Foundation for Innovative New Diagnostics (FIND)

Advertised Tender Enquiry (ATI)

Bid document

For

Design, Construction, Testing, Commissioning and Validation of TB Containment Laboratories and Associated Works on 'Turnkey Basis' under Revised National Tuberculosis Control Programme (RNTCP) across India

IFB NO.: SAMSPL/18-19/ET/2

(Procurement Agent)

STRATEGIC ALLIANCE

Management Services Pvt. Ltd.

B 01- 03, Vardhman Diamond Plaza, Community Centre, Motia Khan, D B Gupta Road, Paharganj, New Delhi- 110 055, India

Phones: 011-43580626/7

Email: procurement@samsconsult.com

Website:www.samsconsult.com

Advertised Tender Enquiry (ATI)

Bid Document

for

Design, Construction, Testing, Commissioning and Validation of TB Containment Laboratories and Associated Works on 'Turnkey Basis' under Revised National Tuberculosis Control Programme (RNTCP) across India

Key Bidding Information

IFB No.	**SAMSPL/18-19/ET/2**
e-Procurement Portal (Powered by MSTC Ltd.)	http://www.mstcecommerce.com/eprochome/samspl/
Name of the Project	**Procurement of Equipment, Goods, Works Services and Reagents for Foundation for Innovative New Diagnostics (FIND) for The Global Fund Project under the Revised National Control Programme (RNTCP), Govt. of India; Contract no. PA/THE GLOBAL FUND/001/2013-14]**
Source of Funding	**The Global Fund to Fight AIDS, Tuberculosis and Malaria (The Global Fund)**
Date of Commencement of Download of Bidding Documents	18th October 2018 *(to download Bidding Documents, click on" Download NIT/Corr." Link on e-Procurement Portal)*
Last Time and Date for Receipt of Request for Clarifications	By 1700 hours on 29th October 2018 (All such request must be submitted through mail to *procurement@samsconsult.com)*
Pre-Bid Meeting Type	**Online and Offline**
Time and Date for Pre-Bid Meeting	1500 hours on 30th October, 2018
Last Time & Date for Online Submission of Bids	1430 hours on 20th November, 2018 *(to submit Bid, please register on the e-Procurement Portal by clicking "Register as Vendor" link on e-Procurement Portal)*
Time & Date for Opening of Technical Bids	1500 hours on 20th November, 2018
Place of Pre-Bid Meeting (offline)	Strategic Alliance Management Services Pvt. Limited (SAMS), B01-B03, Vardhman Diamond Plaza, Community Centre, Motia Khan, D.B. Gupta Road, Paharganj, New Delhi 110055, INDIA
Contact details of MSTC's Support Team	1. Mr. Chirag Sindhu; Mob: 9830336290; e-mail: chiragsindhu@mstcindia.co.in 2. Mr. S D Sharma; Mob: 7878055855; e-mail: sdsharma@mstcindia.co.in
Time Zone	All time shown are as per Indian Standard Time (IST)

Advertised Tender Enquiry (ATI)

Bid Document

for

Design, Construction, Testing, Commissioning and Validation of TB Containment Laboratories and Associated Works on 'Turnkey Basis' under RNTCP across India

IFB No.: SAMSPL/18-19/ET/2 **Dated: 18th Oct, 2018.**

1. Strategic Alliance Management Services Pvt. Ltd. (SAMS) has been engaged by FIND for providing procurement consultancy services for equipment, goods, works and services for TB Laboratories across India for the Revised National Tuberculosis Control Programme (RNTCP), Govt. of India under The Global Fund grant Project. FIND has plans to upgrade/establish the NINE (9) TB Containment Laboratories in the Medical Colleges/ Govt. Hospitals / Institutions across the India for the RNTCP.

2. **SAMS hereby invites e-bids for from eligible and qualified Bidders for the Design, Construction, Commissioning, Testing, and Validation of TB Containment Laboratories and associated works on 'turnkey basis' at 09 sites as given in Schedule of Requirement of the Bid Document. The number of Site may increase also as per the need and this will be intimated during the Pre bid meeting.**

3. Bidding will be conducted through SAMS e-Bidding Portal by 'Advertised Tender Enquiry' method and procedures as set out in the 'General Financial Rule – 2017' and Manual of Policies and Procedure for Purchase of Goods and Works issued by Department of Expenditure, Ministry of Finance, Govt. of India.

4. Interested Bidders may freely download the Bidding Document from the websites i.e. www.samsconsult.com and e-Procurement Portal http://www.mstcecommerce.com/eprochome/samspl/

5. Bidders intending to submit their bids, should register themselves as 'Vendor' by clicking "Register as Vendor" link on e-Procurement Portal. **Such bidders are required to deposit a non-refundable Transaction fee of Rs.15,000/- plus applicable GST at the time of bid submission.** The bidders who have deposited the transaction fee as above will only be able to submit the bids online.

6. All corrigendum/addendum will be uploaded on SAMS website and e-Procurement Portal. Bidders who are interested in participating in the bidding may refer to e-Procurement Portal from time to time and shall be solely responsible for checking above websites for any corrigendum/addendum issued subsequent to publication of this ATI take the same into consideration while preparing and submitting their bids.

7. Bidders' representatives are invited to attend an offline/in person (physical) **pre-bid meeting at 1500 hours on 30/10/2018** at the address mentioned above. Please note that non-attendance at the pre-bid meeting will not be the cause of disqualification of bidders. Bidders can also participate in an online pre-bid meeting by logging in to the e-Procurement Portal and clicking on the Pre-bid meeting link on the E-Procurement Portal at the scheduled time and date of pre-bid meeting.

8. Bidders who are unable to attend the pre-bid meeting (online or offline) can send their written requests for clarification, if any up to 1800 hours on 29/10/2018 at email procurement@samsconsult.com

9. **Bids must be submitted online on or before1430 hours on 20/11/2018 by Bidders**, registered as Vendor on the e-Procurement Portal using the link Auc-Floor Manager. All documents required towards submission of bids must be uploaded online. **Only Original Bid Security should be deposited at the Purchaser's address up to1800 hours on 26/11/2018.**

10. **The Technical Bids will be opened at 1500 hrs on 20/11/2018 on the e-Procurement Portal** and the name of bidders who have submitted their bids upto scheduled date and time shall be made available to all Bidders at the E-Procurement Portal.

All times shown above are as per Indian Standard Time (IST).

Sanjay Rastogi
Director, SAMS

SECTION– I: INSTRUCTIONS TO BIDDERS (ITB)

A. PREAMBLE

1. INTRODUCTION

1.1 Strategic Alliance Management Services Private Limited (SAMS), acting as Procurement Agent on behalf of Foundation for Innovative New Diagnostics (FIND), New Delhi (hereinafter referred as "Purchaser") has issued this Bid Documents for selection of Contactor(s) to Design, Construction, Commissioning, Testing, and Validation of TB Containment Laboratories and associated works on 'turnkey basis' at NINE (09) sites as given in Schedule of Requirement of the Bid Documents.

1.2 This Chapter provides the relevant information as well as instructions to assist the prospective bidders in preparation and submission of bids. It also includes the mode and procedure to be adopted by the Purchaser for receipt and opening as well as scrutiny and evaluation of bids and subsequent placement of award / contract.

1.3 Before preparing the bid and submitting the same to the Purchaser, the bidder should read and examine all the terms & conditions, instructions etc. contained in the Bid Documents. Failure to provide required information or to comply with the instructions incorporated in this Bid Documents may result in rejection of bids submitted by bidders.

2. AVAILABILITY OF FUNDS

2.1 Expenditure to be incurred for the proposed works will be met from the funds provided by The Global Fund to Fight AIDS, Tuberculosis and Malaria (THE GLOBAL FUND).

3. SITE VISIT

3.1 **It is strongly recommended that the Bidders may visit and examine, at their own expense, the Site of Works and its surroundings and obtain all information that may be necessary for preparing the bid and if awarded the work, entering into a contract for successful execution and completion of the work.**

4. LANGUAGE OF BID

4.1 The bid submitted by the bidder and all subsequent correspondences and documents relating to the bid exchanged between the bidder and the Employer, shall be written in English language. However, the language of any printed literature furnished by the bidder in connection with its bid may be written in any other language provided, the same is accompanied by an English translation and, for purposes of interpretation of the bid, the English translation shall govern**.**

5. BIDDER'S ELIGIBILITY

5.1 This invitation for bids is open for all Organizations (Proprietorship Firms, Partnership Firms, Limited Liability Partnership Firms, Companies registered under Companies Act, 1956 or Societies Act, Trusts, Societies registered under respective Act and

Jurisdiction in India). Bidders may form consortium with other Organizations to enhance their qualification.

6. BIDDING EXPENSES

6.1 The bidder shall bear all costs and expenditure incurred and/or to be incurred by it in connection with its bid including preparation, registration on e-portal and submission of its bid and subsequently processing the same. The Purchaser will, in no case be responsible or liable for any such cost, expenditure etc. regardless of the conduct or outcome of the bidding process.

B. BIDDING DOCUMENTS

7. CONTENT OF BIDDING DOCUMENTS

7.1 The Bidding Documents include the following Sections, in addition to the 'Notice Inviting Tenders (NIT):

- Section I – Instructions to Bidders (ITB)
- Section II – Technical Proposal – Standard Forms
- Section III – Financial Proposal – Standard Forms
- Section IV – Schedule of Requirement, Technical Specifications and drawings/ Layouts of Laboratories and required works
- Section V – Contract Form and Conditions of Contract
- Section VI – Other Standard Form - Bid Security in Form of Bank Guarantee

7.2 The relevant details of the required works and services, procedure for bidding, bid evaluation, placement of contract, the applicable contract terms and also the standard formats to be used for this purpose are incorporated in the above-mentioned chapters. The interested bidders are expected to examine all such details etc. to proceed further.

8. AMENDMENTS TO BID DOCUMENTS

8.1 At any time prior to the deadline for submission of bids, the Purchaser may, for any reason deemed fit by it, modify the Bid Documents by issuing suitable amendment(s) to it.

8.2 Such an amendment will be notified on e-procurement portal and SAMS website www.samsconsult.com and the same shall be binding to all prospective Bidders.

8.3 In order to provide reasonable time to prospective bidders to take necessary action in preparing their bids as per the amendment, the Purchaser may, at its discretion extend the deadline for the submission of bids and other allied time frames, which are linked with that deadline.

8.4 Any bidder who has purchased/downloaded the Bid Documents should watch for amendment, if any, issued on the above website and The Purchaser will not issue separate communication to them. Purchaser shall not be responsible in any manner if prospective Bidders miss any notifications placed on above websites

9. CLARIFICATIONS OF TENDER DOCUMENTS

9.1 A prospective bidder requiring any clarification regarding Scope of Work and Technical Specifications, conditions of contract, etc. given in the Bid Documents may submit written request for clarifications to SAMS by post/email up to 1700 hrs. on 29/10/2018. Copies of the Purchaser's response shall be promptly published at the Purchaser's website and e-Procurement Portal, including a description of the inquiry but without identifying its source.

9.2 All the prospective bidders will be notified of response to clarifications only through websites www.samsconsult.com and e-procurement portal. Any bidder who has downloaded the Bid Documents should watch for clarifications, if any, issued on the above website and The Purchaser will not issue separate communication to them.

9.3 The Purchaser shall not be responsible in any manner if a prospective bidder fails to notice any notifications placed on above websites.

10. PRE-BID MEETING

10.1 In order to provide response to any doubt regarding scope of work and technical specifications and conditions of contract etc. given in the Bid Documents, a pre-bid meeting (physical and online) has been scheduled to be held in the office of the Purchaser at **1500 hrs. on 30/10/2018**

10.2 The Bidders, registered as Vendor on e-Procurement Portal as per instructions given in ITB Para 19 can participate in the Pre-bid meeting online after login as Vendor and post their query online. The Bidders who have not registered themselves as Vendor have option to attend physical Pre-bid meeting at the venue specified in the ITB 10.1.

10.3 During the pre-bid meeting, the clarification sought by representative of prospective bidders shall be responded appropriately. However, they shall be asked to submit their written request by close of office next day. The Purchaser shall upload written response to such requests for clarifications, without identifying its source. In case required, amendments, in terms of Para 7 above shall be issued, which shall be binding on all prospective bidders.

C. PREPARATION OF BIDS

11. DOCUMENTS COMPRISING THE BID

11.1 The Bid shall comprise two parts submitted simultaneously, one part containing the **Technical Bid** and the other the **Price Bid**, both online (except for original Bid security).

A) TECHNICAL BID

i) Bid Document Fee furnished in accordance with NIT Para 5.
ii) Earnest money furnished in accordance with ITB Para 16;
iii) Documents in support of qualification criteria as stated in ITB Para 25.A.
iv) Technical Bid Forms, duly filled as per formats given in the Bid Documents as under:
   (1) Form TECH-1: Form of Bid (Technical)
   (2) Form TECH-2: Bidders' Information Form

(3) Form TECH-3: Bidders' Preliminary Programme
(4) Form TECH-4: Proposed Project Team And Organizational Structure
(5) Form TECH-5: Works Management System
(6) Form TECH-6 : Proposed Subcontractors and Suppliers
(7) Form TECH-7 : Proposed Methodology to Execute the Works
(8) Form TECH-8: Technical Compliance sheet
(9) Form TECH-9: Proposed specifications and Make/ manufacturer for item/material which bidder plans to use for the work

v) Power of Attorney in favour of signatory of Bid.
vi) Certificate of Incorporation/ Registration of the bidder and Consortium partner(s) (as the case may be).
vii) Letter of Association from all Consortium Partners to associate with the prime bidder (as the case may be) issued on their letter heads.
viii) Self-attested copy of Income Tax Registration Certificate / PAN card
ix) Self-attested copy of GST registration
x) Supporting Documents showing Qualification of the Bidders for the required Works as per ITB para 25 A (Assessment of Qualification)

B) PRICE BID

Bidder should submit Price Bid **for each quoted Schedule** in accordance with the forms indicated in Section-III:

(1)Form FIN-1: Form of Price Bid (Financial)
(2)Form FIN-2: Lump sum Contract Price
(3)Form FIN-3: Price Bill of Quantity (item wise)

12. BID CURRENCIES

12.1 The bidder providing services as per the scope of services should quote in Indian Rupees only.

12.2 Bids, where prices are quoted in any other currency shall be treated as non - responsive and rejected.

13. BID PRICES

13.1 Prices shall be quoted online as specified in the e-Bidding Portal. The format of the Price Bid is included in Section III. Sample Bid Forms included in the bid is for reference only.

13.2 The Bidder shall indicate on the FIN Forms provided in Section III, total bid prices of the Works including goods and services as per Scope of Services given in Bid Documents. Fixed price to be quoted against required works against each Schedule.

13.3 Prices quoted by the Bidder shall be fixed during the Bidder's performance of the Contract and not subject to variation on any account. A bid submitted with an adjustable price quotation will be treated as nonresponsive and will be rejected, pursuant to ITB Clause 29.

14. FIRM PRICE

14.1 The Prices quoted by the bidder shall remain firm and fixed during the currency of the contract and not subject to variation on any account.

15. ALTERNATIVE BIDS

15.1 Alternative bids shall not be accepted. The bidder should not submit more than one bid for any Schedule.

16. DOCUMENTS ESTABLISHING COMPLIANCE OF WORKS AND SERVICES AS PER BID DOCUMENTS

16.1 The bidder must submit Bid Form duly signed by authorised signatory certifying compliance on the Scope of works and technical specifications incorporated in the Bid Documents.

16.2 In case there is any variation and/or deviation between the Scope of works and technical specifications prescribed by the Purchaser and that offered by the bidder, the bidder shall list out the same in the above statement without any ambiguity.

16.3 If a bidder furnishes wrong and/or misguiding/misleading data, statement(s) etc. about the services offered by it, its bid will be liable to be ignored and rejected in addition to other remedies available to the Purchaser in this regard.

17. EARNEST MONEY DEPOSIT (EMD)

17.1 Bidders shall furnish along with its bid, earnest money deposit (EMD) / Bid Security for the quoted Schedules as per table below:

Schedule No.	Name of Laboratory for Up-gradation Works	Amount of EMD (INR)
I	DR-TB Centre Falkawn, MIMER Medical College Campus, Aizawl, Mizoram	1,00,000/-
II	Government Medical College, Department of Microbiology, 2nd Floor, Collector office road, Near Ashok watika, Akola, Maharashtra	1,00,000/-
III	Moti Lal Nehru Medical College (MLNMC), Allahabad, Uttar Pradesh	1,00,000/-
IV	State TB Hospital Campus, Idgah Hills, Bhopal-462001 Bhopal. Madhya Pradesh	1,00,000/-
V	S.P Medical college & Associated Group of Hospitals, Bikaner, Rajasthan	1,00,000/-
VI	Coimbatore Medical College Hospital, No.1619 A, Trichy Rd, Near. Railway Station, Coimbatore, Tamil Nadu	1,00,000/-
VII	Murshidabad Medical College and Hospital, Station Road, Berhampore, Murshidabad, West Bengal	1,00,000/-
VIII	Pandit B D Sharma Post Graduate Institute of Medical Sciences (PGIMS) Rohtak, Haryana	1,00,000/-
IX	Sri Venkateswara Govt. Medical college (SVMC), Tirupati, Andhra Pradesh	1,00,000/-

17.2 16.2 In case, a bidder is submitting bids for multiple Schedules, it may choose to submit bid security for total amount of all the quoted Schedules together. The earnest money shall be in the form of Demand Draft / Bank Guarantee / Fixed Deposit Receipt.

17.3 The bidders who are registered with MSME or NSIC for the Works/ Services to be procured under this NIT are exempted from submission of bid security. In such case, bidder should submit copy of MSME or NSIC registration and documents showing exemption from submission of bid security, in lieu of bid security.

17.4 Bid without valid EMD or MSME /NSIC Certificate, bid shall be rejected.

17.5 The Bid Security should be provided from any commercial bank and should be pledged to Strategic Alliance Management Services Private Limited, payable at New Delhi. In case bid security is submitted in the form of a Bank Guarantee, it should be as per the format given in the Bid Documents.

17.6 The earnest money deposited in the form of BG / FDR shall be valid for 180 days from the due date of submission of bids.

17.7 Unsuccessful bidders' earnest money will be returned to them without any interest, after expiry of the bid validity period, but not later than thirty days after conclusion of the resultant contract. Successful bidder's earnest money will be returned without any interest, after receipt of performance security from successful bidder.

17.8 Earnest Money is required to protect the Purchaser against the risk of the Bidder's conduct, which would warrant the forfeiture of the EMD. Earnest money of a bidder will be forfeited, if the bidder withdraws or amends its bid or impairs or derogates from the bid in any respect within the period of validity of its tender or if it comes to notice that the information/documents furnished in its tender is incorrect, false, misleading or forged without prejudice to other rights of the Employer. The successful bidder's earnest money will be forfeited without prejudice to other rights of the Purchaser if it fails to furnish the required performance security within the specified period.

18. BID VALIDITY

18.1 The bids shall remain valid for a period of 150 days after the due date of submission of bids. Any bid valid for a shorter period shall be treated as nonresponsive and rejected.

18.2 In exceptional situations, the bidders may be requested by the Purchaser to extend the validity of their bids up to a specified period. Such request(s) and responses thereto shall be conveyed by speed-post/e-mail. The bidders, who agree to extend the bid validity, are to extend the same without any change or modification of their original bids are also required to extend the validity period of the EMD accordingly. A bidder, however, may not agree to extend its bid validity without forfeiting its EMD.

D. SUBMISSION OF BIDS

19. SUBMISSION OF BIDS

19.1 Bidders' Registration on e-Procurement Portal, System Requirements and Settings

A. Bidders are required to onetime 'Register as Vendor' on MSTC's e-Procurement Portal (free of cost) using link http://www.mstcecommerce.com/eprochome/samspl/ *[click 'Register as Vendor' link, fill requisite details and create Vendor Login 'username' and 'password'. Bidders may refer to 'Vendor Guide' for detailed instructions, available at the above link]*

B. In order to Register as Vendor, Bidder should possess a valid Class III signing Type Digital Signature Certificate (DSC). For DSC to appear in the signer box, disable the "Protected Mode" by following the steps as under:

=>Tools

=> Internet Options

=> Security

=> Disable protected mode if enabled i.e. remove the tick from the tick box mentioning "Enable Protected Mode".

The system requirements for use of e-Procurement Portal is as under:

- Operating System: Windows XP Service Pack III and above
- Web Browser – Preferably Internet Explorer 7 and above
- Java (JRE7 Update 45) *[to download, click on the 'Java Download' link at the above link)]*
- Active-X Controls should be enabled as follows:

  =>Tools

  =>Internet Options

  =>Security

  => Custom Level

  =>Enable all Active-X Controls

  =>Disable "Use Pop-up Blocker"
- Other settings:

  =>Tools

  =>Internet Options

  =>General

  =>Click on Settings under "browsing history / Delete Browsing History"

  =>Temporary Internet Files

  =>Activate "Every time I Visit the Webpage".

C. After successful Registration, Bidders will receive a system generated mail confirming their Registration at the email id which has been provided during filling up the registration form. In addition, the Bidders registered as Vendor shall receive email intimating new NIT/Corrigendum being uploaded and email confirming

submission of bid for a particular IFB. Only after Registration as Vendor, Bidder can submit its bids electronically.

19.2 ONLINE SUBMISSION OF BIDS

Bidders who have deposited Transaction Fee in accordance with ITB Para 19, shall be enabled to submit online Bids. The procedure for online submission of Bid is described below:

a) Login as a Vendor using username and password and DSC;

b) Click on 'AUC FLOOR MANGR' under 'My Menu''

c) Click on 'Live Events' to view the 'Live e-Procurement Events' currently make active by the Purchaser for bid submission;

d) Select and click on the live e-Procurement event amongst the 'e-Procurement Event Listing For Live e-Procurement Events' pertaining to the IFB shown on the screen.

e) Allow running JAVA application.

f) Click on the "Techno-Commercial" and "Price" links and save them after entering the required fields, by clicking on 'Save" button provided at the bottom of the page. This will save Bid, which can be edited later through the same link.

g) In order to upload documents required in support of Bidders' eligibility and qualification as per ITB Para 5 and 6, please select "Upload Document" link. After confirming the file that a Vendor wish to submit, press "Attach Document" link adjacent to every file.

h) Multiple documents can be uploaded and there is no limit for total number of uploads. However, size of per upload should be up to 5 MB.

i) After all files have been uploaded, click on 'Final Submission' to submit Bid. A message shall be displayed as "Final Bid Successfully Submitted' and Bid Status shall be updated as "Bid Submitted".

20. DEADLINE FOR SUBMISSION OF BIDS

20.1 Bids must be submitted online no later than the time and date specified in the **Bid i.e. 1430 hrs. of 20th November 2018.**

20.2 The Purchaser may, at its discretion, extend the deadline for the submission of bids by amending the Bidding Documents in accordance with ITB Sub-Clause 8.3, in which case all rights and obligations of the Purchaser and Bidders previously subject to the deadline will thereafter be subject to the deadline as extended.

21. MODIFICATION AND WITHDRAWAL OF BID

21.1 The Bidder may modify its bid only prior to 'Final Submission'.

21.2 While modifying Bids, Bidders may choose to update online forms filled earlier and reload the pdf documents upload earlier and submit Bids again

21.3 However, in case Bidder decides to modify its Bid after 'Final Submission', the Bid should be 'withdrawn' and 'resubmitted' after paying Transaction Fee again and filling / uploading requisite information / documents again.

21.4 The bids can't be withdrawn or altered after due date and time for submission of bids.

21.5 If a bidder withdraws the bid any time during the due date and time for submission of bids and last date of validity of bids, it will result in forfeiture of the earnest money furnished by the bidder in its bid.

E. BID OPENING

22. OPENING OF BIDS

22.1 The Purchaser will open all bids, online in the presence of Bidders' representatives who choose to attend, at the time, on the date, and at the place specified in the **Key Bidding information.** Bidders' representatives shall sign a register as proof of their attendance.

22.2 The Bidders can view the online bid opening after Login as Vendor using username and password. The name of Bidders shall appear to Bidders attending online bid opening**.**

22.3 The Technical Bid shall be opened at the first instance at 1500 hrs on 20/011/2018. During the Technical Bid opening, the Bid opening official(s) will read the salient features of the bids like Earnest Money Deposit and any other special features of the bids, as deemed fit by the bid opening official(s).

22.4 The Purchaser will prepare minutes of the technical bid opening at the end of the opening session, including, as a minimum: the name of the Bidder; the presence or absence of a bid security etc. The minutes should be distributed to all Bidders who attended the meeting either online or offline and will also be uploaded on websites.

22.5 After the technical evaluation of bids are completed the Purchaser shall notify those Bidders whose Bids are found non-responsive at technical evaluation stage, their Financial Bids will not be opened.

22.6 The Purchaser shall simultaneously notify in writing those Bidders that have qualified during technical evaluation stage and inform them of the date, time and location for the opening of the online Financial Bids. The opening date should allow the Bidders sufficient time to make arrangements for attending the opening. The Bidder's attendance at the opening of the Financial Bids is optional and is at the Bidder's choice.

22.7 The Online Financial Bids shall be opened by the Purchaser in the presence of the representatives of those Bidders found qualified during technical evaluation stage. These Online Financial Bids shall be then opened, and the total prices read aloud and recorded. Copies of the record shall be sent to all Bidders who submitted Bids.

F. SCRUTINY AND EVALUATION OF BIDS

23 BASIC PRINCIPLE

23.1 Bids will be evaluated on the basis of the terms & conditions, instructions, criteria already incorporated in the Bid Documents, based on which bids have been received and the information/documents given by the bidders in their bids. No new condition will be brought in while scrutinizing and evaluating the bids.

24 PRELIMINARY SCRUTINY OF BIDS

24.1 The Purchaser will examine the bids to determine whether they are complete, whether required securities have been furnished, whether the documents have been properly signed stamped and whether the bids are generally in order.

24.2 Prior to detailed evaluation of Bids, the Purchaser will determine the substantial responsiveness of each bid to the Bid Documents. For purposes of these clauses, a substantially responsive bid is one, which conforms to all the Conditions of Contract given in the Bid Documents without material deviations. Deviations from, or objections or reservations to critical provisions such as those concerning Performance Security, Taxes & Duties, Force Majeure, and Applicable law will be deemed to be a material deviation.

24.3 The Employer's determination of a Bid's responsiveness is to be based on the contents of the bid itself without recourse to extrinsic evidence.

24.4 The bids, which do not meet the eligibility and qualification requirements are liable to be treated as non- responsive and will be summarily ignored. In addition, the following are some of the important aspects, for which a bid shall be declared non – responsive and will be summarily ignored;

(i) Bid validity is shorter than the required period.
(ii) Required EMD have not been submitted.
(iii) Bidder has not agreed to give the required Performance Security.

25 CLARIFICATION OF BIDS

25.1 During evaluation of the bids, the Purchaser may, at its discretion, ask the Bidder for a clarification of its bid. The request for clarification and the response shall be in writing, and no change in the prices or substance of the bid shall be sought, offered, or permitted, except to correct arithmetic errors identified by the Purchaser in the evaluation of the bids.

26 CONFIDENTIALITY

26.1 Information relating to the examination, clarification, evaluation, and comparison of bids, and recommendations for the award of a Contract shall not be disclosed to bidders or any other persons not officially concerned with such process until the notification of Contract award is made to all Bidders.

26.2 Any effort by the bidder to influence the Purchaser in the Purchaser's bid evaluation, bid comparison, or contract award decisions may result in the rejection of the Bidder's bid.

26.3 From the time of bid opening to the time of Contract award, if any Bidder wishes to contact the Purchaser on any matter related to its bid, it should do so in writing

27. TECHNICAL EVALUATION CRITERIA OF BID

A. ASSESSMENT OF QUALIFICATION

After preliminary scrutiny of bids in accordance with ITB Para 24 above, Bidder's shall be assessed for their qualification for the Schedules quoted by them as per criteria given below:

(a) To qualify **for each Schedule**, the bidder or Bidder and their consortium partner(s) (as the case may be) together, should have:

(1) achieved an average annual turnover of at least INR 50 Lakh during last three financial years (i.e. 2014-15, 2015-16 and 2016-17)

AND

(2) minimum solvency of Rs 15 Lakhs per schedule

In case bidder is quoting for multiple Schedules, the average annual turnover requirement, as well as minimum solvency requirement shall be in the multiples of number of Schedules quoted.
For Example: in case a bidder quotes for three Schedules, the average annual turnover requirement to qualify for all the three Schedules shall be Rs.1.50 Cr. And solvency requirement shall be Rs.45 lakh.

In support of the above qualification requirement, bidder should submit Copies of audited financial statements of accounts (including balance sheet, profit and loss account, auditor's reports and IT returns) certified by the auditor of the Company for last three financial years (i.e. 2014-15, 2015-16 and 2016-17). Solvency certificate issued from the Bidders banker shall be submitted.

(b) The bidder or Bidder and their consortium partner(s) (as the case may be) together should have experience of successfully and satisfactorily executing **similar work**s* during last seven years (as on date of opening of technical bids) as specified below;

Eligibility for (Number of schedules quoted)	**Minimum similar work experience (No. of similar works/Labs)**
One or Two	Two
Three	Three
Four	Four
Five	Five
Six	Six
Seven	Seven
Eight	Ten
Nine	Twelve

***Similar works** shall mean successful construction, testing, commissioning and validation of Bio-Safety laboratory/Biomedical research facility/vaccine facility including internal construction works, electrical works, HVAC works, Access Control System etc.

In support of this qualification requirement, bidder should submit name and address of Client, details of similar works executed, duration of work, date of

completion, handing over of work, copies of work order / contract, satisfactory completion certificate issued by the Client. Self/Own certification by agencies shall not be considered for prequalification. The technical committee will have the discretion to verify the successful and satisfactory work completion certificate furnished by the bidder, failing which, the experience will not be considered.

(c) The bidder or consortium partner(s) shall have following minimum qualified and experienced team of key personnel for successful execution of the work:

1. The bidder should have Project Manager with minimum 5-year *Similar experience to participate in tender;
2. The bidder shall have (in-house or outsourced) design expertise for technical drawings;
3. The bidder should have at least one MEP engineer /Site supervisor **for each pair of schedules quoted (i.e. 2 Schedules)**. She/he shall have minimum 3-years' experience (if B. Tech/B. E- Electrical/Mechanical) or 5-years' experience (if ITI Diploma- Electrical/Mechanical) [*For Example: In case a bidder quotes for four Schedules, it should have at least 2 MEP engineers / Site Supervisors as per qualification/experience stated above]*

In support of this requirement, bidder should submit detailed CV of such personnel duly supported with the letter of undertaking from such personnel that they are full-time employee of the bidder and shall be ready for deployment at site(s) if contract is awarded to the bidder.

(d) The bidder should submit a detailed work plan for each quoted schedule.

(e) The bidder and consortium partner (if any) should not be debarred / blacklisted by MOH&FW, GOI, or any other Central Govt. Department or State Government or UNOPS/UNDP or SAMS as on the date of opening of bid. The bidder and consortium partners (if any) should also not be debarred by the Global Fund.

(f) LIST OF TECHNICAL DOCUMENTS TO BE SUBMITTED BY THE BIDDER ALONG WITH THEIR BIDS FOR TECHNICAL QUALIFICATION AND EVALUATION

Project Implementation Methodology including

i. Past experiences of developing labs including TB Containment labs (with contact details of at least 5 such)
ii. Team (members and their qualifications) which will be building the TB Lab (including designing, HVAC and ducting team, electrical, plumbing, civil works team, interiors developing team, etc.)
iii. Architectural layout plans- including any comments/ concerns about the design provided
iv. Men & Materials movement layout plans- Conceptual layout plans showing movement of men & materials into and within the Laboratory areas clearly highlighting the measures/ preventions for control of spread of infection/contamination into and within the Laboratory
v. List of Construction Material and Equipment Proposed for construction of the laboratory along with specifications including manufacturers (OEM) along with warranty period (as specified by Manufacturer) should be clearly mentioned and submitted as per table at FORM TECH 9 for the labs quoted. Any additional material proposed for construction by bidder may also be specified in the same table.
vi. GANTT Chart informing timelines for executing the various stages of work

(g) In support of this qualification requirement, the bidder should submit Notarized Affidavit giving undertaking to the effect that (a) the bidder and consortium partners (if any), is not debarred / blacklisted by MOH&FW, GOI, or any other Central Govt. Department or State Government or UNOPS/UNDP or SAMS as on the date of opening of bid and (b) the bidder and consortium partners (if any) is not debarred by the Global Fund

The bidders who meet the qualification criteria specified at (a), (b) (c) and (d) above and qualified against the qualification criteria specified at (e) above shall be considered for detailed technical Evaluation for Schedules assessed as qualified. Consequently, for such Schedules, bidder is assessed as not-qualified against the qualification criteria specified at (a), (b), (c), (d) and (e) above shall not be considered for further technical evaluation.

B. TECHNICAL EVALUATION

27.1 After preliminary scrutiny of bids in accordance with ITB Para 24 above, the technical evaluation of substantial responsiveness of bids shall be carried out based on the information / documents submitted against Scope of Works and Technical Specifications for each quoted Schedules individually.

27.2 The bids determined as technically disqualified / non-responsive shall not be considered for opening of financial bids.

C. <u>FINANCIAL EVALUATION:</u>

27.3 The financial evaluation of bids shall be carried out based on the total price for

(a) design, construction, testing, commissioning and validation of TB Containment laboratories along with two-year Comprehensive Warranty or Defect Liability period for each schedule,

(b) Additional Works as per Scope of Works required at each site and

(c) The cost of maintenance of laboratories for the period of 3 years after warranty period.

28. MINOR INFIRMITY/IRREGULARITY/NON-CONFORMITY

28.1 If during the preliminary scrutiny of bids or during technical evaluation of bids, pursuant to ITB Para 24 & 25 above, the Purchaser finds any minor infirmity and/or irregularity and/or non-conformity in a bid, the Purchaser may waive the same provided it does not constitute any material deviation and financial impact and, also, does not prejudice or affect the ranking order of the bidders. Wherever necessary, the Purchaser will convey its observation on such 'minor' issues to the bidder by speed post/e-mail asking the bidder to respond by a specified date. If the bidder does not reply by the specified date or gives evasive reply without clarifying the point at issue in clear terms, that bid will not be evaluated further.

29. FINAL EVALUATIION OF BIDDERS' CAPABILITY TO PERFORM THE CONTRACT

29.1 The Employer, through the above process of bid scrutiny and evaluation will determine to its satisfaction whether the bidder, whose bid has been determined as the lowest evaluated responsive bid, is eligible, qualified and capable in all respects to perform the contract satisfactorily.

29.2 To adjudge bidders' capability to perform the contract, the Purchaser may ask bidder's to make detailed presentation on implementation plan of project.

30. CONTACTING THE EMPLOYER

30.1 From the time of submission of bid to the time of awarding the contract, if a bidder needs to contact the Purchaser for any reason relating to its bid, it should do so only in writing.

30.2 In case a bidder attempts to influence the Purchaser in the Employer's decision on scrutiny, comparison & evaluation of bid and awarding the contract, the bid of the bidder shall be liable for rejection in addition to appropriate administrative and coercive actions being taken against that bidder, as deemed fit by the Employer.

G. AWARD OF CONTRACT

31. EMPLOYER'S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS

31.1 The Purchaser reserves the right to accept in part or in full any bid or reject any bid(s) without assigning any reason or to cancel the bidding process and reject all bids at any time prior to award of contract, without incurring any liability, whatsoever to the affected bidder(s).

32. AWARD CRITERIA

32.1 The contract will be awarded to the lowest priced evaluated responsive bidder for each schedule, decided by the Employer.

33. VARIATION IN SCOPE OF SERVICES AT THE TIME OF AWARD AND/OR DURING VALIDITY OF CONTRACT

33.1 The Purchaser reserves the right at the time of Contract award and/or during validity of contract, to increase or decrease the number of labs to the extent of 25% for the similar scope of services based on mutually agreed terms and conditions.

34. INTIMATION LETTER TO SUCCESSFUL BIDDER / NOTIFICATION OF AWARD

34.1 Before expiry of the bid validity period, the Purchaser will notify the successful bidder(s) in writing, only by speed post or by e-mail that its bid has been accepted, briefly indicating therein the essential details like description of services and corresponding prices accepted. The successful bidder must furnish to the Purchaser the required Performance Security within 21 days along with the contract agreement from the date of this notification, failing which the EMD will be forfeited and the award will be cancelled.

