HSCC/PUR/LHMC/2014 Date: 22.9.2014

Amendment-VI

Ref.: Tender Enquiry No. HSCC/PUR/LHMC/2014 dt. 16.7.2014.

Sub.: Procurement of Radiotherapy Equipment for Lady Hardinge Medical College & Hospital, New Delhi **(for Schedule 1 to 4 as per Bid Document)**.

The revised date of submission of bids on e-tender basis is changed from 23rd Sept. 2014 to 08th Oct. 2014.

Bidders must submit Technical Bid as per Amendment-III dt. 22.8.2014 and upload & submit all other documents as mentioned in Page No. 8 & 9 of the Bid Document.

Tender Fee of Rs.5000/- is one-time fee. Bidder can quote for any or all equipment on submission of Tender Fee. Bidder should submit original Tender Fee & original EMD as per Bid Document in their Technical Bid (refer Amendment – III dt. 22.8.2014) and must be submitted on or before due date and time.

In case, quoting for more than one Schedule/Equipment, original EMD as per Bid Document & photocopy of Tender Document Fee (as proof) must be submitted along with Technical Bid and must be submitted on or before due date and time.

As it is e-tender, tender format of **"Tender Form with Price"** is to be uploaded along with Price Schedules. Further, tender format of **"Price Schedule in Foreign Currency"** is amended without any change but only allowing the bidders to type/quote the prices in words and figures in the cells/field which are blocked.

Bidders must properly check the Bid Document and the following Amendments issued so far along with this present Amendment for the proper submission of bids on e-tender basis on or before due date and time:

1. Amendment – I dt. 24.7.2014
2. Amendment – II dt. 20.8.2014
3. Amendment – III dt. 22.8.2014
4. Amendment – IV dt. 02.9.2014
5. Amendment – V dt. 03.9.2014

Rest all tender conditions remain unchanged.

Director,
LHMC, New Delhi

Encl.: As above.

HSCC/PUR/LHMC/2014 Date:22.9.2014

Amendment-VI

Ref.: Tender Enquiry No.: HSCC/PUR/LHMC/2014 Dated 16.07.2014.

Sub.: Procurement of Radiotherapy Equipment for LHMC, NewDelhi.

	High Energy Linear Accelerator	
S. No.	**Tendered Specifications**	**Amendmendments in the Tendered Specifications**
	1. Linear Accelerator An Advanced, new generation of high-energy medical linear accelerator should be equipped with a multileaf collimator (MLC) and an electronic portal imaging device (EPID) and kV-cone-beam CT (CBCT) to perform conformal treatment techniques such as three dimensional conformal radiotherapy (3D-CRT), intensity modulated radiation therapy (IMRT) and image-guided radiotherapy (IGRT) through record and verification system. The system should have the capability for future upgradation in order to perform advanced treatments of stereotactic radiosurgery and radiotherapy (SRS/SRT), volumetric Modulated Arc therapy, 4D-Radiotherapy and Adaptive Radiotherapy.	**1. Linear Accelerator** An Advanced, new generation of high-energy medical linear accelerator should be equipped with a multileaf collimator (MLC) and an electronic portal imaging device (EPID) and kV-cone-beam CT (CBCT) to perform conformal treatment techniques such as three dimensional conformal radiotherapy (3D-CRT), intensity modulated radiation therapy (IMRT), VIMAT (Volumetric Intensity Modulated Arc Therapy) and image-guided radiotherapy (IGRT) through record and verification system. The system should have the capability for future upgradation in order to perform advanced treatments of stereotactic radiosurgery and radiotherapy (SRS/SRT), 4D-Radiotherapy and Adaptive Radiotherapy.
	2.2 **Dose Rate and Beam Stability** 2.2.1 The maximum dose rate for routine clinical applications shall equal at least 500 monitor units (MU)/min or more for 6mV & 200 MU/min. or more for 15mV for a 10 X 10 cm field at the depth of Maximum buildup at a TSD of 100 cm for both photon beams. Flattening filter free beams shall be 1000 or more MU/min.	2.2 **Dose Rate and Beam Stability** 2.2.1 The maximum dose rate for routine clinical applications shall equal at least 500 monitor units (MU)/min or more for a 10 X 10 cm field at the depth of maximum buildup at a TSD of 100 cm for both photon beams.
		3.0Electron Beam Characteristics 3.1 Electron Beam Energies Five clinically useful electron beam energies

		shall be provided. The lowest energy shall be 4 or 6 MeV and the highest energy shall be 15 MeV/16 MeV or above. Energy shall be specified as the most probable energy (E_p) of the electron energy spectrum at 100 cm from the accelerator exit window. 3.2 Dose Rate The dose rate at the isocenter shall not be less than **600 MU/minute** for each electron energy. 3.3 Field Size The electron beam size is defined by the inside dimensions of the electron beam applicators projected geometrically to a plane surface at 100 cm SSD. A range of field sizes from 4 x 4 cm to 25 x 25 cm is required. A method to obtain irregular field shapes shall be provided. 3.3.1 It shall be possible to visualize both the field defining light and the optical distance indicator with an electron applicator in place. 3.4 Beam Profile 3.4.1 Field Flatness The maximum percent variation of the electron intensity at 100 cm SSD at D_{max} shall not exceed 5% (within the central 80% of the longitudinal and transverse axes relative to the central axis) for field sizes from 10 x 10 cm to 25 x 25 cm and for all the electron beam energies. 3.4.2 Beam Symmetry The maximum percent variation in the average electron intensity to the longitudinal and transverse halves of the electron field at D_{max} for a 10 x 10 and 25 x 25 cm field at 100 cm SSD shall not exceed $\pm$ 2% at gantry angles of 0, 90, 180 and 270 degrees. The average electron intensity is the average of the maximum and minimum points within the central 80% of the field for each of the axes. 3.5 X-ray Contamination The x-ray contamination of the electron beam shall be less than 5% of the maximum dose for all energies specified previously.
	6.4 Multileaf Collimator The MLC System shall have all leaves of 5mm resolution or	No change

