

**Foundation for Innovative New Diagnostics, India
(FIND India)**

Advertised Tender Enquiry (ATE)

Bid Document

For

Construction, Testing, Commissioning and Validation of TB Containment Laboratory & associated works in compliance with National Tuberculosis Elimination Programme (NTEP), Central TB Division (CTD), Govt of India (GoI) at IRL Dehradun.

**Bid Ref. No.: SAMS/FIND India/G/2023/0020/Lab
Upgradation/ATE/25/2023 dt. 17/07/2023**



(Procurement Agency)

STRATEGIC ALLIANCE

Management Services Pvt. Ltd.

B-18, Sector-6, NOIDA, G.B. Nagar, Uttar Pradesh - 201301

Email: procurement@samsconsult.com

Website: www.samsconsult.com

Letter of Technical Bid

The Bidder must prepare the Letter of Technical Bid on its letterhead clearly showing the Bidder's complete name and address.

Note: All italicized text is for use in preparing these forms and shall be deleted from the final products.

Date: **[insert date (as day, month and year) of Bid Submission]**

Bid Ref. No.: **[insert number of bidding process]**

To: **[insert complete name of Purchaser]**

- (a) We hereby confirm that all the information and statements made in this proposal are true and we accept that any misinterpretation or misrepresentation contained in this proposal may lead to our disqualification by the client.
- (b) Our bid shall be valid for a period fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (c) We, along with any of our subcontractors, suppliers, consultants, manufacturers, or service providers for any part of the contract, are not debarred by any Procuring Entity under the State / UT Government, the Central Government, Autonomous body, Authority by whatever name called under them, UNOPS, UNDP, SAMS or GFATM as on the date of opening of bids;
- (d) Our proposal is binding upon us and subject to any modifications resulting from the contract negotiation.
- (e) If our bid is accepted, we commit to obtaining the performance bank guarantee in accordance with the Bidding Documents;**
- (f) If our bid is accepted, we are agreeing for the payment Schedule as mentioned in the bid document.**
- (g) We hereby certify that we are neither associated nor has been associated directly or indirectly with the consultant or any other entity that has prepared the design, specifications and other documents for the subject matter of procurement or is being proposed as Project Manager for the contract
- (h) We hereby certify that we have fulfilled our obligations to pay all such taxes as payable to the Central Government or the State Government or any local authority;
- (i) We hereby certify that we are not insolvent, in receivership, bankrupt or being wound up, not have its affairs administered by a court or a judicial officer, not have its business activities suspended and must not be the subject of legal proceedings for any of the foregoing reasons;

- (j) We hereby certify that our directors and officers have not been convicted of any criminal offence related to their professional conduct or the making of false statements or misrepresentations as to their qualifications to enter into a procurement contract within a period of three years preceding the commencement of the procurement process, or not have been otherwise disqualified pursuant to debarment proceedings;
- (k) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed.

Name of the Bidder

Name of the person duly authorized to sign the Bid on behalf of the Bidder

Title of the person signing the Bid

Signature of the person named above

Date signed.

Checklist for bidders for submission in Proposal

(bidders need to submit below filled and signed checklist mandatorily and provide all the required documents along with the technical proposal)

Sl. No.	Documents to be submitted along with Technical Proposal	Page No.	Remarks (if any)/ Yes/ No
1	Documents required for Preliminary examination		
a	that the bid is signed, as per the requirements listed in the Bidding Documents;		
b	that the bid is signed by authorised signatory		
c	the bid is valid for the period, specified in the Bidding Documents;		
d	that the bid is accompanied by due Bid Security;		
e	Bidder agreed to terms and conditions of bid including delivery period		
f	that the bid is unconditional and that the bidder has agreed to give the required performance security; and		
g	whether any other conditions specified in the Bidding Documents are fulfilled.		
h	Consortium or Joint Venture are not permitted for the bid submission as per basic eligibility specified under ITB para 5 above.		
2	Documents required for Technical Evaluation		
a	To qualify, the bidder, should have achieved an average annual turnover of Rs. 45,50,000/- during last three financial years or latest (i.e., 2018-19, 2019-20 and 2020-21) along-with CA Certified certificate.		
b	Past experiences of developing labs including TB Containment labs		
c	Team (members and their qualifications) which will be building the liquid culture facility as per format given at Standard Forms-Tech-3.		
d	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 7 for the labs quoted. Any additional material proposed for construction by bidder may also be specified in the same table		
e	Submission of Technical compliance as per format given Tech form 6		
f	Submission Notarized Affidavit giving undertaking of not being debarred/blacklisted		
e	GANTT Chart informing timelines for executing the various stages of work		

Advertised Tender Enquiry (ATE)

Bid Document for

Construction, Testing, Commissioning and Validation of TB Containment Laboratory & associated works in compliance with National Tuberculosis Elimination Programme (NTEP), Central TB Division (CTD), Govt of India (GoI).

