

TENDER

FOR

**ESTABLISHMENT OF BSL-3 & ABSL-3 LABORATORY
AND ASSOCIATED WORKS
AT
CENTRE FOR DNA FINGERPRINTING AND
DIAGNOSTICS
'ON TURNKEY BASIS'**

“TECHNICAL BID”

NOVEMBER, 2016



**CENTRE FOR DNA FINGERPRINTING AND DIAGNOSTICS
UPPAL, HYDERABAD, TELANGANA**

Telephone :040-27209450

Website :www.cdfd.ord.in



CENTRE FOR DNA FINGERPRINTING AND DIAGNOSTICS

(An autonomous institute of the Dept. of Biotechnology,
Ministry of Science & Technology, Govt. of India)

Uppal, Hyderabad - 500 039

Date: 01-11-2016

NOTICE INVITING TENDER

1.0 General:

1.1 Turnkey rate tender in two bid system are invited on behalf of Director, CDFD from competent and experience agencies for "Establishment of BSL-3 & ABSL-3 Laboratory Facility and Associated works in all respects on turnkey basis including operation and Maintenance of whole work for a period of 5 years" at CDFD, Hyderabad and as per schedule as under:

Tender No.	CDFD/BSL-3/Tender
Name of the Work	Design, Construction, Supply, Installation, Testing, Commissioning and Validation of BSL-3 Laboratory complete in all respects on turnkey basis including Operation and Maintenance of whole work for a period of 5 years.
Approximate area of the facility	240 Sq.m.
Estimated Cost	Rs. 3.20 crores
Period for completion	4 months
Earnest Money Deposit	Rs. 6.40 Lakhs
Non-refundable cost of tender document	Rs.5,000/- in the form of DD in favour of Director, CDFD payable at Hyderabad.
Last date & time of submission of tender	Upto 21-11-2016 by 3.00 p.m in the office of : Research Facility Manager, CDFD, Tuljaguda Complex, 4-1-714, Mozamjahi Road, Nampally, Hyderabad - 500 001
Date & time of opening of Technical bid	21-11-2016 @ 3.30 p.m at CDFD, Tuljaguda Complex, 4-1-714, Mozamjahi Road, Nampally, Hyderabad - 500 001
Validity of offer	90 days form the date of opening of tender
Pre Bid meeting & Site inspection	10-11-2016 @ 11.00 a.m at CDFD, Tuljaguda Complex, 4-1-714, Mozamjahi Road, Nampally, Hyderabad - 500 001

The tender document can be downloaded from the website www.cdfd.org.in

The intending bidder must read the terms and conditions of the tender carefully. He should only submit his tender if he considers himself eligible and he is in possession of all the documents required.

The tender document as uploaded can be viewed and downloaded free of cost by any one including intending bidder. But tender submission should accompany with tender document cost in the form of DD. Bids received without EMD and Tender document cost will not be considered. No exemption for payment will be considered.

The prospective Bidder's are advised to read the Bid documents carefully and visit the site, at their own cost, to understand the site and to assess the work requirement and scope.

2.0 Brief Scope of Work:

The Scope of the work includes the following:

- 2.1 Preparation of detail design, drawings, technical specifications, etc., for the approval of CDFD before execution.
- 2.2 Preparation of working drawings shall include Civil construction, internal construction, finishing works, plumbing system, Internal electrification, HVAC system, Access control system, CCTV System, BMS, Lab furniture layout, Effluent treatment plant (ETP) etc.
- 2.3 Supply and erection of materials, items and equipments for execution and completion of Civil construction, internal construction, finishing work, effluent and drain piping works, Electrical and associated works, HVAC works, BMS works, systems and services, Effluent treatment plant, etc.,
- 2.4 Supply and installation of equipments and systems.
- 2.5 Validation of system
- 2.6 Operation and maintenance of the system

3.0 Eligibility Criteria

The Bidder shall meet the following eligibility criteria and submit the documentary evidence in the technical bid. The bid received without documentary evidence shall summarily be rejected.

Clause No.	Eligibility Criteria
3.1	<p>The Bidder shall have Experience of having successfully completed similar work during last seven years ending last day of month previous to one in which bids are invited should be either of the following:</p> <p>One similar completed work costing not less than the amount equal to Rs. 2.40 Crore.</p> <p style="text-align: center;">or</p> <p>Two similar completed work costing not less than the amount equal to Rs. 1.50 Crore.</p> <p style="text-align: center;">or</p> <p>Three similar completed work costing not less than the amount equal to Rs. 1.20 Crore.</p> <p>Similar Work shall mean Successful Onsite Construction, Testing, Commissioning and Validation of BSL-3 or Higher Containment Laboratory in Central/State Government Department/Institute, including Internal Construction Works, Electrical works, HVAC works, BMS, Autoclave, BSC, Effluent Decontamination System, Access Control System and other associated equipment and system works.</p>
3.2	<p>The Bidder shall have an average annual turnover of minimum Rs. 3.20 Crore in the last 3 financial years (i.e. F/Y 2013-14, 2014-15& 2015-16). Copy of Audited Balance Sheets for all the three financial years shall be submitted.</p>
3.3	<p>The Bidder shall have minimum solvency of Rs. 1.50 Crore. Solvency Certificate from the Bidder's Banker shall be submitted, which should not be more than one year old, from the date of submission of Bids.</p>

3.4	The Bidder shall be a well established and registered with Registrar of Companies, under the Indian Companies Act and should be in similar business since more than 5 years. Copy of Registration/ Certificate of Incorporation shall be submitted.			
3.5	The Bidder shall have the following minimum Qualified and Experienced personnel for the successful completion of the works			
	Role / Responsibility	Educational Qualification	Min. Post Qualification Work Experience	Number of personnel to be made available for the work
	Project Manager	B. Tech	6 Years	01
	Engineer - MEP Services	B. Tech / Diploma	5/8 Years	01
	Engineer - Electrical	B. Tech / Diploma	5/8 Years	01
	Engineer - Instrumentation	B. Tech / Diploma	5/8 Years	01
	Site Supervisor	Diploma/ITI	4/7 Years	01
	Technician	Diploma/ITI	4/7 Years	01
	<p>a. The site supervisor and technician shall have experience of working on BSL-3 Laboratories project/s and shall be deputed at site for the entire Project duration.</p> <p>b. Bio-data of the personnel available with the Bidder meeting above requirement of qualification and experience shall be submitted.</p>			
3.6	The Bidder shall have the experience and setup for providing Operation and Maintenance Services for at least one similar BSL-3 or higher containment laboratories. Details shall be submitted along with copies of work orders from the client.			
3.7	The Bidder shall not have been blacklisted, debarred or expelled by Union Government/State Governments/ PSU's etc. during the last 5 years. The firm shall submit an affidavit duly notarized certifying the above.			
3.8	The Bidder shall have valid PAN Number, Works Contract/VAT Registration, Service Tax Registration, ESIC & PF Registration with the appropriate concerned regulatory authorities. Copy of registration certificates shall be submitted.			

The Bidder shall meet all the above eligibility Criteria. Bidder/s not meeting any of the above eligibility Criteria shall be disqualified and his Bid shall be summarily rejected.

- 3.9 Joint Venture Bids are not permitted and shall not be accepted or considered and shall be summarily rejected.
- 3.10 The Bidder shall provide and submit information and details regarding litigation/ Arbitration cases, if any, for the last five years.
- 3.11 The Bidder shall provide and submit information about projects of similar nature (Biosafety Laboratory Project Works) executed and completed during the last 7 years indicating the name of work, Total Value of the Project, Date of Completion, Time Overrun & Cost overrun (if any) with reasons and name and contact number of officer/s where reference can be made.
- 3.12 Details of key management and technical personnel available with the firm specifying their qualification and work experience shall be submitted. The proposed project organization chart for the project work shall be submitted clearly specifying the roles and responsibilities of the personnel.

- 3.13 The Bidder shall submit details of manufacturing setup/facility, if any, owned by the firm. List of items and components manufactured by the Bidder and proposed to be used for the work shall be submitted, also indicating similar laboratory facilities where such items and components have been supplied and installed.
- 3.14 If any information furnished by the Bidder is found incorrect at any stage, the submitted Bid shall be rejected and the Bidder shall be liable to be debarred from participating in future tendering processes in CDFD/DBT.
- 3.15 Even through the bidders may satisfy the above requirements they are subject to be disqualified, if they have:
- a. Made misleading or false representation in the statements and enclosures required in the "Eligibility Criteria" and "Technical Bid".
 - b. Been blacklisted or debarred by any State Government / Central Government Department.
 - c. Any other reason as per the decision of the Employer/Bid Evaluation Committee, which shall be final and binding on the Bidder.

4.0 Method of submission of Tender

The tender has to be submitted in three-cover as follows:

- a. First sealed cover (Envelope No.1) shall contain the EMD amount and Technical bid and duly superscribed "Technical bid for the Tender No. CDFD/BSL-3/Tender".
- b. Second sealed cover (Envelope No.2) shall contain the duly filled and signed price bid document only duly superscribed "Price bid for the Tender No. CDFD/BSL-3/Tender".
- c. The third sealed (Envelope No.3)cover shall contain both the two covers indicated at (a) & (b) above and duly superscribed "Bid for the Tender No. CDFD/BSL-3/Tender".

All the covers have to be addressed to "The Director, CDFD Tuljaguda Complex, 4-1-714, Mozamjahi Road, Nampally, Hyderabad - 500 001" . The sealed bids shall be dropped in the tender box kept for the purpose in the office of the Research Facility Manager, CDFD, Hyderabad. Bids received after due date/time either sent by post or submitted in person will not be considered.

5.0 Earnest Money Deposit (EMD):

- 5.1 The EMD mentioned against the above work shall be furnished in the form of Demand draft in favour of "The Director, CDFD, Hyderabad" from any Nationalized bank.
- 5.2 Bids received without EMD amount will not be considered. No request for exemption in payment of EMD will be considered.
- 5.3 The EMD amount will be forfeited if the successful bidder fails to sign/execute the formal agreement within one week from the date of letter of intent or fails to commence the work as per the letter of intent.

6.0 EVALUATION OF BIDS

6.1 The Bids shall be checked, evaluated and assessed on their merits, as under:

- a. The **Security Deposit** and the **Tender Document Fee**, shall be checked as per tender requirement
- b. The Eligibility Criteria and other stipulated criteria and the supporting documents submitted by the firm, shall be checked and evaluated
- c. The Technical Bids of bidders/firms, who will meet all the stipulated Eligibility Criteria criteria requirements shall be opened and evaluated. The bidders/firms meeting all the requirements and the Technical Specifications of the Bid documents shall be considered as Technically Qualified.
- d. The Price Bid of only the Technically Qualified bidder/firm shall be opened and the quoted price by each bidder shall be checked and evaluated.

6.2 The Bids shall be evaluated for compliance to the Prequalification Criteria requirements given under Clause 3.0 above. Technical Bids of only those Bidders shall be considered for opening and evaluation who shall meet all the given eligibility criteria requirements.

6.3 The Evaluation of Technical Bids and Technical Qualification will be based on the details and information submitted by the Bidder and the Compliance and conformance of their Technical Bid to the Technical Requirements and Specifications given in the Bid Documents. It may be noted that merely copying the Tender Specifications as compliance shall not be accepted. The Bidder shall give and submit details of compliance of their bid to the Technical Requirements and Specifications given in the Tender Documents by submitting their offered designs, drawings, proposed equipment and item catalogues/brochures and giving reference to BSL-3 laboratory facilities where similar items, systems and equipments have been provided and installed by the bidder. Wherever required, references and enquiries shall be made by the Bid evaluation committee of CDFD, Hyderabad.

6.4 If required, the Bidders may be called for a detailed explanation of their submitted Technical Bid or for a Technical Presentation to demonstrate the compliance of their Bid to the Technical Requirements and Specifications given in the Bid Documents.

6.5 If required, the works executed by the bidders who otherwise qualify may be got inspected by a committee or any other authority as decided by Director, CDFD.

6.6 'Financial **Price Bids**' of only those bidders shall be considered for opening and evaluation, who shall meet the Technical Requirements and Specifications given in the Bid Documents, shall have the capacity and capability to execute and complete the Contract and who has been '**Technically Qualified**'. The Decision of the Employer in this regard shall be final and binding on the Bidders.

6.7 The Technically Qualified Bidder, whose Financial Price Bid has been opened and considered and is responsive to the Tender Requirement, quoting the **Lowest Priced Financial Bid** shall be considered for Award of Work.

Bidders submitting their bids using tender documents downloaded from the websites mentioned in the Tender Document, should enclose the tender document fee of Rs. 5000/- in the form of Demand Draft in Envelope No. 1 of their Bids along with the Certificate as per format given as under, failing which the Bid shall be rejected:

7.0 GENERAL INFORMATION AND DETAILS

- 7.1 Date of commencement of work shall be reckoned from the tenth day of issue of Letter of Intent. The successful bidder shall enter into a formal agreement with this Centre on Rs.100/- Non Judicial Stamp Paper within one week from the date of letter of intent to this effect.
- 7.2 CDFD does not bind itself to accept the lowest or any tender and reserves the right to accept in whole or any part of the tender and bidder shall be bound to perform the same at the rates quoted.
- 7.3 Bidders are advised to visit the site before quoting their rates. Rates should include all taxes, duties, octroi, etc., and also labour charges etc., As such nothing extra under any circumstances will be entertained.
- 7.4 Employer reserves right to deduct any amount towards Taxes, levies, etc., from the bills of the successful bidder.
- 7.5 Before bidding, the bidder shall inspect the site to fully acquaint himself, about the condition in the regard to accessibility of site, nature and extent of ground, working conditions of site and locality including stacking of materials, installations of tools and plants (T&P) etc., conditions affecting accommodation and movement of labour etc., required for the satisfactory execution of the work contract. No claim whatsoever on such account shall be entertained by the CDFD in any circumstances.
- 7.6 Bids submitted shall remain valid for 90 days from the date of opening for the purpose of acceptance and award of work, Validity beyond 90 days from the date of opening shall be by mutual consent.
- 7.7 The bidder should see drawings and in case of doubt obtain required particulars, which may in any way influence his tender from the Engineer as no claim whatsoever will be entertained for any alleged ignorance thereof.
- 7.8 Bidder shall quote rates both in figures and words. He shall also workout the amount for each item of work and write in both figures and words. On check, if there are differences between the rates quoted by the bidder in words and the figures or in the amount worked out by them/him, the following procedure shall be followed:

- When there is a difference between the rates in figures and the words, the rates which correspond to the amounts worked out by the bidder shall be taken as correct.
 - When the amount of an item is not worked out by the bidder or it does not correspond with the rate written either in figure or in words, the rate quoted by the bidder in words shall be taken as correct.
 - When the rates quoted by the bidder in figures and in words tally but the amount is not worked out correctly the rate quoted by the bidder shall be taken as correct and not the amount.
- 7.9 Except writing the rates and amount, the bidders should not write any conditions or make any changes, additions, alterations and modifications in the printed form of bids. Bidders who are desirous to offer rebate, the same should be brought out separately in the covering letter and submitted along with the tender.
- 7.10 This Notice Inviting Tender (N.I.T) shall form the part of the Contract Document.
- 7.11 Bidders shall sign and put their rubber stamp (seal) in each page of the priced schedule of quantity and also in each page where specifically indicated such as “Name & Address of the Bidder”, “Signature of Bidder”. Tender has to be submitted without any correction/over writing etc., in case of any correction or overwriting is made due to unavoidable reason or unforeseen reason, the same has to be attested and official stamp has to be affixed by the bidder.
- 7.12 Some of the provisions of General Conditions of Contract are given below. Interpretation however shall be as given in the General Conditions of Contract which will be issued as part of tender document.
- a. DEFECTS LIABILITY PERIOD: TWELVE (12) Months from the date of completion of the work.
 - b. SECURITY DEPOSIT: 10% of the total value of the workdone including EMD amount will be withheld as Security Deposit. The recovery on this account will be made from the Bills at 10% of the bill value till the full Security Deposit amount i.e 10% of the total bill value is recovered.
 - c. PAYMENT SCHEDULE: The contractor shall prepare and submit to the engineer for approval, a break-up of the contract price. This contract price break-up shall be interlinked with the agreed detailed PERT network of the contractor setting forth his starting and completion dates for the various key phases of works. Any payment under the contract shall be made only after the contractor's price break-up is approved by the engineer. The aggregate sum of the contractor's price break-up shall be equal to the lump sum contract price.
 - d. COMPENSATION FOR DELAY IN EXECUTION: The contractor shall pay as compensation an amount equivalent to 1% (one percent) per week, on the total value of work unfinished/uncompleted work, subject to a maximum of 5% of the Tendered value of the work, as compensation/penalty amount to the CDFD.