34.2 The Notification of Award shall constitute the formation of the Contract.

35. SIGNING OF CONTRACT

35.1 Promptly after notification of award, the Purchaser will send the contract form as per Format given in the Bid Documents duly completed and signed, in duplicate, to the successful bidder by speed post.

35.2 Within twenty-one days from the date of the Notification of Award as above, the successful bidder shall return the original copy of the contract, duly signed and dated, to the Purchaser by registered / speed post.

SECTION– II: TECHNICAL PROPOSAL- STANDARD FORMS

TECHNICAL PROPOSAL- STANDARD FORMS

Form TECH-1: Form of Bid (Technical)

To,
The Director
M/s Strategic Alliance Management Services Pvt. Ltd.
B01-03 Vardhaman Diamond Plaza, Community Centre,
D.B. Gupta Road, Paharganj,
New Delhi 110055

Dear Sir,

Subject: Bid for Design, Construction, Testing, Commissioning and Validation of TB Containment Laboratory and associated works with two years of comprehensive warranty period on 'Turnkey Basis' in compliance with Revised National Tuberculosis Control Programme (RNTCP), Central TB Division (CTD), Govt of India (GoI).

IFB NO.: SAMSPL/18-19/ET/2

1. We, [***Name of Bidder***], hereby submit a bid for the above-referenced works in response to the above-referenced Bid Document for following Schedules:

Schedule No.	Name of Laboratory

2. We warrant that in preparing and submitting this bid, we have complied with, and are willing to be bound by, any and all of the requirements and provisions of the above-referenced Bid Document, including the terms and conditions of the Contract as set out in Did Documents

3. Our bid shall remain valid for SAMS' acceptance until **150 *days*** from the Closing Date.

4. We acknowledge and agree that:

   - SAMS is not bound to accept the lowest bid or any other bid it may receive in response to the above-referenced ITB;
   - no liability of SAMS and no binding contract exists until the Contract is executed by both parties;
   - each party constituting the bidder is bound jointly and severally by this bid; and

5. If we visit a site for inspection we agree to release SAMS/FIND from all, and indemnify in respect of any damage, expense, loss or liability of any nature suffered or incurred by SAMS/ FIND because of;

   (i) loss of or damage to any real or personal property;
   (ii) personal injury, disease or illness to, or death of, any person;
   (iii) financial loss or expense, arising out of the carrying out of that site inspection; and
   (iv) transportation to the site (if provided) because of any accidents or malicious acts by third parties

6. Enclosed is a bid security in the sum of [***insert amount***] in the form set out in the Form, issued by [***insert name of bank***].

I, the undersigned, certify that I am duly authorized by [***insert name of bidder***] to sign this bid

Name: _____

Title: _____

Date: _____

Signature: _____

[***Stamp form of bid with official stamp of the bidder***]

TECHNICAL PROPOSAL- STANDARD FORMS

Form TECH-2: Bidders' Information Form

[Bidders are required to provide the information sought below]

1. Name, Address, phone / email of the Bidder:

2. Name, Address, phone / email of Consortium Partner(s), if any:

3. Expertise of Organization: [In brief, not more than 500 words]

- Organization structure (e.g. service provider, hospital owner)
- Years of experience in executing similar assignments
- Core areas of expertise of the organization

4. Details of staff under permanent rolls of the Bidder / Consortium Partners (separately)

a. technical
b skilled
c unskilled

5. Financial data of the organization

Annual Turnover of Last 3 Financial Years

- Lead Bidder

F.Y. 2014-15 - Rs._____

F.Y. 2015-16 - Rs._____

F.Y. 2016-17 - Rs._____

- Consortium Partner(s) (if any)

F.Y. 2014-15 - Rs._____

F.Y. 2015-16 - Rs._____

F.Y. 2016-17 - Rs._____

P.S. Please attach Audited financial statement, including Profit & Loss Statement, Income & Expenditure statements etc. (for the last three years as above)

- Name and Address of Banker

6. **Client Reference List:**

   [Please provide references such as customer's details, tel. nos. etc.]

Name of client/customer:	Description of service rendered	Client's Contact person name, telephone and e-mail Id.
1.		
2.		
3.		

PS:

a. Please provide client list of lead bidder and Consortium partner(s) separately as per above table
b. Please attach self-attested copy of Work Order / MOU / Contract or any other document in support of above experience.

7. **Contact details of persons who may contacted for requests for clarification during bid evaluation:**

   - Name/Surname:
   - Tel Number (direct): Landline and Mobile no.
   - Email address (direct):

8. **The responsibility of completing the works and giving the performance as per the Contract lies with the lead bidder if applied as a consortium**

Signature and seal of the Bidder

TECHNICAL PROPOSAL- STANDARD FORMS

Form TECH-3: Bidders' Preliminary Programme

<u>Note to bidders</u>: Bidders shall submit a preliminary programme for the execution of the works.

Bidders are required to make their own detailed assessment of the time, work methods and activities that shall be required for the successful and timely completion of the works and shall submit their bid based on an assurance that the works can be completed by the Time for Completion and the milestone dates identified in the Contract.

The preliminary programme shall be prepared in enough detail to enable SAMS to adequately evaluate the planned execution, staging and allocation of resources for the works.

The preliminary programme shall show the dates when the milestones identified in the Contract shall be achieved. It shall also include and/or be accompanied by:

- **a programme narrative that describes the mechanisms and assumptions made in preparing the programme; and**

- **a critical path analysis for the execution of the works which shall clearly show the float times available within the programme and the earliest start/earliest finish and latest start/latest finish times for each activity.**

If a bidder is selected as the preferred bidder, it shall be required to further develop and complete this programme in accordance with the contract for works.

TECHNICAL PROPOSAL- STANDARD FORMS

Form TECH-4: Proposed Project Team and Organizational Structure

***Note to bidders**: Bidders shall provide the names of Team Members and their qualification and experience, which will be building the TB lab including Design, HVAC and Ducting Team, Electrical, Plumbing, civil works and interior development team (for each Schedule Quoted)*

Schedule No.____

No.	Position Description	Name	Qualification	Years Exp
1	[*Insert Description*]	*[Insert Name]*		[*Insert No.*]
2	[*Insert Description*]	*[Insert Name]*		[*Insert No.*]
3	[*Insert Description*]	*[Insert Name]*		[*Insert No.*]
4	[*Insert Description*]	*[Insert Name]*		[*Insert No.*]
5	[*Insert Description*]	*[Insert Name]*		[*Insert No.*]
…	….			

Schedule No.____

No.	Position Description	Name	Qualification	Years Exp
1	[*Insert Description*]	*[Insert Name]*		[*Insert No.*]
2	[*Insert Description*]	*[Insert Name]*		[*Insert No.*]
3	[*Insert Description*]	*[Insert Name]*		[*Insert No.*]
4	[*Insert Description*]	*[Insert Name]*		[*Insert No.*]
5	[*Insert Description*]	*[Insert Name]*		[*Insert No.*]
…	…….			

Schedule No.____

No.	Position Description	Name	Qualification	Years Exp
1	[*Insert Description*]	*[Insert Name]*		[*Insert No.*]
2	[*Insert Description*]	*[Insert Name]*		[*Insert No.*]
3	[*Insert Description*]	*[Insert Name]*		[*Insert No.*]
4	[*Insert Description*]	*[Insert Name]*		[*Insert No.*]
5	[*Insert Description*]	*[Insert Name]*		[*Insert No.*]
…	….			

…
…

Schedule No.____

No.	Position Description	Name	Qualification	Years Exp
1	[*Insert Description*]	*[Insert Name]*		[*Insert No.*]
2	[*Insert Description*]	*[Insert Name]*		[*Insert No.*]
3	[*Insert Description*]	*[Insert Name]*		[*Insert No.*]
4	[*Insert Description*]	*[Insert Name]*		[*Insert No.*]
5	[*Insert Description*]	*[Insert Name]*		[*Insert No.*]
….	….			

TECHNICAL PROPOSAL-STANDARD FORMS

Form TECH-5: Works Management System

Note to bidders: Bidders are required to provide the following information with supporting documents, if any:

Project implementation/quality management

- *Project implementation/quality management manual/policy (if any);*
- *An outline project implementation/quality management plan for the project.*

Health and safety management

- *Health and safety management* manual/*policy (if any);*
- *An outline health and safety management plan for the project.*

Environmental management

- *Environmental management manual/policy (if any);*
- *An outline environmental management plan for the project.*

TECHNICAL PROPOSAL-STANDARD FORMS

Form TECH-6: Proposed Subcontractors and Suppliers

Note to bidders: Bidders shall provide details of their subcontractors and suppliers they propose to use on the project, including:

- *Companies' names; and*
- *Particulars of the works which the bidder proposes to be undertaken by them.*

TECHNICAL PROPOSAL- STANDARD FORMS

Form TECH-7: Proposed Methodology to Execute the Works

(Use as much space as required for completing this section)

I. PROPOSED METHODOLOGY

II. SCHEDULE OF EXECUTION OF WORKS (FOR EACH QUOTED SCHEDULE SEPARATELY)

TECHNICAL PROPOSAL- STANDARD FORMS

Form TECH-8: Technical Compliance sheet

Sl. No.	Bid Technical Specification (Main)	Specifications Compliance /Deviation, if any (kindly specify Quantity of items, technical specifications, Make and model of the quoted items)
	TECHNICAL SPECIFICATIONS FOR CONSTRUCTION, TESTING, COMMISSIONING AND VALIDATION OF TB CONTAINMENT LABORATORY	
1	**SCOPE OF WORK:**	
a)	The Scope of work involves for Design, Construction, Testing, Commissioning and Validation of TB Containment Laboratory and associated works with two years of comprehensive warranty period on 'Turnkey Basis' in compliance with Revised National Tuberculosis Control Programme (RNTCP), Central TB Division (CTD), Govt of India (GoI).	
b)	The scope of work shall include design, complete construction and establishment of TB Containment facility including minor civil works, electrical works, public health engineering works etc. complete in all respect. All the fixed equipment and systems like pass box, HVAC system and its components (including A/C plant, air handling, exhaust systems, filters, controls etc.),computers, laboratory workstations, uninterrupted power supply system, door interlocks, access control system, fire detection & alarm, system, surveillance systems CCTV with remotely placed monitor control, fire extinguishers and any other equipment/systems essentially required to meet the intent and purpose of setting up of TB Containment laboratory shall be provided and included in the scope of works. Items/equipment like scientific laboratory instruments, bio safety cabinets, autoclaves and other equipment such as freezers, refrigerator, incubators, centrifuges etc. will be available at/ procured by the site. Architectural layout of the lab will be provided (including of the TB Containment Lab and placement of equipment and power load requirement)- see **Annexure 1 to 3**	
2	**The scope of works shall also include:**	
a)	Supply and laying of the required power supply cables from the existing electrical room (LT Panel room) up to the proposed TB Containment Lab for its power supply.	
b)	Extension of existing LT panel by providing feeder panel with switchgears of required capacities to meet the power requirements of TB Containment Lab. Dedicated earthing for the TB Containment Lab shall be installed as required by the vendor.	
c)	Power required for the TB Containment Laboratory shall be tapped from the existing feeder lines (through its expansion and laying of	

Sl. No.	Bid Technical Specification (Main)	Specifications Compliance /Deviation, if any (kindly specify Quantity of items, technical specifications, Make and model of the quoted items)
	required power cablings) or panels. All necessary arrangements like extension of existing feeder/bus bars, laying of power cables etc. for tapping of required power shall be made by the contractor. Supply should be three phase and with proper earthing and required capacity of 440V for AHU Unit for TB Containment lab.	
d)	Extension of existing water supply lines up to the TB Containment Lab to meet its water supply requirements. Supply and erection of water tank 750-1000litres in case of inadequate or absence of water supply for emergency shower and eye wash stations.	
3	**PRE-REQUISITES for the Site to comply**	
a)	**Power required for the TB Containment Laboratory** shall be tapped from the existing feeder lines (through its expansion and laying of required power cablings) or panels. Supply should be three phase and with proper earthing and required capacity of 440V for AHU Unit for TB Containment lab. Adequate provision for power back up in the form connection to a green source for energy back up or Diesel Generator Set of about 120-150 KVA capacity (to be re-calculated based on requirement at time of procurement/assessment) is a must to keep lab functional all time.	
b)	**Water supply to the TB Containment Laboratory** shall be provided through the existing Water distribution network in campus.	
c)	**Strength of existing building structure**- Space identified for TB lab should be strong enough to withstand local climate/ environmental hazard. The institute will require to take care of seepage issues in the building if extensive (minor issues can be taken care by vendor)	
4	**CRITICAL CONSIDERATIONS TO BE FOLLOWED IN DESIGN:**	
a)	The proposed TB Containment Laboratory shall be constructed in accordance with CDC, WHO and RNTCP and other international guidelines as minimum (see later in document reference materials used). Some of the minimum essential critical considerations for construction of the proposed TB Containment Laboratory shall be as under:	
b)	Restricted and controlled access shall be provided for entry into the laboratory.	
c)	The HVAC systems shall be provided to maintain the desired inside conditions in terms of temperatures, humidity conditions, air filtration requirements. Unidirectional airflow to be achieved by appropriate negative differential pressures and a minimum of 6-12 Air changes per hour to be achieved. Air from the laboratories, shall be exhausted only after appropriate filtration (HEPA filters) as per guidelines/standards. Redundant exhaust systems shall be	

Sl. No.	Bid Technical Specification (Main)	Specifications Compliance /Deviation, if any (kindly specify Quantity of items, technical specifications, Make and model of the quoted items)
	provided for Tb Containment lab room. Leak proof dampers with provision to prevent backflow of air shall be provided in supply and exhaust air systems of laboratory rooms for isolation of rooms/zones.	
d)	Interiors of the TB Containment Lab- The internal building finishes shall be monolithic, impervious, non-particle shredding, chemical resistant to phenol, hypochlorite, etc. cleaning and suitable to withstand chemical use during decontamination /fumigation. Modular false ceiling panels should be made for Clean Room application. **Flooring** inside the TB Containment lab shall be of self-levelling industrial epoxy and cleanroom compatible.	
e)	The door interlocks, exhaust blower of BSCs, shall be provided with online, un-interrupted power supply system with minimum 30 minutes power backup.	
f)	Safety measures for fire and electricity shall be provided	
g)	Emergency shower, Eyewash station facility will be provided to address emergency spill situations. Emergency Exit door with panic latch door from the TB Containment Laboratory shall be provided	
5	**GENERAL CONSTRUCTION**	
	The drawings shall be submitted by the contractor for review and approval by the client/ Consultant. However, some of the critical elements of the building and features are highlighted here under:	
a)	**Building Planning Concept:** The proposed TB Containment laboratory building shall be constructed on primary and secondary containment barrier system concept.	
b)	**The Primary Barriers:** Bio-safety cabinets (Class-IIA2) with thimble or canopy ducting, pass box, etc. shall constitute the primary containment barrier and shall be placed suitably to contain the contamination.	
c)	**The Secondary Barriers:** The laboratory building, air management and control system shall provide the secondary barrier system. Sustained directional airflow from “lesser contaminated area" towards “potentially higher contaminated areas” shall be achieved through differential pressure in areas/zones.	
d)	**Building Construction and Finishing:** The internal building finishing shall provide impervious and monolithic construction and all materials used for internal construction and finishing shall be non-particle shredding type and	

Sl. No.	Bid Technical Specification (Main)	Specifications Compliance /Deviation, if any (kindly specify Quantity of items, technical specifications, Make and model of the quoted items)
	chemical resistant. Joints like wall to wall, wall to floor and ceiling to wall shall be provided with covings for easy cleaning. All joints and penetrations in the building shall be sealed with silicon sealant. The drainage and effluent piping system from the TB Containment Lab areas shall be of chemical resistant materials.	
DETAILED SPECIFICATIONS		
1	**Restricted and controlled access** shall be provided for entry into the laboratory.	
	Access control system for entry / exits should be provided. 20 numbers of card to be provided to each lab.	
2	**HEATING VENTILATION & AIR-CONDITIONING (HVAC) SYSTEM:**	
i	The entire laboratory shall be air-conditioned. The HVAC systems shall be provided to maintain the desired inside conditions in terms of temperatures, humidity conditions, air filtration requirements, room/zone pressure requirements and air change rate.	
ii	Housing/Casing of AHU unit: Air Handling Units shall be of sectionalized constructions with an under frame of extruded heavy aluminum profiles. The under frame shall be mechanically strong and shall take double skinned insulated panels. The powder coated panels shall consist of 0.8 mm galvanized iron outer skin and 0.63 mm galvanized iron inner skin with 23 mm thick injected PUF insulation in between two panels. The AHUs shall be with true thermal break. There should not be any projections inside the AHUs and the covings must flush with the side panels. Air tight access panel with suitable neoprene gaskets shall be provided in the fan section, coil and filter section. Similar gaskets should be used at all other joints of the AHU and its ducting. Units meant for indoor locations shall be specially designed to meet the arduous and corrosive atmosphere.	
iii	Platform for AHU: In places where firm, even and concrete surface not available, the same will have to be constructed (masonry work) for the entire surface area which will be enclosed within AHU shed.	
iv	There would be independent supply and exhaust system with unidirectional inward airflow and 100% exhaust.	
v	**Supply Unit:**	
a	Air Conditioning Plant: The Air-Conditioning plant (of suitable capacity based on requirements of the lab's AHU) shall be with Direct Extension (DX system). The condenser unit shall have **multiple compressors such that at least one compressor shall be as standby**. The AHU shall comprise of Cooling Coil Section with 8 row deep DX coil, necessary component, 18-gauge SS 304	

Sl. No.	Bid Technical Specification (Main)	Specifications Compliance /Deviation, if any (kindly specify Quantity of items, technical specifications, Make and model of the quoted items)
	drain pan with 13 mm thick closed cell self-sticking polyethylene insulation, having slope at one side, drain connection from other side. Inlet and outlet coil nipples shall be sealed against unit casing by means of neoprene gaskets. Alternately, the cold air from the existing Central Air-Conditioning plant may be taken.	
b	The laboratory rooms will be supplied with pre-conditioned (heating, cooling) fresh air by a mechanical ventilation system. Temperature inside the lab shall be maintained at 22°C±2.	
c	The air will be cooled to 22°C then reheated with an electric duct coil to maintain required space conditions. This is required to maintain proper humidity conditions in the lab and humidity level should be maintained at 60±10%. To heat the air in the winter, an electrical heater unit (of adequate capacity) would be planned. This heater will be the same heater that will function as dehumidifier unit in summer.	
d	Design of Supply air system: One variable speed supply fan of Gebhardt/ Krugger/ Nicotra or equivalent reputed OEM (Original Equipment Manufacturer) should be installed. Fan is designed for the whole required supply air amount (100% Redundancy). The fan shall be backward (or forward) curved centrifugal double inlet multi blade with optimized selection for low noise and high efficiency. Fans shall be statically and dynamically balanced for vibration free operation. Fans shall be enclosed in galvanized steel scroll cases and shall be driven by a variable frequency drive (VFD). The VFD should be pre-set programme for five different varying fan speed with selector switch for user operation. Fan and motor assembly shall be mounted on vibration isolators eliminating the need for external vibration isolators. Provision shall be made for belt tensioning. Motor should be of required capacity of Crompton Greaves/ Siemens/ ABB or equivalent of reputed OEM make. The fan should not exceed noise level of 75 db (A) from 1 m distance**. A spare motor shall** be provided in case of any burn out/breakdown for immediate repair/replacement. **4-5 spare fan belts** shall also be provided which can be used for replacement in case of wear/tear.	
e	Volume Control Dampers: The distribution of air is planned via air inlets in the laboratory rooms. To control the air volume flow variable volume boxes in the supply air ducts are planned (at mouth of supply, after blower and after fine filter). The housing for these dampers (in fact all) will be of extruded aluminum, Low Leakage Aerofoil design. A constant volume mechanical control damper valve will be installed which will also be easily accessible for corrective purposes. The supply air needs to be constant to maintain the proper air change rate.	
f	A wire mesh screen to prevent entry of rodents/birds/insects, etc. will be placed in front of the damper at the mouth of supply.	

Sl. No.	Bid Technical Specification (Main)	Specifications Compliance /Deviation, if any (kindly specify Quantity of items, technical specifications, Make and model of the quoted items)
g	**Filters:**	
□	There will be three sets of filters- coarse filters at mouth of supply and fine filter after blower motor of supply unit and HEPA filter housing in the supply ducting at a distance of about 500mm from fine filter unit.	
□	Coarse filter will be in outside fresh air pre-filter section and will be G4 washable filter (50 mm deep) class having average arrestance of 85-98% for 10 microns size as per EN779 2002, after damper at mouth of supply (as mentioned in volume control damper).	
□	Fine filters will be F7 filter (300 mm deep) Average Efficiency 85-95% for 1-micron size as per EN 779 2002 standards and placed after coarse filter before air goes into DX system.	
□	F-7 filter to be provided with test port elbows (pre and post) to put in magnehelic gauges tubing for measure differential pressure across it. These test port elbows will remain sealed/closed in routine condition.	
□	The HEPA filter plenums (Containment Housing) shall be made in SS 304 (14 gauge) with air tight and leak proof construction. The HEPA filter plenums shall be provided Isolation dampers at Inlet and Outlet and shall have provisions and facility to carry out on site HEPA filter scanning, testing and validation, magnehelic pressure gauge 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/replacement of filters. The quantity of HEPA filter should be provided based on supply air room volume, length of duct.	
h	Ducting: Ventilation ducting shall be made out of minimum 24-gauge GI sheet, all the ventilation ducting shall be leak proof and with thermal insulation (the colour of insulation material will not be black). This insulation is made of nitrile rubber or glass wool. The GI duct should be fabricated as per SMACNA standards. To prevent air leakage, all the lateral joints and flanged joints of GI ducting should be sealed using silicone sealant.	
i	Ducting design will be submitted by the vendor along with details of bends, dimensions of the duct at various places from AHU to the TB Containment Lab, number of inlets/outlets planned, etc. which would be suitable from the lab being upgraded. It will have to be consulted with lab design expert and the lab i/c and approved before construction is carried out.	
j	Noise Reduction: To avoid the allowed noise level, sound absorber will be installed on the housing of the AHU.	
vi	**Exhaust System**	
a	Design of Exhaust Air System: One variable speed exhaust fan of	

Sl. No.	Bid Technical Specification (Main)	Specifications Compliance /Deviation, if any (kindly specify Quantity of items, technical specifications, Make and model of the quoted items)
	Gebhardt/ Krugger/ Nicotra or equivalent reputed OEM (Original Equipment Manufacturer) should be installed. The fan shall be backward (or forward) curved centrifugal double inlet multi blade with optimized selection for low noise and high efficiency. Fans shall be statically and dynamically balanced for vibration free operation. Fans shall be enclosed in galvanized steel scroll cases and shall be driven by a variable frequency drive (VFD). The VFD should be pre-set programme for five different varying fan speed with selector switch for user operation. Fan and motor assembly shall be mounted on vibration isolators eliminating the need for external vibration isolators. Provision shall be made for belt tensioning. Motor should be of required capacity of Crompton Greaves/ Siemens/ ABB or equivalent of reputed OEM make. The fan should not exceed noise level of 75 db(A) from 1 m distance. **A spare motor** shall be provided in case of any burn out/breakdown for immediate repair/replacement which can be done by local engineer. 4**-5 spare fan belts** shall also be provided which can be replaced by local engineer in case of wear/tear.	
b	Exhaust Air System will be designed such that it ensures directional air flow by differential pressure gradient across different rooms and maintains minimum 6-12-fold air change per hour in the lab area (including separate exhaust ducting for BSCs installed).	
c	Ducting: Exhaust ducting (like supply) shall be made out of minimum 24-gauge GI sheet. The GI duct should be fabricated as per SMACNA standards. To prevent air leakage, all the lateral joints and flanged joints of GI ducting should be sealed using silicone sealant. All the ventilation ducting shall be leak proof and with thermal insulation (the colour of insulation material will not be black). This insulation is made of nitrile rubber or glass wool	
d	Air Filtration: The exhaust air filter handling systems shall be provided with HEPA Filters such that it protects the maintenance staff from acquiring any infections while handling/replacing the filters -Bag in Bag out system (BIBO). It is essential that the maintenance person wears PPE while doing so. The HEPA filters will be located prior to exhaust unit at a place which is easily accessible and has adequate space for BIBO to function effectively. The HEPA filter housed in BIBO should have efficiency of H13 or H14 tested as per EN1822 at MPPS (Maximum Penetrating Particle Size). The HEPA filter plenums (Containment Housing) shall be made in SS 304 (14 gauge) with air tight and leak proof construction. The HEPA filter plenums shall be provided Isolation dampers at Inlet and Outlet and shall have provisions and facility to carry out on site HEPA filter scanning, testing and validation, magnehelic pressure gauge 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/replacement of filters. HEPA Filters of 99.99% efficiency would be used in all	

Sl. No.	Bid Technical Specification (Main)	Specifications Compliance /Deviation, if any (kindly specify Quantity of items, technical specifications, Make and model of the quoted items)
	exhaust. All the HEPA filters should have 0.3µm filtration.	
e	Supply Air system to be electrically interlocked (fans, dampers, electrical) with exhaust air system, to prevent sustained positive pressurization.	
vii	**Appropriate negative differential pressures** (for e.g. the negative pressure room where bio safety cabinets are placed shall be -12.5 Pa (-0.05" WG) relative to the anteroom, anteroom shall be -12.5 Pa (-0.05" WG) relative to change room if planned, and the change room shall be -12.5Pa (-0.05" WG) relative to the outside atmospheric pressure. Manual differential pressure gauges shall be placed outside Change Room, Ante room and main lab. Pressure balancing system to maintain room/zone pressures within specified set limits shall be provided which should be done through manual control. Magnehelic gauges used will be of DYWER/ WAREE/ WIKA or equivalent reputed OEM (Range -50 to 0 to +50 Pascals) with supporting SS Hardware with Top plate & suitable Box SS 304 including tubing & suitable fitting & accessories in wall panel.	
viii	**Fire Dampers for supply and exhaust air**: As a safety feature, fire dampers shall be provided in both supply as well as exhaust duct. In supply system it will be in between variable damper and inlet (but at an accessible point from outside). In the exhaust system it will be located in exhaust ducting coming out of the building and prior to BIBO assembly at an accessible point from outside. These dampers are curtain type made of SS interlocking blades with fusible link which melts at 74°C	
ix	**Leak proof dampers** with provision to prevent backflow of air shall be provided in supply unit (after blower motor and before volume control damper) and in exhaust unit (in between blower motor and volume control damper). It is made of SS blades with neoprene gasket	
x	**AHU SHED**: It will be required at sites where AHU is installed on roof/ outside the lab building. AHU shed with provision for fencing, door with lock-key arrangement. a. Framework vertically made of M S Square Pipe frame: 2 Inches X 2 Inches, 16 Gauge b. M S Fencing with wire mesh: ½ inch X ½ inch c. Supporting Structure M S Angle: 50 X 5 mm d. GI pre-coated corrugated profile roof sheet: 0.5 mm thick duly supported with J Hook. e. 10 SWG with provision of door with lock and key AHU Shed with fencing should be duly enamel painted and with anti-rust coating from both sides. The height covered shall be at least 8 feet. There should be no gap between roof sheet and wire mesh, if any angle creates gap, it should be covered with iron bars and wire mesh in between.	

Sl. No.	Bid Technical Specification (Main)	Specifications Compliance /Deviation, if any (kindly specify Quantity of items, technical specifications, Make and model of the quoted items)
3	**Electricals:**	
i	The electrical power requirement (power matrix) for the TB Containment laboratory should be calculated and provided by the lab.	
ii	Supply should be three phase supply with proper earthing and required 440 V capacity to support the functioning of AHU Unit.	
iii	**Earthing**: the vendor will do the necessary grounding work to ensure entire TB C&DST Lab has adequate earthing.	
iv	All the required electrical panels, cabling, switchgears, surge and spike protection system and arrangements, etc. for the purpose of energizing the TB Containment Laboratory facility shall be carried out by the contractor.	
v	All the electrical fittings and fixtures in the laboratories areas on the walls shall be sealed (all conduits, outlets shall be sealed with silicon sealant), leak proof and capable to withstand chemical exposures during fumigation.	
vi	Lighting should be on ceiling and surface mounted, LED of reputable manufacturer, suitable capacity (~18W) and arranged as per the layout provided. Light fixtures inside shall be with gasket or otherwise sealed with silicon.	
vii	The electrical power distribution scheme shall be provided to provide back-up power supply to the critical components and equipment through a UPS (to prevent any disruption of work) and through Diesel power generator set for the entire lab.	
viii	Every workbench should have at least one socket which received electrical input through UPS of TB Containment lab. Extractor fans of BSC' ducting should also receive electrical input through this online UPS of the TB Containment Lab.	
ix	Power sockets with lid (15-20 in each room) should be provided for equipment (as per the layout provided). Modular type, power sockets with lid of 5A/15A are to be provided at various locations on the wall as per discretion and strategic arrangements /provisions for lab equipment. The Sockets meant for UPS should be screen printed as (UPS) for ease of operation and identification marked wires and cables used shall be copper wire of standard make (ISI Marked) and manufacturer.	
x	**AHU Control panel:**	
□	Cabling from the panel to individual AHUs and control wiring will be in the scope of HVAC contractor. However, cabling up to the	

Sl. No.	Bid Technical Specification (Main)	Specifications Compliance /Deviation, if any (kindly specify Quantity of items, technical specifications, Make and model of the quoted items)
	electrical panel will be provided by site. Termination will be done by HVAC contractor. In case of power failure, the alternate power through Main Diesel Generator Set of the Hospital Supply to be used. The Panel is to be design accordingly.	
□	Housing of the AHU panel shall be GI 16-gauge powder coated, with cable inlet and outlet going through grommet and with earthing connection arrangement.	
□	Multi-function meter displaying voltage, load and power factor for electricity supply to AHU panel should be present.	
□	LED indicator for ON/OFF will be provided for RBY phase, AHU supply, AHU exhaust, Standby exhaust, Condensation unit, Heating Coil of Supply Unit	
□	DOL Starter Switch to be provided for AHU exhaust, AHU Supply and Condensation Unit (in the order)	
□	All electrical equipment used should be high quality of reputed manufacturers like VFD may be Allen Bradley, Siemens make or equivalent, MCCB may be of Havells, Legrant, Anchor, Siemens, L&T or equivalent, wiring of Havells, Polycab or equivalent make, etc.	
□	Control panel should show simple instructions for starting the AHU	
□	Diagrams of electric circuit should be displayed on the backside of door of panel.	
□	Control panel should have its lock and key (for controlled access)	
□	SOP for lab condition for operating VFD with selector switch for manual operation of AHU	
xi	MCCB panel suggesting supply and safety mechanism for different sections of the lab should be provided at adequate place near AHU control panel.	
4	**Fire Safety**: Fire detection and alarm system (FDA System) and fire extinguishers of Type ABC 4 Kg) with inert gas system shall be provided at strategic locations (TB Containment Room, Ante Room and outside at entrance of TB Containment Lab and near control panel, near AHU and should overall comply with fire safety guidelines). Training will be provided for its operation.	
5	**Emergency Preparedness:**	
i	One emergency shower and one eye wash station for each site shall be provided at strategic location in compliance with ANSI / ISEA Z358.1. The water supply for emergency shower shall be enough to supply at least 3 GPM for 10 minutes. Shower shall be hands free and stay open valve type. The water supply for eye wash shall be enough to supply 0.4 GPM (1.5 litres) for 10 minutes in low velocity flow.	
ii	Emergency Exit door with panic latch door from the TB Containment Laboratory shall be provided wherever mentioned for personnel exit in case of an emergency and can also be used for equipment	

Sl. No.	Bid Technical Specification (Main)	Specifications Compliance /Deviation, if any (kindly specify Quantity of items, technical specifications, Make and model of the quoted items)
	placement inside lab. Door should be equipped with hooter/audible alarm every time it is opened.	
iii	UNINTERRUPTED POWER SUPPLY SYSTEM (UPS): A central UPS console shall be provided to cater to the extreme essential power requirement of the laboratory. All critical components like lights, Door Interlocks, exhaust blowers of BSCs, Fire alarm sensor, CCTV camera & monitoring shall be provided with uninterrupted power supply for 30 minutes.	
d	Fire and electrical safety are described in the relevant sections.	
6	**Interiors of the TB Containment Lab:**	
i	Modular walls: The internal building finishes shall be monolithic, impervious, non-particle shredding, chemical resistant especially to Hypochlorite cleaning and suitable to withstand chemical use during decontamination/ fumigation. Modular wall should be made for Clean Room application, pre-engineered 60 mm thick PUF panels with GPSP Sheets with PUF insulation of minimum 38-40 kg/m3. Both surfaces should be 0.8 mm thick GPSP sheet and must be installed along the outer walls, partitions and false ceiling to create an impervious shell which is fully sealed. The panels on either side will be coated with Epoxy painted. These panels must have good aesthetic appeal as well and must be easily maintainable. The height of wall shall be minimum 9 feet (to accommodate BSC with its thimble and damper).	
ii	Modular false ceiling: The internal building finishes shall be monolithic, impervious, non-particle shredding, chemical resistant especially to Hypochlorite cleaning and suitable to withstand chemical use during decontamination/ fumigation. Modular false ceiling panels should be made for Clean Room application, pre-engineered 60 mm thick PUF panels with GPSP Sheets with PUF insulation of minimum 38-40 kg/m3. Both surfaces should be 0.8 mm thick GPSP sheet and must be installed along the ceiling, to create an impervious shell which is fully sealed. The panels on inner side will be coated with Epoxy painted and powder coated on outer side. These panels must have good aesthetic appeal as well and must be easily maintainable. The construction of false ceiling shall be strong to allow 1 person weighing 50-60 kg to easily walk/crawl above it for necessary work. Service window will be provided for access above false ceiling preferably outside TB containment lab.	
iii	Flooring shall be of 5 mm (3 mm + 2mm) of self-levelling industrial epoxy including screed compound for adhesion, 3 mm semisolid cladding of EPOXY will be applied over a uniform cemented flooring and 2 mm semi-liquid epoxy over 3 mm hardened surface with bubble free perfect smooth finishing completed in three steps: Cementing (Uniform Flooring), Hardening (3 mm epoxy) and smoothening (2mm epoxy). Epoxy used for this application will be	

Sl. No.	Bid Technical Specification (Main)	Specifications Compliance /Deviation, if any (kindly specify Quantity of items, technical specifications, Make and model of the quoted items)
	self-levelling and clean room compatible. Flooring outside the TB Containment facility where required for aesthetic purpose will be covered with vinyl flooring.	
iv	**Doors:**	
a	Flush Door finishes shall be 45mm thick with chemical resistant, anti-fungal and anti-bacterial properties.1.2mm thick GPSP sheet suitable to fix on 60 mm thick wall panel with provisions for double glazing glass for all door and hardware like push plates and handle on both side, lock and key, etc. PUF Panels will be with GPSP Sheets, epoxy painted on both sides and PUF insulation of minimum 38-40 kg/m3. Concealed hardware for fixing of door frames, TS-71 door closure, SS hinges, SS Door handle, SS ball bearing butt hinges, concealed tower bolt for the double door, both sides lock and key arrangement. Suitable neoprene “Y seal” type gaskets may be used between the door jam and door stop.	
b	Door interlocking systems shall be complete with controller module, push button stations with LED indication, electromagnetic locks. To take care of malfunctioning of interlocking, alternative electrical switch to manually open the doors should be provided.	
c	Vision Glass for doors shall be fixed type vaccumised and insulated type with 6 mm toughened glass and shall be installed for natural lightening flushed with surfaces of the door. Fixed flush to both faces of the door / wall panels to provide ease of cleaning and maintenance. No crevices / joints / sloped profiles are used for fixing the glass. This will avoid particle contamination and dust accumulation.	
v	Covings: Extruded aluminum anodized R75 clip-on type (Male & Female connectors) covings for entire wall to floor, wall to wall & wall to ceiling joints. Extruded aluminum double cove integrated with top track of the partition panels. Corner internal & external cove joining pieces in aluminum anodized finish. Having similar construction and finish as the walls and properly sealed with silicon sealant with wall & ceiling. Covings used in construction shall include Wall to Wall Coving -R-75, Wall to Ceiling Coving-R-75, 90°Corner, 3-D Corner,2-D Corner	
vi	All penetrations through walls, ceiling & floors will be sealed using a suitable caulking. Caulking shall be applied around pipes and conduit. The interior of electrical and cable conduit shall also be caulked.	
vii	**Pass Box**: Pass Box (Static type) shall be provided at strategic / required locations for transfer of samples, chemicals and materials to and from the Laboratories (as indicated in the design submitted).	

