

TENDER DOCUMENT

ESTABLISHMENT AND EQUIPPING OF DISTRICT INTEGRATED PUBLIC HEALTH LABORATORY (DIPHL) AT PT. JAWAHARLAL NEHRU GOVT. MEDICAL COLLEGE HOSPITAL, CHAMBA, HIMACHAL PRADESH

E-Tendering

IFB No. HLL/CMO/HCD/DIPHL/CMB/HP/26-27, Dt. 05.09.2026



Hi-CARE DIVISION HLL Lifecare Limited

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GENERAL INSTRUCTION TO BIDDERS

- 1 This tender is an e-Tender and is being published online in Government e-Procurement portal, <https://etenders.gov.in/eprocure/app>
- 2 Bid documents including the Bill of Quantities (BoQ) can be downloaded free of cost from the Central Public Procurement Portal of Government of India (e-portal). All Corrigendum/extension regarding this e-tender shall be uploaded on this website i.e. <https://etenders.gov.in/eprocure/app>.
- 3 The tendering process done online only at Government eProcurement portal (URL address: <https://etenders.gov.in/eprocure/app>). Aspiring bidders may download and go through the tender document.
- 4 All bid documents needs to be submitted online only and in the designated cover(s)/envelope(s) on the Government eProcurement website. Tenders/bids shall be accepted only through online mode on the Government eProcurement website and no manual submission of the same shall be entertained. Late tenders will not be accepted.
- 5 The complete bidding process is online. Bidders should be in possession of valid Digital Signature Certificate (DSC) of class II or above for online submission of bids. Prior to bidding DSC need to be registered on the website mentioned above. If the envelope is not digitally signed & encrypted the Purchaser shall not accept such open Bids for evaluation purpose and shall be treated as non-responsive and rejected.
- 6 Bidders are advised to go through “Bidder Manual Kit”, “System Settings” & “FAQ” links available on the login page of the e-Tender portal for guidelines, procedures & system requirements. In case of any technical difficulty, Bidders may contact the help desk numbers & email ids mentioned at the e-tender portal.
- 7 Bidders are advised to visit CPP website <https://www.lifecarehll.com/tender>. regularly to keep themselves updated, for any changes/modifications/any corrigendum in the Tender Enquiry Document.
- 8 The bidders are required to submit soft copies of their bids electronically on the CPP Portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the CPP Portal, prepare their bids in accordance with the requirements and submitting their bids online on the Government eProcurement Portal.

8.1 Registration

- a) Bidders are required to register in the Government e-procurement portal, obtain ‘Login ID’ & ‘Password’ and go through the instructions available in the Home page after log in to the CPP Portal (URL:<http://etenders.gov.in/eprocure/app>), by clicking on the link

“Online bidder Enrolment” on the CPP Portal which is free of charge.

- b) As part of the enrolment process, the bidders will be required to choose a unique user name and assign a password for their accounts.
- c) Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the CPP Portal.
- d) They should also obtain Digital Signature Certificate (DSC) in parallel which is essentially required for submission of their application. The process normally takes 03 days' time. The bidders are required to have Class II or above digital certificate or above with both signing and encryption from the authorized digital signature Issuance Company. Please refer online portal i.e. - <https://etenders.gov.in/eprocure/app> for more details.
- e) Upon enrolment, the bidders will be required to register their valid Digital Signature Certificate (Class II or above Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India (e.g. Sify /nCode / mudra etc.), with their profile.
- f) Bidder then logs in to the site through the secured log-in by entering their user ID/password and the password of the DSC /e-Token.
- g) The Bidder intending to participate in the bid is required to register in the e- tenders portal using his/her Login ID and attach his/her valid Digital Signature Certificate (DSC) to his/her unique Login ID. He/She have to submit the relevant information as asked for about the firm/Supplier. The bidders, who submit their bids for this tender after digitally signing using their Digital Signature Certificate (DSC), accept that they have clearly understood and agreed the terms and conditions including all the Forms/Annexure of this tender.
- h) Only those bidders having a valid and active registration, on the date of bid submission, shall submit bids online on the e-procurement portal.
- i) Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSC's to others which may lead to misuse.
- j) Ineligible bidder or bidders who do not possess valid & active registration, on the date of bid submission, are strictly advised to refrain themselves from participating in this tender.

8.2 Searching for Tender Documents

- a) There are various search options built in the CPP Portal, to facilitate bidders to search active tenders by several parameters. These parameters could include Tender ID, Organization Name, Form of Contract, Location, Date, Value etc. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as Organization
- b) Once the bidders have selected the tenders they are interested in, they may download the required documents/tender schedules. These tenders can be moved to the respective 'My Tenders' folder. This would enable the CPP Portal to intimate the bidders through SMS/

e-mail in case there is any corrigendum issued to the tender document.

- c) The bidder should make a note of the unique Tender ID assigned to each tender, in case they want to obtain any clarification/help from the Helpdesk.

8.3 Preparation of Bids

- a) Bidder should take into account any corrigendum published on the tender document before submitting their bids.
 - b) Please go through the tender document carefully to understand the documents required to be submitted as part of the bid. Please note the number of covers in which the bid documents have to be submitted, the number of documents - including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.
 - c) Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document / schedule and generally, they can be in PDF / XLS / RAR /DWF/JPG formats. Bid documents may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document.
 - d) To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as a part of every bid, a provision of uploading such standard documents (e.g. PAN card copy, annual reports, auditor certificates etc.) has been provided to the bidders. Bidders can use “My Space” or “Other Important Documents” area available to them to upload such documents. These documents may be directly submitted from the “My Space” area while submitting a bid, and need not be uploaded again and again. This will lead to a reduction in the time required for bid submission process.
 - e) Note: My Documents space is only a repository given to the Bidders to ease the uploading process. If Bidder has uploaded his Documents in My Documents space, this does not automatically ensure these Documents being part of Technical Bid.
9. More information useful for submitting online bids on the CPP Portal may be obtained at <https://etenders.gov.in/eprocure/app>
10. Bidder(s) are required to upload the digitally signed file of scanned documents. Bid documents may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document. Uploading application in location other than specified above shall not be considered. Hard copy of application shall not be entertained.
11. Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24x7 CPP Portal Helpdesk. The 24x7 Help Desk details are as below: -

For any technical related queries please call at 24 x 7 Help Desk Number: 0120-4001 062, 0120-4001 002, 0120-4001 005, 0120-6277 787

Note:- International Bidders are requested to prefix +91 as country code

E-Mail Support: For any Issues or Clarifications relating to the published tenders, bidders are requested to contact the respective Tender Inviting Authority

Technical - support-eproc@nic.in, Policy Related - cphp-doe@nic.in

12. Bidders are requested to kindly mention the URL of the portal and Tender ID in the subject while emailing any issue along with the contact details.
13. Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender. Address for communication and place of opening of bids:

DEPUTY VICE PRESIDENT (P&S),

Hicare Division,

HLL Lifecare Limited,

HLL Bhavan, #26/4, Tambaram-Velachery Main Road,

Pallikaranai, Chennai – 600 100,

Tamilnadu, India.

Phn: 044-29813732/34

E-mail: hcdcmo@lifecarehll.com

14. The bids shall be opened online at the **Office of the Deputy Vice President (P&S)** in the presence of the Bidders/their authorized representatives who wish to attend at the above address. If the tender opening date happens to be on a holiday or non-working day due to any other valid reason, the tender opening process will be done on the next working day at same time and place.
15. More details can be had from the Office of the Deputy Vice President (P&S) during working hours. The Tender Inviting Authority shall not be responsible for any failure, malfunction or breakdown of the electronic system while downloading or uploading the documents by the Bidder during the e-procurement process.
16. A firm/bidder shall submit only one bid in the same bidding process. A Bidder (either as a firm or as an individual or as a partner of a firm) who submits or participates in more than one bid will cause all the proposals in which the Bidder has participated to be disqualified.

19. Online Tender Process:

The tender process shall consist of the following stages:

- I. Downloading of tender document: Tender document will be available for free download on Government e-procurement portal ([URL:https://etenders.gov.in/eprocure/app](https://etenders.gov.in/eprocure/app)). However, tender document fees shall be payable at the time of bid submission as stipulated in this tender document.
- II. Pre-bid meeting: As per the Notice Inviting Tender.

- III. Publishing of Corrigendum: All corrigendum shall be published on Government-procurement portal (URL: <https://etenders.gov.in/eprocure/app>)
- IV. Bid submission: Bidders have to submit their bids along with supporting documents to support their eligibility, as required in this tender document on Government e-procurement portal. No manual submission of bid is allowed and manual bids shall not be accepted under any circumstances.
- V. Opening of Technical Bid and Bidder short-listing: The technical bids will be opened, evaluated and shortlisted as per the eligibility and technical qualifications. All documents in support of technical qualifications shall be submitted (online). Failure to submit the documents online will attract disqualification. Bids shortlisted by this process will be taken up for opening the financial bid.
- VI. Opening of Financial Bids: Bids of the qualified bidders shall only be considered for opening and evaluation of the financial bid on the date and time mentioned in critical date's section.
18. Tender Document Fees:
Tender fee (Non-refundable) as per the tender conditions shall be paid separately, thru RTGS/NEFT transfer in the following HLL A/c details:
- Name of Bank: HDFC Bank Limited
A/c number: 00630330000035
IFSC Code: HDFC0000063
Branch name: Commercial Branch, Vazhuthacaud, Thiruvananthapuram
- Document of the above transactions completed successfully by the bidder, shall be uploaded at the locations separately while submitting the bids online.
- Note: Any transaction charges levied while using any of the above modes of payment has to be borne by the bidder. The supplier/Supplier's bid will be evaluated only if payment is effective on the date and time of bid opening.
19. HLL Lifecare Limited does not bind themselves to accept the lowest or any bid or to give any reasons for their decisions which shall be final and binding on the bidders.
20. The HLL Lifecare Limited reserves to themselves the right of accepting the whole or any part of the tender and bidder shall be bound to perform the same at his quoted rates.
21. In case, it is found during the evaluation or at any time before signing of the contract or after its execution and during the period of subsistence thereof, that one or more of the eligibility conditions have not been met by the bidder or the applicant has made material misrepresentation or has given any materially incorrect or false information, appropriate legal/penal etc., action shall be taken by HLL Lifecare Limited including black listing.
22. Conditional bids and bids not uploaded with appropriate/desired documents may be rejected outrightly and decision of HLL Lifecare Limited in this regard shall be final

and binding.

23. The agency shall be solely responsible for complying with the provisions of Provident Fund and ESI Acts etc., (in force and as amended from time to time) relating to manpower engaged to this contract. In the event of any liability on HLL Lifecare Limited due to failure of contract to comply the said Acts, the agency shall indemnify and reimburse the amount payable to HLL Lifecare Limited on this Account. However, it must be clearly understood that the agency/bidder will comply to all statutory obligation in force and amended from time to time and HLL Lifecare Limited will not be held responsible in any manner whatsoever for any non- compliance of statutory obligations.
24. The technical bids should be uploaded as per the requirements of NIT and should not contain price information otherwise the bid will be rejected.
25. HLL reserves the right to club or split the items of works, change the qualifying criteria at their discretion and to reject or cancel the Invitation for bids without assigning any reason thereof.
26. HLL Lifecare Limited Ltd. reserves the right to verify the claims made by the bidders and to carry out the capability assessment of the bidders and the HLL Lifecare Limited's decision shall be final in this regard.
27. Submission Process:
For submission of bids, all interested bidders have to register online as explained above in this document. After registration, bidders shall submit their Technical bid and Financial bid online on Government e-procurement portal (URL: <https://etenders.gov.in/eprocure/app>) along with tender document fees.

Note: - It is necessary to click on “Freeze bid” link/ icon to complete the process of bid submission otherwise the bid will not get submitted online and the same shall not be available for viewing/ opening during bid opening process.

DEPUTY VICE PRESIDENT (P&S)

SECTION II

INSTRUCTIONS TO THE BIDDERS (ITB)

Instructions to bidder are broad guidelines to be followed while formulating the bid and its submission to the Purchaser. It also describes the methodology for opening and evaluation of bids and consequent award of contract.

1. DEFINITIONS

In this Contract, the following words and expressions shall have the meanings as stated below:

- a) **'Invitation for Bid'** shall mean and include the present document, and such other complements and agenda, which may subsequently be issued in this connection.
- b) **'Bidder/Tenderer'** shall mean the person, firm or Corporation submitting a bid against this invitation for bid and shall also include his agents and representatives.
- c) **'Purchaser/Owner'** shall mean HLL Lifecare Limited or its units thereof.
- d) **'Engineer-In-Charge'**, shall mean the Engineer appointed by the purchaser/owner to supervise all activities of the project.
- e) **'Supplier/Contractor'**, shall mean the successful bidder whose tender has been accepted by the purchaser/owner and to whom the order is placed by the purchaser/owner and shall include his heirs, legal representatives, successors etc.
- f) **'Permanent Works'**, means and include all the work specified or set forth and required if any by the specification, drawings and other documents which form part of this contract or to be implied thereof or incidental thereof to be hereafter or required in such further explanatory instructions, drawings etc., as shall from time to time during the progress of the work be given by the HLL.
- g) **'Project'**, shall mean entire work specified in the contract documents inclusive of extra items/extra quantities (if any) executed during the contract period.
- h) **'Acceptance Letter'**, shall mean written consent by a letter of purchaser/owner to the bidder intimating him that his tender has been accepted.
- i) **'Contract'**, shall mean the articles of Contract Agreement, the conditions of contract, schedule of quantities, specifications, drawings attached and duly signed by the purchaser/owner and the Supplier.
- j) **'Date of Contract'**, shall mean the date on which the successful bidder has accepted the notification of award.
- k) **'Contract Period'**, shall mean the period (including rainy season) specified in the tender documents during which the contract shall be executed.
- l) **'Completion Certificate'**, shall mean the certificate issued by the purchaser/owner to the Supplier after successful completion of the project.

- m) **Extra Items'**, are those items, which are not appearing in the Schedule of Items but required to be executed during the project period.

2. SCOPE OF THE BID

HLL Lifecare Limited (HLL), a Government of India Enterprise, invites online bids from the eligible, competent and experienced Suppliers/Dealers/OEMs who are capable of executing the Specified work as per our tender conditions.

3. ELIGIBLE BIDDERS

- 3.1 A Bidder should have eligibility criteria as per 9.2-b of this section to submit bids against this tender.
- 3.2 A firm/bidder shall submit only one bid in the same bidding process. A Bidder (either as a firm or as an individual or as a partner of a firm) who submits or participates in more than one bid will cause all the proposals in which the Bidder has participated to be disqualified.

4. COST OF BIDDING

- 4.1 The Bidder shall bear all costs associated with the preparation and submission of its bid, and "the Purchaser", will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.
- 4.2 Tender documents may be downloaded free of cost from the Government e- procurement portal (URL: <https://etenders.gov.in/eprocure/app>). However, tender document fees, as mentioned in the NIT, is required to be submitted along with the online bid.

5. SITE VISIT

- 5.1. The bidder is advised to visit and examine the Site of delivery/Work and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the bid and entering into a contract for delivery of item/construction of the Works. He shall examine the site condition and satisfy himself of the availability of materials at nearby places, difficulties which may arise during execution before submitting the bids. The costs of visiting the Site shall be at the bidder's own expense.
- 5.2. The bidder and any of his personnel or agents will be granted permission by HLL to enter upon its premises and lands for the purpose of such visit, but only upon the express condition that the bidder, his personnel or agents will release and indemnify HLL and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.

6. Getting information from web portal

- 6.1. All prospective bidders are expected to see all information regarding submission of bid for the Work published in the e tender website during the period from the date of publication of NIT for the Work and up to the last date and time for submission of bid. Non observance of information published in the website shall not be entertained as a reason for any claim or dispute regarding a tender at any stage.
- 6.2. All bids shall be submitted online on the Government e-procurement portal only in the relevant envelope(s)/ cover(s), as per the type of tender. No manual submission of bids shall be entertained for the tenders published through Government e-procurement portal under any circumstances.
- 6.3. The Government e-procurement portal shall not allow submission of bids online after the stipulated date & time. The bidder is advised to submit the bids well before the stipulated date & time to avoid any kind of network issues, traffic congestion, etc. In this regard, the department shall not be responsible for any kind of such issues faced by bidder.

7. Bidding Documents

7.1. Content of Bidding Documents

7.1.1. The bidding documents shall consist of the following unless otherwise specified

- a. Notice Inviting Tender(NIT)
- b. Instructions to Bidders
- c. General and special Conditions of Contract
- d. Technical Specifications
- e. Form of Bid, Appendix to Bid
- f. Bill of Quantities
- g. Drawings if any

7.1.2. The Bidder is required to login to the e-procurement portal and download the listed documents from the website as mentioned in NIT. He shall save it in his system and undertake the necessary preparatory work off-line and upload the completed bid at his convenience before the closing date and time of submission.

7.1.3. The bidder is expected to examine carefully all instructions, Conditions of Contract, Contract Data, Forms, Terms, Technical Specifications, Bill of Quantities, Annexure and Drawings in the Bid Document. Failure to comply with the requirements of Bid Document shall be at the Bidder's own risk.

7.2 Clarification of Bidding Documents

721. A prospective bidder requiring any clarification of the bidding documents shall contact the office of the Tender Inviting Authority on any working day between 10 AM and 5 PM.

722 In case the clarification sought necessitates modification of the bid documents, being unavoidable, the Tender Inviting Authority may affect the required modification and

publish them in the website through corrigendum.

7.3 Amendment to bidding documents

- 731. Before the deadline for submission of bids, the Tender Inviting Authority may modify the bidding document by issuing addenda.
- 732. Any addendum thus issued shall be a part of the bidding documents which will be published in the e-tender website. The Tender Inviting Authority will not be responsible for the prospective bidders not viewing the website in time.
- 733. If the addendum thus published does involve major changes in the scope of work, the Tender Inviting Authority may at his own discretion, extend the deadline for submission of bids for a suitable period to enable prospective bidders to take reasonable time for bid preparation taking into account the addendum published.

8 Preparation of Bids

8.1 Language of the Bid

- 8.1.1. All documents relating to the bid shall be in the English language.

8.2 Documents Comprising the Bid

- 8.2.1. The online bid submitted by the bidder shall comprise the following:

- I. Details required for e-payment (Details of bank account having core banking facility and e-mail address of the Supplier) in the prescribed format.
- II. Payment of bid submission/tender fee as detailed in the e-tender web site.
- III. Bid Security (EMD).
- IV. Copy of Registration (GST, PAN etc) Certificate duly attested.
- V. Copy of Documents in proof of eligibility criteria
- VI. Copy of Documents in proof of Financial turnover.
- VII. Other documents specified from part VII to XV.
- VIII. Priced Bill of Quantities.

- 8.2.2. Bidders shall not make any addition, deletion or correction in any of the bid documents. If tampering of documents is noticed during tender evaluation, the bid will be rejected and the bidder will be blacklisted.

8.3 Bid Prices

- 8.3.1. The Bidder shall bid for the whole work as described in the Bill of Quantities. If any of the items not quoted, then their bid will be treated as non-responsive.

- 8.3.2. For item rate tenders, the bidder shall fill in rates in figures and should not leave any cell blank. The line item total in words and the total amount shall be calculated by the system and shall be visible to the Bidder.

- 8.3.3 The rates quoted by the Bidder shall include cost of all materials and conveyance, labour charges, hire charges of plant and machinery, overheads and all incidental charges for execution of the contract. The rate quoted shall also include all statutory taxes as on the date of submission of the tender and such taxes shall be paid by the Supplier.

8.3.4 The bidder shall clearly indicate the applicable GST rate (%) in the price quotation for reference and billing purposes. However, the Purchase Order (PO) value shall be considered and issued based on the basic amount, excluding GST.

8.3.5 GST or any other tax applicable shall be payable by the Supplier in respect of this contract and HLL will not entertain any claim whatsoever in respect of the same.

8.3.5. All taxes, royalty, Octroi and other levies payable by the Supplier under the contract, or for any other cause as of the date 28 days prior to the deadline for submission of bids shall be included in the rates, prices and total of bid price. The bid prices shall also cater for any change in tax pattern during the tenure of work.

8.3.6. The rates and prices quoted by the bidder shall remain firm during the entire period of contract.

8.4. Currencies of Bid and Payment

8.4.1. The currency of bid and payment shall be quoted by the bidder entirely in Indian Rupees. All payments shall be made in Indian Rupees only.

8.5. Bid Validity

8.5.1. Bids shall remain valid for the period of **120 days** from the date of opening of the bid as specified in the NIT. A bid valid for a shorter period shall be rejected by HLL as nonresponsive.

8.5.2. In exceptional circumstances, prior to expiry of the original bid validity period, the Tendering Authority may request the bidders to extend the period of validity for a specified additional period. The request and the responses thereto shall be made in writing or by e mail.

8.6. Bid Security(EMD)

8.6.1 The Bidder shall furnish, as part of his Bid, a Bid Security Declaration as detailed in the Tender. For e-tenders, Bidders shall upload the Bid Security Declaration given in e-tender under Government e-Procurement system only.

8.6.2 Each bid must be accompanied by Bid Security Declaration. Any Bid not accompanied by an acceptable Bid Security Declaration shall be rejected as non-responsive.

8.7. Bid Submission Fee

8.7.1. For e-tenders, the mode of remittance of Bid submission fee (Tender Fee). For e-tenders, Bidders shall remit the Tender fee using the payment options as mentioned in the e- tender in Government eProcurement portal only.

8.7.2. Any bid not accompanied by the Tender Fee as notified, shall be rejected as non-responsive.

8.7.3. Tender Fee remitted will not be refunded.

8.8 Alterations and additions

88.1. The bid shall contain no alterations or additions, except those to comply with instructions, or as necessary to correct errors made by the bidder, in which case such corrections shall be initiated by the person or persons signing the bid.

88.2 The bidder shall not attach any conditions of his own to the Bid. The Bid price must be based on the tender documents. Any bidder who fails to comply with this clause will be disqualified.

9. Submission of Bids

The Bidder shall submit their bid online only through the Government eProcurement portal (URL: <https://etenders.gov.in/eprocure/app>) as per the procedure laid down for e-submission as detailed in the web site. For e tenders, the bidders shall download the tender documents including the Bill of Quantity (BoQ) file from the portal. The Bidder shall fill up the documents and submit the same online using their Digital Signature Certificate. On successful submission of bids, a system generated receipt can be downloaded by the bidder for future reference. Copies of all certificates and documents shall be uploaded while submitting the tender online.

9.1 The tender is invited in **Envelope system** from the registered and eligible firms CPP Portal.

9.2 Pre-qualification Criteria for bidders: Following 3 envelopes shall be submitted online at CPP-portal by the bidder.

a) Envelope - I (Tender Fee and EMD):

Tender fee (Non-refundable) and EMD as per the tender conditions shall be paid separately, thru RTGS/NEFT transfer in the following HLL A/c details:

Name of Bank	HDFC Bank Limited
A/c number:	00630330000035
IFSC Code:	HDFC0000063
Branch name:	Commercial Branch, Vazhuthacaud, Thiruvananthapuram

Document of the above transactions completed successfully by the bidder, shall be uploaded separately while submitting the bids online.

Technical Bid should contain signed and scanned soft copy documents in proof of experience and duly filled and signed copy of documents specified in Part V.

Qualification Criteria for Suppliers / firms

The bidder should be fulfilling the following preconditions and must also upload/submit documentary evidence in support of fulfillment of these conditions while submitting the bid.

SN	Eligibility Criteria
1	Bidder should have a valid Certificate of the following:

SN	Eligibility Criteria	
	a.	GST Registration
	b.	IT PAN Card
	C	Certificate of incorporation / Memorandum of Article
	Note	Copy of valid certificates for the above shall be submitted in proof of the same
2	Bidder should be a Manufacturer or authorized dealer	
3	The bidder should submit the duly notarized Power of Attorney , issued by the competent authority in favour of the signatory of the bid in the stamp paper of appropriate value as per the Stamp Act.	
4	The bidder shall clearly indicate the applicable GST rate (%) in the price quotation for reference and billing purposes. The work shall be awarded to the responsive and qualified bidder offering the lowest total basic amount for the tendered BoQs. However, the L1 bidder shall be finalised based on the total basic amount, excluding GST. The applicant should have successfully completed similar works during the last 7 years ending last day of the month previous to the one in which tenders are invited shall be either of the following: • Three similar completed works each costing not less than 40% of the estimated cost put to tender, OR • Two similar completed works each costing not less than 60% of the estimated cost put to tender, OR • One similar completed work costing not less than 80% of the estimated cost put to tender, i.e. similar work here encompasses civil and electrical work necessary for the construction/renovation of buildings. Copies of work orders and satisfactory work completion reports issued by the Client/Authority concerned shall be submitted in proof of the same. The Duly filled and Signed copy of the Performance Declaration Form as per item No.1 of Section-VIII is to be attached.	
	Note	1. For works executed for Government / Semi-Government / Autonomous Bodies / Public Sector Undertakings, completion certificates shall be issued by an officer not below the rank of Executive Engineer or equivalent. 2. For works executed for private organizations, completion certificates shall be supported by relevant TDS certificates. 3. The value of completed works shall be considered as per the gross value of work completed excluding GST."
5	The bidder shall have a minimum average annual turnover of not less than 50% of the estimated cost, calculated over the last three (3) financial years (FY 2022-23, FY 2023 24, FY 2024-25). The Duly filled and Signed copy of the Financial Statement as per item No.2 of Section VIII is to be attached.	

SN	Eligibility Criteria	
	Note: Enclose audited Balance sheets, Profit & Loss Statements, and IT return statements certified by a Chartered Accountant as proof of financial status.	
6	Duly signed Acceptance Form as per item no-3 of Section-VIII to be attached	
7	Duly signed Completion Period declaration as per item no-4 of Section-VIII to be attached	
8	Duly filled Requisition Form For E-Payment along with clear and visible scan copy of cancelled cheque as per item no-5 of Section-VIII to be attached	
9	The duly signed declaration form as per item no-6 of Section-VIII is to be attached	
	Note	I. The bidder will be disqualified if they have any record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures etc. Including ongoing works. II. If the order is terminated in the last one year, their bid will be treated as non-responsive III. Self-Certificate: Non-Black Listing Certificate of no-blacklist in any firms in bidders letterhead
10	Duly filled Contractors Superintendence, Supervision, Technical Staff And Employees Details as per item no-7 of Section-VIII to be attached.	
11	Duly filled No Deviation Certificate as per item no-8 of Section-VIII to be attached	
12	Duly filled Category Details of Organization (MSE) as per item no-9 of Section-VIII to be attached.	
13	Credit Limit: Credit Limit: Should have an available un-utilized Credit Limit of at least 10% of the estimated cost put to tender, certified by his bankers for this work. Banker's certificates (as prescribed in item no-10 of Section-VIII) in the current financial year, should be on letter head of the Bank, addressed to tender inviting authority issued after publication of tender.	
14	The bidder should not be insolvent, in receivership, bankrupt or being wound up, not have had their business activities suspended. Accordingly, Bidder shall submit Solvency certificate from Nationalized Scheduled Commercial Bank with details of Financial Status I.e. Name of the Banker & Current Solvency Certificate ((i.e. the solvency certificate shall be dated after the date of publication of NIT and Be addressed to the tendering authority quoting the name of the work)) from the Banker in original for a sum of at least Rs. 40,49,026/- (40% of PAC) in order to fund the project till the time the invoices get paid. (item no-11 of Section-VIII). The Certificate should be issued between the publishing date of NIT & last date of submission of Bids, including extensions if any. The certificate should carry the name, designation & power of attorney of the bank official.	
15	The bidder should visit the site and submit the Site Visit Certificate signed by HLL as per item no. 12 of Section-VIII failing which, the bid will be summarily rejected.	
16	Duly signed the bid form to be submitted as per the item no. 13 of Section-VIII .	
17	Duly filled and signed the Make / Model/ HSN Code of the Equipment as per the Section IX.	
18	Manufacturer authorization as per Section XI. The items that require manufacturer authorization is in Section VI.	
19	Product brochure literature, write up etc.	

SN	Eligibility Criteria
20	Technical compliance sheet with clear indication of deviation in specification, if any.
21	Quality certificate is mandatory for all the equipment and same to be submitted along with technical document.
22	General information of the Manufacturer / Supplier to be attached
23	Duly signed the List of Approved Makes for Civil and Electrical as per Section-XVI

Pre-bid Queries: Pre-bid queries shall be communicated through hcdcmo@lifecarehll.com or through phone +91 75400 20076

b) Envelope – II (Financial Bid): The Financial e-Bid through CPP Portal.

Sheet 1: Equipment cost, Sheet 2: Civil & Electrical Works, Sheet 3: CAMC Cost for 5 Years. The bidder has to fill the mentioned sheets as per the following:

All the items tendered shall be quoted, if any of the item(s) not quoted, then their bid will be treated as non-responsive. All rates shall be quoted in the format provided and no other format is acceptable. If the price bid has been given as a standard format with the tender document, then the same is to be downloaded and to be filled by all the bidders. Bidders are required to download the file, open it and complete the colored (Unprotected) cells with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. Once the details have been completed, the bidder should save it and submit it online, without changing the filename. If the file is found to be modified by the bidder, the bid will be rejected.

Note:-

1. HLL Lifecare Limited reserves the right to verify the credential submitted by the agency at any stage (before or after the award the work). If at any stage, any information / documents submitted by the applicant is found to be incorrect / false or have some discrepancy which disqualifies the firm then HLL shall take the following action:
 - a) Forfeit the entire amount of EMD submitted by the firm.
 - b) The agency shall be liable for debarment from tendering in HLL Lifecare Limited, apart from any other appropriate contractual /legal action.
2. On demand of the Tender Inviting Authority, this whole set of certificates and documents shall be send to the Tender Inviting Authority's office address (as given in the NIT) by registered post/Speed post of India Post in such a way that it shall be delivered to the Tender Inviting Authority before the deadline mentioned. The Tender Inviting Authority reserves the right to reject any bid, for which the above details are not received before the deadline.
3. The Tender Inviting Authority shall not be responsible for any failure, malfunction or breakdown of the electronic system while downloading or uploading the documents by the Bidder during the e-procurement process.

10. Deadline for Submission of the Bids

- 10.1 Bid shall be received only online on or before the date and time as notified in NIT. The Tender Inviting Authority, in exceptional circumstances and at its own discretion, may extend the last date for submission of bids, in which case all rights and obligations previously subject to the original date will then be subject to the new date of submission. The Bidder will not be able

to submit his bid after expiry of the date and time of submission of bid (server time).

