

28-11-2018

Amendment No. 2**Sub: Amendment No.2 to the referred tender enquiry****Ref.: Tender Enquiry: HITES/PCD/MP/08/MOT/18-19 Dated: 16.10.2018**

The following changes are being incorporated in the above referred Tender Enquiry Document

SECTION I**NOTICE INVITING TENDER (NIT)****The clause(1) of the tender enquiry is revised as below:**

(1) Procurement & Consultancy Services Division of HLL Infra Tech Services Limited (HITES), a fully owned subsidiary of HLL Lifecare Ltd. (HLL), for and on behalf of Govt. of Madhya Pradesh, Directorate of Medical Education & Research, invites sealed tenders, from eligible and qualified tenderers for supply, installation and commissioning of MOT to 07 upcoming Medical Colleges/ Institutes in Madhya Pradesh as mentioned in this Tender Enquiry Document:

(1)

Sch. No	RFx No	Consignee- GMC	Quantity	EMD	Tender Processing Fee
				(in INR)	
1	30000034558	Shahdol & Datia (SMS based)	As mentioned in BOQ	28,00,000	11,800
2	3000003557	Chindwara, Vidisha Ratlam, Khandwa & Shivpuri (SS based)	As mentioned in BOQ	70,00,000	11,800

Revised Tender Timeline:

Sl. No.	Description	Schedule
c.	Closing date & time for submission of online bids	12.12.2018, 13:00
d.	Closing date & time for submission of tender processing fee and EMD in physical form*	12.12.2018, 14:00
e.	Time and date of opening of online bids	12.12.2018, 14:30

Note:

- **Deleted.**
- Tender processing Fee is inclusive of GST @18% (Our GSTIN: 09AADCH4882R1ZP)
- The bidder must quote for all the items in the BOQ, failing which the bid will be considered Non- Responsive.
- **Bidders are instructed to visit the sites before quoting to avoid changes at a later stage.**

**SECTION – II
GENERAL INSTRUCTIONS TO TENDERERS
(GIT)**

Existing Terms	Read As:
<p>39. Award Criteria</p> <p>Subject to GIT clause 38 above, the contract will be awarded to the lowest evaluated responsive tenderer decided by the purchaser in terms of GIT Clause 36 or on the basis of least cost to the purchaser.</p>	<p>39. Award Criteria</p> <p>Subject to GIT clause 38 above, the contract will be awarded to the lowest evaluated responsive tenderer decided by the purchaser in terms of GIT Clause 36.</p>

SECTION - VI

LIST OF REQUIREMENTS

Existing Terms	Read As:
<p>Part II: Required Delivery Schedule: point (ii),</p> <p>ii. The quantity mentioned in List of requirement must be supplied within 120 days of Notification of Award or 90 Days from the date of approval of layout drawing, whichever is later.</p>	<p>Part II: Required Delivery Schedule: point (ii),</p> <p>The supply, installation & commissioning of all items must be completed within 150 days from the date of Notification of Award or 120 Days from the date of site handover, whichever is later.</p> <p>Getting drawing approved from the consignee is the responsibility of the vendor.</p>

**Section IX,
Qualification Criteria**

The revised qualification criteria are as below:

1. **Status:** The Bidder should be a Manufacturer or its authorized Agent.
2. **Turnover:** Eligible Bidders should have a minimum cumulative average annual turnover in the past three financial years (i.e. for 2015-16, 2016-17, 2017-18) to qualify for the number of schedule as mentioned in **Eligibility Table**.
3. **Minimum Work of Similar Nature:** Eligible bidders should have successfully executed globally in last five years from the date of tender opening, similar turnkey project of value, equivalent to or exceeding 50% of the estimated schedule/ tender value. Out of total 50% value, at least one single order for similar work of minimum 10% of the estimated schedule/ tender value should have been executed globally. The details of requirement of cumulative schedule values for MWSN (minimum work of similar nature) are mentioned in Eligibility Table. The value of the executed works shall be brought to the current costing level by enhancing the actual value of work at simple rate of 7% per annum, calculated from the date of completion to last date of receipt of tenders.

Example/Clarification: Similar Project means that installation of MOT meeting major technical parameters irrespective of material of construction.

4. **(a) Average Net Worth:** Eligible bidders should have an Average Net Worth (i.e. Assets minus Liabilities) for the last five years (i.e. from 2013-14 to 2017-18) of not less than 10% of the cumulative estimated value of work to qualify for the number of schedule as mentioned in **Eligibility Table**.

Or

(b) Solvency Certificate: Eligible bidders should submit a solvency certificate issued by a Nationalized / Scheduled bank anytime during the last six month from the date of tender opening, for a value of not less than 30% of the cumulative estimated value of work to qualify for minimum number of schedule as mentioned in Eligibility Table.

5. **Financial Status:** Eligible Bidders should not have incurred any loss in more than 2 years during the last five years ending 31st March 2018 or 30th June 2018 or 30th September 2018. Audited Profit & Loss account and Balance Sheet (duly notarized copies) for the immediate last five consecutive financial years should be submitted along with the bid.
6. **Manufacturer Authorization:** Eligible bidders quoting as an Indain Agent (ref. GIT cal sue 14, Indian Agents) should submit a mandatory letter of authority from the Foreign Principal / Manufacturer, with name of manufacturing company for major products quoted by them as per given format as detailed below.

For the following major items, Manufacturer's Authorization should be submitted as per format at Section XIV A :

For below items, following needs to be submitted:

- i) Manufacturer's Authorization should be submitted as per format at Section XIV A
- ii) For all 06 items, Order copy along with installation certificates carried out by the bidder for the same/similar equipment (of the same manufacturer as quoted in the Tender BOQ) should be submitted for atleast one successful installation in India in last five years from the date of tender opening.

1	Wall Paneling System
2	Ceiling Paneling System
3	Laminar Air Flow System
4	OT Pendants (Anesthetist & Surgeon)
5	OT light with Camera
6	HD Camera

For the following items, Manufacturer's Authorization should be submitted as per format at Section XIV-B:

1	Hermetically Sealed Doors
2	Isolation Panel System (IPS)
3	Online UPS

Note:

1. Bidder must clearly spell out in his bid what product and technical configuration he is quoting against the tender requirement. The manufacturer of the quoted product should also be binding legally to perform against the said contract including warranty and CMC terms.

2. Bid for Complete Schedule/Part Schedule: A bidder intending to get qualified and considered for award of work for more than one schedule will be required to meet the above qualification criteria on cumulative basis related to experience as well as financials, for such number of schedules.

3. Performance certificates / order Copies considered for qualification in One schedule will not be considered for Evaluation in the next Schedule.

Eligibility Table:

For Sch: 1, Sites at Shahdol & Datia:

Schedule No.	Requirement of Minimum Cumulative Values (In INR) to determine number of Eligible Schedules					
	EMD to be submitted	Average Annual Turnover	Similar Projects executed in last five years for meeting 50% of the estimated cost	Single order executed in last five years for meeting 10% of estimated cost	Avg. Net Worth in last five years for meeting 10% of the estimated cost	Solvency for meeting 30% of the estimated cost
1	₹ 28,00,000	₹ 4,20,00,000	₹ 7,00,00,000	₹ 1,40,00,000	₹ 1,40,00,000	₹ 4,20,00,000

For Sch: 2, Sites at Chindwara, Vidisha, Ratlam, Khandwa & Shivpuri

Schedule No.	Requirement of Minimum Cumulative Values (In INR) to determine number of Eligible Schedules					
	EMD to be submitted	Average Annual Turnover	Similar Projects executed in last five years for meeting 50% of the estimated cost	Single order executed in last five years for meeting 10% of estimated cost	Avg. Net Worth in last five years for meeting 10% of the estimated cost	Solvency for meeting 30% of the estimated cost
2	₹ 70,00,000	₹ 10,50,00,000	₹ 17,50,00,000	₹ 3,50,00,000	₹ 3,50,00,000	₹ 10,50,00,000

If a bidder is quoting for both Schedules, the bidder has to clearly indicate the Performances to be considered for each schedule in Tabular Format as shown below ; It will be the responsibility of the bidder to clearly state the orders to be considered for each schedule.

Sl. No.	Orders to be Considered for Sch. 1	Sl. No.	Orders to be Considered for Sch. 2
1		1	
2		2	
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n		n	

SECTION - VI
LIST OF REQUIREMENTS

Part I**The revised and Final BOQ is as below:****Schedule 1, MOT for GMC, Shahdol & Datia**

BOQ FOR MODULAR OTs SMS Based (5 OTs)- GMC SHAHDOL			
S.N	Name of Items as per tender specification	UNIT	Qty
1	Wall Paneling System(SMS)	Sq M	465
2	Ceiling Paneling System	Sq M	351
3	Laminar Air Flow System	Nos	5
4	Internal HVAC Ducting & Exhaust System	Ls	5
5	PVC Flooring with Self Leveling compound	Sq M	382
6	Hermetically Sealed Doors	Nos.	
	a. HERMETICALLY SEALED DOORS Size (2.1mx1.8m)	Nos.	5
	b. HERMETICALLY SEALED DOORS Size (2.1mx1.0m)	Nos.	5
	c. HERMETICALLY SEALED DOORS Size 2.1mx1.8m with Lead Line(As per AERB Norms) (optional)	Nos.	1
	d. HERMETICALLY SEALED DOORS Size 2.1mx1.0 m with Lead Line(As per AERB Norms) (optional)	Nos.	1
6A	e. View Window with Motorized Blinds -(optional)	Nos.	1
7	Touch Screen Control Panel	Nos	5
8	Pressure Relief Dampers	Nos	5
9	Hatch Box	Nos	5
10	Operating List Board	Nos	5
11	X-ray Film Viewer	Nos	5
12	Scrub Station	Nos	5
13	Storage Unit	Nos	5
14	OT Pendants (Anesthetist & Surgeon)	Nos	
	14.1. Anesthetist Pendant		5
	14.2. Surgeon Pendant		5
15	Peripheral lighting & Clean room luminaries	Nos	40
16	Electrical Installation	Ls	5
17	Distribution Box	Nos	5
18	Isolation Panel System (IPS) (optional)	Nos	5
19	Online UPS (optional)	Nos	5
20	Medical Gas Lines Installations	Ls	5
21	Site Modifications	Ls	1
22	OT Light with camera, Monitor & Recorder	Nos	
	1.1 OT light with Camera		5
	1.2 HD Camera		5
	1.3 HD Monitors		5
	1.4 HD Recorder		5
23	Extra Works (Price Should be Quoted Separately)		
	a. 9” Brick Wall	Sq M	100
	b. Demolition	Cu. Ft	100
	c. IPS Flooring	Sq M	100
	d. Wiring UPS to CP	M	50
	e. Wiring CP to MOT	M	100

