AMENDMENT-XXV

Ref.: IFB No. HSCC/SJH/Medical Equipment/2016/26 Dated 04.01.2017

Sub.: Procurement of Medical Equipment for New Emergency Block & Super- Specialty Block at Safderjung Hospital,New Delhi.

The queries regarding technical specification and site layout has been received for item no. 1, Brain Suit MRI and Item no. 2 DSA Flat Panel and please find attached the modified site layout plan for the following equipments.

1. Brain Suite/ Intraoperative MRI
2. Flat Panel DSA Lab

Brain suit area is located on the 4th floor of the SSB Block is consist of OT -4, MRI room, Console Room and Equipment room.

Regarding Flat Pannel DSA it is located in basement 1st Floor in SSB Block. DSA Consist of DSA Room, Console Room, Prep /Recovery Room Two Changing Room with lobby.

In the view of the modifications in site layout Plans and the technical specification of both the equipment, the bid submission date is extended from 13.07.2017 to 03.08.2017

Amended Specification are as under: -

Item No. 1

BRAINSUITE INTRAOPERATTIVE MRI 1.5T - AMENDED SPECIFICATION

Existing As :

MRI manufacturer will be the main vendor and he will be responsible for coordinating with other companies to hand over it in the functional state. This will be executed on the turnkey basis.

Competitive bids (Technical and price separately) are invited for a state of the art neuro –surgical operating room complex with fully integrated high resolution actively shielded 1.5T MR imaging system with intra operative nuronavigation with automatic image registration facility. MR compatible head fixation with parallel imaging. Functional imaging, imaging for Gamma Knife planning required for the New Super Speciality Block in Safdarjung Hospital. New Delhi, Only manufacturers of 1.5 Tesla MRI machine who are represented directly in India and who can integrate with the other vendors to provide the complete integrated solutions satisfying all the tender requirements can participate in the bid. The bidding company will be solely responsible for the supply and maintenance of the system and all the components of the bid. The system should also include floor mounted operating microscope & microscope based neuro-navigation, anaesthesia work station. Monitors and additional anaesthesia related equipment, electrophysiological monitoring. OR Lighting , ceiling, suspended high resolution image display and with all accessories. It should be possible to perform real time MR guided brain

biopsy/catheter placement & deep brain stimulation. All components should be MR compatible & integrated to ensure smooth work flow. The system should permit intra –operative imaging control as well as routine MR imaging and should be designed & executed on turnkey basis in the designated area of the New Super Speciality Block in Safdarjung Hospital. New Delhi. The area construction involves modification of the existing structure with an extension on side as designated by the authorities of New Super Speciality Block in Safdarjung Hospital. New Delhi. On site inspection by the potential bidders before submission of the technical /financial bid is encouraged. The setup should offer all surgical procedure to be performed with standard surgical instruments immediately outside of the 5 gauss field line of the MR Scanner or in the regular OT away from MR.

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1. 1.5 Tesla MRI for Intraoperative Imaging including installation and RF shielding
2. Ceiling Mounted Intraoperative neuro Image guidance system with automatic patient registration
3. Fully integrated digital OT with data management system and integration with intra-operative data Management for gamma knife surgery.
4. Ceiling mounted OR lights with integrated light camera & OR room camera.
5. Compatible Microscope
6. Compatible OR equipment
7. OT Table
8. Anesthesia Workstation

9.Installtion and training

It should have the following features:

Definition (Schematic Drawing attached):

- DR : Diagnostic Intraoperative Room
- OR : Intraoperative Neurosurgical Room

1.5 Tesla MRI for Intraoperative Imaging (DR):

Stable ultra-short length (150cm or less) whole body superconductive magnet strength of 1.5 Tesla magnets with active shielding.

High Performance gradient system with minimum gradient strength of 33mT/M or better with slew rate 120 Mt/m/ms

Existing As :
Patient table should be able to take at least 300 kg patient load. OT table should be usable as the operating table & should easily slide out for to operating room. It should be incorporated with operating MR compatible head holder so as to allow imaging during surgery in supine, prone and lateral position.

Amended as :

C. Patient table should be able to take at least 225 or more kg patient load. OT table should be usable as the operating table & should easily slide out for to operating room. It should be incorporated with operating MR compatible head holder so as to allow imaging during surgery in supine, prone and lateral position.

It should include a tried and tested effective patient transfer / transportation system to shift the patient from the OR to the MRI scanner for intra-operative scanning and back to the OR in a safe and practical manner. A MRI compatible trolley for shifting to MRI room to be provided.

E. Magnet bore to be sufficiently wide (70cm or more) after positioning of gradient shim and RF antennae to allow positioning the patient during surgery with head frame / head holder for imaging. Separate MRI table should be provided.

Existing As:

F. Digital RF Transmit and Receive System with 16 independent RF channels to permit PAT factors up to 4 (one direction) or more to help increase speed acquisitions.

