mm x 2800mm with 4000CFM capacity Laminar Air Flow

2) Planair Pleanum Size : 1800mm x 1800mm with 2000 CFM capacity Laminar Air Flow

The system should be certified according to DIN 1946-4 (12-2008), tested to DIN 4799, having horizontally arranged terminal HEPA filters of H 14 type with grip protection on both sides; filter exchange from pure air side, filter tested and certified according to DIN EN 1822-1.

5	DOOR AND FRAME	
	Hermetically Sealed Sliding Door – Automated	Set
	• Automated operated hermetically sealing sliding main door on OT, of appropriate size, 2100mm (H) X 1000 (W) and 2100mm (H) X 1500 (W)	
	• Having a track system wherein the door blade is guided under a 45° angle with approximately 6mm deep indentations at the closed position.	
	• Having a special inside & outside Stainless Steel lever handle that lifts out the door blade from its hermetic closing position, thus allowing even very heavy doors to be opened effortlessly, manually.	
	• Encased within an extruded anodized 2.5 mm thick aluminum profile frame all around the door blade with solid high pressure laminate on both sides.	
	• Should have special nylon top rollers with double roller bearings, to enable the door to slide smoothly & silently.	
	• The door blade to have a special 3-tier specially designed 3 side heavy duty replaceable EPDM gasket, for the hermetic sealing on the wall	

	 frame. The bottom sealing should be with a 2-tier heavy duty EPDM gasket to flush with the finished floor. The door core should be 60 mm thick, built up with 4 mm thick HPL (High pressure compact laminate) skin on both sides of the door to provide better strength and rigidity. Having between the two sides of laminates – CFC free, high density polyurethane puff (density 40 Kg / m3), thickness 52mm. Vision panels - double glazed, laminated safety glass, flush finished on both sides with door blade should be provided in the doors. The automation controller for the door should be microprocessor based with regulated electro-mechanical sliding door drive. The automation should be able to operate a door with maximum door weight of 250Kg. The wall frame should be high grade aluminum extrusion with natural anodized 15 micron finish wall frame profile. The wall frame profile should be 3 sided blind fixed with cladding on wall cut-out section from inside and outside of the room. The automation should have variable / adjustable opening & closing speeds, with opening speed adjustable between 120mm / sec 800mm / sec. 	
	• The automation / door can be controlled/operated using either push-button switch, Kick switch or Sensor (touch less – infra-red) switches OR all in combination.	
6	Double Leaf SS Door Double Leaf Stainless Steel Door Single Side Open Flush Door with 49mm thickness of both door leafs, having size of 1800mm x 2100mm with view window of 300mm x 300mm duly complete with clean view glass, The Door should be having .8mm thick SS304 sheet on both faces while door core should be of PU, The Door should be hinge mounted and should complete with all necessary accessories i.e.Door closer, D type SS Door Handle etc.	SET
7	Single Leaf Stainless Steel Single Side Open Flush Door with 49mm thickness, having size of 1000mm x 2100mm with view window of 300mm x 300mm duly complete with clean view glass, The Door should be having .8mm thick SS304 sheet on both faces while door core should be of PU, The Door should be hinge mounted and should complete with all necessary accessories i.e.Door closer, D type SS Door Handle etc.	SET
8	WALL MOUNTED ITEMS: Imported Operation theatre control panel	Set
	It should be a digital control panel consisting of a computer and a touch screen managed by a PLC. It should integrate all controls, signals and alarms of the operation theatre and offer several services addressed to the maintenance staff.	
	The information management system should be managed by the programmable software – PLC and the visual and control parameters by the PC / Touch screen, IP64 protected, 15" (inches) in size. It should have a digital microphone and speakers, a 300K pixel camera, ambient light sensor and a wireless LAN 802.11 a Bluetooth V2.0. Following frequent used functions should be available a) Controls: General Light Switch control, 3 controls in number, having dimming facility	
	 Control Light Switch control, 5 controls in humber, having drimning racinty Temperature and humidity display Operation theater status – occupied / free / cleaning Stopwatch control OT surgical light switch (depending upon the make ,model of the light) 	

	b) Alarms:	
	 b) Alarms: Electrical Alarm (visual & Acoustic) Gases Alarm repeater (Visual & Acoustic) UPS charging status c) Communications: Telephone / IP Telephone if line available Ethernet connection SMS Alams Video- Conference facility d) Signals: Digital Inputs / Outputs: 14 Nos / 10 Nos. Analogue : (0-10V) Inputs / Outputs (2 Nos. / 1 Nos. 	
9	 X-ray viewing screens (two plates) The theatre should be equipped with a twin plate X-Ray Viewing Screen, recessed in the wall and designed to provide a high level of control luminance, without flicker, from a unit that is easy to clean and maintain. The X-Ray viewing screen illumination should be by LED lamps, controlled by dimming ballast. The front panel diffuser is of a glare free type, sealed flush with the inside face of the operating theatre wall (or may as an option be integrated within the control panel fascia). The LED lamps should provide a uniform level of illumination across the entire front panel. Access for maintenance and lamp changing is from the front of the panel. All internal wiring is terminated in connectors with screw and clamp spring connections. Individual fuses or miniature circuit breakers protect all internal circuits. All internal wiring is of high temperature resistance and secured by propriety cable clips It is flush mounted and sealed into theatre wall by means of a sterile jointing system. 	EACH
10	 Equipment Storage Unit Equipment Storage Unit to be provided in operating theatre of dimensions approved by the user. It should be flush mounted into the theatre wall with a sterile jointing system. The cabinets should be made of Stainless Steel AISI 304 material. Doors of cabinet should open right to left and made of clear safety glass. It is suitably partitioned / shelved to allow storage of common endoscopic equipment's. It has the facility of secure locking. Conform to standard HTM 63 	EACH
11	 Operating List - Writing Board It is flush mounted with a sterile jointing system, 1.50mm thick, white laminate board, bonded to a 2mm steel sheet for additional rigidity. 	EACH

12	Cascade Pressure Stabilizer	EACH
	• Cascade pressure stabilizers should be a range of multi-bladed units specifically designed to control room air pressures in critical areas, such as operating theatre suites.	
	 Each stabilizer should comprise of carbon steel housing with up to four Grade 304 Stainless steel blades, which pivot upon sealed for life bearing assemblies. 	
	 Balancing is carried out utilizing a proven balance weight assembly. These stabilizers should be accurate to a range of 1 Pascal over their working range of 5-35Pa. 	
13	Hatch Box	EACH
	A hatch should be provided to remove waste material from the operation theatre to dirty linen area just adjacent to the operation theatre. Each hatch should be equipped with two doors and the door should be operated electronically. The hatch should be designed in such a way that only one door should be opened at one time. The UV light should be so installed that it is kept on while both the doors are closed, this UV light should automatically turn "OFF" in case of opening of either of the doors. There shall be indicators on both sides of the OT such that door open / close status can be monitored from both ends.	
14	Clean-room illuminators	EACH
	Lamp covered with translucent Plexiglas with high transmission level (higher than 80%), held in a frame of white shell sheet, with integrated screw angles for fastening the lights to the panel system. Including closed mounting frame for the built-in LED lamps; the connection between the illuminator and the ceiling hollow space should be completely airtight. Clean-installed light should non-hygroscopic and be of IP 54 grade. Dimensions should approximately be 600 x 300mm (length x width).	
15	Surgical Scrub Sink	EACH
	The Surgical Scrub Sink should be made of Stainless Steel of grade AISI 304. It should be destined to be used for operating theatres, where high hygienic standards are to be maintained. It should be free standing sink with wall mounted possibility, having a depth of 300 mm. It should be two bay, having standard 2 x drain traps, water and soap dispensers activated by sensor, water and soap time adjustable, water thermostat – temperature adjustable and having chrome faucets. It should have open able front panel with two latches for maintenance purposes, having approximate dimensions of 1600 (L) x 635 (w) x 1271 (H) in mm.	
16	AHU - AIR HANDLING UNIT (DOUBLE SKIN TYPE)	SET
	Type The air-handling units are of double skin construction, draw-thru type comprising of various sections such as Pre-filter section, coil section, as shown on drawings and included in schedule of quantities. Unit must be able to work satisfactory in exposed atmosphere conditions.	
	Casing Double skinned panels are fabricated with anodized extruded aluminum extrusion frame work bolted together with sandwich panel having powder coated 0.70 mm sheet for outer skin and plain GP 0.63 mm sheet for inner skin. 43 mm thick PUF insulation material is injected between the two panels (with U value no greater than 0. 85 W / m2/k)	

The entire frame duly painted is mounted on sheet steel channel based. The panels are sealed to the framework by heavy-duty 'O' ring gaskets held captive in the framed extrusion. All panels are detachable or hinged. Hinges are made of die cast aluminum with stainless steel pivots, handles are made of hard nylon and be operational from both inside and outside of the unit. All fixing and gaskets shall be concealed.

Motor and Drive

Fan motors are highly efficient and work on $440 \pm 10\%$ volts, 50 cycles, three phase with explosion proof type with class F installation, with IP 55 protection. Motors are especially designed for quiet operation and motor speed does not exceed 1440 rpm. Drive to fan is provided through belt-drive arrangement. Belts are of the oil-resistant type.

Fan

Fan are of centrifugal type, conforming to AMCA 210 and are double width, double inlet with forward- inclined airfoil blades, specially designed and suitable for the required operating pressure. Fan casing are made from galvanized steel sheet. Fan shaft is grounded C 40 carbon steel and supported in self-aligning plumber block operating less than 75% of first critical speed, grease lubricated bearings.

Cooling Coils

DX coils have 12.5 to 15 mm dia tubes minimum 24G thick with sine wave aluminum fins firmly bonded to copper tubes assembled in zinc coated steel frame. Face and surfaces areas are such as to ensure rated capacity from each unit and such that the air velocity across the coil does not exceed 150 meters per minutes. Each coil is factory tested at 21-kg/m2 air

150 meters per minutes. Each coil is factory tested at $21-kg/m^2$ air pressures under water. Tube is

Hydraulically / mechanically expanded for minimum thermal contact resistance with fins. Fin spacing is 4 - 5 fins per cm.

Filters

Each unit is provided with a factory assembled filter section containing washable synthetic type air filters having anodized aluminum frame. The media is supported with HDP mesh. Filter banks are easily accessible and designed for easy withdrawal and renewal of filter cells. Filter banks face velocities do not exceed 100 m/minutes. Differential pressure switch is to be fixed across the filter as part of AHU's system.

Ducting

The duct supply system should be free of construction debris. Ducting shall be made of Aluminum with curves & bends where indicated for easy flow of air and ensured to be air tight by applying silicon sealant after fabrication. Hangers shall be provided to ducts & shall be suspended by means of G.I. coated rods & these shall not be more than 2.5mtrs apart. Thermal insulation with 9mm XPE for supply & return air ducts. Joints will be lapped with Nitrile rubber tape for better insulation.

Air Cooled Package Chiller / Condensing Units.

Compressor

The compressor shall be of screw, scroll / reciprocating type, hermitic, in accordance with ARI 520, direct driven with capacity control arrangement. The compressor casing shall be of cast iron and designed for 450 psig or higher. The compressor shall incorporate rolling element bearing to support rotating assembly. The rotor shall be higher steel alloy. We prefer the use of Copeland USA Compressors Hermetic Compressors.

	Refrigerant circuit components shall include flexible pipe connectors, hot gas muffler, high side pressure switch, liquid line shut-off valves, suction and discharge shut-off valves, filter drier, moisture- indicating sight glass, electronic or thermostatic expansion valve (EXV), heavy duty pressure gauge with cocks to monitor suction, discharge and oil pressure and complete operating charge of refrigerant and compressor oil.	
	Motor Compressor motor shall be of Hermetic / semi-hermetic direct drive, squirrel cage, two pole, induction type, refrigerant cooled motor suitable for 415V / 50 Hz. 3 phase supply. Hot gas motor cooling is not acceptable. We prefer the use of Copeland USA Compressors Hermetic Compressors.	
	Condenser Condenser shall be Air Cooled type. Tubing shall be copper, Aluminum fins high efficiency type. Tubes shall be nominal 19mm. Outer diameter and thickness shall not be less than 22 g. and rolled into rube sheets and shall be individually replaceable and also tubes shall be coated with corrosion resistant coating. Condenser fans shall be direct coupled to motor and protected against overloading and with minimum	
	1.15 service factor.	
	Condenser shall design to allow isolating refrigerant charge when servicing the compressor.	
	 With maintain the above said technical specifications, The Air Handling Unit with Air Cooled Package Chiller / Condensing Units should have following capacity: 1) 17.5 tr with 5000CFM 2) 11 tr with 3500 CFM 	
17	Imported Ceiling Pendants	SET
	The idea of using ceiling mounts is such that they can be easily swiveled in place to have medical equipment or gases readily available for patient treatment or care. The benefits should translate to flexible positioning and optimal space utilization & in addition hygiene and safety advantages. In nutshell it should eliminate cable clutter and above all the unrestricted movement of all components in the space around the place of use. They should be CE marked / approved.	
18	Surgical Pendant	SET
	The surgical arm shall be double arm, each arm length of 800mm length. The arm should be able to swivel around each joint by 330 degrees. It should be able to withhold a weight of not less than 150kg. The surgical pendant should have the following features:	
	 Distributor heads / consoles should be modular of length 1100mm & capable of accepting a range of shelves (3 Nos.) and a drawer with a top shelf, each having weight carrying capacity of at least 30kg. The distributor head should have 10 universal electrical sockets, 1 set of RJ45 / RJ11 connectors, have 	
	 2 * Infusion poles with 4 bottle holders. Five medical gas outlet terminals: 1 * O₂ : 2 * Vac : 2 * Air (4 bar) OR 2 * CO₂: 1 * O₂ : 1* Vac : 1 * Air 	

19	Anest	hesia pendant	SET				
	 The arm of pendant shall be single arm of length of 800 mm. The arm should be able to swivel around each joint by 330 degrees. It should be able to withhold a weight of not less than 150kg. The pendant should have the following features: Distributor heads / consoles should be modular of length 800mm long 						
		approx. & capable of accepting a range of shelves (2 Nos.) and a drawer with a top shelf, each having weight carrying capacity of at least 30kg.					
	•	The distributor head should have 8 universal electrical sockets, 1 set of RJ45 / RJ11 connectors, have 2 Infusion poles with 4 bottle holders.					
	• :1* Va	Five medical gas outlet terminals: $2 * O_2 : 2 * N_2O : 1 * Air (4 bar)$					
20		IFICATIONS FOR ELECTRO HYDRAULIC TABLE	EACH				
20	~	Electro Hydraulic operated eight function remote control table up and down, trendelenbreg and reverse trendelenberg, right lateral, left lateral, backrest, up & down.					
		Power supply should be 220 v, 5 amps and three pin plug point. Remote cord and main plug should come from head end of the table (i.e)					
	-	from the bottom of the base, to facilitate the anesthetist					
	>	Table should have 100mm central lock castors for longitudinal and lateral movements, the castors should be made of polyurethane and molded to prevent water and rust entering inside.					
	À	Braking should be effective and should have a dead lock when broken; it should be on the head end side of the table, to facilitate the anesthetist, and one brake on the tail end for better stability.					
	>	Leg bed should be two pieces right and left and should be detachable and abductable and also should move up & down.					
	>	Table top should have five sections; it should be breakable into inverted v-shape from the head side.					
	>	Trendelenberg and lateral mechanism should be concealed with bellows; column should be straight without any projection on right or left.					
	\succ	Table column size should be 280mm x 280mm.					
		Table should have provision to view spine ap and lateral c-arm.					
		Polyurethane detachable cushion top should be provided on the table top. Base covers should be covered with impact, shock resistant, fire resistant					
	>	and disinfectant free material. Base should be broader in the head end. The column casing, table top frame, traction bars and all accessories made of non-corrosive steel. The main column should be covered with non-corrosive stainless steel.					
	\succ	Inbuilt battery back up should be provided.					
	\succ	The table top should be reversible, the headrest attachments should fix to the					
		tail side and the tail side attachment should fix to the head side.					
		The table should have a provision to fix top leg traction attachment.					
		The table should have manual pre sector for all positions. In case of electrical components failure, the table should be operated					
		manually by mechanical pedaling for all positions.					
	≻	The table should be capable of taking off centered load from neck to toe					
		should be screened in to C-Arm without any disturbance.					
	$\mathbf{\lambda}$	Should be ISO 9001, ISO 13485 Approved.					
		, , , , , , , , , , , , , , , , , , ,					
		Patient sitting position, with Tendlenburg maximum should be possible. Minimum height 27" preferred.					
	>	Should adapt Mayfield sugitha and Lyela retractor.					