BOQ FOR MODULAR OTs SMS Based (3 OTs)- GMC DATIA			
S.N	Name of Items as per tender specification	UNIT	Qty
1	Wall Paneling System(SMS)	Sq M	285
2	Ceiling Paneling System	Sq M	218
3	Laminar Air Flow System	Nos	3
4	Internal HVAC Ducting & Exhaust System	Ls	3
5	PVC Flooring with Self Leveling compound	Sq M	237
6	Hermetically Sealed Doors	Nos.	
	a. HERMETICALLY SEALED DOORS Size (2.1mx1.8m)	Nos.	3
	b. HERMETICALLY SEALED DOORS Size (2.1mx1.0m)	Nos.	3
	c. HERMETICALLY SEALED DOORS Size 2.1mx1.8m with Lead Line(As per AERB Norms) (optional)	Nos.	1
	d. HERMETICALLY SEALED DOORS Size 2.1mx1.0 m with Lead Line(As per AERB Norms) (optional)	Nos.	1
6A	e. View Window with Motorized Blinds -(optional)	Nos.	1
7	Touch Screen Control Panel	Nos	3
8	Pressure Relief Dampers	Nos	3
9	Hatch Box	Nos	3
10	Operating List Board	Nos	3
11	X-ray Film Viewer	Nos	3
12	Scrub Station	Nos	2
13	Storage Unit	Nos	3
14	OT Pendants (Anesthetist & Surgeon)	Nos	
	14.1. Anesthetist Pendant		3
	14.2. Surgeon Pendant		3
15	Peripheral lighting & Clean room luminaries	Nos	24
16	Electrical Installation	Ls	3
17	Distribution Box	Nos	3
18	Isolation Panel System (IPS) (optional)	Nos	3
19	Online UPS (optional)	Nos	3
20	Medical Gas Lines Installations	Ls	3
21	Site Modifications	Ls	1
22	OT Light with camera, Monitor & Recorder	Nos	
	1.1 OT light with Camera		3
	1.2 HD Camera		3
	1.3 HD Monitors		3
	1.4 HD Recorder		3
23	Extra Works (Price Should be Quoted Separately)		
	a. 9” Brick Wall	Sq M	100
	b. Demolition	Cu. Ft	100
	c. IPS Flooring	Sq M	100
	d. Wiring UPS to CP	M	50
	e. Wiring CP to MOT	M	100

Schedule -2; MOT for GMC- Chindwara, Vidisha, Ratlam, Khandwa & Shivpuri

BOQ FOR MODULAR OTs SS Based (8 OTs)-GMC CHHINDWARA			
S.N	Name of Items as per tender specification	UNIT	Qty
1	Wall Paneling System	Sq M	539
2	Ceiling Paneling System	Sq M	320
3	Laminar Air Flow System	Nos	8
4	Internal HVAC Ducting & Exhaust System	Ls	8
5	PVC Flooring with Self Leveling compound	Sq M	348
6	Hermetically Sealed Doors	Nos.	
	a. HERMETICALLY SEALED DOORS Size (2.1mx1.8m)	Nos.	8
	b. HERMETICALLY SEALED DOORS Size (2.1mx1.0m)	Nos.	8
	c. HERMETICALLY SEALED DOORS Size 2.1mx1.8m with Lead Line(As per AERB Norms) (optional)	Nos.	1
	d. HERMETICALLY SEALED DOORS Size 2.1mx1.0 m with Lead Line(As per AERB Norms) (optional)	Nos.	1
6A	e. View Window with Motorized Blinds -(optional)	Nos.	1
7	Touch Screen Control Panel	Nos	8
8	Pressure Relief Dampers	Nos	8
9	Hatch Box	Nos	8
10	Operating List Board	Nos	8
11	X-ray Film Viewer	Nos	8
12	Scrub Station	Nos	4
13	Storage Unit	Nos	8
14	OT Pendants (Anesthetist & Surgeon)	Nos	
	14.1. Anesthetist Pendant		8
	14.2. Surgeon Pendant		8
15	Peripheral lighting & Clean room luminaries	Nos	64
16	Electrical Installation	Ls	8
17	Distribution Box	Nos	8
18	Isolation Panel System (IPS) (optional)	Nos	8
19	Online UPS (optional)	Nos	8
20	Medical Gas Lines Installations	Ls	8
21	Site Modifications	Ls	1
22	OT Light with camera, Monitor & Recorder	Nos	
	1.1 OT light with Camera		8
	1.2 HD Camera		8
	1.3 HD Monitors		8
	1.4 HD Recorder		8
23	Extra Works (Price Should be Quoted Separately)		
	a. 9” Brick Wall	Sq M	100
	b. Demolition	Cu. Ft	100
	c. IPS Flooring	Sq M	100
	d. Wiring UPS to CP	M	50
	e. Wiring CP to MOT	M	100

BOQ FOR MODULAR OTs SS Based (8 OTs)- GMC VIDISHA			
S.N	Name of Items as per tender specification	UNIT	Qty
1	Wall Paneling System	Sq M	817
2	Ceiling Paneling System	Sq M	607
3	Laminar Air Flow System	Nos	8
4	Internal HVAC Ducting & Exhaust System	Ls	8
5	PVC Flooring with Self Leveling compound	Sq M	659
6	Hermetically Sealed Doors	Nos.	
	a. HERMETICALLY SEALED DOORS Size (2.1mx1.8m)	Nos.	8
	b. HERMETICALLY SEALED DOORS Size (2.1mx1.0m)	Nos.	8
	c. HERMETICALLY SEALED DOORS Size 2.1mx1.8m with Lead Line(As per AERB Norms) (optional)	Nos.	1
	d. HERMETICALLY SEALED DOORS Size 2.1mx1.0 m with Lead Line(As per AERB Norms) (optional)	Nos.	1
6A	e. View Window with Motorized Blinds -(optional)	Nos.	1
7	Touch Screen Control Panel	Nos	8
8	Pressure Relief Dampers	Nos	8
9	Hatch Box	Nos	0
10	Operating List Board	Nos	8
11	X-ray Film Viewer	Nos	8
12	Scrub Station	Nos	7
13	Storage Unit	Nos	8
14	OT Pendants (Anesthetist & Surgeon)	Nos	
	14.1. Anesthetist Pendant		8
	14.2. Surgeon Pendant		8
15	Peripheral lighting & Clean room luminaries	Nos	64
16	Electrical Installation	Ls	8
17	Distribution Box	Nos	8
18	Isolation Panel System (IPS) (optional)	Nos	8
19	Online UPS (optional)	Nos	8
20	Medical Gas Lines Installations	Ls	8
21	Site Modifications	Ls	1
22	OT Light with camera, Monitor & Recorder	Nos	
	1.1 OT light with Camera		8
	1.2 HD Camera		8
	1.3 HD Monitors		8
	1.4 HD Recorder		8
23	Extra Works (Price Should be Quoted Separately)		
	a. 9” Brick Wall	Sq M	100
	b. Demolition	Cu. Ft	100
	c. IPS Flooring	Sq M	100
	d. Wiring UPS to CP	M	50
	e. Wiring CP to MOT	M	100

BOQ FOR MODULAR OTs SS Based (10 OTs)- GMC RATLAM			
S.N	Name of Items as per tender specification	UNIT	Qty
1	Wall Paneling System	Sq M	929
2	Ceiling Paneling System	Sq M	700
3	Laminar Air Flow System	Nos	10
4	Internal HVAC Ducting & Exhaust System	Ls	10
5	PVC Flooring with Self Leveling compound	Sq M	761
6	Hermetically Sealed Doors	Nos.	
	a. HERMETICALLY SEALED DOORS Size (2.1mx1.8m)	Nos.	10
	b. HERMETICALLY SEALED DOORS Size (2.1mx1.0m)	Nos.	10
	c. HERMETICALLY SEALED DOORS Size 2.1mx1.8m with Lead Line(As per AERB Norms) (optional)	Nos.	1
	d. HERMETICALLY SEALED DOORS Size 2.1mx1.0 m with Lead Line(As per AERB Norms) (optional)	Nos.	1
6A	e. View Window with Motorized Blinds -(optional)	Nos.	1
7	Touch Screen Control Panel	Nos	10
8	Pressure Relief Dampers	Nos	10
9	Hatch Box	Nos	10
10	Operating List Board	Nos	10
11	X-ray Film Viewer	Nos	10
12	Scrub Station	Nos	10
13	Storage Unit	Nos	10
14	OT Pendants (Anesthetist & Surgeon)	Nos	
	14.1. Anesthetist Pendant		10
	14.2. Surgeon Pendant		10
15	Peripheral lighting & Clean room luminaries	Nos	80
16	Electrical Installation	Ls	10
17	Distribution Box	Nos	10
18	Isolation Panel System (IPS) (optional)	Nos	10
19	Online UPS (optional)	Nos	10
20	Medical Gas Lines Installations	Ls	10
21	Site Modifications	Ls	1
22	OT Light with camera, Monitor & Recorder	Nos	
	1.1 OT light with Camera		10
	1.2 HD Camera		10
	1.3 HD Monitors		10
	1.4 HD Recorder		10
23	Extra Works (Price Should be Quoted Separately)		
	a. 9” Brick Wall	Sq M	100
	b. Demolition	Cu. Ft	100
	c. IPS Flooring	Sq M	100
	d. Wiring UPS to CP	M	50
	e. Wiring CP to MOT	M	100

BOQ FOR MODULAR OTs SS Based (6 OT)- GMC KHANDWA			
S.N	Name of Items as per tender specification	UNIT	Qty
1	Wall Paneling System	Sq M	403
2	Ceiling Paneling System	Sq M	238
3	Laminar Air Flow System	Nos	6
4	Internal HVAC Ducting & Exhaust System	Ls	6
5	PVC Flooring with Self Leveling compound	Sq M	259
6	Hermetically Sealed Doors	Nos.	
	a. HERMETICALLY SEALED DOORS Size (2.1mx1.8m)	Nos.	6
	b. HERMETICALLY SEALED DOORS Size (2.1mx1.0m)	Nos.	6
	c. HERMETICALLY SEALED DOORS Size 2.1mx1.8m with Lead Line(As per AERB Norms) (optional)	Nos.	1
	d. HERMETICALLY SEALED DOORS Size 2.1mx1.0 m with Lead Line(As per AERB Norms) (optional)	Nos.	1
6A	e. View Window with Motorized Blinds -(optional)	Nos.	1
7	Touch Screen Control Panel	Nos	6
8	Pressure Relief Dampers	Nos	6
9	Hatch Box	Nos	0
10	Operating List Board	Nos	6
11	X-ray Film Viewer	Nos	6
12	Scrub Station	Nos	6
13	Storage Unit	Nos	6
14	OT Pendants (Anesthetist & Surgeon)	Nos	
	14.1. Anesthetist Pendant		6
	14.2. Surgeon Pendant		6
15	Peripheral lighting & Clean room luminaries	Nos	48
16	Electrical Installation	Ls	6
17	Distribution Box	Nos	6
18	Isolation Panel System (IPS) (optional)	Nos	1
19	Online UPS (optional)	Nos	1
20	Medical Gas Lines Installations	Ls	6
21	Site Modifications	Ls	1
22	OT Light with camera, Monitor & Recorder	Nos	
	1.1 OT light with Camera		6
	1.2 HD Camera		6
	1.3 HD Monitors		6
	1.4 HD Recorder		6
23	Extra Works (Price Should be Quoted Separately)		
	a. 9” Brick Wall	Sq M	100
	b. Demolition	Cu. Ft	100
	c. IPS Flooring	Sq M	100
	d. Wiring UPS to CP	M	50
	e. Wiring CP to MOT	M	100

