



Notice Inviting e-Tender

West Bengal Medical Services Corporation Limited
Swasthya Sathi
GN-29, Salt Lake, Sector-V
Kolkata-700091

Phone No (033) 40340307/320

E mail: procurement@wbmsc.gov.in

**SUPPLY AND COMMISSIONING OF DIFFERENT TYPES OF ONCOLOGY EQUIPMENT IN THE
MEDICAL COLLEGES OF THE GOVERNMENT OF WEST BENGAL**

(Submission of Bid through *online*)

Bid Reference No.: WBMSCL/NIT-239/2023	Dated-11.05.2023
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1. West Bengal Medical Services Corporation Limited (WBMSCL) has been requested by the Government of West Bengal to procure on their behalf **Different Types of Oncology Equipment** for the Medical Colleges of the Govt. of West Bengal.
2. WBMSCL hereby invites bids from eligible and qualified bidders for the **Supply and Commissioning of Different Types of Oncology Equipment** as per Schedule of Requirement.
3. Intending bidders may download the tender document from the e-tender portal of Govt. of West Bengal at wbtenders.gov.in and the website of WBMSCL at www.wbmsc.gov.in. The submission of bids should be online only at wbtenders.gov.in. Earnest Money Deposit (EMD) to be paid offline by way of issuing Bid Security Bank Guarantee in the form given in Form - 5 issued in favour of 'West Bengal Medical Services Corporation Limited' from any scheduled commercial bank payable at Kolkata.

Non statutory documents, Bid – A, Bid – B & Bid – C are to be submitted concurrently.

Sd/-
Managing Director

Table for Important Dates

Sl.	Items	Date(s)
1.	Date of uploading of N.I.T. Documents (online) / Date of Issue / Published on	15.05.2023
2.	Documents download start date (Online)	15.05.2023
3.	Date of Pre Bid Meeting with the intending bidders in the Conference Hall of West Bengal Medical Services Corporation Limited	23.05.2023 at 11:30 AM Onwards
4.	Bid submission start date (On line)	26.05.2023
5.	<p>Bid submission closing (On line) Bid submission includes: i) Non statutory documents to be submitted under <u>My Documents</u> (Each sub-category item should be in multiple page single PDF file) ii) BID – A (Should be in multiple page single PDF file) iii) BID – B (Should be in multiple page single PDF file) iv) BID – C (BOQ and price of consumables & spares etc.)</p> <p>Detailed list of documents annexed at Section V Check-List Form Non-statutory document (document uploaded in <u>My Documents</u>), Bid – A & Bid – B constitute the Technical Bid and Bid – C is the Financial Bid. <i>Any wrong or misleading information provided by the bidder during submission of bids shall lead to summary cancellation of bid and may lead to blacklisting in WBMSCL for at least 5 years.</i></p> <p>Each scanned documents should have an index page indicating the name of the documents enclosed with page number.</p>	06.06.2023 up to 03:00 PM
6.	<p>Last date of submission of:</p> <p>i) Earnest Money Deposit (Copy of original Bank Guarantee issued in favour of WBMSCL)</p> <p>ii) Hard copies of the documents uploaded in e-tender during bid submission. No BOQ to be submitted in hard copy.</p> <p>N.B.:</p> <p>1) All the above documents are to be submitted at the registered office of WBMSCL.</p> <p>It is essential that all documents in hard copy are to be placed before the Bid Evaluation Committee and arranged in the same sequence as given in the Check List. All the documents should be appropriately flagged.</p>	06.06.2023 up to 05:00 PM
7.	Bid opening date for Technical Proposals (Online) (Bid A & B)	08.06.2023 after 03:00 PM
8.	Bidders to remain present at WBMSCL office, Kolkata for identification of the documents for the Technical Bid evaluation	To be notified later
9.	Submission of non-statutory wanting document (if any)	To be notified later
10.	Functional demonstration of the equipment	To be notified later
11.	Opening of Financial Bid	To be notified later

Section I: Instructions to Bidders

A. Important information at a glance

1. TenderPackage Details

Package No.	ITEM	QTY	Warranty	Comprehensive Maintenance Contract (CMC)
A	High Energy LINAC for Burdwan MCH	1	5 Years (Entire System)	5 Years
B	High Energy LINAC for Murshidabad MCH	1		
C	High Energy LINAC for COM & Sagore Dutta Hospital	1		
D	High Energy LINAC for IPGME&R and SSKM Hospital	2		
E	CT Simulator (4D) for Burdwan MCH	1		
F	CT Simulator (4D) for Murshidabad MCH	1		
G	CT Simulator (4D) for COM & Sagore Dutta Hospital	1		
H	CT Simulator (4D) for IPGME&R and SSKM Hospital	1		
I	HDR Brachytherapy for Murshidabad MCH	1		
J	HDR Brachytherapy for COM & Sagore Dutta Hospital	1		
K	HDR Brachytherapy for IPGME&R and SSKM Hospital	1		

2. (a) Tender Fees : Exempted

2. (b) Earnest Money Deposit (EMD)

Package No.	ITEM	AMOUNT IN INR	INSTRUMENT
A	High Energy LINAC for Burdwan MCH	60,00,000	In the form of Bank Guarantee (BG) as per format given in Form 5
B	High Energy LINAC for Murshidabad MCH	60,00,000	
C	High Energy LINAC for COM & Sagore Dutta Hospital	60,00,000	
D	High Energy LINAC for IPGME&R and SSKM Hospital	1,20,00,000	
E	CT Simulator (4D) for Burdwan MCH	24,00,000	
F	CT Simulator (4D) for Murshidabad MCH	24,00,000	
G	CT Simulator (4D) for COM & Sagore Dutta Hospital	24,00,000	
H	CT Simulator (4D) for IPGME&R and SSKM Hospital	24,00,000	
I	HDR Brachytherapy for Murshidabad MCH	10,00,000	
J	HDR Brachytherapy for COM & Sagore Dutta Hospital	10,00,000	
K	HDR Brachytherapy for IPGME&R and SSKM Hospital	10,00,000	

3. Annual Turnover requirements:

The bidders should have minimum average annual turnover in the last three financial years (2019-2020, 2020-2021 and 2021-2022) as per the audited accounts of their organization as specified in the table below:

Package No.	ITEM	Average Annual Turnover in Crore Rs.
A	High Energy LINAC for Burdwan MCH	30
B	High Energy LINAC for Murshidabad MCH	30
C	High Energy LINAC for COM & Sagore Dutta Hospital	30
D	High Energy LINAC for IPGME&R and SSKM Hospital	60
E	CT Simulator (4D) for Burdwan MCH	12
F	CT Simulator (4D) for Murshidabad MCH	12
G	CT Simulator (4D) for COM & Sagore Dutta Hospital	12
H	CT Simulator (4D) for IPGME&R and SSKM Hospital	12
I	HDR Brachytherapy for Murshidabad MCH	5
J	HDR Brachytherapy for COM & Sagore Dutta Hospital	5
K	HDR Brachytherapy for IPGME&R and SSKM Hospital	5

4(a) Time for Supplies& Commissioning:

Package No.	Time for Completion of supply and installation of ordered good(s) including Turnkey job (site preparation and interior works) after opening of LC	The commissioning of ordered good(s) shall be carried out by the supplier by providing adequate number of commissioning experts at each site along with the help of the users from the date of completion of installation
Package A-D	150 Days	60 Days
Package E-K	90 Days	45 Days

4 (b).1 Terms and Mode of Payment:

Payment Terms:

Payment shall be made through electronic transfer subject to recoveries, if any, by way of liquidated damages or any other charges as per terms and conditions of contract in the following manner, depending on the goods being imported or domestic goods or of foreign origin located within India.

(A) Payment for Imported Goods (Package A-K):

Irrevocable and non – transferable 100% LC shall be opened, however, if the Supplier requests specifically to open confirmed LC, the extra charges would be borne by the Supplier. If LC is required to be extended and/or amended for reasons not attributable to the Purchaser/Consignee, the charges thereof shall be borne by the Supplier.

Quotes against the imported goods are to be filled in designated cells in the BOQ. The rate shall only be quoted in United States Dollars (USD) which will remain valid and unchanged for 2 (two) years. The amount in USD quoted by the bidders for the items would be converted into INR by applying the RBI Conversion rate applicable on the date 2(two) days ahead of the last date of submission of online bids for comparison of Financial Bids. Payment shall be made in USD as specified in the Contract in the following manner:

a) On Shipment:

- (i) 70% payment of the unit price quoted at **Column 5 of Form No. 8(a)** at port / airport of lading will be released against furnishing of dispatch documents to the satisfaction of the Purchaser, i.e. WBMSCL and against submission of Performance Security in the form of an unconditional and irrevocable Bank Guarantee of 3% order value valid for a period of 62 months from the date of Award of Contract (AOC) which shall be submitted by the Selected Bidder within 7 days after receipt of intimation of opening of LC by the Purchaser.

The Selected Bidder shall submit the documents specified hereunder:

- i. Four copies of Supplier's invoice showing contract number, Goods description, quantity, unit price and total amount;
- ii. Original and four copies of the negotiable clean, on-board Bill of Lading/Airway bill, marked freight pre paid and four copies of non-negotiable Bill of Lading/Airway bill;
- iii. Four copies of packing list identifying contents of each package;
- iv. Insurance Certificate and documents also to be submitted for payment of Letter of Credit (LC) confirming that dispatch documents has already been sent to all concerned as per the Contract within 24 hours;
- v. Manufacturer's/Supplier's warranty declaration and warranty certificate;
- vi. Inspection certificate issued by the dispatched equipment issued by recognized/reputed agency like SGS, Lloyd, BEAURU VARITUS and TUV prior to dispatch;
- vii. Manufacturer's own factory inspection report and Certificate of country of origin issued by Chamber of Commerce or counter signed by Chamber of Commerce;
- viii. Original copy of the certificate of weight issued by the port authority/licensed authority and six copies;
- ix. Pre-shipment advisory note to Purchaser & Consignee at least 15 days prior to the scheduled delivery of the equipment at the door step of the Consignee;

b) After Supply and Installation:

10% payment of the unit price quoted at Column 5 of Form No. 8(a) will be released after supply and satisfactory installation of the Goods and on submission of satisfactory installation certificate issued by the user Department of the Medical College followed by a joint visit of WBMSCL, PWD & Medical College authority in the prescribed format given at Form-3a & 3b.

c) After Commissioning:

Balance 20% payment of the unit price quoted at Column 5 of Form No. 8(a) will be released after satisfactory commissioning and issuance of commissioning certificate by the user Department in the prescribed format given at Form-3.

d) Payment of customs duty:

The Supplier shall pay the applicable customs duty directly on behalf of the Purchaser to Customs or the Purchaser/ Consignee shall provide Customs Duty Exemption Certificate (CDEC) to the Supplier on arrival of the Goods at the port of import and on submission of relevant documents. The Supplier shall employ one

Clearing and Forwarding agent for clearing the Goods from the port of import and no commission will be paid by the Purchaser to the Clearing and Forwarding agency employed by the Supplier for the purpose. The charges of the Clearing and Forwarding agency will be paid by the Supplier. Customs duty, cess and Customs House Agent charges of the equipment will be reimbursed to Supplier after submission of the relevant documents to Purchaser as required for release of the same. Reimbursement of Customs duty, cess and Customs House Agent charges shall be carried out only at actuals, in INR and upon submission of the original documents to the Purchaser, towards proof of having paid such duties, charges and cess at actuals. If the Selected Bidder fails to supply the Goods (including any components of Goods) from the Country of Origin as specified in the Technical Bid, the Purchaser shall have the right to forthwith reject such Goods or such component of Goods and reimbursement of the Customs Duty, cess and/ or other charges on such Goods (or component of Goods) shall be refused by the Purchaser and no claims will be entertained by the Purchaser on this behalf. However, any charges or liquidated damages or penalties imposed by the Customs authority/ Customs House agent/ Clearing and Forwarding agency on the Selected Bidder for delayed lifting of the Goods from the port of import shall not be borne by the Purchaser and any claim for reimbursement on such account shall be refused by the Purchaser.

While claiming reimbursement of duties, taxes etc. (like Customs duty and/or cess) from the Purchaser/Consignee, as and if permitted under the contract, the Supplier shall also certify that, in case it gets any refund out of such taxes and duties from the concerned authorities at a later date, the Supplier shall refund to the Purchaser/Consignee forthwith.

(B) Payment for Domestic Goods Or Goods of Foreign Origin Located Within India/Goods to be imported and supplied against payment in Indian Rupees

Quotes against the domestic goods or goods of foreign origin, comprising of goods which will be required for running the imported items comprised in Packages A to K above are to be filled in designated cells in the BOQ. The rate shall only be quoted in United States Dollars (USD) which will remain valid and unchanged for 2(two) years. The bidders should provide breakup of the aggregated cost of domestic goods or goods of foreign origin in Form 8(b). The amount in USD quoted by the bidders for the items would be converted into INR by applying the RBI Conversion rate applicable on the date 2(two) days ahead of the last date of submission of online bids for comparison of Financial Bids. Payment shall be made in INR as specified in the Contract in the following manner:

a) On Delivery:

70% (Seventy percent) payment of the unit price as quoted in **Column 6 of Form No. 8(b)** shall be paid on receipt of Goods in good condition will be released after Consignee Receipt Certificate is issued by the user Department in the prescribed format given at Form-3b and balance 30% (thirty) payment of the unit price as quoted in **Column 6 of Form No. 8(b)** will be released after Satisfactory Commissioning certificate issued by the user Department in the prescribed format given at Form-3 and upon the submission of the following documents:

The bidders shall also submit the documents specified hereunder:

- i. Four copies of Supplier's invoice showing contract number, Goods description, quantity, unit price and total amount;

- ii. Two copies of packing list identifying contents of each package;
- iii. Inspection Certificate issued by the user Department, if applicable, as per the Contract.

(C) Payment for Turnkey Work (site preparation including interiors):

Quotes for the Turnkey work is to be filled in designated cells in the BOQ. The rate shall only be quoted in United States Dollars (USD) which will remain valid and unchanged for 2 (two) years. The amount in USD quoted by the bidders for the work would be converted into INR by applying the RBI Conversion rate applicable on the date 2(two) days ahead of the last date of submission of online bids for comparison of Financial Bids. Payment for Turnkey Work (site preparation including interiors) will be made to the Supplier in INR on completion of work and after installation, commissioning of the Goods and issue of final acceptance certificate by the Consignee, i.e., the Principal of the Medical College after joint visit by authorized official(s) from WBMSCL and the Medical College Authority.

(D) Payment for Comprehensive Maintenance Contract (CMC) Charges:

The Consignee, through the Principal of the Medical College will enter into CMC with the Supplier, which shall be confirmed by Purchaser after expiry of warranty at the rates as stipulated in the contract on receipt of bank guarantee for an amount equivalent to 3 % of the cost of the Goods as per contract valid till 2 months after expiry of entire CMC period (i.e. from Year 6 to Year 10, from the installation of the Goods). The CMC shall be awarded in INR by the concerned Hospital Authority after satisfactory completion of the contract period, i.e., after completion of Year 5 from the installation of the Goods and upon expiry of 5 years warranty, upon being duly certified by the Consignee and the RBI Conversion rate in INR applicable on the date 2 (two) days prior to the last date of submission of online bids shall be used for entering into the CMC with the Supplier.

All bidders shall mandatorily quote CMC prices in USD in the BOQ for each year separately for the CMC services required to be rendered. The Selected Bidder shall enter into CMC after expiry of Warranty and CMC should include the following:

- i. The equipment including all other accessories, ancillaries and whole turnkey work as given in the specifications of the equipment including UPS, UPS Battery, AC machines and furniture etc.
- ii. The Selected Bidder must enter into the CMC with WBMSCL directly / third party as authorized by H&FW Dept/ WBMSCL. The Selected Bidder must accept the same CMC rate, if the CMC is offered by the third party/WBMSCL then no escalation, no extra cost will be provided. If the Selected Bidder fails to execute the CMC with WBMSCL or third party (as authorized by WBMSCL or H&FW Department), WBMSCL/ such third party may initiate legal action against the Selected Bidder. The Selected Bidder may be debarred to participate in any future tender.
- iii. The execution of CMC of the equipment will be at the sole discretion of WBMSCL.
- iv. As per tender terms and conditions, third party items should be included within the CMC rate.

The CMC shall provide for guaranteed levels of service parameters including but not limited to percentage uptime to be ensured; performance output levels to be ensured from the Goods, channel of registering service request, response time for resolving the request, channel for escalation of service request in case of delay or unsatisfactory resolution of request, monitoring of service levels etc. This would include but not be limited to provision

of help lines, complaint registration and escalation procedures, response time, percentage of uptime and availability of equipment, non-degradation in performance levels after maintenance, maintenance of an inventory of common spares, use of genuine spares etc. The CMC shall also include penalties in the form of liquidated damages for unacceptable delays in responses and degradation in performance output of Goods, including provisions for terminations.

4.(b).2.The Supplier shall not claim any interest on payments under the Contract.

Payments to be made (in terms of price quoted in Form 8(b)for the Works contained therein, to be undertaken within 2 years from signing of the Contract and for CMC for Year6 to Year10 after expiry of 5 years warranty) in INR shall not be subject to further escalation / exchange variation during the Contract period and the CMC period.

4.(b).3. Where there is a statutory requirement for tax deduction at source, such deduction towards income tax and other tax as applicable will be made from the bills payable to the Supplier at rates as notified from time to time.

4.(b).4.Payment for Goods to be Imported from Abroad:

Irrevocable and non – transferable 100% LC (in USD) shall be opened. However, if the Supplier requests specifically to open confirmed LC, the extra charges would be borne by the Supplier. If LC is required to be extended and/or amended for reasons not attributable to the Purchaser/Consignee, the charges thereof shall be borne by the Supplier.

4.(b).5.Additional information and instruction on Duties and Taxes:

4.(b).5.1.The prices quoted in per Forms 8(a), 8(b) & 8(c) will be taken inclusive of all duties and taxes and no claim for the same will be entertained later.

4.(b).5.2.Taxes:

If a Supplier asks for GST and any other tax to be paid extra, the rate and nature of taxes applicable should be shown separately. If any refund of tax is received at a later date, the Supplier must return the amount forth-with to the Purchaser.

4.(b).5.3.Imposition of new categories of Duties or Taxes:

In the event of any imposition of any new categories of taxes or duties, during the contract period, if such taxes or duties are paid by the Supplier, the same will be reimbursed by the Purchaser.

5. Performance Security (PS):

(In the form of unconditional and irrevocable Bank Guarantee) to be submitted within 7 days after receipt of intimation of opening of LC by the Purchaser

6. Who can bid:

- (1) Manufacturing Company
- (2) Manufacturer's subsidiary in India
- (3) Manufacturer's sole Authorized Distributor / Business Partner, in case the manufacturing company does not have registered office/ commercial establishment in India.

Bidders would only be eligible, if they agree to remain responsible for providing Comprehensive Maintenance Services (including all spares) for the entire useful life of the

Goods after expiry of the Warranty Period.
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7. Service Up time in Warranty & CMC:

97% up time Warranty of complete equipment and the entire set up on 24 (hrs) X 7 (days) X 365 (days) basis.
The response time to any fault should be not more than 12 hrs. Time for rectification should not be more than 24 hours.
Maximum Downtime allowed without penalty : 48 hours
Penalty per LINAC beyond 12 hours of non physical attendance: Rs. 50,000 per 24 hours or part thereof. Penalty per LINAC for Downtime after 24 hrs is Rs. 1,00,000/- per 24 hours cycle or part thereof. Penalty shall be paid to Medical College authority. However, if repairing of the machine requires replacement of Accelerating wave guide, Electron Gun, Target, RF driver, Klystron / Magnetron and any vacuum part, penalty will be charged at the rate of Rs 60000/- per 24 hours or part thereof for down time after 72 hours.
Penalty per CT Simulator (4D) beyond 12 hours of non physical attendance: Rs. 25,000 per 24 hours or part thereof. Penalty per CT Simulator (4D) for Downtime after 24 hrs is Rs. 30,000/- per 24 hours cycle or part thereof. Penalty shall be paid to Medical College authority.
Penalty per HDR Brachytherapy beyond 12 hours of non physical attendance: Rs. 15,000 per 24 hours or part thereof. Penalty per HDR Brachytherapy for Downtime after 24 hrs is Rs. 20,000/- per 24 hours cycle or part thereof. Penalty shall be paid to Medical College authority.
Downtime should be calculated by the machine on a sui generis basis, or, the downtime should be able to be tracked and computed by the manufacturer from a remote location, which can be furnished to the Purchaser or the Consignee, on a case to case basis, free of cost.

8. Penalty for Delayed Delivery, Installation and Commissioning:

If the Supplier fails to deliver, install or commission any or all of the Goods or fails to perform the services within the time prescribed in the Contract, the Purchaser/Consignee shall, **without prejudice to other rights and remedies available to the Purchaser/Consignee under the Contract, for each day of delay in delivery, installation or commissioning of any or all of the Goods, as penalty, extend the warranty period for 3 (three) days until actual delivery or installation or commissioning.**

9. Experience and Technical Capacity:

The manufacturer whose product is offered by the bidder must have commissioned **at least 3 (three) units of the** quoted model of the equipment being supplied of which at least 1 (one) client/user should be in India which are functioning satisfactorily as on the date(s) of physical inspection.

Bidders shall furnish a copy of the Agreement/ MOU with the agency which shall undertake the Turnkey Work on behalf of the bidder and shall also furnish at least 3 (three) certificates issued in favour of the agency demonstrating satisfactory completion of Turnkey Work in Government hospitals/ medical colleges in India within the last 3 (three) financial years.

The equipment (including all its components) supplied shall only be sourced from the Country of Origin which is cited in the Technical Bid by the bidder. Supply of equipment from another Country which is different from the Country of Origin as quoted in the Technical Bid may result in such shipment being refused and returned, which shall only be at the Supplier's risk and cost.

10. Imposition of restrictions on bidder as per Memorandum bearing West Bengal

Finance Department Memo No. 202-F(Y) Dated 18.01.2021 read with

F.No.6/18/2019-PPD dated 23.01.2020 of Ministry of Finance, Government of India

where has been clearly mentioned that, any bidder from a country which shares a land border with India will be eligible to bid in any procurement whether of goods, services (including consultancy services and non-consultancy services) or works (including sub-contracts and turnkey projects) only if the bidder is registered with the Competent Authority.

- 11. Note1:** Warranty and CMC includes the equipment (including all accessories, ancillaries as given in the technical specifications given in Section-IV) including all equipment, accessories and ancillaries required for the site preparation and interiors.

Note2: The bidders, who have downloaded the Bidding Documents, shall be solely responsible for checking these websites for any amendment, addenda or corrigenda issued subsequently to the Bidding Documents and takes into consideration the same while preparing and submitting the bids.

Bids will be opened in the presence of bidders' representative who chooses to attend on the specified date and time. However, opening of bids will not be stopped for absence of any bidder or its authorised representative at the notified time.

Note 3: In the case of a bidder offering to supply Goods under the Contract that the bidder does not manufacture or otherwise produce, the bidder should be duly authorized by the manufacturer of the Goods who meets the criteria under

1. Above (all supporting documents / information as asked above for manufacturer shall be submitted with the bid) and

a) The manufacturer furnishes a legally enforceable authorization in the prescribed Form assuring full guarantee and warranty obligations as per GCC and SCC for the Goods offered; and

b) The bidder, as authorized by the manufacturer, must have supplied and provided after sales service of same model (only the equipment) in the Schedule of Requirements in any one of the institutions within India in the last five (5) years, which must be in satisfactory operation at least for one year on the date of bid opening.

Note 4: Service Centers:

Should have Kolkata, Burdwan & Malda/ Murshidabad based service centres with adequate service engineers with all necessary spare parts so that the response time should not be more than 12 hours from call log.

If in case of non availability of service centres in the said regions, the Selected Bidder (Only for LINAC) shall be liable to set up a service centre at the district at which the LINAC has been installed within one month from the date of awarding of AOC.

Note 5: In case extension required, Bank Guarantees are to be renewed prior to 30 days of their expiry.

12. General Instructions:

- (a) Bidders are requested to study the tender document, terms & conditions carefully and inspect the sites before submitting their bids. Submission of tender shall be deemed to have been done after careful study and examination of the tender document with full understanding of its implications.
- (b) Tender documents should be downloaded from the E-tender portal of Govt. of West Bengal at wbtenders.gov.in and the website of WBMSCL at www.wbmisc.gov.in. The submission of bids should only be through wbtenders.gov.in.
- (c) Any wrong or misleading information provided by the bidder during submission of bids may lead to summarily cancellation of bid, blacklisting in WBMSCL for at least 3 years and forfeiture of EMD.
- (d) All pages of the bid submitted must be signed and sequentially numbered by the bidder. All information in the offer must be in English. Information in any other language must be translated to English. Failure to comply with this may render the offer liable to be rejected. In the event of any discrepancy between the offer in a language other than English and its English translation, the English translation will prevail.

B. General

13. Scope of Bid

- 13.1. The type of goods and related services to be purchased is: **Supply and Commissioning of different types of Oncology Equipment** in the Medical Colleges of the Govt. of West Bengal as per the Schedule of Requirements.

14. Source of Funds

- 14.1 Funds received from the **Department of Health and Family Welfare, Government of West Bengal (DoHFW)**, for the procurement.

15. Fraud and Corruption

- 15.1 It is WBMSCL's policy to require that bidders, suppliers and contractors and their subcontractors under WBMSCL contracts, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, WBMSCL:

- (a) Defines, for the purposes of this provision, the terms set forth below as follows:
 - (i) Bribery is the act of unduly offering, giving, receiving or soliciting anything of value to influence the process of procuring goods or services, or executing contracts;
 - (ii) Extortion or coercion is the act of attempting to influence the process of procuring goods or services, or executing contracts by means of threat of injury to person, property or reputation;
 - (iii) Fraud is the misrepresentation of information or facts for the purpose of influencing the process of procuring goods or services, or executing the contracts, to the detriment of WBMSCL or other participants;
 - (iv) Collusion is the agreement between bidders designed to result in bids at artificial prices that are not competitive.
- (b) Will reject a proposal to award a contract if it determines that a bidder recommended for award has engaged in corrupt practices in competing for the contract in question;
- (c) Will declare a bidder ineligible, either indefinitely or for a stated period of time, to become a WBMSCL registered Vendor if it at any time determines that the bidder has engaged in corrupt practices in competing for or in executing a WBMSCL contract;
- (d) Will cancel or terminate a contract if it determines that a bidder has engaged in corrupt practices in competing for or in executing a WBMSCL contract;
- (e) Will normally require a WBMSCL registered Vendor to allow WBMSCL, or any person that WBMSCL may designate, to inspect or carry out audits of the Vendor's accounting records and financial statements in connection with the contract.

15.2. Any bidder participating in WBMSCL's procurement activities, shall facilitate to WBMSCL personnel upon first request, all documents, records and other elements needed by WBMSCL to investigate the allegations of misconduct by either the bidder or any other party to the procurement activities. The absence of such cooperation may be sufficient grounds for the debarment of the bidder from WBMSCL vendor roster and may lead to suspension following review by WBMSCL Vendor Review Committee.

- 15.3. It is required that bidders, their subsidiaries, agents, intermediaries and principals cooperate with WBMSCL Internal Audit Group as well as with other investigations

authorized by WBMSCL or by the Government of West Bengal or the Government of India as and when required. Such cooperation shall include, but not be limited to, the following: access to all employees, representatives, agents and assignees of the bidder; as well as production of all documents requested, including financial records. Failure to fully cooperate with investigations will be considered sufficient grounds to allow WBMSCL to repudiate and terminate the contract and to debar and remove the supplier from WBMSCL's list of registered vendors.

16. Eligible Bidders

- 16.1. A bidder and all parties constituting the bidder may have the nationality of any country.
- 16.2. A bidder shall not have a conflict of interest. All bidders found to have conflict of interest shall be disqualified. Bidders may be considered to have a conflict of interest with one or more parties in this bidding process, if they are or have been associated in the past, with a firm or any of its affiliates which have been engaged by WBMSCL to provide consulting services for the preparation of the design, specifications and other documents to be used for the procurement of the goods to be purchased under these Bidding Documents.
- 16.3. A bidder that is under a declaration of ineligibility by WBMSCL in accordance with Instructions to bidders at the date of award of contract, shall be disqualified. Bidders shall not be eligible to submit a bid when at the time of bid submission:
- Suppliers are already suspended by WBMSCL; or,
 - Suppliers are suspended by the Government of West Bengal or Government of India or any other State Government or WBMSCL,
 - Suppliers have been declared ineligible by Government of West Bengal or Government of India or any other State Government or WBMSCL.

17. Eligible Goods and related services:

- 17.1 All the Goods and related services to be supplied under the Contract may have their origin in any country.
- 17.2 For purposes of this Clause, the term "origin" means the country where the Goods have been mined, grown, cultivated, produced, manufactured or processed; or, through manufacture, processing, or assembly, another commercially recognized article results that differs substantially in its basic characteristics from its components.

C. Contents of Bidding Documents

18. Sections of Bidding Documents

- 18.1 The Bidding Documents consist of:
- Section I. Instructions to Bidders
 - Section II. General Conditions of Contract (GCC)
 - Section III. Special Conditions of Contract (SCC)
 - Section IV. Schedule of Requirements

- Section V. Bidding Forms
 - Section VI. Contract Forms
- 18.2 The bidder is expected to examine all instructions, forms, terms and specifications in the Bidding Documents. Failure to furnish all information or documentation required by the Bidding Documents may result in the rejection of the bid.
- 18.3 Bidders are cautioned to read the specifications carefully (see Section IV - Schedule of Requirements), as there may be special requirements. The technical specifications presented herein are not to be construed as defining a particular manufacturer's product. Bidders are encouraged to advise WBMSCL, if they disagree.
- 18.4 The specifications are the minimum requirements for the products. Products offered must meet or exceed requirements mentioned in technical specifications. The products shall conform in strength, quality and workmanship to the accepted standards of the relevant industry. Modifications of or additions to basic standard products of less size or capability to meet these requirements will not be acceptable.
- 19. Clarification of Bidding Documents:**
- 19.1 A prospective bidder requiring any clarification of the Bidding Documents shall contact WBMSCL in writing at procurement@wbmsc.gov.in
- 20. Amendment of Bidding Documents:**
- 20.1 At any time prior to the deadline for submission of bids, WBMSCL may amend the Bid Document by issuing addenda/ corrigenda to be uploaded in the e-tender portal & website of WBMSCL.
- 20.2 To give prospective bidders reasonable time in which to take an amendment into account in preparing their bids, WBMSCL may, at its discretion, extend the deadline for the submission of bids.

D. Preparation of Bids

- 21.** Bidders are to prepare and submit the following:
- i. Non statutory documents to be submitted under My Documents
 - ii. BID – A (Should be in multiple page single PDF file)
 - iii. BID – B (Should be in multiple page single PDF file)
 - iv. BID – C (BOQ and the Statement of Breakup of Taxes & Duties)
- Details are given in "Submission and Opening of Bids"
- 22. Cost of Bidding:**
- The bidder shall bear all costs associated with the preparation and submission of its bid.
- 23. Language of Bid:**
- The bid, as well as all correspondence and documents relating to the bid exchanged by the bidder and WBMSCL, shall be written in the English language. Supporting documents and printed literature that are part of the bid, if submitted in any other language shall be permitted provided they are accompanied by an accurate translation of the relevant passages into English and duly authenticated.
- 24. Alternative Bids:**

Alternative bids will not be accepted.

25. Bid Prices:

- 25.1 The prices in the BOQ shall conform to the requirements as specified in the tender.
- 25.2 The Incoterms shall be governed by the rules prescribed in the Incoterms 2020, published by The International Chamber of Commerce.
- 25.3 Prices quoted by the bidder shall be fixed during the bidder's performance of the Contract and not subject to variation on any account.

26. Currencies of Bid:

- (i) The bidder shall quote the rate of equipment in USD only.
- (ii) Domestic Goods & Cost of site Preparation including interiors in USD only.
- (iii) Cost of year wise CMC charges in USD only.

27. Documents Establishing the Conformity of the Goods and Related Services:

To establish the conformity of the goods and related services to the Bidding Documents, the bidder shall furnish as part of its bid the documentary evidence that the Goods conform to the technical specifications and standards specified in Section IV, Schedule of Requirements.

28. Documents Establishing the Qualifications of the Bidder:

AsperForm2: Check-List of Section V of the Bidding Documents.

29. Period of validity of Bids:

- 29.1 Bids shall remain valid for a period of **02 (Two)** years from date of opening of Financial Bid. A bid valid for a shorter period than specified in previous lines shall be rejected by WBMSCL as non responsive.
- 29.2 In exceptional circumstances, prior to the expiration of the bid validity period, WBMSCL may request bidder to extend the period of validity of their bids and EMD. In the event of the request for such extension beyond bid validity period, the bidder may or may not accept such request. In case, the bidder refuses to accept the request, the EMD of the bidder shall not be forfeited.
- 29.3 The LC may be opened in a phased manner within the period of validity of bids as specified under clause no. 29.1.

30. Period of validity of the Bid Price:

The Bid Price shall remain valid for a period of **2 (two)** years from the date of opening of the Financial Bid.

31. Earnest Money Deposit (EMD):

- 31.1 The EMD shall be transferred offline by way of Bank Guarantee in original from any scheduled commercial bank payable at Kolkata as per the format prescribed in Form5 in Section V, in favour of **"West Bengal Medical Services Corporation Limited",GN-29, Swasthya Sathi, Sec-V, Salt Lake, Kolkata-700091** for the amount as provided in the table in **2. (b) Payment Terms of Section I: Instructions to Bidders, under sub-section A. Important information at a glance**, and denominated in INR. The bidders are required to obtain and provide separate bank guarantees to WBMSCL for the specific amounts stated for each package segregated on the basis of type of equipment and location of Medical College as per **2. (b) Payment Terms of Section I: Instructions to Bidders, under sub-section A. Important information at a glance**. Failure to do so, shall lead to automatic rejection of bid by WBMSCL and forfeiture of the EMD.

- 31.2 Any bid not accompanied by a substantially responsive EMD in accordance with Instructions to bidders shall be rejected by WBMSCL as non-responsive.
- 31.3 The EMD of unsuccessful bidders shall be returned as promptly as possible upon the Selected Bidder's furnishing of the Performance Security pursuant to Instructions to Bidders.
- 31.4 The EMD may be forfeited:
- (a) if a bidder withdraws its bid during the period of bid validity specified by the bidder on the Bid Submission Form, except as provided in Instructions to Bidders; or
 - (b) if the Selected Bidder fails to:
 - (i) sign the Contract in accordance with Instructions to Bidders;
 - (ii) furnish a Performance Security in accordance with Instructions to Bidders
- ;

32. Signing of Bid – The bid should be digitally signed and uploaded on the E-tender portal.

33. Withdrawal, Substitution and Modification of Bids:

- 33.1 The bid once submitted cannot be withdrawn but prior to the deadline prescribed for submission of bids, a bidder may substitute, or modify its bid after it has been submitted.
- 33.2 The objective of this bid is to ensure supply of best quality equipment at the most competitive price. If at any stage of the bidding, including at the stage of financial evaluation, it appears that the tendered rate is artificially hiked or is much lower compared to the prevailing market price and available rates of similar or identical composition with the government, WBMSCL reserves the right to reject the bids of such bidder and/ or cancel the entire bidding process.

34. Confidentiality:

Any effort by a bidder to influence WBMSCL in the examination, evaluation, comparison of the bids or contract award decisions may result in the rejection of its bid.

Notwithstanding Instructions to Bidders from the time of bid opening to the time of award of contract, if any bidder wishes to contact WBMSCL on any matter related to the bidding process, it should do so in writing.

E. Submission and Opening of Bids

35. The following are to be submitted:

i) Non statutory documents to be submitted under My Documents

(Each sub-category item should be in multiple page single PDF file)

Guidelines for uploading documents in My Documents:

Sl. No.	Category Name	Sub-Category Name	Document Name
1	CERTIFICATES	CERTIFICATES	a) PAN Card b) GST registration Certificate c) IEC Certificate d) AERB type approval Certificate
2	CREDENTIAL	CREDENTIAL	Performance Statement Form (For the period of last three calendar years ending December 2022) - Form 7 of Section V Should be supported with documentary evidence (copy of work orders along with proof of payment received / copy of work orders along with installation certificate) that the bidder has supplied Medical equipment in Hospitals in India during the last 3 (three) Financial Years (FY). Certificate for carrying out Turnkey Work satisfactorily issued in favour of the agency engaged by the bidder for carrying out Turnkey Work. Certificates have to be provided for at least 3 (three) Turnkey Works which are to be issued by Government hospitals/ medical colleges in India during the last 3 (three) Financial Years (FY). Agreement/ MOU between the bidder and the agency proposed to be engaged for carrying out the Turnkey Work.
3	DECLARATION	DECLARATION 1	Income Tax returns for assessment years 2020-2021, 2021-2022 and 2022-2023 (Financial years 2019-2020, 2020-2021 and 2021-2022).
		DECLARATION 2	Tender Form as per Form 1
5	EQUIPMENT	MACHINERIES 1	Manufacturer's Authorization (If applicable) as per Form 6A of Section V
		MACHINERIES 2	Satisfactory Performance Certificate from at least 3 (three) users of the quoted model in support of the satisfactory operation & at least 01 (One) for the quoted model in India.
		MACHINERIES 3	Spare parts and accessory manufacturers authorisation (If applicable) as per Form 6B of Section V

(ii) Statutory Documents:

(a) BID-A (Should be in multiple page single PDF file)

- Earnest Money Deposit (EMD) in the form of Bank Guarantee (BG) should be submitted in Hard copy with the tender.
- Declaration of the bidder on letter head that "We agree to submit a copy of the Tender Documents and its Amendments and Addenda thereto duly initialled by us in all pages with our seal/rubber stamp affixed thereto, in token of acceptance thereof."

(b) BID-B (Should be in multiple page single PDF file)

1	Model of the equipment offered for (Self Declaration) with Brochure and Technical Data Sheet.
2	Comparative Data Table of the technical specifications (Form No. 4 of Section V)
3	Confirmation from manufacturer of the offered equipment that all the facilities exist in its factory for inspection and testing and these will be made available to WBMSCL or its representative, if inspection is considered necessary.
4	CE ("Conformité Européene") (4 Digit Notified body) & US FDA approval Certificate of the offered model, as applicable (copy of the certificate submitted with the bid shall be either notarised or apostilled, notarised/ apostilled copy of certificate should be submitted in original) CE ("Conformité Européene") Certificate should be from EU Notified Bodies authorized to conduct audits.
5	Pre-requisites of installation [Power (KVA, Phase, Hz), Civil and any other requirement, if any]
6	Average Annual Turnover of the bidder during the last 3 Financial Years 2019-2020, 2020-2021 and 2021-2022 (in INR) - to be certified by practicing Chartered Accountant as per format given in Form 10 of Section V .
7	Form 11: Declaration of Quality Certification of Equipment(as applicable)
8	AERB type approval certificate of the offered model
9	Bidders shall furnish a copy of the Agreement/ MOU with the agency which shall undertake the Turnkey Work on behalf of the bidder and shall also furnish atleast 3 (three) certificates issued in favour of the agency demonstrating satisfactory completion of Turnkey Work in Government hospitals/ medical colleges in India within the last 3 (three) financial years.

Non-statutory document (document uploaded in My Documents), Bid-A & Bid-B constitute the Technical Bid.

(c) BID - C:

Bid C shall contain Price Schedule / BOQ, Form 8 (a), Form 8 (b), Form 8(c), Form 9(a) and Form 9(b)

A. BOQ shall contain the financial quotes in respect of the following;

- (a) Cost of equipment including warranty [High Energy LINAC, HDR Brachytherapy, CT Simulator (4D)] as applicable.
- (b) Site wise cost for domestic goods or goods of foreign origin located within India or goods to be imported and supplied including site preparation and interior works to be carried out on turnkey basis [High Energy LINAC, HDR Brachytherapy, CT Simulator (4D)] as applicable.

(c) Year wise CMC Charges of equipment [High Energy LINAC, HDR Brachytherapy, CT Simulator (4D)] as applicable.

Sl. No.	Item description [High Energy LINAC, HDR Brachytherapy, CT Simulator (4D)] as applicable.	Qty	Units	Rate per unit in Figures to be entered by the bidder	Total Amount
1.0					
1.1	Unit Price on CIP (Kolkata) [i.e. value of the goods including all charges for export, carriage, insurance during loading, unloading and transportation, loading and unloading at port of export and import] + all other charges for unit (i.e. charges for local transportation and storage, Extended Insurance, installation, commissioning, supervision, demonstration and training) for Imported Goods – For LINAC LINAC & Treatment Planning System (TPS) including Oncology Information System (OIS)- For Brachytherapy & 4D C T Simulator Imported Equipment as per Column 5 of Form 8(a): PRICE SCHEDULE FOR GOODS TO BE IMPORTED FROM				
1.2	Unit Price (at Consignee's Site) [i.e. value of the goods including all charges for supply, storage, installation, commissioning, supervision, demonstration and training] exclusive of all taxes of Domestic Goods/Goods of Foreign Origin Located within India/Goods to be imported & site preparation and interior works to be carried out on turnkey basis against payment in Indian Rupees-as per Column 6 of format given in Form 8(b): PRICE SCHEDULE FOR DOMESTIC GOODS OR GOODS OF FOREIGN ORIGIN LOCATED WITHIN INDIA OR GOODS TO BE IMPORTED AND SUPPLIED AGAINST PAYMENT				
1.3	CMC Charges for Year1 after completion of 5 Years of Warranty-to be paid in INR[as per Column 4(a) of Form 8(c)]				
1.4	CMC Charges for Year2 after completion of 5 Years of Warranty-to be paid in INR[as per Column 4(b) of Form 8(c)]				
1.5	CMC Charges for Year3 after completion of 5 Years of Warranty-to be paid in INR[as per Column 4(c) of Form 8(c)]				
1.6	CMC Charges for Year4 after completion of 5 Years of Warranty-to be paid in INR[as per Column 4(d) of Form 8(c)]				
1.7	CMC Charges for Year5 after completion of 5 Years of Warranty-to be paid in INR[as per Column 4(e) of Form 8(c)]				

The BOQ shall be uploaded in .xls in the prescribed format.

B. **Form 8 (a):** Price Schedule for the portion of the LINAC machines, CT Simulator (4D) and HDR Brachytherapy to be imported from Abroad and to be paid in US Dollar

C. **Form 8 (b):** Price Schedule for Domestic Goods or Goods of foreign origin located within India or goods to be imported & site preparation and interior works to be carried out on turnkey basis and against payment in Indian Rupees.

D. **Form 8(c):** Price Schedule for Comprehensive Maintenance Contract after warranty period-to be paid in Indian Rupees.

E. **Form 9(a):** Prices for Optional Items in USD. The prices will not be included in the BOQ.

F. **Form 9(b):** Prices for Spares in USD / INR. The prices will also not be included in the BOQ.

Note:

Form 8 (a), Form 8 (b) and Form 8(c) should be converted in multiple page single PDF file and uploaded in the designated spaces under the Finance Cover / Bid C BOQ.

Form 9(a) and Form 9(b) should be uploaded in the designated spaces as Form 9(a) and Form 9(b) respectively under the Finance cover/ Bid C BOQ.

The bidders may also note that the quoted cost of Comprehensive Maintenance Contract (CMC) includes breakdown services, preventive maintenance including testing & calibration as per technical/ service /operational manual, labour and spares, after satisfactory completion of Warranty period for complete equipment along with all accessories and ancillaries as given in the specification of the equipment and the entire Turnkey. In addition, the Warranty and CMC shall and also include updating of all software & hardware including free of cost replacement of all computer hardware once in the 5 years Warranty and once in the 5 years CMC period and replacement of UPS battery as and when required by the user Department.

The Selected Bidder shall ensure that all third party items quoted including the accessories, spare parts, ancillaries and consumables are present with the Selected Bidder throughout the Warranty Period. In the event, any third party items are not available with the Selected Bidder or is not available in the market at the time of AOC, the Selected Bidder shall inform WBMSCL/Consignee within 7 (seven) days from the date of AOC and use best efforts to ensure that the same are procured by them at the earliest.

The minimum number of preventive maintenance to be undertaken in addition to break down calls during Warranty and CMC period is noted in the table below,

Equipments	Mandatory minimum preventive Maintenance Services (PMS) per year		Remarks
	Warranty	CMC	
Linear Accelerator & Turnkey CT Simulator (4D) & Turnkey HDR Brachytherapy & Turnkey	4	4	1. Supplier/ authorized service provider must attend all breakdown calls during warranty/ CMC period 2. The Supplier should provide Preventive Maintenance Services (PMS) yearly / bi - yearly / quarterly in equal interval to fulfil the minimum number of mandatory PMS as noted in the previous column during warranty / CMC period. 3. The preventive maintenance includes testing & calibration as per AERB guidelines and technical / service operational manual, spares, all software updates and labour.

- Bidders shall quote only those products in the bid which are not obsolete in the market and has at least 15 years residual market life i.e. the offered product shall not be declared end-of-life by the Original Equipment Manufacturer (OEM) before this period.
- The Selected Bidder shall before the expiry of the last 2 years, before the offered product reaches end-of-life shall intimate WBMSCL/ Consignee as to the exact Scope of Work which will be involved in upgrading/ updating such products to meet the necessity of WBMSCL/ Consignee, the likely period for which the upgraded/ updated product can render service and the details of the upgrade/ update such products will require. The Selected Bidder shall ensure that all such upgrades/ updating is done by the Original Equipment Manufacturer or involves the components manufactured by the Original Equipment manufacturer.
- The Selected Bidder has to provide full support including turnkey work, spare parts, consumables and third party items in the Warranty and CMC Period. If the Selected Bidder fails to provide the spare parts, then value of the spare parts, at actuals, will be deducted from the CMC Charges payable to the Selected Bidder.

If the Selected Bidder is found to have quoted for the same make & model of equipment in the tender of any organization under Government of India/any state govt. within the last 5 financial

years and is found to continue their CMC support more than 15 years after the installation, then the Selected Bidder has to extend the same service to WBMSCL.

N.B.

a) Any wrong or misleading information provided by the bidder during submission of bids may lead to summary cancellation of bid, blacklisting in WBMSCL for at least 5 years and forfeiture of EMD.

b) Each scanned documents should have an index page indicating the name of the documents enclosed with Page No.

F. Evaluation and Comparison of Bids

36. Tender Evaluation:

Non-statutory document (document uploaded in My Documents), **Bid – A & Bid – B** constituting the Technical Bid will be opened first and evaluated in presence of intending bidders. Determination of bidders eligible for technical evaluation would be based on the following conditions:

- i. Scrutiny of Form 1 (Tender Form) duly notarized – to proceed further for scrutiny of the checklist document.
- ii. Scrutiny of documentary evidence as per Form 2: Check-list, Section V of Bidding Documents submitted by the bidders – to decide on the eligibility of the bidder.
- iii. Verification of the technical compliance of the offered equipment(s) with the technical specifications given at Section IV (Schedule of Requirements) of the Bidding Documents. Bidders shall have to arrange for a physical inspection & working / functional demonstration of the offered equipment on the notified date, if felt required by the Bid Evaluation Committee for the compliance verifications.
- iv. The onsite functional demonstration of the equipment is purely at the discretion of the Technical Bid Evaluation Committee and its input shall be treated as only corroborative in nature and will not be a substitute for technical evaluation of the document submitted along with the bid. The decision of the Technical Committee in this regard will be final. Bidder has to comply with all parameters of the technical specifications except deviation(s) which will be considered minor and acceptable by the team of Experts to be engaged by WBMSCL to take working / functional demonstration of the offered equipment.

A bidder will be considered technically qualified if, the bidder complies with i), ii) & iii) and qualify in iv) above.

Financial evaluation:

The Financial Bids of only those bidders who qualify in the Technical Bids will be opened.

Financial Bids (Bid – C) of the technically qualified Bidders would only be opened. Comparison of Financial Bids would be based on [(A) + (B) + (C)] as mentioned in "Submission and Opening of Bids" quoted by the bidders. L1 bidder will be selected based on "quoted price in the BOQ (Excluding all taxes & duties) i.e. Bid C.

THE DECISION OF THE WBMSCL AUTHORITY WILL BE FINAL AND BINDING IN THIS MATTER.

37. Responsiveness of Bids:

- 37.1 WBMSCL's determination of a bid's responsiveness is to be based on the contents of the bid itself.
- 37.2 A substantially responsive bid is one that conforms to all the terms, conditions and specifications of the Bidding Documents without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that:
- (a) Affects in any substantial way the scope, quality, or performance of the goods and related services specified in the Contract; or
 - (b) Limits in any substantial way, inconsistent with the Bidding Documents, WBMSCL's rights or the bidder's obligations under the Contract; or
 - (c) If rectified would unfairly affect the competitive position of other bidders presenting substantially responsive bids.

WBMSCL considers material deviation to include but not to be limited to the following situations:

- (d) During technical evaluation of bids (verification of formal criteria):
 - Lack of proper bid securities in terms of change in the wording (not consistent with the prescribed format), amount or validity period.
 - Absence of bid form, change in the wording (not consistent with the prescribed format) or lack of signature in the key portions of the bid form,
 - The bidder does not accept important Contract conditions, i.e. related to Performance Security, Warranty, Force Majeure, Applicable Law, Delivery Schedule, Payment Terms, Limitation of Liability, etc.
 - Specifications of the item quoted vary in one or more significant respect(s) from the minimum required technical specifications.
- 37.3 If a bid is not substantially responsive to the Bidding Documents, it shall be rejected by WBMSCL.