10.2 Modification, Resubmission and Withdrawal of Bids

10.2.1 Resubmission or modification of bid by the bidders for any number of times before the date and time of submission is allowed. Resubmission of bid shall require uploading of all documents including price bid afresh.

10.2.2 If the bidder fails to submit his modified bids within the pre-defined time of receipt, the system shall consider only the last bid submitted.

10.2.3 The Bidder can withdraw his/her bid before the date and time of receipt of the bid. The system shall not allow any withdrawal after the date and time of submission.

11. Bid Opening and Evaluation

11.1. Bid Opening

Bids shall be opened on the specified date & time, by the tender inviting authority or his authorized representative in the presence of bidders or their designated representatives who choose to attend.

11.1 Bid Opening Process

11.1.1. Opening of bids shall be carried out in the same order as it is occurring in invitation of bids or as in order of receipt of bids in the portal. The bidders & guest users can view the summary of opening of bids from any system. Bidders are not required to be present during the bid opening at the opening location if they so desire.

a) Envelope -I: Envelope-I Opening date shall be mentioned in NIT (Envelope – I shall contain scanned copy of Tender Fees, EMD & Pre- qualification document)

b) Envelope -II: Envelope-II opening date shall be as mentioned in NIT. The intimation regarding acceptance / rejection of their bids will be intimated to the Suppliers/firms through e-tendering portal. (Envelope-II shall contain scanned copy of Pre- qualification document.)

If any clarification is needed from bidder about the deficiency in his uploaded documents in Envelope- I and Envelope-II, he will be asked to provide it through CPP portal. The bidder shall upload the requisite clarification/documents within time specified by HLL Lifecare Limited, failing which tender will be liable for rejection.

c) Envelope -III: The financial bids of the Suppliers/firms found to be meeting the qualifying requirements shall be opened as per NIT. (Depending on evaluation of Envelope I & II, the date shall be intimated through CPP Portal)

11.1.2. In the event of the specified date of bid opening being declared a holiday for HLL, the bids will be opened at the same time on the next working day.

11.2. Confidentiality

11.2.1. Information relating to the examination, clarification, evaluation, and comparison of Bids and recommendations for the award of a contract shall not be disclosed to Bidders or any other persons not officially concerned with such process until the award has been announced in favor of the successful bidder.

11.2.2. Any effort by a Bidder to influence the Purchaser during processing of bids, evaluation, bid comparison or award decisions shall be treated as Corrupt & Fraudulent Practices and may result in the rejection of the Bidder's bid.

11.3. Clarification of Bids

11.3.1. To assist in the examination, evaluation, and comparison of bids, the Tender Inviting Authority may ask the bidder for required clarification on the information submitted with the bid. The request for clarification and the response shall be in writing or by e-mail, but no change in the price or substance of the Bid shall be sought, offered, or permitted.

11.3.2. No Bidder shall contact the Tender Inviting Authority on any matter relating to the submitted bid from the time of the bid opening to the time the contract is awarded. If the Bidder wishes to bring additional information to the notice of the Tender Inviting Authority, he shall do so in writing.

11.4. Examination of Bids, and Determination of Responsiveness

During the bid opening, the Tender Inviting Authority will determine for each Bid whether it meets the required eligibility as specified in the NIT; is accompanied by the required bid security declaration form and the required documents and certificates.

Further the purchaser may request for the demonstration of the product quoted from bidder for inspection & evaluation at Chennai / Himachal Pradesh/ as per the sole discretion of the purchaser for the purpose of technical evaluation. The inspection of product shall be as a part of responsiveness of the technical bid. If the bidder doesn't arrange the product demonstration within 7 days from the date of intimation at the desired location of the purchaser (Chennai / Himachal Pradesh), then their bid will be treated as non-responsive.

11.4.1. A substantially responsive bid is one which conforms to all the terms, conditions, and requirements of the bidding documents, without material deviation or reservation.

A material deviation or reservation is one: -

- a. which affects in any substantial way the scope, quality, or performance of the Works;
- b. which limits in any substantial way, inconsistent with the bidding documents, the Purchaser's rights or the Bidder's obligations under the Contractor
- c. Whose rectification would affect unfairly the competitive position of other Bidders presenting substantially responsive Bids.

11.4.2. If a Bid is not substantially responsive, it may be rejected by the Tender Inviting Authority, and may not subsequently be made responsive by correction or withdrawal of the nonconforming material deviation or reservation.

11.4.3. Non submission of legible or required documents or evidences may render the bid non-responsive.

11.4.4. The CAMC costing will not be added to determine the L1 bidder, however the bidders are informed to quote the CAMC rates

11.4.5. Bidder can witness the principal activities and view the documents/summary reports for that particular work by logging on to the portal with his DSC from anywhere.

11.4.6. Single tender shall not be opened in the first tender call.

11.5. Negotiation on Bids

11.5.1. The Tender Inviting Authority reserves the right to negotiate with the lowest evaluated responsive bidder.

12. Award of Contract

121. HLL will award the Contract to the Bidder whose bid has been determined to be substantially responsive and who has offered the lowest evaluated bid price in total.

122. In the eventuality of failure on the part of the lowest successful bidder to produce the original documents, or submit the security deposit, or acceptance of LOI/ Work order within the specified time limit, the Bidder shall be debarred in future from participating in Bids for three years and will be recommended for blacklisting by the competent authority. In such cases, the work shall be re-tendered.

12.3 The rates for the various items quoted by the Bidder shall be rounded to two decimal places. The decimal places in excess of two will be discarded during evaluation.

125 The Tender Inviting Authority reserves the right to accept or reject any Bid and to cancel the Bidding process and reject all Bids at any time prior to the award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the Tender Inviting Authority's action.

126 Notification of Award and Order Acceptance

12.6.1 The Bidder, whose Bid has been accepted, shall be notified of award by HLL prior to expiration of the Bid validity period by facsimile or e-mail confirmed by letter sent through post. This letter (hereinafter and in the Conditions of Contract called the "Letter of Acceptance") will state the sum that the Purchaser will pay the Bidder in consideration of the execution, completion and remedying defects, if any of the Works by the Supplier as prescribed by the Contract.

12.6.2. The notification of award will constitute the formation of the Contract, subject only to the furnishing of a Security Deposit within 7 (Seven) days of issue of letter of acceptance.

12.6.3. Upon the furnishing by the successful Bidder of the Security Deposit, the Agreement Authority will promptly notify the other Bidders that their Bids have been unsuccessful.

12.6.4. The supplier shall arrange for a pre-dispatch inspection within 7 days from the date of intimation, confirming their technical qualification.

12.6.5. Transportation, boarding, lodging and other expenses for Pre-dispatch and post- dispatch will be borne by supplier

12.6.6. Solicitor's fee, if any, to be paid to the Law Officers of Government for scrutinizing or drawing up of agreements - will be paid and the same recovered from the successful bidder.

13. Corrupt or Fraudulent Practices

13.1 The purchaser requires that the bidders, suppliers and Suppliers observe the highest standard of ethics during the procurement and execution of such contracts. In pursuit of this policy, the following are defined:

Sl. No.	Term	Meaning
(a)	Corrupt practice	The offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the action of a public official in the procurement process or in contract execution.
(b)	Fraudulent practice	A misrepresentation or omission of facts in order to influence a procurement process or the execution of a contract.
(c)	Collusive practice	Means a scheme or arrangement between two or more bidders, with or without the knowledge of the purchaser, designed to establish bid prices at artificial, non-competitive levels.
(d)	Coercive practice	Means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the procurement process or affect the execution of a contract.
13.2 The Purchaser will reject a proposal for award if it determines that the Bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive or coercive practices in competing for the Contract in question.		

SECTION - III

GENERAL CONDITIONS OF CONTRACT (GCC)

1. Application

The General Conditions of Contract incorporated in this section shall be applicable for this purchase to the extent the same are not superseded by the Special Conditions of Contract prescribed under Section IV, List of requirements under Section V and Technical Specification under Section VII of this document.

2. Use of contract documents and information

- 2.1. The supplier shall not, without the purchaser's prior written consent, disclose the contract or any provision thereof including any specification, drawing, sample or any information furnished by or on behalf of the purchaser in connection therewith, to any person other than the person(s) employed by the supplier in the performance of the contract emanating from this TE document. Further, any such disclosure to any such employed person shall be made in confidence and only so far as necessary for the purposes of such performance for this contract.
- 2.2. Further, the supplier shall not, without the purchaser's prior written consent, make use of any document or information mentioned in GCC sub-clause 2.1 above except for the sole purpose of performing this contract.
- 2.3. Except the contract issued to the supplier, each and every other document mentioned in GCC sub-clause 2.1 above shall remain the property of the purchaser and, if advised by the purchaser, all copies of all such documents shall be returned to the purchaser on completion of the supplier's performance and obligations under this contract.

3. Patent Rights

The supplier shall, at all times, indemnify and keep indemnified the purchaser, free of cost, against all claims which may arise in respect of goods & services to be provided by the supplier 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 purchaser, the purchaser shall notify the supplier of the same and the supplier shall, at his own expenses take care of the same for settlement without any liability to the purchaser.

4. Country of Origin

All goods and services to be supplied and provided for the contract shall have the origin in India or in the countries with which the Government of India has trade relations.

The word "origin" incorporated in this clause means the place from where the goods are, manufactured, or from where the services are arranged.

The country of origin may be specified in the Price Schedule.

5. Performance Security

5.1. Within Seven (07) days from date of the issue of notification of award by the Purchaser, the supplier, shall furnish Performance Security to the Purchaser for an amount equal to five percent (5%) of the total value of the contract, valid up to 60 days after the date of completion of 1 year warranty period / all contractual obligations by the supplier, including the warranty obligations, initially valid for a total period of minimum 14 months from the date of Notification of Award.

5.3. The Performance security shall be denominated in Indian Rupees.

a) It shall be in any one of the forms namely Account Payee Demand Draft drawn from any Nationalized bank in India or Bank Guarantee issued by a Nationalized bank in India, in the prescribed form as provided in section XII of this document in favor of the Purchaser. The validity of Bank Guarantee will be for a period up to sixty (60) days beyond respective Warranty Period.

5.3 In the event of any failure /default of the supplier with or without any quantifiable loss to the Purchaser the amount of the performance security is liable to be forfeited. The Purchaser may do the needful to cover any failure/default of the supplier with or without any quantifiable loss to the Purchaser.

5.4. In the event of any amendment issued to the contract, the supplier shall, within twenty- one (21) 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.

5.5. The supplier shall enter into CAMC as per the 'Contract Form – B' in Section XV with Purchaser/Purchaser's Client, 3 (three) months prior to the completion of Warranty Period. The CAMC will commence from the date of expiry of the Warranty Period.

5.6. Subject to GCC sub – clause 5.3 above, the Purchaser will release the Performance Security without any interest to the supplier on completion of the supplier's warranty and contractual obligations including submission of satisfactory performance certificates received from Hospital authorities towards quarterly preventive maintenance and breakdown maintenance services rendered by the contractor during warranty period.

6. Technical Specifications and Standards

The Goods & Services to be provided by the supplier under this contract shall conform to the technical specifications and quality control parameters mentioned in 'Technical Specification' and 'Quality Control Requirements' under Sections VI and VII of this document.

7. Packing and Marking

The packing for the goods to be provided by the supplier should be strong and durable enough to withstand, without limitation, the entire journey during transit including transshipment (if any), rough handling, open storage etc. without any damage, deterioration etc. As and if necessary, the size, weights and volumes of the packing cases shall also take into consideration, the remoteness of the final destination of the goods and availability or otherwise of transport and handling facilities at all points during transit up to final destination as per the contract.

The quality of packing, the manner of marking within & outside the packages and provision of

accompanying documentation shall strictly comply with the requirements as provided in Technical Specifications and Quality Control Requirements under Sections VI and VII and in SCC under Section IV. In case the packing requirements are amended due to issue of any amendment to the contract, the same shall also be taken care of by the supplier accordingly.

Packing instructions:

Unless otherwise mentioned in the Technical Specification and Quality Control Requirements under Sections VI and VII and in SCC under Section IV, the supplier shall make separate packages for each consignee (in case there is more than one consignee mentioned in the contract) and mark each package on three sides with the following with indelible paint of proper quality:

- a. contract number and date
- b. brief description of goods including quantity
- c. packing list reference number
- d. country of origin of goods
- e. consignee's name and full address and
- f. supplier's name and address

8. Inspection, Testing and Quality Control

The purchaser and/or its nominated representative(s) will inspect and/or test the ordered goods and the related services to confirm their conformity to the contract specifications and other quality control details incorporated in the contract. The purchaser shall inform the supplier in advance, in writing, the purchaser's programme for such inspection and, also the identity of the officials to be deputed for this purpose. The cost towards the transportation, boarding & lodging will be borne by the supplier and/or its nominated representative(s).

The Technical Specification and Quality Control Requirements incorporated in the contract shall specify what inspections and tests are to be carried out and, also, where and how they are to be conducted. If such inspections and tests are conducted in the premises of the supplier all reasonable facilities and assistance, including access to relevant drawings, design details and production data, shall be furnished by the supplier to the purchaser's inspector at no charge to the purchaser.

If during such inspections and tests the contracted goods fail to conform to the required specifications and standards, the purchaser's inspector may reject them and the supplier shall either replace the rejected goods or make all alterations necessary to meet the specifications and standards, as required, free of cost to the purchaser and resubmit the same to the purchaser's inspector for conducting the inspections and tests again.

In case the contract stipulates pre-dispatch inspection of the ordered goods at premises decided by the purchaser, the supplier shall put up the goods for such inspection to the purchaser's inspector well ahead of the contractual delivery period, so that the purchaser's inspector is able to complete the inspection within the contractual delivery period.

If the supplier tenders the goods to the purchaser's inspector for inspection at the last moment without providing reasonable time to the inspector for completing the inspection within the contractual delivery period, the inspector may carry out the inspection and complete the formality beyond the contractual delivery period at the risk and expense of the supplier.

The purchaser's/consignee's contractual right to inspect, test and, if necessary, reject the goods after the goods' arrival at the final destination shall have no bearing of the fact that the goods have previously been inspected and cleared by purchaser's inspector during pre-dispatch inspection

mentioned above.

Goods accepted by the Purchaser and/or its inspector at initial inspection and in final inspection in terms of the contract shall in no way dilute purchaser's/consignee's right to reject the same later, if found deficient in terms of the warranty clause of the contract, as incorporated under GCC Clause 15.

If required by the purchaser, Foreign supplier shall also have the equipment inspected by recognized/ reputed agency like SGS, Lloyd or equivalent (acceptable to the purchaser) prior to dispatch at the supplier's cost and furnish necessary certificate from the said agency in support of their claim.

For details of final inspection please refer section IV, special conditions of Contract.

9. Terms of Delivery

Goods shall be delivered by the supplier in accordance with the terms of delivery as follows:

- a) The goods shall be supplied, unpacked, installed and commissioned at the designated location as per the SECTION V. The project has to be completed within **180 days** from date of order. All costs including insurance, loading, unloading etc., shall be borne by the supplier.

10. Transportation of Goods

The supplier shall at their own experience, arrange transport (including air/sea/land), loading & unloading of goods upto the consignee address.

11. Insurance:

Unless otherwise instructed in the SCC, the supplier shall make arrangements for insuring the goods against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery in the following manner:

In case of supply of domestic goods on Consignee site basis, the supplier shall be responsible till the entire goods contracted for arrival in good condition at destination. The transit risk in this respect shall be covered by the Supplier by getting the goods duly insured. The insurance cover shall be obtained by the Supplier and should be valid till installation, testing and commissioning of the equipment.

If the equipment is not commissioned and handed over to the consignee within stipulated period, the insurance will be extended by the supplier at their cost till the successful installation, testing, commissioning and handing over of the goods to the consignee. In case the delay in the installation and commissioning is due to handing over of the site to the supplier by the consignee, such extensions of the insurance will still be done by the supplier, but the insurance extension charges at actuals will be reimbursed.

12. Spare parts

If specified in the List of Requirements and in the resultant contract, the supplier shall supply/provide any or all of the following materials, information etc. pertaining to spare parts manufactured and/or supplied by the supplier:

- a) The spare parts as selected by the Purchaser to be purchased from the supplier, subject to the condition that such purchase of the spare parts shall not relieve the supplier of any contractual obligation including warranty obligations; and

- b) In case the production of the spare parts is discontinued:
- i) Sufficient advance notice to the Purchaser before such discontinuation to provide adequate time to the purchaser to purchase the required spare parts, etc. at the supplier's risk and cost and
 - ii) Immediately following such discontinuation, providing the Purchaser, free of cost, the designs, drawings, layouts and specifications of the spare parts, as and if requested by the Purchaser.

Supplier shall carry sufficient inventories to assure ex-stock supply of consumable spares for the goods so that the same are supplied to the Purchaser promptly on receipt of order from the Purchaser.

13. Incidental services

Subject to the stipulation, if any, in the SCC (Section – IV), List of equipment (Section– V) and the Technical Specification (Section – VI), the supplier shall be required to perform the following services.

- i) Installation & Commissioning, Supervision and Demonstration of the goods and rectification of accidental damages occurred before handing over the system/site to Hospital authorities.
- ii) Providing required jigs and tools for assembly, minor civil works required for the completion of the installation.
- iii) Training to Doctors/Technicians on equipment in clinical aspects for operating and maintaining the equipment.
- iv) Supplying required number of operation & maintenance manual for the goods.
- v) Providing all the necessary as built drawings after the installation and commissioning.
- vi) Provide all software updates during warranty period without any additional cost.

14. Distribution of Dispatch Documents for Clearance/Receipt to Goods

The supplier shall send all the relevant dispatch documents well in time to the Purchaser to enable the Purchaser clear or receive (as the case may be) the goods in terms of the contract. Unless otherwise specified in the SCC, the usual documents involved and the drill to be followed in general for this purpose are as follows.

A) For Domestic Goods, including goods already imported by the supplier under its own arrangement.

Within 24 hours of dispatch, the supplier shall notify the purchaser, consignee, and others concerned if mentioned in the contract, the complete details of dispatch and also supply the following documents to them by registered post / speed post (or as instructed in the contract):
Four copies of supplier's invoice showing contract number, goods description, quantity, unit price and total amount;

Consignee Receipt Certificate as per Section XVI in original issued by the authorized representative of the consignee;

Two copies of packing list identifying contents of each package; Inspection certificate issued by the nominated Inspection agency, if any. Certificate of origin;

Insurance Certificate as per GCC Clause 11

Manufacturers/Supplier's warranty certificate & In-house inspection certificate.

15. Warranty

The supplier warrants comprehensively that the goods supplied under the contract is new, unused and incorporate all recent improvements in design and materials unless prescribed otherwise by the purchaser in the contract. The supplier further warrants that the goods supplied under the contract shall have no defect arising from design, materials (except when the design adopted and / or the material used are as per the Purchaser's/Consignee's specifications) or workmanship or from any act or omission of the supplier, that may develop under normal use of the supplied goods under the conditions prevailing in India.

This warranty shall remain valid for 1 year as per SECTION V (LIST OF REQUIREMENTS) from the date of handing over entire equipment and acceptance by the Purchaser/Hospital in terms of the contract after installation and commissioning, unless specified otherwise in the SCC.

In case of any claim arising out of this warranty, the Purchaser shall promptly notify the same in writing to the supplier. The period of the warranty will be as per GCC clause number 15.2 above irrespective of any other period mentioned elsewhere in the bidding documents.

Upon receipt of such notice, the supplier shall, within 8 hours on a 24 (hrs) X 7 (days) X 365 (days) basis respond to take action to repair or replace the defective goods or parts thereof, free of cost, at the ultimate destination. The supplier shall take over the replaced parts/goods after providing their replacements and no claim, whatsoever shall lie on the purchaser for such replaced parts/goods thereafter. The penalty clause form on rectification will be applicable as pretender conditions.

In the event of any rectification of a defect or replacement of any defective goods during the warranty period, the warranty for the rectified/replaced goods shall be extended to a further period from the date such rectified / replaced goods starts functioning to the satisfaction of the purchaser.

If the supplier, having been notified, fails to respond to take action to repair or replace the defect(s) within 8 hours on a 24(hrs) X 7 (days) X 365 (days) basis, the purchaser may proceed to take such remedial action(s) as deemed fit by the purchaser, at the risk and expense of the supplier and without prejudice to other contractual rights and remedies, which the purchaser may have against the supplier.

During Warranty period, the supplier is required to visit consignee's site at least once in 4 months commencing from the date of the installation for preventive maintenance of the goods.

The Purchaser reserve the rights to enter into CAMC between Purchaser/Purchaser's Client and the Supplier for the period of 5 years as mentioned in this tender, after the completion of 5 years warranty.

The supplier along with its Indian Agent and the CAMC provider shall ensure continued supply of the spare parts for the constant performance of the machines and equipment supplied by them to the purchaser for 10 years from the date of installation and handing over.

The Supplier along with its Indian Agent and the CAMC Provider shall always accord most favored client status to the Purchaser vis-à-vis its other Clients/Purchasers of its equipment/machines/goods etc. and shall always give the most competitive price for its machines/equipment supplied to the Purchaser.

16. Assignment

The Supplier shall not assign, either in whole or in part, its contractual duties, responsibilities and obligations to perform the contract, except with the Purchaser's prior written permission.

17. Sub Contracts

The Supplier shall notify the Purchaser in writing of all sub contracts awarded under the contract if not already specified in its tender. Such notification, in its original tender or later, shall not relieve the Supplier from any of its liability or obligation under the terms and conditions of the contract.

Sub contract shall be only for bought out items and sub-assemblies.

Sub contracts shall also comply with the provisions of GCC Clause 4 (“Country of Origin”).

18. Modification of contract

If necessary, the purchaser may, by a written order given to the supplier at any time during the currency of the contract, amend the contract by making alterations and modifications within the general scope of contract in any one or more of the following:

- a) Specifications, drawings, designs etc. where goods to be supplied under the contract are to be specially manufactured for the purchaser,
- b) Mode of packing,
- c) Incidental services to be provided by the supplier
- d) Mode of despatch,
- e) Place of delivery and
- f) Any other area(s) of the contract, as felt necessary by the purchaser depending on the merits of the case.

In the event of any such modification/alteration causing increase or decrease in the cost of goods and services to be supplied and provided, or in the time required by the supplier to perform any obligation under the contract, an equitable adjustment shall be made in the contract price and/or contract delivery schedule, as the case may be, and the contract shall be amended accordingly.

19. Prices

Prices to be charged by the supplier for supply of goods and provision of services in terms of the contract shall not vary from the corresponding prices quoted by the supplier in its tender and incorporated in the contract, except for any price adjustment authorized in the SCC.

20. Taxes and Duties

Supplier shall be entirely responsible for all taxes, duties, fees, levies etc. incurred until delivery of the contracted goods to the purchaser.

Further instruction, if any, shall be as provided in the SCC.

21. Terms and Mode of Payment

A) Payment Terms - Equipment

- a) 50% of supply value shall be released against supply and certificate for receipt of the item in good condition from the Hospital/purchaser.
- b) 45% payment shall be released against certificate of installation and commissioning certified by the Hospital Authorities/purchaser.
- c) Final 5% shall be released against submission of certificate issued by Hospital/purchaser certifying that the facility has been installed, commissioned and handed over and submission on Performance Security and other documents stated in this tender.

- d) Payment shall be made subject to recoveries, if any, by way of liquidated damages or any other charges as per terms & conditions of contract and upon the submission of the following documents:
 - i. supplier's invoice showing contract number, goods description, quantity, unit price and total amount;
 - ii. Completion Certificate duly certified by hospital/HLL authorities.

B) Payment Terms - Turnkey part (Civil & Electrical works)

The contractor can submit two running account bills during the work period and payment made as below:

- a) 80% of the GST bill value will be paid on each running account bill submitted by the contractor recommended by State in charge (P&S, HLL) and approved by Project Engineer (P&S, HLL)/ Deputy General Manager (P&S, HLL).
- b) Balance 20% of running account bill will be paid along with the final bill only after submission of Work Completion certificate issued by State in charge (P&S, HLL) and approved by Project Engineer (P&S, HLL)/ Deputy General Manager (P&S, HLL)
- c) 5% amount of the Bill will be retained as retention money and will be released only after the Defect liability period of 12 months without any interest.
- d) The running account bills/Final bill are to be submitted detailing the work description, quantity and rate as per the Work Order. Payment will be made against actual measurements recorded and certified jointly by State in charge (P&S, HLL) and the Contractor's representative. For supply of capital items, duly certified delivery challan/supporting documents such as Warranty Certificates etc. shall be enclosed

Tax Deduction: All statutory deductions like GST, Income Tax, Works Contract Tax, E.S.I., P.F. or any other government-imposed liabilities shall be borne by the Contractor (as applicable at the time of execution of job) and shall be deducted from each bill submitted by the Contractor.

The running account bills/Final bill are to be submitted detailing the work description, quantity and rate as per the Work Order. Payment will be made against actual measurements recorded and certified jointly by State in charge (P&S, HLL) and the Contractor's representative. For supply of capital items, duly certified delivery challan/supporting documents such as Warranty Certificates etc. shall be enclosed along with bill and shall be submitted to following Address:

For Infrastructure:

HLL Lifecare Limited,
Amrit, Circular road,
Indira Gandhi Medical college,
Regional Cancer centre, Shimla,
Himachal Pradesh,
Pin code -171001.
GST – 02AAACH5598K1ZD

For Equipment:

HLL Lifecare Limited,
HLL Bhavan, #26/4,

Tambaram-Velachery Main Road,
Pallikaranai, Chennai – 600 100,
Tamilnadu, India.

The payment will be disbursed by HLL Project Division in Chennai only against the actual work executed at site. GST No. 33AAACH5598K1Z8.

Payments to the vendor shall be contingent upon the availability of funds disbursed by the client. Consequently, the timing of disbursement may be subject to change based on fund availability. The competent authority will notify the vendor promptly of any anticipated delays in payment.

CAMC Payment:

The payment of CAMC will be made after completion of 4 months' preventive maintenance period and after satisfactory completion of said period on submission of bills with supporting documents, certified by the Hospital authorities, in proof of preventive and breakdown maintenance having rendered in the 4 months. In case the supplier fails carry out the preventive maintenance, in the stipulated period, the purchaser may extend the period of contract to the period of non-services or impose the penalty on the supplier at the discretion of the Purchaser. However, such non service(s) is/ are by a reason of Hospital, the penalty / extension mentioned above will not be applicable.

The supplier shall not claim any interest on payments under the contract.

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.

The payment shall be made in Indian Rupees.

The supplier shall send its claim for payment in writing, when contractually due, along with relevant documents etc., duly signed with date.

While claiming payment, the supplier is also to certify in the bill that the payment being claimed is strictly in terms of the contract and all the obligations on the part of the supplier for claiming that payment has been fulfilled as required under the contract.

The payment for the preventive maintenance will be released only on the submission of performance security of 5% for the particular year.

22. Delay in the supplier's performance

The supplier shall deliver of the goods and perform the services under the contract within the time schedule specified by the Purchaser in the List of Requirements and as incorporated in the contract.

Subject to the provision under GCC clause 26, any unexcused delay by the supplier in maintaining its contractual obligations towards delivery of goods and performance of services shall render the supplier liable to any or all of the following sanctions:

- (i) Imposition of liquidated damages or

- (ii) Forfeiture of its performance security and
- (iii) Termination of the contract for default.

If at any time during the currency of the contract, the supplier encounters conditions hindering timely delivery of the goods and performance of services, the supplier shall promptly inform the Purchaser in writing about the same and its likely duration and make a request to the Purchaser for extension of the delivery schedule accordingly. On receiving the supplier's communication, the Purchaser shall examine the situation as soon as possible and, at its discretion, may agree to extend the delivery schedule, with or without liquidated damages for completion of supplier's contractual obligations by issuing an amendment to the contract.

When the period of delivery is extended due to unexcused delay by the supplier, the amendment letter extending the delivery period shall, inter alia contain the following conditions:

- (a) The Purchaser shall recover from the supplier, under the provisions of the clause 23 of the General Conditions of Contract, liquidated damages on the goods and services, which the Supplier has failed to deliver within the delivery period stipulated in the contract.
- (b) That no increase in price on account of any ground, whatsoever, including any stipulation in the contract for increase in price on any other ground and, also including statutory increase in or fresh imposition of applicable taxes or on account of any other tax or duty which may be levied in respect of the goods and services specified in the contract, which takes place after the date of delivery stipulated in the contract shall be admissible on such of the said goods and services as are delivered and performed after the date of the delivery stipulated in the contract.
- (c) But nevertheless, the Purchaser shall be entitled to the benefit of any decrease in price on account of reduction in or remission of applicable taxes or any other duty or tax or levy or on account of any other grounds, which takes place after the expiry of the date of delivery stipulated in the contract.

The supplier shall not dispatch the goods after expiry of the delivery period. The supplier is required to apply to the Purchaser for extension of delivery period and obtain the same before dispatch. In case the supplier dispatches the goods without obtaining an extension, it would be doing so at its own risk and no claim for payment for such supply and / or any other expense related to such supply shall lie against the purchaser.

23. Liquidated Damages

Subject to GCC clause 26, if the supplier fails to deliver any or all of the goods or fails to perform the services within the time frame(s) incorporated in the contract, the Purchaser shall, without prejudice to other rights and remedies available to the Purchaser under the contract, deduct from the contract price, as liquidated damages, a sum equivalent to 0.5% per week of delay or part thereof on delayed supply of goods and/or services until actual delivery or performance subject to a maximum of 10% of the contract price or actual liability of the purchaser due to delayed supply of goods and/or services/ or total performance of the contractor, whichever is higher. Once the maximum is reached Purchaser may consider termination of the contract as per GCC 24.

During the above-mentioned delayed period of supply and / or performance, the conditions incorporated under GCC sub-clause 22 (a) above shall also apply.

24. Termination for default

The Purchaser, without prejudice to any other contractual rights and remedies available to it (the Purchaser), may, by written notice of default sent to the supplier, terminate the contract in whole or in part, if the supplier fails to deliver any or all of the goods or fails to perform any

other contractual obligation(s) within the time period specified in the contract, or within any extension thereof granted by the purchaser pursuant to GCC sub-clauses 22.3 and 22.4.

In the event of the Purchaser terminating the contract in whole or in part, pursuant to GCC sub-clause 24.1 above, the Purchaser may procure goods and/or services similar to those cancelled, with such terms and conditions and in such manner as it deems fit and the supplier shall be liable to the Purchaser for the extra expenditure, if any, incurred by the Purchaser for arranging such procurement. Unless otherwise instructed by the Purchaser, the supplier shall continue to perform the contract to the extent not terminated.