Key Bidding Information

Bid Ref No.	SAMS/FIND India/G/2023/0020/Lab Upgradation/ATE/25/2023
E-procurement Portal (FIND India)	https://procurementindia.finddx.org/Account/Login.aspx
Name of the Project	Procurement of Equipment, Goods, Works Services and Reagents for Foundation for Innovative New Diagnostics, India (FIND India) for The Global Fund Grant Project under the National Tuberculosis Elimination Program (NTEP), Govt. of India
Source of Funding	The Global Fund to Fight AIDS, Tuberculosis and Malaria (The Global Fund (TGF))
Date of Commencement of Download of Bidding Documents	17/07/2023 from 10:00 AM (Link https://www.samsconsult.com/FIND.aspx)
Last Date and Time for Receipt of Request for Clarifications	26/07/2023 till 04:00 PM (All such request must be submitted through mail to procurement@samsconsult.com)
Time and Date for online Pre-Bid Meeting	27/07/2023 at 11.00 AM The meeting shall be done on hybrid mode (offline/online). Prospective bidders may use the link https://join.skype.com/qzJB9KY7E7S9
Last Date & Time for Submission of Bids	08/08/2023 till 03.00 PM
Date & Time for Opening of Technical Bids	08/08/2023 till 03.30 PM The meeting shall be done on hybrid mode (offline/online). Bidders may use the link https://join.skype.com/vpe5fBjkRXTR
Place of Pre-Bid Meeting	Hybrid Mode (Offline and Online through Skype): https://join.skype.com/qzJB9KY7E7S9
Place of Pre-Bid Meeting (offline)	M/s Strategic Alliance Management Services Pvt. Ltd. B-18, Sector-6, Noida, G.B. Nagar Uttar Pradesh – 201301

Advertised Tender Enquiry (ATE)

for

Construction, Testing, Commissioning and Validation of TB Containment Laboratory & associated works in compliance with National Tuberculosis Elimination Programme (NTEP), Central TB Division (CTD), Govt of India (Gol).

IFB No.: SAMS/FIND India/G/2023/0020/Lab Upgradation/ATE/25/2023 Dated:17/07/2023

1. Strategic Alliance Management Services Pvt. Ltd. (SAMS) has been engaged by “Foundation for Innovative New Diagnostics” (FIND India), New Delhi, India (a not-for-profit Company created under Section 8 (Indian) Companies Act, 2013) for providing procurement consultancy services for equipment, goods, works and services for TB Laboratories established across India under National Tuberculosis Elimination Program(NTEP), Ministry of Health and Family Welfare, Govt. of India. FIND India has plans to upgrade **IRL Dehradun** under NTEP Programme.
2. **SAMS hereby invites e-bids (through E-procurement system of FIND India) from eligible and qualified Bidders for the Renovation, Construction, Commissioning, Testing, and Validation of TB Containment Laboratory and associated works at IRL Dehradun as given in the Schedule of Requirement of the Bid Document.**
3. Bidding will be conducted through **E-procurement system of FIND India** 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. Bidders are required to submit Bid Security as per the format provided in the Bid Document. Certain class of Bidders are exempted from submission of Bid Security. Details are given in Bid Document.
5. The Bid Document can be freely downloaded from the website www.samsconsult.com and E-procurement system of FIND India starting from **10.00 AM on 17/07/2023**. Bidders shall be solely responsible for checking the above website for any addendum/amendment issued subsequent to publication of this IFB and take the same into consideration while preparing and submitting their bids.
6. Bidders’ representatives are invited to attend an offline/in person (physical) **pre-bid meeting at 11.00 AM on 27/07/2023** 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 through skype link <https://join.skype.com/qzJB9KY7E7S9> at the scheduled time and date of pre-bid meeting. Bidders who are unable to attend the pre-bid meeting (online or offline) can send their written requests for clarification, if any up to 04.00 PM till 26/07/2023 at email procurement@samsconsult.com.
7. **Bids must be submitted online on or before 03:00 PM on 08/08/2023 by Bidders**, registered as Vendor on the e-Procurement System. All documents required towards submission of bids must be uploaded online.
8. **The Technical Bids will be opened on the same day at 03.30 PM (<https://join.skype.com/vpe5fBjkRXTR>) on the e-Procurement System** and the name of bidders who have submitted their bids upto scheduled date and time shall be made.

