ALL INDIA INSTITUTE OF MEDICAL SCIENCES, JODHPUR

<div align="right">Date: - 15th September, 2020</div>

Corrigendum
For
Tender for
Digital X-ray (Flat Panel Radiography Unit with Two Flat Panel Detectors) for the Department of Radiology

NIT Issue Date	:	20th July, 2019
NIT No.	:	Admn/Tender/31/2020-AIIMS.JDH
Pre-Bid Meeting	:	30th July, 2020 at 03:30 PM
Earlier Last Date of Submission	:	15th September, 2020 at 03:00 PM
Extended Last Date of Submission	:	29th September, 2020 at 03:00 PM
Bid opening	:	30th September, 2020 at 3:15 PM

The following revised and additional conditions will be added:-

1. Page No. 10, Para 3:
For
The Unit should be completely integrated system (integrated X-ray generator and image acquisition control console). Out of Generator/Tube/Detector, at least two (if not three) must be manufactured by the quoting vendor themselves. It should have following specifications:
Read
The Unit should be completely integrated system (integrated X-ray generator and image acquisition control console). The detector and it acquisition software must be from the quoting vendor in order to ensure quality assurance and serviceability of the same. The unit should have following specifications:

2. Page No 10, Point 1. Generator, para 4:
For:
n   Automatic exposure control function is an essential requirement.
Read:
Automatic exposure control function is an essential requirement.

3. Page No 10, Point 2. X-Ray Tube, para 9:
For:
n   X ray tube and collimator section should have automated image shuttering and cropping facility in collimator.
Read:
X ray tube and collimator section should have automated image shuttering and cropping facility in collimator.

4. Page No 10, Point 2. X-Ray Tube:
New point to add:
It should have an inbuilt DAP meter. The DAP meter reading should be part of the DICOM headers of the image in order to ensure quality assurance for radiation protection

5. Page No 10, Point 2. X-Ray Tube:

For:

. All the movements of the overhead tube suspension (3D column stand) and the chest stand (vertical detector) should be fully motorized. It should be possible to override it manually.
n There should be auto positioning of the overhead tube suspension against both the vertical detector and the table detector. This should be possible through selected protocol from both the console as well as from wall stand control.
• Tube tracking should be there in all axes
· Overhead tube suspension (3D column stand) should also have a screen with display of important parameters and controls.
n Tube rotation: Vertical axis +/- 135 degrees, Horizontal axis +125/-125 degrees or better. Pelase specify rotation of your offered model.
· Should have motorized copper filter to avoid unwanted radiation

Read:

2A. Ceiling Suspended 3D column
• All the movements of the overhead tube suspension (3D column stand) and the chest stand (vertical detector) should be fully motorized. It should be possible to override it manually.
• There should be auto positioning of the overhead tube suspension against both the vertical detector and the table detector. This should be possible through selected protocol from both the console as well as from wall stand control. This should be clearly mentioned in the attached datasheet of the quoted model.
• Tube tracking should be there in all axes
• Horizontal and vertical auto tracking of tube and detector should be available with the vertical bucky and the table including all software and hardware options.
• System should have fully auto positioning capability including all software and hardware options in **both horizontal (Table) and vertical planes (Wallstand bucky).** This should be possible through selected protocol from **both the console as well as from tube head.**
• Overhead tube suspension (3D column stand) should also have a screen with display of important parameters and controls.
• Tube rotation: Vertical axis + 120 degrees or higher, Horizontal axis +120 degrees or better. Please specify rotation of your offered model.
• Should have motorized copper filter to avoid unwanted radiation
• Should have electromagnetic locks and should be a collision protection system

6. Page No 10, Point 3 Horizontal Bucky Table:

New point to add:

The table-top dimensions should be as follows:

- Width of the patient table: minimum 75 cm
- Length of the patient table: 220 cm
- Table height 55 cm upto 90 cm (adjustable by motor)
- The table top movement should be (minimum) Longitudinal movement: ± 45 cm, cross movement: ± 12 cm.
- Table should support patient weight of at least 300 Kg without limitation of movement

7. Page No 11, Point 5. Detector System:

For:

5. Detector System
Detector material should be made of amorphous silicon with CSi scintillator
· Two Digital flat panel detector systems with detector integrated into the wall stand and integrated/wireless for Bucky table. (total of 2 separate detectors)
Detector specification
Minimum size of detector should be 41cms X 41 cms or more for integrated detector. Please provide size of wireless detector for Buck table if offered.
(Vendor should also offer any other smaller size detector for pediatric patients as an option. Please quote its price separately in the price bid.)