25. Termination for insolvency

If the supplier becomes bankrupt or otherwise insolvent, the purchaser reserves the right to terminate the contract at any time, by serving written notice to the supplier without any compensation, whatsoever, to the supplier, subject to further condition that such termination will not prejudice or affect the rights and remedies which have accrued and / or will accrue thereafter to the Purchaser.

26. Force Majeure

Notwithstanding the provisions contained in GCC clauses 22, 23 and 24, the supplier shall not be liable for imposition of any such sanction so long the delay and/or failure of the supplier in fulfilling its obligations under the contract is the result of an event of Force Majeure.

For purposes of this clause, Force Majeure means an event beyond the control of the supplier and not involving the supplier's fault or negligence and which is not foreseeable and not brought about at the instance of, the party claiming to be affected by such event and which has caused the non-performance or delay in performance. Such events may include, but are not restricted to, acts of the Purchaser either in its sovereign or contractual capacity, wars or revolutions, hostility, acts of public enemy, civil commotion, sabotage, fires, floods, explosions, epidemics, quarantine restrictions, strikes excluding by its employees, lockouts excluding by its management, and freight embargoes.

If a Force Majeure situation arises, the supplier shall promptly notify the Purchaser in writing of such conditions and the cause thereof within seven days of occurrence of such event. Unless otherwise directed by the Purchaser in writing, the supplier shall continue to perform its obligations under the contract as far as reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

If the performance in whole or in part or any obligation under this contract is prevented or delayed by any reason of Force Majeure for a period exceeding sixty days, either party may at its option terminate the contract. Termination of this agreement for whatever reason shall not affect the obligation/ liabilities of both the parties accrued hereunder in respect of matters at the time of the agreement.

In case due to a Force Majeure event the Purchaser is unable to fulfill its contractual commitment and responsibility, the Purchaser will notify the supplier accordingly and subsequent actions shall be taken on similar lines described in above sub- paragraphs.

27. Termination for convenience

The Purchaser reserves the right to terminate the contract, in whole or in part for its (Purchaser's) convenience, by serving 7 days written notice on the supplier at any time during the currency of the contract. The notice shall specify that the termination is for the convenience of the Purchaser. The notice shall also indicate inter alia, the extent to which the supplier's performance under the contract is terminated, and the date with effect from which such termination will become effective.

The goods and services which are complete and ready in terms of the contract for delivery and performance within thirty days after the supplier's receipt of the notice of termination shall be

accepted by the Purchaser following the contract terms, conditions and prices. For the remaining goods and services, the Purchaser may decide:

- a) To get any portion of the balance completed and delivered at the contract terms, conditions and prices; and/or
- b) To cancel the remaining portion of the goods and services and compensate the supplier by paying an agreed amount for the cost incurred by the supplier towards the remaining portion of the goods and services.

28. Governing language

The contract shall be written in English language following the provision as contained in GIT clause 4. All correspondence and other documents pertaining to the contract, which the parties exchange, shall also be written accordingly in that language.

29. Notices

Notice, if any, relating to the contract given by one party to the other, shall be sent in writing or by cable and confirmed in writing. The procedure will also provide the sender of the notice, the proof of receipt of the notice by the receiver. The addresses of the parties for exchanging such notices will be the addresses as incorporated in the contract.

The effective date of a notice shall be either the date when delivered to the recipient or the effective date specifically mentioned in the notice, whichever is later.

30. Resolution of disputes

If dispute or difference of any kind shall arise between the Purchaser and the supplier in connection with or relating to the contract, the parties shall make every effort to resolve the same amicably by mutual consultations.

If the parties fail to resolve their dispute or difference by such mutual consultations within twenty one days of its occurrence the same shall be referred for arbitration to a Sole arbitrator to be appointed by the C&MD, of the Purchaser Arbitration shall be conducted as per the provisions of the Arbitration and Conciliation Act 1996 or any statutory modification or re-enactment thereof for the time being in force. The arbitrator shall give a reasoned award. The award of the arbitrator shall be final and binding on the parties to this contract. The venue of arbitration shall be Thiruvananthapuram, Kerala, India and the language of the proceedings shall be English

The arbitrator shall be requested to give reasoned award.

31. Applicable Law

The contract shall be governed by and interpreted in accordance with the laws of India for the time being in force.

32. General/Miscellaneous Clauses

- a. Nothing contained in this Contract shall be constructed as establishing or creating between the parties, i.e. the Supplier/its Indian Agent/CAMC Provider on the one side and the Purchaser on the other side, a relationship of master and servant or principal and agent.
- b. Any failure on the part of any Party to exercise right or power under this Contract shall not operate as waiver thereof.
- c. The Supplier shall notify the Purchaser of any material change would impact on performance of its obligations under this Contract.
- d. The Supplier/its Indian Agent/CAMC Provider shall at all times, indemnify and keep

- indemnified the Purchaser against all claims/damages etc. for any infringement of any Intellectual Property Rights (IPR) while providing its services under CAMC or the Contract.
- e. The Supplier/its Agent/CAMC Provider shall, at all times, indemnify and keep indemnified the Purchaser against any claims in respect of any damages or compensation payable in consequences of any accident or injury sustained or suffered by its employees or agents or by any other third party resulting from or by any action, omission or operation conducted by or on behalf of the supplier/its associate/affiliated.
 - f. All claims regarding indemnity shall survive the termination or expiry of the contract

SECTION –IV

SPECIAL CONDITIONS OF CONTRACT (SCC)

1. General requirement for eligibility

- a) In order to decide the responsiveness of tender, the Purchaser may ask to the bidder for Demonstration of equipment/system, presentations and sample and the bidder shall arrange Purchaser's requirement as and when so asked, failing which the tender shall be deemed as non-responsive.
- b) The Licenses, Certifications, if any, required from the regulatory authorities in India with respect to this tender shall be produced along with the tender.
- c) All technical details, catalogue, application details, shall be provided along with the tender.
- d) Signed copy of Tender Document (all pages of Bid documents to be signed & stamped) by the Bidder as token of acceptance of the Terms & Conditions.
- e) Duly filled, signed and sealed forms as per the Annexures of the tender document.
- f) Power of attorney notarized by the authorized signatory to sign and submit the bid documents
- g) Copy of PAN Card. (self-attested Copy)
- h) GST Registration Certificate
- i) Certificate of incorporation / Memorandum of Article (self-attested copy)
- j) Last 3 financial years audited Profit & Loss, Balance Sheet duly certified by Chartered Accountant.
- k) EMD as per tender document.
- l) Tender Fee as per tender document. Undertaking for replacement of complaint / defective items as Annexure.
- m) One to one compliance statement to technical specification requirements against each item shall be provided along with the tender, with pamphlets/Catalogs.
- n) Acceptance test should be done at designated hospitals, prior to handing over of equipment.
- o) All details of pre installation and installation works along with schedules & drawings should be supplied within a week of award of order.

2. Final Inspection

The final inspection of the Goods will be done by the Technical Committee of the Purchaser and Hospital Authorities after installation and commissioning of the goods.

3. Warranty:

- a) 1 year as per SECTION V (LIST OF REQUIREMENTS) for comprehensive warranty as per Conditions of Contract of the TE document for complete equipment from the date of satisfactory installation, commissioning, trial run & handing over of equipment to Hospital/Institution.
- b) 95% uptime Warranty of complete equipment with extension of Warranty period by double

- the downtime period on 24 (hrs) X 7 (days) X 365(days) basis.
- c) All software updates should be provided by the supplier free of cost during Warranty period.

4. Aftersales Service:

After sales service centre should be available at on 24 (hrs) X 7 (days) X 365 (days) basis. Breakdowns/Complaints should be attended within 8 hrs. An undertaking by the Manufacturer shall accompany the tender that the spares for the equipment shall be available for at least 10 years from the date of supply.

5. CAMC:

- a) Bidder shall offer price for CAMC. CAMC shall be awarded at the discretion of Purchaser/Hospital at the end of the warranty period.
- b) The CAMC shall be for 5 years after completion of prescribed warranty period.
- c) Preventive Maintenance services during CAMC shall be rendered once in every four months with minimum gap between two services shall be not less than 90 days and not more than 115 days. In addition, all breakdown calls shall be attended to immediately and all major repairs shall be rectified within 7 calendar days from the date of intimation, as per tender, failing which, a penalty of Rs. 50,000/- per day thereof is leviable until the equipment is repaired and commissioned to the satisfaction of the end user, For this purpose supplier shall carry sufficient inventories to assure prompt replacement of defective parts as per tender
- d) Breakdown calls shall be attended immediately and major complaints shall be rectified within 7 calendar days from the date of intimation. The breakdown calls shall not be combined with preventive maintenance calls.
- e) In case the performance of CAMC services is not satisfactory and found below the 95% uptime level, the Purchaser / Hospital has the right to source the maintenance services from other means/agency at the risk and cost of supplier including termination of contract and legal/penal actions.
- f) On receipt of CAMC order, the supplier shall furnish performance security for an amount equal to 3% of the CAMC value per annum in the form of Demand Draft or Performance Bank Guarantee, which will be renewed in term with value of every year till completion of CAMC period.
- g) The cost of CAMC includes preventive maintenance with required testing, calibration as per technical/service/operational manual, labour and spares. The supplier shall undertake preventive maintenance as recommended in the manufacturer's technical/ service /operational manual, but minimum once in three months during the 5 years CAMC period for preventive maintenance.
- h) The cost of CAMC may be quoted along with taxes and duties applicable on the date of Tender Opening. 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 pertained later.
- i) The payment of CAMC will be made once in every four months after satisfactory completion of said period, duly certified by Hospital authorities, but subject to valid Performance Security.

- j) There will be 95% uptime warranty during CAMC period on 24 (hrs) X 7 (days) X 365 (days) basis, with penalty, to extend CAMC period by double the down time period.
- k) During the CAMC period, all software updates should be provided free of cost.

SECTION V

LIST OF REQUIREMENTS

SN	List of Equipment
1	ISE Based Electrolyte Analyser

Note:

- 1) The bidder shall quote for all the items tendered. If any of the item (s) not quoted, then their bid will be treated as non-responsive.**
- 2) The quantity indicated is tentative and will increase or decrease as per the actual requirement. The supplier should have no claim against the purchase on the actual quantity of orders placed.**

SECTION VI

LIST OF ITEM REQUIRES MANUFACTURE AUTHORIZATION LETTER

SN	Equipment Name	Authorization
1	ISE Based Electrolyte Analyser	Needed

SECTION VII
TECHNICAL SPECIFICATION FOR EQUIPMENT

1.ISE BASED ELECTROLYTE ANALYSER IVD		
Version no.:		Ver_1
Date:		
Done by: (Name/Institution)		HCT/NHSRC
NAME, CATEGORY AND CODING		
GMDN name		Ion - selective Analyser IVD
GMDN code(s)		56682
GENERAL		
1.USE		
1.1	Clinical purpose	A laboratory instrument intended to be used for the quantitative measurement of electrolytes and other ions in a clinical specimen using ion - specific membranes to selectively measure electrical potential against a reference electrode to determine the target ion Concentration.
1.2	Used by clinical department/ward	Clinical Diagnostic Laboratory
TECHNICAL		
2. TECHNICAL CHARACTERISTICS		
2.1	Technical characteristics (specific to this type of device)	- Should be able to measure sodium [Na⁺], potassium [K⁺], chloride [Cl⁻]. - Should be based on measuring method of Ion Selective Electrode (ISE) (Direct Potentiometer). - Should have individual electrodes for the electrolytes. - Should have automatic calibration. - Should have a throughput of minimum 40 samples per hour. - Should have a memory of at least 100 samples. - QC should be based on test parameters. - The equipment should have in - built digital display unit, PC interface facility and provision for printing of reports - Should have provision for barcode/QR code reader.
2.2	User's interface	- Touch screen Display - Provision for bi - directional LIS interface should be available.
2.3	Software and /or standard of communication (where	Inbuilt – To be provided by manufacturer

	ever required	
3. PHYSICAL CHARACTERISTICS		
3.1	Dimensions(metric)	NA
3.2	Weight(lbs, kg)	NA
3.3	Noise(ind BA)	NA
3.4	Heat dissipation	Should maintain nominal temperature and the heat should be disbursed through a cooling mechanism.
3.5	Mobility, portability	Stationary lab installation

4. ENERGY SOURCE (electricity, UPS, solar, gas, water, CO 2....)		
4.1	Power requirements	220 VAC+/- 10%, 50 Hz.
4.2	Battery operated	Online UPS for minimum one hour backup
4.3	Protection	Internal electrical protection
4.4	Power consumption	To be specified by manufacturer
5. ACCESSORIES, SPARE PARTS, CONSUMABLES		
5.1	Accessories, (mandatory, standard, optional); Spare parts (main ones); Consumables/reagents (open, closed system)	1. 2 D - Barcode/QRcode Scanner. 2. Built - in Thermal printer or provision for external printer. 3. All the consumables, controls and calibrators and any other reagents or items required for conducting 1000 tests should be mentioned and supplied with the equipment. 4. Online UPS for minimum one hour back up
BIDDING/PROCUREMENT TERMS/DONATION REQUIREMENTS		
6. ENVIRONMENTAL AND DEPARTMENTAL CONSIDERATIONS		
6.1	Atmosphere/Ambience (air conditioning, Humidity, dust...)	Operating Condition: Capable of operating continuously in ambient temperature of 10 to 50 deg C (minimum range) and relative humidity of upto 90% in ideal Circumstances.
6.2	User's care, Cleaning, Disinfection & Sterility issues	Disinfection: Parts of the Device that are designed to come in to contact with the patient or the operator should Either be capable of easy disinfection or be protected by a single use/disposable cover.
7. STANDARDS AND SAFETY		
7.1	Certificates (pre-market, sanitary,.); Performance and safety standards (specific to the device type); Local and/or international	1. Should be approved CDSCO (if applicable)/BIS/USFDA/European EC Standards.
8. TRAINING AND INSTALLATION		

8.1	Pre - installation requirements: nature, values, quality, tolerance	As specified by manufacturer and compatible electric accessories as per standard Indian set - up.
8.2	Requirements for sign-off	1. Supplier to perform installation, safety and operation checks before handover. 2. Lab In – Charge to affirm completion of installation.
8.3	Training of staff (medical, paramedical, technicians)	Satisfactory training of users in operation and basic Maintenance shall be provided on installation and during Preventive Maintenance visits and shall be documented
9.WARRANTY AND MAINTENANCE		
9.1	Warranty	➤ 1 year

10.DOCUMENTATION		
10.1	Operating manuals, set manuals, other manuals	Should provide 2 sets (hard copy and soft copy) of: 1. User, technical and maintenance manuals should be supplied in English/Hindi language along with machine diagrams; 2. List of equipment and procedures required for local calibration and routine maintenance; 3. Service and operation manuals (original and Copy) to be provided; 4. Certificate of calibration and inspection, 5. Satisfactory certificate for any existing installation from government hospital.
10.2	Other accompanying documents	List of essential spares and accessories, with their part number and cost;
11. Notes		
11.1	Service Support Contact details (Hierarchy Wise; including a toll free/landline number)	Contact details of manufacturer, supplier and local service agent to be provided.
11.2	Recommendations or warnings	Any warning sign should be adequately displayed.

SECTION – VIII
FORMS AND DECLARATIONS

1. PERFORMANCE DECLARATION FORM

(To be submitted in official letterhead of the firm, including complete company name, physical address, telephone numbers, and other relevant contact details.)

Details of all works of similar class completed during the last seven years ending last day of the Month of August 2026

SN	Name of work with brief description	Work order number with date	Work order amount (Excl. GST)	Gross amount of work completed (Excl. GST)	Actual Date of completion
1					
2					
3					

Note: Copies of Work orders and Completion certificates issued by the Client/Authority concerned shall be submitted as proof of the same. Completion certificates for works issued by private parties shall be supported by TDS certificates.

Signature and seal of the bidder

2. Financial Statement

Name & Address of bidder:

Financial Year	Annual Turnover (In Rs.)
Total annual turnover for the 3 financial years	
Average annual turnover for the 3 financial years	

Note: Enclose audited balance sheets, profit & loss statement and IT return for the above period duly certified by a Chartered Accountant as proof.

We hereby declare that the above Turnover figures are based on the audited financial statements of the firm.

**Signature and stamp of
Chartered Accountant
UDIN:**

Signature and stamp of the bidder

3. ACCEPTANCE FORM

(To be submitted in the letter pad of the firm indicating full name and address, telephone & fax numbers etc.)

From

To

Deputy Vice President (P&S)

HLL Lifecare Limited

(A Government of India Enterprise), Hicare Division,

HLL Bhavan, #26/4,

Tambaram-Velachery Main Road, Pallikaranai, Chennai – 600 100, Tamil Nadu, India

Email: hcdemo@lifecarehll.com

Tender Ref. No:

We, the undersigned have examined the above mentioned TE document, including amendment/corrigendum No._____, dated_____(if any), the receipt of which is hereby confirmed. We now offer to supply and deliver (Description of goods and services) in conformity with your above referred document, as shown in the price schedule(s), attached herewith and made part of this tender.

If our tender is accepted, we undertake to supply the goods and perform the services as mentioned above, in accordance with the delivery schedule specified in the List of Requirements.

We further confirm that, if our tender is accepted, we shall provide you with a performance security of required amount in an acceptable form in terms of GCC clause 5, read with modification, if any, in Section - IV – “Special Conditions of Contract”, for due performance of the contract.

We agree to keep our tender valid for acceptance as required in the ITB clause 8.5, or for subsequently extended period, if any, agreed to by us. We also accordingly confirm to abide by this tender up to the aforesaid period and this tender may be accepted any time before the expiry of the aforesaid period. We further confirm that, until a formal contract is executed, this tender read with your written acceptance thereof within the aforesaid period shall constitute a binding contract between us.

We further understand that you are not bound to accept the lowest or any tender you may receive against your above-referred tender enquiry.

We confirm that we do not stand deregistered/banned/blacklisted by any Govt. Authorities. We confirm that we fully agree to the terms and conditions specified in above mentioned TE document, including amendment/ corrigendum if any

Yours faithfully,

SIGNATURE OF THE BIDDER WITH SEAL

4. COMPLETION PERIOD

(To be submitted in the letter pad of the firm indicating full name and address, telephone & fax numbers etc.)

_____ (Name of the Work)
provided by HLL Engineer-in-charge and each site shall be completed within a period of **180 Days** from the date of Letter of Intent/Work Order or Site Clearance (whichever is later), irrespective to the no. of sites awarded.

SIGNATURE OF THE BIDDER WITH SEAL

5. REQUISITION FORM FOR E-PAYMENT

Certified that I am having a Savings / Current Account in <Name of Bank> -----
----- at <Name of Branch>----- with <IFSC Code>

The Account Number is: _____

I wish to receive all payments in this account through NEFT and RTGS systems, as the case may be, for all payments relating to this work.

Name of Bidder

Place: _____

Date: _____

(Attach Scanned copy of Cancelled cheque of above bank)

SIGNATURE OF THE BIDDER WITH SEAL

6. SELF-DECLARATION FORM
(In company letterhead with sign & seal)

We hereby declare and confirm that:

1. We don't not have any relation with the person authorized to evaluate commercially or involve in finalizing the tender.
2. If at any time, information furnished by us is proved to be false or incorrect, we are liable for any action as deemed fit to HLL Lifecare Limited.
3. We have never been blacklisted/banned /de-registered/de-barred by any of the Government authorities for preceding years from the date of issue of this tender document
4. We will abide by all the terms & conditions of the tender document.
5. We certify that we are offering more than 50% items from India for the supplies required under this e-Tender and hence falls under the category of 'Class 1 local supplier' as defined in Public Procurement (Preference to Make in India), Order 2017 as amended from time to time.
6. We hereby confirm that we have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India or on sub-contracting to contractors from such countries; I hereby certify that we (bidder) is not from such a country or it from such a country, has been registered with the Competent Authority and will not sub-contract any work to a contractor from such countries, unless such contractor is registered with the Competent Authority. We hereby certify that we (bidder) fulfil all requirements in this regard and is eligible to be considered. Accordingly, we declare that our company is not from those countries sharing borders with India and not restricted UNDER RULE 144 (XI) OF GFR 2017.
7. We confirm having read and understood all the instructions, forms, terms and conditions and other requirements of the above tender (both expressed and implied) in full and that we agree to abide by all without any deviation.

SIGNATURE OF THE BIDDER WITH SEAL

**7. CONTRACTORS SUPERINTENDENCE, SUPERVISION, TECHNICAL STAFF &
EMPLOYEES DETAILS**

(In the company letter with sign & seal)

Tender Reference No:

Name of the Bidder:

SN	Minimum Qualification of Technical Representative	Discipline	Minimum Experience (in years)	Number of employees required
1	Graduate Engineer or Diploma Engineer	Civil/Electrical	2 or 5 respectively	1

Assistant Engineers retired from Government services that are holding Diploma will be treated par with Graduate Engineers.

Diploma holder with minimum 10 year relevant experience with a reputed construction company can be treated at par with Graduate Engineers for the purpose of such deployment subject to the condition that such diploma holders should not exceed 50% of requirement of degree engineers..

Note: I/ We hereby declared that we will provide the employees as per mentioned in the tender document. In failing which, I / we understand that we will be Debarred from future Works as per the GCC 14.3

SIGNATURE OF THE BIDDER WITH SEAL

8. NO DEVIATION CERTIFICATE

To

Deputy Vice President (P&S)

HLL Lifecare Limited

(A Government of India Enterprise),

Hicare Division, HLL Bhavan,

#26/4, Tambaram-Velachery Main Road,

Pallikaranai, Chennai– 600100, Tamilnadu, India

Email: hcdemo@lifecarehll.com

Subject: No Deviation Certificate for _____
(Name of the Work)

Tender Ref No:

Dear Sir,

With reference to above this is to confirm that as per Tender conditions we have visited site before submission of our Offer and noted the job content and site condition etc. We also confirm that we have not changed/modified the above tender document and in case of observance of the same at any stage it shall be treated as null and void.

We hereby also confirm that we have not taken any deviation from Tender Clause together with other reference as enumerated in the above referred Notice Inviting Tender and we hereby convey our unconditional acceptance to all terms & conditions as stipulated in the Tender Document.

In the event of observance of any deviation in any part of our offer at a later date whether implicit or explicit, the deviations shall stand null and void.

Yours faithfully,

Date:

(Signature, name and designation
of the Authorized signatory)

Name and seal of Bidder

Note:

In case of Association, the Associate Bidder shall also submit the Form

9. CATEGORY DETAILS OF ORGANIZATION

(In the company letter with sign & seal)

SN	Description	Yes/No
1.	*Whether the organization belongs to the MSME category	
2.	*If yes whether the organization belongs to MSE category	
3.	*Whether the MSE organization belongs to SC/ST entrepreneur.	
4.	*Whether the MSE organization belongs to woman entrepreneur.	

*Kindly furnish the copies of documents supporting your above claim along with this Annexure duly filled.

*The Udyog Aadhar no of the bidder

(Self-attested copy of Udyog Aadhar / Udyam Registration certificate should be submitted along with the technical bid)

Date:

Signature of the Bidder:

Place:

Name with seal:

Designation:

Address:

10. BANKER'S CERTIFICATE

To
HLL LIFECARE LIMITED

This is to certify that to the best of our knowledge and information that M/s.....having marginally noted address, a Customer of our bank are/is respectable and is having an un-utilized Credit Limit of Rs. (Rupees.....).

This certificate is issued without any guarantee or responsibility on the bank or any of the officers.

Signature Name Designation

Email for Confirmation of Credit Limit:

Address of Bank for Confirmation:

BANK'S SEAL

NOTE:

- 1) Banker's certificates should be on letter head of the Bank, addressed to tendering authority issued after invitation of bid.
- 2) In case of partnership firm, certificate should include names of all partners as recorded with the bank.

11. SOLVENCY CERTIFICATE

(To be issued by a Nationalized Schedule Bank only)

Reference No:

Dt.

TO WHOMSOEVER IT MAY CONCERN

This is to certify that M/s. _____ having their office at _____ are a regular customer of our bank. They are solvent to an extent of Rs. _____ (Rupees _____ only). The conduct of their Account is good.

It is certified that this certificate is issued without any risk and responsibility on the part of this Bank or any of its officials in any respect whatsoever, more particularly either as guarantor or otherwise. This certificate is issued at the specific request of the customer.

(Signature, Name, Address, Mail-ID & Designation of issuing authority with Seal)

12. FORMAT OF SITE VISIT CERTIFICATE

Date:

SITE VISIT CERTIFICATE

This is to certify that _____, having its office at _____
has conducted a site visit at the project locations:

1.

The visit was carried out on _____ in connection with the following e-tender:

- Name of Work:
- Tender ID:

This certificate is issued upon request of the bidder.

Bharath Ebenezer B
Manager (BD)
HLL Lifecare Limited

13 BID FORM

Date _____

To
HLL Lifecare Limited

.....
Ref. Tender Document No. _____ dated _____

We, the undersigned have examined the above mentioned tender document, including its amendment/corrigendum(if any), the receipt of which is hereby confirmed.

If our BID is accepted, we undertake to perform the work, in accordance with this tender document.

We further confirm that, if our BID is accepted, we shall provide you with a performance security of required amount in an acceptable form in terms of GCC clause for due performance of the contract.

We agree to keep our BID valid for acceptance as required in the GIT clause or for subsequently extended period, if any, agreed to by us. We also accordingly confirm to abide by this BID up to the aforesaid period and this BID may be accepted any time before the expiry of the aforesaid period.

We further confirm that, until a formal contract is executed, this tender read with your written acceptance thereof within the aforesaid period shall constitute a binding contract between us.

We further understand that you are not bound to accept the lowest or any BID you may receive against your above-referred tender enquiry.

We confirm that we do not stand deregistered/banned/blacklisted by any Govt. Authorities.

We confirm that we fully agree to the terms and conditions specified in above mentioned tender document, including amendment/ corrigendum if any

(Signature with date)

(Name and designation)

Duly authorised to sign BID for and on behalf of

SECTION IX

MAKE/MODEL/HSN CODE OF EQUIPMENT
(In the company letter with sign & seal)

SN	Name of Equipment	Make	Model	HSN Code
1	Open Care system: Radiant warmer, fixed height, with trolley, drawers, O2 bottles			

SIGNATURE OF THE BIDDER WITH SEAL

SECTION – X

BANK GUARANTEE FORM FOR PERFORMANCE SECURITY/ CAMC SECURITY

To

Deputy Vice President (P&S)

HLL Lifecare Limited

(A Government of India Enterprise),

Hicare Division, Central Marketing Office,

HLL Bhavan, #26/4,

Tambaram-Velachery Main Road,

Pallikaranai, Chennai – 600 100,

Tamilnadu, India

Email: hcdcmo@lifecarehll.com

WHEREAS _____ (Name and address of the supplier) (Hereinafter called “the supplier”) has undertaken, in pursuance of contract no _____ dated _____ to supply (description of goods and services) (herein after called “the contract”).

AND WHEREAS it has been stipulated by you in the said contract that the supplier shall furnish you with a bank guarantee by a scheduled commercial bank recognized by you for the sum specified therein as security for compliance with its obligations in accordance with the contract;

AND WHEREAS we have agreed to give the supplier such a bank guarantee;

NOW THEREFORE we hereby affirm that we are guarantors and responsible to you, on behalf of the supplier, up to a total of _____ (Amount of the guarantee in words and figures), and we undertake to pay you, upon your first written demand declaring the supplier to be in default under the contract and without cavil or argument, any sum or sums within the limits of (amount of guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sums specified therein.

We hereby waive the necessity of your demanding the said debt from the supplier before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the contract to be performed there under or of any of the contract documents which may be made between you and the supplier shall in any way release us from any liability under this guarantee and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid up to 36 (thirty Six) months from the date of Notification of Award i.e up to (indicated date)

.....
(Signature with date of the
authorized officer of the Bank)

.....
Name and designation of the officer

.....
.....
. Seal, name & address of the Bank and address of
The Branch

SECTION – XI

MANUFACTURER'S/DISTRIBUTOR'S AUTHORISATION FORM

To

Deputy Vice President (P&S)

HLL Lifecare Limited

(A Government of India Enterprise),

Hicare Division, Central Marketing Office,

HLL Bhavan, #26/4,

Tambaram-Velachery Main Road,

Pallikaranai, Chennai – 600 100,

Tamilnadu, India

Email: hcdcmo@lifecarehll.com

Dear Sirs,

Ref. Your TE document No _____, dated _____

We, _____ who are proven and reputable manufacturers/distributor's of _____ (name and description of the goods offered in the tender) having factories at _____, hereby authorize Messrs _____ (name and address of the agent) to submit a tender, process the same further and enter into a contract with you against your requirement as contained in the above referred TE documents for the above goods manufactured by us.

We further confirm that no supplier or firm or individual other than Messrs.

_____ (name and address of the above agent) is authorized to submit a tender, process the same further and enter into a contract with you against your requirement as contained in the above referred TE documents for the above goods manufactured by us.

We also hereby extend our full warranty, CAMC as applicable as per clause 15 of the General Conditions of Contract, read with modification, if any, in the Special Conditions of Contract for the goods and services offered for supply by the above firm against this TE document.

Yours faithfully,

[Signature with date, name and designation] for
and on behalf of Messrs _____

[Name & address of the manufacturer/distributor]

Note: This letter of authorization should be on the letter head of the manufacturing firm and should be signed by a person competent and having the power of attorney to legally bind the manufacturer.

SECTION – XII
CONTRACT FORM - A

**CONTRACT FORM FOR SUPPLY, INSTALLATION, COMMISSIONING, HANDING
OVER, TRIAL RUN, TRAINING OF OPERATORS & WARRANTY OF GOODS**

THIS AGREEMENT made the day of, 20..... between (Name and Address of *Purchaser*) represented by the Deputy Vice President (P&S)..... (hereinafter “the *Purchaser*”) of one part and (Name and Address of Supplier) (hereinafter “the *Supplier*”) represented by (Name of the Authorized Signatory and Designation), Aged years, residing at (Full Residential Address of the Signatory) of the other part:

WHEREAS the *Purchaser* is desirous that certain Goods and ancillary services should be provided by the Supplier, viz., (Brief Description of Goods and Services) and _has accepted a bid by the Supplier for the supply of those goods and services in the sum of.....
(Contract Price in Words and Figures) (hereinafter “the Contract Price”).