21	Specifications of Ceiling mounted Dual dome LED OT Lights:	EACH
	 Dual Dome Ceiling mount structure with use of multiple LEDs Output Lux intensity of 1,20,000 Lux at 1 meter in one dome (size cm: 61x52x11) and 60,000 lux at 1 meter in another dome(size cm: 38x32x10) Total Power consumption of less than or equal to 200 watts Color temperature of the LED to be equal to daylight color temperature – 5500 k Life of LED - 50,000 hours or more Six motions in each arm to achieve all positions and angles More than 1100 mm up-down movement for both Domes All five rotary motions in each arm to have stopper less design for continuous rotation Wide reach of more than 2 meters in all direction from center for both arms to cover majority of Operation room area Wide operating voltage range from 90 v to 260 v to cover mains voltage fluctuations User selectable intensity variation with digital display from 0 % to 100 %, individual for each dome Digital Display of Life of LED used in hours for each dome Quarter yoke sets in domes for easy handling Availability of Direct battery operation option Provision of Camera at the center of Main Dome Sterilisable & detachable Plastic handle at the center of the each dome for focus adjustment To have ISO 13485 & ISO 9001 certification 	
	 Intensity variable from 0-100% 	
22	Specifications of Ceiling mounted Single dome LED OT Lights:	EACH
	 Single Dome Ceiling mount structure with use of multiple LEDs Output Lux intensity of 90,000 Lux at 1 meter in one dome (size cm: 61x52x11) Total Power consumption of less than or equal to 90 watts Color temperature of the LED to be equal to daylight color temperature – 5500 k Life of LED - 50,000 hours or more Six motions to achieve all positions and angles More than 1100 mm up-down movement of dome All five rotary motions to have stopper less design for continuous rotation Wide reach of more than 2 meters in all direction from center to cover majority of Operation room area Wide operating voltage range from 90 v to 260 v to cover mains voltage fluctuations User selectable intensity variation with digital display from 0 % to 100 % Digital Display of Life of LED used in hours Quarter yoke sets in dome for easy handling Availability of Direct battery operation option Sterilisable & detachable Plastic handle at the center of the dome for focus adjustment To have ISO 13485 & ISO 9001 certification with German Spring Arm Intensity variable from 0-100% 	

23	MEDICAL GAS PIPELINE	
23	MEDICAL GAS PIPELINEOXYGEN MANIFOLD SYSTEM4 x4 gas manifold are extendable & non extendable type with choice of size of cylinders bank for bulk 'd' type jumbo cylinders, manifold is suitable to with stand a working pressure of 140kg/cm manifold have high pressure copper annealed tail pipes with one end having brass adapter suitable for cylinders. Manifold have brass non-return valves for individual cylinders (cylinders must be provides by the Govt. Hospital).OXYGEN MANIFOLD SYSTEM 2 x2 cylinder emergency manifold with pressure reducing systems extendable & non extendable type with choice of size of cylinders bank for bulk 'd' type jumbo cylinders, manifold is suitable to with stand a working pressure of 140kg/cm manifold have high pressure copper annealed tail pipes with one end having brass adapter suitable for cylinders. Manifold have high pressure copper annealed tail pipes with one end having brass adapter suitable for cylinders. Manifold have bigh pressure copper annealed tail pipes with one end having brass adapter suitable for cylinders. Manifold have brass non- return valves for individual cylinders (cylinders must be provides by the Govt. Hospital).	EACH
25	 Automatic oxygen control panel (aluminum body) A) compact and fully automatic manifold control system for oxygen n2o and co2 B) designed with both safety and continuity of flow supply at a constant pressure via two banks f botted gas cylinders with following status monitoring C) a-bank in use (green indicator) D) B-bank ready for use (yellow indication) E) control panel has build in led display to indicate normal, low for line pressure F) the control panel includes pressure gauge (63mm) to indicate the gas pressure of each header ad pipe line distribution pressure G) capable to provide a distribution flow rate in excess of 1500 lpm H) the control panel incorporate safety puncture in case pressure excess 100 psi I) Oxygen Failure Alarm System with Indication 	SET
26	N2O MANIFOLD SYSTEM 2 x 2 size manifold n2o complete with 4 pc tail pipes extendable & non extendable type with choice of size of cylinders bank for bulk 'd' type jumbo cylinders, manifold is suitable to with stand a working pressure of 140kg/cm manifold have high pressure copper annealed tail pipes with one end having brass adapter suitable for cylinders. Manifold have brass non-return valves for individual cylinders (cylinders must be provides by the Govt. Hospital).	EACH
27	N2O MANIFOLD SYSTEM 2 cylinder emergency point with pressure reducing systems extendable & non extendable type with choice of size of cylinders bank for bulk 'd' type jumbo cylinders, manifold is suitable to with stand a working pressure of 140kg/cm manifold have high pressure copper annealed tail pipes with one end having brass adapter suitable for cylinders. Manifold have brass non-return valves for individual cylinders (cylinders must be provides by the Govt. Hospital).	EACH
28	 Automatic n2o control panel (aluminum body) A) compact and fully automatic manifold control system for oxygen n2o B) designed with both safety and continuity of flow supply at a constant pressure via two banks f botted gas cylinders with following status monitoring C) a-bank in use (green indicator) D) B-bank ready for use (yellow indication) E) control panel has build in led display to indicate normal, low for line pressure F)the control panel includes pressure gauge (63mm) to indicate the gas 	SET

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	General Product Flow: 3 Operati Design Max. P Inlet ter End con Atmosp 3.2 Adsorb Size: 2 Desicca No. of 3 Quantit Diamet Straigh	t: Regen 30 scfm ng press Pressure ressure mperatur nnection oheric de ant: Act to 6 mn ant life: adsorber cy of ads er of Ac t head o ess of A	herative ty sure: 7 ba e: 16 bar drop: 0.3 re: 45 deg n: ½" BSF ew point: Ac civated alu n 1 year r: 2 Nos. sorbant: 3 dsorber: 3 f adsorber: 3	r (g) (g) bar g C Max P F - 40 deg Isorber umina Kg per ' DD 101 n r: 515 m 3 mm	g C Tower mm	H 810 esiccant	W 1050			Kgs 70	a
	General Product Flow: 3 Operati Design Max. P Inlet ter End con Atmosp 3.2 Adsorb Size: 2 Desicca No. of a Quantit Diamet Straight Thickney Adsorb	t: Regen 30 scfm ng press Pressure ressure of mperatur nnection oheric do ant: Act to 6 mn ant life: adsorber cy of ads er of Ac t head of ess of A er Shell:	herative ty sure: 7 ba e: 16 bar drop: 0.3 re: 45 deg h: ½" BSF ew point: Au fivated alu n 1 year r: 2 Nos. sorbant: 3 dsorber: C f adsorber	r (g) (g) bar g C Max P F - 40 deg Isorber umina Kg per ' DD 101 n r: 515 m 3 mm um IS 6:	g C Tower m 3400	H 810 esiccant	W 1050			Kgs 70	a
	General Product Flow: 3 Operati Design Max. P Inlet ter End con Atmosp 3.2 Adsorb Size: 2 Desicca No. of 3 Quantit Diamet Straight Thickne Adsorb Top &	t: Regen 30 scfm ng press Pressure ressure of mperatur nnection oheric de ant: Act to 6 mn ant life: adsorber cy of ads er of Act t head of ess of A er Shell: Bottom	erative ty sure: 7 ba e: 16 bar drop: 0.3 re: 45 deg a: ¹ / ₂ " BSF ew point: A civated alu n 1 year r: 2 Nos. sorbant: 3 dsorber: C f adsorber: 3 : Alumini	r (g) (g) bar g C Max P F - 40 deg Isorber umina Kg per ' DD 101 n r: 515 m 3 mm um IS 6:	g C Tower m 3400	H 810 esiccant	W 1050			Kgs 70	a
	General Product Flow: 3 Operati Design Max. P Inlet ter End con Atmosp 3.2 Adsorb Size: 2 Desicca No. of 3 Quantit Diamet Straight Thickne Adsorb Top & Process	t: Regen 30 scfm ng press Pressure ressure of mperatur nnection oheric de ant: Act to 6 mn ant life: adsorber cy of ads er of Ac t head of ess of A er Shell: Bottom s –Data	erative ty sure: 7 ba e: 16 bar drop: 0.3 re: 45 deg n: ¹ ⁄ ₂ " BSF ew point: Au ivated alu n 1 year r: 2 Nos. sorbant: 3 dsorber: 4 f adsorber: 4 f adsorber: 4 f adsorber: 4	r (g) (g) bar g C Max F - 40 deg lsorber umina Kg per ' DD 101 n r: 515 m 3 mm um IS 6. Aluminiu	g C Tower nm 3400 m IS 6	H 810 esiccant	W 1050			Kgs 70	a
	General Product Flow: 3 Operati Design Max. P Inlet ter End con Atmosp 3.2 Adsorb Size: 2 Desicca No. of 3 Quantit Diamet Straight Thicknet Adsorb Top & Process Data/Co	t: Regen 30 scfm ng press Pressure ressure of mperatur nnection oheric de ant: Act to 6 mn ant life: adsorber cy of ads er of Ac t head of ess of A er Shell: Bottom s –Data omponer	herative ty sure: 7 ba e: 16 bar drop: 0.3 re: 45 deg n: $\frac{1}{2}$ " BSF ew point: Au ivated alu n 1 year r: 2 Nos. sorbant: 3 dsorber: C f adsorber: 3 dsorber: C f adsorber: 3 dsorber: 4 f adsorber: 4 mini block : A	r (g) (g) bar g C Max F - 40 deg lsorber umina Kg per ' DD 101 n r: 515 m 3 mm um IS 6. Aluminiu	g C Tower nm 3400 m IS 6	H 810 esiccant	W 1050			Kgs 70	a
	General Product Flow: 3 Operati Design Max. P Inlet ter End con Atmosp 3.2 Adsorb Size: 2 Desicca No. of 3 Quantit Diamet Straigh Thickne Adsorb Top & Process Data/Ce Cycle th	t: Regen 30 scfm ng press Pressure ressure of mperatur nnection oheric de ant: Act to 6 mn ant life: adsorber ex of ads er of Act t head of ess of A er Shell: Bottom s –Data omponer ime :	herative ty sure: 7 ba e: 16 bar drop: 0.3 re: 45 deg n: $\frac{1}{2}$ " BSF ew point: Au fivated alu n 1 year r: 2 Nos. orbant: 3 dsorber: C f adsorber dsorber: 3 : Alumini block : A nt : E : 4 min	r (g) (g) bar g C Max P F - 40 deg Isorber umina Kg per ' DD 101 n r: 515 m 3 mm um IS 6: Aluminiu	g C Tower nm m 3400 m IS 6	H 810 esiccant	W 1050			Kgs 70	a
	General Product Flow: 3 Operati Design Max. P Inlet ter End con Atmosp 3.2 Adsorb Size: 2 Desicca No. of 3 Quantit Diamet Straight Thickne Adsorb Top & Process Data/Ce Cycle ti Drying	t: Regen 30 scfm ng press Pressure ressure of mperatur oheric de ant: Act to 6 mn ant life: adsorber cy of ads er of Ac t head of ess of A er Shell: Bottom s –Data omponer ime : time per	herative ty sure: 7 ba e: 16 bar drop: 0.3 re: 45 deg n: $\frac{1}{2}$ " BSF ew point: Au fivated alu n 1 year r: 2 Nos. orbant: 3 dsorber: C f adsorber dsorber: 3 : Alumini block : A nt : E : 4 min	r (g) (g) bar g C Max F - 40 deg Isorber umina Kg per ' DD 101 n r: 515 m 3 mm um IS 63 Aluminiu	g C Tower nm 3400 m IS 6 on min	H 810 esiccant	W 1050			Kgs 70	a

	Filter DataPre filter:Micron rating : 0.3 - 0.6 micronsFiltering media : Borosilicate fiberEfficiency : 99.9 %Utilities : Auto drain valveAfter filter:Micron rating : 25 micronsFiltering media : Sintered BronzeElectrical – DataController : Custom made Micro controller based systemInput voltage : 85 – 265 V AC, 50 / 60 Hz., 20 Watts Max.Output : 2 Exhaust & 1 Drain valve 24 V / 8 Watts Solenoid coilsDisplay : 3 LED indicating Drain, Tower 1 & Tower 2 StatusEnclosure : IP 55 Protection, ABS plasticConnection : DIN 43650 Micro	
31	 VACUUM PUMP SYSTEM Technical specification:- Bore & stroke 3" & 3" x 2 ¾" R.P.M. 960 P.D. 21.6 Max. working pressure (psig / kg / cm2) 29.6" barometer reading ar the sea level Vacuum tank (liters 500ltr) Motor HP required 2 Scope of supply Suction air filter Vacuum pump with v.sheave along with electrically mounted on the vacuum tank Regulation : ASSC vacuum switch of standard co. make Vacuum pump & motor pulley, v-belts belt guard, motor slide rail etc. Vacuum pump with v. sheave along with electrical mounted on the vacuum tank Motor of standard co. with ISI and ISo standard along with DOL starter of standard co. CE marked only 	SET
32	COPPER PIPING WITH REQUIRED COPPER FITTINGS SIZE TO BE USED As per (BSEN) 13348 as per HTM-0201 Copper and Copper alloys-Seamless round tube for a medical gases or vacuum, materials conforming to manufacturers as per BS:EN:13348:2001+A1:2005 Copper pipe of this European standard are suitable for distributing the following medical gases intended to be used at operating pressure up to 2000kpa and for system under vacuum * Oxygen, Nitrous Oxide, Nitrogen, Helium, Carbon Dioxide, Xenon * Air for Breathing * Specific mixture of these above mentioned gases * Air for Driving surgical tools * Anaesthetics gases and vaporous * Vacuum Mandatory Inspection Requirements: Chemical Composition Cehmical Composition of copper pipe shall conform to the following requirements. The analytical methods shall be carried out by Direct Emission Spectrometer. Copper + Silver: min. 99.90% Phosphorous : min. 0.015%, Max 0.040%	Running Meter

	6) 35mm outer dia, 1.2mm thick	
	7) 28mm outer dia, 0.9mm thick.8) 22mm outer dia 0.9mm thick.	
	9) 15mm outer dia 0.9mm thick.	
	10) 12mm outer dia 0.7mm thick.	
	10) 12mm outer dia 0.7mm thek.	
33	VALVE WITH VALVE BOX AND PRESSURE GAUGE It will be wall mounted M.S. box with powder coated and lockable front glass panel having ball type valves with PTFE seat, brass body nickel plating	SET
	valves having quarter turn handle opening size suitable for 12mm od copper pipe to 28 mm od copper pipe will have screwed ends will have brass adapters suitable for copper pipe, thevalve box door can not be closed during valve close position. These valves will be manufactured by an iso 9001 certified company.	
	4) 4 Services	
	5) 3 Services	
34	6) 2 Services FLOOR ISOLATION STANDARD VALVE (BALL VALVE WITH BRASS	
54	NUT & NIPPLE) 35MM 28MM 15MM	Each
35	AREA LINE PRESSURE ALARM	Each
		Luon
	Area line pressure alarm upto 3 gases	
	Area line pressure alarm upto 2 gases	
	The medical gas alarms will have displays for various fault indications and capable of monitoring a maximum of 4 to 5 medical gas services by means pressure switches,	
	Which detect deviations from the normal operating limits of either pressure or medical vacuum	
	Each gas services will be displayed by colored normal low high pressure conditions. Medical vacuum systems will be displayed in the normal & low vacuum condition only Failure indicators will be displayed by flashing lights and normal indication will be study.	
	An audible warning will sound simultaneously with any failure indication at a mute facility will be provided. A maintenance mute switch will be provided internally to the panel for use during maintenance, which results in prolonged pipeline or plant shutdown. This facility will automatically reset when the gas service returns to normal.	
	The alarm panel will have a test facility to prove the integrity of the internal circuit, and microprocessor based electronic circuit led and audible warning	
	The alarm is equipped with separate gauges for each gas for showing the pressure and it complies to htm 2022 standard.	
36	OXYGEN GAS OUTLET	
	GAS OUTLET POINT	Each
	• Allows plugging of oxygen flowmwter & probes from front.	
	• Bears weight of the metal BPC flowmeter & humidifier	
	• Push to insert and press to release mechanism for flowmeter & probes	
	• Locating terminal unit pin & probe notch gives maximum stability to	
	the flowmeter unit	
	• Non-interchangeability between Probes & terminal outlets for different services; possibility of error in making connection is avoided	
	anieren services, possibility of enor in making connection is avolued	

Ι	Front Loaded outlet point (Oxygen vaccum Air Nitrous)	Each
II	Front Loaded outlet point Probe Only (Oxygen Vacuum Air Nitrous)	Each
III	BPC Flow Meter	Each
IV	Humidifier Bottle	Each
V	Front Loaded Key use for Ventilator (Air, Oxygen)	Each
37	 Central ward suction ward Vacuum Unit (600ml, 1000ml, 2000ml) with Regulator The system should be wall mounted type operated by central vacuum. It includes vacuum regulator range form 0-760mm hg. Use can vary negative pressure as per patient requirement. Vacuum gauge sizes 2" and 600ml capacity autoclavable plastic jars with overflow safety trap will be provided. Ward suction units should be provided with required high and low pressure tubing 600ml unit with 	Set
38	Theatre suction trolly unit with regulator Theatre vacuum unit: - it will be trolley mounted. The unit will include one regulator having meter mounted in the trolley stand, having two re-usable each 2000ml plastic collections bottles mounted on base of trolley unit and connected with regulator and low pressure tube inter connections. The base of the trolley is fitted on castor wheel arrangement to move the system one place to another place easily.	Unit
39	High Pressure Tubing – 6mm I.D. Grey for Air Yellow for Vacuum Blue for Nitrous Oxide White for Oxygen	Per Mtr.
40	Low Pressure Tubing – 6mm I.D. Grey for Air Yellow for Vacuum Blue for Nitrous Oxide White for Oxygen	Per Mtr.
41	ELECTRICAL CONTROL PANEL AIR Electrical Control Panel Equipped for Duplex & Cascade system. For Compressor	Each
42	ELECTRICAL CONTROL PANEL VACCUM Electrical Control Panel Equipped for Duplex & Cascade system. For Vacuum Pump	Each
43	 Master Alarm for Plant The medical gas alarms will have displays for various fault indications and capable of monitoring a maximum of 4 to 5 medical gas services by means pressure switches, Which detect deviations from the normal operating limits of either pressure or medical vacuum Each gas services will be displayed by colored normal low high pressure conditions. Medical vacuum systems will be displayed in the normal & low vacuum condition only Failure indicators will be displayed by flashing lights and normal indication will be study. An audible warning will sound simultaneously with any failure indication at a mute facility will be provided. A maintenance mute switch will be provided internally to the panel for use during maintenance, which results in prolonged pipeline or plant shutdown. This facility will automatically reset when the gas service returns to normal.	Each
	The alarm panel will have a test facility to prove the integrity of the internal circuit, and microprocessor based electronic circuit led and audible warning	

	The alarm is equipped with separate gauges for each gas for showing the pressure and it complies to htm 2022 standard.				
44	 ICU BED HEAD PANEL-5FEET The construction of the wall section is made of extruded aluminum The extruded aluminum structural lower channel will include a vertical integrate equipment mounting track to support optical track mounted equipment. Optional equipments like I,v, hook infusion pole utility basket, monitor tray etc. can be install into the track at any location along the extruded aluminum channel. Gas outlets/ switch -socket/monitor socket/ nurse call system can be fitted on middle portion of the bed console unit after cutting the aluminum sheet as per hospital requirements. Bed Head Panel for ICU 5 Feet Long made of High strength extruded Aluminum profile with powder coated with colour. Each Bed Head Panel have provision for O2-2., Vac-2, Air-4-1 and 5/15amp Switch socket 4nos. with optional Railing and IV Stand, Ward Vacuum and Infusion pump stand 	SET			
44A	Optional Equipments At Extra Cost				
I	I.V. Hook				
II	Syringe Pump Pole				
III	Utility Basket				
IV	Monitor Tray				
<u>V</u>	Aluminum Channel (Railing)				
VI	Ward Vacuum Stand				
VII	Infusion Pump Stand				

<u>U..T.ADMINISTRATION OF DAMAN AND DIU</u> <u>OFFICE OF THE MEDICAL SUPERINTENDENT'</u> <u>GOVERNMENT HOSPITAL, DAMAN</u>