Amended As :

F. Digital RF Transmit and Receive System with 32 or more independent RF channels to permit PA T factors up to 4 (one direction) or more to help increase speed acquisitions.

Existing As :

G. Head Coil with frame should be minimum 6 Channels and should have minimum 3 fixation points, can be used for image acquisition and intra-operative applications in Prone, spine & lateral positions. Should be adequate for comprehensive examinations.

Amended As:

G. Head Coil with frame should be minimum 8 Channels and should have minimum 3 fixation points, can be used for image acquisition and intra-operative applications in Prone, spine & lateral positions.

I. It should have Image acquisition forT1, T2, Flair, DTI, BOLD, SWI, DW, PW, PR & volumetric 3D sequences.

Existing As:

J. Should have all the necessary coils & supports systems for imaging brain, spine & rest of body.

Amended As:

J. Should have the imaging coil i.e Head / neck coil (20 Channel or more), spine coil (32 Chanel), Body coil (18 Channel or more) 2 flex coil for supports systems for imaging brain, spine & rest of body**.**

K. The MRI Vendor should be responsible for the end to end installation of the MRI machine including interior finish of the MRI room and the OR, RF shielding and any required turnkey work to be done.

2. Ceiling mounted Intraoperative neuro image guidance system with automatic patient registration.

Hardware

i. The system should be wireless with passive marker technology.
ii. It should have a Zero OR footprint concept provided through ceiling-mounted camera and touch display.
iii. The system should be fully integrated with the Intra-operative MRI and both preoperative & Intraoperative patient data should be automatically registered without any manual registration steps required.

iv. The system should allow automatic patient registration in any patient position i.e separate lateral & prone position etc.

v. Pre-operative patient registration allowing patient to be registered automatically immediately as the scan is done using the MRI.

Vi. It should again automatically recognize and automatically register the patient during intra-operative scan compensating for craniotomy and brain shift by deformity correction and provide an

exact visualization for the 'Brainshift'.

vii. All necessary hardware should as registration matrix along with the sterilization tray and specialized MR compatible Cranial reference unit should be included.

viii. It should also included option of manual pre-operative patient registration with skin sensitive touch device for maximum accuracy in prone position & Laser guided registration device for marker less/touch free & fast registration while performing manual patient registration.

ix. It should have flexible positioning of cameras and monitor with multi articulated arms allowing adjustment to virtually any position.

x. It should have a Ceiling mounted touch screen monitor (min 26") with brilliant display quality & resolutions beyond full HD (1920x1200pixels per display). Image quality entirely preserved no visualization limitations from the touch interface (surface acoustic wave technology).

xi. Interface Box for connectivity i.e. with surgical microscopes, fluoroscopes, endoscopes, ultrasound etc. via state-of-the-art digital and analog video inputs supporting up to full HD resolution. HD/SD-SDI up to 1080i/29.9fps, composite (CVBS, NTSC/PAL), S-video (NTSC/PAL), 1x SDI HD (In), 1x S- Video (In), 1x Composite (In), 1x Microscope Connector (with: 1x USB 2.0, 1x RS232, 1x SXGA, 1x SDI HD (In), 1x Composite (In).

xii. System should be operable without keyboard & mouse.

xiii. It should have high-end Infrared camera with Optical, laser guided and advanced wireless passive marker tracking technology.

XIV. The system should display a predefined trajectory pathway, inline and probe eye views.

XV. The probe should have capability to show images at 0mm – 180mm in from of it (Tool Tip Extension). The virtual tip should be also having the accuracy verification/ predication system in-built in the system.

XVI. The system should have sub-millimetric patient accuracy ideal for deep seated cranial biopsies, at the same time the system should also have the accuracy verification / prediction system in-built in the system.

XVII. The system should have screenshot storage function for documentation purpose.

XVIII. Fine-adjustment for navigated frameless biopsies, shunt placements & endoscopic examination guided by the navigation system. Allows precise online tracking according to the pre-planned trajectory; Adapts to fit cylindrical instruments of 1.8mm -8.0mm and up to 300g, Holds instruments with length of up to 35 cm and should have the adapter for connecting it to the MRI compatible head holder.

