TENDER DOCUMENT

TENDER No.: ERO/MMD/731/1125

Tender for the “Supply, Installation, Testing, Commissioning and Handing Over of Modular Operation Theater for Medical College and Hospital at Sundergarh, Odisha”.

VOLUME - III

Bill of Quantity cum Quoting Sheet

ENGINEERING PROJECTS (INDIA) LIMITED
(A GOVT. OF INDIA ENTERPRISE)
9th Floor, 50, Chowringhee Road,
Kolkata - 700071
**Abstract Sheet**

“Supply, Installation, Testing, Commissioning and Handing Over of Modular Operation Theater for Medical College and Hospital at Sundergarh, Odisha”.

**e-Tender No: ERO/MMD/731/1125**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Description</th>
<th>Estimated Amount (Rs.)</th>
<th>Amount in Figures</th>
<th>Amount in Words (Rs.)</th>
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<tr>
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<td>Total Amount for MOT</td>
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<td>2</td>
<td>Freight and Insurance Charges</td>
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<td>GST ( @ 18 %) on above “Grand Total”</td>
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**Note**

i) The quoted price by the bidder against each individual item in the BOQ shall be inclusive of all taxes, duties, cess, levies, Fees, royalty etc. except Goods and Service Tax (GST). Amount in figures and amount in words must be filled in the designated cell as depicted above.

ii) The breakup of cost and levies such as GST and other Taxes considered in the above quoted prices should be submitted separately as per Annexure- I
### Annexure- I

“Supply, Installation, Testing, Commissioning and Handing Over of Modular Operation Theater for Medical College and Hospital at Sundergarh, Odisha”.

E-Tender No: ERO/MMD/731/1125

<table>
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<tr>
<th>Sl No</th>
<th>Description</th>
<th>Amount of bid price on which applicable (Rs.)</th>
<th>Rate of the tax as on seven (7) days prior to last date of submission of bid</th>
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<td>Any other Tax(es)</td>
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<td><strong>Total</strong></td>
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NB: The rates/amount quoted in the Schedule / Bill of Quantities shall be inclusive of all taxes, duties, cess, levies, fees, royalty, etc, except Goods and Service Tax (GST)
Supply, Installation, Testing, Commissioning and Handling Over of Modular Operation Theater for Medical College and Hospital at Sundergarh, Odisha

TO BE QUOTED BY TENDERER

e-Tender No: ERO/MMD/731/1125

1 WALL PANELING SYSTEM-SS

The prefabricated Operating Room should be Cladding structure insulated Stainless steel wall panels.

It should be 0.8mm 304 Grade Stainless Steel sandwich panel with core consisting of rigid polyurethane foam, which has been insulated under high pressure, with a minimum density of 40 kg/m3.

The individual wall panels shall use the tongue and groove technology for joining two panels, no welding should be allowed.

The gaps between panels shall be suitably filled with metal flaps/structure and sandblasted finish.

Stainless Steel plate finished to fine grain surfaces, treated properly to take anti-fungal paint.

Paneling should be easy to maintain, durable, anti-static/conductive and fire resistant.

Clearance between inner panel and outer wall should be sufficient to allow the maintenance personnel for service. This closed space should be flushed continuously to eliminate dust and bacterial accumulation.

Anti bacterial paint should be coated on the wall.

Sealant should maintain anti bacterial paint during warranty and CMC period.

Wall elements should be resistant to all standard cleaning agents, disinfectants and fumigation agents.

Panel should be covered with protective sheet to prevent scratch during installation.

It should have minimum number of junction. The junction should be seamless and should be sealed with suitable sealants.

Wall paneling should have proper fire protection.

The wall panels should be CE/UL Listed/BIS certified.

2 CEILING SYSTEM

The ceiling below ceiling should be made up of Stainless Steel sheets, 0.8 mm thick with mullion and should be coated with anti-bacterial paint. The ceiling suspension should be as follows:

Support elements: Suspension bracket with tension spring. Material: High quality galvanized or powder coated steel.