NO.GHD/E-TENDER/2012-2013/

DATED:- 27.12.2012

FINANCIAL BID FOR O.T. NO. B

1 2 3 4 5 5 6 7 8	WALL SURFACES:- WALL & CEILING PANELLING: ESD VINYL FLOORING IMPORTED PLANAIR VENTILATION CEILING / PLENUM / AIR & LIGHT DIFFUSER / LAMINAR FLOW – CONFORMING TO STANDARD HTM 03-01 & HTM 6 DOOR AND FRAME Hermetically Sealed Sliding Door – Automated Double Leaf SS Door Single Leaf Stainless Steel Single Side Open Flush Door with 49mm thickness, WALL MOUNTED ITEMS:	SQ. Mtr. SQ. MTRS SQ. Mtrs Set Set SET SET SET		
3 4 5 6 7	ESD VINYL FLOORING IMPORTED PLANAIR VENTILATION CEILING / PLENUM / AIR & LIGHT DIFFUSER / LAMINAR FLOW – CONFORMING TO STANDARD HTM 03-01 & HTM 6 DOOR AND FRAME Hermetically Sealed Sliding Door – Automated Double Leaf SS Door Single Leaf Stainless Steel Single Side Open Flush Door with 49mm thickness, WALL MOUNTED ITEMS:	MTRS SQ. Mtrs Set Set SET SET		
4 5 6 7	IMPORTED PLANAIR VENTILATION CEILING / PLENUM / AIR & LIGHT DIFFUSER / LAMINAR FLOW – CONFORMING TO STANDARD HTM 03-01 & HTM 6 DOOR AND FRAME Hermetically Sealed Sliding Door – Automated Double Leaf SS Door Single Leaf Stainless Steel Single Side Open Flush Door with 49mm thickness, WALL MOUNTED ITEMS:	Set Set SET SET		
5 6 7	/ PLENUM / AIR & LIGHT DIFFUSER / LAMINAR FLOW – CONFORMING TO STANDARD HTM 03-01 & HTM 6 DOOR AND FRAME Hermetically Sealed Sliding Door – Automated Double Leaf SS Door Single Leaf Stainless Steel Single Side Open Flush Door with 49mm thickness, WALL MOUNTED ITEMS:	Set SET SET		
6 7	LAMINAR FLOW – CONFORMING TO STANDARD HTM 03-01 & HTM 6 DOOR AND FRAME Hermetically Sealed Sliding Door – Automated Double Leaf SS Door Single Leaf Stainless Steel Single Side Open Flush Door with 49mm thickness, WALL MOUNTED ITEMS:	SET SET		
6 7	STANDARD HTM 03-01 & HTM 6 DOOR AND FRAME Hermetically Sealed Sliding Door – Automated Double Leaf SS Door Single Leaf Stainless Steel Single Side Open Flush Door with 49mm thickness, WALL MOUNTED ITEMS:	SET SET		
6 7	DOOR AND FRAME Hermetically Sealed Sliding Door – Automated Double Leaf SS Door Single Leaf Stainless Steel Single Side Open Flush Door with 49mm thickness, WALL MOUNTED ITEMS:	SET SET		
6 7	Hermetically Sealed Sliding Door – Automated Double Leaf SS Door Single Leaf Stainless Steel Single Side Open Flush Door with 49mm thickness, WALL MOUNTED ITEMS:	SET SET		
7	Double Leaf SS Door Single Leaf Stainless Steel Single Side Open Flush Door with 49mm thickness, WALL MOUNTED ITEMS:	SET SET		
7	Single Leaf Stainless Steel Single Side Open Flush Door with 49mm thickness, WALL MOUNTED ITEMS:	SET		
_	Door with 49mm thickness, WALL MOUNTED ITEMS:			
8	WALL MOUNTED ITEMS:	Set		
8		Set		•
	X-ray viewing screens (two plates)			
9		Nos		
10	Equipment Storage Unit	Nos.		
11	Operating List - Writing Board	Nos.		
12	Cascade Pressure Stabilizer	Nos.		
13	Hatch Box	Nos.		
14	Clean-room illuminators	Nos.		
15	Surgical Scrub Sink	Nos.		
16	AHU - AIR HANDLING UNIT (DOUBLE SKIN TYPE)	LOT		
17	Imported Ceiling Pendants	SET		
18	Surgical Pendant	SET		
19	Anesthesia pendant	SET		
20	SPECIFICATIONS FOR ELECTRO HYDRAULIC TABLE	NOS.		
21	Specifications of Ceiling mounted Dual dome LED OT Lights:	NOS.		
22	Specifications of Ceiling mounted Single dome LED OT Lights:	NOS		
23	MEDICAL GAS PIPELINE			
	OXYGEN MANIFOLD SYSTEM 4 x4 gas manifold			
24	OXYGEN MANIFOLD SYSTEM			
<i>2</i> 4	2 x2 cylinder emergency manifold			
25	Automatic oxygen control panel (aluminum body)	SET		
<u>23</u> 26	N2O MANIFOLD SYSTEM	561		
20	2 x 2 size manifold N2O complete with 4 pc tail pipes			
27	N2O MANIFOLD SYSTEM			
	2 cylinder emergency point with pressure reducing systems			

28	Automatic n2o control panel (aluminum body	SET	1		
20	Automatic n20 control panel (aluminum body	SET			
29	COMPRESSED AIR SYSTEM	Each			
30	Medical air dryers with Absorber-Date,	Each			
	Process-Data, Filer Date, Electrical-Date				
	Specification as under				
30.A	Purge saving control (optional)	Each			
30.B	Co & dewpoint monitor (optional)	Each			
31	VACUUM PUMP SYSTEM	SET			
32	COPPER PIPING WITH REQUIRED				
Ι	35mm outer dia, 1.2mm thick	R. Meter			
II	28mm outer dia, 0.9mm thick.	R. Meter			
		R. Meter			
III IV	22mm outer dia 0.9mm thick.	R. Meter			
	15mm outer dia 0.9mm thick.			-	
<u>V</u>	12mm outer dia 0.7mm thick.	R. Meter			
33	VALVE WITH VALVE BOX AND PRESSURE				
	GAUGE	F 1		_	
Ι	4 services	Each			
II	3 services	Each			
III	2 services	Each			
34	FLOOR ISOLATION STANDARD VALVE				
	(BALL VALVE WITH BRASS NUT & NIPPLE)				
Ι	35MM	Each			
II	28MM	Each			
III	22MM	Each			
IV	15MM	Each			
35	AREA LINE PRESSURE ALARM				
Ι	Area line pressure alarm upto 3 gases	Each			
II	Area line pressure alarm upto 2 gases	Each			
36	OXYGEN GAS OUTLET				
	GAS OUTLET POINT	Each			
Ι	Front Loaded outlet point (Oxygen vaccum Air	Each			
	Nitrous)				
II	Front Loaded outlet point Probe Only (Oxygen	Each			
	Vacuum Air Nitrous)				
III	BPC Flow Meter	Each			
IV	Humidifier Bottle	Each			
V	Front Loaded Key use for Ventilator (Air,	Each			
·	Oxygen)	Luch			
37	Central ward suction ward Vaccum Unit with				
57	Regulator				
Ι	600ml unit with regulator	Set			
II	1000ml unit with regulator	Set			
III		Set		_	
	2000ml unit with regulator	NAI NAI			
	2000ml unit with regulator				
38	Theatre suction trolly unit with regulator	Unit			
38 39	Theatre suction trolly unit with regulator High Pressure Tubing – 6mm I.D.	Unit Per Mtr.			
38 39 40	Theatre suction trolly unit with regulatorHigh Pressure Tubing – 6mm I.D.Low Pressure Tubing – 6mm I.D.	Unit Per Mtr. Per Mtr.			
38 39 40 41	Theatre suction trolly unit with regulatorHigh Pressure Tubing – 6mm I.D.Low Pressure Tubing – 6mm I.D.ELECTRICAL CONTROL PANEL AIR	Unit Per Mtr. Per Mtr. Each			
38 39 40 41 42	Theatre suction trolly unit with regulatorHigh Pressure Tubing – 6mm I.D.Low Pressure Tubing – 6mm I.D.ELECTRICAL CONTROL PANEL AIRELECTRICAL CONTROL PANEL VACCUM	Unit Per Mtr. Per Mtr. Each Each			
38 39 40 41 42 43	Theatre suction trolly unit with regulatorHigh Pressure Tubing – 6mm I.D.Low Pressure Tubing – 6mm I.D.ELECTRICAL CONTROL PANEL AIRELECTRICAL CONTROL PANEL VACCUMMaster Alarm for Plant	Unit Per Mtr. Per Mtr. Each Each Each			
38 39 40 41 42 43 44	Theatre suction trolly unit with regulator High Pressure Tubing – 6mm I.D. Low Pressure Tubing – 6mm I.D. ELECTRICAL CONTROL PANEL AIR ELECTRICAL CONTROL PANEL VACCUM Master Alarm for Plant ICU BED HEAD PANEL-5FEET	Unit Per Mtr. Per Mtr. Each Each			
38 39 40 41 42 43 44	Theatre suction trolly unit with regulatorHigh Pressure Tubing – 6mm I.D.Low Pressure Tubing – 6mm I.D.ELECTRICAL CONTROL PANEL AIRELECTRICAL CONTROL PANEL VACCUMMaster Alarm for PlantICU BED HEAD PANEL-5FEETOptional Equipments At Extra Cost	Unit Per Mtr. Per Mtr. Each Each Each SET			
38 39 40 41 42 43 44 44 A I	Theatre suction trolly unit with regulator High Pressure Tubing – 6mm I.D. Low Pressure Tubing – 6mm I.D. ELECTRICAL CONTROL PANEL AIR ELECTRICAL CONTROL PANEL VACCUM Master Alarm for Plant ICU BED HEAD PANEL-5FEET Optional Equipments At Extra Cost I.V. Hook	Unit Per Mtr. Per Mtr. Each Each Each SET Each			
38 39 40 41 42 43 44 44 A I II	Theatre suction trolly unit with regulator High Pressure Tubing – 6mm I.D. Low Pressure Tubing – 6mm I.D. ELECTRICAL CONTROL PANEL AIR ELECTRICAL CONTROL PANEL VACCUM Master Alarm for Plant ICU BED HEAD PANEL-5FEET Optional Equipments At Extra Cost I.V. Hook Syringe Pump Pole	Unit Per Mtr. Per Mtr. Each Each SET Each Each			
38 39 40 41 42 43 44 44 I II III	Theatre suction trolly unit with regulator High Pressure Tubing – 6mm I.D. Low Pressure Tubing – 6mm I.D. ELECTRICAL CONTROL PANEL AIR ELECTRICAL CONTROL PANEL VACCUM Master Alarm for Plant ICU BED HEAD PANEL-5FEET Optional Equipments At Extra Cost I.V. Hook Syringe Pump Pole Utility Basket	Unit Per Mtr. Per Mtr. Each Each SET Each Each Each			
38 39 40 41 42 43 44 44 44 A I II III III IV	Theatre suction trolly unit with regulator High Pressure Tubing – 6mm I.D. Low Pressure Tubing – 6mm I.D. ELECTRICAL CONTROL PANEL AIR ELECTRICAL CONTROL PANEL VACCUM Master Alarm for Plant ICU BED HEAD PANEL-5FEET Optional Equipments At Extra Cost I.V. Hook Syringe Pump Pole Utility Basket Monitor Tray	Unit Per Mtr. Per Mtr. Each Each SET Each Each Each Each			
38 39 40 41 42 43 44 44 A I II III IV V V	Theatre suction trolly unit with regulator High Pressure Tubing – 6mm I.D. Low Pressure Tubing – 6mm I.D. ELECTRICAL CONTROL PANEL AIR ELECTRICAL CONTROL PANEL VACCUM Master Alarm for Plant ICU BED HEAD PANEL-5FEET Optional Equipments At Extra Cost I.V. Hook Syringe Pump Pole Utility Basket Monitor Tray Aluminum Channel (Railing)	Unit Per Mtr. Per Mtr. Each Each SET Each Each Each Each Each			
38 39 40 41 42 43 44 44 44 A I II III III IV	Theatre suction trolly unit with regulator High Pressure Tubing – 6mm I.D. Low Pressure Tubing – 6mm I.D. ELECTRICAL CONTROL PANEL AIR ELECTRICAL CONTROL PANEL VACCUM Master Alarm for Plant ICU BED HEAD PANEL-5FEET Optional Equipments At Extra Cost I.V. Hook Syringe Pump Pole Utility Basket Monitor Tray	Unit Per Mtr. Per Mtr. Each Each SET Each Each Each Each			

	The annual maintenance Contract (AMC) of for the period of three years from the expiry of Guarantee /Warranty period of one year					
1	O.T. No. B	First year				
		Second Year				
		Third Year				
		Total				

<u>U..T.ADMINISTRATION OF DAMAN AND DIU</u> <u>OFFICE OF THE MEDICAL SUPERINTENDENT'</u> <u>GOVERNMENT HOSPITAL, DAMAN</u>

NO.GHD/E-TENDER/2012-2013/

DATED:- 27.12.2012

TECHNICAL BID FOR O.T. NO. C

Sr. No.	Description	
1	WALL SURFACES:-	SQ. Mtr.
	The main requirements for any Operation theatre wall system are that they should be impact resistant, show resistance to solvents & chemicals, prevent colonising of micro-organisms or neutralise micro- organisms which come into contact with the wall surface. The surfaces should be stable – prevent cracking and movement, scrub able – amenable to cleaning & have a completely sealed finish, Biological attack resistance & have hygiene finish & lastly have Hydrothermal performance.	
	• All wall mounted equipment should be flush-mounted and sealed into theatre wall by means of durable sterile jointing system.	
	• The wall panel design and construction should allow for the installation and support of all equipment's with provision of openings required for repair and maintenance without affecting rigidity and strength. In case require, one should be able to easily remove the wall panel for service requirements.	
	• The total distance between the inside and outside surfaces of the theatre should vary to suit the architect's layout; however the composite wall thicknesses should be 100mm or less.	
	• The cavity between the inner and outer walls should be left with minimum obstructions for the possible addition of equipment at a later date and to enable services, pipes, conduits etc, to be run within the cavity.	
	• The Sterile coating is water resistant, does not support bacteriological or fungicidal growth and is resistant to most chemicals commonly used in hospital departments. It should neutralise micro- organisms which come into contact and should prevent colonising or sporing of micro-organisms.	
	 The sterile coating shows resistance to a wide range of mixed species, including stubborn pathogens such as MRSA, Acinetobacter sp, Aerobacter aerogenes, Bacillus subtitles, Escherichia coli, Listeria monocytogenes, Pseudomonas aeruginosa, Pseudomonas putida, Salmonella typimurium, Serratia marcescens, Staphylococcus Aureus. 	
	• The sterile coating should remain unaffected by radiation, its anti- microbial system should not leach out & its anti-microbial properties should last for a minimum of 10 years.	
	• The sterile coating system should be easily maintained and should withstand repeated cleaning with alkaline detergents, antiseptics and fumigation agents without any degradation to the surface finish or performance.	
	• Conform to standards HTM 08-01 / HTM 56	

2	WALL & CEILING DANELLING.	SO MTDC
	WALL & CEILING PANELLING: The Pre-fabricated operating room should be free standing structure, constructed from composite, free standing insulated steel wall panels.	SQ. MTRS
	These panels should be produced in a double band laminator, in which two continuously moving belts of Stainless Steel 304 sheets of 0.80mm thickness are firmly bonded together by the sprayed in insulating foam, which hardens during this process. All panels should have a fifteen year de-lamination warranty.	
	The core should consist of rigid polyurethane foam, which has been injected under high pressure, with a minimum density of $40 \text{ kg} / \text{m3}$. The walls should be modular in construction, consisting of 1180 mm, 875 mm, 570 mm and 265 mm wide panels, together with corner panels 200 x 200 mm to achieve the desired false ceiling height. The thickness of the complete panel, including the core should be a minimum of 60 mm. Conform with respective certificate copy duly attached herewith having clearly mentioning of above,	
	The modular wall panels are installed upon floor using a "U" channel. Each Pre-Fabricated Operating Room may optionally include sloping ceiling panels at an angle of 45 degrees from the straight wall panel edge. This options reduces the overall volume of the room, decreasing the running costs for air- conditioning and ventilation, while at the same time maintaining the necessary height at the center of the room for the installation of ceiling mounted equipment's.	
	The inner surface of the operating theatre should be seamless, free from visible joints and sharp edges. All internal corners and panel joints should be filled with proper Epoxy filler, Sanded flush or radiused on site, ready to receive the sterile plastic finish. All panel joints should be invisible when the final plastic coating is applied.	
	All wall-mounted equipment should be flush mounted and sealed into theatre wall by means of a sterile jointing system. The wall panel design and construction should allow for the installation and support of all equipment and the provision for openings required for the installations, without affecting the rigidity and strength.	
	The internal surfaces of the theatre walls and ceiling should be sprayed with water based, non-reflective liquid plastic, to a color approved by the architect, to a minimum dry film thickness of 60 microns. The plastic coating should overlap the floor covering, ceiling system and door frames by 25 mm to provide a continuous sealed surface.	
	The sterile coating applied to a thickness of 60 microns of the already applied primer coating on the panels inner surface, should be water resistant, does not support bacteriological or fungicidal growth and should be resistant to most chemicals commonly used in hospital departments.	
	The sterile coating should remain unaffected by radiation and other ionizing radiation at levels in excess of 1,000 mrad and should be classified to class 1 when tested in accordance with the requirements as specified under BS:476:part 7 ;1971, surface spread of flame test for materials. The coating should be SILVER Ion based.	
	The coating system should be easily maintainable and should be able to withstand repeated cleaning with alkaline detergents, antiseptics and fumigation agents without any degradation to the surface finish or performance.	
	The thickness of the wall panels should be a minimum of 10mm and mounted	

on the existing Wall structure using the necessary steel frame work. The Wall panels should be easily removable for catering to service related needs.Electrical Components	
Each modular panel should contain separate cable pathways for the routing of electrical services and a variety of openings and rear enclosures for the fixing of electrical components. Cable sizes for power sockets, earth and potential equalization wiring should be provided according to the specific requirements of the site. Separation of LV & ELV Supplies to BS7971, conforming to HTM 06-01 & HTM 06-02 standards. Communication Components	
Each modular panel should contain separate cable pathways for the routing of communication services and a variety of openings and rear enclosures for the fixing of components. Internal wiring is executed according to the existing valid standards, running in a separated cable pathway up to an integrated services connection point. Mechanical Components	
Medical gas outlets are connected to the wall panels from pipes running within. Piping for medical gases is segregated by means of a separate duct within the modular panel; the piping used will be medical grade copper tube according to EN737-3. The modular panel is delivered in a pre-piped configuration, including the CE-marked medical gas outlets of which all common brand types are available.	
3ESD VINYL FLOORING The flooring should conform to standards DIN EN 1081, DIN EN 1815, EN 12466, EN 425, EN 423 & EN 433. It should be fire resistant, scratch resistant, chemical resistant & resistance to fungi – bacterial growth.SO SO SO SO SO SO SO SO SO SO SO SO SO 	SQ. Mtrs
Vinyl is the oldest effective ESD flooring material. Solid vinyl tile (SVT) can give a facility that hospital	
look of cleanliness and shine. Facilities managers often favor vinyl floor because vinyl has a reputation for being inexpensive, simple to repair and easy to clean. The joints between individual tiles are to be welded by heat fusion process to get a seamless floor. The PVC welding bar should of the same matching color as that of the tile and a hot air gun is used for fusion of welding bar with flooring tile. Conductive flooring to be installed within the OT area to prevent damage to sensitive medical electronic equipment's, inadvertent movement of surgeons / technicians, accumulation of static dirt. Maintenance should be simple such as each individual tile can be replaced in very short down-time. The conductive flooring should ensure:	
 The protection of Electronic equipment and components The protection of people against electro-static discharge risks The protection of premises against explosive risks. 	
The Conductive tiles should be static – conductive, flexible, homogenous vinyl floor covering with an electrical resistance of 5 x $104 \le \text{Rt} \le 106$ (EN 1081).	
The Conductive flooring should have the following characteristics:	
 Low accumulation of electrostatic charges to people & Equipment. Should provide an enduring resistance to static and dynamic loads Should display excellent resistance to chemical products such as detergents, acids and alkaline products. Low VOC emissions. Should have Fungistatic and bactreostatic treatment throughout the 	
 total thickness of flooring. It should be non-absorbent, impervious and non-porus. 	

