45. <u>Big Trolley</u>

45.1. SS Trolley for Consumables
45.2. 2-3 Cabinets under the table top, plus one heating drawer for warming infusion
fluids at the bottom of the trolley
45.3. bottom of the heating drawer perforated to facilitate heat distribution
45.4. thermoregulation placed above the heating drawer front, allowing temperature adjusting within the range from +35°C to +45°C
45.5. 5. the drawers on ball bearing slides, full-extension, self-closing
45.6. manoeuvring handle situated at front side of the trolley
45.7. table top with upraised back and sides edges
45.8. all edges rounded and safe
45.9. base on four castors with diameter 100 mm, two of them with brakes
45.10. table top dimensions 650x600 mm
45.11. Measurements: 690 x 700 x 985 mm
45.12. Godrej/Feather lite/ Herman Miller makes

46. <u>Wall Storage cabinets</u>

46.1. Wall mounted wooden cabinets with individual lockable doors (Godrej Store up or equivalent), sturdy, aesthetically appealing color and finish, ergonomic design
46.2. To be provided in reception, USG room, semen production room and andrology lab
46.3. Size: depth approximately-310 mm, height-750-800 mm, length according to room specification to cover one entire wall
46.4. Procurement, installation and work needed for fitting and installation included in the scope of turnkey
46.5. Godrej/Feather lite/ Herman Miller makes

47. <u>Office Table</u>

47.1. The office table should be made up of steel.
47.2. Should be of high quality, aesthetic and ergonomic design
47.3. Top made up pre laminated, beige or pine coloured material of high density
47.4. Pressed wood, properly treated. Flame and water retardant.
47.5. Should be with one drawer and one shelf on right hand side
47.6. Size (approx) Height -750 mm Width – 800 mm Length – 1200 mm
47.7. Pre-acceptance demonstration of the furniture is must.
47.8. Godrej/Feather lite/ Herman Miller makes

48. MEDICAL OXYGEN SYSTEM

A	**Oxygen System**
1.0	**Oxygen Manifold as per NFPA -99 Std / HTM -2022/02-01 of UK**
	The oxygen cylinder manifold should comprise of two cylinder Banks which can accommodate 2 cylinders in each Bank (means 1+1) complete with copper tail

	pipes with bull nose fittings of RH External threading suitable for cylinder valves conforming to IS 3234 (Oxygen service) and Cylinder support system.
	Manifold should be suitable to withstand a pressure of 140 Kg*f*cm2, along with high pressure copper annealed tail pipes with Brass adapter suitable for Oxygen Cylinder sand manifold.
	Top frame comprising of high pressure copper pipes of size 1*f*2" I.D. x 15swg with high pressure brass fittings made of high tensile brass and connections through non−return valves.
	High pressure copper tail pipes, made of high pressure copper pipe of size 1*f*4" I.D. x 15 swg.
	The middle and bottom frame to be provided to fit both round and flat bottom cylinders safely. The manifold should be tested (hydraulically) at 250kg *f* cm sq.
	The copper tail pipes are fitted to the individual non return valves of the cylinder manifold for easy removal of cylinders without disturbance to system operation.
	Each manifold should be provided with one terminal header and a NPT connection for the Automatic control panel.
2.0	**Terminal / Gas Outlet with probes– as per NFPA-99 std / HTM -2022/02-01 of UK (European CE / UL Listed)**
	Oxygen
	N2O
	CO2
	Surface mount, non-interchangeable, self-sealing outlets, outlets should consist of a roughing in assembly and a finishing assembly. A non-removable positive− pin keying arrangement for each specific gas service. Installed in the mounting box a fully assembled brass secondary check valve.
	Design of outlet should be such that it should have the feature to accept two types of probes & push button mechanism for quick release of adaptor. The secondary check valve automatically should from a positive seal to prevent a gas flow when the finishing assembly is removed. The secondary check valve to include 7'' (17.78cm) of 1/2'' Type K copper tubing with a label affixed which identifies the specific gas by name and colour
	A plastic cap inserted at the end of the inlet tube. Rotation of the inlet tube should allow gas connection from the top or bottom. the finishing assembly should consists of a die cast chrome plated cover plate , a machined brass housing for the primary check valve, and a positive −pin keying device to prevent accidental installation into a roughing in assembly of a dismal gas. The finishing assembly should incorporate a double seal arrangement which automatically engages when a hose adapter or patient treatment device is removed from the outlet. The design of the outlet should be such that if can be easily repaired without disassembly of the outlet.
	The finishing assembly should have a colour coded (specific gas) keying disc to prevent connection of hose adapters or patient treatment device to the wrong gas service. The primary check allows absolutely no gas flow to take place until the keying devices are engaged. It should be manufactured in accordance with all applicable NFPA and CGA standards. The locking device should be in the probe instead of gas outlet.
	Matching probe for outlets − Imported as per NFPA −99 *f* HTM 02−01 UL Listed *f* CE Marked Matching probes to the gas outlet mentioned above. That is adapter for Oxygen & vacuum. Each adapter should have suitable barb or threads so that it can

