

REQUEST FOR BUGETARY ESTIMATE

Ref.: HSCC/SES/GOA/2023 Date: 07.08.2023

HSCC (India) Ltd. intends to invite on-line bids from eligible bidders, in two stage bid system for Execution including Supply, Installation, Testing, Commissioning of following Special Services including Turnkey Works for upcoming Hospital in Goa;

1. Medical Gas Manifold System (MGMS),
2. Modular Operation Theatres (MOT),
3. Minor Operation Theatre (Minor OT),
4. CSSD,
5. Laundry and
6. Kitchen

The Technical Specifications and BOQ of above proposed Special Services works are Annexed at Annexure-I (MGMS), Annexure-II (MOT), Annexure-III (Minor OT), Annexure-IV (CSSD), Annexure-V (Laundry) and Annexure-VI (Kitchen) respectively.

It is requested to submit the Budgetary Quotation of above mentioned Special Services works in Company Letter Head, as per the BOQ format, in both Hard & Soft Copy within 10 days of issue of this Notice at following address:

The envelope to be super-scribed “Name of Special Services _____ Ref: No. HSCC/SES/GOA/2023”.

General Manager (Procurement)
Special Engineering Services Department
HSCC (India) Ltd.,
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Soft copy may please be sent to: ses@hsccltd.co.in

General Manager (Proc),
HSCC (India) Ltd.

TECHNICAL SPECIFICATIONS OF MEDICAL GAS MANIFOLD SYSTEM (MGMS)

Scope of Work: Execution including Supply, Installation, Testing, Commissioning of Medical Gas Manifold System on turnkey basis including services of Defect liability period as per contract.

1.0 OXYGEN SYSTEM

1.1 Oxygen Manifold: Main with Middle Frames

Oxygen Manifold: Emergency with Middle Frames

The Manifold has been configured for 2 x 20 nos. of Oxygen Cylinders and is suitable to withstand a pressure of 145 Kg/cm², along with high-pressure copper annealed tail pipes with end Brass adapter suitable for Oxygen Cylinders and manifold.

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

1.2 Automatic Oxygen Control Panel with changeover Alarm

- a) The Oxygen Control Panel shall be of microprocessor based and preferably Digital Display Type. Pressure reduction shall be in two stages. Panel shall be integrated with pressure gauges inside panel on downstream of pressure regulator. Panel shall be fitted with standby line regulator. Line regulators shall have pressure relief mechanism for testing and servicing purpose.
- b) Panel shall be Fully Automatic and shall switch over from "Bank in Use" to 'Reserve Bank' without fluctuation in delivery line pressure and without the need of external electrical power. After the switch-over, the "Reserve Bank" shall become the "Bank in Use" and the "Bank in Use" shall become the "Reserve Bank". The Control Panel will be powered by a microprocessor.
- c) A Microprocessor circuit board assembly shall provide a relay output to give indication when or just before the manifold switches from one bank of cylinders to another. The switch over shall be mechanically controlled, not electrically.
- d) To avoid excess pressure being supplied to the distribution system, a pneumatically relief valve for the line regulator shall be incorporated. An intermediate pressure relief valve shall be installed between the high-pressure regulators and the line delivery regulators.
- e) The control panel incorporates six coloured LED's, three for the Left Bank and three for the Right Bank: Green for Bank in use, Amber for Bank ready and Red for Bank

empty. Both the Left and Right bank pressures and the main line pressure should be displayed on the front door of the cabinet by means of LED's. All pressure transducers, micro switches, and display LED's shall be pre-wired to an internal microprocessor circuit board.

- f) All components inside the Control Panel like Pressure Regulators, piping and control switching equipment shall be cleaned for Oxygen Service and installed inside the cabinet to minimize tampering with the regulators or switch settings.
- g) The Control Panel should be made to provide Heavy Duty with a Delivery Flow Capacity of over 1500 lpm at 55-60 psig.

1.3 Emergency Oxygen system has been configured with 6-cylinder oxygen manifold along with a High Pressure Regulator which will be mounted on the Emergency Manifold System for reducing the cylinder pressure suitable to the line pressure.

Note- To reduce the risk of medical oxygen system from contamination due to ignition of fluorinated polymer materials, only Non Halogenated Polymer materials should be used in the Non Return Valves and high pressure side of the pressure regulator of the manifold system.

2.0 NITROUS OXIDE SYSTEM

2.1 Nitrous Oxide Manifold: Main with Middle Frames
Nitrous Manifold: Emergency with Middle Frames

Nitrous Oxide Manifold for 4 + 4 nos. of cylinders is suitable to withstand a pressure of 145 Kg/cm², along with high-pressure copper annealed tail pipes with end Brass adapter suitable for N₂O Cylinders and manifold.

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

2.2 Automatic Nitrous Oxide Control Panel with changeover Alarm

- The Nitrous Oxide Control Panel shall be of microprocessor based and preferably Digital/Analogue Display type. Pressure reduction shall be in two stages. Panel shall be integrated with pressure gauges inside panel on downstream of pressure regulator. Panel shall be fitted with standby line regulator. Line regulators shall have pressure relief mechanism for testing and servicing purpose.

- Panel shall be Fully Automatic and shall switch over from “Bank in Use” to ‘Reserve Bank’ without fluctuation in delivery line pressure and without the need of external electrical power. After the switch-over, the “Reserve Bank” shall become the “Bank in Use” and the “Bank in Use” shall become the “Reserve Bank”. The Control Panel will be powered by a microprocessor.
 - A Microprocessor circuit board assembly shall provide a relay output to give indication when or just before the manifold switches from one bank of cylinders to another. The switch over shall be mechanically controlled, not electrically.
 - To avoid excess pressure being supplied to the distribution system, a pneumatically relief valve for the line regulator shall be incorporated. An intermediate pressure relief valve shall be installed between the high-pressure regulators and the line delivery regulators.
 - The control panel incorporates six coloured LED’s, three for the Left Bank and three for the Right Bank: Green for Bank in use, Amber for Bank ready and Red for Bank empty. Both the Left and Right bank pressures and the main line pressure should be displayed on the front door of the cabinet by means of LED's. All pressure transducers, micro switches, and display LED’s shall be pre-wired to an internal microprocessor circuit board.
 - All components inside the Control Panel like Pressure Regulators, piping and control switching equipment shall be cleaned for Oxygen Service and installed inside the cabinet to minimize tampering with the regulators or switch settings.
 - The Control Panel will have heaters to prevent ice formation on the regulators at high flow rates.
 - The Control Panel should be made to provide Heavy Duty with a Flow Capacity of over 500 lpm at 55-60 psig.
- 2.3 A High Pressure Regulator will be mounted on the single cylinder Emergency Manifold System for reducing the cylinder pressure suitable to the line pressure.

3.0 COMPRESSED AIR SYSTEM

3.1 Compressed Air System

Medical compressed air system comprising of Compressors 150 CFM capacity at 8.5-10 Kg/sq.cm mounted with 3000 litres Receiver Tank and Filter, Non-Return Valve, Isolation Valves, Air Dryer and Pressure Reducing Station along with interconnecting piping to take care of the requirement of desired no. of air outlets.

Type of Compressor :

Compressed air system with appropriate standby arrangement).

Air Dryer Type :

Heatless Desiccant Type – 1 no. (Having capacity to take care of the hospital demand) suitable for above compressors.

Pressure Reducing System :

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

3.2 Auto Drain for Air Receiver should be provided.

3.3 3-Stage Breathing Air Filters :

The breathing air filters has maximum contaminant removal efficiency with minimum pressure drop. The filtration system conform to breathing air filtration as per ISO 8573 Ch – I Standard.

4.0 **VACUUM SYSTEM**

4.1 Vacuum System

Vacuum Pumps of 220 CFM capacity with 3000 litres Receiver Tank, Filter, Non-Return Valve, Isolation Valves, Auto Switch Gear to set minimum & maximum operating vacuum and interconnecting piping to take care of the requirements of desired no. of vacuum outlets. (Make- Ingersol Rand/ Anest Iwata/Hitachi)

4.2 Type of Vacuum Pumps :

Lubricated, Air-cooled, Vacuum Pumps with appropriate standby arrangement).

Each Vacuum Pump are complete with Base Plate, Belt Guard, V-Belts, Motor and Starter. The system is of Automatic Start and Stop Type. The Pumps are connected to a common vertical receiver of 3000 Ltrs capacity. The receiver has a drain valve at the bottom.

Vacuum Bacterial filtration:

Medical Vacuum filters are used for removal of bacteria & other contamination from the suction side of vacuum pumps, preventing infection of pump and the atmosphere.

These elements are pleated construction giving a high surface area and long operational life. The efficiency exceeds the 0.005% penetration specified in HTM2022 for infectious disease unit.- i.e. complete bacterial removal.

Element is fitted in an aluminum housing suitable for various capacities. These are internally protected against corrosion by an alocrom treatment. The inner & outer

surfaces of the housing are epoxy coated. Complete assembly is fitted with a sterilisable drain flask with isolation valve for removal of liquid if any. Differential pressure indicators are provided to monitor the status of element.

5.0 GAS OUTLET POINTS

Double Lock Outlet

Outlets have been manufactured with a 165 mm length, Copper inlet pipe stub which is silver brazed to the outlet body. Body has been of one piece brass construction. For positive pressure gas services, the outlet has been equipped with a primary and secondary check valve and the secondary check valve has been rated at minimum 200 psi in the event the primary check valve is removed for maintenance.

The outlet assembly has separate colour coding for each service and accepts only corresponding gas specific adapters.

All outlets has been cleaned and de-greased for medical gas service, factory assembled and tested.

The medical gas outlets have been of quick connecting and wall mounted modular type.

6.0 COPPER PIPE

Solid drawn, seamless, de-oxidized, non-arsenical, half-hard, tempered and de-greased copper pipe conforming to BS : 6017, 1981, Table 2 (Cu - DHP) and manufactured as per BSEN: 13348:2008. Table X (or as per BSEN 1057). All medical graded copper pipes are de-greased & delivered capped at both ends. The pipes are accompanied with manufacturers test certificate for the physical properties & chemical composition. Copper pipe also has third party inspection certificate from Bureau Veritas/SGS/Lloyds Register Services.

Copper to Copper joints shall be made on site using silver-copper-phosphorous brazing alloy to BS-1845. Copper to brass or gunmetal joints shall not be made on site. Except for mechanical joints used for components, all metallic pipeline joints shall be brazed or welded. All pipelines shall be routed in such a way that their not exposed to a temperature less than 5 deg Celsius above the dew point of the gas distribution pressure. Pipeline shall be supported at interval to prevent sagging.

INSTALLATION & TESTING

Installation of piping is carried out with utmost cleanliness. Only pipes, fittings and valves which has been degreased and brought in polythene sealed bags has been used

at site. Pipe fixing clamps has been of non ferrous or non-deteriorating plastic suitable for the diameter of the pipe.

All pipe joints have been made using fluxless brazing method. All joints of copper to copper and are brazed by silver brazing filler material without flux.

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

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

All the piping system has been tested in the presence of the engineer or his authorized representative.

PAINTING

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

7.0 ISOLATION VALVES

The isolation valves are Non Lubricated Ball type, suitable for oxygen service. All valves has been pneumatically tested for twice the working pressure and factory de-greased for medical gas service before supply.

8.0 Valve Box Assembly :

Valve Box are made of Powder Coated M.S. Material.

Valve Box Assembly consist of the following :

- Lever operated quarter turn valve (i.e. 90 degree shut-off ball valve- has been manufactured by ISO 9001 company and factory degreased) with brass body and chrome plated brass ball.
- Brass fittings (Nut, Nipples and extruded brass Adapter) Seat Brass Block for pressure gauge
- 2" Dial gauges (0 - 10 kg/cm², 0 - 760mm Hg)
- Nylon Bush for copper pipes holding with the valve box
- Beading for box lead

- Lockable cover with breakable glass so that during normal operation access has been by key. But during emergency operation, access by breaking the glass panel.

9.0 ALARM SYSTEM

9.1 The Master Alarm

9.2 Area line pressure alarms

should be as per required locations.

The main alarm and area line pressure alarm (Digital) are micro-processor based which monitor the pressures of medical gases like oxygen, nitrous oxide, compressed air and vacuum levels at a specific area of piped gas system in any hospital. The electronic circuitry has been such that if the pressure / vacuum in the gas pipeline drops below the present limit, the equipment is give an audio-visual alarm. Visual alarm remains active even after pressing of “Mute” button. But it comes to normal condition when gas pressure / vacuum return to normal level.

The equipment has following features:

- Four Channel Microprocessor Controlled Alarm for Pneumatic & Vacuum Services has the following features:
- Digital Display of Line Pressure for all the services with factory calibrated pressure sensors.
- Color coded LED Display of Line pressure status (High – Caution – Normal – Caution– Low)
- Audible Alarm for High & Low pressure condition.
- Test and Alarm Acknowledge (Mute) facility. (Alarm acknowledge(Mute) time span is programmable from 1 to 60 min).
- Programming facility of alarm limits from front panel (Password protected, preferably to has been done through supplier’s engineer).
- Facility to connect to remote alarm box by potential free contacts provided in the alarm box.
- Small and compact design. Light Weight (3 kg)
- Highly sensitive gas pressure sensors & BIS/CE marked power supply.
- Mounted on a powder coated MS box.
- Nut & Nipples are provided for connection with Pneumatic supply line.
- Low voltage internal operation with input power supply of 220V AC.
- Wall mounting facility.
- Low voltage operation for safety
- High / Low indication
- Test facility
- Mute / silence facility

11.0 AGSS (Anesthesia Gas Scavenging System)

VACUUM SYSTEM

The Simplex tank mount design medical vacuum system must include Rotary Vane Dry vacuum pump of suitable capacity and associated equipment, one ASME air receiver and one control panel. The only field connections required are system intake, exhaust and power connection at the control panel. All components has been completely pre-piped and pre-wired to a single point service connection.

CONTROL PANEL

The system include a control panel in a NEMA 12 enclosure with externally operable circuit breaker with door interlock, control circuit transformer with fused primary and secondary circuits, H-O-A switch, magnetic starter with 3 leg overload protection, hour meter, motor running light and minimum run timer to prevent short cycle operation.

VACUUM PUMP

The medical vacuum pump operate completely dry with air cooled design, and has been equipped with self-lubricating carbon/graphite vanes with no water requirements. Bearings has been permanently lubricated and sealed.

VACUUM PUMP DRIVE

The Vacuum pump has been direct driven. Torque is transmitted from the motor to the pump through a shaft coupling.

12.0 TUBING

LP Tubing

13.0 HORIZONTAL BED HEAD PANELS

13.1 Bed Head Panel (1500 mm long)

- Has been made of High Strength Anodised Aluminium Extrusions with inbuilt single railing.
 - The chamber of Medical Gas Outlets has been made of anodized aluminium
 - Has been powder coated as per the customer's choice.
 - The panel has been designed to has provision to accommodate the following:
 - a). Gas Outlets,
 - b) Electrical Sockets / Switches
 - c). Audio Unit
 - d). Room Lighting
 - The railing has been designed to have the following accessories:
 - a). I V Pole
- HSCC/SES/MGMS

- b). Infusion pump / Syringe pump stand
- c). I V Bottle holder
- d). Medicine / disposable tray
- e). Examination lamp
- f). Reading lamp

14.0 ACCESSORIES:

14.1 BPC Flow meter with Humidifier :

Back Pressure Compensated flow meter is of accurate gas flow measurement with following features:

- Control within a range of 0 – 15 lpm.
- It meets strict precision and durability standard.
- The flow meter body is made of brass chrome plated materials.
- The flow tube and shroud components are made of clear, impact resistant polycarbonate.
- Flow Tube has large and expanded 0 – 5 lpm range for improved readability at low flows.
- Inlet filter of stainless steel wire mesh to prevent entry of foreign particles.
- The humidifier bottle is made of unbreakable polycarbonate/Polysulphone material and autoclavable at 121 degree Centigrade temperature.

14.2 Ward Vacuum Units :

Ward Vacuum Unit has been of light weight and compact. The unit consists of-

- A regulator,
- A 1000-2000 ml. reusable collection jar, made of unbreakable poly carbonate/Polysulphone material and fully autoclavable at 121 degree centigrade
- A wall bracket for mounting the jar assembly on the wall.

The vacuum regulator with instant ON / OFF switch has been infinitely adjustable and has vacuum gauge which indicates suction supplied by the regulator. Safety trap has been provided inside the jar to safeguard the regulator from overflowing.

14.3 Theater Vacuum Units :

The unit has been consisting of two reusable 1500 ml or more shatter resistant bottle, each made up of poly carbonate/Polysulphone material and fully autoclavable at 121 degree centigrade.

The vacuum regulator with instant ON / OFF switch has been infinitely adjustable and has vacuum gauge which indicates suction supplied by the regulator. Safety trap has been provided inside the jar to safeguard the regulator from overflowing.

There are a three way selector switch with an option to operate either

- Left, Right or Both.

All the above items has been mounted on a Metallic Trolley having free moving castor wheels.

15. **Electrical Distribution Panel :-**

Panel shall be wall mounted and fabricated from 16/14 SWG CRCA Sheet duly powder coated. Panel shall incorporate isolators for the following equipments.

- I. Isolator for Medical Compressed air system.
- II. Isolator for Medical Vacuum System
- III. Isolator for AGSS System.

Panel shall have following instrumentations for easy monitoring purpose.:-

- a. Incoming power supply indications of each Phase
- b. Mains indication for mains supply on for each Phase.
- c. Mains shall have digital metering.
- d. Each circuit shall have digital meter.
- e. Mains and each circuit shall be with MCCB only.

16. **Supply of O2 Cylinders- Class D Type**

Should be as per BIS/IS/ASME Standard.

17. **Supply of N2O Cylinders- Class D Type**

Should be as per BIS/IS/ASME Standard

18. IN ADDITION TO THE ABOVE, FOLLOWING TURNKEY WORK FOR INSTALLATION AND COMMISSIONING OF MEDICAL GAS MANIFOLD SYSTEM IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR:

- Bidder must take into consideration in its bid, costs to be incurred for any additional work pertaining to Civil, Electrical, Mechanical and any other protections relevant as per State/Central Govt. regulation/local authority of Punjab, Furniture for Plant & Manifold Room, Servo stabilisers, U.P.S. etc. required for successful installation testing and commissioning of the system and the offered price should include all such costs, each equipment/system is to be considered a package in itself and contractor to execute the order package on a "turn key basis".

- Providing fixing of Electrical Gadgets like ELCB, MCB, Light Points, Power points, etc in the Medical Gas Manifold System.
- Installation of MCB, ACB, ELCB & OCB of Havell/Siemens/L&T/Schneider etc for Control Panel for Medical Gas Manifold System.
- Installation of all electrical cabling must be of IS: 1554 (As per latest amendment) standard and wiring as per IS: 732 standard and proper earthing of all Medical Gas Manifold System and other electrical instrument and accessories in the Medical Gas Pipeline System as per standard guidelines of BIS.
- Arrangement for requisite fire fighting for Manifold Room & Plant Room and its maintenance for the contract period

In addition to the above mentioned equipment/appliances, if the contractor thinks it necessary to include any other equipment/appliances, accessories etc. for the MGMS then that may be provided after approval from Engineer in-charge.

The sizes are approximate. Minor variations in sizes shall be acceptable subject to prior approval of the Engineer.

Note :

- The bidder should attach Technical Compliance item wise with respect to the above technical specifications and turnkey work along with Printed catalogues
- The contractor shall be responsible for the complete works including submission of working drawing and walk through view.
- The contractor should provide complete List of Commonly used Spares, Operation manual, Equipment manual, Service manual and manuals for all systems and subsystems.
- Final electrical and pressure and other safety test, system test and calibration should be done by authorized person with test instruments.
- The contractor should provide all electrical accessories like cable wire, electrical outlets, switches etc, and they should be fire proof of reputed make, certified for electrical safety.
- Wherever makes have not been specified for certain items, the contractor should provide the same as per BIS and as per approval of HSCC.
- Training of personnel of the Institute should be 30 days at least by the contractor.
- The contractor should prepare and submit layout plan for Steam Pipeline, Electrical Wiring, Electrical Distributional Panel, Plumbing, Fire Fighting System, Air Washing and Ventilation and Drain line to HSCC for approval before beginning of supply and installation and As built drawing after installation.
- The contractor should provide test certificate for all materials along with manufacturer's test certificate and equipment used for MGMS.
- Third party quality certification of the equipment from SGS/Lloyds/Bureau Veritas should be submitted by the contractor as "Certifies that the Medical Gas Manifold System (MGMS) items meet the technical specification and BOQ of the tender document vide contract No. (Mention Contract No.)."