38. Examination of Terms and Conditions and Technical Evaluation:

- 38.1 WBMSCL shall examine the bid to confirm that it does not contain material deviation or reservation related to the conditions and requirements specified in the GCC of Section II, SCC of Section III and in the Schedule of Requirements of Section IV.
- 38.2 If, after the examination of the terms and conditions and the technical evaluation, WBMSCL determines that the bid is not substantially responsive in accordance with Instructions to Bidders, it shall reject the bid.
- 38.3 If any deviations to the technical specifications and standards specified in Section IV, Schedule of Requirements exist then the same has to be recorded by the bidder in Form 4 (Technical Specification Form) of Section V. If the deviations are not acceptable to WBMSCL, then the Bid Evaluation Committee shall reject the bid. The deviation statement shall only be submitted in the manner provided in Form 4 as a part of the Technical Bid and if any deviations are separately submitted by any separate letter, e-mail or any other means, before or after the opening of the Technical Bid, such deviations will not be considered and such deviations will be treated as having not been submitted.
- 38.4 Pursuant to the foregoing clause, any deviations stated and submitted by a bidder in the deviation statement in Form 4 of Section V shall be final. No further deviations after opening of the Technical Bid by any bidder shall be entertained or accepted by WBMSCL.

- 38.5 The bidder shall justify the present quotes based on previous purchase orders for similar goods either in India or globally. If the bidder provides quotations for any new model or upgraded version of earlier model, they may mention the same in their Technical Bid.
- 38.6 The spare parts as selected by the Purchaser/Consignee to be purchased from the bidder, are subject to the condition that such purchase of the spare parts shall not relieve the bidder of any contractual obligations including warranty obligations; and b) In case the production of the spare parts is discontinued: i) Sufficient advance notice shall be given to the Purchaser/Consignee before such discontinuation to provide adequate time to the Purchaser/Consignee to purchase the required spare parts etc., and ii) The bidder shall be responsible for undertaking the supply of any such spare part for the proper upkeep of the goods for a period of 15 years including the warranty and CMC periods. The bidder shall carry sufficient inventories to assure ex-stock supply of consumables and spares for the Goods so that the same are used during warranty and CMC period.
- 39. Domestic Preference:**
Companies based and manufacturing in India shall not be a factor in bid evaluation.
- 40. Financial evaluation:**
The Financial Bids of only those bidders who qualify in the Technical Bids will be opened.
- 41. WBMSCL's Right to Accept Any Bid and to Reject Any or All Bids:**
WBMSCL reserves the right to accept or reject any bid and to annul the bidding process and reject all bids at any time prior to award of contract, without thereby incurring any liability to bidders. During the technical evaluation or financial evaluation of bids, no representations from any bidder with respect to suitability of other bidders will be entertained by WBMSCL or the Bid Evaluation Committee and the Bid Evaluation Committee, may in their discretion, reject or annul bids of such bidders whose representations may be considered detrimental to the conduct of bidding process.
- During the technical evaluation or financial evaluation of bids, no representations from any bidder with respect to suitability of other bidders will be entertained by WBMSCL or the Bid Evaluation Committee and the Bid Evaluation Committee, may in their discretion, reject or annul bids of such bidders whose representations may be considered detrimental to the conduct of bidding process.

G. Award of Contract

- 42. Award Criteria:**
- 42.1 In the event of award of contract, WBMSCL shall award the Contract to the bidder whose offer has been determined to be the lowest evaluated bid substantially responsive to the Bidding Documents, provided further that the bidder is determined to be qualified to perform the Contract satisfactorily.
- 42.2 Before the award of contract, WBMSCL may inspect the manufacturing facilities of the lowest evaluated responsive bidder to assess their capability to successfully perform the Contract as per the terms and conditions specified in the NIT.
- 43. WBMSCL's right to vary quantities:**
- 43.1 WBMSCL reserves the right to increase the quantity in case of need / or to decrease the quantity of goods and related services originally specified in Section IV, Schedule of Requirements, up to 25% and without any change in the unit prices or other terms and conditions of the Bidding Documents.
- 44. Publication of Award of Contract:**
- 44.1 WBMSCL shall publish the AOC in the website www.wbtenders.gov.in.

45. Signing of Contract:

- 45.1 Prior to the expiry of the period of bid validity, WBMSCL shall issue AOC. The draft agreement will be sent to the Selected Bidder along with the AOC and Special Conditions of Contract, if any. No payment shall be made by WBMSCL to the Selected Bidder unless the agreement is signed by the Selected Bidder.

46. Performance Security:

- 46.1 Within 7 days of receipt of intimation of opening of LC in favour of the Selected Bidder from WBMSCL, the Selected Bidder, if required, shall furnish the Performance Security in full or in parts in the event of a staggered supply as decided by WBMSCL in accordance with the GCC, using for that purpose the Performance Security Form included in Section VI, Contract forms, or another Form acceptable to WBMSCL. WBMSCL shall promptly discharge the Bid Securities of the unsuccessful bidders pursuant to Instructions to Bidders.

- 46.2 Failure of the Selected Bidder to submit the above-mentioned Performance Security in full or in parts in the event of a staggered supply as decided by WBMSCL and sign the agreement within 14(fourteen) days of issue of AOC shall constitute sufficient grounds for the annulment of the award and forfeiture of the EMD.

***Note:** - Working demonstration of all the offered Goods within India shall be required to be arranged by the bidder before the Bid Evaluation Committee for technical evaluation, as and when requested to do so by the Bid Evaluation Committee prior to the opening of the Financial Bids. The cost incurred for the visit of the members of Bid Evaluation Committee will be entirely borne by WBMSCL. Choosing of site for on-site physical demonstration from the list of installations submitted by a bidder / the institutes who have issued satisfactory certificate to the bidder shall be on the discretion of WBMSCL.*

47. Site handover

- 47.1 At the time of issue of AOC, WBMSCL shall also request the Medical College Authority and other Departments of Government of West Bengal, to take necessary steps for getting the site ready for handover to the Selected Bidder for undertaking supply, installation, commissioning and turnkey works as may be required by the Selected Bidder. Once the said site is ready for handover to the Selected Bidder, WBMSCL shall intimate the Selected Bidder to direct its authorised representative to take handover of the site for undertaking necessary preliminary activities which shall enable the Selected Bidder to keep the site ready for functioning, as and when the equipment reaches the Consignee's location. Once the Selected Bidder has completed such preliminary activities and is of the opinion, that the site is ready for installation and commissioning of the equipment, it shall communicate the readiness of the site to WBMSCL, who shall only upon receiving of such intimation of readiness of the site, take steps for opening of LC.
- 47.2 Once the Selected Bidder takes handover of the site and the Goods reach the site, it shall deploy its own security agencies who will be responsible for ensuring the safety of the Goods (including consumables and spare parts) and for ensuring that no theft or pilferage of the Goods takes place. The responsibility to deploy its own security agencies shall continue to remain with the Selected Bidder till the successful commissioning of the Goods. No claims on the part of the Selected Bidder with regards to theft or pilferage will be entertained by WBMSCL, or the user Department or the Medical College Authority.
- 47.3 Once the installation and commissioning of the Goods is carried out at the Site by the Selected Bidder, the Selected Bidder shall assist WBMSCL, or the user Department or the Medical College Authority to take necessary steps for application for AERB license on the date of commissioning.

Section II. General Conditions of Contract

In the event of an order and any dispute arising out of the same, the General Conditions of Contract will apply as under and all references to the General Conditions of Contract include (subject to all relevant approvals) a reference to these terms and conditions as amended, supplemented, substituted, novated or assigned from time to time. Each schedule and annexure referred to in these terms and conditions shall form part of these terms and conditions. The documents forming the supply contract shall be construed and interpreted so that, in the event there is any conflict or ambiguity between them, these terms and conditions shall prevail.

1.

APPLICATION AND LEGAL STATUS OF THE PARTIES:

The General Conditions Of Contract incorporated in Section -II shall be applicable for the **Supply and Commissioning of Different Types of Oncology Equipment in the Medical Colleges** of the Government of West Bengal and to the extent the same are not superseded by the Special Conditions Of Contract prescribed under Section III, Section IV or Schedule of Requirements of this document.

WBMSCL and the SUPPLIER shall respectively be referred to as "FIRST PARTY" & "SECOND PARTY" hereunder and each party acknowledges and agrees that:

1.1

Nothing contained in or relating to the contract shall be construed as establishing or creating between the Parties the relationship of employer and employee or of principal and agent. The officials, representatives, employees, or subcontractors of each of the Parties shall not be considered in any respect as being the employees or agents of the other Party and each Party shall be solely responsible for all claims arising out of or relating to its engagement of such persons or entities.

2.

DEFINITIONS:

2.1

Goods: Goods are hereinafter deemed to include, without limitation, such medicines, raw materials, components, intermediate products and products which the SECOND PARTY is required to supply pursuant to the Purchase Order or Special Conditions of this Contract to which these General Conditions are attached. **Services** are hereinafter deemed to include services ancillary to the supply of the Goods including, without limitation transportation and supply at the point of consignee and such other obligations as required under this Contract.

2.2

Trade Terms: Whenever an Incoterm is used in this Contract it shall be interpreted in accordance with the Incoterms 2020 and as the same has been judicially interpreted in India.

3.

CONTRACT PRICE;

Prices charged by the SECOND PARTY for the Goods supplied and the related services performed under the Contract shall not vary from the prices quoted by the SECOND PARTY in its bid, with the exception of any price adjustment authorized in writing by FIRST PARTY.

4.

PACKAGING OF THE GOODS:

4.1

The SECOND PARTY shall package the Goods for delivery with the best materials that are adequate to safeguard the Goods while in transit and with all due care and according to the highest standards of export packaging for

the type and quantities of the Goods. The Goods shall be packed and marked in a proper manner in accordance with the instructions stipulated in the Contract or, otherwise, as customarily done in the trade and in accordance with any requirements imposed by applicable law or by the transporters and manufacturers of the Goods. The packing, in particular, shall mark the Contract or Purchase Order number and any other identification information provided by FIRST PARTY as well as such other information as is customary for the Goods in question. During transit, the packing shall be sufficient to withstand, without limitation, rough handling and exposure to extreme temperatures, salt, precipitation and open storage. The SECOND PARTY shall have no right to any return of the packing materials.

5.

TRANSPORTATION AND FREIGHT:

Unless otherwise specified in the Contract (including in INCOTERMS 2020) the SECOND PARTY shall be solely liable for making all transport arrangements and for payment of freight and insurance costs for the shipment and delivery of the Goods in accordance with the requirements of the Contract and as defined in table 4. **(b) Payment Terms of Section I: Instructions to Bidders, under sub-section A. Important information at a glance.** The SECOND PARTY shall make arrangements for insuring the Goods against loss or damage incidental to transportation, delivery and storage at the site till installation and commissioning of the equipment at the site. The insurance cover shall be obtained by the SECOND PARTY at its own cost and in its own name and not in the name of the FIRST PARTY or the Consignee. In the event of breakages or loss of Goods during transit, the Goods will have to be replaced by the SECOND PARTY. Transportation, loading and unloading of the Goods from/ at the seaport/ airport/ Site of delivery shall be solely the responsibility of the SECOND PARTY and shall be carried out only by the men and agents of the SECOND PARTY and the SECOND PARTY shall not seek the assistance of the FIRST PARTY or the Medical College Authority for providing any labourers/ staff on a temporary basis for assisting the SECOND PARTY in the transportation, loading and unloading of the Goods.

6.

DELIVERY OF GOODS:

The SECOND PARTY shall hand over or make available the Goods and the Consignees shall receive the Goods (as per detail annexed in Section IV), at the place for the delivery of the Goods and within the time for delivery of the Goods specified as per table 4 **(a) Date of supplies & commissioning at Section I: Instructions to Bidders under sub-section A. Important information at a glance,** in the Contract. All manuals, instructions, displays and any other information relevant to the Goods shall be in the English language unless otherwise specified in the Contract. Unless specifically stated in the Contract (including in Trade Terms) the entire risk of loss, theft, damage to, or destruction of the Goods shall be borne as defined in table 5. **(b) Payment Terms of Section I: Instructions to Bidders, under sub-section A. Important information at a glance.**

7.

INSPECTION OF THE GOODS:

7.1

All Goods may be subjected to inspection and testing by FIRST PARTY or its designated representatives at the FIRST PARTY's cost and expense at all times and places including the period of manufacture and in any event prior to final acceptance by FIRST PARTY.

7.2

Neither the carrying out of any inspections of the Goods nor any failure to undertake any such inspections shall relieve the SECOND PARTY of any of its warranties or the performance of any obligations under the Contract.

7.3 **For Goods supplied from within or outside India.**
a) For Goods supplied from within or outside India, FIRST PARTY retains the right to perform pre-shipment inspection at the manufacturer's premises and an independent quality control laboratory testing **at its own cost.**

b) The FIRST PARTY will retain the right to perform further inspections and quality testing at any time till the satisfactory installation of Goods, as it deems fit, **at its own cost.**

7.4 Should any inspected or tested Goods fail to conform to the specifications, the FIRST PARTY shall reject them and the SECOND PARTY shall replace the rejected Goods free of cost to the FIRST PARTY, within a period of 30 (thirty) days of intimating such rejection.

8. ACCEPTANCE OF GOODS:
Under no circumstances shall FIRST PARTY be required to accept any Goods that do not conform to the specifications of or requirements of the Contract. FIRST PARTY may condition acceptance of the Goods upon the successful completion of acceptance tests, as may be specified in the Contract or otherwise agreed in writing by the Parties. In no case shall FIRST PARTY be obligated to accept any Goods unless and until FIRST PARTY has inspected the Goods following commissioning of the Goods in accordance with the requirements of the Contract. The Goods shall be deemed to be accepted only after FIRST PARTY provides written acceptance.

9. REJECTION OF GOODS:
Notwithstanding any other rights of, or remedies available to, FIRST PARTY under the Contract, in case any of the Goods is defective or otherwise does not conform to the specifications or other requirements of the Contract, FIRST PARTY may, at its sole option, reject or refuse to accept the Goods and the SECOND PARTY agrees promptly to replace the Goods with Goods of equal or better quality. Provided further that the FIRST PARTY shall reject the Goods or any components of the Goods sent by the SECOND PARTY, if the same does not arrive from the Country of Origin as stated by the SECOND PARTY in the BOQ.

10. TITLE:
Unless otherwise expressly provided in the Contract, title including the incidentals of the title and any legal or inchoate right and interest which may accrue in the said Goods shall pass from the SECOND PARTY to the FIRST PARTY upon delivery of the Goods and the acceptance of the same by the FIRST PARTY in accordance with the requirements of the Contract.

11. PERFORMANCE SECURITY:

11.1 Within 7 days of receipt of intimation of opening of LC in its favour from the FIRST PARTY, the SECOND PARTY, if required, shall furnish the Performance Security in full or in parts in the event of a staggered supply as decided by the FIRST PARTY **as per table 5, Performance Security (PS) at Section I: Instructions to Bidders under sub-section A. Important information at a glance** for an amount of 3% of the Contract Price (bid value)in full or in parts, valid up to 60 days after the date of completion of all contractual obligations, till the last date of warranty obligations.

11.2 Banks issuing Performance Securities must be acceptable to the FIRST PARTY, i.e. they have to be scheduled commercial banks having a branch in India.

- 11.3 Discharge of the Performance Security shall take place upon expiry of the Performance Security or the completion of all contractual liabilities of the SECOND PARTY as per clause 5, Performance Security (PS) at Section I: Instructions to Bidders under sub-section A. Important information at a glance.
- 11.4 In the event of any amendment issued to the Contract, the SECOND PARTY shall, within 14 (fourteen) days of issue of the amendment, furnish the corresponding amendment to the Performance Security (as necessary) rendering the same valid in all respects in terms of the Contract, as amended.

12.

WARRANTIES:

12.1 **Goods Warranties:**

Without limitation of any other warranties stated in or arising under the Contract, the SECOND PARTY warrants and represents that:

- 12.1.1 The Goods, including all packaging and packing thereof, conform to the specifications of the Contract, are fit for the purposes for which such Goods are ordinarily used and for the purposes expressly made known in writing by FIRST PARTY to the SECOND PARTY and shall be of even quality, free from faults and defects in design, material, manufacture and workmanship under normal use in the conditions prevailing in the country of final destination;
- 12.1.2 If the SECOND PARTY is not the original manufacturer of the Goods, the SECOND PARTY shall provide FIRST PARTY with the benefit of all manufacturers' warranties in addition to any other warranties required to be provided hereunder;
- 12.1.3 The Goods are of the quality, quantity and description required by the Contract;
- 12.1.4 The Goods are free from any right of claim by any third-party and unencumbered by any title or other rights, including any liens or security interests and claims of infringement of any intellectual property rights, including, but not limited to, patents, copyright and trade secrets.
- 12.1.5 Unless otherwise indicated in the technical specifications, this warranty shall remain valid for 5(five) years after the Goods have been commissioned at the final destination indicated in the Contract subject to issue of certificate regarding date of commissioning issued by the consignee.
- 12.1.6 During the warranty, free comprehensive annual maintenance and repairs services including testing and calibration, labour and spares shall be provided by the SECOND PARTY during the period of warranty.
- 12.1.7 If the SECOND PARTY, having been notified, fails to remedy the defect(s) within the stipulated period, the FIRST PARTY may proceed to take such remedial action as may be necessary, at the SECOND PARTY's risk and expense and without prejudice to any other rights which the FIRST PARTY may have against the SECOND PARTY under the Contract.
- 12.1.8 The SECOND PARTY shall, at all times, indemnify and keep indemnified the FIRST PARTY, free of cost, against all claims which may arise in respect of Goods and services to be provided by the SECOND PARTY under the contract for infringement of any intellectual property rights or any other right protected by patent, registration of designs or trademarks. In the event of any such claim in respect of alleged breach of patent, registered designs, trademarks etc. being made against the FIRST PARTY, the FIRST PARTY shall notify the SECOND PARTY of the same and the SECOND PARTY shall, at their own expenses take care of the same for settlement without any liability to the FIRST PARTY.

- 12.1.9 The SECOND PARTY shall be responsible and shall indemnify on account of any emission or radiation that may cause harm to the user of the supplied product.
- 12.1.10 The SECOND PARTY shall visit each installation site as recommended in the manufacturer's technical/ service operational manual, but **at least once in three months** during the warranty and Comprehensive Maintenance Contract (CMC) period for preventive maintenance.
- 12.1.11 The Goods shall be new and unused. The SECOND PARTY shall remain responsive to the needs of FIRST PARTY for any services that may be required in connection with any of the SECOND PARTY's warranties under the Contract. All warranties will remain fully valid following any delivery of the Goods and for a period of not less than five (5) years following acceptance of the Goods by the Consignee in accordance with the Contract. During any period in which the SECOND PARTY's warranties are effective, upon notice by FIRST PARTY that the Goods do not conform to the requirements of the Contract, the SECOND PARTY shall replace the defective Goods with Goods of the same or better quality or fully reimburse FIRST PARTY for the purchase price paid for the defective Goods; and if having been notified by any means, the SECOND PARTY fails to replace the defective Goods within 30 days, FIRST PARTY may proceed to take such remedial action as may be necessary, at the SECOND PARTY's risk and expense and without prejudice to any other rights which FIRST PARTY may have against the SECOND PARTY under the Contract. The reasonableness of the period of time granted for remedy is subject to the discretion of FIRST PARTY according to the circumstances of the Contract.
- 12.1.12 If the repair of the Goods or the components of the Goods requires the SECOND PARTY to take the Goods or the components of the Goods to any factory for repair, if the price of such Goods or components of such Goods is more than Rupees One Lakh, a bank guarantee of a suitable value may be required to be submitted by the SECOND PARTY to the FIRST PARTY securing such Goods or the components of the Goods, prior to taking such Goods or the components of the Goods for repair.

13.

INDEMNIFICATION:

The SECOND PARTY shall indemnify, defend and hold the FIRST PARTY, the DoHFW and the Government agencies harmless against any or all proceedings, actions and third party claims arising out of a breach by the SECOND PARTY of any of its obligations under this agreement.

This indemnity shall be limited in respect of making harmless to the FIRST PARTY, the DoHFW and the Government agencies.

The SECOND PARTY shall indemnify the FIRST PARTY against all actions, suits, claims and demands brought or made against it, in respect of anything done or committed to be done by the SECOND PARTY in execution of or in connection with the work of this contract and against any loss or damage to the FIRST PARTY in consequence to any action or suit, or a legal proceeding, being brought against the SECOND PARTY for anything done or committed to be done in the execution of this contract. The SECOND PARTY will abide by the job safety measures prevalent in India and will free the FIRST PARTY from all demands or responsibilities arising from accidents or loss of life, on account of the SECOND PARTY's negligence and responsibility. The SECOND PARTY will pay all indemnities arising from such incidents without any extra cost to FIRST PARTY and will not hold the FIRST PARTY responsible or

obligated. The FIRST PARTY may at its discretion and entirely at the cost of the SECOND PARTY defend such suit, either jointly with the SECOND PARTY or severely in case the latter chooses not to defend the case and /or proceeding.

14.

PENALTY FOR DELAY IN DELIVERY, INSTALLATION AND COMMISSIONING:

Except under the circumstances of force majeure as described, if the SECOND PARTY fails to deliver, install or commission any or all of the Goods as per the time period prescribed under the Contract, FIRST PARTY may, without prejudice to any or all its other remedies under the Contract, impose Penalty, as per **Table - 8 Penalty for delayed delivery, installation and commissioning at Section I: Instructions to Bidders.**

15.

BLACKLISTING:

Any manufacturer/ its subsidiary which has been black-listed by any Government Department/Agency in India during the last five years, would not be eligible to participate in the tender.

16.

PENALTY FOR DEFAULT:

In case of failure by the SECOND PARTY to perform according to this Contact to keep Service Up time in Warranty & CMC of all of the Goods, the FIRST PARTY may exercise one or several of the penal provisions **as per table - 7, Service Up time in Warranty & CMC at Section I: Instructions to Bidders under sub-section A. Important information at a glance.**

16.1

In addition to what has been stated above, the following sequence of penalties shall be imposed against offences mentioned against each:

Nature of offence	Penalty to be imposed
Any wrong or misleading information provided by the SECOND PARTY during submission of bids	a. Forfeiture of EMD b. May lead to blacklisting by FIRST PARTY for at least 5 years
Non execution of agreement within 14 days of issue of AOC	a. Forfeiture of EMD b. Blacklisting for 5 years by FIRST PARTY c. Blacklisting to be circulated to all procurement agencies throughout India
Supplying refurbished goods instead of new/ supplying Goods from a different Country of Origin from what has been stated in the Technical Bid	a. Termination of Contract. b. Blacklisting by FIRST PARTY for 5 years. c. Blacklisting to be circulated to all procurement agencies throughout India. d. Forfeiture of the Performance Security. e. Lodging FIR.
Breach of Agreement	a. Termination of Contract. b. Blacklisting by FIRST PARTY for 5 years. c. Blacklisting to be circulated to all procurement agencies throughout India. d. Forfeiture of the Performance Security. e. Lodging FIR.

17.

SITE INSPECTION AND PREPARATION

17.1

SECOND PARTY shall inspect the Site at their own cost and expense before bidding. No representations by the SECOND PARTY regarding any major variations concerning the planning or layout of the Site shall be entertained by the FIRST PARTY after the pre-bid meeting. The decision as to what constitutes a major variation or a minor variation shall be at the sole

discretion of the FIRST PARTY which shall be valid and binding upon the SECOND PARTY.

- 17.2 Prior to carrying out site preparation, the SECOND PARTY shall seek approval of the FIRST PARTY with regards to the exact Works to be carried out by the FIRST PARTY for site preparation including all third party items to be used/ supplied and specifications for carrying out such Works like specifications of furniture being used, makes/ brands of tiles being used etc. Only upon receipt of specific approval from the FIRST PARTY with regards to the timing of Works, and specifications of individual items, the SECOND PARTY shall take steps for site preparation.

18. TERMINATION FOR CONVENIENCE:

- 18.1 The FIRST PARTY may, upon notice to the SECOND PARTY, terminate this Contract, in whole or in part, at any time for its convenience. The notice of termination shall state that termination is for the FIRST PARTY's convenience, the extent to which performance of the SECOND PARTY under the Contract is terminated and the date upon which such termination becomes effective.
- 18.2 In the event of Termination for Convenience, no payment shall be due from the FIRST PARTY to the SECOND PARTY except for Goods satisfactorily delivered and for the cost of such necessary work as the FIRST PARTY may request the SECOND PARTY to complete.

19. TERMINATION FOR DEFAULT:

- 19.1 The FIRST PARTY, without prejudice to any other remedy for breach of Contract, by written notice of default sent to the SECOND PARTY, may terminate the Contract, in whole or in part if:
- 19.1.1 The SECOND PARTY fails to deliver any or all of the Goods within the period specified in the Contract;
- 19.1.2 The SECOND PARTY fails to perform any other obligation under the Contract;
- 19.1.3 The SECOND PARTY, in the judgment of the FIRST PARTY, has engaged in fraud and corruption, in competing for or in executing the present Contract;
- 19.1.4 The SECOND PARTY attempts to offer any direct or indirect benefit arising from or related to the performance of the Contract or the award thereof to any representative, official, employee or other agent of the FIRST PARTY or any organization of Health & Family Welfare Department, Government of West Bengal;
- 19.1.5 The SECOND PARTY is adjudged bankrupt, or is liquidated, or becomes insolvent, applies for moratorium or stay on any payment or repayment obligations, or applies to be declared insolvent;
- 19.1.6 The FIRST PARTY reasonably determines that the SECOND PARTY has become subject to a materially adverse change in its financial condition that threatens to endanger or otherwise substantially affect the ability of the SECOND PARTY to perform any of its obligations under the Contract.
- 19.1.7 Non-compliance of all statutory norms and applicable laws relating to the said contract will entitle the FIRST PARTY to terminate the contract.
- 19.2 Upon occurrence of one or more of the events specified above, the FIRST PARTY shall follow the procedure of issuing notice or show cause specifying the time frame and on being not satisfied with the explanation, be entitled to terminate the Contract immediately. The decision of the FIRST PARTY shall be final and binding on the SECOND PARTY.

20.

CONSEQUENCES OF TERMINATION:

- 20.1. In the event of any termination of the Contract, upon receipt of notice of termination by the FIRST PARTY, the SECOND PARTY shall, except as may be directed by the FIRST PARTY in the notice of termination or otherwise in writing:
 - 20.1.1 Take immediate steps to bring to a close in a prompt and orderly manner the performance of any obligations under the Contract, including, but not limited to, fulfilling any outstanding orders for Goods under the Contract and in doing so, reduce expenses to a minimum;
 - 20.1.2 Place no further orders for Goods or other materials, except as the FIRST PARTY and the SECOND PARTY agree in writing are necessary to fulfil any outstanding order or to complete any portion of the Contract that has not been terminated;
 - 20.1.3 Transfer title and deliver to the FIRST PARTY any Goods remaining to be delivered as stipulated in the notice of termination; and
 - 20.1.4 Take any other action that may be necessary or that the FIRST PARTY may direct in writing, for the protection and preservation of any property, whether tangible or intangible, related to the Contract that is in the possession of the SECOND PARTY and in which the FIRST PARTY has or may be reasonably expected to acquire an interest.
- 20.2. In the event of any termination of the Contract, the FIRST PARTY shall not be liable to pay the SECOND PARTY except for those Goods delivered to the FIRST PARTY in accordance with the requirements of the Contract, but only if such Goods were ordered, requested or otherwise provided prior to the SECOND PARTY's receipt of notice of termination from the FIRST PARTY.

21.

CONFIDENTIALITY:

- 21.1 The FIRST PARTY and the SECOND PARTY, their respective agents, employees, sub-contractors and servants shall keep confidential and shall not, without the written consent of the other party hereto, divulge to any third party any documents, data, or other information furnished directly or indirectly by the other party hereto, in connection with the Contract, whether such information has been furnished prior to, during or following competition or termination of the contract. Notwithstanding the above, the SECOND PARTY may furnish to its sub-contractor such documents, data and other information it received from the FIRST PARTY to the extent required for the sub-contractor to perform its work under the contract, in which event the SECOND PARTY shall obtain from such sub-contractor an undertaking of confidentiality similar to that imposed on the SECOND PARTY.
- 21.2 The FIRST PARTY shall not use such documents, data and other information received from the SECOND PARTY for any purpose unrelated to the contract. Similarly, the SECOND PARTY shall not use such documents, data and other information received from the FIRST PARTY for any purpose other than the performance of the contract.
- 21.3 The obligation of a party under the two foregoing paragraphs shall not apply to information that:
 - 21.3.1 Now or hereafter enters the public domains through no fault of that party;
 - 21.3.2 Can be proven to have been possessed by that party at time of disclosure and which was not previously obtained, directly, from the other party, or
 - 21.3.3 Otherwise lawfully becomes available to that party from a third party that has no obligation of confidentiality.

22.

FORCE MAJEURE:

- 22.1 Force majeure as used herein means any unforeseeable and irresistible act of nature, any act of war (whether declared or not), invasion, revolution insurrection, flood earthquake or any other acts of a similar nature or force, provided that such acts arise from causes beyond the control and without the fault or negligence of the SECOND PARTY. The SECOND PARTY acknowledges and agrees that, with respect to any obligation under the contract that the SECOND PARTY must perform any delays or failure to perform such obligation arising from or relating to harsh conditions within such areas shall not, in and of itself, constitute Force majeure under the contract. Further the SECOND PARTY acknowledges and agrees that scarcity of raw materials, power cut, workers unrest (even if wide spread) will not constitute force majeure under the contract.
- 22.2 In the event of and as soon as possible after the occurrence of any cause constituting Force majeure, the SECOND PARTY shall give notice and full particulars in writing to the FIRST PARTY, of such occurrence or cause if the SECOND PARTY is thereby rendered unable, wholly or in part to perform its obligations and meet its responsibilities under the contract. The SECOND PARTY shall also notify the FIRST PARTY of any other changes in condition or the occurrence of any event which interferes or threatens to interfere with its performance of the contract. Not more than fifteen (15) days following the provision of such notice Force majeure or other changes in conditions or occurrence, the SECOND PARTY shall also submit a statement to the FIRST PARTY of estimated expenditure that will likely be incurred for the duration of the change in condition or the event. On receipt of notice or notices required hereunder, the FIRST PARTY shall take such action as it considers, in its sole discretion, to be appropriate or necessary in the circumstances, including the granting to the SECOND PARTY of a reasonable extension of time in which to perform any obligations under the contract.
- 22.3 If an event of force majeure exists and the SECOND PARTY fails, within seven (7) days of such event to give notice in writing to the FIRST PARTY and if the SECOND PARTY is rendered permanently unable, wholly, or in part, by reason of force majeure to perform its obligations and meet its responsibilities under the Contract, the FIRST PARTY shall have the right to suspend or terminate the contract on the same terms and conditions except that the period of notice shall be seven (7) days. In any case, the FIRST PARTY shall be entitled to consider the SECOND PARTY permanently unable to perform its obligations under the contract in the case of the SECOND PARTY's suffering any period of suspension in excess of ninety (90) days.
- 22.4 In the event of force majeure the benefit accrued to the FIRST PARTY in terms of title and any accrued right thereof including all inchoate rights shall remain with the FIRST PARTY and the SECOND PARTY shall not have any claim with the same.

23. SOURCE OF INSTRUCTIONS:

The SECOND PARTY shall neither seek nor accept instructions from any authority external to the FIRST PARTY in connection with the performance of its obligations under the Contract. Should any authority external to the FIRST PARTY seek to impose any instructions on the SECOND PARTY regarding the

SECOND PARTY's performance under the Contract, the SECOND PARTY shall promptly notify and shall provide all reasonable assistance required by FIRST PARTY. The SECOND PARTY shall not take any action in respect of its performance of the Contract or otherwise related to its obligations under the contract that may adversely affect the interests of the FIRST PARTY and the SECOND PARTY shall perform its obligations under the Contract with the fullest regard to the interests of the FIRST PARTY.

24.

BENEFITS, CORRUPTION AND FRAUD:

- 24.1 The SECOND PARTY warrants that it has not and shall not offer any direct or indirect benefit arising from or related to the performance of the contract or the award thereof to any representative, officials, employee, or other agent of the FIRST PARTY or any official of the Health & Family Welfare Department, Government of West Bengal or any organization engaged in the procurement process whether during the period the contract is in process or before or after the contract is over. The SECOND PARTY acknowledges and agrees that any breach of this provision is a breach of an essential term of the contract as specified.
- 24.2 Corruption means the offering, giving, receiving or soliciting of, directly or indirectly, anything of value to influence the action of the FIRST PARTY, representative, official, employee or agent of FIRST PARTY or any official of the Health & Family Welfare Department, Government of West Bengal or any organization engaged in the selection process or in the execution of the contract.
- 24.3 Fraud means a misrepresentation or omission of facts in order to influence the selection process or the execution of the contract.

25.

USE OF NAME OR OFFICIAL SEAL OF FIRST PARTY:

The SECOND PARTY shall not advertise or otherwise make public for purpose of commercial advantage or goodwill that it has a contractual relationship with the FIRST PARTY, nor shall the SECOND PARTY, in any manner whatsoever use the name or official seal of the FIRST PARTY, or any abbreviation of the name of the FIRST PARTY or Health & Family Welfare Department, Government of West Bengal in connection with its business or otherwise without the written permission of the FIRST PARTY.

26.

ASSIGNMENT:

- 26.1 The SECOND PARTY shall not, except after obtaining the prior written approval of the FIRST PARTY, assign, transfer, pledge, or make any other disposition of this contract or any part hereof or of any of the SECOND PARTY's right or obligations hereunder, except with the prior written authorization of the FIRST PARTY. The SECOND PARTY may assign or otherwise transfer the contract to the surviving entity resulting from a reorganization of the Party's operations.
- 26.2 Prior to the written approval of the FIRST PARTY, the SECOND PARTY shall promptly notify the FIRST PARTY of such assignment at the earliest opportunity subject to the assignee or transferee agrees in writing to be bound by all of the terms and conditions of the contract and such writing is promptly provided to the FIRST PARTY following the assignment or transfer and the FIRST PARTY finds that the SECOND PARTY has the financial and technical capacity as laid down in the tender document to carry out the assignment provided that:

- 26.2.1 Such reorganization is not the result of any bankruptcy, receivership or other similar proceedings; and
- 26.2.2 Such reorganization arises from sale, merger, or acquisition of all or substantially all of the SECOND PARTY's assets or ownership interest; and
- 26.2.3 Such reorganization is not taking place with any of the SECOND PARTY who had participated in the Tender or who will be deemed to have conflict of interest as defined in the tender documents process for the same tender.
- 26.3 However, should the SECOND PARTY become insolvent or should control of the SECOND PARTY change by virtue of insolvency, the FIRST PARTY may, without prejudice to any other right or remedy, terminate this contract.

27.

AMICABLE SETTLEMENT:

When a dispute arises under this agreement, the parties shall make all reasonable efforts to resolve through good faith negotiation, failing which they will attempt at dispute resolution with the intervention of the Principal Secretary, the DoHFW, GoWB

28.

ARBITRATION:

- 28.1 Except for a dispute in connection with termination in which respect the decision of the FIRST PARTY shall be final, any dispute between the parties arising out of or relating to this agreement which cannot be resolved through good faith or negotiation shall be settled by arbitration, in terms of the provisions of the Arbitration and Conciliation Act, 1996(no.26 of 1996). The arbitration shall be held in Kolkata only and shall be conducted by a sole arbitrator to be mutually agreed upon by the parties. The award of the arbitrator shall be binding on both the parties.
- 28.2 Pending the submission of and / or decision on a dispute, difference or claim, or until the arbitral award is published, the party shall continue to perform all of their obligations under this agreement without prejudice to a final adjustment in accordance with such award.

29.

GOVERNING LAW:

The governing law in case of any dispute between the parties, shall be the laws of India.

30.

QUALITY OF EQUIPMENT:

The equipment should have compliance with CE (European Conformity)/ US FDA standards & safety. In case the name of the offered model is not under the scope of the certification, the SECOND PARTY will submit a declaration in the format given in FORM 11: Declaration of Quality Certification of Equipment.

Section III. Special Conditions of Contract

The following Special Conditions of Contract (hereinafter referred to as SCC) shall supplement the General Conditions of Contract (hereinafter referred to as GCC). Whenever there is a conflict, the provisions herein shall prevail over those in the GCC. The corresponding clause number of the GCC is indicated in the first column.

SCC -1	GCC - 6	<p>Delivery of Goods shall be made by the SECOND PARTY in accordance with the Schedule of Requirement</p> <p>However, the FIRST PARTY may swap facilities between phases and/or substitute any facility by a new one if deemed necessary.</p> <p>The details of shipping and/or other documents, as applicable under I or II, to be furnished by the SECOND PARTY are:</p> <p>I. For Goods supplied from abroad :</p> <p>(A) Upon shipment, within 24 hours the SECOND PARTY shall notify the Purchaser in writing the full details of the shipment including Contract number, description of the Goods, quantity, date and port of shipment, mode of shipment, estimated dates of arrival at the port of entry and the place of destination. In the event of Goods sent by airfreight, the SECOND PARTY shall notify the Purchaser within a minimum of forty-eight (48) hours ahead of dispatch, the name of the carrier, the flight number, the expected date and time of arrival, the Master airway-bill and the House airway- bill numbers. The SECOND PARTY shall first fax the above details and then send to the Purchaser, by courier, two sets of documents comprising one original and one copy of the following:</p> <p>(i) Commercial invoice, indicating the West Bengal Medical Services Corporation Limited as the Purchaser on behalf of the DoHFW; the Contract number, Goods description, quantity, unit price and total amount. Invoices must be signed in original and stamped, or sealed with the SECOND PARTY's stamp/seal;</p> <p>(ii) Original and four copies of negotiable, clean, on-board through bill of lading marked "freight prepaid" and indicating the West Bengal Medical Services Corporation Limited as the Purchaser on behalf of the DoHFW and notify Consignees as stated in the Contract, with delivery through to final destination as per the Schedule of Requirements and non-negotiable bill of lading, or railway consignment note, road consignment note, truck or air waybill, or multimodal transport document, marked "freight prepaid" and showing delivery through to final destination as per the Schedule of Requirements;</p> <p>(iii) Packing list identifying contents of each package;</p> <p>(iv) Manufacturer's Warranty Certificate and warranty declaration covering all items supplied;</p> <p>(v) Manufacturer's Certificate of Origin covering all items supplied;</p> <p>(vi) Original copy of the certificate of weight issued by the port authority/licensed authority and six copies;</p> <p>(vii) Manufacturer will submit a pre-shipment advisory note to Purchaser & Consignee at least 15 days prior to the scheduled delivery of the equipment at the doorstep of the Consignee;</p>
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		<p>The above documents shall be received by the 'Purchaser' at least 15 days before arrival of Goods at the port or place of arrival and, if not received, the SECOND PARTY will be responsible for any consequent expenses.</p> <p>II. For Goods from within India</p> <p>(A) Upon the delivery of the Goods, the SECOND PARTY shall notify the Purchaser in writing and deliver to the Purchaser two sets of documents comprising one original and one copy of the following:</p> <p>(i) Four copies of commercial invoice, indicating the West Bengal Medical Services Corporation Limited as the Purchaser on behalf of the DoHFW, the Contract number, loan number, Goods' description, quantity, unit price and total amount. Invoices must be signed in original and stamped or sealed with the SECOND PARTY's stamp/seal;</p> <p>(ii) Railway consignment note, road consignment note, truck or airway bill, or multimodal transport document showing the Purchaser as the West Bengal Medical Services Corporation Limited on behalf of the West Bengal Medical Services Corporation Limited and delivery through to final destination as stated in the Contract;</p> <p>(iii) Acknowledgement of receipt of Goods by the Consignees, i.e. Consignment Receipt Certificate (CRC);</p> <p>(iv) Two copies of packing list identifying contents of each package;</p> <p>(v) Manufacturer's or SECOND PARTY's Warranty certificate covering all items supplied;</p> <p>(vi) Manufacturer will submit a pre-shipment advisory note to Purchaser & Consignee at least 15 days prior to the scheduled delivery of the equipment at the door step of the consignee.</p> <p>(vii) Inspection Certificate issued by the user Department, if applicable.</p>
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SCC-2		<p>The Comprehensive Maintenance Contract(Including Spare parts)</p> <p>(i) The Consignees/ Government of West Bengal / Operation & Maintenance (O&M) Partner of the Medical College Authority, may, at their own and sole discretion enter into a Comprehensive Maintenance Contract (CMC) with the SECOND PARTY, three months prior to the completion of Warranty Period, at the price quoted by the SECOND PARTY for carrying out CMC, for a period as specified in the tender after the expiry of the Warranty Period provided that this service shall not relieve the SECOND PARTY of any warranty obligations under this Contract. Wherever the technical specifications lay down a different period of CMC, this latter period shall prevail. The CMC will commence from the date of expiry of Warranty Period. The CMC includes preventive maintenance including testing & calibration as per technical/service/operational manual, labour and spares.</p> <p>(ii) The CMC includes repairs of entire system, preventive maintenance, testing & calibration, labour and spares and all software updates and upgrades.</p> <p>(iii) The CMC and Repair charges (after Warranty Period) shall be paid quarterly in four equal instalments.</p> <p>(iv) Details of CMC requirements or otherwise, as spelt out in the technical specifications, will prevail over those given in this section.</p>
SCC - 3		<p>The Selected Bidder shall be required to undertake supplies of quantity as per schedule of requirement in phases spread over a period of 24 (twenty four) months from the date of opening of the Financial Bid.</p>

Section IV. Schedule of Requirements

Contents

1. Facility wise scope of work
2. Technical Specifications

3. Standard requirements
4. List of related services
5. Inspections and Tests

1. Facility wise scope of work in brief

Sl. No.	Name of the Facility	Description	Qty	Other requirements and works
1	Murshidabad MCH	High Energy LINAC	1	Interior work as per drawing & specifications
		CT Simulator (4D)	1	
		HDR Brachytherapy	1	
2	COM & Sagore Dutta	High Energy LINAC	1	Interior work as per drawing & specifications
		CT Simulator (4D)	1	
		HDR Brachytherapy	1	
3	Burdwan MCH	High Energy LINAC	1	Interior work as per drawing & specifications

		CT Simulator (4D)	1	
4	IPGME&R and SSKM Hospital	High Energy LINAC	2	The bunker will be constructed by Medical College Authority and handed over to the Selected Bidder for the Interior works to be taken up & Interior works as per drawing & specifications.

1. TECHNICAL SPECIFICATION

High Energy Linear Accelerator (LINAC)

The Medical Linear Accelerator with Multi-leaf collimator capable of producing following energy photons:

- & 15 MV (Flattened)
- &10 MV (FFF)

Electron beams of at least 5 energies between 4-18 MeV or above. Latest model & technology should be offered. Year of Type approval of AERB should be mentioned. More preference will be given to higher electron energy & a greater number of photon energy in between 6 & 15 MV.

The Medical Linear Accelerator should be capable of delivering

- Three dimensional conformal therapy.
- Intensity Modulated Radiotherapy.
- Image Guided Radiotherapy with facilities for management of respiratory motion.
- Real-time patient position management.
- Stereotactic body Radiation Therapy (SBRT)
- Volumetric Intensity Modulated Arc therapy.
- Kilo voltage X-ray Cone Beam CT (CBCT).
- Electronic Portal Imaging Device (EPID).
- Flattening Filter Free (FFF) mode with high dose rate.

- Volumetric Modulated Arc Therapy Delivery System (VMAT)
- Electron beam energies
- All items (mandatory & optional) quoted should be clinically operational.

The model should be of latest technology and must comply with Atomic Energy Regulatory Board (AERB) Guidelines and must be AERB TYPE APPROVED. The machine should be a **FDA, CE, IEC, AERB** approved product.

A. MACHINE PARAMETERS:

1. **RF Power Source:** High efficiency Klystron / Magnetron (specify) with **5 years full replacement warranty** on full RF chain.
2. **The Accelerator Wave Guide:** A compact standing / travelling type wave guide should be provided for optimum use of RF power source. The wave guide should have **at least 5 years full replacement warranty**.
3. **Electron Gun:** Specify whether the electron gun is sealed or unsealed. The electron gun shall be demountable or filament change option from the accelerator to minimize cost and down time in case of gun problem. The Electron gun shall have **5 years full replacement warranty**.
4. **Bending Magnet System:** A bending magnet of 270 degree or any other degree more than 90 deg based technology equally or better with electron energy spread within $\pm 3\%$ must be provided. 90 deg bending magnet systems will not be accepted. Precautions shall be made in the selection of materials in the bending magnet system to reduce the neutron production above photonuclear thresholds.

B. PHOTON BEAM CHARACTERISTICS:

1. **Photon Beam Energy:** The Linear accelerator shall be capable of producing three clinically useful photon beams with energies 6 MV, 10 MV and 15 MV. The beam characteristics for a 10 cm x10 cm field at 100 cm TSD should be as follows.

Nominal energy	Dmax (cm)	% DD at 10 cm
6 MV	1.5 \pm 0.2	67.1 \pm 2.0 %
10 MV	2.25 \pm 0.2	73.0 \pm 2.0 %
15 MV	3.0 \pm 0.2	76.5 \pm 2.0 %

2. **Dose Rate and Beam Stability:** The minimum dose rate for 10 cm x 10 cm field size at the depth of maximum build up at a TSD of 100 cm should not be less than 500 MU/min for all the three flattened photon beams, should not be less than 1000 MU/min for 6 MV FFF beam, not less than 2000 MU/min for 10 MV FFF beam. Specify whether the dose rate variability is in steps or continuous. Specify whether the dose rate variability is in steps or continuous. **Higher dose rate will be highly preferable.**

Beam stability should be achieved within minimum time to ensure dynamic applications. Specify the beam stability time in milliseconds.

3. **Field Size:** The field size is defined as the distance along the radial and transverse axes between the points of 50% density on an x-ray film taken at 100 cm TSD with minimum build-up. The digital display, light field size and mechanical display should be accurate to within ± 2 mm for all field sizes and comply AERB requirements.

The accelerator shall provide a continuously variable rectangular, unclipped field size from 1 x 1 cm² to 35 x 35 cm² at 100 cm SSD. The maximum clipped field size should be equal or exceed 40x40 cm² at 100

cm SSD. Clipped corners are unacceptable for field smaller than 35x35 cm²

Radiation field penumbra:

The width between the 20% and the 80% isodose lines measured for 10x10 cm at depth of 10 cm at 100 cm SSD should be less than 10 mm for all the given photon energies and comply AERB requirements. Lower penumbra will be preferred.

4. **Beam Flatness:** Field Flatness Specification : Variation of x-ray intensity relative to the central axis shall be $\pm 3\%$ at 100 cm SSD and 10 cm depth over the central 80% of the field for the longitudinal, transverse and diagonal axes of all field sizes from 10x10 cm to 40x40 cm. Stability of the flatness with gantry rotation at 0 deg. 90 deg. 180 deg. and 270 deg. at 10 cm depth on x, y and diagonal axis for all field sizes from 10x10 cm to 40x40 cm should not be more than $\pm 3\%$. The flatness criteria applied to beam profile at D max should show peripheral horns not exceeding 105% of the central axis dose. The parameter should comply with AERB limits.
5. **Beam Symmetry:** The maximum percent difference of average doses shall not exceed $\pm 2\%$ for the longitudinal and transverse halves of the field at 100 cm TSD and 10 cm depth, at gantry angles 0, 90, 180, 270 degrees. Field sizes shall be specified at 10 cm x 10 cm and 40 cm x 40 cm. Average dose is defined as the arithmetic average of minimum and maximum doses within the central 80% of the field for both axes. The parameter should comply with AERB limit.
6. **Quality Index:**

The ratio of ionizations measured at 20 cm and 10 cm depth for a field size 10x10 cm at the detector level and with constant detector source distance = 100 cm should be as given below:-

Sl. No.	Photon beam energy (MU)	Quality Index (QI)
1	6 MV	Specify
2	10 MV	Specify
3	15 MV	Specify

7. **Photon Beam Energy Stability:**

The quality index of a photon beam should not vary with time by more than $\pm 1\%$. The bend magnet system shall be provided with energy defining apertures such that the nominal energy of the electron beam existing from the bend magnet shall be within $\pm 3\%$ of the nominal energy selected at control console for both photons and electrons.

8. **Radiation Leakage: Minimum and maximum dose rate**

X-ray leakage: The air kerma rate due to leakage radiation (excluding neutron) at any point outside the maximum useful beam, but inside a plane circular area of radius 2 m centered around and perpendicular to central axis at normal treatment distance should not exceed 0.2% of the air kerma rate at the same distance. Parameter should comply with AERB limits.

The kerma rate of leakage radiation (excluding neutrons) at 1 m from the path of the electrons between their origin and the target or electron window shall not exceed 0.5% of air kerma rate on the central axis of the beam at normal treatment distance. Parameter should comply with AERB limits.

Lower leakage will be preferred.