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) India, New Delhi (hereinafter referred as “Purchaser”) has issued this Bid Documents for selection of Contactor(s) to **Construction, Testing, Commissioning and Validation of TB Containment Laboratory & associated works at IRL Dehradun along with two years of comprehensive warranty.**
- 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 bid 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 (TGF) grant through FIND India.

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 Purchaser, 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). **Consortium or Joint Venture are not permitted.**

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 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.

The Bid Document can be freely downloaded from the website www.samsconsult.com starting from **10.00 AM on 17/07/2023**. Bidders shall be solely responsible for checking the above website for any addendum/amendment issued subsequent to publication of this IFB and take the same into consideration while preparing and submitting their bids.

B. BIDDING DOCUMENTS

7. CONTENT OF BIDDING DOCUMENTS

7.1 The Bid 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 Forms

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 SAMS website i.e. www.samsconsult.com & FIND India Procurement Software 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 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 website.

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 email at procurement@samsconsult.com up to 04.00 PM on 26/07/2023**. Copies of the Purchaser's response shall be promptly published at the Purchaser's website, 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 SAMS website i.e. www.samsconsult.com & FIND India Procurement Software. 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 in the office of the Purchaser at **11.00 AM on 27/07/2023 and through skype link: <https://join.skype.com/qzJB9KY7E7S9>**.

10.2 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 bidder can submit the bid online through the **E-procurement system of FIND India** by using Two Bid System i.e. **“Technical Bid”** and **“Financial Bid”**. The Bid shall comprise the following:

A) **TECHNICAL BID**

- i) Bid Security furnished in accordance with ITB Para 17;
- ii) Documents in support of qualification criteria as stated in ITB Para 27.A.
- iii) 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: Proposed Project Team and Organizational Structure**
 - (4) **Form TECH-4: Proposed Subcontractors and Suppliers**
 - (5) **Form TECH-5: Proposed Methodology to Execute the Works/GANTT Chart**
 - (6) **Form TECH-6: Technical Compliance sheet**
 - (7) **Form TECH-7: Proposed specifications and make/ manufacturer for item/material which bidder plans to use for the work**
- i. Power of Attorney in favor of signatory of Bid.
- ii. Certificate of Incorporation/ Registration of the bidder.
- iii. Supporting documents showing qualification of the Bidders for the required works as per ITB para 27 A (Assessment of Qualification)

B) **PRICE BID**

Bidder should submit Price Bid 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: Priced Bill of Quantity (item wise)**
- (4) **Form FIN-4 Cost of Annual Maintenance Services (AMC)**

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 as specified in the Bid Document. The format of the Price Bid is included in Section III.

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 at site.

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. Bidder should include all prices for any unexpected expenditure that may be foreseen in the BID price itself. The price quoted by the bidder should include expenses towards any exigency (external or internal) that may arise during execution of the contract. No payment, other than the quoted price shall be made to the selected bidder.

15. ALTERNATIVE BIDS

15.1 Alternative bids shall not be accepted. The bidder should not submit more than one bid. If bidder submitted more than one bid will be considered as ineligible.

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

16.1 The bidder must submit Bid Form duly signed by authorized 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. BID SECURITY

17.1 Bidders shall furnish as part of their bid, a Bid Security/ Earnest Money Deposit (EMD) as per table given below, in the form of FDR/ BG/ DD in the favour of Strategic Alliance Management Services Pvt. Ltd., payable at Noida. EMD can also be deposited online through RTGS as per details given below:

Name of Bank : Kotak Mahindra Bank
Account Name: Strategic Alliance Management Services Pvt Ltd.
Account No. 9447736992
IFSC : KKBK0000181
Branch: Sector 18 Noida

Sl. No.	Site Name	EMD (In Rs.)
1	IRL Dehradun	1,40,000/-

17.2 For FDR/BG (pledged in the name of Strategic Alliance Management Services Pvt. Ltd., Noida) if opted for, originals should reach the SAMS office within 2 days of the submission deadline. Any delay by post or courier shall not be entertained.