	combination of 5mm or less and 10mm set to have maximum field size of 40 x 40 cm^2.	
		6.6.14 Vendor state and provide any value-added features such as IMRT/VMAT portal dosimetry and verification system of EPID (it must be quoted as optional items separately).
	9. Optional Features (Price must be quoted separately) 9.1 The linear accelerator offered model should be a ready platform for upgradation to techniques without any design/functional constraints for newer radiotherapy techniques **viz. flattening filter free Linear Accelerator Technology**. 9.2 It should be possible to upgrade to perform the stereotactic radiosurgery and stereotactic radiotherapy (SRS/SRT) treatment. The SRS/SRT frames, localizers, table attachments, treatment planning system and all other necessary phantom and quality assurance tools should be provided.	**9. Optional Features (Price must be quoted separately)** 9.1 The linear accelerator offered model should be a ready platform for upgradation to techniques without any design/ functional constraints for newer radiotherapy techniques viz. flattening filter free Linear Accelerator Technology. Flattening filter free beams shall be have the dose rate of minimum of 1200 MU/min or more for two energies. 9.2 No change..
	II. Technical Specification for Advanced Treatment Planning System 1.4Two treatment planning workstation with calculation licenses and additional Four workstation enabling simultaneous contouring with licenses and additional should be provided.	**II. Technical Specification for Advanced Treatment Planning System** 1.4Two treatment planning workstation with calculation licenses and additional Four workstation enabling simultaneous contouring with licenses for contouring, registration, image infusion, virtual simulation software in each workstation shall be provided.
	<u>Low Energy Linear Accelerator</u>	
	3.0 Electron Beam Characteristics Deleted from Page 53 (under High Energy Linear Accelerator and added & modified to High Energy Linear Accelerator at Page No. 74, under 2.5 Beam Quality Index	**2.5Beam Quality Index:** The ratio of ionization measured at 20 cm and 10cm depth for a field size 10 X 10 cm^2 at the detector level and with constant detector source distance = 100cm should be as given below <u>Photon beam energy (MV)</u> <u>Quality Index (QI)</u> 6 MV specify **Electron Beam Characteristics** 1 Electron Beam Energies Five clinically useful electron beam energies shall be provided.

		The lowest energy shall be 4 or 6 MeV and the highest energy shall be 15 MeV/16 MeV or above. Energy shall be specified as the most probable energy (E_p) of the electron energy spectrum at 100 cm from the accelerator exit window. 2 Dose Rate The dose rate at the isocenter shall not be less than 600 MU/minute for each electron energy. 3 Field Size The electron beam size is defined by the inside dimensions of the electron beam applicators projected geometrically to a plane surface at 100 cm SSD. A range of field sizes from 4 x 4 cm to 25 x 25 cm is required. A method to obtain irregular field shapes shall be provided. 3.3.1 It shall be possible to visualize both the field defining light and the optical distance indicator with an electron applicator in place. 3.4 Beam Profile 3.4.1 Field Flatness The maximum percent variation of the electron intensity at 100 cm SSD at D_{max} shall not exceed 5% (within the central 80% of the longitudinal and transverse axes relative to the central axis) for field sizes from 10 x 10 cm to 25 x 25 cm and for all the electron beam energies. 3.4.2 Beam Symmetry The maximum percent variation in the average electron intensity to the longitudinal and transverse halves of the electron field at D_{max} for a 10 x 10 and 25 x 25 cm field at 100 cm SSD shall not exceed $\pm$ 2% at gantry angles of 0, 90, 180 and 270 degrees. The average electron intensity is the average of the maximum and minimum points within the central 80% of the field for each of the axes. 3.5 X-ray Contamination The x-ray contamination of the electron beam shall be less than 5% of the maximum dose for all energies specified previously.
	5.6 Electronic Portal Imaging System 6mV Low Energy Linear Accelerator having features and capability	**5.6 Electronic Portal Imaging System** 6mV Low Energy Linear Accelerator having features and

	of amorphous silicon (a-Si) based high resolution EPID & VMAT/Rapid Arc Capability along with 5 or more electron energies should be quoted.	capability of amorphous silicon (a-Si) based high resolution EPID & VMAT/Rapid Arc should be quoted.
	Turnkey for Site Preparation: For Low Energy Linear Accelerator	**Turnkey for Site Preparation: For Low Energy Linear Accelerator** Bidders are requested to collect the required AERB approved drawings from Director, LHMC, New Delhi.
	Commercial Amendment	
	GIT Clause 34. **Comparison of Tenders** Net Present value (NPV) of the Comprehensive Annual Maintenance charges (CMC) quoted for 3 years after the warranty period shall be added to the bid price for evaluation and will be calculated after discounting the quoted price by a discounting factor of 10% per annum."	**GIT Clause 34.** **Comparison of Tenders** Net Present value (NPV) of the Comprehensive Annual Maintenance charges (CMC) quoted for **5 years** after the warranty period shall be added to the bid price for evaluation and will be calculated after discounting the quoted price by a discounting factor of 10% per annum."

The revised due date of submission of bids on e-tender basis is changed from from 23.9.2014 to 08.10. 2014.

Bidders shall be entirely responsible for complete installation, testing & commissioning of the equipment, in case any items are not mentioned inadvertently in the Bid Document including Amendments.

Rest all remains unchanged as per the Bid Document.

Director,
LHMC, New Delhi