· Image matrix size 2k x 2k pixels or more.
· Pixels size should be 200p.m or less
Image resolution should be 2.5 1ps/mm or more
· DOE of detector system should be 65% or more at 0.05 lps/mm or more
· Tube assembly movement to be automatically synchronized with both the horizontal and vertical detectors movement

Read:

5. Detector System
• Detector material should be made of amorphous silicon with CSi scintillator
• Two Digital flat panel detector systems with detector integrated into the wall stand and integrated/wireless for Bucky table. (total of 2 separate detectors)
Detector specification
• Minimum size of detector should be 41cms X 41 cms or more for integrated detector. Please provide size of wireless detector for Bucky table if offered.
• Image matrix size 2.8k x 2.8k pixels or more.
• Pixels size should be 150 microns or less
• Image resolution should be 3.0 1ps/mm or more
• DOE of detector system should be 65% or more at 0.05 lps/mm or more
• Tube assembly movement to be automatically synchronized with both the horizontal and vertical detectors movement

8. Page No 11, Point 6. Operating (acquisition) Station:

For:

6. Operating (acquisition) Station
Should have high resolution **TFT/LCD** monitors of minimum 19" size or more (fully flat) with minimum 1024x1024 or more display matrix and antireflective front screen.
· Image acquisition matrix should be minimum of 2k x 2K
System should have auto protocol select
Operating console should have facility for patient identity entry, viewing and processing images, documentation.
Preview image should be ready in 5 sec or less
· Ortho Stitching should be available in vertical stand as well as on the table. The stitching should be automated. Stitching should be possible on main system. There should be in built measurement scale.

Read:

6. Operating (acquisition) Station
• Should have high resolution **TFT/LCD** monitors of minimum 19" size or more (fully flat) with minimum 1024x1024 or more display matrix and antireflective front screen. The main Console PC must be of reputed brands like HP/ Dell and must have RAID 1 configuration to protect data. It should have minimum 2 x 1TB HDD and minimum 16 GB RAM.
• Image acquisition matrix should be minimum of 2k x 2K.
• System should have auto protocol select.
• Operating console should have facility for patient identity entry, viewing and post processing like Flipping and rotation of images , Free rotation of image in any angle, Window / Level adjustment, Algorithms, Annotations such as markers, Predefined texts , Drawing lines and geometrical shapes , Measuring distances and angles and determining Leg Length Differences, scoliosis angle measurement
• The console should have automatic program to indicate over /under exposure visually in the pre view screen based on IEC standard (IEC 62494-1). It should be able to indicate the exposure on the flat panel comparing the Target Exposure Index (TEI) so that the radiographer can clearly understand if the image is over exposed or underexposed
• Preview image should be ready in 5 sec or less

- Should be able to send DICOM images to a DICOM viewing station / PACS and should be able to connect to HIS / RIS for DMWL. It should comply the following IHE profiles. - CPI - REM - PDI - PIR - SWF - CT - ATNA
• Dose monitoring and reporting based on DRL (Dose reference level) using DAP meter readings and EI should be possible. It should be possible to generate structured reports on dose performance which can be shared with PACS and other DICOM systems.
- The dose monitoring tools should provide Statistical Analysis of Exposure and Dose performance on following parameters, - Exposure Index and Deviation Index - Outliers - Dose Area Product (DAP) values - Complete Exposure List - Results can be Exported - Dose trend
• It should be possible to record reasons for over/under exposure per exposure if the Dose reference level indicates deviation from recommended dose level. It should be also possible to generate a report based on the reasons for over/under shoot
• Special attention should be given to Paediatric and neonatal imaging. It should have possibility of reducing radiation dose to Paediatric and neonatal exams.
• The quoted Image Processing software should essentially be from the same quoted vendor and should be CE/USFDA approved in order to ensure seamless integration of post processing with raw images.
• Ortho Stitching should be available in vertical stand as well as on the table. The stitching should be automated. Stitching should be possible on main system. There should be in built measurement scale. Stitching stand must be from the OEM quoting for the DR unit.

9. Page No 11, Point 7, para 7:
To be deleted
·   Should be connected to a Dry chemistry Camera of 500 DPI or more for documentation. The camera should accept all size films upto 14"x17" size (three film size trays should be active).

10. Page No 11, Point 7, para 11:
New point added:
The reporting workstation should have the capability to be connected to 5 concurrent web clients.