BOQ**Package - Execution including Supply, Installation, Testing and Commissioning of Medical Gas Manifold System (MGMS) with 1 Year of Defect Liability Period****Rate shall be inclusive of all charges like Freight, Cess, Insurance, GST @18% etc.**

Item No.	Description of Items	Unit	Qty	Rate in Rs.	Amount in Rs.
1.0	Oxygen System :				
1.1	10+10 Bulk Cylinder Manifold for Oxygen complete with Middle Frame, NRV and Tail Pipes as required as per specifications	Set	1		-
1.2	Automatic Oxygen Control Panel with automatic switchover from one bank to other bank of cylinders complete as required with accessories as per specification	Nos	1		-
1.3	8 cylinder Emergency system for Oxygen complete as required with accessories as per specification	Set	1		-
					-
2.0	Nitrous Oxide System :				-
2.1	2+2 Bulk Cylinder Manifold for Nitrous Oxide complete with Middle Frame, NRV and Tail Pipes complete as required with accessories as per specification	Set	1		-
2.2	Automatic Nitrous Oxide Control Panel with automatic switchover from one bank to other bank of cylinders complete as required with accessories as per specification	Nos	1		-
2.3	2-cylinder Emergency system for Nitrous Oxide complete as required with accessories as per specification	Set	1		-
					-

Item No.	Description of Items	Unit	Qty	Rate in Rs.	Amount in Rs.
3	Compressed Air System :				-
	3.1 Compressed Air System of 100 scfm capacity with suitable standby and Receiver. Complete as required with accessories as per specification 3.2 Auto Drain System for Air receivers complete as required with accessories as per specification-2 Nos 3.3 3-Stage Breathing Air Filter as per ISO 8573-1 complete as required with accessories as per specification -2 Nos	Set	1		-
					-
4.0	Vacuum System :				-
	4.1 Vacuum pumps of 150 cfm with suitable standby and Receiver. Complete as required with accessories as per specification. 4.2 Bacterial Filter suitable for Vacuum Pump system complete as required with accessories as per specification	Set	1		-
					-
5.0	Gas Outlet complete as required with accessories as per specification				-
5.1	Oxygen	Nos	200		-
5.2	Nitrous Oxide	Nos	2		-
5.3	Medical Air 4 Bar	Nos	46		-
5.4	Surgical Air 7 Bar	Nos	12		-
5.5	Vacuum	Nos	200		-
5.6	AGSS Outlets	Nos	2		-
5.7	Carbon di oxide outlet	Nos	0		-

Item No.	Description of Items	Unit	Qty	Rate in Rs.	Amount in Rs.
6	Distribution Copper Piping having copper pipes as per BS EN 1057 standard with 3rd party inspection from Lloyds' complete as required with accessories as per specification				-
	Cu Pipe 76.1 mm Od x 1.5 mm thick	Mtr.	150		-
	Cu Pipe 54 mm Od x 1.2 mm thick	Mtr.	225		-
	Cu Pipe 42 mm Od x 1.2 mm thick	Mtr.	205		-
	Cu Pipe 35 mm Od x 1.2 mm thick	Mtr.	350		-
	Cu Pipe 28 mm Od x 1.0 mm thick	Mtr.	1100		-
	Cu Pipe 22 mm Od x 1.0 mm thick	Mtr.	2500		-
	Cu Pipe 15 mm Od x 1.0 mm thick	Mtr.	3000		-
	Cu Pipe 12 mm Od x 1.0 mm thick	Mtr.	1000		-
					-
7	Isolation Ball Valve (Factory-Degreased) with Brass Adaptor complete as required with accessories as per specification				-
7.1	76 MM.	Nos	3		-
	54 MM	Nos	10		-
	42 MM	Nos	8		-
	35 MM	Nos	2		-
	28 MM	Nos	1		-
	22 MM	Nos	42		-
	15 MM	Nos	55		-
					-
8	Valve Box complete as required with accessories as per specification				-
	2 services	Nos	11		-
	3 services	Nos	7		-
	6 services	Nos	8		-

Item No.	Description of Items	Unit	Qty	Rate in Rs.	Amount in Rs.
					-
9	Alarm complete as required with accessories as per specification				-
9.1	Master Alarm		1		-
9.2	Area Pressure Alarm (Digital)				-
	2 services	Nos	11		-
	3 services	Nos	7		-
	6 services	Nos	8		-
					-
11.0	AGSS UNIT				-
	Simplex AGSS UNIT having dry Rotary Vane Vacuum System with control panel complete as required with accessories as per specification	No.	1		-
					-
12.0	Tubing:				-
	LP Tubing	Mtr.	500		-
					-
13.0	Horizontal Bed Head Panel : High Strength Anodised Aluminium Extrusions with inbuilt single railing, etc complete as required with accessories as per specification	Nos	47		-
					-
14.0	ACCESSORIES				-
14.1	BPC Flowmeter with humidifier bottle & adapter complete as required with accessories as per specification	Nos	224		-
14.2	Ward Vacuum Unit with 600ml poly carbonate collection jar complete as required with accessories as per specification	Nos	200		-
14.3	Theater Suction Unit with regulator, trolley & 2x2000ml poly carbonate collection jars	Nos	12		-

Item No.	Description of Items	Unit	Qty	Rate in Rs.	Amount in Rs.
15	Electric Distributional Panel complete as required with accessories as per specification	Nos	1		-
16	Supply of O2 cylinder complete as required with accessories as per specification	Nos	40		-
17	Supply of N2O cylinder complete as required with accessories as per specification	Nos	12		-
18	Turnkey works complete as required with accessories as per specification	lot	1		-
	Total Amount in Rs.				-

TECHNICAL SPECIFICATION OF MODULAR OPERATION THEATRE

SCOPE OF WORK : Complete plan, design, supply construction, testing and commissioning of Modular Operating Theatre in accordance with the specifications, bill of quantities including necessary Turnkey work and providing of free spare parts and service during Defect Liability and CMC Period. The design and construction of theatre shall be made using a pre-engineered solution with objectives of Infection control, Promoting high standard of asepsis, Facilitating coordinated services, Ensuring maximum standard of safety, Optimizing utilization of OT with flexibility and staff time, Optimizing working condition, Ensuring functional separation of spaces, Patient and staff comfort in terms of thermal, acoustic and lighting requirements, minimizing maintenance and regulating flow of traffic.

1 WALLS & CEILING SYSTEM

The prefabricated modular construction for 1.50 mm thick AISI-304 Stainless Steel backed by 12mm thick Gypsum board to provide seamless operating room OR 50 mm thick Double skin totally flush false ceiling prefabricated panels shall be made with 0.8 mm thick Stainless Steel (SS-304) sheet on both side with 36 ± 2 kg/m³ density PUF as infill with Silicon sealant and supporting hardware to provide seamless operating Room.

The ceiling suspension from concrete ceiling should be as:

Suspension elements : Suspension bracket with tension spring

Suspension Height: Continuously adjustable from 250 to 1100 mm

Stability: Permanent and non-stop after adjustment.

Material High quality galvanized steel

The external wall of the room shall be constructed with solid brick and mortar by the hospital authority. Clearance between inner panel and outer wall preferably should be 40-45 cm to allow the maintenance personnel for service. This closed space should be flushed continuously to eliminate dust and bacterial accumulation. In order to create a smooth uninterrupted surface between adjacent panels, thereby preventing the risk of the accumulation of dust and bacteria in gaps, the panel should be produced in a single full height floor-to ceiling piece. The total distance between inside and outside surfaces of the operating room should be sufficient for flush mounting of the equipment. All the sharp edges and corners of the OT room should be rounded /coved to avoid bacterial contamination. The wall panel and Ceiling design and construction should be strong enough to allow for the installation and support of all equipment and should have provision of opening required for the installations without affecting rigidity and strength. Access Boxes should be fitted to the rear of all wall-mounted equipment to enable maintenance to be carried out from outside the operating room. Wall paneling should be of DIN 410272 fire protection or Reaction to fire class-1 norm. Room lighting, air supply inlet, Ceiling Service units, return air outlets etc should be integrated with SS metal ceiling system. The individual panels except those at the edges should be removable individually. The Walls and suspended Ceiling should be hermetically sealed. All the four corners should have return air duct outlets and grill for the same made of SS with the color choice to suit the hospital's choice. The system should

afford the maximum versatility at the planning stage and flexibility during erection, ensuring openness to future alternations and trouble-free maintenance. During the installation of first the structural parts and subsequently the finishing elements, the system should ensure perfect integration of technical networks and allow ample operational flexibility at the construction site. The clean, dry installation method should enable optimum programming of the various work phases, allowing optimization of the installation of technical systems and any necessary alterations to be made – right up to checking and final testing of the installed systems – before the modules are sealed.

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 wall panel should be fixed to the brick wall with supports/sub-frame on which individual wall panels will be mounted. The wall panel should be fixed to the brick wall with supports. All joints and cavities should be filled with Metallic Epoxy sealer and sanded flush to provide seamless finish/ Silicon gasket joints. The internal surface of the wall panel should be either solid Mineral Composite Sheet or SS-304 grade material.

The internal surfaces of the walls and ceiling of Operation theatre should be sprayed with **anti-bacterial paint** (Factory Internal test report to be submitted) to a minimum dry film thickness of 300 microns with primer and putty. The anti bacterial paint coating should overlap the floor coving, ceiling system and door frames by 25 microns to provide a continuous sealed surface. The anti bacterial paint coating should be non-reflective type, highly resistant to abrasives, water, detergents and weak acids and alkali used in cleaning area. The coatings should have no loss of performance or adhesion to the substrate in the case of regular steam cleaning. Anti bacterial paint applied should not leach out in order to maintain anti- microbial system throughout the life of the product. The coating should have biocide action and prevention property against growth of mould, bacteria and yeasts for at least 10 years.

A Galvanized steel cover plate shall be installed between the inner and outer wall panels, sealing and protecting the cavity from the ingress of vermin and contaminants, whilst allowing the removal at a later date for upgrading, disassembly, enlargement, or relocation.

Internal colour of the wall and ceiling panel shall be as suggested by the Institute.

2 CEILING FILTRATION SYSTEM / LAMINAR AIR FLOW SYSTEM (AIR MANAGEMENT SYSTEM) (Size-2400 x 2400mm)

The Ceiling Filtration System should be designed to ensure homogenous low turbulence unidirectional laminar flow of sterile air. The Laminar flow system should comprise of thick extruded aluminum profiles frame and sealed gasket. The filters installed in the plenum should be suitable for application for laminar flow and clean rooms.

These filters should meet following specification.

H14

MPPS average efficiency: > 99.95%

0.3 Micron DOP efficiency > 99.99%

Pressure drop : 600 pa(max)

Maximum Operating Temp : 60 degree Celsius

Maximum RH : 90 %.

Others:

Protective grids : White epoxy painted micro drawn grid

Separators : Continuous thermo plastic chord

Sealant : Polyurethane

Gasket : One piece polyurethane

Efficiency test : Filters individually tested and certified (Submission of test certificate for the filters from original manufacturer is must along with its supply).

Filter frames and top plenum should be made of AISI-304 Stainless steel. The filtration should have flow equalizer for uniform & constant air distribution over the whole surface. The high quality Diffuser should secure the unidirectional airflow according to ISO 14644/1. It should have low noise recirculation systems in compliance with noise levels of 45 to 48 db. Air and Light diffuser made out of two layer of mono filament precision woven polyester for the plan air ceiling to proved Laminar flow. Frame should be rigid frame system and made out of AISI-304 Stainless steel which enables the perfect integration of the OT ceiling with surrounding installations. The OT lighting should be integrated into a frame system which ensures its air sealed integration with the OT ceiling. The frame system should allow the seamless and air-sealed coverage of all gaps among the various installations and OT ceiling. The Ceiling system should be equipped with “H” class HEPA filters with different performances according to their position in the ceiling to achieve flow velocities 0.25 m/sec. The filtration ceiling system should have flow equalizer to achieve uniform & constant air distribution over the whole surface .it should also have connection for surgical lamp to be fitted in place of any filter.

The air management system should be designed to achieve the following parameters: F.S. 209 classification = 100 (100 particles/ft³) Bacteriological class =B (5 CFU/m³) Particle decontamination kinetics CP =5 min ISO 14644/1 classification = ISO 5

The technology must avoid turbulences which may draw germs from the non-sterile area in the operating field. The complete filtration ceiling system should be factory assembled. Perfect tightness should be guaranteed by a liquid seal between filters and holding structure enabling no bypass of Mini Pleat filters. A written confirmation from the original product catalogue is required. Laminar air flow system and mini Pleat HEPA Filters.

Testing & maintenance of air quality with periodic replacements of HEPA filters should be done. The supplier should provide test certificate for HEPA filter and laminar air flow systems from the original manufacturer. Modular OTs should be constructed considering all stipulated requirements of Air management system etc.

3 OPERATION THEATRE FLOORING (ANTISTATIC CONDUCTIVE ROLL)

The Operation theatre floor finish should be laid with 2 mm antistatic seamless conductive PVC ROLL on a semi-conductive adhesive base. The floor should be scratch resistant, fire resistant, chemical resistant, non-corrosive, slip resistant, smooth, anti fungi, antimicrobial impervious material conductive enough to dissipate static electricity but not conductive enough to endanger personnel from electric shock. **The floor finish should pass over a concealed cove former and continue up the wall for 100mm.** The floor should be provided flat to within a tolerance of

±3mm over any 30 Sq.mtr area. Copper grounding strip (0.05 thick, 50 mm width) should be laid flat on the floor in the conductive adhesive and connect to copper wire of grounding. The connection from copper grid should be brought out uniformly at places to form equi-potential grid. A self-leveling compound should be laid prior to laying of the floor finish. One earthing lead should be brought out of from every 150 Sq.ft. area and attaching it to main earthing strip/ground. The joints in the flooring should be sealed by using a PVC welding bar of matching colour and hot air gun for fusion of welding bar with flooring to provide a continuous sealed surface. The sheets should be highly durable with resistance to shock, scratch proof and indentation. Corners should be uniformly curved. The conductive material should be uniformly impregnated as grains. The floor should be inert to body fluids, chemicals, detergents and disinfectants and it should not be affected by temperature variation within the OT. Colour should be uniform, pleasant and matching with ambience. The floor should have electrical resistance(Point to ground) within 2.5×10^5 to 2.5×10^6 Ohms as per NFPA-99/ DIN 51953/ATMF-150 B1 class of fire resistance. The floor should efficiently discharge electric charges upto 2 KV. The floor should not allow build up of electrical charge beyond 100 volts due to antistatic effect. It should fulfill product requirements as per EN649. The corner should not be terminated sharply and concealed cove-former (Aluminum) should be used overlap to a height of approx.25mm and sealed perfectly and uniformly. Self-leveling compounds should be used for this purpose.

Radius for corner coving - 70R

4 DOORS AND FRAMES (AUTOMATIC HERMETICALLY SEALED SLIDING DOORS) Size-2100mm x 1800mm)

To maintain sterility and correct air pressure in the theatre, the door should be sliding and hermetically sealed type. Door should meet international quality and safety requirements.

- Controller should be Microprocessor based controller (CE marked) and should have digital display
- Regulated electro-mechanical sliding door drive.
- Suitable capacity of Motor should be equipped.
- Noise level of movement should not be more than 60 decibel.
- Power efficiency should be 0.95 (in AC 100 V full load).
- The track should be made up of single piece extruded aluminum
- Environment temperature should be -20°C to $+55^{\circ}\text{C}$.
- Electrical safety codes for High & Low voltage system design should meet HTM 2020 /2021 standards.
- The door and control should comply current IEE regulations and BS 7971 standard.

Hermetically sealed Sliding Automatic Door shall be with Vision Panels 300 mm x 300 mm with double glazed panels and hermetically sealed should be equipped for OT.

The door panel should be hygienic compact HP laminated (HPL) board HPL/SMS that can withstand high abrasion. The thickness of the door core should be 48mm. The top layer on both

sides is high Pressure laminate of size 6mm. The overall thickness of the door shutter is 60 mm. The inner part of the door should be filled with CFC free polyurethane foam.

Sealed airtight system should be provided to prevent further ingress of any microbial organism. The door should be fixed to Aluminum frame. Reinforcement of Extruded Anodized Aluminium material for HP Laminated Board Panel should be with door frames. Nylon runner guides should be fixed to the door in such a way that there shall be no obstruction to the Trolley movement. The door leaf should have high quality synthetic rubber gasket with long life to ensure hermetic sealing to maintain pressure differential. Air tightness 99.99% at a pressure 50 (Test certificate for hermetic sealing with door frame should be provided with pre-despatch documents. The finished door on either side of the door should be perfectly level (maximum permissible difference +1mm). The track of the door should be made up of single piece extruded Aluminum and the running surface for the top rollers shall be suitably angled to reduce resistance to movement. The door leaf should be hung by means of hard plastic rollers of high quality with double bearing at the top. Roller should be provided under the stainless steel/extruded aluminum track to enable smooth the noiseless movement. The doorframe, track and the wheel should be designed in such a way that during last 50 mm at travel on the closing cycle the door should make a tight sealing with the frame. The door should be provided with high quality cylindrical lock. The lock should be activated or switched off by means of the key switch. The door should be governed by two sensors for half and full closure. The door controller should sense overload condition and in overload case the door shall be automatically stopped and reversed the direction of travel. The controller should be capable of either operated by elbow switch; foot switch & radar switch (Touch fewer sensors). The door should be operated easily manually in the event of failure of the power supply or the automatic mechanism. Door opening handle should be strong and sturdy and the handle material should be AISI-304 Stainless steel and glossy finish. High and Low voltage system of the door should meet electrical safety code..

5. DOORS AND FRAMES (AUTOMATIC HERMETICALLY SEALED SLIDING DOORS) SCRUB DOOR (Size-2100mm x 1000mm)

Same as Sl. No,4

6 PRESSURE RELIEF DAMPERS(PRD)

The Pressure Relief Dampers are to be equipped with the theatre to prevent contamination of air from clean and dirty areas. The Dampers of suitable size should have AISI-304 Stainless Steel blades of thickness 1 mm each. The body should be epoxy powder coated as per standard BS colours. The statically and dynamically balanced Pressure Relief Damper should be properly placed. The Dampers enable to maintain differential room pressure to close tolerance inside the Operation theatre. Counter-weight balancing system should be provided in the Pressure Relief Damper to maintain positive pressure inside the operation room. The PRD should remain closed at pressure below the set pressure and should open fully at a pressure only fractionally above the threshold pressure. Powder coated Aluminium grill should be fitted in the opposite side of PRD i.e towards the corridor. Fins should inclined towards floor. Grill should be accompanied with fined SS net.

7 INTERNAL DUCTING

The internal ducting of the Operating theatre should be done as per ISI-655 duly fabricated out of 22 swg Aluminum sheet complete with flanges and accessories such as GI suspenders and GI supports completely sealed with Silicon sealant duly insulated with Aluminum foil Nitrile rubber self adhesive type insulation. The type of insulation and its thickness should be such that there is no sweating or leakage.

8 PERIPHERAL LIGHT CUM CLEAN ROOM LUMINARIES

It should be fitted outside the air ceiling system area and flush with the ceiling in the operation theatre suitable to required illumination (500 Lux) of OT. Peripheral lights and clean room luminaries fitted in the frame should be 10 in numbers for each OT. The Non-hygroscopic high glow low power LED based peripheral lights having high quality low wattage LED lighting system with highly spectacular anodized Aluminum reflectors and optical antiglare system for adjustable light distribution. Luminaire cover made of highly resistant, disinfectant proof laminated safety glass with fine grained surface, glass pane with white powder coated steel frame. Luminaire body made of sheet steel, white, powder coated supplied ready for connection. The reflectors should be of high quality, cleanable and non deteriorating. Dimmable ballasts of reputed companies to be used and diffuser should be constructed with opaque acrylic diffuser material in aluminum frames. It should have flicker less design with color. Recess frames should be gas tight. The fitting should be flush with the ceiling and should be removable from top or bottom. Lighting units should be properly sealed with the ceiling by means of fillers and beadings so that all lighting units are airtight with ceiling panels. The light fitting should be uniformly and aesthetically distributed on the ceiling to provide uniform illumination in the OR. Peripheral lighting should be done according to **IP65 protocol**. Light should not interfere when green mode of Endoscopy is performed. **Frame of peripheral light fixture should not protrude from the Ceiling inside OT. Screw heads should not also be protruded inside OT.** Should be from these make - Philips/ GE/ Crompton/ Wipro/ Syska

9 SURGEON CONTROL PANEL

The OT Control Panel should be designed to cope with changing technology and equipment in operating environments. Control panel should be user friendly and ease of operating and maintaining purpose.

The **touch screen** typed Control Panel should be 19” medical grade color TFT/LED panel stationed in the sterile field. The Control Panel should be configured to incorporate all the services required by the staff in the Operation theatre. It should be mounted flush in the theatre wall.

The Control Panel should comprise of following services in addition to Instruction board, Communication interfaces- both audio and video etc.:

- Day Time Clock
- Time Elapse Day Clock
- General Lighting System

- Hands free telephone set with memory card
- Temperature and Humidity Indicator with Controller
- HEPA Filter status
- Medical Gas status/alarm
- Digital Room Pressure indicator
- Music control
- Telephone

Day Time clock/Time Elapsed day Clock should be digital type and bright and the height not less than 30mm

Temperature and Humidity Indicator should indicate temperature and humidity of the theatre and the display shall be digital and bright and the height not less than 30mm. The temperature and Humidity controller should be connected to the Air Conditioning system.

General Lighting System should incorporate all the necessary controls of all the lighting system including Dimmer for peripheral/plan air lights. Medical Gas Alarm should indicate high, normal and low of gas pressure for each gas service provided in the Operation room. Alarm should be equipped with audible Buzzer. The pressure sensor of the Alarm should be connected to MGPS for monitoring the pressures.

The control panel should be user friendly and ease of operation and maintenance. All internal wires should be marked with plastic ferrule type cable markers, for ease of identification. The control panel should be able to be integrated with the commonly used OT software in future.

The control panel should meet Electrical Safety Code for High and Low voltage system, wired to the current IEE regulations

10 ADJUSTABLE MOVABLE BOOM ARM SYSTEMS Imported

- The Ceiling boom arm systems designed to provide convenient positioning of medical equipment, medical gas terminal units, electrical and speciality services. The Ceiling Pendants should comply with international standard. The support arms should be extremely robust and revolve on high quality bearings, so that the pendant head glides smoothly and quickly to any desired position. Pendant should be BIS/European CE/US FDA marked.
- a. **Equipment Boom System with boom suspension(Surgeon Pendant) for Progressive Scan Flat Panel**

Description : The Equipment Boom should be custom designed to meet all of the specific needs of the operating room such as concealed cables and tubes, unlimited equipment combinations. The arms should be easy to move, and each should come with pneumatic brakes as a standard option to support a locked position.

Surgeon Pendant:

The Equipment Pendant with a service head column adjustable height and should be with **Double-arm** with Horizontal Motion total coverage 1800mm +/- 10% and Vertical Height Articulating motion. There should not be any sharp edges. Should have a motorized articulating vertical drop. Vertical articulation should be through a Heavy-Duty Electric motor. Should have atleast 3 shelves of minimum 750mm size for various medical devices having a load bearing capacity (Articulating) of minimum 150 Kg.

Top-arm Rotation & Lower-arm Rotation should be atleast 330° & Service-head rotation should be atleast 330°

Should have a provision of mounting a spring-arm monitor in tandem with the equipment boom arm.