Collimator transmission: The movable collimators shall not permit transmission of radiation exceeding 0.5 % of the central axis dose at Dmax measured in air for both photon energies.

For radiation fields of any size, the average air Kerma rate due to transmission through the beam limiting jaws, including MLC jaws, shall not exceed 0.75% of the maximum Kerma rate on the central axis at NTD in a 10 cm x 10 cm field. Lower transmission will be preferred.

Neutron Leakage: The neutron dose rate should not exceed 0.1% of photon dose rate at isocentre within a radius of 1m.

Ozone Production: The ozone production rate from various radiation modes (especially high output photon and electrons) and associated electronics shall be stated and additional site ventilation requirements (if any) shall be stated.

In addition to meeting above specifications for radiation leakage, the LINAC should also meet all the mandatory safety and radiation leakage regulations as specified by the AERB, for a medical linear accelerator. In case of any type of radiation leakage (e.g. Photon, Neutrons etc) outside of LINAC room door, necessary arrangements shall be done by the vendor to minimize the contamination (radiation at door) to a safe limit as specified by AERB.

9. **Photon ARC Therapy:** Bi-directional (CW, CCW) arc therapy should be included with automatic calculation of dose per degree based on dose rate selected and the Arc angle set. Specify whether the dose rate variation mode is continuous or not. **Higher dose rate and higher gantry speed will be preferred.**

C. ELECTRON BEAM CHARACTERISTICS:

1. **Electron Beam Energy:** Minimum 5 electron energies between 4– 18 MeV to be specified. Energy shall be specified as the most probable energy (E_p) of the electron energy spectrum at 100 cm from the accelerator exit window. **Higher dose rate will be preferred.**
2. **Dose rate:** The maximum dose rate at isocentre for each electron energy should be 600 MU/min or more. Specify whether the dose rate variability is in steps or continuous. **Higher dose rate will be highly preferable.**
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. Specify the number of applicators to be supplied with minimum size of – 6 x 6 cm² or less, maximum – 20 x 20 cm² or more. There shall be an arc applicator provided for electron arc treatment. A method to obtain irregular field shapes shall be provided. It shall be possible to visualize both the field defining light and the optical distance indicator with an electron applicator in place. Higher field size will be preferred.
4. **Beam Flatness: Maximum percent** variation of the electron intensity at 100 cm SSD at Dmax shall not exceed $\pm 5\%$ (within the over central 80% of the longitudinal and transverse axes relative to central axis) for all field sizes for all electron energies. Lower limits are preferable. The parameter should comply with AERB limits.
5. **Beam Symmetry:** The maximum percent variation in the average electron intensity to the longitudinal and transverse halves of the electron field at Dmax for a 10x10 cm and 25x25 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. The parameter should comply with AERB.

6. **X-ray contamination:** The X-ray contamination of the electron beam shall be less than 5% of the maximum dose for all available energy.
7. **Electron Arc Therapy:** Electron Arc therapy with necessary applicators shall be provided, if available. The clockwise and anticlockwise gantry rotation must be possible for arc therapy. The MU/Deg must automatically be computed for a defined arc and calculated total MUs. – must be provided, if available with the system.

D. MECHANICAL FEATURE SPECIFICATIONS:

1. **Treatment mode:** Normal: TSD /TAD
Rotation: CW/CCW
Arc: CW / CCW
Dose rate: MU/min & MU/deg
2. **Isocentre:** Target to Axis Distance should be 100 ± 0.2 cm. The isocenter should lie within a sphere of diameter ≤ 2 mm.
3. **Gantry:**
 - **Rotation:** The accelerator gantry shall be capable of rotation equal to or greater than 360 degrees.
 - **Readout:** Digital & mechanical readout is required indicating gantry angle position, should be provided in the treatment room and at the control console. Readout accuracy shall be ± 0.5 deg.
 - **Controls:** Can be operated both from hand pendant and control console. Two hand pendants should be provided.
 - **Optical Distance Indicator (ODI):** ODI should read between 80 -130 cm with a tolerance of ± 1.5 mm.
 - **Optical field light system** for both photons and electrons must be provided. The coincidence between the optical field and radiation field shall lie within 2 mm.
4. **Collimator:** Rotation $\pm 165^\circ$ (with a variation of the mechanical and radiation isocenter during rotation of less than ± 1.0 mm throughout) at mid position, however full $\pm 180^\circ$ rotation preferable. Control – Hand pendent and control – console, Readout accuracy - $\pm 0.5^\circ$, Collimator Rotation Isocentre 2 mm diameter Sphere.
5. **Asymmetric Collimator:** Asymmetric collimation for both set of jaws shall be provided. Specify the travel ranges and over travel ranges of the jaws.
6. **Dosimeters:**

Photon Ionization Chamber

A transmission ionization chamber shall be used for the photon mode. The chamber shall incorporate completely separate collection electrodes consisting of two plates for dose monitoring and a quadrant plate for field symmetry.

Electron Ionization Chamber

A transmission ionization chamber shall be used for the electron mode. The chamber shall incorporate two independent channels capable of monitoring both dose and symmetry. Symmetry monitoring shall consist of a quadrant system.

Dual Channels

The dosimetry system shall utilize two completely independent channels for monitoring accumulated dose (i.e., a primary and a redundant channel). A dose rate channel and a channel for monitoring

differential field symmetry shall be provided. The redundant channel will terminate an exposure of no more than a specified MU higher than the machine setting. The system shall also provide a backup timer with a minimum significant time setting of 0.01 minute. The backup time shall be automatically calculated and set at a user specified value above the expected duration of the treatment.

Specify the dose rate variation at the isocenter for each photon/electron energy. The time averaged dose rate should be constant (flatness) with minimum variation. Specify the Time Averaged Dose Flatness.

7. Monitor Chamber

The dose monitoring chambers shall be sealed/ unsealed and shall operate independent of ambient temperature and pressure. The dosimetry electronics shall incorporate circuitry to permit interrogation of the accumulated dose, dose rate, and symmetry channels prior to each patient treatment. This interrogate function shall check cable continuity, electrical calibration and interlock trip levels before each treatment. All dosimetry and patient safety- related interlocks must be sensed and controlled by hardware. Primary software sensing and control of safety-related interlocks is not acceptable.

The dosimeters shall be reproducible to within + 1% or 1 monitor unit, whichever is greater, at any fixed gantry angle from 0 to 360 degrees.

The linearity of the dosimeters shall be +1 % or 1 monitor unit, whichever is greater, for accumulated doses between 50 and 999 monitor units. Specify the linearity tolerance for less than 10 MU in view of IMRT.

Backup Counter

The integral dose shall be retained on a counter, which indicates the monitor units delivered to that time with the unexpected loss of power or malfunction of the accelerator or dose measuring systems. The dose shall be retained for at least 20 minutes after power interruption.

Dose Rate

The reproducibility of the dosimeters shall be + 1 % or 1 monitor unit, whichever is greater, at a fixed dose rate. With variations in the dose rate from minimum to maximum, the reproducibility of the dosimeters shall be + 2%.

8. Couch:

- A modern, versatile extended range robotic couch top made of new generation homogenous true carbon fibre with 6 degrees of freedom and indexed immobilization movements shall be provided. This will comprise a fully robotic patient positioning system with capability to correct misalignments of the patient remotely not only along the traditional transversal axes, but also for roll, pitch and yaw rotations around Y, X and Z axes and include a tracking system with controls, both inside and outside the treatment room.
- The Table top shall comply with the deflection requirement of IEC norm.
- IEC scale convention shall be provided.
- Specify the range of motions of the treatment couch including in X, Y, Z axis as well as Pitch, Roll and Yaw. The maximum height of the couch shall be at least 40 cm above the isocenter. The lowest couch position shall be less than 66 cm above the finished floor. Motions (except couch top rotation) shall be both manual and variable-speed motor driven. Specify which motions can be performed simultaneously. Lateral and Longitudinal couch displacement shall not exceed 1mm under braked condition.

Specification	Minimum Required	
Vertical	\geq	100 cm
Lateral	\pm	25 cm
Longitudinal	\geq	100 cm
Turntable Rotation	\pm	90 degree

- Patient support panels in the carbon fibre couch top shall be provided to facilitate the large posterior treatments at extended distances without moving the patient. Specify the combined dimensions of the patient support panels in the couch.
- It should have auto correction facility in at least X, Y & Z directions for accurate positioning for IMRT, IGRT & SRS/SRT.
- The couch must be capable of carrying a load of 180 kg or more.
- Emergency down drive (with battery & manual) shall be provided to remove the patient in case of power failure.
- To simplify mechanical motion control and expedite patient set-up, the motorized mechanical motion control system of the accelerator shall be computerized such that gantry rotation, collimator rotation, collimator jaw settings, and treatment couch vertical, lateral, and longitudinal and turntable rotation about isocenter can be operated with the hand-held pendants.
- **Two hand pendants** shall be provided for operating the machine and the table.

The hand pendant must have the control of gantry rotation, collimator rotation, collimator jaw settings, treatment couch motions (vertical lateral, longitudinal and turntable rotation around isocentre and room light control). If two operators are in the treatment room, both pendants shall be capable of being used simultaneously. To prevent possible malfunctioning, when hand pendant is in operation, the computer system must prevent conflicting signals from being sent to the same mechanical device.

To prevent possible damage to mechanical device motors when both pendants are being used, the computer system shall prevent conflicting commands from being sent to the same mechanical device (e.g., simultaneous couch up and couch down commands cannot be issued). The hand pendants shall each have a hardwired motion- enable switch which must be depressed to activate these motions.

- The Couch will have an incorporated remote tracking system with controls, both inside and outside the treatment room making it possible to calculate the position of the robotic couch top for accurate positioning of the couch top to the defined isocenter co-ordinates, relative table position or a new position based on correctional data received from CBCT, using all six degrees of freedom within sub millimeter accuracy.
- Convenient digital scales in metric units shall be incorporated on the couch or on an in-room monitor which will allow the operator to check the orientation of the couch height and couch angle with respect to the gantry.
- Couch positions (except couch top rotation) shall also be displayed at the control console. Accuracy of the scales for vertical, lateral and, longitudinal motions shall be within ± 1 mm.
- Machine space: Details about the physical dimensions and weights of the machine and its accessories including control console is to be provided.

9. Accessories:

- Wedges:

- A Dynamic / motorised wedge shall be provided that can produce an effect of any wedge angle up to 60 deg.
- **Stationary** – 15, 30, 45 & 60 degree wedges for all IN, OUT, RIGHT, LEFT. Specify the maximum field sizes covered, if available.
- **Mechanical front pointer and side pointer:** A mechanical front pointer **and/or LASER** shall be provided to locate the isocenter of the machine to within ± 2 mm. This accuracy shall apply to any orientation of the machine. A range finder shall be provided to locate the target to surface distance on the patient to within ± 5 mm.
- **Accessory mount – shadow block tray assembly** for holding shielding blocks shall be supplied. The distance of the bottom of the tray from the isocenter to be specified. A detachable block holder is highly preferable to accommodate 2 trays simultaneously for wedges and block trays. The spacing above the blocking tray should be specified. The size of the blocking trays should be larger than the maximum field size at the lower position. Specify traction and size of the blocking trays.
- **Universal clamps to be provided.**
- **CCTV / camera:** Two numbers – one wide angle & one remote control with remote zoom & focus facility for control room with Colour monitors should be provided.
- **In-room LCD monitor:** **Two** such shall be provided. **All screens** associated with equipment must be flat panel and **not less than 19 inches**.
- A **patient communication** system with latest standard model shall be supplied.
- **Laser alignment system:** Total 04 (four) Lasers precisely adjustable vertically and horizontally by remote control should be provided whose beams shall intersect at the isocenter. The diameter of the sphere of intersection of the laser beams as shown on a phantom located at isocenter shall be less than 1 mm. The system should have 0.5 mm line thickness at isocenter for patient alignment and setup. The levelness (tolerance: 1 mm) and plumb (tolerance: 0.3°) using a level (horizontal & vertical lasers) or a plumb (vertical lasers) will be preferable. In addition a sagittal line laser shall be provided which should pass through the mechanical isocenter.
- **Blue/green color laser will be preferable. All provided Lasers must comply with the respective code of IEC safety of Laser products and comply with AERB norms.**
- An **arm board** which may be attached to the side rails of the treatment couch for use in breast set-ups shall be provided.
- A mechanism to support the patient's hands shall be provided.
- Mechanism to immobilize the patient shall be provided.
- **Spare Parts Kit and Required Tools**
- A spare parts kit consisting of assorted printed circuit boards, relays, lamps and a container of dielectric gas shall be provided. Specify inventory. Include a spare pendant control module as part of the inventory. Standard spare parts should be provided with the machine.
- **Data Link to Field Service via Modem**
- The vendor shall provide a computer link to connect the accelerator to the Field Service facility for efficient off-site analysis of pertinent files, if available.

- **Field Illuminating Light**

- A field illuminating system should be provided for both photon and electron modes. The edge of the defining light field should coincide to within ± 2 mm of the 50% iso density line on an x-ray film taken with minimum build-up for any field size at one meter and any angulation of the gantry or collimator system.

- **TSD Indicator**

- An optical distance indicator which indicates the SSD to at least ± 4 mm over the 80 to 150 cm range shall be provided. Accuracy at 100 cm shall be ± 1 mm. A mechanical indicator which indicates the SSD to within ± 2 mm maximum error over the range 90 to 110 cm should be provided.
- The **accessory rails** beside the patient support panels shall be removable, allowing treatment and port film images without interference from the rails.

- **UPS system**

- An on-line UPS system with the appropriate power rating with voltage regulation and spike protection to operate the entire LINAC system for uninterrupted treatment delivery (including TPS, server etc.) for at least 30 min shall be supplied. The UPS system should work on a three phase 400-440 V/50 Hz Power.
- A resettable over current breaker shall also be fitted for protection. Details about the physical dimensions and space required for the UPS system to be specified.

- **Chiller system**

- The vendor should provide a fully automatic water chiller system for sufficient cooling of the linear accelerator. The chiller system must be imported / export quality with backup compressor and fully compatible with the machine as per specifications of the manufacturer. The chiller system shall incorporate automatic back-up facilities, remote control and alarm panel with warning facilities.
- Details about the physical dimensions and space required for the chiller to be specified.
- The maintenance of the CCTV system (Zoom & wide angle with separate display), UPS including electrical components thereof and the chiller will be seamlessly provided by the vendor for a period of 5 years under the terms of on-site warranty.
- The supply of all components of CCTV, UPS and chiller systems as and when required shall be provided by the vendor for a period of 5 years under the terms of on-site warranty.
- A standard patient calling system (as per concerned departmental requirement) shall be supplied.

10. Control Features:

- **Console**

A computerized standard control console shall be located outside the treatment room. This console shall provide controls that must be activated in order for the accelerator to become operational in any of its various modes of operation and also provide displays of accelerator parameters. The following shall be present:

- a) Power Off: Turns off all electrical power, including power to the computer, except for that power needed to maintain the accelerator in a "Stand By" condition.
- b) Power On: Turns on electric power to the accelerator.
- c) Total Dose: Sets the desired total dose for patient's treatment.
- d) Time: Sets time for patient's treatment. Time shall be used as a back-up in case of failure of total dose interlock. Backup time shall be calculated automatically with provision for manual reset.
- e) MU/Degrees: Sets the desired MU/degree for rotational therapy. MU/degree shall be calculated automatically with provision for manual reset.
- f) Mode Selection: Selects x-rays or electrons for treatment.
- g) X-ray Energy: Selects photon beam energy.
- h) Electron Energy: Selects electron beam energy.
- i) Radiation On: Turns on accelerator and radiation is produced.
- j) Interrupt: Immediately stops treatment.
- k) Complete: Indicates that desired dose has been delivered. In addition, the operator should be alerted if radiation terminates for any reason other than reaching the set integrated dose. In such cases, the dose remaining to be given shall be indicated.
- l) Arc Therapy: Enables the accelerator to perform arc therapy.
- m) Wedge: Requires that the presence, identification and orientation of a wedge must be confirmed at the control console.
- n) Port Film: Opens jaws completely or partially, as selected by the operator, and limits the amount of radiation to be delivered. This shall be operational in both the photon and electron modes but allow only the production of low energy photons. Once the port film has been completed, it should be possible to return the collimators to their original setting automatically.
- o) When the LINAC control system determines a plan trajectory, it commands every element of treatment delivery (treatment beam, system motion and image acquisition) in rhythm with the system's heartbeat of preferably 10 ms for achieving the imaging, couch, gantry and collimator movements and treatment beam.
- p) Special Procedures: Prohibits accidental selection of procedures such as electron arcs or high dose rate electron irradiation by providing an "extra step" in selection procedure. Describe the mechanism used.
- q) Accelerator parameter checks: It shall be possible to monitor different accelerator parameters via an oscilloscope at or near the control console.

- **Control Console Monitors**

The following standard monitors and displays should be available at the control console, and with the exception of a back-up dose counter, it should be possible continuously to visually observe the value being registered on these counters and displays from the position of the operator.

- a) Dose Rate Indicator: Indicates the dose rate at maximum build up for a 10 x 10 cm field at 100 cm TSD.
- b) Dose Counters: Two counters which count integral dose detected by each of the two dosimeters.

- c) Mechanical Total Dose Counter: In case of power failure, a means of preserving the total dose delivered to the patient under treatment when the power fails for an indefinite time period should be provided.
- d) Total Time Counter: Counts total treatment time in 0.01 minute increments up to 9.99 minutes.
- e) Angle: Indicates position of gantry in degrees with precision of ± 0.5 degrees.
- f) Symmetry: Indicates beam symmetry in both major axes.

- **Control Console Adjustments**

It should be possible to adjust the following parameters at or near the control console:

- a) Dose Rate: Permits the change of radiation output of the unit.
- b) System Calibration and Servicing

A separate mode of operation shall be provided which is used to monitor accelerator parameters and facilitate adjustments to those parameters. While in this mode of operation, the operator shall be able to accomplish the following from the control console:

- (i) Monitor machine parameters including both input and output signals.
- (ii) Display interlock status, and over ride interlocks.
- (iii) Adjust equipment timing.
- (iv) Perform computer diagnostics.
- (v) Control all mechanical motions from the console, either by automatically moving multiple mechanical devices simultaneously to preset positions or by moving individual devices manually.
- (vi) Select dose to appropriate monitor units.
- (vii) Select time to appropriate number of minutes.
- (viii) Operate the machine for at least two hours without stopping for the purpose of dosimetry measurements.
- (ix) Calibrate mechanical motion scales.
- (x) Selectively turn off various accelerator servo systems.
- (xi) Operate the system calibration and servicing mode remotely within the treatment room using the hand pendants. When leaving this mode of operation, all overridden interlocks shall automatically be re-enabled to ensure patient and operator safety. This mode of operation shall be interlocked against unauthorized use.

- c) **Event Logging**

During clinical operation, the accelerator shall record relevant equipment parameters for later review in the event of abnormal machine conditions.

- d) Gantry Angle and Collimator Size: Permits changes in the gantry angle and collimation field size. Automatic setting of field size should also be permitted.
- e) Accelerator Parameter Checks

The following accelerator parameters should be monitored at or near the control console. A separate BNC connector should be provided such that each of the following voltage wave forms can be monitored via an oscilloscope:

- (i) Reflected RF pulse
- (ii) Klystron / Magnetron current
- (iii) Gun current
- (iv) Charge current
- (v) Pulse forming network volts

In addition, a connector for a multi meter should be provided at or near the control console with an appropriate switch such that one of the following voltages can be displayed:

- (i) Gun current
- (ii) Pulse forming network voltage
- (iii) Electron gun heater voltage
- (iv) Power tube heater voltage
- (v) Power tube frequency
- (vi) Charging current
- (vii) Vacuum pump current
- (viii) Dosimetry System

There shall be a separate, completely independent indicator of the accumulated dose and dose rate at the control console. It should be possible to set accumulated dose and dose rate. The system shall warn the operator if the set dose exceeds a preset maximum value. This value shall be determined by the user.

In addition, a safety timer shall be incorporated to prevent irradiation from the accelerator after a fixed period of time, which shall be calculated automatically or determined by the operator. To prevent possible overexposure due to a malfunction of the ionization chambers, an interlock system shall be incorporated to prevent the operation of the accelerator should there be a fault with the ion chambers. The status of all dosimetry interlocks and integrity of ion chambers shall be checked immediately prior to initiation of each treatment. The nature of the interlock system shall be such that a positive indication of the malfunction of the ionization chambers shall be visible at the control console. In addition, failure of the accumulated dose indicator or a portion of the system controlling this indicator shall prevent operation of the accelerator but shall retain the last recorded accumulated dose indication.

In addition, separate control console/s, where specifically warranted, for other add-ons such as for specific IMRT, IGRT (including respiratory motion control, gating, tracking etc.), kV CBCT and matching/correction with DRRs and/or planning CTs, SRS, SRT, SBRT etc. to be provided with all necessary hardware and software solutions required.

11. Interlocks and Indicators and Safety Features

- Dose Rate Interlock

The accelerator should be disabled when the dose rate is not within stipulated value.

- Emergency Off Switches

Provision for connecting emergency off switches into the interlock chain shall be provided to allow immediate disabling of the accelerator in case of an emergency. There should be at least one emergency Off switch on the console and four on the treatment unit (at least seven inside the treatment room including the machine). Describe the location of all emergency Off switches.

- Wedge Filter Interlocks

The presence, identification, and orientation of the particular wedge filter in use shall be indicated on the control console and be interlocked against use during electron therapy.

- Dosimeter Interlocks

The normal treatment delivery will be designed to terminate upon a prescribed given dose at 100 cm TSD for a 10 x 10 cm field at the depth of maximum dose. In addition, a timer shall be used as a safety device to terminate treatment in the case of failure of the integrated dose meters. The timer should indicate the treatment time in units of tenths and hundredths of minutes and be accurate to within ± 0.1 minutes. The backup treatment time shall be automatically calculated.

- Door Interlock

The treatment room door and appropriate accelerator cabinet doors shall be closed before the accelerator can produce radiation.

- Rotational Therapy Interlock

To perform a rotational therapy treatment, the arc therapy mode shall be selected on the control console. In addition, there shall be an interlock to interrupt treatment if the dose rate per degree is too high or too low as per specifications.

- Port Film Interlock

This interlock shall allow partial or complete opening of the collimators from the control console and limit the total dose delivered. It shall also automatically allow radiographs to be taken with the low energy photon beam for either photon or electron modes.

- Electron Mode Selection

The presence and identification of the particular electron applicator in use shall be indicated on the control console and be interlocked against use in photon therapy (except for port films). This interlock should be in addition to a separate interlock which is required for electron mode selection.

- Electron Collimator Interlock

This interlock should prevent accelerator turn-on in the electron mode if the electron scattering foils and the dosimeter are not in the correct position.

- Key Switch Interlock

This interlock should be controlled by a separate key, which must be in the "on" position before it is possible to turn the accelerator on.

- Vacuum Interlock

This interlock should prevent high voltage from being turned on if the vacuum in the accelerator guide is not low enough.

- Pressure Interlock

This interlock should prevent high voltage from being turned on if the dielectric gas or cooling water pressure is too high or too low.

- Modulator Interlock

This interlock should prevent high voltage from being turned on if there is a fault condition in the high voltage power supply or modulator.

- Warm Up Interlock

This interlock should prevent high voltage from being turned on during the warm up period when electric power has been turned on.

- RF Interlock

In the photon mode of operation, the accelerator should be interlocked such that no RF power can be applied to the accelerator unless the photon beam converter is accurately and correctly positioned to prevent the electron beam from being directed toward the patient.

- Collision Protection

The accelerator should include protection devices designed to minimize injury resulting from collision of an electron applicator with the patient. Describe these devices.

- Symmetry Interlock

A symmetry interlock is required which shall terminate an exposure if the ratio of the maximum dose off axis in air at two symmetric points exceeds the range 0.98-1.02. The vendor shall demonstrate that this interlock operates as specified.

- Excess Dose per Pulse Interlock

This interlock should terminate irradiation if the dosimetry system detects an excess dose from a single electron gun pulse.

- High Voltage Protection

Interlock systems should be provided to afford maximum protection for personnel against high voltage hazards. Unshielded high voltage contacts should be prominently and appropriately labeled. In addition, a manual grounding system should be made available in the modulator enclosure and near other high voltage sources.

- Last man out (LMO) switch with full installation.

- Door light (Red, Yellow, Green LED panel for the LINAC bunker doors). Light should be as per the AERB safety code for Radiotherapy.

12. MULTI-LEAF COLLIMATOR:

The MLC system shall have at least 120 leaves (60 pairs MLC) with following features: Higher number of leaves and higher resolution will be preferred.

- a) Leaves shall have independent drives.
- b) Leaf width at isocentre shall be ≤ 5 mm for central leaves and ≤ 10 mm for lateral leaves.
- c) Maximum leaf retracting and extending position – to be specified.
- d) The over travel distance of the MLC to be specified.
- e) Leaf height & material and peak transmission – to be specified.
- f) Transmission through leaves should meet AERB guidelines.
- g) Interleaf leakage limits should meet AERB guidelines.
- h) Leaf end position and side position accuracy and reproducibility – to be specified.

- i) The minimum & maximum leaf speed. (To insert minimum & maximum value); Higher speed will be preferred.
- j) The carriage speed – to be specified.
- k) Penumbra for all square fields with or without MLC – to be specified.
- l) Should be capable of performing multiple static fields and dynamic multi-leaf collimation, IMRT & Arc IMRT treatment.
- m) There should be facility to treat patients conventionally, using blocks without MLC.
- n) Should be integrated with planning system, CT simulator (4D), RFA and/or MRI via planning system
- o) The MLC workstation must have user interface, can open or close desired patient file, can load treatment plan, graphical beams eye view of the MLC leaf and collimator jaw position as well as 3-D transparent image of the surface contour, body organs and gross tumor volume, clinical target volume and planning target volume as planned in the treatment planning system.
- p) Maximum static field size and maximum static aperture field size: at least 30x30 cm²
- q) Maximum IMRT field size to be specified.

13. IMRT TREATMENT DELIVERY:

The LINAC should be capable of performing Step & Shoot and Sliding Window MLC delivery and all necessary planning system, software and algorithm should be offered.

(Details given in section titled 3-D TREATMENT PLANNING SYSTEM WITH MULTIPLE WORKSTATIONS below).

14. PORTAL IMAGING SOLUTIONS:

- The electronic portal image system shall be based on Amorphous Silicon Flat Panel Detector Based Technology.
- Should be able to take images at any gantry angle with variable X-Y-Z movements. Should have motorized Robotics Arm with remote control from console without entering the machine room.
- The size of the flat panel shall be at least 30 cm x 30 cm with a resolution of not less than 1024 x 768 pixels.
- Necessary hardware & software with licenses to be provided for imaging for IMRT QA to check the machine fluence of the planned treatment and auto -verification with planning fluence shall be provided.
- Mention the size and pixel density of the detector.
- Mention the full active viewing area.
- Mention the number of bits used in detector digitizer.
- Mention the minimum detector dose to acquire a full field image.
- Minimum time after acquisition required to display image shall be as less as possible.
- Mention the image acquisition rate per frame.
- Mention range of lateral and longitudinal movement.
- Mention type of read out provided for movement and its location.
- There should be a collision detection/avoidance system (specify detail).
- Specify beam energy at which system can be used
- Dose rate for portal image acquisition to be specified
- Minimum and maximum settable exposure to be specified
- Contrast resolution to be specified
- Necessary QA tools for EPID to be provided
- Imager alignment to mechanical isocentre to be specified

- **Facilities for Portal dosimetry and dosimetry for FFF mode.**

15. Image Guided Radiotherapy (IGRT) System

A dedicated KV imager with solutions for IGRT including kv CBCT is to be provided. The kv imager performance specifications, imager travel range, image acquisition rate detector (made of amorphous silicon) specifications, typical radiographic image specifications are to be specified. The specifications for kv CBCT image acquisitions and reconstruction are to be specified. The optical imager specifications are also to be mentioned. All of the above specifications should be AERB/IEC/FDA compliant.

Higher field of view, higher spatial resolution, low contrast detect ability, low organ dose, lower acquisition time.

16. Respiratory Gating:

To monitor, correct patient motion and organ motion using Optical surface guided 3 camera system with respiratory gating should be offered along with IGRT package. All accessories needed for the Respiratory gating and correction in 6DoF and monitoring of tumour motions should be included along with the IGRT package. The proposed system should aid in faster positioning of patients with a live video feed enabling the users to switch between different camera angles to ensure accurate positioning.

Respiratory Gating should be installed in the Linear Accelerator room and in the 4D CT Simulator Room. The Respiratory gating system should be quick and easy for day-to-day use. It should have seamless integration with the following:

- Linear Accelerator
- Treatment Planning System
- Record & Verify System

The Respiratory Gating system should be real time and should be able to accurately track the tumor so that maximum dose to tumor is delivered during the treatment. Accurate gating should be possible in the 4D CT Simulator and with the Linear Accelerator for gated treatments.

The Respiratory Gating system should be able to provide retrospectively and prospectively gated imaging studies. The Respiratory Gating system should track the patient breathing pattern within the specific threshold that determines when the treatment beam will be gated on and off in all 6DoF.

The gating system should support 4D CT for the CT scanner installed in the department. Adequate and appropriate software along with the necessary high-end hardware must be supplied. 5 years warranty + 5 Years CMC (total 10 years) with onsite support, software and hardware up gradation if any during this period. Free in house training for Physicists, Oncologists and Technologists should be provided.

TREATMENT PLANNING SYSTEMS FOR LINAC MACHINE WITH WORKSTATIONS

Advanced approved latest 3-dimensional treatment planning system (TPS) for the machine that should be capable of planning for conventional radiotherapy, 3D Conformal Radiotherapy (3DCRT), Intensity Modulated Radiotherapy (IMRT), Volumetric Modulated Arc Therapy (VMAT), IGRT (including CBCT planning, 4D Planning including solutions integrating respiratory motion), SRS, SRT, FFF planning and SBRT with both forward and inverse planning with adaptability for future up gradation shall be supplied. **Any software up gradation within 5 years of procurement should be incorporated free of cost by the vendor**. Virtual simulation software should be part of the planning system. The system should have an integrated patient data base that is accessible to all radiotherapy applications present in the division through planning and contouring workstation. It should work on client server architecture. The server should not be counted as a planning system. The planning system offered should be latest version available with the company.

Single TPS solution for all kind of planning facility 3DCRT, IMRT, VMAT, SRS & SRT with localizers is preferable

Recommended single unified integrated for OIS & TPS.

➤ **Hardware**

Latest window based workstation with latest hardware (Processor speed, hard disk memory, RAM, video card, hard drive, tape drive, CD RW, DVD reader writer, modem, keyboard and mouse) at the time of purchase should be supplied. The TPS and its workstations should have 20" or more flat panel monitors. Two (At least 1 A3 printer) advanced colour laser printer with network connectivity shall be provided. New cartridges for the printers to be provided twice a year and as on need based for a period of five years. A3 Scanner of high quality for data acquisition from plain X-rays, CT/MRI films should be provided. Appropriate battery and UPS for smooth running of the TPS to be provided with facility for replacement of batteries as and when required for a period of 5 years.

No of workstations to be provided: **Four (4)**

With capability of planning: **Two (2)**

With capability of contouring: **Two (2)**

Optional: ADDITIONAL

With capability of planning: **One (1)**

With capability of contouring: **One (1)**

➤ **Planning and contouring software**

Should have the following specifications:

- Virtual fluoroscopy Isocentre placement from AP and lateral DRR's, auto computation of isocentre from target volume should be possible. Editing of origin placement in the reference slice and computation of isocentre with reference to origin. Should calculate each phase of treatment plan independently and as a composite plan. Should plan for the following combination:
Photon-Photon
Photon-Electron: All energy combinations
Electron-electron: all energy combinations

- Dose and marker point definition. Export of isocentre coordinates with reference to origin to laser control system. The system should support multi laser marking software. Provide pre-defined structure templates that can be used for all type of treatment. Must be able to add/subtract predefined organs and/or parts of organs for defining areas of interest. Tool to match MRI, CT and PET image using reference point should be available. Mutual matching algorithms must be available to auto match images using different modalities. It should be possible to display the calculated dose on sagittal, coronal and arbitrary planes and on MR, PET and fusion images. Should be fully integrated with the record and verify system. Should support addition of bolus of different thickness.
- Volume definition should be possible using Volume Segmentation using threshold, Free hand contour tracing, Contoured editing, 3D anisotropic margins etc.
- Volume delineation should be possible with Free hand contour tracking or Advanced volume segmentation using threshold in 2D or 3D or with predefined shapes. Various contour editing tools to modify the contour at any plane should be possible.
- Contouring options in Axial, Sagittal, and Coronal or in any oblique planes must be available.
- It should be possible to do manual, semi-automated, fully automated contouring/segmentation in the images. Library based advanced auto-contouring facility with auto-planning will be highly desirable
- The software should have facility for automated uniform or non-uniform margins. For example it should be possible to expand the clinical target volume (CTV) three dimensions by same magnitude or by different magnitudes to define the planning target will be considered as not meeting the requirements.
- It should be possible to copy one organ to another with margin; add margins on a single slice, arrange of slices or all slices.
- It should also be possible to interactively edit the contours with user choice of segments to reject or accept.
- Interpolate algorithm should be available to provide inter active, shape based interpolation- i.e. after contouring only in selected slices, the algorithm should automatically interpolate the closely fitting contours in other slices. Interpolated contours may be edited: accepted or rejected.
- The DRR/BEV image should display the machine diagram to allow real-time checking of machine and patient geometry.
- Auto-outlining with Non-Uniform Margins.
- Facility to contour on coronal and sagittal and on any arbitrary planes.
- Knowledge based auto contouring with anatomical atlas (Preferable).
- **Minimum Two (2) numbers of independent 3D-CRT and IMRT licenses and one(1) floating VMAT licence which can work separately, individually and simultaneously for all planning modalities, optimizations and calculation algorithms.**

- All Planning workstations must be equipped with individual licenses for planning including 3DCRT, IMRT and VMAT.
- Minimum 2 numbers of independent contouring licenses which can work separately, individually and simultaneously for all type of radiotherapy contouring should be provided by the vendor.

➤ **Image Fusion Software**

- This should include auto matic and interactive image registration and fusion of CT with MR/PET/SPECT images for treatment planning.
- This should include real time image reformatting and fully automated image alignment.
- 3DFusion display with delineation of target in the fused image should be available.
- Highly preferable: Deformable registration facility.

➤ **Networking System**

Latest version of networking software with standard server to be provided and installed for local area networking compatible with the TPS, Machine, treatment console, CT Simulator (4D) & MRI (if any). Preference will be given to minimum 64 bit digital networking system. Full network connectivity between the LINAC, the oncology information and treatment record & verify system, workstations on either location, all imaging treatment planning and treatment delivery system on both locations must be established. Provision must be available for adding more work stations. Storage media for archiving and export through Ethernet and TCP/IP format must be provided.

- The TPS should be of the latest & able to network with LINACs, CT Simulator (4D), HDR Brachytherapy machine.

➤ **Imaging Tools**

DRR features

Interactive DRR calculation mode must be available Automatic window width/level selection for DRR. DRR should be interactively updated when the isocenter position is modified should be possible to highlight or suppress different density regions in the DRR Printing of DRR images should be possible. The DRR generation methods should include normal summed, MIP and volume rendered (for soft tissue/bone weighted DRR).

DRR presets should be user defined Macro function to save a series of frequently used steps should be available.

Specify DRR image enhancement tools to improve DRR image quality Reconstruction of DRRs should be real-time or sub-second direct printing of DRR on laser film should be possible.

Real-time displays of DRR as beam parameters are changed.

It should be possible to transfer DRR and BEV images to EPID of Linear Accelerator. Depth Control in oblique projections must be possible

Cross-hair display on DRR to provide scale information.

➤ **IMRT**

Support for coplanar and non-coplanar beam arrangements and synchronous IMRT optimization with delivery by both Sliding window and static step and shoot should be available. QA data generation tools per beam and per plan. Support for multiple MLC vendors. IMRT QA tools. Ability to run IMRT plans on phantoms to create digital composite files for film comparison. Dose QA export to IMRT plan verification software. Intensity map BEV display. Offered IMRT module can have MLC segmentation settings as Minimum number of monitor units per segment, Maximum number of MLC segments per plan, Minimum open area per segment and Minimum number of open leaf pairs per segment.

Should have full integration with IGRT planning and delivery – should be able to send DRR of desired gantry orientation to IGRT system for comparison with KV/MV radiographic image to determine patient shift. It should also be able to send CT images to IGRT system to compare with reference CT images. Should be able to import Cone beam CT images from Treatment machine and compute dose on the imported images to evaluate dose to critical structures of the patient during treatment. If IMRT is delivered as a boost dose after delivery of partial treatment by conventional, 3D-CRT plan, then it must be possible to incorporate the delivered plan to optimize the IMRT treatment plan. It shall include IGRT software also.

Advanced library based intuitive fast and adaptive planning solution should be provided.

A method for estimating Dose Volume Histograms (DVHs) based on patient geometry (structure set) and previous knowledge contained in a set of existing patient cases.

Based on the estimated DVH and plan prescription the system defines optimization objectives that are a good starting point for the optimization. This makes IMRT and VMAT planning faster for the user.

The estimate provides a good starting point for the current patient based on your previous planning knowledge. Also Equivalent Dose-Distance histogram (EDD) will be preferred. Equivalent Dose in a voxel depends on the distance of the voxel from the field origin and the dose of the target that the fall line crosses.

System to leverage IMRT planning experience of larger institutions to automatically create high quality plans for outside clinics, feasibility by generating plans from an outside institution by adapting plans.

➤ **DICOM Import and Export**

All required licenses for latest DICOM version and DICOMRT import and export through network between various imaging and treatment systems which are available or to be procured in future (CT,MRI, PET and Simulator) must be provided. In addition to latest DICOM version and DICOM RT the vendor shall also provide DVD based connectivity. The system should be able to acquire and display on-board 2D and 3D volume images of the patient immediately prior to treatment. The network provided should be able to transfer images to (from) EPID/CBCT from (to) TPS and simulator and additional workstations.

➤ **Calculation Algorithm**

All three TPS should include calculation algorithms each for photons and electrons **as follows: pencil beam, Convolution superposition, Collapsed cone, AAA and Monte Carlo / Boltzmann transport ACUROS for photons and Monte Carlo algorithms for electrons. Most advanced accurate dose calculation algorithm will be highly preferred. Photon optimizer algorithm for IMRT and VMAT optimization. Portal dosimetry image prediction algorithm. Integrated Patient specific EPID QA algorithm, Multi criteria optimization, Pareto optimization, constrained optimization, Biological optimization and evaluation using EUD should be provided. Adapt Anatomy and BIAS planning for re-contouring and re-planning for adaptive radiotherapy should be provided. Licence for SRS Optimization algorithm should be provided.**

➤ **Configuration of Treatment Parameters**

Beam Data entry via keyboard, digitizer, and water phantom. Should accept data from standard Dosimetry systems. Generation beam parameters: Gantry/ collimator/ table conventions/ single and dual asymmetric jaw limits/PDD/OAR/TAR/TPR/BSF/Phantom scatter correction factor/wedges/blocks. Should accept physical/motorized or dynamic wedge parameters. Multi-window overlay of measured vs. generated depth dose and profiles and multiple tray factor definition for each treatment machine should be provided.

➤ **Utilities**

The following facilities should be available: Template plan storage/ recall including graphics layout. Single/dual asymmetric jaws. Manual divergent blocking. Automatic blocking with margin. MLC planning. Automatic MLC shaping with changes in machine parameters. Enhanced dynamic wedge. Virtual wedge, motorized wedges. Arbitrary weight point location. Relative dose, absolute dose or MU weighting. Bolus. 3D Room's eye view with real time rotation of wire frame, solid and transparent structures and dose clouds. Transverse, sagittal, coronal and oblique views with/ without CT. BEV with variable content display. Export of DRR in DICOM secondary capture format. Real time display of doses on sagittal, coronal and arbitrary planes. Global hot spot display. MU/time calculation for both photons and electrons. Dose profile generator. DVH: differential and cumulative with Multiplan comparison.

VOLUMETRIC MODULATED ARC THERAPY:

Both the planning systems should have support volumetric modulated arc therapy treatments, delivering comparable or better dose distribution as IMRT. VMAT Delivery for a single linear accelerator with the capability to simultaneously modulate aperture shape, dose rate, and gantry speed continuously through 360 degrees of gantry rotation, during an arc beam delivery. When coupled with VMAT Planning and a VMAT - compatible information system, the TPS should have the capability to generate IMRT-quality or better dose distributions in a single, optimized arc deliverable by the accelerators.

FEATURES

- Latest version of Inverse Planning software for VMAT with option for SRS/SRT/SBRT should be offered
- Simultaneous modulation of MLC aperture shape, beam dose rate, and gantry rotation speed during beam delivery
- Radiation beam is continuously and smoothly modulated for dose rate
- Provides IMRT-quality dose distributions in a single arc/multiple arc delivery in minimum possible time.
- Should be capable to generate superior plans while limiting leakage, scatter and integral dose to the OARs
- Seamless connection with compliant R&V systems
- Should be Capable to perform Single and multiple arc capable Non-coplanar arcs for support of stereotactic radiotherapy and SBRT
- Gated VMAT is preferable
- Infractional imaging should be available for SBRT.

SRS, SRT AND SBRT SOLUTIONS:

Necessary hardware and software solutions (including image acquisition, fusion, segmentation, planning, evaluation, record and verification) for Frame based/ Frameless SRS, SRT and SBRT using same MLC to be provided by the vendor, specifications of which are to be mentioned and those should be US FDA, CE, AERB compliant. IGRT planning and delivery solutions for the same to be provided and specified. Necessary QA tools (hardware and software) to be provided and specified.

ONCOLOGY INFORMATION AND IMAGE MANAGEMENT / TREATMENT RECORD AND VERIFY SYSTEM:

- Patient record & verify system for two LINACs.
- Transfer all parameters from TPS, Simulator to Accelerator for automatic treatment setup & delivery shall be done.
- Transfer of portal imaging system data for comparison.

- Transfer & execution of MLC position parameters for normal treatment & IMRT treatment including step & shoot & dynamic sliding window techniques from treatment planning system should be provided.
- Should be networked with existing network system and all required interfaces should be provided for all features such as IMRT, VMAT, IGRT, SRS and SRT.
- The LINAC should have the feature of ultrafast first automatic morning QA check in minutes for the positional accuracy of gantry, collimator, MLC and jaws and beam constancy with clear pass/ fail criteria.

IMAGE GUIDED RADIOTHERAPY (IGRT):

The vendor shall quote an IGRT verification system including solutions for management of respiratory motion that should be FDA/CE approved and should be in clinical use in renowned centers worldwide.

The system shall be based on Cone beam CT imaging. For image guidance, either the digitally reconstructed radiograph from the planning system or a 2D image or a 3D cone beam CT image set will be kept as the reference image and the appropriate image set acquired on the subsequent treatment days will be compared against this reference standard.

The couch top should shift at least in three directions (x, y and z-axes) for IGRT required for matching the patient's position with the reference image set which will then be computed by the image guidance software provided.

The software shall then drive the couch automatically to the desired position. The software shall offer both automatic and manual matching modes.

It shall also be possible to do matching based on implanted marker seeds.

It shall be possible to use the cone beam CT images acquired by the LINAC for routine treatment planning and the accuracy should be within $\pm 2\%$ of the dose calculated using the conventional CT images.

It shall be possible to acquire such image guided verifications and adjustments of patient's position daily or on selected days during the course of treatment. All such data shall be automatically stored in the database.

All data and image transfer shall be fully DICOM-RT compliant. Full DICOM-RT compliance with all import/export licenses shall be provided.

Vendor should also provide DICOM-RT licenses for the existing planning systems with the LINAC.

KV and MV Imager specifications should be as per USFDA, CE, AERB guidelines and details to be mentioned.

Facilities for dynamic adaptive radiotherapy including adaptive re-planning should be provided.

Facilities for offline review (matching of images & shift calculation) should be provided.

4D advanced IGRT software including software for 4D motion management and management of respiratory motion should be provided.

There should be imaging during the beam on to facilitate intra fraction motion review (IMR).

Specific software for 4D image acquisition including 4DCT/ 4D CBCT with facilities for MIP/ ITV based solutions to be provided and specified by the vendor. Specific solutions for respiratory motion to be provided and specified for treatment planning and delivery including a gating /tracking or equivalent

approach. External / Internal fiducial based or surface contour based respiratory / tumor motion control hardware/ software and all necessary equipment thereof to be specified and provided. All specifications should be as per USFDA, CE, AERB guidelines.

VIRTUAL SIMULATION SOFTWARE:

Virtual Simulation Software with moving lasers compatible to CT Scan machine in this institute shall be provided. An indexed flat CT table top for IMRT planning imaging purpose shall be provided for the purpose. The Vendor shall ensure easy integration of the Radiotherapy CT Simulator software for acquisition, virtual simulation and image transport with the TPS and machine.

Backup Facility

Sufficient back up facility for storage of all information related to imaging, planning and treatment of patient for 10 years with NAS Drive (minimum 20 TB usable space) with RAID facility.

The model or version of both the LINAC machines must be on Digital Platform and launched on or after Year 2020.