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 wall panels should be CE/UL Listed/BIS certified.

3 LAMINAR AIR FLOW SYSTEM

The ceiling filtration system should be designed to ensure unidirectional distribution of sterile air of the surgical theatre to ensure the cleanliness of the whole area covered by the air flow.

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:

Separators: continuous thermo plastic chord
Sealant: Polyurethane
Gasket: Single pace polyurethane
MPPS average efficiency: > 99.99%
3 micron DOP efficiency: > 99.99%
Final Pressure drop: 600 pa/m2 Max, Operating Temp: 60 degree Celsius Maximum RH: 40-50 %.

The ceiling system should be equipped with "H14" class HEPA filters position in the ceiling to achieve 0.25m/sec flow.

The complete laminar ceiling system should be factory assembled. Its holding structure. Filter frames and top plenum should be made of Aluminum.

The filtration ceiling system should have flow parallel 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 class 100 - the following parameters:

Bacteriological class = H (≤ 5 CFU/m3)
Particle decontamination kinetics CP: <5 min
ISO 14644-1 classification = ISO 5

Third party validation by Govt. approved environment lab.

The positive pressure should be maintained inside the OT to prevent contamination due to air from outside the OT.

The supplier should provide test certificate for HEPA filter and laminar air flow systems from the original manufactures.

It should be CE/UL Listed/BIS certified.

4 PERIPHERAL LIGHTING AND CLEAN ROOM LUMINARIES

To provide peripheral lighting and clean rooms luminaries with intensity min 500 Luv, it should be 6 in numbers for each OT.

Should be with highly specular anodized aluminum reflectors and optical antiglare system.

Luminaries cover should be made of highly resistant, disinfectant proof laminated safety glass with stylish fine grained surface, glass pane with white coated steel frame.

The reflectors should be of high quality, cleanable and non deteriorating.

The white luminaries body should be made of sheet steel perfectly powder coated, supplied ready for connection optionally for individual or series circuit with digital electronic control panel in multilamp technology.

Recess frames should be gas tight. The fittings should be flush with the ceiling and should be removable from top or bottom.

The light fitting should be uniform and aesthetically distributed on the ceiling to provide uniform illumination in the OT. Light should not interfere when green mode endoscopy is performed.

Peripheral lighting should be done according to IP65/international protection rating (RI).

Control equipment for the general lighting and the light dimming should be provided in the theatre control panel.

It should be CE/UL Listed/BIS certified.

5 HERMETICALLY SEALED DOORS

Engineering Projects (India) Ltd
### TOUCH SCREEN CONTROL PANEL

- The control panel should be touch sensitive. A touch control panel should work as a central control panel for the HVAC controls, instruction board, communication interfaces—both audio and video etc.
- The panel should accommodate all necessary controls for the correct operation and monitoring of the equipment and services within the operating room (OR).
- The touch screen should be wall mounted, stationed in the visibility line of the surgeon and OT staff. The access height should be convenient for the nurse to operate and help assistant when in need.
- The panel should accommodate digital clock and the elapsed time indicator.
- The medical gas alarm should indicate high and low gas pressures for each gas service present in the OT including vacuum.
- This should be supported by audible alarm also. The panel should have an alarm mute (fault annunciation) facility. The sensors (pressure switch) should be at the nearest isolation valve.
- Control for general lighting: ON/OFF and dimming controls organized in groups to provide uniform illumination.
- Control for the operating light (major and satellite and camera control) (on/off and intensity control) should be provided.
- Hand free telephone set with memory should be located at one side.
- Temperature and humidity control for the room connected to the AHU. (Adjustable from the panel).
- Noise level should not exceed 60 db.
- Noise level should not exceed 60 db. Air pressure stabilizers should have unique capability of controlling differential pressure only fractionally above the threshold pressure.
- Pressure relief dampers should be provided in each room to prevent contamination of air from clean and dirty areas.
- Suitably sized air pressure relief damper should be strategically placed, enabling differential room pressure to be maintained and ensure that when doors are opened between clean and dirty areas.
- Counter-weight balancing system should be provided in the PRD to maintain positive pressure inside the operation room.
- Air pressure stabilizers should have unique capability of controlling differential pressure to close tolerance. The PRD should remain closed at pressure before the set pressure and should open fully at a pressure only fractionally above the threshold pressure.
- The body should be epoxy powder coated as per standard BIS colors. High grade electrolyzed steel plate should be used for body and high grade SS304 stainless steel for blades.
- It should be CE/UL Listed/BIS certified.