Service Points/Outlets :

Pendant should be supplied with following pre-fitted Medical Gas Service outlets (7 bar Surgical Air outlet x1, Oxygen Outlet x 2, Vacuum Outlet x 2 Outlets, CO2 outlet x 1) & atleast 10 no. 5/15 Amp standard duplex conditioned antibacterial Electrical switch & socket (same as in Anesthesia Boom System). Outlets should be CE certified/UL listed. Each terminal unit should be identified by the appropriate recognized name or symbol, colour, coding and shape as per HTM 02-01 /NFPA 99C. The Column should have atleast 8 no. of Data (Audio/Video/Control) Ports for connections to various other medical devices desired to be integrated in future. Pendant should have RJ 45 /cat 5 for telephone communication and RJ 45 /cat 6 for data communication. Fluid Pole with 2 hooks – 1No. (Pole should be capable of stacking 4 nos of syringe pumps)

b. Anesthesia Boom System

The boom system should be available as follows:

- 900 mm moveable arms each with 330 deg. Horizontal movement.
Arm should have anaesthesia machine lifting arrangement. The Pendant with a service head column adjustable height and should be with **Double-arm** with Horizontal Motion total Coverage 1800mm +/- 10% and Vertical Height Articulating motion. There should not be any sharp edges. Should have a motorized articulating vertical drop. Vertical articulation should be through a Heavy-Duty Electric motor.
- The weight carrying capacity of the arm should not be less than 150-200 KG.
- Each arm should be capable of 330 degrees of rotation, which can be easily adjusted to suit the desired mode of operation.
- The arms may be fitted with pneumatic brakes to prevent inadvertent movement.
- The Pendant Service Head should be supplied with following pre-fitted medical gas terminal units and 5/15 Amps. Antibacterial Switch & Sockets:
Oxygen Outlets– 2
Nitrous Oxide Outlet - 1
Medical Air(4 bar) Outlet– 2
Vacuum Outlets– 2

AGSS Outlet-1

Electrical Sockets –10 nos.

Shelf with two rails one on each side – 2 no.

Monitor input & Output – 1no.

Infusion pump pole – 1

IV management – 1

RJ 45 /cat 5 for telephone communication.

RJ 45 /cat 6 for data communication.

Pendant supplier should provide cutouts for Patch Panels in Integrated OTs. (only for integrated OT)

Outlets should be CE certified/UL listed. Each terminal unit should be identified by the appropriate recognized name or symbol, colour, coding and shape as per HTM 02-01 /NFPA 99C.

11 X-RAY FILM VIEWER

The three (3)-plate viewing LED lamps X-Ray Viewing Screen should be designed to provide flicker free luminance for clear film viewing. Each plate should be able to illuminate films up to 14”x17” size. ‘Dimming is controlled using dimming ballast and PCB mounted inside the box. The mounting of the Screen should be installed flushed with Operation theatre wall to avoid dust accumulation and microbial growth and ease of cleaning. The diffuser should diffuse the light evenly and to provide adequate luminance for film viewing. Body should be of extruded aluminum powder coated black with bacteria and disinfectant resistant finish. Proper spring loaded film clip with rollers should be provided to hold the films firmly and to remove the film without scratches. The X-Ray Film viewer should comply with relevant Electrical Safety Codes for High and Low voltage system.

12 HATCH/PASS BOX

It should be of 600mm x 600mm size for disposal of dirty linen/waste to non-sterile store with Door open/close indication. 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 will be opened at one time. The Hatch Box should be constructed of Stainless Steel AISI-304 Door and completed with interlocked UV light and electro-magnetic mechanism complete with indicators and hours meter. This UV light should be automatically turned off in case of opening of either of the doors. Indicators should be provided on both sides of the OT so that door open / close status can be monitored from both sides.

13 WRITING BOARD (OPERATING LIST BOARD)

Writing Board as operating list Board of size-1000x700x60deep should be made of ceramic having magnetic properties and should be flushed to the wall of the operating Room.

14. BUILT-IN STORAGE UNIT

Storage Unit should be made out of 1.50 mm thick AISI-304 Stainless steel. The storage unit should be divided 2 or more parts and each part should have individual glass doors with high quality locking system. These doors should be installed on the storage units with the help of fittings allowing an opening allowance of 90-100 degree. Each part should be provided with steel racks which should be completely detachable type. The storage unit should be fitted with 5mm thick glass door and mounted flush with the theatre wall. The storage unit should be continuously ventilated by positive air in the OT through ventilation holes provided at the bottom and top of opposite sides. The dimensions of each storage unit should not be less than height 1800mm x width 900mm x depth 350mm.

The storage units should be designed in a way that they are flush with the OT wall panels and the units should be air tight, not allowing any leakage between units and the wall panels.

15 DISTRIBUTION BOARD

All high voltage equipment should be installed in a separate enclosure. The remote cabinet should house the operating lamp transformers, mains failure relays, UPS, electrical distribution equipment & circuit protection equipment for all circuits within the operating theatre. All internal wiring should terminate in connectors with screw & clamp spring. Connections of the clip- on type mounted, on CE approved rail & labeled with indelible proprietary labels. This unit should be BIS/EN/CE/UL/FDA/IEC certified. Wiring for 220 volts single phase and neutral 6/16 Amps **antibacterial** switched socket at the 325 mm height from FFL with 4 sq.mm and 2.5 sq.mm PVC insulated copper conductor 1100 volts stranded flexible wires should be concealed with conduit. **Antibacterial switch and socket should be flushed on the OT wall panel.** Installation of all electrical cabling must be of IS: 1554 (As per latest amendment) standard and wiring as per IS: 732 standard and proper earthing of OT and other accessories in the OT room as per standard guidelines of BIS. Fittings should be sealed on accordance with the standard IP54. Earthed equipotent bonding of all exposed metal work should be provided. Individual fuses or miniature circuit breakers should protect all internal circuits. Complete schematic drawing with description should be enclosed with the equipment. Earthed equipment bonding of all exposed metalwork should be provided. Power sockets within the Operating Theatres ancillary areas should be matched to the rest of the hospital. Light fittings within the clinical areas should be recessed LED type with control gear. Fittings should be sealed In accordance with the standard IP54. All equipment should be fully and permanently labeled to identify and describe the function, operation and voltage of the apparatus concerned. Throughout and upon completion of the electrical installation, tests in accordance with relevant sections of the local wiring regulations should be carried out and the results recorded. All necessary interconnection of LAN cables, Telephone/intercom, copper strip, etc. to MOT from hospital source is the responsibility of the bidder.

16 SCRUB STATION

Compact Surgical Scrub sink -3 Bay should be designed for use in Operation theatre complex providing surgeons with a convenient sink for pre-OT scrub up. The Scrub Sink should be made of 1.5mm thick AISI-304 Stainless Steel and top surface(Counter) should be made of one piece and polished to seamless satin finish. The scrub sink should be provided with a front access panel which should be easily removed for access to the water controlled valve, waste connections, stoppers and strainers. Hands free operation should include infra-red sensors with built-in range of adjustment. Thermostatic mixing, valve control should be located behind the access panel and maintain constant water temperature. User defined time 1, 3,5,10 min. are available. This timing should be adjustable to meet individual application requirements, provided with infrared sensors, thermostatic control taps with fail-safe temperature controls. All units should have reduced anti splash front. It should have manual foot and operation mode. Knee operated switch should be provided additionally. The station should also have inbuilt soap dispensers. Scrub station should be equipped with 10L Geysers for supply of hot water.

17. MEDICAL GAS LINE INSTALLATION

Oxygen, Air(Medical & Surgical), Vacuum, Nitrous Oxide and AGSS supply to Operation Theatres from the existing manifold system should be provided. The medical gas alarm system shall be installed which fully satisfies the principles of HTM 02-01/NFPA 99C.

Medical graded Copper pipes shall be solid drawn, tempered, seamless, phosphorous deoxidized, non-arsenic and degreased for oxygen service. Copper to Copper joints shall be made on site using silver-copper-phosphorous brazing alloy to BS-1845. Copper to brass or gunmetal joints shall not be made on site. Except for mechanical joints used for components, all metallic pipeline joints shall be brazed or welded. All pipelines shall be routed in such a way that their not exposed to a temperature less than 5 deg Celsius above the dew point of the gas distribution pressure. The chemical composition shall be as per BS-6017: 1981 Table 2, Cu-DHP grade. Distribution Copper Pipe manufactured as per BSEN:13348:2008 Each pipe shall be capped at both ends before supply. Pipeline shall be supported at interval to prevent sagging.

The supply of pipes shall accompany with manufacturers test certificates for physical properties and chemical composition. The supply of pipes shall be further substantiated with inspection certificates from third party inspectors like LLOYDS/TUV/SGS.

Medical graded Copper Piping should be laid down from Pendant of OT to the nearby Valve Box outside the Operation Theatre via Surgeon Control Panel.

18. VIEW WINDOW (HERMETICALLY SEALED) WITH MOTORIZED BLINDS

View window with motorized horizontal Venetian blinds sandwiched in two parallel toughened glasses of thickness 5 mm should be complete with FHP Motor Control for 90° rotation. The Window frame should be powder coated Aluminum of approved shape flush mounted with wall paneling. The entire assembly should be completely sealed and fitted with proper Aluminum profile. The assembled thickness of the Window should be 33 mm. The window blinds should be operated with Remote Control and manually.

19 EXHAUST AIR CABINETS

The openable and cleanable return-air exhaust cabinets should be provided in the operation theater. Designed flow rate should not be less than 1000 m³/hr. Distribution of exhaust air volume should be divided between fluff strainers to maintain the required pressure within the theatre without causing turbulence. The air cabinets should have suction from **top as well as from bottom**. The supplier of wall and ceiling system should manufacture and supply the exhaust air cabinet. Specification of materials and aesthetic should match perfectly with the ceiling system. Each powder coated Aluminium diffuser should be equipped with **Damper** (Opening and closing to be adjustable from OT) and 20 micron filter. Fins of diffuser shall be inclined towards the floor.

20 OT LIGHT WITH CAMERA AND MONITOR- (Imported)

Description: Dual Dome **LED** Surgical Lighting System with one dedicated Spring-Arm Suspension for Progressive Scan HD Flat Panel with an Integrated In-Light Camera System.

i) OT Light

Operating Room Surgical Lighting System should provide an ideal combination of brightness, Maneuverability, and shadow resolution without sacrificing color accuracy through a consistent LED technology with a unique faceted reflector design technology.

Such Lighting System should have the following technical specifications:

- Number of Light heads : : Two per suspension
- Number of LEDs : Should be adequate enough for following minimum illumination level
- Color Temperature : 3800 - 5000 K (+/- 10%)
- Field Size Diameter Depth : 20 – 28 cm (+/- 10%)
- Depth of Field : 750 – 1100mm (+/- 10%)
- Illumination Level : minimum 160,000 Lux each
- Controls : Wall Control Touch Panel and on dome
- Rotation : 330- 360 degrees
- Vertical Adjustment Range : + 20 inch – 25 inch
- Sterilizable Handle : 2 Nos

- Lighthead Diameter : 30-35/800mm×720mm of size
- Mounting Type : Ceiling
- Supply Voltage : 230 VAC 50 Hz
- Bulb Type : LED
- Dimming Range : 30% - 80%
- Operating/Storage Humidity : 10 – 95%
- Life of Light Source : > 40,000 Hrs.

Surgical Light System Should be compliant with relevant BIS/European CE /US FDA standards

Camera System (Full HD)

Description : Camera System should be integrated at the centre of one of the domes of this lighting system in order to capture images & video sequences of the open cases.

Such a camera should have the following specifications:

- Signal to Noise Ratio (S/N Ratio) : > 50 dB.
- Minimum Illumination : <3 lx
- CCD : 1/3"
- Optical Zoom : 10X.
- Digital Zoom : 12-15X
- Power Supply : Through Light / max. 12W.
- Relative Humidity : <90%.
- Video Output : HD, S-Video & Composite Video
- White Balance & Gain : Automatic/Manual
- Light and Integrated Camera should have a control through Touch Panel of the control
- equipment placed inside the operating room

Such Surgical Light System Should be compliant with relevant BIS/ European CE /US FDA standards

Such Light and Integrated Camera should have a remote control placed inside the operating room at documentation station / nurse works station.

C. Flat Panel Monitor (Full HD)

Should be 30-32" High Definition Progressive Scan Flat-panel Monitors with ceiling mounted spring arm suspension to support high-definition/HDTV progressive Scan images and should be able to support and display DVI/HDTV, RGBHV, S-Video, Composite video signals.

The flat Panel suspension should be ready with the cables for integration of High Definition Digital (DVI/HDTV), RGBHV (High Resolution), SVHS (S-Video), Composite video signals to travel from the various sources of video like endoscopic camera, room camera, in light camera, high definition flat panel monitors, while assuring native resolution / signal.

Such Monitor should at least meet the following technical criteria:

- Resolution : 1920x1080 or more, Progressive Scan
- Aspect ratio 16:9/16:10
- Display Colors : 16 Million Colors
- Inputs : DVI, RGBHV, S-Video, Composite Video
- Synchronization : 2.5 – 5.0 Vpp separated sync
- Response time : <25ms
- Travel : 330° - 340°
- Forward Tilt : 30° - 40°
- Backward Tilt : 45° - 50°
- Cable Kit for Integration : DVI, Fiber Optic, RGBHV, S-Video, Composite

IN ADDITION TO THE ABOVE, FOLLOWING TURNKEY WORKS FOR INSTALLATION AND COMMISSIONING OF MODULAR OT ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR :

- The turnkey work includes all modifications to the built up space provided at the hospital site including civil modifications, electrical works, plumbing works, all cable trenches and railings wherever required, interior decoration, air conditioning duct, furniture and other related works of the Operation Theatre required for the smooth and efficient functioning of the centre. These works shall comply with all relevant safety and standards guidelines. The vendor is fully responsible for installation and commissioning of all equipment mentioned in the tender. Bidders are strongly advised to visit the site for assessment before the submission of tender offer. Demolishing, re-constructing, water roofing, plumbing, repainting and replacement Any demolition , reconstruction, water proofing, necessary plumbing, anti-microbial painting, replacement of any door or windows to provide structured design for modular OT .

Commissioning and installation of SMS wall & ceiling paneling, Frame Structures & substructure, PVC flooring, Lighting, Touch Screen Control Panel, laminar flow, pendants, OT Light, Painting (if any), electrical work, ups, windows (if any)and Doors, etc. as per technical specification. All cable conduit, trenches and railings wherever required. All electrical accessories like cable wire, electrical outlets, switches, Control panels, etc should be fire proof, of reputed make, certified for electrical safety. Bidder has to provide hatch box, storage shelves, scrub basins and other service areas as mentioned in the tender. Testing, Installation and commissioning of all equipment/services. Any other necessary work required for satisfactory working/performance of the modular OT and not mentioned/specified.

- **Electrical cabling** of IS : 1554 standard and wiring as per IS : 732 standard from MDB (Single point source) to Electric Distributional Panel and to the corresponding load points. All cable conduit, trenches and railings wherever required.
- **Earthing system** of Control panel and other electrical instrument and accessories in the OT area **as per standard guidelines of BIS(Latest edition)**. All cable trenches and railings should be made wherever required.

Providing fixing of **Electrical Gadgets** like ELCB, MCB, Light Points, Power points, in the Modular OT room. • Number of fans, power point, bulbs/tube light. Apart from these supplies to the individual equipments with ELCB & MCB for Modular OT • Installation of MCB, ACB, ELCB & OCB of Havell/Siemens/L&T/Schneider etc for Control Panel for Modular OT. All electrical accessories like cable wire, electrical outlets, switches, Control panels, etc should be fire

- Providing all tools, tackles, manpower for demolishing /dismantling, alteration/ addition for lime concrete, cement concrete, R.C.C, R.B work, precast concrete or stone slabs in walls,partition walls , stone rubble masonry, dressed stone work, ashlar face stone work, marble work or precast concrete work, dismantling doors, windows and clerestory window (steel orwood) shutter including chowkhats, architrave, holdfasts etc. CI or asbestos rain water pipes of any diameter with fittings and clamps, dismantling G.I. pipes (external work) including excavation and refilling trenches after taking out the pipes, taking out doors, windows and clerestory window shutters (steel or wood), wood work in frames, trusses, purlins and rafters, dismantling steel work in single sections including dismembering and stacking, dismantling steel work in built up sections in angles, tees, flats and channels including all gusset plates, bolts, nuts, cutting rivets, welding etc., old plaster or skirting raking out joints and cleaning the surface for plaster, dismantling of R.C.C. spun vent shaft including excavating the cement concrete pit completely, taking out the shaft, refiling the excavated gap, stacking the useful materials near the site extra for cutting reinforcement bars, Dismantling aluminium/ Gypsum partitions doors, windows, fixed glazing and false ceiling including disposal of unserviceable surplus material and stacking of serviceable material within 1000 meters lead and any other work as directed by engineer-in-charge. Disposal of building rubbish/ malba/ similar unserviceable, dismantled or waste materials by mechanical means, including loading, transporting, unloading to approved municipal dumping ground or as approved by Engineer-in-charge.

In addition to the above mentioned equipment/appliances, if the contractor thinks it necessary to include any other equipment/appliances, accessories etc. for the Modular OT then that may be provided and any other necessary work required for satisfactory working of the Modular OT and not mentioned

The sizes are approximate. Minor variations in sizes shall be acceptable subject to prior approval of the Engineer.

Note:

- **All electrical accessories like cable wire, electrical outlets, switches etc supplied by the contractor should be fire proof of reputed make, certified for electrical safety.**
- **Wherever makes have not been specified for certain items, the same shall be as per BIS and as per approval of HSCC.**
- **The contractor should provide test certificate for all material used for construction of pre-fabricated Modular OT**
- **The contractor should prepare and submit layout plan for Modular OTs, Laminar flow System including ducting, Electrical Wiring, to HSCC for approval before beginning of supply and installation and As-built drawing after installation.**
- **The contractor shall be responsible for the complete works including submission of working drawing and walk through view.**

- **The contractor should provide complete Operation Manual/Equipment & parts manual/Service manuals for all systems and subsystems.**
- **The contractor shall bear the cost of Final electrical safety test, system test and calibration to be done by authorized person with test instruments.**
- **Training should be provided by the contractor.**
- **All software updates should be provided free of cost during warranty period and CMC period**
- **Bidders are requested to make sure that they should attach the list of equipments for carrying out routine and preventive maintenance wherever asked for and should make sure that Electrical Safety Analyzer / Tester for Medical equipments to periodically check the electrical safety aspects as per BIS Safety Standards IS-13540 which is also equivalent to IEC electrical safety standard IEC-60601 is a part of the equipments. If the Electrical Safety Analyzer/Tester is not available they should provide a commitment to get the equipments checked for electrical safety compliance with Electronic Regional Test Labs /Electronics Test and Development Centres across the country on every preventive maintenance call.**
- **.Bidder shall be responsible for commissioning of Medical Gas pipe lines, Pendants, LED OT Light and Gas outlets for the OTs and other associated works to make MOT fully functional. MOT Bidder should coordinate with MGPS, Integration and other vendors for the successful completion of MOTs.**
- **Bidder shall be responsible for maintaining suitable air conditioning inside the operation theatre (Ducting inside the OT). Setting and monitoring of temperature and RH should be in the scope of the MOT. (Necessary coordination with HVAC vendor to be done by the MOT bidder)**
- **Regarding Outlets of the Anesthesia & surgeon Pendants, bidders have to supply same type of outlets as installed in the same building/block. Before shipment of the Pendants, bidders should take necessary action for selecting the same outlets.**
- **Third party quality certification of the Modular OT items from SGS/ Bureau Veritas /Lloyds should be submitted by the contractor as “Certifies that the Modular OT items for installation meet the technical specification and BOQ of the tender document vide contract No. (Mention Contract No.).”**

BOQ - MOT

Package- Execution including Supply, installation, testing and commissioning of MODULAR OT including turnkey works with 1 Year Defect Liability Period

Rate shall be inclusive of all charges like Freight, Cess, Insurance, GST @18% etc.