DOSIMETRY AND QA EQUIPMENTS

DOSIMETRY & QA EQUIPMENTS AS PER THE FOLLOWING SPECIFICATIONS

Sl. No.	Specification	Remarks	Qty. needed for 1 LINAC setup
1	RADIATION THERAPY BEAM ANALYZER		1 set
	<p>Require a full-fledged three dimensional Water Phantom & Dosimetry System and therapy beam analyser for performing Off-axis profiles, PDD, point dose measurement, beam symmetry tuning, Dose rate constancy check, vector scan and TG51 lead foil measurement for low and high energy Photon and electrons. All the measurements should be computer controlled and user friendly. All components comply with national and international regulations and safety rules. All components of the system and all available options are controlled by the same software that runs under Microsoft Windows. The system should be suitable to measure pulsed radiation with fluctuation dose rate.</p> <p>The parent company should have direct service staffs in India, for smooth and efficient troubleshooting. The product should be robust and reliable and the parent company should have at least 50 installed and working water phantom systems in India.</p>	A robust and reliable 3D water phantom along with accessories are required for the fast commissioning of the linear accelerator (3D radiation field analyzer)	
a)	Water phantom		1 set

	<p>The scanning volume should be large enough to scan and should not be less than 48x48X40 cm. It should be square in shape and the system should come with suitable thickness to avoid bending of the tank's walls by water pressure and water absorption of the acrylic material. The reproducibility of a position should be ± 0.1 mm throughout the whole phantom. The positioning tool should be there to allow easy and exact positioning of the chamber's geometrical centre in the central beam and at the water surface. Apart from this the exact position of the chamber in the radiation beam should be possible via software/Pendant. The positioning speed should be adjustable upto 50mm/s. The acceleration of the step movement should also be changed as and when required. The zero point, reference point and limit of the different detector units should be stored separately in the control unit /Pendant. The control pendant should display the actual position of the chamber position at any given measuring time. The system should be capable of performing fast continuous mode / step by step mode. Availability of both the mode will be preferred.</p>	<p>A rectangular/square scanning volume make sure that the water phantom measurement correlates with the field of view of the LINAC, which is also square/rectangular. A higher reproducibility makes sure that the repeated measurements give the same value and a faster scanning helps in faster data collection and hence faster commissioning</p>	
b)	Ionisation Chamber for RFA		1 Set
	2 nos of 0.13cc or 0.125 cc ion chambers, along with detector adapters and 2 nos of 5m cables should be provided	2 nos of 0.13cc or 0.125 cc chambers are needed for scanning and reference purpose.	
c)	Water reservoir		1 set
	<p>The water reservoir should be atleast 180 litres to store the water and can be pump and drain to the water phantom as quick as possible. The water Reservoir must be able to hold the entire weight of the water without any change. The weight of the whole assembly can be push or pull through the wheel with polyethylene or equivalent. The lifting carriage should come with the technology that keeps the height absolutely accurate. The Lifting carriage and Water Reservoir should be separate /integrated for easy movements, must be imported and directly from the suppliers. The water reservoir should have a safety circuit that avoids the dry pump running.</p> <p>Automatic Lifting facility should be quoted mandatorily. Provision for leveling water phantom manually / automatically should be provided.</p>	<p>Imported table and reservoir make sure that the accuracy and robustness is not compromised, even in the accessories division</p>	
d)	Control Unit		1 set
	A separate control unit for controlling the movement of the detector in any three directions should be possible. The control unit should permanently store zero point, reference point and limit points for water phantom. It should have a time constant of minimum 20ms and the leakage current should be less than 200fA.		
e)	Control Laptop		1 set

	The latest version of Windows , Professional laptop (with higher version processor, 8GB RAM, 1TB hard disk, 2GB Nvidia graphics card) should have all the latest feature with color FULL HD monitor and with printer/plotter (color) . The system should be upgradable.	A powerful computer ensures that the system software run smoothly	
f)	The Software		1 set
	<p>Fully workflow oriented acquisition and analysis software to increase efficiency and to reduce the commissioning and QA time of the LINAC should be provided with the following minimum properties:</p> <ul style="list-style-type: none"> -Many data exchange with IMRT software system -Support of all international and industry protocols -Licenses for installation of acquisition and analysis software on up to five workstations Common settings: <ul style="list-style-type: none"> -Complete settings in one window -Visibility of connected controller and electrometer Queue Set-Up: <ul style="list-style-type: none"> -Highlights discrepancies prior to measurement -Queues pre-defined though adaptive/flexible; measurements are prepared based on RTPS Requirements -Queue filtering and sorting base for grouping scans and optimization queues functions for modify, extend and exchange queues -Import of RFQ files (queue files) Data Acquisition: <ul style="list-style-type: none"> -1D, 2D and 3D data views -Online display of measurements and online data analysis of each scan controller panel. -Central axis check facility -Adaptive scan optimization facility -Output factor table Data Analysis: <ul style="list-style-type: none"> -Electron depth-curves/profiles photon depth-curves/profiles TPR/TMR -Isodose / Array calculation mathematics: add, multiply, subtract and divide curves data modification tools, e.g. rescale, move, mirror RTPS: -Generation of measurements queue data transfer plug-in module for new RTPS update Archiving / Printing: <ul style="list-style-type: none"> -Appropriate data archiving customized print templates creation and export of tables 	An User friendly and comprehensive software to compliment the powerful water phantom.	
g)	Administrative Data		1 set

	Comprehensive documentation of the measured data by automatic saving of the used measuring environment should simplify the interpretation of data even a long time. The used measuring routine data can be reused either unchanged or with some of the parameter changed. Data can be printed and plotted in numerical and graphical form on all printers and plotters that are supported by windows. The administrative data can be changed after saving the measuring data. All measuring data should furnished automatically with their administrative information and comprehensive filter function allows the easily selection of specific data. The necessary software to network the 3D TBA system with the existing 3D TPS in the department of Radiotherapy must be offered.		
h)	Data Analysis		1 set
	Various normalization should possible viz. normalization to maximum for depth dose curves, normalization to maximum or center for profiles and normalization to maximum, enter, position and value for isodose lines. Homogeneity and symmetry should be calculated automatically and various national and international protocols can be selected. Depth dose curves can be analyses according to AERB protocols.		
2	ARRAY DETECTOR for IMRT& Rotational IMRT		1 set
	The device must be based on ion chamber matrix with more than 1000 detectors, having the facility to use with dedicated phantom with 3D dosimetry system having facility for measurements of IMRT/ VMAT/Rapid-Arc and should be calibrated for FFF applications at high dose rate. The device should come with a physical device to calculate the gantry angles for VMAT/Rapid Arc plans. The chamber must be a vented plane-parallel square shaped ion chambers with center to center spacing less (per institution) than 8mm. It should be able to use for the dose verification of IMRT beams and routine quality control of high energy photon and electron beams by using the software. The device should include a temperature and pressure sensor to perform an automated correction of the chamber signal (optional). The software should allow for the Registration of measured vs planned data, Complete IMRT verification of measured vs. planned TPS data incl. 1D profiles, 2D isodose maps, DVH, automated verification such as sum, (absolute difference, correlation, multiplication, DTA (distance to agreement) calculation, Gamma analysis, including threshold and gamma angle Histograms (for data sets and results) Region (ROI) of interest analysis Time based analysis (tables) e.g. start-up License for complete DICOM for: Import of planned 2D and 3D data from all TPS supporting DICOM RT and RTOG formats Import of EPID data via DICOM Interface to DICOM compatible scanners (e.g. Kodak CR, Agfa) via import of DICOM CR files	Ion chamber based detector array makes sure that most accurate IMRT and Rotational IMRT QA is done. 1000+ detectors ensure that the spatial resolution of the array is superior and hence no information is lost. If the sampling time is less, this ensures that the data collection by the detector is very fast. So the best detector will have lower spatial resolution along with lower sampling time!	
	The parent company should have direct service staffs in India, for smooth and efficient troubleshooting. The product should be robust and reliable and the parent company should have atleast 25 installed and working IMRT QA systems in India.	This make sure that the department gets a reliable and robust Rotational IMRT QA device, supported by the principal company from India	
	A pin point chamber should be provided for small field IMRT QA		

3	Machine QA and Daily QA		1 set
	<p>A comprehensive daily machine QA ion chamber based detector should be provided. There should be at least 300 ion chambers for precise measurement. The system should be capable of giving the parameters like analysis of symmetry, flatness, penumbra, field width, energy verification, dose output in a single exposure.</p> <p>Additionally, it should be able to perform MLC and wedge check, light field vs. radiation field congruence and LINAC start-up behaviour. The software should be capable of automated archiving in database, advanced grouping, filtering & sorting, simple export of data to Microsoft Excel, Water phantom software and IMRT software with only one click. If the IMRT detector offered earlier is able to perform the above tests, then the vendor is allowed to quote for only the software needed for performing the daily QA with the IMRT ion chamber array.</p>	Advanced LINAC QA solution needed for the daily / weekly LINAC check	
4	Absolute Dosimetry and Detectors		2 Sets Quantities needed for 02 set per institute
	<p>A reference class electrometer with TNC connector, with a sampling time of minimum 20ms should be provided. 2 farmer chamber 0.65cc or 0.6 cc, 0.4cc parallel plate chamber and 18m long triax cables with TNC connectors should be provided. Adequate build-up caps for (6MV, 10 MV and 15MV) farmer chamber should be also provided. All chambers supplied should be water-proof and should have TNC/M type connection. (per institute irrespective of no. of LINACS)</p>	Reference class electrometer helps in cross calibration of chambers and TNC connector makes sure that the electrometer can work with any TNC chamber	
	<p>The following items should be included in the absolute dosimetry package - imported RW 3 slab phantom of 30x30cm with adapter plates for pin point chamber, FC and PPC, imported fluke/ Ludlum survey meter, a local D10/20 phantom, an imported at least 25 cm variable depth 30x30x30 phantom with chamber insert for FC and PPC, digital calibrated thermometer and barometer.</p>	Essential items needed for	1 set of slab phantom per machine.
5	SRS/SRT QA		1 set
	The following items should be quoted for SRS/SRT QA:		<p>All the stated inserts shall be a homogeneous cubic insert with automatic locking mechanism and must have same material and density as that of base phantom. They should also contain cylindrical CT markers so that the isocentre position can be easily and accurately defined and the dose value at the isocentre can be extracted. A homogenous plug shall also be supplied wherever applicable to fill into detector cavity to avoid artifacts caused by the inserted detector while planning CT of those inserts combined with base phantom. A corresponding</p>
	1. Reference diode detector along with Stereotactic diode detector	Mandatory package for SRS/SRT QA	
	2. Photon and Electron field detector	Necessary package for SRS/SRT QA	
	3. Dedicated array detector for SRS & SRT QA / Software solution for SRS & SRT QA.	These items ensure that the SRS/SRT QA done is of high quality	

			detector holder wherever applicable that can be screwed in to the insert must be supplied for the exact positioning of the detector in the centre of the insert.
	<p>4. A technologically advanced and fast phantom with powerful and ready-to-use application-specific inserts are required. The system set up and operation should be simple with unrivalled flexibility to add and combine inserts as and when needed.</p> <p>All components should be designed and manufactured with sub-millimeter precision.</p> <p>It must support SRS, SBRT including Treatment techniques with 6D couch. It should have CT markers on the base phantom to coincide with all inserts for enhanced visibility.</p> <p>A phantom should be made of polystyrene material with octahedral symmetry and Polyhedron design having physical density of at least 1.05 g/cm³.</p> <p>The phantom must be usable with various inserts for end – to – end testing, patient plan verification, and additional tests for LINAC QA in a clinical environment. It should have an integrated and compatible solution with application-oriented inserts and appropriate detectors.</p>	Base Phantom for SRS/SRTQA	
	<p>5. The insert shall have capability to check 2D/3D coincidence of MV & kV Isocentre with MV Imaging system (EPID-2D) and kV CBCT (3D) system, respectively using minimum four Tissue-equivalent bone structures for enhanced visibility.</p> <p>It should also have the capability of daily checks of IGRT and SGRT positioning accuracy, including remote controlled couches as recommended by AAPM TG-179 and TG-142.</p> <p>It should have a high-density radiopaque ceramic spherical ball having dia of less than 9 mm to perform Winston-Lutz testing 3D iso – centre verification. There should be a software module to determine 3 D isocentre deviation.</p> <p>The insert should have a tilt accessory for easy 6D couch QA including latest techniques available in Advanced Linear Accelerators.</p>	LINAC QA insert	
	<p>6. This insert when combined with base phantom must enable a comprehensive end-to-end testing and patient QA of stereotactic treatments (SRS, SBRT, SRT) as recommended in major QA protocols and guidelines, including AAPMTG-101.</p> <p>It shall have MRI visibility in all commonly used sequences (T1, T2 and FLAIR at 1.5 T) as well as ICRU 44/-46 standards based, tissue-equivalent materials (brain, lung and bone) for enhanced CT visibility and additionally the insert should be compatible for accurate verification of the CT/MRI image fusion algorithm of the treatment planning system. A detector borehole in the centre of the same insert is required for Patient-specific single-point dose measurements with different detector types.</p> <p>The insert must be compatible with patient positioning systems and patient masks for accurate set up.</p>	System QA insert	

	<p>7. The insert should be usable in measurement based patient specific plan verification including non co planar treatments with different detector types. This insert must allow fast point - dose verification of treatment plans of any gantry angle.</p>	Detector insert for patient QA	
	<p>8. The insert should be usable in measurement based patient specific plan verification including non coplanar treatments with high resolution radio chromic films for high precision radiotherapy and SBRT /SRS treatment plans. This insert must allow 2 dimensional dose verification of treatment plans of any gantry angle without repositioning.</p> <p>The patient QA insert for radio chromic film shall allow the use of minimum 15 cm x 9cm sized radio chromic film. The design of the insert when combined base phantom shall permit the film to be positioned at different planes.</p> <p>It shall also contain cylindrical CT markers so that the isocentre position can be easily and accurately defined. Any accessory which will be useful to mark the film relative to the CT markers in the phantom or film perforation shall be supplied.</p>	Film insert for patient QA	
	<p>9. An insert should be available to perform the quality assurance of irradiation of multiple metastasis with one Isocentre or non-iso-centric treatment / irradiation techniques, with or without couch rotation.</p> <p>It shall enable the positioning of at least three detectors at different positions within the insert marked with CT markers. The positions of these should have a maximum longitudinal spacing of 12 cm as well as a maximum lateral spacing of 6 cm and a maximum vertical spacing of 5 cm from each other.</p> <p>It shall also embed at least three bone equivalent cylinders enabling compatibility with IGRT systems and to provide contrast for positioning using kV imaging systems.</p> <p>Necessary homogenous plug shall also be supplied to fill into detector cavity to avoid artifacts caused by the inserted detector while planning CT of the insert combined with base phantom.</p>	Optional insert for Multiple Metastasis applications	
	<p>10. A phantom should be supplied and be compatible to do QA for special stereotactic treatment techniques with couch extensions equipped with head shells. The phantom should mimic human head which should be compatible to all QA inserts stated above.</p> <p>The Phantom in combination with all above said inserts shall be used in conjunction with 6D couch treatment techniques.</p> <p>The Phantom should be visible for all in-built LINAC Imaging system i.e., MV Image, DRR Image, kV Planar and kV CBCT.</p> <p>All components shall be designed and manufactured with submillimetre precision.</p> <p>This phantom when combined with Insert for Multiple metastasis applications shall enable realistic treatment planning of brain metastases.</p> <p>The head phantom shall be of polystyrene material having physical density of at least 1.05 g/cm³.</p>	Optional phantom for SRS/SRT with Head shells	
6.	IN-VIVO DOSIMETRY		1 set

	Mobile MOSFET: For routine, IMRT vivo dosimetry, a set of ten (10) MOSFET with associated Remote dose verification software, wall mounted Bluetooth wireless trans receiver, reader, software and final dose reporting system.	For the Patient dose verification purpose	
7.	Warranty & Service Facilities		
	Five year warranty on all products should be provided. Factory trained Application specialist should be available in India to look after the installation and maintenance of the systems.	Make sure to provide the best support always	
8.	Additional item to be included		
	1) 5 boxes of 8x10 inches & 2 boxes of 14x17 inches Gafchromic film for QA purpose		1 set
	2) Imported Specific phantom for image Verification		1 Set
	3) Digital pocket dosimeter with online real-time Bluetooth connectivity with android mobile – 02 number		
	4) A3 Flat bed film scanner with necessary software for dosimetry analysis		
	5) Iso-alignment device for verification of the iso-centre QA and light field congruence QA verification system.		
	6) Dedicated phantom for IMRT (both homogeneous and incorporating in-homogeneities mimicking actual patient anatomy like lung etc) for all steps from imaging to dose verification and SRS (including capabilities of imaging, image fusion, absolute, relative and point-dose dosimetry measurements at isocenter and at exact positions off isocenter. This should allow for a seamless evaluation of dose as well as geometric accuracy, including CBCT and MV/kV alignment.		
	7) Digital Radiation Survey Meter: Fluke/Ludlums/equivalent. Reading in Sievert and Sievert/Hour. – 2 per institution		

MISCELLANEOUS

- Internet broad band speed connectivity and Local Telephone facility should be provided and maintained by the vendor only.
- One LCD Projector with a projection screen and smart board technology of latest make to be provided.
- Five books of most recent edition on IMRT, IGRT and Radiotherapy and Medical Physics along with online access to any intensive planning / QA / delivery resource for academic use to be provided.
- Intercom system as per departmental requirement must be provided.

MOULD ROOM ACCESSORIES TO BE SUPPLIED WITH LINEAR ACCELERATOR:

Mold room accessories consisting the following items should be provided,

1. Vac. Lock System – Nylon re-enforced blue urethane materials with one suitable vacuum pump for the system (complete set).	
Item	Qty.
Breast & Thorax	6
Hip & Pelvic	10
Whole Body	6
Paediatric Vac. Lock	10

2. Electron block cutter system with accessories	2 sets
3. Various sizes holders to accommodate electron cut out of available electron applicators, cadmium free low melting alloy	30 pcs.
4. Immobilization Devices (Following Mould Room equipments are to be provided) All the products should be imported, if available and all immobilization devices must have certified dosimetric property for different energy. All immobilization system must be with suitable storage cabinet.	
All in one board carbon fiber is preferable. (per institution)	4 nos.
Carbon fiber Head rests with low & regular correction of standard make A to F (per institution)	4 complete sets
Paediatric head rests including prone of different inclination angles (per institution)	2 sets
Carbon fibre tilting Head & Neck base plate (per institution)	2 sets
Carbon fibre prone head holder with immobilization facility (per institution)	2 sets
Tilting/ Pituitary base plate for head with immobilization facility (per institution)	2 nos.
Prone head rest adult and pediatric (per institution)	3 nos.
Blue cushion Thorax Abdomen- 0 wedge	4 nos.
Foot rests & knee rests	4 sets
Breast callipers (digital)	4 sets
Multipurpose support cushions of various shapes	4 sets
Immobilization straps for various sites	4 sets
Separation meter - Should be made up of light metal with accurate scales	2 nos.
Shoulder retractor for head and neck patients	4 nos.
Digital water bath for thermoplastic precuts	1 no.

All the thermoplastic sheets must have clamp-based fitting with the base plates and the base plates should have the fitting for both clamps based as well as push pin types fittings.

Heat gun	2 nos.
Gel Bolus sheets 30 cm x 30 cm of thickness 0.5 cm	30 pcs per LINAC
Gel Bolus sheets 30 cm x 30 cm of thickness 1 cm	20 pcs
Styrofoam cutter for electron	1 no.
Alloy Melter	1 no.
Low/medium melt alloy	25 kg
Styrofoam blocks 12"x12"x3"	1 set
Styrofoam blocks 12"x12"x1"	1 set
Body caliper	2 nos
Curved stainless steel caliper	2 nos.
Tissue compensator	2 sets
Rectal marker	4 nos.
CT markers (2mm dia)	500 nos.
Wax bolus	50 box
Shoulder traction device for shoulder depression	4 nos.
Indexer bar for LINAC couch top carbon fibre to fit variety of base plates. (per institution)	4 sets
Tungsten eye shields set consist of three sizes, for paediatric and adult patients	1 set each
5. Customized Thermoplastic Immobilization precuts best quality (for two tears)	
Head & neck 4 clamp	500 pcs.
Head 3 clamp	250 pcs.
Pelvis (supine) 4 clamp	50 pcs.
Head & neck 5 clamp	50 pcs.
Pelvis (supine) 6 clamp	50 nos.
Tattoo ink	10 bottles
Thorax Abdomen wedge 5 degree	4 nos.
Thorax Abdomen- Arm rest - low	4 nos.
Knee & leg positioning cushion- low	4 nos.
Knee & leg positioning cushion- Base plate extension	4 nos.

Grip pole- Complete system	4 nos.
Side Panels for Vacuum cushions (set of 4)	4 nos.
Leg separator Low	4 nos.
Block 20mm in Reg Density	4 nos.
Wedge 9 Angle in Reg Density	4 nos.
Block 20mm in Carbon Fiber	4 nos.
Wedge 9 Angle in Carbon Fiber	4 nos.
Pressure belt for SBRT with manual pump	1 set
SRT/SRS Starter Kit Including Frame, Acrylic Base plate, Storage Base, 10 no of SRT/SRS Thermoplastic	1 set

Customized Thermoplastic Immobilization precuts should be provided as and when required by the concerned department and after installation of LINACs.

To install the Mould room facilities the demarcated area is to be prepared to make a room for Mould room facility. An indexed stable flat top couch of good make along with fixed sagittal LASER in-tune and aligned with the sagittal LASER of the CT simulator and treatment room should be provided at the ceiling of the mould room.

GENERAL CONDITIONS AND REQUIREMENTS:

- Life span of LINAC machines should be minimum of 10 years. The bidders should provide all necessary spare parts & services for satisfactory functioning of the equipment for the period.
- No conditional warranty like mishandling, manufacturing defects etc. will be acceptable.
- The cost of the CMC shall be quoted in Indian Rupees. All the items of the entire system, be it warranty or CMC period will be supplied from reputed manufacturers abroad and not from India.

In the above specifications wherever the word 'shall' is mentioned, it is taken in the meaning that the required feature/facility/procedure specification/standard is mandatory. All claims regarding meeting of the specifications shall be duly supported by appropriate, latest technical catalogues/brochures from the manufacturer. Simply stating that the equipment meets the specifications is not sufficient and any such quotations will be summarily rejected. Computer printed documents or laser printouts will not be accepted as technical catalogues/brochures. During the warranty and CMC period, all software up gradation/s of any and all of the machine and allied systems shall be provided free of cost.

- The vendor shall submit a compliance statement point wise in regard to the specifications asked for in the tender. It will be responsibility of the vendor to go through all the tender requirements carefully and accordingly address each and every point about their compliance. The compliance statement shall preferably be made in an Excel worksheet. The soft and hard copy of the compliance statement shall be provided. The yes or no statement mentioned in the compliance statement shall not be contradicted in the tender document.
- The vendor shall supply all the items required for running the entire Linear Accelerator system (including all parts consumables and non-consumables, imported or local). This assurance will remain valid for the entire life of the Linear Accelerator system. This assurance includes supply of all the parts required for proper functioning of the entire unit even if those have not been mentioned in the tender specifications advertised and the supply order / agreement contract. The Company shall carry out all the regulatory clearance required for installation, commissioning proper clinical use of the entire Linear Accelerator till the time the machine is functioning. The company shall coordinate the preparedness of the site for housing the Linear Accelerator and the shipment and delivery of the system to the Hospital complex so that the machine does not remain idle. The insurance up to the date of commissioning for the entire system will be company responsibility. The company shall not request the Hospital to purchase any items for 10 years from the date of commissioning which includes five years warranty and subsequent five years as CMC. The payment with regard to CMC will be made to the company by the Hospital at the end of every year of successful maintenance which will be certified by the user. The company will supply all the quality assurance tools/gadgets required for the smooth functioning of the machine for entire life of the machine. The company shall supply all the items

required for remote diagnosis and servicing. The company shall provide networking with the existing systems of the Hospital like TPS and the future purchase of any equipment in consultation with the vendor concerned (The cost of license from the respective vendors of the above equipments available in the department will be quoted).

- The custom duty/cost of insurance etc. for procuring the machine for the commissioning and any subsequent spare part /accessory etc. will be paid by the company at least for the entire 5 years of warranty and 5 years of CMC.
- The IMRT, IGRT LINAC system shall be FDA/CE approved and type approved from the regulatory body AERB, Mumbai. **Year of manufacturing of the unit and average life of the unit must be mentioned.** The suppliers shall bear all responsibilities and expenditures relating to transportation, custom clearance, loading, unloading, insurance of the equipment till commissioning, pre-commissioning approval of AERB and handing over the machine to the hospital authority.
- The acceptance/performance tests will be done as per AERB protocols and any deviation from their tolerance limit shall not be accepted. Dispute if any with regard to the tender shall be settled in the court in the jurisdiction of Kolkata, West Bengal.
- The LINAC system will be installed in the building (as per Layout plan approved by AERB).
- The vendor must depute an expert to acquire the requisite AERB data at the site during commissioning. Vendor shall inspect the site and assess according to the need of the specific machine which will be supplied. Any masonry, electrical or other work, if it is not done required for installation including finishing of treatment room and control area walls, floors etc. or any minor alteration / adjustments of the same will be completed by the vendor on a turnkey basis.
- **All furniture required for the control area, Treatment Planning systems room, Contouring room, Mould room, work stations, Physicist rooms, treatment rooms and patient waiting areas are also to be supplied by the vendor. Those must be of modern and reputed make in keeping with design and functioning of the entire area.**
- Vendor shall quote their optional items separately as described in the specifications. Optional or additional items not included in the essential items of the tender, if available may also be quoted by the firms as optional features, separately with individual prices. These may include advanced features/special features/advanced clinical applications etc. However, if the Hospital wants to purchase anyone of the optional items in future, the prices can be taken as frozen until the expiry of warranty period. (The technical and price bids of such items shall be quoted separately item wise and not with the main equipment).
- **Last Man out Switch to be installed in LINAC Bunker by the vendor as per guidelines of AERB.**
- **Door light (Red, Yellow, Green LED panel) for all the installed machines; lights should be as per the AERB safety code for Radiotherapy.**
- **One good quality Radiation survey meter.(Fluke/Ludlums reading in Sv, Sv/hr)**
- Sulfur Hexa-fluoride (SF₆) gas cylinder to be supplied throughout the warranty period and same to be included in CMC thereafter.
- **Vendor should add the necessary dosimetry equipments & accessories which they feel to be essential for their offered machine but not mentioned in this document.**

TECHNICAL SPECIFICATION OF CT SIMULATOR (4D)

CT Simulator is a latest wide bore 4D multi slice CT scanner with a virtual simulation workstation and moving external laser system.

1. MANDATORY REQUIREMENTS

- 1.1. The quoted model should have BIS/ISO/USFDA/CE (European) approval.
- 1.2. In addition, the quoted model should be NOC/type approved by AERB and should be the latest model available with the vendor. The related certificate & documents should be enclosed with the technical bid.

2. GENERAL REQUIREMENTS

- 2.1 The quoted model should be a dedicated CT-Simulator which is required for the Radiotherapy Department for conventional, 3-D CRT, IMRT and VMAT planning. The CT-Simulator should be able to use for most accurate simulation, placement of treatment fields and marking of radiation field portals on patients' skin for radiation therapy of cancer.
- 2.2. The quoted model should be the latest, state-of-the-art model.
- 2.3. The CT scanner should be a spiral, 16 slice or more multi-detector slip ring technology incorporating latest technology available in the market.
- 2.4. The simulator software should be user-friendly and should be easy, error-free and should have total compatibility between scanner and simulator workstation. If third-party software is supplied, it will be the sole responsibility of the vendor supplying the CT-Simulator to run the software seamlessly for the entire periods of comprehensive warranty and comprehensive maintenance contract.
- 2.5. The system should be networked to the existing 3-D Treatment Planning Systems, Brachytherapy Systems and High Energy Linear Accelerators in the department for DICOM RT Import and export and this will be entirely and direct responsibility of the CT-Simulator Vendor Co-ordination should be done by the turnkey supplier with the existing Radiotherapy Systems in the department. Compatibility should be complete in all respects.

3. CT-SCANNER SPECIFICATION

- 3.1 GENERAL: The quoted model should be a whole body spiral, 16-slice per rotation or more CT (multi-detector) with flat carbon fibre indexed table top for Radiotherapy Treatment Planning and Simulation of 4D-pulmonary CT scan acquisition.

3.2. GANTRY

- 3.2.1. Gantry aperture should be adequate enough to plan all types of RT planning with patients in their actual treatment position. Hence larger aperture of more than or equal to 80 cm will be desirable.
- 3.2.2. Scan Field of View should be 50 cm or more. Extended Field of View should be preferable equal to bore size.
- 3.2.3. Metal-free Scannable range should be at least 150 cm.
- 3.2.4. Gantry must have internal laser-positioning lights with a positioning accuracy of ± 1 mm or better.

3.3. X-RAY GENERATOR

- 3.3.1. High frequency x-ray generator with power rating of at least 75 kW or more.

3.4. X-RAY TUBE

- 3.4.1. The x-ray tube should have anode heat storage capacity of 6 MHU or more.
- 3.4.2. The anode peak heat dissipation rate should be 700 KHU/ min or more.
- 3.4.3. X-ray tube should have dual focal spot. Specify the size of the focal spots.
- 3.4.4. There should be at least two kV Settings or more available over a range of 80 kV to 140 kV.
- 3.4.5. The mA range must be from 20 mA to 600 mA or better, with step size of 5 mA or lesser.

3.5. DETECTOR SYSTEM

- 3.5.1. The detector system should have a high-performance and low-noise 16 rows of detectors or more with high data density, active response data acquisition system.
- 3.5.2. The detectors should be solid state.
- 3.5.3. The detector system should be free from repeated calibrations.
- 3.5.4. The detector system should be able to produce two data sets of image generation per rotation.

3.6. PATIENT COUCH

- 3.6.1. The couch top material must be indexed carbon fibre having horizontal moving range of 150 cm or more.
- 3.6.2. The table should be universally flat/ Carbon fibre flat tabletop.
- 3.6.3. The table should be compatible with the tables of quoted High Energy Linear Accelerator.
- 3.6.4. The table should have a patient positioning index system on carbon fibre tabletop. 2 Index rods have to be supplied for positioning of Immobilization base-plates (Head & Neck, Abdomen and Pelvis and Knee at Rest) for Radiotherapy Patient Simulation.
- 3.6.5. The table should be able to bear weight up to 180 kg or more and the tabletop sagging should be as per IEC guidelines.
- 3.6.6. The table should have a metal free range of about 150 cm and should have a scan able horizontal range of 150 cm.
- 3.6.7. The horizontal accuracy should be ± 1 mm or less.
- 3.6.8. It should be possible to move the table top from the Gantry/control console.
- 3.6.9. The table should have auto-home facility.

3.7. CONTROL CONSOLE

- 3.7.1. It should have 19" or more display monitor for display of 1280x1024 matrix or more.
- 3.7.2. All functions viz., scanning, image reconstruction, film documentation, MPR, CT maximum intensity projection, 3D with SSD etc., should be possible from the main console and workstation with pulmonary and ECG probe, interface card and driver.
- 3.7.3. Image storage of 1TB or at least 2,50,000 images of 512x512 matrixes uncompressed or better should be provided. The latest configuration may be quoted.
- 3.7.4. Latest fast DVD R/RW facility for archiving must be available.
- 3.7.5. The image reconstruction time should be less than 1.5 second from any mode.

3.8. CT-SCANNING PARAMETERS

- 3.8.1. The slice thickness should be user-selectable from 0.6 mm to 10 mm or lesser.
- 3.8.2. kV range: 80 or lesser to 140 kV.
- 3.8.3. mA range: 20 to 600 mA in increment of 10 mA or lesser increment or larger range.
- 3.8.4. Scan time for full 360-degree rotation should be 0.5 second or less.
- 3.8.5. Scan field view should be 50 cm or more.
- 3.8.6. Display field of view should be 50 cm or more.
- 3.8.7. Intra-Plan delay of 5 seconds or less should be possible.
- 3.8.8. Retrospective reconstruction should be possible on raw data files with change in parameter such as FOV.
- 3.8.9. The following scanning modes should be possible:
 - Scannogram
 - Axial
 - Spiral
- 3.8.10. It must be possible to obtain the scanogram for AP or PA or left-to-right or right-to-left directions.
- 3.8.11. The accuracy of slice prescription from scanogram should be 0.5 mm or better.
- 3.8.12. The scanogram length should be more than 1500 mm long and 500 mm wide.
- 3.8.13. Reference scan should be possible on an arbitrary slice within the proposed treatment volume.

3.9. IMAGE QUALITY

- 3.9.1. The reconstruction matrix must be 512x512 or higher.
- 3.9.2. The reconstruction time should be as less as possible. Specify the reconstruction time.
- 3.9.3. Simultaneous scanning and reconstruction should be possible. It should be possible to do:
 - 3.9.3. Simultaneous scanning & routing analysis
 - 3.9.3. Simultaneous scanning & archiving and/or hard copying, and
 - 3.9.4. Simultaneous scanning and transfer to the second console / workstation.
- 3.9.5. The system must have automatic mA control software that automatically adjusts mA for patient size; adjust mA along the z-axis, modulates mA during rotation.
- 3.9.6. High contrast Spatial Resolution: It should be 15 lp/cm or more for a slice of 10 mm thickness.
 - Clearly specific the phantom used, scan time, mA, filter for image reconstruction, scan field.
 - Low contrast detectability 5 mm or less with 10 mm slice thickness on CATPHAN phantom.
- 3.9.7. The CT number accuracy must be better than ± 4 HU for water and ± 10 HU for air.
- 3.9.8. All necessary phantoms to check the spatial resolution of the scanner should be provided.
- 3.9.9. Spiral parameters: Different selection of pitch should be possible, from 0.5 to 1.5.

3.10. COMPUTER SYSTEM OF CT-SCANNER

- 3.10.1. A very high-end main computer system, latest available in the market must be provided.
- 3.10.2. RAM size must be at least 32 GB or higher.
- 3.10.3. There must be two monitors in the console and they must be 19-inch or higher displays. One of these will be used for acquisition and other will be used for review and processing.
- 3.10.4. The hard disk capacity of the main computer system must be at least 700 GB (solid state) or more.
- 3.10.5. In the hard disk meant for image storage, the number of uncompressed 512x512 images that can be stored should be at least 2,50,000 or more/ 1 TB. The maximum possible hard disk Capacity must be provided.
- 3.10.6. For archiving, DVD writer should be provided. The images should be able to convert to JPEG/MEPG to be recorded onto recordable CD and DVD.
- 3.10.7. The CT simulator system should be fully DICOM RT compliant. The DICOM should support the following:
 - 3.10.7.1. DICOM 3.0 Storage class as a user.
 - 3.10.7.2. DICOM 3.0 Storage class as a provider.
 - 3.10.7.3. DICOM 3.0 Send/Receive.
 - 3.10.7.4. DICOM 3.0 Query/Retrieve service class as a user.
 - 3.10.7.5. DICOM 3.0 Query/Retrieve service class: a provider.
 - 3.10.7.6. DICOM compliance statement must be provided.
- 3.10.8. A bidirectional speaker communication must be provided between the operator and the patient.

3.11. STANDARD SOFTWARES

- 3.11.1. Complete scanning and evaluation software.
- 3.11.2. 3-D surface shaded and 3-D volume rendering.
- 3.11.3. Quantitative CT measurement tools should be provided.
- 3.11.4. 3-D small volume analysis software for solitary nodules is desirable.
- 3.11.5. Metal Artifact Reduction feature should be provided to reduce metal artifacts.
- 3.11.6. Interface and essential software for four-dimensional pulmonary CT scan for both amplitude and phase-bin CT data acquisitions to reconstruct the MIP (Maximum Intensity Projection), MinIP (Minimum Intensity Projection) and AIP (Average Intensity Projection) CT Image datasets should be provided. Retrospective four-dimensional CT scan acquisition options should also be available.

4. MOVING LASER SYSTEM

- 4.1. The CT simulator should have at least three green lasers for marking field reference points and field isocentres – two lateral laser stations and one sagittal laser station. Two left and right lateral Laser stations, guarded with outer steel mesh to avoid the movement of Laser Stations by routine CT Simulator users and each lateral laser station consists of a horizontal and a vertical laser source. One sagittal Laser station

consists of a sagittal and vertical laser source. The wavelength of these Lasers should be $\sim 520 \pm 30$ nm. The positional accuracy should be within ± 0.5 mm and the width of the laser should be within 1 mm.

4.2. In addition to the above moving lasers the CT scanner should have conventional in-built lasers for positioning the patient.

5. CT SIMULATION PLANNING SYSTEM

5.1. GENERAL

5.1.1. The workstation/console computer should have advanced CT simulation tools for radiation therapy treatment planning compatible with the LINAC.

5.1.2. The workstation/console computer should be able to provide complete volume definition and geometric beam placement for radiotherapy.

5.1.3. The CT simulation should generate digitally reconstructed radiographs (DRRs) in a true volumetric environment.

5.1.4. It should have complete compatibility and error-free DICOM networking with a CT scanner computer, TPS and existing Linear Accelerators. All licenses required for DICOM 3 and DICOM RT (RT Plan, RT Structure, RT Dose) import and export to other Treatment planning systems (including Third Party) should be permanent and included in the offer.

5.1.5. Vendors should provide the DICOM connectivity of CT Simulator to be connected with the existing MOSAIQ and ARIA Oncology Information System softwares.

5.2. HARDWARE

5.2.1. Hardware specification should be mentioned clearly.

5.2.2. Display should be Medical Grade 2 Mega pixel higher display monitor with a high resolution of 1920 x 1024 pixels or better.

5.2.3. Networking with TPS: All the software with essential licences required should be included. Complete DICOM-RT export/import license should be available.

5.3. SOFTWARE FOR SIMULATION AND CONTOURING

5.3.1.1. Console/Workstation should be able to Import of CT, MR, PET, PET CT Images and other images taken at or outside the Department of Radiotherapy & Oncology.

5.3.1.2. It should automatically create 3D image from the supplied axial images and should make the body structure through auto segmentation.

5.3.1.5. On the monitor screen it should be possible to view DICOM in multiple slices viewports at least 16 images or more.

5.3.1.6. The standard screen layout should consist of one main view port and three sub-view ports for frequent usage of other images, quick manipulation of images or for displaying reference views, while the main view port is used for high resolution display.

5.3.1.7. Image manipulation such as changing window width and window level, hot keys activated, automated study archive, deletion, screen layout changes, disk space display, archiving, and graphic overlays such as annotation.

5.3.1.8. It should be possible to simulate all kinds of teletherapy machines in the simulation workstation. It should conform to IEC and other international standards for linear accelerator conventions.

5.3.1.9. It should be possible to visualize interactively reference views in axial, coronal, sagittal, isocenter image planes in any oblique directions with overlay of beams on DRRs.

5.3.1.10. DRR must provide a fully divergent beam's eye view of 512 x 512 matrix.

5.3.1.11. The DRR/BEV should display the machine diagram to allow real time checking of machine and patient geometry.

5.3.1.12. Facility for multimodality fusions to accept data from other DICOM compatible and DICOM supporting modalities like MRI/CT/PET/SPECT and should be able to fuse them.

5.4. CONTOURING SOFTWARE

- 5.4.1. Contouring tools for 3D auto margin and 3D variable margin.
- 5.4.2. Automatically/manually create margins in all six directions. Both positive and negative uniform and non-uniform margins should be possible and individual expansions should be possible in all dimensions.
- 5.4.3. Edit/Draw all contours, contour names, CT densities and colour for each structure. Facility for selection of colour for DVH display is available should be specified.
- 5.4.4. Continuous trace, point to point and auto contour via CT threshold.
- 5.4.5. Contour on primary image (CT) or secondary study images (MRI / PET) after image fusion. Also should be feasible to contour on fused images like MRI, PET Images acquired with localizing frames send after image registration in other systems.
- 5.4.6. Outline tumor volumes and critical structures on transverse planes with visualization in any 3 axes including real time 3D visualization.
- 5.4.7. Contour interpolation facility.
- 5.4.8. Asymmetric stretch and resize facility should be available.
- 5.4.9. Rapid copy to superior and inferior slices.
- 5.4.10. Advanced editing tools like facility to give negative margins, crop structures with arbitrary margins, remove structures extending outside or inside other structures; wall extraction from a solid structure with positive or negative margin, auto-segmentation based on CT numbers and limiting contours by the Volume of Interest tool should be provided.
- 5.4.11. It should be possible to add/subtract/join one or more contours of drawn structures.
- 5.4.12. It should have the capability for interpolation of contiguous and non-contiguous contours between one or more image planes. It should be able to copy and extend the contours in arbitrary lengths along the cranio-caudal direction.
- 5.4.13. Facility for rigid image registration should be available. The result of registration of such type should be editable and exportable. The system should be capable of registering arbitrary images like CT, MRI, PET, PET-CT.

5.5. 3-D VIEW AND VOLUME RENDERING CAPABILITIES

- 5.5.1. Post-processing features like Volume Rendering, Real-time multi-axial volume reconstruction, 3-D surface rendering, color 3-D should be available.
- 5.5.2. It should allow complete 3-D volume to be defined including complex 3-D volumes, user selectable multi-image views, reformatted sagittal, coronal and oblique images etc.
- 5.5.3. DICOM-RT structure set with import/export of data should be possible. The DICOM compliance statement should be provided.

5.6. DRR FEATURES

- 5.6.1. The virtual simulation software should have the capability to display real time Digitally Reconstructed Radiographs.
- 5.6.2. It should be possible to have adjustable Window and Length for display of DRR.
- 5.6.3. Various preset DRR modes should be available specially to display the bone, air cavity and lung.
- 5.6.4. The DRR generation method should include normal sum, Maximum Intensity Projection (MIP) 3D image data set.
- 5.6.5. The system should have the Capability to display the Beams Eye View in various orientations. There should be facility for real time rotation of wire frame, solid and transparent structures.
- 5.6.6. Real time display of DRR as beam parameters are changed.

5.7. DEPTH CONTROL

- 5.7.1. The system should support depth control mode creating a DRR from slab of 3-D mode, perpendicular to beam axis.
- 5.7.2. DRR must be calculated over a user defined thickness.
- 5.7.3. Depth control in oblique projections must be possible.
- 5.7.4. Cross-hair display on DRR to Provide scale information should be available.

5.8. DOCUMENTATION & ARCHIVING

5.8.1. Should be on a color dye sublimation or alternative.

5.8.2. Laser colour printer A4 size, latest model should be provided.

5.9. MEASUREMENT PACKAGE

5.9.1. The software should provide the density value (in Hounsfield Unit) of a particular point on an image. It should compute distance along straight lines and curved lines, angle between the lines, and radius of curvature for curves.

5.9.2. For specific region of interest (ROI) the area, minimum and maximum voxel values, mean and standard distribution and a density histogram should be available.

5.9.3. The software should be able to calculate the volume of a displayed 3-D object.

5.10. IMAGE MANIPULATION

5.10.1. Different kinds of image manipulation features should be available like multiplanar reconstruction and curved reformatting.

5.10.2. 3-D reconstruction with no waiting for reprocessing.

6. ENVIRONMENTAL FACTORS

6.1. Complete installation should include:

6.1.1. Room planning, designing and modification of the existing site as per AERB guidelines and approval taken by department.

6.1.2. Air conditioning and monitoring of temperature and dehumidifier for maintaining the relative humidity and air changes (to specify number per hour) to be installed by the vendor.

6.1.3. The unit shall be capable of being stored continuously in ambient temperature of 0 to 50 degree Celsius and relative humidity of 15 to 70%.

6.1.4. The unit shall be capable operating in ambient temperature of 20 to 30 degree Celsius and relative humidity of less than 70%.

6.2. The unit shall meet IEC-60601-1-2:2001 (or equivalent BIS) General Requirements of Safety for Electromagnetic Compatibility or should comply with 89/366/EEC; EMC-directive.

7. POWER SUPPLY AND AIR CONDITIONER

7.1. Should work on three phase 200 to 220 volts/50 Hertz Power.

7.2. Online UPS of suitable rating should be supplied for the power backup of the complete system including gantry, computer system and room lights with at least 30 minutes back up time.

7.3. Reset-table over current breaker shall be fitted for protection.

7.4. The vendor should procure, install and maintain the air conditioning and humidity control systems as needed for the perfect functioning of the Equipment and its subsystems for the entire warranty and CAMC period.

7.5. Complete details of such units must be furnished.

7.6. After completion of the warranty period of 5 years the actual supplier of the Air Condition system must enter into a comprehensive maintenance contract for all those units for 5 years. All the consumable items for the maintenance of Air Conditioning, UPS, should be included in this CAMC quotation. The details and rates for the same which should be supplied by the third party should be quoted separately.

8. ACCESSORIES & DOCUMENTS

8.1. A complete User/Technical/Maintenance manual to be supplied in English (Soft copy & Hard copy)

8.2. Certificate of calibration and inspection from factory.

8.3. All necessary phantoms and QA systems/ tools/ gadgets required for commissioning and validation tests for clinical implementation of above systems should be provided.

- 8.4. Latest Dell laptops of Intel I-7 processor with 32 GB ram and 1 TB hard disk for dedicated QA applications, 1 TB external HDD for backup, software for analysis and all associated essential QA tools.
- 8.5. Focal spot test tool with analysis software etc.
- 8.6. Water bath with thermostat and digital display, with adequate inner dimensions so that the biggest size thermoplastic accommodated inside.
- 8.7. Image calibration/High and Low Contrast, Spatial Resolution, Slice Thickness, CT No. uniformity and Dosimetry QA phantoms/check devices, ion-chamber based dosimeter with electrometer for patient dose measurement.
- 8.8. Set of Aluminium filters for HVL measurements.
- 8.9. kVp and Timer meters of x-ray tube. mA meter for x-ray tube current measurement.
- 8.10. Aluminium Step Wedge for Sensitometry curve measurement.
- 8.11. **Contrast Injector:** A latest high quality automatic dual (double) head CT contrast pressure injector with auto refill system should be provided with the system. 500 number disposable syringes compatible with contrast injector. To be supplied in phased manner over 5 years.
- 8.12. Temperature management and relative humidity management as per maintenance specifications of the concerned 4D CT simulator machine should be done by 4D CT simulator vendor company for the 4D CT simulator as well as control console. (Sufficient AC machines with 100% backup and dehumidifiers should be mentioned separately in turnkey for this purpose).
- 8.13. All furniture, cabinet, table, desk, chairs for CT room and control console – no. to be included in turnkey.
- 8.14. The dehumidifier system for keeping the humidity of the CT simulator room within the vendor specific ranges.
- 8.15. The main machine and all the third party items should be installed within 180 days after the date of letter of credit opening or AERB site drawing approval whichever is later.
- 8.16. During the warranty period the vendor should provide a service uptime guarantee of 95%. The minimum period of downtime more than or equal to 60 minute will be counted in the annual downtime hours calculation. Downtime will include any and all the time in which the machine was not functional due to other accessory systems like AC, UPS system and all internal hardware, workstation, software or network related issue.
- 8.17. Compliance Report to be submitted in a tabulated and point wise manner clearly mentioning the page/Para number of original catalogue/data sheet. Any point, if not substantiated with authenticated catalogue/manual, will not be considered.

TECHNICAL SPECIFICATIONS of HDR Brachytherapy

A. General Specification

1. The system should be high dose rate Remote After loading Ir-192 Brachytherapy system capable of Intra cavitory, Intraluminal, Interstitial, surface mould Brachytherapy.
2. The offered model whose hardware & software up gradation done in the year 2018 or after.
3. The HDR system should be microprocessor based with PC control.
4. The HDR system must be from a well established company with a documented history of reliability.
5. The HDR machine should be in compliance of all AERB specified safety regulation and AERB type approved.
6. The HDR system manufacturer should have an ISO 9001 and FDA approval.
7. The HDR system must have a "check" cable that automatically checks the operation of the complete system prior to Treatment. The check cable must also be possible to use as a "Dummy" source to allow simulation of particular source Locations.
8. The system should be in use in renowned centers in India. The tender offer must be accompanied with letters of reference from at least 3 (three) existing users of the offered product. At least 1 (one) reference should be from user in India.

9. The vendor should provide warranty for at least 5 years and CAMC for at least subsequent 10 years. The vendor should provide service and all necessary part for at least 15 years from the date of installation.
10. The room for installation of the HDR Brachytherapy system has already been constructed as per AERB approval. If any modification work is required depending on the model is to be done by the Supplier as per AERB recommendation.
11. All the AERB specified Radiation safety features in the control unit and in the room should be available.

B. Detailed Specification: Treatment Unit–HDR

1. Treatment unit should be on wheels for easy mobility within the room.
2. Separate stepper motors to control the dummy check cable and source cable.
3. Maximum air kerma rate at 1 meter and on the surface of the after loader treatment unit should not exceed AERB specified limit.
4. The maximum source holding capacity without exceeding AERB specified air kerma rate at a distance 1 meter from the surface of the after loader and on the surface of after loader should be specified.
5. Multichannel indexer with a minimum of physical 30 channels having an automatic/optical verification of channel number and applicator connection.
6. The source must be retractable in the event of an emergency/power failure by following methods:
 - i) By an independent DC Motor
 - ii) Manual source retraction through hand crank.
7. UPS back up for at least 30 min should be provided separately for HDR Brachytherapy Machine, control unit and in the TPS. A detailed circuit for checking the battery condition should be provided
8. Nominal wire speed should be specified.
9. Unit should have Catheter end check for enhanced safety
10. A Safe must to be contain the source which complies with AERB and international safety regulations to hold source with minimum 10 Ci (370 GBq) for Ir-192. The activity of the sources to be supplied should be mentioned.

C. RADIATION SOURCE AND TRANSFER MECHANISM:

1. The source must be a single, High Dose Rate Iridium-192 Source.
2. The source cable connection must be tested to withstand minimum 5,000 transfers per source. The source transfer guarantee must be high to ensure optimal usage of each individual source.
3. Treatment curvature of the source cable should be mentioned.
4. A package of twenty radioactive sources (for Ir 192) for an appropriate time period (around 10 years) depending on the source transfer guarantee specified by the manufacturer must be provided. The price of the sources should be mentioned separately.
5. The sources should be supplied as and when required/requisition by the user department.
6. Insurance and freight cost, the custom clearance and transport cost, and all other cost related to the import and delivery to the department of the new/unused sources; and export/disposal of the used sources from the department must also be included in the order for all the sources to be procured.
7. The logistic arrangement for import and delivery to the department of new/unused sources; and the export /disposal of the used source from the department should be arranged by the vendor.
8. The source transfer guarantee and uninterrupted functioning of each source should be ensured for minimum 6 (Six) Months for Ir-192 source.
9. The dimension of the source to be specified.

D. Control Unit:

1. Stand alone and independent PC based control unit with colour monitor, keyboard, mouse, printer (for hardcopy) built in audio card, network card and a backup media.
2. Control unit should have a graphical user interface and should contain an extensive reporting

facility.

3. Control Unit software should run on Windows application.
4. Control Unit should have a self-testing feature.
5. Control unit must keep track of patient's fractionated treatment.
6. Access must be limited to authorized users with Password protection.
7. The treatment times must be automatically corrected for the decay of the source.
8. The no of dwell positions for the source in each channel should be mentioned.
9. Display window should show dwell time and dwell position.
10. Display of Total reference air Kerma and dose should be available.
11. The control unit should contain:
 - i) An inbuilt protection circuit to prevent treatment without proper applicator connection and proper indexer locking.
 - ii) Minimum 1 TB internal Hard drive should be provided along with a backup option to an internal/external storage device of 1TB or more.
 - iii) Availability of a built-in log book and event recording in Control unit should be specified.

E. Brachytherapy Treatment Planning System

i) Hardware

1. The hardware should be of high end graphics workstation with latest high resolution scanner and multicolour network Printer.
2. The software should be latest and up-datable for at least 10 yrs.
3. Latest version of DICOM facility for Import/export from all existing CT/MR/PET/PACS/C- ARM/ultrasound should be available. The HDR Brachytherapy system and all imaging machines available should be integrated with the network for import/export of image/ structure.
4. Two separate workstations to be provided for contouring and treatment planning with all relevant licenses.

ii) SOFTWARE:

1. The Brachytherapy treatment Planning software should 3D and be able to perform all kinds of 2D/3D planning, isodose plotting and display of patient files, beam data acquisition etc.
2. It should support treatment modalities including intracavitary, interstitial, intraluminal and surface mould techniques.
3. All the reconstruction technique like: Orthogonal Semiorthogonal with reconstruction box Variable angle Isocentric must be available.
4. Dose Calculation should be based on TG43 (Mandatory). Automatic placement of Basal Dose Points for Paris Technique (optional).
5. Different Optimization techniques like Dose point Optimization on distance and volume. Geometrical Optimization on distance and volume, Graphical Optimization with local and global control should be available.
6. Fast and accurate dose calculation considering radial dose function, anisotropy function and geometric function should be there.
7. Rapid reconstruction of catheter using tracking algorithm and indication of corresponding lines on the images should be present.