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract referred to.
2. The following documents shall be deemed to form and be read and constructed as part of this Agreement, viz.:
 - (a) the Bid Form and Price Schedule submitted by the Bidder;
 - (b) the Schedule of Requirements;
 - (c) the Technical Specifications;
 - (d) the General Conditions of Contract;
 - (e) the Special Conditions of Contract; and
 - (f) the *Purchaser*’s Notification of Award
3. In consideration of the payments to be made by the *Purchaser* to the Supplier as hereinafter mentioned, the Supplier hereby covenants with the *Purchaser* to provide the Goods and Services and to remedy defects therein in conformity in all respects with the provisions of the Contract.
4. The *Purchaser* hereby covenants to pay the Supplier in consideration of the provision of the Goods and Services and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

BRIEF PARTICULARS OF THE GOODS AND SERVICES WHICH SHALL BE SUPPORTED / PROVIDED BY THE SUPPLIER ARE:

Sl. No.	Description of Goods	Qty	Unit Price inRs.	GST Amt inRs.	Total Amt inRs.

Sl. No.	Description of Goods	Qty	Unit Price inRs.	GST Amt inRs.	Total Amt inRs.

Total Value in Rs. _____

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract referred to.
2. The following documents shall be deemed to form and be read and constructed as part of this Agreement, RefNo. viz.:
 - (a) HLL Tender Ref. No. _____
 - (b) HLL Amendment/Corrigendum No. _____
 - (c) Supplier Bid Ref No. _____
 - (d) Minutes of Negotiation Meeting Dt. _____
 - (e) P.O. Ref No _____
3. **Delivery location:** _____.
4. **Completion Period:** 90 days from the date of order.
5. **Terms of Payment:** Payment shall be made in Indian Rupees as specified in the contract in the following manner: -

C) Payment Terms - Equipment

- a) 50% of supply value shall be released against supply and certificate for receipt of the item in good condition from the Hospital/purchaser.
- b) 45% payment shall be released against certificate of installation and commissioning certified by the Hospital Authorities/purchaser.
- c) Final 5% shall be released against submission of certificate issued by Hospital/purchaser certifying that the facility has been installed, commissioned and handed over and submission on Performance Security and other documents stated in this tender.
- d) Payment shall be made subject to recoveries, if any, by way of liquidated damages or any other charges as per terms & conditions of contract and upon the submission of the following documents:
 - iii. supplier's invoice showing contract number, goods description, quantity, unit price and total amount;
 - iv. Completion Certificate duly certified by hospital/HLL authorities.

D) Payment Terms - Turnkey part (Civil & Electrical works)

The contractor can submit two running account bills during the work period and payment made as below:

- e) 80% of the GST bill value will be paid on each running account bill submitted by the contractor recommended by State in charge (P&S, HLL) and approved by Project Engineer (P&S, HLL)/ Deputy General Manager (P&S, HLL).
 - f) Balance 20% of running account bill will be paid along with the final bill only after submission of Work Completion certificate issued by State in charge (P&S, HLL) and approved by Project Engineer (P&S, HLL)/ Deputy General Manager (P&S, HLL)
 - g) 5% amount of the Bill will be retained as retention money and will be released only after the Defect liability period of 12 months without any interest.
 - h) The running account bills/Final bill are to be submitted detailing the work description, quantity and rate as per the Work Order. Payment will be made against actual measurements recorded and certified jointly by State in charge (P&S, HLL) and the Contractor's representative. For supply of capital items, duly certified delivery challan/supporting documents such as Warranty Certificates etc. shall be enclosed.
 - i) **Tax Deduction:** All statutory deductions like GST, Income Tax, Works Contract Tax, E.S.I., P.F. or any other government-imposed liabilities shall be borne by the Contractor (as applicable at the time of execution of job) and shall be deducted from each bill submitted by the Contractor.
6. **Warranty:** Warranty is one year will be effective from the date of installation, commissioning and acceptance. During warranty period 3 preventive maintenance shall be executed, once in every four months in a year.
 7. **Performance Security:** The supplier shall submit performance security by way of security deposit or bank guarantee in the form prescribed for the 5% of the total value of the purchase order, valid upto sixty (60) days after the date of completion of all contractual obligations by the supplier, including the warranty obligations. Necessary preventive maintenance reports shall be submitted at the end of warranty period with working satisfactory certification from HLL/Hospital.
 8. **CAMC:** Comprehensive Annual Maintenance Contract as per the prevailing rate as mentioned below will be applicable for the purchase orders issued for Five (5) years after completion of warranty period.
 9. **Purchaser Rights:** Purchaser reserves all rights to cancel the purchase order issued by the purchaser at any time without assigning any reasons.
 10. **Applicable Law**
The contract shall be governed by and interpreted in accordance with the laws of India for the time being in force.
 11. **Resolution of disputes**
If the parties fail to resolve their dispute or difference by such mutual consultations within twenty-one days of its occurrence the same shall be referred for arbitration to a Sole arbitrator to be appointed by the C&MD, of the Purchaser Arbitration shall be conducted as per the provisions of the Arbitration and Conciliation Act 1996 or any statutory modification or re-enactment thereof for the time being in force. The arbitrator shall give a reasoned award.
 12. The award of the arbitrator shall be final and binding on the parties to this contract. The venue of arbitration shall be Thiruvananthapuram, Kerala, India and the language of the proceedings shall be English
 13. Subject to above mentioned Arbitration Clause, any dispute or differences arising out of this Agreement shall fall under the exclusive jurisdiction of courts at Chennai.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with their respective laws the day and year first above written.

**Signed, Sealed and Delivered by the said(For the *Purchaser*)
(Signature, Name, Designation and Address with Office seal)
in the presence of.....**

**Signed, Sealed and Delivered by the said(For the Supplier)
(Signature, Name, Designation and Address with Office seal)
in the presence of**

|1) (Signature, Name and Address of witness)

| (Signature, Name and Address of witness

SECTION – XIII
CONTRACT FORM – B
CONTRACT FORM FOR COMPREHENSIVE ANNUAL MAINTENANCE
CONTRACT

This AGREEMENT made on this day ----- between HLL Lifecare Ltd (HLL)/HLL's Client, represented by the ----- having his Office at(hereinafter called HLL/) of one part and M/s.----- represented by ----- aged----- years, having his / her Office at----- (hereinafter called “”) of the other part. (The term *HLL/HLL's Client* and-----, wherever the context appear and unless, it is specifically excluded, shall mean and exclude its successor, assign administrators and executors).

WHEREAS the ----- had supplied and installed number ----- at ----- against the supply order placed by HLL vide P.O. No. _ and as per provisions of the tender and supply order ----- should provide Comprehensive Annual Maintenance Services for this equipment (herein after called services) and the purchaser accepted & approved the rates and terms and conditions offered by ----- in the financial bid for the services to which this agreement made for.

NOW THE AGREEMENT WITNESS AS FOLLOWS:

1. In this Agreement, words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract / order referred to above.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz:
 - a. the terms and conditions stipulated in *Purchaser's* tender document ref. -----, Dt. ----- for the supply of the equipment.
 - b. The Bid Form and Price Schedule submitted by ----- for supply and providing the maintenance Services, against the tender.
 - c. The supply order for supply and installation of the equipment vide Ref. No. ----- Dt. ----- Placed by Purchaser.
3. The Contract of Annual Comprehensive Maintenance is hereby concluded as under:

Sr. No	Name of Equipment	Qty	Total CAMC Amount in Rs. (Excl. applicable GST)				
			2 nd year	3 rd year	4 th year	5 th year	6 th year

4. Payments shall be made by HLL/HLL's Client to Supplier as per the Purchaser's tender document, hereby ----- covenant with ----- the *Purchaser* to provide the Comprehensive Annual Maintenance Services in conformity in all respects with the provisions of the *Contract* and the orders referred above.
5. The rates indicated cover all charges towards cost of spare parts, transportation and installation charges, cost of travel, boarding, lodging and expenses related to service personnel and other expenses related to maintenance of the equipment. No claim

whatsoever will be entertained.

6. It is agreed that the rates indicated hereunder will be firm during the contract period and the contract period is for 5 years from.(date of expiry of 5 years warranty period)
7. Performance security shall be submitted by way of Bank Guarantee valid till [(fill the date) 2 months after expiry of entire CAMC period] for an amount of Rs. [(fill amount) equivalent to 5 % of the cost of the total CAMC value.
8. It is agreed that _____ will provide preventive maintenance call at least one visit in four months and the gap between any two Preventive Maintenance should not be less than 90 days and not more than 115 days and attend all breakdown calls, within the time limit prescribed in the tender. In addition, all breakdown calls shall be attended to immediately and all major repairs shall be rectified within 7 calendar days from the date of intimation, as per tender, failing which, a penalty of Rs.50,000/- per day thereof is leviable until the equipment is repaired and commissioned to the satisfaction of the end user, For this purpose you shall carry sufficient inventories to assure prompt replacement of defective parts as per tender.
9. It is agreed that the failure to attend to any breakdown calls within the prescribed time limit will attract penalty as stipulated in the CAMC order.
10. Uptime guarantee of 95% shall be maintained by _____ on annual basis taking into consideration the number of actual working hours and working days of the centre.
11. Purchaser reserves its rights to get the maintenance services done through any other agency at your full risk and cost and also to take appropriate penal action including termination of the contract, if the performance of services is found not satisfactory and below the 95%uptimelevel.
12. All disputes arising out of this agreement would be settled by arbitration by a sole arbitrator to be appointed by the CMD of Purchaser
13. All disputes arising out of this agreement will be subjected to the jurisdiction of Chennai only.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with their respective laws the day and year first above written.

Signed, Sealed and Delivered by the

Said(For the HLL/HLL's Client)

in the presence of

Signed, Sealed and Delivered by the

Said(For_____)

in the presence of

SECTION – XIV
PERFORMA OF CONSIGNEE RECEIPT CERTIFICATE
(To be given by consignee's authorized representative)

The following store (s) has/have been received in good condition:

- (i) Contract No & date : _____
- (ii) Supplier's Name : _____
- (iii) Consignee's Name & Address with
telephone No. & Fax No. : _____
- (iv) Name of the item supplied : _____
- (v) Quantity Supplied : _____
- (vi) Date of Receipt by the Consignee: _____
- (vii) Name and designation of Authorized
Representative of Consignee : _____
- (viii) Signature of Authorized
Representative of Consignee
with
date : _____
- (ix) Seal of the Consignee : _____

SECTION – XV

PERFORMA OF FINAL ACCEPTANCE CERTIFICATE BY THE CONSIGNEE

Date _____

To

M/s _____

Subject: Certificate of commissioning of equipment/plant.

This is to certify that the equipment(s)/plant(s) as detailed below has/have been received in good conditions along with all the standard and special accessories and a set of spares (subject to remarks in Para no.02) in accordance with the contract/technical specifications. The same has been installed and commissioned.

- (a) Contract No _____ dated _____
- (b) Description of the equipment(s)/plants: _____
- (c) Equipment(s)/plant(s)nos.: _____
- (d) Quantity: _____
- (e) Bill of Loading/Air Way Bill/Railway Receipt/Goods Consignment Note no _____ dated _____
- (f) Name of the vessel/Transporter: _____
- (g) Name of the Consignee: _____
- (h) Date of commissioning and proving test: _____

Details of accessories/spares not yet supplied and recoveries to be made on that account.

Sl. Description of Item	Quantity	Amount to be recovered No.
-------------------------	----------	----------------------------

The proving test has been done to our entire satisfaction and operators have been trained to operate the equipment(s)/plant(s).

The supplier has fulfilled its contractual obligations satisfactorily ## or

The supplier has failed to fulfill its contractual obligations with regard to the following:

He has not adhered to the time schedule specified in the contract in dispatching the documents/drawings pursuant to 'Technical Specifications'.

He has not supervised the commissioning of the equipment(s)/plant(s) in time, i.e. within the period specified in the contract from date of intimation by the Purchaser in respect of the installation of the equipment(s)/plant(s).

The supplier as specified in the contract has not done training of personnel.

The extent of delay for each of the activities to be performed by the supplier in terms of the contract is

The amount of recovery on account of non-supply of accessories and spares is given under Parano.02.

The amount of recovery on account of failure of the supplier to meet his contractual obligations is _____ (here indicate the amount).

Signature. Name.

Designation with stamp.

Explanatory notes for filling up the certificate:

He has adhered to the time schedule specified in the contract in dispatching the documents/drawings pursuant to ‘Technical Specification’.

He has supervised the commissioning of the equipment(s)/plant(s) in time, i.e. within the time specified in the contract from date of intimation by the Purchaser in respect of the installation of the equipment(s)/plant(s).

Training of personnel has been done by the supplier as specified in the contract.

In the event of documents/drawings having not been supplied or installation and commissioning of the equipment(s)/plant(s) having been delayed on account of the supplier, the extent of delay should always be mentioned.

SECTION XVI

LIST OF APPROVED MAKES FOR CIVIL AND ELECTRICAL WORK

To be submitted in the letter pad of the firm indicating full name and address, telephone & fax numbers etc.)

TECHNICAL SPECIFICATIONS

1. All the measurements shall be as per the latest edition of B.I.S.
2. The Technical specifications, code of practice etc. shall be referred in accordance with CPWD Specifications and work shall be executed accordingly for all works.
3. Items which are not covered under CPWD Specification shall be carried out as per relevant Indian Standard Specifications of BIS/ NBC/ IRC/ BS/ ASTM/ DIN as directed by the Engineer-in-charge.
4. The detailed specifications for electrical works shall be in accordance with CPWD – General Specifications for Electrical Works Part I (Internal) 2013.

TECHNICAL SPECIFICATION & CONDITIONS – CIVIL WORKS

1. **EARTH WORK:** As per relevant CPWD specifications.
 - A. Irrespective of the stipulations in the relevant CPWD Specifications or elsewhere in the Contract, the excavated earth shall be disposed of by the contractor at his own cost to the place as directed by Engineer – in-charge and/or permitted by the local authority after obtaining written permission of the Engineer – in-charge and no payment will be made by the HLL for disposal of this excavated earth.
 - B. The Contractor shall, at his own expense and without extra charges, make provision for all shoring, pumping, dredging or bailing out water, encountered from any sources such as rain, floods, springs, subsoil water table being high or due to any other cause whatsoever.
 - C. Filling in plinth shall be consolidated with water and compacted with pneumatic rammers, to achieve 90% relative density on testing. One test is to be carried out for 1000 sq.ms. of compacted area.
2. **PLAIN CEMENT CONCRETE AND REINFORCED CEMENT CONCRETE WORK:**
 - A. **STONE AGGREGATE:**
 - i. Stone aggregate used in the work shall be of hard broken stone to be obtained from approved source and shall conform to relevant provision in the Latest CPWD Specifications for works.
 - B. **SAND**
 - i. Sand to be used for the work shall be of as specified in CPWD Specifications 2019. Sand shall be obtained from the source to be got approved by the Engineer in charge and washed if required, with appropriate equipment to bring down the chemical, inorganic and organic impurities within

the permissible limits as per the direction of the Engineer in charge. The same shall consist of hard siliceous materials. Note: Where only one variety of sand is available the sand will be sieved for use in finishing work as directed by the Engineer – in – charge in order to obtain smooth surface and nothing extra will be paid on this account.

- ii. Nothing extra shall be paid for screening or washing the sand as prescribed above.

C. CEMENT

- i. The contractor shall procure 43/ 53 grade ordinary Portland cement [grade as per design/ decision of Engineer-in-charge] conforming to IS 8112/Portland Pozzolana Cement conforming to IS:1489 (Part-I) as required in the work, from approved manufacturers of cement having a production capacity not less than one million tonnes per annum as approved by the Engineer –in –charge. The tenderers may also submit a list of names of cement manufacturers which they propose to use in the work. The tender accepting authority reserves right to accept or reject name(s) of cement manufacturer(s) which the tenderer proposes to use in the work. No change in the tendered rates will be accepted if the tender accepting authority does not accept the list of cement manufacturers, given by the tenderer, fully or partially. The supply of cement shall be taken in 50 kg bags bearing manufacturer's name and ISI marking. Samples of cement arranged by the contractor shall be taken by the Engineer-in-charge and got tested in accordance with provisions of relevant BIS codes. In case the test results indicate that the cement arranged by the contractor does not conform to the BIS codes, the same shall stand rejected, and it shall be removed from the site by the contractor at his own cost within a week's time of written order from the Engineer in-charge to do so. The cement shall be brought at site in bulk supply of approximately 50 tonnes or as decided by the Engineer-in-charge. The cement godown of the capacity to store a minimum of 2000 bags of cement shall be constructed by the contractor at site of work for which no extra payment shall be made.

D. CENTERING SHUTTERING AND SCAFFOLDING:

- i. All Scaffolding centering for RCC shall be with properly designed system and brought to site well in advance so that the progress of the work is not hampered for non-availability of the same.
- ii. All shuttering for RCC work except soffits of slab shall be in water proof shuttering Ply. Shuttering for slab and soffits shall be in water proof shuttering ply or in good quality mild steel plates free of dents, bends or warping and rusting as approved by the Engineer in charge.

- iii. Contractor should deploy complete one set of shuttering materials for minimum one complete floor and the shuttering material for beam bottom shall be minimum for two complete floors.

E. REINFORCEMENT:

- i. TMT reinforcement steel shall be used shall be as per design and conforming to IS: 1786 pertaining to Fe 500D OR Fe 550D grade of steel.
- ii. TMT steel bars manufactured by main producers, as per list of makes, shall be allowed in the work. Contractor shall produce manufacturer Test Report for each dia and each lot Tests. Nothing extra will be paid for “straightening of bars” received from market in coils or with bends. All incidental charges of any kind whatsoever including cartage, storage, safe custody of materials, cutting and wastage etc. shall be borne by the contractor.
- iii. The actual average sectional weight for dia up to 10 mm shall be arrived at from one meter long samples (minimum 3 from each dia) taken from each lot of steel. The discretion of the Engineer – in – charge shall be final for the procedure to be followed for determining the average sectional weight of each lot. Quantity of each diameter of steel received at site of work each day will constitute the single lot for this purpose.
- iv. The weight of each lot of a particular diameter of 10mm and below shall be reckoned as the weight as per actual issue multiplied by a factor equal to the standard sectional weight of the particular diameter divided by the average sectional weight of the particular dia in a particular lot worked out as per above para. Adjustment for the steel shall be effected on the basis of the weight as modified above for quantity payable.
- v. Measurement of all diameters of steel be on linear basis and will be converted into weight on the basis of standard sectional weight coefficients given in relevant CPWD specifications mentioned in schedule ‘F’ of General Conditions of Contract.
- vi. Measurement of reinforcement shall be as per procedure described in the relevant CPWD specifications mentioned in schedule ‘F’ of General Conditions of Contract

F. CONCRETE MIX DESIGN

The mix design shall be for MODERATE exposure and GOOD degree of quality control, unless otherwise specified.

3. BRICK WORK

A. BRICK WORK

- a. Bricks used in the work shall be obtained from kilns to be got approved from the Engineer in charge and shall be best quality well burnt ground moulded bricks as available in the vicinity. They shall have a compressive strength of not less than 75 Kgs/sq.cm and an absorption percentage of not more than 15 (Fifteen) % of its dry weight when immersed in water for 24 hours. In all other respects they shall conform to the provision in Latest CPWD Specifications for works.
- b. Both the face of wall of thickness more than 23cm shall be kept in the proper plane. Walls of half brick thickness or less shall be measured separately and paid in sqm.
- c. Bricks wall beyond half brick thickness shall be measured in multiple of half brick (i.e. more than 115mm or equivalent) which shall be deemed to be inclusive of mortar joints. In all other respects they shall conform to the provision in relevant specifications of the work.
- d. For mortar, use of PP Cement shall be preferred.

B. Solid/Hollow Block Work

- a. Precast CC blocks shall be procured from approved manufactures or manufactured at site. Nothing extra shall be payable on account of adding any admixture for making pre- cast blocks or for steam curing.
- b. The Solid CC blocks shall have nominal size of 400mm x 200mm x 200mm for 200mm thick masonry wall& Hollow blocks of nominal size 400mm x 200mm x 100mm for 100mm thick masonry walland shall confirm to IS 2185.
- c. The samples of CC blocks (each sample consisting of 6 specimens) shall be chosen randomly from the lot and tested for various parameters specified below. One samples shall be tested for every 100 cum or part thereof.
- d. Following parameters shall be tested.
 - i. Compressive strength.
 - ii. Water absorption
 - iii. Density
 - iv. Dimensional Tolerances
 - v. The material shall meet following parameters :
 - vi. Compressive strength shall be no less than 5.0 N/sq. mm.
 - vii. Water absorption shall not be more than 5%.
 - viii. Density shall be not less than 1500 kg/cum.
 - ix. Dimensional tolerance in the size shall be not more than + 5mm for length and + 3mm for height and width.
- e. Top course of all plinth, parapets, steps and top of walls below floor and roofs shall be laid with solid blocks, properly radiated and keyed into position to form cut (meru) corner. Where blocks

cannot be cut to meru corners, cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) equal to thickness of the coarse shall be provided in lieu of cut blocks. No additional payment shall be made on this account.

- f. Nothing extra shall be payable on account of chasing the CC block masonry work for embedding pipes, electrical boards/ boxes etc. and also filling the chases with cement mortar 1:4 (1 Cement : 4 Coarse sand). The chasing shall however be carried out using machine cutters so as not to disturb the joints in the masonry and without any cracks being developed in the masonry.
- g. All other specifications for 100 mm thick and 200mm thick hollow/solid block work shall be as described for full brick and half brick masonry work respectively.
- h. For unsupported lengths of 100 mm thick walls exceeding 3.5 m, 100 x 200 mm wide R.C. mullions shall be provided at 3.5 m centre, tied to the lintels at door height. Similarly, continuous R.C. beam of size 100 x 150 mm shall be provided at door height for 100 mm thick wall. Such RC mullion/ bands shall be measured and paid separately.

4. **CEMENT PLASTER:** - The use of PP Cement shall be preferred.

The joints in the brick work, concrete blocks, shall be raked to a depth of 15 mm while the masonry is green. Concrete surfaces to receive plaster shall be suitably roughened. All walls shall be washed with water and kept damp for 10 hours before plastering. The plaster unless specified otherwise shall be average of 12 mm thick on walls. The finished texture shall be as approved by the HLL. The mix for plaster unless otherwise specified, shall be one-part cement and four parts sand, to walls. All plaster work shall be kept continuously wet for seven days.

5. **STEEL GRILL WORK:**

- a. All steel grills shall be according to the detailed drawings and obtained from approved suppliers. These shall conform to Latest CPWD Specifications for works.
- b. In case of grills an approved quality priming coat of zinc chromate shall be applied over and above a shop coat of primer. Nothing extra shall be payable for providing shop coat primer, but the zinc chromate primer, if additionally required, will be paid for separately.

6. **PAINTING**

a. **MATERIAL**

This paint shall be brought to the site of work by the contractor in its original containers in sealed condition. The material shall be brought in at a time in adequate quantities to suffice for the whole work or at least a fortnight's work. The materials shall be kept in the joint custody of the contractor and the Engineer-in- Charge. The empty containers shall not be removed from the site of work till

the relevant item of work has been completed and permission obtained from the Engineer-in-Charge

b. SCAFFOLDING

Scaffolding as required for the proper execution of the work shall be erected. If work can be done safely with the ladder or jhoola these will be permitted in place of scaffolding.

c. PREPARATION OF SURFACE

The surface shall be thoroughly cleaned off all mortar dropping, dirt dust, algae, fungus or moth, grease and other foreign matter of brushing and washing, pitting in plaster shall make good, surface imperfections such as cracks, holes etc. should be repaired using white cement. The prepared surface shall have received the approval of the Engineer in charge after inspection before painting is commenced.

d. APPLICATION

Before pouring into smaller containers for use, the paint shall be stirred thoroughly in its container, when applying also the paint shall be continuously stirred in the smaller containers so that its consistency is kept uniform. The lids of paint drums shall be kept tightly closed when not in use as by exposure to atmosphere the paint may thicken and also be kept safe from dust. Paint shall be applied with a brush on the cleaned and smooth surface. Horizontal strokes shall be given, First and vertical strokes shall be applied immediately afterwards. This entire operation will constitute one coat. The surface shall be finished as uniformly as possible leaving no brush marks.

e. BRUSHES & CONTAINERS

After work, the brushes shall be completely cleaned of Paint and linseed oil by rinsing with turpentine. A brush in which Paint has dried up is ruined and shall on no account be used for painting work. The containers when not in use, shall be kept closed and free from air so that Paint does not thicken and also shall be kept safe from dust. When the Paint has been used, the containers shall be washed with turpentine and wiped dry with soft clean cloth, so that they are clean, and can be used again.

7. ALUMINIUM WORK \UPVC

- a. The scope of the work is the fabrication, supply and erection at site of all types of Aluminium/ UPVC glazed doors, windows and ventilators in accordance with the drawings and specifications.
- b. The supply and erection will include all parts such as but not restricted to frames, tracks, guides, mullions, styles, rails, couplers, transoms, rails, plates glazing bars, glass, hinges, arrangement, spring catches, cord and pulley arrangements, spring catches, cord and pulley arrangements door closers floor springs etc., required for the whole work whether the parts/ items are individually and specifically referred to in the schedules/ specifications/drawings or not provided that the

supply and installation of such parts can be inferred there from and are necessary to make the work complete, unless separate provision is made in the bills of quantities for supply to such parts/items.

c. The doors, windows, ventilators, will be fabricated to suit the finished clear openings in the building/structure which the tenderer will himself measure.

d. Materials:-

- i. The members will be made out of aluminum alloy corresponding to IS:733 and will consist of extruded sections and of other shapes, and to sized gauges as shown in the drawings/ described in accordance with the relevant IS codes. The members shall be chosen to provide strength/ stability and maximum resistance to wear and tear.
- ii. UPVC members shall be made of PVC material conforming to IS: 10151.
- iii. The Sections will be as per approved makes, extruded sections. As indicated in the drawings the tenderer should specifically mention which sections he is using.
- iv. The weight of sections and the corresponding catalogue numbers are mentioned. The weight of sections and the corresponding catalogue numbers are mentioned. The IS specifications are to be strictly adhered.
- v. The extruder using recycled materials may be preferred.
- vi. The alloy of extruded aluminum should be BS or IS old HE9, Alcon 50 SWP. to this effect test certificate has to be provided for the extruder.

a. Finishing

- i. The extruded aluminum section has to be mechanically finished to remove all scratches; extrusion marks etc and subsequently thoroughly cleared in all alkali baths prior to anodizing.
- ii. The polyester powder coating, as required, as per item of work, shall be of desired shade with minimum average thickness to 50 microns or other shades as required and to this effect the tenderer must have to produce test certificate from authorized institutions Bureau of Indian Standard.
- iii. The polyester powder coated material should be properly wrapped in gummed tape before fabrication to avoid scratches during fabricated and erection shall be kept protected till handing over.

b. Fabrication:

- Before commencing the fabrication the contractor shall submit to the Engineer – in charge for their approval detailed shop drawings, based on the Architectural drawings and corresponding specification showing junctions, fittings, accessories

such as hinges flush bolts, locks, latches, latching arrangements, peg stays, rotor arms, anodize pivots gaskets rubber packing door felts, mastic, sealant etc., including fixing and sealing arrangements . Type and method of scaffolding he intends to use, Fabrication is to be taken up only after approval by the Engineer – in- charge and in accordance with the approved drawings. Sections for fabrication of door/ window/ventilators etc shall be as per architectural drawings or as approved by the Engineer – in - charge.

- ii. A sample of finished door / windows/ ventilator railing etc.shall be fabricated as per the shop drawings approved by the Engineer – in - charge for final approval before under taking mass production/ fabrication,
- iii. The doors, window, ventilators and partitions shall be as per thickness given in the approved shop drawings, Polyester Powder coating shall be as specified in the item specifications.
- iv. All materials shall conform to relevant IS. Codes and in the absence of IS code, they should correspond to the best engineering practice; decision of the the Engineer – in
- charge shall be final and binding on the contractor.
- v. Fabrication shall be done true to the drawing/ sample approved and in correspondence to the finished openings at the site. All joints shall be mitered at the corners, true right angles, and joints to be finished neatly to hairlines, with concealed fasteners, wherever possible joints shall be made in concealed locations.vii. Site installation shall be with concealed screws, self-tapping or other approved fasteners or may be by welding, due precautions shall be taken to avoid any distortion/ discoloration /damage to the finished items.
- vi. Wood work faces /parts coming in contact with masonry shall before shifting to the site be given a heavy coat of alkali resistance bitumen paint. Steel items coming in contact with other incompatible materials shall be given a thick coat of zinc chromate primer.

c. Glazing:

Glazing shall be done with flawless sheet glass of best approved quality without waviness, distortion, coloration / discoloration, of specified thickness in sizes as shown in the drawings, fixed as required with special glazing clips, putty, neoprene/PVC gaskets. All glass shall be cleaned thoroughly before they are fixed in position. Unless otherwise specified the minimum thickness shall be 5 mm thick.

8. FALSE CEILING

- i. False ceiling items in general are carried out as per the description of the item in the Bill of quantities and also as per the manufacturer’s specifications / as directed by the Engineer – in – Charge.

- ii. Location of particular type of false ceiling shall be as per relevant drawing, in its absence written approval of the Engineer – in - charge shall be obtained.
- iii. The false ceiling tiles from manufacturers using recycled materials shall be preferred.

9. FLOORING:

- i. The flooring in the building shall be as per the approved floor finish drawings and laid in such a way that limits in floor levels would not exceed the limits provided in the latest CPWD specifications or manufactures specifications.
- ii. Wherever Vitrified Tile flooring is done, it shall be with multy grade/range 1st Quality tiles.
- iii. Slope in floors shall be provided as per architectural drawings, else the levels at any place when checked over a distance of one meters in any direction should not show variation in floor level more than 3 mm.
- iv. Rate for the items of flooring is inclusive of provision of sunken flooring and finishing edges of the same in bath kitchen, toilets, cutting holes for traps/ pipes etc., and nothing extra shall be paid on this account unless otherwise specified.
- v. Protective layer to be provided of any type of flooring and nothing extra shall be paid on this account.10.

10. STAINLESS STEEL RAILINGS

- i. The scope of the work includes preparation of the shop drawings (based on the architectural drawings), fabrication, supply, installation and protection of the stainless steel railing till completion and handing over of the work.
- ii. The stainless steel work shall be got executed through specialized fabricator having experience of similar works. The Contractor shall submit the credentials of the fabricator for the approval of the Engineer-in-Charge.
- iii. The Contractor shall submit shop drawings, for approval of the Engineer-in-Charge, for fabricating stainless steel railing with detailing of M.S. stiffener frame work backing along with the fixing details of the M.S. frame work to the R.C.C columns. The details of the joints in the stainless steel railing including location, etc. shall also be shown in the shop drawings.
- iv. The Contractor shall procure and submit to the Engineer-in-Charge, samples of various materials for the railing work, for approval. After approval of samples, the Contractor shall prepare a mock up for approval of Engineer-in-Charge/ HITES. The material shall be procured and the mass work taken up only after the approval of the mock up by the Engineer-in-Charge/ HITES. The mock-up shall be dismantled and removed by the contractor as per the directions of the Engineer-in-Charge. Nothing extra shall be payable on this account.