Item No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1.0	WALL & CEILING CONSTRUCTION Complete with all accessories as per technical specification Area	SQM	467		-
2.0	CEILING FILTRATION SYSTEM / LAMINAR AIR FLOW SYSTEM (AIR MANAGEMENT SYSTEM) Complete with all accessories as per technical specification	Nos	4		-
3.0	OPERATION THEATRE FLOORING (ANTISTATIC CONDUCTIVE TILES) Complete with all accessories as per technical specification	SQM	307		-
4.0	DOORS AND FRAMES (AUTOMATICALLY HERMETICALLY SEALED SLIDING DOOR) Complete with all accessories as per technical specification	Nos	4		-
5.0	DOORS AND FRAMES (AUTOMATICALLY HERMETICALLY SEALED SLIDING DOOR) Complete with all accessories as per technical specification	Nos	4		-
6.0	PRESSURE RELIEF DAMPERS Complete with all accessories as per technical specification	Nos	4		-
7.0	INTERNAL DUCTING Complete with all accessories as per technical specification	lot	4		-

Item No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
8.0	PERIPHERAL LIGHT CUM CLEAN ROOM LUMINARIES Complete with all accessories as per technical specification	Nos	40		-
					-
9.0	SURGEON CONTROL PANEL Complete with all accessories as per technical specification	Nos	4		-
					-
10.0	ADJUSTABLE MOVABLE BOOM ARM SYSTEMS Imported				-
					-
a	SURGEON PENDANT (Imported) Complete with all accessories as per technical specification	Nos	4		-
					-
b	ANESTHETIST PENDANT (Imported) Complete with all accessories as per technical specification	Nos	4		-
					-
11.0	X-RAY FILM VIEWER Complete with all accessories as per technical specification	Nos	4		-
					-
12.0	HATCH/PASS BOX (600 x 1200)mm Complete with all accessories as per technical specification	Nos	4		-
					-
13.0	WRITING BOARD (LIST BOARD) Complete with all accessories as per technical specification	Nos	4		-
					-
14.0	STORAGE UNIT Complete with all accessories as per technical specification	Nos	8		-
					-
15.0	DISTRIBUTION BOARD ELECTRICAL WIRING, CONDUITING WITH FIXTURES INSIDE THE OPERATION THEATRE Complete with all accessories as per technical specification	Lot	4		-
					-
16.0	SCRUB STATION Complete with all accessories as per technical specification	Nos	4		-
					-

Item No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
17.0	MEDICAL GAS LINE INSTALLATION Complete with all accessories as per technical specification	Lot	4		-
					-
18.0	VIEW WINDOW Complete with all accessories as per technical specification	Nos	4		-
					-
19.0	EXHAUST CABINET Complete with all accessories as per technical specification	Nos	4		-
					-
20.0	OT LIGHT (LED) WITH CAMERA AND MONITOR (Imported) Complete with all accessories as per technical specification	Nos.	4		-
					-
	Total Amount in Rs. (including all charges)				-

Execution including Supply, Installation, Testing & Commissioning of Minor Operation Theatres
including Turnkey Works

Sr. No.	Description as per Technical Specification
	Minor OT
1	<p>CEILING CONSTRUCTION The prefabricated construction for Double skinned panel of 0.8mm thick 304 Grade Stainless Steel sheet each. The double skinned panel shall be sandwiched with core consisting of rigid polyurethane foam, which has been injected under high pressure, with a minimum density of 40 kg/m³.with Silicon sealant to provide seamless operating room. The individual wall panels shall use the tongue and groove technology for joining two panels, no welding should be allowed. The ceiling suspension from concrete ceiling should be as: Suspension elements : Suspension bracket with tension spring Suspension Height: Continuously adjustable from 250 to 1100 mm Stability: Permanent and non-stop after adjustment. Material High quality galvanized steel Providing and laying Epoxy/Antibacterial painting of 300 microns thickness over smoothly rendered surface. The treatment consists of surface preparation, priming with Primer.</p>
2	<p>CEILING FILTRATION SYSTEM / LAMINAR AIR FLOW SYSTEM (Unidirectional Low Turbulence Laminar Air Flow Plenum Ceiling for each OT) Plan air Ceiling System, standard size. PLENUM UNIT - The complete unit shall have factory prepared fine sealing system. It should be perfectly seamless integration of ceiling mounted equipment and OT Ceiling. It should be flexible modular range of solutions, adjustable to the local requirements .It should be made out of high quality and durable materials, filter housings and pressure chamber are made out of Aluminum. It should have a low pressure drop allows for the long-term usage of the HEPA miniplete H14 filters . It should have reliable filter efficiency and filters are guaranteed to remove particles and germs with the usual H14 filters retaining 99.99 % of the particles and germs. It should have minimal pressure drop a low pressure drop ensures the energy saving characteristic of the Laminar Flow Ceiling . Air & light diffuser made out of two layer of mono filament precision woven polyester for the plan air ceiling to give a “LAMINAR FLOW” of filtered air Size-8ft x 8ft. It also provides a diffused shadow less lighting system with a control on the intensity of luminance by using high frequency electronic fluorescent/LED tubes and ballasts.</p>
3	<p>CORNER COVING Extruded Aluminum powder coated/Anodized clip on type covings for the entire wall to wall and wall to ceiling. R-70, 3D internal/ external corner coves. Covering and coving of Return air ducting lines inside OT. Material to be used for covering should be Powder coated Aluminum.</p>
4	<p>WALL PAINTING Providing and laying Epoxy/Antibacterial painting of 300 microns thickness over smoothly rendered walls. The treatment consists of surface preparation, priming with Epoxy Primer.Walls should be smoothly rendered with Wall putty.</p>
5	<p>SWING DOOR –Double leaf door- SS-304 Both way opening- Size-2100 x 1500mm Both way opening double leaf door of 44 mm thick door shutters made with 0.6-0.8mm thick double skinned SS-304 sheets on both sides with PUF as infill, 2.5/1.2 mm thick</p>

	Al/GPSP powder coated door frames totally flush with the wall panels, hardware like push plates, handles, door closure, double glazed view glass of std size, hinges and provision for concealed automatic door bottom Drop seal etc. Supply & Installation of double-glazed view panels (1 Square ft. area) with flush design, with 5/6mm thick tempered/float glass fixed in double panel with necessary arrangements. Colour of the door should be fixed to SS finish door.
6	<p>HINGED DOOR –Single leaf door-SS-304 - Size-2100 x 1000mm</p> <p>Single leaf flushed hinged door of 44 mm thick door shutter made with 0.8mm thick double skinned SS-304 sheets on both sides with PUF as infill, 2.5/1.2 mm thick Al/GPSP powder coated door frames totally flush with the wall panels, hardware like push plates, handles, door closure, double glazed view glass of std size, hinges and provision for concealed automatic door bottom Drop seal etc. Supply & Installation of double glazed view panels (1 Square ft. area) with flush design, with 5/6mm thick tempered/float glass fixed in double panel with necessary arrangements. Colour of the door should be fixed to SS finished door.</p>
7	<p>PERIPHERAL LIGHT</p> <p>It should be fitted outside the air ceiling system area and flush with the ceiling in the operation theatre suitable to required illumination of OT. Peripheral lights and clean room luminaries fitted in the frame should be 8 Nos/As suitable to the required illumination (500 Lux)in numbers for each OT. The LED lamp of size 2ft.x 2ft with highly spectacular anodized Aluminum reflectors and optical antiglare system for adjustable light distribution. Luminaries cover made of highly resistant, disinfectant proof laminated safety glass with fine grained surface, glass pane with white powder coated steel frame. Luminary’s body made of sheet steel, white, powder coated supplied ready for connection. The reflectors should be of high quality, cleanable and non deteriorating. Dimmable ballasts of reputed companies to be used and diffuser should be constructed with opaque acrylic diffuser material in aluminum frames/ SS frames. It should have flicker less design with color. Recess frames should be gas tight. The fitting should be flush with the ceiling and should be removable form top or bottom. Lighting units should be properly sealed with the ceiling by means of fillers and beadings so that all lighting units are airtight with ceiling panels. The light fitting should be uniformly and aesthetically distributed on the ceiling to provide uniform illumination in the OR. Peripheral lighting should be done according to IP 65 protocol. Light should not interfere when green mode of Endoscopy is performed.</p>
8	<p>DISTRIBUTION BOARD, ELECTRICAL WIRING, CONDUITING WITH FIXTURES INSIDE THE OPERATION THEATRE</p> <p>Electrical Distribution Board along with all high voltage equipment should be installed in a separate enclosure. Transformers, Mains, Relays, Circuit protective equipment, for all circuits of Operation theatre shall be installed in the remote cabinet.</p> <p>All electrical wiring should be terminated to the connectors mounted on rail and labeled with indelible labels. Individual fuse and miniature circuit breakers should protect all internal circuits. Complete schematic diagram drawing description should be enclosed with the equipment.</p> <p>Laying of PVC conduits, Modular Switch Boxes, Modular Switches-sockets, Power and Light wiring including Earthing wire for all the lighting controls, Pendant and other equipment fixtures and fittings inside the theatre Wiring with low leakage current wires of FRLS wires should be as per requirements. 5/15 Amps antibacterial switch and socket outlet set -3 Nos shall be flushed equidistant in each wall at 325mm height from FFL of OT. Wiring for 250 volts single phase and neutral 5/15 Amps switched socket outlet with 4 sq.mm and 2.5 sq.mm PVC</p>

	<p>insulated copper conductor 1100 volts stranded flexible wires should be concealed with conduit. Installation of all electrical cabling must be of IS: 1554 (As per latest amendment) standard and wiring as per IS: 732 standard and proper earthing of OT and other accessories in the OT room as per standard guidelines of BIS. Fittings should be sealed on accordance with the standard IP54. Earthed equipotent bonding of all exposed metal work should be provided.</p>
9	<p>OPERATION THEATRE FLOORING (ANTISTATIC CONDUCTIVE ROLL) The Operation theatre floor finish should be laid with 2 mm antistatic seamless conductive PVC Roll on a semi-conductive adhesive base. The floor should be scratch resistant, fire resistant, chemical resistant, non-corrosive, slip resistant, smooth, anti-fungi, antimicrobial impervious material conductive enough to dissipate static electricity but not conductive enough to endanger personnel from electric shock. The joints in the flooring should be sealed by using a PVC welding bar of matching colour and hot air gun for fusion of welding bar with flooring to provide a continuous sealed surface. The conductive material should be uniformly impregnated as grains. The floor should be inert to body fluids, chemicals, detergents and disinfectants and it should not be affected by temperature variation within the OT. Colour should be uniform, pleasant and matching with ambience and should be approved by client/HSCC. The floor finish should pass over a concealed cove former and continue up the wall for 100mm. The floor should be provided flat to within a tolerance of ± 3mm over any 30 Sq.mtr area. Copper grounding strip (0.05 thick, 50 mm width) should be laid flat on the floor in the conductive adhesive and connect to copper wire of grounding. The connection from copper grid should be brought out uniformly at places to form equi-potential grid. A selfleveling compound should be laid prior to laying of the floor finish. One earthing lead should be brought out of from every 150 Sq.ft. area and attaching it to main earthing strip/ground. The floor should have electrical resistance(Point to ground) within 2.5×10^6 Ohms as per NFPA-99/ DIN 51953/ATMF-150 B1 class of fire resistance. The floor should efficiently discharge electric charges upto 2 KV. The floor should not allow building up of electrical charge beyond 100 volts due to antistatic effect. It should fulfill product requirements as per EN649. The corner should not be terminated sharply and concealed cove-former (Aluminum) upto 100mm from FFL and should be used overlap to a height of 25mm approx.and sealed perfectly and uniformly. Self-leveling compounds should be used for this purpose. Radius for corner coving- 60-70R</p>
10	<p>MEDICAL GAS LINE INSTALLATION Oxygen, Air(Medical & Surgical), Vacuum, Nitrous Oxide and AGSS supply to Operation Theatres from the existing manifold system should be provided. The medical gas alarm system shall be installed which fully satisfies the principles of HTM 2022/NFPA. Medical graded Copper pipes shall be solid drawn, tempered, seamless, phosphorous deoxidized, non-arsenic and degreased for oxygen service.Copper to Copper joints shall be made on site using silver-copper-phosphorous brazing alloy to BS-1845. Copper to brass or gunmetal joints shall not be made on site. Except for mechanical joints used for components, all metallic pipeline joints shall be brazed or welded. All pipelines shall be routed in such a way that their not exposed to a temperature less than 5 deg Celsius above the dew point of the gas distribution pressure.The chemical composition shall be as per BS-6017: 1981 Table 2, Cu-DHP grade. Distribution Copper Pipe manufactured as per BSEN:13348:2008.Each pipe shall be capped at both ends before supply. Pipeline shall be supported at interval to prevent sagging. The supply of pipes shall accompany with manufacturers test certificates for physical</p>

	<p>properties and chemical composition. The supply of pipes shall be further substantiated with inspection certificates from third party inspectors like LLOYDS/SGS/TUV. Medical graded Copper Piping should be laid down from Pendant/Bed Head Panel/Gas Outlets of OT to the nearby Valve Box outside the Operation Theatre via Surgeon Control Panel. Gas Outlets for each Minor OT shall be provided as : Oxygen-4 Nos, Vacuum-4 Nos, Medical Air(4 Bar) -4 Nos, Surgical Air(7 Bar) -2 Nos, CO2-1 Nos& AGSS-1.</p>
11	<p>SCRUB STATION Compact Surgical Scrub sink -2Bay should be designed for use in Operation theatre complex providing surgeons with a convenient sink for pre-OT scrub up. The Scrub Sink should be made of 1.5mm thick AISI-304 Stainless Steel and top surface(Counter) should be made of one piece and polished to seamless satin finish. The scrub sink should be provided with a front access panel which should be easily removed for access to the water controlled valve, waste connections, stoppers and strainers. Hands free operation should include infra-red sensors with built-in range of adjustment. Thermostatic mixing, valve control should be located behind the access panel and maintain constant water temperature. User defined time 1, 3,5,10 min. are available. This timing should be adjustable to meet individual application requirements, provided with infrared sensors, thermostatic control taps with fail-safe temperature controls. All units should have reduced anti splash front. It should have manual foot and operation mode. Knee operated switch should be provided additionally. The station should also have inbuilt soap dispensers. Scrub station should be equipped with 10L Geyser for supply of hot water.</p>
12	<p>X-RAY FILM VIEWER The Two (2) plate viewing LED type/ high frequency fluorescent lamps X-Ray Viewing Screen should be designed to provide flicker free luminance for clear film viewing. Each plate should be able to illuminate films up to 14"x17" size. 'Dimming is controlled using dimming ballast and PCB mounted inside the box. The mounting of the Screen should be installed flushed with Operation theatre wall to avoid dust accumulation and microbial growth and ease of cleaning. The diffuser should diffuse the light evenly and to provide adequate luminance for film viewing. Body should be of extruded aluminum powder coated black with bacteria and disinfectant resistant finish. Proper spring loaded film clip with rollers should be provided to hold the films firmly and to remove the film without scratches. The X-Ray Film viewer should comply with relevant Electrical Safety Codes for High and Low voltage system.</p>
13	<p>OT LIGHT Description: Dual Dome LED Surgical Lighting System . i) OT Light Operating Room Surgical Lighting System should provide an ideal combination of brightness, Maneuverability, and shadow resolution without sacrificing color accuracy through a consistent LED technology with a unique faceted reflector design technology. Such Lighting System should have the following technical specifications: - Number of Light heads : : Two per suspension - Number of LEDs : Should be adequate enough for following minimum illumination level - Color Temperature : 3800 - 5000 K(±10 %) - Variable colour temperature. - - Field Size Diameter :20 to 28cm (+/- 10%)</p>

- Depth of Field :750 to 1100mm (+/- 10%)
- Illumination Level : minimum 160,000 Lux each
- Controls : Wall Control Touch Panel
- Rotation : 330- 360 degrees
- Vertical Adjustment Range : + 20 inch – 25 inch
- Sterilizable Handle : 2 Nos
- Lighthead Diameter : 30-35/800mm×720mm of size
- Mounting Type : Ceiling
- Supply Voltage : 230 VAC 50 Hz
- Bulb Type : LED
- Dimming Range : 30% - 80%
- Operating/Storage Humidity : 10 – 95%
- Life of Light Source :>40,000 Hrs.
- BIS/European CE /US FDA certified

IN ADDITION TO THE ABOVE, FOLLOWING TURNKEY WORKS FOR INSTALLATION AND COMMISSIONING OF MINOR OT ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR:

The turnkey work includes all modifications to the built up space provided at the hospital site including civil modifications, electrical works, plumbing works, all cable trenches and railings wherever required, interior decoration, air conditioning duct, furniture and other related works of the Operation Theatre required for the smooth and efficient functioning of the centre. These works shall comply with all relevant safety and standards guidelines. The vendor is fully responsible for installation and commissioning of all equipment mentioned in the tender. Bidders are strongly advised to visit the site for assessment before the submission of tender offer.

Electrical cabling of IS : 1554 standard(Latest) and wiring as per IS : 732 standard from MDB(Single point source) to Electric Distributional Panel and to the corresponding load points

- Providing fixing of **Electrical Gadgets** like ELCB, MCB, Light Points, Power points, in the MINOR OT room.
- Number of fans, power point, bulbs/tube light. Apart from these supplies to the individual equipments with ELCB & MCB for MINOR OT
- Installation of MCB, ACB, ELCB & OCB of Havell/Siemens/L&T/Schneider etc for Control Panel for MINOR OT.

In addition to the above mentioned equipment/appliances, if the contractor thinks it necessary to include any other equipment/appliances, accessories etc. for the MINOR OT then that may be provided and any other necessary work required for satisfactory working of the MINOR OT.

In addition to the above mentioned equipment/appliances, if the contractor thinks it necessary to include any other equipment/appliances, accessories etc. for the MINOT OT then that may be provided after approval from Engineer in-charge.

The sizes are approximate. Minor variations in sizes shall be acceptable subject to prior approval of the Engineer.

- **Third party quality certification of the OT items from SGS/ Bureau Veritas /Lloyds should be submitted by the contractor as “Certifies that the OT items for installation meet the technical specification and BOQ of the tender document vide contract No (Mention Contract No.)”**

BOQ Minor OT					
Package -Execution including Supply, Installation, Testing & Commissioning of MINOR OT including Turnkey Works with 1 Year Defect Liability Period					
Rate shall be inclusive of all charges like Freight, Cess, Insurance, GST @18% etc.					
Item No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
1.0	CEILING CONSTRUCTION Complete with all accessories as per technical specification	SQM	53.00		
2.0	CEILING FILTRATION SYSTEM / LAMINAR AIR FLOW SYSTEM (AIR MANAGEMENT SYSTEM) Complete with all accessories as required as per technical specification	Nos	1.00		
3.0	CORNER COVING Complete with all accessories as per technical specification	Mtr	46.00		
4.0	WALL PAINTING Complete with all accessories as per technical specification	SQM	92.00		
5.0	SWING DOOR (2100 X 1500) mm Complete with all accessories as per technical specification	Nos	1.00		
6.0	HINGED DOOR (2100 x 1000) mm Complete with all accessories as per technical specification	Nos	1.00		
7.0	PERIPHERAL LIGHT CUM CLEAN ROOM LUMINARIES -LED Complete with all accessories as per technical specification	Nos	10.00		
8.0	DISTRIBUTION BOARD ELECTRICAL WIRING, CONDUITING WITH FIXTURES INSIDE THE OPERATION THEATRE Complete with all accessories as per technical specification	Lot	1.00		

Item No.	Description	Unit	Qty	Rate in Rs.	Amount in Rs.
9.0	FLOORING (ANTISTATIC CONDUCTIVE ROLL) WITH SELF LEVELLING COMPOUND Complete with all accessories as required as per technical specification	SQM	53.00		
10.0	MEDICAL GAS LINE INSTALLATION Complete with all accessories as per technical specification	Lot	1.00		
11.0	SCRUB STATION Complete with all accessories as required as per technical specification.	Nos	1.00		
12.0	X-RAY FILM VIEWER Complete with all accessories as per technical specification	Nos	1.00		
13.0	OT LIGHT DUAL DOME LED LIGHT Complete with all accessories as required as per technical specification.	Nos.	1.00		
					-
	Total in Rs. (including all charges)				-

TECHNICAL SPECIFICATION OF CSSD EQUIPMENTS

Scope of Work : Supply, Installation, Testing and Commissioning of CSSD equipment on Turnkey basis and handover to the client in satisfactory condition and providing of free spares and service during defect liability period.

1. HORIZONTAL RECTANGULAR DOUBLE DOOR AUTOCLAVE

Capacity : 550-600L

The sterilizer should have **sterilization at temperatures 134°C and 121°C.**

The sterilizer is conforming to the following standards:

- ISO certified 9001 : 2008
 - ISO certify 13485 : 2003
 - CE certified
- **Fully automatic** and Microprocessor controlled, User friendly Alpha-numerical / Graphical / Digital type display and Display of Cycle status Fault/Error Indication with visual alarms.
 - The normal working pressure would be 1.2 - 2.1 Kg/cm² corresponding to temperature 121 - 134°C.
 - **Sterilize** Surgical instruments, textiles and hospital utensils.
 - The **Jacket** of the sterilizer should be of the channel type for providing additional strength to the chamber and made of AISI-316L Stainless steel.
 - The **Chamber** should be constructed of AISI-316L Stainless steel
 - The **structure** of the sterilizer would be made of stainless steel and would be adjustable for uneven floor surfaces.
 - The Chamber and jacket should be **insulated** with Chloride free mineral wool which should be covered under rigid, removable steel housings.
 - The Vertical Sliding **Doors** made of AISI-316L Stainless steel should be with automatic door sealing. The pneumatically operated door slides vertically upward to close. Doors include all interlocking safety devices prescribed by the world's safety standards and since the surface temperature of the door never exceeds 55°C; the risk of burn injuries is eliminated.
 - The **Safety features** as the Sterilizer operation cannot commence until the door is fully closed, the door cannot be opened until the sterilizing cycle is fully completed and the chamber is effectively vented to atmosphere before the opening mechanism is fully released.

- All **Steam Piping** should be made of stainless steel with TIG welding joints.
- The sterilizer should be equipped with :
 - Chamber Drain Temperature Sensor for steam processes
 - Chamber Pressure Sensor*
 - Temperature sensors should be PT 100 type
- * Pressure sensors should have software based temperature compensation. Accuracy of 1% over the range 0 to 5 bar.
- **Alarm System** for:
 - Failure of Temperature and pressure sensor
 - Phase time out
 - Not properly closing of door
 - Power failure
 - Low water level
 - checking of all safety devices continuously
- Both the chamber and the jacket should be equipped with **Safety Valves**. If the pressure exceeds the allowable limit the safety valves should discharge steam.
- The Sterilizer should be equipped with liquid-ring **Vacuum Pump** to create vacuum for total evacuation of the air from the chamber in the shortest time.
- The Sterilizer should be provided with following mountings & fittings:
 - Fully Automatic with pre-selected and variable programs
 - Self sterilizing vacuum drier.
 - Safety valve spring loaded and vacuum breaker.
 - Pressure and compound gauge
 - Screen plug for chamber discharge line.
 - Chamber discharge line with team trap and swing check valve.
- The **operation** of the sterilizer should be activated by means of **solenoid valve**
- The Sterilizer should be fitted with **Control Panels** of Stainless steel construction where discharged steam from the autoclave on opening of the door cannot impinge on it. The Control Panel contains the control system and associated circuitry. Each circuit should be protected by a miniature circuit breaker. All electrical components in the control panel should be labeled. All wiring should be insulated and labeled to link with the circuit

wiring diagrams and should be resistant to conditions of high humidity and heat, eg. PVC and silicon insulated wires.

- The **controls** must be capable of controlling automatically the following parameters:
 - P1-Wrapped instruments, textiles, porous load - 134°C
 - P2-Heat sanities material, rubber, plastic porous load - 121°C
 - P3Sterilization for open instruments - 134°C
 - P4-Bowie & Dick Test cycle - 134°C
 - P5-Automatic leak test
- The Sterilizer system is incorporated with PLC based microprocessor with the facility of Human-Machine-Interface.
- The technician can program the cycles with his choice of different settings of time, temperature and corresponding pressure, which can be used to sterilize various types of contents / materials.
- The **Micro-Processor based control Panel** should control entire cycle of sterilization and steam pulsing automatically through water ring vacuum pump. The control panel should house the complete automatic process control arrangement including timers, relays, contactors etc.