- e. PERFORMANCE GUARANTEE: The successful bidder has to deposit a sum equivalent to 5% of his / their tendered amount as Performance Deposit. This performance deposit amount will be refunded to the Contractor along with the final bill after satisfactory completion of the work, provided the work has been carried out in accordance with agreement provisions and the same is not forfeited for any reason.

7.13 The Director, CDFD shall have the right to accept or reject any Bidder or cancel the Bidding Process without assigning any reason and liability, whatsoever and also reserves the right to reject any or all bids or the lowest or to accept other than the lowest or to accept any tender in full or in part without assigning any reasons thereof.

I/We (Name of the Bidder) fully agreeable to the above conditions and also for all the terms and conditions attached to this tender document.

Name & Address of the Bidder

Signature of the Bidder

.....
.....
.....
.....
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LETTER OF APPLICATION
(On Bidder's letterhead)

Date: _____

THE DIRECTOR
Centre For DNA Fingerprinting & Diagnostics
Tuljaguda Complex, 4-1-714,
Mozamjahi Road, Nampally, Hyderabad
Telangana-500001

Sir,

1. Being duly authorized to represent and act on behalf of(hereinafter referred to as "the BIDDER") and having reviewed and fully understood all the Eligibility Criteria requirement and Tender Conditions, we hereby apply to be qualified as a bidder for **"Establishment of BSL-3 & ABSL-3 Laboratory Facility and Associated works in all respects on turnkey basis including operation and Maintenance of whole work for a period of 5 years at CDFD, Hyderabad, Telangana on Turnkey Basis"**.
2. Your Department/Institute and its authorized representatives are hereby authorized to conduct any inquiries or investigations to verify the statements, documents and information submitted in connection with this application, and to seek clarification from our bankers and clients regarding any financial and technical aspects. This letter of application will also serve as authorization or any individual or authorized representative or any institution referred to in the supporting information, to provide such information deemed necessary and requested by yourself to verify statements and information provided in this application, or with regard to the resources, experience, and competence of the Bidder.
3. Your Department/Institute and its authorized representatives may contact the following persons for any clarification or further information:

Contact 1 :	Telephone 1 :
Contact 2 :	Telephone 2 :
4. This application is made in the full understanding that :
 - (a) Bids submitted by us will be subject to verification of all information submitted at the time of bidding
 - (b) Your Department/Institute reserves the right to reject or accept any Bid, cancel the tendering process, and reject all the Bids without assigning reasons or incurring any liability thereof ; and
 - (c) Your Department/Institute shall not be liable for any such actions and shall be under no obligation to inform the Bidder
5. The undersigned declare that statements made and the information provided in the duly completed application are, true and correct in every detail.

Authorized Signatory :
Name :
For and on behalf of the Bidder :

BID FORM

(On non-judicial stamp paper of Rs. 100/-, duly Notarized)

Name of Contract : **Establishment of BSL-3 & ABSL-3 Laboratory Facility and Associated works in all respects on turnkey basis including operation and Maintenance of whole work for a period of 5 years at CDFD, Hyderabad, Telangana on Turnkey Basis.**

1. Having examined the Conditions of Contract, Specifications, Drawings, and schedule of Quantities and Addendum Nos. _____ for the execution of the above-named works we, the undersigned, offer to execute and complete such works on Turnkey Basis in conformity with the Contents of Bid Documents, Scope of Work and Specifications, Approved Drawings and Addenda.
2. We acknowledge that the Appended forms are part of tender.
3. We undertake, if our tender is accepted, to commence the works within two weeks after the receipt of the Employer's notice to commence, and to complete the whole of the works comprised in the Contract within the time stated in the tender.
4. We agree to abide by this tender for the period of 90 days from the date fixed for receiving the same, and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
5. We agree to treat the tender documents, other documents and records connected with the works as confidential documents and shall not communicate information described therein to any person other than the person authorized by you, or use the information in any manner prejudicial to the safety of the works.
6. Unless and until a formal Agreement is prepared and executed for this tender, subject to your written acceptance of our bid thereof, this Bid Form shall constitute a binding contract between us.
7. We undertake and confirm to agree and accept all the terms and conditions and specifications given in the tender without any deviation or reservation.
8. We understand that you are not bound to accept the lowest or any tender you may receive.

Dated this _____ day of _____ 201_

Signature _____ in the capacity of _____ duly authorized to sign Bid for and on behalf of _____.

Name of Bidder : _____

Address _____

(Signed & Sealed of Bidder Firm)

CERTIFICATE

(Only for bidders using tender documents downloaded from website)

We certify that the Tender Documents submitted by us along with our bid for *Establishment of BSL-3 & ABSL-3 Laboratory Facility and Associated works at CDFD, Hyderabad, Telangana on 'Turnkey Basis*, has been downloaded from the given website <http://www.cdfd.org.in/> and is same in content and form (verbatim).

We also undertake that any deviation, if detected at any stage, would entitle CDFD, Hyderabad to reject our bid/tender/offer and take suitable penal action against us. In any such an eventuality, the decision of CDFD shall be final and the same would be legally binding on us.

Signature & seal of the Bidder

CHECKLIST FOR TECHNICAL BID

Sr. No.	Requirements/Details to be submitted	Submitted (Yes/No)	Page/Annex. No.
1	Completed Letter of Application		
2	Completed Bid Form		
3	Certificate and Tender Document Fees, if Tender Document is downloaded from website		
4	Copies of work orders and completion certificates (as per clause 3.1)		
5	Copy of audited balance sheets (as per clause 3.2)		
6	Solvency certificate (as per clause 3.3)		
7	Copy of certificate of Registration/Incorporation (as per clause 3.4)		
8	Details and bio-date of personnel (as per clause 3.5)		
9	Details and copies of work orders for operation & maintenance contracts (as per clause 3.6)		
10	Notarized Affidavit (as per clause 3.7)		
11	Copy of registration certificates (as per clause 3.8)		
12	Details of litigations/arbitrations		
13	Details of similar executed projects		
14	Details of key management and technical personnel and project organization chart		
15	Details of manufacturing setup and items and equipment for the project with references		

Signature & seal of the Bidder

GENERAL CONDITIONS OF CONTRACT

1. INTERPRETATIONS:

In constructing these Conditions, the Specifications, the Schedule of quantities, Tender, Special Conditions and Contract Agreement the following words shall have the meaning herein assigned to them except where the subject or context otherwise required:

- a. "Employer" shall mean Director, Centre for DNA Fingerprinting and Diagnostics, Hyderabad or any officer authorized by the Director for the purpose.
- b. "Engineer/Engineer-in-charge" shall mean the Engineer designated by the Employer to superintend and perform other duties as indicated in the contract.
- c. "Contractor" shall mean the individual or Firm or Company, whether incorporated or not, undertaking the work and shall include the legal personal representative or such individual or the persons composing such Firm or Company or the successors of such Firm or Company and the permitted assignees of such individual or Firm or Company.
- d. "Work/Works" shall mean all work or works defined in schedule of quantities, specifications and such other work or works as the contractor may be entrusted with for carrying out under this contract.
- e. "Contract" shall mean the Articles of Agreement, the General Conditions, Special Conditions, the Appendix, the Schedule of Quantities, Specifications and drawings etc., attached hereto and duly signed.
- f. "Contract Price" shall mean the sum named in the Tender, subject to such amount additions thereto or deductions there from as may be made under the provisions, hereinafter contained.
- g. "Site" shall mean the lands and other places as shown on the site plan, on which the works are to be, provided, by the Employer for the purpose of the Contract.
- h. "Drawings" shall mean the drawings referred to in the contract etc., and any modifications of such drawings approved in writing by the Employer and such other drawings as may from time to time be furnished or approved in writing by the Employer.
- i. "Notice in Writing" or written notice shall mean a notice in writing, typed or printed characters sent (unless delivered personally or otherwise provided to have been received) by registered post to the last known private or business address or registered office of the address and shall be deemed to have been received, when in the ordinary course of post, it would have been delivered.
- j. "Act of Insolvency" shall mean any Act of Insolvency as defined by the Presidency Towns Insolvency Act, or the Provincial Insolvency Act or any act amending such original.

- k. "Net Prices" if in arriving at the Contract Amount, the contractor has added to or deducted from the total of the items of the Tender any sum, either as a percentage or otherwise, then the net price of any items, in the tender, shall be the sum arrived at by adding to or deducting from the actual figure appearing in the Tender, as the price of that item, a similar percentage or proportionate sum. Provided always that in determining the percentage or proportion of the sum so added or deducted by the contractor, the total amount of any Prime cost items and provisional sums of money shall be deducted from the total amount of the Tender. The expression "net rates" or "net prices" when used with reference to the contract or account shall be held to mean rates or prices so arrived at.
- l. "Virtual Completion" shall mean that the work is in the opinion of the Employer, sufficiently completed for occupation by the Employer, in relation to the scope of work of this contract.
- m. Words importing persons include firms and corporations. Words importing the singular only, also include the plural and vice versa, where the context requires.

2. SCOPE OF CONTRACT:

The Scope of the work includes the following:

- 2.1 Preparation of detail design, drawings, technical specifications, etc., for the approval of CDFD before execution.
- 2.2 Preparation of working drawings shall include Civil construction, internal construction, finishing works, plumbing system, Internal electrification, HVAC system, Access control system, CCTV System, BMS, Lab furniture layout, Effluent treatment plant (ETP) etc.
- 2.3 Supply and erection of materials, items and equipments for execution and completion of Civil construction, internal construction, finishing work, effluent and drain piping works, Electrical and associated works, HVAC works, BMS works, systems and services, Effluent treatment plant, etc.,
- 2.4 Supply and installation of equipments and systems.
- 2.5 Validation of system
- 2.6 Operation and maintenance of the system

3. DRAWINGS AND SPECIFICATIONS:

The Contractor shall execute whole and every part of the work in the most substantial and workman like manner both as regards material and otherwise in every respect in accordance with the specifications. The contractor shall also conform exactly and faithfully to the design, drawings and instructions given in respect of the work by the Engineer. The contractor shall be furnished free of charge one copy of such specifications and all such designs, drawings and instructions as are not included in the printed publications.

4. SUFFICIENCY OF TENDER:

The contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the works and of the prices stated in the Schedule of Quantities which rates and the prices shall, except as otherwise provided,

cover all his obligations under the contract and all matters and things necessary for the proper completion and maintenance of the works.

5. SCHEDULE OF QUANTITIES:

The Schedule of Quantities unless otherwise stated shall be deemed to have been prepared in accordance with the Standard procedure and shall be considered to be approximate and no liability shall attach to the Employer for any error/variations that may be discovered therein.

The contractor shall be deemed to have satisfied himself before tendering as to the correctness and sufficiency of his tender for the works and of the prices stated in the Schedule of Quantities and/or the Schedule of Rates and Prices, which rates and prices shall cover all things necessary for the proper completion of the works.

6. CONTRACTOR TO PROVIDE EVERYTHING NECESSARY:

The contractor shall provide at his own cost all materials (except such materials, if any as may in accordance with the contract be supplied by the Employer) plants, tools, appliances, implements, ladders, scaffolding, temporary works etc., requisite or proper for the execution of the work whether original, altered or substituted and whether included in the specifications or other documents forming part of the contract or which may be necessary for the purpose of satisfying or complying to the requirements of Engineer in charge, as to which under these conditions he is entitled to be satisfied together with carriage therefor to and from the work. The contractor shall also supply without charge requisite number of persons with means and materials necessary for the purpose of setting out works and counting, weighing and assisting in the measurement or examination at any time and from time to time of the work or materials. Failing his so doing, the same may be provided by the Engineer in charge at the expense of the contractor and the expenses may be deducted from any money due to the contractor under the contract and/of from his Security Deposit.

The contractor shall provide everything necessary for the proper execution of works according to the true intent and meaning of the drawings, specifications and the Schedule of Quantities etc., taken together, whether the same may or may not be particularly shown or described there in, provided the same can be inferred therefrom. The several documents forming the contract are to be taken as mutually explanatory to one another; detailed drawings and figured dimensions in preference to scale, and special conditions in preference to General conditions and particular specifications in preference to General specifications.

The contractor shall provide himself with requisite quantity and quality of water for carrying out the works at his own cost. However, if the contractor is permitted to make his own arrangement to draw water from a well, hand-pump or natural river or pond of the Employer, No charges will be made for the water drawn from the same, but the contractor will make good any damage done to the installations and ensure that the quality of water used in the work is conforming to BIS codes and provide for any treatment at this own cost.

The contractor shall be allowed to construct temporary wells in Employers land for taking water for construction purpose only after he has permission of the Employer in writing. No charges shall be recovered from the contractor on this account but the contractor shall be required to provide necessary safety arrangement to avoid any accident or damage to adjacent building, roads and service lines. He shall be responsible for any accident or damage caused due to construction and subsequent maintenance of the wells and shall restore the ground to its original condition after the wells are dismantled on completion of the work.

Temporary Electrical connections shall be obtained by the contractor to facilitate execution and completion of work at their cost and all the charges there of should be borne by them.

The contractor shall supply, fix and maintain at his cost, during the execution of any works, all the necessary centering, scaffolding, staging, planking, timbering, strutting, shoring, pumping, fencing, hoarding, watching, store, contractor's office and lighting during nights as well as by day required not only for the proper execution and protection of the said works, but also for the protection of the public and the safety of any adjacent road, streets, cellars, vaults, pavements, walls, houses, buildings and all other erections, matters or things. The Contractor shall take down and remove any or all such centering, scaffolding, staging, planking, strutting, shoring etc., as occasion shall require or when ordered or so to do, and shall fully reinstate at his own cost and make good all the matters and things disturbed during the execution of the works to the satisfaction of the Employer.

The Contractor should maintain on site minimum equipment/crane as required.

A Cement storage platform and coverings or a mobile trolley to store cement bags of 50 kgs shall be provided by the contractor at site of work for which no payments will be made. Contractor shall be responsible for the watch & ward and safety of cement.

In case of discrepancy between the Schedule of Quantities, the specifications and/or the drawings, the following order of preference shall be observed:-

- i) Description of Schedule of Quantities.
- ii) Particular specifications and special condition, if any.
- iii) Drawings.
- iv) Specifications stated by OEMs.
- v) C.P.W.D. specifications.
- vi) Indian Standard specifications of B.I.S.