- v. The stainless steel shall be of grade 316 with brushed steel satin finish and procured from the approved manufacturer. It shall be without any dents, waviness, scratches, stains etc.
- vi. The required joints in the railing provided as per the architectural drawings, shall be welded in a workmanlike manner including grinding, polishing, buffing etc. all complete and compacted. The temporary clamps provided and fixed to hold the stainless steel railing, in position shall be removed after the concrete has set properly. The junction of the flooring and the cladding shall be neatly filled with weather silicone sealant of approved colour and shade. Nothing extra shall be payable on this account.
- vii. One test (three specimens) for each lot shall be conducted for the stainless steel pipe in the approved laboratory. Therefore, the material shall preferably be procured in one lot from one manufacturer.
- viii. The finished surface shall be free of any defects like dents, waviness, scratches, stains etc. and shall have uniform brushed stbe rejected and redone by the Contractor at his own cost. The finished surface shall therefore be protected using protective tape which shall be removed at the time of completion of the work. The surface shall then be suitably cleaned using nonabrasive approved cleaner for the material. Nothing extra shall be payable on this account.
- ix. The item includes the cost of all inputs of labour, materials (including stainless steel pipes, welding, brazing, concrete, protective film, weather silicone sealant etc including cost of providing and fixing M.S. frames), T & P other incidental charges, wastages etc. The items also included providing and fixing stainless steel anchor fasteners for fixing railing.
- x. The railing shall be fixed in position using stainless steel pipes, stainless steel posts of required diameters and thickness as shown on drawing and polished to satin finish including cutting, welding, grinding, bending to required profile and shape, hoisting, butting, polishing etc.
- xi. The item includes the cost of all inputs of labour, materials, T&P, other incidental charges, wastage etc. The entire work shall be carried out to the satisfaction of Engineer-In-Charge.

11. GLASS:

- i. All glassand glazing material shall be verified and coordinate with the applicable Performance requirement.
- ii. All glass shall be cut to require size and ready for glazing. All glass shall be accurate sizes with clear undamaged edges and surfaces which are not disfigured. Any panel which does not fit any section of the curtain wall and shop front will be rejected and a replacement made at the Contractor's expense.
- iii. Glass shall conform to the quality, thickness and dimensional requirement specified in Bill of Quantities/ CPWD Specification.

- iv. Heat strengthened glass shall not deviate in surface flatness by more than 0.23 mm with in 260mm of leading or trailing edge, or 0.076 mm in centre. Direction of ripple shall be consistent and is acceptable to Engineer-in-charge. Distortion of glass shall be controlled as much as possible during heat strengthening. Sag distortion shall be unidirectional and surface compression shall be in the range of 320-450 Kg/cm². All glass shall be delivered to site with the manufacturer's label of identification attached.
- v. The glass glazed panel/ structural glazing frames for the structural glazing system shall be designed to withstand lateral imposed loads and comply with requirement of local building codes.
- vi. Glass shall be free from defect or impurities detrimental to its performance. Defects such as bubbles, waves, spots scratches, spalls, discoloration, visibly imperfect coating, chipping, and bubbles delaminating of opacifier film shall be limited in accordance with the Manufacturer's / trade guidelines. The glass is to be produced in such a way that the rollers will be parallel to what will be the horizontal position of the glass. Glass should be consistent in colour.
- vii. Double glazed units shall be procured only from approved manufacturer. Quality control tests shall be performed for mixing, curing, adhesion and dew point. The unit shall be guaranteed against condensation and dirt between the panes, failure of seal and damage to internal coating.
- viii. All glass breakage caused by the Contractor or his sub-contractor because of negligence or caused by the installation of faulty work by him shall be replaced by the Contractor at his own expense without delay to the project completion.

12. WATER PROOFING TREATMENT:

All the items for water proofing treatment with cement based water proofing treatment for roof slab and sunken portion in schedule of quantities shall be guaranteed for TEN YEARS the case of cement based treatment by the contractor as per Performa prescribed. The water proofing treatment work should be got done through specialized agency approved by EIC.

13. WATER PROOFING TREATMENT FOR ROOF /SUNKEN FLOORS OF W.C'S ETC.

- i. Water proofing treatment for roof/ sunken floor has to carried out as per the respective Bill of Quantities/ CPWD Specification.
- ii. The finished surface after water proofing treatment shall have required slope.
- iii. While treatment of sunken floors is done it shall be ensured that the 'S' or 'P' traps as the case may be have been fixed/ eased and rounded off properly the work shall be carried out as per relevant CPWD specifications.

- iv. **GURANTEE:** The above water proofing, treatment shall be guaranteed for TEN YEARS against any leakage etc. the contractor shall have to execute a bond, 10 % of cost of items executed for water proofing shall be retained for 10 years as security (Refer GCC provisions).

14. ANTIBACTERIAL PAINT

- i. The Antibacterial Paint shall be able to provide anti-Microbial Protection:
- ii. The scope of work includes providing & applying approved makes anti-Microbial Paint on wall surfaces as per manufacturer's specifications complete in all respect & as directed by Engineer-in-charge. Following are the desired characteristic of the paint:
- iii. **Protection:** The product hygiene coatings to start the biocidal action as soon as the microorganism land on the surface, and prevents the growth of mould, bacteria and yeasts for at least 5 years.
- iv. **Lily Cycle Savings:** The unparalleled durability of hygiene coatings should help to extend the maintenance cycle and to minimize all related material, labour and shut down costs.
- v. **Chemical Persistence:** The hygiene coatings should be highly resistant to abrasives, detergents and weak acids and alkalis used in cleaning

15. CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPES

CPVC pipes & fittings used in hot & cold potable water distribution system shall conform to requirement of IS 15778. The material from which the pipe is produced shall consist of chlorinated polyvinyl chlorides. The polymer from which the pipe compounds are to be manufactured shall have chlorine content not less than 66.5%. The internal and external surfaces of the pipe shall be smooth, clean and free from grooving and other defects. The pipes shall not have any detrimental effect on the composition of the water flowing through it.

LIST OF APPROVED MAKES (CIVIL WORKS)

SN	Material	Approved Make/Manufacturers
1	Plywood /Block board /Ply board	Duro/ Greenply/ Century/ Kitply/ National/ Archiply/ Merino/equivalent
2	Pre-laminated particle board / Veneered particle board	Novapan /Century /Green Ply /AK Plywood/ Merino/equivalent
3	PVC door/shutter	Rajshri/ Plasopan/ Synkapolywood/ Polyline Sintex/ Polyex/equivalent
4	Clear Glass / Clear Float Glass / Toughened Glass/ Mirror/ Structural Glazing	Modiguard/ Saint Gobian (SG)/ TATA Continental/ Asahi India Safety Glass Ltd/equivalent
5	Glass Wool / Insulation Boards	Rockwool/ UP Twiga/ Liloyd Insulation/ equivalent
6	Aluminum building hardware	IPSA/ Everite/ EBCO/ ECIE/ Hardwyn Traders/equivalent

SN	Material	Approved Make/Manufacturers
7	Aluminium Sections	Jindal/ Hindalco/ Indal/equivalent
8	UPVC Doors & Windows & Partitions	Fenesta/ Lingel/ CASSA/ Evolution/ Kommerling/ NCL Wintec/ Duroplast/AparnaVenster/equivalent
9	UPVC Toilet Doors	AMD Overseas/ Fenesta/ Lingel/ CASSA/ Evolution/ Kommerling/ NCL Wintec/ Duroplast/AparnaVenster/equivalent
10	Locks/Latches	Godrej/ Harrison/ Hettichplaza/ yale/ link/equivalent
11	Door Hardware	Dorma/ Kich/ Classic/ Haffle/ Ozone/ Geze/equivalent
12	Hydraulic Door Closer/Floor Spring	Godrej/ Hardwyn/ Dorma/ Everite/equivalent
13	Adhesive for tiles	Cico / Pidilite / ArdexEndura / Sikka / Fosroc / BASF/ MYK Laticrete
14	Adhesive for Wood Work	Fevicol/ Pidilite/ ArelditeCico/ Vamicol/ Dunlop/equivalent
15	Fastener	Fisher/ Hilti/ Canon/ Bosch/equivalent
16	Fire Sealant	Hilti/ Promat/ Birla/ 3M/equivalent
17	Silicon sealants /Weather Sealant / Structural Glazing Sealant/ Additives	Asian paints/ Fosroc/ Pidilite/ GE- Silicon/ Pidilite/ CICO/ Sikka/ MYK Arment
18	Cement	ACC/ Coromandel / Ultra tech/ JK Cement/ Ambuja/ India Cement/ Ramco/ Dalmia/ Malabar Cement/ Birla/ Chettinad/ Cement Corporation of India/ Bharati/equivalent
19	Concrete Additive	Sikka/ CICO/ Pidilite/ Fosroc/ Fairmate/ MC Bauchemie / BASF/ MYK Arment
20	Concrete Admixture	Fosroc/ Pidilite/ MYK Arment
21	AAC blocks	Xtralite from Ultratech/ Aerocon from HIL/ Siporex India Limited/equivalent
22	Damp proof material	Impermo/ Duraseal/ ACCO-proof/
23	Gypsum Board / Gypsum False Ceiling/ Gypsum Partitions	India Gypsum/ SaintGobain/ Lafarge/ Boral Gypsum/ Armstrong/equivalent
24	Calcium Silicate Boards & Tiles False Ceiling	India Gypsum/ Aerolite/ RAMCO (Hilux)/ Saint Gobain (Gyproc)/equivalent
25	Metal false Ceiling	Armstrong/ Hunter-Douglas/ USG/ Unimet/ equivalent
26	Mineral fibre false Ceiling	Armstrong/ Decosonic/ USG/ AMF/ Saint Gobain (Gyproc)/equivalent
27	Ceramic Tiles	Kajaria/ Somany / H & R Johnson/ Orient - Bell NITCO/ RAK/equivalent
28	Vitrified Tiles (Double/ Fully Charged)/ Gem Free	Kajaria/ Somany / H & R Johnson/ Orient- Bell/ NITCO /RAK/equivalent
29	Epoxy Flooring	CIPY/ FOSROC/ ArdexEndura/ Dr. Beck/

SN	Material	Approved Make/Manufacturers
		Flamafloor/ BASF/ MYK Arment
30	PVC Flooring	LG Floors / Gerflor / Premier Vinyl flooring / Armstrong/equivalent
31	Cement Concrete Paver Tiles/ Drain cover/ Kerb Stone	K.K/ HPL/ TUFFTECH/ NITCO/ Modern/ Dalal Tiles/ CICO/ Bharat Concrete Products/ Ashokaa/ Uni Stone Products (India) Pvt. Ltd/ Hindustan Tiles/equivalent
32	Antistatic Floor Coating	INARCO/ PVC WONDER FLOOR/ ARMSTRON/ MYK Arment
33	Water proofing compound	Dr.Fix/ FOSROC/ SIKKA/ CICO/ Pidilite/ Impermo by Snowcem/ MYK Arment
34	Water proofing Materials (Bitumenistic)	BASF/ Fosroc/ Sikka/ CICO/ Pidilite/ STP/ ArdexEndura/ MYK Arment
35	White Cement	Birla White/ JK White/equivalent
36	Wall putty	JK Wall Putty/ Birla Putty / Nippon/equivalent
37	Synthetic Enamel Paint	Asian (Premium Apcolite Gloss)/ Berger (LuxolHigloss)/ Nerolax/ ICI (Dulux Gloss)/ Nerolac / Jotun/equivalent
38	Oil Bound Distemper	Nerolac/ Berger(BisonAcrylic)/ Asianpaints/
39	Dry Distemper	Berger(Castle)/equivalent
40	Emulsion Paint	Nerolac/ Berger/ Asian paints/ ICI/ Jotun/equivalent
41	Steel/ wood primer	Nerolac/ Berger/ Asian paints/ ICI / Jotun/equivalent
42	Texture Paint	Spectrum/ Unilite Heritage/ Asian/ Berger/ Jotun/ equivalent
43	Epoxy Paint	ICI Dulux/ Nerolac/ Cico/ Sikka/ BASF/ Berger/ Pidilite/ MYK Arment
44	OT: Anti -Fungal Paint	ArdexEndura/ Sikka by Liquid Plastic/ Viesmann/ SSK/ TRILUX/ MYK Arment
45	Water proofing cement paint	Snowcem/ Asian/equivalent
46	Pre –coated galvanized steel Profile sheet & accessories	TATA Bluescope/ DynaRoof/ ESSAR Steel/ JINDAL/ Llyod Insulations India Ltd / S.R Metals/equivalent
47	Steel section windows, Pressed Steel door frame	San HarvicSteelman Industries/ AGEW/ BHAWANI-STEEL/equivalent
48	Structural Steel Sections/ Rolled Sections & Tubeless Sections	SAIL, TATA (TISCO), RINL, Jindal/ RANA/ Capital/ Kamdhanu/ Prithivi/ Prakashsurya/ Appolo&Hitech/equivalent
49	Reinforcement Steel	SAIL/ TATA(TISCO)/ RINL/ JSW/ JINDAL/equivalent
50	Pre-coated Galvanized Steel Sheet	Tata BlueScope / Llyod Insulations India Ltd / S.R.Metals/equivalent
51	Polycarbonate Sheets	Galina/ GE Plastic / Skyarch/ Polytechno/

SN	Material	Approved Make/Manufacturers
		Tuflite/equivalent
52	PUF/ Sandwich Panels	Llyod Insulations India Ltd / Jindal / T K E S P Ltd. Isocab Sandwich Panels/equivalent
53	Vitreous china sanitary ware	Jaquar/ Kohler/ Cera/Hindware/ Parryware / Kerovit/equivalent
54	Plastic WC cover	Hindustan Saitary ware, Commander, DIPLOMAT/equivalent
55	Stainless Steel sink	Hindware/ Neelkanth/ Nirali/ Jayna/ Anupam/equivalent
56	G.I pipes	Jindal Hissar/ TATA/ BST/equivalent
57	G.I fittings	Unik/ ZOLOTOM/ DRP-M/ Kent/ equivalent
58	C.PVC pipe	Astral/ Ashirwad/ SFMC/ Finolex/ Ashirwad/equivalent
59	Rainwater & PVC pipes & fittings	Prince/ Supreme/ Finolex/ SFMC/ Astral/equivalent
60	Gun metal valves	Leader/ Sant/ Zoloto/ Kriloskar/ Cera/ Jaquar/equivalent
61	CPVC pipes & fittings	Supreme/ Finolex/ SFMC/ Astral/ Prince/equivalent
62	C.I covers & Manhole covers	RIF/ NICO/ SKF/equivalent
63	SS Gratings/ Soap Dish/ Towel Rail and other SS fitting	Camry/ Glacier/ Gem/ Jaquar/ Grohe/equivalent
64	CP Brass Fittings	Jaquar/ Hindware/ Crome/ Cera/equivalent
65	Floor Drain Fixture & Channel Gratings	Chilly/ Neer/ ACO/equivalent
66	C.P .Grating for Floor Trap	Chilly/ CockroachTrap/ GMGR/equivalent
67	Cast Iron Pipes & Fittings Manhole covers and frames	Electro Steel Calcutta/ Kesoram Calcutta/ NECO/ R.I.F./ B.I.C./ Hepco/ SKF/ Kajeco/equivalent
68	PVC Storage Tanks	Sintex/ Rotoplast/ Electroplast/ Fusion/ Polycon / Prince/equivalent
69	Anticorrosive Tape for Pipe Protection	PYPKOTE/equivalent
70	Pressure Gauge	HGuru/ Fiebig/ Dwyer/equivalent
71	PTMT Fittings	Prayag/ Jaquar/ Cera/ Prayag/ Polytuf/equivalent

Note:

1. The Engineer-in-charge is at liberty to select any of the brands indicated above. The contractor obtains prior approval from Engineer-in-charge before placing the order listed above.

2. Change of any make of material in case of its non-availability or any other such reason shall be at the discretion of the Engineer-in-charge. The Contractor shall not be allowed to change the makes without their prior permission.
 3. Equivalent make of any item may be added with the approval of Engineer in charge, wherever makes have not been specified for certain items, the same shall be as per BIS and as per approval of Engineer.
 4. In case of items for which approved make is not given above, the Contractor shall place the order with the prior approval of the Engineer-in-charge.
 5. In case of Contradiction between the approved makes/brands specified above and mentioned in the Specifications /Bill of quantities. The decision of the Engineer-in-Charge shall be final and binding on the Contractor.
 6. All materials should confirm to relevant standard and codes of BIS and shall have ISI mark.
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TECHNICAL SPECIFICATION & CONDITIONS – ELECTRICAL & MECHANICAL SERVICES

1.1. SCOPE OF WORK

The bidder shall supply, install and commission along with requisite spare, maintenance tools and tackles the following equipment and system in the Project. The scope also covers the detailed engineering and calculations of the various equipment/system mentioned hereunder and the same shall be approved by the HLL/Engineer-in-charge prior to execution of the job.

- Light fixtures – internal
- Wiring devices – switches & sockets
- Earthing.
- Laying and termination of L.T. cables.
- Distribution Boards / Sub-Distribution Board.
- Providing power supply to equipment's
- Complete internal building wiring as per specification.
- Safety to personnel and equipment during both operation and maintenance.
- Ease of maintenance and convenience of operation.
- Electrical supply to equipment and machinery within the design operating limits.
- Adequate provision for future expansion and modification.
- Maximum interchange ability of equipment.
- Fail-safe feature.
- Suitability for applicable environmental factors.
- All the necessary Approvals & Liasoning for Load enhancement from present approved load to the required load shall be in the scope of the contractor.

A. ELECTRICAL ITEMS:

GENERAL:

The contractor shall consider the following details in their scope of works no additional cost shall be paid, wherever required:

- All Switch gears shall conform $I_{cs} = 100\% I_{cu}$ as per IEC 61439 part 1 & 2
- Proper bonding to earth.
- Supporting rigid steel framework.
- Painting/ lettering on Breakers and distribution boards, the location they serve, providing on each panel its c

0 Circuit diagram.

- Providing cable clamps/supports within distribution boards cable alley.
- All MCB's /MCCB shall be of minimum KA breaking capacity as per CPWD General Specification Part-IV

Substation

- All MCCB's shall be provided with operating mechanism for door interlock.
- All hinged door shall be earthed through 2.5sqmm tinned braided copper wire.
- Tinned copper earth bus shall be provided throughout the length of each board.
- Pad locking of Switch board doors.
- Medium voltage switch boards/distribution boards, the combination of both these and components shall

conform to the equipment's of the latest revision including amendments of the following codes and standards.

- All MCB's used for protection of resistive and lightly inductive load shall be type "B" characteristic and

inductive (motor) load shall be of type "C" characteristic and discharge lamps and UPS etc. shall be of type

D characteristic.

- The drawings, specification and BOQ complement each other and which is shown or called for one shall be

interpreted as being called for on both. Material, if any, which may not have been specified but fairly required

to make a complete assembly of switch gear as shown on the drawing, specifications shall be construed as

being required and no extra charges shall be payable on this account.

WIRING:

Control and protective wiring shall be done with copper conductor PVC insulated 1100 volts grade multi-stranded flexible wire of 1.5/2.5/4 sq.mm cross section. The colour coding shall be as per latest edition of IS: 375.

Each wire shall be identified by plastic ferrule. All wire termination shall be made with type connection. Wire shall not be taped or spliced between terminal points.

Terminal blocks shall preferably be grouped according to circuit function and each terminal block group shall have at least 20% spare capacity.

Not more than one wire shall be connected to any terminal block. All doorframe of L.T. switchboard shall be earthed with bare braided copper wire.

EARTHING:

All electrical equipment is to be earthed by connecting two earth tapes from the frame of the equipment to a main earthing. The earthing ring will be connected via several earth electrodes. The cable armour will be earthed through cable glands. Earthing shall be in conformity with provision of rules 32, 61, 62, 67&68 of Indian Electricity Rules 1956 and as per IS-3043-1989.

The following shall be earthed:

All fixtures, sockets outlets, fans, switch boxes and junction boxes etc. shall be earthed with PVC insulated copper wire as specified in item of work. The earth wires ends shall be connected with solder less bottle type copper lugs.

The resistance between earthing system and the general mass of earth shall not be greater than 1 ohm.

The earth loop resistance to any point in the electrical system shall not be in excess of 1 ohm in order to ensure satisfactory operation of protective devices.

All earthing conductors shall be of high conductivity copper/ G.I. as per B.O.Q. and shall be protected against mechanical damage. The cross-sectional area of earth conductors shall not be smaller than half that of the largest current carrying conductor.

L.T. CABLES & WIRE

a) Wires

The design manufacture, testing and supply of single core LEAD FREE FRLS PVC insulated 1.1 KV grade multi-stranded twisted wires under this specification shall comply with latest edition of following standards.

IS:3961 Current rating for cables.

IS:5831 PVC insulation and sheath of electric cables.

IS:694 PVC insulated cables for working voltage up to and including 1100 volts. IEC:754(i) FRLS PVC insulated cable.

Copper multi-stranded twisted conductor FRLS PVC insulated wires shall be used in conduit as per item of work.

The wires shall be colour coded R Y B, for phases, Black for neutral and Green for earth.

Progressive automatic in line indelible, legible and sequential marking of the length of cable in meters at every one metre shall be provided on the outer sheath of wire.

Progressive automatic in line indelible, legible and sequential marking of the length of cable in meters at every one metre shall be provided on the outer sheath of wire.

The material & insulation of wires shall be ROHS compliant (Reduction of Hazardous Substance) and shall comply the following directives:

EU Directive 2002/95/EC Issued Jan 2003

-

EU Directive 94/62/EC and 2004/12/EC (amendment) EU Directive 91/338/EEC

EU Directive 91/157/EEC & 98/101/EC (amendment)

Summary on related directives

Directive Ref.	Date	Objective	Remarks
2002/95/EC	27Jan03	Restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) and to contribute to the protection of human health and the environmentally sound recovery and disposal of waste EEE.	6 banned materials included Pb (Lead), Hg (mercury), Cr6+ (Hexavalent Chromium), Cd (Cadmium) and Flame Retardants- Polybrominated Biphenyls – PBB 1000ppm & Polybrominated Diphenyls Esters- PBDE 1000ppm. Max. conc. value - 0.1% by weight in homogeneous material for Pb, Hg, Cr6+, PBB/ PBDE Max. conc. value - 0.01% weight in homogenous material for Cd.
94/62/EC	20Dec94	Amending directive 94/62/EC, on Packaging	The targets defined are the following:
2004/12/EC (amendment)	2Nov04	and Packaging Waste is to prevent packaging waste by encouraging packaging re-use and recycling while at the same time avoid distortions in the internal market.	Recovery of minimum 60% by weight of the packaging waste Recycling of at least 55% and a maximum 80% by weight of the totally of packaging materials, with a material-specific minimum recycling rate for plastic of 22.5% Max. sum of concentration levels of Pb,

b) Cables

The design, manufacture, testing and supply of the cable under this specification shall comply with latest edition of following standards:

IS:8130 Conductors for insulated electric cables and flexible cords .IS:7098 XLPE insulation and sheath of electric cables.

IS:3975 Mild steel wires, strips and tapes for armoring cables. IS:7098 Current rating of cables.

IS:7098 XLPE insulated (heavy duty) electric cables for working voltage up to and including 1100volts.

IS:424-1475(F-3) Power cable-flammability test.

Specification for cross-linked polyethylene insulated XLPE sheathed cable for working voltage up to 1.1 KV.

Specification for XLPE insulated (heavy duty) electric cables for working voltages up to and including 1100 volts.

ASTM-D: 2863 Standard method for measuring the minimum oxygen concentration to support candle-like combustion of plastics (Oxygen Index).

ASTM-D: 2843 Standard test method for measuring the density of smoke from the burning or decomposition.

c) Technical Requirements:

The cables shall be suitable for laying in racks, ducts, trenches conduits and under-ground buried installation with uncontrolled back fill and chances of flooding by water.

They shall be designed to withstand all mechanical, electrical and thermal stresses under steady state and transient operating condition.

The aluminium /copper wires used for manufacturing the cables shall be true circular/sector in shape before stranding and shall be of uniformly good quality, free from defects. The conductor used in manufacture of the cable shall be of H2grade.

The cable should withstand 25 KA for 0.5 sec with insulation armour insulated at one end. Bidder shall furnish calculation in support of capability to withstand the earth fault currents. The current carrying capacity of armour and screen (as applicable) shall not be less than the earth fault current values and duration.

Laying of Cables:

The cable drum shall be placed on jacks before unwinding the cable. Great care shall be exercised in laying cables to avoid forming links. At all changes in directions in horizontal & vertical places, the cable shall be bent with a radius of bend not less than 8 times the diameter of cable.

The cable of 1.1KV grade shall be laid not less than 750mm below ground level in 36 a 375mm wide trench(throughout), where more than one cable is to be laid in the same trench, the width of the trench shall be increased such that the interaxial spacing between the cables except where otherwise specified shall at least be 150mm minimum or as per site requirements

or as approved by the Engineer-in-charge. Where single core cables are used in multiphase systems, the cables shall be installed in trefoil where possible.

INTERNAL ELECTRICAL WORKS:

1) PVC Conduit:

All conduits shall be high impact rigid 2mm thickness PVC heavy duty type and shall comply with I.E.E. regulations for non-metallic conduit 2mm thick as per IS-40 9537/1983 (Part-III). All sections of conduit and relevant boxes shall be properly cleaned and glued by using epoxy resin glue and the proper connecting pieces. Inspection type conduit fittings such as inspection boxes, drawn boxes, fan boxes and outlet boxes shall be M.S. or otherwise mentioned. Conduit shall be terminated with adopter/PVC glands as required.

Accessories:

Conduit accessories such as normal bends, unions, circular junction boxes and pull boxes, locknuts etc. shall be heavy gauge type and approved make. Conduit accessories shall conform in all respects to IS: 3837-1966 with latest amendment. Wherever several conduits are running together, adequately sized adoptable boxes common to all runs shall be used to avoid inserting inspection boxes in the individual run. Where it is necessary to segregate wiring metal filler shall be fixed with in the box.

Separate conduit shall be used for:

- 1) Normal light, fan call bell
- 2) 16 A power outlet
- 3) Emergency Light Point
- 4) Fire alarm System
- 5) Computer Outlets
- 6) P.A System
- 7) Telephone system
- 8) TV Network
- 9) Or any other services not mentioned here.

Wiring for short extensions to outlets in hung ceiling or to vibrating equipments, motors etc. shall be installed inflexible conduits. Flexible conduits shall be formed from a continuous length of spirally wound interlocked wire steel with a fused zinc coating on both sides. The conduit shall be provided with approved type adopter. A separate and accessible earth connection shall bond across the flexible conduit.

Conduit runs on surfaces shall be supported with metal 1.2mm thick saddles, which in turn are properly secured on to GI spacer to the wall or ceiling. Fixing screws shall be with round or cheese head and of rust proof materials. Exposed conduits shall be neatly run parallel or at right

angles to the walls of the building and shall be painted in color matching the adjoining area. Unseemly conduit bends and offsets shall be avoided by using better appearance. Cross cover of conduits shall be minimum and entire conduit installation shall be clean and with good appearance. For surface work, the boxes shall be raised back pattern type, designed for use with distances addles to give clearance of 6mm between the back of conduit and the fixing surface.

Wiring:

All the wiring installation shall be as per IS: 732 with latest amendment. PVC insulated copper conductor cables as specified in bills of quantity shall be used for sub-circuit runs from the distribution boards to the points and shall be pulled into conduits. They shall be twisted copper conductors with the thermos-plastic insulations of 660/1100volts grade. Colour Code for wiring shall be followed.

Looping system of wiring shall be used, wires shall not be jointed. Where joints are unavoidable, they shall be made through approved mechanical connectors with prior permission of the HLL. No reduction of strands is permitted at terminations. No wire smaller than 1.5sq.mm shall be used and shall be as per B.O.Q. Wherever wiring is run through trunkings or raceways, the wires emerging from individual distributions shall be bunched together with cable straps at required regular intervals. Identification ferrules indicating the circuit and DB number shall be used for submains sub-circuit wiring. The ferrules shall be provided at both end of each submain and sub-circuit.

Where single-phase circuits are supplied from a three phase and a neutral distribution board, no conduit shall contain the wiring fed from more than one phase. In any one room in the premises where all or part of the electrical load consists of lights, fans and/or other single phase current consuming devices, all shall be connected to the same phase of the supply. Circuits fed from distinct sources of supply or from different distribution boards or through switches or MCBs shall not be bunched in one conduit. In large areas and other situations where the load is divided between two or three phase, no two single-phase switches connected to different phase shall be mounted within one box.

Conduit size	20mm		25mm		32mm		40mm		50mm		60mm	
Wire size in sq.mm.	S	B	S	B	S	B	S	B	S	B	S	B

1.50	7	5	1 2	1 0	2 0	1 4	-	-	-	-	-	-
2.50	6	5	1 0	8	1 8	1 2	-	-	-	-	-	-
4	4	3	7	6	1 2	1 0	-	-	-	-	-	-
6	3	2	6	5	1 0	8	-	-	-	-	-	-
10	2	-	4	3	6	5	8	6	-	-	-	-
16	-	-	2	-	4	3	7	6	-	-	-	-
25	-	-	-	-	3	2	5	4	8	6	9	7

Notes:

The above table shows the maximum capacity of conduits for a simultaneous drawing in of cables.

The columns heads 'S' apply to runs of conduits which have distance not exceeding 4.25 m between draw in boxes and which do not deflect from the straight by an angle of more than 15 degrees. The columns heads 'B' apply to runs of conduit which deflect from the straight by an angle of more than 15 degrees.

The Contractor shall be responsible for:

Detailed co-ordination with other services, shop drawings for various electrical layouts such as equipment layout, lighting layouts, cabling layouts, earthing and lightning protection layouts, including equipment installation and cable termination details etc. prior to start of work.

- Preparation of bill of materials for cabling, lighting, earthing and miscellaneous items etc.
- Cable schedule.
- Lighting/power panel schedule.
- Inter connection drawing.
- Protection co-ordination drawings/tables for complete power system.
- Shop inspection and testing procedures.
- Field testing and commissioning procedures.
- Preparation of as built drawings for all services.

B. ELV (EXTRA LOW VOLTAGE)

GENERAL:

All the material shall must confirm the good working condition as per the local weather/temperature and environmental condition. The work covered under this contract shall

include furnishing of all labour, materials, equipments and services required for the Security systems in accordance with the drawings and specifications.