The digital display at front panel should show the following parameters:

- Chamber Pressure
 - Chamber temperature
 - Cycle no.
 - Batch no.
 - Time & Date
 - Alarm indicator
 - Error code
 - Low water indicator
- **Printer** that should monitor and record dates, time of day, load, identification no. and operating parameters i.e. temperature, pressure and residence time automatically and continuously throughout the sterilization cycles
 - The Sterilizer should have built-in **Steam Generator** fitted below the sterilizer chamber. The Steam Generator pressure vessel should be made of AISI-316L Stainless steel and should be insulated in 50mm Chlorine free mineral wool enclosed in a rigid removable steel sheet housing. A water level **Gauge glass** for inspection should be provided with Steam Generator. The unit should be fitted with elements made of Stainless steel.
 - Electrically heated
 - **The Chamber, Jacket and Steam Generator should be hydraulically tested at the pressure twice of the working pressure**

With accessories of Carriage (SS-316) and Trolley (SS-304)

2. ETHYLENE OXIDE STERILIZER

- I. The ETO gas sterilizer should be fully automatic type for sterilization of heat sensitive goods such as anesthetic tubing and other plastic disposable materials etc.
 - II. The sterilization chamber should be double walled, corrosion and gas resistant of suitable alloy.
 - III. The inner surface should be smoothly finished to minimize gas deposits.
 - IV. The chamber shall be insulated against heat emission and jacket shall be connected to warm water circulation arrangement.
 - V. The sterilizer door shall have a quick release locking arrangement, with door opening to the sides.
 - VI. Suitable safety interlocking arrangement shall be provided for the door so that the sterilization process does not start unless the door is properly locked in position and during the programme run it should not open.
 - VII. The sterilizer shall be provided with suitable vacuum pump and gas trap to separate and evacuate the gas.
 - VIII. The ETO sterilizer should be able to operate for the minimum essential following cycles programmes :
 - a) Sterilization cycle for heat sensitive objects that ensure temperature from 33-55degreeC with subsequent aeration for protection of the operating personnel.
 - b) Aeration cycle/programme to extract residual gas out of the sterilized objects after each sterilization cycle.
 - c) Automatic chamber evacuation cycle with subsequent venting before releasing the door lock for opening, thereby prohibiting exposure of the operating personnel by gas dissolving from the chamber walls during shutdown period.
 - d) Gas disposal arrangement/catalytic converter.
 - IX) Capacity: Should have capacity of **250 L**
 - X) The ETO sterilizer shall be equipped with the following accessories:
 - a) Sterilization basket of suitable size : 1 No.
 - b) EO gas cartridges: 25 No.
 - c) Packaging material with chemical indicator of all sizes, 1 roll each. (minimum 3 rolls)
 - XI) Gas cartridges should be puncturing system
 - XII). Technical Data
 - a) Sterilization Gas : Ethylene Oxide
 - b) Sterilization method : Cold sterilization of heat sensitive material
 - c) Operating temp. Range : 33 to 55 C
- HSCC/ SES/CSSD

d) No. of doors : One
Should be provided with Compressor if required.
Should be CE certified.

3. DOUBLE DOOR WASHER DISINFECTOR WITH ACCESSORIES

1. The washer disinfectant shall be suitable for cleaning and disinfection of surgical instruments/goods. The process shall include pre wash, detergent wash and hot water disinfection, rinse and drying cycles.
2. The unit shall be suitable for electrical operation and would be complete with water circulation pump, necessary valves & fittings.
3. It should be microprocessor based so as to ensure correct program.
4. Chamber Capacity: **Operational Volume should be 300 L.** The chamber should be made of S.S. 316 quality with electro polished washed surfaces. The chamber edges should not have the pockets & folds so as to avoid bacterial growth.
 - * The unit should be provided with 2nos. insulated SS 316 doors and silicon gasket seal
5. Washer should have following features:
 - a) For shortest possible filling and draining phases, higher capacity quick opening valves should be used so that short total process time is achieved. The design should focus on saving the environment through reduced consumptions of all utilities.
 - b) Cleansable spray arms should be located at the top and bottom of the chamber.
 - c) Wash carts should be equipped with cleansable spray arms between each shelf so as to facilitate water to reach all the surfaces which needs to be cleaned.
 - d) Injection wash carts should be automatically connected to water and drying air in order to clean and dry the inside of the tubular instrument.
 - e) The drying air should be pre-heated.
 - f) The washer should be equipped with independent temperature monitoring and validation test port.
 - g) Data interface RS232 should be available.
 - h) All electrical components should be easily accessible for easy service - ergonomic design.
 - i) Washer should have a built in self-cleaning debris filter
 - j) Washer should be equipped with audible alarm that alerts if error code occurs.
 - k) **Double door**
 - l) The washer should have 3 dosing pump (detergent, alkaline & lubrication) for process chemicals, instrument lubricants/ enzymatic cleaners
6. The washer should perform:
 - a) Pre-rinses with cold water.
 - b) Main washes with hot water (60C) and detergent.
 - c) Final rinse with water (55C)

- d) Disinfection with hot water (85C)
- 7. Unit to have LCD display and operating console to have membrane key pad for durability.
- 8. Unit should feature safety measures such as:
 - a) Automatic door lock.
 - b) Automatic temperature regulation.
 - c) Electronic adjustment of water level.
- 9. The unit should also have an interface as standard for an optional batch printer.
- 10. The washer disinfector shall be supplied with universal rack, 4 level racks for instrument tray, full size instrument tray as well as stop valves, anti-suction device and plastic water trap.
- 11. Should ensure essential washing accessories.
- 12. Standards & Norms:

Should be CE certified.

Manufacturer should be ISO 13485:2003/ EN ISO15883/ISO9001

4. **ULTRASONIC CLEANER (40 L)**

- 1. The units should be a compact free-standing bench model, with a built-in tank manufactured from high-quality (316) stainless steel and a solid-state generator that sends ultrasonic (approx 40 KHz) impulses through wash water containing detergent and electrical heating; microprocessor controlled display with memory time and temperature functions.
- 2. The electrical energy should be transformed into sound waves by transducers, fixed to the bottom of the tank.
- 3. The tank should be made of solid stainless steel (316).
- 4. The ultrasonic cleaner should have a display and control which could be easily seen and placed above any liquid for safety and reliability.
- 5. It should have digital read out timer and temperature setting (temperature adjustable from 20 to 69 °C) monitoring.
- 6. Capacity should be **40 L**
- 7. Should work on 230V, 50 Hz AC Supply.
- 8. Ultrasonic cleaner should be CE certified.
- 9. Ultrasonic cleaner should supplied with Wire mesh basket of suitable size & Stainless steel lid

5. **AIR COMPRESSOR**

Rotary/Reciprocating Air Compressor coupled with 6 hp electric motor.

6. HEAT SEALING MACHINE

1. Rotary heat sealers should provide validated sealing of sterilization bags and clear-view pouches (paper/plastic laminate).
2. It should be microprocessor-controlled.
3. The rotary heat sealer should give documentation of process parameters via an integrated printer and could be integrated with documentation system.
4. The ergonomically design should be tilted forward for increased user convenience and space saving installation.
5. The sealer housing should be powder-coated and the control panel is of the flat-membrane type, for easy cleaning.
6. It should be operationally simple. When a bag is fed into one side of the machine, the machine should start automatically or by pushing a button, moving the bag through the machine, and applying pressure and heat to form a perfect seal.
7. The warm-up time should not exceed 30 seconds, and the feed speed should be approx. 10 m/min.
8. The temperature should be adjustable from 50–200°C with a tolerance of 1% of the set value.
9. It should be regulated by a heating element that is highly sensitive to temperature fluctuations, assuring even temperature and perfect seals.
10. It should offer a number of additional features, including:
 - a) Automatic start-up
 - b) Reverse feed function in case an instrument accidentally enters the sealing area
 - c) Energy-saving stand-by mode
 - d) Pre-set temperatures
 - e) Re-settable counter function
11. Rotary heat sealers come with a port and cable for connection of the sealer to a PC and printer, enabling monitoring and documentation of the entire process.
12. Should have a protection mechanism against overheating and start prevention at temperature deviations outside +/- 5° C tolerance.
13. Rotary heat sealer should be CE certified.

7. SPRAY GUN RINSER

1. Spray gun rinse unit should be designed for connection to water or compressed air, to use for assisted cleaning of pipettes, catheters, cannulas, syringes etc.
2. The spray-gun should include tubing and different tips and nozzles for the various cleaning purposes, like
 - a) Syringes and cannulas with Record cone

- b) Measuring and blood pipettes
 - c) Catheters and small pipes
 - d) Drainage tubing
 - e) Syringes and cannulas with Lure cone
 - f) Spray jet for rapid instrument cleaning
 - g) Bottles and Erlenmeyer flasks
 - h) Water jet pumps for suction cleaning
 - i) All appliances are stored within easy reach on a special wall-mounted rack (included).
3. A special wall-mounted rack should be a part of standard supply to store all appliances within easy reach.
 4. All tips should be able to get easily locked to the spray gun by a safety cone.
 5. The gun grip is heat-insulated. The water/air pressure is released, regulated and fully controlled by the spray-gun trigger (adapted to a 1/2" connection).
 6. Bidder should provide complete details of sets of standard and optional adapters, nozzles and accessories

8. DRYING CABINET

1. Should be automatic in operation
2. Inner chamber should be made up of stainless steel and outer chamber should be of SS sheets
3. Should have heaters of minimum 3.5 KW
4. There should be provision for setting the drying temperature and drying time.
5. Capacity-**275L**

9. GAUZE CUTTING MACHINE

1. Should be useful in cutting thickest of cotton gauze material
2. Should consist of a cutting unit and a knife sharpening unit
3. Blade size should be 200 mm.
4. Cutting Capacity should be 165 mm.
5. Should work on 230V, 50 Hz power supply.

10. MULTI-ROLL TAPE DISPENSER

1. Size (LxWxH) 2600x600x1200mm
2. This dispenser for sterilizer tape should hold two reels of tape.

3. The heavy-duty bottom plate should be fitted with anti-slip rubber to prevent the dispenser from slipping when tape is torn off.
4. Should be made of high quality coated steel for long use.

11. DOCUMENTATION LABELLER

The labeller should be 3–line for printing the following information

- a) Person responsible for sterilization
- b) Load number
- c) Packaging content
- d) Sterilizer number
- e) Production date
- f) Expiry date

Should have 24 rolls of 750 3-line labels with double adhesives (Steam and ETO) indicator

12. WASH STATIONS WITH 2 SINKS FOR DIRTY AREA

1. Size Approx. (L x W x H) : 2000x750x850 mm
2. The worktop should be made of solid, bright-polished minimum sheet thickness of 1.5 mm stainless steel (304) to withstand heavy-duty work with wet instrument.
3. Designed with an integrated 10 mm high edge at the front and sides, and a 60 mm high edge (splash back) at the rear
4. The front and side edges are reinforced and widened to 49 mm. Edges are welded together and polished at the corners.
5. The worktop should slope to the sink, and reinforced by a full-length support frame.
6. The support frame should be a complete assembly with the front, back and ends welded together at the corners.
7. The worktop and support frame should be bonded together with double-adhesive tape of a special, age-resistant quality to give rigidity and noise abatement.
8. The floor stand should be made of polished stainless steel.
9. The table should be available with double sink units preferably at both ends of the table, all with a smooth, polished inside finish made of stainless steel (304) top
10. Corners should be curved to a 65 mm radius for easy cleaning.
11. The bottom should slope to the drain.
12. Sink units should be of sizes that allow processing of the large modular instrument trays
13. Sink units should have 650 mm wide and 900 mm high (adjustable ± 25 mm).
14. The legs should be able to provide strong support and hold to the entire unit securely.

15. The sink should include a drain valve, removable strainer, manually operated drain-valve, overflow drainpipe and water trap. The table also includes a mixing faucet with swivel spout, for cold and hot water connection.
16. Should be delivered ready for assembly.

13. SS WORK TABLE

1. Size approx. (LxWxH):1200x650x900 mm approximately.
2. Stainless steel tables specially designed for working with dry goods and for general purpose pre-storage.
3. The work tables should have a rigid stainless steel construction which is easy to clean and without sharp edges or corners.
4. The table should be ergonomically worked up, should have easy to clean robust matt-finished (to reduce reflection of light from the surface) with minimum sheet thickness of 1.5 mm stainless steel (304) worktop/surface to withstand and carry out heavy work comfortably, either sitting or standing.
5. The edges along the front, back and sides should be reinforced and widened to 37 mm, giving a rigid construction.
6. They are welded together and polished at all corners for good hygiene, as well as for the comfort and safety of the staff.
7. The worktop should be supported by a complete assembly with full-length reinforcements along the front, back and ends, welded together at the corners.
8. The worktop and support frame are bonded together with double-adhesive tape of a special, age-resistant quality to give rigidity and noise abatement.
9. The support frame has to be mounted on a solid, stable floor stand, made of polished stainless steel square tubing, with horizontal braces 300 mm above floor level. An adjustable 10 cm (\pm 25 mm) plastic foot, easy to clean, is mounted on each leg
10. The provision is to be made for a sturdy 445 mm-wide stainless steel shelf (optional) can be mounted on the horizontal braces.
11. Must be delivered ready for assembly
12. All edges should be smooth and the rigid frame should be made up of minimum 1.5 mm sheet thickness stainless steel (304).
13. There should be unobstructed access to the working space, since the only supports needed along the front of the table are the corner legs. This also facilitates cleaning of floors.

14. CONTROL & PACKING TABLE WITH TWO SHELVES FOR CLEAN AREA

1. Size (LxWxH) : 2000x1400 x 1400 mm approximately.
2. This table should be specially designed for sorting, inspection, functional control and packing of various sets for wards, clinics etc. and for surgical instrument sets in trays. The work could be done comfortably, either sitting or standing.

3. The worktop should be made of Stainless steel material. All edges should be smooth. The extended width of the worktop should be designed to facilitate thorough inspection of instrument trays and allow the use of large wrapping material.
4. The rigid frame is made of stainless steel (304).
5. There should be unobstructed access to the working space, since the only supports needed along the front of the table are the corner legs. This also facilitates cleaning of floors.
6. Should have double workspace. One workplace table should have 700 mm wide worktop and other workplace should have 1400 mm worktop.
7. The table should include a two-shelf console, mounted on the worktop, for storage of packaging materials. The rigid supporting columns of the console include 3 electrical outlets.
8. There should be a free space of 450 mm between the lower shelf and the worktop, and 150 mm between the two shelves.
9. The table should have a drawer unit (both sides as double model) mounted under the worktop.
10. Each drawer unit should be 400 mm wide and should include a drawer and a sliding plate.
11. Fluorescent tube fittings (Inspection lamp) should be available. (Optional)

15. WIRE STORAGE SHELF MODULE FOR DIRTY/CLEAN/ STERILE AREA

1. Size (LxWxH) : 1500x450x1900 mm approximately.
2. Construction should be based on single free-standing shelf modules for storage of clean linen, instruments, and packing material or sterilized goods, including disposables.
3. Moreover, two single modules can be placed back to back and combined as a double module unit.
4. If two units are to be connected, 10 S-hooks should be supplied.
5. The wire construction should allow good air circulation while permitting easy inspection of the goods.
6. The wire shelves should be made of special heavy-duty steel (304), chromium-plated and surface treated with clear epoxy varnish to facilitate cleaning.
7. The shelf unit should be easy to assemble on site and all parts should fit precisely.
8. Shelves should be mounted by means of plastic clamps onto circular rigid posts, with the adjustable height within a range of about 50 mm. Each post should include a height adjustable foot.
9. Each unit should include 5 shelves.
10. The shelf unit should have optional Ø 125 mm castors for using as a mobile storage unit by replacing the foot with castors.

16. PASS BOX

1. Area : Dirty to Clean supply, ETO to Sterile supply & Sterile Issue
HSCC/ SES/CSSD

2. Size : 600x600x600mm, internal
3. Should be made up of SS 304 sheets with double wall construction
4. Should have UV lights for safe storage of components
5. UV light should automatically switch off when any one door is opened
6. Pass-through chamber should be based on electrical sliding hatches and should fit all types of standard racks.
7. The chamber should consist of two electrically operated sliding hatches.
8. Each hatch should have its own 24 DC motor that powers a drive belt and ensures smooth operation, as well as its own convenient push-button control to ensure that both hatches cannot be opened at the same time.
9. The control should feature two modes of operation to open or close the hatch with a press button mechanism.
10. Should have door interlocking to prevent simultaneous opening of both the doors
11. Should have toughened glass paneling for easy visibility.

17. CLOSED TRANSPORT TROLLEY FROM STERILE STORE TO OT

1. Size : 1400x750x1260 mm(LxWxH) (External) approximately.
2. A Closed Transport trolley is used for sterile goods handling, for which higher protection than normal dust protection is required, e.g. short transports between hospital buildings. Suitable for handling baskets or containers with a total capacity of 9 STU (1 STU = 600 x 300 x 300 mm) on three solid, removable shelves (3 x 3 STU).
3. Trolley should be fitted with large stainless steel wheels (Ø 160 mm) for easier maneuverability.
4. Should have two fixed and two swivel wheels with brakes.
5. Should be of fully welded stainless steel construction (minimum 18 gauges, 304).
6. The doors should open 270° for easy access and cleaning.
7. Trolley should have lockable doors and should include handlebars.

18. TABLE TROLLEY FOR DIRTY/CLEAN/STERILE AREA

1. Size : 1080x550x800 mm approximately.
2. The table trolley is made of all-welded medical grade stainless steel tubing.
3. The trolley should have handlebars.
4. The solid top and bottom shelves are made of heavy gauge stainless steel (304) with a ground and polished finish, and with a 12 mm raised edge all around.

5. The lower shelf is 300 mm above floor level. There are protective buffer rollers on all four corners.
6. The table trolley has 4 swivel wheels, mounted in ball bearings, for easy handling even in narrow passages.

19. MODULAR STERILIZING BASKETS BIG

1. Size : 585x395x195 mm approximately.
2. Area : Various movement
3. It should be modular design with standard sizes and high precision and should be designed for sterilizing / processing as well as easy handling and management of the supply, storage and distribution of re-circulated sterilized goods.
4. It should be self-drying after disinfection in hot water (min.+85°C)
5. It should be sturdy, jig-welded trays maintain their size and shape even if handled carelessly.
6. It should be both nest able and stackable There should be special wire support to help making baskets both stackable (when the supports are folded into the basket) and nest able (when the supports are folded out)
7. The top frame should be designed such that it should serve as a handle grip for easy carrying even when heavily loaded.
8. There should be no sharp edges or wires.
9. The surfaces should be smooth to assure easy cleaning in a washer-disinfector.
10. The baskets should be made of electro-polishes heavy-duty stainless steel (304) and should have a rigid bottom frame that gives space for airing between goods and work surfaces and allow use on roller belt and chain conveyors.
11. It should be designed and manufactured in accordance with high quality specifications to assure long lifetime.

20. MODULAR STERILIZING BASKETS MEDIUM

1. Size : 585x395x100 mm approximately.
2. Area : Various movement
3. It should be modular design with standard sizes and high precision and should be designed for sterilizing / processing as well as easy handling and management of the supply, storage and distribution of re-circulated sterilized goods.
4. It should be self-drying after disinfection in hot water (min.+85°C)
5. It should be sturdy, jig-welded trays maintain their size and shape even if handled carelessly.
6. It should be both nest able and stackable There should be special wire support to help making baskets both stackable (when the supports are folded into the basket) and nest able (when the supports are folded out)
7. The top frame should be designed such that it should serve as a handle grip for easy carrying even when heavily loaded.

8. There should be no sharp edges or wires.
9. The surfaces should be smooth to assure easy cleaning in a washer-disinfector.
10. The baskets should be made of electro-polishes heavy-duty stainless steel (304) and should have a rigid bottom frame that gives space for airing between goods and work surfaces and allow use on roller belt and chain conveyors.
11. It should be designed and manufactured in accordance with high quality specifications to assure long lifetime.

21. BASKET RACK

1. Should be suitable for keeping 20 Baskets
2. Should be mounted on Bullet feet legs
3. Should be made up of stainless steel.
4. Should be provided with handle for easy transport.

22. STORAGE RACK

Size - 1830X535X1830

5 shelves; Made of Stainless Steel-AISI-304, Finished with Polishing with bullet feet

23. STAFF CHAIR

1. Should be medium Back chair
2. Should rest on high quality 50mm castors on4 legs with cross reinforcement for sides with arm rest and foot stumps of PVC
3. Should have seamlessly upholstered seat and backrest, washable antimicrobial with poly foam cushion.
4. Colour of base should be black.
5. Should be height adjustable, broad, padded.
6. Should have upholstered arm rests and comfortable back rest.

24. LAB STOOL WITHOUT BACKREST (SS-304)

1. Should have stainless Steel top
2. Should be height adjustable from 450mm to 680 mm, through mild steel threaded screws
3. Should have four legged base made of 25mm steel tube mounted on rubber shoes.
4. Should have Stainless steel ring for footrest.
5. Should be pre-treated Epoxy powder coated frame work.

25. STORAGE CUPBOARD

1. Should have size 500 mmL x 450 mmH x 400 mm depth approximately.
2. Material should be high quality, cold rolled, close annealed (CRCA) steel.
3. Should be provided with lockable doors

26. WASTE BIN PEDAL OPERATED-SS

1. Should be made up of high quality stainless steel.
2. Should have minimum capacity of 5 liters.
3. The covering lid should be open able by pressing the plate attached to the bottom.

27. CHANGE LOCKER -4 COMPARTMENTS

1. Change locker should have 4 compartments.
2. Should have 2 lockers at bottom and 2 at top.
3. Size of each compartment should be 20cm W x 80cm H x 45 cm D.
4. Should be of MS
5. Should be pretreated and epoxy powder coated.

28. VISITORS CHAIR

1. Visitors chair should be ergonomically designed, sturdy and of good quality.
2. Should have comfortable seating and low back support.
3. Should have padded seats with anti-microbial upholstery of leather finish.
4. Should be with arm rests and fixed height.
5. Should have frame of MS tubing, multiple pretreated and finished with epoxy powder coating.

29. OPEN STORAGE RACK

1. Open racks should be made of stainless steel -304
2. Should be highly durable, and should have narrow holes for allowing ventilation.
3. Should be water resistant, disinfectant resistant and rust proof.
4. Should be provided with lockable castors
5. Approx. Dimensions: 180cm (H) x45 cm (W) x150cm(L) approximately.