Software

i. The Advance Cranial applicable software should have a separate workstation with TFT motor for advanced cranial surgery planning enabled with transfer of preoperative data from CT, MRI, DTI, BOLD, SPECT, PET etc in DICOM format from any sources.

ii. Both the Planning and navigation software should have the functionality of doing advanced 3D Visualization allowing display to bone-vessel, skin overlay. Maximum-intensity-Projection, Digital Radiography (DRR etc) views options with flexibility to superimpose 3D data images on the surgical plan and cut and crop functionality to adjust 3D images.

iii. Software should offer Automatic segmentation of anatomical cranial organs for the fat delineation of the anatomical structures. All anatomical objects such as Brainstem, Cerebrum, Cerebellum, CSF, Edema, gray matter, Hippocampus, Hypothalamus, Putamen, resection cavity, ventricles, thalamus, vessels, white matter, whole brain, eyes, optic apparatus etc should be automatically contoured by the system.

iv. Software should offer automatic Image fusion of the CT, MR, DTI, BOLD, PET & SPECT images.

v. The software should have the capability to paint the targets and adapt to the complex 3D structure of the lesion/ object /landmark using the HU value sot that it becomes quick & time saving to outline the object during pre-operative & intra-operative planning.

vi. Software should offer Conversion of fiber tracts to 3D structures for visualization & interactive selection of Fiber tracks. It should provide automatic Fibretracking base on point to-point, point-to-location/region, and also drawn contoured object showing different color code for the direction of hydrogen atom in Fibre tracking (display of fibers in original red-green-blue color code for detailed functional information.

vii. Software should allow anatomical images to be merged with functional maps to visualize perceptual, motoric & cognitive areas of the brain using the Blood Oxygen level dependent (BOLD) mapping & localization of functional areas. It should include Pre-processing of data including motion correction, since time correction and smoothing, flexible definition of different functional paradigms and should support of block-designed paradigms for motoric and speech areas with automatic detection of functional activations in the time series view for verification of signal to paradigm correlation. It should include Interactive selection and display of functional areas and regions of interest with possibility to Convert into 3D objects for use in navigation.

vii. Software for Frameless Biopsy system

viii. Microscope interface software should have advanced image guided microscope: Tracking of spatial orientation, viewing, direction, and associated focal point of the microscope, Superposition of 3D projections and reformatted contours of pre-planned anatomical structures, targets, and trajectories Injection of such 3D information (contours, trajectories, targets) into the optical pathway of the microscope Injection of non-correlated video images (e.g. endoscope) or diagnostic images (reformatted 2D/3D images) into optical pathway Continuous “smart” auto focus to the instrument or pointer tip.

ix. The System should provide additional navigation information like “distance to target”, “tumor extension” and “target/trajectory” information.

xi. The microscope integration should deliver Heads up display and image injection module into the microscope eyepiece provided the microscope itself has those features.

xii. The system should have the entire kit for microscope integration.

3. Fully Integrated Digital OT with Data Management System & Integration with follow-up Radio surgery /Radiotherapy.

It should include IP based Digital OR with seamless integration with Intra-operative MRI & the Navigation platform:

i. Minimum 42" wide Full HD (1920x1080 pixel) ON-wall (2 units required in the OT). Both units should seamlessly integrate with each other and pair with each other. Control unit of video signals and routing from 24" or touch screen located inside the sterile area for surgeon.

ii. In-built high performance workstation (min. 8GB RAM & 2 TB storage) allowing connection with up to 12 video signals and routing contents with pre-designed expandable capabilities/ connection point on the surgical pendant for future addition of Intra-operative devices.

iii. In-built communication controls such as video conferencing, Recording and Live Streaming should be possible using the touch screen.

iv Full integration with the Hospital Network and should be able to configure the IP series as provided by the hospital.

v Full DICOM Import of patient data from Hospital Network / PACS.

vi Analog/ Digital import of any modalities such as MRI, CT, X-Ray, PET, SPECT, Ultrasound etc.

vii Transfer of DATA using USB, CD or DVD.

viii In-built patient data privacy & HIPPA compliant with user log-in and auto log-off.

ix Possibility to route images, patient data, Intra-operative video sources through touchscreen without the use of keyboard or mouse.

x The system should include all transfer lines/ cables connection within the OR

xi It should include Intra-operative Device management & Integration including.

xii Video inputs with Full HD with SDI (OT light camera & OT Room Camera) should be integrated.

xiii Different input formats such as S-video (Ultrasound), Composite (C-arm), DVI (Endoscope/ Microscope) & also standard RGB/VGA should be supported for integration.

xiv Special provision of additional input signals on the surgical pendant.

b. Interactive DICOM viewer capabilities should include:

i. Capability on Interactive DICOM capabilities including Zoom-in/out, panning, scrolling, add/subtract slices, flipping, Rotating, Adjusting contrast/ brightness.

ii. Capability of Measurement functionalities for distance, angles and circles should be possible on the modalities.

iii. The system should allow instantaneous 3D visualization for analysis.

iv. 3D volume rendering of CT, MR, PET, SPECT datasets with presets for visualization of skin, bone, vessel, DRR and MIP should be included.

v. Superimposition of 3D dataset visualization and surgical planning data such as 3D contours, trajectories and annotation should be visualized instantaneously.

vi. It should allow crop functionality to cut through the planes in 3D along any direction and should allow to manipulate the threshold of the relevant anatomy.

vii. The system should allow quick and easy volumetric outlining of pathologies and anatomical structures with instant volumetric contouring and calculation of outlined structure in just two orthogonal slices.

vii. It should allow automatic creation of volumetric report defining the geometrical measurements like volume, PECIST & Macdonald criteria.

ix. It should allow automatic fusion of multiple data CT, MRI, MRA, PET, SPECT, DTI & BOLD

ix. The system should also allow planning for multiple trajectories for different Neurosurgical workflow with interactive touch screen control for target and entry point definition.

x. Option for flexible scaling of trajectory diameter should be included in the system.