The specifications given here shall be used to identify the requirement for rich and a high standard integrated Fire Alarm system, CCTV System, Public Address System, Access Control System, Passive Security System and Structured Cabling & Active Devices. All systems shall provide satisfactory operations, in the range of 110% and 85% of rated voltage.

Technical specifications & schedule of quantities provided under different headings are as mentioned below:

1. Structured cabling and active devices
2. Public address system
3. CCTV system
4. Access control
5. Fire detection system

1. STRUCTURED CABLING AND ACTIVE DEVICES

Structured Cabling: The cabling design to the department LAN cabling shall be as per the TIA/EIA-T568-A standards/ TIA/EIA-T568-B standards.

Faceplate: Faceplate shall meet the following requirements:

- a) Shall have the ability to fit a dust cap or shutter to prevent dust and dirt getting into the outlet for single, dual, Quad or Hexa outlets.
- b) Shall have clear label for application identification
- c) Shall be able to have 1,2,3,4,6 or 12 outlets
- d) Shall have options for vertical style or horizontal style.
- e) The faceplate housing the UTP connector modules shall have no visible mounting screws.
- f) The faceplate housing the UTP connector modules shall have aperture plugs to cover any unused openings in the faceplate.
- g) The faceplate housing the UTP connector modules shall provide flexibility in configuring multimedia workstation outlets that respond to present of future network needs such as audio, video, coaxial and optical fiber application

Modular Jack connector: TIA / EIA-T568-A defines four basic modular jack styles. The 8-position and 8-position keyed modular jacks are commonly referred as RJ45 (Registered Jack) connector and keyed RJ45. The 6-position modular jack is commonly refereed as RJ11. RJ45 is the standard connector for unshielded twisted pair cabling. RJ 45 is a plastic connector with eight pins. It allows insertion in only one way. The jack wiring specification is as per the Universal Service Ordering Codes (USOC).

Patch Cord: The Patch cord shall meet the following requirements:

- a) Shall consist of 8 Solid copper conductors terminated with RJ 45 plugs at both ends.
- b) Shall meet transmission performance and comply to EIA/TIA 568-B.2 and ISO/IEC 11801- CAT 6 minimum standard for patch cord testing (as per Annex 3)
- c) Factory terminated with options for 1.2 meter, up to 12.8 meters with a long flexible boot and in different colors. The boot material should be injected into the plug to retain the position of the conductors. The Boot should be at least 2" long with built-in bend radii maintaining technology. (d) Shall have Characteristics impedance of $100 \pm 5\%$ @ 100 MHz. (e) The Patch cord sh

Patch Panel: Rack mounted patch panels shall be used for termination of copper cables or rack mount fiber termination unit shall be used for termination of optical fiber cable. 111.2.8.

Patch cords shall be provided for cross-connections to facilitate Moves, Adds and Changes (MACs). They shall be able to support up to Category 6 applications and shall be NEXT compliant. 1.2.8.2 The cross connect module shall be (a) (b) (c) Fire -retardant, molded plastic modules UL 94 VO rate, consisting of horizontal index strips for termination of Cat5 25 pair module to ensure ease of re-termination in case of wrong pair termination or NEXT compliant RJ 45 Modular jack panel. 10/25 pair disconnection module for incoming voice or 8/10/25 pair disconnection module for all data services.

The UTP copper cables: The UTP copper cables meet the following requirements: (a) Shall be CMR, LSZH, CMP, or MPR rated form. (b) Shall consists of 23-24 AWG, twisted pair copper conductor with UL approved insulator. (c) Fire retardant PVC Sheath shall have improved frictional properties, allowing it to be pulled through conduit without the use of lubricants. (d) The insulation should be made from Polyolefin for ruggedness (e) Available in the form of 25 pairs. - minimum Cat5 UTP cable. (f) The UTP multi pair cable shall meet the following electrical specifications: - i. EIA / TIA 568 A commercial wiring standard. ii. iii. All applications as per annex 4 Mutual capacitance (at) 1Khz: 22 nF / 1000 feet. iv. Dc resistance (Ohms/1000 feet: 28.6 v. Characteristics Impedance: 100 ohms +/- 15 % @ 100Mhz (except 4 Pr)

Optical fiber requirements: Cable must be Armored Single Mode (OM1), Multi-mode (OM1, OM2 or OM3) color coded fibers, jelly filled color coded loose tubes, around the dielectric central strength member, jelly filled, plastic tape, dielectric strength member and outer PE jacket for outdoor use and shall be tight buffered with color-coded PVC for identification for multi-core fiber optic cable (OM1, OM2, OM3 and OS1) for Indoor use

NETWORKING SWITCH: Key considerations for network are – gigabit connectivity to each user from the nearest distribution rack to various users/departments/devices in a topology consisting of core switches at central server room followed by the distribution and edge/access switches.

- a. The network shall have a mix of components for supporting PoE+ as well as non-PoE devices.
- b. A robust fiber optics based backbone is being provided. It shall be based on ring topology using single mode fiber optics cable. The vendor shall ensure that the

networking switches shall be populated with the necessary transceivers for achieving this design objective.

- c. Several applications are proposed to run on this network – IP-based voice communications supporting voice-data-video, network based cameras and storage, integrated audio-video, video conferencing, interactive learning, integrated building management systems and important services integration such as fire detection.

- d. The integrators shall propose and supply enterprise class networking switches only

a) **WALL /FLOOR MOUNTED NETWORK RACK :**

Construction shall be single section welded robust with ventilation holes on the sides and top

& bottom covers with provision to mount 2 fans

- b) Top/ Bottom covers and side panels shall be of sheet steel, powder coated Vertical 19” metric panel mounts and door trims shall be of sheet steel and powder coated
- c) The top and bottom covers shall be provided with four cut outs on top and bottom cover for cable entry and round cuts shall be edge protected with rubber grommets
- d) Two pairs of 19” equipment mounting angles with mounting holes conforming to IEC 297-3
- e) Toughened glass front lockable door
- f) Wall mounted Networking rack shall be available in various heights
- g) Cooling shall be achieved with the help of two fans, 90 CFM capacity each, mounted on top
- h) Power shall be provided in form 19” rack mountable power strip which shall consist of minimum four 5/15A power sockets.
- i) Cantilever shelf – at least one front mounting 1U cantilever shelf shall be provided with depth of 250 mm or more
- j) 1U vertical cable managers on a/r (as required basis) for dressing of cables for 24 ports patch panel, 24 ports switch Hardware Pack / Rack mounting accessories and hardware – as required Horizontal managers on A/R basis for ensuring neat and aesthetically clean installation

2. PUBLIC ADDRESS SYSTEM

The Public Addressing system shall be as per the IEC 60268-7 (Audio equipment - Part 7: Public address systems), IS 10201 (Audio equipment - General requirements and methods of test), and specific guidelines regarding power supply, noise levels, intelligibility, and safety features depending on the project's requirements and location, with consideration for local regulations and building codes

The scope of work under this shall include designing supplying and installing of Public Address System. The work under this system shall consist of furnishing all materials, equipment's and appliances and labour necessary to install the said system, complete with Speakers, Amplifiers, Mike and Zone Selection Panel.

System Design

The Speakers shall be distributed in the entire floor and shall be configured into multiple zones. The announcement can be made zone wise or to all the speakers simultaneously in ALL CALL mode. Fire Alarm shall be announced immediately on receipt of Fire signal from the panel to all zones.

The PA System shall serve to,

- a) Play the music
- b) Making general announcement
- c) Make announcement in car park
- d) Transmit fire tone under fire condition

Amplifier

Amplifier shall be USB/BLUETOOTH player and AM/FM Tuner with World space receiver, with remote control and suitable to for 220-240V AC supply operations.

Speakers

Speakers shall be especially designed for broadcasting high quality, integrated emergency fire alarm signals and voice communications and approved by an appropriate authority for use in such situations.

Speakers shall be ceiling or Column mounted as shown in the schedule of work and shall be completed with mounting brackets accessories etc. Speakers shall be in wooden or metal enclosures.

P A System Wiring

High-quality twisted pair cable designed for connecting speakers and amplifiers in commercial I A/V systems. The speakers in each zone are connected in parallel and are connected to the respective output. The cables from each zone are separately routed and terminated in the Panel.

Testing and commissioning

Entire PA system shall be tested to establish the following.

- a) Functionality of the PA system
- b) Combined systems shall be tested for the overriding feature for prioritizing fire alarm and life safety requirements.
- c) Acceptable audibility of the public address in all spaces and record sound pressure levels of the Public address viz the ambient noise levels.

DOCUMENTATION:

The contractor, upon completion of the commissioning activity, shall hand over the system to the customer. At the time of hand over, the contractor shall provide the customer with the following documentation:

- a) Copy of detailed report
- b) Component and equipment list
- c) Product description sheets
- d) System design drawing(s)
- e) System schematic diagram(s)
- f) System operating manuals

3. CCTV SYSTEM

CCTV cameras and recorders must be registered and manufactured according to IS 13252 (Part 1):2010 under the BIS Compulsory Registration Scheme from the Bureau of Indian Standards (BIS)

The camera shall meet the following networking standards:

- IEEE 802.3af (Power over Ethernet)
- IPv64
- IPv67
- QoS – DiffServ (RFC 2475)

Work includes providing all material, equipment, accessories, hardware, software, licenses, services and tests necessary to complete and make ready for operation by the NETWORK/IP based CCTV System in accordance with the design & specifications given in Technical Specifications of the Security Surveillance System.

System should be programmed such that operator's intervention if required shall be minimal and the system should provide features like guard tours, preset positions and the preset positions will be linked to perimeter protection system/intrusion system in future. The NVR/DVR should allow for recording of events both continuous and motion triggered as per requirement and recordings should be able to create evidences and support post event analysis.

GENERAL REQUIREMENTS

- The camera shall be of manufacturer's official product line, designed for commercial/industrial 24/7/365 use.
- The camera shall be based upon standard components and proven technology using open and published protocols.

QUALITY ASSURANCE

- All camera installation, configuration, setup, program and related work shall be performed by electronic technicians thoroughly trained by the manufacturer in the installation and service of the equipment provided.
- All equipment provided shall be backed by a minimum of one-year manufacturer warranty.
- The specified unit shall be manufactured in accordance with ISO 9001 / EN 29001.

CCTV wiring standards

Using RG59 or RG6 cables for video transmission, ethernet cables for IP-based systems, and coaxial cables for analog video transmission. Optical fiber cables are also used for high-speed CCTV.

RG59 and RG6 cables

- RG59 is the industry standard for transmitting video signals.
- RG6 is a thicker gauge cable that can also be used for surveillance cameras.
- These cables are shielded from most video interference.

Ethernet cables

- Ethernet cables (Cat5e, Cat6) are used for IP-based systems.
- They connect IP cameras to the internet and power the cameras.

Coaxial cables

- Coaxial cables are used for analog video transmission.

Optical fiber cables

- These cables use pure glass to transmit data via light.
- They are the fastest option of all the cables mentioned.
- They are expensive, delicate, and require more technical know-how than other cables.

CCTV wiring

A standard practice is to use PVC conduit with a minimum diameter of 20mm ($\frac{3}{4}$ inch), depending on the number of cables being run, with larger diameters needed for multiple cables or long runs; always consult local building codes for specific requirements in your area.

- **Cable type:** The type of CCTV cable (e.g., coaxial, UTP, or fiber optic) will influence the conduit size needed.
- **Number of cables:** More cables require a larger conduit diameter.
- **Environmental factors:** Outdoor installations may require heavier duty conduit with additional protection against weather elements.

Common conduit sizes for CCTV:

- **Small installations:** 20mm ($\frac{3}{4}$ inch) conduit for a few cables.
- **Medium installations:** 25mm (1 inch) conduit for moderate cable runs.
- **Large installations:** 32mm (1 $\frac{1}{4}$ inch) conduit for multiple cable runs or long distances.

4. ACCESS CONTROL

Proposed system should consist of Biometric Finger/Face scan for staff access entry to have extreme security. Offered Reader should be high quality, technologically advanced and high pixel face detection camera. Single door Electromagnetic Locks Capacity of Holding Pressure

300 /600 Lbs should be installed at the entry door for staff entry. Entire system should have Access Server PC along with required Hardware & SQL Database Software.

A. Common Features:

1. Software to generate time and attendance report
2. Door Controls:
 - a. Door open and close alarm activation
 - b. Door lock capabilities with locks
 - c. Door Switch
 - d. Switch or keypad (internal)
3. Status control and anti-pass back
4. Flexible (minimum 32) sets of time zone to provide user to set up each time zone with different time districts
5. Self-hardware testing function when equipments are activated
6. Internal battery included during power shortage
7. Battery operation possible when AC power is interrupted
8. Data logging facility for minimum 5,000 Access transaction
9. Capable of communicating with multiple readers to provide online information
10. Add more readers without changing software
11. Communication, information Inquiry / Setting through RS-232/422/485 and Ethernet
12. Remote Web Management Interface or functionality to be accessed from any workstation.
13. Grant or deny access to single or group of employees to a single or all entrances.
14. Back-end Database (industry Standard)

CABLING FOR ACCESS CONTROL

0.5 Sq mm X 8 Core Shielded Flexible FRLS Cable

- Size : 1.5 Sq mm
- Core : 8 Core
- Conductor Type : Flexible Copper
- Insulation : PVC
- Sheathing : FRLS
- Shielding : Foil
- Voltage Grade : 300/500 V

The vendor will be responsible for all the related accessories, software, locks, cables, minor civil work (if required), documentations, configuration and commissioning of the devices at the existing network (Ethernet CAT-5). The cost of items should be inclusive of these services and items.

PANIC / EMERGENCY EXIT SWITCH:

Specification

- Weight : 0.18 kg
- Dimensions (HxWxD) : 93x89x59.5mm
- Operating Temperature : -10 °C to +55 °C
- IP Rating : IP24D

5. FIRE DETECTION SYSTEM

This section of the specification includes the furnishing, installation, connection and testing of the conventional and microprocessor controlled, intelligent reporting fire alarm equipment required to form a complete, operative, coordinated system. It shall include, but not be limited to, alarm initiating devices, alarm notification appliances, Fire Alarm Control Panel (FACP), auxiliary control devices, annunciators, and wiring as shown on the drawings and specified herein.

The fire alarm system shall comply with requirements of NFPA Standard 72/EN54 LPCB for Protected Premises Signaling Systems except as modified and supplemented by this specification. The system shall be electrically supervised and monitor the integrity of all conductors.

The system and its components shall be Underwriters Laboratories or Loss Prevention Certification Board Inc. listed under the appropriate UL/ EN54 testing standard as listed herein for fire alarm applications and the installation shall be in compliance with the UL/EN54 listing

EQUIPMENT AND MATERIAL

General:

All equipment and components shall be new, and the manufacturer's current model. The materials, appliances, equipment and devices shall be tested and listed by a nationally recognized approvals agency for use as part of a protective signaling system, meeting the National Fire Alarm Code.

All equipment and components shall be installed in strict compliance with manufacturers' recommendations. Consult the manufacturer's installation manuals for all wiring diagrams, schematics, physical equipment sizes, etc., before beginning system installation.

All equipment shall be attached to walls and ceiling/floor assemblies and shall be held firmly in place (e.g., detectors shall not be supported solely by suspended ceilings). Fasteners and supports shall be adequate to support the required load.

Where required, all wiring shall be installed in conduit or raceway. Conduit fill shall not exceed 40 percent of interior cross sectional area where three or more cables are contained within a single conduit.

Cable must be separated from any open conductors of power, or Class 1 circuits, and shall not be placed in any conduit, junction box or raceway containing these conductors, per NEC Article 760-29.

Wiring for 24 volt DC control, alarm notification, emergency communication and similar power-limited auxiliary functions may be run in the same conduit as initiating and signaling line circuits. All circuits shall be provided with transient suppression devices and the system shall be designed to permit simultaneous operation of all circuits without interference or loss of signals.

Conduit shall not enter the fire alarm control panel, or any other remotely mounted control panel equipment or back boxes, except where conduit entry is specified by the FACP manufacturer.

Conduit shall be 25mm minimum.

Wire:

All wires shall be of FRLS PVC insulated copper conductor as per BOQ

Intelligent thermal or Heat Detectors

Thermal detectors shall be intelligent addressable devices rated at 135 degrees Fahrenheit (58 degrees Celsius) and have a rate-of-rise element rated at 15 degrees F (9.4 degrees C) per minute.

It shall connect via two wires to the fire alarm control panel signalling line circuit.

The detector shall be capable to configure and to be addressed manually as well as from software or remote locations also.

Beam Smoke Detectors

Sensing Range: 5 to 50 meters □ Adjustment Angle: $\pm 10^\circ$ horizontal and vertical.

Typical sensitivity levels: Level 1 — 25%. Level 2 — 30%. Level 3 — 40%. Level 4 — 50%.]

Fault Condition (trouble): 96% or more obscuration blockage. In alignment mode. Improper initial alignment. Self-compensation limit reached.

Alignment Aid using optical gun sight or integral signal strength indication or Two-digit display.

Addressable manual call box

Addressable manual fire alarm boxes shall on command from the control panel, send data to the panel representing the state of the manual switch and the addressable communication module status. They shall use a key operated test-reset lock, and shall be designed so that after actual emergency operation, they cannot be restored to normal use except by the use of a key.

All operated stations shall have a positive, visual indication of operation and utilize a key type reset. All entrances and stair levels shall be equipped with a pull type manual call point to activate an alarm. Manual call points shall be located in a manner so as to give an easy access to occupants in emergency; these shall be at entry/exits and within 30 meters distance.

Sounder and strobe:

Shall follow NFPA 72 2013.

1. Electronic sounders shall operate on 24 VDC nominal.
2. Electronic sounders shall be field programmable without the use of special tools, at a sound level of at least 90 dBA measured at 3 meters from the device.

Addressable Control Module (Whether Applicable Separately)

Addressable control modules shall be provided to supervise and control the operation of one conventional NACs of compatible, 24 VDC powered polarized audio/visual notification appliances.

- a) Audio/visual power shall be provided by a separate supervised power circuit from the main fire alarm control panel or from a supervised remote power supply from the same OEM

- b) . The control module shall be suitable for pilot duty applications and rated for a minimum of 2.0 amps at 24 VDC.

Isolator Module (whether Applicable Separately)

Isolator modules shall be provided to automatically isolate wire-to-wire short circuits on an SLC Class A or branch. The isolator module shall limit the number of modules or detectors that may be rendered inoperative by a short circuit fault on the SLC loop segment or branch. Each loop shall have isolator module after every 20 detectors to protected zone of the building.

- a) If a wire-to-wire short occurs, the isolator module shall automatically open-circuit (disconnect) the SLC. When the short circuit condition is corrected, the isolator module shall automatically reconnect the isolated section.
- b) The isolator module shall not require address-setting, and its operations shall be totally automatic. It shall not be necessary to replace or reset an isolator module after its normal operation.
- c) The isolator module shall provide a single LED that shall flash to indicate that the isolator is operational and shall illuminate steadily to indicate that a short circuit condition has been detected and isolated.

TEST

The service of a competent, factory-trained engineer or technician authorized by the manufacturer of the fire alarm equipment shall be provided to technically supervise and participate during all of the adjustments and tests for the system. All testing shall be in accordance with NFPA 72

Before energizing the cables and wires, check for correct connections and test for short circuits, ground faults, continuity, and insulation. Open initiating device circuits and verify that the trouble signal actuates.

Open and short signalling line circuits and verify that the trouble signal actuates. Open and short notification appliance circuits and verify that trouble signal actuates. Ground all circuits and verify response of trouble signals.

Check presence and audibility of tone at all alarm notification devices.

Check installation, supervision, and operation of all intelligent smoke detectors using the walk test.

Each of the alarm conditions that the system is required to detect should be introduced on the system. Verify the proper receipt and the proper processing of the signal at the FACP and the correct activation of the control points.

When the system is equipped with optional features, the manufacturer's manual shall be consulted to determine the proper testing procedures. This is intended to address such items as verifying

controls performed by individually addressed or grouped devices, sensitivity monitoring, verification functionality and similar

FINAL INSPECTION

At the final inspection, a factory-trained representative of the manufacturer of the major equipment shall demonstrate that the system functions properly in every respect

C. FIRE FIGHTING SYSTEM

GENERAL

The scope of work includes the design, engineering, supply, installation, testing, and commissioning of a complete fire-fighting system for the buildings. The system specified in the BOQ must adhere to the tender specifications outlined below. All materials used will comply with the relevant IS specifications, where applicable, and are subject to the approval of the Engineer-in-Charge. The fire-fighting system will be designed and executed in strict accordance with the prevailing norms of NBC-2016, CPWD General Specifications for Electrical Works, Part-V, Wet Riser & Sprinkler System: 2020, and relevant Indian Standards such as IS:13039:2014 (External Hydrant Systems), IS:15105 (Fixed Automatic Sprinkler Fire Extinguishing System), as well as local bye-laws and requirements from the relevant fire inspection authorities. The work will cover the complete process from design and supply to installation, testing, commissioning, and obtaining necessary statutory approvals from fire inspection authorities, including securing the No Objection Certificate (NOC) for the occupation of the buildings.

1.1 WET RISER AND DOWNCOMER

The firefighting system's pipeline design must ensure that the pressure at both the hydraulically remote hydrant and the highest hydrant does not fall below 3.5 kgf/cm² and does not exceed 7 kgf/cm². The pipeline should be engineered to allow discharge at any given location. The design parameters include a maximum flow velocity of 2.5 m/s and a maximum friction loss of 5 meters per 100 meters of pipeline run. The number of risers should be determined based on the following criteria: no corner of the building should be more than 30 meters from the nearest riser, the horizontal distance between two risers should not exceed 50 meters, and one riser must be provided for every 1000 sqm of plinth area or part thereof. These specifications are essential for ensuring adequate water flow and pressure for firefighting operations across the building

However, number of Risers may be suitably increased to meet given situation as per directions of Engineer-In-Charge. The quantity of Sprinkler & Hydrant, Wet Risers etc. and all other allied equipment shall be provided as per norms of NBC-2016 latest as amended.

All down comer pipes shall be inter connected at the terrace level. In case terraces are not interconnected, all building will be treated as individual buildings. Fire service inlet shall be provided with each Riser/down comer for facilitating pumping of water from fire service tenders.

1.2. INTERNAL HYDRANTS

Internal hydrants shall be installed on each floor at the same location and connected to risers. The firefighting hydrants will be placed in the lobby within the firefighting shaft. Hydrants near the fire exit staircase on each floor must be located within 5 meters from the exit door along the exit

access. The number and placement of risers will be determined according to the norms specified in the preceding sections. Each building wing should preferably have independent hydrants.

The landing valve will feature an oblique pattern and will include a GI twist release chain and cap. The manufacturer's name, trademark, year of manufacture, size, and type must be clearly marked. Valves will be coated with a primer followed by two coats of red paint (Shade No. 536, as per IS-5), with paint conforming to IS 2932. The hand wheel will be painted black, and the valve will be BIS-approved. Blank caps will be made of gunmetal. A hydrostatic pressure test will be conducted at 21 kg/cm² for 2.5 minutes, and a flow test will be performed at 7 kg/cm² at 900 LPM. The water-tightness seat test will be conducted at 14 kg/cm². In case of any discrepancies between the manufacturer's standards and the specified values, the parameters must comply with the relevant IS codes.

The RRL hose pipe will be of the non-percolating type, ISI marked (IS:8423), with a 63 mm diameter and 15-meter length (2 Nos.), complete with instantaneous type gunmetal 63 mm dia ISI marked Male & Female couplings (IS:903), securely bound and riveted with copper rivets and 1.5 mm copper wire, and a bursting pressure not less than 22 kg/cm². The external hydrant post will include a standard short size 63 mm dia gunmetal branch pipe with a gunmetal nozzle of 20 mm nominal bore outlet, featuring an instantaneous type 63 mm dia coupling, in compliance with IS:903. The internal hydrant will be equipped with a fireman's axe with a heavy rubber handle. A swing-type first aid hose reel in red color will be provided with a 30-meter-long, 20 mm dia heavy-duty rubber water hose, a 20 mm dia globe valve stopcock, terminating with a GM coupling and nozzle with a 5 mm outlet and shut-off valve, conforming to IS:8090-1976. It will come complete with a drum and wall-mounted brackets, bolts, and nuts conforming to IS:884-1969.

A mild steel door made of 16 gauge MS sheet, capable of accommodating the fire hose reel, landing valve, hose pipes, fittings, 1 CO₂ fire extinguisher, and 1 dry powder fire extinguisher, along with accessories, shall be provided. The door will feature a 1250 mm high front glass with a lock and key arrangement and will be painted with one coat of primer and two coats of finished stove enamelled post office red color paint.

The internal hydrant will be clearly marked on the front with the inscription "FIRE HOSE CABINET" in letters of 75 mm height and 12 mm width, with a luminous sign. The location of these cabinets will be shown on the floor plan and displayed on the landing of the respective exit fire staircase. Internal hydrants must be easily accessible, with a minimum clearance of 1.5 meters in front for operation. They shall not be placed in a lockable room.

A masonry enclosure will be provided on three sides, with minimum dimensions of 1200 mm wide, 800 mm deep, and 2100 mm high. A 200 mm x 200 mm cutout will be provided in one corner of the slab for the wet riser/down comer pipe, and an additional cutout of the same size will be made for the sprinkler pipe and drain pipe.

1.3 BUILDING TO BE SPRINKLER PROTECTED

The sprinkler pipes shall be installed throughout the area to be protected. The structure shall be designed to support sprinkler pipes and the contained water. Inbuilt drainage with slope shall be provided throughout the area so that in the event of operation of sprinkler, water is drained out without spreading to other parts of the building. Storage racks/platforms shall be sufficiently raised above floor. It is essential to make provisions for avoiding water from Sprinkler/hydrant operation entering lifts and electrical rooms.

1.4 FIRE BRIGADE INLET CONNECTIONS/ DRAW OFF CONNECTION

One set of 2/4 ways collector head Fire Brigade connection shall be provided at underground tank, Ring Main, Sprinkler system and individual wet risers as specified conforming to IS 904.

The inlet to the wet riser sprinkler header shall be with 150 mm dia butterfly or sluice valve and non-return valve. The scope shall include necessary reducers, tees bends and special fittings as required. Construction of Health Facilities under ECRP-II (PKG-I) Vol-5 Tech Specifications It should be provided with M.S. enclosure fabricated from 1.5 mm thick M.S. sheet, front glass locking arrangement supported on M.S. structural members, painting with two coats of postal red enamel.

Fire brigade inlet connection (fire department connection) consisting of 4 Nos. 63 mm dia instantaneous inlet arranged on a 50 mm dia header, 1 No. 150 mm diameter sluice valve, with in built Non-return valve and wall mounted box of M.S. construction made out of 16 gauge MS Sheet with glass door to house the above mentioned components.

Fire brigade draw out connection (fire department connection) with suction pipe MS class 'C' 100 mm dia. & 100 mm dia. foot valve & steel chain including wall mounted box M.S. construction made out of 16 gauge MS Sheet with glass door to house the above mentioned components.

Inlet breeching having C.I. body Two-way gun metal 63 mm dia instantaneous inlets conforming to IS 903 fitted with non-return valves, 25 mm dia gun metal drain cock, blank cap, brass chains and 150 mm dia flanges with all accessories suitable for local fire tender complete as required.

2. PORTABLE FIRE EXTINGUISHERS:

2.1) **ABC Powder stored pressure type Fire Extinguishers** of 4 kg capacity IS:15683 & CO2 gas based Fire Extinguisher of 4.5 Kg capacity with IS :15683, IS 2878 is proposed for all floors near internal hydrant locations.

2.2). **4.5 kg Carbon Dioxide Extinguisher**, IS marked shall be complete with high pressure discharge tube, horn, control valve & CCE approved cylinder. It shall be suitable for extinguishing Class B & C fires. It shall be provided with Wheel type /Squeeze grip type with discharge hose & horn. It shall be suitable for operation within the temperature range of -20°C to 55°C. The test pressure shall be 250 Bar. The minimum effective discharge shall be 95 percent.

2.3). The ISI marked extinguishers and their installations shall be in accordance with acceptable standards of NBC 2016. These units shall be mounted at a convenient height & locations to enable quick access at all times. All requirement of fire extinguishers shall be fulfilled as per as per NBC 2016, Part-4, Table -7, other statutory norms and directions of Engineer-In-Charge.

3. FIRE SIGNAGES:

Various types of signage will be provided throughout the building/complex in compliance with NBC-2016, Part-4. On each floor, near the lift landing, a diagram indicating stairways shall be displayed with the instruction: "IN CASE OF FIRE USE STAIRS UNLESS INSTRUCTED OTHERWISE." This signage will be positioned above the call button in the lift lobby. Additionally, floor signage indicating the exit path will be placed on each floor within the staircase. The numerical text on these signs will be in bold type, with a minimum height of 75 mm. Directional signage indicating the fire escape route will be placed in each corridor on every floor.

All fire-related signage will be LED-lit with UPS power backup or made using photo luminescent paint to ensure visibility in the event of a power failure. These signs will be printed on Photo luminescent U1000 aluminium sheets (1.0 mm $\pm$ 10%) or acrylic boards containing Lumigen II as the base chemical, covered with a UV-stabilized coating. The signs will be of the appropriate size and will be securely fixed to walls, doors, or ceilings using proper clamps, hangers, cleats, anchor fasteners, etc. Text will be either double-sided or single-sided, depending on the requirements. Samples of all fire signage must be submitted for prior approval by the Engineer-In-Charge.

The signage will be lightweight yet highly powerful, capable of penetrating even the finest grills and meshes. It will feature an easy snap safety seal that can be broken in seconds. Each fire extinguisher will be equipped with a pressure gauge, discharge mechanism with an easy snap lever lock, and an EPDM rubber hose. It will be capable of fighting Class A, B, and electrically started fires. The extinguisher will have ISO 9001 and CE certifications, and preferably UL listing and FM approval, conforming to ISI standards. It should come with a warranty of at least 5 years. The extinguisher will preferably have a minimum capacity of 4 kg, a discharge time of approximately 8 seconds, and a range of around 2 meters.

4. PIPE WORK

4.1 SCOPE

This chapter covers the requirements of pipe work in firefighting installations.