Sl. No.	Bid Technical Specification (Main)	Specifications Compliance /Deviation, if any (kindly specify Quantity of items, technical specifications, Make and model of the quoted items)
	In case of two pass box, one will be to receive the sample within and second will be for sample discard to autoclave room or for disinfected waste collection. It shall be made of SS 304, with inbuilt UVGI system, with interlocking in such a way that both doors cannot be opened simultaneously, panel mounted, with buzzer to indicate open status for any door, fixed at a height of 750 mm from floor in sandwich panel, with dimension of 610 mm (L) X 610 MM (W) X 610 MM (D), with load bearing capacity of 40 Kg, door make-Single door in each side, with glass and air tight gasket, with door latch for one door(door opening outside), with handle of superior quality, with viewing glass made of polycarbonate or 10 mm thick tempered glass, hinges made of SS304, with one LED lamp inside pass box, chemical resistant especially to Hypochlorite solution, alcohol, etc., flange to seal pass-box and sandwich panel, with indicating lamps in both sides to show status. Manual ON/OFF switch for both Fluorescent & UV lamp on both side of the Pass box. A SOP must be developed for pass-box decontamination.	
7	**Furniture inside the lab:**	
i	**Laboratory work stations** (numbers as per the Lab design)- Frame shall be made up of SS 304, with nylon cushion/bushing for the legs, non-particle shredding material and shall be chemical resistant to allow chemical disinfection. It should be strong to hold the granite top/workbench as well as equipment places on the workbench. It should be stable and vibration free. There shall be no drawers or safe in the workstation and shall have arrangement for placing the UPS below the work bench.	
ii	**Garment Storage Cabinet**- One garment storage cabinet that can be locked shall be provided in the Change room/Ante Room. It shall be of SS 304 with two compartments and shelves for storage of clean items of suitably large dimension to fit in the Ante/ Change Room (size to be consulted with site i/c)	
iii	**Coat hangers** 8-10 individual hangers made of SS30, in group of 4-5 each, will be providing to hang gowns/ aprons in Ante Room and change room (in consultation with site i/c)	
iv	**Shoe rack** (one)- It should be made of SS 304 with 5 shelves, open type and wide enough to hold two pairs of shoes in each shelf and shall be able to fit in available space as per design.	
v	**Wash Basin** (two): Modular standalone hand washing sinks made of SS 304 with elbow or foot operated mechanism shall be provided as per design inside lab and in change or ante room or as indicated in the layout. Wall hanging soap dispenser to be provided along with each wash basin unit. A Tissue paper rack with a mechanism to pull out tissue papers, will be provided near the wash basin to dry hands. Water lines that penetrate the TB Containment space shall be equipped with back-flow prevention devices. Outlet pipes should	

Sl. No.	Bid Technical Specification (Main)	Specifications Compliance /Deviation, if any (kindly specify Quantity of items, technical specifications, Make and model of the quoted items)
	be made of PVC with closure outside lab made of SS plate.	
vi	**Laboratory Stools** (five): Laboratory grade hydraulic SS stools with back support, foot rest, rotating type with castor wheels at the base, shall be provided by contractor.	
vii	**Trolleys**: Two tier trolleys (two quantity) made of SS 304, size 2'x1'6" with side walls to prevent fall of items from sides and wheels at bottom for smooth movement, shall be provided. Plus, one similar trolley will be provided for each BSC. One of the trolleys for transportation of material from lab to the Autoclave room shall be provided with a lid to prevent direct exposure of material to outside.	
8	**Monitoring Mechanism:** Monitoring of crucial parameters will be made available in the lab for the following**:**	
i	Visual display of Room Pressure, Relative humidity and temperature in the TB Containment Lab	
Ii	Differential pressure through Magnehelic gauges in Ante-room, Change Room (where available) and outside TB Containment Lab	
Iii	In the Control Panel- Multi-function meter displaying voltage, load and power factor for electricity supply to AHU panel and LED indicator for ON/OFF will be provided for RBY phase, AHU supply, AHU exhaust, Standby exhaust, Condensation unit, Heating Coil of Supply Unit	
Iv	CCTV footage from the various sections in the Microbiologist's room	
V	Hooter/alarm when the emergency exit door is opened as well as when fire detection system is activated in incidence of fire.	
9	**Connectivity:**	
I	LAN wiring for internet access inside the lab with sockets to be provided at strategic locations (near work benches) in TB Containment Room.	
ii	A suitable EPABX System shall be provided for the laboratory. Telephone instrument with line will be kept in Microbiologist room, Staff room and TB containment room and any other place as suggested by Site i/c. Telephone with speaker for hands free operation will be provided inside TB Containment Room.	
10	**SPECIALIZED LABORATORY SUPPORT EQUIPMENTS AND SYSTEMS**	
i	**Split AC for MGIT**: Two wall mounted split air conditioners (of	

Sl. No.	Bid Technical Specification (Main)	Specifications Compliance /Deviation, if any (kindly specify Quantity of items, technical specifications, Make and model of the quoted items)
	suitable tonnage according to the area of the TB Containment Lab) should be installed near to MGIT. These will be inverter ACs (minimum three star) of Hitachi/ Bluestar/ Carrier/ Lloyd/ Godrej or equivalent OEM with suitable voltage stabilizer. The outdoor unit will be suitably placed outside the lab with easy access and adequate protection from theft. Drainage pipe of ACs will be adequately long and connected into the drainage system of the institute. Both the Split ACs should be connected with alternator (Timer Control cut-off and start) for changeover every 4 hours between them so that load is distributed between both the ACs. These will be used at the end of the day when main HVAC system is not operating to provide ambient temperature for MGIT.	
ii	**Biological Safety Cabinets**: Biological Safety Cabinets (BSC) will be installed, commissioned and validated inside the TB Containment Lab at the required location as per the plan. BSCs should be placed away from doors, air supply vents or other things which may disrupt the cabinet airflow. The Biological Safety Cabinets that are being procured shall be Class II A2 type. Lab upgradation agency shall coordinate/liaise with BSC Manufacturer for installation, ducting, commissioning and calibration of BSC if under warranty or newly supplied (else it shall be done by vendor). The exhaust from the Biological Safety Cabinets shall be thimble connected and individually ducted out. The external extraction fan installed at the end of the ducting should exceed the volumetric flow rate of each BSC by 30–50%, and should be controllable, provided with easily accessible dampers and connected to an uninterrupted power supply. The air from the BSC should be ducted with ventilation pipes that have a diameter exceed 20 cm. **(The exhaust from the Biological Safety Cabinets shall be thimble connected and individually ducted out. The ducting material & External blower of adequate capacity for BSC ducting should be provided by Identified Agency.)**	
iii	**CCTV Monitoring Devices**: Camera to continuously monitor the activities inside and outside the TB Containment Lab by providing Central CCTV Monitor. Five/Six Camera unit should be installed (one/two outside the TB Containment lab covering the entry and corridor area, one in ante room /Change Room and two inside TB Containment Room and one covering AHU Area). Supply, installation, testing and commissioning of the following shall be done:	
a	Color Camera 1/3" CCD, IR type, dome shaped, 480 TV lines resolution which work in low light.	
b	6 Channel standalone / Network version DVR Make: DAHUA /equivalent reputed OEM	
c	Hard Disk with 1 TB (TERA byte) Capacity -Make -Seagate or equivalent reputed OEM	
d	6 Channel Power Supply of reputed Make	

Sl. No.	Bid Technical Specification (Main)	Specifications Compliance /Deviation, if any (kindly specify Quantity of items, technical specifications, Make and model of the quoted items)
e	Supply Laying of Co-axial Cable with necessary Accessories	
f	Wall mounted monitor (at least 20-inch LED/LCD) located in Microbiologist room or as suggested by site i/c.	
11	**Civil works and Plumbing:**	
i	Ensure water proofing of the roof (if required) is done prior to carrying out the work. Levelling of the floor where required will be carried out the vendor. Civil works to create new door arrangement/ closure of exiting openings, sealing of the existing windows, etc. will be carried out by the vendor.	
ii	Drain: All the liquid drain coming out from the laboratory shall be connected to a single drain with back flow prevention, which would be further connected to existing local ETP plant in the hospital campus if available. All drains shall be equipped with “p traps”. Penetrations made in walls and floors must be properly sealed.	
iii	Water connections for the emergency shower and eye wash and wash basins to be appropriate provided.	
iv	Ensure that pipes and connections are leak proof to avoid flooding behind modular walls.	
12	**Labelling to be done as per following details:**	
i	Biohazard label should be placed outside the laboratory.	
ii	Labels for all switches (to be provided) including in the MCCB panels, LT Panel and AHU Control panel	
iii	Labelling of the TB Containment Lab and Ante Room/ Change room including Emergency exist.	
iv	TB Containment laboratory layout should be provided at the entrance of Lab	
13	**Final performance and capacity testing and validation: All the certification and validation parameters for TB Containment Lab must be done in accordance in with NIH certification requirement. BSCs will be validated and calibrated as per NSF 49and EN 12469 standards.**	
i	There will be periodic mid-term assessment of the project (after plumbing, electrical works, ducting and AHU installation, construction of interiors and dry run) by identified technical people and Site i/c to assess the timely and proper execution of the project.	
ii	After completion of the construction and installations, the entire laboratory facility, all the equipment, systems and services shall be validated by the contractor under supervision of a committee of the	

Sl. No.	Bid Technical Specification (Main)	Specifications Compliance /Deviation, if any (kindly specify Quantity of items, technical specifications, Make and model of the quoted items)
	consultants / client or lab i/c as follows:	
a	**For Bio Safety Cabinet:**	
□	Validation of BSC: Particle count test, PAO (Filter Integrity test for pre-filters, filters ULPA filter/ HEPA filters), Air in-flow velocity and down-flow velocity test as per NSF 49and EN 12469 standards with devices traceable to National/International Standards, UV and Fluorescent light intensity	
□	Maintenance of the BSC to be carried out if existing one to be used (and not covered under warranty) i.e. complete and thorough cleaning of working Area of cabinet, cleaning of exhaust filter from the top to eliminate and external clogging or disturbance and inspection of ducting, cleaning and oiling of sliding sash movement system, checking of switches, tube lights and UV light fittings, checking of airflow and exhaust system, calibration and validation of Magnehelic Gauges if existing, etc.	
b	**For TB Containment Lab- The installation as a whole shall be balanced, tested and validated upon completion, and all relevant information, including the following shall be submitted to the Institution**	
□	Pressure in each room/zone as per the design, differential pressure readings including across filters.	
□	Air inflow velocity and outflow velocity test across all inlets and outlets to measure/derive air change rate per hour (minimum 6-12 ACH) and as per design	
□	Smoke pattern test for directional airflow should be performed during validation including for Passbox.	
□	Temperature shall be maintained at 22°C±2 and humidity level should be maintained at 60±10%	
□	HEPA Filter (in BIBO) integrity test based on PAO test and manufacturer's certifications	
□	Electrical current readings, in amperes on full load work, average running, and on starting, Testing of power cabling, earthling, AHU control panel, MCCB panel and LT panels	
□	Containment room -the walls, floors, ceilings, penetrations, and other containment barrier features have adequate integrity	
□	Operational performance testing for	
	• HVAC including Blower motors in the Supply, exhaust including emergency, extractor of BSC ducting and condensation unit • Ducting for any potential leakages and insulation breakage • Dampers including variable control, leak proof and fire control (only verification) • Magnehelic Gauges • Temperature control sensors; pressures control sensors, • Passbox • Split ACs	

Sl. No.	Bid Technical Specification (Main)	Specifications Compliance /Deviation, if any (kindly specify Quantity of items, technical specifications, Make and model of the quoted items)
	• Fire Detection system • EPABX System • Access Control System • CCTV System • UPS Back up system • Emergency Shower and eye wash station • Interlocking of supply blower motor and exhaust blower motor	
iii	Prior to validation, the contractor shall prepare and submit a detailed 'Validation Document' for approval.	
a	The Validation Document shall provide the detailed procedure for validation, parameters for validation, validation schemes and formats for recording the validation details.	
b	The contractor shall arrange to do a mandatory third-party validation	
c	The contractor shall arrange for all the instruments, tools, manpower etc. required for the validation. The validation results shall be recorded and documented and shared with the site and hiring/funding agency.	
iv	The above validation tests shall be performed Annually during the warranty as well as maintenance period	
a	**In addition to the above validation tests, preventive maintenance servicing of all installations, operational performance testing as listed above shall be carried out on a quarterly basis during the maintenance as well as defects liability period or Comprehensive warranty period (2 years).**	
14	**Maintenance Services**: After the completion of defect liability or warranty period of two years, it will be appropriate to have a longer-term maintenance of the upgraded lab for a period of at least three years through the same agency who upgraded the lab. Apart from annual validation and quarterly preventive maintenance servicing as described above, it should include attending breakdown maintenance calls as and when required, repair/replacement of compressors, refrigerant gas charging of condensing units, besides replacement of spares required (due to wear and tear) at pre-fixed rates.	
15	**Training of personnel**: Institution personnel to be trained over 2 days for:	
i	Operation of HVAC Plant and all other equipment and systems.	
ii	Adjustments of settings for controls and protective devices	

Sl. No.	Bid Technical Specification (Main)	Specifications Compliance /Deviation, if any (kindly specify Quantity of items, technical specifications, Make and model of the quoted items)
iii	Servicing and Preventive maintenance	
iv	Emergency response training.	
16	**Submission of specialized systems and services layout schemes prior to initiation of the work**: Conceptual layout plans and schematic drawings of various specialized services and utilities showing tentative locations of equipment and furniture such as to be submitted before initiating work at site for approval to hiring agency and site i/c	
i	HVAC system (including Air filtration system Drawing of Supply AHU, Drawing of Exhaust AHU, Ducting drawing)	
ii	Pressure control system including differential pressure zones	
iii	Fire Detection and Alarm system	
iv	Air distribution System including ACH ((Heat load calculation & Design Data)	
v	Electrical distribution system (including Single Line Diagram with UPS system)	
vi	Monitoring system including CCTV and three important parameter monitoring (pressure, temp and humidity)	
vii	Water supply and drainage system	
viii	AHU Control Panel System with VFD controls and SOP for lab condition for operating VFD with selector switch for manual operation of AHU	
ix	Chart for defining the AHU fan and its speed for air quantity being delivered by supply and exhaust blower at different speed	
x	Un-interrupted Power Supply system	
xi	Specialized laboratory support equipment/ primary containment barriers such as	
	o Pass boxes o Entry exit protocols	
17	**Documents for final submission: The following documents are required to be submitted after Final assessment and validation of TB Containment Lab for verification and approval to hiring agency and to the lab within 15 days of completion of successful validation.**	

Sl. No.	Bid Technical Specification (Main)	Specifications Compliance /Deviation, if any (kindly specify Quantity of items, technical specifications, Make and model of the quoted items)
i	The drawings and layout of each final commissioned TB Containment laboratory should be shared with site and hiring/funding agency (both in soft and hard copy) for verification.	
ii	All Test Certificates / Maintenance manuals / As Built drawings / Spare Part List should be submitted to site and hiring/funding agency after validation within one week.	
iii	Detailed document on Laboratory Validation Procedures and to include as per table;	
18	**Submission of validation documents as per followings.** Design Qualification Installation Qualification Performance Qualification Operational Qualification All Test Certificates / Maintenance manuals/ As Built drawings / Spare Part List.	
19	**DOCUMENTS TO BE SUBMITTED BY THE BIDDER ALONG WITH THEIR BIDS FOR TECHNICAL QUALIFICATION AND EVALUATION**	
	Project Implementation Methodology including following documents	
i	Past experiences of developing labs including TB Containment labs (with contact details of at least 5 such)	
ii	Team (members and their qualifications) which will be building the TB Lab (including designing, HVAC and ducting team, electrical, plumbing, civil works team, interiors developing team, etc.)	
iii	Architectural layout plans- including any comments/ concerns about the design provided	
iv	Men & Materials movement layout plans- Conceptual layout plans showing movement of men & materials into and within the Laboratory areas clearly highlighting the measures/ preventions for control of spread of infection/contamination into and within the Laboratory	
v	List of Construction Material and Equipment Proposed for construction of the laboratory along with specifications including manufacturers (OEM) along with warranty period (as specified by Manufacturer) should be clearly mentioned and submitted as per table FORM Tech 9 given below for the labs quoted. Any additional material proposed for construction by bidder may also be specified in the same table.	
vi	GANTT Chart informing timelines for executing the various stages of work	

SCHEDULE WISE COMPLIANCE SHEET FOR ADDITIONAL WORK REQUIREMENT AND SOME SITE-SPECIFIC DETAIL FOR TB CONTAINMENT LAB UP-GRADATION WORK

Name of Lab / Schedule No.	Specific work requirement	Specifications Compliance /Deviation, if any along with Make and Model of Item Quoted
Sch. No. I Aizawl, Mizoram	• The partition between the currently identified TB Containment Lab and the adjacent room to be removed to make this a larger room. **Placement of AHU (Air Handling Unit):** • Construction of concrete cemented platform (16 feet 7 inches (L) X 10 feet 6 inches (W)) up to the Slop around the boundary. The base of the concrete platform to be levelled at the same height as that of building floor. • Installation of LED Ceiling lights & necessary wiring with CCTV surveillance system	
Sch. No. II GMC Akola	**Additional Civil, Plumbing and Electrical work in New Research Lab -for creating TB Containment Lab, Equipment & Culture reading Room, Microscopy & Staining Room and Washing cum Autoclave Room** **1. General:** a. Permanent closing by brick & cement of existing 11 windows of size [4'6" (W) X 4'6" (H)]. Seven windows inside the Proposed TB Containment room and three inside the proposed Washing Cum Autoclave room. One window is in space next to entry in New Research Lab. Existing windows in Existing MET Hall for Sputum Microscopy and Equipment & Culture Reading room may only be sealed and not closed by brick and cement. b. Removal of existing RCC structure work bench covering the entire room with eight modular sinks and the sinks needs to be hand over to institute. c. Removal of existing electrical fixtures (fan, electrical point & ceiling lights) from the proposed TB Containment Room and hand over to institute. d. Create door between New Research Lab and Exiting MET Hall: i. The existing window near to the Proposed Washing cum Autoclave room needs to be removed and replaced with aluminium glass door (4'x 6'8") to enter the Proposed Culture Reading Room & Microscopy Room. e. While preparing the various sections using glass and aluminium partitions, glass portion of the partition-wall may be of 3' starting at 2' 6" above the floor which is adequate for viewing purpose and the rest may be of aluminium (below and above). Same principle applies to the door too (glass portion of 3' staring at 2'6" above the floor). Since the height of the hall is not much, we can have the Glass& Aluminium partition walls up to the ceiling. f. All existing walls in existing MET hall as well as New Research Lab to be tiled up to 9 feet (to help better cleaning and disinfection) in areas where glass and aluminium partition walls to be created.	

2. **For AHU Placement:**
   a. Space for AHU placement identified at Ground Floor behind the Proposed TB Containment Lab (near to the exit door of Anatomy Hall). Floor will have to be cleaned and levelled and platform needs to be created at a height of 4 feet above from the floor level (to avoid AHU from getting flooded during rains).

3. **For creating Washing cum Autoclave Room (as indicated in layout):**
   a. Installation of one glass aluminium partition of size 12' X 11' (up to ceiling) with a glass Double door of size 2' (W) X 6'8" (H) each with auto door closure system and lock & key facility.
   b. Supply & Installation of one 32 AMP, single phase MCB socket with required wiring for one vertical autoclave
   c. Supply & Installation of one 4 Pole MCB with 40 AMP 3-phase with one neutral and ground for one Horizontal Autoclave.
   d. Supply & installation of three 15/6 AMP, single phase electrical socket with wiring as per layout.
   e. Workbenches:
   i. Creation of one work bench with granite top and two modular wash basins of dimension 8'(L) X 3(W) x 2'6" (H) i.e. WB4 as shown in layout. Wash basins and their fitting should be chemical resistant.
   ii. Creation of one work bench with granite top of dimension 4'(L) X 3(W) x 2'6" (H) i.e. WB3 as shown in layout
   iii. Both the workbenches can be created by using brick and mortar
   f. Supply & installation of 2 Ceiling lights & 1 ceiling fan with dedicated on/off switch
   g. Supply & Installation of one exhaust fan with necessary wiring with dedicated on/off switch

4. **For Proposed Equipment & Culture reading Room:**
   a. Creation of glass aluminium wall partition with proper gasketing with placement as per layout for proposed Instrument Room measuring 14' x 12'6" (height up to the ceiling).
   b. Provision of one work bench with granite top of size 4'(L) X 2' (W) x 2'6" (H) as indicated in the layout i.e. WB8. It may be made of brick and mortar with granite top.
   c. Supply and installation of 1.5 Tr Split AC with suitable Voltage stabilizer (outdoor unit to be placed in the corridor) along with MCB socket with required wiring. These will be inverter ACs of Hitachi/ Bluestar/ Carrier/ Lloyd/ Godrej or equivalent OEM. The outdoor unit will be suitably placed outside the lab with easy access and adequate protection from theft.
   d. Supply & Installation of six 15/6 AMP, single phase electrical sockets with wiring
   e. Supply & installation of 5 Ceiling lights & 1 ceiling fan with dedicated on/off switch

	5. For Proposed Microscopy & Staining Room: a. Installation of aluminium frame to create Microscopy & Staining room of size 10'8" (L) and 8'(W) (height up to ceiling) b. An aluminium glass door of size 3' (W) and 6'8" (H) with auto door closure mechanism with lock & key facility as indicated in the layout to be created. c. Work benches: i. Construction of one work bench of dimension 8' (L) and 2'6" (w) and 2'6" (h) with two modular wash-basins for Staining Purpose (wash basin and their fitting be chemical resistant) as indicated in the layout WB9. ii. Provision of one work bench of size 6'(L) X 2'6" (W) and 2'6" (h) as indicated in the layout (WB10). iii. Both the workbenches can be created by using brick and mortar and granite top. There may be a shelf below it. d. Supply and installation of 1 Tr Split AC with suitable voltage stabilizer (outdoor unit to be placed in the window seal outside) along with MCB socket with required wiring. These will be inverter ACs of Hitachi/ Bluestar/ Carrier/ Lloyd/ Godrej or equivalent OEM. The outdoor unit will be suitably placed outside the lab with easy access and adequate protection from theft. e. Supply & Installation of four 15/6 AMP, single phase electrical sockets with wiring f. Supply & installation of 3 Ceiling lights & 1 ceiling fan with dedicated on/off switch **6. For Corridor from main entrance to nearby the TB Containment Lab:** a. Supply & Installation of four 15/6 AMP, single phase electrical sockets with wiring as shown in layout b. Supply & installation of 8 Ceiling lights & 3 ceiling fan with dedicated on/off switch as per layout c. Existing door to be labelled with "Restricted Access-Staff only"	
Sch. No. III Moti Lal Nehru Medical College, Allahabad	**Proposed Corridor 2:** Supply and installation of 1 spilt AC of 2 TR with in-built inverter, minimum 3-star rating with suitable voltage stabilizer needs to be installed with proper drainage facility. These will be inverter ACs of Hitachi/ Bluestar/ Carrier/ Lloyd/ Godrej or equivalent OEM. The outdoor unit will be suitably placed outside the lab with easy access and adequate protection from theft. **Room 14(Proposed Autoclave Room):** • Area: 16 feet 3 inches (L)x6 feet 9 inches (W) • Installation of aluminium Glass partition with aluminium Glass Partition Door of 4 feet (W) X 7feet(H) as indicated in the layout • Gypsum false ceiling at a height of 8 feet from the floor to be installed of required ceiling area • Installation of Electrical point 5/15Amp- 4 numbers and 3 phase,4 pole MCB, with 40 AMP for Horizontal Autoclave	

	• Installation of LED Ceiling lights & necessary wiring • Necessary Electrical work for installation of Horizontal Autoclave needs to be done by Agency identified by FIND • Electrical installation for placement of 2 Exhaust Fan of appropriate capacity is required to be installed in the room **Placement of AHU (Air Handling Unit):** • Construction of concrete cemented platform and providing a shed of (36 feet 7 inches(L) X 10 feet (W) (to the fence of the boundary) X3 feet (H)(Approximately at the height of base of exit door of the TB C&DST Lab) • Installation of LED Ceiling lights & necessary wiring	
Sch. No. IV STDC Bhopal	**Room No 13: (Proposed TB Containment Lab including Change and Ante Room)** • Glass view panel of approx. 3 feet(H) X4 feet(L) to be provided on the modular wall panel next to the work bench **Corridor (between Proposed TB Containment lab and Proposed LPA lab)** • Installation of aluminium Glass Partition Door of 3 feet (W) X 7feet(H) as indicated in the layout (at the entrance of corridor) • Gypsum false ceiling at a height of 9 feet from the floor to be installed of required ceiling area • PVC flooring to be done, area of corridor 20 feet 5 inches(L) X 4 feet 8 inches(W) approx. • Installation of LED Ceiling lights & necessary wiring • 1 spilt AC of 2 TR with in-built inverter, minimum 3-star rating with suitable voltage stabilizer needs to be installed with proper drainage facility. These will be inverter ACs of Hitachi/ Bluestar/ Carrier/ Lloyd/ Godrej or equivalent OEM. The outdoor unit will be suitably placed outside the lab with easy access and adequate protection from theft • aluminium glass partition window (glass view panel type) to be provided at the rear end (size of window- 3'X3') **Placement of AHU (Air Handling Unit)** In case cemented platform is not available at site/from site, agency to carry out the AHU platform work as per the technical specification of TB containment lab, the height of platform should be less than 2 feet 6 inches to 3 feet of appropriate length and width (ideal 15 feet X15 feet)	
Sch. No. V S.P Medical college & Associated Group of Hospitals, Bikaner	**Additional Civil, Plumbing and Electrical work in Museum Room -for creating TB Containment Lab, Incubator cum Culture Reading Room and Washing cum Autoclave Room** **1. General:** a. Permanent closing by brick & cement of existing 4 windows of size [5'11" (W) X 5'10" (H)]. Three windows inside the Proposed TB Containment room and one inside the proposed Incubator & culture reading room. b. Permanent closing by brick & cement of one existing door inside the proposed TB Containment room. c. Removal of existing electrical fixtures (fan, electrical point & ceiling lights) from the proposed TB Containment Room and	

	hand over to institute. **2. For creating Incubator cum Culture Reading Room (as indicated in layout):** a. Installation of one glass aluminium partition with glass door of size 3' (W) X 6'8" (H) with auto door closure system and providing lock & key facility b. Installation of aluminium partition false ceiling at a height of 9' from the floor c. Installation of work bench of SS 304 frame with granite top of dimension 4'(L) X 2'6" (W) d. Construction of one wash basin with all plumbing work e. Supply & Installation of 15/6 A, single phase electrical sockets (3 quantity) f. Supply & Installation of 2 ceiling lights with dedicated on/off switch g. Supply & installation of 1 TR split AC with suitable Voltage stabilizer with required wiring and proper drainage (outdoor unit to be placed above the room on terrace). These will be inverter ACs of Hitachi/ Bluestar/ Carrier/ Lloyd/ Godrej or equivalent OEM. The outdoor unit will be suitably placed outside the lab with easy access and adequate protection from theft **3. In corridor near TB Containment Lab, incubator and Autoclave room:** a. Supply & installation of 3 Ceiling lights & 2 ceiling fan with necessary wiring with dedicated on/off switch **4. For creating Washing cum Autoclave Room (as indicated in layout):** a. Installation of one glass aluminium partition with glass door of size 3' (W) X 6'8" (H) with auto door closure system and lock & key facility b. Supply & Installation of Two 32 AMP, single phase MCB socket with required wiring for two vertical autoclaves c. Supply & installation of two 15/6 AMP, single phase electrical socket with wiring as per layout d. Creation of one work bench with granite top and two modular wash basins of dimension 8'(L) X 3(W) (wash basins and their fitting be chemical resistant) e. Supply & installation of 3 Ceiling lights & 1 ceiling fan with dedicated on/off switch f. Supply & Installation of one exhaust fan with necessary wiring with dedicated on/off switch g. Existing window needs to be closed permanently by brick & cement by keeping space for creation of door. Door to be made of aluminium frame with auto door closure mechanism and lock & key system	
Sch. No. VI Coimbatore Medical College Hospital, Coimbatore	**Additional work related to TB Containment Lab:** 1. Existing work bench (Slabs) to be removed 2. Existing 2 windows to be removed and permanently closed with brick and cement 3. Increase the height of the wall between the TB containment lab and Autoclave room (As mentioned in the layout) for keeping the Pass box 4. 2 windows in the Identified TB Containment area need to be closed permanently with brick and Cement	

	5. Remove the Existing slab and 2 wash basins in the identified TB Containment Area 6. Need to remove the Shelf in the identified space for fixing of AHU panel 7. Removal of existing electrical fixtures from inside the Proposed TB Containment area 8. Grill lock and key facility need to be provided to the AHU panel board which is planned in the corridor for the safety purposes.	
Sch. No. VIII PGIMS Rohtak	**Additional work related to TB Containment Lab:** a. Permanent closing by brick & cement of existing one window of size [12'9" (W) X 3'6" (H)] & one existing ventilation window of size [12'9" (W) X 3'6" (H)],four windows of size [2'6" (W) X 3'6" (H)], four glass window of size [3'4" (W) X 3'6" (H)]. b. Removal of existing RCC structure work bench covering the entire room with four modular sinks and the sinks needs to be hand over to institute. c. Removal of existing Plumbing lines from inside the Room. d. Uniform flooring after removal of existing slab and drainage pipes. e. Removal of existing electrical fixtures (fan, electrical point & ceiling lights) from the proposed TB Containment Room and hand over to institute. f. Removal of existing Wooden cupboard from inside the Proposed TB Containment Lab.	
Sch. No. IX Sri Venkateswara Govt. Medical college (SVMC), Tirupati	**Additional work related to TB Containment Lab:** 1. Creation of Door For entry to Change Room, Ante Room & TB containment Room as indicated in the layout 2. Creation of Emergency Door as indicated in the layout and closing the remaining opening of existing window by permanent brick & cement 3. Permanent closing of existing Door by Brick & cement in between Proposed Change Room & Proposed TB Containment Facility 4. Creation of HVAC/AHU platform with a height 3/4 feet above the roof top label 5. Dismantle of existing Work bench & Wash basin inside the Proposed Change & Ante Room 6. Dismantle of existing electrical sockets & lights from the proposed TB Containment Facility 7. Permanent closing of existing entry door to the proposed TB Containment Facility by brick & Cement 8. Creation of Two View panel inside the proposed TB Containment Facility as indicated in the layout and the remaining space for existing window needs to be close permanently 9. Dismantle of existing aluminium Partition inside the Facility 10. Permanent removal of existing wall including the existing Door in between Existing Culture & Media room without effecting the beam & Pillar 11. Permanent closing of the existing window inside the Proposed Ante room by brick & cement 12. Grill lock and key facility need to be provided to the AHU panel board for the safety purposes	
	<u>General Work Requirement for all 9 Sites:</u>	
A	Batteries of UPS should be provided with rack. UPSs with batteries	

	should be installed and well-arranged/organized well giving aesthetic look	
B	Dedicated earthing to be done for TB Containment Lab	

Form TECH-9: Proposed specifications and Make/ Manufacturer for item/material which bidder plans to use for the work

List of Construction Material and Equipment Proposed for Construction of the Laboratory along with specifications including manufacturers (OEM) along with warranty period (as specified by Manufacturer) **should be clearly mentioned and submitted schedule wise as per tables given below**. Any additional material proposed for construction by bidder may also be specified in the same table.

Sl. No.	Item description	Unit of Measurement (UOM)	Quantity	Specifications with capacity (wherever applicable) and warranty as specified by Manufacturer	Proposed Makes / Manufactures
1	Thermal Insulation				
2	HEPA Filter H14				
3	Diffusers, Grilles				
4	Airtight and Gastight Isolation Dampers				
5	VAV Dampers & Leak dampers				
6	Fire Damper				
7	Magnehelic Gauge				
8	Containment HEPA filter housing				
9	BIBO Indigenous				
10	AHU and Ventilation units				
11	AHU Plenum Filters G4 , F7				
12	AHU Blower- Supply & Exhaust				
13	AHU Motor-Supply & Exhaust				
14	Condensing unit				
15	HVAC Control valves				
16	Modular Material for Ceiling and Walls				
17	GI Sheets				
18	Epoxy Flooring Material				
19	Distribution Boards				
20	LT Switchgear (ACB, MCCB, MCB,ELCB, RCCB, Contactors, SFUs)				
21	FUSE				
22	VFD				
23	Timers				
24	Protection Relays				
25	Selector Switches				
26	Change Over Switch				
27	Ammeters, Voltmeters,				
28	Indication Lamps (LED Type)				
29	Push Buttons				
30	PF Meters				
31	Energy Meter				
32	Electrical Multi-function Meters				
33	Load Managers				
34	Current Transformers (Cast Resin)				
35	Telephone Tag Box				
36	Industrial type Metallic plug				

Sl. No.	Item description	Unit of Measurement (UOM)	Quantity	Specifications with capacity (wherever applicable) and warranty as specified by Manufacturer	Proposed Makes / Manufactures
	sockets				
37	Modular switches, socket outlets, LED ceiling lights				
38	PVC Conduits, Accessories				
39	MS Structural's				
40	Copper wires				
41	XLPE insulated, armoured,				
42	Aluminium conductor cables				
43	Telephone, Co-axial wires & Cables				
44	Data Cables (CAT 5e, 6)				
45	CONTROL JUNCTION BOXES				
46	Network Switches				
47	CCTV & CAMERAS				
48	UPS				
49	LED Monitor				
50	Door Interlock and Access control System				
51	Smoke Detectors				
52	Addressable analogue main panel				
53	FIRE ALARM SYSTEM				
54	Differential Pressure Switch				
55	Temperature sensor				
56	Temperature transmitter				
57	Temperature display				
58	Humidity sensor				
59	Humidity transmitter				
60	Humidity display				
61	Pressure sensor				
62	Pressure transmitter				
63	Pressure display				
64	3-Channel Monitor display with Audio-visual alarm system, wiring & accessories				
65	Vinyl Flooring for Passage/Corridor				
66	Other items (please specify) **				
67	Other items (please specify)**				

Note:

i. Attach separate sheets for specifications and manufacturers catalogues/brochures for construction materials and equipment proposed.
ii. Use separate table as above for each quoted Schedule
iii. ****Other items include any important item missed from the above list and site-specific work requirement associated with TB Containment Lab upgradation**

CHAPTER III – FINACIAL PROPOSAL - PRICE BID FORM (STANDARD FORMS)

(TO BE FILLED ONLINE BY BIDDERS FOR QUOTING THEIR PRICES -SCHEDULE WISE)

Form FIN I - Price Bid Form
(TO BE SUBMITTED ONLINE ONLY IN THE PRICE BID FORMAT. NOT TO BE UPLOADED OR SENT IN HARDCOPY IN ANY CASE)

[to be submitted with Price Bid only]

To,
Director
M/s Strategic Alliance Management Services Pvt. Ltd. (SAMS)
B01-03 Vardhaman Diamond Plaza, Community Centre,
D.B. Gupta Road, Paharganj,
New Delhi 110055

Dear Sir,

Subject: Bid for Design, Construction, Testing, Commissioning and Validation of TB Containment Laboratory and associated works with two years of comprehensive warranty period on '*Turnkey Basis'* and the cost of maintenance of laboratories for the period of 3 years after warranty period

Bid Ref. No.: **SAMSPL/18-19/ET/2**

1. We, [***Name of Bidder***], hereby submit a bid for the construction of the above-referenced works in response to the above-referenced ITB for following Schedule:

Schedule No. (as many as quoted by the Bidder	Name of Laboratory

2. We warrant that in preparing and submitting this bid, we have complied with, and are willing to be bound by, any and all of the requirements and provisions of the above-referenced ITB, including the terms and conditions of the Contract as set out in the Bid Documents.