C. **It should include Live Streaming of OR procedure capabilities as**-

i. Live streaming should be possible using the touch screen which can be viewed suing the hospital network or web browser from anywhere.

ii. It should be possible to live stream video signal from HD camera (Room & OT camera), endoscope, Microscope, Ultrasound etc whichever is being used intra-operatively.

D. Digital Recording capabilities as :–

i. It should be able to locally record the procedure in digital HD quality on the in-built computer on the wall itself using the touch screen.

ii. The system should allow storing of all recording to the USD or Hard disk once the procedure in finished.

iii. It should also allow taking screenshot of the live procedures on the display using the touch screen. All screenshots taken on the live streaming /videos during the procedures should also be stored on the in-built computer platform on the wall which can later be transferred to USD/Hard disk once the procedure is finished.

iv It should also have the provision of configuring to save of recordings, screenshots etc on the hospital network.

E. Audio-Video conferencing capabilities should include-

i. Web-based/VOiP based audio video conferencing should be provided

ii. The system should have built-in camera and microphone for conferencing

iii. It should also have the capabilities to configure Bluetooth microphone for conferencing in sterile environment.

iv. It should also allow network based remote consulting, viewing and communication form Surgeon's office, Doctor's lounge, Seminar room/ hall, Auditorium room through the network.

F. The system should allow integration with the existing Hospital HIS platform HL7, DICOM3, IHE standard.

G. The system should also include display of Surgical checklist for improved patient safety-

i. The Electronic checklist should be based on WHO principles.

ii. Checklist should guide through different questions to make sure that e.g. the correct patient is operated at the correct site, the OR team prepares for risk of high blood loss, the OR team will avoid inducing an allergic drug reaction for which the patient is known to be at risk, etc.\

iii. The Checklist should be available in English language.

iv. It should have Full integration of checklist in Hospital Information System (HIS). It should create document providing evidence that all steps in the checklist were completed and is sent to HIS and embedded in the electronic medical record of the patient.

H. Intra-operative simulation of follow-up SRS/SRT planning:

i. It should allow automated analysis of follow-up Stereotactive Radiosurgery/Radiotherapy simulation plant for residual benign brain tumours during surgery.

ii. SRS/SRT plan feasibility should allow reducing surgery time and decreasing morbidity by providing criteria for concluding subtotal resection.

iii. It should be have automatic intra-operative plan simulation of follow-up SRS/SRT based on initial or updated tumour volume.

iv. It should include Automatic simulation and intuitive side-by-side comparison of single fractionated, hypo-fractionated, and conventional fractionated treatment plans

v. It should have comprehensive visualization of the simulated plan results like dose volume histogram, including dose conformity and constraints and visualization of the dose distribution.

4. Compatible ceiling mounted OR lights :

Existing As :

A .Operating Room should have high-end surgical OR lights with 2-arm system with single /multi bulb technology with High illumination intensity at least 130000 lux. For attachment to roof Part should be provided.

Amended as :

A .Operating Room should have high-end surgical OR lights with 4-arm system with si angle /multi bulb technology with High illumination intensity at least 130000 lux. For attachment to roof Part should be provided.

5. Compatible Microscope:

High end 300 w xenon light source having contravas stand, able to incorporate images guidance. should have binocular surgeon eye pieces, binocular Assistant diploscope, high definition recording system with at least 24 " medical grade monitor to be fixed on wall panel. Recording system should have 4 GB RAM, 2 TB HDD storage memory. A side binocular tube for assistant should also be provided. The microscope should have ICG and ALA Facilities. Necessary Software & hardware should be provided.