If there are varying or conflicting provisions made in any document forming part of the contract, the Employer shall be the deciding authority, with regard to the intention of the document and his decision shall be final and binding on the contractor.

Any error in description, quantity or rate in schedule of quantities or any omission therefrom shall not vitiate the contract or release the contractor from the execution of the whole or any part of the works expressed therein according to drawings and specifications or from any of his obligations under the contract.

7. AUTHORITIES, NOTICES, PATENT RIGHTS AND ROYALTIES:

The contractor shall conform to the provisions of the statutes relating to the works, and to the regulation and by laws of any local authority, and of any water, lighting and other companies or authorities, with whose systems the structures are proposed to be connected; and shall before making any variation from the drawings or specifications, that may be necessitated by so conforming, give to the Employer a written notice, specifying the variations proposed to be made and the reason for making it and apply for instruction thereon. In case, the contractor shall not within ten days receive such instructions, he shall proceed with the work conforming with the provisions, regulations or by laws in question.

The contractor shall bring to the attention of the Employer all notices required by the said acts, regulations or bylaws to be given to any authority, and pay to such authority or to any Public Officer all fees that may be properly chargeable in respect of the works, and lodge the receipts with the Employer.

The contractor shall indemnify the Employer against all claims in respect of patent rights, designs, trade marks or name or other protected rights in respect of any constructional plant, machine, work or material used for or in connection with works or temporary works and from and against all claims, demands, proceedings, damages, costs, charges, and expenses whatsoever in respect thereof or in relation thereto. The Contractor shall defend all actions arising from such claims, unless he has informed the Employer, before any such infringement and received their permission to proceed, and shall himself pay all royalties, licence fees, damages, cost and changes of all and every sort that may be legally incurred in respect thereof.

8. MATERIALS AND WORKMANSHIP CONFORM TO DESCRIPTION:

All materials and workmanship shall, so far as procurable be of the respective kinds specified in the Schedule of Quantities and/or specifications, should furnish all invoices, accounts, receipts and the other vouchers to prove that the materials comply therewith. The contractor shall at his own cost arrange for and/or carry any test of any materials, which the Employer may require. The costs of materials used for testing, packing, transportation and testing shall be borne by the contractor and his quoted rates/amounts shall include all such expenses/contingencies.

In case of non-availability of specified Make/brand of any material including steel and cement the alternate make/brand will be given by the Employer.

9. THE SETTING OUT:

The Contractor shall at his own expense, set out the works accurately in accordance with the plans and to the complete satisfaction of the Engineer. The Contractor shall be solely responsible for the true and perfect setting out of the same and for the correctness of the positions, levels, dimensions and alignment of all parts thereof. If at any time any error shall appear during the progress or on completion of any part of the work, the contractor shall at his cost rectify such error if called upon to the satisfaction of the Employer. The work shall from time to time be inspected by the Engineer, but such inspections shall not exonerate the contractor in any way from his obligation to remedy

any defects, which may be found to exist at any stage of the work or after the same is completed, at his own cost.

10. REMOVAL OF ALL OFFENSIVE MATTERS:

All soil, filth or other matter of an offensive nature, taken out of any trench, sewer, drain, cesspool or other place shall not be deposited on the surface, but shall at once be carried out away by the contractor to some pits or place provided by them and shall be disposed off as per the rules and regulations of the Local authorities concerned.

11. WORKS TO BE OPEN FOR INSPECTION:

All works under or in course of execution or executed in pursuance of the contract shall at all times be open to the inspection and supervision of the Engineer and the contractor shall at all times during the usual working hours and at all other times at which reasonable notice of the intention of the Engineer to visit the works shall have been given to the contractor, either himself be present to receive order and instruction or have a responsible agent duly accredited in writing present for that purpose.

The contractor shall give not less than seven days notice in writing to the Engineer In-charge before covering up or otherwise placing beyond the reach of measurement any work in order that the same may be measured and correct dimensions thereof be taken before the same is so covered up or placed beyond the reach of measurement and shall not cover up and placed beyond the reach of measurement, any work without the consent in writing of the Engineer and the Engineer shall within the aforesaid period of seven days inspect the work, and if any work shall be covered up or placed beyond the reach of measurement without such notice having been given or the Engineer's consent obtained the same shall be uncovered at the contractors expense or in default thereof no payment or allowance shall be made for such work or the materials with which the same was executed.

12. CONTRACTOR'S SUPERINTENDENCE & REPRESENTATIVE ON THE WORKS:

The contractor shall give all necessary personal superintendence during the execution of the works and so long thereafter as the Employer may consider it necessary until the expiration of the "Defects Liability Period". The Contractor shall meet the Engineer-In-Charge/Engineer, whenever required and so informed by the Employer.

The Contractor shall maintain and be represented at site at all times, while the work is in progress, by a responsible and efficient foreman, approved by the Employer and who must thoroughly understand all the trades entailed and be constantly in attendance while the men are at work. Any directions, explanations, instructions or notices give by the Employer to such foreman shall be deemed to have been given to the contractor and shall be binding as such on the contractor. The Foreman shall be thoroughly conversant with the English language and should be able to read, write and speak English.

13. DISMISSAL OF WORKMEN:

The contractor shall on the request of the Employer immediately dismiss from the works any person employed thereon who may, in the opinion of the Employer be unsuitable or

incompetent or who may misconduct himself, and such person shall not again be employed or allowed on the works without the permission of the Employer.

14. ACCESS TO WORKS:

The Employer/Engineer-In-charge and any person authorized by them shall at all reasonable times have free access to the works and to the workshops, factories or other places where materials are being prepared or constructed by the contract and also to any place where the materials are lying or from which they are being obtained. The Contractor shall give every facility to the Employer and their representatives for inspection and examination and test of the materials and workmanship. No person, unless authorized by the Employer, except the representatives of Public authorities, shall be allowed on the works at any time. If any work is to be done at a place other than the site of works, the contractor shall obtain the written permission of the Employer for doing so.

15. EMPLOYER'S REPRESENTATIVE:

The Employer may appoint an assistant to the Engineer, any Site Engineer, who shall be the representative of the Employer. The duties of the Employer's representatives are to watch and supervise the works and to test any materials to be used and of workmanship employed in connection with the works. He shall have no authority either to relieve the contractor of any of his duties or obligations under the contract, or except those expressly provided hereunder, to order any work involving delay or any extra payment by the Employer or any variation of or in the works.

The contractor shall afford the Employer's representative every facility and assistance for examining the works and materials and checking and measuring item and materials. Employer's representative shall have power to revoke, alter, enlarge or relax the requirements of this contract, or to sanction any new-work, additions, alterations, deviations or omissions unless such an authority may be specially conferred by a written order of the Employer.

The Employer's representative shall have to give notice to the Contractor or his representative about the non-approval of any work or materials and such works shall be suspended or the use of such materials should be discontinued until the decision of the Employer is obtained. The work will from time to time be examined by the Employer's representative, but such examinations shall not in any way exonerate the contractor from the obligation to remedy any defects, which may be found to exist at any stage of the work or after the same is completed. Subject to the limitations of the clause, the contractor shall take instructions only from the Employer.

- 15(a) The proposed work covered under this tender, during the progress and/ or after completion, can also be inspected by the Chief Technical Examiner/ Technical Examiner or Officers of the Central Vigilance Commission, Government of India, on behalf of Employer to ascertain that the execution of the work has been done with materials and workmanship all as stipulated in the contract and as directed.

Contractor shall afford all reasonable facilities to the above vigilance staff and also provide them with ladders, tapes, plumbob, level etc., as required and directed and also necessary labourers skilled/unskilled to enable them to complete their inspection/study/technical scrutiny and no extra shall be admissible to the contractor on this account.

16. ASSIGNMENT OF SUB-LETTING:

The works included in the contract shall be executed by the contractor and the contractor shall not directly or indirectly transfer, assign or underlet the contract or any part/share thereof or interest therein without the written consent of the Employer, and no undertaking shall relieve the contractor from the full and entire responsibility of the contract or from active superintendence of the works during their progress.

17. SUB-CONTRACTORS:

The Employer reserves the right to use the premises and any portion of the site for the execution of any work not included in the contract. The contract is to afford all reasonable facilities to all sub-contractors, specialists, merchants, tradesman and others who may at any time be appointed by the Employer for executing any work or supplying any goods relating to the constructions, servicing, equipping or furnishing of the work under this contract.

18. VARIATIONS NOT TO VITIATE CONTRACT:

The contractor shall when directed in writing by the Employer, omit from or vary works shown upon the drawings or described in the specifications or included in the priced schedule of quantities, but the contractor shall not make any alterations or additions to or omissions from the works or any deviations from the provisions of the Contract without such authorizations or direction in writing from the Employer.

No claim for any extra item or deviations shall be allowed, unless it shall have been executed by the Authority of the Employer as herein mentioned. Any such extra item or deviation is hereinafter referred to as an authorised extra item or deviation. No variations i.e., additions, omissions or substitutions shall vitiate the contract.

The rate of items not included in the bill of quantities shall be settled by the Employer in accordance with the provisions of clause 21, hereof.

19. MEASUREMENTS OF WORKS:

The Employer may from time to time intimate the Contractor that he requires the works to be measured and the contractor shall forthwith attend or send a qualified agent to assist Engineer in taking measurements and calculations, and to furnish all particulars or give all assistance required by either of them.

21. UNFIXED MATERIALS:

When any materials intended for the works shall have been placed at site by the contractor, such materials shall not be removed therefrom (except for the purposes of being used on the works) without the written authority of the Employer and when the contractor shall have received payment in respect of any certificate in which the Employer shall have stated that he has taken into account the value of such unfixed materials on the works such materials shall become the property of the Employer and the Contractor shall be liable for any loss or damage to any such materials.

22. REMOVAL OF IMPROPER WORK AND MATERIALS:

The Employer shall, during the progress of the works, have power to order in writing from time to time the removal from the works, within such reasonable times as may be specified in the order, of any materials which in the opinion of the Employer are not in accordance with the specifications or the instructions of the Employer; and the substitution with proper materials and the removal and proper re-execution of any work, which has to be executed with materials or workmanship, not in accordance with the contract/drawings and specifications or instructions etc., the contractor shall forthwith carry out such orders at his own cost. In case of default on the part of the contractor to carry out such orders, the Employer shall have the power to employ and pay other persons to carry out the same and all expenses consequent thereon or incidental thereto shall be borne by the Contractor, and shall be recoverable from the contractor by the Employer, or may be deducted by the Employer, from any money due or may become due to the contractor for this work or on any other account.

Instead of this procedure for work not done in accordance with the contract, the Employer may allow such work to remain, and in that case may make allowance for the difference in value together with such further allowance for damages to the Employer, as in his opinion may be reasonable. This allowance shall be recoverable from the contractor by the Employer from any money due or may become due to the contractor for this work or on any other accounts. The decision of Employer in these matters shall be final and binding on the contractor.

23. DEFECTS AFTER COMPLETION:

Any defect, shrinkage, settlement or other faults which may appear within the "Defects Liability Period" i.e. within 12 months after the virtual completion of the works arising in the opinion of the Employer, from materials or workmanship not in accordance with the contract, shall upon the directions and writing of the Employer and within such reasonable time as shall be specified therein, be rectified and made good by the Contractor at his own cost. In case of default, the Employer may employ any other person to amend and make good such defects, shrinkage, settlements or other faults. All damages, loss and expenses consequent therein or incidental thereto shall be made good and borne by the contractor and such damage, loss and expenses shall be recoverable from him by the employer from the amount held against EMD & Security deposit or any other amounts due or may become due later.

24. CERTIFICATE OF VIRTUAL COMPLETION:

The contractors shall intimate in writing to the Employer, as and when the works are complete in all respects in order to enable the Employer to take possession of the same. The works shall not be considered as virtually completed, until the Engineer-In-Charge has certified in writing that the same have been "Virtually completed" and accepted by the employer. The defects liability period shall commence, only from the date of such virtual completion certificate.

25. OTHER PERSONS ENGAGED BY THE EMPLOYER:

The Employer reserves the right to use the premises and any portions of the site for the execution of any work not included in this contract which he may desire to carry out through other persons, and the contractor is to allow all reasonable facilities for the execution of such work, except by special arrangement with the Employer. Such work shall be carried out in such a manner as not to impede the progress of the works included in the contract, and the contractor shall not be responsible for any damage or delay which may happen to or be occasioned by such work.

26. INSURANCE IN RESPECT OF DAMAGE TO PERSONS AND PROPERTY:

The contractor shall be responsible for all injury to persons, animals or things and for all structural and decorative damage to property, which may arise from operation or neglect of himself or any of his or sub-contractor's employees, whether or any other cause whatever in any way connected with the carrying out of this contract. This clause shall be held to include, interlaid any damage to buildings, whether immediately adjacent or otherwise, any damage to roads, caused to the buildings and works forming the subject of this contract by frost or other inclement weather. The contractor shall indemnify the employer and hold him harmless in respect of all and any expenses arising from any such injury or damage to persons or property as aforesaid and also in respect of any claim made in respect of injury or damage under any acts of government or otherwise, and also in respect of any award of compensation or damages consequent upon such claim.

The Contractor shall reinstate all damages caused during contract period, so as to deliver up the whole of the contract works complete and perfect in every respect.

The contractor shall indemnify the Employer against all claims which may be made against the Employer, by any member of the Public or other party, in respect of anything which may arise in respect of the works or in consequence thereof and shall at his own cost, effect and maintain until one month after the works are taken over by the Employer or three months after the date of completion of the contract with an approved office, a policy of Insurance in the joint names of the Employer and the contractor against such risks and signing of the contract. The contract shall also indemnify the employer against all claims which may be made upon the Employer whether under the Workmen's compensation act or any other statute in force during the currency of this contract or at common law in respect of any employees of the contractor or of any sub-contractor and shall at his own expense effect and maintain until one month beyond the virtual completion of the contract, with an approved office. A policy of Insurance in the joint

names of the Employer and the Contractor against such risks and deposit such policy or policies with the Employer from time to time, during the currency of the contract.

The contractor shall be responsible for anything which may be excluded from the Insurance Policies above referred to and also for all other damages to any property arising out of and incidental to the negligent or defective carrying out of this contract however, such damage shall be caused.

The Contractor shall also indemnify the Employer in respect of any costs, charges or expenses arising out of any claim or proceedings and also in respect of any Award of or compensation of damages arising there from.

The Employer shall be at liberty and is hereby empowered to deduct the amount of any damages, compensations, costs, charges and expenses arising or occurring from or in respect of any such claims of damages from any sums due or to become due to the contractor.

27. CONTRACTOR'S ALL RISK POLICY:

The contractor shall within 7 days from the date of commencement of the work insure the works at his cost and keep them insured until one month after the works are taken over by the Employer or three months after the date of completion whichever is earlier, against loss or damage by fire and usual risks other than fire against which insurers generally provide cover in a CONTRACTOR'S ALL RISK POLICY, with an insurer, in the joint names of the Employer and contractor (the name of the former being placed first in the policy), progressively for the full amount of the contract, in three stages, beginning with 1/3 of the contract value, and for any further sum as called upon to do so by the Employer, the premium of such further sum being allowed to the contractor as an authorized extra. Such policy shall cover the property of the Employer only and shall not cover any property of the contractor of any subcontractor or employee. The contractor shall deposit the policy and receipts for the premiums paid, within twenty one days of the date of commencement of work. The contractor shall as soon as the claim under the policy is settled, or the work reinstated by the insurers should they elect to do so, proceed with all due diligence with the completion of the works in the same manner as though the fire or other such risk had not occurred and in all respects under the same conditions of contract.