3. Based on the above, our proposed **Total Contract Price is Rs. _____ inclusive of all relevant taxes for……. schedules** (amount in words) and as per FIN-2 and FIN-3 Forms attached

4. I, the undersigned, certify that I am duly authorized by [***insert name of bidder***] to sign this bid and bind [***insert name of bidder***]:

Name: _____

Title: _____

Date: _____

Signature: _____

FINANCIAL PROPOSAL- STANDARD FORMS

Form FIN-2 : Lump sum Contract Price

(To be submitted for each quoted Schedules individually)

Schedule No.___

Description	**Costs (**inclusive of all applicable taxes)
A. Cost of Financial Bid for Design, Construction, Testing, Commissioning and Validation of TB Containment Laboratory and associated works with two year comprehensive warranty on 'Turnkey Basis'.	_____
B. Cost of additional works as per Scope of work of each schedule. (Except Mushridabad, West Bengal site)	_____
C. Schedule wise Cost of Annual Maintenance Services after completion of warranty period of 2 years[1]	
3rd Year	_____
4th Year	_____
5th Year	_____
D.**TOTAL CONTRACT PRICE = (A + B + C)**	_____

[1] Please provide spare part price list (as Annexure-A to FIN-2) as may be required (and valid) during entire duration of annual maintenance services. Please use Tech Form 9 as a reference while preparing spare part price list.

ANNEXURE-A

FORM FIN-2 – Price list of all necessary spare parts that may be required and should be valid during entire duration of annual maintenance services after completion of two years comprehensive warranty period.

Sr. No.	Name of Spare Part	Unit Price (exclusive of GST)
1		
2		
n		

FINANCIAL PROPOSAL- STANDARD FORMS

Form FIN-3: Priced Bill of Quantity

(To be submitted for each quoted Schedule with Price bid only)

Bidders shall submit detailed workings of Lump Sum Contract Price (Component-A & B as given in FIN-2) for Design, Construction, Testing, Commissioning and Validation of TB Containment Laboratory and associated works on 'Turnkey Basis'. The total price mentioned in the table below should coincide with the Price Component A & B as given in FIN-2 for each Schedule.

Schedule I: - Aizwal

Sl. No.	Item description	UNIT of Measurement	Quantity	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
HVAC					
1	Thermal Insulation for Ducting				
2	Ducting				
3	Containment HEPA Filter (H14) Housing with Test elbow port				
4	Diffusers, Grills				
5	Airtight and Gastight Isolation Dampers				
6	VAV, Dampers (VCDs, Low Leakage dampers)				
7	Fire Dampers				
8	Magnehelic Gauge				
9	HEPA filter with BIBO Indigenous with Test elbow port				
11	AHU and Ventilation Units				
12	AHU Filters (G4, F7)				
13	AHU Fan/Blower				
14	Motor				
15	Condensing Unit				
16	compatible cooling coil				
17	HVAC Control Valves				
18	VFD				
19	MS Structural for AHU Shed				
20	BSC ducting with Exhaust blower (Damper, Pipe, other ducting accessories material and foundation work for Exhaust blower)				
Electrical Panel, AHU Control Panel, Electrical Cabling & accessories					
1	LT Switch Gears (ACB, MCCB, MCB, ELCB, RCCB, Contactors, SFUs)				
2	FUSE				
3	Protection Relays				
4	Selector Switches				
5	Ammeters, Voltmeters				
6	Indication Lamps (LED Type)				
7	Push Buttons				
8	PF Meters				
9	Energy Meter				
10	Electric Multifunction Meter				

Sl. No.	Item description	UNIT of Measurement	Quantity	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
11	Load Managers				
12	Current Transformers				
13	Modular Switches, Socket outlets, Ceiling lights				
14	PVC Conduits, Accessories (running meter)				
15	Copper wires				
16	XLPE Insulated armoured wire				
17	UPS- 3KVA 30 minutes backup				
18	Distribution Board				
19	CONTROL JUNCTION BOXES				
Interiors					
1	Modular Material for Ceiling				
2	Modular Material for wall panels with coving				
3	Epoxy Flooring				
4	Modular (PUFF panel) Flush Doors				
5	CCTV Camera				
6	LED Monitor				
7	Fire Alarm system with Fire extinguishers				
8	Addressable analogue main panel				
9	Smoke Detectors				
10	Emergency eye wash and Shower				
11	Pass Box				
12	Split ACs with Accessories with change over timer				
13	Data Cable (CATFI Cable connection point				
14	Door interlocking & access control system				
15	Temperature sensor, transmitter & display				
16	Humidity sensor, transmitter & display				
17	Pressure sensor & display				
18	EPABX Box				
19	Telephone set, Co-axial wires & cables				
20	Laboratory Stools				
21	SS Trolley				
22	SS Workbench				
23	SS Shoe Racks				
24	Wash Basin				
25	Garment Cubicles				
26	RTV Silicon Sealant				
27	Validation of Lab & BSC				
27	Misc. Civil & Plumbing Work including AHU foundation				
28	Dedicated Earthing				
29	Site specific additional work				
30	Any other items as quoted by the bidder				

Schedule II :- Akola

Sl. No.	Item description	UNIT of Measurement	Quantity	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
HVAC					
1	Thermal Insulation for Ducting				
2	Ducting				
3	Containment HEPA Filter (H14) Housing with Test elbow port				
4	Diffusers, Grills				
5	Airtight and Gastight Isolation Dampers				
6	VAV, Dampers (VCDs, Low Leakage dampers)				
7	Fire Dampers				
8	Magnehelic Gauge				
9	HEPA filter with BIBO Indigenous with Test elbow port				
11	AHU and Ventilation Units				
12	AHU Filters (G4, F7)				
13	AHU Fan/Blower				
14	Motor				
15	Condensing Unit				
16	compatible cooling coil				
17	HVAC Control Valves				
18	VFD				
19	MS Structural for AHU Shed				
20	BSC ducting with Exhaust blower (Damper, Pipe, other ducting accessories material and foundation work for Exhaust blower)				
Electrical Panel, AHU Control Panel, Electrical Cabling & accessories					
1	LT Switch Gears (ACB, MCCB, MCB, ELCB, RCCB, Contactors, SFUs)				
2	FUSE				
3	Protection Relays				
4	Selector Switches				
5	Ammeters, Voltmeters				
6	Indication Lamps (LED Type)				
7	Push Buttons				
8	PF Meters				
9	Energy Meter				
10	Electric Multifunction Meter				
11	Load Managers				
12	Current Transformers				
13	Modular Switches, Socket outlets, Ceiling lights				
14	PVC Conduits, Accessories (running meter)				
15	Copper wires				
16	XLPE Insulated armoured wire				
17	UPS- 3KVA 30 minutes backup				
18	Distribution Board				
19	CONTROL JUNCTION BOXES				

Sl. No.	Item description	UNIT of Measurement	Quantity	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
Interiors					
1	Modular Material for Ceiling				
2	Modular Material for wall panels with coving				
3	Epoxy Flooring				
4	Modular (PUFF panel) Flush Doors				
5	CCTV Camera				
6	LED Monitor				
7	Fire Alarm system with Fire extinguishers				
8	Addressable analogue main panel				
9	Smoke Detectors				
10	Emergency eye wash and Shower				
11	Pass Box				
12	Split ACs with Accessories with change over timer				
13	Data Cable (CATFI Cable connection point				
14	Door interlocking & access control system				
15	Temperature sensor, transmitter & display				
16	Humidity sensor, transmitter & display				
17	Pressure sensor & display				
18	EPABX Box				
19	Telephone set, Co-axial wires & cables				
20	Laboratory Stools				
21	SS Trolley				
22	SS Workbench				
23	SS Shoe Racks				
24	Wash Basin				
25	Garment Cubicles				
26	RTV Silicon Sealant				
27	Validation of Lab & BSC				
27	Misc. Civil & Plumbing Work including AHU foundation				
28	Dedicated Earthing				
29	Site specific additional work				
30	Any other items as quoted by the bidder				

Schedule III :- Allahabad

Sl. No.	Item description	UNIT of Measurement	Quantity	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
HVAC					
1	Thermal Insulation for Ducting				
2	Ducting				
3	Containment HEPA Filter (H14) Housing with Test elbow port				
4	Diffusers, Grills				
5	Airtight and Gastight Isolation Dampers				
6	VAV, Dampers (VCDs, Low Leakage dampers)				
7	Fire Dampers				
8	Magnehelic Gauge				
9	HEPA filter with BIBO Indigenous with Test elbow port				
11	AHU and Ventilation Units				
12	AHU Filters (G4, F7)				
13	AHU Fan/Blower				
14	Motor				
15	Condensing Unit				
16	compatible cooling coil				
17	HVAC Control Valves				
18	VFD				
19	MS Structural for AHU Shed				
20	BSC ducting with Exhaust blower (Damper, Pipe, other ducting accessories material and foundation work for Exhaust blower)				
Electrical Panel, AHU Control Panel, Electrical Cabling & accessories					
1	LT Switch Gears (ACB, MCCB, MCB, ELCB, RCCB, Contactors, SFUs)				
2	FUSE				
3	Protection Relays				
4	Selector Switches				
5	Ammeters, Voltmeters				
6	Indication Lamps (LED Type)				
7	Push Buttons				
8	PF Meters				
9	Energy Meter				
10	Electric Multifunction Meter				
11	Load Managers				
12	Current Transformers				
13	Modular Switches, Socket outlets, Ceiling lights				
14	PVC Conduits, Accessories (running meter)				
15	Copper wires				
16	XLPE Insulated armoured wire				
17	UPS- 3KVA 30 minutes backup				
18	Distribution Board				
19	CONTROL JUNCTION BOXES				

Sl. No.	Item description	UNIT of Measurement	Quantity	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
Interiors					
1	Modular Material for Ceiling				
2	Modular Material for wall panels with coving				
3	Epoxy Flooring				
4	Modular (PUFF panel) Flush Doors				
5	CCTV Camera				
6	LED Monitor				
7	Fire Alarm system with Fire extinguishers				
8	Addressable analogue main panel				
9	Smoke Detectors				
10	Emergency eye wash and Shower				
11	Pass Box				
12	Split ACs with Accessories with change over timer				
13	Data Cable (CATFI Cable connection point				
14	Door interlocking & access control system				
15	Temperature sensor, transmitter & display				
16	Humidity sensor, transmitter & display				
17	Pressure sensor & display				
18	EPABX Box				
19	Telephone set, Co-axial wires & cables				
20	Laboratory Stools				
21	SS Trolley				
22	SS Workbench				
23	SS Shoe Racks				
24	Wash Basin				
25	Garment Cubicles				
26	RTV Silicon Sealant				
27	Validation of Lab & BSC				
27	Misc. Civil & Plumbing Work including AHU foundation				
28	Dedicated Earthing				
29	Site specific additional work				
30	Any other items as quoted by the bidder				

Schedule IV:- Bhopal

Sl. No.	Item description	UNIT of Measurement	Quantity	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
	HVAC				
1	Thermal Insulation for Ducting				
2	Ducting				
3	Containment HEPA Filter (H14) Housing with Test elbow port				
4	Diffusers, Grills				
5	Airtight and Gastight Isolation Dampers				
6	VAV, Dampers (VCDs, Low Leakage dampers)				
7	Fire Dampers				
8	Magnehelic Gauge				
9	HEPA filter with BIBO Indigenous with Test elbow port				
11	AHU and Ventilation Units				
12	AHU Filters (G4, F7)				
13	AHU Fan/Blower				
14	Motor				
15	Condensing Unit				
16	compatible cooling coil				
17	HVAC Control Valves				
18	VFD				
19	MS Structural for AHU Shed				
20	BSC ducting with Exhaust blower (Damper, Pipe, other ducting accessories material and foundation work for Exhaust blower)				
	Electrical Panel, AHU Control Panel, Electrical Cabling & accessories				
1	LT Switch Gears (ACB, MCCB, MCB, ELCB, RCCB, Contactors, SFUs)				
2	FUSE				
3	Protection Relays				
4	Selector Switches				
5	Ammeters, Voltmeters				
6	Indication Lamps (LED Type)				
7	Push Buttons				
8	PF Meters				
9	Energy Meter				
10	Electric Multifunction Meter				
11	Load Managers				
12	Current Transformers				
13	Modular Switches, Socket outlets, Ceiling lights				
14	PVC Conduits, Accessories (running meter)				
15	Copper wires				
16	XLPE Insulated armoured wire				
17	UPS- 3KVA 30 minutes backup				
18	Distribution Board				

Sl. No.	Item description	UNIT of Measurement	Quantity	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
19	CONTROL JUNCTION BOXES				
Interiors					
1	Modular Material for Ceiling				
2	Modular Material for wall panels with coving				
3	Epoxy Flooring				
4	Modular (PUFF panel) Flush Doors				
5	CCTV Camera				
6	LED Monitor				
7	Fire Alarm system with Fire extinguishers				
8	Addressable analogue main panel				
9	Smoke Detectors				
10	Emergency eye wash and Shower				
11	Pass Box				
12	Split ACs with Accessories with change over timer				
13	Data Cable (CATFI Cable connection point				
14	Door interlocking & access control system				
15	Temperature sensor, transmitter & display				
16	Humidity sensor, transmitter & display				
17	Pressure sensor & display				
18	EPABX Box				
19	Telephone set, Co-axial wires & cables				
20	Laboratory Stools				
21	SS Trolley				
22	SS Workbench				
23	SS Shoe Racks				
24	Wash Basin				
25	Garment Cubicles				
26	RTV Silicon Sealant				
27	Validation of Lab & BSC				
27	Misc. Civil & Plumbing Work including AHU foundation				
28	Dedicated Earthing				
29	Site specific additional work				
30	Any other items as quoted by the bidder				

Schedule V:- Bikaner

Sl. No.	Item description	UNIT of Measurement	Quantity	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
HVAC					
1	Thermal Insulation for Ducting				
2	Ducting				
3	Containment HEPA Filter (H14) Housing with Test elbow port				
4	Diffusers, Grills				
5	Airtight and Gastight Isolation Dampers				
6	VAV, Dampers (VCDs, Low Leakage dampers)				
7	Fire Dampers				
8	Magnehelic Gauge				
9	HEPA filter with BIBO Indigenous with Test elbow port				
11	AHU and Ventilation Units				
12	AHU Filters (G4, F7)				
13	AHU Fan/Blower				
14	Motor				
15	Condensing Unit				
16	compatible cooling coil				
17	HVAC Control Valves				
18	VFD				
19	MS Structural for AHU Shed				
20	BSC ducting with Exhaust blower (Damper, Pipe, other ducting accessories material and foundation work for Exhaust blower)				
Electrical Panel, AHU Control Panel, Electrical Cabling & accessories					
1	LT Switch Gears (ACB, MCCB, MCB, ELCB, RCCB, Contactors, SFUs)				
2	FUSE				
3	Protection Relays				
4	Selector Switches				
5	Ammeters, Voltmeters				
6	Indication Lamps (LED Type)				
7	Push Buttons				
8	PF Meters				
9	Energy Meter				
10	Electric Multifunction Meter				
11	Load Managers				
12	Current Transformers				
13	Modular Switches, Socket outlets, Ceiling lights				
14	PVC Conduits, Accessories (running meter)				
15	Copper wires				
16	XLPE Insulated armoured wire				
17	UPS- 3KVA 30 minutes backup				
18	Distribution Board				

Sl. No.	Item description	UNIT of Measurement	Quantity	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
19	CONTROL JUNCTION BOXES				
	Interiors				
1	Modular Material for Ceiling				
2	Modular Material for wall panels with coving				
3	Epoxy Flooring				
4	Modular (PUFF panel) Flush Doors				
5	CCTV Camera				
6	LED Monitor				
7	Fire Alarm system with Fire extinguishers				
8	Addressable analogue main panel				
9	Smoke Detectors				
10	Emergency eye wash and Shower				
11	Pass Box				
12	Split ACs with Accessories with change over timer				
13	Data Cable (CATFI Cable connection point				
14	Door interlocking & access control system				
15	Temperature sensor, transmitter & display				
16	Humidity sensor, transmitter & display				
17	Pressure sensor & display				
18	EPABX Box				
19	Telephone set, Co-axial wires & cables				
20	Laboratory Stools				
21	SS Trolley				
22	SS Workbench				
23	SS Shoe Racks				
24	Wash Basin				
25	Garment Cubicles				
26	RTV Silicon Sealant				
27	Validation of Lab & BSC				
27	Misc. Civil & Plumbing Work including AHU foundation				
28	Dedicated Earthing				
29	Site specific additional work				
30	Any other items as quoted by the bidder				

Schedule VI :- Coimbatore

Sl. No.	Item description	UNIT of Measurement	Quantity	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
HVAC					
1	Thermal Insulation for Ducting				
2	Ducting				
3	Containment HEPA Filter (H14) Housing with Test elbow port				
4	Diffusers, Grills				
5	Airtight and Gastight Isolation Dampers				
6	VAV, Dampers (VCDs, Low Leakage dampers)				
7	Fire Dampers				
8	Magnehelic Gauge				
9	HEPA filter with BIBO Indigenous with Test elbow port				
11	AHU and Ventilation Units				
12	AHU Filters (G4, F7)				
13	AHU Fan/Blower				
14	Motor				
15	Condensing Unit				
16	compatible cooling coil				
17	HVAC Control Valves				
18	VFD				
19	MS Structural for AHU Shed				
20	BSC ducting with Exhaust blower (Damper, Pipe, other ducting accessories material and foundation work for Exhaust blower)				
Electrical Panel, AHU Control Panel, Electrical Cabling & accessories					
1	LT Switch Gears (ACB, MCCB, MCB, ELCB, RCCB, Contactors, SFUs)				
2	FUSE				
3	Protection Relays				
4	Selector Switches				
5	Ammeters, Voltmeters				
6	Indication Lamps (LED Type)				
7	Push Buttons				
8	PF Meters				
9	Energy Meter				
10	Electric Multifunction Meter				
11	Load Managers				
12	Current Transformers				
13	Modular Switches, Socket outlets, Ceiling lights				
14	PVC Conduits, Accessories (running meter)				
15	Copper wires				
16	XLPE Insulated armoured wire				
17	UPS- 3KVA 30 minutes backup				
18	Distribution Board				

Sl. No.	Item description	UNIT of Measurement	Quantity	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
19	CONTROL JUNCTION BOXES				
	Interiors				
1	Modular Material for Ceiling				
2	Modular Material for wall panels with coving				
3	Epoxy Flooring				
4	Modular (PUFF panel) Flush Doors				
5	CCTV Camera				
6	LED Monitor				
7	Fire Alarm system with Fire extinguishers				
8	Addressable analogue main panel				
9	Smoke Detectors				
10	Emergency eye wash and Shower				
11	Pass Box				
12	Split ACs with Accessories with change over timer				
13	Data Cable (CATFI Cable connection point				
14	Door interlocking & access control system				
15	Temperature sensor, transmitter & display				
16	Humidity sensor, transmitter & display				
17	Pressure sensor & display				
18	EPABX Box				
19	Telephone set, Co-axial wires & cables				
20	Laboratory Stools				
21	SS Trolley				
22	SS Workbench				
23	SS Shoe Racks				
24	Wash Basin				
25	Garment Cubicles				
26	RTV Silicon Sealant				
27	Validation of Lab & BSC				
27	Misc. Civil & Plumbing Work including AHU foundation				
28	Dedicated Earthing				
29	Site specific additional work				
30	Any other items as quoted by the bidder				

Schedule VII :- Murshidabad

Sl. No.	Item description	UNIT of Measurement	Quantity	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
	HVAC				
1	Thermal Insulation for Ducting				
2	Ducting				
3	Containment HEPA Filter (H14) Housing with Test elbow port				
4	Diffusers, Grills				
5	Airtight and Gastight Isolation Dampers				
6	VAV, Dampers (VCDs, Low Leakage dampers)				
7	Fire Dampers				
8	Magnehelic Gauge				
9	HEPA filter with BIBO Indigenous with Test elbow port				
11	AHU and Ventilation Units				
12	AHU Filters (G4, F7)				
13	AHU Fan/Blower				
14	Motor				
15	Condensing Unit				
16	compatible cooling coil				
17	HVAC Control Valves				
18	VFD				
19	MS Structural for AHU Shed				
20	BSC ducting with Exhaust blower (Damper, Pipe, other ducting accessories material and foundation work for Exhaust blower)				
	Electrical Panel, AHU Control Panel, Electrical Cabling & accessories				
1	LT Switch Gears (ACB, MCCB, MCB, ELCB, RCCB, Contactors, SFUs)				
2	FUSE				
3	Protection Relays				
4	Selector Switches				
5	Ammeters, Voltmeters				
6	Indication Lamps (LED Type)				
7	Push Buttons				
8	PF Meters				
9	Energy Meter				
10	Electric Multifunction Meter				
11	Load Managers				
12	Current Transformers				
13	Modular Switches, Socket outlets, Ceiling lights				
14	PVC Conduits, Accessories (running meter)				
15	Copper wires				
16	XLPE Insulated armoured wire				
17	UPS- 3KVA 30 minutes backup				
18	Distribution Board				

Sl. No.	Item description	UNIT of Measurement	Quantity	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
19	CONTROL JUNCTION BOXES				
	Interiors				
1	Modular Material for Ceiling				
2	Modular Material for wall panels with coving				
3	Epoxy Flooring				
4	Modular (PUFF panel) Flush Doors				
5	CCTV Camera				
6	LED Monitor				
7	Fire Alarm system with Fire extinguishers				
8	Addressable analogue main panel				
9	Smoke Detectors				
10	Emergency eye wash and Shower				
11	Pass Box				
12	Split ACs with Accessories with change over timer				
13	Data Cable (CATFI Cable connection point				
14	Door interlocking & access control system				
15	Temperature sensor, transmitter & display				
16	Humidity sensor, transmitter & display				
17	Pressure sensor & display				
18	EPABX Box				
19	Telephone set, Co-axial wires & cables				
20	Laboratory Stools				
21	SS Trolley				
22	SS Workbench				
23	SS Shoe Racks				
24	Wash Basin				
25	Garment Cubicles				
26	RTV Silicon Sealant				
27	Validation of Lab & BSC				
27	Misc. Civil & Plumbing Work including AHU foundation				
28	Dedicated Earthing				
29	Site specific additional work				
30	Any other items as quoted by the bidder				

Schedule VIII :- Rohtak

Sl. No.	Item description	UNIT of Measurement	Quantity	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
HVAC					
1	Thermal Insulation for Ducting				
2	Ducting				
3	Containment HEPA Filter (H14) Housing with Test elbow port				
4	Diffusers, Grills				
5	Airtight and Gastight Isolation Dampers				
6	VAV, Dampers (VCDs, Low Leakage dampers)				
7	Fire Dampers				
8	Magnehelic Gauge				
9	HEPA filter with BIBO Indigenous with Test elbow port				
11	AHU and Ventilation Units				
12	AHU Filters (G4, F7)				
13	AHU Fan/Blower				
14	Motor				
15	Condensing Unit				
16	compatible cooling coil				
17	HVAC Control Valves				
18	VFD				
19	MS Structural for AHU Shed				
20	BSC ducting with Exhaust blower (Damper, Pipe, other ducting accessories material and foundation work for Exhaust blower)				
Electrical Panel, AHU Control Panel, Electrical Cabling & accessories					
1	LT Switch Gears (ACB, MCCB, MCB, ELCB, RCCB, Contactors, SFUs)				
2	FUSE				
3	Protection Relays				
4	Selector Switches				
5	Ammeters, Voltmeters				
6	Indication Lamps (LED Type)				
7	Push Buttons				
8	PF Meters				
9	Energy Meter				
10	Electric Multifunction Meter				
11	Load Managers				
12	Current Transformers				
13	Modular Switches, Socket outlets, Ceiling lights				
14	PVC Conduits, Accessories (running meter)				
15	Copper wires				
16	XLPE Insulated armoured wire				
17	UPS- 3KVA 30 minutes backup				
18	Distribution Board				

Sl. No.	Item description	UNIT of Measurement	Quantity	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
19	CONTROL JUNCTION BOXES				
	Interiors				
1	Modular Material for Ceiling				
2	Modular Material for wall panels with coving				
3	Epoxy Flooring				
4	Modular (PUFF panel) Flush Doors				
5	CCTV Camera				
6	LED Monitor				
7	Fire Alarm system with Fire extinguishers				
8	Addressable analogue main panel				
9	Smoke Detectors				
10	Emergency eye wash and Shower				
11	Pass Box				
12	Split ACs with Accessories with change over timer				
13	Data Cable (CATFI Cable connection point				
14	Door interlocking & access control system				
15	Temperature sensor, transmitter & display				
16	Humidity sensor, transmitter & display				
17	Pressure sensor & display				
18	EPABX Box				
19	Telephone set, Co-axial wires & cables				
20	Laboratory Stools				
21	SS Trolley				
22	SS Workbench				
23	SS Shoe Racks				
24	Wash Basin				
25	Garment Cubicles				
26	RTV Silicon Sealant				
27	Validation of Lab & BSC				
27	Misc. Civil & Plumbing Work including AHU foundation				
28	Dedicated Earthing				
29	Site specific additional work				
30	Any other items as quoted by the bidder				

Schedule IX:- Tirupati

Sl. No.	Item description	UNIT of Measurement	Quantity	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
HVAC					
1	Thermal Insulation for Ducting				
2	Ducting				
3	Containment HEPA Filter (H14) Housing with Test elbow port				
4	Diffusers, Grills				
5	Airtight and Gastight Isolation Dampers				
6	VAV, Dampers (VCDs, Low Leakage dampers)				
7	Fire Dampers				
8	Magnehelic Gauge				
9	HEPA filter with BIBO Indigenous with Test elbow port				
11	AHU and Ventilation Units				
12	AHU Filters (G4, F7)				
13	AHU Fan/Blower				
14	Motor				
15	Condensing Unit				
16	compatible cooling coil				
17	HVAC Control Valves				
18	VFD				
19	MS Structural for AHU Shed				
20	BSC ducting with Exhaust blower (Damper, Pipe, other ducting accessories material and foundation work for Exhaust blower)				
Electrical Panel, AHU Control Panel, Electrical Cabling & accessories					
1	LT Switch Gears (ACB, MCCB, MCB, ELCB, RCCB, Contactors, SFUs)				
2	FUSE				
3	Protection Relays				
4	Selector Switches				
5	Ammeters, Voltmeters				
6	Indication Lamps (LED Type)				
7	Push Buttons				
8	PF Meters				
9	Energy Meter				
10	Electric Multifunction Meter				
11	Load Managers				
12	Current Transformers				
13	Modular Switches, Socket outlets, Ceiling lights				
14	PVC Conduits, Accessories (running meter)				
15	Copper wires				
16	XLPE Insulated armoured wire				
17	UPS- 3KVA 30 minutes backup				
18	Distribution Board				

Sl. No.	Item description	UNIT of Measurement	Quantity	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
19	CONTROL JUNCTION BOXES				
	Interiors				
1	Modular Material for Ceiling				
2	Modular Material for wall panels with coving				
3	Epoxy Flooring				
4	Modular (PUFF panel) Flush Doors				
5	CCTV Camera				
6	LED Monitor				
7	Fire Alarm system with Fire extinguishers				
8	Addressable analogue main panel				
9	Smoke Detectors				
10	Emergency eye wash and Shower				
11	Pass Box				
12	Split ACs with Accessories with change over timer				
13	Data Cable (CATFI Cable connection point				
14	Door interlocking & access control system				
15	Temperature sensor, transmitter & display				
16	Humidity sensor, transmitter & display				
17	Pressure sensor & display				
18	EPABX Box				
19	Telephone set, Co-axial wires & cables				
20	Laboratory Stools				
21	SS Trolley				
22	SS Workbench				
23	SS Shoe Racks				
24	Wash Basin				
25	Garment Cubicles				
26	RTV Silicon Sealant				
27	Validation of Lab & BSC				
27	Misc. Civil & Plumbing Work including AHU foundation				
28	Dedicated Earthing				
29	Site specific additional work				
30	Any other items as quoted by the bidder				

Note: Bidder may include any important item/s missed from the above list and site-specific work requirement associated with TB Containment Lab upgradation

Chapter IV

SCHEDULE OF REQUIREMENT, TECHNICAL SPECIFICATIONS AND DRAWINGS/ LAYOUTS OF LABORATORIES AND REQUIRED WORKS

Chapter IV
SCHEDULE OF REQUIREMENT, TECHNICAL SPECIFICATIONS AND DRAWINGS/ LAYOUTS OF LABORATORIES AND REQUIRED WORKS

A. SCHEDULE OF REQUIREMENT

Schedule No.	Brief Scope of Works and List of Sites
	Design, Construction, Testing, Commissioning and Validation of TB Containment Laboratory and associated works with two years of Comprehensive warranty period on '*Turnkey Basis*' in compliance with *Revised National Tuberculosis Control Programme(RNTCP), Central TB Division(CTD), Govt of India(GoI)*. **, and the cost of maintenance of laboratories for the period of 3 years after warranty period at following sites:**
I	DR-TB Centre Falkawn, MIMER Medical College Campus, Aizawl, Mizoram
II	Government Medical College, Department of Microbiology, 2nd Floor, Collector office road, Near Ashok watika, Akola, Maharashtra
III	Moti Lal Nehru Medical College (MLNMC), Allahabad, Uttar Pradesh
IV	State TB Hospital Campus, Idgah Hills, Bhopal-462001 Bhopal. Madhya Pradesh
V	S.P Medical college & Associated Group of Hospitals, Bikaner, Rajasthan
VI	Coimbatore Medical College Hospital, No.1619 A, Trichy Rd, Near. Railway Station, Coimbatore, Tamil Nadu
VII	Murshidabad Medical College and Hospital, Station Road, Berhampore, Murshidabad, West Bengal
VIII	Pandit B D Sharma Post Graduate Institute of Medical Sciences (PGIMS) Rohtak, Haryana
IX	Sri Venkateswara Govt. Medical college (SVMC), Tirupati, Andhra Pradesh

B. Schedule for Completion and Handover of Works:

Within six (06) months of issuance of Notification of Award (NOA) for each quoted Schedules.

C. Detailed address of sites:

Sl. No.	Address	consignee's representative	Tel / Mobile	Email	Alternate Staff Officer	Mobile	Alternate Staff Email
1	Sri Venkateswara Govt. Medical college (SVMC), Tirupati, Andhra Pradesh - 517507	Dr. Ramanarah, Principal, SriVenkateswara Govt. Medical college (SVMC), Tirupati, Andhra Pradesh	8919327185 9849903177	Principalsvmctpt1960@gmail.com	Dr. Sreenivas Rao Professor & HOD Microbiology	09704142174	drchsrinivasarao@gmail.com
2	S.P Medical college & Associated Group of Hospitals, Bikaner-334003	Dr BP Sharma, Professor ,Professor & Head Department of Clinical	9982496277 Tel: 0151-2226334-338 ,Extn.323,324, 325	sharmamicro@rediffmail.com	Dr Geeta Tinna, Associate Prof Microbiology, Nodal Officer	9414528988 9413684655	geetavtinna@gmail.com drb.29e@gmail.com

Sl. No.	Address	consignee's representative	Tel / Mobile	Email	Alternate Staff Officer	Mobile	Alternate Staff Email
		Microbiology &Immunology			Dr BR Bishnoi (Asst. Prof) Lab In charge		
3	Coimbatore Medical College Hospital, No.1619 A, Trichy Rd, Near. Railway Station, Coimbatore, Tamil Nadu 641018	DR. B. Asokan, Dean	0422-2301393 Ext.6. Mob:9842245081.	deancmccbe@gmail.com	Dr. Mythili, HOD, Microbiology Dr. Malini, Asst. Prof. Dr. Sakthivel, DTO, Coimbatore.	HOD Mob: 9894722662; Asst. Prof:9442482890; DTO Mob: 9443369760;	micro_cmccbe@gmail.com ; dtotncbe@rntcp.org
4	STDC IRL-Bhopal, State TB Hospital Campus, Idgah Hills, Bhopal-462001 Bhopal. Madhya Pradesh.	Dr. Kaushal Kumar Director STDC Bhopal	Mobile +91 9425677704	Irlmpbpl@rntcp.org stdcmp@rntcp.org	Dr. Soumya Dhawan Dr. Sanjay Dawar	+91 9669531250 +91 9179140267	Irlmpbpl@rntcp.org sowmyadhawan@gmail.com irlmpbpl@rntcp.org
5	Murshidabad Medical College and Hospital, Station Road, Berhampore – 742 101 Murshidabad, West Bengal	Dr. (Prof.) Manju Banerjee, Principal, Murshidabad Medical College	9433006525 03482-200433	Principal.msdmch@gmail.com	Dr. Manash Sarkar. Prof. and HOD Microbiology, Murshidabad Medical College	9433396315	Manashsarkar98@yahoo.in
6	DR-TB Centre Falkawn, MIMER Medical College Campus, Aizawl, Mizoram - 796004	Dr. Lily Chhakchhuak, DTO Aizawl	9436140882	dtomzaz@rntcp.org	Dr. Zara, Medical Officer, State TB Cell, Mizoram	8575414006	stomz@rntcp.org
7	Government Medical College, Department of Microbiology,2 nd Floor, Collector office road, Near Ashok watika, Akola-444001	Dr Rajesh Karyaskarte, DEAM, GMC, Akola	09922402502	karyakarte@hotmail.com	Dr Nitin Ambhore, Associate Professor. Microbiology, GMC, Akola Dr Rupali S. Mantri, Assistant Professor, Microbiology, GMC-Akola	9822698540/9850621354 9822500958	naambhore@rediffmail.com r.mantri@rediffmail.com
8	Moti Lal Nehru Medical College (MLNMC), Allahabad-211001	Dr.(Prof.) S. P. Singh,Principal, MLNMC, Allahabad.	0532-2256507	mlnmc1961@gmail.com	Dr Reena Sachan, Lecturer Dept. Of Microbiology	9721410660	drreena126@gmail.com

Sl. No.	Address	consignee's representative	Tel / Mobile	Email	Alternate Staff Officer	Mobile	Alternate Staff Email
					Moti Lal Nehru Medical College (MLNMC), Allahabad-211001 Dr.Arindam Chakraborty, Lecturer, Incharge,Deptt. of Microbiology	7408881369	arins133@gmail.com
9	Pandit B D Sharma Post Graduate Institute of Medical Sciences (PGIMS) Rohtak, Haryana - 124001	Dr Aparna Professor Microbiology, Pandit B D Sharma PGIMS Rohtak, Department of Microbiology,2nd Floor	9896354269	Aparnaparmar2008@rediffmail.com	Dr Ashima Katyal Senior Resident, Microbiology, Pandit B D Sharma PGIMS Rohtak	9466676878	docak07@gmail.com

D. SCOPE OF WORK, TECHNICAL SPECIFICATIONS AND DRAWINGS/ LAYOUTS OF LABORATORIES

SCOPE OF WORK:

The Scope of work involves 'Construction, Testing, Commissioning and Validation of TB Containment Laboratory & associated works approved under the Revised National Tuberculosis Control Programme (RNTCP), Central TB Division (CTD), Govt. of India (GoI).

The scope of work shall include design, complete construction and establishment of TB Containment facility including minor civil works, electrical works, public health engineering works etc. complete in all respect. All the fixed equipment and systems like pass box, HVAC system and its components (including A/C plant, air handling, exhaust systems, filters, controls etc.),computers, laboratory workstations, uninterrupted power supply system, door interlocks, access control system, fire detection & alarm, system, surveillance systems CCTV with remotely placed monitor control, fire extinguishers and any other equipment/systems essentially required to meet the intent and purpose of setting up of TB Containment laboratory shall be provided and included in the scope of works. Items/equipment like scientific laboratory instruments, bio safety cabinets, autoclaves and other equipment such as freezers, refrigerator, incubators, centrifuges etc. will be available at site/ procured by the site. Architectural layout of the lab will be provided (including TB Containment Lab and placement of equipment and power load requirement)- **see Annexure 1 to 3.**

The scope of works shall also include:

i. Supply and laying of the required power supply cables from the existing electrical room (LT Panel room) up to the proposed TB Containment Lab for its power supply.
ii. Extension of existing LT panel by providing feeder panel with switchgears of required capacities to meet the power requirements of TB Containment Lab. Dedicated earthing for the TB Containment Lab shall be installed as required by the vendor.
iii. Power required for the TB Containment Laboratory shall be tapped from the existing feeder lines (through its expansion and laying of required power cablings) or panels. All necessary arrangements like extension of existing feeder/bus bars, laying of power cables etc. for tapping of required power shall be made by the contractor. Supply should be three phase and with proper earthing and required capacity of 440V for AHU Unit for TB Containment lab.
iv. Extension of existing water supply lines up to the TB Containment Lab to meet its water supply requirements. Supply and erection of water tank 750-1000litres in case of inadequate or absence of water supply for emergency shower and eye wash stations.