BOQ FOR MODULAR OTs SS Based (9 OTs)- GMC SHIVPURI			
S.N	Name of Items as per tender specification	UNIT	Qty
1	Wall Paneling System	Sq M	694
2	Ceiling Paneling System	Sq M	427
3	Laminar Air Flow System	Nos	9
4	Internal HVAC Ducting & Exhaust System	Ls	9
5	PVC Flooring with Self Leveling compound	Sq M	464
6	Hermetically Sealed Doors	Nos.	
	a. HERMETICALLY SEALED DOORS Size (2.1mx1.8m)	Nos.	9
	b. HERMETICALLY SEALED DOORS Size (2.1mx1.0m)	Nos.	0
	c. HERMETICALLY SEALED DOORS Size 2.1mx1.8m with Lead Line(As per AERB Norms) (optional)	Nos.	1
	d. HERMETICALLY SEALED DOORS Size 2.1mx1.0 m with Lead Line(As per AERB Norms) (optional)	Nos.	1
6A	e. View Window with Motorized Blinds -(optional)	Nos.	1
7	Touch Screen Control Panel	Nos	9
8	Pressure Relief Dampers	Nos	9
9	Hatch Box	Nos	9
10	Operating List Board	Nos	9
11	X-ray Film Viewer	Nos	9
12	Scrub Station	Nos	9
13	Storage Unit	Nos	9
14	OT Pendants (Anesthetist & Surgeon)	Nos	
	14.1. Anesthetist Pendant		9
	14.2. Surgeon Pendant		9
15	Peripheral lighting & Clean room luminaries	Nos	72
16	Electrical Installation	Ls	9
17	Distribution Box	Nos	9
18	Isolation Panel System (IPS) (optional)	Nos	9
19	Online UPS (optional)	Nos	9
20	Medical Gas Lines Installations	Ls	9
21	Site Modifications	Ls	1
22	OT Light with camera, Monitor & Recorder	Nos	
	1.1 OT light with Camera		9
	1.2 HD Camera		9
	1.3 HD Monitors		9
	1.4 HD Recorder		9
23	Extra Works (Price Should be Quoted Separately)		
	a. 9” Brick Wall	Sq M	100
	b. Demolition	Cu. Ft	100
	c. IPS Flooring	Sq M	100
	d. Wiring UPS to CP	M	50
	e. Wiring CP to MOT	M	100

**SECTION-VII
TECHNICAL SPECIFICATIONS**

The Final Technical Specifications are as below:

Schedule 1, MOT for GMC, Shahdol & Datia

Sl. No	Technical Specification
	Modular OT (SMS Based)
	RESPONSIBILITY OF BIDDER
a	Bidder shall be responsible for complete design, construction, testing and commissioning of modular operation theatres based on seamless integration with modular concept.
b	Bidder shall execute all required modification in civil, electrical and peripheral lighting, plumbing, air-conditioning system (Ducting inside the OT), demolition and other works as may be required for complete installation and trouble-free functioning of the operation theatres as a part of the 'Site Modification' like PRD cutout, Hatch Box cutout, modification to Door cutout as per Door size etc.
c	Necessary coordination with fire-safety vendor for the installation of fire-safety sensor/instrument inside the MOT to be done by the MOT bidder.
d	The bidder shall be responsible for the complete works including the submission of Working Drawings, layout drawings and walk through view on the basis of provided Auto CAD or PDF or Hard Copies of Drawings from respective institute.
e	Bidder shall be responsible for installation and commissioning of other medical equipment (like Integration Equipment, Monitors, Etc) in coordination with hospital authorities and equipment vendor.
f	The bidder should provide UPS power supply to all OTs (If UPS is in the scope of MOT bidder)
g	Bidder shall be responsible for free maintenance of modular operation theatres during warranty period inclusive of all consumables.
h	Bidder shall be responsible for commissioning of all equipment coming within the MOT as per technical specification of the tender.
i	MOT Bidder should coordinate with MGPS and other bidders for the successful completion of MOT.
j	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 vendor. (Necessary coordination with HVAC vendor to be done by the MOT bidder) Control of HVAC will be provided by HVAC vendor.
k	Bidder should provide factory test certificates for the material user for the construction of modular theatres.
l	Bidder should supply complete set of part manuals, service manuals for all the systems and subsystems to be supplied.
m	Consignee/ User have to be trained for a week by the engineers from Original Equipment Manufacturer (OEM).
n	Final electrical safety test, system test, and calibration should be done as per international standard by authorized persons using calibrated test equipment and declaration should be submitted by the vendor.
o	OEM or his authorized agent should post a trained engineer who should be available at site or should reach the site within 24 hrs of raising a service call.
p	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 standard outlets and outlets should be European CE approved or UL listed
q	Bidder must have a satisfactory installation of complete MOT as asked in tender and demo may be taken for the same.
r	Bidder has to clarify their doubts or prerequisites during prebid meeting. No extra prerequisites or clarifications after placement of order will be addressed.
s	Bidder has to submit their drawing within 15 days after placement of order in consultation with HITES and after site visit.

Responsibility of the Consignee:	
1	The institute will provide MOT shell structure (complete with brick works, plastering , leveled floor of the outer area only)
2	Institute will provide UPS room preferably on same OT floor or If it is elsewhere the necessary power cables from UPS room to each OT (load capacity of approx 12-15kVA) to be provided by the institute if UPS is in scope of MOT vendor.
3	Institute will provide hot and cold water supply with drain and 5/15 A switch sockets at each scrub location
4	Institute will provide temporary storage for storing of raw materials of MOT system during installation period and the security of the store is the responsibility of MOT vendor
5	Institute will provide working electrical power supply for installation to MOT vendor on chargeable basis or MOT vendor will arrange their own working power.
6	Institute will provide LAN cable, telephone line, copper strip earthing for each OTs
7	Institute will provide dedicated AHU & air conditioning with HVAC supply and return aluminium air duct and suitable prefilter upto outside of each OTs. Controlling cable from AHU to OT Control panel to be provided by HVAC vendor.
8	Institute will provide single point electrical connection at outside wall of each OT/at the UPS room (If UPS supply is at the MOT vendor scope). All other cabling has to be done by the bidder. Hospital Earthing will be provided at UPS room. However if bidder require dedicated earthing for UPS, it has to be done by MOT vendor.
9	Institute will be responsible for complete finishing of areas outside the MOT like corridors, scrub area, preparation room, store room etc except inside MOT area and floor level of corridor connecting to the OT should be 4-5mm higher than MOT floor level
SCOPE OF WORK	
The "Site Modification" work includes all modifications to the built up space provided at the hospital site including Installation of Medical Equipment, Communication Systems, civil modifications, electrical works, plumbing works, interior decoration, air conditioning ducting 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.	
Turn Key Job to be provided by the Bidder for following –	
1	Wall Paneling System
2	Ceiling Paneling System
3	Laminar Air Flow System
4	Internal HVAC Ducting & Exhaust System
5	PVC Flooring
6	Hermetically Sealed Doors
7	Touch Screen Control Panel
8	Pressure Relief Dampers
9	Hatch Box
10	Operating List Board
11	X-ray Film Viewer
12	Scrub Station
13	Storage Unit
14	OT Pendants (Anesthetist & Surgeon)
15	Peripheral lighting & Clean room luminaries
16	Electrical Installation
17	Distribution Box
18	Isolation Panel System (IPS)
19	Online UPS
20	Medical Gas Lines Installations

21	Site Modifications
22	OT Light with camera, Monitor & Recorder
1	WALL & CEILING SYSTEM (SMS)
1.1	The wall system should be based on a technological modular unit designed to clad and to divide interior space in controlled bacteria environments in a flexible and functional manner.
1.2	The design ensures that the unique self-loading and free standing substructure can be clad with all types of engineered finishing panels without use of screws and any other fixed mechanical joints (SCREWLEES TECHNOLOGY)
1.3	The outer surface of a wall surface should be created with high –tech materials such as Solid Mineral Composite Sheet (SMS) with backing of Aluminum frame.
1.4	System should offer total ease of cleaning and sanitization of the partitions. It should have no corners and adjacent surfaces should be molded flush by means of connecting elements. 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, first the structural parts and subsequently the finishing elements to be installed. The system should ensure perfect integration of technical networks and allow ample operational flexibility on the construction site.
1.5	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.
1.6	All component of Wall & Ceiling System should be from the same manufacturer for the following
1.7	Sub frame/Structure
1.8	Wall Panels
1.9	Angular Wall corners
1.10	Sealing Material
1.11	Ceiling Panels
1.12	Sub Frame/Structure:
	Sub Structure frame made of galvanized steel pillars with broad cross section and dual cavity, with geometry designed to achieve exceptional rigidity. The substructure, with its FREE-STANDING technology, minimize the interference with all electro mechanical systems to be installed. Possible to adjust and secure the profiles, ensuring the maximum rigidity and self-loading capacity of the sub frame system.
1.13	Wall panels:
	Cladding shall be with composite panels the finishing of which should be Solid Mineral
	Composite Sheet (SMS) thickness of 03mm.
	Entire thickness of SMS sheet should be antimicrobial, dense and non-porous material.
	The panel should be made of a durable and uniform material that should be easy to clean and extremely hygienic.
	Internal balancing core with suitable geometry to ensure the maximum rigidity
	The total thickness of panel including Aluminum backing structural panel (minimum 15mm thickness) consisting of a trapezoidal aluminium corrugated core glued between two flat of aluminium sheet and total panel thickness not less than 18mm
	Panels should be resistant to water and detergents normally used in hospital.
	Reaction to fire class 1 norm
	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 wall modules should be individually dismountable independently from ceiling and floor system to allow inspectability, maintenance of technical systems, and any variations that may become necessary for future alteration, modification and repair.
1.14	Angular Wall corners:
	Angular air intake element made with a 130°-140° angular modular element with the same finish of the wall panels. Such unit is internally completed by a stainless-steel recovery duct formed by a single inox sheet,

	perfectly integrated and shelled in order to allow the correct element sanitization. A removable front panel allows both access to the canal behind either the regulation of the air flow between the lower and upper opening (adjusting dampers excluded)
1.15	Sealing Material:
	Should be non-toxic , antibacterial medical grade silicone/ Monolithic sealing method around all the contact perimeters between the various materials, and the hermetically sealed gaps between modules, should ensure optimum space segregation and ensure that sterile air pressure values are maintained in the protected environment, this being a fundamental prerequisite for guaranteed sterility. Should be seamlessly connected surface with same color finish.
1.16	Ceiling Panels:
	The hermetic suspended ceiling should be a loading structure in heavy gauge material forming the grid on which the ceiling panels made of Solid Mineral Composite Sheet (SMS) thickness of 03mm.
	The total thickness of panel including Aluminum backing should not be less than 15 mm .The integration of sealed lighting fixtures, air anemostats and /or various service units. The variable module grid should make it possible to adapt the size of the ceiling module to match the equipment to be mounted. It should also allow the use of different module sizes within the same room.
	The grid should be formed of loading profiles, suspended from the ceiling slab, to which the crossbar profiles are secured by means of rigid mechanical couplings. The thus formed grid should be rigid and remains perfectly stable during all the subsequent site operations.
	The suspended ceiling should be hermetically sealed by means of nontoxic silicon gasket application and it should be durable and non-degradable & resistant to microorganism attack.
	Color of inner surface wall & Ceiling of MOT shall be finalized after approval of consignee.
2	LAMINAR AIR FLOW SYSTEM
2.1	The ceiling filtration system should be designed to ensure unidirectional distribution of sterile air of the surgical theatre to ensure the cleanliness of all the area covered by the air flow.
2.2	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 : One piece polyurethane
	MPPS average efficiency: > 99.95%
	3 Micron DOP efficiency > 99.99%
	Final Pressure drop : 600 pa(max)
	Maximum Operating Temp : 60 degree Celsius
	Maximum RH : 40-50 %
2.3	The ceiling system should be equipped with “H 14” class HEPA filters position in the ceiling to achieve 0.25m/sec flow at the diffuser.
2.4	Filtration Ceiling System holding structure, Filter frames and top plenum should be made of Aluminium/Stainless Steel.
2.5	The filtration ceiling system should have diffuser/flow equalizer to achieve uniform & constant air distribution over the whole surface. It should be CE/UL certified
2.6	The air management system should be designed to achieve class 100 with the following parameters:
	Bacteriological class =B (5 CFU/m ³)
	Particle decontamination kinetics CP =5 min
	ISO 14644/1 classification = ISO 5
	Third party validation by Govt. approved environment lab(After Installation)
2.7	The positive pressure should be maintained inside the OT to prevent contamination due to air from outside the OT.
2.8	The supplier should provide test certificate for HEPA filter and laminar air flow systems from the original manufactures.