30. OFFICE TABLE

1. Should be wooden executive office table.
2. Should be high quality, aesthetic and ergonomic design.

3. Top should be made of pre laminated, of high density pressed wood, properly treated.
4. Should be flame and water retardant. Lipped on all sides
5. Should have an option for placing keyboard of computer
6. Should have one shelf on left side
7. Size should be (approx.):1200 mm(L)X800 mm(W)x750 mm(H)

31. SHOE RACK

1. Shoe rack to keep 12 pair of shoes.
2. Should be made up of MS powder coated rack with 4 tiers.
3. Should have length, breadth and depth to keeps shoes of all standard sizes.

32. PAPER DISPENSING TROLLEY

1. Should be movable trolley for storing four different sizes of sterilizing wrapping paper sheets should be made of stainless steel tube.
2. Should have four ball bearing rubber wheels, of which two wheels should be equipped with brakes.

IN ADDITION TO THE ABOVE, FOLLOWING TURNKEY WORKS FOR INSTALLATION AND COMMISSIONING OF CSSD ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR:

- The turnkey work includes all modifications/Patch work to the built up space provided at the hospital site including Installation of Equipment, civil works, electrical works, plumbing works, furniture and other related works of the CSSD unit required for the smooth and efficient functioning of the centre. These works shall comply with all relevant safety and standards guidelines. The vendor is fully responsible for installation and commissioning of all equipment. The work includes demolition of unwanted walls.
- Bidder must take into consideration in its bid, costs to be incurred for any additional work pertaining to Civil, Electrical, Plumbing, Sanitary and any other protections relevant as per State/Central Govt. regulation/local authority, Servo stabilisers, U.P.S. etc. required for successful installation testing and commissioning of the system and the offered price should include all such costs, each Schedule is to be considered a package in itself and contractor to execute the order package on a “turn key basis”.
- **Electric distribution panel** for the above CSSD equipment complete with all switchgears, wiring and controls etc complete as per specifications and drawings. (Switch gears of L&T/ Siemens/ ABB/GE or Schneider make). **Earthing system** of Control panel and other electrical instrument and accessories in the CSSD area **as per standard guidelines of BIS(Latest edition)**. All cable trenches and railings should be made wherever required.

- Laying of **GI water pipe line for Plumbing** with necessary taps, joints, elbows, Unions, Tees and valves of GI made and IS-1239 standard (Latest version) to various supply points in the CSSD Room from single point supply(Provided by the hospital). Contractor will be responsible for supply and installation of water storage tanks and Booster pumps. Individual plumbing lines with valves are required.
- Providing fixing of **Electrical Gadgets** like ELCB, MCB, Fluorescent light, Light Points, Power points, Cool air Fans, Exhaust fan etc in the CSSD room.
- Installation of MCB, ACB, ELCB & OCB of Havell/Siemens/L&T/Schneider etc **for Control Panel** for CSSD.
- Installation of all **Electrical cabling** must be of IS: 1554 (As per latest amendment) standard and wiring as per IS: 732 standard and proper earthing of all CSSD equipments and other electrical instrument and accessories in the CSSD room as per standard guidelines of BIS. All cable trenches and railings wherever required
- Construction/laying of **Draining system** from all the equipments/Sinks to the main drain (outside the CSSD) with SS Grating/covered with drain port, proper trap and flow system and tapping.
- Contractor should provide effective **firefighting system**. The contractor should provide fire extinguishers/ two Dry CO2 cylinders-2 kg with essential accessories. Cylinders should be certified by respective regulatory board.
- ETO sterilizer should be provided in a separate room with ventilation, degassing and other regulatory ethylene oxide disposal protection requirements. Exhaust pipe should be laid from CSSD to 3m above the top of the building.
- All necessary work associated with the installation of sterilizer including **integrated steam piping, pressure control valves and exhaust** as required should be done by the vendor. All steam piping should be of SS 304.

In addition to the above mentioned equipment/appliances, if the contractor thinks it necessary to include any other equipment/appliances, accessories etc. for the CSSD then that may be provided after approval from Engineer in-charge.

The sizes are approximate. Minor variations in sizes shall be acceptable subject to prior approval of the Engineer.

Note :

- The contractor shall be responsible for the complete works including submission of working drawing and walk through view.
- The contractor should provide complete Operation manual, Equipment manual, Service manual and manuals for all systems and subsystems.
- The contractor should provide Final electrical safety test, system test and calibration to be done by authorized person with test instruments.
- All electrical accessories like cable wire, electrical outlets, switches etc supplied by the contractor should be fire proof of reputed make, certified for electrical safety.
- Wherever makes have not been specified for certain items, the same shall be as per BIS and as per approval of HSCC.
- The contractor should provide test certificate for all materials and equipments used for

CSSD

- Training of personnel of the Institute should be 30 days by the contractor.
- The contractor should prepare and submit layout plan as well as As-Built drawing for Steam Pipeline, Electrical Wiring, Electrical Distributional Panel, Plumbing, Fire Fighting System, Air Washing and Ventilation and Drain line to HSCC for approval before beginning of supply and installation and As-Built drawing after installation.
- The contractor should provide test certificate for all materials along with manufacturer's test certificate and equipments used for CSSD.
- **Third party quality certification of the CSSD equipment from SGS/ Bureau Veritas/Lloyds should be submitted by the contractor as "Certifies that the CSSD equipment to be supplied/supplied for installation meet the technical specification and BOQ of the tender document vide contract No (Mention Contract No.)."**

BOQ -CSSD

Package - Execution including Supply, installation, Testing and commissioning of CSSD including turnkey works with 1 year of Defect liability period

Rate shall be inclusive of all charges like Freight, Cess, Insurance, GST @18% etc.

Item No.	Description	Unit	Qty	Unit Rate in Rs.	Amount (Rs.)
1.0	HORIZONTAL DOUBLE Sliding DOOR AUTOCLAVE Size-600L WITH CARRIAGE AND TROLLEY,Complete with all accessories as per detail technical specification.	Nos	2		-
2.0	ETHYLENE OXIDE STERILIZER (ETO) Size- 250L Complete with all accessories as per detail technical specification.	Nos	1		-
3.0	DOUBLE DOOR WASHER DISINFECTOR CAPACITY-300 L. Complete with all accessories as per detail technical specification.	Nos	1		-
4.0	ULTRASONIC CLEANER CAPACITY-40L Complete with all accessories as per detail technical specification.	Nos	1		-
5.0	AIR COMPRESSOR 6 hp Complete with all accessories as per detail technical specification.	Nos	2		-
6.0	HEAT SEALING MACHINE Complete with all accessories as per detail technical specification.	Nos	2		-
7.0	SPRAY GUN RINSER Complete with all accessories as per detail technical specification.	Nos	2		-
8.0	DRYING CABINET 275 L Complete with all accessories as per detail technical specification.	Nos	1		-
9.0	GAUZE CUTTING MACHINE Blade size - 200 mm Capacity- 165 mm Complete with all accessories as per detail technical specification.	Nos	2		-
10.0	MULTI-ROLL TAPE DISPENSER Complete with all accessories as per detail technical specification.	Nos	2		-
11.0	DOCUMENTATION LABELLER Complete with all accessories as per detail technical specification.	Nos	1		-
12.0	WASH STATIONS WITH 2 SINKS FOR DIRTY AREA Size Approx. (L x W x H) : 2000x750x850 mm Complete with all accessories as per detail technical specification.	Nos	1		-

Item No.	Description	Unit	Qty	Unit Rate in Rs.	Amount (Rs.)
13.0	SS WORK TABLE SIZE-1200X650X900 Complete with all accessories as per detail technical specification.	Nos	4		-
14.0	CONTROL & PACKING TABLE WITH TWO SHELVES FOR CLEAN AREA Complete with all accessories as per detail technical specification.	Nos	3		-
15.0	WIRE STORAGE SHELF MODULE FOR DIRTY/DISINFECTION AREA/CLEAN/STERILE AREA Complete with all accssories as per detail technical specification	Nos	6		-
16.0	PASS BOX Complete with all accessories as per detail technical specification.	Nos	3		-
17.0	CLOSED TRANSPORT TROLLEY FROM STERILE STORE TO OT Size : 1400x750x1260 mm(LxWxH) (External) approximately Complete with all accessories as per detail technical specification.	Nos	9		-
18.0	TABLE TROLLEY with 2 shelves 530x1080x800 H Complete with all accssories as per detail technical specification	Nos	3		-
19.0	MODULAR STERILIZING BASKETS BIG Complete with all accessories as per detail technical specification.	Nos	50		-
20.0	MODULAR STERILIZING BASKETS MEDIUM Complete with all accessories as per detail technical specification.	Nos	50		-
21.0	BASKET RACK suitable to accomodate Baskets Complete with all accessories as per detail technical specification.	Nos	6		-
22.0	STORAGE RACK 5 SHELVES 1830X535X1830 Complete with all accessories as per detail technical specification.	Nos	12		-
23.0	STAFF CHAIR Complete with all accessories as per detail technical specification.	Nos	2		-
24.0	LAB STOOL WITHOUT BACKREST.(SS) Complete with all accessories as per detail technical specification.	Nos	8		-
25.0	STORAGE CUPBOARD Complete with all accessories as per detail technical specification.	Nos	1		-
26.0	WASTE BIN PEDAL OPERATED-SS Complete with all accessories as per detail technical specification.	Nos	2		-
27.0	CHANGE LOCKER -4 COMPARTMENTS Complete with all accessories as per detail technical specification.	Nos	2		-

Item No.	Description	Unit	Qty	Unit Rate in Rs.	Amount (Rs.)
28.0	VISITORS CHAIR Complete with all accessories as per detail technical specification.	Nos	2		-
29.0	OPEN STORAGE RACK Complete with all accessories as per detail technical specification.	Nos	2		-
30.0	OFFICE TABLE Complete with all accessories as per detail technical specification.	Nos	1		-
31.0	SHOE RACK Complete with all accessories as per detail technical specification.	Nos	1.00		-
32.0	PAPER DISPENSING TROLLEY Complete with all accessories as per detail technical specification.	Nos	2.00		-
	Total Amount in Rs. (including all charges)				-

TECHNICAL SPECIFICATION OF MECHANIZED LAUNDRY

SCOPE OF WORK Supply, installation, testing and commissioning and handover of complete Laundry to hospital including all accessories and auxiliary items in accordance with the specifications, bill of quantities including Turnkey work and providing of free spare parts and service during Defect Liability Period.

1. SLUICING CUM WASHER EXTRACTOR

For removal of blood stains, faecal matter, vomit and other residue

Capacity -15 kg , Electrically Heated,

Front loading, Heavy duty, High Spin, Soft Mount, Suspended, Variable frequency drive & Auto reverse & forward, Open pocket & Front display.

- a . Control - Fully programmable Microprocessor/Computer controlled
- b . Dispenser - 4/5 compartment detergent dispensers
- c . Outer Drum - Made of Stainless steel AISI-304 with 2mm thickness
- d . Inner Drum - Made of Stainless steel AISI-304 with 2 mm thickness of basket, CNC Perforated
- e . Outer Cabinet - Made of Mild Steel sheet and channels, Welded structure, Finished with Powder Coating
- f . Door - Made of die pressed Stainless steel AISI 304 quality, 2 mm thickness, Toughened glass window , SS door latch/handle and interlock for safety
- g . Door Opening - 500 mm Ø (Minimum)
- h . Level Sensor - Highly sensitive auto water level sensor with PLC
- i . Seal - High quality seal to be used to prevent contact of water with the Bearings
- j . Bearing Housing- Roller bearings of reputed brand duly packed with grease & Lubricants
- k . Wash RPM - 35 (Minimum)
- l . Final Extract - 870 RPM(Minimum)
- m . G-Force - 340 (Minimum)
- n . Motor - Large capacity motor with variable frequency drive for wash, distribution, low, normal and high spin.
- o . All wet materials and components must be of AISI-304 Stainless steel
- p . All Stainless steel components should be TIG welded and highly polished.
- q . In-built Control Panel and Motor

2. WASHER EXTRACTOR

For washing cleaning and extraction

**Capacity -30 kg , Electrically Heated,
Front loading, Heavy duty, High Spin, Soft Mount, Suspended, Variable frequency drive &
Auto reverse & forward, Open pocket & Front display.**

- a. Control - Fully programmable Microprocessor/Computer controlled
- b. Dispenser - 3/4 compartment detergent dispensers
- c. Outer Drum - Made of Stainless steel AISI-304 with 2mm thickness
- d. Inner Drum - Made of Stainless steel AISI-304 with 2 mm thickness of basket, CNC Perforated
- e. Outer Cabinet - Made of Stainless Steel sheet AISI-304 and channels, Welded structure, Finished with polishing.
- f. Door - Made of die pressed Stainless steel AISI 304 quality, 2 mm thickness, Toughened glass window , SS door latch/handle and interlock for safety
- g. Door Opening - 500 mm Ø (Minimum)
- h. Level Sensor - Highly sensitive auto water level sensor with PLC
- i. Seal - High quality seal to be used to prevent contact of water with the Bearings
- j. Bearing Housing- Roller bearings of reputed brand duly packed with grease & Lubricants
- k. Wash RPM - 35 (Minimum)
- l. Final Extract - 800 RPM(Minimum)
- m. G-Force - 340 (Maximum)
- n. Motor - Large capacity motor with variable frequency drive for wash, distribution, low, normal and high spin.
- o. All wet materials and components must be of AISI-304 Stainless steel
- r. All Stainless steel components should be TIG welded and highly polished.
- s. In-built Control Panel and Motor

3. WASHER EXTRACTOR

For washing cleaning and extraction

**Capacity -60 kg , Electrically Heated,
Front loading, Heavy duty, High Spin, Soft Mount, Suspended, Variable frequency drive &
Auto reverse & forward, Open pocket & Front display.**

- a) Control - Fully programmable Microprocessor/Computer controlled
- b) Dispenser - 5 compartment detergent dispensers
- c) Outer Drum - Made of Stainless steel AISI-304 with 2mm thickness
- d) Inner Drum - Made of Stainless steel AISI-304 with 2 mm thickness of basket, CNC Perforated
- e) Outer Cabinet - Made of Stainless Steel sheet AISI-304 and channels, Welded structure, Finished with polishing
- f) Door - Made of die pressed Stainless steel AISI 304 quality, 2 mm thickness, Toughened glass window , SS door latch/handle and interlock for safety

**Front feed and Front Return Type, Variable Speed Control, Powder coated outer body
Auto timed and Auto temperature control**

- a. Roller - Made of Stainless steel AISI-304. Machined with perforations through out the length and periphery for moisture suction. Roller should run on self aligning ball bearings.
- b. No. of Rollers- 1 (One). padded with heavy duty heat resistant Numex/Polyester
- c. Ironing Chest- Sliding type. Grinded smoothly Polished Chest should move back and forth through pneumatic cylinders at both sides. Adjustable and uniform ironing pressure should be across the entire roll.
- d. Drive - Heavy duty chain drive with spring loaded adjustable sprockets and equipped with Geared Box Motor
- e. Drive Motor- 1.5 Kw (Approx.)
- f. Suction Motor- 0.37 Kw (Approx.)
- g. Control - Digital control with variable speed of Roller through VFD
- h. Roller Speed - 2-6 m/min
- i. Main body - Made of steel sheet of 1.5 mm thickness with powder coating
- j. Safety - Start and stop of the machine with emergency switch. Automatic stopping of the machine for Finger guard
- k. Padding - Galvanized coil type/leaf type springs should be covered with heat resistant double layer Polyester Padding of minimum 900 GSM
- l. Heating load- By easily replaceable heaters with thermostat. Heating elements should be oriented in the Roller in a manner for good dissipation of heat
- m. Top cover - Made of Stainless steel for stacking pressed articles
- n. All wet materials and components must be of AISI-304 Stainless steel
- o. All Stainless steel components should be TIG welded and highly polished.
- p. In-built Control Panel and Motor

6. FLAT BED PRESS

Suitable for linen like uniform, room furnishing , personal garments, Bed sheets & Pillow Covers

**Head & Bed Size- 1500X750mm Electrically/Steam heated,
Auto-timed, Auto-temperature controlled, Double Switch operation, Built-in Suction Blower,
Pneumatically controlled,**

- a) Head - Polished Stainless steel/High quality steel with Teflon coated/Nickel plated
- b) Main Body- Made of Mild Steel sheets of 1.5 mm thickness, Welded structure and finished with powder coating
- c) Rocker Arms- Should move on ball bearings. Front head weight should be counter balanced by Springs. A pneumatic cylinder should be attached to rocker arms for raising and lowering of the head.
- d) Bed- Large perforated bed with heat resistant Silicon/Molleton padding
- e) Blower - 0.75Kw Heavy duty Suction Blower with powerful suction
- f) Safety - Emergency Stop of the machine with emergency switch. Automatic

- stopping of the machine for Finger guard for operator safety
- g) Control - Frontally placed. Automatic digital timed release of the head at preset time. Push Button for raising and lowering of the head pneumatically
- h) Temperature- Digital temperature controller

7. AUXILIARY STEAM GENERATOR

The Steam Generator of steam capacity 8Kg/hr. must be fully automatic and electrically operated. The Steam Generator shall be equipped with pressure vessel of heavy gauge AISI-316 Stainless Steel fitted with SS heating elements and built-in electric control panel, Pressure Regulator, High Pressure Water Injection Pump of 1hp, Pressure Gauge, Solenoid steam release Safety Valve, Highly sensitive Float Regulator, Blow down Valve, Built-in water storage tank, Inlet and Outlet connections, Solenoid valve with Flow Control Device and Drain lines. Pressure vessel should withstand double of working pressure hydraulically.

8. VACUUM FINISHING TABLE WITH IRON

Adjustable height.

Table Top Size -1200mm X 750mm

- a. Table top - Mild Steel sheet of 2.5 thickness padding with heat resistant material like Silicon etc. Perforated flat top padded with high porosity
- b. Main Body - Made of Mild steel sheets/plates and finished with powder coating
- c. Blower - Heavy duty Powerful suction through Centrifugal blower of 0.5hp Motor activated by spring loaded full length foot pedal working in combination with heavy duty micro switch
- d. Heater - 1 Kw In-built Thermostatically controlled stainless steel heater
- e. Electric Steam - Die cast sole plate, Teflon shoe and thermostatically controlled Heating element with moisture trap, Rubberized handle

9. AIR COMPRESSOR

- a. The air compressor of Elgi/Ingersolrand/ Kirloskar make shall be multistage stage, fully automatic suitable for delivering dry compressed air at pressure compatible to Ironer.
- b. Drive - Belt driven with pulleys, belts and belt guard.
- c. Motor - 3 hp. (Kirloskar/Siemens/NGEF/Crompton Greaves make)

10. MENDING MACHINE

The Mending machine or motorized sewing machine shall be heavy duty type with all metallic shuttle, and moving parts. The machine shall be complete with mounting table with adequate space for placement and movement of garments to be stitched/mended. The machine shall have a table mounted drive motor foot pedal operated for convenience of operation with both hands free.

11. WASH ROOM TROLLEY

Capacity -50Kg

The wash room trolley shall be fabricated out of Stainless Steel AISI-304 tubes and flats in all welded construction ground smooth & finished, supported on swiveling wheels.

12. DRY LINEN TROLLEY Capacity-50 Kg

The dry linen trolley shall be designed in Stainless Steel construction with all welded joints ground & smooth finished out of Stainless Steel tubes and bars and foldable front. The base frame shall be supported on 4 Nos. castor wheels min. 75 mm size of swiveling type.

13. MOBILE TABLE

Table top size-1200mm x 750mm x 800mm

The folding table shall be specially designed for carrying rolling and folding of linen in the laundry. The frame of the table shall be fabricated out of MS welded construction with one bottom shelf for storage. Complete with heavy duty ball bearing for swiveling wheels. The table top shall be of polished Stainless steel.

14. SHELF TROLLEY (Finished linen) Capacity -100Kg

The linen trolley shall be designed in Stainless Steel AISI-304 construction with all welded joints ground & smooth finished out of Stainless Steel tubes and bars and foldable front. The trolley shall be fitted with at least 4 Nos. AISI-304 Stainless Steel shelves(2-shelves removable). The base frame shall be supported on swiveling wheels.

15. LAUNDRY SCRUB STATION WITH 2 SINKS.

Stainless Steel Construction. S.S Sinks with taps for wash and rinse using hot and cold water. SS Scrubbing Board in between Sinks. Underneath Shelf. Size-1600x500x900 ht.

16. STORAGE RACK

Size – 1800mm x 1200mm x 460mm

4 shelves; Made of Stainless Steel-AISI-304, Finished with Polishing

17. LINEN FOLDING TABLE

Size- 1500 x 1200 x950mm

The table top shall be fabricated out of S.S. 304 quality and ground and polished to a dull mirror finish. The table top should be duly re-in-forced against bending and treated for sound deadening. The tabletop shall be fixed on a S.S. square tube frame. The frame shall be provided with leveling lugs for suitable adjustment of height up to ± 25 mm.

IN ADDITION TO THE ABOVE, FOLLOWING TURNKEY WORKS FOR INSTALLATION AND COMMISSIONING OF LAUNDRY EQUIPMENT AT ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR :

- **Electric distribution panel (EDP)** for the above Laundry equipment complete with all switchgears, wiring and controls etc complete as per specifications and drawings. (Switch gears of L&T/ Siemens/ ABB/GE or Schneider make)
- **Electrical cabling** of IS: 1554 standard and wiring as per IS : 732 standard and of adequate capacity to bear total electrical load required for laundry works from **nearby MDB/Substation in the hospital** to the Electric Distributional Panel(EDP) of Laundry room and from the EDP to the corresponding load points.
- Providing fixing of **Electrical Gadgets** like **ELCB, MCB, Power points, Fans, Cool air Fans, Exhaust fan** etc in the Laundry room. Number of fans, power point, **Fluorescent light**. Apart from these supplies to the individual equipments with **ELCB & MCB** in the Laundry room. Installation of **MCB, ACB, ELCB & OCB** of Havell/Siemens/L&T/Schneider etc for Control Panel for Laundry.
- Laying of concealed **GI water pipe line** with necessary taps, joints, elbows, Unions and valves of GI made and IS-1239 standard (Latest version) and of adequate sizes to feed total water requirement of the Laundry from the available source point in the hospital to the overhead tank and from the overhead tank to the installed machines'/users' ends at Laundry Room.
- Installation and commissioning of **Water Softener** for softening of available ground/supply water continuously at the hardness necessary for washing and other application required for Laundry is at least “< 50 ppm” or as per suitability of the Steam Generators/equipment. The Water Softening System shall be installed in the capacity compatible to the requirement of Laundry equipments and system running for the assigned duration at fully loaded condition. The specimen of ground/supply water is

available at the site of installation for design and selection of Water Softening System.