PRE-REQUISITES for the Site to comply

i. **Power required for the TB Containment Laboratory** shall be tapped from the existing feeder lines (through its expansion and laying of required power cablings) or panels. Supply should be three phase and with proper earthing and required capacity of 440V for AHU Unit for TB Containment lab. Adequate provision for power back up in the form connection to a green source for energy back up or Diesel Generator Set of about 120-150 KVA capacity (to be re-calculated based on requirement at time of procurement/assessment) is a must to keep lab functional all time.

ii. **Water supply to the TB Containment Laboratory** shall be provided through the existing Water distribution network in campus.

iii. **Strength of existing building structure-** Space identified for TB lab should be strong enough to withstand local climate/ environmental hazard. The institute will require to take

care of seepage issues in the building if extensive (minor issues can be taken care by vendor)

CRITICAL CONSIDERATIONS TO BE FOLLOWED IN DESIGN:

The proposed TB Containment Laboratory shall be constructed in accordance with CDC, WHO and RNTCP and other international guidelines[2] as minimum. Some of the minimum essential critical considerations for construction of the proposed TB Containment Laboratory shall be as under:

i. Restricted and controlled access shall be provided for entry into the laboratory.
ii. The HVAC systems shall be provided to maintain the desired inside conditions in terms of temperatures, humidity conditions, air filtration requirements. Unidirectional airflow to be achieved by appropriate negative differential pressures and a minimum of 6-12 Air changes per hour to be achieved. Air from the laboratories, shall be exhausted only after appropriate filtration (HEPA filters) as per guidelines/standards. Redundant exhaust systems shall be provided for Tb Containment lab room. Leak proof dampers with provision to prevent backflow of air shall be provided in supply and exhaust air systems of laboratory rooms for isolation of rooms/zones.
iii. Interiors of the TB Containment Lab- The internal building finishes shall be monolithic, impervious, non-particle shredding, chemical resistant to phenol, hypochlorite, etc. cleaning and suitable to withstand chemical use during decontamination /fumigation. Modular false ceiling panels should be made for Clean Room application. Flooring inside the TB Containment lab shall be of self-levelling industrial epoxy and cleanroom compatible.
iv. The door interlocks, exhaust blower of BSCs, shall be provided with online, un-interrupted power supply system with minimum 30 minutes power backup.
v. Safety measures for fire and electricity shall be provided
vi. Emergency shower, Eyewash station facility will be provided to address emergency spill situations. Emergency Exit door with panic latch door from the TB Containment Laboratory shall be provided

GENERAL CONSTRUCTION

The drawings shall be submitted by the contractor for review and approval by the client/ Consultant. However, some of the critical elements of the building and features are highlighted here under:

i. **Building Planning Concept**:

The proposed TB Containment laboratory building shall be constructed on primary and secondary containment barrier system concept.

ii. **The Primary Barriers**:

Bio-safety cabinets (Class-IIA2) with thimble or canopy ducting, pass box, etc. shall constitute the primary containment barrier and shall be placed suitably to contain the contamination.

---

[2] **Guidelines & Standards for reference:**

i. *Bio safety in Microbiological and Biomedical Laboratories, 5th edition, 2007 (CDC/NIH BMBSL).*This guideline recommends minimum facility and operational requirements for laboratories working with biological hazards. Primary Containment for Biohazards: Selection, Installation and Use of Biological Safety Cabinets,
ii. Canadian Tuberculosis Standards 6th Edition
iii. American Society of Heating, Refrigeration and Air-Conditioning Engineers, Inc. *Laboratory Design Guide - 2001*
iv. NIH Design Policy and Guidelines, 2008
v. American National Standards Institute (ANSI)
vi. NIH BSL 3 Certification requirement, 2006
vii. WHO TB Containment Lab Biosafety Manual, 2012

iii. **The Secondary Barriers**:

The laboratory building, air management and control system shall provide the secondary barrier system. Sustained directional airflow from “lesser contaminated area" towards “potentially higher contaminated areas” shall be achieved through differential pressure in areas/zones.

iv. **Building Construction and Finishing**:

The internal building finishing shall provide impervious and monolithic construction and all materials used for internal construction and finishing shall be non-particle shredding type and chemical resistant. Joints like wall to wall, wall to floor and ceiling to wall shall be provided with covings for easy cleaning. All joints and penetrations in the building shall be sealed with silicon sealant. The drainage and effluent piping system from the TB Containment Lab areas shall be of chemical resistant materials.

DETAILED SPECIFICATIONS

1. **Restricted and controlled access** shall be provided for entry into the laboratory.
   - Access control system for entry / exits should be provided. 20 numbers of card to be provided to each lab.

2. **HEATING VENTILATION & AIR-CONDITIONING (HVAC) SYSTEM:**

i. The entire laboratory shall be air-conditioned. The HVAC systems shall be provided to maintain the desired inside conditions in terms of temperatures, humidity conditions, air filtration requirements, room/zone pressure requirements and air change rate.

ii. Housing/Casing of AHU unit: Air Handling Units shall be of sectionalized constructions with an under frame of extruded heavy aluminium profiles. The under frame shall be mechanically strong and shall take double skinned insulated panels. The powder coated panels shall consist of 0.8 mm galvanized iron outer skin and 0.63 mm galvanized iron inner skin with 23 mm thick injected PUF insulation in between two panels. The AHUs shall be with true thermal break. There should not be any projections inside the AHUs and the covings must flush with the side panels. Air tight access panel with suitable neoprene gaskets shall be provided in the fan section, coil and filter section. Similar gaskets should be used at all other joints of the AHU and its ducting. Units meant for indoor locations shall be specially designed to meet the arduous and corrosive atmosphere.

iii. Platform for AHU: In places where firm, even and concrete surface not available, the same will have to be constructed (masonry work) for the entire surface area which will be enclosed within AHU shed.

iv. There would be independent supply and exhaust system with unidirectional inward airflow and 100% exhaust.

v. **Supply Unit:**

   a. Air Conditioning Plant: The Air-Conditioning plant (of suitable capacity based on requirements of the lab’s AHU) shall be with Direct Extension (DX system). The condenser unit shall have multiple compressors such that at least one compressor shall be as standby. The AHU shall comprise of Cooling Coil Section with 8 row deep DX coil, necessary component, 18-gauge SS 304 drain pan with 13 mm thick closed cell self-sticking polyethylene insulation, having slope at one side, drain connection from other side. Inlet and outlet coil nipples shall be sealed against unit casing by means of neoprene gaskets. Alternately, the cold air from the existing Central Air-Conditioning plant may be taken.

   b. The laboratory rooms will be supplied with pre-conditioned (heating, cooling) fresh air by a mechanical ventilation system. Temperature inside the lab shall be maintained at 22°C±2.

   c. The air will be cooled to 22°C then reheated with an electric duct coil to maintain required space conditions. This is required to maintain proper

humidity conditions in the lab and humidity level should be maintained at 60±10%. To heat the air in the winter, an electrical heater unit (of adequate capacity) would be planned. This heater will be the same heater that will function as dehumidifier unit in summer.

d. Design of Supply air system: One variable speed supply fan of Gebhardt/ Krugger/ Nicotra or equivalent reputed OEM (Original Equipment Manufacturer) should be installed. Fan is designed for the whole required supply air amount (100% Redundancy). The fan shall be backward (or forward) curved centrifugal double inlet multi blade with optimized selection for low noise and high efficiency. Fans shall be statically and dynamically balanced for vibration free operation. Fans shall be enclosed in galvanized steel scroll cases and shall be driven by a variable frequency drive (VFD). The VFD should be pre-set programme for five different varying fan speed with selector switch for user operation. Fan and motor assembly shall be mounted on vibration isolators eliminating the need for external vibration isolators. Provision shall be made for belt tensioning. Motor should be of required capacity of Crompton Greaves/ Siemens/ ABB or equivalent of reputed OEM make. The fan should not exceed noise level of 75 db (A) from 1 m distance. A spare motor shall be provided in case of any burn out/breakdown for immediate repair/replacement. 4-5 spare fan belts shall also be provided which can be used for replacement in case of wear/tear.

e. Volume Control Dampers: The distribution of air is planned via air inlets in the laboratory rooms. To control the air volume flow variable volume boxes in the supply air ducts are planned (at mouth of supply, after blower and after fine filter). The housing for these dampers (in fact all) will be of extruded aluminium, Low Leakage Aerofoil design. A constant volume mechanical control damper valve will be installed which will also be easily accessible for corrective purposes. The supply air needs to be constant to maintain the proper air change rate.

f. A wire mesh screen to prevent entry of rodents/birds/insects, etc. will be placed in front of the damper at the mouth of supply.

g. Filters:
   - There will be three sets of filters- coarse filters at mouth of supply and fine filter after blower motor of supply unit and HEPA filter housing in the supply ducting at a distance of about 500mm from fine filter unit.
   - Coarse filter will be in outside fresh air pre-filter section and will be G4 washable filter (50 mm deep) class having average arrestance of 85-98% for 10 microns size as per EN779 2002, after damper at mouth of supply (as mentioned in volume control damper).
   - Fine filters will be F7 filter (300 mm deep) Average Efficiency 85-95% for 1-micron size as per EN 779 2002 standards and placed after coarse filter before air goes into DX system.
   - F-7 filter to be provided with test port elbows (pre and post) to put in magnehelic gauges tubing for measure differential pressure across it. These test port elbows will remain sealed/closed in routine condition.
   - The HEPA filter plenums (Containment Housing) shall be made in SS 304 (14 gauge) with air tight and leak proof construction. The HEPA filter plenums shall be provided Isolation dampers at Inlet and Outlet and shall have provisions and facility to carry out on site HEPA filter scanning, testing and validation, magnehelic pressure gauge 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/replacement of filters. The quantity of HEPA filter should be provided on the basis of supply air room volume, length of duct.

h. Ducting: Ventilation ducting shall be made out of minimum 24-gauge GI sheet, all the ventilation ducting shall be leak proof and with thermal insulation (the colour of insulation material will not be black). This insulation is made of nitrile rubber or glass wool. The GI duct should be fabricated as per SMACNA

standards. To prevent air leakage, all the lateral joints and flanged joints of GI ducting should be sealed using silicone sealant.

i. Ducting design will be submitted by the vendor along with details of bends, dimensions of the duct at various places from AHU to the TB Containment Lab, number of inlets/outlets planned, etc. which would be suitable from the lab being upgraded. It will have to be consulted with lab design expert and the lab i/c and approved before construction is carried out.

j. Noise Reduction: To avoid the allowed noise level, sound absorber will be installed on the housing of the AHU.

vi. **Exhaust System**

i. Design of Exhaust Air System: One variable speed exhaust fan of Gebhardt/ Krugger/ Nicotra or equivalent reputed OEM (Original Equipment Manufacturer) should be installed. The fan shall be backward (or forward) curved centrifugal double inlet multi blade with optimized selection for low noise and high efficiency. Fans shall be statically and dynamically balanced for vibration free operation. Fans shall be enclosed in galvanized steel scroll cases and shall be driven by a variable frequency drive (VFD). The VFD should be pre-set programme for five different varying fan speed with selector switch for user operation. Fan and motor assembly shall be mounted on vibration isolators eliminating the need for external vibration isolators. Provision shall be made for belt tensioning. Motor should be of required capacity of Crompton Greaves/ Siemens/ ABB or equivalent of reputed OEM make. The fan should not exceed noise level of 75 db(A) from 1 m distance. A spare motor shall be provided in case of any burn out/breakdown for immediate repair/replacement which can be done by local engineer. 4-5 spare fan belts shall also be provided which can be replaced by local engineer in case of wear/tear.

ii. Exhaust Air System will be designed such that it ensures directional air flow by differential pressure gradient across different rooms and maintains minimum 6-12-fold air change per hour in the lab area (including separate exhaust ducting for BSCs installed).

iii. Ducting: Exhaust ducting (like supply) shall be made out of minimum 24-gauge GI sheet. The GI duct should be fabricated as per SMACNA standards. To prevent air leakage, all the lateral joints and flanged joints of GI ducting should be sealed using silicone sealant. All the ventilation ducting shall be leak proof and with thermal insulation (the colour of insulation material will not be black). This insulation is made of nitrile rubber or glass wool

iv. Air Filtration: The exhaust air filter handling systems shall be provided with HEPA Filters such that it protects the maintenance staff from acquiring any infections while handling/replacing the filters -Bag in Bag out system (BIBO). It is essential that the maintenance person wears PPE while doing so. The HEPA filters will be located prior to exhaust unit at a place which is easily accessible and has adequate space for BIBO to function effectively. The HEPA filter housed in BIBO should have efficiency of H13 or H14 tested as per EN1822 at MPPS (Maximum Penetrating Particle Size). The HEPA filter plenums (Containment Housing) shall be made in SS 304 (14 gauge) with air tight and leak proof construction. The HEPA filter plenums shall be provided Isolation dampers at Inlet and Outlet and shall have provisions and facility to carry out on site HEPA filter scanning, testing and validation, magnehelic pressure gauge 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/replacement of filters. HEPA Filters of 99.99% efficiency would be used in all exhaust. All the HEPA filters should have 0.3µm filtration.

v. Supply Air system to be electrically interlocked (fans, dampers, electrical) with exhaust air system, to prevent sustained positive pressurization.

vii. **Appropriate negative differential pressures** (for e.g. the negative pressure room where bio safety cabinets are placed shall be -12.5 Pa (-0.05" WG) relative to the

anteroom, anteroom shall be -12.5 Pa (-0.05" WG) relative to change room if planned, and the change room shall be -12.5Pa (-0.05" WG) relative to the outside atmospheric pressure. Manual differential pressure gauges shall be placed outside Change Room, Ante room and main lab. Pressure balancing system to maintain room/zone pressures within specified set limits shall be provided which should be done through manual control. Magnehelic gauges used will be of DYWER/ WAREE/ WIKA or equivalent reputed OEM (Range -50 to 0 to +50 Pascals) with supporting SS Hardware with Top plate & suitable Box SS 304 including tubing & suitable fitting & accessories in wall panel.

viii. **Fire Dampers for supply and exhaust air:** As a safety feature, fire dampers shall be provided in both supply as well as exhaust duct. In supply system it will be in between variable damper and inlet (but at an accessible point from outside). In the exhaust system it will be located in exhaust ducting coming out of the building and prior to BIBO assembly at an accessible point from outside. These dampers are curtain type made of SS interlocking blades with fusible link which melts at 74°C

ix. **Leak proof dampers** with provision to prevent backflow of air shall be provided in supply unit (after blower motor and before volume control damper) and in exhaust unit (in between blower motor and volume control damper). It is made of SS blades with neoprene gasket

x. **AHU SHED:** It will be required at sites where AHU is installed on roof/ outside the lab building. AHU shed with provision for fencing, door with lock-key arrangement.

a. Framework vertically made of M S Square Pipe frame: 2 Inches X 2 Inches, 16 Gauge
b. M S Fencing with wire mesh: ½ inch X ½ inch
c. Supporting Structure M S Angle: 50 X 5 mm
d. GI pre-coated corrugated profile roof sheet: 0.5 mm thick duly supported with J Hook.
e. 10 SWG with provision of door with lock and key

AHU Shed with fencing should be duly enamel painted and with anti-rust coating from both sides. The height covered shall be at least 8 feet. There should be no gap between roof sheet and wire mesh, if any angle creates gap, it should be covered with iron bars and wire mesh in between.

3. **Electricals:**

i. The electrical power requirement (power matrix) for the TB Containment laboratory should be calculated and provided by the lab.
ii. Supply should be three phase supply with proper earthing and required 440 V capacity to support the functioning of AHU Unit.
iii. **Earthing**: If earthing is not adequate, the vendor will do the necessary grounding work to ensure entire TB C&DST Lab has adequate earthing.
iv. All the required electrical panels, cabling, switchgears, surge and spike protection system and arrangements, etc. for the purpose of energizing the TB Containment Laboratory facility shall be carried out by the contractor.
v. All the electrical fittings and fixtures in the laboratories areas on the walls shall be sealed (all conduits, outlets shall be sealed with silicon sealant), leak proof and capable to withstand chemical exposures during fumigation.
vi. Lighting should be on ceiling and surface mounted, LED of reputable manufacturer, suitable capacity (~18W) and arranged as per the layout provided. Light fixtures inside shall be with gasket or otherwise sealed with silicon.
vii. The electrical power distribution scheme shall be provided to provide back-up power supply to the critical components and equipment through a UPS (to

prevent any disruption of work) and through Diesel power generator set for the entire lab.

viii. Every workbench should have at least one socket which received electrical input through UPS of TB Containment lab. Extractor fans of BSC' ducting should also receive electrical input through this online UPS of the TB Containment Lab.

ix. Power sockets with lid (15-20 in each room) should be provided for equipment (as per the layout provided). Modular type, power sockets with lid of 5A/15A are to be provided at various locations on the wall as per discretion and strategic arrangements /provisions for lab equipment. The Sockets meant for UPS should be screen printed as (UPS) for ease of operation and identification marked wires and cables used shall be copper wire of standard make (ISI Marked) and manufacturer.

x. AHU Control panel:
   - Cabling from the panel to individual AHUs and control wiring will be in the scope of HVAC contractor. However cabling up to the electrical panel will be provided by site. Termination will be done by HVAC contractor. In case of power failure, the alternate power through Main Diesel Generator Set of the Hospital Supply to be used. The Panel is to be design accordingly.
   - Housing of the AHU panel shall be GI 16 gauge powder coated, with cable inlet and outlet going through grommet and with earthing connection arrangement.
   - Multi-function meter displaying voltage, load and power factor for electricity supply to AHU panel should be present.
   - LED indicator for ON/OFF will be provided for RBY phase, AHU supply, AHU exhaust, Standby exhaust, Condensation unit, Heating Coil of Supply Unit
   - DOL Starter Switch to be provided for AHU exhaust, AHU Supply and Condensation Unit (in the order)
   - All electrical equipment used should be high quality of reputed manufacturers like VFD may be Allen Bradley, Siemens make or equivalent, MCCB may be of Havells, Legrant, Anchor, Siemens, L&T or equivalent, wiring of Havells, Polycab or equivalent make, etc.
   - Control panel should show simple instructions for starting the AHU
   - Diagrams of electric circuit should be displayed on the backside of door of panel.
   - Control panel should have its lock and key (for controlled access)
   - SOP for lab condition for operating VFD with selector switch for manual operation of AHU

xi. MCCB panel suggesting supply and safety mechanism for different sections of the lab should be provided at adequate place near AHU control panel.

4. **Fire Safety:** Fire detection and alarm system (FDA System) and fire extinguishers of Type ABC **(4 Kg) with inert gas system** shall be provided at strategic locations (TB Containment Room, Ante Room and outside at entrance of TB Containment Lab and near control panel, near AHU and should overall comply with fire safety guidelines). Training will be provided for its operation.

5. **Emergency Preparedness:**
   i. One emergency shower and one eye wash station for each site shall be provided at strategic location in compliance with ANSI / ISEA Z358.1. The water supply for emergency shower shall be sufficient to supply at least 3 GPM for 10 minutes. Shower shall be hands free and stay open valve type. The water supply for eye wash shall be sufficient to supply 0.4 GPM (1.5 litres) for 10 minutes in low velocity flow.

ii. Emergency Exit door with panic latch door from the TB Containment Laboratory shall be provided wherever mentioned for personnel exit in case of an emergency and can also be used for equipment placement inside lab. Door should be equipped with hooter/audible alarm every time it is opened.

iii. UNINTERRUPTED POWER SUPPLY SYSTEM (UPS): A central UPS console shall be provided to cater to the extreme essential power requirement of the laboratory. All critical components like lights, Door Interlocks, exhaust blowers of BSCs, Fire alarm sensor, CCTV camera & monitoring shall be provided with uninterrupted power supply for 30 minutes.

iv. Fire and electrical safety is described in the relevant sections.

6. **Interiors of the TB Containment Lab:**

i. Modular walls**:** The internal building finishes shall be monolithic, impervious, non-particle shredding, chemical resistant especially to Hypochlorite cleaning and suitable to withstand chemical use during decontamination/ fumigation. Modular wall should be made for Clean Room application, pre-engineered 60 mm thick PUF panels with GPSP Sheets with PUF insulation of minimum 38-40 kg/m^3. Both surfaces should be 0.8 mm thick GPSP sheet and has to be installed along the outer walls, partitions and false ceiling to create an impervious shell which is fully sealed. The panels on either side will be coated with Epoxy painted. These panels must have good aesthetic appeal as well and have to be easily maintainable. The height of wall shall be minimum 9 feet (to accommodate BSC with its thimble and damper).

ii. Modular false ceiling: The internal building finishes shall be monolithic, impervious, non-particle shredding, chemical resistant especially to Hypochlorite cleaning and suitable to withstand chemical use during decontamination/ fumigation. Modular false ceiling panels should be made for Clean Room application, pre-engineered 60 mm thick PUF panels with GPSP Sheets with PUF insulation of minimum 38-40 kg/m^3. Both surfaces should be 0.8 mm thick GPSP sheet and has to be installed along the ceiling, to create an impervious shell which is fully sealed. The panels on inner side will be coated with Epoxy painted and powder coated on outer side. These panels must have good aesthetic appeal as well and have to be easily maintainable. The construction of false ceiling shall be strong to allow 1 person weighing 50-60 kg to easily walk/crawl above it for necessary work. Service window will be provided for access above false ceiling preferably outside TB containment lab.

iii. Flooring shall be of 5 mm (3 mm + 2mm) of self-levelling industrial epoxy including screed compound for adhesion, 3 mm semisolid cladding of EPOXY will be applied over a uniform cemented flooring and 2 mm semi-liquid epoxy over 3 mm hardened surface with bubble free perfect smooth finishing completed in three steps: Cementing (Uniform Flooring), Hardening (3 mm epoxy) and smoothening (2mm epoxy). Epoxy used for this application will be self-levelling and clean room compatible. Flooring outside the TB Containment facility where required for aesthetic purpose will be covered with vinyl flooring.

iv. Doors:

i. Flush Door finishes shall be 45mm thick with chemical resistant, anti-fungal and anti-bacterial properties.1.2mm thick GPSP sheet suitable to fix on 60 mm thick wall panel with provisions for double glazing glass for all door and hardware like push plates and handle on both side, lock and key, etc. PUF Panels will be with GPSP Sheets, epoxy painted on both sides and PUF insulation of minimum 38-40 kg/m3. Concealed hardware for fixing of door frames, TS-71 door closure, SS hinges, SS Door handle, SS ball bearing butt hinges, concealed tower bolt for the double door, both sides lock and key arrangement. Suitable neoprene “Y seal” type gaskets may be used between the door jam and door stop.

ii. Door interlocking systems shall be complete with controller module, push button stations with LED indication, electromagnetic locks. To take care of

malfunctioning of interlocking, alternative electrical switch to manually open the doors should be provided.

iii. Vision Glass for doors shall be fixed type vaccumised and insulated type with 6 mm toughened glass and shall be installed for natural lightening flushed with surfaces of the door. Fixed flush to both faces of the door / wall panels to provide ease of cleaning and maintenance. No crevices / joints / sloped profiles are used for fixing the glass. This will avoid particle contamination and dust accumulation.

v. Covings: Extruded aluminium anodized R75 clip-on type (Male & Female connectors) covings for entire wall to floor, wall to wall & wall to ceiling joints. Extruded aluminium double cove integrated with top track of the partition panels. Corner internal & external cove joining pieces in aluminium anodized finish. Having similar construction and finish as the walls and properly sealed with silicon sealant with wall & ceiling. Covings used in construction shall include Wall to Wall Coving -R-75, Wall to Ceiling Coving-R-75, 90°Corner, 3-D Corner,2-D Corner

vi. All penetrations through walls, ceiling & floors will be sealed using a suitable caulking. Caulking shall be applied around pipes and conduit. The interior of electrical and cable conduit shall also be caulked.

vii. **Pass Box:** Pass Box (Static type) shall be provided at strategic / required locations for transfer of samples, chemicals and materials to and from the Laboratories (as indicated in the design submitted). In case of two pass box, one will be to receive the sample within and second will be for sample discard to autoclave room or for disinfected waste collection. It shall be made of SS 304, with inbuilt UVGI system, with interlocking in such a way that both doors cannot be opened simultaneously, panel mounted, with buzzer to indicate open status for any door, fixed at a height of 750 mm from floor in sandwich panel, with dimension of 610 mm (L) X 610 MM (W) X 610 MM (D), with load bearing capacity of 40 Kg, door make-Single door in each side, with glass and air tight gasket, with door latch for one door(door opening outside), with handle of superior quality, with viewing glass made of polycarbonate or 10 mm thick tempered glass, hinges made of SS304, with one LED lamp inside pass box, chemical resistant especially to Hypochlorite solution, alcohol, etc., flange to seal pass-box and sandwich panel, with indicating lamps in both sides to show status.Manual ON/OFF switch for both Fluorescent & UV lamp on both side of the Pass box. A SOP must be developed for pass-box decontamination.

7. **Furniture inside the lab:**

i. **Laboratory work stations** (numbers as per the Lab design)**-** Frame shall be made up of SS 304, with nylon cushion/bushing for the legs, non-particle shredding material and shall be chemical resistant to allow chemical disinfection. It should be strong to hold the granite top/workbench as well as equipment places on the workbench. It should be stable and vibration free. There shall be no drawers or safe in the workstation and shall have arrangement for placing the UPS below the work bench.

ii. **Garment Storage Cabinet**- One garment storage cabinet that can be locked shall be provided in the Change room/Ante Room. It shall be of SS 304 with two compartments and shelves for storage of clean items of suitably large dimension to fit in the Ante/ Change Room (size to be consulted with site i/c)

iii. **Coat hangers** 8-10 individual hangers made of SS30, in group of 4-5 each, will be provide to hang gowns/ aprons in Ante Room and change room (in consultation with site i/c)

iv. **Shoe rack** (one)- It should be made of SS 304 with 5 shelves, open type and wide enough to hold two pairs of shoes in each shelf and shall be able to fit in available space as per design.

v. **Wash Basin** (two): Modular standalone hand washing sinks made of SS 304 with elbow or foot operated mechanism shall be provided as per design inside lab and in change or ante room. Wall hanging soap dispenser to be provided along with each

wash basin unit. A Tissue paper rack with a mechanism to pull out tissue papers, will be provided near the wash basin to dry hands. Water lines that penetrate the TB Containment space shall be equipped with back-flow prevention devices. Outlet pipes should be made of PVC with closure outside lab made of SS plate.

vi. **Laboratory Stools** (five): Laboratory grade hydraulic SS stools with back support, foot rest, rotating type with castor wheels at the base, shall be provided by contractor.

vii. **Trolleys**: Two tier trolleys (two quantity) made of SS 304, size 2'x1'6" with side walls to prevent fall of items from sides and wheels at bottom for smooth movement, shall be provided. **Plus,** one similar trolley will be provided for each BSC. One of the trolleys for transportation of material from lab to the Autoclave room shall be provided with a lid to prevent direct exposure of material to outside.

8. **Monitoring Mechanism:** Monitoring of crucial parameters will be made available in the lab for the following:
   i. Visual display of Room Pressure, Relative humidity and temperature in the TB Containment Lab
   ii. Differential pressure through Magnehelic gauges in Ante-room, Change Room (where available) and outside TB Containment Lab
   iii. In the Control Panel- Multi-function meter displaying voltage, load and power factor for electricity supply to AHU panel and LED indicator for ON/OFF will be provided for RBY phase, AHU supply, AHU exhaust, Standby exhaust, Condensation unit, Heating Coil of Supply Unit
   iv. CCTV footage from the various sections in the Microbiologist's room
   v. Hooter/alarm when the emergency exit door is opened as well as when fire detection system is activated in incidence of fire.

9. **Connectivity:**
   i. LAN wiring for internet access inside the lab with sockets to be provided at strategic locations (near work benches) in TB Containment Room.
   ii. A suitable EPABX System shall be provided for the laboratory. Telephone instrument with line will be kept in Microbiologist room, Staff room and TB containment room and any other place as suggested by Site i/c. Telephone with speaker for hands free operation will be provided inside TB Containment Room.

10. **SPECIALIZED LABORATORY SUPPORT EQUIPMENTS AND SYSTEMS**
   i. **Split AC for MGIT:** Two wall mounted split air conditioners (of suitable tonnage according to the area of the TB Containment Lab) should be installed near to MGIT. These will be inverter ACs (minimum three star) of Hitachi/ Bluestar/ Carrier/ Lloyd/ Godrej or equivalent OEM with suitable voltage stabilizer. The outdoor unit will be suitably placed outside the lab with easy access and adequate protection from theft. Drainage pipe of ACs will be adequately long and connected into the drainage system of the institute. Both the Split ACs should be connected with alternator (Timer Control cut-off and start) for changeover every 4 hours between them so that load is distributed between both the ACs. These will be used at the end of the day when main HVAC system is not operating to provide ambient temperature for MGIT.
   ii. **Biological Safety Cabinets**: Biological Safety Cabinets (BSC) will be installed, commissioned and validated inside the TB Containment Lab at the required location as per the plan. BSCs should be placed away from doors, air supply vents or other things which may disrupt the cabinet airflow. The Biological Safety Cabinets that are being procured shall be Class II A2 type. Lab upgradation agency shall coordinate/liaise with BSC Manufacturer for installation, ducting, commissioning and calibration of BSC if under warranty or newly supplied (else it shall be done by vendor). The exhaust from the Biological Safety Cabinets shall be thimble connected and individually ducted out. The external extraction fan installed at the end of the ducting should exceed the volumetric flow rate of each BSC by

30–50%, and should be controllable, provided with easily accessible dampers and connected to an uninterrupted power supply. The air from the BSC should be ducted with ventilation pipes that have a diameter exceed 20 cm. (**The exhaust from the Biological Safety Cabinets shall be thimble connected and individually ducted out. The ducting material & External blower of adequate capacity for BSC ducting should be provided by Identified Agency.)**

iii. **CCTV Monitoring Devices:** Camera to continuously monitor the activities inside and outside the TB Containment Lab by providing Central CCTV Monitor. Five/Six Camera unit should be installed (one/two outside the TB Containment lab covering the entry and corridor area, one in ante room /Change Room and two inside TB Containment Room and one covering AHU Area). Supply, installation, testing and commissioning of the following shall be done:

- Color Camera 1/3" CCD, IR type, dome shaped, 480 TV lines resolution which work in low light.
- 6 Channel standalone / Network version DVR Make: DAHUA /equivalent reputed OEM
- Hard Disk with 1 TB (TERA byte) Capacity -Make -Seagate or equivalent reputed OEM
- 6 Channel Power Supply of reputed Make
- Supply Laying of Co-axial Cable with necessary Accessories
- Wall mounted monitor (at least 20-inch LED/LCD) located in Microbiologist room or as suggested by site i/c.

11. **Civil works and Plumbing:**
    i. Ensure water proofing of the roof (if required) is done prior to carrying out the work. Levelling of the floor where required will be carried out the vendor. Civil works to create new door arrangement/ closure of exiting openings, sealing of the existing windows, etc. will be carried out by the vendor.
    ii. Drain: All the liquid drain coming out from the laboratory shall be connected to a single drain with back flow prevention, which would be further connected to existing local ETP plant in the hospital campus if available. All drains shall be equipped with “p traps”. Penetrations made in walls and floors must be properly sealed.
    iii. Water connections for the emergency shower and eye wash and wash basins to be appropriate provided.
    iv. Ensure that pipes and connections are leak proof to avoid flooding behind modular walls.

12. **Labelling to be done as per following details:**
    i. Biohazard label should be placed outside the laboratory.
    ii. Labels for all switches (to be provided) including in the MCCB panels, LT Panel and AHU Control panel
    iii. Labelling of the TB Containment Lab and Ante Room/ Change room including Emergency exist.
    iv. TB Containment laboratory layout should be provided at the entrance of Lab

13. **Final performance and capacity testing and validation:** All the certification and validation parameters for TB Containment Lab must be done in accordance in with NIH certification requirement. BSCs will be validated and calibrated as per NSF 49and EN 12469 standards.
    i. There will be periodic mid-term assessment of the project (after plumbing, electrical works, ducting and AHU installation, construction of interiors and dry run) by identified technical people and Site i/c to assess the timely and proper execution of the project.
    ii. After completion of the construction and installations, the entire laboratory facility, all the equipment, systems and services shall be validated by the contractor under supervision of a committee of the consultants / client or lab i/c as follows:

i. For Bio Safety Cabinet:
   - Validation of BSC: Particle count test, PAO (Filter Integrity test for pre-filters, filters ULPA filter/ HEPA filters), Air in-flow velocity and down-flow velocity test as per NSF 49and EN 12469 standards with devices traceable to National/International Standards, UV and Fluorescent light intensity
   - Maintenance of the BSC to be carried out if existing one to be used (and not covered under warranty) i.e. complete and thorough cleaning of working Area of cabinet, cleaning of exhaust filter from the top to eliminate and external clogging or disturbance and inspection of ducting, cleaning and oiling of sliding sash movement system, checking of switches, tube lights and UV light fittings, checking of airflow and exhaust system, calibration and validation of Magnehelic Gauges if existing, etc.

ii. For TB Containment Lab- The installation as a whole shall be balanced, tested and validated upon completion, and all relevant information, including the following shall be submitted to the Institution
   - Pressure in each room/zone as per the design, differential pressure readings including across filters.
   - Air inflow velocity and outflow velocity test across all inlets and outlets to measure/derive air change rate per hour (minimum 6-12 ACH) and as per design
   - Smoke pattern test for directional airflow should be performed during validation including for Passbox.
   - Temperature shall be maintained at 22°C±2 and humidity level should be maintained at 60±10%
   - HEPA Filter (in BIBO) integrity test based on PAO test and manufacturer's certifications
   - Electrical current readings, in amperes on full load work, average running, and on starting, Testing of power cabling, earthling, AHU control panel, MCCB panel and LT panels
   - Containment room -the walls, floors, ceilings, penetrations, and other containment barrier features have adequate integrity
   - Operational performance testing for
     - HVAC including Blower motors in the Supply, exhaust including emergency, extractor of BSC ducting and condensation unit
     - Ducting for any potential leakages and insulation breakage
     - Dampers including variable control, leak proof and fire control (only verification)
     - Magnehelic Gauges
     - Temperature control sensors; pressures control sensors,
     - Passbox
     - Split ACs
     - Fire Detection system
     - EPABX System
     - Access Control System
     - CCTV System
     - UPS Back up system
     - Emergency Shower and eye wash station
     - Interlocking of supply blower motor and exhaust blower motor

iii. Prior to validation, the contractor shall prepare and submit a detailed 'Validation Document' for approval.

i. The Validation Document shall provide the detailed procedure for validation, parameters for validation, validation schemes and formats for recording the validation details.
ii. The contractor shall arrange to do a mandatory third party validation
iii. The contractor shall arrange for all the instruments, tools, manpower etc. required for the validation. The validation results shall be recorded and documented and shared with the site and hiring/funding agency.

iv. The above validation tests shall be performed Annually during the warranty as well as maintenance period

In addition to the above validation tests, preventive maintenance servicing of all installations, operational performance testing as listed above shall be carried out on a quarterly basis during the maintenance as well as defects liability period.

14. **Maintenance Services**: After the completion of defect liability or warranty period of two years, it will be appropriate to have a longer-term maintenance of the upgraded lab for a period of at least three years through the same agency who upgraded the lab. Apart from annual validation and quarterly preventive maintenance servicing as described above, it should include attending breakdown maintenance calls as and when required, repair/replacement of compressors, refrigerant gas charging of condensing units, besides replacement of spares required (due to wear and tear) at pre-fixed rates.

15. **Training of personnel:** Institution personnel to be trained over 2 days for:
    i. Operation of HVAC Plant and all other equipment and systems.
    ii. Adjustments of settings for controls and protective devices
    iii. Servicing and Preventive maintenance
    iv. Emergency response training.

16. **Submission of specialized systems and services layout schemes prior to initiation of the work:** Conceptual layout plans and schematic drawings of various specialized services and utilities showing tentative locations of equipment and furniture such as to be submitted before initiating work at site for approval to hiring agency and site i/c
    a. HVAC system (including Air filtration system Drawing of Supply AHU, Drawing of Exhaust AHU, Ducting drawing)
    b. Pressure control system including differential pressure zones
    c. Fire Detection and Alarm system
    d. Air distribution System including ACH ((Heat load calculation & Design Data)
    e. Electrical distribution system (including Single Line Diagram with UPS system)
    f. Monitoring system including CCTV and three important parameter monitoring (pressure, temp and humidity)
    g. Water supply and drainage system
    h. AHU Control Panel System with VFD controls and SOP for lab condition for operating VFD with selector switch for manual operation of AHU
    i. Chart for defining the AHU fan and its speed for air quantity being delivered by supply and exhaust blower at different speed
    j. Un-interrupted Power Supply system
    k. Specialized laboratory support equipment/ primary containment barriers such as
        - Pass boxes
        - Entry exit protocols

17. **Documents for final submission: The following documents are required to be submitted after Final assessment and validation of TB Containment Lab for verification and approval to hiring agency and to the lab within 15 days of completion of successful validation.**

i. The drawings and layout of each final commissioned TB Containment laboratory should be shared with site and hiring/funding agency (both in soft and hard copy) for verification.
ii. All Test Certificates / Maintenance manuals / As Built drawings / Spare Part List should be submitted to site and hiring/funding agency after validation within one week.
iii. Detailed document on Laboratory Validation Procedures and to include as per table;

Submission of validation documents as per followings.
Design Qualification
Installation Qualification
Performance Qualification
Operational Qualification
All Test Certificates / Maintenance manuals/ As Built drawings / Spare Part List.