8. Extremely accurate and dwell time optimization and dose calculation must be available.
9. Wide range of dose volume histogram methods, Point dose option. Different planes view must be available.
10. Catheter/applicator reconstruction in 3D space for 3D image imported from simulator, CT scanner, MRI scanner & Ultrasound scanner should be available.
11. Reconstruction of 3DS models of anatomical structures, based on 3D data set from simulator, CT, MRI and Ultrasound scanner.
12. Catheter /applicator reconstruction in 3D space from: orthogonal film, semi orthogonal film stereo shift films using zig reconstruction.
13. CT and MR fusion features should be available

F. Standard applicator set to provided. For detail ANNEXURE I attached.

G. The Following Quality assurance tools and other equipment to be provided:

1. One G.M based Survey meter for Brachytherapy Installation (Reputed brand).
2. Source position check device
3. One Electrometer with well type chamber (Reputed brand) with connecting cable of at least 20 meter length.
4. The source holder for dosimetry (for well type chamber) should be machine and source dimension specific.
5. One Gamma zone monitor for Brachytherapy installation (Reputed Brand).
6. One mercury thermometer and aneroid barometer.
7. One PC with scanner and printer with latest configuration.
8. One packet of Gafchromic film for Brachytherapy auto radiograph
9. Contamination monitor: 1 no (Reputed Brand).
10. CC TV camera with monitor: 3 nos
11. LMO Switch: 1 no
12. Radiation Signage: 2nos
13. Radiation warning Lights: 2nos
14. New sliding door along with interlock for treatment room (with maintenance) Require Door/Glass Door of Brachytherapy room and control console and Minor OT room should be provided.
15. Core Cutting: 1 no between treatment room and Console, for cable connecting
16. Brachytherapy machine with console.
17. Networking Cable from Brachytherapy treatment room to CT simulator room to be provided by the supplier (approximate distance 5-10m) with RJ 45 socket- 3nos and one networking switch to be provided by Supplier.
18. Emergency light-4 nos.

ANNEXURE I

Brachytherapy Applicator Requirements

A. INTRACAVITARY

1. Segmented AND Non Segmented Cylinder Applicator Set CT Compatible and MR Compatibility: Conditional

2. Single channel- all sizes (3 each)
3. Multiple channel- all sizes if available 3cm (2)-Cylinder-Diameter- 2 cm, 2.5 cm, 3 cm
4. Fletcher-style Applicator Set – Defined Geometry
5. All tandem angles, all ovoid diameters (2 each)-3
6. Fletcher – INTRA UTERINE TANDEM – Anteflexion angulation 15°, 30°, 45° B/L OVOID– Full & Half.
7. CT/MRI Fletcher-Suit-Delclos-style Applicator Set, Flexible Geometry CT Compatible and MR Compatibility: Conditional All tandem angles, all ovoid diameters (2 each)
8. Fletcher – INTRA UTERINE TANDEM– Anteflexion angulation 15°, 30°, 45° B/L OVOID– Full & Half.
9. Manchester-style Applicator Set–Flexible Geometry -2 sets
10. Fletcher – INTRA UTERINE TANDEM – Anteflexion angulation 15°, 30°, 45° B/L OVOID– Full & Half.
11. Ring & Tandem Applicator Set CT Compatible/MR Compatibility: Conditional
12. All angles (2 each)
13. Fletcher– INTRA UTERINE TANDEM – Anteflexion angulation 15°, 30°, 45° WITH DIFFERENT RING DIAMETERS.
14. BALLON CATHETER APPLICATOR CT & MRI (CONDITIONAL) COMPATIBLE FOR CA BREAST (MAMMOSITE) - 25 qty

B. Advanced ICRT+ISRT set (combined interstitial plus intracavitary applicator with ring and tandem and transvaginal interstitial needle application.) – MR Compatible- (2)

C. INTRALUMINAL

1. Esophagus Bougie Set CT Compatible (2)
2. Centering Intraluminal Applicator Set CT Compatible (1)

D. INTERSTITIAL

1. Perineal Implant Template Set
 - a. MUPIT/ equivalent Template Set- (2) + Needles (CT and MR Compatible)-(2 sets)
 - b. Syed Neblett template set (2) + needles-(2 sets)

2. Breast Implant Template Set CT Compatible (any one)-2

I.SQUARE

II. TRIANGLE

3. Prostate - i. MUPIT set + needles (CT and MR Compatible)
4. ISRT Needles (CT & MR compatible) as available-
 - Long-4 sets- 2
 - Medium-4 sets-2
 - Short-4 sets-2
5. Interstitial Needles (CT Compatible and MR Compatibility: Conditional) – 2 sets each size
6. Plastic Catheters- Single ended- 500 nos. (3 yr life span) Double ended- 500 nos. (3 yr life span)

The Scope of Work for Turnkey–for Bardhaman MCH (High Energy LINAC)

1. The prospective bidders already visited the proposed site for HIGH END HIGH ENERGY Linear Accelerator (LINAC) bunker at Burdwan Medical College and Hospital, Burdwan. Bidders are advised to acquaint themselves with access to site, location of work and any other matter relating to availability and carriage of construction materials. The construction of the concrete shell of the Bunker(LINAC ROOM) has already been built. The turnkey work shall include all other site preparation work required for installation and functioning of the LINAC at the proposed site. The selected bidder shall submit 3D view of the interior work to be undertaken for approval of WBMSCL. Along with interior works as specified in details, the scope of work for Turnkey shall also include the following,

a) The cutout kept for transporting the LINAC consignment from Ground floor to lower basement with the help of Chain Pulley should have an Iron I-girder fixed at one level higher floor. To fulfill this requirement additional temporary structure for hanging the LINAC consignment will be provided by Civil engineering department of concerned Institute. The chain pulley or other similar additional civil & mechanical arrangements should be done by the vendor for hanging and transporting the heavy weight boxes from Ground level to lower basement.

b) One Toilet facility with small basin at Lower basement and One Toilet facility with medium basin at upper basement vertically inline should be furnished by Vendor Company.

Lower basement toilet requirements: Area located. Existing 3 walls only. Room Dimension: Length -1500mm, Width-1120 mm, Height- 3700 mm. Additional requirements: Western type toilet with water flush facility, Mini Basin, 500 liter RCC tank below the toilet, stairs up to toilet slab, suction type /suitable automatic pumping system having non return valve with back up motor and piping up to main tank at ground level, door with wall above the door, all other required interiors, Air exhaust system.

Upper basement toilet requirements: Area located vertically above the lower basement toilet. Existing 3 walls. One wall to be made by vendor (Length-3325 mm Height-3300 mm). One wall needs to be cut to make door space by vendor. Room Dimensions: Length- 3325 Width – 1225 Height – 3300 mm. Additional requirements: Western type toilet with water flush facility, Medium Basin, 500 liter RCC tank below the toilet, stairs up to toilet slab, suction type /suitable automatic pumping system having non return valve with back up motor and piping up to main tank at ground level, door , all other required interiors, Air exhaust system.

- a) Remaining necessary civil work for enhancement in thickness of floor, walls and ceiling of concrete wall in the present bunker already constructed at Burdwan Medical College and Hospital.
- b) The sunken area inside LINAC bunker and console area should be filled /raised by selected LINAC vendor using RCC so that the trenches/base frame, table pit can be accommodated as per the selected vendor and also to match with AERB approved plans.
- c) Temperature management (Sufficient AC machines with 100% back up) and relative humidity (Sufficient Dehumidifier) management as per maintenance specifications of the concerned LINAC Machine should be done by LINAC vendor company for the LINAC room as well as console area.
- d) All further core cutting needed through walls and ceilings other than existing should be done by vendor.
- e) The outdoor unit of AC should have grill coverage with lock and key facility to prevent theft and damage. The water drainage storage and pumping management system for the AC units should be arranged by Vendor.
- f) The chiller system, if placed outside of the building, the vendor should make necessary arrangements like shades above, grill around with lock and key facility for the same to ensure physical safety and security.
- g) Necessary Heavy Duty wooden door and Aluminum panel glass door to be provided.
- h) Vacuum Cleaner

The AERB approved drawings of the LINAC building is attached herewith.

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

- i) Easy movement of the patient stretchers/trolleys through corridors and doors.

- j) Adequate Radiation shield is as per AERB norms, if necessary.
- k) Supply of furniture like desk, chairs, shelves, locker etc.
- l) Supply of Patient stretcher and other furniture/accessories to make the LINAC functional.

The intending bidders are to calculate the cost of necessary turnkey job (site preparation, interior works, furniture and office accessories) based on the area as demarcated in the site wise drawings attached with the tender document.

- m) Construction / modification work including construction of brick wall if any, plastering, flooring as per the approved plan and equipment lay out plan.
- n) Construction of renovation/modification demolition, exaction, filling work including construction of full or half brick wall if required, plastering, flooring as per the approved plan and equipment layout plan. Necessary openings/ niches/ cut-outs, wherever required as per drawings and asked for by WBMSCL, shall be provided by the contractor without any extra cost.
- o) Making surface good for floor modification for installing the LINAC.
- p) Platform for unloading and if necessary.
- q) Cable tray, trench & channel–necessary trenches, cable tray and channels at required locations.
- r) Anti-termite treatment and pest controls should be done in and around the facility once in a year. The entire complex will be made rodent/pest proof.
- s) Core cutting in the ceiling of LINAC console room for electrical mains cable if require. (dimension: approx. 6 inch of 4 no's)

3. Specification of materials

t) Flooring:

Granite– 2400 x 800 mm or bigger good quality heavy duty hard Granites of 18 mm thick

Premier Tiles – 800 x 800 mm mirror polished premier quality double charged joint less vitrified tiles

Kota – Heavy Duty Hard Kota of 18 mm thick

u) Walls:

Granite – 2400 x 800 mm or bigger good quality heavy duty hard Granites of 18 mm thick

Premier Tiles– 800 x 800 mm mirror polished premier quality double charged joint less vitrified tiles

Ceramic Tiles– Premier quality joint less Glazed ceramic tiles of size 450 x 300 mm

Note: Epoxy base resin should be added with cement mortar with necessary key stone while fixing of the Granite

v) False Ceiling:

Mineral fiber board with powder coated GI grid at LINAC room, control room, lobby and patient preparation areas.

PLUMBING WORK

1. All necessary plumbing work to install LINAC and Chiller piping work should be done by vendor

ELECTRICAL WORK:

- (i) The supplier shall be required to specify the total load requirements for the LINAC 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 LINAC centre. Few lights in each room shall be connected to the UPS to provide emergency lighting.

(ii) The electrical work shall include the following:

Wiring – Wiring with colour code for all types of points and plugs etc. All interior electrical wiring – with main distribution panel board, necessary vertical TPNMCBDBs to control MCCBs, TPNMCBDBs and SPNMCBDB if any necessary. Every point should be wired with both neutral and phase and earth separately from the copper link bar of phase, neutral and earth. Copper link Bar should be housed into the switch board on 1.1 KV grade insulators. There should not be any joint in between of any two terminals of all the installations. The 3wires system shall be of copper wire (minimum 1.5 Sq-mm) of different capacity as per the load and should be of renowned make as listed below.

w) All the internal wiring including that of telephone, LAN, DICOM & PACS etc. will be of concealed variety.

x) Earthing: Double earthing with copper plate for the LINAC and all accessories should be as per ISO rule

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

z) General lights – LED Lights of 400 LUX

aa) Sky Light should be in the ceiling of LINAC room. All wires used must be FRLS

(Fire Retardant with low smoke) type only

2. AIR CONDITIONING: All rooms mentioned above need to be air-conditioned. Ductable central AC for LINAC room and control room should be used according to room requirement and suitability. Humidity control should be provided to effectively eliminate moisture condensation on the equipment. The Air conditioning system should be designed with standby provision to function 24 x 7. The outdoor units of AC should have grill coverings to prevent theft and damage. Exhaust systems required in toilet to be provided.

Dehumidifier: Two of 2 tonnage per LINAC should be provided

3. Environment specifications:

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

cc) **Temperature ranges:** 22 +/- 2° C in all areas throughout the year, except equipment room which shall be as per requirement of the equipment.

dd) **Air conditioning load:** The heat load calculations and maintaining the desired temperature and humidity shall be the responsibility of the supplier.

4. Painting:

Two coat plastic emulsion paint over two coats of wall putty including primer in all area except LINAC room.

LINAC room walls-High quality high density vitrified tiles clad on the side walls up to false ceiling.

FURNITURE AND OTHER OFFICE ACCESSORIES FOR PATIENT BENEFIT:

➤ LINAC

BURDWAN MEDICAL COLLEGE& HOSPITAL, WESTBENGAL			
Sl. No.	Rooms	Required facilities	Remarks
1.	LINAC room (Lower basement)	<ul style="list-style-type: none"> Customized cupboards for storing immobilization devices / machine accessories/Daily QA equipments – at least 60'(W)x6'(H)x3'(D) in parts. Patient changing area with chair, full length curtains, mirror, small rack /drawer for keeping belongings patient. Table with drawers-5'(W)x3'(D) Trolley for carrying dosimetry devices. Sky lighting. 	Inside LINAC room
2.	LINAC console room (Lower basement)	<ul style="list-style-type: none"> Long tailored made table 20'(W)x3'(D) with drawers for installing 4-6 computers and printers etc. Executive revolving chair with full backrest-4 Executive revolving chair with half backrest-4 Customized wall cabinet of at least 20'(W)x4'(H)x3'(D) with lock and key facility – 2such Steel almirah / wall cabinet of standard size 6'(H)x2'(D) with lock and key-2 X-ray viewer with digital backlight 4 plates – 1 Dustbin –4 	For operating LINAC from control console area
3.	TPS room (Lower basement – Presently designated as Physicist Room in plan layout)	<ul style="list-style-type: none"> Customized table tops along three sides of the room with a depth of 2.5' for installing 8-9 computers, 2 printers etc. Executive revolving chair with full backrest-6 Executive revolving chair with half backrest-6 Customized wall cabinet along 2 sides of the room with a depth of 2' with lock and key facility Steel almirah / cabinet of standard size 6'(H)x2'(D) with lock and key-3 X-Ray viewer with digital backlight (4 plates)-1 Dustbin-2 CPU trolleys/UPS trolleys as needed Polycarbonate based suitcase with wheels (Air cabin luggage size) –2 such for ion chamber calibration purpose. 	Treatment planning Stations Room for LINAC.
4.	Contouring Room (Lower Basement – Presently designated as TPS room in plan layout)	<ul style="list-style-type: none"> Customized table tops along three sides of the room for contouring workstations with a depth of 2.5' with drawers. Executive revolving chair with full backrest-6 Executive revolving chair with half backrest-6 Customized wall cabinet of at least 40'(W)x5'(H)x2'(D) with lock and key facility X-Ray viewer with digital backlight (4 plates)-2 Dustbin-2 CPU trolleys/UPS trolleys as needed Steel almirah / cabinet of standard size 6'(H)x2'(D) with lock and key – 3 	Doctor's Contouring Station room
5.	Mould Room – (Lower basement as it is in the plan layout)	<ul style="list-style-type: none"> Table with drawers-5'(W)x3'(D)-2 One standard table for patient mould preparation. 4 bed mats. Smoke Exhaust System. Executive revolving chair with full backrest-2 Executive revolving chair with half backrest-4 Customized wall cabinet of at least 20'(W)x4'(H)x3'(D) with lock and key facility Steel almirah / cabinet of standard size 6'(H)x2'(D) with lock and key-2 Dustbin –2 	Necessary plumbing work to be done.
6.	QA accessories room – (Lower basement as it is in the plan layout)	<ul style="list-style-type: none"> Table with drawers-5'(W)x3'(D)-2 Executive revolving chair with full backrest-2 Executive revolving chair with half backrest-4 Customized wall cabinet of at least 20'(W)x4'(H)x3'(D) with lock and key facility Steel almirah / cabinet of standard size 6'(H)x2'(D) with lock and key-2 Dustbin –2 	

6.	Physicist cum RSO room –(Presently designated as Chiller room at upper basement as the chiller is planned in other suitable place) (Seating arrangement with 4 separate office cubicles for minimum 4 Physicists cum RSO)	<ul style="list-style-type: none"> • Table with drawers – 5'(W)x3'(D) –4 • ComputerTable-4 • Executive revolving chair with full backrest-4 • Executive revolving chair with half backrest-8 • Customized wall cabinet of at least 5'(W)x4'(H)x3'(D) with lock and key facility-4 • Steel almirah / cabinet of standard size 6'(H)x2'(D) with lock and key-4 • Dustbin-4 • Desktop Computer system with latest configuration for e- LORA and other official work along with A4 scanner, LASER Printer (wifi enabled) and UPS.-4 such • One Dell Precision 5470 workstation with highest configurations, preloaded with all licenses, latest operating system, antivirus, essential office applications and software with minimum 3 years warranty and supports - for Dosimetric data evaluation and software QA, research simulation. • Office cubicles by wooden and glass separation with doors covering area 6200 mm x 4725. 	Office room accessories for Medical Physicist cum radiation safety officers.
7.	Doctors Room – 3 (At upper basement)	<ul style="list-style-type: none"> • Table with drawers-5'(W)x3'(D)- 2 • Executive revolving chair with full backrest-2 • Executive revolving chair with half back rest – 2 • Patient's examination table-2 • Steel almirah / cabinet of standard size 6'(H)x2'(D) with lock and key-1 • Desktop Computer with latest configuration for official work along with A4 scanner, LASER Printer (wifi enabled) and UPS. - 1 • X-Ray viewer with digital backlight(4plates) • Dustbin-2 	3 set for 3 Doctors room for patient examination and prescription, record keeping, other office works related to treatment etc.
8.	Technologist's room – (At upper basement presently designated as Physicist room in lay out plan)	<ul style="list-style-type: none"> • Table with drawers – 5'(W)x3'(D) –4 • ComputerTable-1 • Steel almirah / cabinet of standard size 6'(H)x2'(D) with lock and key -2 • Executive revolving chair with half backrest-10 • Dustbin-2 	
9.	Nurse's Station – (Upper basement)	<ul style="list-style-type: none"> • Table with drawers-5'(W)x3'(D)-2 • Executive revolving chair with half backrest-4 • Steel Almirah/ Cabinet with lock and key-4 	
10	Patient's waiting Area (Lower basement – Walls around Lift lobby and space below upper half of staircase)	Sitting arrangement for thirty patients. Steel chairs – 30.	
11	LED Smart TV 48" (With internet connection)	1 unit	Patient waiting area/Lobby
12	Cartridge (black and color) for Printers associated with TPS and Control Computer of LINAC	10 nos. for each Printer over a period of 5 years as and when required by the end user.	TPS room and Control Console of LINAC
13	Trolley with facility for oxygen cylinder Attachment	3	Patient Transportation

14	Wheel Chair	4	Patient Transportation
15	Vacuum Cleaner	1	For cleaning LINAC, TPS rooms etc.
16	Shoe Shelf (25pairs)	4	Outside LINAC room Outside waiting area
17	Door Mat	20	Outside waiting area & outside LINAC room
18	Microphone system (Two way)	2 unit	LINAC room for calling patients
19	Dehumidifier	Two/three per LINAC covering up to console area should be provided as per machine specific requirement after proper pint calculation for room volume and relative Humidity level.	Humidity control for LINAC
20	Smart Projector – Interactive smart board with short throw projector bundle.	1 unit	For onsite training and teaching purpose.

FIRE SAFETY MEASURE:

1. A fire alarm system of reputed make with smoke/heat detectors, indicator panels, call boxes, electronic sirens and wiring will be installed. Audio call bell system with intercom & remote locking/unlocking facility to be provided at the main door of the complex.
2. Supplying, Installing Dry chemical power type fire extinguisher of 6 kgs capacity, with initial filling in brand new cylinder with power coated finish, fitted with Gun metal union, high pressure CO2 gas cartridge, discharge hose, wall mounting bracket etc.

MISCELLANEOUS:

1. Cabling of Network (LAN) connectivity and required branded switches for networking the LINAC, TPS, CT simulator, Brachytherapy and any other work station used within the site.
2. Broadband connection with static IP for REMOTE SERVICE of LINAC system Land line based Broad Band internet connection will be procured by the Hospital Authority & the bill for the broadband should be paid by the supplier.
3. One Computer Trolley should be provided at site by the supplier.
4. Radiation related Signage to be provided as per requirement.
5. Inter com system having at least 60 channels should be provided.
6. 1 no of Digital camera to upload patient photo into R&V system.
7. Required De-Ionized water supply over period of 10 years when ever require for LINAC maintenance.
8. The outdoor unit of all AC should have grill coverage to prevent the theft and damage.
9. The chiller unit should have grill and asbestos coverage to prevent damage and theft. It should have lock and key facility.
- 10.

LIST OF ITEMS AND SUGGESTED MANUFACTURERS/BRANDS		
Sl. No.	ITEMS	PREFERRED MAKES
A	CIVIL	
	Granite	Thar Marble/GCL India Pvt. Ltd.
1	TILES	Kajaria/Johnson/, Restile

2	PAINT	Dulux/AsianPaints/Nerolac
3	PLUMBING	Kohler/Jaguar/Grohe/Roca
4	SANITARYITEMS	CERA/Hindware/Parryware
B	ELECTRICAL	
1	CABLES	Finolex/Havells/V-Guar
2	SWITCHES	Legrand/L&T/Crabtree
3	DISTRIBUTION BOX, MCB	Legrand/L&T/Siemens
4	LIGHT FITTINGS- (LED light)	Philips/Crompton/Wipro.
C	AIR CONDINTIONING (Copper Condensing unit)	Mistubishi/Hitachi/Daikin/Carrier
D	FURNITURE	Godrej/Hermen Miller/Featherlite/Damro
E	SKYLIGHT	Reputed company

The Scope of Work for Turnkey–for Bardhaman MCH (4D-CT Facility)

1. The prospective bidders already visited or about to visit the proposed site for 4D-CT bunker at Burdwan Medical College and Hospital, Burdwan. Bidders are advised to acquaint themselves with access to site, location of work and any other matter relating to availability and carriage of construction materials. The construction of the concrete shell of the Bunker (4D-CT room) has already been built. The turnkey work shall include all other site preparation work required for installation and functioning of the 4D-CT at the proposed site. The selected bidder shall submit 3D view of the interior work to be under taken for approval of WBMSCL.

Along with interior works as specified in details, the scope of work for Turnkey shall also include the following.

1. General:

- Remaining necessary civil work for enhancement in thickness of floor, walls and ceiling of concrete wall in the present bunker already constructed at Burdwan Medical College and Hospital.
- Temperature management (Sufficient AC machines with 100% back up) and relative humidity (Sufficient Dehumidifier) management as per maintenance specifications of the concerned CT Machine should be done by vendor for the CT room as well as console area.
- All further core cutting needed through walls and ceilings other than existing should be done by vendor.
- The outdoor unit of AC should have grill coverage with lock and key facility to prevent theft and damage. The water drainage storage and pumping management system for the AC units should be arranged by Vendor.
- The chiller system, if placed outside of the building, the vendor should make necessary arrangements like shades above, grill around with lock and key facility for the same to ensure physical safety and security.

The AERB approved drawings of the CT- Building is attached herewith.

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

- Easy movement of the patient stretchers / trolleys through corridors and doors.
- Adequate Radiation shielding as per AERB norms, if necessary.
- Supply of furniture like desk, chairs, shelves, locker etc.
- Supply of Patient stretcher and other furniture / accessories to make the 4D-CT functional.

3. The intending bidders are to calculate the cost of necessary Turnkey job (site preparation, interior works, Furniture and office accessories) based on the area as demarcated in the site wise drawings attached with the tender document.

- Construction / modification work including construction of brick wall if any, plastering, flooring as per the

approved plan and equipment layout plan.

- b) Construction of renovation/modification demolition, exaction, filling work including construction of full or half brick wall if required, plastering, flooring as per the approved plan and equipment layout plan. Necessary openings/ niches/ cut-outs, wherever required as per drawings and asked for by WBMSCL, shall be provided by the contractor without any extra cost.
- c) Making surface good for floor modification for installing the 4D-CT.
- d) Platform for unloading and if necessary.
- e) Cable tray, trench & channel – necessary trenches, cable tray and channels as required.
- f) **Anti-termite treatment and pest control** should be done in and around the facility once in a year. The entire complex will be made rodent/pest proof.
- g) Core cutting in the ceiling of CT console room for electrical mains cable if required.

4. Specification of materials:

- a) **Floor:** Floor (except of CT room) should be of premier quality double charged joint less vitrified mirror polished tiles. Antistatic floor for CT room
- b) **Ceiling:** Ceiling should be of Mineral fiber board with aluminum grid. 2/3 coats of distemper on true ceiling.
- c) **Wall:** Walls should be of premier quality double charged joint less vitrified mirror polished tiles up to false ceiling. Wall specification should be as per AERB norms
- d) **Door:** (One Patient entry door and one console to CT room entry door)
 - i) **CT Scan room:** Double leaf door lined with 2.0 mm lead equivalence as per AERB norms
 - ii) **Main Entry to the unit:** First quality seasoned shagoon wooden door of minimum 40 mm thick double leaf of width 1500 mm with 150 mm X 150 mm vision panel, viewing window, plastic kicking plate fixed with headless screw, high gloss wax polish. The door should be fitted with proper locking arrangement, door closure, handle and stopper. Wooden frame from 125 mm x 100 mm of good quality Shal / Shagoon wooden block.
 - iii) **Other:** Good quality Flush Door with / viewing window
- e) **Paint:** 2 coats synthetic enamel paints over 2 coats primer over wall putty (if required)
- f) **Viewing Window:** 2ft x 4ft of 2 mm lead equivalence lead glass

5. Air-conditioning machine:

The total carpet area mentioned has to be properly air-conditioned @ 750 cu ft. for one ton. In the CT Scan additional AC to be considered depending on the heat dissipation by the machines. Split/Ductable Split type AC machines having appropriate rating to bring down and maintain room temperature to be $20^{\circ} \pm 2^{\circ}$ celsius.

There should be sufficient number of the AC machines to run the service round the clock (i.e 100 % backup). The service should be uninterrupted in case of breakdown of any of the AC machine(s).

A/C ducting to be prepare, if required. Humidifier and Dehumidifier should be provided to maintain the humidity level at 40 – 60 % at Gantry room and in other area(s), if technically required.

- 6. High quality room lighting (LED up to 400 LUX of illuminance)
- 7. Necessary power supply points for the followings should be provided in addition to standard power supply points:
 - a. Vac. Lock System
 - b. Digital water bath for thermoplastic precuts
 - c. Heat gun

8. Medical Gas Pipeline system [O2, N2O, Air (4 Bar) and Suction] with imported outlet points along with matching adapter etc. should be provided. Inside pipeline in the Gantry room to be completed in all respect and the entry points of the pipelines should be terminated at a suitable place outside the Gantry room with medical grade isolation valves.
9. The bidders to submit drawing layout plan of the interior. At least 15 -20 patient holding positions has to be mentioned in the drawing layout plan. Sufficient furniture to be supplied for the console room.

10. Wiring System:

- a. Light, Fan, 5 Amp Plug: 3 X 1.5 sq. mm copper conductor FRLS wire should be provided.
- b. Power Plug (15 Amp): 2 X 2.5 + 1 X 1.5 sq. mm copper conductor FRLS wire should be provided.
- c. Split/ Ductable AC wiring: 2 X 4 + 1 X 2.5 sq. mm / suitable gauge copper conductor FRLS wire should be provided.

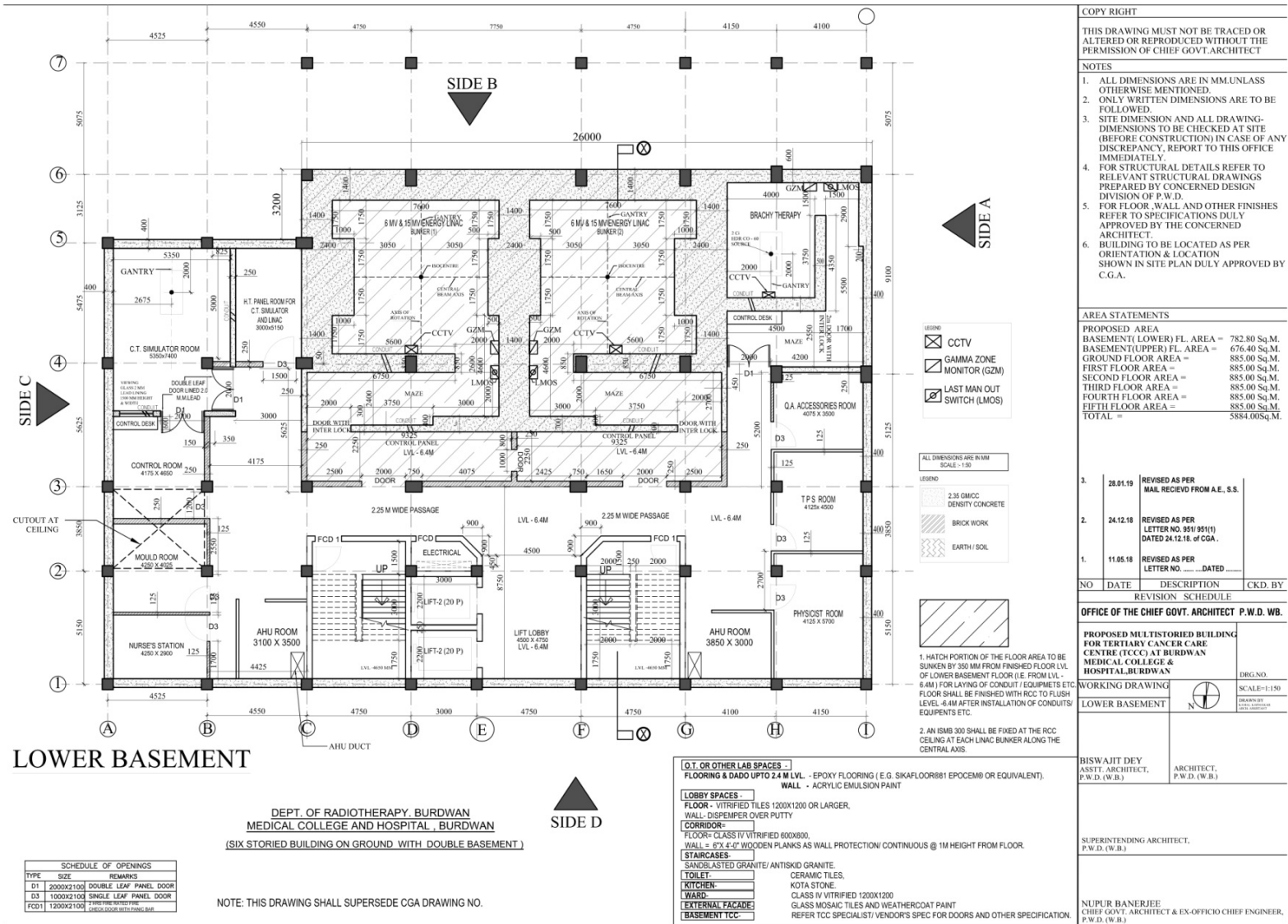
Earthing: Two nos. Copper plate earthing as per PWD schedule

11. Furniture item to be supplied:

Racks and platforms for keeping mould room accessories should be provided.

- i) Executive revolving chair with arm rest: 6 Nos. (Godrej / Featherlite or equivalent)
- ii) Storage Cupboard: 3 Nos. high quality customized Wall mounted
- iii) Shoe Rack: 1 No
- iv) Corner Table: 2 Nos. (Godrej / Featherlite or equivalent)
- v) Change room with Mirror
- vi) 2 Kg Fire extinguisher cylinder: 4 Nos.
- vii) Console Table from OEM
- viii) Workstation table 1200 x 600 mm: 1 No. (Godrej/Featherlite or equivalent)
- ix) Emergency Crash Cart in the CT room for storage of emergency medicines, medical equipment, true cut biopsy needles etc. – (Godrej/Janak)
- x) LED view box for four films
- xi) Patient trolley with mattress side rails, oxygen cylinder and fluid stand attachment: 2 Nos.
- xii) Dehumidifier - 22 Liters: 4 Nos.
- xiii) Patient waiting chair 3-seater: - 3 Nos.
- xiv) One flat top table for patient.

LIST OF ITEMS AND SUGGESTED MANUFACTURERS/ BRANDS		
Sl. No.	ITEMS	PREFERRED MAKES
A	CIVIL	
	Granite	Thar Marble/GCL India Pvt. Ltd.
1	TILES	Kajaria/ Johnson / Restile
2	PAINT	Dulux/ Asian Paints / Nerolac
3	PLUMBING	Kohler/ Jaguar / Grohe / Roca
4	SANITARY ITEMS	CERA/ Hindware/ Parryware
B	ELECTRICAL	
1	CABLES	Finolex/ Havells/ V-Guar
2	SWITCHES	Legrand/ L&T/ Crabtree
3	DISTRIBUTION BOX , MCB	Legrand/ L&T/ Siemens
4	LIGHT FITTINGS- (LED light)	Philips/ Crompton/ Wipro.
C	AIR CONDINTIONING (Copper Condensing unit)	Mistubishi/ Hitachi/ Daikin/ Carrier
D	FURNITURE	Godrej/ Hermen Miller/ Featherlite/ Damro
E	SKY LIGHT	Reputed company



The Scope of Work for Turnkey–for Murshidabad MCH (Brachytherapy)

GENERAL

The prospective bidders already visited the proposed site for HIGH END HIGH ENERGY BRACHYTHERAPY bunker at Murshidabad Medical College and Hospital, Murshidabad. Tenderer's are advised to acquaint themselves with access to site, location of work and any other matter relating to availability and carriage of construction materials. The construction of the concrete shell of the Bunker (BRACHYTHERAPY ROOM) has already been built. The turnkey work shall include all other site preparation work required for installation and functioning of the BRACHYTHERAPY at the proposed sites. The selected bidder shall submit 3D view of the interior work to be under taken for approval of WBMSCL.

Along with interior works as specified in details, the scope of work for Turnkey shall also include the following,

- Remaining necessary civil work except enhancement in thickness of walls and ceiling of concrete wall in the present bunker already constructed at Murshidabad Medical College and Hospital.
- Electrical, Plumbing, Furnishing, Air-conditioning.
- Fire fighting works.
- Necessary Heavy Duty wooden door and aluminum panel glass door to be provided at BRACHYTHERAPY and control console room.

The drawings of the proposed BRACHYTHERAPY building layout are attached herewith.

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

- Easy movement of the patient stretchers / trolleys through corridors and doors.
- Adequate Radiation shielding as per AERB norms, if necessary.
- Supply of furniture like desk, chairs, shelves, locker etc.
- Supply of Patient stretcher and other furniture / accessories to make the BRACHYTHERAPY functional.
- The intending bidders are to calculate the cost of necessary Turnkey job (site preparation and interior works) based on the area as demarcated in the site wise drawings attached with the tender document.

CIVIL WORK:

- Construction / modification work including construction of brick wall if any, plastering, flooring as per the approved plan and equipment layout plan.
- Construction of renovation / modification demolition, exaction, filling work including construction of full or half brick wall if required, plastering, flooring as per the approved plan and equipment layout plan. Necessary openings/ niches/ cut-outs, wherever required as per drawings and asked for by WBMSCL, shall be provided by the contractor without any extra cost.
- Making surface good for floor modification for installing the BRACHYTHERAPY.
- Platform for unloading and shifting the BRACHYTHERAPY if necessary.
- Cable tray, trench & channel – necessary trenches, cable tray and channels at required locations.
- **Anti-termite treatment and pest control** should be done in and around the facility once in a year. The entire complex will be made rodent/pest proof.
- If core cutting between tx room & control-console for connecting cables between console & B.T. machine
- **Specification of materials**

Flooring:

Enhancement of thickness of floor as per AERB layout should be constructed by vendor considering cable pit.

Granite- 2400 x 800 mm or bigger good quality heavy duty hard Granites of 18 mm thick

Premier Tiles - 800 x 800 mm mirror polished premier quality double charged joint less vitrified tiles

Kota - Heavy Duty Hard Kota of 18 mm thick

Walls:

Granite - 2400 x 800 mm or bigger good quality heavy duty hard Granites of 18 mm thick

Premier Tiles- 800 x 800 mm mirror polished premier quality double charged joint less vitrified tiles

Ceramic Tiles- Premier quality joint less Glazed ceramic tiles of size 450 x 300 mm

Note: Epoxy base resin should be added with cement mortar with necessary key stone while fixing of the Granite

a) False Ceiling: Mineral fibre board with powder coated GI grid at BRACHYTHERAPY room, control room.

PLUMBING WORK

All necessary plumbing work to install Brachytherapy.

ELECTRICAL WORK:

The supplier shall be required to specify the total load requirements for the BRACHYTHERAPY 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 BRACHYTHERAPY centre. Few lights in each room shall be connected to the UPS to provide emergency lighting.

The electrical work shall include the following:

- **Wiring** – Wiring with colour code for all types of points and plugs etc. All interior electrical wiring – with main distribution panel board, necessary vertical TPNMCBDBs to control MCCBs, TPNMCBDBs and SPNMCBDB if any necessary. Every point should be wired with both neutral and phase and earth separately from the copper link bar of phase, neutral and earth. Copper link Bar should be housed into the switch board on 1.1 KV grade insulators. There should not be any joint in between of any two terminals of all the installations. The 3 wires system shall be of copper wire (minimum 1.5 Sq-mm) of different capacity as per the load and should be of renowned make as listed below.

All the internal wiring including that of telephone, LAN, DICOM & PACS etc. will be of concealed variety. The internet broadband connection at a single point will be provided by hospital. The distribution of internet will be carried out by vendor only.

- **Earthing:** Double earthing with copper plate for the BRACHYTHERAPY and all accessories should be as per ISO rule
- Switches light and power points should be of modular type and of standard make as listed below.
- General lights – LED Lights of 400 LUX (BRACHYTHERAPY Room along with Control- Console room)
- Sky Light should be in the ceiling of BRACHYTHERAPY room. All wires used must be FRLS (Fire Retardant with low smoke) type only
- **AIR CONDITIONING:** All rooms (BRACHYTHERAPY Room along with Control-Console room) need to be air-conditioned. Ductable central AC for BRACHYTHERAPY room and control room and should be used according to room requirement and suitability. Humidity control should be provided to effectively eliminate moisture condensation on the equipment. The Air conditioning system should be designed with standby provision to function 24 x 7. The outdoor units of AC should have grill coverings to prevent theft and damage.

Dehumidifier: one of 2 tonnage per BRACHYTHERAPY should be provided.

- **Environment specifications:** (BRACHYTHERAPY Room along with Control-Console room)
- Humidity range: Relative humidity 60% and 80% in all areas except equipment room which shall be as per requirement of the equipment.

- **Temperature ranges:** 22 +/- 2° C in all areas throughout the year, except equipment room which shall be as per requirement of the equipment.
- **Air conditioning load:** The heat load calculations and maintaining the desired temperature and humidity shall be the responsibility of the supplier.
- **Painting:** (BRACHYTHERAPY room along with Control Console) Two coat plastic emulsion paint over two coats of wall putty including primer in all area of BRACHYTHERAPY room and control console room.

FURNITURE AND OTHER ACCESSORIES REQUIREMENT

BRACHYTHERAPY with Control -Console Room

Sl. No.	Room	Required facilities	Remarks
1	Brachytherapy Console & Inside Brachytherapy Machine Room	2 Almirah (78x48x22 inch), 2 Cabinet to keep brachytherapy accessories, applicators and medicines, L shaped table (Qty:1)-2.5 m x 2.5m, L shaped wall hanging cabinet (2 Nos)- 2.5m x 2.75m Revolving Chair with wheels 6 nos,	
2	Minor OT	1 OT Table (Brachytherapy C-Arm table), 2 Chair, 1 standard Table, 4 OT stool, 2 steel cabinet	
3	Nurse's Room	1 table, 4 chairs, 1 almirah, 1 shoerack, 1 desktop with laser printer and UPS, 1 computer table 1 Fridge	

MISCELLANIOUS

4	Trolley with facility for oxygen cylinder attachment	1	Patient Transportation
5	Wheel Chair	1	Patient Transportation
6	Shoe Shelf/ Rack for Brachytherapy, TPS	2	Outside waiting area
7	Door Mat	2	
8	Dehumidifier (2 Ton)	1 for Brachytherapy	
9	Dustbin	2	
10	Microphone	1 unit	1-BRACHYTHERAPY
11	Cartridge for Printers associated with TPS and Control Computer of LINAC and Control console computer	Printer cartridge over a period of 10 years as and when required by the end user.	

FIRE SAFETY MEASURE:

- A fire alarm system of reputed make with smoke / heat detectors, indicator panels, call boxes, electronic sirens and wiring will be installed. Audio call bell system with intercom & remote locking/unlocking facility to be provided at the main door of the complex.
- Supplying, installing dry chemical type fire extinguisher of 6 kg capacity, with initial filling in brand new cylinder with power coated finish, fitted with gun metal union, high pressure carbon dioxide gas cartridge, discharge hose, wall mounting bracket etc.

MISCELLANEOUS:

- **Cabling of Network (LAN)** connectivity and required branded switches for networking the BRACHYTHERAPY, TPS and any other workstation used within the site.
- The internet broadband connection at a single point will be provided by hospital. The distribution of internet will be carried out by vendor only.
- **Broadband connection** with static IP for REMOTE SERVICE of BRACHYTHERAPY.
- **Radiation related Signage** to be provided as per requirement.
- **Inter com system** should be provided.
- **The outdoor unit of all AC should have grill coverage to prevent theft and damage.**
- Necessary power supply plug point should be provided at BRACHYTHERAPY machine room, BRACHYTHERAPY control console room.
- Patient change area with full length curtain, small rack/drawer for keeping belongings.

LIST OF ITEMS AND SUGGESTED MANUFACTURERS/BRANDS		
Sl. No.	ITEMS	PREFERRED MAKES
A	CIVIL	
	Granite	Thar Marble/GCL India Pvt. Ltd.
1	TILES	Kajaria, Johnson, Restile
2	PAINT	Dulux, Asian Paints, Nerolac
3	PLUMBING	Kohler, Jaguar, Grohe, Roca
4	SANITARY ITEMS	CERA, Hindware, Parryware
B	ELECTRICAL	
1	CABLES	Finolex, Havells, V-Guar
2	SWITCHES	Legrand, L&T, Crabtree
3	DISTRIBUTION BOX, MCB	Legrand, L&T, Siemens
4	LIGHT FITTINGS- (LED light)	Philips, Crompton, Wipro.
C	AIR CONDITIONING (Copper Condensing unit)	Mitsubishi, Hitachi, Daikin, Carrier
D	FURNITURE	Godrej, Hermen Miller, Featherlite, Damro
E	SKY LIGHT	Reputed company

The Scope of Work for Turnkey-for Murshidabad MCH (4D CT Simulator)

GENERAL

1. The prospective bidders already visited the proposed site for HIGH END HIGH ENERGY CT bunker at Murshidabad Medical College and Hospital, Murshidabad. Tenderer's are advised to acquaint themselves with access to site, location of work and any other matter relating to availability and carriage of construction materials. The construction of the concrete shell of the Bunker (CT ROOM) has already been built. The turnkey work shall include all other site preparation work required for installation and functioning of the CT at the proposed sites. The selected bidder shall submit 3D view of the interior work to be under taken for approval of WBMSCL.

Along with interior works as specified in details, the scope of work for Turnkey shall also include the following,

- a) Remaining necessary civil work except enhancement in thickness of walls and ceiling of concrete wall in the present bunker already constructed at Murshidabad Medical College and Hospital. Plastering and flooring with tiles also completed at CT Machine room, Control-Console room.
- b) Electrical, Plumbing, Furnishing, Air-conditioning, Fire fighting works.
- c) Necessary Heavy Duty wooden door (2 nos.) to be provided at CT and control console room.

The drawings of the proposed CT building layout are attached herewith.

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

- a) Easy movement of the patient stretchers / trolleys through corridors and doors.
- b) Adequate Radiation shielding as per AERB norms, if necessary.
- c) Supply of furniture like desk, chairs, shelves, locker etc.
- d) Supply of Patient stretcher and other furniture / accessories to make the CT functional.

3. The intending bidders are to calculate the cost of necessary Turnkey job (site preparation and interior works) based on the area as demarcated in the site wise drawings attached with the tender document.

CIVIL WORK:

- (i) Construction / modification work including construction of brick wall if require, plastering, flooring as per the approved plan and equipment layout plan.
- (ii) Construction of renovation / modification demolition, exaction, filling work including construction of full or half brick wall if required, plastering, flooring as per the approved plan and equipment layout plan. Necessary openings/ niches/ cut-outs, wherever required as per drawings and asked for by WBMSCL, shall be provided by the contractor without any extra cost.
- (iii) Making surface good for floor modification for installing the CT.
- (iv) Platform for unloading and shifting the CT if necessary.
- (v) Cable tray, trench & channel – necessary trenches, cable tray and channels at required locations.
- (vi) Anti-termite treatment and pest control should be done in and around the facility once in a year. The entire complex will be made rodent/pest proof.
- (vii) Core cutting between CT machine room and Control-Console for connecting cables.

4. Specification of materials

1. General

- a) **Ceiling:** Ceiling should be of Mineral fiber board with aluminum grid. 2/3 coats of distemper on true ceiling.

b) Door:

- (i) **CT Scan room:** Double leaf door lined with 2.0 mm lead equivalence as per AERB norms
- (ii) Main Entry to the unit: First quality seasoned shagoon wooden door of minimum 40 mm thick double leaf of with 150 mm X 150 mm vision panel (2mm lead equivalent glass), viewing window (lead equivalent glass-2 mm lead equivalent), plastic kicking plate fixed with headless screw, highgloss wax polish. The door should be fitted with proper locking arrangement, door closure, handle and stopper. Wooden frame from 125 mm x 100 mm of good quality Shal / Shagoon wooden block. (Viewing glass dimension: 1500mm x 1500mm)
- (iii) Other: Good quality Flush Door with / viewing window

c) Viewing Window: 2 mm lead equivalence lead glass with adequate dimension.

Fire door: 1 fire door at HT PANEL room.

2. Air-conditioning machine:

The total carpet area mentioned has to be properly air-conditioned @ 750 cu ft. for one ton. In the CT Scan additional AC to be considered depending on the heat dissipation by the machines.

Split/Ductable Split type AC machines having appropriate rating to bring down and maintain room temperature to be $20^{\circ} \pm 2^{\circ}$ celsius.

There should be sufficient number of the AC machines to run the service round the clock (i.e 100 % backup). The service should be uninterrupted in case of breakdown of any of the AC machine(s).

A/C ducting to be prepared, if required. Humidifier and Dehumidifier should be provided to maintain the humidity level at approx 60-65 % at Gantry room and in other area(s), if technically required.

- 3. High quality room lighting (LED up to 400 LUX of illuminance)
- 4. Necessary power supply points for the followings should be provided in addition to standard power supply points:
 - a. Vac. Lock System
 - b. Digital water bath for thermoplastic precuts
 - c. Heat gun
- 5. Medical Gas Pipeline system [O₂, N₂O, Air (4 Bar) and Suction] with imported outlet points along with matching adapter etc. should be provided. Inside pipeline in the Gantry room to be completed in all respect and the entry points of the pipelines should be terminated at a suitable place outside the Gantry room with medical grade isolation valves.
- 6. The bidders to submit drawing layout plan of the interior. At least 15 -20 patient holding positions has to be mentioned in the drawing layout plan. Sufficient furniture to be supplied for the console room.
- 7. **Wiring System:**
 - a) Light, Fan, 5 Amp Plug: 3 X 1.5 sq. mm copper conductor FRLS wire should be provided.
 - b) Power Plug (15 Amp): 2 X 2.5 + 1 X 1.5 sq. mm copper conductor FRLS wire should be provided.
 - c) Split/ Ductable AC wiring: 2 X 4 + 1 X 2.5 sq. mm / suitable gauge copper conductor FRLS wire should be provided.
- 8. **False Ceiling:** Mineral fibre board with powder coated GI grid at CT room, control room.

9. PLUMBING WORK

All necessary plumbing work to install CT. Chiller piping work should be done by vendor. (if require)

10. ELECTRICAL WORK:

1. The supplier shall be required to specify the total load requirements for the CT room 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 CT room. Few lights in each room shall be connected to the UPS to provide emergency lighting.
2. The electrical work shall include the following:
 - a. **Wiring** – Wiring with colour code for all types of points and plugs etc. All interior electrical wiring – with main distribution panel board, necessary vertical TPNMCBDBs to control MCCBs, TPNMCBDBs and SPNMCBDB if any necessary. Every point should be wired with both neutral and phase and earth separately from the copper link bar of phase, neutral and earth. Copper link Bar should be housed into the switch board on 1.1 KV grade insulators. There should not be any joint in between of any two terminals of all the installations. The 3wires system shall be of copper wire (minimum 1.5 Sq-mm) of different capacity as per the load and should be of renowned make as listed below.
 - b. All the internal wiring including that of telephone, LAN, DICOM & PACS etc. will be of concealed variety. The internet broadband connection at a single point will be provided by hospital. The distribution of internet will be carried out by vendor only.
 - c. **Earthing:** Double earthing with copper plate for the CT and all accessories should be as per ISO rule
 - d. Switches light and power points should be of modular type and of standard make as listed below.
General lights – LED Lights of 400 LUX (CT Room along with Control-Console room)
 - e. Sky Light should be in the ceiling of CT room. All wires used must be FRLS (Fire Retardant with low smoke) type only

Dehumidifier: Two of 2 tonnage per CT should be provided.