2.9	Size of laminar airflow system minimum 8 feet X 8 feet or more.
2.10	Should be CE certified.
2.11	Note: Prospective bidders are advised to collect the information regarding CFM and AHU capacity from the respective institute site. Total flow rate of filter bank shall match the CFM of AHU.
3	Internal HVAC Ducting & Exhaust System
3.1	All the ducting inside the MOT shall be scope of the MOT bidder.
3.2	All the ducting should be as per industry standard and sheet should be Aluminum of appropriate thickness and insulated as per industry standard.
3.3	All necessary HVAC interconnection for supply and return air shall be the scope of bidder (the institute will provide the duct upto outside of each MOT)
3.4	Return air exhaust grill should be provided in the OT.
3.5	The exhaust air cabinets should be openable and cleanable.
3.6	These cabinets should have suction from bottom and top also.
3.7	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.
3.8	The Exhaust air cabinet should be manufactured and supplied by the supplier of wall and ceiling system supplies.
3.9	Return air exhaust cabinet should be made from SS304. Also it should match perfectly with the ceiling system aesthetically
4	PVC FLOORING WITH SELF LEVELING
4.1	It should be with 2mm antistatic seamless PVC flooring
4.2	Floor should be smooth, non-slip, impervious material conductive enough to dissipate static electricity but not conductive enough to endanger personnel from electric shock.
4.3	Electrostatic charge dissipation combat PVC seamless flooring of very high quality should be provided.
4.4	Thickness not less than 2 mm. Continuous roll should be used and joints should be welded by special PVC thermal welding units using PVC welding bars of same colour
4.5	The sheets should be highly durable with resistance to shock and indentation. It should be scratchproof also. The conductive material should be uniformly impregnated as grains.
4.6	It should be inert to body fluids, chemicals and disinfectants. Should not be affected by temperature variation within the OT.
4.7	The floor should efficiently discharge electric charges up to 2 kV
4.8	Flooring should be done by skilled workers of accredited agencies authorized by the supplier of PVC sheets. The electrical resistance (point to ground) should be within 2.5×10^4 to 5×10^6 ohms. The floor should not allow build up of electrical charge beyond 100 volts due to antistatic effect. The corners should not be terminated sharply and concealed cove- former (aluminium) should be used to overlap the wall panel to a height of approx.25mm and sealed perfectly and uniformly. Self leveling compounds should be used.
4.9	The conductive copper grid laid underneath the PVC sheet should be supported by liquid epoxy compounds allowed to set as a uniform and level surface. The copper strips to be made visible by grinding and no copper strip should project more than 0.5mm above level surface to avoid damage to the PVC sheet. One earthing lead should be brought out from every 150sq.ft area and attaching it to the main earthing strip/ground.
4.10	Copper grounding strips (0.05 mm thick, 50 mm width) should be laid flat on the floor in the conductive adhesive and connected to copper strip of grounding. The connection from copper grid should be brought out uniformly at places to form equipotential grid.
4.11	Flooring should be mechanically shock proof, scratch proof, flame retardant and anti microbial
4.12	Corners should be uniformly curved
4.13	Final surface should be non corrosive to biological fluids and detergents.
4.14	Colour should be uniform pleasant and matching with ambience and as approved by respective consignee.
4.15	Suitable self-leveling should be done before PVC flooring to avoid undulation within the MOT.
5	HERMETICALLY SEALED DOORS -
5.1	Door sizes should be as per below option and quantities will be as per BOQ of respective institute
a	HERMETICALLY SEALED DOORS Size 2.1mx1.8m

b	HERMETICALLY SEALED DOORS Size 2.1mx1.0m
c	HERMETICALLY SEALED DOORS Size 2.1mx1.8m with Lead Line(As per AERB Norms) (Optional)
d	HERMETICALLY SEALED DOORS Size 2.1mx1.0 m with Lead Line(As per AERB Norms) (Optional)
5.2	This should be a hermetically sealed, single sliding door of 2.1 (H)X 1.8 m(W)
5.3	The controller should be capable of being operated by elbow switches/foot switches as well as touch less sensor.
5.4	The track should be of stainless steel/Aluminum and the running surface for the top rollers should be suitably angled to reduce resistance to movement
5.5	The door leaf should be hung by means of hard plastic rollers of high quality with double bearing at the top. Rollers should be provided under the stainless steel/Aluminium track to enable smooth and noiseless movement.
5.6	Opening and closing of the door should be microprocessor controlled electromechanical movement.
5.7	The door material should be of SMS and Color should match the interior and care should be taken to make the leaf strong and light weight.
5.8	One should be able to open and close the door effortlessly incase of failure of automatic mechanism.
5.9	Door opening handle should be strong and sturdy. Material should be of SS (gloss finish). Should be provided with high quality cylindrical lock.
5.10	Door leaf should have high quality synthetic rubber gasket with long life to ensure hermetic sealing (to maintain air pressure differential). Air tightness 99.99% at a pressure of 100Pa.
5.11	The finished floor on either side of the door should be perfectly level (maximum permissible difference +1mm).
5.12	The overall thickness of the finished door should be 40-60mm . The inner part of the door should be filled with CFC free polyurethane foam thickness of 48mm or nearby. (Sealed airtight to prevent further ingress of any microbial organism).
5.13	The door and controls should comply with IEE regulation. All motors used should be DC brushless motors with essential isolation from mains.
5.14	Door should be with vision window 300 mm x 300 mm with double glazed panels and hermetically sealed.
5.15	Door movement should have minimum noise.
5.16	The starting time after receiving the signal should be adjustable between 0.5 to 20 seconds.
5.17	The door controller should be CE marked.
5.18	Test certificate for hermetically sealed door frame (factory test certificate) should be enclosed with the pre dispatch documents.
6	Window with Motorized Blinds for MOT -1Nos (Optional) size approx. 1.5m x 1m
7	TOUCH SCREEN CONTROL PANEL 20" or more
7.1	The control panel should be touch screen panel. This control panel should work as the central control panel for the HVAC controls, instruction board. Touch screen, OT light control (on-off facility) . The controller should be capable of adjusting the temp adjustment of +/- 5 Deg with in 5Minutes. It should be CE or UL Listed.
7.2	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.
7.3	The panel should accommodate digital clock and the elapsed time indicator.
7.4	The medical gas alarm should indicate high and low gas pressures for each gas service present in the OT including vacuum. (For Vacuum, it will be low/normal) This should be supported by audible alarm also. The panel should have an alarm mute (fault annunciation) facility. The sensors (pressure switches) should be at the nearest isolation valve.
7.5	Control for general lighting: ON/OFF and dimming controls organized in groups to provide uniform illumination.
7.6	Control of the operating light (major and satellite and camera control (on/off and) should be provided.
7.7	Hand free telephone set with memory should be located at one side.
7.8	Temperature and humidity control for the room connected to the AHU. (Adjustable from the panel) The controller should be capable of adjusting the temp adjustment of +/- 5 Deg with in 5Minutes wherever separate

	AHU is provided for each OT.
7.9	Digital room pressure indicator in cm of H ₂ O or equivalent (signal from pressure sensor shall be provided to indicate pressure differential between OT and outside)
7.10	HEPA filter bank differential pressure indicator.
7.11	The control Panel should be able to integrated with HIS/BMS
8	PRESSURE RELIEF DAMPERS
8.1	Pressure relief dampers or over flow ports should be provided in each room to prevent contamination of air from clean and dirty areas.
8.2	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.
8.3	Counter- weight balancing system should be provided in the PRD to maintain positive pressure inside the operation room.
8.4	Air pressure stabilizers should have unique capability of controlling differential pressure to close tolerance. The PRD should remain closed at pressure below the set pressure and should open fully at a pressure only fractionally above the threshold pressure.
8.5	The frame, body and blade should be of grade SS304 stainless steel.
9	HATCH BOX
9.1	It 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.
9.2	Each hatch box should be equipped with two doors and the door should be operated electrically/motorised.
9.3	The hatch should be designed in such a way that only one door should be opened at one time.
9.4	The UV light should be so installed that it is kept on while both the doors are closed. This UV light has to be automatically turned off in case of opening of either of the doors.
9.5	Indicators should be provided on both sides of the OT so that door open / close status can be monitored from both sides.
9.6	Hatch Box material should be SS304 grade.
9.7	Size of the Hatch box minimum: 600mm x 600mm.
10	OPERATING LIST BOARD
10.1	One operating list board should be provided in each operating theater.
10.2	It should be made of ceramic having magnetic properties and should be flushed to the wall of the operating room.
11	X RAY FILM VIEWER
11.1	LED type flat panel X-ray viewing panel should be supplied.
11.2	This should comply with relevant electrical safely codes.
11.3	Mounting should be flush with the wall to avoid dust accumulation and growth or organisms between wall and panel.
11.4	Body should be of extruded aluminum powder coated black with bacteria resistant and disinfectant resistant finish.(Colour as pr User choice)
11.5	The diffuser on the front panel should be a uniformly lit screen.
11.6	Dimming electronic control should be enclosed at the bottom of the cabinet.
11.7	Proper spring loaded film clip with rollers should be provided to hold the films firmly and to remove the film without scratches.
11.8	This should be of dual panel viewing screen (14"x17" each).
12	SCRUB STATION (min size 1500mm)
12.1	Compact surgical scrub sink should be designed for use in OT complex providing for pre procedural scrub up.(Double sink combination as suitable)
12.2	Each fixture should be fabricated from heavy gauge type 304 stainless steel (minimum thickness 1.5mm) and should be seamless welded construction, polished to a satin finish
12.3	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.
12.4	Hands free operation should include infra red sensors with programmable adjustment.