- Construction/laying of **Draining/Sewer system** from all the equipments/Sinks to the main drain line with **SS grating**, proper trap and flow system and tapping.
- Necessary Ducting of GI sheet with grills at the suitable places for **Air washing for fresh air** at the working place inside the laundry. Exhaustion of hot air and **Ventilation** for creating **comfortable working zone** within the Laundry.
- Arrangement for requisite **Fire Fighting** for the entire effective zones in the Laundry Room
- Additional work pertaining to Civil works, Electrical works, **Office Furniture, Store Furniture**, Plumbing, Overhead Water Tank, Sanitary, Servo stabilizers/U.P.S etc. and any other protections relevant as per State/Central Govt. regulation/local authority/NDMC, required for successful installation testing and commissioning of the system and the offered price should include all such costs, each Schedule is to be considered a package in itself and contractor to execute the order in package on a “turnkey basis”.

In addition to the above mentioned equipment/appliances, if the contractor thinks it necessary to include any other equipment/appliances, accessories etc. for the Laundry then that may be provided after approval from Engineer in-charge.

The sizes are approximate. Minor variations in sizes shall be acceptable subject to prior approval of the Engineer.

Note :

- **The bidder should attach Technical Compliance item wise with respect to the above technical specifications and turnkey work along with Printed catalogues**
- **The contractor shall be responsible for the complete works including submission of working drawing and walk through view.**
- **The contractor should provide complete List of Commonly used Spares, Operation manual, Equipment manual, Service manual and manuals for all systems and subsystems.**
- **Final electrical and pressure and other safety test, system test and calibration should be done by authorized person with test instruments.**
- **The contractor should provide all electrical accessories like cable wire, electrical outlets, switches etc, and they should be fire proof of reputed make, certified for electrical safety.**
- **Wherever makes have not been specified for certain items, the contractor should provide the same as per BIS and as per approval of HSCC.**
- **Training of personnel of the Institute should be 30 days at least by the contractor.**
- **The contractor should prepare and submit layout plan for Steam Pipeline, Electrical Wiring, Electrical Distributional Panel, Plumbing, Fire Fighting System, Air Washing and**

Ventilation and Drain line to HSCC for approval before beginning of supply and installation and As built drawing after installation.

- **The contractor should provide test certificate for all materials along with manufacturer's test certificate and equipment used for Laundry.**
- **The contractor should provide Third party quality certificate of the laundry equipment from SGS/Lloyds/Bureau Veritas saying as "Certifies that the laundry equipment meets the technical specification and BOQ of the Contract".**

BOQ Laundry

Package - Execution including Supply, installation & commissioning of MECHANIZED LAUNDRY including turnkey works with 1 year Defect Liability Period

Rate shall be inclusive of all charges like Freight, Cess, Insurance, GST @18% etc.

Item No.	Description	Unit	Qty	Unit Rate in Rs.	Amount in Rs.
1.0	Slucing cum Washer Extractor 15 Kg capacity Fully Programmable Microprocessor/Computer controlled. Electrically heated. suitable for heavy duty continuous operation.Details of technical data are as per technical specification.	Nos	1		-
					-
2.0	Washer Extractor 30 Kg Fully Programmable Microprocessor/Computer controlled. Electrically heated suitable for heavy duty continuous operation. Details of technical data are as per technical specification.	Nos	1		-
					-
3.0	Washer Extractor 60 Kg Fully Programmable Microprocessor/Computer controlled. Electrically heated suitable for heavy duty continuous operation. Details of technical data are as per technical specification.	Nos	1		-
					-
4.0	Drying Tumbler 30 Kg heavy duty Programmable Logic Controlled. Electrically heated. Details of technical data are as per technical specification.	Nos	3		-
					-
5.0	Flat Ironer Chest heated Roller Size-380 dia x 3000 L Details of technical data are as per technical specification.	Nos	1		-
					-
6.0	Flat bed press, Size- 1500mm x 750mm. Electrically heated, Details of technical data are as per technical specification.	Nos	2		-
					-
7.0	Steam Generator , Electric, Portable & Fully Portable & Fully Automatic Steam capacity 8Kg/hr. Make Thermax/Unidyne/. Details of technical data are as per technical specification.	Nos.	1		-
					-

Item No.	Description	Unit	Qty	Unit Rate in Rs.	Amount in Rs.
8.0	Vacuum finishing table with Electric steam iron, Size- 1300mm x 800 mm. Details of technical data are as per technical specification.	Nos	2		-
					-
9.0	Air Compressor of 3hp of Ingersoll rand/Elgi/Kirloskar make. Details of technical data are as per technical specification.	Nos	1		-
					-
10.0	Mending Machine Motorized sewing machine shall be heavy duty type. Details of technical data are as per technical specification.	Nos	2		-
					-
11.0	Wash Room Trolley Capacity 50 Kg. Stainless steel construction with tubes and bars. Fitted with 4 nos swivelling castor wheels. Details of technical data are as per technical specification.	Nos	6		-
					-
12.0	Dry Linen Trolley Capacity 50 Kg. Stainless steel construction with tubes and bars. Fitted with 4 nos swivelling castor wheels. Details of technical data are as per technical specification.	Nos.	6		-
					-
13.0	Mobile Table with Stainless table top. Size-1200mm x 750mm x 800 mm ht.with swiveling wheels. Details of technical data are as per technical specification.	Nos.	5		-
					-
14.0	Shelf Trolley Capacity -100 Kg. Stainless construction with tubes and bars. Fitted with 3 shelves and 4 nos swivelling type castor wheels. Details of technical data are as per technical specification.	Nos	5		-
					-
15.0	Laundry Scrub Station with 2 Sinks. Stainless Steel Construction. S.S Sinks with taps for wash and rinse using hot and cold water. SS Scrubbing Board in between Sinks. Underneath Shelf. Size-1600x500x900 ht. Details of technical data are as per technical specification.	Nos.	1		-

Item No.	Description	Unit	Qty	Unit Rate in Rs.	Amount in Rs.
					-
16.0	Storage Rack (Size-1200mmx460mmx1800mm) 4 shelves, Stainless Steel Construction. Details of technical data are as per technical specification.	Nos.	12		-
					-
17.0	Linon Folding Table Size- 1500 x 1200 x950mm Details of technical data are as per technical specification.	Nos.	2		-
	Total Amount in Rs. (including all charges)				-

TECHNICAL SPECIFICATION OF KITCHEN

EQUIPMENTS SCOPE OF WORK:

The scope of work covered under this package comprises of Plan, design, supply, installation, testing and commissioning of Kitchen equipments complete with accessories and auxiliary items including Turnkey works all in accordance with the Technical Specifications, Bill of Quantities and handover to the client and providing of free spares and service during Defect Liability Period.

CENTRAL KITCHEN

1. Wall shelf

Shelf constructed of 18 swg S.S-304 sheet & supports constructed from the 16 swg sheet 2000 x600

2. Single Burner Stock Pot

Top of 16 swg. S.S-304 Sheet on M.S Angle frame work duly rust proof painted on SS-304 Tubular/ Square legs with adjustable bullet feet for uneven floors. Fitted with United/Sarna make heavy duty burner with pilot lamps with individual control valves and heavy duty cast iron pan support. Size- 750x750x600

3. Side Table

Same as Sr. No.1. Size- 1500x600x600

4. Exhaust hood

Complete frame work 20/22swg. Complete joints are air tight insulated weather proof mechanically painted on the Upper surface. S.S-304 filters-island type. Fitted with S.S-304 baffle filters. Exhaust system should have individual motorized blower to exhaust fumes and smokes generated in the Kitchen to outside through GI ducting system Fitted with grease collection tray and hung with metal fasteners complete with accessories as per specification. Size- 1650x1650x600.

5. Boiler (Tilting)

Double walled glass wool Insulated all S.S-304 Sheet body. The outer Most is of 18swg S.S-304 Sheet body. Fitted with heavy duty high pressure burner with pilot lamp & individual control valves. Fitted with water inlet & water outlet valve & strainer at the bottom level of the boiler also fitted with a Top opening lid with insulated handle. The entire boiler is mounted on heavy duty tubular legs. Also fitted with a heavy duty tilting gear to extract the boiled food. Size- 80 Ltrs.

6. Brazing Pan (Tilting)

Double walled mineral wool insulated all S.S-304sheet body on heavy duty tubular legs with adjustable bullet feet. Fitted with heavy duty burner with pilot lamp with

individual control needle valve. Fitted with tilting gear to extract contents after cooking & water inlet valve. Also fitted with top opening lid with insulated handle. Size – 60 Ltrs.

7. Exhaust Hood

Complete frame work 20/22swg. Complete joints are air tight insulated weather proof mechanically painted on the Upper surface. S.S-304 filters-Wall fixed type. Fitted with S.S-304 baffle filters. Exhaust system should have individual motorized blower to exhaust fumes and smokes generated in the Kitchen to outside through GI ducting system Fitted with grease collection tray and hung with metal fasteners complete with accessories as per specification. -2500x900x600

8. Chapatti Plate cum puffer

Structure made of mild steel angle frame duly rust proof painted . Top of 12 mm mild steel, front Panel and under shelf 18swg S.S-304sheet, vertical legs of S.S-304 round pipe of 16swg. 1.5” diameter with nylon adjustable feet. Complete with CI perforated grill for puffing of chapattis, heavy duty high pressure RV burner pilot, individual control valves Indian Oil corporation approved. Size- 1500x600x850

9. Chapatti Rolling Table (Manual)

Top made of 16swg S.S-304 sheet on MS Angle frame work with rust proof painted on S.S-304 square pipe 25x25mm/Tubular legs frame work and under shelf made of 18swg S.S-304 sheet. Vertical legs of S.S-304 round pipe of 16 swg. 1.5” dia with nylon adjustable feet. Size- 1200x600x850

10. Chapatti collection Trolley

Structure made of MS angle, duly rust proof painted Body completely constructed of S.S-304 sheet. Sunken top of 16 swg.S.S.-304 Sheet on S.S tubular legs on heavy duty wheels- 2 with breaks & 2 normal. Size- 750x600x850

11. Exhaust hood

Complete frame work 20/22swg. Complete joints are air tight insulated weather proof mechanically painted on the Upper surface. S.S-304 filters-island type. Fitted with S.S-304 baffle filters. Exhaust system should have individual motorized blower to exhaust fumes and smokes generated in the Kitchen to outside through GI ducting system Fitted with grease collection tray and hung with metal fasteners complete with accessories as per specification. Size-1650x750x600

12. Side Table

Same as Sr. No. 1. Size 1200x600x850

13. Dough Kneader

Body completely constructed of heavy duty cast iron with gear box mounted on the top the mixing bowl of S.S-304 sheet 14 swg with S.S-304 arm to mix the dough and is operated electrically with heavy duty motor of 1 hp. Motor shall be S1 type of IS : 325 standard (Latest version) and of Kirloskar/NGEF/Siemens/ABB/GEC/Crompton Greaves make. Capacity -25 Kg.

14. Garbage Cart

Moulded Plastic container -100 Ltrs capacity fitted with 2 Nos-Big castor wheel. Garbage cart should be set to keep vertically upright on its base. Make- Cambro/Nilkmal/Sintex/Supreme

PREPARATION AREA

1. Wall shelf

Shelf constructed of 18 swg S.S-304 sheet & supports constructed from the 16 swg sheet Size-1800x300

2. SS stand for Chopping blocks with boards

All S.S-304 sheet body to hold poly carbonate chopping boards-4Nos. Size-600x600x850

3. SS Double Bowl Sink unit R.H.S

Top of 16 sg. SS sheet on S.S. Angle frame work on S.S square legs with adjustable bullet feet for uneven floors. Also fitted with a large sink on RHS. Also fitted with a back splash and under shelf. The top is fitted with stud welded bolts with the frame for sturdy and stronger grip. The bowl size 500x500x250. Size-1500 x 650 x 850 + 150 spl.

4. Garbage Cart

Moulded Plastic container -100 Ltrs capacity with 2 Nos-Big castor wheel. Garbage cart should be set to keep vertically upright on its base. Make: Cambro/Nilkmal/Sintex/Supreme

SPECIAL FEED AREA

1. Milk boiler

Triple walled mineral wool insulated all SS -304 sheet body on SS-304 legs with adjustable bullet feet. The outer most wall and the second wall is mineral wool insulated and the other wall water proof and fitted with water inlet, outlet, over flow valves and water level indicator. Also fitted with 3.0 kw immersion type heating element with auto temperature controller and indicating lamps and a heavy duty gun metal faucet. A top opening lid with insulated handle is fitted . Also fitted with two nos, insulated handles on either sides to carry. Capacity- 50 Ltrs.

2. **Two Burner with Oven**

Top of 16 swg. SS Sheet on M.S Angle frame work on SS Square legs with adjustable bullet feet for uneven floors. Fitted with United/Sarna make heavy duty burner with pilot lamps with individual control valves and heavy duty cast iron pan support. Also fitted with an electrically operated oven beneath. Size-950 x 950 x 850 + 150 Spl.

3. **Exhaust hood**

Complete frame work 20/22swg. Complete joints are air tight insulated weather proof mechanically painted on the Upper surface. S.S-304 filters-Wall fixed type. Fitted with S.S-304 baffle filters. Exhaust system should have individual motorized blower to exhaust fumes and smokes generated in the Kitchen to outside through GI ducting system Fitted with grease collection tray and hung with metal fasteners complete with accessories as per specification. Size- 1650x1000 x600

4. **Juicer**

Compact design- fits almost anywhere, under counters or worktables.

5. **Garbage Cart**

Moulded Plastic container -100 Ltrs capacity with 2 Nos-Big castor wheel. Garbage cart should be set to keep vertically upright on its base. Make- Cambro/Nilkmal/Sintex/Supreme

POT WASH

1. **Pot Rack**

All the shelves are S.S-304 Square/Round pipes on 4Nos Square/Round legs with adjustable bullet feet. All the joints are firmly welded and nicely grinded, polished and puffed to a smoother finish. Size-1200x450x1650

2. **Two Sink Pot wash**

The structure made of SS: 304 square pipe 25 x 25 mm Angle frame work duly rust proof painted. Top & sink made of 14 swg and under shelf made of 18 swg SS: 304. Vertical legs of SS: 304 round pipe of 16 swg. 1.5inch dia. With nylon adjustable feet. Size- 1500x600x850+150

3. **Pot wash Sink**

To be constructed with Brick and Cement (Masonry Work) and finished with tiles Size-1500x1500x600

4. **Geyser**

Horizontal Capacity-30 Ltrs.

5. Garbage Cart

Moulded Plastic container -100 Ltrs capacity with 2 Nos-Big castor wheel. Garbage cart should be set to keep vertically upright on its base. Make- Cambro/Nilkmal/Sintex/Supreme

DISH WASH

1. **Two Sink Dish Wash-** The structure made of SS: 304 square pipe 25 x 25 mm Angle frame work duly rust proof painted. Top & sink made of 14 swg and under shelf made of 18 swg SS: 304. Vertical legs of SS: 304 round pipe of 16 swg. 1.5inch dia. With nylon adjustable feet. Size- 1500x600x850+150

2. Soiled Dish Landing Table with glass Rack with Garbage chute

The marine edged top made of 16 swg SS: 304 sheet on MS Angle frame work, duly rust proof painted & stud welded for stronger grip and cross bracing of 18 swg SS: 304 sheet. Vertical legs with nylon adjustable feet. A Garbage chute is provided on LHS & a glass is fitted on the D.L.T. 1500X800X850 +60

3. Clean Dish Table

Top 16 swg S.S-304 sheet on MS Angle frame work duly rust proof painted & stud welded on SS. Tubular/square legs with adjustable bullet feet. Also fitted with SS slide out beneath to hold the plate/glass racks of 500 x 500 mm Size-900x800x850+150

4. Geyser

Horizontal Capacity-30 Ltrs.

5. Clean Dish Rack

Entirely constructed of S.S-304 round pipe with verticals and slides of 1.5 inch and inside shelves S.S-304 sheet 18 swg. The rack with 5 tiers is mounted on four nylon adjustable feet. Size- 900x450x1800

6. Garbage Cart

Moulded Plastic container -100 Ltrs capacity with 2 Nos-Big castor wheel. Garbage cart should be set to keep vertically upright on its base. Make- Cambro/Nilkmal/Sintex/Supreme

SET-UP AREA

1. **Hot Bain Marie on Castors.**

Double walled mineral wool insulated all S.S. Sheet body is fitted with an immersion type heating element of 3.0 KW with auto temp. controller & indicating lamps on heavy duty castor wheels. Also fitted with 4 nos. G.N. pans with lids of ½ x 150. Size- 1800 x 625 x 850

2. Hot Food Service Trolley

Double walled insulated with glass wool. Inner side made of 18swg & outer side made of 20 swg as Stainless steel 304 sheet with 4 no heavy duty Castor wheels (4”/6” dia) with 2 wheels locking arrangement and push cart type handle constructed from ss pipe. Trolley has Immersion type 3Kw heating elements with auto temp. controller & indicating lamp with temp. Indicator to keep 3 Nos big round containers of 10 ltrs. capacity each and 3 more small containers all with lids to keep food hot vegetable/soup/card etc. and one rectangular for container for to keep chapattis. Also fitted with one middle and bottom shelves with lockable door. Rubber cushion to be fitted at the corners to prevent damage during transportation. Size- 900x600x900

3. Platform Trolley

The entire trolley is made of 16 swg. S.S. Sheet on M.S. Angle frame work, duly Rust proof painted on heavy duty castor wheels. The top to be stud welded with the frame for stronger grip. Also fitted with a push cart type handle & rubber cushion in front to avoid the damage during movement.

4. Garbage Cart

Moulded Plastic container -100 Ltrs capacity with 2 Nos-Big castor wheel. Garbage cart should be set to keep vertically upright on its base. Make- Cambro/Nilkmal/Sintex/Supreme

STORE

1. Weighing Scale Electronic

Electronic weighing scales of standard make to weigh upto 300 kg. The certificate from Weights & Measures Dept. is to be attached with the machine, duly certifying the serial no. Capacity-300 Kg. Make- Atco/Sanchit

2. Storage Rack with 5 tiers

All shelves are made of 18swg S.S-304 sheet on 4 nos round/square legs with adjustable bullet feet. All the shelves are having “C” channel through to accommodate maximum load bearing ability Capacity- 1410 Ltrs

3. Four Door Refrigerator

1410 lts ,-2deg C to +10 deg C, External and internal door and side panels in 304 AISI stainless steel. External back and top panel in galvanized steel. High-density expanded polyurethane insulating foam, 70mm in thickness 4 half doors with lock and microswitch to switch off the fan when the door is opened. Built-in refrigeration unit; Cooling capacity 1800 (watt) ventilated operating mode; digital control; automatic defrost and evaporation of defrost water; external digital temperature display. For

ambient temperatures up to 43 °C. CFC and HCFC free. R134a gas in refrigeration circuit. fitted with Danfoss make compressor ,Gas in foam: Cyclopentane. Supplied with n. 8x2/1GN nylon coated grids and n. 8 sets of 2 stainless steel grid runners. Overall Dimensions (WxDxH mm): 1450 x 825 x 1975, El. Power (kW): 720. Fitted with Dixcell controller & EBM fan motor. The sheet thickness in the top & body should be 1.00 MM & 0.8MM. Mounted on adjustable feet. Confirming to HACCP Control. should have provision for USB comaptibility,RS485 interface,& integrated data logger, prepared for GSM alarm,& contact for remote control, door opening alarm, adjustable high/ low temperature & visual & acoustic alarm.

4. Four Door Freezer

1410 lts ,18 deg C to -22 deg C, External and internal door and side panels in 304 AISI stainless steel. External back and top panel in galvanized steel. High-density expanded polyurethane insulating foam, 70mm in thickness 4 half doors with lock and microswitch to switch off the fan when the door is opened. Built-in refrigeration unit; Cooling capacity 1800 (watt) ventilated operating mode; digital control; automatic defrost and evaporation of defrost water; external digital temperature display. For ambient temperatures up to 43 °C. CFC and HCFC free. R134a gas in refrigeration circuit fitted with Danfoss make compressor, Gas in foam: Cyclopentane. Supplied with n. 8x2/1GN nylon coated grids and n. 8 sets of 2 stainless steel grid runners. Overall Dimensions Dimensions (WxDxH mm): 1450 x 825 x 1975, El. Power (kW): 720. Fitted with Dixcell controller & EBM fan motor. The sheet thickness in the top & body should be 1.00 MM & 0.8MM. Mounted on adjustable feet. Confirming to HACCP Control. should have provision for USB comaptibility,RS485 interface,& integrated data logger, prepared for GSM alarm,& contact for remote control, door opening alarm, adjustable high/ low temperature & visual & acoustic alarm.

5. Onian/ Potato Bin

The entire bin is made of S.S. wire meshed body on heavy duty castor wheels. Fitted with top opening lid and the inclined bottom to have a lockable door to extract. Size- 900x600x750

6. Cereal/Atta/Maida Bin

The entire bin made of 18 swg S.S-304 sheet on tiny caster wheels & with top opening lid. Size- 600x600x750

7. **Insect killer :** Twin tube. Reputed Brand.
8. **Air curtain :** A t entry points

LPG Bank / Manifold:

1. 10 + 10 (One set working another set standby) LPG Cylinder Bank of 14.2 Kg each LPG cylinder with:
 - Class‘C’ seamless steel pipe conforming to IS:1239 (Latest version) with Pressure Gauges (0-15 PSIG & 0-5PSIG, dial type),
 - Pressure reducing stations complete with Flanges & accessories and Isolation

valves having ball valves of approved makes with LPG installation certificate having carbon steel body, SS ball and PTFE seat, Laboratory tap and all other fittings such as tees, reducers, unions, elbows.