IMPORTED PLANAIR VENTILATION CEILING / PLENUM / AIR &	Set
LIGHT DIFFUSER / LAMINAR FLOW - CONFORMING TO	
STANDARD HTM 03-01 & HTM 60	

4

The Planair ceiling ventilation system should dilute the bacteria generated by the operating team and patient in the theatre and to create an Air flow pattern that carries contaminated air away from the operating table & entering surgical wounds. It should be designed such that filtered, sterile air flows through the operating zone without an admixture of indoor air. The germs and aerosols released by occupants are displaced into adjacent room zone and removed with the exhaust air.

The main components that the Laminar flow should be having is a rectangular air outlet housing with air outlet frame and air discharge element on the underside and two housings on the top side each with a built in HEPA filter. The air discharge element should be a fine - meshed fabric for laminar displacement flow. The air discharge element should be split with a feed through for the Surgical light. The element should be removable or can be folded downwards for easy accessibility to the housing interior for cleaning and disinfection. It should be also easily accessible to the HEPA filters which can be easily replaced when required to do so.

The complete Laminar flow system should be Pre-manufactured and preassembled unit, modular in design, having connection box and filter frame. The construction should consist of four units' modular in design with filter frames and variable connection hoods for the supply air, The air discharge element should be made of fine-mesh laminar fabric (polyester) with a surrounding stainless steel frame. The air outlet housing should be made of stainless steel and the filter housing of powder coated steel sheet. The Laminar air distribution element should be modular in design, divided into four parts with a minimum number of bars, individually foldable, covered with monofilament polyamide from one side, fixed without screws. It should have a connection for differential pressure measurement. The Laminar flow should be of following characteristics:

1) Planair Pleanum Size : 2800mm x 2800mm with 4000CFM capacity Laminar Air Flow

2) Planair Pleanum Size : 1800mm x 1800mm with 2000 CFM capacity Laminar Air Flow

The system should be certified according to DIN 1946-4 (12-2008), tested to DIN 4799, having horizontally arranged terminal HEPA filters of H 14 type with grip protection on both sides; filter exchange from pure air side, filter tested and certified according to DIN EN 1822-1.

5	DOOR AND FRAME	
	Hermetically Sealed Sliding Door – Automated	Set
	• Automated operated hermetically sealing sliding main door on OT, of appropriate size, 2100mm (H) X 1000 (W) and 2100mm (H) X 1500 (W)	
	• Having a track system wherein the door blade is guided under a 45° angle with approximately 6mm deep indentations at the closed position.	
	• Having a special inside & outside Stainless Steel lever handle that lifts out the door blade from its hermetic closing position, thus allowing even very heavy doors to be opened effortlessly, manually.	
	• Encased within an extruded anodized 2.5 mm thick aluminum profile frame all around the door blade with solid high pressure laminate on both sides.	
	• Should have special nylon top rollers with double roller bearings, to enable the door to slide smoothly & silently.	
	• The door blade to have a special 3-tier specially designed 3 side heavy duty replaceable EPDM gasket, for the hermetic sealing on the wall	

	 frame. The bottom sealing should be with a 2-tier heavy duty EPDM gasket to flush with the finished floor. The door core should be 60 mm thick, built up with 4 mm thick HPL (High pressure compact laminate) skin on both sides of the door to provide better strength and rigidity. Having between the two sides of laminates – CFC free, high density polyurethane puff (density 40 Kg / m3), thickness 52mm. Vision panels - double glazed, laminated safety glass, flush finished on both sides with door blade should be provided in the doors. The automation controller for the door should be microprocessor based with regulated electro-mechanical sliding door drive. The automation should be able to operate a door with maximum door weight of 250Kg. The wall frame should be high grade aluminum extrusion with natural anodized 15 micron finish wall frame profile. The wall frame profile should be 3 sided blind fixed with cladding on wall cut-out section from inside and outside of the room. The automation should have variable / adjustable opening & closing speeds, with opening speed adjustable between 120mm / sec 800mm / sec. The automation / door can be controlled/operated using either push-button switch, Kick switch or Sensor (touch less – infra-red) switches OR all in combination. 	
6	Double Leaf SS Door Double Leaf Stainless Steel Door Single Side Open Flush Door with 49mm thickness of both door leafs, having size of 1800mm x 2100mm with view window of 300mm x 300mm duly complete with clean view glass, The Door should be having .8mm thick SS304 sheet on both faces while door core should be of PU, The Door should be hinge mounted and should complete with all necessary accessories i.e.Door closer, D type SS Door Handle etc.	SET
7	Single Leaf Stainless Steel Single Side Open Flush Door with 49mm thickness, having size of 1000mm x 2100mm with view window of 300mm x 300mm duly complete with clean view glass, The Door should be having .8mm thick SS304 sheet on both faces while door core should be of PU, The Door should be hinge mounted and should complete with all necessary accessories i.e.Door closer, D type SS Door Handle etc.	SET
8	WALL MOUNTED ITEMS: Imported Operation theatre control panel It should be a digital control panel consisting of a computer and a touch screen managed by a PLC. It should integrate all controls, signals and alarms of the operation theatre and offer several services addressed to the maintenance staff. The information management system should be managed by the programmable software – PLC and the visual and control parameters by the PC / Touch screen, IP64 protected, 15" (inches) in size. It should have a digital microphone and speakers, a 300K pixel camera, ambient light sensor and a wireless LAN 802.11 a Bluetooth V2.0. Following frequent used functions should be available a) Controls: □ General Light Switch control, 3 controls in number, having dimming facility □ Temperature and humidity display □ Operation theater status – occupied / free / cleaning	Set

	\Box OT surgical light switch (depending upon the make ,model of the light)	
	b) Alarms:	
	Electrical Alarm (visual & Acoustic)	
	Gases Alarm repeater (Visual & Acoustic)	
	UPS charging status	
	c) Communications:	
	Tolephone / ID Tolephone if line graitable	
	 Telephone / IP Telephone if line available Ethernet connection 	
	\square SM SAlarms	
	□□ Video- Conference facility	
	d) Signals:	
	Digital Inputs / Outputs: 14 Nos / 10 Nos.	
	$\square \square Analogue : (0-10V) Inputs / Outputs (2 Nos. / 1 Nos.$	
9	X-ray viewing screens (two plates)	Nos
	• The theatre should be equipped with a twin plate X-Ray Viewing	
	Screen, recessed in the wall and designed to provide a high level of	
	control luminance, without flicker, from a unit that is easy to clean	
	and maintain.	
	• The X-Ray viewing screen illumination should be by LED	
	lamps, controlled by dimming ballast.	
	• The front panel diffuser is of a glare free type, sealed flush	
	with the inside face of the operating theatre wall (or may as an	
	option be integrated within the control panel fascia).	
	• The LED lamps should provide a uniform level of illumination across	
	the entire front panel.	
	• Access for maintenance and lamp changing is from the front of the	
	panel.	
	• All internal wiring is terminated in connectors with screw and clamp	
	spring connections.	
	• Individual fuses or miniature circuit breakers protect all internal	
	circuits.	
	• All internal wiring is of high temperature resistance and secured by propriety cable clips	
	propriety cable enps	
	It is flush mounted and sealed into theatre wall by means of a sterile jointing	
	system.	
10	Equipment Storage Unit	Nos.
	• Equipment Storage Unit to be provided in operating theatre of	
	dimensions approved by the user.	
	• It should be flush mounted into the theatre wall with a sterile jointing	
	 System. The cabinets should be made of Stainless Steel AISI 304 material. 	
	 Doors of cabinet should open right to left and made of clear safety 	
	glass.	
	• It is suitably partitioned / shelved to allow storage of common	
	endoscopic equipment's.	
	 It has the facility of secure locking. 	
	Conform to standard HTM 63	

 Cascade pressure stabilizers should be a range of multi-bladed units specifically designed to control room air pressures in critical areas, such as operating theater suites. Each stabilizer should comprise of carbon steel housing with up to four Grade 304 Stainless steel blades, which pivot upon sealed for life bearing assemblies. Balancing is carried out utilizing a proven balance weight assembly. These stabilizers should be accurate to a range of 1 Pascal over their working range of 5-35Pa. Hatch Box A hatch should be provided to remove waste material from the operation theatre to dirty linen area just adjacent to the operation theatre. Each hatch should be equipped with two doors and the door should be operated electronically. The hatch should be designed in such a way that only one door should be opened at one time. The UV light should be so installed that it is kept on while both the doors are closed, this UV light should automatically turn "OFF" in case of opening of either of the doors. There shall be indicators on both sides of the OT such that door open / close status can be monitored from both ends. Clean-room illuminators Lamp covered with translucent Plexiglas with high transmission level (higher than 80%), held in a frame of white shell sheet, with integrated screw angles for fastening the lights to the panel system. Including closed mounting frame for the built-in LED lamps; the connection between the illuminator and the ceiling hollow space should be compared system. Sould be for grade AISI 304. It should be destined to be used for operating theating sink with wall mounted possibility, having a depth of 300 mm. It should be two bay, having standards are to be maintained. It should be trow pay, having standard 2 x drin traps, shaving approximated Juspensors, water and soap time adjustable, water thermostat – temperature adjustable and havin	11	Operating List - Writing Board	Nos.
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Lamp covered with translucent Plexiglas with high transmission level (higher than 80%), held in a frame of white shell sheet, with integrated screw angles for fastening the lights to the panel system. Including closed mounting frame for the built-in LED lamps; the connection between the illuminator and the ceiling hollow space should be completely airtight. Clean-installed light should non-hygroscopic and be of IP 54 grade. Dimensions should approximately be 600 x 300mm (length x width).Nos.15Surgical Scrub SinkNos.The Surgical Scrub Sink should be made of Stainless Steel of grade AISI 304. It should be destined to be used for operating theatres, where high hygienic standards are to be maintained. It should be free standing sink with wall mounted possibility, having a depth of 300 mm. It should be two bay, having standard 2 x drain traps, water and soap dispensers activated by sensor, water and soap time adjustable, water thermostat – temperature adjustable and having chrome faucets. It should have open able front panel with two latches for maintenance purposes, having approximate dimensions of 1600 (L) x 635 (w) x 1271 (H) in mm.LOT16AHU - AIR HANDLING UNIT (DOUBLE SKIN TYPE) The air-handling units are of double skin construction, draw-thru type comprising of various sections such as Pre-filter section, coil section, as shown on drawings and included in schedule of quantities. Unit must be able to work satisfactory in exposed atmosphere conditions.LOT		theatre to dirty linen area just adjacent to the operation theatre. Each hatch should be equipped with two doors and the door should be operated electronically. The hatch should be designed in such a way that only one door should be opened at one time. The UV light should be so installed that it is kept on while both the doors are closed, this UV light should automatically turn "OFF" in case of opening of either of the doors. There shall be indicators on both sides of the OT such that door open / close status can be monitored from both ends.	
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The air-handling units are of double skin construction, draw-thru type comprising of various sections such as Pre-filter section, coil section, as shown on drawings and included in schedule of quantities. Unit must be able to work satisfactory in exposed atmosphere conditions.	16	AHU - AIR HANDLING UNIT (DOUBLE SKIN TYPE)	LOT
Casing		The air-handling units are of double skin construction, draw-thru type comprising of various sections such as Pre-filter section, coil section, as shown on drawings and included in schedule of quantities. Unit must be able	
Cushig		Casing	

Double skinned panels are fabricated with anodized extruded aluminum extrusion frame work bolted together with sandwich panel having powder coated 0.70 mm sheet for outer skin and plain GP 0.63 mm sheet for inner skin. 43 mm thick PUF insulation material is injected between the two panels (with U value no greater than 0. 85 W / m2/k)

The entire frame duly painted is mounted on sheet steel channel based. The panels are sealed to the framework by heavy-duty 'O' ring gaskets held captive in the framed extrusion. All panels are detachable or hinged. Hinges are made of die cast aluminum with stainless steel pivots, handles are made of hard nylon and be operational from both inside and outside of the unit. All fixing and gaskets shall be concealed.

Motor and Drive

Fan motors are highly efficient and work on $440 \pm 10\%$ volts, 50 cycles, three phase with explosion proof type with class F installation, with IP 55 protection. Motors are especially designed for quiet operation and motor speed does not exceed 1440 rpm. Drive to fan is provided through belt-drive arrangement. Belts are of the oil-resistant type.

Fan

Fan are of centrifugal type, conforming to AMCA 210 and are double width, double inlet with forward- inclined airfoil blades, specially designed and suitable for the required operating pressure. Fan casing are made from galvanized steel sheet. Fan shaft is grounded C 40 carbon steel and supported in self-aligning plumber block operating less than 75% of first critical speed, grease lubricated bearings.

Cooling Coils

DX coils have 12.5 to 15 mm dia tubes minimum 24G thick with sine wave aluminum fins firmly bonded to copper tubes assembled in zinc coated steel frame. Face and surfaces areas are such as to ensure rated capacity from each unit and such that the air velocity across the coil does not exceed

150 meters per minutes. Each coil is factory tested at 21-kg/m2 air pressures under water. Tube is

Hydraulically / mechanically expanded for minimum thermal contact resistance with fins. Fin spacing is 4 - 5 fins per cm.

Filters

Each unit is provided with a factory assembled filter section containing washable synthetic type air filters having anodized aluminum frame. The media is supported with HDP mesh. Filter banks are easily accessible and designed for easy withdrawal and renewal of filter cells. Filter banks face velocities do not exceed 100 m/minutes. Differential pressure switch is to be fixed across the filter as part of AHU's system.

Ducting

The duct supply system should be free of construction debris. Ducting shall be made of Aluminum with curves & bends where indicated for easy flow of air and ensured to be air tight by applying silicon sealant after fabrication. Hangers shall be provided to ducts & shall be suspended by means of G.I. coated rods & these shall not be more than 2.5mtrs apart. Thermal insulation with 9mm XPE for supply & return air ducts. Joints will be lapped with Nitrile rubber tape for better insulation.

Air Cooled Package Chiller / Condensing Units.

Compressor

The compressor shall be of screw, scroll / reciprocating type, hermitic, in

		[
	accordance with ARI 520, direct driven with capacity control arrangement. The compressor casing shall be of cast iron and designed for 450 psig or higher. The compressor shall incorporate rolling element bearing to support rotating assembly. The rotor shall be higher steel alloy. We prefer the use of Copeland USA Compressors Hermetic Compressors. Refrigerant circuit components shall include flexible pipe connectors, hot gas muffler, high side pressure switch, liquid line shut-off valves, suction and discharge shut-off valves, filter drier, moisture- indicating sight glass, electronic or thermostatic expansion valve (EXV), heavy duty pressure gauge with cocks to monitor suction, discharge and oil pressure and complete operating charge of refrigerant and compressor oil.	
	Motor Compressor motor shall be of Hermetic / semi-hermetic direct drive, squirrel cage, two pole, induction type, refrigerant cooled motor suitable for 415V / 50 Hz. 3 phase supply. Hot gas motor cooling is not acceptable. We prefer the use of Copeland USA Compressors Hermetic Compressors.	
	Condenser Condenser shall be Air Cooled type. Tubing shall be copper, Aluminum fins high efficiency type. Tubes shall be nominal 19mm. Outer diameter and thickness shall not be less than 22 g. and rolled into rube sheets and shall be individually replaceable and also tubes shall be coated with corrosion resistant coating. Condenser fans shall be direct coupled to motor and protected against overloading and with minimum	
	1.15 service factor.	
	Condenser shall design to allow isolating refrigerant charge when servicing the compressor.	
	 With maintain the above said technical specifications, The Air Handling Unit with Air Cooled Package Chiller / Condensing Units should have following capacity: 1) 17.5 tr with 5000CFM 2) 11 tr with 3500 CFM 	
17	Imported Ceiling Pendants	SET
	The idea of using ceiling mounts is such that they can be easily swiveled in place to have medical equipment or gases readily available for patient treatment or care. The benefits should translate to flexible positioning and optimal space utilization & in addition hygiene and safety advantages. In nutshell it should eliminate cable clutter and above all the unrestricted movement of all components in the space around the place of use. They should be CE marked / approved.	
18	Surgical Pendant	SET
	The surgical arm shall be double arm, each arm length of 800mm length. The arm should be able to swivel around each joint by 330 degrees. It should be able to withhold a weight of not less than 150kg. The surgical pendant should have the following features:	
	 Distributor heads / consoles should be modular of length 1100mm & capable of accepting a range of shelves (3 Nos.) and a drawer with a top shelf, each having weight carrying capacity of at least 30kg. The distributor head should have 10 universal electrical sockets, 1 set of RJ45 / RJ11 connectors, have 	
	2 * Infusion poles with 4 bottle holders.	