The contractor in case of rebuilding or reinstatement after fire or other such usual risk shall be entitled to such extension of time for completion.

28. COMMENCEMENT AND COMPLETION:

Date of commencement of work shall be reckoned as per the date mentioned in the letter of intent. Successful bidder has to enter into a formal agreement with this Centre on Rs.100/- Non Judicial Stamp Paper within one week from the date of letter of intent to this effect. The time allowed to complete the work as entered in the tender is 4 months from the date of commencement of work.

29. NOTICES:

Notices for the Employer, or the Contractor may be served in person by obtaining a personal endorsement or may be sent to their respective Registered Office addresses by registered post with acknowledgment due, or may be sent to an address specified by them by registered post with acknowledgement due. Any notice sent by registered post shall be deemed to have been served at the time when in ordinary course of time it would be delivered.

30. DELAY AND EXTENSION OF TIME:

30.1 If the works be delayed by:

- a. force majeure, or
- b. abnormally bad weather, or
- c. reason of proceedings taken on threatened by or dispute with adjoining or neighboring owners or public authorities arising otherwise, than through the contractor's own default, or
- d. civil commotion, local commotion of workmen or strike or lock-out affecting any of the trades employed on the work, or
- e. delay on the part of other contractors or tradesman engaged by Engineer-in-charge in executing work not forming part of the contract.

then upon the happening of any such event causing delay, the contractor shall immediately give notice thereof in writing to the Engineer-in-charge but shall nevertheless use constantly his best endeavors to prevent or make good the delay and shall do all that may be reasonably required to the satisfaction of the Engineer-in-charge to proceed with the works.

30.2 Request for extension of time, to be eligible for consideration, shall be made by the contractor in writing within fourteen days of the happening of the event causing delay on the prescribed form. The contractor may also, if practicable, indicate in such a request the period for which extension is desired.

30.3 In the event, the value of work exceeds the value of the Bill of quantities owing to variations the contractor shall be entitled to ask for extension of time in proportion the increased value of work.

31. SUSPENSION OF WORK BY CONTRACTOR:

31.a. The Employer may without prejudice to his right against the contractor in respect of any delay or inferior workmanship or otherwise or to any claims for damages in respect of any breaches of the contract and without prejudice to any rights or remedies under any of the provisions of this contract or otherwise and whether the date for completion has or has not elapsed by notice absolutely determine the contract in any of the following cases:

- i) If the contractor having been given by the Engineer a notice to rectify, reconstruct or replace any defective work or that the work is being performed in any inefficient or otherwise improve or un-workman-like manner shall omit to comply with requirements of such notice for a period of seven days thereafter or if the contractor shall delay or suspend the execution of the work so that in the judgement of the Employer (which shall be final and binding) he will be unable to ensure completion of the work by the date for completion or he has already failed to complete the work by that date.
 - ii) If the contractor being a company shall pass a resolution or the court shall make an order that the company shall be wound up or if a receiver or a manager on behalf of a creditor shall be appointed or if circumstances shall arise which entitle the court of creditor to appoint a receiver or a manager or which entitle the court to make a winding up order.
 - iii) In the contractor commits breach of any of the terms and condition of this contract.
 - iv) If the contractor commits any acts mentioned in Clause 16 hereof.
- 31.b. When the contractor has made himself liable for action under any of the cases aforesaid, the Employer shall have the following powers:
- (i) To determine or rescind the contract as aforesaid for which termination or rescission notice in writing to the contractor under the hand of the Employer shall be conclusive evidence. Upon such determination or rescission the security deposit of the contractor shall be liable to be forfeited and shall be absolutely at the disposal of the Employer.
 - (ii) The Engineer may employ labour paid by the Employer and to supply materials to carry out the work or any part of the work debiting the contractor with the cost of the labour and the price of the materials (of the amount of which cost and price certified by the Engineer shall be final and conclusive against the contractor) and crediting him with the value of the work done in all respects in the same manner and at the same rates as if it had been carried out by the contractor under the terms of contract. The certificate of the Engineer as to the value of the work done shall be final and conclusive against the contractor, provided always that the action under the sub clause shall only be taken after giving notice in writing to the contractor. Provided also that if the expenses incurred by the Employer are less than the amount payable to the contractor at his agreement rates, the difference should not be paid to the contractor.
 - (iii) After giving notice to the contractor to measure up the work of the contractor and to take such part thereof as shall be unexecuted out of his hands and to give it to another contractor to complete in which case any expenses which may be incurred in excess of the sum which would have been paid to the original contractor if the whole work had been executed by him (of the amount of which exceed the certificate in writing of the Engineer shall be final and conclusive) shall be borne and paid by the original contractor and may be deducted from any money due to him by the Employer under this contract or any other account whatsoever or from his security deposit.
 - (iv) In the event any one or more of the above courses being adopted by the Employer the contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured any materials or entered into any engagements or made any advances on account or with a view to the execution of

the work or the performance of the contract. And in case action is taken under any of the provisions aforesaid, the contractor shall not be entitled to recover or be paid any sum for any work thereof or actually performed under this contract unless and until the Engineer has certified in writing the performance of such work and the value payable in respect thereof and he shall only be entitled to be paid the value payable in respect thereof and he shall only be entitled to be paid the value so certified.

32. CERTIFICATES AND PAYMENTS:

- 32.a. The payment to the contractor for the performance of the works under the contract will be made by the employer as per the guidelines and conditions specified herein. All payment made during the contract shall be on account payments only. The final payment will be made on completion of all the works and on fulfillment by the contractor of all his liabilities under the contract.
- 32.b. The contractor shall prepare and submit to the engineer for approval, a break-up of the contract price. This contract price break-up shall be interlinked with the agreed detailed PERT network of the contractor setting forth his starting and completion dates for the various key phases of works. Any payment under the contract shall be made only after the contractor's price break-up is approved by the engineer. The aggregate sum of the contractor's price break-up shall be equal to the lump sum contract price.
- 32.c. The contractor shall submit application for the interim payment and final payment. Each such application shall state the amount claimed and shall set forth in detail, in the order of the payment schedule, particulars of the works including the works executed at site and of the equipment shipped/brought on to the site pursuant to the contract upto the date mentioned in the application and for the period covered since the last preceding certificate, if any.
- 32.d. Every interim payment certificate shall certify the contract value of the works executed upto the date mentioned in the application for the payment certificate, provided that no sum shall be included in any interim payment certificate in respect of the works that, according to the decision of the engineer, does not comply with the contract, or has been performed, at the date of certificate prematurely.

33. IN CASE OF DEATH OF CONTRACTOR or LIQUIDATION OF COMPANY INCASE CONTRACTOR IS A CORPORATE

Without prejudice to any of the rights or remedies under this contract, if the contractor dies, the Employer shall have the option of terminating the contract without compensation to the contractor.

34. TERMINATION OF CONTRACT BY THE EMPLOYER:

If the contractor being an individual or a firm, commit any act of insolvency, or shall be adjudged as Insolvent or being an incorporated Company shall have an order for compulsory winding up made against it or pass an effective resolution for winding up voluntarily or subject to the Supervision of the Court and of the Official Assignee of the Liquidator in such acts of insolvency or winding up, shall be unable within seven days after notice to him requiring him to do so, to show to the reasonable satisfaction of the

Employer that he is able to carry out and fulfill the contract, and to give security thereof, if so required by the Employer.

Or if the contractor (whether an individual, firm or incorporated Co.) shall suffer execution to be issued.

Or shall suffer any payment under this contract to be attached by or on behalf of any of the creditors of the contractor.

Or shall assign or sublet this contract without the consent in writing of the Employer first obtained.

Or shall charge or encumber this Contract or any payments due or which may be due to the Contract thereunder.

- a. has abandoned the contract or
- b. has failed to commence the works, or has without any lawful excuse under these conditions suspended the progress of the works for 14 days, after receiving from the Employer written notice to proceed, or
- c. has failed to proceed with the works with such due diligence and failed to make such due progress as would enable the works to be completed within the time agreed upon, or
- d. has failed to remove materials from the site or to pull down and replace work for 7 days after receiving from the Employer written notice that the said materials or work were condemned and rejected by the Employer under these conditions, or
- e. has neglected persistently to observe and perform all or any of the acts, matters or things by this contract to the observed and performed by the Contractors for 7 days after written notice shall have been given to the contractor requiring the contractor to observe or perform the same, or
- f. has to the detriment of good workmanship or in defiance of the Employer's instructions to the contrary, sublet any part of the contract.

35. ARBITRATION:

35.a. Except where otherwise provided in the contract, all questions and disputes relating to the interpretation of the specifications, designs, drawings and instructions therein before mentioned and as to the quality or workmanship or materials used on the work or as to any other question, claim, right, matter of thing whatsoever in any way arising out of or relating to the contract, designs, specifications, estimates, instructions, orders on these conditions or otherwise concerning the works, or the execution or failure to execute the same whether arising during the progress of the work or after the completion or abandonment thereof shall be referred to the sole arbitration of the person appointed by the Employer. The arbitrator to whom the matter is originally referred being unwilling or unable to act for any reason, the Director shall appoint another person to as arbitrator in accordance with the terms of the contract. Such person shall be entitled to proceed with the reference from the stage at which it was left by his predecessor. The arbitrator shall

give a speaking award. The award of the arbitrator shall be final and binding on the parties. The cost of the Arbitrator shall be borne equally by both the parties.

- 35.b. It is also a term of the contract that the party invoking arbitration shall specify the dispute or disputes to be referred to arbitration under this clause together with the amount or amounts claimed in respect of each such dispute.
- 35.c. It is also a term of the contract that if the contractor does not make any demand for arbitration in respect of any claim in writing within 90 days of receiving the intimation from the Employer that the final bill is ready for payment, the claim of the contractor will be deemed to have been waived and absolutely barred and the Employer shall be discharged and released of all liabilities under the contract in respect of these claims.
- 35.d. Subject as aforesaid the provisions of the Arbitration and Conciliation Act, 1996, or any statutory modification or reenactment thereof and the rules made there under and for the time being in force shall apply to the arbitration reference under this clause.
- 35.e. This contract is under jurisdiction of court at Hyderabad.

36. DISMANTLED MATERIAL:

The contractor shall treat all material obtained during dismantling of a structure, services sub systems/installations, excavations of the site for a work etc., as employer's property and such material shall be disposed of to the best advantage of the Employer according to the instructions issued in writing by the Engineer.

37. SECURITY DEPOSIT :

The contractor shall permit the Employer at the time of making any payment to him for the work done and measured to deduct the sum at the rate of 10% of the gross value of work done in each running bill along with the Earnest Money if any, as already deposited by the contractor will amount to full Security Deposit amount i.e., 10% of the total bill value of work done. The Earnest Money and Security deposit thus paid shall be held by the Employer, as security deposit, for due execution and fulfillment of the contract, till the completion of the work and defect liability period in all respects and shall not bear any interest.

Security Deposit amount will be released after completion of Defects liability period. No partial refund of security deposit shall be made during the Defects liability period. In case the final bill is not settled within stipulated period for reasons beyond control and the Employer is satisfied that the Security deposit is not required for adjustment of Employers dues or whatsoever dues either in this or any other contract then this security deposit either in full or in part could be refunded at the sole discretion of the Employer.

In case of termination of contract, this security deposit shall be forfeited and amount necessary to make up this amount shall be recovered from money due to the contractor under this contract, or any other contract with the Employer.

38. PERFORMANCE GUARANTEE:

Performance Guarantee may be taken from the contractor before the award of work, by the Officer authorized to award the contract, if and where considered necessary, to

ensure that a part or whole of the contract is completed by the contractor. In case of non-performance, this guarantee could be encashed.

39. COMPENSATION FOR DELAY:

The time for carrying out the work as entered into the tender shall be strictly observed by the contractor and shall be deemed to be the essence of the contract on the part of the contractor. The work shall throughout the stipulated period of the contract be proceeded with all due diligence and the contractor shall pay as compensation an amount equal to one percent or such small amount as the Employer (whose decision in writing shall be final) may decide on the amount of the whole work as shown in the agreement, for every week that the work remains un-commenced or unfinished after the proper dates.

40. COMPLETION CERTIFICATE :

Within ten days of the completion of the work, the contractor shall give notice of such completion to the Employer and within twenty days of the receipt of such notice the Engineer shall inspect the work. If there is no defect in the work the Employer shall furnish the contractor with a certificate of completion otherwise a certificate of completion indicating defect shall be issued but the work shall not be considered to completion until the contractor shall have removed from the premises on which the work shall be executed all the scaffolding, surplus material, rubbish and all huts and sanitary arrangements required for his work, people on the site in connection with the execution of the works as shall have been erected or constructed by the contractor and cleaned of the dirt, splashes, droppings of finishing items from all wood work, doors, windows, walls, floors or other parts of any building, in, upon or about which the work is to be executed or of which he may have had possession for the purpose of the execution thereof. If the contractor shall fail to comply with requirements of this clause on or before the date fixed for the completion of the work, the Employer may at the risk and cost of the contractor take action as he may think fit and the contractor shall have no claim except for any sum actually realized by the sale thereof.

TECHNICAL SPECIFICATIONS

1.0 GENERAL SCOPE OF WORK

- 1.1 The work in the scope of the contractor shall include **'Detailed Design, Construction and Establishment of BSL-3 & ABSL-3 Laboratory Facility and Associated works at CDFD, Hyderabad, Telangana on 'Turnkey Basis, including testing, commissioning and validation of the facility at CDFD, Hyderabad, Telangana.**

The BSL-3 & ABSL-3 shall comply with the Fifth edition of BMBL Guidelines issued by the U.S. Department of Health and Human Services, CDC, USA'.

- 1.2 The detailed design, drawings, technical specifications to be prepared and submitted by the contractor, for the approval of CDFD shall include:
- a) Working drawings for internal construction and finishing work
 - b) Plumbing System and associated PHE drawing
 - c) Electrical power distribution SLD and Panel GA drawings
 - d) Electrical light, power, data & voice Layout, FDA system drawing
 - e) HVAC System details and drawings
 - f) Door Interlock and Access Control system details and drawings
 - g) Shower System, CCTV system details and drawings
 - h) Building Management System details and drawings
 - i) Lab Furniture Layout plan
 - j) Other associated systems and services for the proposed Laboratory Facility
 - k) Technical Data Sheet, Catalogues and Literatures for equipment including Autoclave, Bio-Safety Cabinet, Pass Box, Air Handling Units, Air Compressor, Exhaust Blower, CCTV system, Access Control system etc.
 - l) Any other relevant drawing and technical details considered essential and required for successful completion of the works and asked by the employer.
 - m) The executing agency/contractor shall submit the working drawings, technical literature, brochure, literature, technical specifications and other details, sufficiently in advance for approval of the Employer, giving sufficient time for its review. The work shall be taken up only after approval of the drawings and specifications.

Some of the important input parameters for designing the facility:

Approximate area of the facility	240 Sq.m.
Facilities required	2 Nos. BSL-3 lab, 1 No. ABSL-3 lab with all allied facilities like Water shower entry to clean area and service area, BMS room, ETP with necessary civil construction, Clean corridors, Emergency shower, etc., Please refer the indicative plan of the tender document.
Min. clear height required inside the facility	9 feet
Inside temperature	22 ± 2° C
Relative Humidity	Less than 60%
Negative pressure gradient	As per zoning plan/guidelines (NIH/WHO/ASHRAE standards or better)
Air changes per hour in labs	More than 12

Filtration	HEPA Filter Supply Air in BSL-3 and ABSL-3 HEPA Filter Exhaust Air in BSL-3 and ABSL-3. Fine Filter Supply Air in Support areas
Ventilation	100% Fresh Air system in BSL-3 and ABSL-3
Exhaust fan location for BSL-3	Minimum 25feet away from AHU intake
Air velocity at exhaust discharge	15-20 m/s(3000-4000 fpm)for BSL-3and ABSL-3 labs

1.3 Supply and erection of materials, items and equipments/s for execution and completion of internal construction and finishing work, effluent and drain piping works, Electrical and associated works, HVAC work, BMS work, systems and services etc. required as per approved designs and drawings.