17.3 The copy of EMD receipt (of any form) should be enclosed in the online submission.

17.4 Any bid not accompanied by Bid Security Amount as specified in ITB Para 17.1 above shall be rejected by the Purchaser as non-responsive.

17.5 No interest shall be payable by the Purchaser for the sum deposited as earnest money deposit.

17.6 The EMD of the unsuccessful bidders would be returned within one month of signing of the contract.

17.7 The EMD shall be forfeited by the Purchaser in the following events:

- (a) When the bidder withdraws or modifies its bid during the validity of bids as specified in the Letter of Bid; or
- (b) when the bidder, having been notified of the acceptance of its bid by the Purchaser during the period of bid validity, (i) fail or refuses to execute the Contract; or (ii) fail to furnish the Performance Security, if required in accordance with the Bid Documents.
- (c) If the bidder tries to influence the evaluation process.

17.8 The Micro and Small Enterprise (MSE) bidders, registered with MSME or those registered with NSIC are exempted from submission of bid security. In such case, bidder should submit copy of MSME or National small industries corporation (NSIC) registration and documents showing exemption from submission of bid security, in lieu of bid security.

18. BID VALIDITY

18.1 The bids shall remain valid for a period of 120 days after the due date of submission of bids. Any bid valid for a shorter period shall be treated as non-responsive 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 e-mail.

D. SUBMISSION AND OPENING OF BIDS

19. SUBMISSION OF BIDS

19.1 Bidders are requested to submit their bids online through FIND India e-Procurement system. FIND India has introduced an e-Procurement process for sourcing goods and services for its projects in India. As a part of this initiative, FIND India has created a Vendor Portal to provide a platform for various vendors to offer their services. A vendor can be a legally registered business entity or an individual. Broadly speaking, this portal provides the following facilities to the vendors:

- Register with FIND India for supplying goods or for providing services.
- Sign up in a secure manner and manage their access password.
- Create and manage profiles online.
- Receive online and email notifications for RFPs for various procurements.
- Submit electronic bids in response to RFPs issued by FIND India.

Bidders are requested to submit their proposals through FIND India E-procurement System only.

If bidder is not registered yet on FIND India E-procurement system, kindly go through the attached "USER MANUAL" pdf below the link, for the process of vendor registration which will provide the guidance for using this vendor portal and onward submission of the proposal.

Please find below the link for vendor registration

<https://procurementindia.finddx.org/Vendor/VendorRegistration.aspx>



FIND_UserManual_V
endorRegsitration.pdf

20. DEADLINE FOR SUBMISSION OF BIDS

20.1 Bids must be submitted online before **Bid i.e., 03.00 PM of 08/08/2023.**

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 A bidder may substitute or modify its bid before the deadline for online submission of bids.

21.2 No bid shall be withdrawn, substituted, or modified after the time and date fixed for submission of online bids.

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**. The name of Bidders shall appear to Bidders attending online bid opening.

22.2 The Technical Bid shall be opened at the first instance **at 03.30 PM on 08/08/2023**. During the Technical Bid opening, the Bid opening official(s) will read the salient features of the bids like Bid Security and any other special features of the bids, as deemed fit by the bid opening official(s).

- 22.3 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 and will also be uploaded on Purchaser's website.
- 22.4 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.
- 22.5 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 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.
- 22.6 The Financial Bids shall be opened online by the Purchaser in the presence of the representatives of those Bidders found qualified during technical evaluation stage. Financial bids shall be opened as per criteria mentioned below at para 22.7. These 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 based on 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 Bid Evaluation Committee constituted by the Purchaser shall conduct a preliminary scrutiny of the opened bids at the beginning to assess the prima-facie responsiveness and record its findings thereof particularly in respect of the following:
- (a) that the bid is signed, as per the requirements listed in the Bidding Documents;
 - (b) that the bid is signed by authorised signatory
 - (c) the bid is valid for the period, specified in the Bidding Documents;
 - (d) that the bid is accompanied by due Bid Security;
 - (e) Bidder agreed to terms and conditions of bid including delivery period
 - (f) that the bid is unconditional and that the bidder has agreed to give the required performance security; and
 - (g) whether any other conditions specified in the Bidding Documents are fulfilled.
 - (h) The Bidder is eligible to supply the goods required under this bid as per basic eligibility specified under ITB para 5 above.