		1
	• Five medical gas outlet terminals: $1 * O_2 : 2 * Vac : 2 * Air (4 bar)$	
	OR $2 * CO_2$: $1 * O_2$: $1 * Vac$: $1 * Air$	
19	Anesthesia pendant	SET
	The arm of pendant shall be single arm of length of 800 mm. The arm should	
	be able to swivel around each joint by 330 degrees. It should be able to	
	withhold a weight of not less than 150kg. The pendant should have the	
	following features:	
	• Distributor heads / consoles should be modular of length 800mm long	
	approx. & capable of accepting a range of shelves (2 Nos.) and a	
	drawer with a top shelf, each having weight carrying capacity of at	
	least 30kg.	
	• The distributor head should have 8 universal electrical sockets, 1 set	
	of RJ45 / RJ11 connectors, have 2 Infusion poles with 4 bottle	
	holders.	
	• Five medical gas outlet terminals: $2 * O_2 : 2 * N_2O : 1 * Air (4 bar)$	
	:1* Vac	
20	SPECIFICATIONS FOR ELECTRO HYDRAULIC TABLE	NOS.
	Electro Hydraulic operated eight function remote control table up and	
	down, trendelenbreg and reverse trendelenberg, right lateral, left	
	lateral, backrest, up & down.	
	Should be Remote control table with corded remote.	
	Power supply should be 220 v, 5 amps and three pin plug point.	
	Remote cord and main plug should come from head end of the table	
	(i.e) from the bottom of the base, to facilitate the anesthetist	
	> Table should have 100mm central lock castors for longitudinal and	
	lateral movements, the castors should be made of polyurethane and	
	molded to prevent water and rust entering inside.	
	\succ Braking should be effective and should have a dead lock when	
	broken; it should be on the head end side of the table, to facilitate the	
	anesthetist, and one brake on the tail end for better stability.	
	Leg bed should be two pieces right and left and should be detachable	
	and abductable and also should move up & down.	
	Table top should have five sections; it should be breakable into	
	inverted v-shape from the head side.	
	 Trendelenberg and lateral mechanism should be concealed with 	
	bellows; column should be straight without any projection on right or	
	left.	
	 Table column size should be 280mm x 280mm. 	
	 Table column size should be 280mm x 280mm. Table should have provision to view spine ap and lateral c-arm. 	
	Polyurethane detachable cushion top should be provided on the table	
	top.	
	▶ Base covers should be covered with impact, shock resistant, fire	
	resistant and disinfectant free material. Base should be broader in the	
	head end.	
	The column casing, table top frame, traction bars and all accessories	
	made of non-corrosive steel. The main column should be covered with	
	non-corrosive stainless steel.	
	Inbuilt battery back up should be provided.	
	The table top should be reversible, the headrest attachments should fix	
	to the tail side and the tail side attachment should fix to the head side.	
	The table should have a provision to fix top leg traction attachment.	
	The table should have manual pre sector for all positions.	
	\blacktriangleright In case of electrical components failure, the table should be operated	
	manually by mechanical pedaling for all positions.	
	\blacktriangleright The table should be capable of taking off centered load from neck to	
	toe should be screened in to C-Arm without any disturbance.	
	Should be ISO 9001, ISO 13485 Approved.	
	> The entire vertebral column should be viewed without any hindrance.	
	> Patient sitting position, with Tendlenburg maximum should be	
	possible.	
	I	I

	Minimum height 27" preferred.	
01	Should adapt Mayfield sugitha and Lyela retractor.	NOS
21	Specifications of Ceiling mounted Dual dome LED OT Lights:	NOS.
	- Dual Dama Cailing mount structure with use of multiple LEDs	
	• Dual Dome Ceiling mount structure with use of multiple LEDs	
	• Output Lux intensity of 1,20,000 Lux at 1 meter in one dome (size	
	cm: $61x52x11$) and $60,000$ lux at 1 meter in another dome(size cm:	
	38x32x10)	
	• Total Power consumption of less than or equal to 200 watts	
	• Color temperature of the LED to be equal to daylight color	
	temperature – 5500 k	
	• Life of LED - 50,000 hours or more	
	• Six motions in each arm to achieve all positions and angles	
	• More than 1100 mm up-down movement for both Domes	
	• All five rotary motions in each arm to have stopper less design for	
	continuous rotation	
	• Wide reach of more than 2 meters in all direction from center for both	
	arms to cover majority of Operation room area	
	• Wide operating voltage range from 90 v to 260 v to cover mains	
	voltage fluctuations	
	• User selectable intensity variation with digital display from 0 % to	
	100 %, individual for each dome	
	• Digital Display of Life of LED used in hours for each dome	
	• Quarter yoke sets in domes for easy handling	
	Availability of Direct battery operation option	
	Provision of Camera at the center of Main Dome	
	• Sterilisable & detachable Plastic handle at the center of the each dome	
	for focus adjustment	
	• To have ISO 13485 & ISO 9001 certification	
	• with German Spring Arm	
	• Intensity variable from 0-100%	
22	Specifications of Calling mounted Single dome LED OT Lights:	NOS
22	Specifications of Ceiling mounted Single dome LED OT Lights:	NOS
22		NOS
22	 Single Dome Ceiling mount structure with use of multiple LEDs 	NOS
22	 Single Dome Ceiling mount structure with use of multiple LEDs Output Lux intensity of 90,000 Lux at 1 meter in one dome (size cm: 	NOS
22	 Single Dome Ceiling mount structure with use of multiple LEDs Output Lux intensity of 90,000 Lux at 1 meter in one dome (size cm: 61x52x11) 	NOS
22	 Single Dome Ceiling mount structure with use of multiple LEDs Output Lux intensity of 90,000 Lux at 1 meter in one dome (size cm: 61x52x11) Total Power consumption of less than or equal to 90 watts 	NOS
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23	MEDICAL GAS PIPELINE	
_	OXYGEN MANIFOLD SYSTEM	
	4 x4 gas manifold are extendable & non extendable type with choice of size	
	of cylinders bank for bulk 'd' type jumbo cylinders, manifold is suitable to	
	with stand a working pressure of 140kg/cm manifold have high pressure	
	copper annealed tail pipes with one end having brass adapter suitable for	
	cylinders. Manifold have brass non-return valves for individual cylinders	
	(cylinders must be provides by the Govt. Hospital).	
24	OXYGEN MANIFOLD SYSTEM	
	2 x2 cylinder emergency manifold with pressure reducing systems extendable & non extendable type with choice of size of cylinders bank for bulk 'd' type	
	jumbo cylinders, manifold is suitable to with stand a working pressure of	
	140kg/cm manifold have high pressure copper annealed tail pipes with one	
	end having brass adapter suitable for cylinders. Manifold have brass non-	
	return valves for individual cylinders (cylinders must be provides by the	
	Govt. Hospital).	
25	Automatic oxygen control panel (aluminum body)	SET
	A) compact and fully automatic manifold control system for oxygen n20 and	
	co2	
	B) designed with both safety and continuity of flow supply at a constant	
	pressure via two banks f botted gas cylinders with following status	
	monitoring	
	C) a-bank in use (green indicator)	
	D) B-bank ready for use (yellow indication)	
	E) control panel has build in led display to indicate normal, low for line pressure	
	F) the control panel includes pressure gauge (63mm) to indicate the gas	
	pressure of each header ad pipe line distribution pressure	
	G) capable to provide a distribution flow rate in excess of 1500 lpm	
	H) the control panel incorporate safety puncture in case pressure excess 100	
	psi	
	I) Oxygen Failure Alarm System with Indication	
26	N2O MANIFOLD SYSTEM	
	2 x 2 size manifold n2o complete with 4 pc tail pipes	
	extendable & non extendable type with choice of size of cylinders bank for	
	bulk 'd' type jumbo cylinders, manifold is suitable to with stand a working	
	pressure of 140kg/cm manifold have high pressure copper annealed tail pipes	
	with one end having brass adapter suitable for cylinders. Manifold have brass non-return valves for individual cylinders (cylinders must be provides by the	
	Govt. Hospital).	
	Gove nospital).	
27	N2O MANIFOLD SYSTEM	
	2 cylinder emergency point with pressure reducing systems	
	extendable & non extendable type with choice of size of cylinders bank for	
	bulk 'd' type jumbo cylinders, manifold is suitable to with stand a working	
	pressure of 140kg/cm manifold have high pressure copper annealed tail pipes	
	with one end having brass adapter suitable for cylinders. Manifold have brass	
	non-return valves for individual cylinders (cylinders must be provides by the	
	Govt. Hospital).	0.FT
28	Automatic n2o control panel (aluminum body)	SET
	A) compact and fully automatic manifold control system for oxygen n2oB) designed with both safety and continuity of flow supply at a constant	
	pressure via two banks f botted gas cylinders with following status	
	monitoring	
	C) a-bank in use (green indicator)	
	D) B-bank ready for use (yellow indication)	
	E) control panel has build in led display to indicate normal, low for line	
	pressure	
	\dot{F})the control panel includes pressure gauge (63mm) to indicate the gas	
	F) the control panel includes pressure gauge (63mm) to indicate the gas	

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	-		h header a				-		1 700 lm		
	· •	-	rovide a d						-		
	H) the control panel incorporate safety puncture in case pressure excess 100 psi							excess 100			
	-	Failure	Alarm Sy	stem wit	th Indic	cation					
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	Filter Data	
	Pre filter:	
	Micron rating : 0.3 - 0.6 microns	
	Filtering media : Borosilicate fiber	
	Efficiency : 99.9 %	
	Utilities : Auto drain valve	
	After filter:	
	Micron rating : 25 microns	
	Filtering media : Sintered Bronze	
	Electrical – Data	
	Controller : Custom made Micro controller based system Input voltage : 85 – 265 V AC, 50 / 60 Hz., 20 Watts Max.	
	Output : 2 Exhaust & 1 Drain valve 24 V / 8 Watts Solenoid coils	
	Display : 3 LED indicating Drain, Tower 1 & Tower 2 Status	
	Enclosure : IP 55 Protection, ABS plastic	
	Connection : DIN 43650 Micro	
31	VACUUM PUMP SYSTEM	SET
	Technical specification:-	
	Bore & stroke 3" & 3" x 2 ³ / ₄ "	
	R.P.M. 960	
	P.D. 21.6	
	Max. working pressure (psig / kg / cm2)	
	29.6" barometer reading ar the sea level	
	Vacuum tank (liters 500ltr) Motor HP required 2	
	Scope of supply	
	- Suction air filter	
	- Vacuum pump with v.sheave along with electrically mounted on the	
	vacuum tank	
	- Regulation : ASSC vacuum switch of standard co. make	
	- Vacuum pump & motor pulley, v-belts belt guard, motor slide rail etc.	
	- Vacuum pump with v. sheave along with electrical mounted on the	
	vacuum tank	
	- Motor of standard co. with ISI and ISo standard along with DOL	
	starter of standard co. CE marked only	
22	CODDED DIDING WITH DECLIDED	R.MTRS
32	COPPER PIPING WITH REQUIRED COPPER FITTINGS SIZE TO BE USED	K.MIKS
	As per (BSEN) 13348 as per HTM-0201	
	Copper and Copper alloys-Seamless round tube for a medical gases or	
	vacuum, materials conforming to manufacturers as per	
	BS:EN:13348:2001+A1:2005	
	Copper pipe of this European standard are suitable for distributing the	
	following medical gases intended to be used at operating pressure up to	
	2000kpa and for system under vacuum	
	* Oxygen, Nitrous Oxide, Nitrogen, Helium, Carbon Dioxide, Xenon	
	* Air for Breathing	
	* Specific mixture of these above mentioned gases	
	* Air for Driving surgical tools	
	* Anaesthetics gases and vaporous * Vacuum	
	Mandatory Inspection Requirements:	
	Chemical Composition	
	Cehmical Composition of copper pipe shall conform to the following	
	requirements. The analytical methods shall be carried out by Direct Emission	
	Spectrometer.	
	Copper + Silver: min. 99.90%	
	Phosphorous : min. 0.015%, Max 0.040%	

5mm outer dia, 1.2mm thick	R. Meter
	K MIAtor
8mm outer dia 0.0mm thick	R. Meter
8mm outer dia, 0.9mm thick.	
2mm outer dia 0.9mm thick. 5mm outer dia 0.9mm thick.	R. Meter R. Meter
2mm outer dia 0.7mm thick.	R. Meter R. Meter
ALVE WITH VALVE BOX AND PRESSURE GAUGE	SET
will be wall mounted M.S. box with powder coated and lockable front glass anel having ball type valves with PTFE seat, brass body nickel plating alves having quarter turn handle opening size suitable for 12mm od copper ipe to 28 mm od copper pipe will have screwed ends will have brass dapters suitable for copper pipe, thevalve box door can not be closed during alve close position. These valves will be manufactured by an iso 9001 ertified company.	
services	Each
services	Each
services	Each
LOOR ISOLATION STANDARD VALVE (BALL VALVE WITH BRASS (UT & NIPPLE)	
5MM	Each
8MM	Each
2MM	Each
5MM	Each
he medical gas alarms will have displays for various fault indications and apable of monitoring a maximum of 4 to 5 medical gas services by means ressure switches, Which detect deviations from the normal operating limits of either pressure or nedical vacuum ach gas services will be displayed by colored normal low high pressure onditions. Medical vacuum systems will be displayed in the normal & low acuum condition only ailure indicators will be displayed by flashing lights and normal indication will be study. An audible warning will sound simultaneously with any failure indication at a nute facility will be provided. A maintenance mute switch will be provided iternally to the panel for use during maintenance, which results in prolonged ipeline or plant shutdown. This facility will automatically reset when the as service returns to normal. The alarm panel will have a test facility to prove the integrity of the internal ircuit, and microprocessor based electronic circuit led and audible warning the alarm is equipped with separate gauges for each gas for showing the ressure and it complies to htm 2022 standard.	
area line pressure alarm upto 3 gases	Each
trea line pressure alarm upto 2 gases	Each
AS OUTLET POINT	Each
 Allows plugging of oxygen flowmwter & probes from front. Bears weight of the metal BPC flowmeter & humidifier Push to insert and press to release mechanism for flowmeter & probes Locating terminal unit pin & probe notch gives maximum stability to the flowmeter unit Non-interchangeability between Probes & terminal outlets for 	
AS	 S OUTLET POINT Allows plugging of oxygen flowmwter & probes from front. Bears weight of the metal BPC flowmeter & humidifier Push to insert and press to release mechanism for flowmeter & probes Locating terminal unit pin & probe notch gives maximum stability to the flowmeter unit

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I	Front Loaded outlet point (Oxygen vaccum Air Nitrous)	Each
II	Front Loaded outlet point Probe Only (Oxygen Vacuum Air Nitrous)	Each
III	BPC Flow Meter	Each
IV	Humidifier Bottle	Each
V	Front Loaded Key use for Ventilator (Air, Oxygen)	Each
37	Central ward suction ward Vaccum Unit with Regulator	
	The system should be wall mounted type operated by central vacuum. It	
	includes vacuum regulator range form 0-760mm hg. Use can vary negative	
	pressure as per patient requirement. Vacuum gauge sizes 2" and 600ml	
	capacity autoclavable plastic jars with overflow safety trap will be provided.	
	Ward suction units should be provided with required high and low pressure	
т	tubing	9.1
I	600ml unit with regulator	Set
II	1000ml unit with regulator	Set
III	2000ml unit with regulator	Set
38	Theatre suction trolly unit with regulator	Unit
	Theatre vacuum unit :- it will be trolley mounted. The unit will include one	
	regulator having meter mounted in the trolley stand, having two re-usable	
	each 2000ml plastic collections bottles mounted on base of trolley unit and	
	connected with regulator and low pressure tube inter connections. The base of	
	the trolley is fitted on castor wheel arrangement to move the system one place to another place easily.	
	to another prace easily.	
39	High Pressure Tubing – 6mm I.D.	Per Mtr.
	Grey for Air	1 CI IVILI.
	Yellow for Vacuum	
	Blue for Nitrous Oxide	
	White for Oxygen	
40	Low Pressure Tubing – 6mm I.D.	Per Mtr.
••	Grey for Air	
	Yellow for Vacuum	
	Blue for Nitrous Oxide	
	White for Oxygen	
41	ELECTRICAL CONTROL PANEL AIR	Each
	Electrical Control Panel Equipped for Duplex & Cascade system. For	
	Compressor	
42	ELECTRICAL CONTROL PANEL VACCUM	Each
	Electrical Control Panel Equipped for Duplex & Cascade system. For	
	Vacuum Pump	
43	Master Alarm for Plant	Each
	The medical gas alarms will have displays for various fault indications and	
	capable of monitoring a maximum of 4 to 5 medical gas services by means	
	pressure switches,	
	Which detect deviations from the normal operating limits of either pressure or	
	medical vacuum	
	Each gas services will be displayed by seleved normal low high measure	
	Each gas services will be displayed by colored normal low high pressure conditions. Medical vacuum systems will be displayed in the normal & low	
	vacuum condition only	
	Failure indicators will be displayed by flashing lights and normal indication	
	will be study.	
	An audible warning will sound simultaneously with any failure indication at a	
	mute facility will be provided. A maintenance mute switch will be provided	
	internally to the panel for use during maintenance, which results in prolonged	
	pipeline or plant shutdown. This facility will automatically reset when the	
	gas service returns to normal.	
	The alarm panel will have a test facility to prove the integrity of the internal	

	circuit, and microprocessor based electronic circuit led and audible warning	
	The alarm is equipped with separate gauges for each gas for showing the pressure and it complies to htm 2022 standard.	
44	ICU BED HEAD PANEL-5FEET	SET
	 The construction of the wall section is made of extruded aluminum The extruded aluminum structural lower channel will include a vertical integrate equipment mounting track to support optical track mounted equipment. Optional equipments like I,v, hook infusion pole utility basket, monitor tray etc. can be install into the track at any location along the extruded aluminum channel. Gas outlets/ switch -socket/monitor socket/ nurse call system can be fitted on middle portion of the bed console unit after cutting the aluminum sheet as per hospital requirements. Bed Head Panel for ICU 5 Feet Long made of High strength extruded Aluminum profile with powder coated with colour. Each Bed Head Panel have provision for O2-2., Vac-2, Air-4-1 and 5/15amp Switch socket 4nos. with optional Railing and IV Stand, Ward Vacuum and Infusion pump stand 	
44 A	Optional Equipments	
I	I.V. Hook	
II	Syringe Pump Pole	
III	Utility Basket	
IV	Monitor Tray	
V	Aluminum Channel (Railing)	
VI	Ward Vacuum Stand	
VII	Infusion Pump Stand	

<u>..T.ADMINISTRATION OF DAMAN AND DIU</u> <u>OFFICE OF THE MEDICAL SUPERINTENDENT'</u> <u>GOVERNMENT HOSPITAL, DAMAN</u>