1.4 Supply and installation of following equipment's and systems:

- Bio-Safety Cabinets
- Pass Box and Dunk Tanks
- Double Door Autoclave and Vertical Autoclave/Sterilizer
- Air compressor and distribution piping
- Hot water shower system
- UPS & Inverter with Battery bank for 30 minutes backup
- Door interlocks and Access Control System
- Addressable type Fire Detection & Alarm System
- Laboratory Surveillance (CCTV) System
- Computer Networking System (computers will be supplied by CDFD)
- Intercom System with telephone instruments and EPABX
- Laboratory Work Station, Eye wash and Hand Wash Stations
- Laboratory Biological Effluent Decontamination System
- Ventilated type Garment storage cabinets for inner change rooms
- Non ventilated Garment storage cabinets for outer change rooms
- Portable Fire Extinguishers (CO₂ /Dry Powder type)
- Water Softening Plant for HVAC System and Laboratory water supply

1.5 The Employer reserves the right to do minor changes in the given layout plan or change the quantities of fittings and fixture as given in the tender documents. All such changes shall be incorporated and the work shall be executed by the contractor without any additional cost. However, in case, the Employer instructs or make changes in any of the already executed works, which requires demolition/dismantling and re-work by the contractor, than the cost of making such demolition/dismantling and re-work shall be reimbursed and paid to the contractor, at justified and mutually agreed rates.

1.6 All the required site preparatory works including and any other ancillary work required to complete the works shall be carried out by the contractor, as required and included in the scope. The contractor shall take all precautions not to damage any part of the remaining building and the structure. All the opening and dismantling works required for the execution of the works shall be repaired by the contractor in good condition at no extra cost.

- 1.7 The Contractor shall carry out Testing and commissioning of all the equipment/s, items, systems and services supplied and installed in the Laboratory Facility and Validation of the BSL-3 Laboratory as per the BSL-3 Laboratory Certification Guidelines of NIH, USA in the presence of representative/s of Employer and submit the compiled validation report.
- 1.8 The Contractor shall prepare and submit of 3 sets of 'AS BUILT' drawings, OPERATION & MAINTENANCE MANUAL AND INSTRUCTION' for the complete installation and 'BIO-SAFETY MANUAL' .
- 1.9 The Contractor shall provide training to the Employer's staff on operation, servicing and maintenance of all engineering installations and handling of emergencies due to fire or engineering system failures.

2.0 TENDER DRAWINGS

- a) The given Tender Drawings of the proposed BSL-3 & ABSL-3 Laboratory are for the reference purpose and guidance to the Bidders to understand the scope of work. The Bidders are advised to visit the site, cross check the accuracy of site dimensions, assess the site conditions and submit their Bid accordingly. The work shall be executed as given and detailed in the scope of work, technical specifications and the final design and drawings to be submitted by the Bidder and approved by the Employer.
- b) The Employer shall be under no obligation nor shall provide any compensation to the Contractor on account of any in-correct data, dimension or details provided, if any, in the Tender Drawing/s.

3.0 TECHNICAL SPECIFICATIONS

3.1 INTERNAL CONSTRUCTION, FINISHES AND PHE WORKS & CIVIL CONSTRUCTION,

- 3.1.1 All the internal partition walls and ceiling construction in BSL-3 Laboratory and support areas shall be carried out with prefabricated, non-particle shredding panels in Powder Coating finish. The prefabricated wall and ceiling panels shall provide impervious and monolithic construction and surface finish. The existing external brick walls shall be provided with cladding from inside with similar pre-fabricated wall panels. The Flooring shall be carried out in 3 mm Self Leveling Epoxy, in approved shade.
- 3.1.2 The internal partition and ceiling panels shall be able to withstand negative pressure of upto -100 Pa, without any sag or buckling. The ceiling shall be walkable type for access of services above for maintenance purpose.

MODULAR WALL PANELS

- Prefabricated modular wall panels in 80 mm thickness with Powder Coated GSS sheet of 0.8 mm thickness on both sides
- Bonded with PUF insulation having density of 40kg/m³ in-between both side of sheets
- All joints shall be sealed with RTV (Silicone) sealant

- Wall panels shall have provision of electrical conduit, pre inserted in panels, to run electricalwires and cables.
- The conduits shall be sealed with silicon sealantafter completing installation of electrical wires and cables.

CEILING PANELS

- Prefabricated Walkable ceiling panels 80 mm thick - Powder Coated GSS sheet of 0.8 mm thickness on both sides
- Ceiling panels shall be monolithic with minimum number of joints
- Bonded with PUF density of 40 kg/m³ in-between both side sheets.
- All the joints shall be sealed with RTV (Silicone) sealant
- The ceiling panels shall be in the installed in uniform manner and there should be no over lapping of panels
- The ceiling panels shall be provided with uniform and symmetrical cut-outs for supply air and return/exhaustair diffusers

VIEW PANEL/WINDOW

- View panels/window frame work shall be made in similar construction as partition panels and shall be installed flushed with the wall panel.
- The view panels shall be double glazed type and shall bein size 1000 mm × 1000 mm (or as required) in the wall partitions.
- The view panel glazing shall be in8 mm thick toughened glass on both sides and shall be fully glued fit and sealed along with desiccant to avoid condensation
- The view panels/window frame and glass panel glazing shall beperfectly sealed not to allow any ingress of air, due to negative pressure.

- 3.1.3 Wall and ceiling corners shall be provided with 50 mm radius aluminium coving in same shade as of wall panels. Wall to floor corners shall be provided with epoxy coving in same or approved colour top coat and in same radius as of aluminium coving provided for wall to wall and wall to ceiling coving.
- 3.1.4 Flooring shall be in 3 mm Self-level epoxy in approved shade, complete with base coat, sealer coat and 3 mm top coat in self-levelling epoxy.
- 3.1.5 The wall and ceiling surface finish shall provide impervious, monolithic, chemical resistant (organic solvents, acids and alkalis), antibacterial and antifungal finish and shall sustain Formalin/H₂O₂ fumigation of lab spaces.
- 3.1.6 The Door Frames and Shutters in laboratory and support area shall be in metallic construction and factory pre-painted/powder coated in chemical resistant finish. The doors shall be provided with lip gaskets on top and sides and drop down gasket at the bottom. Doors shall be provided with approx. 300 mm ×600 mm vision panel with double glass in 5 mm thickness, both sides installed flushed with the door surface.
- 3.1.7 The doors shall be provided with heavy duty door closer, stainless steel kick plate on outer side and Stainless Steel handle. The doors shall be provided with Key-Lock, except for doors inside the BSL-3 Laboratory area.

- 3.1.8 The Door Frames and Door Shutters of the Biosafety Doors for Showers and Air-Locks shall be constructed in 16 swg Stainless Steel 304.
- 3.1.9 The Biosafety Doors of shower and fumigation airlock and BSL-3 Laboratory shall be, provided with inflatable gaskets, connected to compressed air line from the air compressor, to ensure perfect sealing when in closed position. The inflatable gaskets shall be interlocked with the door interlock system such that when the door is closed, the gasket should inflate and seal the door and when the door release button is pressed, the gasket should deflate to allow opening of the door. The doors shall be provided with sealed vision glass and shall be complete with door closers and SS handles.
- 3.1.10 Service pendant/s manufactured in 18 swg SS 304 shall be provided for connecting services like steam, water and compressed air inside the BSL-3 Laboratory. The ceiling pendant penetration shall be perfectly caulked and sealed with Epoxy Sealant not to allow any ingress of air, due to negative pressure.
- 3.1.11 All the joints and penetrations in the BSL-3 Laboratory area shall be perfectly sealed with Epoxy Sealant and made leak proof not to allow any ingress of air, due to negative pressure.
- 3.1.12 Floor traps/U-traps in BSL-3 Lab area shall provide double pass and shall have 4" W.C head. The effluent drainage piping from the BSL-3 Lab shall be in chemical resistant material like HDPE with all joints welded and tested to be leak proof.
- 3.1.13 Each BSL-3 Lab room shall be provided with stainless steel sink with elbow operated free tap and emergency eye wash station. Water distribution piping in High Containment area shall be provided in Polypropylene and shall be provided with non-return valve/backflow prevention device.
- 3.1.14 Construction of additional civil structure space using concrete, bricks, etc., shall be intergrated to the existing civil structure and foundation shall be designed to suitable load of G+2 floors as per IS Code. All civil works like foundation, columns, beams, lintel beams, steel reinforcement, slab, AAC blocks wall construction, Flooring, plastering and internal smooth finish painting and external heritage finish of wall, etc., shall be inconfirmary to the latest CPWD specifications.
- As the loading patterns of the building differs from the original consideration during structural design, contractor has to obtain safe structural stability certificate before commencement of civil work from the local municipality licensed Structural engineer.
- 3.1.15 Entrance steps to the facility shall be movable and detachable type made of Mild Steel with bearing wheels on bottom of the unit, railing work with concrete base on the floor, etc., complete in all respects.
- 3.1.16 The building should have anti termite treatment for the entire facility.
- 3.1.17 UPVC windows shall be provided on the outer wall of the facility.
- 3.1.18 Finished floor level of the facility shall be maintained same as the adjoining Experimental animal facility.

3.1.19 All doors in common area of facility shall be with aluminium section with glass, rubber beading, water proof boards and lockable features.

3.2 HVAC SYSTEM AND BUILDING MANAGEMENT SYSTEM

The proposed BSL-3 & ABSL-3 Laboratory and support areas shall be air-conditioned through a central A/C system to maintain the required temperature, humidity, air-change rate, differential pressure gradient and air filtration conditions of the Laboratory Facility. The chilled water supply shall be tapped from existing chilled water header to the new Air Handling Units, supplied by the contractor for the BSL-3 Lab. The Air Handling Supply System, Exhaust System, Air Filtration System and Air Distribution System complete in all respect. The system shall be with standby and backup provisions in supply Air Handling system, exhaust system and containmnet HEPA Filter housing capable to provide un-interrupted continuous 24x7x365 days operation of BSL-3 & ABSL-3 Lab. The contractor shall submit the HVAC system and BMS design and working drawings for prior approval. The HVAC system shall comply with the given specifications and performance requirements and shall be complete in all respect, as required and approved.

The following design and performance conditions shall be maintained in the BSL-3 and ABSL-3 Laboratories:

- Inside Temperature : 22 +/- 2° C
- Relative humidity : less than 60%
- Negative Pressure gradient : As per approved zoning plan
- ACPH in BSL-3 & ABSL-3 Lab : 12 or Higher
- Filtration : HEPA Filter Supply Air in BSL-3&ABSL-3
HEPA Filtered Exhaust in BSL-3 &ABSL-3
- Ventilation : 100% FA system for BSL-3
70% Re-circulatory, 30% exhaust in BSL-2
Other areas with Re-circulatory system
- Exhaust Fan location for BSL-3 : Minimum 25 ft from AHU intake
- Air velocity at exhaust discharge : 15-20 m/s (3000-4000 fpm) for BSL-3
- AHU & Exhaust Configuration : Separate Systems for BSL-3 & ABSL-3 Labs

3.2.1 Chilled Water and Hot Water Piping System:

Chilled water and hot water piping system shall be provided for Air Handling Units in accordance with ASHRAE standards. The piping shall be carried out in heavy class MS ERW pipes conforming to IS 1239 for pipe size upto 150 mm dia and IS 3589 above 150 mm dia pipes. The joints in the water piping system shall be welded as per IS 823.

The chilled water and hot water piping system shall be complete with required butterfly valves, ball valves, balancing valves as per IS 780, IS 5152 & IS5155. Non-return valves as per IS 778 & IS 5312

- Valves shall be suitable for upto 15 Kg working pressure
- Non return valves shall be disc type
- Strainers shall be provided (Y type/ pot strainers)
- All Piping, fittings and supports shall be painted with red oxide primer
- The water flow-direction shall be visibly marked with arrows

- Pressure Gauge and Thermometers shall be provided at AHU coils inlet and outlet

The Piping shall be tested to hydrostatic test pressure of at least 2 ½ times the maximum operation pressure but not less than 8 kg per sq.cm gauge for a period of not less than 24 hrs. The pressure testing shall be done before application of insulation.

The piping shall be insulated with 50 mm thick expanded polystyrene insulation or 25 mm thick Class 'O' closed cell nitrile foam insulation with aluminium cladding.

Hot Water Generator: Hot water generator shall be provided for winter heating and re-heating. The hot water generator shall be electric water heater consisting of a vertical tubular shell, closed to both the ends with bolted end covers. The shell shall be fabricated from M.S. sheet and joints shall be welded. The construction shall conform to the BIS standards/international standards. It shall be designed for a working pressure of 21 Kg/cm² and tested accordingly

3.2.2 Air Handling Units :

The Air Handling Units shall be Double Skin type and shall be complete with blower, motor, drive set, cooling coil, filter section, drain tray etc. complete in all respect. The Air Handling Units shall be floor mounted type installed on civil foundation with vibration isolation pads. To ensure un-interrupted operation, multiple AHU's shall be provided for supply air to BSL-3 in manifold arrangement, with n+1 redundancy. The capacity of Air Handling Units shall be 10% higher than the designed required capacity.

AHU Casing: AHU Casing shall be made of minimum 25 mm thick PUF sandwich panels. The outer wall should be of galvanized sheet, chemically treated having scratch free pre plasticized coating and plain GI inner sheet. In-fill shall be with PUF insulation having density 35-40 kg/m³ fixed on modular frame. The frame work shall be in extruded aluminium sections with thermal break to avoid condensation/sweating. The AHU should be provided with electric power /control junction box on external side of the unit.

Fan section: The Fan Section shall have SISW type, multi blade type Fan / Blower. The Fan / Blower blades shall be made of treated heavy gauge steel treated. The fans should be statistically and dynamically balanced and should have AMCA approval.

Cooling coils and heating coils: Coils shall be constructed in 12.5 - 15mm dia copper tubes, 24 swg thickness with aluminium fins, spaced at 12 fpi, firmly bounded to copper tubes assembled in zinc coated steel frame. Air velocity across the coil should not exceed 500 fpm. The coil shall be factory tested at 21kg/sq.cm air pressure. The cooling coil shall be 8 RD for 100% FA system and 6 RD for re-circulatory system.

Filter section: The Filter Section shall be same as that of AHU casing. The Filter section shall be complete with Filters of 5 micron and 0.5 micron particulate size.

Dampers: Each AHU shall be complete with OPEN/CLOSE Dampers and Fire Dampers. The dampers shall be opposed blade type. Blades shall be made of double skinned aero foil aluminium sections with integral gasket and assembled within extruded aluminium alloy frame. All linkages and supporting spindles should be made of aluminium or

nylon. Spindle shall be provided with a bakelite knob for locking the damper blades in position. The OPEN CLOSE dampers shall be provided with compatible motor actuator.