6. Compatible equipment: MR Compatible Items

New Points Added in: (G)

i. RF Cabin: The system should be supplied with the imported RF cabin with RF room shielding, RF Door screen, and interiors for the same should be carried out suitably.

ii. Dual/ triple Head MRI-Compatible Pressure Injector (minimum 2000 cost line) with 500 sets of syringes (Two syringes &connecting tubing per set). It should be compatible with 10, 15, 20 & 30 ml pre-filled contrast syringes and 50 ml syringes for both saline and contrast.

iii. Water Chiller for Cold Head and Gradients.

iv. Two Non-ferromagnetic MR compatible patient transfer trollies of international make should be provided. (in case of dockable table, one extra trolley to be supplied)

v. Fire Fighting System, Detectors and 6 Fire Extinguishers (MR Compatible) to be provided

vi. Hand held metal detectors - 4 Nos

vii. Closed circuit CCD camera for patient observation. Phantoms for image quality audits to be provided.

viii. Patient positioning accessories with hand held alarm & look-out mirror.

ix. MR Compatible Transport Ventilator. (1000 Gauss Line)

x. Two laptops with 1 TB storage, 4 GB RAM & Windows 10 operating system (of reputed make) with laser Printer, UPS & Dictaphone.

xi.Set of boom and spring arm to be installed in the OR to hold monitors, surgical and anaesthesia equipment.

Xii. MRI Compatible anaesthesia workstation having with digital display having facility for ETCO2, bispectral index inbuilt ventilator. It should be on wheels with brakes and total machine should be transportable to MRI Room.

XIII.MRI safe I.V Pole 4 hook system – Qty. 04

XIV.Two Multi parameter monitors MRI Compatible which should display SPO2, Heart RATE, ECG, and NIBP. It should have 2 invasive ports for lines like intra arterial pressure and central venous pressure. One will be mounted on wall & one to be transportable.

Existing As:

xv. Drug administration system/ pump for exact medication dosage – Qty. 02

Amended as:

Amended as: MR Compatible Infusion Pump (2000 Gauss Line) 5 Nos. (3 infusions + 2 syringes)

xvi. OT Chairs– Surgeons Chairs and one assistant chair should be provided, which should have height adjustment.

7. OT Table: OT Table high end, top of which to should be MR Compatible and top should be slide on to trolley to be taken to MRI room. MR compatible 3 pin head fixation system should be supplied with 6 spare pins set and table attachments.

8. Anaesthesia workstation: MRI Compatible anaesthesia workstation having with digital display having facility for ETCO2, bispectral index inbuilt ventilator. It should be on wheels with brakes and total machine should be transportable to MRI Room.

9. Installations & Trainings:

The main bidder shall be MRI manufacturer, who shall be comprehensively responsible for supply installation testing and commissioning of brain suite on turnkey basis as per the tender condition.

Training for surgeons, Radiographers, Nurses & Technicians should be done onsite & other centres where brain suit exist by the supplier for two continuous weeks followed by repeat trainings of one weeks each at 6 months & 12 months from the day of going clinical.

All interior and finishing of the Brain suite intra-operative MRI area shall be done by supplier. Finishing should be like other modular O.T. in super specialty block of Safderjung Hospital.

Warrantee: .:-5 Year warranty with 95 % up time maintenance.

At the end of Assembly of intraoperative MRI Neuro Navigation and other things needed for the Brain suit should be complete and system should be able to perform the surgery on the patient in the brain suite.

Item No. 2

Amended Technical Specification Flat Panel DSA LAB-

The system should be the state of the art model to be quoted with feature equivalent to be latest model launched at RSNA 2013 or later.

Gantry:

1. The system should have two gantries: one floor mounted and one ceiling suspended providing full body coverage. The lateral plane should have motorized longitudinal C-arm movement.
2. It should be possible to pre-program the gantries for multiple examination positions.
3. All movements of the gantries should be controlled from the joystick on the table side as well as from the control.
4. The system should have adequate collision protection for the safety of the patient.
5. Both gantries should have fast speed for angulations and positioning. The frontal system should have a speed of at least 15 degree/sec. for all positions and lateral plane should have a speed of at least 8 degree/sec.
6. Gantry angulations in both planes frontal and lateral should be freely user selectable to satisfy clinical imaging needs.
7. Both the gantries should have an automatic positioning capability dependent on the reference image being selected and possibility to select reference image depending on the gantry position.

Patient Table :

1. The table should have motorized longitudinal, horizontal and vertical travel.
2. It should have the facility for automatic bolus chase for peripheral angiography.
3. **Existing As ; The table with trendelenburg tilt facility would be preferred.**
3. **Amended as : The table with trendelenburg tilt and lateral tilt facility should be there.**
4. It should be possible to swivel the table in case of emergencies

X-Ray Generator:

1. Generator should be multi-pulse/high frequency for constant output.
2. Output should be 100 KW or more.
3. Radiography KVP range should be 40KV – 125 KV or more.
4. Output at 100 KV should be 1000 MA or more
5. It should have automatic exposure control device for radiographic fluoroscopy and angio mode
6. It should have digital display or KVP & MAs.
7. Anatomical programming radiography should be possible.
8. It should have over loading protection
9. It should have the facility for pulsed fluoroscopy at variable rates for reducing the x-ray dose to the patient during intervention procedure.

X-Ray Tubes:

Both planes should be provided with rotting node high speed tubes.

Anode heat storage capacity should be 2.0 MHU or more having liquid bearing technology or metal lubricant.