NO.GHD/E-TENDER/2012-2013/

DATED:- 27.12.2012

FINANCIAL BID FOR O.T. NO. C

Sr. No.	Description		Qty.	Rate Each	Total Cost
1	WALL SURFACES:-	SQ.			
		Mtr.			
2	WALL & CEILING PANELLING:	SQ. MTRS			
3	ESD VINYL FLOORING	SQ. Mtrs			
4	IMPORTED PLANAIR VENTILATION CEILING / PLENUM / AIR & LIGHT DIFFUSER / LAMINAR FLOW – CONFORMING TO STANDARD HTM 03-01 & HTM 6	Set			
5	DOOR AND FRAME				
0	Hermetically Sealed Sliding Door – Automated	Set			
6	Double Leaf SS Door	SET			
7	Single Leaf Stainless Steel Single Side Open	SET			
	Flush Door with 49mm thickness,				
8	WALL MOUNTED ITEMS:	Set			
9	X-ray viewing screens (two plates)	Nos			
10	Equipment Storage Unit	Nos.			
11	Operating List - Writing Board	Nos.			
12	Cascade Pressure Stabilizer	Nos.			
13	Hatch Box	Nos.			
14	Clean-room illuminators	Nos.			
15	Surgical Scrub Sink	Nos.			
16	AHU - AIR HANDLING UNIT (DOUBLE SKIN TYPE)	LOT			
17	Imported Ceiling Pendants	SET			
18	Surgical Pendant	SET			
19	Anesthesia pendant	SET			
20	SPECIFICATIONS FOR ELECTRO HYDRAULIC TABLE	NOS.			
21	Specifications of Ceiling mounted Dual dome LED OT Lights:	NOS.			
22	Specifications of Ceiling mounted Single dome LED OT Lights:	NOS			
23	MEDICAL GAS PIPELINE				
<u> </u>	OXYGEN MANIFOLD SYSTEM				
	4 x4 gas manifold				
24	OXYGEN MANIFOLD SYSTEM				
<i>4</i> 4					
07	2 x2 cylinder emergency manifold	0 EM			
25	Automatic oxygen control panel (SET			

	aluminum body)			
26	N2O MANIFOLD SYSTEM			
	2 x 2 size manifold N2O complete with 4 pc			
	tail pipes			
27	N20 MANIFOLD SYSTEM			
	2 cylinder emergency point with pressure			
	reducing systems			
28	Automatic n20 control panel (aluminum	SET		
	body			
29	COMPRESSED AIR SYSTEM	Each		
30		Each		
50	Medical air dryers with Absorber-Date,	Each		
	<u>Process-Data, Filer Date, Electrical-Date</u> Specification as under			
30 A	Purge saving control (optional)	Each		
30 B	Co & dewpoint monitor (optional)	Each		
30 D 31	VACUUM PUMP SYSTEM	SET		
31	COPPER PIPING WITH REQUIRED	5E1		
I JZ	35mm outer dia, 1.2mm thick	R.		
		Meter		
II	28mm outer dia, 0.9mm thick.	R.		
		Meter		
III	22mm outer dia 0.9mm thick.	R.		
		Meter		
IV	15mm outer dia 0.9mm thick.	R.		
		Meter		
V	12mm outer dia 0.7mm thick.	R. Meter		
33	VALVE WITH VALVE BOX AND	Meter		
00	PRESSURE GAUGE			
I	4 services	Each		
II	3 services	Each		
III	2 services	Each		
34	FLOOR ISOLATION STANDARD VALVE	Hatti		
• -	(BALL VALVE WITH BRASS NUT & NIPPLE)			
I	35MM	Each		
II	28MM	Each		
III	22MM	Each		
IV	15MM	Each		
35	AREA LINE PRESSURE ALARM			
Ι	Area line pressure alarm upto 3 gases	Each		
II	Area line pressure alarm upto 2 gases	Each		
	OXYGEN GAS OUTLET			
36	GAS OUTLET POINT	Each		
Ι	Front Loaded outlet point (Oxygen vaccum	Each		
	Air Nitrous)			
II	Front Loaded outlet point Probe Only	Each		
	(Oxygen Vacuum Air Nitrous)			
III	BPC Flow Meter	Each		
IV	Humidifier Bottle	Each		
V	Front Loaded Key use for Ventilator (Air ,	Each		
	Oxygen)			
37	Central ward suction ward Vaccum Unit		T	
	with Regulator			
I	600ml unit with regulator	Set		
II	1000ml unit with regulator	Set		
III	2000ml unit with regulator	Set		
38	Theatre suction trolly unit with regulator	Unit		
39	High Pressure Tubing – 6mm I.D.	Per Mtr.		
40	Low Pressure Tubing – 6mm I.D.	Per Mtr.		

41	ELECTRICAL CONTROL PANEL AIR	Each		
42	ELECTRICAL CONTROL PANEL	Each		
	VACCUM			
43	Master Alarm for Plant	Each		
44	ICU BED HEAD PANEL-5FEET	SET		
45	Optional Equipments At Extra Cost			
Ι	I.V. Hook	Each		
II	Syringe Pump Pole	Each		
III	Utility Basket	Each		
IV	Monitor Tray	Each		
V	Aluminum Channel (Railing)	Each		
VI	Ward Vacuum Stand	Each		
VII	Infusion Pump Stand	Each		

The annual maintenance Contract (AMC) of for the period of three years from the expiry of Guarantee /Warranty period of one year

1	O.T. No. C	First year
		Second Year
		Third Year
		Total

<u>U..T.ADMINISTRATION OF DAMAN AND DIU</u> <u>OFFICE OF THE MEDICAL SUPERINTENDENT'</u> <u>GOVERNMENT HOSPITAL, DAMAN</u>

NO.GHD/E-TENDER/2012-2013/

DATED:- 27.12.2012

TECHNICAL BID FOR O.T. NO. D

Sr. No.	Description	
1	WALL SURFACES:-	SQ. Mtr.
	The main requirements for any Operation theatre wall system are that they should be impact resistant, show resistance to solvents & chemicals, prevent colonizing of micro-organisms or neutralize micro- organisms which come into contact with the wall surface. The surfaces should be stable – prevent cracking and movement, scrub able – amenable to cleaning & have a completely sealed finish, Biological attack resistance & have hygiene finish & lastly have Hydrothermal performance.	
	• All wall mounted equipment should be flush-mounted and sealed into theatre wall by means of durable sterile jointing system.	
	• The wall panel design and construction should allow for the installation and support of all equipment's with provision of openings required for repair and maintenance without affecting rigidity and strength. In case require, one should be able to easily remove the wall panel for service requirements.	
	• The total distance between the inside and outside surfaces of the theatre should vary to suit the architect's layout; however the composite wall thicknesses should be 100mm or less.	
	• The cavity between the inner and outer walls should be left with minimum obstructions for the possible addition of equipment at a later date and to enable services, pipes, conduits etc, to be run within the cavity.	
	• The Sterile coating is water resistant, does not support bacteriological or fungicidal growth and is resistant to most chemicals commonly used in hospital departments. It should neutralise micro- organisms which come into contact and should prevent colonising or sporing of micro-organisms.	
	• The sterile coating shows resistance to a wide range of mixed species, including stubborn pathogens such as MRSA, Acinetobacter sp, Aerobacter aerogenes, Bacillus subtitles, Escherichia coli, Listeria monocytogenes, Pseudomonas aeruginosa, Pseudomonas putida, Salmonella typimurium, Serratia marcescens, Staphylococcus Aureus.	
	• The sterile coating should remain unaffected by radiation, its anti- microbial system should not leach out & its anti-microbial properties should last for a minimum of 10 years.	
	• The sterile coating system should be easily maintained and should withstand repeated cleaning with alkaline detergents, antiseptics and fumigation agents without any degradation to the surface finish or performance.	
	• Conform to standards HTM 08-01 / HTM 56	

2	WALL & CEILING PANELLING: The Pre-fabricated operating room should be free standing structure, constructed from composite, free standing insulated steel wall panels.	SQ. MTRS
	These panels should be produced in a double band laminator, in which two continuously moving belts of Stainless Steel 304 sheets of 0.80mm thickness are firmly bonded together by the sprayed in insulating foam, which hardens during this process. All panels should have a fifteen year de-lamination warranty.	
	The core should consist of rigid polyurethane foam, which has been injected under high pressure, with a minimum density of $40 \text{ kg} / \text{m3}$. The walls should be modular in construction, consisting of 1180 mm, 875 mm, 570 mm and 265 mm wide panels, together with corner panels 200 x 200 mm to achieve the desired false ceiling height. The thickness of the complete panel, including the core should be a minimum of 60 mm. Conform with respective certificate copy duly attached herewith having clearly mentioning of above,	
	The modular wall panels are installed upon floor using a "U" channel. Each Pre-Fabricated Operating Room may optionally include sloping ceiling panels at an angle of 45 degrees from the straight wall panel edge. This options reduces the overall volume of the room, decreasing the running costs for air- conditioning and ventilation, while at the same time maintaining the necessary height at the center of the room for the installation of ceiling mounted equipment's.	
	The inner surface of the operating theatre should be seamless, free from visible joints and sharp edges. All internal corners and panel joints should be filled with proper Epoxy filler, Sanded flush or radiused on site, ready to receive the sterile plastic finish. All panel joints should be invisible when the final plastic coating is applied.	
	All wall-mounted equipment should be flush mounted and sealed into theatre wall by means of a sterile jointing system. The wall panel design and construction should allow for the installation and support of all equipment and the provision for openings required for the installations, without affecting the rigidity and strength.	
	The internal surfaces of the theatre walls and ceiling should be sprayed with water based, non-reflective liquid plastic, to a color approved by the architect, to a minimum dry film thickness of 60 microns. The plastic coating should overlap the floor covering, ceiling system and door frames by 25 mm to provide a continuous sealed surface.	
	The sterile coating applied to a thickness of 60 microns of the already applied primer coating on the panels inner surface, should be water resistant, does not support bacteriological or fungicidal growth and should be resistant to most chemicals commonly used in hospital departments.	
	The sterile coating should remain unaffected by radiation and other ionizing radiation at levels in excess of 1,000 mrad and should be classified to class 1 when tested in accordance with the requirements as specified under BS:476:part 7 ;1971, surface spread of flame test for materials. The coating should be SILVER Ion based.	
	The coating system should be easily maintainable and should be able to withstand repeated cleaning with alkaline detergents, antiseptics and fumigation agents without any degradation to the surface finish or performance.	

		1
	The thickness of the wall panels should be a minimum of 10mm and mounted on the existing Wall structure using the necessary steel frame work. The Wall panels should be easily removable for catering to service related needs. Electrical Components Each modular panel should contain separate cable pathways for the routing of electrical services and a variety of openings and rear enclosures for the fixing of electrical components. Cable sizes for power sockets, earth and potential equalization wiring should be provided according to the specific requirements of the site. Separation of LV & ELV Supplies to BS7971, conforming to	
	HTM 06-01 & HTM 06-02 standards. Communication Components	
	Each modular panel should contain separate cable pathways for the routing of communication services and a variety of openings and rear enclosures for the fixing of components. Internal wiring is executed according to the existing valid standards, running in a separated cable pathway up to an integrated services connection point. Mechanical Components	
	Medical gas outlets are connected to the wall panels from pipes running within. Piping for medical gases is segregated by means of a separate duct within the modular panel; the piping used will be medical grade copper tube according to EN737-3. The modular panel is delivered in a pre-piped configuration, including the CE-marked medical gas outlets of which all common brand types are available.	
3	ESD VINYL FLOORING The flooring should conform to standards DIN EN 1081, DIN EN 1815, EN 12466, EN 425, EN 423 & EN 433. It should be fire resistant, scratch resistant, chemical resistant & resistance to fungi – bacterial growth. Vinyl is the oldest effective ESD flooring material. Solid vinyl tile (SVT) can give a facility that hospital look of cleanliness and shine. Facilities managers often favor vinyl floor because vinyl has a reputation for being inexpensive, simple to repair and easy to clean. The joints between individual tiles are to be welded by heat fusion process to get a seamless floor. The PVC welding bar should of the same matching color as that of the tile and a hot air gun is used for fusion of welding bar with flooring tile. Conductive flooring to be installed within the OT area to prevent damage to sensitive medical electronic equipment's, inadvertent movement of surgeons / technicians, accumulation of static dirt. Maintenance should be simple such as each individual tile can be replaced in very short down-time. The conductive flooring should ensure: • The protection of Electronic equipment and components • The protection of people against electro-static discharge risks • The protection of premises against explosive risks. The Conductive tiles should be static – conductive, flexible, homogenous vinyl floor covering with an electrical resistance of 5 x 104 ≤ Rt ≤ 106 (EN 1081). The Conductive flooring should have the following characteristics: • Low accumulation of electrostatic charges to people & Equipment. • Should provide an enduring resistance to static and dynamic loads • Should display excellent resistance to chemical products such as detergents, acids and alkaline products. • Low VOC emissions. • Low VOC emissions. • Low VOC emissions. • Low UOC emissions. • Should have Fungistatic and bactreostatic treatment throughout the total thickness of flooring. • It should be non-absorbent, impervious and non-porus.	SQ. Mtrs

IMPORTED	PLANAIR VENTILATION CEILING / PLENU	M Set
/ AIR & LIGHT DIFFUSER / LAMINAR FLOW – CONFORMING TO		
STANDARD HT	M 03-01 & HTM 60	

4

The Planair ceiling ventilation system should dilute the bacteria generated by the operating team and patient in the theatre and to create an Air flow pattern that carries contaminated air away from the operating table & entering surgical wounds. It should be designed such that filtered, sterile air flows through the operating zone without an admixture of indoor air. The germs and aerosols released by occupants are displaced into adjacent room zone and removed with the exhaust air.

The main components that the Laminar flow should be having is a rectangular air outlet housing with air outlet frame and air discharge element on the underside and two housings on the top side each with a built in HEPA filter. The air discharge element should be a fine - meshed fabric for laminar displacement flow. The air discharge element should be split with a feed through for the Surgical light. The element should be removable or can be folded downwards for easy accessibility to the housing interior for cleaning and disinfection. It should be also easily accessible to the HEPA filters which can be easily replaced when required to do so.

The complete Laminar flow system should be Pre-manufactured and preassembled unit, modular in design, having connection box and filter frame. The construction should consist of four units' modular in design with filter frames and variable connection hoods for the supply air, The air discharge element should be made of fine-mesh laminar fabric (polyester) with a surrounding stainless steel frame. The air outlet housing should be made of stainless steel and the filter housing of powder coated steel sheet. The Laminar air distribution element should be modular in design, divided into four parts with a minimum number of bars, individually foldable, covered with monofilament polyamide from one side, fixed without screws. It should have a connection for differential pressure measurement. The Laminar flow should be of following characteristics:

1) Planair Pleanum Size : 2800mm x 2800mm with 4000CFM capacity Laminar Air Flow

2) Planair Pleanum Size : 1800mm x 1800mm with 2000 CFM capacity Laminar Air Flow

The system should be certified according to DIN 1946-4 (12-2008), tested to DIN 4799, having horizontally arranged terminal HEPA filters of H 14 type with grip protection on both sides; filter exchange from pure air side, filter tested and certified according to DIN EN 1822-1.

		1
5	DOOR AND FRAME	
	Hermetically Sealed Sliding Door – Automated	
	• Automated operated hermetically sealing sliding main door on OT, of appropriate size, 2100mm (H) X 1000 (W) and 2100mm (H) X 1500 (W)	
	• Having a track system wherein the door blade is guided under a 45° angle with approximately 6mm deep indentations at the closed position.	
	• Having a special inside & outside Stainless Steel lever handle that lifts out the door blade from its hermetic closing position, thus allowing even very heavy doors to be opened effortlessly, manually.	
	• Encased within an extruded anodized 2.5 mm thick aluminum profile frame all around the door blade with solid high pressure laminate on both sides.	
	• Should have special nylon top rollers with double roller bearings, to enable the door to slide smoothly & silently.	
	• The door blade to have a special 3-tier specially designed 3 side heavy duty replaceable EPDM gasket, for the hermetic sealing on the wall	

frame: The bottom seeding should be with a 2-tier heavy duty EPDM gasket to flow with the finished floor. • The door core should be 60 mm thick, built up with 4 mm thick HPL. (High pressure compact laminate) skin on both sides of the door to provide better strength and rigidity. Having between the two sides of laminates - CPC free, high density polyarethane part (density 40 Kg / m3), thickness 52mm. • Vision panels - double glazed, laminated safety glass, flush finished on both sides with door blade should be provided in the doors. • The automation controller for the door should be microprocessor based with regulated electro-mechanical sliking door drive. • The automation should be able to operate a door with maximum door weight of 250Kg. • The automation should have variable / adjustable opening & closing speeds, with opening speed adjustable between 120mm / sec			
6 Double Leaf SS Door SET 0 Double Leaf Stainless Steel Door Single Side Open Flush Door with 49mm thickness of both door leafs, having size of 1800mm x 2100mm with view window of 300mm x 300mm duly complete with clean view glass. The Door should be having .8mm thick SS304 sheet on both faces while door core should be of PU. The Door should be hinge mounted and should complete with all necessary accessories i.e.Door closer, D type SS Door Handle etc. SET 7 Single Leaf Stainless Steel Single Side Open Flush Door with 49mm thick SS304 sheet on both faces while door core should be having .8mm thick SS304 sheet on both faces while door core should be having .8mm thick SS304 sheet on both faces while door core should be having .8mm thick SS304 sheet on both faces while door core should be having .8mm thick SS304 sheet on both faces while door core should be having accessories i.e.Door closer, D type SS Door Handle etc. SET 8 WALL MOUNTED ITEMS: Imported Operation theatre control panel Set It should be a digital control panel consisting of a computer and a touch screen managed by a PLC. It should integrate all controls, signals and alarms of the operation theatre and offer several services addressed to the maintenance staff. Set The information management system should be managed by the programmable software – PLC and the visual and control parameters by the PC / Touch screen, IP64 protected, 15" (inches) in size. It should have a digital microphone and speakers, a 300K pixel camera, ambient light sensor and a wireless LAN 802.11 a Bluetooth V2.0. Following frequent used functions should be available a) Controls:		 gasket to flush with the finished floor. The door core should be 60 mm thick, built up with 4 mm thick HPL (High pressure compact laminate) skin on both sides of the door to provide better strength and rigidity. Having between the two sides of laminates – CFC free, high density polyurethane puff (density 40 Kg / m3), thickness 52mm. Vision panels - double glazed, laminated safety glass, flush finished on both sides with door blade should be provided in the doors. The automation controller for the door should be microprocessor based with regulated electro-mechanical sliding door drive. The automation should be able to operate a door with maximum door weight of 250Kg. The wall frame should be high grade aluminum extrusion with natural anodized 15 micron finish wall frame profile. The wall frame profile should be 3 sided blind fixed with cladding on wall cut-out section from inside and outside of the room. The automation should have variable / adjustable opening & closing speeds, with opening speed adjustable between 120mm / sec 800mm / sec. The automation / door can be controlled/operated using either push-button switch, Kick switch or Sensor (touch less – infra-red) 	
Double Leaf Stainless Steel Door Single Side Open Flush Door with 49mm thickness of both door leafs, having size of 1800mm x 2100mm with view window of 300mm x 300mm duly complete with clean view glass, The Door should be having .8mm thick SS304 sheet on both faces while door core should be of PU, The Door should be hinge mounted and should complete with all necessary accessories i.e.Door closer, D type SS Door Handle etc. 7 Single Leaf Stainless Steel Single Side Open Flush Door with 49mm thickness, having size of 1000mm x 2100mm with view window of 300mm x 300mm duly complete with clean view glass, The Door should be having .8mm thick SS304 sheet on both faces while door core should be of PU. The Door should be hinge mounted and should complete with all necessary accessories i.e.Door closer, D type SS Door Handle etc. SET 8 WALL MOUNTED ITEMS: Imported Operation theatre control panel Set 8 WALL MOUNTED ITEMS: Imported Operation theatre and offer several services addressed to the maintenance staff. Set 90 The information management system should be managed by the programmable software – PLC and the visual and control parameters by the PC / Touch screen, IP64 protected, 15" (inches) in size. It should have a digital microphone and speakers, a 300K pixel camera, ambient light sensor and a wireless LAN 802.11 a Bluetooth V2.0. Following frequent used functions should be available a) Operation theater status – occupied / free / cleaning 11 Temperature and humidity display Operation theater status – occupied / free / cleaning Stopwatch control		switches OR all in combination.	
thickness, having size of 1000mm x 2100mm with view window of 300mm x 300mm duly complete with clean view glass, The Door should be having .8mm thick SS304 sheet on both faces while door core should be of PU, The Door should be hinge mounted and should complete with all necessary accessories i.e.Door closer, D type SS Door Handle etc. 8 WALL MOUNTED ITEMS: Imported Operation theatre control panel Set It should be a digital control panel consisting of a computer and a touch screen managed by a PLC. It should integrate all controls, signals and alarms of the operation theatre and offer several services addressed to the maintenance staff. The information management system should be managed by the programmable software – PLC and the visual and control parameters by the PC / Touch screen, IP64 protected, 15" (inches) in size. It should have a digital microphone and speakers, a 300K pixel camera, ambient light sensor and a wireless LAN 802.11 a Bluetooth V2.0. Following frequent used functions should be available a) Controls: B General Light Switch control, 3 controls in number, having dimming facility Temperature and humidity display Coperation theater status – occupied / free / cleaning Stopwatch control	6	Double Leaf Stainless Steel Door Single Side Open Flush Door with 49mm thickness of both door leafs, having size of 1800mm x 2100mm with view window of 300mm x 300mm duly complete with clean view glass, The Door should be having .8mm thick SS304 sheet on both faces while door core should be of PU, The Door should be hinge mounted and should complete	SET
Imported Operation theatre control panel It should be a digital control panel consisting of a computer and a touch screen managed by a PLC. It should integrate all controls, signals and alarms of the operation theatre and offer several services addressed to the maintenance staff. The information management system should be managed by the programmable software – PLC and the visual and control parameters by the PC / Touch screen, IP64 protected, 15" (inches) in size. It should have a digital microphone and speakers, a 300K pixel camera, ambient light sensor and a wireless LAN 802.11 a Bluetooth V2.0. Following frequent used functions should be available a) Controls:	7	thickness, having size of 1000mm x 2100mm with view window of 300mm x 300mm duly complete with clean view glass, The Door should be having .8mm thick SS304 sheet on both faces while door core should be of PU, The Door should be hinge mounted and should complete with all necessary	SET
It should be a digital control panel consisting of a computer and a touch screen managed by a PLC. It should integrate all controls, signals and alarms of the operation theatre and offer several services addressed to the maintenance staff. The information management system should be managed by the programmable software – PLC and the visual and control parameters by the PC / Touch screen, IP64 protected, 15" (inches) in size. It should have a digital microphone and speakers, a 300K pixel camera, ambient light sensor and a wireless LAN 802.11 a Bluetooth V2.0. Following frequent used functions should be available a) Controls:	8	WALL MOUNTED ITEMS:	Set
 Temperature and humidity display Operation theater status – occupied / free / cleaning Stopwatch control 		It should be a digital control panel consisting of a computer and a touch screen managed by a PLC. It should integrate all controls, signals and alarms of the operation theatre and offer several services addressed to the maintenance staff. The information management system should be managed by the programmable software – PLC and the visual and control parameters by the PC / Touch screen, IP64 protected, 15" (inches) in size. It should have a digital microphone and speakers, a 300K pixel camera, ambient light sensor and a wireless LAN 802.11 a Bluetooth V2.0. Following frequent used functions should be available a) Controls:	
1		facility □□ Temperature and humidity display □□ Operation theater status – occupied / free / cleaning	
		±	