Environment specifications: (CT Room along with Control-Console room)

- a. Humidity range: Relative humidity 60% to 65% in all areas except equipment room which shall be as per requirement of the equipment.
- b. **Temperature ranges:** 20 +/- 2° C in all areas throughout the year, except equipment room which shall be as per requirement of the equipment.
3. **Air conditioning load:** The heat load calculations and maintaining the desired temperature and humidity shall be the responsibility of the supplier.

11. Furniture item to be supplied:

Racks and platforms for keeping mould room accessories should be provided.

- Executive revolving chair (medium back) with arm rest: 6 Nos. (Godrej / Featherlite or equivalent)
- Storage Cupboard: 3 Nos. high quality customized Wall mounted (900x400x1800)mm
- Shoe Rack: 1 No
- slotted angle storage rack of size : (1000x500x2100)mm Qty:1
- Corner Table: 2 Nos. (Godrej / Feather lite or equivalent)
- Patient Change area with Mirror, full length curtain, small rack/drawer for keeping belongings.
- Console Table from OEM
- Workstation table 1200 x 600x750 mm: 1 No. (Godrej / Featherlite or equivalent)
- Emergency Crash Cart in the CT room for storage of emergency medicines, medical equipment, trunct biopsy needles etc. – (Godrej/Janak)
- LED view box for four films
- Patient trolley with mattress side rails, oxygen cylinder and fluid stand attachment: 1Nos.

- Dehumidifier – 22 Ltrs: 2 Nos.
- Patient waiting chair for at least 6 nos.
- Microphone:1 no
- Cartridge for printer associated with CT computer should supply for 10 yrs. whenever require.
- Dustbin: 3 nos
- Door mat: 2 nos
- Wheel chair: 1 no
- Emergency light: 4 nos.

Note: The items mentioned above are indicative in nature

FIRE SAFETY MEASURE:

1. A fire alarm system of reputed make with smoke / heat detectors, indicator panels, call boxes, electronic sirens and wiring will be installed. Audio call bell system with intercom & remote locking/unlocking facility to be provided at the main door of the complex.
2. Supplying, installing dry chemical type fire extinguisher of 6 kg capacity, with initial filling in brand new cylinder with power coated finish, fitted with gun metal union, high pressure carbon dioxide gas cartridge, discharge hose, wall mounting bracket etc.

MISCELLANEOUS:

1. **Cabling of Network (LAN)** connectivity and required branded switches for networking the CT, TPS and any other workstation used within the site.
2. The internet broadband connection at a single point will be provided by hospital. The distribution of internet will be carried out by vendor only.

Broadband connection with static IP for REMOTE SERVICE of CT.

Radiation related Signage to be provided as per requirement.

3. **Inter com system** should be provided.
4. The outdoor unit of all AC should have grill coverage to prevent theft and damage.
5. Necessary power supply plug point should be provided at CT machine room, CT control console room.

LIST OF ITEMS AND SUGGESTED MANUFACTURERS/BRANDS		
Sl. No.	ITEMS	PREFERRED MAKES
A	CIVIL	
	Granite	Thar Marble/GCL India Pvt. Ltd.
1	TILES	Kajaria, Johnson, Restile
2	PAINT	Dulux, Asian Paints, Nerolac
3	PLUMBING	Kohler, Jaguar, Grohe, Roca
4	SANITARY ITEMS	CERA, Hindware, Parryware
B	ELECTRICAL	
1	CABLES	Finolex, Havells, V-Guar
2	SWITCHES	Legrand, L&T, Crabtree
3	DISTRIBUTION BOX, MCB	Legrand, L&T, Siemens
4	LIGHT FITTINGS- (LED light)	Philips, Crompton, Wipro.
C	AIR CONDITIONING (Copper Condensing unit)	Mitsubishi, Hitachi, Daikin, Carrier
D	FURNITURE	Godrej, Hermen Miller, Featherlite, Damro
E	SKY LIGHT	Reputed company

The Scope of Work for Turnkey–for Murshidabad MCH (High Energy LINAC)

GENERAL

1. The prospective bidders already visited the proposed site for HIGH END HIGH ENERGY LINAC bunker at Murshidabad Medical College and Hospital, Murshidabad. Tenderer's are advised to acquaint themselves with access to site, location of work and any other matter relating to availability and carriage of construction materials. The construction of the concrete shell of the Bunker (LINAC ROOM) has already been built. The turnkey work shall include all other site preparation work required for installation and functioning of the LINAC at the proposed sites. The selected bidder shall submit 3D view of the interior work to be under taken for approval of WBMSCL.

Along with interior works as specified in details, the scope of work for Turnkey shall also include the following,

- Remaining necessary civil work except enhancement in thickness of walls and ceiling of concrete wall in the present bunker already constructed at Murshidabad Medical College and Hospital.
 - Electrical, Plumbing, Furnishing, Air-conditioning, Fire fighting works.
 - Noted: Plastering and flooring with tiles at LINAC Control-Console room have been done at MMCH
 - Aluminium panel glass door at the entrance of control-console of LINAC have been done at MMCH.
 - Necessary Heavy Duty wooden door to be provided at LINAC and control console room.
- The drawings of the proposed LINAC building layout are attached herewith.

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

- a) Easy movement of the patient stretchers / trolleys through corridors and doors.
- b) Adequate Radiation shielding as per AERB norms, if necessary.
- c) Supply of furniture like desk, chairs, shelves, locker etc.
- d) Supply of Patient stretcher and other furniture / accessories to make the LINAC functional.

3. The intending bidders are to calculate the cost of necessary Turnkey job (site preparation and interior works) based on the area as demarcated in the site wise drawings attached with the tender document.

3. CIVIL WORK:

- a) Construction / modification work including construction of brick wall if any, plastering, flooring as per the approved plan and equipment layout plan.
- b) Construction of renovation / modification demolition, exaction, filling work including construction of full or half brick wall if required, plastering, flooring as per the approved plan and equipment layout plan. Necessary openings/ niches/ cut-outs, wherever required as per drawings and asked for by WBMSCL, shall be provided by the contractor without any extra cost.
- c) Making surface good for floor modification for installing the LINAC.
- d) Platform for unloading and shifting the LINAC if necessary.
- e) Cable tray, trench & channel – necessary trenches, cable tray and channels at required locations.
- f) **Anti-termite treatment and pest control** should be done in and around the facility once in a year. The entire complex will be made rodent/pest proof.
- g) Core cutting in the ceiling of LINAC console room for electrical mains cable if require.(dimension: approx 6 inch of 4 no's)

4. Specification of materials

Flooring:

Enhancement of thickness of floor as per AERB layout should be constructed by vendor considering dimension of Base Frame of LINAC, and cable pit.

Granite– 2400 x 800 mm or bigger good quality heavy duty hard Granites of 18 mm thick

Premier Tiles – 800 x 800 mm mirror polished premier quality double charged joint less vitrified tiles

Kota – Heavy Duty Hard Kota of 18 mm thick

Walls:

Granite – 2400 x 800 mm or bigger good quality heavy duty hard Granites of 18 mm thick

Premier Tiles– 800 x 800 mm mirror polished premier quality double charged joint less vitrified tiles

Ceramic Tiles– Premier quality joint less Glazed ceramic tiles of size 450 x 300 mm

Note: Epoxy base resin should be added with cement mortar with necessary key stone while fixing of the Granite

a) False Ceiling: Mineral fibre board with powder coated GI grid at LINAC room, control room.

PLUMBING WORK

All necessary plumbing work to install LINAC. Chiller piping work should be done by vendor.

5. ELECTRICAL WORK:

1. The supplier shall be required to specify the total load requirements for the LINAC 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 LINAC centre. Few lights in each room shall be connected to the UPS to provide emergency lighting.

2. The electrical work shall include the following:

a) Wiring – Wiring with colour code for all types of points and plugs etc. All interior electrical wiring – with main distribution panel board, necessary vertical TPNMCBDBs to control MCCBs, TPNMCBDBs and SPNMCBDB if any necessary. Every point should be wired with both neutral and phase and earth separately from the copper link bar of phase, neutral and earth. Copper link Bar should be housed into the switch board on 1.1 KV grade insulators. There should not be any joint in between of any two terminals of all the installations. The 3 wires system shall be of copper wire (minimum 1.5 Sq-mm) of different capacity as per the load and should be of renowned make as listed below.

b) All the internal wiring including that of telephone, LAN, DICOM & PACS etc. will be of concealed variety. The internet broadband connection at a single point will be provided by hospital. The distribution of internet will be carried out by vendor only.

c) Earthing: Double earthing with copper plate for the LINAC and all accessories should be as per ISO rule

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

General lights – LED Lights of 400 LUX (LINAC Room along with Control-Console room)

e) Sky Light should be in the ceiling of LINAC room. All wires used must be FRLS (Fire Retardant with low smoke) type only.

6. AIR CONDITIONING: All rooms (LINAC Room along with Control-Console room) need to be air-conditioned. Ductable central AC for LINAC room and control room and should be used according to room requirement and suitability. Humidity control should be provided to effectively eliminate moisture condensation on the equipment. The Air conditioning system should be designed with standby provision to function 24 x 7. The outdoor units of AC should have grill coverings to prevent theft and damage.

Dehumidifier: Two of 2 tonnage per LINAC should be provided.

7. **Environment specifications:** (LINAC Room along with Control-Console room)

- Humidity range: Relative humidity 60% and 80% in all areas except equipment room which shall be as per requirement of the equipment.
- Temperature ranges:** 22 +/- 2° C in all areas throughout the year, except equipment room which shall be as per requirement of the equipment.
- Air conditioning load:** The heat load calculations and maintaining the desired temperature and humidity shall be the responsibility of the supplier.

Painting: (LINAC room)

Wall putty including primer and painting at linac control console room have been done.

LINAC room walls- High quality high density vitrified tiles clad on the side walls up to false ceiling.

FURNITURE AND OTHER ACCESSORIES REQUIREMENT:

LINAC with Control -Console Room

MURSHIDABAD MEDICAL COLLEGE & HOSPITAL			
Sl. No.	Rooms	Required facilities	Remarks
01	TPS Room	Long table/wall shelves for installing total 8-9 computers, 2 printers etc, 08 revolving Chairs, one Almirah (78x48x22 inch), One view box, Wall cabinet(2) with lock and key facility	
02	Mould Room	One standard long table for patient mould preparation, 2 cabinet, 1 almirah (78x48x22 inch), 3 chair, 4 no's of bed mat	
03	LINAC console	Long wooden shelves/table for installing 4-6 computers and printers etc, one Almirah (78x48x22 inch) 06 revolving chairs + wall cabinet(2)	
04	Physicist's Room & e-LORA Room	Two standard table (L-125cm, width-65cm, height 75 cm), Two computer table, 4 chairs, 2 almirah (78x48x22 inch), 2 no of desktop computer with laser printer and UPS, one A4 scanner	e-LORA related work-1 desktop computer official work-1 desktop computer
05	Doctor's Room (3 doctor's room)	Three(3) standard table (L-125cm, width-65cm, height 75 cm) + 12 chairs + 3 Patient's examination table/couch with mat and pillow, 3 almirah (78x48x22 inch), 3(three) view box Specifications for the View Boxes LED X-Ray film viewer with adjustable brightness, capable of Holding 3 films (14"x17") 3 desktop with laser printer and UPS 3 computer table	For Three Doctors room
06	Technician's Room with Dosimetry /physics accessories Room	Two standard table (L-125cm, width- 65cm, height 75 cm) + 8 revolving chairs + 1 desktop with laser printer and UPS with computer table, Three Almirah (78x48x22 inch)	
07	Inside LINAC Room	Two Cabinet for keeping electron Applicators and other accessories, Patient changing area with full length curtain, small rack/drawer for keeping belongings Storage cabinet: 2 nos wall mounted (900x400x1800)mm	To keep immobilization devices

MISCELLANIOUS

08	Tumor Board Room	1 Big table, 1 computer Table, 15 revolving chair, 1 almirah, 1 desktop with laser printer and UPS	
09	Reception	1 table, 6 chair, desktop with laser printer and UPS with computer table 1 sofa	
10	Patient's waiting Area/ Lobby	Sitting arrangement for 30 patients.	
11	Smart LED TV 48" (with internet connection)	1 unit	Patient waiting area/lobby
12	Cartridge for Printers associated with TPS and Control Computer of LINAC and Control console computer	20 nos. for each Printer cartridge over a period of 10 years as and when required by the end user.	
13	Trolley with facility for oxygen cylinder attachment	2	Patient Transportation
14	Wheel Chair	2	Patient Transportation
15	Vacuum Cleaner	1	For cleaning
16	Shoe Shelf/Rack for LINAC, TPS	5	Outside waiting area
17	Door Mat	15	Outside waiting area & Outside every RT room
18	Dehumidifier (2 Ton)	2 for LINAC	
19	Dustbin	20	
20	Microphone	1 unit	1-LINAC

FIRE SAFETY MEASURE:

1. A fire alarm system of reputed make with smoke / heat detectors, indicator panels, call boxes, electronic sirens and wiring will be installed. Audio call bell system with intercom & remote locking/unlocking facility to be provided at the main door of the complex.
2. Supplying, installing dry chemical type fire extinguisher of 6 kg capacity, with initial filling in brand new cylinder with power coated finish, fitted with gun metal union, high pressure carbon dioxide gas cartridge, discharge hose, wall mounting bracket etc.

MISCELLANEOUS:

1. **Cabling of Network (LAN)** connectivity and required branded switches for networking the LINAC, TPS and any other workstation used within the site.
2. The internet broadband connection at a single point will be provided by hospital. The distribution of internet will be carried out by vendor only.

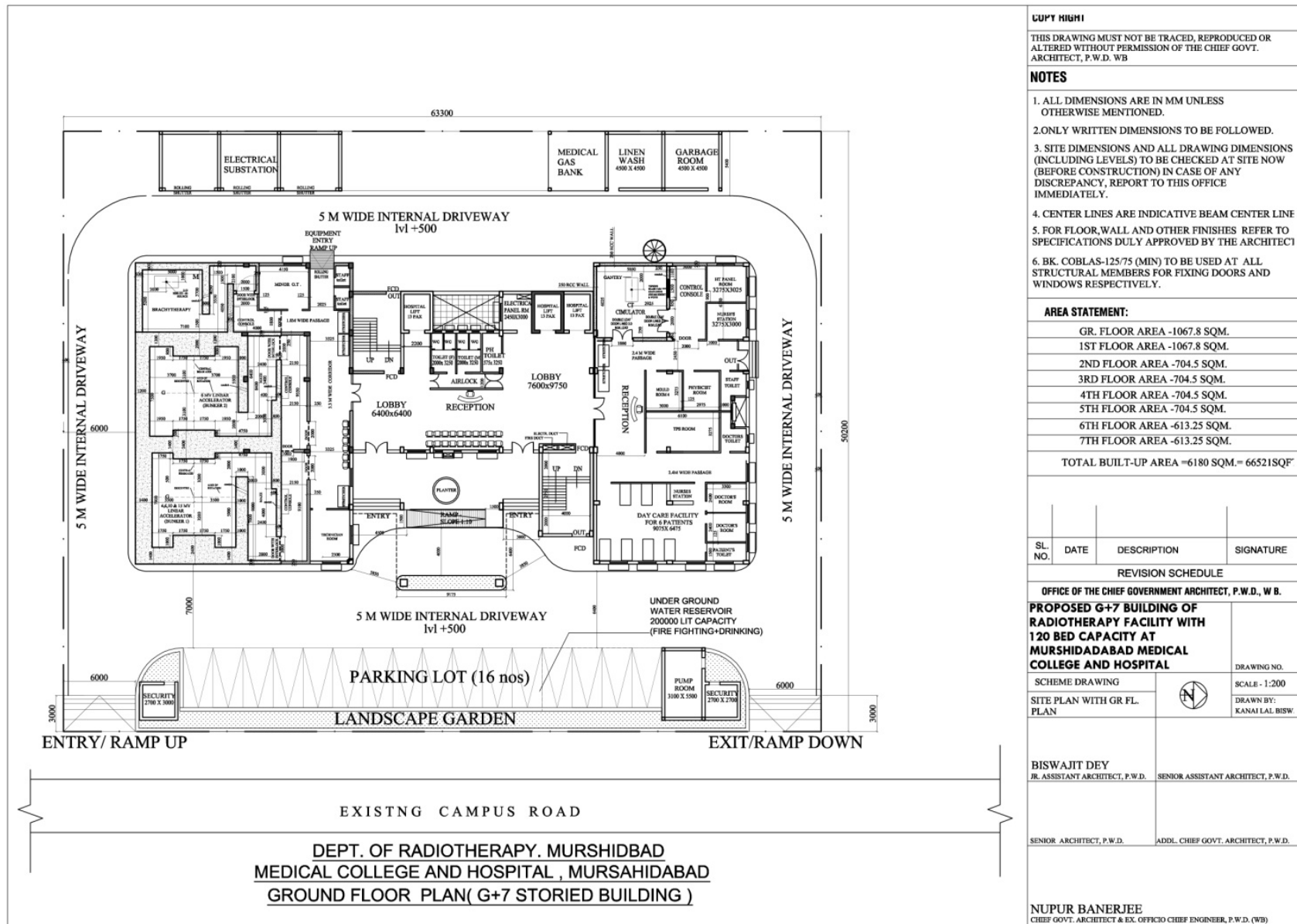
Broadband connection with static IP for REMOTE SERVICE of LINAC.

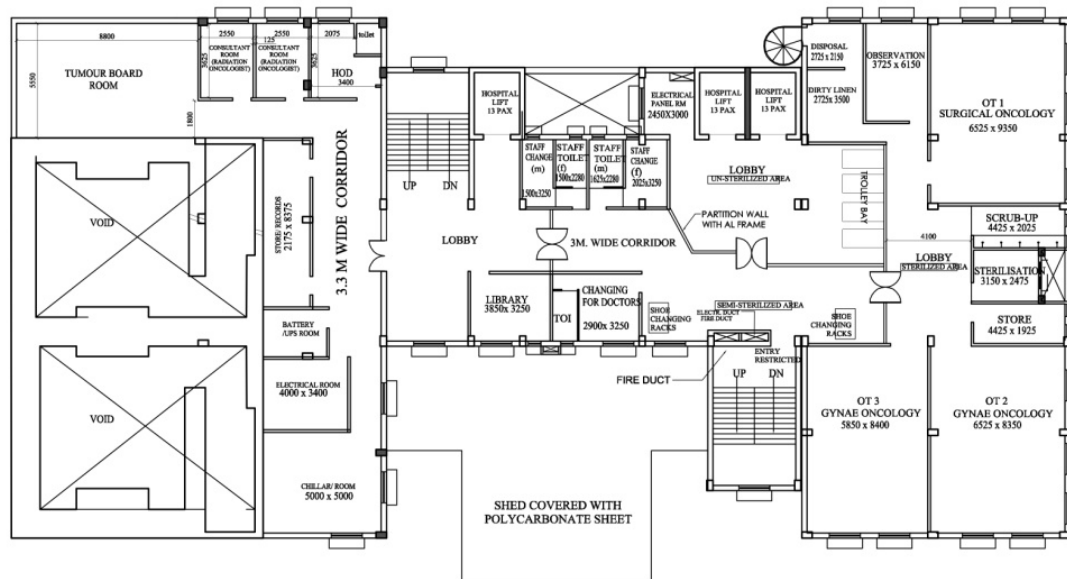
One Computer Trolley should be provided at site by the supplier.

3. **Radiation related Signage** to be provided as per requirement.
4. **Inter com system** having at least 60 channels should be provided.

5. **1 no of Digital camera** to upload patient photo into R& V system.
6. Required **De-Ionised water** supply over period of 10 years whenever require for LINAC maintenance.
7. **The outdoor unit of all AC should have grill coverage to prevent theft and damage.**
8. The **chiller unit** should have grill and asbestos coverage to prevent damage and theft. It should have lock and key facility.
9. Water basin water in out pipeline within mould room for mould preparation.
10. Necessary power supply plug point should be provided at LINAC machine room, LINAC control console room.

LIST OF ITEMS AND SUGGESTED MANUFACTURERS/BRANDS		
Sl. No.	ITEMS	PREFERRED MAKES
A	CIVIL	
	Granite	Thar Marble/GCL India Pvt. Ltd.
1	TILES	Kajaria /Johnson /Restile
2	PAINT	Dulux/Asian Paints / Nerolac
3	PLUMBING	Kohler/ Jaguar /Grohe / Roca
4	SANITARY ITEMS	CERA/ Hindware/Parryware
B	ELECTRICAL	
1	CABLES	Finolex/Havells/ V-Guar
2	SWITCHES	Legrand/ L&T/Crabtree
3	DISTRIBUTION BOX , MCB	Legrand/ L&T/ Siemens
4	LIGHT FITTINGS- (LED light)	Philips/Crompton/Wipro.
C	AIR CONDINTIONING (Copper Condensing unit)	Mistubishi/Hitachi/ Daikin, Carrier
D	FURNITURE	Godrej/ Hermen Miller/Featherlite / Damro
E	SKY LIGHT	Reputed company





**DEPT. OF RADIOTHERAPY. MURSHIDBAD
MEDICAL COLLEGE AND HOSPITAL , MURSAHIDABAD
1st FLOOR PLAN(G+7 STORIED BUILDING)**

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THIS DRAWING MUST NOT BE TRACED, REPRODUCED OR ALTERED WITHOUT PERMISSION OF THE CHIEF GOVT. ARCHITECT, P.W.D. WB

NOTES

1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE MENTIONED.
2. ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
3. SITE DIMENSIONS AND ALL DRAWING DIMENSIONS (INCLUDING LEVELS) TO BE CHECKED AT SITE NOW (BEFORE CONSTRUCTION) IN CASE OF ANY DISCREPANCY, REPORT TO THIS OFFICE IMMEDIATELY.
4. CENTER LINES ARE INDICATIVE BEAM CENTER LINE.
5. FOR FLOOR, WALL AND OTHER FINISHES REFER TO SPECIFICATIONS DULY APPROVED BY THE ARCHITECT.
6. BK. COB.LAS-125/75 (MIN) TO BE USED AT ALL STRUCTURAL MEMBERS FOR FIXING DOORS AND WINDOWS RESPECTIVELY.

SL. NO.	DATE	DESCRIPTION	SIGNATURE
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REVISION SCHEDULE

OFFICE OF THE CHIEF GOVERNMENT ARCHITECT, P.W.D., W. B.

**PROPOSED G+7 BUILDING OF
RADIOTHERAPY FACILITY WITH
120 BED CAPACITY AT
MURSHIDABAD MEDICAL
COLLEGE AND HOSPITAL**

SCHEME DRAWING	DRAWING NO.
1ST FLOOR PLAN	SCALE - 1:200 DRAWN BY:

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The Scope of Work for Turnkey-for Sagore Dutta Hospital (HDR Brachytherapy)

GENERAL

The prospective bidders already visited the proposed site for HDR **BRACHYTHERAPY bunker** at College of Medicine and Sagore Dutta Hospital, Kamarhati, Kolkata. Tenderers are advised to acquaint themselves with access to site, location of work and any other matter relating to availability and carriage of construction materials. The construction of the concrete shell of the Bunker (BRACHYTHERAPYROOM) has already been built. The turnkey work shall include all other site preparation work required for installation and functioning of the BRACHYTHERAPY at the proposed sites. The selected bidder shall submit 3D view of the interior work to be under taken for approval of WBMSCL. Along with interior works as specified in details, the scope of work for Turnkey shall also include the following,

Remaining necessary civil work except enhancement in thickness of walls and ceiling of concrete wall in the present bunker.

Electrical, Plumbing, Furnishing, Air-conditioning, Fire fighting works.

Necessary Heavy Duty wooden door and aluminium panel glass door to be provided at BRACHYTHERAPY and control console room.

The drawings of the proposed BRACHYTHERAPY building layout are attached herewith.

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

1. Easy movement of the patient stretchers/trolleys through corridors and doors.
2. Adequate Radiation shielding as per AERB norms, if necessary.
3. Supply of furniture like desk, chairs, shelves, locker etc.
4. Supply of Patient stretcher and other furniture/accessories to make the BRACHYTHERAPY functional.
5. The intending bidders are to calculate the cost of necessary Turnkey job (site preparation and interior works) based on the area as demarcated in the site wise drawings attached with the tender document.

CIVIL WORK:

1. Construction / modification work including construction of brick wall if any, plastering, flooring as per the approved plan and equipment layout plan.
2. Construction of renovation/modification demolition, exaction, filling working including construction of full or half brick wall if required, plastering, flooring as per the approved plan and equipment layout plan.
3. Necessary openings/ niches/ cut-outs, wherever required as per drawings and asked for by WBMSCL, shall be provided by the contract or without any extra cost.
4. Making surface good for floor modification for installing the BRACHYTHERAPY.
5. Platform for unloading and shifting the BRACHYTHERAPY if necessary.
6. Cable tray, trench & channel-necessary trenches, cable tray and channels at required locations.
7. **Anti-termite treatment and pest control** should be done in and around the facility once in a year. The entire complex will be made rodent/pest proof.

Specification of materials

a) Flooring:

Enhancement of thickness of floor as per AERB layout should be constructed by vendor considering cable pit.

Granite – 2400x800 mm or bigger good quality heavy duty hard Granites of 18mm thick
Premier Tiles– 800x800mm mirror polished premier quality double charged jointless vitrified tiles
Kota–Heavy Duty Hard Kota of 18mm thick

b) Walls:

Granite– 2400x800mm or bigger good quality heavy duty hard Granites of 18mm thick
Premier Tiles– 800x800mm mirror polished premier quality double charged jointless vitrified tiles
Ceramic Tiles– Premier quality jointless Glazed ceramic tiles of size 450x300mm

Note: Epoxy base resin should be added with cement mortar with necessary keys tone while fixing of the Granite

c) False Ceiling: Mineral fibre board with powder coated GGrid at BRACHYTHERAPY room, control room.

PLUMBING WORK

All necessary plumbing work to install Brachytherapy. Chiller piping work should be done by vendor.

ELECTRICALWORK:

The supplier shall be required to specify the total load requirements for the BRACHYTHERAPY bunker and console 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 BRACHYTHERAPY centre. Few lights in each room shall be connected to the UPS to provide emergency lighting.

The electrical work shall include the following:

a) Wiring–Wiring with colour code for all types of points and plugs etc. All interior electrical wiring – with main distribution panel board, necessary vertical TPNMCBDBs to control MCCBs, TPNMCBDBs and SPNMCBDB if any necessary. Every point should be wired with both neutral and phase and earth separately from the copper link bar of phase, neutral and earth. Copper link Bar should be housed into the switch board on 1.1 KV grade insulators. There should not be any joint in between of any two terminals of all the installations. The 3 wires system shall be of copper wire (minimum 1.5 Sq-mm) of different capacity as per the load and should be of renowned make as listed below.

All the internal wiring including that of telephone, LAN, DICOM & PACS etc. will be of concealed variety. The internet broadband connection at a single point will be provided by hospital. The distribution of internet will be carried out by vendor only.

b) Earthing: Double earthing with copper plate for the BRACHYTHERAPY and all accessories should be as per ISO rule

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

General lights– LED Lights of 400 LUX (BRACHYTHERAPY Room along with Control-Console room)

d) Sky Light should be in the ceiling of BRACHYTHERAPY room. All wires used must be FRLS (Fire Retardant with lows make) type only

e) AIRCONDITIONING: All rooms (BRACHYTHERAPY Room along with Control-Console room) need to be air-conditioned. Ductable central AC for BRACHYTHERAPY room and control room and should be used according to room requirement and suitability. Humidity control should be provided to effectively eliminate moisture condensation on the equipment. The Air conditioning system should be designed with standby provision to function 24x7. The outdoor units of AC should have grill coverings to prevent theft and damage.

f) Dehumidifier: one of 2 tonn age per BRACHYTHERAPY should be provided.

g) Environmentspecifications: (BRACHYTHERAPYRoomalongwithControl-Consoleroom)

- h) Humidity range: Relative humidity 60% and 80% in all areas except equipment room which shall be as per requirement of the equipment.
- i) **Temperature ranges:** 22+/-2°C in all areas through out they ear, except equipment room which shall be as per requirement of the equipment.
- j) **Air conditioning load:** The heat load calculations and maintaining the desired temperature and humidity shall be the responsibility of the supplier.
- k) **Painting:** (BRACHYTHERAPY room along with Control Console) Two coat plastic emulsion pain to ver two coats of wall putty including primer in all area of BRACHYTHERAPY room and control console room.

FURNITURE AND OTHER ACCESSORIES REQUIREMENT:

l) BRACHYTHERAPY with Control –Console Room

Furniture Requirement:		
01	HDR Brachytherapy console	Long L shaped tail or made table for HDR control console Executive revolving chair with half backrest – 8 Customized L Shaped wall cabinet of at least 20'(W)x4'(H)x3'(D) with lock and key facility Patient treatment Bed – 1 Steel almirah / cabinet of standard size 6'(H)x2'(D) with lock and key – 2 Dustbin – 2
02	Brachytherapy Procedure Room	Wooden cabinet with glass door 2m.(H) x 1m. (W) x 1m. (D)
03	Brachytherapy Minor OT	Table – 1, Chair – 2, OT Table – 1, OT Stool – 4, Steel Cabinet – 2, Dustbin – 2
04	Trolley with facility for oxygen cylinder attachment	01 (For Patient transportation)
05	Wheel Chair	01
06	Shoe Shelf/ Rack for Brachytherapy, TPS	02
07	Dehumidifier(2 Ton)	01 for HDR Brachy
08	Microphone	01 unit for Patient Calling
09	Cartridge for Printers associated with TPS and Control Computer of LINAC and Control console computer	Printer cartridge over a period of 10 years as and when required by the end user.
10	Dustbin	02

FIRE SAFETY MEASURE:

- 1) A fire alarm system of reputed make with smoke / heat detectors, indicator panels, call boxes, electronic sirens and wiring will be installed. Audio call bell system with intercom & remote locking/unlocking facility to be provided at the main door of the complex.
- 2) Supplying, installing dry chemical type fire extinguisher of 6 kg capacity, with initial filling in brand new cylinder with power coated finish, fitted with gun metal union, high pressure carbon dioxide gas cartridge, discharge hose, wall mounting bracket etc.

MISCELLANEOUS:

- a) **Cabling of Network (LAN):** connectivity and required branded switches for net working the BRACHYTHERAPY, TPS and any other workstation used within the site.
- b) The internet broadband connection at a single point will be provided by hospital. The distribution of internet will be carried out by vendor only.
- c) **Broadband connection** with static IP for REMOTE SERVICE of BRACHYTHERAPY.
- d) **Radiation related Signage** to be provided as per requirement.

- e) Intercom system should be provided.
- f) The outdoor unit of all AC should have grill cover to prevent theft and damage.
- g) Necessary power supply plug point should be provided at BRACHYTHERAPY machine room, BRACHYTHERAPY control console room.
- h) Patient change area with full length curtain, small rack/drawer for keeping belongings.

LIST OF ITEMS AND SUGGESTED MANUFACTURERS/BRANDS		
Sl. No.	ITEMS	PREFERRED MAKES
A	CIVIL	
	Granite	Thar Marble/GCL India Pvt. Ltd.
1	TILES	Kajaria, Johnson, Restile
2	PAINT	Dulux, Asian Paints, Nerolac
3	PLUMBING	Kohler, Jaguar, Grohe, Roca
4	SANITARY ITEMS	CERA, Hindware, Parryware
B	ELECTRICAL	
1	CABLES	Finolex, Havells, V-Guar
2	SWITCHES	Legrand, L&T, Crabtree
3	DISTRIBUTION BOX, MCB	Legrand, L&T, Siemens
4	LIGHT FITTINGS-(LED light)	Philips, Crompton, Wipro.
C	AIR CONDITIONING (Copper Condensing unit)	Mitsubishi, Hitachi, Daikin, Carrier
D	FURNITURE	Godrej, Hermen Miller, Featherlite, Damro
E	SKYLIGHT	Reputed company

The Scope of Work for Turnkey-for Sagore Dutta Hospital (4D CT Simulator Machine)

GENERAL

The prospective bidders already visited the proposed site for **4D CT Simulator bunker** at College of Medicine and Sagore Dutta Hospital, Kamarhati, N 24 pgs. Tenderers are advised to acquaint themselves with access to site, location of work and any other matter relating to availability and carriage of construction materials. The construction of the concrete shell of the Bunker (CT ROOM) has already been built. The turnkey work shall include all other site preparation work required for installation and functioning of the CT at the proposed sites. The selected bidder shall submit 3D view of the interior work to be under taken for approval of WBMSCL.

Along with interior works as specified in details, the scope of work for Turnkey shall also include the following,

- 1) Remaining necessary civil work except enhancement in thickness of walls and ceiling of concrete wall in the present bunker already constructed at College of Medicine & Sagore Dutta Hospital.
- 2) Plastering and flooring with tiles also completed at CT Machine room, Control-Console room.
- 3) Electrical, Plumbing, Furnishing, Air-conditioning, Fire fighting works.
- 4) Necessary Heavy Duty wooden door (1 no) for CT bunker and necessary lead glass window to be provided for control console room.

The drawings of the proposed CT building layout are attached herewith.

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

- a) Easy movement of the patients tretchers/trolleys through corridors and doors.
- b) Adequate Radiation shielding as per AERB norms, if necessary.
- c) Supply of furniture like desk, chairs, shelves, locker etc.
- d) Supply of Patient stretcher and other furniture/accessories to make the CT functional.

The intending bidders are to calculate the cost of necessary Turnkey job (site preparation and interior works) based on the area as demarcated in the site wise drawings attached with the tender document.

CIVIL WORK:

1. Construction / modification work including construction of brick wall if any, plastering,
2. Construction of renovation / modification demolition, exaction, filling work including construction of full or half brick wall if required, plastering, flooring as per the approved plan and equipment layout plan. Necessary openings/ niches/ cut-outs, wherever required as per drawings and asked for by WBMSCL, shall be provided by the contractor without any extra cost.
3. Making surface good for floor modification for installing the CT.
4. Platform for unloading and shifting the CT if necessary.
5. Cable tray, trench & channel – necessary trenches, cable tray and channels at required location
6. Anti-termite treatment and pest control should be done in and around the facility once in a year. The entire complex will be made rodent/pest proof.
7. Core cutting between CT machine room and Control-Console for connecting cables.

Specification of materials:

General

False ceiling, floor and walls are already completed. Any further works needed to be done by vendor (excluding the waterproofing of the CT bunker floor).

Door:

1. **CT Scan room:** Double leaf door lined with 2.0 mm lead equivalence as per AERB norms
2. **Main Entry to the unit:** First quality seasoned shagoon wooden door of minimum 40mm thick double leaf of with 150mm X 150mm vision panel (2mm lead equivalent glass), viewing window, plastic kicking plate fixed with headless screw, high gloss wax polish. The door should be fitted with proper locking arrangement, door closure, handle and stopper. Wooden frame from 125mm x 100mm of good quality Shal/Shagoon wooden block.(Viewing glass dimension: 1500mm x 1500mm)
3. **Other:** Good quality Flush Door with/viewing window.

Paint: 2 coats synthetic enamel paints over 2 coats primer over wall putty (if required)

Viewing Window: 2 mm lead equivalence lead glass with adequate dimension.

Fire door: 1 fire door at HT PANEL room.

Air-conditioning machine:

The total carpet area mentioned has to be properly air-conditioned @ 750 cu ft. for one ton .In the CT Simulator additional AC to be considered depending on the heat dissipation by the machines.

Split/Ductable Split type AC machines having appropriate rating to bring down and maintain room temperature to be 20°±2° celsius.

There should be sufficient number of the AC machines to run the service round the clock (i.e. 100% backup). The service should be uninterrupted in case of breakdown of any of the AC machine(s).

A/C ducting to be prepare, if required. Humidifier and Dehumidifier should be provided to maintain the humidity level at approx 60 % at Gantry room and in other area(s), if technically required.

1. High quality room lighting(LED upto 400 LUX of illuminance)
2. Necessary power supply points for the followings should be provided in addition to standard power supply points:
3. Vac. Lock System
4. Digital water bath for thermoplastic pre cuts
5. Heat gun

The bidders to submit drawing layout plan of the interior. At least 15-20 patient holding positions has to be mentioned in the drawing layout plan. Sufficient furniture to be supplied for the console room.

Wiring System:

1. Light, Fan, 5 Amp Plug: 3X1.5 sq. mm copper conductor FRLS wire should be provided.
2. Power Plug (15 Amp): 2X2.5 + 1X1.5 sq. mm copper conductor FRLS wire should be provided.
3. Split/Ductable AC wiring: 2X4 + 1X2.5 sq. mm/suitable gauge copper conductor FRLS wire should be provided.

False Ceiling: Mineral fibre board with powder coated GI grid at CT room, control room.

PLUMBING WORK

All necessary plumbing work to install CT. Chiller piping work should be done by vendor (if require).

ELECTRICALWORK:

1. The supplier shall be required to specify the total load requirements for the CT room 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 CT room. Few lights in each room shall be connected to the UPS to provide emergency lighting.

The electrical work shall include the following:

2. **Wiring–** Wiring – Wiring with colour code for all types of points and plugs etc. All interior electrical wiring – with main distribution panel board, necessary vertical TPNMCBDBs to control MCCBs, TPNMCBDBs and SPNMCBDB if any necessary. Every point should be wired with both neutral and phase and earth separately from the copper link bar of phase, neutral and earth. Copper link Bar should be housed into the switch board on 1.1 KV grade insulators. There should not be any joint in between of any two terminals of all the installations. The 3wires system shall be of copper wire (minimum 1.5 Sq-mm) of different capacity as per the load and should be of renowned make as listed below.
3. All the internal wiring including that of telephone, LAN, DICOM & PACS etc. will be of concealed variety. The internet broadband connection at a single point will be provided by hospital. The distribution of internet will be carried out by vendor only.
4. Earthing: Double earthing with copper plate for the CT and all accessories should be as per ISO rule
5. Switches light and power points should be of modular type and of standard make as listed below.
General lights – LED Lights of 400 LUX (CT Room along with Control-Console room)
6. Sky Light should be in the ceiling of CT room. All wires used must be FRLS (Fire Retardant with low smoke) type only.

7. **Environment specifications:** (CT Room along with Control-Console room)
8. Humidity range: Relative humidity 60% to 65% in all areas except equipment room which shall be as per requirement of the equipment.
9. Temperature ranges: 20+/-2°C in all areas throughout the year, except equipment room which shall be as per requirement of the equipment.
10. Air conditioning load: The heat load calculations and maintaining the desired temperature and humidity shall be the responsibility of the supplier.

FURNITURE REQUIREMENTS FOR CT SIMULATOR:

Furniture Requirement:		
01	4DCT simulator room	a. Customized cupboard for storing immobilization devices/machine accessories – at least 60'(W)x6'(H)x3'(D) in parts. b. Patient changing area with chair, full length curtains, mirror, small rack / drawer for keeping belongings c. Table with drawers – 5'(W)x3'(D) – 3 d. Stainless steel sink of large size near water bath with granite table top of at least 5'(W)x3'(D) adjacent to it.
02	4DCT simulator Control Console	a. Table with drawers – 5'(W)x3'(D) – 3 b. Executive revolving chair with full backrest – 3 c. Executive revolving chair with half backrest – 3 d. Customized wall cabinet of at least 20'(W)x4'(H)x3'(D) with lock and key facility e. Steel almirah/cabinet of standard size 6'(H)x2'(D) with lock and key – 2 f. X-Ray viewer with digital backlight (4 plates) – 1 g. Dustbin – 2

FIRE SAFETY MEASURE:

1. A fire alarm system of reputed make with smoke/heat detectors, indicator panels, call boxes, electronic sirens and wiring will be installed. Audio call bell system with intercom & remote locking/unlocking facility to be provided at the main door of the complex.
2. Supplying, installing dry chemical type fire extinguisher of 6 kg capacity, with initial filling in brand new cylinder with power coated finish, fitted with gun metal union, high pressure carbon dioxide gas cartridge, discharge hose, wall mounting bracket etc.

MISCELLANEOUS:

1. **Cabling of Network (LAN)** connectivity and required branded switches for net working the CT, TPS and any other workstation used within the site.
2. The internet broadband connection at a single point will be provided by hospital. The distribution of internet will be carried out by vendor only
3. **Broadband connection** with static IP for REMOTE SERVICE of CT.
4. **Radiation related Signage** to be provided as per requirement.

5. **Inter com system** should be provided.
6. **The outdoor unit of all AC should have grill coverage to prevent theft and damage.**
7. Necessary power supply plug point should be provided at CT machine room, CT control console room.

LIST OF ITEMS AND SUGGESTED MANUFACTURERS/BRANDS		
Sl. No.	ITEMS	PREFERRED MAKES
A	CIVIL	
	Granite	Thar Marble/GCL India Pvt. Ltd.
1	TILES	Kajaria/Johnson/Restile
2	PAINT	Dulux/AsianPaints/Nerolac
3	PLUMBING	Kohler/Jaguar/Grohe, Roca
4	SANITARYITEMS	CERA/Hindware/Parryware
B	ELECTRICAL	
1	CABLES	Finolex/Havells/V-Guar
2	SWITCHES	Legrand/L&T/Crabtree
3	DISTRIBUTIONBOX,MCB	Legrand/L&T/Siemens
4	LIGHTFITTINGS-(LED light)	Philips/Crompton/Wipro.
C	AIR CONDINTIONING (Copper Condensing unit)	Mistubishi/Hitachi/Daikin/Carrier
D	FURNITURE	Godrej/Hermen/Miller/Feather/lite/Damro
E	SKYLIGHT	Reputed/company

The Scope of Work for Turnkey–for Sagore Dutta Hospital (High Energy LINAC)

GENERAL:

The prospective bidders already visited the proposed site for HIGH ENERGY Linear Accelerator ROOM, bunkers at College of Medicine and Sagore Dutta Hospital, Kamarhati, Kolkata.

Bidders are advised to acquaint themselves with access to site, location of work and any other matter relating to availability and carriage of construction materials. The construction of the concrete shell of the Bunker (LINAC ROOM) has already been built. The turnkey work shall include all other site preparation work required for installation and functioning of the LINAC at the proposed site. The selected bidder shall submit 3D view of the interior work to be under taken for approval of WBMSCL.

Along with interior works as specified in details, the scope of work for Turnkey shall also include the following:

- a) The cut out kept for transporting the LINAC consignment from Ground floor to lower basement with the help of Chain Pulley should have an Iron I-girder fixed at one level higher floor. To full fill this requirement additional temporary structure for hanging the LINAC consignment will be provided by Civil engineering department of concerned Institute. The chain pulley or other similar additional civil & mechanical arrangements should be done by the vendor for hanging and transporting the heavy weight boxes from Ground level to lower basement.
- b) The sunken area inside LINAC bunker and console area should be filled /raised by selected LINAC vendor using RCC so that the trenches/base frame, table pit can be accommodated as per the selected vendor and also to match with AERB approved plans.

- c) Remaining necessary civil work for enhancement in thickness of floor, walls and ceiling of concrete wall in the present bunker already constructed at Burdwan Medical College and Hospital.
- d) Temperature management (Sufficient AC machines with 100% back up) and relative humidity (Sufficient Dehumidifier) management as per maintenance specifications of the concerned LINAC Machine should be done by LINAC vendor company for the LINAC room as well as console area.
- e) All further core cutting needed through walls and ceilings other than existing should be done by vendor.
- f) The outdoor unit of AC should have grill coverage with lock and key facility to prevent theft and damage. The water drainage storage and pumping management system for the AC units should be arranged by Vendor.
- g) The chiller system, if placed outside of the building, the vendor should make necessary arrangements like shades above, grill around with lock and key facility for the same to ensure physical safety and security.
- h) Necessary Heavy Duty **wooden door** and **Aluminum panel glass** door to be provided.
- i) Vacuum Cleaner

The AERB approved drawings of the LINAC building is attached herewith.

- j) Adequate Radiation shielding as per AERB norms (if necessary)
- k) Supply of furniture like desk , shelves, chairs ,lockers etc for the control area.
- l) Supply of Patient Strecher and other furniture/accessories to make LINAC functional.

The intending bidders are to calculate the cost of necessary turnkey job (site preparation, interior works, Furniture and office accessories) based on the area as demarcated in the site wise drawings attached with the tender document.

- 1) Construction / modification work including construction of brick wall (if any), plastering, flooring as per the approved plan and equipment layout plan,
- 2) Construction of renovation / modification demolition, exaction, filling work including construction of full or half brick wall if required, plastering, flooring as per the approved plan and equipment layout plan. Necessary openings/ niches/ cut-outs, wherever required as per drawings and asked for by WBMSCL, shall be provided by the contractor without any extra cost.
- 3) Making surface good for floor modification for installing the LINAC.
- 4) Platform for unloading and if necessary.
- 5) Cable tray, trench & channel – necessary trenches, cable tray and channels at required locations.
- 6) **Anti-termite treatment and pest control** should be done in and around the facility once in a year. The entire complex will be made rodent/pest proof.
- 7) Core cutting in the ceiling of LINAC console room for electrical mains cable if required. (Dimension: approx. 6 inches of 4 no's)
- 8) Necessary waterproofing of LINAC bunkers before installation of LINAC machines to be done by vendors.

Specification of Materials:

A. Flooring:

Granite- 2400 x 800 mm or bigger good quality heavy duty hard Granites of 18 mm thick

Premier Tiles - 800 x 800 mm mirror polished premier quality double charged joint less vitrified tiles

Kota - Heavy Duty Hard Kota of 18 mm thick

B. Walls:

Granite - 2400 x 800 mm or bigger good quality heavy duty hard Granites of 18 mm thick

Premier Tiles- 800 x 800 mm mirror polished premier quality double charged joint less vitrified tiles

Ceramic Tiles- Premier quality joint less Glazed ceramic tiles of size 450 x 300 mm

Note: Epoxy base resin should be added with cement mortar with necessary key stone while fixing of the Granite.

C. False Ceiling:

Mineral fiber board with powder coated GI grid at LINAC room, control room, Brachytherapy and CT Simulator room.

PLUMBING WORK

All necessary plumbing work to install LINAC and Chiller piping work should be done by vendor.

ELECTRICAL WORK

- 1) The supplier should be required to specify the total load requirements for LINAC 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 LINAC centre. Few lights in each room shall be connected to the UPS to provide emergency lighting.
- 2) The electrical work shall include the following:
Wiring - Wiring with color code for all types of points and plugs etc. All interior electrical wiring-with main distribution panel board, necessary vertical TPNMCBDBs to control MCCBs, TPNMCBDBs and SPNMCBDB if any necessary. Every point should be wired with both neutral and phase and earth separately from the copper link bar of phase, neutral and earth. Copper link Bar should be housed into the switch board on 1.1 KV grade insulators. There should not be any joint in between of any two terminals of all the installations. The 3 wires system shall be of copper wire (minimum 1.5 Sq-mm) of different capacity as per the load and should be of renowned make as listed below.

All the internal wiring including that of telephone, LAN, DICOM & PACS etc. will be of concealed variety.

a) **Earthing:**

Double earthing with copper plate for the LINAC and all accessories should be as per ISO rule.

- b) Switches light and power points should be of modular type and of standard make as listed below.
- c) General lights - LED Lights of 400 LUX
- d) Sky Light should be in the ceiling of LINAC rooms. All wires used must be FRLS (Fire Retardant with low smoke) type only

AIR CONDITIONING:

All rooms mentioned above need to be air-conditioned. Ductable central AC for LINAC room should be used according to room requirement and suitability. Humidity control should be provided to effectively eliminate moisture condensation on the equipment. The Air conditioning system should be designed with standby provision to function 24 x 7. The outdoor units of AC should have grill coverings to prevent theft and damage. Exhaust systems required in toilet to be provided.

ENVIRONMENT SPECIFICATIONS:

- Humidity range: Relative humidity 60% and 80% in all areas except equipment room which shall be as per requirement of the equipment.
- Temperature ranges:** 22 +/- 2° C in all areas throughout the year, except equipment room which shall be as per requirement of the equipment.
- Air conditioning load:** The heat load calculations and maintaining the desired temperature and humidity shall be the responsibility of the supplier.

PAINTING:

Two coat plastic emulsion paint over two coats of wall putty including primer in all area except LINAC room.

LINAC room walls- High quality high density vitrified tiles clad on the side walls up to false ceiling.

FURNITURE REQUIREMENT (FOR FUNCTIONING OF LINAC AND PATIENT BENEFIT):

COLLEGE OF MEDICINE & SAGORE DUTTA HOSPITAL, WEST BENGAL			
Sl. No.	Rooms	Required facilities	Remarks
01	TPS room	a. Customized table tops along three sides of the room with a depth of 2.5' with drawers for installing 8-9 computers, 2 printers etc. b. Executive revolving chair with full backrest – 6 c. Executive revolving chair with half backrest – 6 d. Customized wall cabinet along 2 sides of the room with at least 30'(W) x 3'(H) x 2' (D) with lock and key facility. e. Steel almirah / cabinet of standard size 6'(H)x2'(D) with lock and key – 3 f. X-Ray viewer with digital backlight (4 plates) – 1 g. Dustbin – 2 h. CPU trolleys/ UPS trolleys as needed i. Polycarbonate based suitcase with wheels (Air cabin luggage size) for ion chamber calibration purposes –2 such	Treatment planning Stations Room
02	Contouring Room	a. Long tailor-made table tops along 3 sides of the room for installing 4-5 workstations with a depth of 2.5' with drawers. b. Executive revolving chair with full backrest – 4 c. Executive revolving chair with half backrest – 6 d. Customized wall cabinet along two side of the room of approx. 20' (W) x 3'(H) x 2'(D) with lock and key facility f. X-Ray viewer with digital backlight (4 plates) – 2 g. Dustbin – 2 h. CPU trolleys/ UPS trolleys as needed i. Steel almirah / cabinet of standard size 6'(H)x2'(D) with lock and key – 1	Doctor's Contouring Station room
03	Mould Room - (Located at ground floor)	a. Table with drawers – 5'(W)x3'(D) –2 b. One standard table for patient mould preparation. c. Executive revolving chair with half backrest – 6 d. Customized wall cabinet of at least 20'(W)x4'(H)x3'(D) with lock and key facility e. Steel almirah / cabinet of standard size 6'(H)x2'(D) with lock and key – 2 g. Dustbin – 3 h. 4 bed mats i. Smoke exhaust system.	Necessary plumbing works to be done.