4.2 PLUMBING DESIGN

Pipe sizes shown in tender documents are purely for contractor's guidance. The contractor shall be responsible for selection of sizes as per detailed engineering to be done by him. Plumbing design to be done by the contractor shall incorporate the following: -

- (a) Sluice valves shall be provided at suction and delivery sides of pumps.
- (b) External hydrant
- (c) Fire service connection/inlet.
- (d) Test valve.
- (e) Drain connections.
- (ii) For testing the system healthiness and automatic operation on daily basis, one test pipe with sluice valve shall be provided in common discharge header. For avoiding wastage of water, this pipe shall discharge water in the tank.
- (iii) Non-return valve shall be provided at the delivery of each pump and fire service inlet. This shall be of swing type.
- (iv) Air release valves with ball valve shall be provided in the piping system for venting trapped air with a size of 25 mm for pipes up to 100 mm and 40 mm for larger pipes.
- (v) Plumbing drawings showing the sizes of pipe, valves, layout and other details shall be prepared and shall be got approved from the Engineer-in-Charge before the execution of the plumbing work.

4.3 PIPE MATERIALS

Pipes shall be of the following materials:

- (a) Mild steel heavy class (C-class) conforming to IS:1239 for sizes up to 150 mm.
- (b) Welded black steel pipe, Class 2, conforming to IS: 3589, for sizes greater than 150 mm. These pipes shall be factory rolled and fabricated from minimum 6mm thick M.S. Sheet for pipes upto 350 mm diameter and from minimum 7 mm thick M.S. sheet for pipes of 400 mm diameter and above.

MS pipes may be allowed for extension of existing systems which are laid with CI pipes.

(c) Cast iron double flanged pipe, Class-A conforming to IS 1536 or IS: 1537 (to be provided only in underground application).

Note: For pipe work of Automatic Sprinkler System inside the building, Stainless Steel Pipes and fittings of grade AISI 304 as per JIS standard 3448 are also permitted particularly where replacement of pipes is not easy like areas above false ceiling etc., subject to the condition that these pipes with associated fittings are suitable to safely withstand the system test pressures.

(d) (i) GI Pipe Medium Class (B-class) conforming to IS:1239 (For Drain)

(ii) Cadmium plated steel nuts/bolts/washers shall be used.

(iii) Flex drop of stainless steel metallic pipe with mounting accessories, frame for installation on false ceiling.

4.4 PIPE JOINTS

i) Electric welding joints shall be provided in the MS pipe work. Flanged joints shall be provided for connections to valves, pumps, air vessels etc. and also on straight lengths at suitable points to facilitate erection and subsequent maintenance.

ii) For connection of C.I. Pipe, fittings shall also be of C. I. heavy grade conforming to IS:1538. The flanges shall be smooth faced and neoprene gasket shall be provided between joints. All bolt holes in flanges shall be drilled. The drilling of each flange shall be in accordance with the relevant Indian Standards. Where un-avoidable and to connect underground pipe with risers, MS pipe may be used in the form of distant pieces. The joint between C.I. and MS pipe shall be flanged type. MS pipe laid at such locations shall be provided anti-corrosive treatment as per Para 7.5.

iii) Mild steel flanges shall be in accordance with Table - 17 of IS : 6392 i.e. "Plate Flanges for Welding" and flange thickness shall be as under. Gasket thickness shall not be less than 3 mm.

Pipe diameter	Flange Thickness
200 mm	24 mm
150 mm and 125 mm	22 mm
100 mm and 80 mm	20 mm
65 mm	18 mm
40 mm and below	16 mm

iv) Fittings installed underground shall be of cast iron 'heavy' grade conforming to IS 1538 whereas those installed above ground shall normally be of medium grade wrought steel or mild steel conforming to IS 1239 (Part 2) or malleable iron fittings conforming to IS 1879.

v) All hardware items such as Nuts, Bolts, Washers shall be of appropriate size. Washers shall be used on both sides of the bolt.

4.5 ANTI-CORROSIVE PROTECTION ON UNDER GROUND MS PIPE

Corrosion protection tape shall be wrapped on MS pipes to be buried in ground. This corrosion protection tape shall comprise of coal tar/asphalt component supported on fabric of organic or inorganic fibre and minimum 4 mm thick and conform to requirement of IS:10221-Code of practice for coating and wrapping of underground mild steel pipe line. Before application of corrosion protection tape all foreign matter on pipe shall be removed with the help of wire brush and suitable primer shall be applied over the pipe thereafter. The primer shall be allowed to dry until the solvent evaporates and the surface becomes tacky. Both primer and tape shall be furnished by the same manufacturer. Corrosion protection tape shall then be wound around the pipe in spiral fashion and bounded completely to the pipe. There shall be no air pocket or bubble beneath the

tape. The overlaps shall be 15 mm and 250 mm shall be left uncoated on either end of pipe to permit installation and welding. This area shall be coated insitu after the pipe line is installed. The tapes shall be wrapped in accordance with the manufacturer's recommendations. If application is done in cold weather, the surface of the pipe shall be pre- heated until it is warm to touch and traces of moisture are removed and then primer shall be applied and allowed to dry.

Holiday Testing for wrapping and coating is essential. Holiday testing may preferably be carried by flexible and detachable ring probe, which will enable the entire 360o of the surface of the pipe to be scanned.

At least 10 percent of all the welded joints shall be radio graphically tested and half of the joints radio graphed shall be the 'field joints'.

4.6 VALVES

Each pump shall be provided with a non-return valve and a sluice valve on the delivery side, the sluice valve being installed on the upstream side of the non- return valve. A pressure gauge shall also be provided between the pump and the non-return valve. The size of the non-return valve and cut off (sluice) valve shall not be less than the size of the initial delivery pipe and, in no case, less than the delivery outlet of the pump. No butterfly valves shall be installed inside the pump room. Sluice valve shall conform to IS: 780.

Butterfly valve, wherever used, shall conform to IS:13095.

All valves shall be suitable to with-stand the pressure in the system and rating shall be PN 1.6. All valves shall be right handed (i.e. handle or key shall be rotated clock wise to close the valve), the direction of opening and closing shall be marked and an open/shunt indicator fitted.

(i) The material of valves shall be as under:

Body - Cast iron

Disc - Cast Bronze or Stainless Steel

Seat - Either integral or Nitrile rubber

O-ring - Nitrite/ Silicon

(ii) Non return valves shall be swing check type in horizontal run and lift check type in vertical run of pipes.

(iii) Air release valves shall be of gunmetal body.

4.7 ISOLATION VALVES:

(i) Isolation valves shall be provided in the network to enable isolation of any section of the network without affecting the flow in the rest. These valves are distributed according to the general layout of the installation. The isolation valves shall be normally located near the loop junctions. Additional valves shall be provided in the segments where the length of the segment exceeds 300 m.

(ii) Cut-off valves shall conform to IS 780 (PN 1.6 rating)/IS 14846, Class 3.

(iii) Butterfly valves can be accepted subject to the condition that the valves of diameter exceeding 150 mm shall necessary be of gear operated.

(iv) All Cut-off valves shall be of the right-hand type and enclosed in properly constructed surface boxes, at least 1 m² in area so as to allow for broken joints being easily remade. The top of the surface box shall be 80 mm above ground level, except where it is located on a road. Valve wheels shall have an arrowhead engraved or cast thereon showing direction for turning open and close.

It is recommended that the position of the surface box be indicated by an iron plate painted fire red with distinct lettering. Such plates shall also show the open and close direction as cast or indicated on the valves and the serial number of the sluice valve.

(v) Locations where vehicles can pass shall be avoided for provision of valve below ground. (CPWD Specs Para 7.10 (xii))

(vi) In case of installations in earthquake prone zones, flexible couplings shall be used for jointing purposes at required locations.

4.8 Valves in fixed firefighting installations shall have supervisory switch with its signaling to fire alarm panel or to have chain(s), pad lock(s), label and temper-proof security tag(s) with serial number to prevent tempering/unauthorized operation. These valves shall be kept in their intended 'open' position.

4.9 STRAINERS

Stainless steel strainers shall have minimum 1 mm thick screen with 3 mm perforations. Strainers shall be provided with flanges.

4.10 ORIFICE PLATE

Orifice plate shall be made of 6 mm thick stainless steel and shall have an identification tag projecting beyond any flange between which it is clamped. The orifice shall be plain central hole without burs and diameter not less than one-half of the internal diameter of the pipe to which it is fitted.

4.11 INSTRUMENTS

(i) Pressure gauge of appropriate range and 150 mm diameter size shall be provided.

(ii) The pressure gauge shall be duly calibrated before installation and shall be complete with shut off valve.

4.12 AIR VESSEL

Air vessel shall be provided on top of each riser and shall be fabricated out of 8 mm thick M.S. Sheet. The ends shall be dished. This shall be of 250 mm diameter, 1.2 m high and installed vertically on suitable legs. The legs shall be provided with M.S. Plate of size 75 mm x 75 mm x 5 mm at the bottom so that the legs do not puncture the roof. The legs shall be grouted in CC foundation. Flange connection shall be provided for connection with wet riser pipe. Air release valve and pressure gauge with shut off valve shall be provided. The air vessel shall be tested at 25 kgf/cm² pressure before installation.

4.13 INSTALLATION

(i) The installation work shall be carried out in accordance with the detailed drawings prepared by the contractor and approved by the Engineer-in-charge.

(ii) In pipe above ground level, expansion loops or joints shall be provided to take care of expansion or contraction of pipes due to temperature changes.

(iii) Tee-off connections shall be through equal or reducing tees, otherwise ferrules welded to the main pipe shall be used. Drilling and tapping of the walls of the main pipe shall not be resorted to.

(iv) Open ends of piping shall be blocked as soon as the pipe is installed to avoid entrance of foreign matter.

(v) Piping installation shall be supported on or suspended from structure adequately. The contractor shall provide, clamps, hangers etc.

Proper lines and levels shall be maintained while installing exposed pipes.

(vi) Pipe supports in pump house shall be floor mounted and of mild steel/ G. I. Spacing of pipe supports shall not be more than that specified below:

Nominal Pipe Size (mm)	Spacing (m)
20 and 25	2.00
0	

32 to 125

2.50

150 and above

3.00

Extra supports shall be provided at the bends and at heavy fittings like valves to avoid undue stress on the pipes.

(vii) Anti-vibration pads, springs or liners of resilient and non-deteriorating material shall be provided at each support, so as to prevent transmission of vibration through the supports.

(viii) Pipe sleeves of diameter larger than the pipe by least 50 mm shall be provided wherever pipes pass through walls and the annular spaces shall be filled with felt and finished with retaining rings.

(ix) (a) Vertical risers shall be parallel to walls and column lines and shall be straight and in plumb. Risers passing from floor to floor shall be supported at each floor by clamps.

5. AUTOMATIC SPRINKLER SYSTEM

This section covers the general requirement of selection, design, installation, testing, commissioning and maintenance of automatic sprinkler system for firefighting in buildings used for other than industrial, storage purpose, hotels and mercantile buildings.

References: For additional information regarding definitions, planning, design, hydraulic calculations, tables etc. following documents are to be referred to:

- i. IS: 15105: Design and Installation and Maintenance of Fixed Automatic Sprinkler Fire Extinguishing Systems- Code of Practice (First Revision).
- ii. IS: 9972: Specification for Automatic Sprinkler Heads for Fire Protection Service (First Revision).

5.1 INTRODUCTION

Firefighting systems for Wet Risers, Downcomers, and Wet Riser cum Downcomer are designed to be operated manually. Any delay in manual operation due to late detection or response could lead to the rapid spread of fire. In an automatic sprinkler system, sprinkler heads are installed throughout the protected areas at specified locations such as on roofs or ceilings, walls, between racks, and below obstructions. These sprinkler heads are connected to water supply lines that are permanently charged with water at a specified pressure. The sprinklers activate at a predetermined temperature, discharging water over the affected area to provide sufficient coverage for controlling or extinguishing the fire. Only those sprinklers near the fire, which reach the necessary heat level, will activate. The operation of the sprinkler system triggers the flow of water, which in turn initiates the fire alarm. Therefore, sprinklers serve two primary functions: detecting the fire and distributing water to control or extinguish it. Water distribution from the ceiling cools the hot gases forming under the ceiling of the enclosure, helping prevent the fire from spreading to adjacent areas and containing the damage within a limited area.

5.2 CLASSIFICATION OF OCCUPANCIES AND PROVISION OF AUTOMATIC SPRINKLER FIRE SYSTEM

Sprinklers are provided in industrial and non-industrial buildings. The design of sprinkler installation depends upon type of occupancy. For the purpose of designing and installation of automatic sprinkler system, buildings are categorized under the following classes in IS: 15105.

- (a) Light hazard class
- (b) Moderate/Ordinary hazard class
- (c) High hazard class

(d) Storage hazards

For details of classifications, IS:15105 is to be referred. Light Hazard Occupancies shall be understood as those with low fire loads and with materials within having low rates of heat release. Light Hazard Occupancies are of non-industrial type subject to the condition that “No single compartment greater than 210 m² are allowable within light hazard occupancies and such compartments shall be fire separated by walls having 30 min rating and doors. Otherwise the sprinkler system shall be designed as per Ordinary Hazard Occupancy.”

Office buildings (excluding store rooms), education institutions, hospitals (excluding kitchens, stores, utilities), libraries, museums, nursing homes, prisons and residential apartments are classified under light hazard occupancies.

Airport terminal buildings, car parking areas within building or basement, departmental stores/retail shops are classified under ordinary hazard class.

In order to satisfy above conditions, all buildings classified under Light Hazard shall be designed under Ordinary Hazard class. Accordingly, these specifications cover Ordinary Hazard class only.

5.3 PLANNING

Automatic sprinklers shall be installed wherever required in terms of Table 7 of Part-4, Vol-1 of NBC 2016 (amended up to date).

Automatic Sprinklers shall also be installed in false ceiling voids exceeding 800 mm in height. Ramps at all levels shall also be protected with sprinklers. Pressure in the sprinkler installation piping shall not exceed 7 bar and pressure at the most remote sprinkler at any level shall not be less than 0.5 bar and also not more than 5 bar.

5.3.1. Extent of Sprinkler Protection: Sprinklers shall be provided, but for following exceptions:

a. Areas, rooms or places where the water discharged from a sprinkler may pose a fire or explosion or toxic hazard. In such areas alternative arrangement shall be made.

b. Stairs, spaces below stair headings (but not rooms above a stair) and lift wells. Any part of the building not provided with sprinkler protection shall be fire separated by walls. Fire doors not less than 1 hour in fire resistance shall be provided in the opening of such walls.

Construction of Health Facilities under ECRP-II (PKG-I) Vol-5 Tech Specifications

c. Wash rooms, toilets and WCs (but not cloak rooms) of area less than 5 m². If area of these rooms exceed 5 m², these shall be provided with sprinkler protection unless fire separated by walls and all openings in the walls are protected.

d. Sprinklers shall not be required in electrical equipment rooms where all of the following conditions are met:

i. The room is dedicated to electrical equipment only.

ii. Only dry-type electrical equipment is used.

iii. Equipment is installed in a 120 minutes' fire-rated enclosure including protection for penetration in walls.

iv. Cable coating is done in trays or trenches to prevent flame spread.

v. Storage is not permitted in the room.

In addition, for firefighting provisions to be provided for Substation/Transformers, Electrical MV main distribution panel and lift panel Clause 3.4.6.3 and 3.4.6.4, Page-22-23 of NBC 2016, Vol-1, Part-4 may be referred to.

e. Rooms like server room or electrical control room where alternate protection by other automatic extinguishing systems, (for example gas, powder and water spray).

f. In areas having height 17 m or above such as in atria, sprinkler installations may be rendered ineffective and hence may be avoided.

5.3.2. The area to be protected by sprinkler is divided in to various zones. For detecting operation of sprinkler in a zone, flow switches are provided which are wired to an annunciation panel installed in the Fire Control Room. In the event of operation of sprinkler(s) in an affected area. The annunciation panel will give audio-visual alarm and indicate the affected zone. This arrangement will be independent of fire alarm system.

5.3.3. Design, Density and Assumed Maximum Area of Operation (AMAO): - This is different for different hazards classified in Para 13.4. For moderate hazard, water discharge shall be at least 5 litre/min/m² over an assumed area of operation covering 360 m².

5.3.4. Sprinkler Spacing, Arrangement, Distribution and Locations: - Sprinkler heads may be installed on ceiling and or side walls. For selection of number of sprinkler and their location in a given area, following factors shall be considered:

i. Maximum Area Coverage per Sprinkler

(a) Ceiling sprinkler: 12 m²

(b) Side Wall sprinkler:

- Combustible ceiling: 7.5 m²
- Non-Combustible ceiling: 9 m²

ii. Maximum Distance between Sprinklers

(a) Ceiling Sprinkler: 3.5 m

(b) Side wall sprinkler

- Combustible ceiling 2.7 m
- Non-combustible ceiling 3 m

iii. Minimum Distance between Sprinklers (for Ceiling as well as Sidewall sprinklers): 1.8m

In case of intermediate ceiling suspended sprinklers, protecting commodities in racks, distance lower than 1.8 m may be considered if necessary. Construction of Health Facilities under ECRP-II (PKG-I) Vol-5 Tech Specifications

iv. Maximum distance of sprinklers from end walls (for ceiling & sidewall sprinklers) shall not exceed half of the allowable distance between sprinklers

Note: For ceiling sprinklers:

(a) Where the external walls are combustible or built with metallic or otherwise or open sided; and in case of open joisted ceilings or where the roof has the rafters exposed, the distance between the boundary and the sprinklers shall not exceed 1.5 m.

(b) Distance shall be measured perpendicular to the wall.

v. Sprinklers shall not be located at a distance less than 100 mm from the wall (for ceiling sprinklers). Sprinklers shall not be located at a distance less than 100 mm from the end wall (for sidewall sprinklers)

vi. While designing sprinklers installation, the recommendation of sprinkler manufacturer shall be considered. Typical layout of side wall sprinklers shall be shown in shop drawings.

5.3.5. **Spacing below Sprinkler Heads:** Clear minimum space of 0.5 m shall be maintained below the deflector of sprinkler head.

6. TESTING

a. Initial Testing

i. During laying of pipes, the same shall be subjected to 10 kgf/cm² hydraulic pressure for a period of 24 hours, in sections.

ii. After completion of the work, all valves/ fittings shall be installed in position and entire system shall be tested for 24 hours at a pressure of 10 kgf/cm². The drop of pressure up to 0.5 kgf/cm² shall be accepted.

b. Final Testing

i. After completion, all operation checks as per norms in relevant Para shall be carried out for automatic operation of the systems. For this purpose, landing valves may be opened at different locations. The exercise shall be repeated couple of times to ensure trouble free operation of the system.

ii. **Flow Test:** The design flow of pumps shall be checked. The pump shall be operated after opening a number of landing valves at different locations. Design pressure is to be maintained in the pump house. Water discharge is to be measured by drop in level in UG tank for a certain period. All pumps shall be tested one by one. The flow rate shall be not less than as specified while maintaining the design pressure in pump house.

7. COMMISSIONING

Before commissioning, the entire firefighting system must be thoroughly flushed to remove any earth or foreign materials that may have entered during installation. This can be done by operating the pump and opening valves at various locations. Once the work is complete, the system shall be commissioned and made ready for use. The need for functioning firefighting installations is crucial, even during the occupancy phase of the building. If only part of the building is occupied, the completed firefighting system must be commissioned by isolating the system serving the under-construction areas. From the moment of commissioning, the firefighting system must be properly maintained and manned. Any defects identified during the warranty period must be promptly addressed by the contractor, ensuring the system is fully operational at all times.

8. TRAINING TO CLIENT'S PERSONNEL

The contractor shall conduct orientation and training sessions on the Fire Fighting System for the client's personnel assigned to this task. Training will cover all aspects of operation, maintenance, and troubleshooting, and will be provided on mutually agreed-upon dates as per the instructions of the Engineer-In-Charge.

D. HVAC SYSTEM

GENERAL:

The tender Bill of Quantities (BOQ) may include any combination of Split AC systems, VRV/VRF Systems including indoor units such as Hi-Wall, Cassette, Ductable units, Air Handling Units (AHUs) etc. The specific HVAC system(s) required for this project will be clearly delineated within the BOQ. Bidders shall base their tender submissions on the system(s) indicated therein. The Contractor is required to follow the detailed specifications outlined in the BOQ, which take precedence and shall be read in conjunction with these general tender specifications. It is the Contractor's responsibility to thoroughly review and understand both this tender specification document and the BOQ in its entirety to ensure accurate and compliant bid preparation and project execution. All systems must comply with relevant Indian standards (IS, BIS, and IEC) and be energy-efficient, reliable, and suitable for the local climate.

1. SPLIT AC SYSTEMS

All Hi-Wall Split AC units shall operate with R-410A refrigerant or an environmentally equivalent alternative. The minimum Indian Seasonal Energy Efficiency Ratio (ISEER) ratings for each unit must correspond to the 3-star or 5-star energy rating specified in the BOQ, in accordance with the most recent standards by the Bureau of Energy Efficiency (BEE). Hi-Wall indoor units shall be equipped with auto-swing functionality and operate with low noise levels. Outdoor units must be weatherproof, corrosion-resistant, and designed for low-noise operation. Cassette-type units shall feature 4-way airflow distribution and a compact design for easy maintenance. Ductable units shall be designed for concealed installation and seamless integration with the building's ductwork system. The power supply requirements are 230V, 50Hz for smaller units and 415V, 50Hz three-phase for larger capacity units.

2. VRV/VRF SYSTEMS

VRV/VRF systems shall be modular and have a scalable capacity range, utilizing R-410A refrigerant. The system must meet the minimum ISEER rating as specified in the BOQ. It should incorporate heat pump functionality appropriate for varying climatic conditions, inverter-driven compressors, and individual zone control. Indoor units should be available in Hi-Wall, Cassette, Ductable, and Ceiling Concealed configurations. Outdoor units must be weatherproof, compact, and designed for low-noise operation. A centralized control system shall enable individual zone temperature adjustment. The system shall operate on a 415V, 50Hz, three-phase power supply.

3. AIR HANDLING UNIT (AHU)

All the AHUs supplied shall be factory-built. The AHU configuration, as detailed in the BOQ, shall be adaptable to either ceiling or floor mounting and shall be either a single-deck or double-deck type, contingent upon the specific requirements of the installation location. The AHUs shall be fully compatible with the intended system type, whether DX, VRF, or CHW. In addition to the specifications detailed herein, all other characteristics including tonnage, CFM, and external static pressure, must comply with the individual AHU requirements as defined in the BOQ. AHUs shall include the following components and features:

- The construction shall consist of double-skinned panels with a minimum thickness of 40 mm, with both inner and outer skins being 0.8 mm thick. The specific material—either pre-coated galvanized stainless steel (GSS) or aluminium sheet—will be as detailed in the Bill of Materials (BOM). The panels shall be filled with factory-injected polyurethane foam (PUF) insulation with a minimum density of 40 kg/m³. Thermal break aluminium extruded profiles shall be provided at all corners and joints to ensure thermal efficiency.
- The AHU shall be equipped with a two- or three-stage filtration system. The MERV rating for each stage, as well as any HEPA filter requirements, shall be as specified in the BOQ.
- Unless otherwise specified the cooling coil shall be a six-row DX cooling coil with aluminium fins and copper tubes for efficient heat transfer.
- A plug fan with a variable frequency drive (VFD) and a suitable IE3 class TEFC drive motor with IP55 protection, designed for 415V $\pm$ 10%, 50 Hz, three-phase AC supply shall be provided. The fan shall be Eurovent/AMCA certified.
- An 18-gauge stainless steel 304 drain pan with 19 mm NBR insulation and necessary drain connections shall be included.

- UV-C emitters with reflectors shall be mounted on the coil surface using removable extruded aluminum frames. The emitters shall be UL certified, capable of producing 254 nm wavelength radiation, and provide a minimum of 7.5 watts/sq. ft. of coil surface area for uniform distribution.
- Slip-in type tubular heaters with a step controller shall be provided inside the AHU. The heaters shall be arranged in two independently operating banks, one controlled by a humidistat and the other by a thermostat. Safety features such as a safety thermostat, air stat/airflow switch, and interlocking with the fan motor shall be included.
- The AHU shall include essential accessories and components, including a mixing box (if required) for blending fresh and return air, aluminium volume control dampers (VCDs) on air inlets and outlets to regulate airflow, and minimum two-bend GSS/PVC eliminators to prevent water carryover. Vibration isolation arrangements shall minimize noise and vibration. Safety and maintenance features include limit switches on access doors and an inspection lamp. AHU shall be equipped with an expansion valve, drier, complete with DX/VRF AHU kit, and a corded remote controller.
- The AHU shall be Eurovent/AHRI certified.
- The scope of supply shall include all necessary supporting GI hangers, MS angles, channels, nuts, bolts, washers, and other installation materials. All incoming power and control cabling, earthing, and interconnections between the AHU, strip heaters, and control panel shall also be included.
- The Contractor shall submit a comprehensive AHU datasheet for approval, detailing the proposed AHUs' specifications and demonstrating compliance with this tender document.

4. AHU CONTROL PANEL

The AHU control panel shall be a CPRI-approved (IEC 61439-1 and 2), factory-fabricated, wall-mounted unit designed to control the AHU and associated components. The panel shall include the following features:

- **Motor Control:** The panel shall incorporate a variable frequency drive (VFD) for fan motor control, along with a bypass DOL/star delta starter and a manual changeover switch for transitioning between VFD and DOL/star delta operations.
- **Control Elements:** The panel shall include contactors, overload relays (OLR), single-phase preventors (SPPR), control switches, and MCBs for AC units. It shall also feature a 24V AC power supply for fire interlock.
- **User Interface:** The panel shall have an auto/manual selection switch, ON/OFF push buttons, and indicator lamps for ON, OFF, and trip status.
- **Heater Control:** The panel shall include contactors and breakers for the heater banks, with necessary power and control wiring to maintain the desired temperature and relative humidity (RH%) as per the design conditions. The fan/blower motor shall be interlocked with the heaters to ensure that the heaters are powered only after the blower has reached full designed speed.
- **Safety and Monitoring:** The panel shall be equipped with a humidistat, thermostat, air stat/airflow switch, and safety thermostat for precise control and safety.

- Wiring and Interconnections: All necessary control and power cabling between the AHU and the panel shall be included in the scope of supply.
- Data Sheets: Contractor shall provide AHU panel drawings & data sheets for prior approval.

5. FANS

All ventilation fans, including inline and cabinet fans, must be AMCA certified for both air and sound performance. The material of construction and the static pressure rating shall conform to the specifications detailed in the BOQ. Installation shall be all-inclusive, incorporating an electronic speed regulator for single-phase fans. Three-phase fans shall utilize VFD-compatible motors and include a VFD starter panel. All related power and control wiring between the power supply and fan speed regulator/panel, a suitable enclosure, a plug top for connecting to the socket, mounting brackets, and all other necessary accessories must be incorporated in the installation.

6. THERMAL INSULATION

- The insulating material shall be a closed-cell elastomeric compound based on Nitrile Butadiene Rubber (NBR). The thermal conductivity of the elastomeric NBR insulation must not exceed 0.035 W/m·K when tested at a mean temperature of 20°C, following the procedures outlined in EN 12667. The insulation material shall have a density ranging from 40 to 60 Kg/m³.
- Prior to insulation, all duct surfaces must be thoroughly cleaned to remove contaminants, including grease, oil, and dirt. Accurate surface measurements should be taken to ensure precise cutting of the closed-cell elastomeric rubber sheets, with sufficient allowance for proper fitting. The insulation material must be installed under compression, without stretching. Apply a thin, uniform layer of adhesive to both the back of the insulation sheet and the prepared metal surface. Allow the adhesive to become tack-dry before carefully positioning the insulation sheet and pressing firmly to achieve a secure bond. All longitudinal and transverse joints shall be sealed in accordance with the insulation manufacturer's recommendations, using only the adhesive specified by the manufacturer.
- For ductwork installations directly exposed to solar radiation, a UV-resistant and mechanically protective coating, as recommended by the insulation manufacturer, shall be applied after allowing the adhesive to cure for 36 hours.
- All refrigerant and condensate drain lines shall be insulated as detailed herein, maintaining a 25 mm air gap between adjacent insulated chilled water or refrigerant surfaces. Prior to applying insulation, all pipes shall be cleaned and brushed to remove any surface contaminants (dirt, dust, mortar, grease, oil, etc.). Only the insulation manufacturer's recommended adhesive should be used for all applications.

7. ACOUSTIC INSULATION

To mitigate noise transmission, specified areas shall incorporate acoustic insulation with the following attributes:

- The acoustic insulation shall be of engineered, open-cell Nitrile Rubber foam. The insulation must demonstrate specific sound absorption capabilities as measured by Random

Incidence Sound Absorption Coefficients (RISACs) across a range of octave band frequencies. Testing must adhere to the methodology defined in ISO 354. The insulation material shall be manufactured without the use of fibers. The acoustic insulation must possess a minimum density of 140 Kg/m³. The insulation shall incorporate an integrated anti-microbial agent during the manufacturing process. This agent must provide sustained protection against fungal and bacterial growth. The acoustic insulation shall exhibit a thermal conductivity not exceeding 0.047 W/m·K when tested at a temperature of 20°C. The insulation shall conform to a Class 1 rating for surface spread of flame. Additionally, it must comply with UL 94 (HBF, HF1 & HF2) flammability standards.

- Duct Acoustic Lining: For ductwork designated on the project drawings and listed in the Schedule of Quantities, an internal acoustic lining with a thickness of 10mm shall be applied. Unless otherwise specified, the lining shall extend for a minimum distance of 6 meters along the duct length or 30% of the total duct length, whichever is greater.

8. DUCT WORK – GENERAL SPECIFICATION

- All ducts shall be fabricated from either Galvanized Sheet Steel (GSS) conforming to IS: 277 or aluminium sheets conforming to IS: 737. The steel sheets shall be hot-dip galvanized with a MAT finish and a coating of minimum 120 grams per square meter (GSM) of zinc. GI sheets shall be lead-free, eco-friendly, and RoHS compliant.
- The thickness of sheets for the fabrication of rectangular ductwork shall be as follows. The thickness required corresponding to the longest side of the rectangular section shall be applicable for all four sides of the ductwork:

Longest Side (mm)	Minimum Sheet Thickness (GSS)	Minimum Sheet Thickness (Aluminum)
750 mm and below	0.63 mm	0.8 mm
751 mm to 1500 mm	0.8 mm	1.0 mm
1501 mm to 2250 mm	1.0 mm	1.5 mm
2251 mm & above	1.25 mm	1.8 mm

- All sheet metal connections, partitions, and plenums required for the flow of air through the filters, fans, etc., shall be at least 1.25 mm thick galvanized steel sheets in the case of G.I. sheet ducting or 1.8 mm thick aluminum sheets in the case of aluminum sheet ducting and shall be stiffened with 25 mm x 25 mm x 3 mm angle iron braces.
- Aluminum ducting shall normally be used for clean room applications, hospital works, and wherever high cleanliness standards are functional requirements.