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 Lab as per criteria given below:

- (a) Bidders may submit their responses as the per requirement specified below at Sl. No. (b)
- (b) To qualify, the bidder, should have achieved an average annual turnover during last three financial years or latest (i.e., 2018-19, 2019-20 and 2020-21) as per table below:

Brief Scope of Works at IRL Dehradun	Average Annual Turnover requirement over last three F.Y. or latest (i.e., 2018-19, 2019-20 and 2020-21) (Rs.)
Construction, Testing, Commissioning and Validation of TB Containment Laboratory & associated works in compliance with National Tuberculosis Elimination Programme (NTEP), Central TB Division (CTD), Govt of India (Gol).	
IRL Dehradun	45,50,000/-

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 or latest (i.e., 2018-19, 2019-20 and 2020-21).

- (c) Bidder should have experience of successfully executed **at least 1 (one) similar works*** during last 5 (five) years (as on date of opening of technical bids).

***Similar works shall mean successful Design, construction, testing, commissioning, and validation of Bio-Safety laboratory (BSL-2 plus /BSL-3/BSL-4Laboratories) /TB Containment laboratories/ Biomedical research facility/vaccine facility must include Internal construction works, electrical works, HVAC works, AccessControl 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 Purchaser will have the discretion to verify the successful and satisfactory work completion. In case performance is found unsatisfactory, the Purchaser shall have discretion to disqualify the bidder.

- (d) The bidder shall have followed a minimum qualified team of key personnel for the successful execution of the work.
- The bidder should have one Project Manager, with a minimum of 5-years *Similar experience who shall be responsible for the work at site.
 - The bidder shall have one (in-house or outsourced) design expertise for technical drawings who shall be responsible for the site.
 - The bidder should have at least one Site supervisor /Mechanical Electrical and Plumbing (MEP engineer). She/he shall have minimum 3- years' experience (if B. Tech/B. E- Electrical/Mechanical/Biomedical/Electronics/Civil) or 5-years' experience (if ITI/Diploma- Electrical/Mechanical/Biomedical/Electronics/ Civil)

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/ consultant of the bidder and shall be ready for deployment at site if contract is awarded to the bidder.

- (e) The bidder should submit a detailed work plan/GANTT Chart.
- (f) Bidder should not be debarred / blacklisted by MOH&FW, GOI, or any other Central Govt. Department or State Government or UNOPS/UNDP, any other UN organizations, or SAMS as on the date of opening of bid. The bidder should also not be debarred by the Global Fund. In support of this qualification requirement, bidder should submit Notarized Affidavit giving undertaking to the above effect.

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

Project Implementation Methodology including (under Form Tech-7)

- i. Past experiences of developing similar labs
- ii. Team (members and their qualifications) Standard Forms-Tech-3
- iii. 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 7 for the labs quoted. Any additional material proposed for construction by bidder may also be specified in the same table.

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

Note:

- 1. *The bidders who meet the qualification criteria specified at para (a) and (b) above, shall be considered for further evaluation of qualification as per para (c) to (e) and also for detailed 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.
- 27.2 The bids determined as technically disqualified / non-responsive shall not be considered for opening of financial bids.

C. FINANCIAL EVALUATION:

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

- (a) Construction, Testing, Commissioning and Validation of TB Containment Laboratory & associated works with two years of comprehensive warranty period or Defect Liability period on 'Turnkey Basis'
- (b) Additional Works as per Scope of Works required at site.

27.4 Financial evaluation shall be carried out only for technically qualified and lowest evaluated responsive bidder shall be considered for award of contract.

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 an evasive reply without clarifying the point at issue in clear terms, that bid will not be evaluated further.

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

29.1 The Purchaser, 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 bidders to make detailed presentation on implementation plan of project.