	be connected to tube or flow meter regulator. Adapter should have clear gas service embossed on it.
3.0	**Oxygen Flow meter & Humidifier Bottle –for critical area**
	The graduated scale should have an oval shape which allows a "lens effect" get the scale values easy-reading in any condition of use.On/OFF switch button of green and red color which allows the operator to quickly identify lock and reactivate the flowmeter gas supply and also keepsn the previous flow preset value unchanged.It should have ADJUSTING KNOB WITH PUSH&LOCK SYSTEM: it keep locked the pre-set flow value. To adjust the flow pull the knob, set the flow value you need to deliver to the patient and push the knob to lock the selected value.The flowmeter should have an integrated pressure reducer for the stabilization of supplied pressure at 2.8bar, to guarantee the flow accuracy of the device. The flowmeter should be useable in any area of hospital with different pressure from the plants and it is not necessary to calibrate it.
	The outlet nipple should have a double thread interchangeable through slide and at one time one thread is visible and second thread should be stored in flowmeter body .The flowmeter should not have less then 50 mm adjusting knob with soft grip inserts for easy handling. The humidifier should be completely made of polycarbonate / polypropylene and should be autoclavable at 121 °C for 15 min. For the inlet connection it should have some snap inserts, identified with color-code, with different threads to be chosen by the end user. An ergonomic and big size rotating nut which allows easy connecting and disconnecting the humidifier to the oxygen supply device. The 360° rolling positioning hose connector ø 6÷9 mm allowing an easy use of the humidifier.The bottle should have hollow shape, besides being a design unique element, offers the operator an easy and safe handling.The humidifier should have an integrated relief valve
B	**MEDICAL NITROUS OXIDE SYSTEM**
1.0	**Nitrous Oxide Manifold as per NFPA -99 Std / HTM -2022/02-01 of UK**
	The N2O cylinder manifold should comprise of two cylinder Banks which can accommodate 1 cylinders for cylinder valves conforming to IS 3234 (N2O service) complete with copper tail pipes with fittings.
	Manifold should be suitable to withstand a pressure of 140 Kg*f*cm2, along with high pressure copper annealed tail pipes with Brass adapter suitable for Nitrous Cylindersand manifold.
	Top frame comprising of high pressure copper pipes of size 1*f*2" I.D. x 15swg with high pressure brass fittings made of high tensile brass and connections through non− return valves.
	High pressure copper tail pipes, made of high pressure copper pipe of size 1*f*4" I.D. x 15 swg.
	The middle and bottom frame to be provided to fit both round and flat bottom cylinders safely. The manifold should be tested (hydraulically) at 250kg *f* cm sq.
	The copper tail pipes are fitted to the individual non return valves of the cylinder manifold for easy removal of cylinders without disturbance to system operation.
	Each manifold should be provided with one terminal header and a NPT connection for the Automatic control panel.
C	**Carbon Dioxide System**
1.0	**CO2 Manifold as per NFPA -99 Std / HTM -2022/02-01 of UK**

	The CO2 cylinder manifold should comprise of two cylinder Banks which can accommodate 1 cylinders in each Bank (means 1+1) for cylinder valves conforming to IS 3234 (CO2@ service) complete with copper tail pipes with fittings. Manifold should be suitable to withstand a pressure of 140 Kg*f*cm2, along with high pressure copper annealed tail pipes with Brass adapter suitable for Nitrous Cylinders and manifold.
	Top frame comprising of high pressure copper pipes of size 1*f*2" I.D. x 15swg with high pressure brass fittings made of high tensile brass and connections through non−return valves.
	High pressure copper tail pipes, made of high pressure copper pipe of size 1*f*4" I.D. x 15 swg.
	The middle and bottom frame to be provided to fit both round and flat bottom cylinders safely. The manifold should be tested (hydraulically) at 250kg *f* cm sq.
	The copper tail pipes are fitted to the individual non return valves of the cylinder manifold for easy removal of cylinders without disturbance to system operation.
	Each manifold should be provided with one terminal header and a NPT connection for the Automatic control panel.
D	**MEDICAL COPPER PIPE**
	Copper Piping :
	<u>Installation:</u>
	Installation of piping should be carried out as per international standards with utmost cleanliness. Only pipes, fittings and valves which have been degreased as per International standards should be used . Pipe fixing clamps for upto 28mm diameter. Pipes should be non ferroussuitableforthediameterofthepipe.Forthepipesofthesizedabove28mmrigid metallic hanging or cemented supports to be used.
	The main lines to the building to be taken overhead through metallic poles or through underground ducts with inspection removable slabs, All pipe joints should be made using inert gas fluxless brazing method. All joints should be of copper to copper and should be brazed by silver brazing filler material without flux while being brazed joints shall be continuously purged with oil free dry nitrogen to prevent the formation of copper oxide on the inside surface of the joint. All pipes should be installed without springing or forcing. All pipes should be protected against mechanical injury in a manner satisfactory to authorities having jurisdiction.
	Test: After erection, all the new pipes cleaned or purged with the help of dry nitrogen gas. Complete system should be tested with dry nitrogen at 2 times of working pressure for 24 hours.
	Painting: All existing and proposed exposed pipes should be painted with two coats of Synthetic enamel paint & color codification as per international standards. All concealed pipes to have gas identification bands labels at appropriate distance. Similarly all pipes which need embedding in the wall should be tested*f*painted*f*labeled and properlyinsulated.
	Certification: To be certified that pipes are suitable for the particular service and complete cross connection (anti−confusion) test will be carried out.
	<u>Distribution piping system:</u>
	<u>MATERIAL (PIPE):</u>