11. Page No 12, Point 9. Accessories, para 1:
To be deleted
Dry chemistry Camera of 500 DPI or more

12. Page No 12, Point 9. Accessories, para 2:
For:
UPS (of 3 KVA) for the computer with 30 minutes backup
Read:
UPS PCI Riello or equivalent small footprint UPS, with 15 minutes back up of Xray machine, console and post processing station.

13. Page No 12, Point 9. Accessories, para 5:
For:
Ten light weight 'zero lead' aprons of 0.5mm lead equivalence with thyroid shield collar
Read:

Ten light weight 'zero lead' aprons of 0.5mm lead equivalence with thyroid shield collar. (Following specifications)

    a) Lead apron should be 100% lead free and light weight, US FDA/CE certified.

    b) It should be skirt and vest type, should have complete frontal overlap for higher protection.

    c) Apron should be complete stain and waterproof. Comfortable and soft on skin.

    d) Please provide 7 in L and 3 in XL size.

14. Page No 12, Point 9. Accessories, para 6:

For:

A 120 KV or better stabilizer for the DR system

Read:

A 150 KV or better stabilizer for the DR system

15 .Page No 12, Point 9. Accessories, para 7:

New point to add:

9 A. **Workstation with 2MP 24'' Medical display system with graphic card, CPU and reporting desktop** (**Total 3 sets** for general reporting in Radiology Department)

    a) Workstation with Medical Grade 2MP Display with graphic card -FDA approved

    b) Intel XEON 2104G 4C / 16GB (2X8GB) DDR4, 266UDIMM NECC/ 1TB 7200RPM/ GFX NVIDIA Quadro P400 /DVDRW/Win 10 Pro 64 KB+ Mouse (HP/DELL or Equivalent)

    c) 2MP Medical grade display of size 24'' or more with graphic card of the same brand. DICOM calibrated luminance of 350cd/m2 and Maximum luminance @600cd/m2 with front sensor and Fully cleanable protective glass cover with anti-reflective coating with 5 years warranty.

    d) Ambient light presets Yes, reading room selection.

    e) Display should be cleanable with solution 70% solutions of ethanol or isopropyl alcohol

    f) Response time ((Tr + Tf)/2) (typical) 7ms

    g) All display should have auto dimming feature and clone view feature. Display should include Medical QA software

    h) Video input signals 1 x DP, 1 x DVI-I

    i) Contrast Ratio 1000:1, Power consumption < 0.5 W (standby)

    j) Graphic card output terminal- DP /Mini DP, Frame buffer memory 2GB DDR3 or higher Memory bandwidth 28 GB/s.

    k) Latest display and graphic card to be supplied with 5 years replacement warranty

    l) A separate reporting windows based desktop 21 inch or more size monitor, with 8 GB or more RAM, 1TB hard disk, latest window system, intel i5 or better with keyboard and mouse (HP/Dell or equivalent)

9B. **Network attached storage (NAS) system (Synology or better platform) with internal hard disk having following specifications. The system would be used to store and retrieve DICOM data for studies done in emergency as well as main department**

    a) Minimum driver bay: 6

    b) Internal raw storage capacity: (14 TB x 6= 84 TB)

    c) Expandable capacity: upto 224 TB (quotes for further expansion must be provided for future perusal of expansion of memory)

    d) Minimal requirement - Quad core 2.1 Ghz CPU or more

    e) 4 GB DDR4 expandable upto 32 GB

    f) External port: 2x USB 3.0port

    g) Hot swappable drive: Yes

    h) LAN: 2 x Gigabit or more

    i) Internal hard disk of reputed company (14 TB x 2) for storage (7200 RPM or more, 6GB/s or more)

16. Page No 12, Point 11. Furniture:

For:

11. Furniture:
· Cupboard for storage- Three
· Godrej swivel chairs with arm rest —Ten
· Film viewing panel for X ray films 3 in 1 of 14"X17" size — Four (LED type Maxx or equivalent)
· Table with storage space— Three

· Examination stool - two
· Footstep for patient: two
· Gonadal shields for boys and girls of all age groups — Two set each
· Stand for lead aprons and Gonadal shields
· Emergency light - one
·Wall fans— two

Read:

11.   Furniture:
• Cupboard for storage- Two (6x4x2 Feet size, Godrej or equivalent) Three (Customizable 8x4x2 Feet size as per requirement in existing CT scan room in Radiology Department)
• Mid back swivel chairs with arm rest -Ten (Godrej or equivalent)
• Film viewing panel for X ray films 3 in 1 of 14"X17" size -Four (LED type Maxx or equivalent)
• Table with storage space-Three
• Gonadal shields (0.5 mm lead equivalent) for boys and girls of all age groups -Two set each
• Head Shield: Four (.35 mm lead equivalent), after discussion with department for pattern.
• Stand for lead aprons and Gonadal shields (For total 10 lead apron)