12.5	Thermostatic mixing, valve control should be located behind the access panel and maintain constant water temperature.
12.6	Timing should be adjustable to meet individual application requirements.
12.7	Provided with infrared sensors, thermostatic control taps with fail safe temperature controls.
12.8	All units should have reduced anti- splash fronts.
12.9	Knee/foot operated switch should be provided additionally.
13	STORAGE UNIT
13.1	The storage unit should be made with 1 mm thick stainless steel panels.
13.2	The shelves should be of SS 304 & removable for cleaning.
13.3	The storage unit should be divided 2 or more parts and each part should have individual glass doors with high quality locking system
13.4	The overall size should be approx. 200 cm X 120 cm X 40 cm
14	PENDANTS FOR ANESTHETIST AND SURGEON
14.1	Double arm moveable Pendant for Anesthetist
a	The Pendants should comply with NFPA 99C/HTM 02-01/DIN. 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
b	Double moveable arms (any combination) with total coverage of min 1800mm and 330 deg. Horizontal movements for each arm. Vertical movement should be motorized and the arm height should remain to a height greater than 6.5 feet above floor level
c	Weight carrying capacity of the arm should not be less than 180 Kg. should have electromagnetic/pneumatic brakes.
d	Each arm should be capable of 300-340 degrees of rotation, which can be easily adjusted to suit the desired mode of operation.
e	The pendant should be European CE Certified with 4digit notified body number or US FDA approved.
f	The Pendant Service Heads should be modular with minimum 800mm head. The heads should be capable of accepting a range of shelves, infusion poles, electrical switch/sokets, gas outlets other accessories asasked in tender. The Pendant Heads should support the range of Physiological Monitor Mounting Solutions.
g	The Pendant Service Heads should be supplied with medical gas terminal units and 5/15 or 6/16 Amps hybrid Sockets with switches.
h	Double arm pendant anesthesiologist and surgeon : Each pendant should be supplied with outlets and probes as mentioned below – Oxygen Outlets – 2 nos., Vacuum Outlets – 2 nos., Nitrous oxide – 1 nos., Air(4 bar) Outlets - 2 nos., AGSS outlet - 1 no Electrical sockets - 10 nos. Adjustable Shelf with two rails one on each side – 3 no. IV Fluid Pole with 4 hooks – 1No. Data socket RJ-45 -2 nos.
i	Pendant supplier should provide cutouts for Patch Panels in Integrated OTs. (applicable only for integrated OT)
14.2	Double arm moveable Pendant for Surgeon
a)	The Pendants should comply with NFPA 99C/HTM 02-01. 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
b)	Double moveable arms (any combination) with total coverage of min 1800mm and 330 deg. Horizontal movements for each arm. Vertical movement should be motorized and the arm height should remain to a height greater than 6.5 feet above floor level
c)	Weight carrying capacity of the arm should not be less than 180 Kg. should have electromagnetic/pneumatic brakes.

d)	Each arm should be capable of 300 - 340 degrees of rotation, which can be easily adjusted to suit the desired mode of operation.
e)	The pendant should be European CE Certified with 4digit notified body number or US FDA under Medical Devices Directive.
f)	The Pendant Service Heads should be modular with minimum 800mm head. The heads should be capable of accepting a range of shelves, infusion poles, electrical switch/sokets, gas outlets other accessories asasked in tender. The Pendant Heads should support the range of Physiological Monitor Mounting Solutions.
g)	The Pendant Service Heads should be supplied with medical gas terminal units and 5/15 or 6/16 Amps hybrid Sockets with switches.
h)	Each pendant should have – Each pendant should be supplied with outlets and probes as mentioned below – Vacuum Outlets – 2nos, Air(7bar) Outlet- 01nos, CO2 Outlet - 01 nos., Electrical sockets - 10 nos. Adjustable Shelf with two rails one on each side – 3 no. Data socket RJ-45 -2 no. IV Fluid Pole with 2 hooks – 1No. (Pole should be capable of stacking 4 nos of syringe pumps)
i)	Pendant supplier should provide cutouts for Patch Panels in Integrated OTs (applicable only for integrated OT)
15	PERIPHERAL LIGHTING AND CLEAN ROOM LUMINARIES (LED TYPE)
15.1	To provide peripheral lighting and clean room luminaries with intensity min 500 Lux, it should be minimum 8 in numbers for each OT.
15.2	Luminaries cover should be made of highly resistant, disinfectant proof laminated safety glass/acrylic with stylish fine grained surface.
15.3	Deleted
15.4	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 gear in multilamp technology.
15.5	Recess frames should be gas tight. The fitting should be flush with the ceiling and should be removable from top or bottom. The light fitting should be uniformly and aesthetically distributed on the ceiling to provide uniform illumination in the OT. Light should not interfere when green mode endoscopy is performed
15.6	Peripheral lighting should be done according to IP65 (international protection rating 65) / IP 54 regulations. Certificate for this to be submitted along with bid.
15.7	Control equipment for the general lighting and the light dimming should be provided in the theatre control panel
15.8	The LED Bulbs should be from these make - Philips/ GE/ Crompton/ Wipro/ Syska.
16	ELECTRICAL INSTALLATIONS
16.1	Power distribution within the OT should be provided from distribution boards for each theatre to be supplied by MOT vendor. Sub mains power to these panels should be by the general electrical contractor. From these panels all distribution services within the departments should be run. Isolated power supply, insulation measuring and protection as per IEC standards should be provided. This unit should be EN/CE/UL/FDA/IEC certified.
16.2	Earthed equipment bonding of all exposed metalwork should be provided.
16.3	Power sockets within the Operating Theatres ancillary areas should be matched to the rest of the hospital.
16.4	Each wall of MOT should have minimum 02 Nos. 6/16A hybrid switch socket & 32A industrial socket at any two walls as per IEC standard.
16.5	Light fittings within the clinical areas should be recessed LED type with control gear
16.6	Fittings should be sealed In accordance with the standard IP54.
16.7	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.

16.8	All the conduits inside the OT should be of MS.
17	DISTRIBUTION BOARD
17.1	All high voltage equipment should be installed in a separate enclosure.
17.2	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.
17.3	All internal wiring should terminate in connectors with screw & clamp spring.
17.4	Connections of the clip- on type mounted, on a CE approved rail & labeled with indelible proprietary labels.
17.5	Individual fuses or miniature circuit breakers should protect all internal circuits.
17.6	Complete schematic drawing with description should be enclosed with the equipment.
17.7	DB Should have minimum two 32A/16A(As per requirement) extra circuits with MCCB/MCB for future uses like integration equipment, etc.
18	Isolation Panel System (Optional)
18.1	Isolation Panel System of minimum 10KVA capacity should be provided for every operation theatre which ensures the safety of staff and patient. System should have isolators provided through leakage relays etc. (If required) according to IEC recommendation. This unit should be EN/CE/UL/BIS/FDA/IEC certified. These systems are to be commissioned by specialists.
18.2	Should be medical grade Insolation panel
18.3	Should have fault detection feature
18.4	Should be compliant to CEI 64-8 / IEC 60364-7-710/BS7671 Standard
18.5	Should be mountable on wall & compact
19	Online UPS(Optional)
19.1	Backup should be minimum 30min.
19.2	The room for the central UPS will be provided by the respective institute/hospital preferably at same OT floor and one point electric supply will be provided to the UPS Room by the respective institute/hospital.
19.3	Bidder should provide required electrical wiring from UPS to all modular MOT as per IEC/International standard.
19.4	Electrical control panel complete with MCCB, Switchgears etc should be provided.
19.5	Bidder shall offer UPS from make – APC/ TATA Liebert/ Delta /Hitachi/ Consul Neowatt / UNILINE/3EM
19.6	Per MOT UPS load should be provided minimum 10 KVA with one 10KVA backup for all OTs and redundancy(n+1) should switch automatically. The battery bank may be common for UPS
20	MEDICAL GAS LINE INSTALLATION
20.1	The bidder should ensure that all works carried out are to the recommendation made in the Department of Health and Social Securities HTM 02-01 /NFPA 99C / DIN
20.2	Bidder should provide Oxygen, Air, Vacuum, AGSS, and Nitrous Oxide supply to Operation Theatres from the existing lines terminated outside the OT .
20.3	Bidder shall be responsible for supply, installation, testing and commissioning of complete MGPS system inside the operation theatre including Distribution piping, Pendants, outlets and other essential accessories.
20.4	Terminal units should be gas specific and only accept the correct Medical gas probe. Gas specific components shall be pin indexed to ensure that a correct gas specific assembly is accepted.
20.5	Each terminal unit should be identified by the appropriate recognized name or symbol, colour, coding and shape as per HTM 02-01 /NFPA 99C. Outlets should be CE certified/UL listed.
20.6	Copper pipes should be of solid drawn, seamless, deoxidized, non-arsenical, half hard, tempered and degreased copper pipe. All copper pipes should be degreased & delivered capped at both ends. The pipes should be accompanied with manufacturers test certificate for the physical properties & chemical composition. The copper pipe should comply with EN 13348
20.7	Copper pipe must have reputed third party inspection certificate (Eg. Lloyd's, TUV, SGS).
20.8	Fittings should be made of copper and suitable for a working Pressure of up to 17bar and especially made for brazed socket type connections
20.9	The copper fitting should comply with EN 1254-1
20.10	The Brazing filler material should comply with EN 1044
21	Site Modification -

21.1	Any minor demolition , reconstruction, water proofing, necessary plumbing, anti-microbial painting, replacement of any door or windows to provide structured design within the OT area for modular OT should be carried out by the bidder for successful installation and commissioning of MOT.Modification of work includes PRD cutout, Hatch Box cutout, modification to Door cutout as per Door size etc. Bidder are advised to visit the site before quoting.
22	OT LIGHT WITH CAMERA
22.1	OT Light – LED
	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.
	Such Lighting System should have the following technical specifications:
a	Number of Light heads : Two per suspension
b	Color Temperature range: 3800k-5000 ($\pm 10\%$)- Variable color temperature.
c	Field Size Diameter : 20 to 28cm (+/- 10%)
d	Working Range : 750 to 1100mm (+/- 10%)
e	Illumination Level : 160000Lux (Major Dome & Minor dome)
f	Controls : Control Panel (wall and on dome)
g	Rotation : 360-330degrees
h	Sterilizable Handle : 02Nos.
i	Mounting Type : Ceiling
j	Supply Voltage : 230 VAC 50 Hz
k	Bulb Type : LED
l	Dimming Range : 50% - 100%
m	Operating/Storage Humidity : 10 – 95%
n	Life of Light Source : >40,000 Hrs
o	Should be provision to mount the camera in one dome.
p	Surgical Light System Should be European CE with 4digit notified body/US FDA certified or Declaration of Conformity for quoted model with ISO 13485 issued by 4digit notified body of European CE authority.
22.2	HD Camera System – 1080p/i.
	Description: 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 – Locable camera should have the following specifications -
a	Signal to Noise Ratio (S/N Ratio) : >50 dB
b	CCD/CMOS : 1/3” or 1/2.8”
c	Optical Zoom : 10X
d	Digital Zoom : 12-15X
e	Video Output : HD, DVI, S-Video or Composite Video
f	White Balance & Gain : Automatic/Manual
g	Light and Integrated Camera should have a control through Touch Panel of the control equipment placed inside the operating room.
22.3	HD LED FLAT PANEL MONITOR (Only for non integrated OT’s)
a	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. Aspect ratio 16:9/16:10. Resolution – 1920X1080 or better.
b	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.
c	Monitor should capable of displaying from other sources like endoscope, microscope, etc. necessary provision should be provided as standard.