The focal spot should have the following sizes :

i) 1.0 mm or less with load 80 KW or more in minimum one plane.

ii) 0.5 mm or less with load 15 KW or more in minimum one plane.

3. The system should have adequate cooling facility for the x-ray tubes for uninterrupted performance during procedure it should be ≥6000w

1. One collimator for each plane is to be provided.
2. The collimator should have facility for automatic copper pre-filtration for reducing the x-ray dose.
3. The collimator leaf should have IRIS type arrangement.
4. The collimator should have the facility for the dose measurement chamber in order to display the skin dose on the monitors in the lab.

Biplane Digital System:

1. Dynamic flat detector system with high spatial and with Frontal detector of ≥14 bit and lateral ≥ 14 bit contrast resolution with DQE of minimum 70%.

2. Existing as : Size of both frontal and lateral plane should be at least 40cm diagonal.

Amended as : size of frontal should be at least 40 deg. cm or more diagonal. And size of lateral plane should be at least 38 cm diagonal.

3. The collimator leaf should have IRIS/rectangular type arrangement.
4. It should provide multiple formats/fields at least of 4 sizes.
5. Spatial resolution should be at least 2.5LP/mm in frontal plane and 2.5 IP/mm in the lateral plane.

6. **Existing As: Three monitors of at least 19 sizes TFT/LCD for each plant display of live, reference and subtracted image with high resolution flicker free display should be provided. Monitors should have anti-glare provisions.**

Amended as : single screen 50 " / three monitor of TFT /LCD for each plane display of live , reference and subtracted image with high resolution flicker free display should be provided. Monitors should have anti-glare provisions.

7. Similarly 4 monitors, two for each plane (live & reference image) with high resolution display in the control room should be provided.

8. Console monitor for patient registration.

9. Existing As: Physiology monitor in examination room and in console with the requisite computer system for NIBP, IBP, SpO2 measurement, display and analysis.

Amended as : Physiology monitor in examination room and console should display NIBP, IBP, SpO2 measurement , and analysis.

Digital Imaging System and essential software's:

1. Road mapping facility (Real time 2D & 3D) should be available with possibility of

superimposing of fluoro image on reference image. Facilities for unlimited subtracted high resolution fluoroscopy should be available.

2 It should have the capability to acquire images in 1024 x 1024/**12 bit or more**. Matrix with a maximum speed of 6 frames or more per second on-line subtraction. Specify the maximum image acquisition rate without subtraction.

3. Post processing software facilities with real time edge enhancement, positive/negative image display windowing, electronic shuttering, roaming, image reversal, zooming and magnifying with text and annotation junctions.

4. a. rotational angiography facility (2D & 3D) at speed of at least 30 degree/sec. with acquisition frame rate of at least 25 frames/sec. in 1k matrix with facility for online display of subtracted images should be available. Specify if the rotational angiography is with on-line subtraction in 1024 matrix.

. **Existing As : b. Rotation data acquisition with an output of cross sectional CT like images should be possible.**

Amended As : Rotation data acquisition with an output of cross sectional CT like images should be possible. i.e.:-

- **i. It should be possible to have CT like imaging with collateral filling to see the lesion in Ischemic stroke patient for immediate care with intravenous injections.**
- **ii. System should have latest images processing software/algorithm to have excellent image quantity at lower case.**
- **iii. CT Images for visualization of Device, stent and flow divertors.**
- **iv. CT Images for visualization of feeder vessel and area of tumors.**

5. Last image hold or reference image toggling with fluoro should be available.

6. Amended as : It should have minimum image storage capacity of 75,000 or more images in the 1024 x 1024/12 bit.

7. Digital subtraction angiography software of automatic pixel shift enhancement for iodine and CO2 contrast should be possible.

8. **Existing As: A separate workstation for 3D reconstruction of the rotational angiography images should be provided. The 3D image measurement and slicing should be possible. Facility to display reconstructed images in the procedure room should be provided.**

Amended as : A separate workstation for 3D reconstruction of the rotational angiography images should be provided. The 3D image measurement and slicing should be possible. Facility to display reconstructed images in the procedure room should be provided. This workstation should have the facility to reconstruct the long leg view for peripheral images.

9. The complete digital system along with workstation should be networked and connected to a DICOM compatible laser system

10. The digital system should have software for vascular analysis and quantification including stenosis %. All measurement should be possible from the patient table side.

11. **Existing As: Archiving on a CD/DVD recorder should be provided. Juke box/RAID (4TB) and 5000 CD's R/W or 1000 DVD should be supplied with the unit.**

Amended As: Archiving on a CD/DVD recorder should be provided. 6 TB RAID Images storage server and 5000 CD's R/W or 1000 DVD should be supplied with the unit.