30. CONTACTING THE PURCHASER

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 Purchaser'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 Purchaser.

G. AWARD OF CONTRACT

31. PURCHASER'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, decided by the Purchaser.

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 scope of services to the extent of 25% 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 there in 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 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. B-18, Sector-6,
Noida, G.B. Nagar, Uttar Pradesh - 201301

Dear Sir,

Subject: Construction, Testing, Commissioning and Validation of TB Containment Laboratory & associated works in compliance with National Tuberculosis Elimination Programme (NTEP), Central TB Division (CTD), Govt of India (GoI)

Bid Ref. No. **SAMS/FIND India/G/2023/0020/Lab Upgradation/ATE/25/2023**

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

Sl. No.	Name of Laboratory
1	IRL Dehradun

2. We warrant that in preparing and submitting this bid, we have complied with, and are willing to be bound by, all of the requirements and provisions of the above-referenced Bid Document, including the terms and conditions of the Contract as set out in Bid Documents
3. Our bid shall remain valid for SAMS' acceptance until **120 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 India from all, and indemnify in respect of any damage, expense, loss or liability of any nature suffered or incurred by SAMS/ FIND India 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. We shall ensure compliance of The Global Fund's Code of Conduct for Suppliers (https://www.theglobalfund.org/media/3275/corporate_codeofconductforsuppliers_policy_en.pdf), as amended from time to time.
7. I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries. I certify that this bidder is not from such a country or, if from such a country, has been registered with the Competent Authority and will not sub-contract any work to a contractor from such countries unless such contractor is registered with the Competent Authority. I hereby certify that this bidder fulfills all requirements in this regard and is eligible to be considered.

8. Enclosed is a bid security amount as mentioned in the Bid Documents.

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. **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

3. Details of staff under permanent rolls of the Bidder

- a. technical
- b. skilled
- c. unskilled

4. **Financial data of the organization**

Annual Turnover of Last 3 Financial Years

F.Y. 2018-19 - Rs. _____

F.Y. 2019-20 - Rs. _____

F.Y. 2020-21 - 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

5. 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.		

- a. Please provide client list of the bidder as per above table
- b. Please attach self-attested copy of Work Order / MOU / Contract or any other document in support of above experience.

6. Contact details of persons who may be contacted for requests for clarification during bid evaluation:

-Name/Surname:

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

Signature and seal of the Bidder

TECHNICAL PROPOSAL- STANDARD FORMS

Form TECH-3: 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, Liquid culture facility, Electrical, Plumbing, civil works and interior development team.

IRL Dehradun

	Position Description	Name	Qualification	Years Exp
	[Project manager]	[Insert Name]		[Insert No.]
	[Design Expert]	[Insert Name]		[Insert No.]
	[Site supervisor]	[Insert Name]		[Insert No.]
	[others, if any]	[Insert Name]		[Insert No.]
	[others, if any]	[Insert Name]		[Insert No.]
			

TECHNICAL PROPOSAL-STANDARD FORMS

Form TECH-4: 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-5: Proposed Methodology to Execute the Works/GANTT Chart

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

I. PROPOSED METHODOLOGY

II. SCHEDULE OF EXECUTION OF WORKS

TECHNICAL PROPOSAL- STANDARD FORMS

Form TECH-6: 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)
	<p>Scope of Work</p> <p><i>The Scope of work involves ‘Construction, Testing, Commissioning and Validation of TB Containment Laboratory & associated works in compliance with National Tuberculosis Elimination Programme (NTEP), Central TB Division (CTD), Govt of India (Gol).</i></p>	
	<p>The scope of work shall include design, 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.),, 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</p>	
	<p>The scope of works shall also include:</p> <ol style="list-style-type: none"> a) Dismantling and removal of existing installed items of interiors, civil construction work & electrical systems and handed over to site. b) Uninstallation, packaging & shifting of equipment from the existing facility to the space identified by the site and reinstallation of shifted equipment inside the new constructed laboratory. c) Power required for the TB Containment Laboratory shall be tapped from the AHU panels (through its expansion and laying of required power cabling). 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. Extension of existing water supply lines up to the TB Containment Lab to meet its water supply requirements. 	
	<p>The following shall be provided to the Vendor by the institution/site:</p> <ol style="list-style-type: none"> 1. Three phase power supply with earthing and required capacity of 440V for A.H.U unit for TB containment lab at the AHU Panel 2. Alternative Backup- Diesel generator set of 120 -150 KVA capacity. 3. Water supply line and drainage nearby the site. 	
	<p>PRE-REQUISITES for the Site to comply</p>	