17. Page No 12, Point 13. Installation and Turnkey:

For:

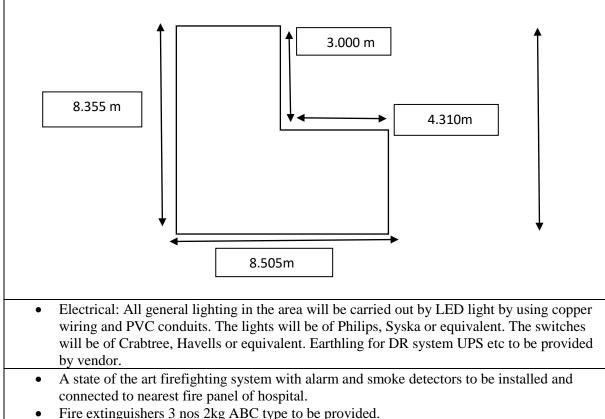| 13. Installation and Turnkey |
|---|
| · All site approval, layout approval and registration of equipment from AERB shall be done by Radiology Department AIIMS Jodhpur under assistance of supplier. |
| · All turnkey work proposed by the selected firm will require approval of HOD of department of Radiology, AIIMS Jodhpur and competent authorities including engineering section, of the institute before implementation. |
| A complete site preparation plan will be required to be submitted as a turnkey project. The vendor will be eligible to inspect the proposed site. |
| The cost of alteration and preparation in a specified built in area on turnkey basis which will include civil, electrical and air conditioning and maintenance of air conditioning is to be borne by the firm. Requirement of power and air conditioning must be clearly specified. The room should be adequately air-conditioned and that should be discussed with engineering department of the AIIMS. |
| **Turnkey work:**
Ceiling work – Metal powder coated false ceiling to be considered.
Doors – the doors associated with the examination room to be lead lined laminated wooden doors with hard wood frames, rest all other door would be laminated wooden damage to the wall due to stretchers. Brick wall partition between radiography room and console with lead glass. |
| Electrical: All general lighting in the area will be carried out by LED light by using copper wring and PVC conduits. The lights will be of Philips, Syska or equivalent. The switches will be of Crabtree, Havells or equivalent. Earthling for DR system UPS etc to be provided by vendor. |
| · A state of the art firefighting system with alarm and smoke detectors to be installed and connected to nearest fire panel of hospital. Fire extinguishers 3 nos 2kg ABC type to be provided. |

Read:

13. Installation and Turnkey
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• All turnkey work proposed by the selected firm will require approval of HOD of department of Radiology, AIIMS Jodhpur and competent authorities including engineering section, of the institute before implementation.

• A complete site preparation plan will be required to be submitted as a turnkey project. The vendor will be eligible to inspect the proposed site.
• The cost of alteration and preparation in a specified built in area on turnkey basis which will include civil, electrical and air conditioning and maintenance of air conditioning is to be borne by the firm. Requirement of power and air conditioning must be clearly specified. The area should be adequately air-conditioned(15 T of cassette /split AC) and that should be discussed with engineering department of the AIIMS.

Turnkey work: (Total area is 750 square feet including machine room, console, UPS/battery room and reporting room): please see the drawing as under.

• Electrical: All general lighting in the area will be carried out by LED light by using copper wiring and PVC conduits. The lights will be of Philips, Syska or equivalent. The switches will be of Crabtree, Havells or equivalent. Earthling for DR system UPS etc to be provided by vendor.
• A state of the art firefighting system with alarm and smoke detectors to be installed and connected to nearest fire panel of hospital.
• Fire extinguishers 3 nos 2kg ABC type to be provided.
• Lead lining of the walls and doors, as required.
• Vendor will maintain the room and paint it on alternate years till the end of CMC period.
• Wooden work in reporting room in form of customized reporting tables, electrical connections, overhead cabinet and two sleeping couches.
• Wall tiles:80 cm x 80 cm Kajaria or equivalent till roof.
• Floor finish: Vitrified Tiles(60 cm x 60 cm) ,Kajaria or equivalent
• False ceiling: Metal powder coated false ceiling.
• Doors – the doors associated with the examination room to be lead lined laminated wooden doors with hard wood frames, rest all other door would be laminated wooden damage to the wall due to stretchers. Brick wall partition between radiography room and console with lead glass.
• Lighting in the reporting room: Ambient adjustable, non glaring lighting as applicable for radiology reporting room.
• Good quality heavy duty Biometric access system: Two in number