	light)	
9	 light) b) Alarms: Electrical Alarm (visual & Acoustic) Gases Alarm repeater (Visual & Acoustic) UPS charging status c) Communications: Telephone / IP Telephone if line available Ethernet connection SMS Alarms Video- Conference facility d) Signals: Digital Inputs / Outputs: 14 Nos / 10 Nos. X-ray viewing screens (two plates) 	EACH
	 The theatre should be equipped with a twin plate X-Ray Viewing Screen, recessed in the wall and designed to provide a high level of control luminance, without flicker, from a unit that is easy to clean and maintain. The X-Ray viewing screen illumination should be by LED lamps, controlled by dimming ballast. The front panel diffuser is of a glare free type, sealed flush with the inside face of the operating theatre wall (or may as an option be integrated within the control panel fascia). The LED lamps should provide a uniform level of illumination across the entire front panel. Access for maintenance and lamp changing is from the front of the panel. All internal wiring is terminated in connectors with screw and clamp spring connections. Individual fuses or miniature circuit breakers protect all internal circuits. All internal wiring is of high temperature resistance and secured by propriety cable clips It is flush mounted and sealed into theatre wall by means of a sterile jointing system. 	
10	 Equipment Storage Unit Equipment Storage Unit to be provided in operating theatre of dimensions approved by the user. It should be flush mounted into the theatre wall with a sterile jointing system. The cabinets should be made of Stainless Steel AISI 304 material. Doors of cabinet should open right to left and made of clear safety glass. It is suitably partitioned / shelved to allow storage of common endoscopic equipment's. It has the facility of secure locking. Conform to standard HTM 63 	EACH
11	 Operating List - Writing Board It is flush mounted with a sterile jointing system, 1.50mm thick, white laminate board, bonded to a 2mm steel sheet for additional rigidity. 	EACH
12	 Cascade Pressure Stabilizer Cascade pressure stabilizers should be a range of multi-bladed units 	EACH
	specifically designed to control room air pressures in critical areas,	

	 such as operating theatre suites. Each stabilizer should comprise of carbon steel housing with up to four Grade 304 Stainless steel blades, which pivot upon sealed for life bearing assemblies. Balancing is carried out utilizing a proven balance weight assembly. These stabilizers should be accurate to a range of 1 Pascal over their working range of 5-35Pa. 	
13	Hatch Box	EACH
	A hatch should be provided to remove waste material from the operation theatre to dirty linen area just adjacent to the operation theatre. Each hatch should be equipped with two doors and the door should be operated electronically. The hatch should be designed in such a way that only one door should be opened at one time. The UV light should be so installed that it is kept on while both the doors are closed, this UV light should automatically turn "OFF" in case of opening of either of the doors. There shall be indicators on both sides of the OT such that door open / close status can be monitored from both ends.	
14	Clean-room illuminators	EACH
	Lamp covered with translucent Plexiglas with high transmission level (higher than 80%), held in a frame of white shell sheet, with integrated screw angles for fastening the lights to the panel system. Including closed mounting frame for the built-in LED lamps; the connection between the illuminator and the ceiling hollow space should be completely airtight. Clean-installed light should non-hygroscopic and be of IP 54 grade. Dimensions should approximately be 600 x 300mm (length x width).	
15	Surgical Scrub Sink	EACH
	The Surgical Scrub Sink should be made of Stainless Steel of grade AISI 304. It should be destined to be used for operating theatres, where high hygienic standards are to be maintained. It should be free standing sink with wall mounted possibility, having a depth of 300 mm. It should be two bay, having standard 2 x drain traps, water and soap dispensers activated by sensor, water and soap time adjustable, water thermostat – temperature adjustable and having chrome faucets. It should have open able front panel with two latches for maintenance purposes, having approximate dimensions of 1600 (L) x 635 (w) x 1271 (H) in mm.	
16	AHU - AIR HANDLING UNIT (DOUBLE SKIN TYPE)	SET
	Type The air-handling units are of double skin construction, draw-thru type comprising of various sections such as Pre-filter section, coil section, as shown on drawings and included in schedule of quantities. Unit must be able to work satisfactory in exposed atmosphere conditions.	
	Casing Double skinned panels are fabricated with anodized extruded aluminum extrusion frame work bolted together with sandwich panel having powder coated 0.70 mm sheet for outer skin and plain GP 0.63 mm sheet for inner skin. 43 mm thick PUF insulation material is injected between the two panels (with U value no greater than 0. 85 W / m2/k)	
	The entire frame duly painted is mounted on sheet steel channel based. The panels are sealed to the framework by heavy-duty 'O' ring gaskets held captive in the framed extrusion. All panels are detachable or hinged. Hinges are made of die cast aluminum with stainless steel pivots, handles are made of hard nylon and be operational from both inside and outside of the unit. All fixing and gaskets shall be concealed.	

Motor and Drive

Fan motors are highly efficient and work on $440 \pm 10\%$ volts, 50 cycles, three phase with explosion proof type with class F installation, with IP 55 protection. Motors are especially designed for quiet operation and motor speed does not exceed 1440 rpm. Drive to fan is provided through belt-drive arrangement. Belts are of the oil-resistant type.

Fan

Fan are of centrifugal type, conforming to AMCA 210 and are double width, double inlet with forward- inclined airfoil blades, specially designed and suitable for the required operating pressure. Fan casing are made from galvanized steel sheet. Fan shaft is grounded C 40 carbon steel and supported in self-aligning plumber block operating less than 75% of first critical speed, grease lubricated bearings.

Cooling Coils

DX coils have 12.5 to 15 mm dia tubes minimum 24G thick with sine wave aluminum fins firmly bonded to copper tubes assembled in zinc coated steel frame. Face and surfaces areas are such as to ensure rated capacity from each unit and such that the air velocity across the coil does not exceed

150 meters per minutes. Each coil is factory tested at $21-kg/m^2$ air pressures under water. Tube is

Hydraulically / mechanically expanded for minimum thermal contact resistance with fins. Fin spacing is 4 - 5 fins per cm.

Filters

Each unit is provided with a factory assembled filter section containing washable synthetic type air filters having anodized aluminum frame. The media is supported with HDP mesh. Filter banks are easily accessible and designed for easy withdrawal and renewal of filter cells. Filter banks face velocities do not exceed 100 m/minutes. Differential pressure switch is to be fixed across the filter as part of AHU's system.

Ducting

The duct supply system should be free of construction debris. Ducting shall be made of Aluminum with curves & bends where indicated for easy flow of air and ensured to be air tight by applying silicon sealant after fabrication. Hangers shall be provided to ducts & shall be suspended by means of G.I. coated rods & these shall not be more than 2.5mtrs apart. Thermal insulation with 9mm XPE for supply & return air ducts. Joints will be lapped with Nitrile rubber tape for better insulation.

Air Cooled Package Chiller / Condensing Units.

Compressor

The compressor shall be of screw, scroll / reciprocating type, hermitic, in accordance with ARI 520, direct driven with capacity control arrangement. The compressor casing shall be of cast iron and designed for 450 psig or higher. The compressor shall incorporate rolling element bearing to support rotating assembly. The rotor shall be higher steel alloy. We prefer the use of Copeland USA Compressors Hermetic Compressors.

Refrigerant circuit components shall include flexible pipe connectors, hot gas muffler, high side pressure switch, liquid line shut-off valves, suction and discharge shut-off valves, filter drier, moisture- indicating sight glass, electronic or thermostatic expansion valve (EXV), heavy duty pressure gauge with cocks to monitor suction, discharge and oil pressure and complete operating charge of refrigerant and compressor oil.

Motor Compressor motor shall be of Hermetic / semi-hermetic direct drive, squirrel cage, two pole, induction type, refrigerant cooled motor suitable for 415V / 50 Hz. 3 phase supply. Hot gas motor cooling is not acceptable. We prefer the use of Copeland USA Compressors Hermetic Compressors.	
Condenser Condenser shall be Air Cooled type. Tubing shall be copper, Aluminum fins high efficiency type. Tubes shall be nominal 19mm. Outer diameter and thickness shall not be less than 22 g. and rolled into rube sheets and shall be individually replaceable and also tubes shall be coated with corrosion resistant coating. Condenser fans shall be direct coupled to motor and protected against overloading and with minimum	
1.15 service factor.	
Condenser shall design to allow isolating refrigerant charge when servicing the compressor.	
 With maintain the above said technical specifications, The Air Handling Unit with Air Cooled Package Chiller / Condensing Units should have following capacity: 1) 17.5 tr with 5000CFM 2) 11 tr with 3500 CFM 	
Imported Ceiling Pendants	SET
The idea of using ceiling mounts is such that they can be easily swiveled in place to have medical equipment or gases readily available for patient treatment or care. The benefits should translate to flexible positioning and optimal space utilization & in addition hygiene and safety advantages. In nutshell it should eliminate cable clutter and above all the unrestricted movement of all components in the space around the place of use. They should be CE marked / approved.	
Surgical Pendant	SET
The surgical arm shall be double arm, each arm length of 800mm length. The arm should be able to swivel around each joint by 330 degrees. It should be able to withhold a weight of not less than 150kg. The surgical pendant should have the following features:	
 Distributor heads / consoles should be modular of length 1100mm & capable of accepting a range of shelves (3 Nos.) and a drawer with a top shelf, each having weight carrying capacity of at least 30kg. The distributor head should have 10 universal electrical sockets, 1 set of RJ45 / RJ11 connectors, have 	
 2 * Infusion poles with 4 bottle holders. Five medical gas outlet terminals: 1 * O₂ : 2 * Vac : 2 * Air (4 bar) OR 2 * CO₂: 1 * O₂ : 1 * Vac : 1 * Air 	
Anesthesia pendant	SET
The arm of pendant shall be single arm of length of 800 mm. The arm should be able to swivel around each joint by 330 degrees. It should be able to	
	 cage, two pole, induction type, refrigerant cooled motor suitable for 415V / 50 Hz. 3 phase supply. Hot gas motor cooling is not acceptable. We prefer the use of Copeland USA Compressors Hermetic Compressors. Condenser Condenser shall be Air Cooled type. Tubing shall be copper, Aluminum fins high efficiency type. Tubes shall be nominal 19mm. Outer diameter and thickness shall not be less than 22 g, and rolled into rube sheets and shall be individually replaceable and also tubes shall be coated with corrosion resistant coating. Condenser fans shall be direct coupled to motor and protected against overloading and with minimum 1.15 service factor. Condenser shall design to allow isolating refrigerant charge when servicing the compressor. With maintain the above said technical specifications, The Air Handling Unit with Air Cooled Package Chiller / Condensing Units should have following capacity: 11 17.5 tr with 5000CFM 12) 11 tr with 3500 CFM Imported Ceiling Pendants The idea of using ceiling mounts is such that they can be easily swiveled in place to have medical equipment or gases readily available for patient treatment or care. The benefits should translate to flexible positioning and optimal space utilization & in addition hygiene and safety advantages. In nutshell it should eliminate cable clutter and above all the unrestricted movement of all components in the space around the place of use. They should be able to swivel around each joint by 330 degrees. It should be able to swivel around each joint by 330 degrees. It should be able to withhold a weight of not less than 150kg. The surgical pendant should have the following features: Distributor heads / consoles should be modular of length 1100mm & capable of accepting a range of shelves (3 Nos.) and a drawer with a top shelf, each having weight carrying capacity of at least 30kg. The distributor heads / consoles should be mo

 least 30kg. The distributor head should have 8 universal electrical sockets, 1 set of RJ45 / RJ11 connectors, have 2 Infusion poles with 4 bottle holders. Five medical gas outlet terminals: 2 * 0₂ : 2 * N₂O : 1 * Air (4 har) 21* Vae SPECIFICATIONS FOR ELECTRO HYDRAULIC TABLE Electro Hydraulic operated eight function remote control table up and down, trendelenbreg, an everse trendelenbreg, night lateral, left lateral, backrest, up & down. Should be Remote control table with corded remote. Power supply should be 220 v, 5 amps and three pin plug point. Remote cord and main plug should come from head end of the table (i.e) from the botom of the base, to facilitate the anesthetist Table should have 100mm central lock castors for longitudinal and lateral movements, the castors should be made of polyurethane and molded to prevent water and rust entering inside. Braking should be effective and should have a deal lock when broken; it should be two pieces right and left and should be detachable and abs obtable and also should move up & down. Table top should have five sections; it should be breakable into inverted v-shape from the head side. Trendelenberg and lateri mechanism should be concealed with bellows; column should be 280mm x 280mm. Table column size should be 280mm x 280mm. Table column size should be provided. The column casing, table top frame, traction bars and all accessories made of no puyrethane data. Polyurethane detachable cushion top should be broader in the head end. Table should have manual pre sector for all positions. The column casing, table top frame, traction bars and all accessories made of no-corrosive statiles steel. Incase of electrical components future, the bade should fix to the tad side. The table should have a movis	r			
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• Color temperature of the LED to be equal to daylight color			,	
1 = 1000 mm		•		
-			•	
Life of LED - 50,000 hours or more		●	Life of LED - 50,000 hours or more	

	• Six motions in each arm to achieve all positions and angles	
	 More than 1100 mm up-down movement for both Domes 	
	• All five rotary motions in each arm to have stopper less design for	
	continuous rotation	
	• Wide reach of more than 2 meters in all direction from center for both arms to cover majority of Operation room area	
	 Wide operating voltage range from 90 v to 260 v to cover mains 	
	voltage fluctuations	
	• User selectable intensity variation with digital display from 0 % to	
	100 %, individual for each dome	
	• Digital Display of Life of LED used in hours for each dome	
	• Quarter yoke sets in domes for easy handling	
	Availability of Direct battery operation option	
	Provision of Camera at the center of Main Dome	
	• Sterilisable & detachable Plastic handle at the center of the each dome	
	for focus adjustment	
	• To have ISO 13485 & ISO 9001 certification	
	with German Spring ArmIntensity variable from 0-100%	
	• Intensity variable from 0-100%	
22	Specifications of Ceiling mounted Single dome LED OT Lights:	EACH
	1. Single Dome Ceiling mount structure with use of multiple LEDs	
	2. Output Lux intensity of 90,000 Lux at 1 meter in one dome (size cm:	
	61x52x11)	
	 Total Power consumption of less than or equal to 90 watts Color temperature of the LED to be equal to daylight color 	
	4. Color temperature of the LED to be equal to daylight color temperature -5500 k	
	5. Life of LED - 50,000 hours or more	
	6. Six motions to achieve all positions and angles	
	7. More than 1100 mm up-down movement of dome	
	8. All five rotary motions to have stopper less design for continuous	
	rotation	
	9. Wide reach of more than 2 meters in all direction from center to cover majority of Operation room area	
	10. Wide operating voltage range from 90 v to 260 v to cover mains	
	voltage fluctuations	
	11. User selectable intensity variation with digital display from 0 % to	
	100 %	
	12. Digital Display of Life of LED used in hours	
	13. Quarter yoke sets in dome for easy handling	
	 Availability of Direct battery operation option Sterilisable & detachable Plastic handle at the center of the dome for 	
	focus adjustment	
	16. To have ISO 13485 & ISO 9001 certification	
	17. with German Spring Arm	
	18. Intensity variable from 0-100%	
23	MEDICAL GAS PIPELINE OXYGEN MANIFOLD SYSTEM	EACH
23	4 x4 gas manifold are extendable & non extendable type with choice of size	LACII
	of cylinders bank for bulk 'd' type jumbo cylinders, manifold is suitable to	
	with stand a working pressure of 140kg/cm manifold have high pressure	
	copper annealed tail pipes with one end having brass adapter suitable for	
	cylinders. Manifold have brass non-return valves for individual cylinders	
24	(cylinders must be provides by the Govt. Hospital).	EACH
24	OXYGEN MANIFOLD SYSTEM	EACH
	2 x2 cylinder emergency manifold with pressure reducing systems extendable & non extendable type with choice of size of cylinders bank for bulk 'd' type	
	jumbo cylinders, manifold is suitable to with stand a working pressure of	
	140kg/cm manifold have high pressure copper annealed tail pipes with one	
L		