18. **DOCUMENTS TO BE SUBMITTED BY THE BIDDER ALONG WITH THEIR BIDS FOR TECHNICAL QUALIFICATION AND EVALUATION**

Project Implementation Methodology including

i. Past experiences of developing labs including TB Containment labs (with contact details of at least 5 such)
ii. Team (members and their qualifications) which will be building the TB Lab (including designing, HVAC and ducting team, electrical, plumbing, civil works team, interiors developing team, etc.)
iii. Architectural layout plans- including any comments/ concerns about the design provided
iv. Men & Materials movement layout plans- Conceptual layout plans showing movement of men & materials into and within the Laboratory areas clearly highlighting the measures/ preventions for control of spread of infection/contamination into and within the Laboratory
v. Schematic Diagram of HVAC system for each lab should be mentioned and submitted for the labs quoted
vi. Detail specification of HVAC components lab should be mentioned and submitted for the labs quoted
vii. AHU Calculation for each lab should be mentioned and submitted for the labs quoted
viii. Zoning plans: Plans indicating details of zoning and separation/isolation of different classified, non- classified and contaminated areas/zones, relative pressurization, Air change rates, air re-circulation rates and sterility requirements, decontamination control, services etc. for different areas/zones.
ix. Total Power requirement and heat load including buffer of 20-25% for each lab should be mentioned and submitted
x. List of Construction Material and Equipment Proposed for construction of the laboratory along with specifications including manufacturers (OEM) along with warranty period (as specified by Manufacturer) should be clearly mentioned and submitted as per table **(FORM Tech 9)** given above for the quoted labs. Any additional material proposed for construction by bidder may also be specified in the same table.
xi. Certificates complying to refer standard for filters and HEPA filters should be mentioned and submitted.
xii. Services & Utilities schemes

- Power supply and distribution system
- Water supply and distribution system
- Internal/external communication system
- Disinfection/decontamination system

xiii. Laboratory Validation Procedures and Details including design qualification, installation qualification, performance and operational qualification

xiv. GANTT Chart informing timelines for executing the various stages of work

Annexures of the Scope of Works and Technical Specifications:

1. Schedule Wise (nine Schedules) existing and proposed Drawings/ Layout of TB Containment Lab is given at **Annexure 1.**
2. Area details of the Sites for TB Containment Laboratory Infrastructure Establishment and list of equipment to be placed in TB Containment Lab is given at **Annexure 2.**
3. Power Load for Equipment planned for TB Containment Lab is given at **Annexure 3.**
4. Inspections and Validation Stages for Works completed by FIND Official is given at **Annexure-4.**
5. Schedule of payment against contract is given at **Annexure-5.**
6. Reporting requirement by the selected agency under Contract is given at **Annexure-6**.

SCOPE OF WORKS FOR ADDITIONAL WORK REQUIREMENT AND SOME SITE-SPECIFIC DETAIL FOR TB CONTAINMENT LAB UP-GRADATION WORK

Please refer to lab layouts for clarity on below requirements:

Name of Lab	Specific work requirement
S.P Medical college & Associated Group of Hospitals, Bikaner (Schedule- V)	**Additional Civil, Plumbing and Electrical work in Museum Room -for creating TB Containment Lab, Incubator cum Culture Reading Room and Washing cum Autoclave Room** **1. General:** a. Permanent closing by brick & cement of existing 4 windows of size [5'11" (W) X 5'10" (H)]. Three windows inside the Proposed TB Containment room and one inside the proposed Incubator & culture reading room. b. Permanent closing by brick & cement of one existing door inside the proposed TB Containment room. c. Removal of existing electrical fixtures (fan, electrical point & ceiling lights) from the proposed TB Containment Room and hand over to institute. **2. For creating Incubator cum Culture Reading Room (as indicated in layout):** a. Installation of one glass aluminium partition with glass door of size 3' (W) X 6'8" (H) with auto door closure system and providing lock & key facility b. Installation of aluminium partition false ceiling at a height of 9' from the floor c. Installation of work bench of SS 304 frame with granite top of dimension 4'(L) X 2'6" (W) d. Construction of one wash basin with all plumbing work e. Supply & Installation of 15/6 A, single phase electrical sockets (3 quantity) f. Supply & Installation of 2 ceiling lights with dedicated on/off switch g. Supply & installation of 1 TR split AC with suitable Voltage stabilizer with required wiring and proper drainage (outdoor unit to be placed above the room on terrace). These will be inverter ACs of Hitachi/ Bluestar/ Carrier/ Lloyd/ Godrej or equivalent OEM. The outdoor unit will be suitably placed outside the lab with easy access and adequate protection from theft

Name of Lab	Specific work requirement
	3. In corridor near TB Containment Lab, incubator and Autoclave room: a. Supply & installation of 3 Ceiling lights & 2 ceiling fan with necessary wiring with dedicated on/off switch **4. For creating Washing cum Autoclave Room (as indicated in layout):** a. Installation of one glass aluminium partition with glass door of size 3' (W) X 6'8" (H) with auto door closure system and lock & key facility b. Supply & Installation of Two 32 AMP, single phase MCB socket with required wiring for two vertical autoclaves c. Supply & installation of two 15/6 AMP, single phase electrical socket with wiring as per layout d. Creation of one work bench with granite top and two modular wash basins of dimension 8'(L) X 3(W) (wash basins and their fitting be chemical resistant) e. Supply & installation of 3 Ceiling lights & 1 ceiling fan with dedicated on/off switch f. Supply & Installation of one exhaust fan with necessary wiring with dedicated on/off switch g. Existing window needs to be closed permanently by brick & cement by keeping space for creation of door. Door to be made of aluminium frame with auto door closure mechanism and lock & key system
Sri Venkateswara Govt. Medical college (SVMC), Tirupati **(Schedule- IX)**	**Additional work related to TB Containment Lab:** 1. Creation of Door For entry to Change Room, Ante Room & TB containment Room as indicated in the layout 2. Creation of Emergency Door as indicated in the layout and closing the remaining opening of existing window by permanent brick & cement 3. Permanent closing of existing Door by Brick & cement in between Proposed Change Room & Proposed TB Containment Facility 4. Creation of HVAC/AHU platform with a height 3/4 feet above the roof top label 5. Dismantle of existing Work bench & Wash basin inside the Proposed Change & Ante Room 6. Dismantle of existing electrical sockets & lights from the proposed TB Containment Facility 7. Permanent closing of existing entry door to the proposed TB Containment Facility by brick & Cement 8. Creation of Two View panel inside the proposed TB Containment Facility as indicated in the layout and the remaining space for existing window needs to be close permanently 9. Dismantle of existing aluminium Partition inside the Facility 10. Permanent removal of existing wall including the existing Door in between Existing Culture & Media room without effecting the beam & Pillar 11. Permanent closing of the existing window inside the Proposed Ante room by brick & cement 12. Grill lock and key facility need to be provided to the AHU panel board for the

Name of Lab	Specific work requirement
	safety purposes
Coimbatore Medical College Hospital, **Coimbatore** **Schedule- VI**	**Additional work related to TB Containment Lab:** 1. Existing work bench (Slabs) to be removed 2. Existing 2 windows to be removed and permanently closed with brick and cement 3. Increase the height of the wall between the TB containment lab and Autoclave room (As mentioned in the layout) for keeping the Pass box 4. 2 windows in the Identified TB Containment area need to be closed permanently with brick and Cement 5. Remove the Existing slab and 2 wash basins in the identified TB Containment Area 6. Need to remove the Shelf in the identified space for fixing of AHU panel 7. Removal of existing electrical fixtures from inside the Proposed TB Containment area 8. Grill lock and key facility need to be provided to the AHU panel board which is planned in the corridor for the safety purposes.
Moti Lal Nehru Medical College, Allahabad **(Schedule-III)**	**Proposed Corridor 2:** Supply and installation of 1 spilt AC of 2 TR with in-built inverter, minimum 3-star rating with suitable voltage stabilizer needs to be installed with proper drainage facility. These will be inverter ACs of Hitachi/ Bluestar/ Carrier/ Lloyd/ Godrej or equivalent OEM. The outdoor unit will be suitably placed outside the lab with easy access and adequate protection from theft. **Room 14(Proposed Autoclave Room):** • Area: 16 feet 3 inches (L)x6 feet 9 inches (W) • Installation of aluminium Glass partition with aluminium Glass Partition Door of 4 feet (W) X 7feet(H) as indicated in the layout • Gypsum false ceiling at a height of 8 feet from the floor to be installed of required ceiling area • Installation of Electrical point 5/15Amp- 4 numbers and 3 phase,4 pole MCB, with 40 AMP for Horizontal Autoclave • Installation of LED Ceiling lights & necessary wiring • Necessary Electrical work for installation of Horizontal Autoclave needs to be done by Agency identified by FIND • Electrical installation for placement of 2 Exhaust Fan of appropriate capacity is required to be installed in the room **Placement of AHU (Air Handling Unit):** • Construction of concrete cemented platform and providing a shed of (36 feet 7 inches(L) X 10 feet (W) (to the fence of the boundary) X3 feet (H)(Approximately at the height of base of exit door of the TB C&DST Lab) • Installation of LED Ceiling lights & necessary wiring

Name of Lab	Specific work requirement
Aizawl, Mizoram (Schedule-I)	• The partition between the currently identified TB Containment Lab and the adjacent room to be removed to make this a larger room. **Placement of AHU (Air Handling Unit):** • Construction of concrete cemented platform (16 feet 7 inches (L) X 10 feet 6 inches (W)) up to the Slop around the boundary. The base of the concrete platform to be levelled at the same height as that of building floor. • Installation of LED Ceiling lights & necessary wiring with CCTV surveillance system
STDC Bhopal (Schedule-IV)	**Room No 13: (Proposed TB Containment Lab including Change and Ante Room)** • Glass view panel of approx. 3 feet(H) X4 feet(L) to be provided on the modular wall panel next to the work bench **Corridor (between Proposed TB Containment lab and Proposed LPA lab)** • Installation of aluminium Glass Partition Door of 3 feet (W) X 7feet(H) as indicated in the layout (at the entrance of corridor) • Gypsum false ceiling at a height of 9 feet from the floor to be installed of required ceiling area • PVC flooring to be done, area of corridor 20 feet 5 inches(L) X 4 feet 8 inches(W) approx. • Installation of LED Ceiling lights & necessary wiring • 1 spilt AC of 2 TR with in-built inverter, minimum 3-star rating with suitable voltage stabilizer needs to be installed with proper drainage facility. These will be inverter ACs of Hitachi/ Bluestar/ Carrier/ Lloyd/ Godrej or equivalent OEM. The outdoor unit will be suitably placed outside the lab with easy access and adequate protection from theft • aluminium glass partition window (glass view panel type) to be provided at the rear end (size of window- 3'X3') **Placement of AHU (Air Handling Unit)** In case cemented platform is not available at site/from site, agency to carry out the AHU platform work as per the technical specification of TB containment lab, the height of platform should be less than 2 feet 6 inches to 3 feet of appropriate length and width (ideal 15 feet X15 feet)
GMC Akola (Schedule-II)	**Additional Civil, Plumbing and Electrical work in New Research Lab -for creating TB Containment Lab, Equipment & Culture reading Room, Microscopy & Staining Room and Washing cum Autoclave Room** **7. General:** a. Permanent closing by brick & cement of existing 11 windows of size [4'6" (W) X 4'6" (H)]. Seven windows inside the Proposed TB Containment room and three inside the proposed Washing Cum Autoclave room. One window

Name of Lab	Specific work requirement
	is in space next to entry in New Research Lab. Existing windows in Existing MET Hall for Sputum Microscopy and Equipment & Culture Reading room may only be sealed and not closed by brick and cement. b. Removal of existing RCC structure work bench covering the entire room with eight modular sinks and the sinks needs to be hand over to institute. c. Removal of existing electrical fixtures (fan, electrical point & ceiling lights) from the proposed TB Containment Room and hand over to institute. d. Create door between New Research Lab and Exiting MET Hall: i. The existing window near to the Proposed Washing cum Autoclave room needs to be removed and replaced with aluminium glass door (4'x 6'8") to enter the Proposed Culture Reading Room & Microscopy Room. e. While preparing the various sections using glass and aluminium partitions, glass portion of the partition-wall may be of 3' starting at 2' 6" above the floor which is adequate for viewing purpose and the rest may be of aluminium (below and above). Same principle applies to the door too (glass portion of 3' staring at 2'6" above the floor). Since the height of the hall is not much, we can have the Glass& aluminium partition walls up to the ceiling. f. All existing walls in existing MET hall as well as New Research Lab to be tiled up to 9 feet (to help better cleaning and disinfection) in areas where glass and aluminium partition walls to be created. **8. For AHU Placement:** a. Space for AHU placement identified at Ground Floor behind the Proposed TB Containment Lab (near to the exit door of Anatomy Hall). Floor will have to be cleaned and levelled and platform needs to be created at a height of 4 feet above from the floor level (to avoid AHU from getting flooded during rains). **9. For creating Washing cum Autoclave Room (as indicated in layout):** a. Installation of one glass aluminium partition of size 12' X 11' (up to ceiling) with a glass Double door of size 2' (W) X 6'8" (H) each with auto door closure system and lock & key facility. b. Supply & Installation of one 32 AMP, single phase MCB socket with required wiring for one vertical autoclave c. Supply & Installation of one 4 Pole MCB with 40 AMP 3-phase with one neutral and ground for one Horizontal Autoclave. d. Supply & installation of three 15/6 AMP, single phase electrical socket with wiring as per layout. e. Workbenches: i. Creation of one work bench with granite top and two modular

Name of Lab	Specific work requirement
	wash basins of dimension 8'(L) X 3(W) x 2'6" (H) i.e. WB4 as shown in layout. Wash basins and their fitting should be chemical resistant. ii. Creation of one work bench with granite top of dimension 4'(L) X 3(W) x 2'6" (H) i.e. WB3 as shown in layout iii. Both the workbenches can be created by using brick and mortar f. Supply & installation of 2 Ceiling lights & 1 ceiling fan with dedicated on/off switch g. Supply & Installation of one exhaust fan with necessary wiring with dedicated on/off switch **10. For Proposed Equipment & Culture reading Room:** f. Creation of glass aluminium wall partition with proper gasketing with placement as per layout for proposed Instrument Room measuring 14' x 12'6" (height up to the ceiling). g. Provision of one work bench with granite top of size 4'(L) X 2' (W) x 2'6" (H) as indicated in the layout i.e. WB8. It may be made of brick and mortar with granite top. h. Supply and installation of 1.5 Tr Split AC with suitable Voltage stabilizer (outdoor unit to be placed in the corridor) along with MCB socket with required wiring. These will be inverter ACs of Hitachi/ Bluestar/ Carrier/ Lloyd/ Godrej or equivalent OEM. The outdoor unit will be suitably placed outside the lab with easy access and adequate protection from theft. i. Supply & Installation of six 15/6 AMP, single phase electrical sockets with wiring j. Supply & installation of 5 Ceiling lights & 1 ceiling fan with dedicated on/off switch **11. For Proposed Microscopy & Staining Room:** g. Installation of aluminium frame to create Microscopy & Staining room of size 10'8" (L) and 8'(W) (height up to ceiling) h. An aluminium glass door of size 3' (W) and 6'8" (H) with auto door closure mechanism with lock & key facility as indicated in the layout to be created. i. Work benches: iv. Construction of one work bench of dimension 8' (L) and 2'6" (w) and 2'6" (h) with two modular wash-basins for Staining Purpose (wash basin and their fitting be chemical resistant) as indicated in the layout WB9. v. Provision of one work bench of size 6'(L) X 2'6" (W) and 2'6"

Name of Lab	Specific work requirement
	(h) as indicated in the layout (WB10). vi. Both the workbenches can be created by using brick and mortar and granite top. There may be a shelf below it. j. Supply and installation of 1 Tr Split AC with suitable voltage stabilizer (outdoor unit to be placed in the window seal outside) along with MCB socket with required wiring. These will be inverter ACs of Hitachi/ Bluestar/ Carrier/ Lloyd/ Godrej or equivalent OEM. The outdoor unit will be suitably placed outside the lab with easy access and adequate protection from theft. k. Supply & Installation of four 15/6 AMP, single phase electrical sockets with wiring l. Supply & installation of 3 Ceiling lights & 1 ceiling fan with dedicated on/off switch **12. For Corridor from main entrance to nearby the TB Containment Lab:** d. Supply & Installation of four 15/6 AMP, single phase electrical sockets with wiring as shown in layout e. Supply & installation of 8 Ceiling lights & 3 ceiling fan with dedicated on/off switch as per layout f. Existing door to be labelled with “Restricted Access- Staff only”
PGIMS Rohtak **(Schedule-VIII)**	**Additional work related to TB Containment Lab:** 1. Permanent closing by brick & cement of existing one window of size [12’9” (W) X 3’6” (H)] & one existing ventilation window of size [12’9” (W) X 3’6” (H)],four windows of size [2’6” (W) X 3’6” (H)], four glass window of size [3’4” (W) X 3’6” (H)]. 2. Removal of existing RCC structure work bench covering the entire room with four modular sinks and the sinks needs to be hand over to institute. 3. Removal of existing Plumbing lines from inside the Room. 4. Uniform flooring after removal of existing slab and drainage pipes. 5. Removal of existing electrical fixtures (fan, electrical point & ceiling lights) from the proposed TB Containment Room and hand over to institute. 6. Removal of existing Wooden cupboard from inside the Proposed TB Containment Lab.

General Work Requirement for all 9 Sites:

- Batteries of UPS should be provided with rack. UPSs with batteries should be installed and well-arranged/organized well giving aesthetic look
- Dedicated earthing to be done for TB Containment Lab

Annexure 1

Schedule Wise (nine Schedules) existing and proposed Drawings/ Layout of TB Containment Lab

(Downloadable PDF files of drawings are attached separately)

Annexure-2

Area Details of TB Containment Lab

Sl. No.	Name of the Site	Lab Location	TB Containment Lab		Ante Room		Change Room		Total Area (D+F+H)	No. of BSC to be installed	No. of Trolley	Capacity of split AC *			Location of AHU
			Dimensions	Area (sq.ft.)	Dimensions	Area (sq.ft.)	Dimensions	Area (sq.ft.)				1.5 TR	2 TR	Total quantity of AC	
1	**S.P Medical College, Bikaner**	1st Floor	18' X 22'6"	405	7' X 5'	35	9'4" X 5'	46.65	487	3	4 (3 Two tier trolleys for each BSC +1 trolley with lid for transportation of material from lab to the Autoclave room)		2 TR	2	On the roof top of the proposed TB Containment Room
2	**Aizawal, Mizoram**	under ground first floor	21'3" X 12' + 6'6" X 5'	288	4' x 5'	20	5' X 5'	25	333	2	3 (2 Two tier trolleys for each BSC +1 trolley with lid for transportation of material from lab to the Autoclave room)	1.5 TR		2	On the ground floor, area just behind the windows of the proposed TB Containment Lab
3	**GCMC, Coimbatore**	2 nd Floor	20' X 10'8" +14 'X 5'6"	290	4'6" X 5'6"	25	6' X 5'6"	33	348	3	4 (3 Two tier trolleys for each BSC +1 trolley with lid for transportation of material from lab to the Autoclave room)		2 TR	2	On the roof top of the proposed TB Containment Room.
4	**GMC, Akola**	2 nd Floor	25' X 10'4"+12' X 5'	318	5' X 5'	25	7' X 5'	35	378	3	4 (3 Two tier trolleys for each BSC +1 trolley with lid for transportation of material from lab to the Autoclave room		2 TR	2	On the Ground Floor behind to the proposed TB Containment Room,C-Building and near to the exit door of anatomy Room
5	**MLNMC, Allahabad**	Ground Floor	15'6" X 16'3"	252	7' X 5'5"	38	8'10" X 5'5"	48	338	2	3 (2 Two tier trolleys for each BSC +1 trolley with lid for transportation of material from lab to the Autoclave room)		2 TR	2	On the Ground Floor behind to the proposed TB Containment Room

Sl. No.	Name of the Site	Lab Location	TB Containment Lab		Ante Room		Change Room		Total Area (D+F+H)	No. of BSC to be installed	No. of Trolley	Capacity of split AC *			Location of AHU
			Dimensions	Area (sq.ft.)	Dimensions	Area (sq.ft.)	Dimensions	Area (sq.ft.)				1.5 TR	2 TR	Total quantity of AC	
6	**Murshidabad**	7 th Floor	12'10" X 20'10" + 6'4" X 11'	337	6' x 3'	18	6 'x 6'	36	391	3	4 (3 Two tier trolleys for each BSC +1 trolley with lid for transportation of material from lab to the Autoclave room)		2 TR	2	On the terrace just above the lab
7	**STDC Bhopal**	Ground Floor	21 ' X 18'6"	389	9'6 "X 6'8"	64	10'7" X 6'8"	71	524	3	4 (3 Two tier trolleys for each BSC +1 trolley with lid for transportation of material from lab to the Autoclave room)		2 TR	2	On the Ground Floor behind to the proposed TB Containment Room
8	**SVMC, Tirupati**	1st Floor	21' X 17'	357	4'6" X 7'3"	33	5' X 7'3"	36	426	3	4 (3 Two tier trolleys for each BSC +1 trolley with lid for transportation of material from lab to the Autoclave room		2 TR	2	On the roof top of the proposed TB Containment Room
9	**PGIMS, Rohtak**	2 nd Floor	13'6" X 20'6"+7'6" X 7'2"	331	7' X 5'6"	39	7' X 6'	42	412	3	4 (3 Two tier trolleys for each BSC +1 trolley with lid for transportation of material from lab to the Autoclave room		2 TR	2	on the roof top of the proposed TB Containment Room

*** Back up split AC for after work hours support for MGIT**

Annexure 3

Power Load for Equipment planned for TB Containment Lab:

Sl. No.	Equipment	Quantity	Power Requirement (W) Approx	Dimension (Feet & Inch) L X H X D	Weight (Kg)	Remarks	Placement
1	Biosafety Cabinet (with external blower)	2/3*	2000	4'4" x 7'3" x2'6"	225	Thimble ducting	Floor Standing
2	Refrigerated centrifuge with UPS	/2/3*	1800	2' x1'3" x 2'3"	120		Benchtop
3	MGIT	1	1560	2'6" x 4'6" x 3	500		Floor Standing
4	Printer for MGIT	1	50	1'3" x1'6" x 1'7"	NA		Floor Standing
5	Vortex	2/3***	30	0.4" x 0.4" x 0.6"	3		Benchtop
6	Refrigerator	1	500	2'1" x 2' x 4'	52		Floor Standing
7	Electric Micro Incinerator	2/3***	1000	0.4' x 0.6' x 0.6'	2		Benchtop
8	Split AC	2/3**	2000-3500	3'2" x 1' x 1'	15	Depends on Manufacturer	Wall Mounted

Note:

* As per Layout
** Per Equipment
*** Per BSC

Dimensions and Power requirements are approximate values and may vary Power requirements mentioned here are standby loads, the peak values may be 120% the stand by load.

All UPS should be placed in a common electrical panel room (where possible) with connections for various equipment.

Annexure-4

Inspections and Validation Visits by FIND/ LABS

Sr. No.	Scheduled Inspection Visit	Activity
1	**Agency Introduction visit to site with FIND team**	1) Agency will give detail work project for that site. 2) Schedule work plan. 3) Any support required from Site (Approvals/road permits). 4) Timeline to complete the Project work. 5) The requirement from Site (electrical requirement, water lines, drainage line/any other) 6) Discussion on checklist used for Monitoring of upgradation work
2	**Electrical civil work & Plumbing**	No visit from FIND/SAMS, Lab will inspect, and Agency will provide Photographs for that site indicating competition of this activity
3	**HVAC Ducting & commissioning**	Visit by FIND Technical team to ensure all the activities as per checklist & Specification in coordination with Lab. If anything, pending during that visit, Agency will give submit photographs against that pending work.
4	**Interior ,BSC Installation Midterm Assessment**	Visit by FIND Technical team to ensure all the activities as per checklist & Specification in coordination with Lab .If anything pending during that visit, Agency will submit photographs against that pending work. FIND Technical team also to confirm completion of previous pending activity
5	**Performance testing of HVAC(Dry Run)**	Visit by FIND Technical team at least for 2 days to ensure all the activities as per checklist & Specification in coordination with Lab. performance testing of HVAC. FIND Technical team also to confirm completion of previous pending activity
6	**Validation & Handover**	Visit by FIND Technical team to ensure all the activities as per checklist & Specification in coordination with Lab .If anything pending during that visit, Agency will submit photographs against that pending work. FIND Technical team also to confirm completion of previous pending activity

The validation of TB Containment lab will be as per **clause 13 (Validation)** under detailed specifications of construction works of TB Containment Lab.

Annexure-5
Schedule of Payment

Sl. No.	Suggested milestones for TB Containment Lab establishment	Project activity in brief	Payment Slab	Documents to be submitted for processing the payment
1	Signing of Contract and submission of Performance of Security	None	10%	1. Signed copy of Contract 2. Bank Guarantee towards Performance Security for an amount equivalent to 10% of total Contract Price valid till two months beyond the warranty period; and 3. Bank Guarantee towards Advance Payment for an amount equivalent to 10% of total Contract Price valid till date of handing over of completed works.
2	Approval of Inception Report by FIND along-with related document & all working drawings	**Contractor's Introduction visit to site with FIND team**: 1) Contractor will give detail work plan along with timelines for the project 3) Any support required from Site (Approvals/road permits). 3) The requirement from Site (electrical requirement, water lines, drainage line/any other) 6) Checklist to be used for Monitoring of Project	15%	Approved copy of Inception Report & working drawings
3	Completion of Electrical Cabling, communication network, Plumbing, Minor civil works and confirmation from FIND's Technical Representative(s)	**Electrical, plumbing and minor civil works:** Contractor will provide report on completion of electrical, plumbing and minor civil works along with photographs of site as an evidence of completion of electrical cabling, communication network, plumbing, minor civil works etc.	15%	Report from Agency along with photographs & Confirmation visit report from FIND Technical team
4	Completion of Ventilation Unit (HVAC) ducting, Filters, Air conditioning Unit and AHU installation, Transducers and control systems, dampers, AHU Shed	**HVAC Ducting & commissioning:** Visit by FIND's Technical Representative(s) to ensure all the activities as per checklist & Specification in coordination with Lab's representative(s). If anything pending during that visit, Contractor will submit photographs against that pending work later.	25%	Site Visit Report (Quality Checklist) along with photographs of site and confirmation from FIND's Technical Representative(s)

Sl. No.	Suggested milestones for TB Containment Lab establishment	Project activity in brief	Payment Slab	Documents to be submitted for processing the payment
5	Completion of Interiors, Modular Monolithic Panelling, Pass box, Doors, Glass windows, Coving(Wall and Ceiling), , Electrical fixtures and outlets, Fire Safety, Flooring, Epoxy, Coving(Floor), Monolithic Finishing (Silicon sealing), Furniture, Connectivity, monitoring and access control devices. Split AC Installation, BSC Placement and ducting, Emergency preparedness ANDPerformance testing of HVAC, Final commissioning and validation, labelling, Training, Laboratory documents submission and handover of TB Containment Lab	**Interior, BSC Installation, Midterm Assessment and Performance testing of HVAC(Dry Run)**:Visit by FIND's Technical Representative(s) to ensure all the activities as per checklist & Specification in coordination with Lab's Representative and performance testing of HVAC and also confirm completion of previous pending activity.Upon handover of completed Works, a Project Taking Over Certificate shall be issued by Lab in-charge and endorsed by FIND's Technical Representative	25%	Visit Report (Signed checklist & Quality Checklist) along with photographs of site and confirmation from FIND's Technical Representative(s) & **'Taking-over Certificate' issued by Lab in-Charge of the respective site.**
6	After two months from the final completion of Works of the laboratories, provided no complaints on operation of labs are received or rectified.	**Validation & Handover:** Visit by FIND's Technical Representative(s) to ensure all the activities as per checklist & Specification in coordination with Lab's Representative .If anything pending during that visit, Agency will submit photographs against that pending work later. FIND's Technical Representative(s) shall also confirm completion of previous pending activity	10%	Copy of **'Final Work Completion Certificate' issued by Lab in-Charge of the respective site.**
	Total		100%	

Note- Above Payment Schedule covers completion of Works as per broad milestones given above for each Schedule.

Annexure-6

Reporting Requirements

REPORT OF THE PROJECT PROGRESSION TO BE SUBMITTED TO THE PURCHASER (FIND/SAMS) IN THE FORMAT SPECIFIED AT THE TIME OF CONTRACT EXECUTION.

Sr. No.	Scheduled Visit/ Milestone	Activity/ Reports to be submitted to FIND/SAMS	Payment Slab No.
1	**Agency Introduction visit to site with FIND team**	1) Inception Report and Working Drawing 2) Agency will give detail work project for that site. 3) Schedule work plan. 4) Any support required from Site (Approvals/road permits). 5) Timeline to complete the Project work. 6) The requirement from Site (electrical requirement, water lines, drainage line/any other) 7) Discussion on checklist used for Monitoring of upgradation work	2
2	**Electrical civil work & Plumbing**	Agency will provide Photographs for that site indicating completion of this activity	3
3	**HVAC Ducting & commissioning**	Visit by FIND Technical team to ensure all the activities as per checklist & Specification in coordination with Lab. If anything pending during that visit, Agency will give submit photographs against that pending work.	4
4	**Interior ,BSC Installation Midterm Assessment**	Visit by FIND Technical team to ensure all the activities as per checklist & Specification in coordination with Lab .If anything pending during that visit, Agency will submit photographs against that pending work. FIND Technical team also to confirm completion of previous pending activity	5
5	**Performance testing of HVAC (Dry Run)**	Visit by FIND Technical team at least for 2 days to ensure all the activities as per checklist & Specification in coordination with Lab. performance testing of HVAC. FIND Technical team also to confirm completion of previous pending activity	5
6	**Validation & Handover**	Visit by FIND Technical team to ensure all the activities as per checklist & Specification in coordination with Lab .If anything pending during that visit, Agency will submit photographs against that pending work. FIND Technical team also to confirm completion of previous pending activity	6

Section V- CONTRACT FORM and CONDITIONS OF CONTRACT

DESIGN, CONSTRUCTION, TESTING, COMMISSIONING AND VALIDATION OF TB CONTAINMENT LABORATORIES AND ASSOCIATED WORKS ON 'TURNKEY BASIS' UNDER RNTCP ACROSS INDIA

Laboratory Site Address:_____

(1) Strategic Alliance Management Services Pvt. Ltd. ("SAMS")

- and –

(2) [***insert the Contractor's name***]

Contract No.: [***insert***]

[***insert month***] **20**17

CONTRACT FORM

THIS CONTRACT is made on the _____ day of _____ 20[***insert***].

BETWEEN

1) Strategic Alliance Management Services Pvt. Ltd. ("SAMS"), having its postal address at Strategic Alliance Management Services Pvt. Ltd. B01-03 Vardhaman Diamond Plaza, Community Centre, D.B. Gupta Road, Paharganj, New Delhi 110055 ("Purchaser"); and
2) [***insert name***], a [***insert type of company i.e. limited liability***] company incorporated under the laws of [***insert***] and having its registered address at [***insert address***], [***insert name of city and country***] (**"Contractor"**).

BACKGROUND

a) The Purchaser intends to undertake the Project. The Works are an integral part of the Project.

b) The Contractor has represented to the Purchaser that it has the appropriate experience, expertise, licences and resources to undertake the Works and has agreed to undertake the Works in accordance with the Contract

c) In reliance on the Contractor's representations, the Purchaser has entered into the Contract.

d) The Contract sets out the terms and conditions upon which the Contractor will undertake the Works.

THIS CONTRACT:

1) The Purchaser agrees to pay the Contractor the Contract Price, at the times and in the manner prescribed by the Contract, in consideration for the Contractor executing and completing the Works and remedying all defects in accordance with the Contract and otherwise performing all of its obligations in accordance with the Contract.

2) In the Contract words and expressions will have the same meanings as are respectively assigned to them in the General Conditions.

3) The following documents, listed in the order of priority, are deemed to form and be read and construed as part of the Contract:

3.1 this Instrument of Agreement;
3.2 the Schedule of Details;
3.3 the Particular Conditions;
3.4 the General Conditions;
3.5 the Specification;
3.6 the Drawings; and
3.7 the remaining Schedules.

IN WITNESS WHEREOF, the Parties have caused this Contract to be executed by their respective duly authorised representatives as of the date first written above:

SIGNED BY _____

[***insert name of authorised signatory of SAMS***]

Duly authorised to sign this Contract for and on behalf of the Employer, SAMS:

In the presence of:

Signature _____ (witness)

Address _____

Occupation _____

SIGNED BY _____

[***Insert name of authorized signatory of the Contractor***]

Duly authorised to sign this Contract for and on behalf of the Contractor, [***insert***]:

In the presence of:

Signature _____(witness)

Address _____

Occupation _____

CONDITIONS OF CONTRACT

General Conditions

1. GENERAL PROVISIONS

1.1 Definitions

In the Contract as defined below, the words and expressions defined have the following meanings assigned to them, except where the context requires otherwise:

"Bank Guarantee for advance payment" means the security (or securities) to be provided under Sub-Clause 11.3 [*Advance Payment*].

"Bank Guarantee for performance" means the security (or securities) to be provided under Sub-Clause 4.4 [*Bank Guarantee for Performance*].

"Bill of Quantities" means the document, if any, entitled Bill of Quantities set out in the Schedule of Contract Price.

"Commencement Date" means the date stated in the Schedule of Details.

"Contract" means the Instrument of Agreement, these General and Particular Conditions, the Schedules and the further documents (if any) which are listed in the Instrument of Agreement.

"Contract Price" means the price specified in the Schedule of Details, subject to any increases or decreases as may be made in accordance with this Contract.

"Contractor" means the entity named as the "Contractor" in the Instrument of Agreement and the legal successors in title and assigns to this entity.

"Contractor's Equipment" means all apparatus, machinery, vehicles, facilities and other things required for the execution of the Works but does not include Materials or Plant.

"Contractor's Personnel" means the Contractor's Representative and all personnel the Contractor utilises on the Site, which may include the staff, labour, agents and other employees of the Contractor and of each subcontractor and any other personnel assisting the Contractor in the execution of the Works.

"Contractor's Representative" means the person named as such in the Schedule of Details or appointed from time to time by the Contractor under Sub-Clause 4.2, who acts on behalf of the Contractor.

"Cost" means all direct and reasonable expenditure properly incurred in connection with the execution of the Works by the Contractor but does not include non-project specific overheads, profit or loss of profit.

"Country" means the country in which the Site is located.

"Date of Substantial Completion" means the date when the Works have reached Substantial Completion as stated in the Taking-Over Certificate.

"day" means a calendar day, unless provided otherwise.

"Defects Notification Period or Comprehensive Warranty Period" means the period for notifying defects in the Works under Sub-Clause 9.1, as stated in the Schedule of

Details (with any extension under Sub-Clause 9.1), calculated from the Date of Substantial Completion as stated in the Taking-Over Certificate issued under Sub-Clause 8.2.

"Drawings" means the drawings of the Works as listed in the Schedule of Works, and any additional or modified drawings issued by (or on behalf of) the Employer.

"Employer" means the entity named as the "Employer" in the Instrument of Agreement, and the legal successors in title and assigns and novatees to this entity.

"Employer's Representative" means the person named as such in the Schedule of Details or as otherwise notified by the Purchaser to the Contractor, who acts on behalf of the Employer.

"Employer's Risks" means those matters listed in Sub-Clause 6.1.

"Final Completion Certificate" means the certificate issued under Sub-Clause 9.3.