Motor and Drive: Fan motors shall be flame proof and suitable for 415V+/-10%, 50Hz, 3 phase, AC supply. Motor shall be squirrel cage TEFC motors. Motors shall be designed for quiet operation. Drive to fan shall be provided through belt-drive with a standard belt guard housing the bolt and adjustable motor sheave.

AHU Drain piping : AHU drain piping shall be carried out in GI upto the nearest drain traps complete as required. The drain pipes shall be insulated with 12 mm thick closed cell nitrile foam insulation.

AHU Controls: Three way mixing valve with actuator and limit switch for AHU access doors shall be provided complete with power and control wiring.

3.2.3 Exhaust System:

The exhaust system of the BSL-3 Laboratory shall comprise of High Static Exhaust Blowers, SISW type, backward curve, complete with motor, drive set, vibration isolation pads, OPEN/CLOSE damper and other fittings and accessories. The Exhaust System shall be provided with redundant backup (N+1) to ensure un-interrupted operation (24x7x365 days) of the Laboratory. The capacity of the selected Exhaust Blowers shall be 10% higher than the designed required capacity.

3.2.4 Air Filtration System

BSL-3 & ABSL-3 Lab Supply Air : Three stage air filters shall be provided

- The first stage shall be for 5 micron particulate size, 90% efficiency
- Second stage shall be for 0.5 micron particulate size, 99.9% efficiency
- Third stage shall be for 0.3 micron particulate size HEPA Filters, 99.97% efficiency

BSL-3 & ABSL-3 Lab Exhaust Air

- HEPA Filter, 0.3 micron particulate size, 99.97% efficiency

The system for BSL-3 & ABSL-3 Lab shall be designed and configured to provide multiple HEPA Filter bank to permit un-interrupted round the clock (24x7x365 days) operation of the BSL-3 Laboratory including during HEPA filter maintenance, replacement and/or change.

The HEPA filters shall be of micro-fibreglass filter media mini pleated type and shall be capable to withstand corrosive agents and gases used for lab fumigation. The HEPA filters shall have minimum 99.97% efficiency for 0.3 micron particulates. The HEPA filters shall be HOT DOP tested at the manufacturer's works, before supply at site, as per ASTM D 2986-71, US-MIL STD 282 to validate the filter efficiency.

The HEPA filter plenums shall be constructed/made in 14 swg SS 304 with air tight and leak proof construction. The HEPA filter plenums shall have ports and provisions to carry out on site HEPA filter testing and validation, pressure sensors to monitor

pressure drop across the HEPA filter, fumigation ports to allow IN-SITU decontamination of HEPA filters and Bag-In-Bag-Out facility for change of filters.

3.2.5 Supply and Exhaust Air Ducting

BSL-3 Laboratory Ducting:

The supply air and exhaust ducting shall be carried out in GI sheet (class VIII with zinc coating of 120 gm/ sq.m.). All duct fabrication work, thickness of sheet metal, supports, hangars shall conform to SMACNA standards. All the joints shall be sealed with silicone sealant.

Supply air ducting insulation - 19 mm thick Al. faced closed cell nitrile foam
Return/Exhaust air ducting insulation - 13mm thick Al. faced closed cell nitrile foam

Volume Control Dampers, Fire dampers, air diverting vanes shall be provided in the supply and exhaust air ducting, as per the requirements, and ASHRAE standards and approved design. Each BSL-3 & ABSL-3 Lab room/zone supply and exhaust air duct shall be provided with bubble tight Isolation Damper to allow isolation of the room/zone and carry out selective decontamination/fumigation. The exhaust system of BSL-3 Laboratory shall be provided with backdraft / non-return damper.

3.2.6 Pressure Adjustment and Control System:

The BSL-3 & ABSL-3 Laboratory area/zone Pressure shall be PLC Controlled through VAV's and VFD's, to automatically balance the negative pressure fluctuations in the BSL-3 Laboratory rooms/zones caused due to varying conditions like opening of doors, operation of BSC's etc. for continued maintenance of the differential pressure gradient.

The AHU motor and Exhaust Blower motors shall be provided with Variable Frequency Drive (VFD). The Adjustment, Control and Monitoring system of the BSL-3 Laboratory room/zone pressures shall be provided through the BMS.

3.2.7 Fire Dampers :

Fire Dampers provided in the supply and exhaust air systems shall be interlocked with the AHU blower motors such that in case of fire, the AHU fan motor should trip automatically

3.2.8 Alarms :

The system shall be provided with following alarms:

- HVAC system failure alarm
- Room/zone pressure failure alarm

3.2.9 Canopy Hood:

Canopy hood shall be provided above the loading and unloading doors of the Autoclave to capture steam vapor and heat generated by the equipment and above aerosol

generating equipment like Centrifuges. The canopy hood on the containment side shall be ducted and connected to the HEPA filtered laboratory exhaust and on non-containment side shall be ducted and connected to normal exhaust. The Canopy hood exhaust air capture velocity shall be more than 50 fpm.

3.3 BUILDING MANAGEMENT SYSTEM

A customized Building Management System shall be designed, programmed and provided to control and monitor the operation of HVAC system and laboratory operating parameters in the BSL-3 & ABSL-3 Lab rooms/zones :

- Room/Area/zone pressure
- Room/Area/zone temperature & RH
- Ambient temperature & RH
- AHU and Exhaust Blower operating status
- VFD status & VAV status
- OPEN/Close dampers status
- Supply & exhaust air quantity in each BSL-3 & ABSL-3 Lab rooms/zone.

The supply and exhaust air duct of each Lab Room/Area shall be provided with VAV device with flow measurement sensor for adjustment and balancing of the desired supply and exhaust air quantities. The Air Handling Units and Exhaust Blowers shall be provided with Variable Frequency Drives (VFD's). The VAV's and VFD's shall be controlled to maintain the set laboratory inside pressure conditions through BMS Program.

The Building Management System shall allow START/STOP operation of the Complete HVAC system in AUTO Mode. However, the system shall have the provision to override the parameters (password protected) and to enable START/STOP operation of the HVAC system in MANUAL mode, as well. The BMS shall provide alarm in case of HVAC system failure, collapse in room/zone negative pressure and deviation of any operating parameter from the set limits. Each BSL-3 Laboratory Rooms/Zones area shall be provided with Pressure Sensors, Temperature Sensors and RH Sensors, wired and integrated with the BMS to display the operating conditions.

The Building Management System shall be complete with PLC, Sensors, Controllers, power and control wiring, customized Software and other associated field devices, hardware and accessories complete in all respect, as per requirement and approved design. The HVAC system START and STOP sequence shall be interlocked to prevent positive pressurization of the BSL-3 laboratory, at any point of time. A dedicated desktop PC shall be provided for the BMS operation and control along with a parallel secondary display screen of 32" size at the BSL-3 laboratory entrance to show the operating parameters.

The BMS control panel shall be powered through UPS. Upon restoration of power after a power failure, the BMS shall start the HVAC system automatically without any human interface and restore the normal operational set points of the system.

3.4 ELECTRICAL SYSTEM AND ASSOCIATED WORKS

The Contractor shall provide the electrical power distribution system scheme for the BSL-3 and ABSL-3 Laboratory. The electrical distribution system shall be designed and installed as per the Indian Electricity Rules and shall conform to NBC.

The contractor shall submit the electrical load calculation sheet, power and light wiring diagrams, GA and Single Line diagrams for Electrical Distribution Panels, cable routing etc., before proceeding with the work.

All the materials, items, fittings and appliances to be used for the works shall conform to the specification given hereunder and manufactured in accordance with the current BIS standard specifications, wherever they exist, else with CPWD specifications.

a) Power Distribution system

The contractor shall design and provide the main power distribution (LT) panel, sub-distribution boards and panels complete with required switchgears, breakers, circuit breakers, power and control wiring, etc. for power distribution system for the BSL-3 and ABSL-3 Laboratory. The power distribution system shall include supply and laying of cabling/wiring for HVAC System and Fixed equipment and systems like Autoclaves, Bio-safety cabinets, access control system, CCTV system etc., required and provided for the Laboratory.

The main Power Distribution panel (LT Panel) shall be manufactured by a CPRI approved manufacturer. The LT Power cables for use on 415 V system shall be of 1100 volt grade, aluminium conductor, PVC insulated, PVC sheathed, armoured and overall PVC sheathed, strictly as per IS: 1554 (part I) - 1976 amended upto date. Cable Glands shall be provided for end termination of cables. These shall be provided at both ends of armoured/unarmoured electrical cables. Cable glands shall conform to BS- 6121 amended as on date. Double compression glands shall be complete with check-nut, gland body, neoprene outer ring, armour clamping cone, armour-clamping ring, armour clamping nut, skid washer & outer seal nut. The power cables shall be neatly dressed on cable trays.

The cables shall be neatly laid and dressed in cable trays. Cable Trays shall be perforated type heavy duty, return flange or inward bend shape, manufactured from mild steel conforming to IS 226 and hot dip galvanised as per IS 2629/BS 729. The width of cable trays shall be as per the requirement.

For circuit and power distribution, the DB's shall be 8/12 way TPN vertical/Horizontal with double door 3 phase/ 1 phase, fitted with ELCB, RCCB, MCB etc. complete as required. The circuits, lighting and power distribution shall be fully wired and complete in all respect. Only multistranded copper conductor wires shall be used for submain wiring, circuit wiring, light and power wiring.

b) Internal Light Points, Power Points, Fittings and Fixtures

The Electrical fittings and fixtures, switches, sockets and lights in the BSL-3 & ABSL-3 Laboratory shall be sealed type, explosion proof, capable to withstand chemical exposures during laboratory fumigation and shall have IP 55 or better protection. The Laboratory rooms shall be provided with 400-450 lighting Lux level. The light fixtures shall be surface mounted type. All the electrical points, power points, light and power sockets shall be fully wired and connections complete in all respect as required.

The internal wiring shall conform to the Indian Electricity Rules and BIS standards. The conduit work for light points, power points, voice and data points, FDA system etc., shall be concealed type and shall be done in rigid PVC as per IS specifications. All the conduit pipes shall be sealed to prevent ingress of air.

c) Fire Detection and Alarm System

The complete BSL-3 and ABSL-3 Laboratory and support areas shall be provided with Addressable type Fire Detection and Alarm System. The Fire Detection & Alarm System shall be complete with Smoke detectors, Heat detectors, Fire Alarm Panel, manual call points, response indicators, power and control wiring and cabling etc. complete in all respect. The Fire Alarm system shall be as per NBC and shall meet the statutory requirements and guidelines.

d) Communication Facility (Intercom & LAN)

The BSL-3 & ABSL-3 Laboratory areas and support and service area shall be provided with Data and Voice points for communication. The system shall be complete with required conduit and wiring. The Data and Voice points shall be fully wired with CAT5/6 cable complete with output terminals.

A suitable EPABX shall be provided for upto 2 incoming lines and 20 outgoing lines for the laboratory for internal communication. All the rooms shall be provided with intercom connection and telephone instrument set. The incoming voice lines and internet connection for the facility shall be procured and provided by CDFD.

e) Door Interlock & Access Control System

The door interlock and access control system shall be provided with combination of proximity card based, numerical key pad lock based and push button based system. The system shall be complete with access logic controllers, door electromagnets, proximity cards and card reader/s, numerical keypad locks, door release push buttons, emergency door release buttons, PC communicator, control and power wiring and cabling and other required accessories, hardware, and software. The access control system shall be powered through UPS supply for uninterrupted operation even during mains power failure. Access Control software shall be provided to perform the following operations.

- Assign the access rights to the individual proximity cardholder/s
- Create database for the authorized persons and assign them access
- Enable/disable access for specified time periods (for visitors etc.)
- Record the transactions and generate transaction reports

The door Electromagnetic Lock shall be suitable for installation on doors/frames. The electromagnetic lock and armature shall be constructed and designed to provide trouble free service. The door electromagnetic lock shall conform to the following specifications:

Operating Voltage	- 12/24 VDC
Protect against corrosion	- The electromagnetic lock and its accessories shall be of anticorrosive finish
Residual Magnetism	- There should be no residual magnetism after release of electromagnetic lock

g) Closed Circuit TV System (CCTV)

CCTV System shall be provided for surveillance of the Laboratory. The CCTV system shall be complete with wall/ceiling mounted high resolution color cameras, multiplexer cum DVR, LCD color monitor 32" size, associated power and control cabling etc. and required hardware and software. The output of the CCTV system cameras shall be displayed on a 32" LCD monitor, to be installed at approved location.

The cameras shall be high resolution color cameras and shall be suitable for indoor installation and shall be equipped with varifocal lenses to enable adjustment for best view. The cameras shall also have auto Iris lens to control the aperture according to the light fluctuations. The cameras shall be suitable to exposure of chemicals during laboratory fumigation.

The multiplexer cum DVR shall be suitable for saving up-to 12 channels analog data, audio, text data and event data with play back feature. The DVR memory/Hard disk capacity shall be 1 TB or higher. For convenient backups the DVR shall be compatible with Windows based OS so that it can be backed up through a PC.

h) UPS and INVERTER

An UPS of 5 KVA (or as required) capacity shall be provided for un-interrupted power backup to critical components like Door Interlock and access control system, BMS Operation and shower control panel operation. The power backup through the UPS shall be for minimum 30 minutes. The UPS shall be complete with battery bank, battery rack, interconnecting cabling and wiring, complete in all respect.

An Inverter of 5 KVA (or as required) capacity shall be provided for backup power to the facility lighting. The power backup through the Inverter shall be for minimum 30 minutes. The Inverter shall be complete with battery bank, battery rack, interconnecting cabling and wiring, complete in all respect.

3.5 EQUIPMENTS AND SYSTEMS

a) AUTOCLAVE

The autoclaves shall be double door, rectangular, steam operated, high pressure high vacuum, suitable for horizontal loading of waste. The autoclave shall be with bio-seal design. The chamber size shall be approximately 600 mm x 600 mm x 1200 mm. The autoclave shall be free standing type. The Autoclave shall be PLC controlled, programmable and shall be loaded with different pre-programmed decontamination and sterilization cycles.

The Autoclave chamber shall be constructed of heavy duty SS of 316 (min. 6 mm thickness) with full argon welding. The chamber material and construction shall meet ASME standards for unfired vessels. The chamber shall be duly reinforced with the help of carbon steel. Doors and jacket shall be constructed of stainless steel sheet of 304 grade (min. 5 mm thickness). Doors must be provided with automatic safety locking and unlocking devices. All doors shall be with gasket to ensure a high temperature seal. Chamber and doors shall be designed for working under positive pressures upto 31 psig at temperature upto 135° C.

The autoclave shall be insulated with 50 mm thick resin bonded glass wool to minimise heat loss and restrict the skin temperature within reasonable limits so as not to cause burn due to accidental touch. Pipes and fittings shall be of stainless steel and bronze. Key locked main power switch should be provided for additional safety and security.

The autoclave shall be provided with a vacuum pump mounted on a mini skid. The vacuum line shall be provided with an absolute vent filter cartridge (0.22 micron or better) for safe vent and shall allow In-Situ decontamination of filter for Safe Change when the filter is to be accessed. The autoclave control system shall be PLC controlled, programmable and shall allow up-to six pre-programmed cycles. The logic of pre-programmed cycles shall be developed as per the requirement of the end users.

The in-built steam generator shall be provided with the autoclave. The steam generator shall be fabricated from SS 316 L (16 gauge) with industrial immersion heater of reputed make. The immersion heaters shall be heavy duty type in stainless steel construction. The heater shall be of suitable capacity so as to achieve the required operating temperature and pressure in about 30 minutes to start the autoclave cycle and should be capable of maintaining the pressure and temperature thereafter during various load cycles of the autoclave.

b) DYNAMIC PASS BOX

Pass Boxes (Dynamic) shall be provided at required locations for transfer of samples, chemicals and materials into the laboratory.