### PHOTOFLEX

- LED type flat panel X-ray viewing panel should be supplied.
- This should comply with relevant electrical safety codes.
- This should be a 3 panel viewing screen.
- Mounting should be flush with the wall to avoid dust accumulation and growth or organisms between wall and panel.
- Body should be of extruded aluminum powder coated black with bactericidal resistant and disinfectant resistant finish.
- The diffuser on the front panel should be a uniformly lit screen.
- Dimming electronic control should be enclosed at the bottom of the cabinet.
- Proper spring loaded film clip with rollers should be provided to hold the film firmly and to remove the film without scratches.
- Each panel should be able to illuminate films up to 14\x9d\x2033 size. (Total 3 panels)
- It should be CE/UL Listed/BIS certified.

### PVC FLOORING

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<table>
<thead>
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<th>S.No.</th>
<th>Item Description</th>
<th>Unit</th>
<th>Qty.</th>
<th>Rate (Rs)</th>
<th>Amount (Rs)</th>
<th>% (-) Below (+) Above Estimated Cost</th>
<th>Total Amount (Rs)</th>
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<td><strong>Flooring</strong></td>
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<td>The floor should be made of ceramic having magnetic properties and should be flush at the wall of the operating room.</td>
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<td><strong>Hatch Box</strong></td>
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<td>A hatch should be provided in each operation theater to remove waste materials from the operation theater to dirty linen area/Corridor just adjacent to Operation Theater. Each hatch box should be equipped with two doors and the door should be operated electrically/motorised. The hatch should be designed in such a way that only one door should be opened at one time.</td>
<td>No.</td>
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<td><strong>Single arm moveable Pendant for Anesthetist</strong></td>
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<td>The Pendant should comply with IS 1949:1982-01. 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. The pendant should have the following specification: 1000mm moveable arm with 330 deg movements. Weight carrying capacity of the arm should not be less than 125 Kgs. should have electromagnetic brakes.</td>
<td>No.</td>
<td>3</td>
<td>7,58,427.30</td>
<td>60,67,418.00</td>
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<td>The Pendant Service Heads should be modular. The heads should be capable of accepting a range of shears, and infusion poles or other accessories. The Pendant Heads should support the range of Physiological Monitor Mounting Solutions. The Pendant Service Heads should be supplied with medical gas terminal units and 5/15 Amps. Sockets.</td>
<td>No.</td>
<td>3</td>
<td>7,58,427.30</td>
<td>60,67,418.00</td>
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<td>Each pendant should have: Oxygen Outlets - 2 nos, Nitrous oxide - 2 nos, Ar/h2o IL Outlets - 2 nos AGSS outlet - 1 no Electrical sockets - 6 nos Shelf with one rack - 1 no. Data socket RJ-45 - 1 no.</td>
<td>No.</td>
<td>3</td>
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<td>It should be CE/UL Listed/BIS certified.</td>
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<td></td>
<td><strong>Double arm moveable Pendant for Surgeon</strong></td>
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### OT LIGHT WITH CAMERA

#### OT LIGHT

Operate 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
- **Color Temperature**: 4000 K - 5000 K (White LED)
- **Field Size Diameter**: 18 - 22 cm, 25 - 27 cm
- **Depth of Field**: 80 - 120 cm, 120 - 450 cm
- **Illumination Level**: 160,000 Lux Major Dome & 120,000 Lux Minor Dome
- **Controls**: Control Panel (wall and on dome)
- **Rotation**: 360 - 330 degrees
- **Sterilizable Handle**: Yes
- **Light Head Diameter**: 65 - 70 cm
- **Mounting Type**: Ceiling
- **Supply Voltage**: 230 VAC 50 Hz
- **Sub Type**: LED
- **Dimming Range**: 30% - 80%
- **Life of Light Source**: >40,000 Hrs
- **Lighting System**: It should be CE/UL Listed/BIS certified.