22.4	Recording system to be offered separately (Only for non integrated OT's)
a	Recording system to be offered separately. Recording system should be full HD medical grade monitor LCD 19" touch screen and having the one TB storage space.
b	Data cable for communication from both pendants and monitors should be laid down up-to outside of OT in a patch port for future expansion for all OT's where there is no integration
c	Patch Panel for power & signal to be laid down for 32" LCD Monitor at wall of MOT
d	Recorder should be capable of recording video from other sources like - microscopes, endoscopes. Etc., suitable provision should be provided as standard.
e	Should be flushed mounted on the OT wall with suitable frame.
23	Extra Works (Price Should be Quoted Separately)
a	Construction of 9" brick wall (500 Sq.ft) with Plaster on both sides with paint matching the surrounding premises. Payment shall be made at actuals.
b	Demolition of brick wall 200 Cu.ft. Payment shall be made at actuals.
c	IPS flooring for MOT unit rate (Per Sq.mtr.) with min.75mm thickness (Optional-Price to be quoted seperately).
d	Should quote unit rate (Per mtr.) for suitable wiring (including tray / pipes / casing as per requirment) from UPS to Control Panel
e	Should quote unit rate (per mtr.) from control panel to MOT. For ranking purpose 50 mtr. wiring will be considered for UPS to Control and 100 mtr. for wiring from control panel to MOT.

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Modular OT (SS Based)	
RESPONSIBILITY OF BIDDER	
a	Bidder shall be responsible for complete design, construction, testing and commissioning of modular operation theatres based on seamless integration with modular concept.
b	Bidder shall execute all required modification in civil, electrical and peripheral lighting, plumbing, air-conditioning system (Ducting inside the OT), demolition and other works as may be required for complete installation and trouble-free functioning of the operation theatres as a part of the 'Site Modification' like PRD cutout, Hatch Box cutout, modification to Door cutout as per Door size etc.
c	Necessary coordination with fire-safety vendor for the installation of fire-safety sensor/instrument inside the MOT to be done by the MOT bidder.
d	The bidder shall be responsible for the complete works including the submission of Working Drawings, layout drawings and walk through view on the basis of provided Auto CAD or PDF or Hard Copies of Drawings from respective institute.
e	Bidder shall be responsible for installation and commissioning of other medical equipment (like Integration Equipment, Monitors, Etc) in coordination with hospital authorities and equipment vendor.
f	The bidder should provide UPS power supply to all OTs (If UPS is in the scope of MOT bidder)
g	Bidder shall be responsible for free maintenance of modular operation theatres during warranty period inclusive of all consumables.
h	Bidder shall be responsible for commissioning of all equipment coming within the MOT as per technical specification of the tender.
i	MOT Bidder should coordinate with MGPS and other bidders for the successful completion of MOT.
j	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 vendor. (Necessary coordination with HVAC vendor to be done by the MOT bidder), Control of HVAC will be provided by HVAC vendor.
k	Bidder should provide factory test certificates for the material user for the construction of modular theatres.
l	Bidder should supply complete set of part manuals, service manuals for all the systems and subsystems to be

	supplied.
m	Consignee/ User have to be trained for a week by the engineers from Original Equipment Manufacturer (OEM).
n	Final electrical safety test, system test, and calibration should be done as per international standard by authorized persons using calibrated test equipment and declaration should be submitted by the vendor.
o	OEM or his authorized agent should post a trained engineer who should be available at site or should reach the site within 24 hrs of raising a service call.
p	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 standard outlets and outlets should be European CE approved or UL listed
q	Bidder must have a satisfactory installation of complete MOT as asked in tender and demo may be taken for the same.
r	Bidder has to clarify their doubts or prerequisites during prebid meeting. No extra prerequisites or clarifications after placement of order will be addressed.
s	Bidder has to submit their drawing within 15 days after placement of order in consultation with HITES and after site visit.
	Responsibility of the Consignee:
1	The institute will provide MOT shell structure (complete with brick works, plastering , leveled floor)
2	Institute will provide UPS room preferably on same OT floor or If it is elsewhere the necessary power cables from UPS room to each OT (load capacity of approx 12-15kVA) to be provided by the institute if UPS is in scope of MOT vendor.
3	Institute will provide hot and cold water supply with drain and 5/15 A switch sockets at each scrub location
4	Institute will provide temporary storage for storing of raw materials of MOT system during installation period and the security of the store is the responsibility of MOT vendor
5	Institute will provide working electrical power supply for installation to MOT vendor on chargeable basis or MOT vendor will arrange their own working power.
6	Institute will provide LAN cable, telephone line, copper strip earthing for each OTs
7	Institute will provide dedicated AHU & air conditioning with HVAC supply and return aluminium air duct and suitable prefilter upto outside of each Ots. Controlling cable from AHU to OT Control panel to be provided by HVAC vendor.
8	Institute will provide single point electrical connection at outside wall of each OT/at the UPS room (If UPS supply is at the MOT vendor scope). All other cabling has to be done by the bidder. Hospital Earthing will be provided at UPS room. However if bidder require dedicated earthing for UPS, it has to be done by MOT vendor.
9	Institute will be responsible for complete finishing of areas outside the MOT like corridors, scrub area, preparation room, store room etc except inside MOT area and floor level of corridor connecting to the OT should be 4-5mm higher than MOT floor level
	SCOPE OF WORK
	The “Site Modification” work includes all modifications to the built up space provided at the hospital site including Installation of Medical Equipment, Communication Systems, civil modifications, electrical works, plumbing works, interior decoration, air conditioning ducting 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.
	Turn Key Job to be provided by the Bidder for following –
1	Wall Paneling System
2	Ceiling Paneling System
3	Laminar Air Flow System
4	Internal HVAC Ducting & Exhaust System
5	PVC Flooring

6	Hermetically Sealed Doors
7	Touch Screen Control Panel
8	Pressure Relief Dampers
9	Hatch Box
10	Operating List Board
11	X-ray Film Viewer
12	Scrub Station
13	Storage Unit
14	OT Pendants (Anesthetist & Surgeon)
15	Peripheral lighting & Clean room luminaries
16	Electrical Installation
17	Distribution Box
18	Isolation Panel System (IPS)
19	Online UPS
20	Medical Gas Lines Installations
21	Site Modifications
22	OT Light with camera, Monitor & Recorder
1	WALL PANELING SYSTEM
1.1	The prefabricated Operating Room should be Cladding structure insulated Stainless steel wall panels. Total Panel thickness 50-60mm.
1.2	It should be 0.8mm 304 Grade Stainless Steel sandwich panel with core consisting of rigid polyurethane foam, which has been injected under high pressure, with a minimum density of 40 kg/m ³ .
1.3	The individual wall panels shall use the tongue and groove technology for joining two panels, no welding should be allowed.
1.4	The gaps between panels shall be suitably filled with metal filler/epoxy and sanded flush.
1.5	Stainless Steel plate finished to fine grain surface, treated properly to take antifungal paint.
1.6	Paneling should be easy to maintain, durable, antistatic/conductive and fire retardant.
1.7	Space between inner panel and outer wall should be flushed continuously to eliminate dust and bacterial accumulation.
1.8	Anti bacterial paint should be coated on the wall.
1.9	Bidder should maintain anti-bacterial paint during warranty and CMC period.
1.10	Wall elements should be resistant to all standard cleaning agents, disinfectants and fumigation agents.
1.11	Panel should be covered with protective sheath to prevent scratch during installation.
1.12	It should have minimum number of junction. The junction should be seamless and should be sealed with suitable sealants. Rails at the floor for fixing the wall panels should be made of SS 304.
1.13	The wall panels should be CE/UL Listed/BIS/DIN 1.4301 certified
1.14	Third party test certificate for SS304 from material testing lab (Govt. Authorized) - to be provided at the time of pre dispatch inspection/supply.
2	CEILING PANELING SYSTEM
2.1	The prefabricated ceiling plates /cassettes should be made up of SS 304 panels with sheet thickness of at least 0.8 mm sandwich panel of PUF with minimum density 40kg/m ³ with matt finish and should be coated with antibacterial paint. It should be from the same manufacturer of wall panel. Total thickness should be 30-40mm.
2.2	Support elements: Suspension bracket with threaded rod.
2.3	Material: High quality galvanized or powder coated steel.
2.4	Room lighting, air supply inlet, ceiling service units, return air outlets, etc should be integrated with SS metal ceiling system.
2.5	The individual panels except those at the edges should be removable individually.
2.6	The ceiling material should be CE/ UL/BIS /DIN 1.4301 certified
2.7	Anti bacterial paint should be coated on the ceiling.
2.8	Third party test certificate for SS 304 from material testing lab. (Govt. authorized) - to be provided at the time

	of pre dispatch inspection/supply.
3	LAMINAR AIR FLOW SYSTEM
3.1	The ceiling filtration system should be designed to ensure unidirectional distribution of sterile air of the surgical theatre to ensure the cleanliness of all the area covered by the air flow.
3.2	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 : One piece polyurethane
	MPPS average efficiency: > 99.95%
	3 Micron DOP efficiency > 99.99%
	Final Pressure drop : 600 pa(max)
	Maximum Operating Temp : 60 degree Celsius
	Maximum RH : 40-50 %
3.3	The ceiling system should be equipped with “H 14” class HEPA filters position in the ceiling to achieve 0.25m/sec flow at the diffuser.
3.4	Filtration Ceiling System holding structure, Filter frames and top plenum should be made of Aluminium/Stainless Steel.
3.5	The filtration ceiling system should have diffuser/flow equalizer to achieve uniform & constant air distribution over the whole surface. It should be CE/UL certified
3.6	The air management system should be designed to achieve class 100 with the following parameters:
	Bacteriological class =B (5 CFU/m ³)
	Particle decontamination kinetics CP =5 min
	ISO 14644/1 classification = ISO 5
	Third party validation by Govt. approved environment lab(After Installation)
3.7	The positive pressure should be maintained inside the OT to prevent contamination due to air from outside the OT.
3.8	The supplier should provide test certificate for HEPA filter and laminar air flow systems from the original manufactures.
3.9	Size of laminar airflow system minimum 8 feet X 8 feet or more.
3.10	Should be CE certified.
3.11	Note: Prospective bidders are advised to collect the information regarding CFM and AHU capacity from the respective institute site. Total flow rate of filter bank shall match the CFM of AHU.
4	Internal HVAC Ducting & Exhaust System
4.1	All the ducting inside the MOT shall be scope of the MOT bidder.
4.2	All the ducting should be as per industry standard and sheet should be Aluminum of appropriate thickness and insulated as per industry standard.
4.3	All necessary HVAC interconnection for supply and return air shall be the scope of bidder (the institute will provide the duct upto outside of each MOT)
4.4	Return air exhaust grill should be provided in the OT.
4.5	The exhaust air cabinets should be openable and cleanable.
4.6	These cabinets should have suction from bottom and top also.
4.7	Designed flow rate should not be less than 1000 m ³ /hr. Distribution of exhaust air volume should be divided between fluff strainers to maintain the required pressure within the theatre without causing turbulence.
4.8	The Exhaust air cabinet should be manufactured and supplied by the supplier of wall and ceiling system supplies.
4.9	Return air exhaust cabinet should be made from SS304 and should be from the same manufacturer of wall panel. Also it should match perfectly with the ceiling system aesthetically
5	PVC FLOORING WITH SELF LEVELING