04	Inside LINAC room -LINAC bunker	a. Customized cupboards for storing immobilization devices / machine accessories/Daily QA equipments – at least 60'(W)x6'(H)x3'(D) in parts. b. Patient changing area with chair, full length curtains, mirror, small rack / drawer for keeping belongings of patient. c. Table with drawers - 5'(W)x3'(D) d. Trolley for carrying dosimetry devices. e. Sky lighting.	For both the LINAC rooms -2 LINAC rooms- (2 sets)
05	LINACconsole-2 (two) no of consoles	a. Long tailored made table 20' (W) x 3' (D) for keeping LINAC console workstations, printers etc b. Executive revolving chair with full backrest – 2 c. Executive revolving chair with half backrest – 6 d. Customized wall cabinet of at least 20'(W)x3'(H)x3'(D) with lock and key facility e. Steel almirah / cabinet of standard size 6'(H)x2'(D) with lock and key g. Dustbin – 4	For both the LINAC console (2 sets)
06	Physicist cum RSO room. (Seating arrangement with 4 separate office cubicles for minimum 4 Physicists)	a. Table with drawers – 5'(W)x3'(D) – 4 b. Computer Table- 5 c. Executive revolving chair with full backrest – 5 d. Executive revolving chair with half backrest – 8 e. Customized wall cabinet of at least 6'(W)x4'(H)x3'(D) with lock and key facility-4 f. Steel almirah / cabinet of standard size 6'(H)x2'(D) with lock and key – 4 g. Dustbin – 4 h. Desktop Computer with latest configuration for e- LORA and other official work along with A4 scanner, LASER Printer and UPS. -4 i. One Dell Precision 5470 workstation with highest configurations, preloaded with all licenses, operating system, antivirus, essential office applications and software with minimum 3 years warranty and supports- for Dosimetric data evaluation and software QA, research simulation. j. Office cubicles by wooden and glass separation covering area 6025 mm x 6000 mm.	Office room accessories for Physicist cum Radiation Safety Officers' rooms.
07	Patient Examination Room	a. Table with drawers – 5'(W)x3'(D) – 2 b. Executive revolving chair with full backrest – 2 c. Executive revolving chair with half backrest – 4 d. Patient's examination table with step tool-2 e. Steel almirah / cabinet of standard size 6'(H)x2'(D) with lock and key – 1 f. X-Ray viewer with digital backlight (4 plates) g. Dustbin- 2	Doctors room
08	Technologist's room	a. Table with drawers – 5'(W)x3'(D) – 3 b. Executive revolving chair with half backrest – 10 c. Steel almirah / cabinet of standard size 6'(H)x2'(D) with lock and key – 2 d. Computer table-1 e. Dustbin – 2	
09.	QA Analysis & Calculation Room	a. Table with drawers – 5'(W)x3'(D) – 1 b. Executive revolving chair with full backrest – 2 c. Executive revolving chair with half backrest – 4 d. Customized Cabinet/ Steel Almirah of standard size with lock and key-2 e. Computer table- 1 f. dustbin-1	

09	Nurse's Station (Upper basement)	a. Table with drawers – 5'(W)x3'(D) – 2 b. Executive revolving chair with half backrest – 4 c. Steel Almirah/ Cabinet with lock and key-3 d. dustbin-2	
10	Patient's waiting Area	Sitting arrangement for thirty patients.	
11	Physics accessories Room	a. Table with drawers – 5'(W)x3'(D) – 2 b. Executive revolving chair with full backrest – 2 c. Executive revolving chair with half backrest – 4 c. Customized Cabinet/ Steel Almirah of standard size with lock and key-2	
12	LED TV 48" (16hrs X 7days)	1 unit	Patient waiting area
13	Cartridge (black and colour) for Printers associated with TPS and Control Computer of LINAC	10 nos. for each Printer over a period of 5 years as and when required by the end user.	TPS room and Control Console of LINAC
14	Trolley with facility for oxygen cylinder Attachment	2	Patient Transportation
15	Wheel Chair	4	Patient Transportation
16	Vacuum Cleaner	1	For cleaning LINAC, TPS rooms etc
17	Shoe Shelf (25 pairs)	2	Outside LINAC room, & Outside waiting area
18	Door Mat	20	Outside waiting area & Outside LINAC room
19	Patient calling system	3 unit	For LINAC, CT simulator for calling patients
20	Dehumidifier	Two/three per LINAC covering up to console area should be provided as per machine specific requirement after proper pint calculation for room volume and relative Humidity level	Humidity control for LINAC

FIRE SAFETY MEASURE:

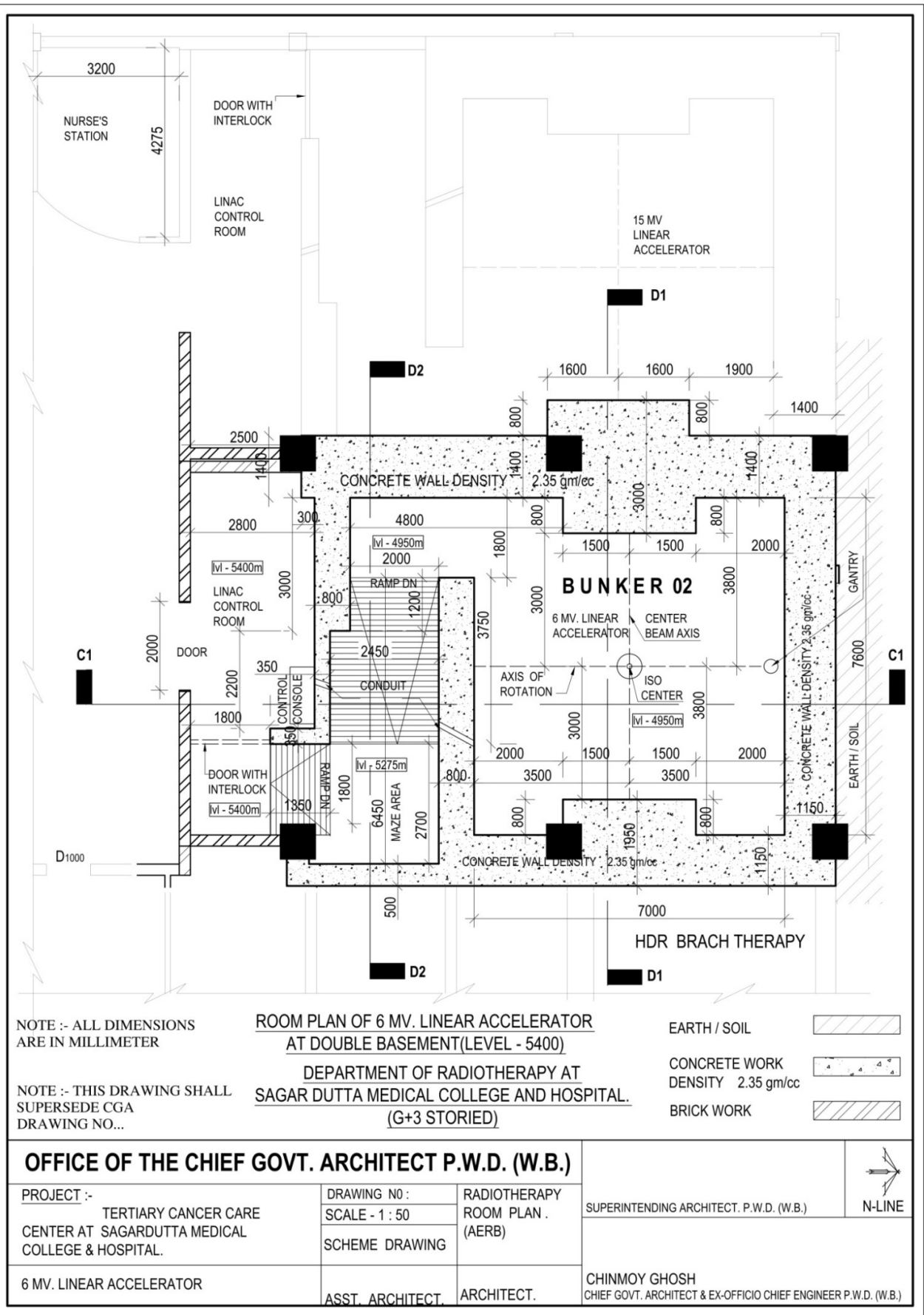
1. A fire alarm system of reputed make with smoke/heat detectors, indicator panels, call boxes, electronics sirens and wiring will be installed. Audio call bell system with intercom & remote locking /unlocking facility to be provided at the main door of the complex.
2. Supplying, Installing Dry chemical power type fire extinguisher of 6 kgs capacity, with initial filling in brand new cylinder with power coated finish, fitted with Gun metal union, high pressure CO2 gas cartridge, discharge hose, wall mounting bracket etc. complete, confirming to IS:2171 of approved make & complete as directed by WBMSCL.

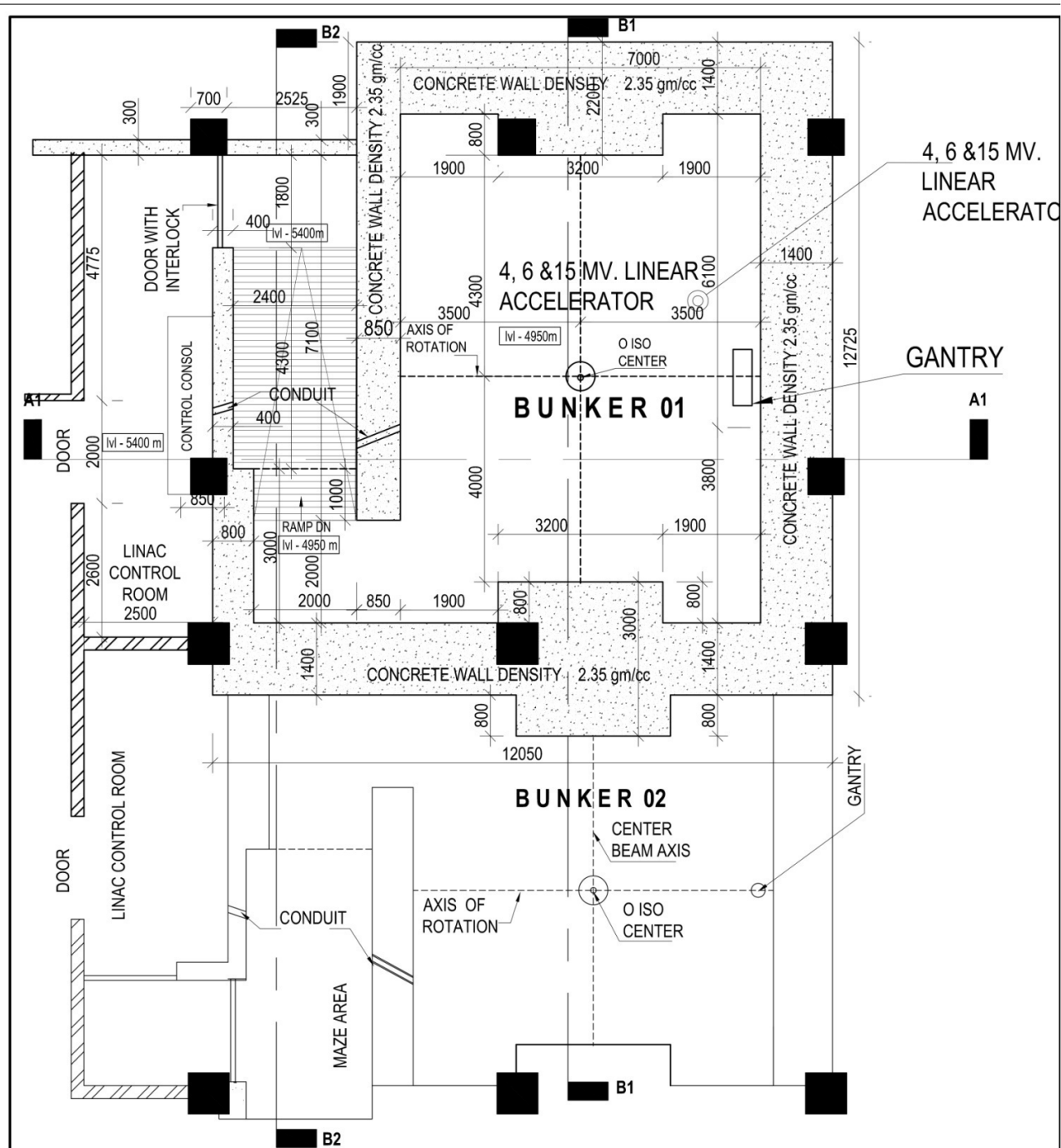
m) MISCELLANEOUS:

1. **Cabling of Network (LAN)** connectivity and required CISCO switches for networking the LINAC, TPS, CT simulator, Brachytherapy and any other workstation used within the site. All the internal wiring including that of telephone, LAN, DICOM&PACS etc. will be of concealed variety. The internet

broadband connection at a single point will be provided by hospital. The distribution of internet will be carried out by vendor only.

2. **Broadband connection** with static IP for REMOTE SERVICE of LINAC system.
3. One LCD Projector with accessories should be supplied for the facility for teaching and training purposes.
4. **One Computer Trolley** should be provided at each site by the supplier.
5. Radiation related Sign age to be provided as per requirement.
6. **Intercom system** having at least 60 channels should be provided.
7. **1 no of Digital Camera** to upload patient photo into R&V system.
8. Required **De-ionized water** supply over period of 10 years whenever required for LINAC maintenance.
9. The outdoor unit of all AC should have grill coverage to prevent theft and damage.
10. The chiller unit should have grill and asbestos coverage to prevent physical damage and theft. It should have lock and key facility.


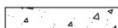





ROOM PLAN OF 4, 6 & 15 MV LINEAR ACCELERATOR
AT DOUBLE BASEMENT (LEVEL - 5400)

NOTE :- THIS DRAWING SHALL SUPERSEDE
PREVIOUS CGA DRAWING BEARING DRAWING
NO.....

DEPARTMENT OF RADIOTHERAPY AT
SAGAR DUTTA MEDICAL COLLEGE AND HOSPITAL.
(G+3 STORIED)

EARTH / SOIL 
CONCRETE WORK
DENSITY 2.35 gm/cc 
BRICK WORK 

NOTE :- ALL DIMENSIONS ARE IN MILLIMETER

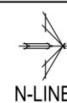
OFFICE OF THE CHIEF GOVT. ARCHITECT P.W.D. (W.B.)

PROJECT :-
TERTIARY CANCER CARE
CENTER AT SAGARDUTTA MEDICAL
COLLEGE & HOSPITAL.

DRAWING NO :
SCALE - 1 : 50
SCHEME DRAWING

RADIOTHERAPY
ROOM PLAN
(AERB)

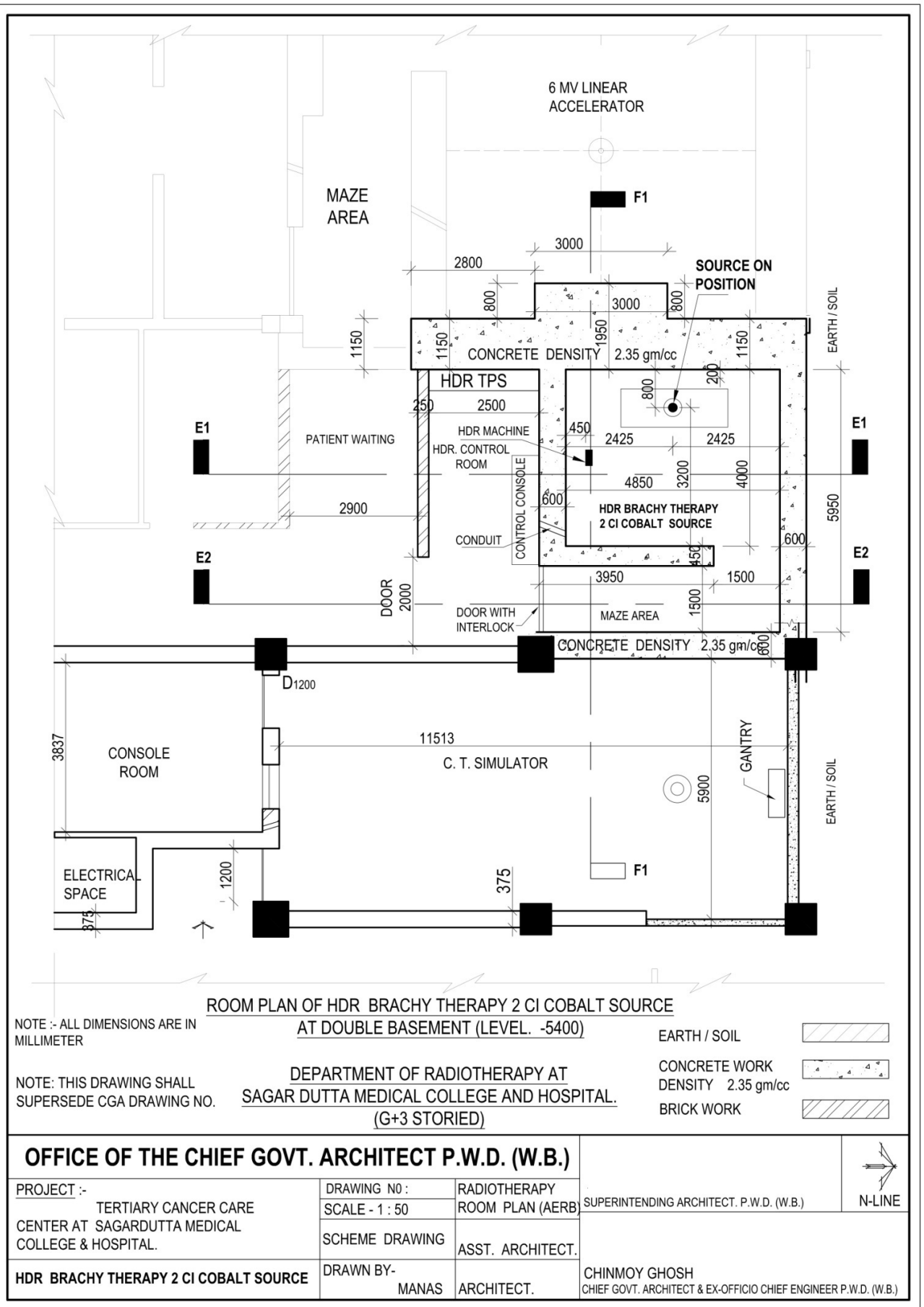
SUPERINTENDING ARCHITECT. P.W.D. (W.B.)



4, 6 & 15 MV. LINEAR ACCELERATOR

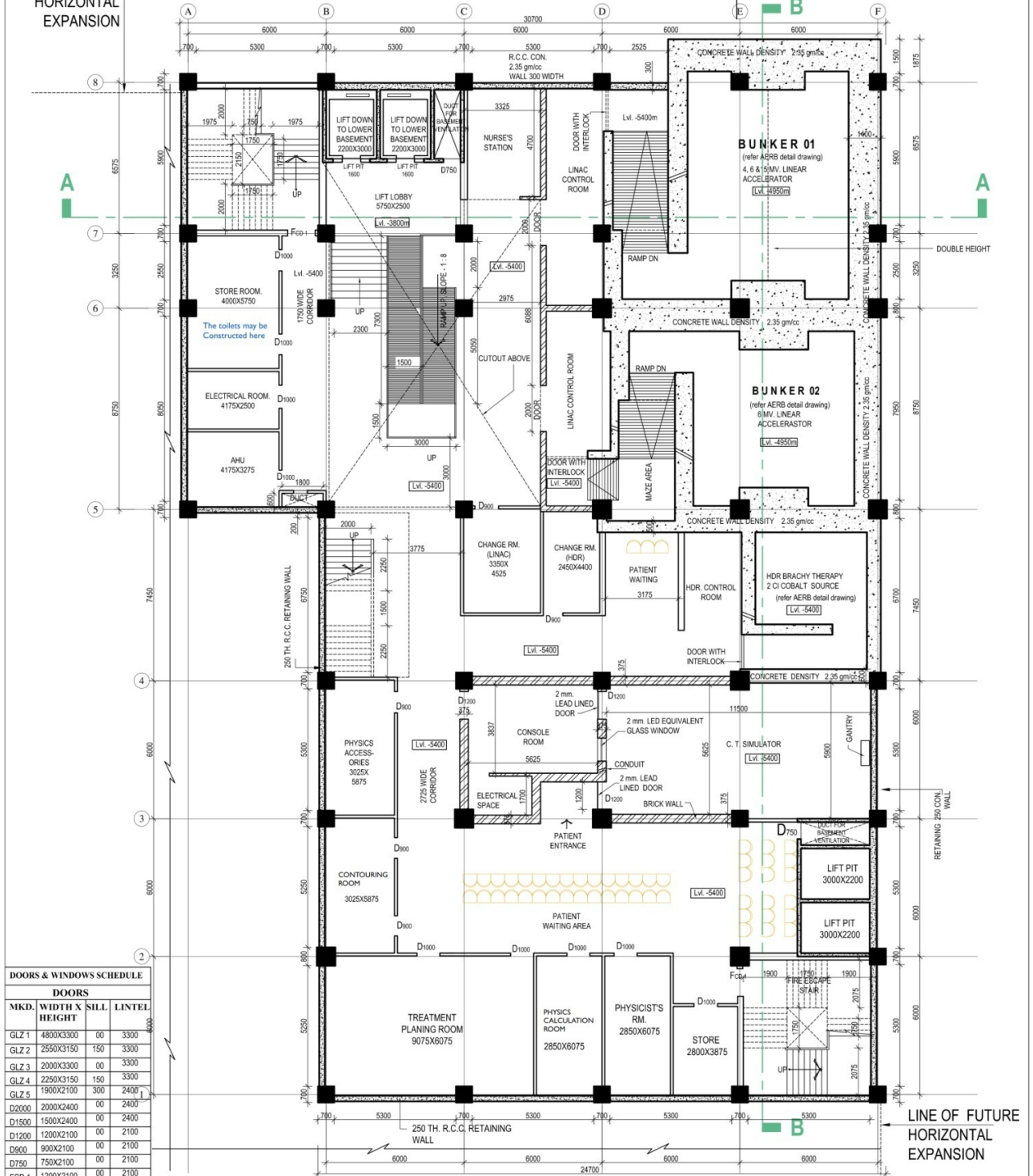
ASST. ARCHITECT.

CHINMOY GHOSH
CHIEF GOVT. ARCHITECT & EX-OFFICIO CHIEF ENGINEER P.W.D. (W.B.)



LINE OF FUTURE
HORIZONTAL
EXPANSION

COPY RIGHT
THIS DRAWING MUST NOT BE TERRACED OR ALTERED OR REPRODUCED WITH
OUT THE PERMISSION OF CHIEF GOVT. ARCHITECT.



LOWER BASEMENT PLAN

(LEVEL. - 5400)

AREA - 1235.34 SQ.M

NOTE:- REFER A.E.R.B DRAWINGS FOR BUNKER
WALL AND CEILING STRUCTURAL DETAILS

NOTE:- FOUNDATION FOR G+9 STORIED
BUILDING WITH DOUBLE BASEMENT

OFFICE OF THE CHIEF GOVT. ARCHITECT P.W.D. (W.B.)

DRAWING NO :

SCALE -

1:150

DRAWN BY-

SUPERINTENDING ARCHITECT. P.W.D.

PROJECT -
TERTIARY CANCER CARE
CENTER AT COLLEGE OF
MEDICINE OF SAGORE DUTTA
HOSPITAL, KAMARHATI



N-LINE

LOWER BASEMENT PLAN

WORKING DWG. -PHASE 1

ASST. ARCHITECT.

ARCHITECT.

CHINMOY GHOSH
CHIEF GOVT. ARCHITECT & EX-OFFICIO CHIEF ENGINEER P.W.D. (W.B.)

The Scope of Work for Turnkey–for IPGME&R and SSKM Hospital (High Energy LINAC)

GENERAL

1. The prospective bidders shall inspect the proposed site for HIGH ENERGY LINAC (2 No) bunker at IPGME&R/SSKM HOSPITAL, KOLKATA. Tenderer's are advised to acquaint themselves with access to site, location of work, and any other matter relating to availability and carriage of construction materials. The concrete shell of the Bunker (2 LINAC ROOM) is under construction. The turnkey work shall include all other site preparation work required the installation and functioning of HIGH ENERGY LINAC at the proposed site. The bidders are required to submit the plan for the HIGH ENERGY LINAC Centre on a turnkey basis. The bidders shall submit 3D view of the interior work to be under taken for approval of WBMSCL.

Along with interior works as specified in details, the scope of work on Turnkey shall also include the following,

- a) After completing the civil work by PWD (As LINAC bunker is under construction), the remaining work will be for the vendor.
- b) Electrical, Plumbing, Furnishing, Air Conditioning, Fire Fighting Works
- c) Necessary Heavy Duty **wooden door** and **aluminium panel glass door** along with lead shielding if necessary to be provided.
- d) The entire complex will be made rodent/pest proof.
- e) Temperature management (Sufficient AC machines with 100% back up) and relative humidity (Sufficient Dehumidifier) management as per maintenance specifications of the concerned LINAC Machine should be done by LINAC vendor company for the LINAC room as well as console area.
- f) All further core cutting needed through walls and ceilings other than existing should be done by vendor.
- g) The outdoor unit of AC should have grill coverage with lock and key facility to prevent theft and damage. The water drainage storage and pumping management system for the AC units should be arranged by Vendor.
- h) The chiller system, if placed outside of the building, the vendor should make necessary arrangements like shades above, grill around with lock and key facility for the same to ensure physical safety and security.
- i) Vacuum Cleaner

The AERB approved drawings of the LINAC building is attached herewith.

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

- a) Easy movement of the patient stretchers/trolleys through corridors and doors
- b) Adequate Radiation Shielding as per AERB norms, if necessary
- c) Supply of furniture like desk, chairs, shelves, locker etc.
- d) Supply of Patient stretchers and other furniture/accessories to make the LINAC functional.

3. The intending bidders are to calculate the cost of necessary turnkey job (site preparation, interior works, and Furniture and office accessories) based on the area as demarcated in the site wise drawings attached with the tender document.

- a) Construction / modification work including construction of brick wall (if any), plastering, flooring as per the approved plan and equipment layout plan.

- b) Construction of renovation / modification demolition, exaction, filling work including construction of full or half brick wall if required, plastering, flooring as per the approved plan and equipment layout plan. Necessary openings/ niches/ cut-outs, wherever required as per drawings and asked for by WBMSCL, shall be provided by the contractor without any extra cost.
- c) Making surface good for floor modification for installing the LINAC.
- d) Platform for unloading if necessary.
- e) Cable tray, trench & channel – necessary trenches, cable tray and channels at required locations.
- f) Anti-termite treatment and pest control should be done in and around the facility once in a year. The entire complex will be made rodent/pest proof.
- g) Core cutting in the ceiling of LINAC console room for electrical mains cable if required. (Dimension: approx. 6 inches of 4 no's).
- h) Necessary waterproofing of LINAC bunkers before installation of LINAC machines to be done by vendors.

4. Specification of Materials:

a) Flooring:

Granite- 2400 x 800 mm or bigger good quality heavy duty hard Granites of 18 mm thick **Premier Tiles**
- 800 x 800 mm mirror polished premier quality double charged joint less vitrified tiles

Kota - Heavy Duty Hard Kota of 18 mm thick

b) Walls:

Granite - 2400 x 800 mm or bigger good quality heavy duty hard Granites of 18 mm thick **Premier Tiles**- 800 x 800 mm mirror polished premier quality double charged joint less vitrified tiles

Ceramic Tiles- Premier quality joint less Glazed ceramic tiles of size 450 x 300 mm Note: Epoxy base resin should be added with cement mortar with necessary key stone while fixing of the Granite.

c) **False Ceiling**: Mineral fiber board with powder coated GI grid at LINAC room, control console room.

5. PLUMBING WORK

All necessary plumbing work to install LINAC and Chiller piping work should be done by vendor.

6. ELECTRICAL WORK

- 1) The supplier should be required to specify the total load requirements for LINAC 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 LINAC centre. Few lights in each room shall be connected to the UPS to provide emergency lighting.

- 2) The electrical work shall include the following:

Wiring – Wiring with color code for all types of points and plugs etc. All interior electrical wiring – with main distribution panel board, necessary vertical TPNMCBDBs to control MCCBs, TPNMCBDBs and SPNMCBDB if any necessary. Every point should be wired with both neutral and phase and earth separately from the copper link bar of phase, neutral and earth. Copper link Bar should be housed into the switch board on 1.1 KV grade insulators. There should not be any joint in between of any two terminals of all the installations. The 3 wires system shall be of copper wire (minimum 1.5 Sq-mm) of different capacity as per the load and should be of renowned make as listed below.

All the internal wiring including that of telephone, LAN, DICOM & PACS etc. will be of concealed variety.

- a) **Earthing**: Double earthing with copper plate for the LINAC and all accessories should be as per ISO rule.
- b) Switches light and power points should be of modular type and of standard make as listed below.

- c) General lights – LED Lights of 400 LUX.
- d) Sky Light should be in the ceiling of LINAC rooms. All wires used must be FRLS (Fire Retardant with low smoke) type only.

7. AIR CONDITIONING:

All rooms (LINAC Room along with Control Console Room) need to be air-conditioned. Ductable central AC for LINAC room should be used according to room requirement and suitability. Humidity control should be provided to effectively eliminate moisture condensation on the equipment. The Air conditioning system should be designed with standby provision to function 24 x 7. The outdoor units of AC should have grill coverings to prevent theft and damage. Exhaust systems required in toilet to be provided.

8. 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° C in all areas throughout the year, 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 supplier.

9. PAINTING:

Two coat plastic emulsion paint over two coats of wall putty including primer in all area except LINAC room. LINAC room walls– High quality high density vitrified tiles clad on the side walls up to false ceiling.

FURNITURE REQUIREMENT (FOR FUNCTIONING OF LINAC AND PATIENT BENEFIT): LINAC

<u>IPGME&R/SSKM HOSPITAL</u>			
Sl. No.	Rooms	Required facilities	Remarks
01	TPS room(First Floor)	a. Customized table tops along three sides of the room with a depth of 2.5' with drawers for installing 8-9 computers, 2 printers etc. b. Executive revolving chair with full backrest – 6 c. Executive revolving chair with half backrest – 6 d. Customized wall cabinet along 2 sides of the room with at least 30'(W) x 3'(H) x 2' (D) with lock and key facility. e. Steel almirah/cabinet of standard size 6'(H)x2'(D) with lock and key – 3 f. X-Ray viewer with digital backlight (4 plates) – 1 g. Dustbin – 2 h. CPU trolleys/ UPS trolleys as needed i. Polycarbonate based suitcase with wheels (Air cabin luggage size) for ion chamber calibration purposes -2 such	Treatment planning Stations Room

02	Contouring Room(First Floor)	a. Long tailor-made table tops along 3 sides of the room for installing 4-5 workstations with a depth of 2.5' with drawers. b. Executive revolving chair with full backrest – 4 c. Executive revolving chair with half backrest – 6 d. Customized wall cabinet along two side of the room of approx. 20' (W) x 3'(H) x 2'(D) with lock and key facility e. X-Ray viewer with digital backlight (4 plates) – 2 f. Dustbin – 2 g. CPU trolleys/ UPS trolleys as needed h. Steel almirah / cabinet of standard size 6'(H)x2'(D) with lock and key – 1	Doctor's Contouring Station room
03	Mould Room (First floor)	a. Table with drawers – 5'(W)x3'(D) –2 b. One standard table for patient mould preparation. c. Executive revolving chair with half backrest – 6 d. Customized wall cabinet of at least 20'(W)x4'(H)x3'(D) with lock and key facility e. Steel almirah/cabinet of standard size 6'(H)x2'(D) with lock and key – 2 f. Dustbin – 3 g. 4 bed mats h. Smoke exhaust system. i. One Wash basin with large sink j. One Equipment Table	Necessary plumbing works to be done.
04	Inside LINAC room -2 LINAC bunkers	a. Customized cupboards for storing immobilization devices / machine accessories/Daily QA equipments – at least 60'(W)x6'(H)x3'(D) in parts. b. Patient changing area with chair, full length curtains, mirror, small rack / drawer for keeping belongings of patient. c. Table with drawers – 5'(W)x3'(D) d. Trolley for carrying dosimetry devices. e. Sky lighting.	For both the LINAC rooms -2 LINAC rooms- (2 sets)
05	LINAC console-2 (two) no of consoles	a. Long tailored made table 20' (W) x 3' (D) for keeping LINAC console workstations, printers etc b. Executive revolving chair with full backrest – 2 c. Executive revolving chair with half backrest – 6 d. Customized wall cabinet of at least 20'(W)x3'(H)x3'(D) with lock and key facility e. Steel almirah / cabinet of standard size 6'(H)x2'(D) with lock and key f. Dustbin – 4	For both the LINAC console (2 sets)
06	Physicist cum RSO room for eLORA (Seating arrangement with 6 separate office cubicles for minimum 6Physicists)(Second Floor)	a. Table with drawers – 5'(W)x3'(D) – 6 b. Computer Table- 5 c. Executive revolving chair with full backrest – 4 d. Executive revolving chair with half backrest – 8 e. Customized wall cabinet of at least 6'(W)x4'(H)x3'(D) with lock and key facility-6 f. Steel almirah / cabinet of standard size 6'(H)x2'(D) with lock and key – 5 g. Dustbin – 4 h. Desktop Computer with latest configuration for e-LORA and other official work along with A4 scanner, LASER Printer and UPS. – 4	Office room accessories for Physicist cum Radiation Safety Officers' rooms

		<p>i. One Dell Precision 5470 workstation with highest configurations, preloaded with all licenses, operating system, antivirus, essential office applications and software with minimum 3 years warranty and supports- for Dosimetric data evaluation and software QA, research simulation.</p> <p>j. Office cubicles by wooden and glass separation covering area 6025 mm x 6000 mm.</p>	
07	Patient Examination Room(Ground floor)	<p>a. Table with drawers – 5'(W)x3'(D) – 2</p> <p>b. Executive revolving chair with full backrest – 2</p> <p>c. Executive revolving chair with half backrest – 4</p> <p>d. Patient's examination table with step tool-2</p> <p>e. Steel almirah / cabinet of standard size 6'(H)x2'(D) with lock and key – 1</p> <p>f. X-Ray viewer with digital backlight (4 plates) g. Dustbin- 2</p>	Doctors room
08	Technologist's room(First Floor)	<p>a. Table with drawers – 5'(W)x3'(D) – 3</p> <p>b. Executive revolving chair with half backrest – 12</p> <p>c. Steel almirah / cabinet of standard size 6'(H)x2'(D) with lock and key – 2</p> <p>d. Computer table-1</p> <p>e. Dustbin – 2</p>	
09	Dosimetry/Physics accessories Room(Ground floor)	<p>a. Table with drawers – 5'(W)x3'(D) – 2</p> <p>b. Executive revolving chair with full backrest – 2</p> <p>c. Executive revolving chair with half backrest – 4</p> <p>d. Customized Cabinet/ Steel Almirah of standard size with lock and key-4</p>	
10	Nurse's Station (Ground Floor)	<p>a. Table with drawers – 5'(W)x3'(D) – 2</p> <p>b. Executive revolving chair with half backrest – 4</p> <p>c. Steel Almirah/ Cabinet with lock and key-3</p> <p>d. dustbin-2</p>	
11	Patient's waiting Area	Sitting arrangement for Forty Patients.	
12	LED TV 48" (16hrsX7days)	1 Unit	Patient waiting area
13	Cartridge (black and colour) for Printers associated with TPS and Control Computer of LINAC	10 nos. for each Printer over a period of 5 years as and when required by the end user.	TPS room and Control Console of LINAC
14	Trolley with facility for oxygen cylinder Attachment	2	Patient Transportation
15	Wheel Chair	4	Patient Transportation
16	Vacuum Cleaner	1	For cleaning LINAC, TPS rooms etc
17	Shoe Shelf (25 pairs)	2	Outside LINAC room, & Outside waiting area
18	Door Mat	20	Outside waiting area & outside LINAC room
19	Patient calling system	3 unit	For LINAC, CT simulator for calling patients

20	Dehumidifier	Two/three per LINAC covering up to console area should be provided as per machine specific requirement after proper pint calculation for room volume and relative Humidity level	Humidity control for LINAC
21	Smart Projector – Interactive smart board with short throw projector bundle.	1 unit	For onsite training and teaching purpose.

FIRE SAFETY MEASURE:

1. A fire alarm system of reputed make with smoke / heat detectors, indicator panels, call boxes, electronic sirens and wiring will be installed. Audio call bell system with intercom & remote locking /unlocking facility to be provided at the main door of the complex.
2. Supplying, Installing Dry chemical power type fire extinguisher of 6 kg capacity ,with initial filling in brand new cylinder with power coated finish, fitted with Gun metal union, high pressure CO2 gas cartridge, discharge hose, wall mounting bracket etc.

MISCELLANEOUS:

1. **Cabling of Network (LAN)** connectivity and required branded switches for networking the LINAC, TPS, CT simulator, Brachytherapy and any other workstation used within the site.
2. **Broadband connection** with static IP for REMOTE SERVICE of LINAC system Land line based Broad Band internet connection will be procured by the Hospital Authority & the bill for the broadband should be paid by the supplier.
3. **One Computer Trolley** should be provided at site by the supplier.
4. **Radiation related Signage** to be provided as per requirement.
5. **Intercom system** having at least 60 channels should be provided.
6. **1 no of Digital camera** to upload patient photo into R&V system.
7. Required **De-Ionized water** supply over period of 10 years whenever require for LINAC maintenance.
8. Required **Ionization Chamber and Dosimeter calibration** over period of 10 years whenever required for the LINAC dosimetric measurement.
9. **The outdoor unit of all AC should have grill coverage to prevent theft and damage.**
10. The **chiller unit** should have grill and asbestos coverage to prevent damage and theft. It should have lock and key facility.
11. Required Two Water Purifier (One for Patient and Another for Staff) with 5 years periodic maintenance warranty.

LIST OF ITEMS AND SUGGESTED MANUFACTURERS/BRANDS		
Sl. No.	ITEMS	PREFERRED MAKES
A	CIVIL	
	Granite	Thar Marble/GCL India Pvt. Ltd.
1	TILES	Kajaria, Johnson, Restile
2	PAINT	Dulux, Asian Paints, Nerolac
3	PLUMBING	Kohler, Jaguar, Grohe, Roca
4	SANITARY ITEMS	CERA, Hindware, Parryware
B	ELECTRICAL	

1	CABLES	Finolex, Havells, V-Guar
2	SWITCHES	Legrand, L&T, Crabtree
3	DISTRIBUTION BOX, MCB	Legrand, L&T, Siemens
4	LIGHTFITTINGS - (LED light)	Philips, Crompton, Wipro.
C	AIR CONDINTIONING (Copper Condensing unit)	Mistubishi, Hitachi, Daikin, Carrier
D	FURNITURE	Godrej, Hermen Miller, Featherlite, Damro
E	SKYLIGHT	Reputed company

The Scope of Work for Turnkey–for IPGME&R and SSKM Hospital (4D CT Simulator)

GENERAL

1. The prospective bidders shall inspect the proposed site for 4D CT SIMULATOR bunker at I.P.G.M.E&R/SSKM HOSPITAL, KOLKATA. Tenderer's are advised to acquaint them selves with access to site, location of work, and any other matter relating to availability and carriage of construction materials. The concrete shell of the Bunker (4D CT Simulator) is under construction. The turnkey work shall include all other site preparation work required for the installation and functioning of 4D CT SIMULATOR at the proposed site. The bidders shall submit 3D view of the interior work to be undertaken for approval of WBMSCL.

Along with interior works as specified in details, the scope of work on Turnkey shall also include the following,

- a) After completing the PWD civil work (As 4D CT SIMULATOR bunker is under construction), the remaining work will be completed for the vendor.
- b) Temperature management (Sufficient AC machines with 100% back up) and relative humidity (Sufficient Dehumidifier) management as per maintenance specifications of the concerned CT Machine should be done by vendor for the CT room as well as console area.
- C) All further core cutting needed through walls and ceilings other than existing should be done by vendor.
- d) The outdoor unit of AC should have grill coverage with lock and key facility to prevent theft and damage. The water drainage storage and pumping management system for the AC units should be arranged by Vendor.

The AERB approved drawings of the 4D CT SIMULATOR building is attached herewith.

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

- a) Easy movement of the patient stretchers/trolleys through corridors and doors
- b) Adequate Radiation Shielding as per AERB norms, if necessary

- c) Supply of furniture like desk, chairs, shelves, locker etc. as mentioned in the **Serial No-11**.
- d) Supply of Patient stretchers and other furniture/accessories to make the 4DCTSIMULATOR functional.

3. The intending bidders are to calculate the cost of necessary turnkey job (site preparation, interior works, and Furniture and office accessories) based on the area as demarcated in the site wise drawings attached with the tender document.

- a) Construction / modification work including construction of brick wall (if any), plastering, flooring as per the approved plan and equipment layout plan.
- b) Construction of renovation / modification demolition, exaction, filling work including construction of full or half brick wall if required, plastering, flooring as per the approved plan and equipment layout plan. Necessary openings/ niches/ cut-outs, wherever required as per drawings and asked for by WBMSCL, shall be provided by the contractor without any extra cost.
- c) Making surface good for floor modification for installing the 4D CT SIMULATOR.
- d) Platform for unloading and if necessary.
- e) Cable tray, trench & channel – necessary trenches, cable tray and channels at required locations.
- f) Anti-termite treatment and pest control should be done in and around the facility once in a year. The entire complex will be made rodent/pest proof.
- g) Core cutting in the ceiling of CT SIMULATOR console room for electrical mains cable if required.

4. Specification of Materials:

- a) **Floor:** Floor (except of CT room) should be of premier quality double charged joint less vitrified mirror polished tiles. Antistatic floor for CT room.
- b) **Ceiling:** Ceiling should be of Mineral fiber board with aluminum grid. 2/3 coats of distemper on true ceiling.
- c) **Wall:** Walls should be of premier quality double charged joint less vitrified mirror polished tiles up to false ceiling. Wall specification should be as per AERB norms.
- d) **Door:** (One Patient entry door and one console to CT room entry door)
 - i) **CT Scan room:** Both door should be Double leaf door lined with 2.0 mm lead equivalence so that radiation level outside the door should be within permissible limit as per AERB norms.
 - ii) **Main Entry to the unit:** First quality seasoned shagoon wooden door of minimum 40 mm thick double leaf of width 1500 mm with 150 mm X 150 mm vision panel, viewing window, plastic kicking plate fixed with headless screw,

high gloss wax polish. The door should be fitted with proper locking arrangement, door closure, handle and stopper. Wooden frame from 125 mm x 100 mm of good quality Shal / Shagoon wooden block.

iii) **Other:** Good quality Flush Door with / viewing window

e) **Paint:** 2 coats synthetic enamel paints over 2 coats primer over wall putty (if required).

f) **Viewing Window:** 2ft x 4ft of 2 mm lead equivalence lead glass.

5. Air-conditioning machine:

The total carpet area mentioned has to be properly air-conditioned @ 750 cu ft. for one ton. In the CT Scan additional AC to be considered depending on the heat dissipation by the machines. Split / Ductable Split type AC machines having appropriate rating to bring down and maintain room temperature to be $20^{\circ} \pm 2^{\circ}$ celsius.

There should be sufficient number of the AC machines to run the service round the clock (i.e. 100 % backup). The service should be uninterrupted in case of breakdown of any of the AC machine(s).

A/C ducting to be prepare, if required. Humidifier and Dehumidifier should be provided to maintain the humidity level at 40 - 60 % at Gantry room and in other area(s), if technically required.

6. High quality room lighting (LED up to 400 LUX of illuminance)

7. Necessary power supply points for the followings should be provided in addition to standard power supply points:

- a. Vac. Lock System
- b. Digital water bath for thermoplastic precuts
- c. Heat gun

8. Medical Gas Pipeline system [O₂, N₂O, Air (4 Bar) and Suction] with imported outlet points along with matching adapter etc. should be provided. Inside pipeline in the Gantry room to be completed in all respect and the entry points of the pipelines should be terminated at a suitable place outside the Gantry room with medical grade isolation valves.

9. The bidders to submit drawing layout plan of the interior. At least 15 -20 patient holding positions has to be mentioned in the drawing layout plan. Sufficient furniture to be supplied for the console room.

10. Wiring System:

- a) Light, Fan, 5 Amp Plug: 3 X 1.5 sq. mm copper conductor FRLS wire should be provided.
- b) Power Plug (15 Amp): 2 X 2.5 + 1 X 1.5 sq. mm copper conductor FRLS wire should be provided.
- c) Split/ Ductable AC wiring: 2 X 4 + 1 X 2.5 sq. mm / suitable gauge copper conductor FRLS wire should be provided.

Earthing: Two nos. Copper plate earthing as per PWD schedule

11. Furniture item to be supplied:

Racks and platforms for keeping mould room accessories should be provided.

- i) Executive revolving chair with arm rest: 6 Nos. (Godrej / Featherlite or equivalent)
- ii) Storage Cupboard: 3 Nos. high quality customized Wall mounted
- iii) Shoe Rack: 1 No
- iv) Corner Table: 2 Nos. (Godrej / Featherlite or equivalent)
- v) Change room with Mirror
- vi) 2 Kg Fire extinguisher cylinder: 4 Nos.
- vii) Console Table from OEM
- viii) Workstation table 1200 x 600 mm: 1 No. (Godrej / Featherlite or equivalent)
- ix) Emergency Crash Cart in the CT room for storage of emergency medicines, medical equipment, true cut biopsy needles etc. – (Godrej / Janak)
- x) LED view box for four films
- xi) Patient trolley with mattress side rails, oxygen cylinder and fluid stand attachment: 2 Nos.
- xii) Dehumidifier - 22 Liters: 4 Nos.
- xiii) Patient waiting chair 3-seater: - 3 Nos.
- xiv) One flat top table for patient.

LIST OF ITEMS AND SUGGESTED MANUFACTURERS/BRANDS		
Sl. No.	ITEMS	PREFERRED MAKES
A	CIVIL	
	Granite	Thar Marble/GCL India Pvt. Ltd.
1	TILES	Kajaria, Johnson, Restile
2	PAINT	Dulux, AsianPaints, Nerolac
3	PLUMBING	Kohler, Jaguar, Grohe, Roca
4	SANITARY ITEMS	CERA, Hindware, Parryware
B	ELECTRICAL	
1	CABLES	Finolex, Havells, V-Guar
2	SWITCHES	Legrand, L&T, Crabtree
3	DISTRIBUTION BOX, MCB	Legrand, L&T, Siemens
4	LIGHT FITTINGS-(LED Light)	Philips, Crompton, Wipro.
C	AIR CONDINTIONING(Copper Condensing unit)	Mistubishi, Hitachi, Daikin, Carrier
D	FURNITURE	Godrej, Hermen Miller, Featherlite, Damro
E	SKYLIGHT	Reputed company

The Scope of Work for Turnkey–for IPGME&R and SSKM Hospital (Brachytherapy Unit)

GENERAL

The prospective bidders shall inspect the proposed site for BRACHYTHERAPY bunker at I.P.G.M.E&R/SSKM HOSPITAL, KOLKATA. Tenderers are advised to acquaint themselves with access to site, location of work and any other matter relating to availability and carriage of construction materials. The construction of the concrete shell of the Bunker (BRACHYTHERAPY ROOM) is under construction. The turnkey work shall include all other site preparation work required for installation and functioning of the BRACHYTHERAPY at the

proposed sites. The selected bidder shall submit 3D view of the interior work to be under taken for approval of WBMSCL.

Along with interior works as specified in details, the scope of work for Turnkey shall also include the following,

a) After completing the PWD civil work (As BRACHYTHERAPY bunker is under construction), the remaining work will be completed for the vendor.

b) Electrical, Plumbing, Furnishing, Air-conditioning, Fire fighting works, Sky light.

c) Necessary Heavy Duty wooden door and aluminum panel glass door to be provided at BRACHYTHERAPY and control console room such that radiation level within the limit as per AERB Protocol.

d) Temperature management (Sufficient AC machines with 100% back up) and relative humidity (Sufficient Dehumidifier) management as per maintenance specifications of the concerned BRACHYTHERAPY Machine should be done by BRACHYTHERAPY Vendor Company for the BRACHY room as well as console area.

e) Audio visual devices with high resolution camera with viewing monitor and with dual speaker for patient communication during treatment.