	1						
	end having brass adapter suitable for cylinders. Manifold have brass non- return valves for individual cylinders (cylinders must be provides by the Govt. Hospital).						
25	 Automatic oxygen control panel (aluminum body) A) compact and fully automatic manifold control system for oxygen n2o and co2 B) designed with both safety and continuity of flow supply at a constant pressure via two banks f botted gas cylinders with following status monitoring C) a-bank in use (green indicator) D) B-bank ready for use (yellow indication) E) control panel has build in led display to indicate normal, low for line pressure F) the control panel includes pressure gauge (63mm) to indicate the gas pressure of each header ad pipe line distribution pressure G) capable to provide a distribution flow rate in excess of 1500 lpm H) the control panel incorporate safety puncture in case pressure excess 100 psi 						
26	 I) Oxygen Failure Alarm System with Indication N2O MANIFOLD SYSTEM 2 x 2 size manifold n2o complete with 4 pc tail pipes extendable & non extendable type with choice of size of cylinders bank for bulk 'd' type jumbo cylinders, manifold is suitable to with stand a working pressure of 140kg/cm manifold have high pressure copper annealed tail pipes with one end having brass adapter suitable for cylinders. Manifold have brass non-return valves for individual cylinders (cylinders must be provides by the Govt. Hospital). 	EACH					
27	N2O MANIFOLD SYSTEM 2 cylinder emergency point with pressure reducing systems extendable & non extendable type with choice of size of cylinders bank for bulk 'd' type jumbo cylinders, manifold is suitable to with stand a working pressure of 140kg/cm manifold have high pressure copper annealed tail pipes with one end having brass adapter suitable for cylinders. Manifold have brass non-return valves for individual cylinders (cylinders must be provides by the Govt. Hospital).	EACH					
28	 Automatic n2o control panel (aluminum body) A) compact and fully automatic manifold control system for oxygen n2o B) designed with both safety and continuity of flow supply at a constant pressure via two banks f botted gas cylinders with following status monitoring C) a-bank in use (green indicator) D) B-bank ready for use (yellow indication) E) control panel has build in led display to indicate normal, low for line pressure F)the control panel includes pressure gauge (63mm) to indicate the gas pressure of each header ad pipe line distribution pressure G) capable to provide a distribution flow rate in excess of 1500 lpm H) the control panel incorporate safety puncture in case pressure excess 100 psi I) N2O Failure Alarm System with Indication 	SET					
29	COMPRESSED AIR SYSTEM Air compressed system Oil Free with (2 /24/28cfm) 7.5 hp head 7.5 hp motor mounted air receiver tank capacity , 1000liter complete and Lubricating Two stage air compressors H.P. No. of cyl. Piston displacement c.f.m pressure f.g.m Tank capacity in liter H.P. No. of cyl. C.f.m l.p.m. Psi Kg/cm2 Kg/cm2	EACH					

	7.5	2	27	756	175	12	5	550	100	Oltr	
		<u> </u>		<u> </u>							
			dryers w te Specifica				, Pro	cess-D)ata, F	liler Date	e, SET
			w point per	forman	ce						
	No cfc r	-	ants obilized to	elimine	ate dust	ting					
	Design			Cimin	.ic uusi	mg					
A B	-	-	control (opt t monitor (<i>l</i>)						
	Flow	v cfm	End conn	ection t	osp I	Dimens	sions (1	mm)		Weight	
					ł		W		D	Kgs	
	30		1/2"		8	310	1050		780	70	
	Genera	l Data									
	Product Flow: 3	-	nerative typ	pe Heat	less De	siccan	t Drye	r			
	Operatio	ng pres	ssure: 7 bar								
	-		re: 16 bar (drop: 0.3 b								
			ure: 45 deg								
			n: ½" BSP		C						
	Atmosp 3.2	heric d	lew point:	- 40 deg Isorber	g C		_	_		Data	9
		ant: Ac	tivated alu				_	-		Data	a
	Size: 2										
	Desicca		•								
			er: 2 Nos.	V	Τ						
		•	sorbant: 3 dsorber: O	01							
			of adsorber								
	0		Adsorber: 3								
	Adsorbe	er Shell	l: Aluminiu	um IS 6	3400						
	Top & I	Bottom	block : A	luminiu	m IS 6	3400					
	Process	–Data	ı								
		-	ent : D	escription	on						
	Cycle ti			. 2	•						
	Drying	-	er tower ime per tov		min 5 min						
	-		time per tov			.5 min					
	Filter D										
	Pre filte										
			: 0.3 - 0.6			. *					
	-		a : B : 99.9 %	orosilica	ate fibe	r					
		•	: 99.9 % : Auto drai	in valve	•						
	After fil		uu								
			: 25 micro								
		-	a : Si	intered]	Bronze	;					
	Electric							1			
	Controll		: Custom n					•			
	Output	0	: 85 – 265 : 2 Exhaus							d coils	
	Display		: 2 Exhaus : 3 LED in								
				(IIC ALLING						18	

	Connection : DIN 43650 Micro	
31	VACUUM PUMP SYSTEM	SET
	Technical specification:-	~~
	Bore & stroke 3" & 3" x 2 ³ / ₄ "	
	R.P.M. 960	
	P.D. 21.6	
	Max. working pressure $(psig / kg / cm2)$	
	29.6" barometer reading ar the sea level Vacuum tank (liters 500ltr)	
	Motor HP required 2	
	Scope of supply	
	- Suction air filter	
	- Vacuum pump with v.sheave along with electrically mounted on the	
	vacuum tank	
	- Regulation : ASSC vacuum switch of standard co. make	
	- Vacuum pump & motor pulley, v-belts belt guard, motor slide rail etc.	
	- Vacuum pump with v. sheave along with electrical mounted on the	
	vacuum tank Motor of stondard on with ISI and ISa stondard slong with DOI	
	- Motor of standard co. with ISI and ISo standard along with DOL starter of standard co. CE marked only	
32	COPPER PIPING WITH REQUIRED	Running
52	COPPER FITTINGS SIZE TO BE USED	Meter
	As per (BSEN) 13348 as per HTM-0201	
	Copper and Copper alloys-Seamless round tube for a medical gases or	
	vacuum, materials conforming to manufacturers as per	
	BS:EN:13348:2001+A1:2005	
	Copper pipe of this European standard are suitable for distributing the	
	following medical gases intended to be used at operating pressure up to	
	2000kpa and for system under vacuum	
	* Oxygen, Nitrous Oxide, Nitrogen, Helium, Carbon Dioxide, Xenon	
	* Air for Breathing	
	* Specific mixture of these above mentioned gases	
	* Air for Driving surgical tools	
	* Anaesthetics gases and vaporous	
	* Vacuum	
	Mandatory Inspection Requirements:	
	Chemical Composition	
	Cehmical Composition of copper pipe shall conform to the following	
	requirements. The analytical methods shall be carried out by Direct Emission	
	Spectrometer.	
	Copper + Silver: min. 99.90%	
	Phosphorous : min. 0.015%, Max 0.040%	
	11) 35mm outer dia, 1.2mm thick	
	12) 28mm outer dia, 0.9mm thick. 13) 22mm outer dia 0.9mm thick.	
	13) 22mm outer dia 0.9mm thick. 14) 15mm outer dia 0.9mm thick.	
	15) 12mm outer dia 0.7mm thick.	
33	VALVE WITH VALVE BOX AND PRESSURE GAUGE	SET
	It will be wall mounted M.S. box with powder coated and lockable front glass panel	
	having ball type valves with PTFE seat, brass body nickel plating valves having	
	quarter turn handle opening size suitable for 12mm od copper pipe to 28 mm od copper pipe will have screwed ends will have brass adapters suitable for copper pipe,	
	the valve box door can not be closed during valve close position. These valves will	
	be manufactured by an iso 9001 certified company.	
1	7) 4 Services	
	8) 3 Services 9) 2 Services	

34	ELOOD ISOLATION STANDADD VALVE (DALL VALVE WORK PRACE						
34	FLOOR ISOLATION STANDARD VALVE (BALL VALVE WITH BRASS NUT & NIPPLE)	Each					
	35MM						
	28MM						
	22MM						
	15MM						
35	AREA LINE PRESSURE ALARM	Each					
	Area line pressure alarm upto 3 gases						
	Area line pressure alarm upto 2 gases						
	The medical gas alarms will have displays for various fault indications and						
	capable of monitoring a maximum of 4 to 5 medical gas services by means						
	pressure switches,						
	Which detect deviations from the normal operating limits of either pressure or						
	medical vacuum						
	Each gas services will be displayed by colored normal low high pressure						
	conditions. Medical vacuum systems will be displayed in the normal & low vacuum condition only						
	Failure indicators will be displayed by flashing lights and normal indication						
	will be study.						
	An audible warning will sound simultaneously with any failure indication at a						
	mute facility will be provided. A maintenance mute switch will be provided						
	internally to the panel for use during maintenance, which results in prolonged						
	pipeline or plant shutdown. This facility will automatically reset when the						
	gas service returns to normal.						
	The element will have a test facility to prove the intervity of the interval						
	The alarm panel will have a test facility to prove the integrity of the internal circuit, and microprocessor based electronic circuit led and audible warning						
	encurt, and interoprocessor based electronic encurt ied and addible warning						
	The alarm is equipped with separate gauges for each gas for showing the						
	pressure and it complies to htm 2022 standard.						
	OXYGEN GAS OUTLET						
36	GAS OUTLET POINT	Each					
	• Allows plugging of oxygen flowmwter & probes from front.						
	• Bears weight of the metal BPC flowmeter & humidifier						
	• Push to insert and press to release mechanism for flowmeter & probes						
	• Locating terminal unit pin & probe notch gives maximum stability to the flowmeter unit						
	• Non-interchangeability between Probes & terminal outlets for different services; possibility of error in making connection is avoided						
Ι	Front Loaded outlet point (Oxygen vaccum Air Nitrous)	Each					
II	Front Loaded outlet point (Onygen Vacuum Air Nitrous)	Each					
III	BPC Flow Meter	Each					
IV	Humidifier Bottle	Each					
V	Front Loaded Key use for Ventilator (Air, Oxygen)	Each					
37	Central ward suction ward Vacuum Unit (600ml, 1000ml, 2000ml) with	Set					
	Regulator The system should be wall mounted type operated by central vacuum. It						
	The system should be wall mounted type operated by central vacuum. It includes vacuum regulator range form 0-760mm hg. Use can vary negative						
	pressure as per patient requirement. Vacuum gauge sizes 2" and 600ml						
	capacity autoclavable plastic jars with overflow safety trap will be provided.						
	Ward suction units should be provided with required high and low pressure						
	tubing 600ml unit with						
38	Theatre suction trolly unit with regulator	Unit					
	Theatre vacuum unit: - it will be trolley mounted. The unit will include one						
	regulator having meter mounted in the trolley stand, having two re-usable						
	each 2000ml plastic collections bottles mounted on base of trolley unit and						
	connected with regulator and low pressure tube inter connections. The base of						

	the trolley is fitted on castor wheel arrangement to move the system one place to another place easily.	
39	High Pressure Tubing – 6mm I.D. Grey for Air Yellow for Vacuum Blue for Nitrous Oxide White for Oxygen	Per Mtr.
40	Low Pressure Tubing – 6mm I.D. Grey for Air Yellow for Vacuum Blue for Nitrous Oxide White for Oxygen	Per Mtr.
41	ELECTRICAL CONTROL PANEL AIR Electrical Control Panel Equipped for Duplex & Cascade system. For Compressor	Each
42	ELECTRICAL CONTROL PANEL VACCUM Electrical Control Panel Equipped for Duplex & Cascade system. For Vacuum Pump	Each
43	Vacuum 1 umpMaster Alarm for PlantThe medical gas alarms will have displays for various fault indications and capable of monitoring a maximum of 4 to 5 medical gas services by means pressure switches, Which detect deviations from the normal operating limits of either pressure or medical vacuumEach gas services will be displayed by colored normal low high pressure conditions. Medical vacuum systems will be displayed in the normal & low vacuum condition only Failure indicators will be displayed by flashing lights and normal indication will be study.An audible warning will sound simultaneously with any failure indication at a mute facility will be provided. A maintenance mute switch will be provided internally to the panel for use during maintenance, which results in prolonged pipeline or plant shutdown. This facility will automatically reset when the gas service returns to normal.The alarm panel will have a test facility to prove the integrity of the internal circuit, and microprocessor based electronic circuit led and audible warning The alarm is equipped with separate gauges for each gas for showing the pressure and it complies to htm 2022 standard.ICU BED HEAD PANEL-SFEET	Each
44	 ICU BED HEAD PANEL-SFEET The construction of the wall section is made of extruded aluminum The extruded aluminum structural lower channel will include a vertical integrate equipment mounting track to support optical track mounted equipment. Optional equipments like I,v, hook infusion pole utility basket, monitor tray etc. can be install into the track at any location along the extruded aluminum channel. Gas outlets/ switch –socket/monitor socket/ nurse call system can be fitted on middle portion of the bed console unit after cutting the aluminum sheet as per hospital requirements. Bed Head Panel for ICU 5 Feet Long made of High strength extruded Aluminum profile with powder coated with colour. Each Bed Head Panel have provision for O2-2., Vac-2, Air-4-1 and 5/15amp Switch socket 4nos. with optional Railing and IV Stand, Ward Vacuum and Infusion pump stand 	SET

44 A	Optional Equipments At Extra Cost	
Ι	I.V. Hook	Each
II	Syringe Pump Pole	Each
III	Utility Basket	Each
IV	Monitor Tray	Each
V	Aluminum Channel (Railing)	Each
VI	Ward Vacuum Stand	Each
VII	Infusion Pump Stand	Each

<u>U..T.ADMINISTRATION OF DAMAN AND DIU</u> <u>OFFICE OF THE MEDICAL SUPERINTENDENT'</u> <u>GOVERNMENT HOSPITAL, DAMAN</u>

NO.GHD/E-TENDER/2012-2013/

DATED:- 27.12.2012

FINANCIAL BID FOR O.T. NO. D

Sr. No.	Description		Qty.	Rate Each	Total Cost
1	WALL SURFACES:-	SQ. Mtr.			
2	WALL & CEILING PANELLING:	SQ. MTRS			
3	ESD VINYL FLOORING	SQ. Mtrs			
4	IMPORTED PLANAIR VENTILATIONCEILING / PLENUM / AIR & LIGHTDIFFUSER / LAMINAR FLOW -CONFORMING TO STANDARD HTM 03-01 &HTM 6DOOR AND FRAME	Set			
5	Hermetically Sealed Sliding Door – Automated	Set			
6	Double Leaf SS Door	SET			
7	7Single Leaf Stainless Steel Single Side Open Flush Door with 49mm thickness,	SET			
8	WALL MOUNTED ITEMS:	Set			
9	X-ray viewing screens (two plates)	Nos			
10	Equipment Storage Unit	Nos.			
11	Operating List - Writing Board	Nos.			
12	Cascade Pressure Stabilizer	Nos.			
13	Hatch Box	Nos.			
14	Clean-room illuminators	Nos.			
15	Surgical Scrub Sink	Nos.			
16	AHU - AIR HANDLING UNIT (DOUBLE SKIN TYPE)	LOT			
17	Imported Ceiling Pendants	SET			
18	Surgical Pendant	SET			
19	Anesthesia pendant	SET			
20	SPECIFICATIONS FOR ELECTRO HYDRAULIC TABLE	NOS.			
21	Specifications of Ceiling mounted Dual dome LED OT Lights:	NOS.			
22	Specifications of Ceiling mounted Single dome LED OT Lights:	NOS			
	MEDICAL GAS PIPELINE				
23	OXYGEN MANIFOLD SYSTEM				
9.4	4 x4 gas manifold				
24	OXYGEN MANIFOLD SYSTEM				
	2 x2 cylinder emergency manifold	CLEAR			
25	Automatic oxygen control panel (aluminum body)	SET			

2 x 2 size manifold N20 complete with 4 pe tail pipes 27 N20 MANIFOLD SYSTEM 2 eylinder emergency point with pressure reducing systems Each 28 Automatic n20 control panel (aluminum body SET 29 COMPRESSED AIR SYSTEM Each 30 Medical air drvers with Absorber Date. Process Data, Filer Date, Electrical Date. Specification as under Each 30.A Purge saving control (optional) Each Each 30.B Co & dewpoint monitor (optional) Each Each 31 VACUUM PUMP SYSTEM SET Each 31 VACUUM PUMP SYSTEM SET Each 32 COPPER PIPING WITH REQUIRED R Each 33 To atouter dia 0.9mm thick. R Meter III 22mm outer dia 0.9mm thick. R Meter IV 15mm outer dia 0.7mm thick. R Meter III 2 services Each Each III 2 services Each Each III 3 services Each Each III 2 services Each Each <	26	N2O MANIFOLD SYSTEM			
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39 High Pressure Tubing – 6mm I.D. Per Mtr. 40 Low Pressure Tubing – 6mm I.D. Per Mtr.					
40 Low Pressure Tubing – 6mm I.D. Per Mtr.	38				
	39				
41 ELECTRICAL CONTROL PANEL AIR Each	40	8	Per Mtr.		
	41	ELECTRICAL CONTROL PANEL AIR	Each		

42	ELECTRICAL CONTROL PANEL	Each		
	VACCUM			
43	Master Alarm for Plant	Each		
44	ICU BED HEAD PANEL-5FEET	SET		
44 A	Optional Equipments At Extra Cost			
Ι	I.V. Hook	Each		
II	Syringe Pump Pole	Each		
III	Utility Basket	Each		
IV	Monitor Tray	Each		
V	Aluminum Channel (Railing)	Each		
VI	Ward Vacuum Stand	Each		
VII	Infusion Pump Stand	Each		

	The annual maintenance Contract (AMC) of for the period of three years from the expiry of Guarantee /Warranty period of one year			
1	O.T. No. D	First year		
		Second Year		
		Third Year		
		Total		