"Force Majeure" means an event or circumstance which is beyond the control and without the fault or negligence of the Party affected and which by the exercise of reasonable diligence the Party affected was unable to prevent provided that event or circumstance is limited to the following:

a) war, (whether war be declared or not), invasion, act of foreign enemies within the Country;
b) rebellion, terrorism, revolution, insurrection, military or usurped power, or civil0020war within the Country;
c) munitions of war, ionising radiation or contamination by radio-activity within the Country, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity; and
d) earthquake, hurricane, typhoon, tsunami or fire emanating from outside the Site within the Country that are outside the normal range for that place at that time of year, but excluding any other weather conditions regardless of the severity.

"General Conditions" means these general conditions of Contract.

"Instrument of Agreement" means the document signed by the Parties and forming part of the Contract.

"Materials" means things of all kinds (other than Plant) intended to form or forming part of the permanent work.

"Particular Conditions" means the particular conditions (if any) set out immediately before the Schedules to the Contract.

"Party" means either the Purchaser or the Contractor.

"Plant" means the machinery, vehicles and apparatus intended to form or forming part of the permanent work.

"Project" means the project described in the Schedule of Details.

"Schedule of Contract Price" is Schedule 4.

"Schedule of Details" is Schedule 1.

"Schedule of Payment" is Schedule 5.

"Schedule of Security" is Schedule 6.

"Schedule of Site" is Schedule 3.

"Schedule of Works" is Schedule 2.

"Schedules" means Schedules 1 to 12 to this Contract, including any further documents which are annexed or attached to, or incorporated by reference into **Schedules 1 to 12**.

"Site" means the places provided by the Purchaser where the Works are to be executed and to which Plant and Materials are to be delivered as shown in the Schedule of Site, and any other places specified in the Contract as forming part of the Site.

"Specification" means the requirements or documents as listed in the Schedule of Works, including Employer's requirements in respect of design to be carried out by the Contractor, if any, and any Variation to such document.

"Substantial Completion" means that stage in the execution of the Works when the following has occurred:

(a) the Works are performed and completed in accordance with this Contract except for minor defects which would not affect the performance or operation of the Works;
(b) all tests required by this Contract have been undertaken and successfully passed;
(c) all documents, technical and other information, including plans, designs, drawings, as-built drawings, engineering information, data, specifications, reports and any other information required under this Contract have been supplied to the Employer's Representative in accordance with this Contract or as directed by the Employer's Representative from time to time;
(d) all third party warranties and certificates and local authority approvals have been issued and provided to the Employer's Representative; and
(e) any other preconditions to Substantial Completion set out in the Schedule of Details have been met.

"Taking-Over Certificate" means a certificate issued under Clause 8 certifying that the Works have reached Substantial Completion and stating the Date of Substantial Completion.

"Time for Completion" means the time for completing the Works as stated in the Schedule of Details (or as extended under Sub-Clause 7.3), calculated from the Commencement Date.

"Variation" means a change, alterations, addition or omission to the Works which is instructed by the Employer's Representative under Sub-Clause 10.1

"Works" means all the work and design (if any) to be performed by the Contractor in accordance with this Contract as specified in the Schedule of Works, including temporary work and any Variation.

1.2 Interpretation

Words importing persons or parties include firms and organisations. Words importing singular or one gender include plural or the other gender where the context requires.

1.3 Priority of Documents

The documents forming the Contract are to be taken as mutually explanatory of one another. If an ambiguity or discrepancy is found in the documents, the Employer's Representative will issue any necessary instructions to the Contractor, and the priority of the documents is in accordance with the order as listed in the Instrument of Agreement.

1.4 Language

The language for communications is English.

1.5 Communications

Any notice, approval, consent or other communication in relation to this Contract must be in writing, signed, dated and marked to the relevant representative of the Parties and sent to the address for service of notices and communications set out in the Schedule of Details.

1.6 Statutory Obligations

The Contractor must comply with the laws of the countries where activities are performed. The Contractor must give all notices and pay all fees and other charges in respect of the Works.

1.7 Assignment

The Contractor must not assign or novate any of its rights or obligations under this Contract without prior written consent of the Employer.
The Purchaser has the right to assign or novate any or all of its rights or obligations under this Contract after giving written notice to the Contractor.

1.8 Confidential Details

The Contractor must keep confidential and must not, without the written consent of the Employer, disclose to any third party the terms and conditions of the Contract, or any documents or other information furnished directly or indirectly by either Party in connection with the Contract or the Works, except if disclosure is required by law or for outside consultants engaged to act in connection with the Works (including insurance and legal advisers). In addition, the Contractor must not (without the prior written consent of the Employer) take, or authorize the taking of, any photograph of the Works or the Site for use in any publicity or advertising.

2. THE PURCHASER

2.1 Provision of Site

The Purchaser will provide non-exclusive possession of the Site and non-exclusive right of access to the Site at the times stated in the Schedule of Details. The Contractor must comply with any conditions relating to the Site as stated in the Schedule of Site.

2.2 Permits and Licenses

The Contractor must obtain and comply with all relevant permits, licences, authorisations and approvals necessary to carry out the Works in accordance with the Contract. The Purchaser must, if requested, assist the Contractor in applying for such permits, licences, authorisations or approvals which are required for the Works.

2.3 Employer's Instructions

The Contractor must comply with all instructions given by the Purchaser or the Employer's Representative in respect of Works. The Purchaser or the Employer's Representative is entitled to suspend progress of part or all of the Works at any time and for any reason by giving the Contractor written notice. During such suspension, the Contractor must protect, store and secure such part of the Works against any deterioration, loss or damage.

If the Contractor receives a notice of suspension under this Sub-Clause 2.3, the Contractor must suspend progress of the relevant parts of the Works until such time as the Employer's Representative directs the Contractor to resume progress of those parts of the Works by notice in writing.

If a suspension under this Sub-Clause 2.3 has continued for more than 180 consecutive days, the Contractor may request the Employer's Representative's permission to proceed with the Works. If the Employer's Representative does not give permission within 28 days after being requested to do so, the Contractor may, by giving notice to the Employer's Representative, treat the suspension as an omission under Sub-Clause 10.1 of the affected part of the Works. If the suspension affects the whole of the Works, the Contractor may give a notice in accordance with Sub-Clause 12.2.

2.4 Approvals

No approval or consent or absence of comment by the Purchaser or the Employer's Representative will affect the Contractor's obligations.

3. EMPLOYER'S REPRESENTATIVE

3.1 Employer's Representative

The Employer's Representative is authorised to carry out the duties assigned to it in the Contract. The Employer's Representative has no authority to amend the terms of the Contract unless an amendment is authorised and approved in writing by the Employer. The Employer's Representative may instruct Variations in accordance with Clause 10.

3.2 Employer's Representative's Assistant

The Employer's Representative may from time to time assign duties and delegate authority to an individual to carry out certain duties. The appointee may be notified by the Purchaser to the Contractor from time to time. The Purchaser must notify the Contractor of the delegated duties and authority of this Employer's Representative's assistant.

4. THE CONTRACTOR & PERFORMANCE OF THE WORKS

4.1 General Obligations

The Contractor must carry out the Works properly and in accordance with the Contract, including all works which are necessary to satisfy the Specifications and the Drawings and all other works which (although not expressly mentioned in the Contract) are necessary for the stability and/or for the completion, and/or safe and proper operation of the Works. The Contractor must provide all supervision, labour, Materials, Plant and Contractor's Equipment which may be required. All Materials and Plant on Site are deemed to be the property of the Employer.

The Contractor must comply with all applicable occupational health and safety and environmental laws, guidelines, rules, procedures, quality control requirements and codes of practice including those stated in the Schedule of Works and any provided to the Contractor by the Employer's Representative.

The Contractor is deemed to have inspected and examined the Site, its surroundings, and access to the Site and to have satisfied itself that the Site and access to the Site, including security, is suitable for the Works and is deemed to have obtained all necessary information as to risks which may affect execution of the Works including climatic, hydrological and natural conditions and is not entitled to an increase to the Contract Price or to an extension to the Time for Completion based upon such conditions encountered during the execution of the Works that could have been reasonably foreseen by an experienced contractor acting in accordance with industry best practice.

The Contractor must, in a form acceptable to the Employer's Representative, provide the Employer's Representative with monthly, or more frequently on request by the

Employer's Representative, reports in relation to the Works and any occupational, health and safety issues in relation to the Works. The report must comply with any requirements stated in the Schedule of Works.

4.2 Contractor's Representative

The Contractor's Representative is named in the Schedule of Details. The Contractor must not replace the Contractor's Representative without the prior written consent of the Employer's Representative and must submit to the Employer's Representative for approval the name and particulars of the person the Contractor proposes to replace the Contractor's Representative. The Contractor is responsible for all acts and omissions of the Contractor's Representative.

The Contractor gives the Contractor's Representative all authority necessary to act on the Contractor's behalf under the Contract.

4.3 Subcontracting

The Contractor must not subcontract the whole of the Works. The Contractor should not subcontract any part of the Works without the prior written consent of the Employer's Representative. Subcontracting shall not relieve the Contractor from the responsibility of completing the works and giving the performance as per the Contract

4.4 Bank Guarantee for Performance

Unless otherwise stated in the Schedule of Details, the Contractor must deliver to the Employer, within 14 days of the Commencement Date, an unconditional and irrevocable on-demand bank guarantee in the form provided in the Schedule of Security, from a bank approved by the Employer, for the amount stated in the Schedule of Details.

Any Bank Guarantee for performance provided to the Purchaser under Sub-Clause 4.4 must be valid for three months beyond Defects Notification Period under Contract.

The Purchaser may withhold, retain or set off from any payment due to the Contractor under this Contract amounts to protect the Purchaser against any costs, charges, expenses and damages for which the Contractor is liable to the Purchaser under or in connection with this Contract. This right to withhold, retain or set off does not limit the Employer's right to recover those amounts in any other way.

4.5 Contractor's Personnel

The Contractor's Personnel must be appropriately qualified, skilled and experienced in their respective trades or occupations. The Employer's Representative may require the Contractor to remove (or cause to be removed) any person employed on the Site or in the execution of the Works, including the Contractor's Representative who in the opinion of the Employer's Representative:

a) persists in any misconduct or lack of care;
b) carries out duties incompetently or negligently;
c) fails to conform with any provisions of the Contract; or
d) persists in any conduct which is prejudicial to safety, health, or the protection of the environment.

Where this Sub-Clause 4.5 applies, the Contractor must then appoint (or cause to be appointed) a suitable replacement person for each person so removed.

The Contractor must provide and maintain all necessary sanitary and welfare facilities for the Contractor's personnel and must at all times take all reasonable precautions to maintain the health and safety of the Contractor's personnel and comply with all relevant labour laws.

The parties agree that if the Employer's Representative becomes aware that the Contractor has failed to pay any subcontractor's or the Contractor's Personnel in

accordance with this Contract, and the Employer's Representative gives the Contractor written notice 48 hours before the Purchaser intends to pay, the Purchaser may, in its absolute discretion, pay those staff, labour or subcontractors the amount the Employer's Representative determines is, or may be owing and the Purchaser may recover any such amount paid as a debt due from the Contractor to the Employer.

The Purchaser will not be liable for or in respect of any damages or compensation payable at law in respect or in consequence of any accident or injury to any of the Contractor's Personnel, unless resulting from any act or default of the Employer, its agents or servants. The Contractor must defend, hold and save harmless and indemnify the Purchaser against all claims and proceedings, as well as damages and compensation in relation to any accident or injury to any of the Contractor's Personnel, unless resulting from any act or default of the Employer, its agents or servants. The Contractor is responsible for all costs, including legal costs, charges and expenses whatsoever associated with the defence of the Employer. In defending the Employer, the Contractor shall not enter into a settlement agreement without the prior written approval of the Employer.

4.6 Publicity and Use of the Name, Emblem or official Seal of the Purchaser

The Contractor must not advertise or otherwise make public for purposes of commercial advantage or goodwill that it has a contractual relationship with the Employer, nor must the Contractor, in any manner whatsoever use the name, emblem or official seal of the Employer, or any abbreviation of their name in connection with its business or otherwise without the written permission of the Employer. This Sub-Clause 4.6 survives the completion, expiry or termination of the Contract.

4.7 Mines

a) The Contractor warrants and represents that neither it, its parent entities (if any), nor any of the Contractor's subsidiaries or affiliated entities (if any) is engaged in the sale or manufacture of anti-personnel mines or components utilised in the manufacture of anti-personnel mines.
b) The Contractor acknowledges and agrees that any breach of this Sub-Clause 4.7 entitles the Purchaser to terminate the Contract immediately in accordance with Sub-Clause 12.1, without any liability for termination charges or any other liability of any kind.

4.8 Official-Not-To-Benefit, Corruption and Fraud

a) The Contractor warrants that it has not engaged, or attempted to engage, in any way whatsoever, in any corruption or fraud in connection with the selection process or the execution of this Contract or any other activities of the Employer, involving, in any way whatsoever, any Employer's personnel or representative, official, or other agent of the Employer.
b) In this Sub-Clause 4.8, "corruption" means the offering, giving, receiving or soliciting from or to any person, directly or indirectly, anything of value as an inducement or reward:
    i. for doing or forbearing to do any action in relation to the Contract, the selection process or any other activities of the Employer; or
    ii. for showing or forbearing to show favour or disfavour to any person in relation to the Contract, or any other activities of the Employer.

c) In this Sub-Clause 4.8, "fraud" means a misrepresentation or omission of fact(s) in order to influence, or to attempt to influence, the selection process or the execution of this Contract or any other activities of the Employer.

d) Contractor acknowledges and agrees that any breach of this Sub-Clause 4.8 entitles the Purchaser to terminate the Contract immediately by written notice in accordance with Sub-Clause 12.1, without any liability for termination charges or any other liability of any kind.

4.9 Supply of Water

The Contractor must provide on the Site, for the duration of the Works, an adequate supply of drinking and other water for the use of its staff and labour.

4.10 Alcoholic Liquor or Drugs

The Contractor must not bring onto or store on the Site, import, sell, give, barter or otherwise dispose of any alcoholic liquor or drugs, or permit or suffer any such importation, sale, gift, barter or disposal by its subcontractors, agents, staff or labour.

4.11 Arms, Ammunition & Explosives

Unless otherwise stated in the Schedule of Works or instructed or permitted by the Purchaser in writing, the Contractor must not bring onto or store on the Site, give, barter or otherwise dispose of to any person or persons, any arms, ammunition or explosives of any kind or permit or suffer the same.

4.12 Festivals and Religious Customs

The Contractor must in all dealings with its staff and labour have due regard to all recognised festivals, days of rest and religious or other customs.

4.13 Epidemics

In the event of any outbreak of illness of an epidemic nature, the Contractor must comply with and carry out such regulations, orders and requirements as may be made by the relevant authorities or local medical or sanitary authorities for the purpose of dealing with or overcoming the epidemic.

4.14 Fundamental Principles and Rights at Work:

a) The Contractor warrants that it will comply with, and ensure the Contractor's Personnel will comply with, the 1998 International Labour Organization (ILO) Declaration on Fundamental Principles and Rights at Work. These universal rights, as applied in the context of ILO, are freedom of association and the effective recognition of the right to collective bargaining, the elimination of forced or compulsory labour, the abolition of child labour and the elimination of discrimination in respect of employment and occupation.

b) The Contractor must provide a safe and secure working environment, and provide separate amenities on the Site, for women employed in the execution of the Works.

c) The Contractor acknowledges and agrees that any breach of this Sub-Clause 4.14 entitles the Purchaser to terminate the Contract immediately in accordance with sub-Clause 12.1, without any liability for termination charges or any other liability of any kind.

d) The Contractor shall at all times during the continuance of the Contract comply fully with all existing Acts, regulations and bylaws including all statutory amendments and re-enactments and acts that may be passed in future either by the state or the Central Government or local authority, including, Indian Workmen's Compensation Act, Contract Labour (Regulation and Abolition) Act 1970 and Equal remuneration Act 1976. Factories Act, Minimum Wages Act, provident fund regulations employees provident Fund Act and schemes made under same Act, Health and Sanitary Arrangements for workmen,

Insurance and other benefits and shall keep the Purchaser indemnified in case any action is commenced for contravention by the contractor

4.15 **Child Labour**

a) The Contractor represents and warrants that neither it, its parent entities (if any), nor any of the Contractor's subsidiary or affiliated entities (if any) is engaged in any practice inconsistent with the rights set forth in the Convention on the Rights of the Child, including Article 32 thereof, which, *inter alia,* requires that a child must be protected from performing any work that is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development.

b) The Contractor acknowledges and agrees that any breach of this Sub-Clause 4.15 entitles the Purchaser to terminate the Contract immediately in accordance with Sub-Clause 12.1, without any liability for termination charges or any other liability of any kind.

4.16 Sexual Exploitation

a) The Contractor must take all appropriate measures to prevent sexual exploitation or abuse of anyone by the Contractor's Personnel. For these purposes, sexual exploitation and abuse includes sexual activity with any person less than eighteen years of age, regardless of any laws relating to consent, unless such sexual activity is consensual between two persons who are married and such marriage is recognized as valid under the laws of the country of citizenship of such Contractor's personnel.

b) In addition, the Contractor must refrain from, and must take all reasonable and appropriate measures to prohibit its employees or other persons engaged and controlled by it from exchanging any money, goods, services, or other things of value, for sexual favours or activities, or from engaging any sexual activities that are exploitive or degrading to any person.

c) The Contractor acknowledges and agrees that any breach of this Sub-Clause 4.16 entitles the Purchaser to terminate the Contract immediately in accordance with Sub-Clause 12.1, without any liability for termination charges or any other liability of any kind.

4.17 Security of the Site

Unless otherwise stated in the Contract, the Contractor must keep unauthorised persons from entering the Site. Authorised persons are limited to the Contractor's Personnel and the Employer's personnel and any other personnel notified to the Contractor, by the Purchaser or the Employer's Representative, as authorised personnel of the Purchaser or the Employer's other contractors on the Site. The security and safety of the Site, the Contractor's Equipment, the Employer's equipment, Plant, Materials and all other property or personnel on the Site is the sole responsibility of the Contractor. The Contractor must comply with any other security requirements set out in the Schedule of Site.

4.18 Unexploded Ordinances

If at any time during the carrying out of the Works the Contractor discovers an unexploded ordinance or land mine, the Contractor must immediately stop work, notify the Employer's Representative, take all necessary steps to ensure the safety of all persons and property and secure the Site. The Contractor must immediately resume the Works when instructed by the Employer's Representative that is it safe to do so.

5. DESIGN BY CONTRACTOR

5.1 Contractor's Design

The Contractor must carry out design to the extent specified in accordance with the Contract, including the Schedule of Works. The Contractor must promptly submit to

the Employer's Representative all designs prepared by the Contractor. Within 14 days of receipt the Employer's Representative may notify any comments or, if the design submitted is not in accordance with the Contract, may reject it stating the reasons. The Contractor must not construct any element of the permanent work designed by the Contractor without the approval and prior written consent of the Employer's Representative or where the design for that element has been rejected. Design that has been rejected must be promptly amended and resubmitted. The Contractor must resubmit all designs commented on, taking these comments into account as necessary.

5.2 Design by Contractor

The Contractor is responsible for any design it has prepared and such design must be fit for the intended purposes defined in the Contract. The Contractor is also responsible for any infringement of any patent or copyright in respect of the same.

6. EMPLOYER'S RISKS

6.1 Employer's Risks

In this Contract, Employer's Risks mean:

a) a Force Majeure event,
b) a suspension under Sub-Clause 2.3 unless it is attributable to the Contractor's failure, act, omission or breach,
c) any delay or disruption caused by any Variation, except where that Variation is caused by the Contractor's failure, act, omission or breach,
d) any act, omission or breach by the Purchaser or its agents, and
e) the occurrence of any event specified in the Schedule of Details.

7. TIME FOR COMPLETION

7.1 Execution of the Works

The Contractor must commence the Works on the Commencement Date and must proceed expeditiously and without delay and must complete the Works within the Time for Completion.

7.2 Programme

Within the time stated in the Schedule of Details, the Contractor must submit to the Employer's Representative for approval, a programme for the Works in accordance with and in the form stated in the Schedule of Works. The programme will be used to monitor the progress of the Works under the Contract. The Employer's Representative may request the Contractor to submit an amended programme at any time for approval.

7.3 Extension of Time

Subject to Sub-Clause 10.3, the Contractor may be entitled to an extension to the Time for Completion if it is or will be delayed by any of the Employer's Risks.

Despite any other provision in this Contract, the Employer's Representative may, in its absolute discretion and at any time, grant an extension to the Time for Completion. Such an extension must be granted in writing.

7.4 Late Completion

If the Contractor fails to complete the Works within the Time for Completion, the Contractor must pay delay damages for such failure in the amount stated in the Schedule of Details for each day for which the Contractor fails to complete the Works up to and including the Date of Substantial Completion as stated in the Taking-Over Certificate.

If the cumulative amount of delay damages reaches the amount stated in the Schedule of Details, the Purchaser may terminate the Contract at any time in accordance with Sub-Clause 12.1.

8. TAKING OVER

8.1 Completion

The Contractor must notify the Employer's Representative in writing as soon as it considers that the Works have reached the stage of Substantial Completion.

8.2 Taking-Over Certificate

After receiving the notice under Sub-Clause 8.1, the Employer's Representative must either issue a Taking-Over Certificate stating the Date of Substantial Completion or notify the Contractor that there are defects or deficiencies in the Works that prevent Substantial Completion being reached.

If the Employer's Representative notifies the Contractor that there are defects or deficiencies in the Works, the Contractor must correct the defects or deficiencies and the procedures in this Clause 8 must be repeated until the Employer's Representative issues a Taking-Over Certificate.

The Contractor acknowledges and agrees that it takes full responsibility for the care of the Works until the Date of Substantial Completion and that no partial or entire use or occupancy of the Site or the Works by the Purchaser in any way constitutes an acknowledgement by the Purchaser that Substantial Completion has occurred, nor does it release the Contractor from any of its warranties, obligations or liabilities under or in connection with this Contract.

The Purchaser must take over the Works upon the Date of Substantial Completion.

After issuance of the Taking-Over Certificate the Contractor must promptly complete any outstanding work, submit a statement in accordance with Sub-Clause 11.2 and, subject to Clause 9, clear the Site.

8.3 Testing

The Contractor must undertake all tests in accordance with the requirements set out in the Schedule of Works, and must agree, with the Employer's Representative, 4 days prior written notice of the time and place for the specified testing of any Plant, Materials and other parts of the Works.

9. REMEDYING DEFECTS

9.1 Remedying Defects

The Employer's Representative may at any time prior to the expiry of the relevant Defects Notification Period, notify the Contractor of any defects or outstanding work. The Contractor must remedy at no cost to the Purchaser any defects due to the Contractor's design, Materials, Plant or workmanship not being in accordance with the Contract. The timing of remedying a defect must be agreed between the Parties, or failing agreement, be reasonably specified by the Employer's Representative.

If the Contractor fails to rectify the defect within the time agreed or specified, the Employer's Representative may do so or engage another party to do so at the Contractor's risk and expense and any cost will be a debt due from the Contractor to the Employer.

The Defects Notification Period will be extended to the extent that the Works, part of the Works or a major item of Plant (as the case may be) cannot be used for the purposes for which they are intended by reason of a defect or damage or failure by the

Contractor to comply with any other obligation of the Contract and such extension will be equal to the period for which the Works, part of the Works or major item of Plant cannot be so used for the purpose intended or, if instructed in writing by the Employer's Representative, the Defects Notification Period will recommence (and restart from the beginning) from the date of the repair, replacement or making good of such defect or damage, but only in respect of that part of the Works repaired, replaced or made good.

9.2 Uncovering and Testing

The Employer's Representative may give instruction as to the uncovering and/or testing of any work. Unless as a result of any uncovering and/or testing it is established that the Contractor's design, Materials, Plant or workmanship are defective or not in accordance with the Contract or the Contractor did not give sufficient notice in accordance with Sub-Clause 8.3 before covering the relevant parts of the Works, the Contractor will be paid for such uncovering and/or testing as a Variation in accordance with Sub-Clause 10.2. If the Contractor did not give sufficient notice in accordance with Sub-Clause 8.3 before covering the relevant parts of the Works or if the Employer's Representative establishes that the Contractor's design, Materials, Plant or workmanship are defective or not in accordance with the Contract, the Contractor must (at its cost) then promptly make good the defect and ensure that the rejected item complies with the Contract and bears the cost of uncovering and testing.

9.3 Final Completion Certificate

Performance of the Contractor's obligations will not be considered to have been completed until the Employer's Representative has issued the Final Completion Certificate to the Contractor, stating the date on which the Contractor completed its obligations under the Contract.

The Employer's Representative must issue the Final Completion Certificate within 28 days after the latest of the expiry dates of the Defects Notification Periods or as soon thereafter as the Contractor has supplied all relevant documents and completed and tested all of the Works, including remedying defects notified under Sub-Clause 9.1. A copy of the Final Completion Certificate must be issued to the Employer. Notwithstanding this the Purchaser may issue the Final Completion Certificate at any time after the Employer's Representative has issued the Taking-Over Certificate.

9.4 Unfulfilled Obligations

After the Final Completion Certificate has been issued, each Party remains liable for the fulfilment of any obligation which remains unperformed at that time. For the purposes of determining the nature and extent of unperformed obligations, the Contract is deemed to remain in force.

10. VARIATIONS AND CLAIM

10.1 Right to Vary

The Employer's Representative may, in its absolute discretion and at any time before the Taking-Over Certificate is issued, initiate, or immediately instruct Variations by written notice and the Contractor must carry out and be bound by any such Variations. Unless otherwise instructed by the Employer's Representative in this notice, the Contractor must provide a detailed breakdown of the increase or decrease in the Contract Price and any effect on the Time for Completion within 7 days of receipt of this notice, and before the Contractor carries out the Variation. The Contractor must then execute and is bound by the Variation unless otherwise instructed by the Employer's Representative.

The Contractor agrees that a Variation may involve an omission of any part or parts of the Works and in the case of an omission the Purchaser may engage others to perform that part or parts so omitted.

10.2 Valuation of Variations

Variations will be valued by the Employer's Representative as follows:

a) at a rate or lump sum price agreed between the Parties, or in the absence of agreement
b) where appropriate, at rates in the Bill of Quantities, or if there are no applicable rates in the Bill of Quantities, at the rates in the schedule of Variation rates contained in the Schedule of Contract Price, or
c) in the absence of appropriate rates, then a fair and reasonable valuation of the Variation will be made by the Employer's Representative, or
d) if the Employer's Representative so instructs, at day work rates set out in the Schedule of Contract Price for which the Contractor must keep records of hours of labour and Contractor's Equipment, and of Materials used.

For the avoidance of doubt the Contractor's entitlement to payment for a Variation excludes non-project specific overheads and costs.

10.3 Notice of Delay

The Contractor must notify the Employer's Representative as soon as practicable and in any case in writing no later than 7 days (or within a time frame notified by the Employer's Representative) after it becomes aware of any event or circumstance which may delay or disrupt the Works, or which may give rise to a claim for additional payment, Costs and/or other entitlements or relief from obligations, under any Clause of these General Conditions or otherwise arising out of or in connection with the Contract. The Contractor must take all reasonable steps to minimise these effects.

The notice submitted by the Contractor under this Sub-Clause 10.3 must set out details of the event or circumstance giving rise to the claim, and if requested supply supporting documents, stating a reasonable period by which the Contractor believes the Time for Completion should be extended and the nature and extent of any additional resultant Costs. As soon as practicable after the receipt of this notice, the Employer's Representative will notify the Contractor of the period, if any, by which the Time for Completion will be extended and additional payment of Costs (if any) to which the Contractor is entitled under the Contract. The Employer's Representative may also respond with comments and request any necessary further particulars.

The Contractor is not entitled to an extension to the Time for Completion or additional payment or Costs if it does not submit a notice in accordance with and within the time stated in Sub-Clause 10.3 in which case the Contractor will be deemed to have waived its entitlement to make such claim, the Purchaser will be discharged from all liability arising out of or in connection with the claim and the Contractor must comply with its obligations to perform the Works by the Time for Completion and for the Contract Price.

10.4 Right to Claim

Subject to Sub-Clause 10.3, if the Contractor incurs Cost as a result of any of the Employer's Risks, other than a Force Majeure event, the Contractor will be entitled to the amount of such Cost. If as a result of any of the Employer's Risks, it is necessary to change the Works, this will be dealt with as a Variation.

10.5 Adjustments for Changes in Cost

Unless otherwise expressly stated in the Schedule of Contract Price, the Contract Price, and the rates and prices inserted in the Bill of Quantities, will not be adjusted for rises or falls in the cost of labour, goods and other inputs to the Works and the

Contract Price and the rates and prices inserted in the Bill of Quantities, will be deemed to include amounts to cover contingency of rises and falls in the cost of labour, goods and other inputs to the Works.

11. CONTRACT PRICE AND PAYMENT

11.1 Contract Price & Valuation of the Works

The Purchaser must pay the Contractor the Contract Price in accordance with this Clause 11 and the Schedule of Contract Price. The Contractor is deemed to have satisfied itself as to the correctness and sufficiency of the Contract Price and all fixed unit rates and prices in the Contract.

11.2 Statements

The Contractor must submit a statement to the Employer's Representative in accordance with the requirements and timings stated in the Schedule of Payment or otherwise as notified by the Employer's Representative in writing. Each statement must be in a form approved by the Employer's Representative, showing the value of the work performed and details of any other amounts to which the Contractor considers itself entitled. If requested by the Employer's Representative, when submitting the statement the Contractor must provide verification of all payments owed to subcontractors and the Contractor's Personnel.

The statement must be based on the prices and/or rates set out in the Bill of Quantities or as otherwise set out in the Schedule of Contract Price.

If a percentage is stated in the Schedule of Details, the Contractor will be entitled to that percentage of the value of Materials and Plant listed in the Schedule of Details if such Plant and Materials are in accordance with the Contract, delivered to and properly stored on the Site at a reasonable time.

Within 28 days after the Employer's Representative issues the Taking-Over Certificate, the Contractor must submit a statement to the Employer's Representative as its final statement in respect of the Contract Price and any claim the Contractor has in respect of the Works under the Contract which the Contractor considers to be due from the Purchaser for all events and circumstances that have occurred up to the Date of Substantial Completion stated in the Taking-Over Certificate.

The Contractor is not entitled to make, and the Purchaser is released from, any new claim or an increased existing claim against the Purchaser in respect of the Contract Price or otherwise in respect of all events and circumstances that have occurred up to the earlier of the submission of the statement or expiration of the 28 days.

11.3 Advance Payment

a) The Purchaser will make the advance payment a maximum of 10% of the total contract value (if any) set out in the Schedule of Payment, as a loan for mobilisation, when the Contractor submits a Bank Guarantee for advance payment in accordance with this Sub-Clause 11.3. If no advance payment is set out in the Schedule of Payment, then this Sub-Clause 11.3 will not apply.

b) Unless otherwise notified by the Employer, the Purchaser will pay the advance payment only after receiving the Bank Guarantee for performance (if any) in accordance with Sub-Clause 4.4 and a Bank Guarantee for advance payment in accordance with Sub-Clause 11.3(c), in amounts and currencies equal to the advance payment.

c) The Bank Guarantee for advance payment payable in accordance with Sub-Clause 11.3(b), must be an unconditional and irrevocable on-demand bank guarantee in the form provided in the Schedule of Security, from a bank

approved by the Employer. Unless and until the Purchaser receives this guarantee, Sub-Clause 11.3 will not apply.

d) The Contractor must ensure that the Bank Guarantee for advance payment is valid and enforceable until the whole of the advance payment has been repaid, but its amount may be progressively reduced by the amount repaid by the Contractor in the interim payments. If the terms of the guarantee specify its expiry date, and the advance payment has not been repaid by the date 28 days prior to the expiry date, the Contractor must extend the validity of the guarantee until the advance payment has been repaid.

e) The advance payment must be repaid by the Contractor through percentage deductions in interim payments. The Purchaser will deduct a percentage of each interim payment, at the rate stated in the Schedule of Payments, until such time as the advance payment has been repaid.

f) If the advance payment has not been repaid prior to the issue of the Taking Over Certificate for the Works or prior to termination of the Contract, the whole of the balance then outstanding will immediately become due and payable by the Contractor to the Employer.

11.4 Interim Payment

Within 28 days of delivery of each statement submitted in accordance with Sub-Clause 11.2, the Purchaser will pay to the Contractor the amount shown in the Contractor's statement at the rate stated in the Schedule of Details and less any amounts to be deducted for advance payment and repayments in accordance with Sub-Clause 11.3, and less any other amount for which the Employer's Representative has specified its reasons for disagreement or that has become due under the Contract. The Purchaser is not bound by any sum previously considered by the Purchaser to be due to the Contractor

The Purchaser may withhold interim payments until it receives the performance security under Sub-Clause 4.4 (if any).

.

11.5 Final Payment

Within 7 days after receiving the Final Completion Certificate, the Contractor must submit a final account to the Employer's Representative together with any documentation reasonably required to enable the Purchaser to ascertain the final contract value.

Within 28 days after the submission of this final account, the Purchaser must pay to the Contractor any amount due. If the Purchaser disagrees with any part of the Contractor's final account, the Purchaser must specify its reasons for disagreement when making payment.

11.6 Currency

Payment will be in the currency stated in the Schedule of Details.

11.7 Delayed Payment

The Contractor is not entitled to any interest in respect of any amount in any statement submitted to the Purchaser in accordance with Sub-Clause 11.2 which remains due and unpaid.

11.8 Provisional Sums

If a provisional sum is included in the Schedule of Contract Price, it will not be payable by the Purchaser unless the Employer's Representative directs the Contractor to perform the work or item to which the provisional sum relates. If the Employer's Representative directs the Contractor to perform that work, the work or item will be

priced by the Employer's Representative in accordance with Sub-Clause 10.2, and the difference will be added to or deducted from the Contract Price.

11.9 Audit and Investigations

a) Each payment made by the Purchaser to the Contractor may be subject to a post-payment audit by auditors, whether internal or external, of the Purchaser or by other authorised and qualified agents of the Purchaser at any time during the term of the Contract and for a period of two (2) years following the expiration or prior termination of the Contract. The Purchaser is entitled to a refund from the Contractor for any amounts shown by such audits to have been paid by the Purchaser other than in accordance with the terms and conditions of the Contract.

b) The Contractor acknowledges and agrees that, from time to time, the Purchaser may conduct investigations relating to any aspect of the Contract or the award thereof, the obligations performed under the Contract, and the operations of the Contractor generally relating to performance of the Contract. The right of the Purchaser to conduct an investigation and the Contractor's obligation to comply with such an investigation does not lapse upon issuance of the Final Completion Certificate or prior termination of the Contract. The Contractor must provide its full and timely cooperation with any such inspections, post-payment audits or investigations. Such cooperation must include, but is not limited to, the Contractor's obligation to make available the Contractor's Personnel and any relevant documentation for such purposes at reasonable times and on reasonable conditions and to grant to the Purchaser access to the Contractor's premises at reasonable times and on reasonable conditions in connection with such access to the Contractor's Personnel and relevant documentation. The Contractor must require its agents, including, but not limited to, the Contractor's attorneys, accountants or other advisers, to reasonably cooperate with any inspections, post-payment audits or investigations carried out by the Employer.

12. DEFAULT & TERMINATION

12.1 Default by Contractor

If the Contractor abandons the Works, refuses or fails to comply with a valid instruction of the Purchaser or the Employer's Representative or fails to proceed expeditiously and without delay, or is in breach of the Contract, the Employer's Representative may give notice referring to this Sub-Clause and stating the default.

If the Contractor has not taken all practicable steps to remedy the default within 14 days after the Contractor's receipt of the Employer's Representative's notice, the Purchaser may by a second notice of 14 days, terminate the Contract.

The Purchaser may terminate the Contract immediately by written notice if the Contractor is declared insolvent under Sub-Clause 12.3 or is in breach of Sub-Clauses 4.7, 4.8, 4.14, 4.15 or 4.16 or submits a guarantee, certificate, statement, test result or any other document it is required to submit under the Contract that is false or intentionally misleading.

If the Purchaser delivers a termination notice under this Sub-Clause 12.1, the Contractor must stop work and demobilise (except to the extent specified in the notice from the Employer) and take such action as necessary or as the Employer's Representative directs, for the transfer, protection and preservation of the Employer's property and deliver any required goods and documents to the Employer's Representative. The Contractor must use its best efforts to comply immediately with any reasonable instructions included in the notice for the assignment of any

subcontract and for the protection of life or property or for the safety of the Works. The Contractor must leave behind any Contractor's Equipment, Materials and Plant which the Purchaser or the Employer's Representative instructs, in writing, is to be used until the completion of the Works. The Purchaser may employ others to complete or perform the Works and the cost incurred that exceeds the Contract Price will be a debt due from the Contractor to the Employer.