The drawings of the proposed BRACHYTHERAPY building layout are attached herewith.

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

1. Easy movement of the patient stretchers/trolleys through corridors and doors.
2. Adequate Radiation shielding as per AERB norms, if necessary.
3. Supply of furniture like desk, chairs, shelves, locker, etc.
4. Supply of Patient stretcher and other furniture/accessories to make the BRACHYTHERAPY functional.
5. Log book, CPU Trolley, 1 meter metal scale, scientific calculator, Graph Papers, Gap Chromic Film for brachytherapy dosimetry etc.
6. The intending bidders are to calculate the cost of necessary Turnkey job (site preparation and interior works) based on the area as demarcated in the site wise drawings attached with the tender document.

CIVIL WORK:

1. Construction / modification work including construction of brick wall if any, plastering, flooring as per the approved plan and equipment layout plan.
2. Construction of renovation/modification demolition, exaction, filling working including construction of full or half brick wall if required, plastering, flooring as per the approved plan and equipment layout plan.
3. Necessary openings/ niches/ cut-outs, wherever required as per drawings and asked for by WBMSCL, shall be provided by the contract or without any extra cost.
4. Making surface good for floor modification for installing the BRACHYTHERAPY.
5. Platform for unloading and shifting the BRACHYTHERAPY if necessary.
6. Cable tray, trench & channel–necessary trenches, cable tray and channels at

required locations.

7. **Anti-termite treatment and pest control** should be done in and around the facility once in a year. The entire complex will be made rodent/pest proof.

Specification of materials

a) Flooring:

Enhancement of thickness of floor as per AERB layout should be constructed by vendor considering cable pit.

Granite - 2400x800 mm or bigger good quality heavy duty hard Granites of 18mm thick

Premier Tiles- 800x800mm mirror polished premier quality double charged joint less vitrified tiles

Kota-Heavy Duty Hard Kota of 18mm thick

b) Walls:

Granite- 2400x800 mm or bigger good quality heavy duty hard Granites of 18mm thick

Premier Tiles- 800x800 mm mirror polished premier quality double charged joint less vitrified tiles

Ceramic Tiles- Premier quality joint less Glazed ceramic tiles of size 450x300mm

Note: Epoxy base resin should be added with cement mortar with necessary keys tone while fixing of the Granite

- c) False Ceiling:** Mineral fibre board with powder coated GI grid at BRACHYTHERAPY room, control room.

PLUMBING WORK

All necessary plumbing work to install Brachytherapy. Chiller piping work should be done by vendor.

ELECTRICALWORK:

The supplier shall be required to specify the total load requirements for the BRACHYTHERAPY bunker and console 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 BRACHYTHERAPY centre. Few lights in each room shall be connected to the UPS to provide emergency lighting.

The electrical work shall include the following:

- a) Wiring**–Wiring with colour code for all types of points and plugs etc. All interior electrical wiring – with main distribution panel board, necessary vertical TPNMCBDBs to control MCCBs, TPNMCBDBs and SPNMCBDB if any necessary. Every point should be wired with both neutral and phase and earth separately from the copper link bar of phase, neutral and earth. Copper link Bar should be housed into the switch board on 1.1 KV grade insulators. There should not be any joint in between of any two terminals of all the installations. The 3 wires system shall be of copper wire (minimum 1.5 Sq.-mm) of different capacity as per the load and should be of renowned make as listed below.

All the internal wiring including that of telephone, LAN, DICOM & PACS etc. will be of concealed variety. The internet broadband connection at a single point will be provided by hospital. The distribution of internet will be carried out by vendor only.

- b) **Earthing:** Double earthing with copper plate for the BRACHYTHERAPY and all accessories should be as per ISO rule
- c) Switches light and power points should be of modular type and of standard make as listed below.

General lights– LED Lights of 400 LUX (BRACHYTHERAPY Room along with Control-Console room)

- d) Sky Light should be in the ceiling of BRACHYTHERAPY room. All wires used must be FRLS (Fire Retardant with lows make) type only
- e) **AIRCONDITIONING:** All rooms (BRACHYTHERAPY Room along with Control-Console room) need to be air-conditioned. Ductable central AC for BRACHYTHERAPY room and control room and should be used according to room requirement and suitability. Humidity control should be provided to effectively eliminate moisture condensation on the equipment. The Air conditioning system should be designed with standby provision to function 24x7. The outdoor units of AC should have grill coverings to prevent theft and damage.
- f) **Dehumidifier:** one of 2 ton age per BRACHYTHERAPY should be provided.
- g) **Environment specifications:**(BRACHYTHERAPY Room along with Control-Console room)
- h) Humidity range: Relative humidity 60% and 80% in all areas except equipment room which shall be as per requirement of the equipment.
- i) **Temperature ranges:** 22+/-2°C in all areas through out the year, except equipment room which shall be as per requirement of the equipment.
- j) **Air conditioning load:** The heat load calculations and maintaining the desired temperature and humidity shall be the responsibility of the supplier.
- k) **Painting:** (BRACHYTHERAPY room along with Control Console) Two coat plastic emulsion paint over two coats of wall putty including primer in all area of BRACHYTHERAPY room and control console room.

FURNITURE AND OTHER ACCESSORIES REQUIREMENT:

1) BRACHYTHERAPY with Control -Console Room

Furniture Requirement:		
01	HDR Brachytherapy console	Long L shaped table or made table for HDR control console Executive revolving chair with half backrest – 8 Customized L Shaped wall cabinet of at least 20'(W)x4'(H)x3'(D) with lock and key facility Patient treatment Bed - 1 Steel almirah / cabinet of standard size 6'(H)x2'(D) with lock and key – 2 Dustbin – 2
02	Brachytherapy Procedure Room	Wooden cabinet with glass door 2m. (H) x 1m. (W) x

		1m. (D)
03	Brachytherapy Minor OT	Table – 1, Chair – 2, OT Table – 1, OT Stool – 4, Steel Cabinet – 2, Dustbin - 2
04	Trolley with facility for oxygen cylinder attachment	01 (For Patient transportation)
05	Wheel Chair	05
06	Shoe Shelf/ Rack for Brachytherapy, TPS	02
07	Dehumidifier(2 Ton)	01 for HDR Brachy
08	Microphone	01 unit for Patient Calling
09	Cartridge for Printers associated with TPS and Control Computer of BRACHY and Control console computer	Printer cartridge over a period of 10 years as and when required by the end user.
10	Dustbin	05

FIRE SAFETY MEASURE:

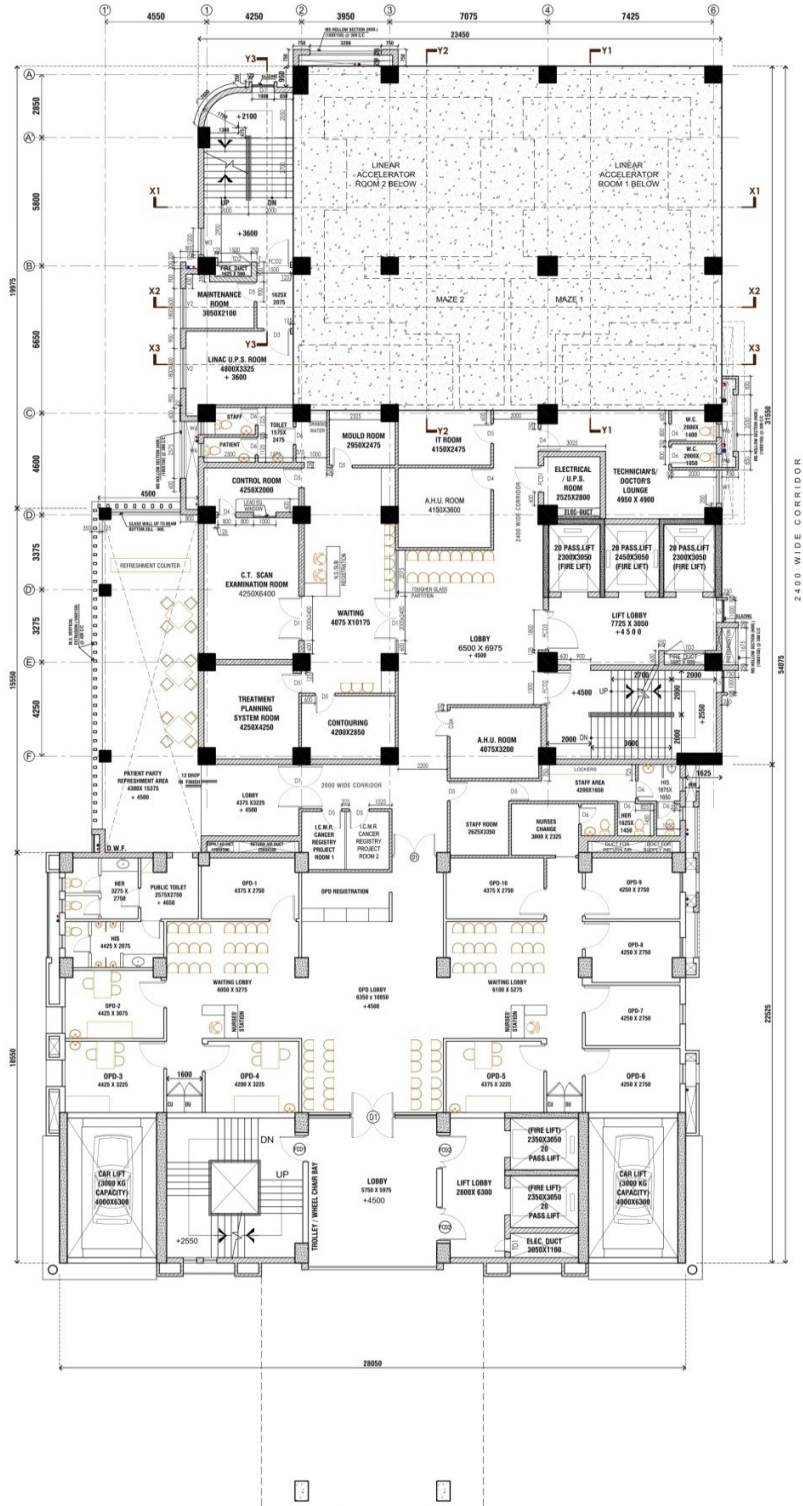
- 1) A fire alarm system of reputed make with smoke / heat detectors, indicator panels, call boxes, electronic sirens and wiring will be installed. Audio call bell system with intercom & remote locking/unlocking facility to be provided at the main door of the complex.
- 2) Supplying, installing dry chemical type fire extinguisher of 6 kg capacity, with initial filling in brand new cylinder with power coated finish, fitted with gun metal union, high pressure carbon dioxide gas cartridge, discharge hose, wall mounting bracket etc.

MISCELLANEOUS:

- a) **Cabling of Network (LAN):** connectivity and required branded switches for networking the BRACHYTHERAPY, TPS and any other workstation used within the site.
- b) The internet broadband connection at a single point will be provided by hospital. The distribution of internet will be carried out by vendor only and one router should be provided for machine maintenance and engineer service.
- c) **Broadband connection** with static IP for REMOTE SERVICE of BRACHYTHERAPY.
- d) **One Laptop** with standard specification for **Brachy QA as per AERB Protocol.**
- e) **External HDD'S for Brachy patient back up.**
- f) **Radiation related Signage** to be provided as per requirement.
- g) **Intercom system** should be provided.
- h) **The out door unit of all AC should have grill coverage to prevent theft and damage.**
- i) Necessary power supply plug point should be provided at BRACHYTHERAPY machine room, BRACHYTHERAPY control console room.
- j) Patient change area with full length curtain, small rack/drawer for keeping belongings.

LIST OF ITEMS AND SUGGESTED MANUFACTURERS/BRANDS		
Sl. No.	ITEMS	PREFERRED MAKES
A	CIVIL	
	Granite	Thar Marble/GCL India Pvt. Ltd.
1	TILES	Kajaria, Johnson, Restile
2	PAINT	Dulux, Asian Paints, Nerolac

3	PLUMBING	Kohler, Jaguar, Grohe, Roca
4	SANITARY ITEMS	CERA, Hindware, Parryware
B	ELECTRICAL	
1	CABLES	Finolex, Havells, V-Guar
2	SWITCHES	Legrand, L&T, Crabtree
3	DISTRIBUTION BOX, MCB	Legrand, L&T, Siemens
4	LIGHT FITTINGS-(LED light)	Philips, Crompton, Wipro.
C	AIR CONDINTIONING (Copper Condensing unit)	Mistubishi, Hitachi, Daikin, Carrier
D	FURNITURE	Godrej, Hermen Miller, Featherlite, Damro
E	SKYLIGHT	Reputed company



COPY RIGHT :

THIS DRAWING MUST NOT BE TRACED, REPRODUCED OR ALTERED WITHOUT THE WRITTEN PERMISSION OF THE C.G.A.

NOTES :

1. ALL DIMENSIONS ARE IN M.M. UNLESS OTHERWISE MENTIONED.
2. ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
3. ANY EXISTING LEVEL, POSITION OF WALL, OPENING SIZES TO BE CHECKED AT SITE.
4. IN CASE OF ANY DISCREPANCY IN DRAWING REFER TO CGA'S OFFICE.
5. ORIENTATION OF BUILDING AND NORTH LINE TO BE CHECKED AT SITE.
6. ALL EXTERNAL WALLS ARE 250 MM THK. & ALL INTERNAL WALLS ARE 125 MM THK. UNLESS OTHERWISE MENTIONED.

OFFICE OF THE CHIEF GOVT. ARCHITECT (P.W.D.) W.B.

PROPOSED HORIZONTAL AND VERTICAL EXTENSION OF LINAC BUILDING (G+2) AT 1, HARISH MUKHERJEE ROAD, KOLKATA.

SCHEMATIC DRAWING

First Floor Plan

DRG. NO.

ABHJIT GHOSH

ASST. ARCHITECT, P.W.D. (W.B.)

ARCHITECT, P.W.D. (W.B.)

SUPERINTENDING ARCHITECT, P.W.D. (W.B.)

VINEET GUPTA

CHIEF GOVT. ARCHITECT & EX-OFFICIO CHIEF ENGINEER IN-CHARGE, P.W.D. (W.B.)

SCALE: 1:200

ARCH. ASST.

Soumit Das Chowdhury

2)		
1)	INTERNAL LAYOUT	11.01.2023
NO.	REVISION	DATE



ALL DIMENSION IS IN MM.

<p> BRICK WALL</p> <p> CONCRETE (Density 2.35 Gm/CC)</p> <p>NOTE :- CONDUIT HAS 50 MM DIA. AND 200 MM HEIGHT FROM FL. LVL. IN TREATMENT ROOM. AND ANGLE OF 35° WITH FLOOR.</p>		<p>OFFICE OF THE CHIEF GOVT. ARCHITECT (P.W.D.) W.B.</p> <p>PROPOSED HORIZONTAL AND VERTICAL EXTENSION OF LINAC BUILDING (G+2) AT 1, HARISH MUKHERJEE ROAD, KOLKATA.</p> <p>DRG. NO.</p>		<p>ABHIJIT GHOSH ASST. ARCHITECT, P.W.D. (W.B.)</p>
<p>PERMANENT ADDRESS</p> <p>I.P.G.M.E & R/SSKM HOSPITAL , 244 A.J.C. BOSE ROAD, KOLKATA - 700020</p>	<p>SITE ADDRESS</p> <p>1, HARISH MUKHERJEE ROAD, KOLKATA - 700020</p>	<p>DRAWING TITLE</p> <p>SITE LAYOUT PLAN AT FIRST FLOOR LVL , CT SIMULATOR</p>	<p>SCALE-1:500</p> <p>ARCH. ASST. Sonali Das Chowdhury</p>	

VINEET GUPTA
CHIEF GOVT. ARCHITECT &
EX-OFFICIO CHIEF ENGINEER IN-CHARGE, P.W.D.(W.B.)

3. STANDARD REQUIREMENTS

The following requirements with regard to inspection, quality, packing, warranty, maintenance and related services shall commonly apply to all the Goods in all the Schedules:

i. QUALITY CERTIFICATION

Wherever appearing in the Bidding Documents, the "CE certificate" shall be read as: "CE mark for conformité européenne, (French for "European conformity").

ii. WARRANTY

Unless specified otherwise, warranty shall always be for a period of five (5) years from the date of acceptance by the Consignee after commissioning of the Goods. During warranty, cost and responsibility of the transport/shifting of the equipment, in case so required for repair, etc, shall be entirely borne by the Supplier, without any liability on the Consignee. In case of such shifting of equipment, alternative working equipment shall be first made available to the Consignee to avoid any disruption in the clinical work.

iii. MAINTENANCE

a. CMC shall be as per the specification after the expiry of warranty, unless specified otherwise. During CMC, cost and responsibility of the transport/shifting of the equipment, in case so required for repair, etc, shall be entirely borne by the Supplier, without any liability on the Consignee. In case of such shifting of equipment, alternative working equipment shall be first made available to the Consignee to avoid any disruption in the clinical work.

b. Subject to (b) above, CMC services shall be provided at the site of the equipment, within the prescribed response time.

4. LIST OF RELATED SERVICES

I. Incidental Services

The Selected Bidder may be required to provide any or all of the following services, including additional services, if any, specified in SCC:

(a) Performance or supervision of the assembly, installation and/or start-up of the supplied equipments

(b) Furnishing of tools required for assembly and/or maintenance of the supplied Goods along with each equipment

(c) Furnishing of detailed operations and maintenance manual for each appropriate unit of supplied equipment at the time of delivery

(d) The Selected Bidder shall be required to give an undertaking that suitable trained service engineers shall be posted at three places of West Bengal for providing prompt, effective and preventive maintenance during the period of warranty as defined as well as CMC period.

(e) The Comprehensive Maintenance Contract (Including Spare Parts)

- (i) The Purchaser/ Consignees/ Government of West Bengal, may, at their own and sole discretion enter into a Comprehensive Maintenance Contract (CMC) with the Supplier at the contracted price.
 - (ii) The Supplier shall visit each site as recommended in the manufacturer's technical/ service operational manual, but at least once in three months during the CMC period for preventive maintenance.
- (f) Training of the Purchaser's/Consignee's personnel, on-site, in assembly, start-up, operation, maintenance and/or repair of the supplied Goods. This must be carried out at the time of commissioning of the Goods.
- (g) Necessary support from the Original Equipment Manufacturer or the Selected Bidder, as may be required for obtaining Clinical License from AERB exclusively for LINAC.

II. Availability of Spare parts

Suppliers shall ensure the availability of spare parts for 15 (Fifteen) years from the date of commissioning. Inventory of the Spare parts shall be required to be maintained by the Supplier for 15(Fifteen) years from the date of commissioning.

III. Training

The Supplier shall impart training to doctors, radiation safety officers or radiologists nominated by the Medical College Authority, not more than 5 in number, whose details shall be communicated by the Purchaser/ Medical College Authority within due time, who shall be imparted with training for operation and maintenance of the equipment for a period of 21 days in total, out of which first 7 days training shall take place offsite, in a place where such equipment having similar make and model has been installed and is operational, within any place in India (preferably in West Bengal). This shall be followed by another 14 days training, at the site, after commissioning of the equipment, where such nominated officials will be imparted training for operation and maintenance of the equipment installed and commissioned at the site of the Consignee by the Supplier. The entire responsibility for the offsite training programme shall be borne by the Supplier in all respect.

5. Inspections and Tests

- a) The Supplier shall get the Goods inspected in the manufacturer's works by a competent authority and submit a test certificate and also a guarantee/warranty certificate that the Goods conform to laid down specifications.
- b) WBMSCL or its representative may inspect and/or test any or all item of the Goods to confirm their conformity to the Contract at their own cost and expense, prior to dispatch from the manufacturer's premises or at the port of entry.

Section V. Bidding Forms

FORM1

Tender Form

(To be furnished on non-judicial stamp-paper of Rs.100/-, affirmed before a First Class Magistrate/Notary/Executive Magistrate in the case of domestic bidder or any other legally equivalent document as permissible under the laws of the respective country, where the bidder is incorporated)

Date:.....

Bid Reference No.:.....

Name of Contract: SUPPLY AND COMMISSIONING OF DIFFERENT TYPES OF ONCOLOGY EQUIPMENT IN THE MEDICAL COLLEGES OF THE GOVERNMENT OF WEST BENGAL.

The Managing Director,
West Bengal Medical Services Corporation Ltd, Swasthya Sathi,
GN-29, Sector-V, Salt Lake, Kolkata-700091

Sir,

I/We, the undersigned hereby accept all the terms and conditions of the Bid Reference No.: **WBMSCL/NIT-239/2023, Dated 11.05.2023-** and its Amendments and Addenda/ Corrigenda thereto are read and accepted without any modification or condition(s).

We also

1. certify that:

- a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders.
- b) We have quoted for all the jobs in full under the scope of work of the tender
- c) We offer to execute the Scope of Work in conformity with Bidding Documents.
- d) The offered products are in accordance with the required specifications and technical requirements.
- e) Our bid consisting of the Technical Bid and the Financial Bid shall be valid for a period of 2 (two) years from the date of opening of Financial Bid in accordance with the Bidding Documents. The prices quoted by us and accepted by WBMSCL shall hold good and remain valid for a period of **2 (two)** year from the date of opening of Financial Bid and no additional claims will be made on account of any price variation or fluctuation in market rates. The rate quoted shall remain binding upon us and may be accepted at any time before the expiration of **2 (two)** years from the date of opening of Financial Bid.
- f) If our bid is accepted, we will submit a Performance Security within 7 (seven) days of

receipt of intimation of issue of LC in our favour in the prescribed format as given in the Bidding Documents.

- g) Our company has been incorporated in accordance with the laws of _____ and governed by them.
 - h) Our company have commissioned nos. Of the offered model and providing necessary service support to the equipment.
 - i) We have never been blacklisted by any Government Department/ Agency in India during the last 5 years.
 - j) There is no adverse report against the equipment offered by us in any Govt. institution.
 - k) We will permit WBMSCL or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them audited by auditors appointed by the WBMSCL.
 - l) All the statements made in the attached documents are true and correct. In case of any information submitted proved to be false or concealed, penalties shall be imposed in terms of the Bidding Documents.
2. We understand that:
- (i) Partial or incomplete bid submission will lead to cancellation of our bid.
 - (ii) The tender inviting and accepting authority reserves the right to reject any application without assigning any reason.

Enclose:

- 1. Non Statutory Documents/ My Documents
- 2. Statutory Documents (Bid A & Bid B)
- 3 .Forms & Annexure duly filled up, signed & notarized (where applicable)

Name.....

In the capacity of.....

Signed.....

Duly authorized to sign the bid for and on behalf of (if applicable).....

Date.....

Form 2: Check-List

[Please fill in and include with your bid]

Note1: It is essential that all documents in hard copy are to be placed before the Bid Evaluation Committee and arranged in the same sequence as given in the Check List. All the documents should be appropriately flagged.

Note2: If any document is written in any language other than English, an English translation of the document duly authenticated is to be submitted.

Note 3: The documents listed at Sl. No. 1, 2, 3, 4, 5, 7, 10, & 13 must be submitted online during online bid submission or else the bid would be liable to be summarily rejected.

Note 4: After opening of the Technical Bids, if it is found that any of the documents required to be submitted with the bids is wanting, WBMSCL shall reserve the right to allow late submission of such document at its discretion within a specified time limit.

Non statutory documents to be submitted under <u>My Documents</u>				
SL. No.	Activity	Yes/No/NA	Page No. in the bid	Remark
1	PAN Card			
2	GST registration Certificate			
3	IEC Certificate			
4	AERB type approval Certificate of the offered model.			
5	Performance Statement Form (For the period of last three calendar years ending December 2022) - Form 7 of Section V Should be supported with documentary evidence (copy of work orders along with proof of payment received / copy of work orders along with installation certificate) that the bidder has supplied Medical equipment in Hospitals in India during the last 3 (three) Financial Years (FY).			
6	Income Tax returns for assessment years 2020-21, 2021-22 and 2022-23 (financial years 2019-2020, 2020-2021 and 2021-2022).			
7	Tender Form as per Form 1			
8	Manufacturer's Authorization (If applicable) as per Form 6A of Section V			
9	Satisfactory Performance Certificate from at least 3 (three) users of the quoted model in support of the satisfactory operation & at least 01 (One) for the quoted model in India.			
BID-A				
10	Earnest Money Deposit (EMD) (Copy of Bank Guarantee (BG)).			

11	Declaration of the bidder on letter head that "We agree to submit a copy of the Tender Documents and its Amendments and Addenda thereto duly initialled by us in all pages with our seal/rubber stamp affixed thereto, in token of acceptance thereof."			
12	Spare parts and accessory manufacturers Authorisation (if applicable) as per Form 6B of Section V			

BID-B				
Sl. No.	Activity	Yes/No/NA	Page No in the Bid	Remark
13	Model of the equipment offered for (Self Declaration) with Brochure and Technical Data Sheet			
14	ComparativeDataTableofthetechnicalspecifications(FormNo.4ofSectionV)			
15	CE ("Conformité Européene") (4 Digit notified body) & US FDA approval Certificate of the offered model, as applicable CE ("Conformité Européene") Certificate should be from EU Notified Bodies authorized to conduct audits. (copy of the certificate submitted with the bid shall be either notarised or apostilled, notarised/ apostilled copy of certificate should be submitted in original)			
16	Pre-requisites of installation [Power (KVA, Phase, Hz) Civil and any other requirement, if any].			
17	Average Annual Turnover of the bidder during the last 3 Financial Years 2019-2020, 2020-2021 and 2021-2022 (in INR) - to be certified by practicing Chartered Accountant as per format given in FORM 10 of Section V .			
18	Form11: Declaration of Quality Certification of Equipment (as applicable)			
19	AERB type approval certificate of the offered model.			
20	Bidders shall furnish a copy of the Agreement/ MOU with the agency which shall undertake the Turnkey Work on behalf of the bidder and shall also furnish at least 3 (three) certificates issued in favour of the agency demonstrating satisfactory completion of Turnkey Work in Government hospitals/ medical colleges in India within the last 3 (three) financial years.			

Form3: PROFORMA OF CERTIFICATE

(TO BE ISSUED BY THE CONSIGNEE AFTER SUCCESSFUL COMMISSIONING AND
FINAL ACCEPTANCE OF THE LINAC, CT Simulator (4D) and HDR Brachytherapy)

Certificate of commissioning of equipment and its satisfactory and faultless Functioning
after commissioning

(To be issued jointly by the Director/MSVP/Superintendent & HOD)

This is to certify that the equipment(s) as detailed below is functioning satisfactorily since
it was commissioned on.....

- a) Contract No. / Supply Order No. Dated :
- b) Description of the equipment (s) :
- c) Serial no. of the equipment (s) :
- d) Quantity :
- e) Name of the Health Facility :
- f) Date of commissioning :

Signature of Authorized Signatory of Facility
(Rubber stamp to be affixed)

Signature of HOD
(Rubber stamp to be affixed)

Form 3a: Consignee Receipt Certificate (CRC)



West Bengal Medical
Services Corp. Ltd.

(To be issued by consignee's authorized representative)

[The consignee may issue an additional challan receipt if delivered by courier or transporter]

Date of supply by the Company Person or Courier:	
Name and Address of the Consignee:	
Name of the item supplied (with Make & Model & Model No.):	
Purchase Order /Contract No.:	
Name of the Supplier:	
No. Of Units supplied:	
Place of destination (The user Dept. where the equipment will be actually installed):	
Invoice No. & Date:	
Details of Batch /Serial Numbers, if any of item supplied:	
<p>..... (Signature & Office Seal of authorized representative of Consignees with date) [Name and designation of the signatory to be written capital letter]</p>	
<p>..... (Signature & Office Seal of Head of the Institute/ Hospital with date) [Name and designation of the signatory to be written capital letter]</p>	



Form 3b: Satisfactory Installation Certificate (SIC)

(To be issued by the consignee after successful commissioning of equipment)

Bid Reference :

Award of Contract Reference :

Description of Equipment/Service :

Date of Commissioning :

This is to certify that the equipment(s) as detailed below has/have been received in good condition along with all the standard and special accessories, consumables, set of spares in accordance with the contract/technical specification of the equipment and site preparation including interiors as per bid document.

Details of equipment, accessories, consumables, spares, etc

Sl	Description	Quantity	Serial No. / Part No.
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

In case of space deficiency, another sheet with the same format can be annexed.

The supplier has also submitted the following,

1. Tools for maintenance
2. Detailed operation and maintenance manual both in hard and soft copy for each item of supply at each location

The proving test has been done to our entire satisfaction. The equipments, its accessories and ancillaries of the site preparation including interiors is functioning satisfactorily and faultlessly

Declaration by Unit Head (HOD/MO-IC/Others):

Sticker designed by WBMSCL is fitted with the equipment ☐ Yes ☐ No

Signature with stamp:

Name (in Block):

P.T.O. →

The following operators/ end users have been trained to operate the equipment(s),

Sl	Name	Designation	Contact No	E-mail ID (In CAPS)	Remarks
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

In case of space deficiency, another sheet with the same format can be annexed.

Countersigned by the head of the institute/ hospital: Signature_____ Name _____ Designation with Stamp _____ Date _____ Phone No_____	Signature of Unit Head: (HOD/MO-IC/Others)
	Name (in Block):
	Designation with Stamp:

Form 4: Technical Specification Form
(Comparative Data Table)

<i>WBMSCL's minimum Technical Requirements</i>	<i>Compliance</i>

THE OFFERED PRODUCTS ARE IN ACCORDANCE WITH THE
REQUIRED SPECIFICATIONS AND TECHNICAL REQUIREMENTS:

YES NO

ANY DEVIATIONS MUST BE LISTED BELOW:

Form 5: Bid Security (Bank Guarantee) Form

[Insert: No Bid Security is requested or The Bank shall fill in this Bank Guarantee Form in accordance with the instructions indicated.]

[Bank's Name and Address of Issuing Branch or Office]

Beneficiary: West Bengal Medical Services Corporation Limited, having its registered office at Swasthya Sathi, GN- 29, Bidhannagar, Sector – V, Salt Lake, Kolkata-700 091

Date: _____

BIDGUARANTEE No.: _____

We have been informed that *[name of the bidder]* (herein after called "the Bidder") has submitted to you its bid dated (herein after called "the Bid") for the execution of *[name of contract]* under Invitation to Bid No. *[NIT number]* ("the NIT").

Furthermore, we understand that, according to your conditions, bids must be supported by a bid security.

At the request of the Bidder, we *[name of Bank]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of *[amount in figures]*/*[amount in words]* upon receipt by us of your first demand in writing accompanied by a written statement stating that the Bidder is in breach of its obligation(s) under the bid conditions, because the Bidder:

- a) has withdrawn its Bid during the period of bid validity specified by the Bidder in the Form of Bid; or
- b) having been notified of the acceptance of its Bid by WBMSCL during the period of bid validity, (i) fails or refuses to execute the Contract Form; or (ii) fails or refuses to furnish the Performance Security, if required, in accordance with the Instructions to Tenderers.

This guarantee will expire: (a) if the Bidder is not the Selected Bidder, upon the receipt of a copy of your notification to the Bidder of the name of the Selected Bidder; or (b) if the Bidder is the Selected Bidder, twenty-eight days after the expiration of the Bid Validity Period.

Consequently, any demand for payment under this guarantee must be received by us at the office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458.

While issuing Bank Guarantee, issuing applicant must mention receiver's details as ICICI Bank A/c. No.: 105605003391, IFSC ICIC0001056, Branch Salt Lake Sector 5, in BG text at which SFMS IFIN 760 message to be sent by issuing bank, to establish the authenticity of given BG.

[Signature]

Form 6 A: Manufacturer's Authorization Form

[The bidder shall require the Manufacturer to fill in this Form in accordance with the instructions in the Bidding Documents. This letter of authorization should be on the letterhead of the Manufacturer and should be signed by a person with the proper authority to sign documents that are binding on the Manufacturer. Such certificate is not required where Manufacturer is the bidder.]

Date:

NIT No.:

To:
MD, WBMSCL

WHEREAS

We *[insert complete name of Manufacturer]*, who are official manufacturers of *[insert type of goods manufactured]*, having factories at *[insert full address of Manufacturer's factories]*, do hereby authorize *[insert complete name of bidder]* to submit a bid the purpose of which is to provide the following Goods, manufactured by us *[insert name and or brief description of the Goods]* and to subsequently negotiate and sign the Contract.

We hereby extend our full guarantee and warranty in accordance with the General Conditions for Goods, with respect to the Goods offered by the above bidder.

When resold by *[name of bidder]*, these goods are subject to applicable warranty terms of your Bidding Documents.

We assure you that in the event of *[name of bidder]* not being able to fulfill its obligation as our Sales & Service Provider in respect of your Bidding Documents, we would continue to meet our terms stated in the Bidding Documents through alternate arrangements.

Authorised Signatory of the Manufacturer

Name

Designation with stamp

Date _____

Form 6 B: SPARE PARTS AND ACCESSORIES MANUFACTURER'S AUTHORIZATION FORM

[The bidder shall require the manufacturers of the spare parts and accessories which are being procured by them for running the equipment to fill in this Form in accordance with the instructions in the Bidding Documents. This letter of authorization should be on the letterhead of such manufacturer and should be signed by a person with the proper authority to sign documents that are binding on such manufacturer.]

Date:

NIT No.:

To:
MD, WBMSCL

WHEREAS

We *[insert complete name of manufacturer]*, who are manufacturers of *[insert category of spare parts/ accessories]* and/or supply of spare parts/ accessories *[insert particulars of spare parts/ accessories being supplied]*, having factories at *[insert full address of place where such items are being manufactured]*, do hereby authorize *[insert complete name of Bidder]* to submit a bid, the purpose of which is to provide the following Goods*[insert name and or brief description of the Goods]* and to subsequently negotiate and sign the Contract.

We hereby extend our full guarantee and warranty in accordance with the General Conditions for Goods, with respect to the Goods offered by the above bidder.

When resold by *[name of bidder]*, these goods are subject to applicable warranty terms of your Bidding Documents.

We assure you that in the event of *[name of bidder]* not being able to fulfill its obligation as our Sales & Service Provider in respect of your Bidding Documents, we would continue to meet our terms stated in the Bidding Documents through alternate arrangements.

Authorized Signatory of the manufacturer _____

Name_____

Designation with stamp_____

Date_____

Form7: Performance Statement Form

(For the period of last three years, if applicable)

Bid no: _____

Date of Opening: _____

Name of the Firm_____

Order placed by (Full address of purchaser)	Order no& date	Description & quantity of ordered Items	Value of Order	Date of completion of Delivery		Remarks indicating reasons of late delivery, if any	Was the supplies of Goods satisfactory
				As per Contract	Actual		

Signature and seal of the bidder

Form 8(a): PRICE SCHEDULE FOR GOODS TO BE IMPORTED FROM A BROAD (To be uploaded separately for each package)
PACKAGE NAME:

1	2	3	4	5	6	7	8
Sl. No.	Brief Description of Goods (Item wise breakup of price quoted in sl no. 1.01 of BOQ)	Country of Origin	Quantity (Nos.)	Price per unit (in USD)	Total price(in USD) [(Quantity at 4)x (Price per unitat5)]	Payment Mode	Duties & Taxes
				Unit Price on CIP (Kolkata) [i.e. value of the Goods including all charges for export, carriage, insurance during loading, unloading and transportation, loading and unloading at port of export and import] + all other charges for unit (i.e. charges for local transportation and storage, Extended Insurance, installation, commissioning, supervision, demonstration and training) The unit price is excluding the cost of Dosimetry & QA Equipment and Mould Room accessories		Paymen t will be made in USD	Custom Duty & GST will be paid as applicable
1							
2							
3							
4							
5							
6							
7							

8							
9							
10							

Total Tender price in USD:_____

In words:_____

Note: -

1.If there is a discrepancy between the unit price and total price, the unit price shall prevail.

2.The charges for CMC after warranty shall be quoted separately.

3.The Selected Bidder will be fully responsible for the safe arrival of the Goods at the named port/airport of entry in good condition as per terms of CIP as per Incoterms 2020.

Signature of Bidder_____

Name_____

Business Address_____

Place:_____

Signature of bidder_____

Date:_____

Seal of the bidder_____

Form8(b): PRICE SCHEDULE FOR DOMESTIC GOODS OR GOODS OF FOREIGN ORIGIN LOCATED WITHIN INDIA OR GOODS TO BE IMPORTED AND SUPPLIED **INCLUDING SITE PREPARATION AND INTERIOR WORKS TO BE CARRIED OUT ON TURNKEY BASIS** AGAINST PAYMENT IN INDIAN RUPEES

1	2	3	4	5	6	7
A	High Energy LINAC for Burdwan MCH			1	Price per Unit Price (at Consignee's Site) [i.e. value of the goods including all charges for supply, storage, installation, commissioning, supervision, demonstration and training including site preparation and interior works to be carried out on turnkey basis] exclusive of all taxes <i>[To be fed in the designated cell under Rate in the BOQ]</i>	
B	High Energy LINAC for Murshidabad MCH			1		
C	High Energy LINAC for COM & Sagore Dutta Hospital			1		
D	High Energy LINAC for IPGME&R and SSKM Hospital			2		
E	CT Simulator (4D) for Burdwan MCH			1		
F	CT Simulator (4D) for Murshidabad MCH			1		
G	CT Simulator (4D) for COM & Sagore Dutta Hospital			1		
H	CT Simulator (4D) for IPGME&R and SSKM Hospital			1		
I	HDR Brachytherapy for Murshidabad MCH			1		

J	HDR Brachytherapy for COM & Sagore Dutta Hospital			1		
K	HDR Brachytherapy for IPGME&R and SSKM Hospital			1		

Total tender price in USD:_____

In words:_____

*Taxes:

GST - %

Any other applicable taxes.....%

Note: -

1. If there is a discrepancy between the unit price and total price, the unit price shall prevail.
2. The charges for CMC after warranty shall be quoted separately.
3. The INR equivalent of the rate quoted in USD as per Reserve Bank of India (RBI) reference rate 2 (two) days prior to the last date of submission of online bids, shall be paid by the Purchaser.
4. The bidder must quote price for "GOODS TO BE IMPORTED AND SUPPLIED AGAINST PAYMENT IN INDIAN RUPEES" after having taken in to account, the provision of Customs Duty Exemption Certificate (CDEC) by the Purchaser, as per Customs Tariff Act.

Name_____

Business Address_____

Place:_____

Signature of bidder_____

Date:_____

Seal of the bidder_____

Form8(C): PRICE SCHEDULE FOR COMPREHENSIVE MAINTENANCE CONTRACT AFTER WARRANTY PERIOD:

1	2	3	4					5
SL.	DESCRIPTION OF GOODS	QUANTITY (Nos.)	Comprehensive Maintenance Contract Cost after completion of 5 years warranty for Each Unit year wise*. [To be fed in the designated cell under Rate in the BOQ]					Total Comprehensive Maintenance Contract Cost for 5 Years [3x{4(a)+4(b)+4(c)+4(d)+4(e)}]
			Year1	Year2	Year3	Year4	Year5	
			(a)	(b)	(c)	(d)	(e)	
A	High Energy LINAC for Burdwan MCH	1						
B	High Energy LINAC for Murshidabad MCH	1						
C	High Energy LINAC for COM & Sagore Dutta Hospital	1						
D	High Energy LINAC for IPGME&R and SSKM Hospital	2						
E	CT Simulator (4D) for Burdwan MCH	1						
F	CT Simulator (4D) for Murshidabad MCH	1						
G	CT Simulator (4D) for COM & Sagore Dutta Hospital	1						
H	CT Simulator (4D) for IPGME&R and SSKM Hospital	1						
I	HDR Brachytherapy for Murshidabad MCH	1						

J	HDR Brachytherapy for COM & Sagore Dutta Hospital	1						
K	HDR Brachytherapy for IPGME&R and SSKM Hospital	1						

**GST: Applicable GST in addition%*

Any other applicable taxes.....%

NOTE:-

1. In case of discrepancy between unit price and total prices, the unit price shall prevail.
2. The cost of Comprehensive Maintenance Contract (CMC) which includes preventive maintenance including testing & calibration as per technical/ service/operational manual, labour and spares, after satisfactory completion of Warranty Period may be quoted for next 5 years on yearly basis for complete equipment and Turnkey.
3. The taxes to be paid extra, to be specifically stated. In the absence of any such stipulation the price will be taken inclusive of such taxes and no claim for the same will be entertained later.
4. The uptime warranty will be 97% on 24 (hrs) X 7 (days) X 365 (days) basis or as stated in technical specification of the technical evaluation document.
5. All software & hardware including free of cost replacement of all computer hardware once in the 5 years CMC period.
6. The stipulations in technical specification will supersede above provisions.
7. The Supplier shall keep sufficient stock of spares required during Comprehensive Maintenance period. In case the spares are required to be imported, it would be the responsibility of the supplier to import and get them customs cleared and pay all necessary duties and taxes.

Name_____

Business Address_____

Place:_____

Signature of bidder_____

Date:_____

Seal of the bidder_____

Form 9(a): Prices for Optional Items

Sl. No.	Items	Unit Price on CIP (Kolkata)+ Extended Insurance+ local transportation and storage (in USD)
1	TPS including Oncology Information System (OIS), if required to procure with High-energy LINAC	
2		
3		

Form 9(b): Prices for Spares

Spare parts

Bidders to attach/enclose a separate price list of all spares and accessories and consumables, if any, (Including minor) required for maintenance and repairs in future after guarantee/ warranty period in the prescribed format below,

LINEAR ACCELERATOR/ CT Simulator (4D)/ HDR Brachytherapy		
Sl. No.	Items	Rate per unit in USD/ INR
1		
2		
3		

Form10: Turnover certificate

I certify that Average Annual Turnover of *(insert the name of the company)* during the last 3 Financial Years 2019-20, 2020-21 and 2021-22 is Rs. *(in Crore)* as per the Audited Accounts of the Organization.

NOTE: For the purposes of this Clause, exchange rate from any foreign currency to Indian Rupees prevailing on the last day of the respective financial year shall be applicable.

Signature and seal of Chartered Accountant

Form11: Declaration of Quality Certification of Equipment

(to be issued on the letterhead of the bidder)

I am the authorised signatory of-----, (name of Company) and in the context of supply and/or installation of the ----- (Name of the Equipment, Name of the offered model) which is an (name of class) solemnly affirm and declare as follows:

1. That the device is in conformity with the requirements of the medical devices directive 93/42/EEC which apply to it.
2. That the above mentioned model of (Name of the Equipment) is CE (European Conformity)/ US FDA approved.
3. That the vendor company and/or supplier on whose behalf I am the authorised signatory admit the responsibility on the subject relating to the standard and safety of the equipment.
4. That the original copy/photocopy of the CE/ US FDA certification of the offered model is enclosed and/or shall be subject to inspection on demand.

DEPONENT

Section VI. Contract Forms

Form 1: Performance Security

B.G. No. Dated:

To:

[_____]

West Bengal Medical Services Corporation Limited
Swasthya Sathi
GN-29, Salt Lake, Sector-V
Kolkata-700091

WHEREAS:

(A) West Bengal Medical Services Corporation Limited (WBMSCL) has been requested by the Government of West Bengal to procure on their behalf for the Supply and Commissioning of Different Types of Oncology Equipment for the Medical Colleges of the Govt. of West Bengal ("**Project**").

(B) WBMSCL has invited bids from eligible and qualified bidders for the Project.

(C) The Bidding Documents for the Project requires the Selected Bidder to furnish a Performance Security to WBMSCL for a sum of USD [_____] (United States Dollars _____ only) as security for due and faithful performance of its obligations, under and in accordance with the Bidding Documents (as defined herein below).

(D) We, [PLEASE INSERT NAME OF THE BANK] having our registered office at [PLEASE INSERT ADDRESS OF THE BANK] and one of its branches at [PLEASE INSERT ADDRESS OF THE BRANCH OFFICE] (the "**Bank**") have agreed to furnish this Bank Guarantee by way of Performance Security.

Now, therefore, the Bank hereby, unconditionally and irrevocably, guarantees and affirms as follows:

1 In consideration of you, WBMSCL, (hereinafter referred to as the "Authority", which expression shall unless it be repugnant to the subject or context thereof include its, successors and assigns) having agreed to receive the offer of _____ (a company registered under the laws of _____) and having its registered office at _____ (hereinafter referred to as the "Selected Bidder" which expression shall unless it be repugnant to the subject or context thereof include its/their executors, administrators, successors and assigns), for the Supply and Commissioning of Different Types of Oncology Equipment for the Medical Colleges of the Govt. of West Bengal (hereinafter referred to as "the Project") pursuant to the Bid Reference No. _____ dated _____ issued in respect of the Project and other related documents (hereinafter collectively referred to as "Bidding Documents", we, (Name of the Bank) having our registered office at _____ and one of its branches at _____ (hereinafter referred to as the "Bank"), at the request of the Selected Bidder, do hereby in terms of Clause 11, of Section – II of the Bidding Documents, irrevocably, unconditionally and without reservation guarantee the due and faithful fulfillment and compliance of the terms and conditions of the Bidding Documents by the said Selected Bidder and unconditionally and irrevocably undertake to pay forthwith to the Authority an amount (hereinafter referred to as the "Guarantee") as our primary obligation without any demur, reservation, recourse, contest or protest and without reference to the Selected Bidder if the Selected Bidder shall fail to fulfil or comply with all or any of the terms and conditions contained in the said Bidding Documents.

- 2 Any such written demand made by the Authority stating that the Selected Bidder is in default of the due and faithful fulfillment and compliance with the terms and conditions contained in the Bidding Documents shall be final, conclusive and binding on the Bank.
3. We, the Bank, do hereby unconditionally undertake to pay the amounts due and payable under this Guarantee without any demur, reservation, recourse, contest or protest and without any reference to the Selected Bidder or any other person and irrespective of whether the claim of the Authority is disputed by the Selected Bidder or not, merely on the first demand from the Authority stating that the amount claimed is due to the Authority by reason of failure of the Selected Bidder to fulfil and comply with the terms and conditions contained in the Bidding Documents including failure of the said Selected Bidder to keep its Bid open during the Bid Validity Period as set forth in the said Bidding Documents for any reason whatsoever. Any such demand made on the Bank shall be conclusive as regards amount due and payable by the Bank under this Guarantee. However, our liability under this Guarantee shall be restricted to an amount not exceeding USD_____ (United States Dollars_____) only.
4. This Guarantee shall be irrevocable and remain in full force for a period of (62) months from the date of Award of Contract (AOC) subject to extensions in accordance with the terms of the Bidding Documents or for such extended period as may be mutually agreed between the Authority and the Selected Bidder, and agreed to by the Bank, and shall continue to be enforceable till all amounts under this Guarantee have been paid.
5. Each demand made by the Authority shall be sent to the Bank stating that the Selected Bidder has failed to comply with the terms and conditions of the Bidding Documents and as a result of the failure the amount claimed is due to the Authority and the demand shall be signed by an authorized representative of the Authority.
6. We, the Bank, further agree that the Authority shall be the sole judge to decide as to whether the Selected Bidder is in default of due and faithful fulfillment and compliance with the terms and conditions contained in the Bidding Documents including, inter alia, the failure of the Selected Bidder to keep its bid open during the bid validity period set forth in the said Bidding Documents, and the decision of the Authority that the Selected Bidder is in default as aforesaid shall be final and binding on us, notwithstanding any differences between the Authority and the Selected Bidder or any dispute pending before any Court, Tribunal, Arbitrator or any other relevant authority.
7. The Guarantee shall not be affected by any change in the constitution or winding up of the Selected Bidder or the Bank or any absorption, merger or amalgamation of the Selected Bidder or the Bank with any other person or any amendment to Bidding Documents.
8. Any notice by way of request, demand or otherwise hereunder shall be sufficiently given or made if addressed to the Bank and sent by courier or by registered mail to the Bank at the address set forth herein.
9. We undertake to make the payment on receipt of your notice of claim on us addressed to [name of Bank along with branch address] and delivered at our above branch which shall be deemed to have been duly authorized to receive the said notice of claim.
10. It shall not be necessary for the Authority to proceed against the said Selected Bidder before proceeding against the Bank and the guarantee herein contained shall be enforceable against the

Bank, notwithstanding any other security which the Authority may have obtained from the said Selected Bidder or any other person and which shall, at the time when proceedings are taken against the Bank hereunder, be outstanding or unrealised.

11. We, the Bank, further undertake not to revoke this Guarantee during its currency except with the previous express consent of the Authority in writing.

12. The Bank declares that it has power to issue this Guarantee and discharge the obligations contemplated herein, the undersigned is duly authorised and has full power to execute this Guarantee for and on behalf of the Bank.

13. This Guarantee shall be governed by and construed in all respects in accordance with the laws of India. The courts of India shall have exclusive jurisdiction to settle any disputes which may arise out of or in connection with this Guarantee.

Signed and Delivered by Bank

By the hand of Mr. /Ms., its and authorized official.

(Signature of the Authorized Signatory) (Official Seal)

Notes:

- i. The Bank Guarantee should contain the name, designation and code number of the officer(s) signing the Guarantee.*
- ii. The address, telephone number and other details of the Head Office of the Bank as well as of issuing Branch should be mentioned on the covering letter of issuing Branch.*