8.1 ASSOCIATED ITEMS

- Supply/return air outlets, F.A. (Fresh Air) grilles, and accessories shall be constructed from extruded aluminum sections.
- Flanges for matching duct sections, stiffening angles (braces), and supporting angles shall be of rolled steel sections and shall be of the following sizes:

Application	Duct Width	Angle Size
Flanges	Up to 1000 mm	35 mm x 35 mm x 3 mm

-do-	1001 mm to 2250 mm	40 mm x 40 mm x 3 mm
-do-	More than 2250 mm	50 mm x 50 mm x 3 mm
Bracings	Up to 1000 mm	25 mm x 25 mm x 3 mm
-do-	More than 1000 mm	40 mm x 40 mm x 3 mm
Support Angles	Up to 1000 mm	40 mm x 40 mm x 3 mm
-do-	1001 mm to 2250 mm	40 mm x 40 mm x 3 mm
-do-	More than 2250 mm	RS section size decided individually

- Hanger rods shall be of mild steel and of at least 10 mm dia for ducts up to 2250 mm size, and 12 mm dia for larger sizes. All nuts, bolts, and washers shall be zinc-plated steel. All rivets shall be galvanized or shall be made of magnesium-aluminum alloy. Self-tapping screws shall not be used.

8.1.2 DUCTWORK FABRICATION AND INSTALLATION STANDARDS

- Ducts shall be fabricated either on-site or factory-fabricated, adhering to IS: 655 "Specifications for Metal Air Ducts," unless otherwise specified. The interior surfaces of the ducting shall be smooth to ensure efficient airflow. Ducts up to 600 mm on the longest side shall be cross-broken between flanges by a single continuous break. Ducts 600 mm and above shall be cross-broken by single continuous breaks between flanges and bracings. Alternatively, beading at 300 mm centers shall be provided for stiffening. Long-radius elbows and gradual changes in shape shall be used to maintain uniform velocity, reduce turbulence, minimize resistance, and lower noise. The ratio of duct size to the radius of the elbow shall not be less than 1:1.5. Flanged joints shall be used at intervals not exceeding 2500 mm. Flanges shall be welded at corners first and then riveted to the duct.
- Stiffening angles shall be fixed to the sides of ducts by riveting at 1.25 meters from joints for ducts 600 mm to 1500 mm, and 0.6 meters from joints for ducts larger than 1500 mm. Diagonal angles may be used as bracings for ducts larger than 1500 mm. Plenums for filters shall include a suitable access door of size 450 mm x 450 mm. Factory-fabricated ducts shall be supplied in L-sections, with lengths not exceeding 1800 mm for ducts with the longest side of 600 mm and above, and 3000 mm for smaller ducts.

8.1.3 AIR OUTLETS AND INLETS (SUPPLY AND RETURN)

- All air outlets and intakes shall be made of extruded aluminum sections, presenting a neat appearance and rigid mechanical joints. Square and rectangular wall outlets shall have a flanged frame with returned or curved edges (5 to 7 mm) and a flexible gasket between the flange and the wall face. Supply air registers shall have adjustable front louvers for vertical deflection (up to 22.5 degrees) and back louvers for horizontal spread (at least 45 degrees). Return air grilles shall have only front louvers. The outer framework shall be made of at least 1.6 mm thick aluminum sheet, with aerofoil-designed louvers of 0.8 mm thickness.
- Square and rectangular ceiling outlets/intakes shall have a flange flush with the ceiling or be of anti-smudge type. The outer shell shall be made of at least 1.6 mm thick extruded aluminum, with a removable diffusing assembly. Linear diffusers shall have a flanged frame with returned edges (3.5 mm) and adjustable slots. The construction shall use at least 1.6 mm thick extruded aluminum sheet.

- Grilles and diffusers shall have grille bars set straight or deflected, assembled by mechanical interlocking to prevent distortion. Adjustable rear blades shall be provided for deflection. Supply air outlets shall include volume control devices with mill-finish/block-shade blades pivoted on nylon brushes to avoid rusting and noise. Opposed blade dampers shall be used for circular outlets, while radial/shutter-type dampers shall be used for square and rectangular outlets. All products shall be supported by manufacturer performance curves.

8.1.4 FRESH AIR INTAKES

Fresh air intake grilles shall be made of extruded aluminum sections. A bird wire screen of 12 mm mesh in 1.6 mm steel wire shall be fixed to the rear face of the louver frame.

8.1.5 FIRE DAMPERS

- Fire dampers shall be installed in all supply and return air ducts, return air passages, and at floor crossings. Access doors shall be provided before each set of fire dampers. Fire dampers shall be multi-blade louver type, constructed with at least 1.6 mm thick galvanized sheet, and factory-fitted in a 400 mm long sleeve. They shall include a locking device, motorized actuator, and control panel.
- Unless otherwise specified, Fire dampers shall be motorized smoke and fire dampers, equipped with a UL-stamped fusible link to close in case of temperature rise or fire alarm activation. An electric limit switch shall cut off power to the AHU blower motor and strip heaters upon damper closure. Fire dampers shall be CBRI tested and certified for 90 minutes of fire resistance as per UL 555-1995.
- Fire dampers shall be compatible with the building's fire detection system and operate automatically via an electric motor upon receiving a signal from the fire alarm panel. Wiring from the fire alarm panel to the AHU electric panel shall be provided by the department, while wiring from the AHU panel to the fire damper shall be provided by the air conditioning contractor.

8.1.6 INSTALLATION OF METALLIC DUCT

- Fabrication and installation shall be performed in a workmanlike manner. Ductwork shall be rigid and straight, free from kinks. All exposed ducts within the conditioned space shall utilize slip joints. Flanged joints are prohibited in these areas. All joints must be airtight.
- Ducts shall be independently supported from the building structure with adequate support to maintain their true shape. Support spacing shall not exceed 2 meters. In situations where ducts cannot be suspended from the ceiling, wall brackets or alternative arrangements, as approved by the Engineer-in-Charge, shall be implemented. Neoprene or other vibration isolation packing, with a minimum thickness of 6 mm, shall be provided between the ducts and the angle iron supports/brackets. Vertical ductwork shall be suitably supported at each floor level by steel structural members.
- Where metal ducts or sleeves terminate in woodwork, tight joints shall be achieved using closely fitting heavy flanged collars. Where ducts pass through brick or masonry openings, wooden framework shall be installed within the openings, and the crossing ducts shall be equipped with heavy flanged collars on either side of the wooden framework to ensure a leak-proof duct crossing. Duct connections to the air-handling unit shall be established by

inserting a double canvas sleeve, 100 mm in length. The sleeve shall be securely bonded and bolted to both the duct and the unit casing.

- Dampers shall be installed in branch duct connections to facilitate proper volume control and balancing of air quantities within the system, regardless of whether they are indicated in the drawings. Suitable links, levers, and quadrants shall be provided for the proper operation, control, and setting of the dampers. Every damper shall feature an indicating device that clearly displays its position at all times.
- Where electrical heaters are mounted within the duct, they shall be of the low-temperature, totally enclosed type, fitted with radiation fins. A removable panel shall be provided in the duct to allow access to the heaters. Any openings in the duct for electrical wiring must be equipped with suitable bushes to prevent leakage. A 6 mm thick asbestos board lining shall be installed around the inside of the duct for a distance of 30 cm on either side of the electrical heaters. A manually reset thermostatic safety switch shall be positioned near the duct section housing the heaters. Furthermore, the heaters must be interlocked with the connected fan motor of the AHU.

8.1.7 AIR OUTLETS AND INLETS

- The locations of the air outlets and intakes are indicated in the tender drawings. The air conditioning contractor shall provide the necessary openings and wooden framework for fixing the grilles. The location of these outlets/inlets is subject to change, and the approval of the Engineer-in-Charge must be obtained before final fixing of the grilles/diffusers. When installing fresh air intakes, no fixing devices shall be visible from the face of the frame.
- Where louvers are to be fixed in masonry or concrete, they shall be secured using either expanding plugs or raw plugs. Where louvers are to be fixed in steel or wood, non-ferrous screws or bolts shall be used. Supply air outlets and return air intakes shall be anodized/powder-coated aluminum in a color that matches the surrounding wall/ceiling. Fresh air intakes shall be anodized/powder-coated aluminum, subject to the approval of the Engineer-in-Charge. The paint color shall be approved by the Engineer-in-Charge.
- The air-conditioning contractor shall repair any damage to the finish of the structure that occurs during the installation work before handing over the installation to the Department.

8.1.8 AIR BALANCING

Air systems shall be balanced to minimize throttling losses. The entire air distribution system shall be balanced with the help of an anemometer. Measured air quantities at the fan discharge and at the various outlets shall be within + 5 percent of the specified/quoted values. For fans greater than 0.75 KW (1.0 HP), fan adjustments must be made to meet design flow conditions. Branch duct adjustments shall be permanently marked after air balancing is completed to allow for restoration to their correct position if disturbed.

8.1.9 MEASUREMENT

- Duct measurements (for insulated ducts) shall be taken before the application of insulation. Ductwork shall be measured section-wise based on the external surface area, calculated by multiplying the axial length from flange face to flange face for each section by the

corresponding duct perimeter at the center of that section length. Uniformly tapering straight sections shall be measured as described above. However, for special pieces like tees, bends, etc., surface area computations shall be performed according to the shape of such pieces.

- The quoted unit rate for external surfaces of ducts shall include all wastage allowances, flanges, gaskets for joints, vibration isolators, bracings, hangers and supports, inspection chambers/access panels, splitter dampers with quadrants and levers for position indication, turning vanes, straightening vanes, and all other accessories required to complete the duct installation per the specifications. These accessories shall not be measured separately.
- Grilles and diffusers (excluding linear diffusers) shall be measured by their cross-sectional areas, perpendicular to the airflow, excluding the flanges. Volume control dampers, where provided, shall not be accounted for separately.
- Linear diffusers shall be measured by linear measurements only, not by cross-sectional areas, and shall exclude flanges for mounting the linear diffusers. The supply air plenum for linear diffusers shall be measured as described above for ducting.
- Fire dampers shall be measured by their cross-sectional area perpendicular to the direction of airflow. Quoted rates shall include the necessary collars and flanges for mounting, inspection pieces with access doors, fusible links/solenoids with wiring, but excluding fire detectors, etc.

LIST OF APPROVED MAKES

Sl.	Item	Makes
1	Steel conduit	BEC/AKG/PRECISION/ATUL
2	PVC Conduit & Accessories	AvonPlast,Atul,Polycab,Precision,Balco,Konseal,Anchor
3	PVC Insulated CU, Conductor FRLS Wires/Cables	RR-KABEL/National/Ralison/Finolex/Polycab/Havells.
4	Modular type Switches and Socket Outlet.	Clipsal/Legrand/Crabtree(Havells)/Wipro/MK
5	Step Type Electronic Regulators	Clipsal/Legrand/Anchor/WIPRO/Havells/Schneider
6	Single Phase Industrial Type Socket Outlet	Legrand/Siemens/ABB/Havells
7	LT Panel/M.V Cubicles Boards	L&T/Siemens/Schneider/Tricolite/Milestone/or CPRI Approved Panel Manufactures.
8	Air Circuit Breakers	L&T/Siemens/ABB/Schneider/GE
9	MCB's/Isolators/RCBO/RCCB	Legrand/C&S/L&T/ABB/Siemens/Schneider/Havells/HPL
10	MCCB	Siemens/ABB/Schneider/L&T/C&S/Legrand/HPL/Havells
11	Protection relays	L&T/ABB/Schneider/C&S/Siemens
12	Fuse Disconnect Switch/SFU/Fuse	L&T/Siemens/ABB/C&S
13	Multifunction meter	Schneider/Siemens/L&T/ELMeasure

LIST OF APPROVED MAKES

Sl.	Item	Makes
14	LT Cables (XLPE)	Polycab/RRKabel/KEI/Bonton/Havells/Finolex
15	Rising Mains/BUS Trunking	Tricolite/L&T /Zeta /C&S
16	Acoustic Enclosure	Jakson/ Sudhir power/SuperNova
17	Anti-Vibration Mountings	Dunlop/Resistoflex
18	Light Fittings	Philips/ Bajaj/Crompton/Havells/Wipro
19	Ceiling fans	Orient/Crompton/Khaitan/Polar/Usha/Havells
20	Motor	Siemens/ABB/Crompton/Kirloskar
21	Exhaust Fan	Havells/Crompton/Anchor by Panasonic/Almonard/Bajaj
22	Servo Stabilizer	Approved ISI Standards
23	Indicating Meters	HPL/L&T/Meco/Rishabh/Universal/ABB
24	kWH, kW Meters/TOD	HPL/L&T/Enercon/Meco/Rishabh/Universal/ABB
25	Capacitor	L&T/Conzerv/SHREEM
26	Earth leakage relay	L&T/ELMEASURE/ABB
27	Battery Chargers	Uptron/VolstatElectronics/StatconAE
28	Change over switch	L&T/C&S/Socomec/ABB
29	Diesel Generators	Cummins/Ashok Leyland/Kirloskar/TATA
30	AMF	Siemens/C&S/Schneider
31	Transformer	ABB/Intrans/Unipower/KEL
32	Cast resin current Transformers:	AE/L&T /Kappa/ Rishab
33	Cable Trays/ Raceways	OBO/Legrand/Anant Power
34	UPS	
a	Upto 3 KVA	Microtek/APtech/Luminous/V-guard
b	Above 3 KVA	Microtek/Luminous/Hykon/Eaton/Numeric
c	Battery (150 Ah/160Ah)	Relicell/Exide/Luminous/Amaron/Eveready
35	Lifts/ Dumb Waiters/Escalators	Otis /Kone/ Mitsubishi/ Scheindler/ Thyssenkrupp
	ELV(EXTRA LOW VOLTAGE)	
36	CCTV/ NVR/DVR	Hikvision/CP Plus/Dahuva/Honeywell.
37	CCTV Cable	Polycab/finolex/Hikvision/V-Guard
38	LED TV/SMART TV	Samsung/LG/Panasonic/Sony.
39	Routers	Alcatel/Cisco/TPLINK/NETGEAR/D-Link
40	Cat 6/6a Cable.	Finolex/D-Link/Polycab/V-guard
41	Socket, Keystone Module & Face Plate	Havells/Schnieder/ Honeywell/Indo Asian/Legrand

LIST OF APPROVED MAKES

Sl.	Item	Makes
42	Speaker Wire	Finolex/MX/Polycab/V-guard.
43	Network rack	Legrand / D Link / Netrack / Wal Rack
44	Server PC	DELL / HP / Lenovo
45	Hard Disk	Seagate / Toshiba /WD
46	Network switch/POE switch & Wifi access points	Netgear/Cisco/Alcatel/ D-Link/TPLINK/Hikvision
47	Door Controller, Card Reader, Biometric Reader, Access Control Server Software, Smart card	Honeywell/Siemens /ESSL/ZKTeco/Biomax
48	PA System, Amplifier, PA Speaker, Voice Controller, Paging Station, Microphone	AHUJA/Bosch/ Honeywell/Yamaha
49	PVC Conduits & Raceways	Balco/TOMS/Finolex/Modi's/Precision
50	Video Conferencing System & Secondary Camera	Logitech/Jabra/Polycom/Sony
51	RG-6, RG-11 Wire/ Coaxial Cables	Finolex/KEI/Polycab/Havells/DLINK
52	Digital/ANALOG PHONES/ Handsets/IP	Beetel /Panasonic /Alcatel
53	IPABX / EPABX System	CRYSTAL/Alcatel/ Matrix/ Panasonic/Coral
	FIRE ALARM AND DETECTION SYSTEM	
54	Smoke detector/Heat detector	Honeywell /Minimax/Ravel/ADT/Siemens/Agni
55	Fire Alarm control Panel	Honeywell /Minimax/Ravel/ADT/Siemens/Agni
56	Response indicator/Fault isolators/sounder/Manual Call Point/Phone control module	Honeywell /Minimax/Ravel/ADT/Siemens/Agni
57	Talk back unit	Honeywell /Minimax/Ravel/ADT/Siemens/Agni
58	Fire alarm cable	RR-Kabel/Finolex/V-guard/PolyCab/Valuecon
59	Fire Extinguisher	Minimax/New age/Vijay/Cease fire/Superax/Safex
	FIRE FIGHTING SYSTEM	
60	G.I./M.S. Heavy Class Pipe	Jindal-Hissar, Tata, Prakash
61	Gate, Butterfly, Air Release Valve	Leader, Zoloto, Castle, Sant, Crescent, Fouress, Audco, Viking
62	Forged Steel Fittings	True Forge, Sant, Zoloto
63	SS/Brass/Gunmetal Ball Valve (Fullway Check and Globe Valves)	Sant, Zoloto, Leader
64	C.I. Double Flanged Sluice Valve	Zoloto, AIP, Kirloskar
65	Fire Hose Pipes	Newage, Minimax, Safex, Ceasefire, Superex, Safeguard
66	Fire Hydrant Valves	Minimax, Safex, Ceasefire, Newage, Safe Guard, Kanex, , Superex, Agni, AAAG

LIST OF APPROVED MAKES

Sl.	Item	Makes
67	Sprinkler Heads	Tyco, Viking, HD, Grinnel, Life Guard, Getech, Newage
68	Sluice and Non-return/Check Valve	I.V.C., Kilburn, Zoloto, Castle, Sant, KSB, Kirloskar, Leader, Crescent, AIP
69	First Aid Fire Hose Reels	Minimax, Safex, Ceasefire, Newage, Safe Guard, Kanex, Safe Fire, Superex.
70	Horizontal Centrifugal/Fire Pumps	Mather & Platt (WILO), GRUNDFOS, Kirloskar, Beacon
71	Diesel Engine	Cummins, Ashok Leyland, Caterpillar, Kirloskar
72	Electric Motors	GEC, Siemens, ABB, Crompton
73	G.I. Fittings	Unik, K.S., Zoloto
74	Yard Hydrant Stand Post	Eversafe, Safe fire, Minimax, Newage, Safe Guard
75	Pressure Gauge	H.GURU, Fiebig, HD, Manometer, GIC, Emerald, WIKA
76	Flow Switch	Potter, Safex, system sensor, Rapid flow, TRAC, Levcon, Switchgear, Honeywell, Siemens.
77	Pressure Switch	Indfoss, Switcher, Honeywell, Vexma Trafag, Danfoss, H-Guru, Switzer, Waaree
78	Fire Suppression System	KANEX, SVS Buildwel (p) ltd
79	Sprinkler Flexible Drops	VICTAULIC, SMITH COOPER, ANVIL, Tyco, HD, Agni
80	Branch Pipe	New Age, Steelage, Minimax, Superex, Safeguard
81	First Aid Hose Reel Drum	New Age, Minimax, Vijay
82	Alarm Valve & Hydraulic Alarm Motor	HD, Mather & Platt, Central Spray Safe, Grinnel
	HVAC	
83	Split AC Units (Hi Wall / Cassette Units / Ductable Split)	Hitachi, Daikin, Toshiba, Trane, O-General, Mitsubishi Electric, Voltas, Bluestar, Carrier
84	DX Condensing Unit	Hitachi, Daikin, Toshiba, Trane, O-General, Mitsubishi Electric, Voltas, Bluestar, Carrier
85	VRV/VRF	Hitachi, Daikin, Toshiba, Trane, O-General, Mitsubishi Electric, Voltas, Bluestar, Carrier
86	Air Handling Units	Flaktwood, Trane, Systemair, VTS, Edgetech, Zeco, Citizen, Euroclima
87	Circular Inline Fans / Cabinet Fans	Systemair, Greenheck, Kruger, Nicotra, Flakt, Comefri, Ostberg, Airmaster
88	Variable Frequency Drives	Siemens, Danfoss, ABB, Schneider, Yaskawa, Fuji Electric
89	Factory Fabricated Ducting	Zeco, Rollastar, Multiline, Sevenstar, Western Air
90	GI Sheets/Ducting	SAIL, Jindal, Tata
91	Aluminium Sheets/Ducting	SAIL, Jindal, Tata, Hindalco
92	Nitrile Rubber Insulation	Armacell, K Flex, ALP Aeroflex

LIST OF APPROVED MAKES

Sl.	Item	Makes
93	Grilles / Diffusers / Louvers	Systemair, Greenheck, Ruskin, Titus, Dynacraft, Cosmos, Ravistar, Airmaster
94	Fire Dampers / Volume Control Dampers	Systemair, Greenheck, Ruskin, Titus, Dynacraft, Cosmos, Ravistar, Airmaster
95	Drain Pumps	Aspen
96	Electrical Panels	CPRI Approved Make List
97	Laminar Airflow Hood	Thermadyne, AAF, Camfil
98	MERV Filters	Spectrum, Camfil, Pyramid, EMW, AAF, Klenzaid, Thermadyne, Aerofil
99	HEPA Filters	Spectrum, Camfil, Pyramid, EMW, AAF, Klenzaid, Thermadyne, Aerofil
100	Magnehelic Gauges	Dawson, Omicron
101	Stabilizer	V-Guard/V-stab / Microtek
102	Thermostat / Humidistat	Honeywell, Johnson Control, Siemens , Danfoss, Schneider, Omicron, Belimo
103	Copper Piping	Mexflow, Mandev, Rajco, Totaline
104	Drain Piping	Supreme, Astral, Finolex, Prince
105	Communication Cable / Power Cable	Polycab, RR Kabel, KEI, Havells

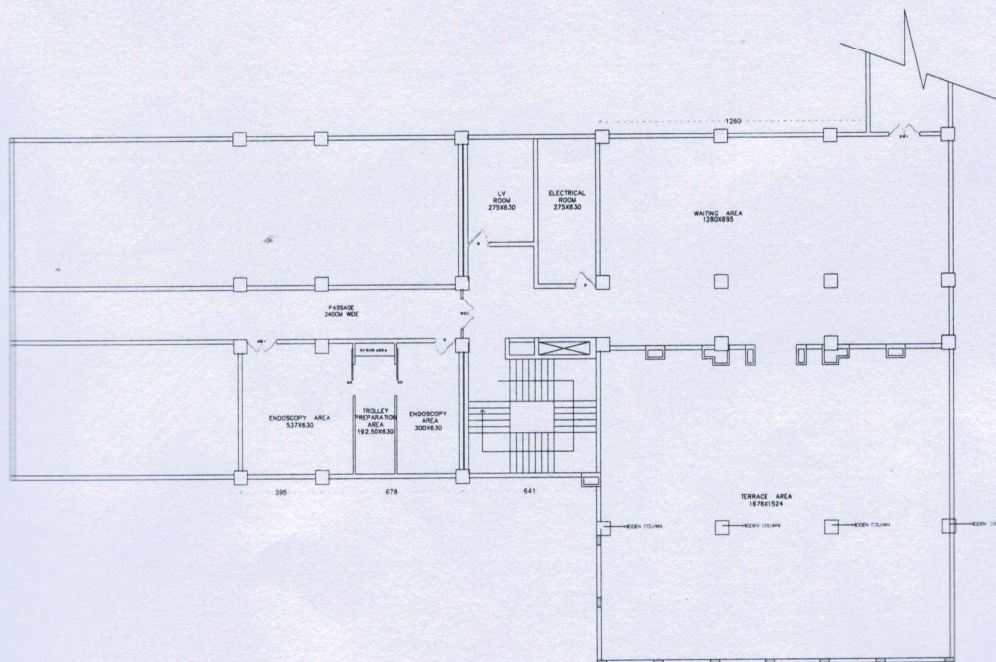
Note:

1. Change of any make of material in case of its non-availability or any other such reason shall be at the discretion of the Engineer-in-charge. The Contractor shall not be allowed to change the makes without their prior permission.
2. Equivalent make of any item may be added with the approval of Engineer in charge, wherever makes have not been specified for certain items, the same shall be as per BIS and as per approval of Engineer.
3. In case of items for which approved make is not given above, the Contractor shall place the order with the prior approval of the Engineer-in-charge.
4. In case of Contradiction between the approved makes/brands specified above and mentioned in the Specifications /Bill of quantities. The decision of the Engineer-in-Charge shall be final and binding on the Contractor.
5. All materials should confirm to relevant standard and codes of BIS and shall have ISI mark.

SIGNATURE & SEAL OF THE BIDDER

PART-XVII

DRAWINGS



EXISTING PLAN
SETTING UP OF DIPHL CHAMBA

COPY RIGHT
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SCHEDULE OF OPENING

MARK	SIZE	TYPE
DD1	150 X 210	DOUBLE DOOR
DD	120 X 210	DOUBLE DOOR
D	100 X 210	SINGLE DOOR
D1	90X 210	SINGLE DOOR
D2	75X 210	SINGLE DOOR
AD1	90X 210	ALUMI. DOOR
AD2	75X 210	ALUMI. DOOR
SD	100X 210	SLIDING DOOR
SD1	90X 210	SLIDING DOOR
W3	150 X150	WINDOW
W3a	150 X100	WINDOW
W2	100 X150	WINDOW
W2a	100 X100	WINDOW
W1	60 X100	WINDOW
FW3	150 X150	FIXED WINDOW
V	60X60	VENTILATOR
V2	120X60	VENTILATOR

FLOOR AREA 345 SQM

FLOOR HEIGHT: 3.60 M

PROJECT TITLE:

SETTING UP OF DIPHL CHAMBA

NAME OF CLIENT / OWNER:

NATIONAL HEALTH MISSION

DESIGN:

HLL Lifecare Ltd.
(A Government of India Enterprise)

DRAWING TITLE:

EXISTING FLOOR PLAN

DWG NO: HLL/NDP/MS/001

SHEET NO: 01/02

SCALE 1:

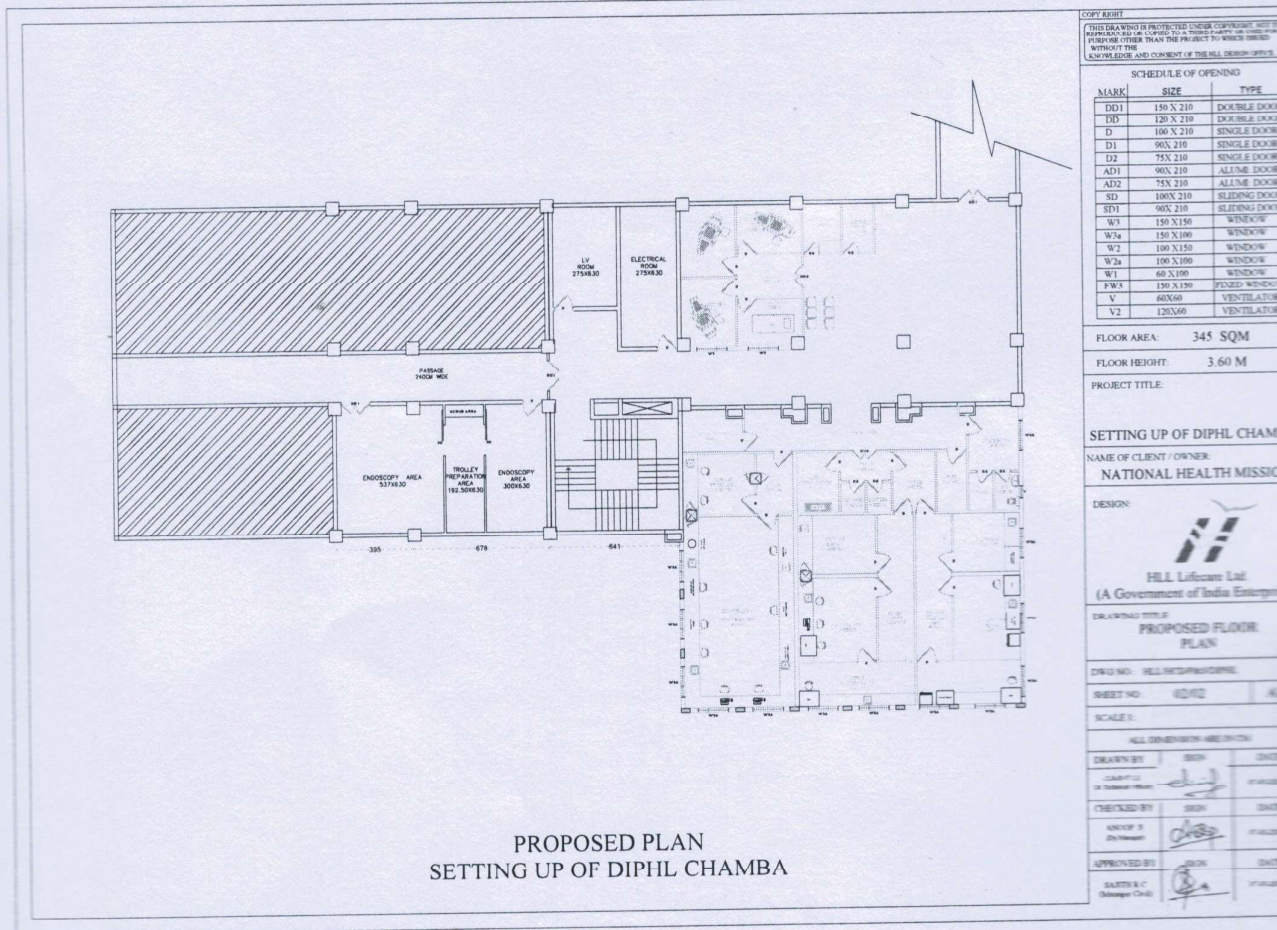
ALL DIMENSIONS ARE IN MM

DRAWN BY	SDH	DATE
CHECKED BY	SDH	DATE
APPROVED BY	SDH	DATE
SARTH R.C. (Manager Civil)		

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AD1	90X 210	ALUMI. DOOR
AD2	75X 210	ALUMI. DOOR
SD	100X 210	SLIDING DOOR
SD1	90X 210	SLIDING DOOR
W3	150 X 150	WINDOW
W3a	150 X 150	WINDOW
W2	100 X 150	WINDOW
W2a	100 X 150	WINDOW
W1	60 X 100	WINDOW
FW3	150 X 150	FIXED WINDOW
V	60X60	VENTILATOR
V2	120X60	VENTILATOR

FLOOR HEIGHT: 3.60 M

SETTING UP OF DIPHL CHAMBA

NATIONAL HEALTH MISSION

DRAWING TITLE:

DWG NO : HLL/HCD/P&S/DIPHL

SCALE 1:

DRAWN BY	SIGN	DATE
CLARITY CJ (In Technical Office)		07-03-2025
CHECKED BY	SIGN	DATE
ANOOK S (Dy Manager)		07-03-2025
APPROVED BY	SIGN	DATE
SAJJITH R C Manager		07-03-2025

PROPOSED PLAN SETTING UP OF DIPHL CHAMBA

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