The Pass Box shall be constructed in 18 swg SS 304. The corners inside the Pass Box chamber shall be coved for easy cleaning. The pass box chamber dimension shall be approximately 610 mm x 610 mm x 610 mm. The unit shall be complete with HEPA filters, blower, motor, door electromagnets, door interlock, UV Lamp with timer, necessary wiring, controls and all other accessories. etc. complete.

The Pass Box doors shall be interlocked by providing suitable electromagnet, so that both the door cannot be opened simultaneously. The interlock shall provide visual indicator for door open/close conditions. The blower motor of Pass Box shall be of suitable rating and shall be dynamically and statistically balanced. Magnehelic differential pressure gauge shall be provided to indicate the pass box chamber pressure. The pass box shall be provided with UV light with ON/OFF switch and shall be interlocked with the pass box doors

The Supply Air velocity across the terminal HEPA filter in Pass Box shall be approximately 0.45 m/sec. Noise level shall be less than 70 dB. The pass box shall be installed flush with the wall on BSL-3 Lab side and projected on the other side. The projected side shall be provided with SS coving at the pass box and wall junction.

c) BIOSAFETY CABINET

The Biosafety Cabinets shall be *Class II A2 type* and shall be as per NSF 49 standards. The Bio-Safety Cabinet body, frame and supports shall be constructed in 18 swg SS 316L. The work surface shall be in perforated 18 swg SS 316 L.

The front panel shall be in 18 swg SS 316 L top section and sliding sash in toughened glass with required counter weight.

The Bio-Safety Cabinet shall be complete with following accessories, features and specifications :

- Approx. Work Space of 1000 mm (W) x 610 mm(D) x 610 mm (H)
- Supply Air Face velocity not to exceed 0.65 m/sec
- Working chamber to operate under > 10 mm negative pressure
- Drain receptacle with drain faucet
- Fluorescent light & UV light
- Extract plenum and Air control dampers
- 2 Nos. Power outlet switch/sockets
- 80 to 100 fpm air inlet velocity at 8-10 inches of sash opening
- Supply and Exhaust HEPA filters shall be mini pleat separator less type with 99.97 % efficiency down to 0.3 micron particle size
- Supply and Exhaust Blowers with motor, statically and dynamically balanced.
- Magnehelic differential pressure gauge for chamber and HEPA filters
- Control console with indication lamps

d) DUNK TANK

Dunk tank shall be provided at the required location. The dunk tank shall be constructed in 16 swg SS 304 for active use of disinfectant chemical like NaOH, Sodium Hypo-Chloride Solution. Approx size of dunk tank shall be 550x5500x900 mm

e) SHOWER SYSTEM

The shower system for BSL-3 Lab shall comprise of pre-fabricated cubicle and doors constructed in 16 swg SS 304 of approximately 1.2 mtr. dia. All the joints shall be argon welded and perfectly buffed and shall be free from any blurs and sharp edges. The shower cubicle shall be provided with supply & return air diffusers and light fixture. The shower cubicle door shall be of approximately 750x 2100 mm size. The shower floor shall be perforated type with effluent collection tray at the bottom to allow connection with the effluent drain line.

A water heater/calorifier shall be provided for supply of continuous heated water to the showers at controlled temperature of 30-35 Deg. C, during winters.

The shower system shall be complete with a separate shower water storage tank, insulated water distribution/recirculation piping, water distribution pumps (1W+1S), valves, flow meters, batch controllers (to set each shower cycle), hot water generator, control panel and all other necessary controls, wiring, piping etc. complete as required.

f) AIR COMPRESSOR

Compressed Air system shall be provided complete with 1 no. 5 hp Skid Mounted Air Cooled Compressor (1 working + 1 standby). The air compressor shall be complete with in-built compressed air reservoir, oil and particulate removal filters, starter controls, compressed air distribution piping, pressure regulating valves, ball valves etc. complete in all respect as required and as per approved design and drawing.

The compressed air piping shall be done in heavy class GI pipes with isolation valves fitted at required location to permit uninterrupted maintenance and service of distribution line. The compressed air outlet points shall be provided at the required locations for operation of pneumatic valves and inflatable gasket of fumigation air-lock doors.

g) VENTILATED TYPE GARMENT STORAGE CABINET

The Garment Cabinet shall be provided in inner Change Rooms of BSL-3 & ABSL-3 Lab. The garment cabinet shall be constructed in 18 swg SS 304. The garment cabinet shall be ventilated type fitted with UV Lamp, blower, motor, filter etc., complete. The garment cabinet shall be approx. 1800 mm High X 1500 mm wide X 500 mm deep, in size.

h) LABORATORY WORK STATION

The BSL-3 Lab rooms shall be provided with workstations, as per approved layout drawing. The work stations shall be provided with the most optimum utilization of space in the laboratories. Hand wash sinks and emergency eye wash stations shall be provided integrated with the work station. Taps shall elbow operated laboratory taps.

The workstations in BSL-3 Laboratory shall be constructed in 16 swg SS 304. The workstation shall have under counter storage space and drawers. Each work station and Bio-safety cabinet shall be provided with a laboratory chair. The chair in BSL-3 Laboratory shall be in SS frame and seat (fabric and non-leather finish seats shall not be accepted).

i) WATER SOFTENING PLANT

The HVAC system, the laboratory rooms, sinks and showers shall be supplied with filtered soft water. A water softening plant of 2000 litre/hour output capacity shall be supplied and installed. The contractor shall get the existing water quality tested from laboratory and provide the system accordingly. The water softening system shall be complete with interconnecting piping, pumps and piping upto the soft water storage tanks.

j) EFFLUENT DECONTAMINATION SYSTEM

The Chemical Decontamination System for BSL-3 & ABSL-3 Laboratory shall comprise of Two nos. Effluent Collection tanks (1 Working +1 Standby), each of 1000 Ltrs. Capacity. The decontamination tanks shall be constructed in 14 swg SS 304 with chemical resistant lining/coating from inside suitable for use disinfectant chemical sodium hypo-chlorite, NaOH etc. The effluent decontamination tanks shall be provided with motorized OPEN/CLOSE valves connected with liquid level sensor such that when one tank get filled up to approx. 800 Ltrs volume, the supply valve shall automatically close and the supply valve of the standby tank shall automatically open to allow collection of effluent. During this time, the effluent collected in filled up tank can be decontaminated by introducing disinfectant chemical. This cycle shall be repeated automatically vice-versa with both the decontamination tanks and the process shall be automatically controlled through a control panel.

One number chemical storage tank in 14 swg SS 304 fitted with transfer pump and measuring device, piped and connected to both the decontamination tanks shall also be provided for introducing disinfectant chemical into the decontamination tanks.

The system shall be complete with following items:

- Two nos. Decontamination Tanks, 1000 Lts. capacity each.
- Motorized valve connected with liquid level sensor through control panel
- Disinfectant Chemical storage tank constructed in SS 304 (16 gauge) with chemical resistant lining/coating from inside suitable for use of disinfectant chemicals like sodium hypo-chlorite, NaOH etc.
- Disinfectant Chemical dosing pump (1W+1S) in non-corrosive material construction and seal suitable for use of disinfectant chemicals like sodium hypo-chlorite, NaOH etc.
- Non return valves in non-corrosive material construction and seal suitable for use of disinfectant chemicals like sodium hypo-chlorite, NaOH etc.
- Interconnecting piping including piping for chemical dosing
- Pumps for discharging decontaminated effluent into sewer/drain (1W+1S) Power and control cabling/wiring for pumps and motorized valves with control panel

3.6 BIOLOGICAL LIQUID EFFLUENT DECONTAMINATION SYSTEM - CHEMICAL TREATMENT SYSTEM (ETP)

The Chemical treatment based Effluent Decontamination System for BSL-3 Laboratory effluent shall comprise of Two nos. Effluent Collection tanks (1 Working +1 Standby), each of 500 Ltrs. Capacity. The effluent collection tanks shall be constructed in SS 304 (14 gauge) with chemical resistant lining/coating from inside suitable for use of disinfectant chemicals like sodium hypo-chlorite/NaOH etc. The drain line from BSL-3 Laboratory containment area shall be terminated to the effluent decontamination tanks. The effluent decontamination tanks shall be provided with motorized OPEN/CLOSE valves connected with liquid level sensor such that when one tank get filled up to approx. 800 Ltrs volume, the supply valve shall automatically close and the supply valve of the standby tank shall automatically open to allow collection of effluent. During this time, the effluent collected in the filled up tank can be decontaminated by introducing disinfectant chemical. This cycle shall be repeated automatically vice-versa with both the decontamination tanks and the process shall be automatically controlled through a control panel.

One number chemical storage tank of 500 Ltr capacity, constructed in SS 304 (16 gauge) fitted with transfer pump and measuring device, piped and connected to both the decontamination tanks shall also be provided for introducing disinfectant chemical into the decontamination tanks.

The system shall be complete with following items:

- Two nos. Decontamination Tanks, each of 500 Lts. capacity
- Motorized valves connected with liquid level sensor through control panel
- Disinfectant Chemical storage tank constructed in SS 304 (16 gauge) with chemical resistant lining/coating from inside suitable for use of disinfectant chemicals like sodium hypochlorite, NaOH etc.

- Disinfectant Chemical dosing pump(1W+1S) in non-corrosive material construction and seal suitable for use of disinfectant chemicals like sodium hypo-chlorite/NaOH etc.
- Non return valves in non-corrosive material construction and seal suitable for use of disinfectant chemicals like sodium hypo-chlorite, NaOH etc.
- Interconnecting piping including piping for chemical dosing
- Pumps for discharging decontaminated effluent into sewer/drain (1W+1S) with complete piping system
- Power and control cabling/wiring for pumps and motorized valves with control panel

3.7 SERVICE & UTILITIES

a) Power:

The required incoming Power supply, upto the main LT Panel of BSL-3 & ABSL-3 Laboratory Facility shall be arranged and provided by CDFD. The Contractor shall be responsible for cable termination and further cabling for power distribution to the BSL-3 & ABSL-3 Laboratory.

b) Water:

Water supply shall be provided by CDFD at the nearest available source. The required piping work for water connection to storage tanks and further distribution in BSL-3 and ABSL-3 Laboratory shall be done by the Contractor.

c) Drain & Sewer Line

The effluent drain piping from the BSL-3 and ABSL-3 laboratory, after decontamination, shall be finally terminated to the nearest available drain and sewer line, by the Contractor. Final termination of the treated waste water line in to the existing manhole to be with non return valves with valve chamber.

d) Utilities for laboratory equipment/s

Required services and utilities like water, power, drain etc. needed for the laboratory equipment/s and instruments supplied by CDFD, shall be provided by the contractor, as required.

3.8 STATUTORY APPROVALS

The statutory approvals from authorities like Fire Authorities, Pollution Control Board, Electrical Inspectors, etc., if required and applicable, shall be obtained by the Contractor. CDFD Bhopal shall only provide the required assistance in getting such clearance/s, as required. Official Statutory fees, if any, shall be paid to the concerned department/authority directly by CDFD.

3.9 TESTING, COMMISSIONING AND VALIDATION

- a) After completion of the construction and installation works, all the equipment, systems and services shall be commissioned and tested to check the operation and performance of each of the equipment and system.
- b) Once all the equipment and systems are found to be working satisfactory, the Validation of the BSL-3 Laboratory shall be carried out by the Contractor in the presence of authorized representatives/committee of CDFD, Hyderabad. The Validation shall be carried out in accordance with the NIH Guidelines for commissioning and validation of BSL-3 Laboratories. During the validation process, operation and functioning of complete installations shall be checked to verify that the equipment and systems are delivering the desired and approved performance results. It will be checked to ensure that all the biosafety and biosecurity requirements are met, are in place and are functional.
- c) Before start of the validation process, the Contractor shall submit a detailed validation document giving details of validation checks and tests to be performed, the acceptance criteria as per the approved designs and drawings and the formats for recording the check and test results.
- d) After completion of the validation process, the Contractor shall compile the validation results and submit to CDFD, Hyderabad.
- e) The Contractor shall provide all the test and measuring instruments and tools, manpower etc. required for the Testing, Commissioning and Validation Process.

3.10 DOCUMENTS & DETAILS TO BE SUBMITTED ON COMPLETION

- a) On Completion of the works, the Contractor shall submit the following documents to CDFD, Hyderabad in three sets:
 - Complete Set of 'AS BUILT DRAWINGS'
 - Operation and Maintenance Instructions & Manuals for individual Equipment and Systems
 - Recommended List of Spares and Consumables
 - Preventive Servicing and Maintenance Schedule
- b) The Contractor shall submit the '**Bio-Safety Manual**' clearly highlighting all the bio-safety aspects, precautions, safeties and emergencies, applicable to this BSL-3 Laboratory Facility.
- c) The Contractor shall submit the Technical Specifications and Data sheet for all the equipment/s and systems supplied and installed.
- d) The Contractor shall submit a written undertaking that spares and after sales services for all the equipment, systems and services installed in the facility shall be made available for a period of at least 10 years (Ten Years) from the date of handing over the facility. The after sales services may be availed by the Employer from the Contractor under a separate Operation and Maintenance Contract.

3.11 EXTERNAL VALIDATION

CDFD, Hyderabad may desire to get the BSL-3 Laboratory validation done by external experts and the contractor shall provide all the required assistance for carrying out the validation by external experts.

The Contractor shall extend full cooperation and provide the validation instruments, tool, tackles and manpower etc., as required and asked by the employer

3.12 COMPREHENSIVE ANNUAL OPERATION & MAINTENANCE SERVICES

3.12.1 After Completion of Works and Handing Over, CDFD may ask the Contractor to provide Comprehensive Operation and Maintenance services for a period of 1-5 years at the quoted and pre-approved rates invited in the tender, and enter into a contract for comprehensive annual operation and maintenance services with the Contractor.

3.12.2 The Comprehensive Operation and Maintenance Services to be provided by the Contractor shall include:

- a) Providing qualified, experienced and trained manpower for handling operation of the Laboratory Facility on day-to-day basis on all working days
- b) To carry out routine and preventive servicing and maintenance of the equipment, system and services like Chiller, AHU, Exhaust Blowers, Autoclave, Biosafety Cabinet, Pass Box, Access Control System, BMS, Building Electrical System, Fire Alarm system etc., installed in the facility.
- c) Attend to and carry out any breakdown maintenance works required from time to time, as and when it occurs and notified by the Employer.
- d) Maintain daily Log Sheet of laboratory operating parameters
- e) Providing Spares and Consumables for various equipment, systems and services like BMS, Access Control System, Gaskets (for Doors and Pass Box), Filters, Valves, Light Fittings, spare switches and sockets etc. and maintain suitable inventory at site during the period.
- f) Maintenance of electrical system, services and construction works executed by the contractor
- g) Annual Validation of the Laboratory Facility

3.12.3 The following works and consumables shall not be included and covered in the scope of Contractor in the Comprehensive Operation and Maintenance Services:

- a) Supply of power, water and fuel
- b) Internal and External Painting of the Building
- c) Chemicals/reagents for use in laboratory for Fumigation/Decontamination
- d) Water and Power including change of batteries for UPS and Inverter
- e) General Housekeeping works including associated consumables
- f) Day-to-day operation of equipment/item installed for the BSL-3 & ABSL-3 Lab.
- g) Maintenance of any external works or roads
- h) Maintenance of equipment and items supplied directly by CDFD
- i) Damage or loss of item/equipment caused due to fire and theft

- 3.12.4 In case the performance of the Contractor during the Comprehensive Operation and Maintenance Services is found to be un-satisfactory, the Employer may terminate the Contract by giving one month notice to the Contractor and proceed to appoint a new agency
- 3.12.5 During the operation and maintenance period, the RESPONSE TIME by the contractor should not exceed 24 hours from the time the breakdown intimation is given by the user.
- 3.12.6 During the operation and maintenance period, it is expected that the Contractor shall attend the breakdown and rectify the fault/s promptly with minimum possible downtime. The maximum permitted DOWNTIME shall be 48 Hours from the time the intimation is given by the user.