12. Existing as : An additional workstation for processing of the DSA images and their documentation should be provided in addition to 3D workstation.This workstation should have the facility to reconstruct the long leg view for peripheral images.

Amended as : An additional workstation for processing of the DSA images and their documentation should be provided in addition to 3 D Workstation.

13. The system should be able to receive /display on reference monitor, DICOM format images from other modalities like CT & MR. DICOM print facility should be available.

14. Bolus chase software should be provided.

15. it should have facility to measure dose during the procedures.

16. Specify the time limit minimum 30 seconds for uninterrupted acquisition of on-line subtracted images at 1024 x 1024 matrixes with maximum frame rate.

Essential accessories:

The following essential accessories to be provided with the unit:-

1. On line UPS for the complete system excluding the x-ray system for both planes with 30 min. back up.
2. Pressure injector of reputed make along with 500 disposable syringes sets.
3. Dry Chemistry Laser Imager with resolution of 600 DPI or more. DICOM ready and online for film size of 14x17 (Prices to be quoted separately)
4. Ceiling suspended radiation protection system and table side protection system.
5. Focused ceiling mounted light with a handle for positioning the light.
6. Lead gown as per the following specifications : 8 Nos.
   - i) It should have lead equivalent of 0.5 mm.
   - ii) It should be double sided type lead apron
   - iii) it should be light in weight.
7. Thyroid Guard – 6 Nos.
8. Lead spectacles – 6 Nos.
9. Foot switch for fluoro/acquisition control

10. **Existing As : Multichannel monitor (with essential accessories) for monitoring physiology. It should be able to record and print the pressures in general and also for stenosis analysis (catheter gradient). It should have a pulse oximeter module, ECG module, SpO2 Module, etc.**

Amended as : Multichannel monitor (with essential accessories) for monitoring physiology should be provided. It should be able to record and print the pressures in general. It should have a pulse oximeter module, ECG module, SpO2 Module, etc.

11. Lead protected viewing glass (Size: 200cm x 100cm)
12. High end Anesthesia workstation with ventilator**.**
13. Reputed make Bi Phasic Defibrillator.

14. Multiparameter monitor having a least 21 inch screen displaying spo2, pulse rate , NIBP, & having two invasive ports for recording arterial pressure & CVP. Separate Spo2 probes for children to be provided also. Monitor should have UPS/battery back-up with minimum 2 hrs backup.

15. Existing As : Training: Two weeks training to be provided to the doctors, nurses, & two other staff at the site, other high volume centre in India/ Abroad.

Amended as : Two weeks training to be provided to 3,doctors, 3 nurses, & two other staff member at the site & at other high volume centre in India/ Abroad.

At the end of commissioning of the system we should be able to do angiography on the patients. Coiling material for 5 aneurysm patient to be provided detail is given below:-

Procedural Item for Aneurysm coiling:

1. Pressures Bags: 05 Nos. (Reusable)
2. W Connectors : 15 Nos.
3. Y Connectors : 15 Nos.
4. Diagnostic Catheter: 5 Nos.
5. Diagnostic Sheaths : 5 Nos.
6. Guiding Catheter : 5 Nos.
7. Guide wire : 0.14 m 5 Nos.
8. Micro Catheter for coiling – 5 Nos.
9. Bare Platinum and Hydraged Coil : 40 Nos. for 6 mm Size
10. Coil Detacher: 5 Nos.
11. Micro Puncture set : 5 Nos.
12. Nirodipine : 5 Nos. (Drug.)

The turnkey Scope of Work –Flat Panel D.S.A. lab

1. The Supplier should inspect the proposed site offered by the Consignee Institute in which the Flat Panel DSA Lab has to be installed and they are required to submit the plan for the complete System on a turnkey basis. The scope of work includes complete Civil work, Electrical, Plumbing, Furnishing, Air-conditioning and Fire fighting for the construction of Center on turnkey basies.

2. While preparing the plan, the following aspects have to be addressed.

a) Care should be taken to provide easy negotiation of the patient stretchers / trolleys through corridors and doors.

b) Radiation shielding for doors, walls, windows etc.

c) Furniture like desk, chairs, shelves etc.

3. The cost of Turnkey for the area of 1500 sq.ft and air-conditioning of Tonnage 15 TR will be considered for Ranking / Evaluation purpose

4. Moreover Bidders will have to quote the Unit Rates of the following components of turnkey work.

a. Civil works

b. Electrical work

c. Public health (plumbing and sanitary fittings)

d. Air Conditioning (HVAC)

e. Interior Furnishing & Furniture

f. **Miscellaneous**

Scope of work for turnkey for Flat Panel D.S.A system:

The supplier should inspect the proposed site and submit all the detailed structural and architectural drawings and BOQ for the proposed System along with technical bid of the tender.