- Steel Grilled cage of area 32 ft x 4ft.with lockable door for keeping 20 + 20 Cylinder Bank.
- The piping shall be joined through welding by using welding electrodes of ISI marked only.
- The LPG piping works shall be duly supported with ceiling, on walls etc. by providing adequate supports. In no case the spacing between two supports shall exceed 1.5 meter. Adequate measures shall be taken to prevent pipe from undue stresses, sagging etc.
- The piping shall be free internally and externally of cutting burrs, loose scales, dirt, dust and other foreign matters before installation is completed.
- All care shall be taken to prevent rusting of piping during installation by providing red oxide primer coating.
- Suitable sleeve of GI/wood shall be provided wherever the pipes are crossing through the walls/slabs etc. The LPG shall be providing keeping a minimum distance of 100 mm from the electrical wiring system.
- On completion of installation, the LPG manifold shall be complete with all accessories and individual components/parts which are subjected to cylinder pressure shall be capable of withstanding a test pressure twice the working pressure or 26 Kg/sq.cm whichever is higher. Pressure testing of complete LPG system and obtain the pressure test certificate from appropriate regulatory authority.
- All the fittings used for installation of LPG line system shall conform to relevant BIS codes.
- The complete LPG pipeline system shall be installed in accordance with IS:6044 (Latest version), Gas cylinder rules 1981 with latest amendments, OISD July 1995 (latest amendments).
- All the accessories, components used for installation of LPG pipeline system shall have the approval from Oil Company.
- Isolation/shut off valves shall be ball valves with installation certificate for use in LPG pipelines and shall have carbon steel body, Stainless steel ball and PTFE seat.
- After completion of installation, the entire pipeline system shall be given at least two coats paint as per LPG colour norms.
- The work of supply, installation, testing and commissioning of LPG manifold and supply system shall be carried out only by specialized agency shall have certification for carrying out similar jobs from Oil Companies like IOCL/BP/HP.
- The entire work of supply, installation, testing and commissioning of LPG manifold and supply system shall be carried out in accordance with directives of Oil Industry safety directorate and of Bureau of Indian Standards and using materials having necessary approvals for use in LPG installations.
- The contractor shall submit detailed shop drawings of LPG manifold, piping layout and piping installation details for approval. The items covered under the scope of works shall include all those ancillary items which may be required to complete the work in all respect whether specifically mentioned or not.

- Fire fighting arrangements for LPG Bank should be as per the guidelines of statutory body/local authority/State Government/Central Government.

IN ADDITION TO THE ABOVE, FOLLOWING TURNKEY WORKS FOR INSTALLATION AND COMMISSIONING OF KITCHEN ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR:

- **Electric distribution panel** for the above Kitchen equipment complete with all switchgears, wiring and controls etc complete as per specifications and drawings. (Switch gears of L&T/ Siemens/ ABB/GE or Schneider make)
- **Electrical cabling** of IS : 1554 standard and wiring as per IS : 732 standard from MDB(Single point source) to Electric Distributional Panel and to the corresponding load points. All cable trenches and railings wherever required.
- Providing fixing of **Electrical Gadgets** like ELCB, MCB, Light Points, Power points, Fans, Cool air Fans, Exhaust fan etc in the Kitchen room. • Number of fans, power point, bulbs/tube light. Apart from these supplies to the individual equipments with ELCB & MCB in the Kitchen room. • Installation of MCB, ACB, ELCB & OCB of Havell/Siemens/L&T/Schneider etc for Control Panel for Kitchen.
- Laying of **GI water pipe line, Plumbing** with necessary taps, joints, elbows, Unions and valves of GI made and IS-1239 standard (Latest version) from overhead tank (Overhead tank is at the roof of Kitchen room)to the installed machines'/users' ends at Kitchen Room.
- Construction/laying of **Draining system** if required from all the equipments/Sinks to the main drain (outside the Kitchen) **with SS Grating**, proper trap and flow system and tapping.
- **Ventilation** for creating comfortable working zone within the Kitchen. Motors of the exhaust hoods shall be of continuous duty S1 type of IS: 325 standard (Latest version) and of Kirloskar/NGEF/Siemens/ABB/GEC/ Crompton Greaves make.
- Contractor should also provide Fire Extinguishers = 9 Kg with essential accessories towards **Fire Fighting= 8 Nos.** Cylinders should be certified by respective regulatory board.
- Bidder must take into consideration in its bid, costs to be incurred for any additional work pertaining to any kind of dismantling, reconstruction works, patch works relating to Civil, Electrical, Plumbing, Sanitary, Ventilation and any other protections relevant as per State/Central Govt. regulation/local authority, Servo stabilisers, U.P.S. etc. required for successful installation testing and commissioning of the system at site and the offered price should include all such costs, each Schedule is to be considered a package in itself and contractor to execute the order package on a “turn key basis”.

In addition to the above mentioned equipment/appliances, if the contractor thinks it necessary to include any other equipment/appliances, accessories etc. for the Kitchen then that may be provided after approval from Engineer in-charge.

- The sizes are approximate. Minor variations in sizes shall be acceptable subject to prior approval of the Engineer.

APPROVED MAKES

1. Air Blower: SWAM/ EVEREST/ KAY
2. Blower/Pump/ Motor: KIRLOSKAR/ NGEF/ SIEMENS/CROMPTON/ABB
3. Compressor: EMERSON/ TECHUMSHAH/COPELAND/DANFOSS
4. Cable: SKYTONE/KEI/UNIVERSAL/NATIONAL/RRCABLE
5. Aeration System: NORTON/ UEM/ V.K.ENVIROTECH/MM AQUA
6. Butter Fly Valve: AUDCO/ KEYSTONE/ KSB
7. Control Panel: L & T/ SIEMENS/ SCHNEIDER
8. Valve: LEADER/ ZOLOTO
9. PVC Pipe Class III with Fitting : FINOLEX/ SUPREME/ PRINCE
10. G.I. / M.S. Pipe Heavy Class: TATA/ JINDAL/SAIL /ITC
11. MCCB/Contactor/Relay: L&T/ABB/SIEMENS/SCHNEIDER
12. Pressure Gauges: H.GURU /FIEBIG
13. Stainless steel : TATA/JINDAL/SAIL
14. GI Sheets : TATA/SAIL/JINDAL
15. Aluminium Sheet : BALCO/NALCO/HINDALCO
16. Grilles/Diffusers: RAVISTAR/CARYAIRE/ MAPRO/DYNACRAFT

Note :

- The bidder should attach Technical Compliance item wise with respect to the above technical specifications and turnkey work along with Printed catalogues
- The contractor shall be responsible for the complete works including submission of working drawing and walk-through view.
- The Contractor should provide complete Operation manual, Equipment manual, Service manual and manuals for all systems and subsystems.
- The contractor should provide Final electrical and pressure and other safety test, system test and calibration to be done by authorized person with test instruments.
- All electrical accessories like cable wire, electrical outlets, switches etc supplied by the contractor should be fire proof of reputed make, certified for electrical safety.
- Wherever makes have not been specified for certain items, the same shall be as per BIS and as per approval of HSCC.
- Training of personnel of the Institute should be by the contractor.
- The contractor should prepare and submit layout plan for Electrical Wiring, Electrical Distributional Panel, Plumbing, Fire Fighting System, Air Washing and Ventilation and Drain line to HSCC for approval before beginning of supply and installation and As-Built drawing after installation.
- The contractor should provide test certificate for all materials along with manufacturer's test certificate and equipments used for Kitchen.
- **Third party quality certification of the Kitchen equipment from SGS/ Bureau Veritas/Lloyds should be submitted by the contractor as "Certifies that the Kitchen equipment to be supplied/supplied for installation meet the technical specification and BOQ of the tender document vide contract No (Mention Contract No.).**

BOQ - Kitchen

Execution including Supply, Installation, Testing and Commissioning of Kitchen including Turnkey Works with 1 year Defect Liability Period					
Rate shall be inclusive of all charges like Freight, Cess, Insurance, GST @18% etc.					
Sl. No.	Specifications	Size/Unit	Qty.	Unit Rate in Rs.	Amount in Rs.
CENTRAL KITCHEN					
1	Wall Shelf - constructed of 18 swg S.S-304 sheet & supports constructed from the 16 swg sheet	2000x600	1		-
2	Single Burner Stock Pot - Top of 16 swg. S.S-304 Sheet on M.S Angle frame work duly rust proof painted on SS Tubular/ Square legs with adjustable bullet feet for uneven floors. Fitted with United/Sarna make heavy duty burner with pilot lamps with individual control valves and heavy duty cast iron pan support complete with accessories as per specification.	750x750x600	4		-
3	Side Table - Same as sl.ni.1	1500x600x600	2		-
4	Exhaust hood - Complete frame work 20/22swg. Complete joints are air tight insulated weather proof mechanically painted on the Upper surface. S.S-304 filters-island type. Fitted with S.S-304 baffle filters. Exhaust system should have individual motorized blower to exhaust fumes and smokes generated in the Kitchen to outside through GI ducting system Fitted with grease collection tray and hung with metal fasteners complete with accessories as per specification.	1650x1650x600	1		-
5	Boiler (Tilting) - Double walled glass wool Insulated all S.S-304 Sheet body. The outer Most is of 18swg S.S-304 Sheet body. Fitted with heavy duty high pressure burner with pilot lamp & individual control valves. Fitted with water inlet & water outlet valve & strainer at the bottom level of the boiler also fitted with a Top opening lid with insulated handle. The entire boiler is mounted on heavy duty tubular legs. Also fitted with a heavy duty tilting gear to extract the boiled food complete with accessories as per specification.	80ltr.	1		-
6	Brazing Pan (Tilting) - Double walled mineral wool insulated all S.S-304sheet body on heavy duty tubular legs with adjustable bullet feet. Fitted with heavy duty burner with pilot lamp with individual control needle valve. Fitted with tilting gear to extract contents after cooking & water inlet valve. Also fitted with top opening lid with insulated handle complete with accessories as per specification.	60 ltr.	1		-
7	Exhaust hood - Complete frame work 20/22swg. Complete joints are air tight insulated weather proof mechanically painted on the Upper surface. S.S-304 filters-Wall fixed type. Fitted with S.S-304 baffle filters. Exhaust system should have individual motorized blower to exhaust fumes and smokes generated in the Kitchen to outside through GI ducting system Fitted with grease collection tray and hung with metal fasteners complete with accessories as per specification.	2500x900x600	1		-
8	Chapatti Plate cum puffer - Structure made of mild steel angle frame duly rust proof painted . Top of 12 mm mild steel, front Panel and under shelf 18swg S.S-304sheet, vertical legs of S.S-304 round pipe of 16swg. 1.5" diameter with nylon adjustable feet. Complete with CI perforated grill for puffing of chapattis, heavy duty high pressure RV burner pilot, individual control valves Indian Oil corporation approved complete with accessories as per specification.	1500x600x850	2		-

Sl. No.	Specifications	Size/Unit	Qty.	Unit Rate in Rs.	Amount in Rs.
9	Chapatti Rolling Table - Top made of 16swg S.S-304 sheet on MS Angle frame work with rust proof painted on S.S-304 square pipe 25x25mm/Tubular legs frame work and under shelf made of 18swg S.S-304 sheet. Vertical legs of S.S-304 round pipe of 16 swg. 1.5" dia with nylon adjustable feet complete with accessories as per specification.	1200x600x850	2		-
10	Chapatti collection Trolley - Structure made of MS angle, duly rust proof painted Body completely constructed of S.S-304 sheet. Sunken top of 16 swg.S.S. Sheet on S.S tubular legs on heavy duty wheels- 2 with breaks & 2 normal complete with accessories as per specification.	750x600x850	2		-
11	Exhaust hood - Complete frame work 20/22swg. Complete joints are air tight insulated weather proof mechanically painted on the Upper surface. S.S-304 filters-island type. Fitted with S.S-304 baffle filters. Exhaust system should have individual motorized blower to exhaust fumes and smokes generated in the Kitchen to outside through GI ducting system Fitted with grease collection tray and hung with metal fasteners complete with accessories as per specification.	1650x750x600	2		-
12	Side Table -Same as sl.ni.1.	1200x600x850	1		-
13	Dough Kneader - Body completely constructed of heavy duty cast iron with gear box mounted on the top the mixing bowl of S.S-304 sheet 14 swg with S.S-304 arm to mix the dough and is operated electrically with heavy duty motor of 1 hp. Motor shall be S1 type of IS : 325 standard (Latest version) and of Kirloskar/NGEF/Siemens/ABB/GEC/ Crompton Greaves make complete with accessories as per specification..	25 kg.	1		-
14	Garbage Cart - Moulded Plastic container with 2 Nos-Big castor wheel. Garbage cart should be set to keep vertically upright on its basecomplete with accessories as per specification. Make- Cambro/Nilkmal/Sintex/Supreme	Capacity-100 ltrs,	1		-
PREPARATION AREA					
1	Wall shelf - Shelf constructed of 18 swg S.S-304 sheet & supports constructed from the 16 swg sheet	1800x300	1		-

Sl. No.	Specifications	Size/Unit	Qty.	Unit Rate in Rs.	Amount in Rs.
2	SS stand for Chopping blocks with boards- All S.S-304 sheet body to hold poly carbonate chopping boards-2Nos.complete with accessories as per specification.	600x600x850	4		-
3	SS Dual Bowl Sink unit (Vegetable washing)- Top of 16 sg. SS sheet on S.S. Angle frame work on S.S square legs with adjustable bullet feet for uneven floors. Also fitted with a large sink on RHS. Also fitted with a back splash and under shelf. The top is fitted with stud welded bolts with the frame for sturdy and stronger grip. The bowl size 500x500x250	1500 x 650 x 850 + 150 spl.	1		-
4	Garbage Cart- Moulded Plastic container with 2 Nos-Big castor wheel. Garbage cart should be set to keep vertically upright on its base complete with accessories as per specification.Make- Cambro/Nilkmal/Sintex/Supreme	Capacity-100 ltrs,	1		-
	SPECIAL FEED AREA				-
					-
1	Milk boiler- Triple walled mineral wool insulated all SS sheet body on SS legs with adjustable bullet feet. The outer most wall and the second wall is mineral wool insulated and the other wall water proof and fitted with water inlet, outlet, over flow valves and water level indicator. Also fitted with 3.0 kw immersion type heating element with auto temperature controller and indicating lamps and a heavy duty gun metal faucet. A top opening lid with insulated handle is fitted . Also fitted with two nos, insulated handles on either sides to carry complete with accessories as per specification.	50 ltrs.	1		-
2	Two Burner with Oven- Top of 16 swg. SS Sheet on M.S Angle frame work on SS Square legs with adjustable bullet feet for uneven floors. Fitted with United/Sarna make heavy duty burner with pilot lamps with individual control valves and heavy duty cast iron pan support. Also fitted with an electrically operated oven beneath. Size-950 x 500 x 850 + 150 Spl.	950 x 500 x 850 + 150 Spl.	1		-
3	Exhaust hood- Complete frame work 20/22swg. Complete joints are air tight insulated weather proof mechanically painted on the Upper surface. S.S-304 filters-Wall fixed type. Fitted with S.S-304 baffle filters. Exhaust system should have individual motorized blower to exhaust fumes and smokes generated in the Kitchen to outside through GI ducting system Fitted with grease collection tray and hung with metal fasteners complete with accessories as per specification.	1650x1000 x600	1		-
4	Juicer- Compact design- fits almost anywhere,under counters or worktables.		1		-
5	Garbage Cart- Moulded Plastic container with 2 Nos-Big castor wheel. Garbage cart should be set to keep vertically upright on its base complete with accessories as per specification.Make- Cambro/Nilkmal/Sintex/Supreme	Capacity-100 ltrs,	1		-

Sl. No.	Specifications	Size/Unit	Qty.	Unit Rate in Rs.	Amount in Rs.
POT WASH					
1	Pot Rack- All the shelves are S.S-304 Square/Round pipes on 4Nos Square/Round legs with adjustable bullet feet. All the joints are firmly welded and nicely grinded, polished and puffed to a smoother finish complete with accessories as per specification..	1200x450x1650	2		-
2	Two Sink Pot Wash- The structure made of SS: 304 square pipe 25 x 25 mm Angle frame work duly rust proof painted. Top & sink made of 14 swg and under shelf made of 18 swg SS: 304. Vertical legs of SS: 304 round pipe of 16 swg. 1.5inch dia. With nylon adjustable feet. Size- 1500x600x850+150	1500x600x850+150	1		-
3	Pot wash Sink- To be constructed with Brick and Cement (Masonry Work) finished with tiles	1500x1500x600	1		-
4	Geysar- Heat insulated with thermostatic control-	30 Ltrs	1		-
5	Garbage Cart- Moulded Plastic container with 2 Nos-Big castor wheel. Garbage cart should be set to keep vertically upright on its base complete with accessories as per specification.Make- Cambro/Nilkmal/Sintex/Supreme	Capacity-100 ltrs,	1		-
DISH WASH					
1	Two Sink DishWash- The structure made of SS: 304 square pipe 25 x 25 mm Angle frame work duly rust proof painted. Top & sink made of 14 swg and under shelf made of 18 swg SS: 304. Vertical legs of SS: 304 round pipe of 16 swg. 1.5inch dia. With nylon adjustable feet. Size- 1500x600x850+150	1500x600x850+150	2		-
2	Soiled Dish Landing Table with glass Rack with Garbage chute- The marine edged top made of 16 swg SS: 304 sheet on MS Angle frame work, duly rust proof painted & stud welded for stronger grip and cross bracing of 18 swg SS: 304 sheet. Vertical legs with nylon adjustable feet. A Garbage chute is provided on LHS & a glass is fitted on the D.L.T.	1500X800X850+600	1		-
3	Clean Dish Table- Top 16 swg S.S-304 sheet on MS Angle frame work duly rust proof painted & stud welded on SS. Tubular/square legs with adjustable bullet feet. Also fitted with SS slide out beneath to hold the plate/glass racks of 500 x 500 mm	900x800x850+150	1		-
4	Geysar- Heat insulated with thermostatic control	30 Ltrs	1		-
5	Clean Dish Rack- Entirely constructed of S.S-304 round pipe with verticals and slides of 1.5 inch and inside shelves S.S-304 sheet 18 swg. The rack with 5 tiers is mounted on four nylon adjustable feet.	900x450x1800	4		-
6	Garbage Cart- Moulded Plastic container with 2 Nos-Big castor wheel. Garbage cart should be set to keep vertically upright on its base complete with accessories as per specification.Make-	Capacity-100 Ltrs,	1		-

Sl. No.	Specifications	Size/Unit	Qty.	Unit Rate in Rs.	Amount in Rs.
SET-UP AREA					
1	Hot Bain Marie on Castors- Double walled mineral wool insulated all S.S. Sheet body is fitted with an immersion type heating element of 3.0 KW with auto temp. controller & indicating lamps on heavy duty castor wheels. Also fitted with 4 nos. G.N. pans with lids of ½ x 150.	1800 x 625 x 850	2		-
2	Hot Food Service Trolley- Double walled insulated with glass wool. Inner side made of 18swg & outer side made of 20 swg as Stainless steel 304 sheet with 4 no heavy duty Castor wheels (4"/6" dia) with 2 wheels locking arrangement and push cart type handle constructed from ss pipe. Trolley has Immersion type 3Kw heating elements with auto temp. controller & indicating lamp with temp. Indicator to keep 3 Nos big round containers of 10 ltrs. capacity each and 3 more small containers of suitable capacities all with lids to keep food hot vegetable/soup/card etc. and one rectangular for container for to keep chapattis. Also fitted with one middle and bottom shelves with lockable door. Rubber cushion to be fitted at the corners to prevent damage during transportation complete with accessories as per specification..	900x600x900	6		-
3	Platform Trolley- The entire trolley is made of 16 swg. S.S. Sheet on M.S. Angle frame work, duly Rust proof painted on heavy duty castor wheels. The top to be stud welded with the frame for stronger grip. Also fitted with a push cart type handle & rubber cushion in front to avoid the damage during movement.	900x600x250	2		-
4	Garbage Cart- Moulded Plastic container with 2 Nos-Big castor wheel. Garbage cart should be set to keep vertically upright on its base complete with accessories as per specification. Make- Cambro/Nilkmal/Sintex/Supreme	Capacity-100 ltrs,	1		-
STORE					
1	Weighing Scale Electronic- Electronic weighing scales of standard make to weigh upto 300 kg. The certificate from Weights & Measures Dept. is to be attached with the machine, duly certifying the serial no. complete with accessories as per specification. Make- Atco/Sanchit	300kg	1		-
2	Storage Rack with 5 tiers - All shelves are made of 18swg S.S-304 sheet on 4 nos round/square legs with adjustable bullet feet. All the shelves are having "C" channel through to accommodate maximum load bearing ability complete with accessories as per specification.	900 x 450 x1800	3		-

Sl. No.	Specifications	Size/Unit	Qty.	Unit Rate in Rs.	Amount in Rs.
3	Four Door Refrigerator- 1410 lts ,-2deg C to +10 deg C, External and internal door and side panels in 304 AISI stainless steel. Complete as required with all accessories as per technical specification	1410 Ltrs,	1		-
4	Four Door Freezer 1410 lts ,18 deg C to -22 deg C, External and internal door and side panels in 304 AISI stainless steel. External back and top panel in galvanized steel. High-density expanded polyurethane insulating foam, 70mm in thickness 4 half doors with lock and microswitch to switch off the fan when the door is opened. Built-in refrigeration unit; Cooling capacity 1800 (watt) ventilated operating mode; digital control; automatic defrost and evaporation of defrost water; external digital temperature display. Complete as required with all accessories as per technical specification	1410 Ltrs,	1		-
5	Onian/ Potato Bin- The entire bin is made of S.S. wire meshed body on heavy duty castor wheels. Fitted with top opening lid and the inclined bottom to have a lockable door to extract.	900x600x750	3		-
6	Cereal/Atta/Maida Bin- The entire bin made of 18 swg S.S-304 sheet on tiny caster wheels & with top opening lid.	900x600x750	3		-
7	Insect killer	Two tubes	3		-
8	Air curtain	As per door size at the entry	2		-
	LPG BANK				-
1	LPG Bank- 10 + 10 (One set working another set standby) LPG Cylinder Bank of 14.2 Kg each LPG cylinder with :Class‘C’ seamless steel pipe conforming to IS:1239 (Latest version) with Pressure Gauges (0- 15 PSIG & 0-5PSIG, dial type) Complete with accessories as required as per specification.	1 Lot	1		-
					-
	Total Amount in Rs. (including all charges)				-