5.1	It should be with 2mm antistatic seamless PVC flooring
5.2	Floor should be smooth, non-slip, impervious material conductive enough to dissipate static electricity but not conductive enough to endanger personnel from electric shock.
5.3	Electrostatic charge dissipation combat PVC seamless flooring of very high quality should be provided.
5.4	Thickness not less than 2 mm. Continuous roll should be used and joints should be welded by special PVC thermal welding units using PVC welding bars of same colour
5.5	The sheets should be highly durable with resistance to shock and indentation. It should be scratchproof also. The conductive material should be uniformly impregnated as grains.
5.6	It should be inert to body fluids, chemicals and disinfectants. Should not be affected by temperature variation within the OT.
5.7	The floor should efficiently discharge electric charges up to 2 kV
5.8	Flooring should be done by skilled workers of accredited agencies authorized by the supplier of PVC sheets. The electrical resistance (point to ground) should be within 2.5×10^4 to 5×10^6 ohms. The floor should not allow build up of electrical charge beyond 100 volts due to antistatic effect. The corners should not be terminated sharply and concealed cove- former (aluminium) should be used to overlap the wall panel to a height of approx.25mm and sealed perfectly and uniformly. Self leveling compounds should be used.
5.9	The conductive copper grid laid underneath the PVC sheet should be supported by liquid epoxy compounds allowed to set as a uniform and level surface. The copper strips to be made visible by grinding and no copper strip should project more than 0.5mm above level surface to avoid damage to the PVC sheet. One earthing lead should be brought out from every 150sq.ft area and attaching it to the main earthing strip/ground.
5.10	Copper grounding strips (0.05 mm thick, 50 mm width) should be laid flat on the floor in the conductive adhesive and connected to copper strip of grounding. The connection from copper grid should be brought out uniformly at places to form equipotential grid.
5.11	Flooring should be mechanically shock proof, scratch proof, flame retardant and anti microbial
5.12	Corners should be uniformly curved
5.13	Final surface should be non corrosive to biological fluids and detergents.
5.14	Colour should be uniform pleasant and matching with ambience and as approved by respective consignee.
5.15	Suitable self-leveling should be done before PVC flooring to avoid undulation within the MOT.
6	HERMETICALLY SEALED DOORS -
6.1	Door sizes should be as per below option and quantities will be as per BOQ of respective institute
a	HERMETICALLY SEALED DOORS Size 2.1mx1.8m
b	HERMETICALLY SEALED DOORS Size 2.1mx1.0m
c	HERMETICALLY SEALED DOORS Size 2.1mx1.8m with Lead Line(As per AERB Norms) (Optional)
d	HERMETICALLY SEALED DOORS Size 2.1mx1.0 m with Lead Line(As per AERB Norms) (Optional)
6.2	This should be a hermetically sealed, single sliding door of 2.1 (H)X 1.8 m(W)
6.3	The controller should be capable of being operated by elbow switches/foot switches as well as touch less sensor.
6.4	The track should be of stainless steel/Aluminum and the running surface for the top rollers should be suitably angled to reduce resistance to movement
6.5	The door leaf should be hung by means of hard plastic rollers of high quality with double bearing at the top. Rollers should be provided under the stainless steel/Aluminium track to enable smooth and noiseless movement.
6.6	Opening and closing of the door should be microprocessor controlled electromechanical movement.
6.7	The door material should be of HPL Color should match the interior and care should be taken to make the leaf strong and light weight.
6.8	One should be able to open and close the door effortlessly incase of failure of automatic mechanism.
6.9	Door opening handle should be strong and sturdy. Material should be of SS (gloss finish). Should be provided with high quality cylindrical lock.
6.10	Door leaf should have high quality synthetic rubber gasket with long life to ensure hermetic sealing (to maintain air pressure differential). Air tightness 99.99% at a pressure of 100Pa.
6.11	The finished floor on either side of the door should be perfectly level (maximum permissible difference

	+1mm).
6.12	The overall thickness of the finished door should be 40-60mm . The inner part of the door should be filled with CFC free polyurethane foam thickness of 48mm or nearby. (Sealed airtight to prevent further ingress of any microbial organism).
6.13	The door and controls should comply with IEE regulation. All motors used should be DC brushless motors with essential isolation from mains.
6.14	Door should be with vision window 300 mm x 300 mm with double glazed panels and hermetically sealed.
6.15	Door movement should have minimum noise.
6.16	The starting time after receiving the signal should be adjustable between 0.5 to 20 seconds.
6.17	The door controller should be CE marked.
6.18	Test certificate for hermetically sealed door frame (factory test certificate) should be enclosed with the pre dispatch documents.
6A	Window with Motorized Blinds for MOT -1Nos (Optional) size approx. 1.5m x 1m
7	TOUCH SCREEN CONTROL PANEL 20" or more
7.1	The control panel should be touch screen panel. This control panel should work as the central control panel for the HVAC controls, instruction board. Touch screen, OT light control (on-off facility). The controller should be capable of adjusting the temp adjustment of +/- 5 Degwith in 5Minutes. It should be CE or UL Listed.
7.2	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.
7.3	The panel should accommodate digital clock and the elapsed time indicator.
7.4	The medical gas alarm should indicate high and low gas pressures for each gas service present in the OT including vacuum. For Vacuum, it will below/normal. This should be supported by audible alarm also. The panel should have an alarm mute (fault annunciation) facility. The sensors (pressure switches) should be at the nearest isolation valve.
7.5	Control for general lighting: ON/OFF and dimming controls organized in groups to provide uniform illumination.
7.6	Control of the operating light (major and satellite and camera control (on/off Control) should be provided.
7.7	Hand free telephone set with memory should be located at one side.
7.8	Temperature and humidity control for the room connected to the AHU. (Adjustable from the panel) The controller should be capable of adjusting the temp adjustment of +/- 5 Deg with in 5Minutes wherever separate AHU is provided for each OT.
7.9	Digital room pressure indicator in cm of H2O or equivalent (signal from pressure sensor shall be provided to indicate pressure differential between OT and outside)
7.10	HEPA filter bank differential pressure indicator.
7.11	The control Panel should be able to integrated with HIS/BMS
8	PRESSURE RELIEF DAMPERS
8.1	Pressure relief dampers or over flow ports should be provided in each room to prevent contamination of air from clean and dirty areas.
8.2	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.
8.3	Counter- weight balancing system should be provided in the PRD to maintain positive pressure inside the operation room.
8.4	Air pressure stabilizers should have unique capability of controlling differential pressure to close tolerance. The PRD should remain closed at pressure below the set pressure and should open fully at a pressure only fractionally above the threshold pressure.
8.5	The frame, body and blade should be of grade SS304 stainless steel.
9	HATCH BOX
9.1	It 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.

9.2	Each hatch box should be equipped with two doors and the door should be operated electrically/motorised.
9.3	The hatch should be designed in such a way that only one door should be opened at one time.
9.4	The UV light should be so installed that it is kept on while both the doors are closed. This UV light has to be automatically turned off in case of opening of either of the doors.
9.5	Indicators should be provided on both sides of the OT so that door open / close status can be monitored from both sides.
9.6	Hatch Box material should be SS304 grade.
9.7	Size of the Hatch box minimum: 600mm x 600mm.
10	OPERATING LIST BOARD
10.1	One operating list board should be provided in each operating theater.
10.2	It should be made of ceramic having magnetic properties and should be flushed to the wall of the operating room.
11	X RAY FILM VIEWER
11.1	LED type flat panel X-ray viewing panel should be supplied.
11.2	This should comply with relevant electrical safety codes.
11.3	Mounting should be flush with the wall to avoid dust accumulation and growth of organisms between wall and panel.
11.4	Body should be of extruded aluminum powder coated black with bacteria resistant and disinfectant resistant finish. Colour as pr User choice.
11.5	The diffuser on the front panel should be a uniformly lit screen.
11.6	Dimming electronic control should be enclosed at the bottom of the cabinet.
11.7	Proper spring loaded film clip with rollers should be provided to hold the films firmly and to remove the film without scratches.
11.8	This should be of dual panel viewing screen (14"x17" each).
12	SCRUB STATION (min size 1500mm)
12.1	Compact surgical scrub sink should be designed for use in OT complex providing for pre procedural scrub up.(Double sink combination as suitable)
12.2	Each fixture should be fabricated from heavy gauge type 304 stainless steel (minimum thickness 1.5mm) and should be seamless welded construction, polished to a satin finish
12.3	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.
12.4	Hands free operation should include infra red sensors with programmable adjustment.
12.5	Thermostatic mixing, valve control should be located behind the access panel and maintain constant water temperature.
12.6	Timing should be adjustable to meet individual application requirements.
12.7	Provided with infrared sensors, thermostatic control taps with fail safe temperature controls.
12.8	All units should have reduced anti- splash fronts.
12.9	Knee/foot operated switch should be provided additionally.
13	STORAGE UNIT
13.1	The storage unit should be made with 1 mm thick stainless steel panels.
13.2	The shelves should be of SS 304 & removable for cleaning.
13.3	The storage unit should be divided 2 or more parts and each part should have individual glass doors with high quality locking system
13.4	The overall size should be approx. 200 cm X 120 cm X 40 cm
14	PENDANTS FOR ANESTHETIST AND SURGEON
14.1	Double arm moveable Pendant for Anesthetist
a	The Pendants should comply with NFPA 99C/HTM 02-01/DIN. 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
b	Double moveable arms (any combination) with total coverage of min 1800mm and 330 deg. Horizontal