If the repair/rectification is not carried out by the Contractor within the themaximum permitted DOWNTIME, the Employer shall charge penalty, for each breakdown instance, subject to a maximum of 10% of the Annual Contract Value,as follows:

Above 48 hours & Below 96 hours - Penalty of 1% of the Annual Contract Value

Above 96 hours & Below 192 hours - Penalty of 1.5% of the Annual Contract Value

Above 192 Hours - Penalty of 2% of the Annual Contract Value and get the work repair/rectification done from third partyat the Contractor' sRisk and Cost

- 3.12.7 The contractor shall maintain sufficient Inventory of required spares and consumables at site to minimize the downtime and to ensure smooth operation and functioning of the Laboratory.
- 3.12.8 Before entering into the Comprehensive Operation and Maintenance Contract, the Contractor shall submit details of manpower proposed to be deployed at site, detailed schedule of preventive servicing and maintenance works, the formats for maintaining daily log sheet and servicing and maintenance records and details of spares and consumables to the Employer
- 3.12.9 Payment for Comprehensive Annual Operation and Maintenance Contract Services shall be made by the Employer to the Contractor on QUARTERLY basis, in proportionate amount to the yearly quoted price for the services.

LIST OF APPROVED MAKES / MANUFACTURERS

ITEM	APPROVED MAKES /MANUFACTURER
Hot water Generator/Calorifier	: Rapidcool / Khokar / Emerald
Double skin type AHU	: Blue Star/Caryaire/Suvidha/Carrier/Zeco
Pumps	: Kirloskar/Beacon/Greaves
Centrifugal blower for AHU	: Nicotra/ Comferi/ Flakt / Kruger
Motors	: Crompton/Siemens/ Bharat Bijlee/ ABB
Exhaust Blowers	: TCF /NADI/Kruger/Caryaire/Carrier/Zeco
MS Pipes	: ITC/ Jindal/ Tata/ SAIL/ HSL
Isolation Damper	: Trox/Camfil/YIT/Klenzaid
VAV	: Trox/ Aldes/Celmec/Tekair
HEPA Filters	: AAF/Camfil/YIT//Klenzaid/Thermadyne
Containment HEPA Filter housing	: Camfil/YIT/Klenzaid
VFD	: ABB/Seimens/AllenBradley/Danfoss
Pressure sensor & transmitter	: Honeywell/Dawyer/Danfoss/Siemens
Temperature sensor & transmitter	: Honeywell/Dawyer/Danfoss/Siemens
Humidity sensor & transmitter	: Honeywell/Dawyer/Danfoss/Siemens
BMS system	: Rockwell / Siemens /ABB
PLC	: AllenBradley/Siemens
Magnehelic Gauges	: Dawyer
Grilles/Diffusers	: Carryaire/MK precision/System Air/Airvision
Biosafety Cabinet	: Esco/Nuaire/Klenzaid/Thermo
Autoclave	: Pharmalab/Klenzaid/Machinfabrik
Dynamic Pass Box	: Esco/Klenzaid/I-Clean
Fire Alarm System	: Honeywell/System Sensor/GST/Siemens
Door Interlock & Access Control	: HID/LG/ESFL
UPS & Inverter	: Tata Emerson/APC/Sukam
CCTV Camera	: BOSCH/Pelcin/Sony
LCD for CCTV display	: Samsung/LG/Sony/Panasonic
Butterfly Valves	: Audco/ C&R/ Castle/ Arrow/Intervalve
Gate Valves	: Leader/ BankimSarkar/ Divine/ Sant
Balancing Valves	: Advance / C&R/ Castle/ Arrow/ Audco

Y – Strainers	:	Emerald/ Scientific device/Rapidcool
NR Valves	:	Advance /C&R/ Castle/ Arrow/ Univass
Flow Switch.	:	Jhonson/Honeywell/Staefa
HVAC Control valves	:	Honeywell/ Johnson/ Danfoss
3-Way Valves	:	Johnson/ Honeywell/Siemens
Modulating Motors	:	Honeywell./Jhonson/Siemens/Danfoss/Trox/Belimo
Pressure & Temperature gauges	:	H. Guru/ Fiebig/ Japsin/Forbesmarshall
LT Panel	:	CPRI approved manufacturer
Electrical Switch Gears	:	L&T/ABB/Siemens/Schneider
Starters.	:	L & T/Siemens/ABB
Distribution Board	:	Legrand/L7T/ABB/Havells/Schneider
Diesel Generator Set	:	Kirloskar/Cummins/Volvo Penta
Cables and wires	:	Polycab/Finolex/Gloster/National
CAT5/6 cables	:	AT&T/KABEL/LUCENT/LAPP/Digilink
Protection Relays	:	ABB/L&T/Seimens/Schneider
Single phase preventor	:	L&T / Minilec
Fire damper with controls	:	Caryaire/ Dynacraft/ Ravi star /Trox
V belt/ Pulley	:	Fenner/ Dunlop
Heaters	:	Daspass/Escorts
Ammeter/Voltmeter	:	Rishabh/L&T/Schneider
PVC Conduits and accessories	:	Precision/Polycab/Supreme
Prefabricated wall and ceiling panels	:	Nicomac/I-Clean/GMP
Laboratory Doors	:	Nicomac/I-Clean/GMP
Epoxy Coating	:	Dr. Beck / Apurva / Fosrok/Cleancoats
Air Compressor	:	ATLAS COPCO / INGERSOLL RAND

Any item not included above shall conform to the relevant BIS specifications, wherever applicable.

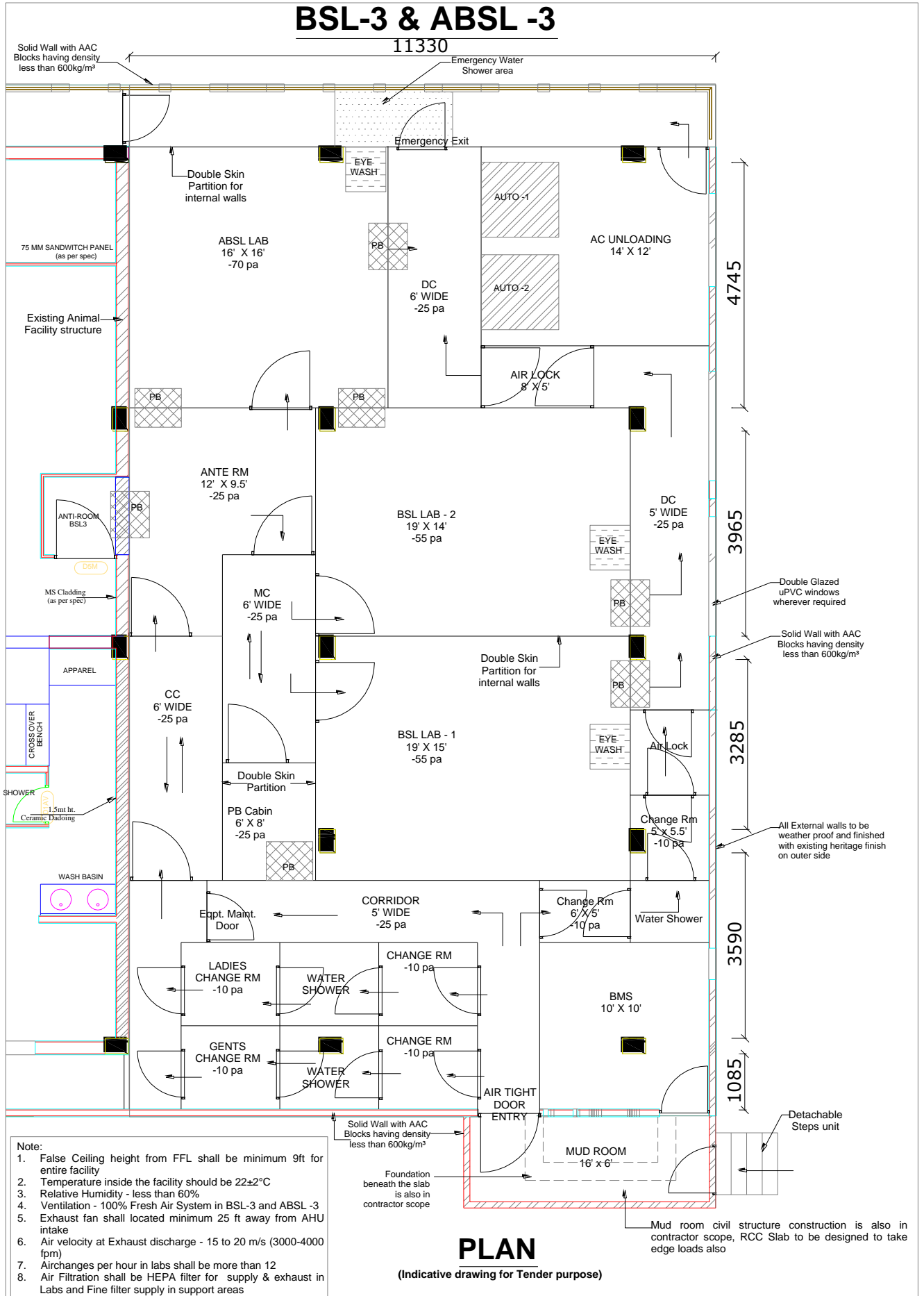
CHECKLIST FOR SUBMISSION OF TECHNICAL PROPOSAL & COMPLIANCE

The Bidder shall submit the technical proposal and details for the offered item / equipment along with supporting details like drawings, catalogues and brochures in support of compliance.

Sr. No.	Item of Work	Proposed Make / Model	Offered Specifications w.r.t. Tender Specifications	Supporting documents Submitted (drawing/catalogue/brochure)	Reference BSL-3 Lab, where similar item / equipment is supplied and installed by the Contractor
1	Air Handling Units				
2	Hot water generator				
3	Exhaust Blower				
4	HEPA Filters				
5	HEPA Plenums / Containment Housing				
6	AHU Controls (3-way valve and Actuator)				
7	VAV Device				
8	VFD				
9	Isolation dampers				
10	Dampers & Actuators				
11	BMS System				
12	Double Door Autoclave				
13	Biosafety Cabinet				
14	Garment Cabinet				
15	Dynamic Pass Box				
16	Dunk Tank				
17	Main Electrical Panel (LT panel)				
18	Electrical Light Fittings & Fixtures				
19	Electrical Switches & Sockets				
20	Data and Voice Outlet Sockets				
21	Fire Detection & Alarm system				

22	Door Interlock and Access Control system				
23	CCTV system				
24	UPS & batteries				
25	Inverter & batteries				
26	Shower System				
27	Air Compressor				
28	Effluent Decontamination system				
29	Service Pendant				
30	Hand and eye wash station				
31	Exhaust Canopy/Hood				
32	Workstations and Chairs				
33	Prefabricated wall and ceiling panels				
34	Doors				
35	View panels / windows				
36	Epoxy Flooring				
37	Water Softening System				
38	Effluent Treatment Plant				

BSL-3 & ABSL -3



TENDER

FOR

**ESTABLISHMENT OF BSL-3 & ABSL-3 LABORATORY
AND ASSOCIATED WORKS
AT
CENTRE FOR DNA FINGERPRINTING AND
DIAGNOSTICS
'ON TURNKEY BASIS'**

“PRICE BID”

NOVEMBER, 2016



**CENTRE FOR DNA FINGERPRINTING AND DIAGNOSTICS
NAMPALLY, HYDERABAD, TELANGANA
Telephone :040-24749321/22/23 , FAX - 040-24749448
Website :www.cdfd.ord.in**

PRICE BID / BILL OF QUANTITY

The rates to be quoted for each item of the Price Bid/BOQ in Indian Rupees, both in figures and words for the execution of work on 'Turnkey Basis' including all the required material, labour, accessories, tools & tackles etc., taxes, duties & levies for the complete work, as per Scope of Work, Specifications and approved design & drawings. All the pages shall be stamped and signed by the authorized representative of the Bidder. The Price Schedule with rates and amount duly filled in and signed shall be submitted in a separate sealed envelope, as given in Instructions to Bidder.

Item No.	Item / Work Description	Unit	Qty.	Rate (In Figures)	Rate (In Words)	Amount
A.	<p><i>Detailed Design and preparation of working drawings, Construction and Establishment of BSL-3 & ABSL-3 Laboratory Facility and associated works at Centre for DNA Fingerprinting and Diagnostics, Hyderabad, Telangana on 'Turnkey Basis' in accordance with the Fifth edition of BMBL Guidelines issued by the U.S. Department of Health and Human Services, CDC, USA' including Testing, Commissioning and Validation of the facility</i></p> <p>The scope of work shall include Detailed Design & preparation of working drawings, Civil Construction, Internal construction and finishes, plumbing System and associated works, Electrical System and associated works, HVAC System and associated works, Building Management System, shower system, Door Interlock & access control system, FDA system, CCTV System, UPS & Inverter, Intercom and LAN (Data & Voice) system, Autoclave, Biosafety Cabinets, Pass Box, dunk tank, garment cabinets, hand & eye wash stations, work stations, air compressor, water softening plant, effluent decontamination system, and other required and associated works as given in the Scope of Work and Technical Specifications, as per approved designs and drawings on 'Turnkey Basis' .</p>	Turnkey Lumpsum Job	01			
	TOTAL (A) - In Figures (Rs.)					
	TOTAL (A) - In Words (Rs.)					

Signature & Seal of Bidder

Comprehensive Operation & Maintenance Services of the BSL-3 & ABSL-3 Laboratory including spares and consumables as given in the Scope of Work. The comprehensive operation & maintenance services shall be at the discretion of the Employer and may be availed for a period of 1-5 years, as required and decided by the Employer. The rates quoted by the Bidder shall be inclusive of required material, labour, accessories, tools & tackles etc., taxes, duties & levies for the complete work and shall remain firm, fixed and valid for acceptance for the entire duration and shall remain binding on the Bidder. The quoted rates for comprehensive operation & maintenance services shall be considered for evaluation of Price/Financial Bids.

Item No.	Item / Work Description	Unit	Qty.	Rate (In Figures)	Rate (In Words)	Amount
B.	<u>Comprehensive Operation & Maintenance Services</u> Providing Comprehensive Operation and Maintenance Services for Ten Years after Handing Over including providing required manpower, tools and tackles, spares, consumables, taxes, duties & levies etc., Annual Validation of the Laboratory, complete as given in the Scope of Work, Technical Specifications and Conditions of Contract					
1	During 1st Year, after Handing Over	LS Job	1			
2	During 2 nd Year, after Handing Over	LS Job	1			
3	During 3 rd Year, after Handing Over	LS Job	1			
4	During 4 th Year, after Handing Over	LS Job	1			
5	During 5 th Year, after Handing Over	LS Job	1			
	TOTAL (B) - In Figures					
	TOTAL (B) - In Words					

Signature & Seal of Bidder