12.2 Default by Employer

If the Purchaser fails to pay in accordance with the Contract, or if a prolonged suspension affects the whole of the Works as described in Sub-Clause 2.3, the Contractor may give notice referring to this Sub-Clause and stating the default. If the default is not remedied within 14 days after the Employer's receipt of this notice, the Contractor may suspend the execution of all or parts of the Works.

If the default is not remedied within 28 days after the Employer's receipt of the Contractor's notice, the Contractor may by a second notice of 14 days, terminate the Contract. The Contractor must then demobilise from the Site.

12.3 Insolvency

If the Contractor is declared insolvent under any applicable law, the Purchaser may by written notice terminate the Contract immediately.

12.4 Payment upon Termination

After termination, the Contractor is entitled to payment of the unpaid balance of the value of the Works executed and of the Materials and Plant reasonably delivered to the Site, adjusted by the following:

a) any sums to which the Contractor is entitled under Sub-Clause 10.4,
b) any sums to which the Purchaser is entitled,
c) in the absence of appropriate rates, the rates in the Contract will be used as the basis for valuation, or failing which the Employer's Representative will make a reasonable valuation, or
d) if the Contractor has terminated under Sub-Clause 12.2 or the Purchaser has terminated under Sub-Clause 12.5, the Contractor is entitled to the Cost of its suspension and demobilisation together with a sum equivalent to 5% of the value of those parts of the Works not executed at the date of termination.

The net balance due must be paid or repaid within 28 days of the notice of termination.

12.5 Employer's Entitlement to Terminate for Convenience

The Purchaser may in its absolute discretion terminate the Contract, at any time for the Employer's convenience, by giving notice of such termination to the Contractor. The termination will take effect 28 days after the latter of the dates on which the Contractor receives this notice, or the Purchaser returns the Bank Guarantee for performance.

12.6 Cessation of Work and Removal of Contractor's Equipment

After a notice of termination under Sub-Clauses 12.2, 12.5, 13.2 or 12.3 has taken effect, the Contractor must promptly cease all further work (except to the extent specified in the notice from the Employer) and take such action as necessary or as directed by the Employer, for the transfer, protection and preservation of the Employer's property, protection of life or for the safety of the Works. Unless otherwise notified in writing by the Purchaser under Sub-Clause 12.1, the Contractor must remove all Contractor's Equipment from the Site and remove from the Site any wreckage, rubbish and debris of any kind and leave the whole of the Site in a clean and safe condition.

13. RISK & RESPONSIBILITY

13.1 Contractor's Care of the Works

The Contractor is responsible for the care of the Works from the Commencement Date until the date the taking-over Certificate is issued under Sub-Clause 8.2. Responsibility will then pass to the Employer. If any loss or damage happens to the Works during the above period, the Contractor must rectify such loss or damage so that the Works conform with the Contract and the requirements of any relevant authorities.

The Contractor must defend, hold and save harmless and indemnify, at its own cost, including legal costs, the Employer, its agents and employees from and against all suits, actions, claims and costs arising out of the acts or omissions of the Contractor, its employees, agents or subcontractors in connection with the Works and the Contractor's other obligations under or in connection with the Contract, in respect of any accident, bodily injury, sickness or death to any person, infringement of any intellectual property rights and loss or damage to the Works or any property unless due to an act or default of the Purchaser or its personnel. In defending the Employer, the Contractor shall not enter into a settlement agreement without the prior written approval of the Employer.

13.2 Force Majeure

If a Party is or will be prevented from performing any of its obligations by Force Majeure, the Party affected must notify the other Party immediately in writing and not later than 7 days, setting out full details of the Force Majeure event and the reasons for the Force Majeure event preventing that Party from, or delaying that Party from, performing the affected obligations under this Contract. If instructed by the Employer's Representative, the Contractor must suspend the execution of the affected Works and, to the extent agreed with the Employer's Representative, demobilise the Contractor's Equipment, but only so far as, and for so long as, the performance of those obligations is affected by the Force Majeure event. The affected Party must use its best endeavours to overcome or remove the effects of the Force Majeure event as quickly as possible.

Upon completion of the Force Majeure event, the affected Party must as soon as is reasonably practicable recommence the performance of the affected obligations.

If the event continues for a period of 84 days, either Party may then give notice of termination which will take effect 28 days after the giving of the notice.

After termination, the Contractor is entitled to payment of the unpaid balance of the value of the Works executed and of the Materials and Plant reasonably delivered to the Site, adjusted by the following:

a) any sums to which the Contractor is entitled under Sub-Clause 10.4,
b) the Cost of suspension and demobilisation,
c) any sums to which the Purchaser is entitled.

The net balance due must be paid or repaid within 28 days of the notice of termination.

The Contractor acknowledges and agrees that, with respect to any of its obligations under the Contract, the Contractor will be performing such obligations in areas in which the Employer, is engaged in, preparing to engage in, or disengaging from peacekeeping, humanitarian or similar operations and any delays or failure to perform such obligations arising from or relating to harsh conditions within such areas, shall not, in and to itself, constitute a Force Majeure event.

14. INSURANCES

14.1 Extent of Cover

The Contractor must, on or prior to the Commencement Date, effect and thereafter maintain insurances in the joint names of the Parties:

a) for loss and damage to the Works, Materials, Plant and the Contractor's Equipment,
b) for liability of both Parties for loss, damage, death or injury to third parties or their property arising out of the Contractor's performance of the Contract, including the Contractor's liability for damage to the Employer's property other than the Works, and
c) for liability of both Parties and of any Employer's personnel for death or injury to the Contractor's Personnel except to the extent that liability arises from the negligence of the Employer, any Employer's representative or their employees.

14.2 Arrangements

All insurances must conform with the requirements detailed in the Schedule of Details. The policies must be issued by insurers and in terms approved by the Employer. The Contractor must provide the Purchaser with evidence that any required policy is in force and that the premiums have been paid.

All payments received from insurers relating to loss or damage to the Works must be held jointly by the Parties and used for the repair of the loss or damage or as compensation for loss or damage that is not to be repaired.

14.3 Failure to Insure

If the Contractor fails to effect or keep in force any of the insurances referred to in the previous Sub-Clauses, or fails to provide satisfactory evidence, policies or receipts, the Purchaser may, without prejudice to any other right or remedy, effect insurance for the cover relevant to such default and pay the premiums due and recover the same as a deduction from any other monies due to the Contractor.

15. RESOLUTION OF DISPUTES

15.1 Dispute Resolution Procedure

Unless settled amicably by the Parties' Representatives, any dispute or difference which arises between the Contractor and the Purchaser out of or in connection with the Contract, including any valuation or other decision of the Purchaser ("**Dispute**"), the Dispute must be referred, if requested by either Party, to the Senior Representatives of the Parties set out in the Schedule of Details, or any replacement notified by a Party to the other Party in writing.

If the Senior Representatives of the Parties are unable to resolve a Dispute referred to them within 28 days, either Party may invite the other Party to conciliate the Dispute in

accordance with the provisions of Sub-Clause 15.2. Otherwise the Dispute must be referred, if requested by either Party, directly to arbitration in accordance with the provisions of Sub-Clause 15.3.

15.2 Conciliation

a) In accordance with Sub-Clause 15.1, either Party may invite the other Party to conciliate a Dispute under the UNCITRAL Permanent Court of Arbitration Optional Conciliation Rules, 1996 (the "Conciliation Rules") provided that;
   i) the language of the conciliation must be in English;
   ii) one conciliator must be appointed and agreed by the Parties; or
   iii) if the Parties are unable to agree on the appointment of a conciliator within 14 days after the matter has been referred to conciliation, the conciliator will be appointed by the Secretary-General of the Permanent Court of Arbitration in accordance with the Conciliation Rules.

If the Parties do not reach agreement under the Conciliation Rules, the Dispute shall be referred, if requested by either Party, to arbitration in accordance with Sub-Clause 15.3.

15.3 Arbitration

If the Parties are unable to resolve the Dispute in accordance with Sub-Clause 15.1 or 15.2, the Dispute must, if requested by either Party, be referred to and finally resolved by arbitration in accordance with the UNCITRAL Arbitration Rules ("Arbitration Rules") then in effect, provided that:

a) the place of Arbitration is DELHI;
b) the language of the arbitration must be English;
c) the decisions of the arbitral tribunal must be based on general principles of Indian law in vogue. The arbitral tribunal must not award punitive damages. In addition, the arbitral tribunal must not award interest in excess of the India Inter-Bank Offered Rate then prevailing, and any such interest must be simple interest only.

The Parties will be bound by any arbitration award rendered as a result of such arbitration as the final adjudication of any such dispute, controversy, or claim.

The arbitral proceedings and any information and documents relating to these proceedings must be regarded as confidential.

15.4 Dispute resolution not to delay execution of the Works

Despite any activation of the dispute resolution procedures under Sub-Clause 15.1, the Contractor must continue to execute the Works and its other obligations under or in connection with the Contract.

15.5 Survival

This Clause 15 survives the completion, expiry or termination of the Contract.

16. PRIVILEGES AND IMMUNITIES

Nothing in or relating to the Contract is deemed a waiver, express or implied, of any of the privileges and immunities whatsoever.

PARTICULAR CONDITIONS

Additional Clauses

The General Conditions are amended by the inclusion of the following additional conditions:

If nothing is stated, then no additional conditions apply.

Clause	Additional General Condition

Schedules

SCHEDULE 1 - SCHEDULE OF DETAILS

Commencement Date (Sub-Clause 1.1)	Date.....
Contract Price (Sub-Clause 1.1)	[***If this is a lump sum contract insert the following: "The lump sum amount of [insert the amount in words and figures]"*** See the Schedule of Contract Price & Payment for a breakdown of the Contract Price
Contractor's Representative (Sub-Clause 1.1)	[***name, position title and contact details to be inserted***]
Defects Liability Period (Comprehensive Warranty) (Sub-Clause 1.1)	**24 months from the date of <u>Taking Over Certificate</u>**
Employer's Representative (Sub-Clause 1.1)	[***insert name, position title and contact details***]
Project (Sub-Clause 1.1)	
Substantial Completion (Sub-Clause 1.1)	No additional grounds.
Time for Completion (Sub-Clause 1.1)	
Address for Service of Notices and Communications (Sub-Clause 1.5)	**Employer** **Attention: Sanjay Rastogi** **Strategic Alliance Management Services Pvt. Ltd.** **B01-03 Vardhaman Diamond Plaza, Community Centre, D.B. Gupta Road, Paharganj, New Delhi 110055** **Facsimile :: +91-11-26312514** **Contractor :** Attention: [***to be inserted***] Position title: [***to be inserted***] Address: [***to be inserted***] Facsimile Number: [***to be inserted***] Email Address: [***to be inserted***]

Time(s) for access to and possession of site (Sub-Clause 2.1)	**Date.....**
Amount of Bank Guarantee for Performance (Sub-Clause 4.4)	The amount of the Bank Guarantee for performance to be provided under Sub-Clause 4.4 is the amount equal to **10%** of the Contract Price. The initial validity of the performance security shall be at least more than two months of warranty period.
Additional Employer's Risks (Sub-Clause 6.1)	If Site is not ready.
Time for Programme Submission (Sub-Clause 7.2)	Within14 days from the Commencement Date
Delay Damages for failure to complete the Works within the Times for Completion (Sub-Clause 7.4)	**Whole of the Works** 0.05% of the total contract amount per day subject to a maximum of 10% of the contract value.
Cumulative Amount of Delay Damages (Sub-Clause 7.4)	10%
Percentage of Plant & Materials (Sub-Clause 11.2)	Nil
Percentage deduction for Retention (Sub-Clause 11.4)	Nil
Currencies of payment (Sub-Clause 11.8)	Payments will be made in INR only.
Insurance Details (Sub-Clause 14.2)	[***insert insurance requirements and amounts***]
Senior Representatives (Sub-Clause 15.1)	**Employer:** Sanjay Rastogi, Director Strategic Alliance Management Services Pvt. Ltd. B01-03 Vardhaman Diamond Plaza, Community Centre, D.B. Gupta Road, Paharganj, New Delhi 110055 **Contractor:** [***insert name, position title and contact details***]
Arbitration (Sub-Clause 15.3)	The place of the hearing shall be Delhi

SCHEDULE 2- SCHEDULE OF WORKS

LIST OF WORKS (SITE DETAILS) & SCHEDULING

As per Sub sections A, B and C of SECTION IV of ITB

SCOPE OF WORKS, TECHNICAL SPECIFICATIONS AND DRAWINGS

As per Sub sections D of SECTION IV of ITB

SCHEDULE 3 - SCHEDULE OF SITE

As per Sub Sections A and B of SECTION IV of ITB

SCHEDULE 4 - SCHEDULE OF CONTRACT PRICE

For example:

1. Contract Price

   [If this is a lump sum contract, insert the lump sum amount and include the clearest breakdown of the Contract Price. This may be in tabular form.]

2. Bill of Quantities

SCHEDULE 5 - SCHEDULE OF PAYMENT

Applications for Advance and Interim Payments

Sl. No.	Suggested milestones for TB Containment Lab establishment	Project activity in brief	Payment Slab	Documents to be submitted for processing the payment
1	Signing of Contract and submission of Performance of Security	None	10%	1. Signed copy of Contract 2. Bank Guarantee towards Performance Security for an amount equivalent to 10% of total Contract Price valid till two months beyond the warranty period; and 3. Bank Guarantee towards Advance Payment for an amount equivalent to 10% of total Contract Price valid till date of handing over of completed works.
2	Approval of Inception Report by FIND along-with related document & all working drawings	**Contractor's Introduction visit to site with FIND team**: 1) Contractor will give detail work plan along with timelines for the project 3) Any support required from Site (Approvals/road permits). 3) The requirement from Site (electrical requirement, water lines, drainage line/any other) 6) Checklist to be used for Monitoring of Project	15%	Approved copy of Inception Report & working drawings
3	Completion of Electrical Cabling, communication network, Plumbing, Minor civil works and confirmation from FIND's Technical Representative(s)	**Electrical, plumbing and minor civil works:** Contractor will provide report on completion of electrical, plumbing and minor civil works along with photographs of site as an evidence of completion of electrical cabling, communication network, plumbing, minor civil works etc.	15%	Report from Agency along with photographs & Confirmation visit report from FIND Technical team
4	Completion of Ventilation Unit (HVAC) ducting, Filters, Air conditioning Unit and AHU installation, Transducers and control systems, dampers, AHU Shed	**HVAC Ducting & commissioning:** Visit by FIND's Technical Representative(s) to ensure all the activities as per checklist & Specification in coordination with Lab's representative(s). If anything pending during that visit, Contractor will submit photographs against that pending work later.	25%	Site Visit Report (Quality Checklist) along with photographs of site and confirmation from FIND's Technical Representative(s)

Sl. No.	Suggested milestones for TB Containment Lab establishment	Project activity in brief	Payment Slab	Documents to be submitted for processing the payment
5	Completion of Interiors, Modular Monolithic Panelling, Pass box, Doors, Glass windows, Coving(Wall and Ceiling), , Electrical fixtures and outlets, Fire Safety, Flooring, Epoxy, Coving(Floor), Monolithic Finishing (Silicon sealing), Furniture, Connectivity, monitoring and access control devices. Split AC Installation, BSC Placement and ducting, Emergency preparedness ANDPerformance testing of HVAC, Final commissioning and validation, labelling, Training, Laboratory documents submission and handover of TB Containment Lab	**Interior, BSC InstallationMidterm Assessment and Performance testing of HVAC (Dry Run)**:Visit by FIND's Technical Representative(s) to ensure all the activities as per checklist & Specification in coordination with Lab's Representative and performance testing of HVAC and also confirm completion of previous pending activity.Upon handover of completed Works, a Project Taking Over Certificate shall be issued by Lab in-charge and endorsed by FIND's Technical Representative	25%	Visit Report (Signed checklist & Quality Checklist) along with photographs of site and confirmation from FIND's Technical Representative(s) & **'Taking-over Certificate' issued by Lab in-Charge of the respective site.**
6	After two months from the final completion of Works of the laboratories, provided no complaints on operation of labs are received or rectified.	**Validation & Handover:** Visit by FIND's Technical Representative(s) to ensure all the activities as per checklist & Specification in coordination with Lab's Representative .If anything pending during that visit, Agency will submit photographs against that pending work later. FIND's Technical Representative(s) shall also confirm completion of previous pending activity	10%	Copy of **'Final Work Completion Certificate' issued by Lab in-Charge of the respective site.**
	Total		100%	

Note-

i. Above Payment Schedule covers completion of Works as per broad milestones given above for each Schedule.

SCHEDULE 6 - SCHEDULE OF SECURITY

BANK GUARANTEE FOR PERFORMANCE
[*On the letterhead of the Bank*]

Date: [***insert***]

To:

Director
Strategic Alliance Management Services Pvt. Ltd.
B01-03 Vardhaman Diamond Plaza, Community Centre, D.B. Gupta Road, Paharganj, New Delhi 110055

Dear [***insert***]

[*insert works title*] Construction Contract - Bank Guarantee for Performance

You entered into a contract dated [***insert date***] with [***insert***] ("**Contractor**") titled [***insert contract title***] Construction Contract for the [***insert name of the project***] for certain works and services ("**Works**") to be undertaken by the Contractor ("**Contract**").

We, [***insert Bank***], irrevocably and unconditionally undertake with you that whenever you give written notice to us stating that in your sole and absolute judgment the Contractor has failed to observe or perform any of the terms, conditions or provisions of the Contract on its part to be observed or performed, we will, notwithstanding any objection which may be made by the Contractor and without any right of set-off or counterclaim, immediately pay to you or as you may direct such an amount as you may in such notice require not exceeding the sum equivalent to ***10*** % of the Accepted Contract Amount ("**Guaranteed Sum**").

This Bank Guarantee for Performance ("**Guarantee**") is valid and will continue to be valid from the date of this letter for the Guaranteed Sum till [***insert date***]. This Guarantee will automatically become null and void by the end of this validity period.

Any payment by us in accordance with this Guarantee must be in INR or immediately available and freely transferable ***currency*** free and clear of and without any deduction for or on account of any present or future taxes, levies, imposts, duties, charges, fees, set off, counterclaims, deductions or withholdings of any nature whatsoever and by whomever imposed.

Our obligations under this Guarantee constitute direct primary, irrevocable and unconditional obligations, do not require any previous notice to or claim against the Contractor and will not be discharged or otherwise prejudiced or adversely affected by any:

- time, lenience or tolerance which you may grant to the Contractor;
- amendment, modification or extension which may be made to the Contract or the Works executed under the Contract;
- intermediate payment or other fulfilment made by us;
- change in the constitution or organisation of the Contractor; or
- other matter or thing which in the absence of this provision would or might have that effect, except a discharge or amendment expressly made or agreed to by you in writing.

This Guarantee may not be assigned by you to any person, firm or company other than an Affiliate, without our prior written consent, which must not be unreasonably withheld. You must notify us in writing of any assignment, after which we must make any payment claimed under this Guarantee to the person, firm or company specified in the notice which will constitute a full and valid release by us in relation to that payment.

Any notice required by this Guarantee is deemed to be given when delivered (in the case of personal delivery) or forty-eight (48) hours after being despatched by prepaid registered post or recorded delivery (in the case of letter) or as otherwise advised by and between the parties.

We agree that part of the Contract may be amended, renewed, extended, modified, compromised, released or discharged by mutual agreement between you and the Contractor, and this security may be exchanged or surrendered without in any way impairing or affecting our abilities under this Guarantee without notice to us and without the necessity of any additional endorsement, consent or guarantee by us, provided, however, that the Guaranteed Sum does not increase or decrease.

No action, event or condition which by any applicable law may operate to free us from liability under this Guarantee will have any effect. We waive any right we may have to apply such law so that in all respects our liability under this Guarantee will be irrevocable and, except as stated in this Guarantee, unconditional in all respects.

Capitalised words and phrases used within this Guarantee have the same meanings as are given to them in the Contract.

This Guarantee is governed by the Uniform Rules for Demand Guarantees, ICC Publication No. 758, provided that the supporting statement under Article 15 (a), and Articles 34 and 35 are excluded. Any disputes arising out or in connection with this Guarantee, or the breach, termination, or invalidity thereof will be referred to and finally resolved by arbitration in accordance with the UNCITRAL Arbitration Rules then in effect, the language of the proceedings being English.

Nothing in or relating to this Guarantee shall be deemed a waiver, express or implied, of any of the privileges and immunities whatsoever.

IN WITNESS of which the [***insert Bank***] has duly executed this Guarantee on the date stated above.

SIGNED by [***insert***]	)	
as attorney for [***insert***]	)	
under power of attorney dated	)	
[***insert***]	)	
in the presence of	)	
	)	
…….	)	
Signature of witness	)	
	)	
…….	)	……...
Name of witness (block letters)	)	By executing this agreement the
…….	)	attorney states that the attorney has
Address of witness	)	received no notice of revocation of the
…….	)	power of attorney
Occupation of witness		

Address for notices
[***insert address***]

SCHEDULE-7
BANK GUARANTEE FOR ADVANCE PAYMENT
[***On the letterhead of the Bank***]

Date: [***insert***]

To:

Director
Strategic Alliance Management Services Pvt. Ltd.
B01-03 Vardhaman Diamond Plaza, Community Centre, D.B. Gupta Road, Paharganj, New Delhi 110055

Dear [***insert***]

[*insert works title*] Construction Contract - Bank Guarantee for Advance Payment

You entered into a contract dated [***insert date***] with [***insert***] ("**Contractor**") titled [***insert contract title***] Construction Contract for the [***insert name of the project***] for certain works and services ("**Works**") to be undertaken by the Contractor ("**Contract**").

We, [***insert Bank***], irrevocably and unconditionally undertake with you that whenever you give written notice to us stating that in your sole and absolute judgment the Contractor has failed to observe or perform any of the terms, conditions or provisions of the Contract on its part to be observed or performed, we will, notwithstanding any objection which may be made by the Contractor and without any right of set-off or counterclaim, immediately pay to you or as you may direct such an amount as you may in such notice require not exceeding the sum equivalent to ***10*** % of the Accepted Contract Amount ("**Guaranteed Sum**").

This Bank Guarantee for Performance ("**Guarantee**") is valid and will continue to be valid from the date of this letter for the Guaranteed Sum till [***insert date***]. This Guarantee will automatically become null and void by the end of this validity period.

Any payment by us in accordance with this Guarantee must be in INR or immediately available and freely transferable ***currency*** free and clear of and without any deduction for or on account of any present or future taxes, levies, imposts, duties, charges, fees, set off, counterclaims, deductions or withholdings of any nature whatsoever and by whomever imposed.

Our obligations under this Guarantee constitute direct primary, irrevocable and unconditional obligations, do not require any previous notice to or claim against the Contractor and will not be discharged or otherwise prejudiced or adversely affected by any:

- time, lenience or tolerance which you may grant to the Contractor;
- amendment, modification or extension which may be made to the Contract or the Works executed under the Contract;
- intermediate payment or other fulfilment made by us;
- change in the constitution or organisation of the Contractor; or
- other matter or thing which in the absence of this provision would or might have that effect, except a discharge or amendment expressly made or agreed to by you in writing.

This Guarantee may not be assigned by you to any person, firm or company other than an Affiliate, without our prior written consent, which must not be unreasonably withheld. You must notify us in writing of any assignment, after which we must make any payment claimed under this Guarantee to the person, firm or company specified in the notice which will constitute a full and valid release by us in relation to that payment.

Any notice required by this Guarantee is deemed to be given when delivered (in the case of personal delivery) or forty-eight (48) hours after being despatched by prepaid registered post or recorded delivery (in the case of letter) or as otherwise advised by and between the parties.

We agree that part of the Contract may be amended, renewed, extended, modified, compromised, released or discharged by mutual agreement between you and the Contractor, and this security may be exchanged or surrendered without in any way impairing or affecting our abilities under this Guarantee without notice to us and without the necessity of any additional endorsement, consent or guarantee by us, provided, however, that the Guaranteed Sum does not increase or decrease.

No action, event or condition which by any applicable law may operate to free us from liability under this Guarantee will have any effect. We waive any right we may have to apply such law so that in all respects our liability under this Guarantee will be irrevocable and, except as stated in this Guarantee, unconditional in all respects.

Capitalised words and phrases used within this Guarantee have the same meanings as are given to them in the Contract.

This Guarantee is governed by the Uniform Rules for Demand Guarantees, ICC Publication No. 758, provided that the supporting statement under Article 15 (a), and Articles 34 and 35 are excluded. Any disputes arising out or in connection with this Guarantee, or the breach, termination, or invalidity thereof will be referred to and finally resolved by arbitration in accordance with the UNCITRAL Arbitration Rules then in effect, the language of the proceedings being English.

Nothing in or relating to this Guarantee shall be deemed a waiver, express or implied, of any of the privileges and immunities whatsoever.

IN WITNESS of which the [***insert Bank***] has duly executed this Guarantee on the date stated above.

SIGNED by [***insert***]	)	
as attorney for [***insert***]	)	
under power of attorney dated	)	
[***insert***]	)	
in the presence of	)	
	)	
…….	)	
Signature of witness	)	
	)	
…….	)	……...
Name of witness (block letters)	)	By executing this agreement the
…….	)	attorney states that the attorney has
Address of witness	)	received no notice of revocation of the
…….	)	power of attorney
Occupation of witness		

Address for notices
[***insert address***]

SCHEDULE 8 - SCHEDULE OF PROGRAMME

(A) Approved Preliminary Programme

(B) Milestone Dates

(C) Contract Programme Requirements

(A) **Approved Preliminary Programme**

The Approved Preliminary Programme is attached to this Schedule and set out immediately after this page.

(B) **Milestone Dates**

The Contractor must complete the following Milestones by the corresponding Milestone

Dates:

Sl. No.	Milestone	Milestone Date
1	(insert a detailed description of the Milestone) (for example: The supply, construction, commissioning, testing and completion of Road Section XX)	(insert date)
2	(insert a detailed description of the Milestone)	(insert date)
3	(insert a detailed description of the Milestone)	(insert date)
4	(insert a detailed description of the Milestone)	(insert date)
5	(insert a detailed description of the Milestone)	(insert date)

If no Milestones are listed above, then no Milestones apply and the Contractor must still complete the whole of the Works by the Time for Completion.

(C). Contract Programme Requirements [*this section is to set out the programme requirements consistent with the general conditions. An example is provided below - amend as required:*]

Within 21 days after the Date of the Contract, the Contractor must submit to the Employer's Representative a draft Contract Programme incorporating all timing requirements of the Contract, in accordance with Sub-Clause 8.3 of the General Conditions. Upon approval and certification by the Employer's Representative, the draft Contract Programme, or resubmission thereof, will become the Contract Programme.

The draft Contract Programme must be in such form and detail as the Employer's Representative requires and shall contain as a minimum:

1. the order in which the Contractor proposes to carry out the Works;
2. the time limits within which submission of any Contractor's Documents are required under the Contract; and

The Contract Programme must be prepared in sufficient detail to ensure the adequate planning, execution and monitoring of the Works. The networked activities must be detailed enough to provide a meaningful measurement tool for progress of works. For this purpose, with the exception of approval cycles and the procurement of material, no activity can have a duration of more than 28 days.

The Contract Programme shall be resource loaded and include material, plant and labour. The labour resource assignment shall be further broken down to clearly identify types (trade and/or discipline) and number of resources allocated to an activity.

The Contract Programme must include a detailed CPM logic linked network with activity durations and resource allocations. Negative lags and/or SF (start – finish) relationships are not to be used in developing the Contract Programme.

The Contract Programme will be prepared in electronic format using a recognised computer programme or as otherwise directed by the Employer's Representative.

The Contract Programme will be coded as such to identify the work packages within the scope of work and each ID will be in a format approved by the Employer's Representative. Additionally, the Contract Programme will also identify the life-cycle phases of the work to be carried out i.e. Design, Procurement, Construction, Commissioning & Handover.

The Contract Programme must be accompanied by and/or detail:

1. a programme narrative that describes the inclusions and assumptions made in preparing the Contract Programme;
2. a general description of the arrangements and methods which the Contractor proposes to adopt for carrying out the Works;
3. the critical path for the Works and a complete critical path analysis for the execution of the Works which must show clearly the links between activities and the float times available within the Contract Programme and the earliest start/earliest finish and latest start/latest finish times for each and every activity;
4. Details, and durations on Site, of the resources proposed to achieve the Contract Programme;
5. A manpower (resource) histogram detailing cumulative and monthly volumes by trade for the duration of the Works;
6. A detailed cash flow estimate, in quarterly periods, of all payments to which the Contractor may be entitled under the Contract;
7. An overall planned performance monetary s-curve based upon the approved

Contract Programme; and

8. A schedule of all submittals and material procurement activities, including time for submittals, re-submittals and reviews and time for any fabrication and delivery of manufactured products and samples. The interdependence of design procurement and construction activities must be included in this schedule.

SUBMISSIONS

All programme submissions by the Contractor are to include:

1. 3 coloured hard copies, plus
2. 1 full copy in native electronic format on CD.

CALENDARS

All programmes shall be developed using appropriate calendars that reflect the intended method of working, public holidays, etc. The standard calendars to be used are:

1. Calendar 1 – Eight (8) hour day, Five (5) day work week, Saturday and Sunday non-working days and include public holidays. The start day for the calendar is Sunday. This calendar should generally be applied to all non-construction activities related to design, procurement, government and/or other approvals, etc.
2. Calendar 2 – Ten (10) hour day, Six (6) day work week, Sunday non-working day and include public holidays. The start day for the calendar is Saturday. This calendar will be applied to a majority of construction activities.

All other non- standard calendars that need to be used to reflect the intended method of work are to be identified and highlighted in any programme submission and will be subject to the Employer's Representative's approval.

SCHEDULE 9 - SCHEDULE OF KEY PERSONNEL

The Contractor's Key Personnel for the Project are:

Sl. No.	Position Description	Name
1	[*insert position description*] [*for example: Safety Manager, Quality control Manager, Environmental Manager, Site Manager, Site Foreman.*]	[*insert name*]
2	[*insert position description*]	[*insert name*]
3	[*insert position description*]	[*insert name*]
4	[*insert position description*]	[*insert name*]
5	[*insert position description*]	[*insert name*]
6	[*insert position description*]	[*insert name*]
7	[*insert position description*]	[*insert name*]
8	[*insert position description*]	[*insert name*]
9	[*insert position description*]	[*insert name*]
10	[*insert position description*]	[*insert name*]

If there is a position stated in this Schedule but no person is named in that particular role, then the Contractor shall obtain the Employer's Representative's approval before appointing a person to fill that role.

Schedule 10 - SCHEDULE OF FORMS OF CERTIFICATES

(A) Form of Taking Over Certificate

(B) Form of Final Completion Certificate

(C) Form of Final Payment Certificate

(A) FORM OF TAKING-OVER CERTIFICATE

[ON LAB/SITE OFFICIAL LETTERHEAD]

[***insert Date***]

Contractor's Representative

[***Address***]

TAKING-OVER CERTIFICATE

Dear [***insert***]

[***insert works title***] **Construction Contract ("Contract")**

[***insert name of the development***]

We refer to Clause 8.2 of the Contract.

We advise you that on [***insert date***] the Works, or a Section or part of the Works as specified below, were completed to a stage ready to be Taken Over by the Purchaser in accordance with the Contract.

The works to which this Taking-Over Certificate relates are:	

By signing this Taking-Over Certificate, the Purchaser acknowledges and accepts that the Works, or the Section or part of the Works specified above, were completed, including the matters described in Clause 7 [*Time for Completion*], and Taken Over by the Purchaser in accordance with the Contract on [***insert date***].

This Taking-Over Certificate is executed by an official representative duly authorised to bind the Employer.

This Taking-Over Certificate does not relieve you from any of your unperformed or continuing warranties, obligations or liabilities under or in connection with the Contract or at law, including the remedying of all defects.

Yours sincerely

.....

[***insert***]

Employer's Representative

(B) FORM OF FINAL COMPLETION CERTIFICATE

[ON LAB/SITE OFFICIAL LETTERHEAD]

[***insert Date***]

Contractor's Representative

[***Address***]

FINAL COMPLETION CERTIFICATE

Dear [***insert***]

[***insert works title***] **Construction Contract ("Contract")**

[***insert name of the development***]

We refer to Sub-Clause 9.3 of the Contract.

We advise that on [***insert date***] you have completed your obligations under the Contract to a stage ready for the Final Completion Certificate to be issued by the Purchaser in accordance with the Contract.

By signing this Final Completion Certificate, the Purchaser acknowledges and accepts that your obligations under the Contract have been completed to a stage ready for the Final Completion Certificate to be issued by the Employer.

This Final Completion Certificate is executed by an official representative duly authorised to bind the Employer.

This Final Completion Certificate does not relieve you from any of its unperformed or continuing warranties, obligations or liabilities under or in connection with the Contract or at law.

Yours sincerely

.....

[***insert***]

Employer's Representative

(B) FORM OF FINAL PAYMENT CERTIFICATE

[ON SAMS LETTERHEAD]

[***insert Date***]

Contractor's Representative
[***Address***]

FINAL PAYMENT CERTIFICATE

Dear [***insert***]

insert works title] **Construction Contract ("Contract")**

[***insert name of the development***]

This Final Payment Certificate is issued pursuant to Clause 11.7 of the Contract.

Date of Final Statement applying for a Final Payment Certificate:

Total amount claimed in the Final Statement: INR

Value of all work done in accordance with Contract: INR

Any additional amount that the Contractor is entitled to under the Contract: INR

Amount to be deducted for all prior payments made by the Purchaser to the Contractor: INR

Total of the amount due for payment to [the Contractor by the Employer][the Purchaser by the Contractor]: INR

Yours sincerely

.....

[***insert***]

Employer's Representative

SCHEDULE 11 - SCHEDULE OF PERMITTED SUBCONTRACTORS

Subcontract Works	Permitted Subcontractors
[*insert description*]	[*insert*]
[*insert description*]	[*insert*]
[*insert description*]	[*insert*]
[*insert description*]	[*insert*]
[*insert description*]	[*insert*]
[*insert description*]	[*insert*]
[*insert description*]	[*insert*]
[*insert description*]	[*insert*]

For all other subcontract works not listed above, the Contractor must obtain the Employer's prior written consent before engaging a subcontractor to execute such parts of the Works.

If no subcontractors are listed above, then no Permitted Subcontractors apply and the Contractor must obtain the Employer's prior written consent before subcontracting any part of the Works.

SCHEDULE 12 - SCHEDULE OF NOMINATED SUBCONTRACTORS

Subcontract Works	Nominated Subcontractors
[*insert description*]	[*insert*]
[*insert description*]	[*insert*]
[*insert description*]	[*insert*]
[*insert description*]	[*insert*]
[*insert description*]	[*insert*]
[*insert description*]	[*insert*]
[*insert description*]	[*insert*]
[*insert description*]	[*insert*]

For all other subcontract works not listed above or in Schedule 15, the Contractor must obtain the Employer's prior written consent before engaging a subcontractor to execute such parts of the Works.

The Purchaser reserves the right to nominate additional subcontractors for certain works in accordance with the General Conditions.

Chapter VI– Other Standard Form

Bid Security in Form of Bank Guarantee

Whereas _____ (hereinafter called the "Bidder") has submitted its bid dated _____ for the services _____ (hereinafter called the "bid") against the Client's Bid Ref. No. _____ Know all persons by these presents that we _____ of _____ (Hereinafter called the "Bank") having our registered office at _____ are bound unto _____ (hereinafter called the "Employer) in the sum of _____ for which payment will and truly to be made to the said Client, the Bank binds itself, its successors and assigns by these presents.

Sealed with the Common Seal of the said Bank this _____ day of _____ 20____. The conditions of this obligation are:

(1) If the Bidder withdraws or amends, impairs or derogates from the bid in any respect within the period of validity of this bid.

(2) If the Bidder having been notified of the acceptance of his tender by the Client during the period of its validity:-

a) fails or refuses to furnish the performance security for the due performance of the contract.

or

b) fails or refuses to accept/execute the contract.

or

c) if it comes to notice that the information/documents furnished in its bid is incorrect, false, misleading or forged

We undertake to pay the Client up to the above amount upon receipt of its first written demand, without the Client having to substantiate its demand, provided that in its demand the Client will note that the amount claimed by it is due to it owing to the occurrence of one or both the two conditions, specifying the occurred condition(s).

This guarantee will remain in force for a period 180 days after due date of opening of technical bids and any demand in respect thereof should reach the Bank not later than the above date.

(Signature of the authorised officer of the Bank)

Name and designation of the officer

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