	movements for each arm. Vertical movement should be motorized and the arm height should remain to a height greater than 6.5 feet above floor level
c	Weight carrying capacity of the arm should not be less than 180 Kg. should have electromagnetic/pneumatic brakes.
d	Each arm should be capable of 300-340 degrees of rotation, which can be easily adjusted to suit the desired mode of operation.
e	The pendant should be European CE Certified with 4digit notified body number or US FDA approved.
f	The Pendant Service Heads should be modular with minimum 800mm head. The heads should be capable of accepting a range of shelves, infusion poles, electrical switch/sokets, gas outlets other accessories as asked in tender. The Pendant Heads should support the range of Physiological Monitor Mounting Solutions.
g	The Pendant Service Heads should be supplied with medical gas terminal units and 5/15 or 6/16 Amps hybrid Sockets with switches.
h	Double arm pendant anesthesiologist and surgeon : Each pendant should be supplied with outlets and probes as mentioned below –
	Oxygen Outlets – 2 nos.,
	Vacuum Outlets – 2 nos.,
	Nitrous oxide – 1 nos.,
	Air(4 bar) Outlets - 2 nos.,
	AGSS outlet - 1 no
	Electrical sockets - 10 nos.
	Adjustable Shelf with two rails one on each side – 3 no.
	IV Fluid Pole with 4 hooks – 1No.
	Data socket RJ-45 -2 nos.
i	Pendant supplier should provide cutouts for Patch Panels in Integrated OTs. (applicable only for integrated OT)
14.2	Double arm moveable Pendant for Surgeon
a)	The Pendants should comply with NFPA 99C/HTM 02-01. 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
b)	Double moveable arms (any combination) with total coverage of min 1800mm and 330 deg. Horizontal movements for each arm. Vertical movement should be motorized and the arm height should remain to a height greater than 6.5 feet above floor level
c)	Weight carrying capacity of the arm should not be less than 180 Kg. should have electromagnetic/pneumatic brakes.
d)	Each arm should be capable of 300 - 340 degrees of rotation, which can be easily adjusted to suit the desired mode of operation.
e)	The pendant should be European CE Certified with 4digit notified body number or US FDA under Medical Devices Directive.
f)	The Pendant Service Heads should be modular with minimum 800mm head. The heads should be capable of accepting a range of shelves, infusion poles, electrical switch/sokets, gas outlets other accessories as asked in tender. The Pendant Heads should support the range of Physiological Monitor Mounting Solutions.
g)	The Pendant Service Heads should be supplied with medical gas terminal units and 5/15 or 6/16 Amps hybrid Sockets with switches.
h)	Each pendant should have – Each pendant should be supplied with outlets and probes as mentioned below –
	Vacuum Outlets – 2nos,
	Air(7bar) Outlet- 01nos,
	CO2 Outlet - 01 nos.,
	Electrical sockets - 10 nos.
	Adjustable Shelf with two rails one on each side – 3 no.
	Data socket RJ-45 -2 no.
	IV Fluid Pole with 2 hooks – 1No. (Pole should be capable of stacking 4 nos of syringe pumps)

i)	Pendant supplier should provide cutouts for Patch Panels in Integrated OTs (applicable only for integrated OT)
15	PERIPHERAL LIGHTING AND CLEAN ROOM LUMINARIES (LED TYPE)
15.1	To provide peripheral lighting and clean room luminaries with intensity min 500 Lux, it should be minimum 8 in numbers for each OT.
15.2	Luminaries cover should be made of highly resistant, disinfectant proof laminated safety glass/acrylic with stylish fine grained surface.
15.3	Deleted
15.4	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 gear in multilamp technology.
15.5	Recess frames should be gas tight. The fitting should be flush with the ceiling and should be removable from top or bottom. The light fitting should be uniformly and aesthetically distributed on the ceiling to provide uniform illumination in the OT. Light should not interfere when green mode endoscopy is performed
15.6	Peripheral lighting should be done according to IP65 (international protection rating 65) / IP 54 regulations. Certificate for this to be submitted along with bid.
15.7	Control equipment for the general lighting and the light dimming should be provided in the theatre control panel
16	ELECTRICAL INSTALLATIONS
16.1	Power distribution within the OT should be provided from distribution boards for each theatre to be supplied by MOT vendor. Sub mains power to these panels should be by the general electrical contractor. From these panels all distribution services within the departments should be run. Isolated power supply, insulation measuring and protection as per IEC standards should be provided. This unit should be EN/CE/UL/FDA/IEC certified.
16.2	Earthed equipment bonding of all exposed metalwork should be provided.
16.3	Power sockets within the Operating Theatres ancillary areas should be matched to the rest of the hospital.
16.4	Each wall of MOT should have minimum 02 Nos. 6/16A hybrid switch socket & 32A industrial socket at any two walls as per IEC standard.
16.5	Light fittings within the clinical areas should be recessed LED type with control gear
16.6	Fittings should be sealed In accordance with the standard IP54.
16.7	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.
16.8	All the conduits inside the OT should be of MS.
17	DISTRIBUTION BOARD
17.1	All high voltage equipment should be installed in a separate enclosure.
17.2	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.
17.3	All internal wiring should terminate in connectors with screw & clamp spring.
17.4	Connections of the clip- on type mounted, on a CE approved rail & labeled with indelible proprietary labels.
17.5	Individual fuses or miniature circuit breakers should protect all internal circuits.
17.6	Complete schematic drawing with description should be enclosed with the equipment.
17.7	DB Should have minimum two 32A/16A(As per requirement) extra circuits with MCCB/MCB for future uses like integration equipment, etc.
18	Isolation Panel System (Optional)
18.1	Isolation Panel System of minimum 10KVA capacity should be provided for every operation theatre which ensures the safety of staff and patient. System should have isolators provided through leakage relays etc. (If required) according to IEC recommendation. This unit should be EN/CE/UL/BIS/FDA/IEC certified. These systems are to be commissioned by specialists.
18.2	Should be medical grade Insolation panel
18.3	Should have fault detection feature
18.4	Should be compliant to CEI 64-8 / IEC 60364-7-710/BS7671 Standard

18.5	Should be mountable on wall & compact
19	Online UPS(Optional)
19.1	Backup should be minimum 30min.
19.2	The room for the central UPS will be provided by the respective institute/hospital preferably at same OT floor and one point electric supply will be provided to the UPS Room by the respective institute/hospital.
19.3	Bidder should provide required electrical wiring from UPS to all modular MOT as per IEC/International standard.
19.4	Electrical control panel complete with MCCB, Switchgears etc should be provided.
19.5	Bidder shall offer UPS from make – APC/ TATA Liebert/ Delta /Hitachi/ Consul Neowatt / UNILINE/3EM
19.6	Per MOT UPS load should be provided minimum 10 KVA with one 10KVA backup for all OTs and redundancy (n+1) should switch automatically. The battery bank may be common for UPS
20	MEDICAL GAS LINE INSTALLATION
20.1	The bidder should ensure that all works carried out are to the recommendation made in the Department of Health and Social Securities HTM 02-01 /NFPA 99C / DIN
20.2	Bidder should provide Oxygen, Air, Vacuum, AGSS, and Nitrous Oxide supply to Operation Theatres from the existing lines terminated outside the OT .
20.3	Bidder shall be responsible for supply, installation, testing and commissioning of complete MGPS system inside the operation theatre including Distribution piping, Pendants, outlets and other essential accessories.
20.4	Terminal units should be gas specific and only accept the correct Medical gas probe. Gas specific components shall be pin indexed to ensure that a correct gas specific assembly is accepted.
20.5	Each terminal unit should be identified by the appropriate recognized name or symbol, colour, coding and shape as per HTM 02-01 /NFPA 99C. Outlets should be CE certified/UL listed.
20.6	Copper pipes should be of solid drawn, seamless, deoxidized, non-arsenical, half hard, tempered and degreased copper pipe. All copper pipes should be degreased & delivered capped at both ends. The pipes should be accompanied with manufacturers test certificate for the physical properties & chemical composition. The copper pipe should comply with EN 13348
20.7	Copper pipe must have reputed third party inspection certificate (Eg. Lloyd's, TUV, SGS).
20.8	Fittings should be made of copper and suitable for a working Pressure of up to 17bar and especially made for brazed socket type connections
20.9	The copper fitting should comply with EN 1254-1
20.10	The Brazing filler material should comply with EN 1044
21	Site Modification -
21.1	Any minor demolition , reconstruction, water proofing, necessary plumbing, anti-microbial painting, replacement of any door or windows to provide structured design within the OT area for modular OT should be carried out by the bidder for successful installation and commissioning of MOT.Modification of work includes PRD cutout, Hatch Box cutout, modification to Door cutout as per Door size etc. Bidder are advised to visit the site before quoting.
22	OT LIGHT WITH CAMERA
22.1	OT Light – LED
	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.
	Such Lighting System should have the following technical specifications:
a	Number of Light heads : Two per suspension
b	Color Temperature range: 3800k-5000 (±10 %)- Variable color temperature.
c	Field Size Diameter : 20 to 28cm (+/- 10%)
d	Working Range : 750 to 1100mm (+/- 10%)
e	Illumination Level : 160000Lux (Major Dome & Minor dome)
f	Controls : Control Panel (wall and on dome)
g	Rotation : 360-330degrees
h	Sterilizable Handle : 02Nos.

i	Mounting Type : Ceiling
j	Supply Voltage : 230 VAC 50 Hz
k	Bulb Type : LED
l	Dimming Range : 50% - 100%
m	Operating/Storage Humidity : 10 – 95%
n	Life of Light Source : >40,000 Hrs
o	Should be provision to mount the camera in one dome.
p	Surgical Light System Should be European CE with 4digit notified body/US FDA certified or Declaration of Conformity for quoted model with ISO 13485 issued by 4digit notified body of European CE authority.
22.2	HD Camera System – 1080p/i.
	Description: 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 – Locable camera should have the following specifications -
a	Signal to Noise Ratio (S/N Ratio) : >50 dB
b	CCD/CMOS : 1/3” or 1/2.8”
c	Optical Zoom : 10X
d	Digital Zoom : 12-15X
e	Video Output : HD, DVI, S-Video or Composite Video
f	White Balance & Gain : Automatic/Manual
g	Light and Integrated Camera should have a control through Touch Panel of the control equipment placed inside the operating room.
22.3	HD LED FLAT PANEL MONITOR (Only for non integrated OT’s)
a	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. Aspect ratio 16:9/16:10. Resolution – 1920X1080 or better.
b	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.
c	Monitor should capable of displaying from other sources like endoscope, microscope, etc. necessary provision should be provided as standard.
22.4	Recording system to be offered separately (Only for non integrated OT’s)
a	Recording system to be offered separately. Recording system should be full HD medical grade monitor LCD 19” touch screen and having the one TB storage space.
b	Data cable for communication from both pendants and monitors should be laid down up-to outside of OT in a patch port for future expansion for all OT’s where there is no integration
c	Patch Panel for power & signal to be laid down for 32” LCD Monitor at wall of MOT
d	Recorder should be capable of recording video from other sources like - microscopes, endoscopes. Etc., suitable provision should be provided as standard.
e	Should be flushed mounted on the OT wall with suitable frame.
23	Extra Works (Price Should be Quoted Separately)
a	Construction of 9" brick wall (500 Sq.ft) with Plaster on both sides with paint matching the surrounding premises. Payment shall be made at actuals.
b	Demolition of brick wall 200 Cu.ft. Payment shall be made at actuals.
c	IPS flooring for MOT unit rate (Per Sq.mtr.) with min.75mm thickness (Optional-Price to be quoted seperately).
d	Should quote unit rate (Per mtr.) for suitable wiring (including tray / pipes / casing as per requirement) from UPS to Control Panel
e	Should quote unit rate (per mtr.) from control panel to MOT. For ranking purpose 50 mtr. wiring will be considered for UPS to Control and 100 mtr. for wiring from control panel to MOT.

All other contents of the tender enquiry including terms & conditions remain unaltered.

Note:

- i. Prospective Bidders are also advised to check the website regularly prior to the closing date and time of online submission of bids.**
- ii. If EMD is submitted in the form of BG, then the validity of the BG should be at least 165 days from the date of tender opening.**