	Solid drawn, seamless, deoxidized, non arsenical, half hard, tempered and degreased materials conforming to BS: EN 13348 Medical Grade Kite Marked Pipe with CE certification	
	All copper pipes will be KITE MARKED for medical use before dispatch and the pipe will be delivered plugged or capped at both ends.	
	Pipe sizes to be used as under:	
	28mmOD X 1.00mm thk	
	22mmOD X 1.00mm thk	
	15mmOD X 1.00mm thk	
	12mmOD X 1.00mm thk	
	Fittings will be made of copper conforming to BS 864 and suitable for a steam of working pressure of 35 bar and especially made for brazed socket type connections.	
E	**MEDICAL AREA LINE PRESSURE ALARM: LCD Touch type**	
	Medical Gas Alarm –As per NFPA -99 std/HTM -2022/02-01 of UK (European CE / ULListed)	
	3 services	
	The Area Alarm should be LCD touch type. The panel should be microprocessor controlled and designed to comply with NFPA 99. The panel should be incorporate an individual minimum 2.50" LCD touch screen display for each gas service, which should allow all alarm programming and set up to be done without the use of tools. The panel should be 100% digital and should not require re-calibration. The unit should be enclosed in a steel box and should be designed to accept an electrical input range of 120-240 volts AC – 50-60 hertz. The source voltage should be stepped down with a self-contained transformer. The panel should contain audible and visual alarm indicators. The audible alarm should be silenced by pressing the alarm silence button, but the visual alarm indicator should only be cancelled by fault correction. The alarm should detect and filter out transient (less than 0.6 seconds) . The alarm should be capable of displaying alarm history for all possible alarm conditions. The alarm should be capable of monitoring and displaying up to 10 gases per alarm panel. Gas modules should be arranged in accordance with the customer's requirements. A security pin code should be required and must be entered in order to access the programming software	
	The Area Alarm Panel should digitally displays gas pressure (1 psi increments) and provide alarm conditions as required by the latest edition of NFPA 99 for up to 10 medical gases. The alarm should be ETL listed to UL 1069 and CSA C22.2 # 205 Signal equipment. Transducers should be included. DISS risers are included – transducers should be installed as per requirement.	
	A green normal or red alarm condition for each gas service should confirm the condition for each individual gas service which should be easily readable from at least 10 feet. Emergency preparedness instructions - Alarm Panels should allow users to set up customized instructions for each alarm signal which appear when the signal is in alarm. Up to 4 area/gas boards in a two slot box, 8 in a three slot and 16 in a five slot panel.	

	Wireless (minimal low voltage wiring) models available · Last event history (per gas board /signal point) · NFPA and ISO pre-loaded gas 'labels' · English, and English/French pre-loaded languages · Editable text and alarm 'labels' · Self-contained unit - Designed for ease of installation and Service · Self-diagnostic error message display for ease of maintenance · Audio and visual alarm indicators · Bright easy to read LCD displays – clearly visible in both day and night lighting conditions · Constant display and monitoring of each sensor input · User programmable high/low set points on transducer and 4 – 20 mA sensor input boards · Dry contacts provided on the CPU module for general fault condition covering entire panel · Hinged frame for easy accessibility · Color coded displays. Should be made in the U.S.A. In addition, each Area Alarm Module should incorporate the following features:
	In addition, each Area Alarm Module should incorporate the following features:
	Does not require re-calibration. Gas specific sensor with DISS nut & nipple. An error message will be displayed if incorrect sensor or no sensor is attached. Should be capable of displaying gas readouts in PSI, kPa, BAR, inHg, or mmHg . Gas alarm repeat feature is factory set at 10 minutes, and is adjustable or may be turned off.
	The alarm should be capable to be connected with the HIS system.
	Line pressure Alarm panel for Medical Gas Piping System should monitor the following indication:−
	3 gas service
	Oxygen Normal *f* High *f* Low
	N2O Normal *f* High *f* Low
	CO2 Normal *f* High *f* Low
F	**MEDICAL AREA VALVE SERVICE UNIT (VALVE BOX WITH ISOLATION VALVE) AS PER BSEN 1057 STANDARDS AS PER ENCLOSED TECHNICAL SPECIFICATIONS As per NFPA-99 std / HTM - 2022/02-01 of UK**