The Flat Panel D.S.A lab site shall consist of the following rooms:

a. Flat Panel D.S.A Room

b. Console room

c. Equipment room

d. Patient preparation room

e. Change room

f. Patient waiting area

g. Radiologist room

The actual area of turnkey works done will be considered for payment, based on the site measurements.

civil work

a) Civil construction work including construction of brick wall if any, plastering, flooring as per the approved plan and equipment layout plan.

b) Concrete bed at Flat Panel D.S.A equipment area.

c) Platform for unloading and shifting the Biplane DSA should be provided if necessary.

d) Cable tray, trench & channel – necessary trenches, cable tray and channels at required location would be provided.

e) All the construction work to be done as per the final plan approved by the Consignee.

f.) Finishing should be like other OT's in the super specialty block.

a) Flooring

1. 600 x 600 mm vitrified tiles with 100mm tile skirting to match in console room lobby and patient preparation areas, Radiologist room etc.

2. 50 mm thick cement concrete flooring with Vinyl flooring in Biplane DSA equipment /UPS room.

b) Painting

1. Two coats Plastic Emulsion Paint over 2 Coats of wall putty including primer in patient preparation area, Lobby area, console room, Flat Panel D.S.A & Equipment room etc.

c)False Ceiling

1. Acoustical tile for ceiling with light weight insulating material of high quality supported on grid or finished seamless with support above ceiling.

2. Finished with white painting or powder coated with white paint, if metallic. Ceiling height to suit the equipment mount and clearances.

Plumbing work

3. All water pipes and fittings shall be of high density polythene of approved and standard make the grating shall be brass chrome plated. All plumbing accessories should be of standard make.

Electrical work

4. The supplier shall be required to specify the total load requirements for the Flat Panel D.S.A centre including the load of air conditioning, room lighting and for the accessories if any. The supply line will be provided by the institute up to one point within the Flat Panel D.S.A. The distribution panel shall be provided by the vendor. Few lights in each room shall be connected to the UPS to provide emergency lighting.

5. The electrical work shall include the following:

a. Wiring – All interior electrical wiring – with main distribution panel board, necessary MCBs, DB, joint box, switch box etc. the wires shall be of copper of different capacity as per the load and should be renowned make as listed below.

b. Switches light and power points should be of modular type and of standard make as listed below.

c. General lights – Mirror optical type 1x25 W or 2x28 W/CFL fittings 2x36, 3x36 W with electronic ballasts.

6. AIR CONDITIONING:

Ductable package air conditioners and split AC units may be used according to room requirement and suitability. Humidity control should be effective to eliminate moisture condensation on equipment surface. The Air Conditioning should be designed with standby provision to function 24 hours a day.

The outdoor units of AC should have grill coverings to prevent theft and damage. Ventilation is required in toilet.

2. Environment specifications:

a) Humidity range: Relative humidity 60% and 80% in all areas except equipment room which shall be as per requirement of the equipment.

b) Temperature ranges: 22 + 2^{o}C in all areas except equipment room which shall be as per requirement of the equipment.

c) Air conditioning load: The heat load calculations and maintaining the desired temperature and humidity shall be the responsibility of the bidder.

Furniture:

a) Revolving Chairs height adjustable, medium-back with hand-rest in the control room and radiologist room and viewing area – 4 Nos.

b) Chairs for patient waiting area – Three seats (chrome plated) : 10 Nos.

c) Wall mounted shelves for catheter and other procedural hardware – 4 Nos.

d) Cupboard with laminate door shutters for storage of spare parts and accessories and records as per requirement. – 3 Nos.

e) Drug trolley 1 numbers for patient preparation area.

f) Patient trolley with rubber foam mattress to be kept in the patient preparation room.

g) Name boards for all rooms

h) Tables for Workstation and Radiologist in reporting room – 2 Nos.

i) Charging rooms should have change lockers and dressing table.

j) Dustbins (plastic with lid) to be provided as required.

k) Any other furniture item as per requirement.

All furniture items should be of standard make as mentioned in the table below:

Miscellaneus :

i. Knee controlled hand free two station scrub unit with disinfectant /soap dispenser.

ii. Reporting room should have LED X-ray Film viewer with adjustable brightness; capable of holding 3 films of 14"x17" size-2 nos.

iii. Cabling of Network (LAN) connectivity for camera system, console system, workstation and computers etc.

iv. Broadband connection : for REMOTE SERVICE of Flat Panel D.S.A

v. Fire extinguisher Dry CO2 type as required for the building safety.

Amendment to be issued will be uploaded on websites www.tenderwizard.com/HSCC & www.hsccltd.com.

All other tender terms and conditions remain unchanged.

Medical Superintendent
VMMC& Safdarjung Hospital

ICU- UROLOGY, NEPHROLOGY & ONCO SURGERY

UROLOGY LABS & DEPARTMENT

WARDS- UROLOGY & RENAL TRANSPLANT

OT'S - NEURO SURGERY