#### HD Camera System – HD1080i

Integrated In-Light Camera System should be integrated at the centre of one of the domes of this lighting system third arm in order to capture images & video sequences of the open cases. Such a autofocus – Lecalbe camera should have the following specifications:

- **Signal to Noise Ratio (S/N Ratio)**: >35 dB
- **CCD**: 1/3”
- **Optical Zoom**: 10 X Digital Zoom : 12 - 15 X
- **Video Output**: 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.

It should be CE/UL Listed/BIS certified.

#### HD LED Flat Panel Monitor

Should be 24” High definition Progressive scan Flat panel Monitors with manual mounted arm supporting to support high-definition HDTV progressive Scan images and should be able to display DVI/HDTV, RGBHV, S-Video, Composite video signals. Aspect ratio 16:9/16:10. Resolution – 1920x1080

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 cameras, in light camera, high definition flat panel monitors, while assuring native resolution / signal.

The recording system to be offered separately.

### VIEW WINDOW

Supply, Installation, Testing and commissioning of VIEW WINDOW with 8mm toughened glass on both sides. Material: Blinds of reputed make sandwiched in both glasses. The window will be recessed into wall. View Window size : 1800 x 1500 mm. View Window should be CE certified and in compliance under Class 1 Medical device
<table>
<thead>
<tr>
<th>S.No.</th>
<th>Item Description</th>
<th>Unit</th>
<th>Qty.</th>
<th>Rate (Rs)</th>
<th>Amount (Rs)</th>
<th>% (-) Below / (+) Above Amount % (-) Below / (+) Above Estimated Cost</th>
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<tr>
<td>16</td>
<td>DISTRIBUTION BOARD</td>
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<td>All high voltage equipment should be installed in a separate enclosure. The remote cabinet should house the operating lamp, transformers, main failure relays, UPS, electrical distribution equipment &amp; circuit protection equipment for all circuits within the operating theatre. All internal wiring should terminate in connectors with screw &amp; clamp spring. Connections of the clip-on type mounted, on a CE approved rail &amp; labeled with indelible proprietary labels. Individual fuses or miniature circuit breakers should protect all internal circuits. Complete schematic drawing with description should be encased with the equipment.</td>
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<tr>
<td>17</td>
<td>EXHAUST AIR CABINETS</td>
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<td>Remote exhaust grill should be provided in the OT. The exhaust air cabinets should be operable and cleanable. These cabinets should have suction from bottom. Designed flow rate should not be less than 1000 m³/hr. Distribution of exhaust air volume should be divided between sumps to maintain the required pressure within the theatre without causing turbulence. The Exhaust air cabinet should be manufactured and supplied by the supplier of wall and ceiling system supplies. Specification of materials and aesthetic should match perfectly with the ceiling system.</td>
<td>Lot 8</td>
<td>4,21,348.50</td>
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<tr>
<td>18</td>
<td>SCRUB SINK</td>
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<td>Compact autoclavable scrub sink should be designed for use in OT complex providing for pre-procedural scrub up. (Double sink combination as suitable) Each fixture should be fabricated from heavy gauge type 304 stainless steel and should be seamless welded construction, polished to a satin finish. The scrub sink should be provided with a front access panel which should be easily removable for access to the water controlled valve, waste connections, stoppers and strainers. Hands free operation should include infra red sensors with programmable adjustment. Thermostatic mixing, valve control should be located behind the access panel and maintain constant water temperature. 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 fronts. Knee operated switch should be provided additionally. It should be CE/UL Listed/BIS certified.</td>
<td>No. 8</td>
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