	ZONE VALVE BOX As per NFPA -99 std / HTM -2022/02-01 of UK
	Bidder must submitted third party CE certification *f* UL listed along with tender documents. Self-attested certificate not valid.
	(3 Gas)
	Adopter having opening by quarter turn of handle. The valve should be pneumatically tested as per BSEN 1057 for twice the working pressure and degreased for medical gas service before supply. Valve boxes should be equipped with components for shutting off and supervising individual *f*parts of central systems in hospital, laboratories and the like. They should be allowed the ward staff to allow isolating of the areas for maintenance and repair work. The pressure monitoring of the distribution system is done by pressure gauges. In case of emergency the door can be glass break opened or by un−locking using the key.
G	**MEDICAL LINE VALVE, AS PER BS EN 1057 STANDRADS AS PER TECHNICAL SPECIFICATIONS As per NFPA -99 std / HTM -2022/02-01 of UK**
	ISOLATING VALVE
	15mm OD
	22mm OD
	28mm OD
	All ball valves as per BS 1057 are rated at 400 psig, as well as full vacuum (29.9" Hg). Valves go from full ON to full OFF by turning the vinyl−gripped valve handle 90 0 Locking−type handles may be ordered separately when required. Copper tubing is factory installed to help prevent valve seat damage during soldering. Main and riser valves are not required to be installed in a box unless specially noted or required.
H	**Bedhead panel for Low Equity Ward Areas, 1500mm length, with provision of Gas outlets & provided with electrical sockets & accessories complete as per enclosed tender technical specifications As per NFPA-99 std / HTM -2022/02-01 of UK.**
	The system should provide a safe, efficient means of delivering services to patients staff in general ward application.
	The Bed Head Panel should meet the following criteria.
	Robust design in extruded aluminum sections
	Ability to house medical gas terminal units and Electrical Sockets.
	Ease of installation via separate wall mounting plates.
	The system should consist of a number of aluminum extrusions joined together to form a carcass to suit the particular application.
	Each Bed Head Panels will have three extruded section compartments
	. One for MGPS outlets with copper pipe
	. One for electrical receptacles 6, 6*f*16 Amps receptacles
	. One for low voltage like nurse call, data points & voice points
	Each Bed unit should have
	· Length of panel should be 1500mm.
	· 1 Nurse Call Button – Provision only

	· Gas Outlets as per list attached O2, Air−4 ,Vac (Provision only − Gas outlets calculated separately)
	. Provision for Electricals − 10 nos. (5*f*15 Amps switched socket)
	· Provision for Electricals − 10 nos. (5*f*15 Amps switched socket)
I	**ICU - Rigid Pendant complete As per NFPA-99 std / HTM -2022/02-01 of UK**
	1. Critical Areas:
	Standards: The Products will be UL Listed
	The Weight bearing capacity will be minimum 50 Kg.
	Scope of Medical Supply Unit Equipment
	The supply unit will meet the high standards for a safe and reliable operation in the ICU.
	The supply unit will have upgrading capability of new functions for adaptation to future requirements.
	All surfaces will be resistant against corrosion and disinfectants.
	Colour of painted surfaces: RAL 9002
	The functional units of the supply unit will be completely assembled and tested by the manufacturer.
	Ergonomic, optimized supply unit consisting of the following functional units:
	Ceiling fixture set for installation to concrete ceiling structure.
	Ceiling interface for connection of supply unit with electrics and gases delivered from site.
	Media columns of **800 mm with Provision for terminal units for medical gas supply/gas evacuation,(5nos), high- and low voltage power supply (10Nos)**
	Workstation components such as shelves 2 nos (min), drawers (1 No), & one IV rod of 800mm for mounting Syringe pumps
	The above shelf could be adequate enough to mount 15" screen Multiport monitor of 15 Kg
	The below shelf could be adequate enough to mount ventilator
	The drawer will be equivalent to shelf size.
	Will have central rotation facility (Swivel range) at least 3300
	Complete unit including intermediate ceiling construction and installation.