1	Power required for the TB Containment Laboratory shall be tapped from the existing feeder lines (through its expansion and laying of required power cabling) 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.	
2	Water supply to the TB Containment Laboratory shall be provided through the existing Water distribution network in campus	
3	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)	
<p>CRITICAL CONSIDERATIONS TO BE FOLLOWED IN DESIGN:</p> <p>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:</p>		
1	Restricted and controlled access shall be provided for entry into the laboratory.	
2	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.	
3	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.	
4	The door interlocks, exhaust blower of BSCs, shall be provided with online, uninterrupted power supply system with minimum 30 minutes power backup.	
5	Safety measures for fire and electricity shall be provided	
6	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	
<p>GENERAL CONSTRUCTION</p> <p>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:</p>		
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 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. <ul style="list-style-type: none"> Access control system with push button manual bypass switch for exits of the facility 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 has to flush with the side panels. Airtight 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 and 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	<p><u>Design of Supply air system:</u> 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. 5 spare fan belts shall also be provided which can be used for replacement in case of wear/tear.</p>	
e	<p><u>Volume Control Dampers:</u> 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.</p>	
f	<p>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.</p>	
g	<p><u>Filters:</u></p>	
	<ul style="list-style-type: none"> ○ 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. ○ The HEPA filter plenums (Containment Housing) shall be made in SS 304 (14 gauge) with airtight 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	<p><u>Ducting:</u> 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 aluminium foil nitrile rubber (19mm) or glass wool (50mm) thick. 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.</p>	
i	<p><u>Ducting design</u> 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.</p>	

vi	Exhaust System	
a	<p><u>Design of Exhaust Air System:</u> 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 programmed in such a way that the required negative pressure will be maintained irrespective of switching ON/OFF of the Biosafety cabinet and its exhaust system. 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. 5 spare fan belts shall also be provided which can be replaced by local engineer in case of wear/tear.</p>	
b	<p>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).</p>	
c	<p>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 aluminium foil nitrile rubber of thickness 13 mm or glass wool of thickness 25mm.</p>	
d	<p>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 airtight 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.</p>	
e	<p>Supply Air system to be electrically interlocked (fans, dampers, electrical) with exhaust air system, to prevent sustained positive pressurization.</p>	
vii	<p>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.</p>	

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 site 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 (<u>power matrix</u>) for the TB Containment laboratory should be calculated and provided by the lab.	
ii	Supply should be <u>three phase supply</u> with proper earthing and required <u>440 V capacity</u> to support the functioning of AHU Unit.	
iii	Earthing: Two separate dedicated earthing circuit to be carried out by the vendor for TB C&DST Lab and HVAC system. Earthing should be done as per standard for the heavy machinery equipment and the value of earthing should be less than 5 ohm and the voltage between E-N should be less than 1 V.	
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. The lighting of the total area should be at 400-450 Lux.	
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. Electrical Switches and Sockets shall be sealed type suitable for laboratory fumigation (IP55 or better).	
x	AHU Control panel: <ul style="list-style-type: none"> ○ 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. ○ Single-phase protector in the AHU control Panel ○ 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) 	
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 (4kg) 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:	
a	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.	
b	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.	
c	3 KVA UNINTERRUPTED POWER SUPPLY SYSTEM (UPS): A central online 3 KVA 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: Fire detection and alarm system (FDA System) and fire extinguishers of Type ABC (4kg) 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.	
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	<p><u>Doors:</u></p> <ul style="list-style-type: none"> 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 vacuumised 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. iv. <u>Covings:</u> 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 v. 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. vi. 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:	

a	Laboratory workstations (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.	
b	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)	
c	Coat hangers 8-10 individual hangers made of SS304, in group of 4-5 each, will be provided to hang gowns/ aprons in Ante Room and change room (in consultation with site i/c)	
d	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.	
e	Wash Basin (numbers as per the Lab design): 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.	
f	Laboratory Stools (five): Laboratory grade hydraulic SS 304 stools with back support, footrest, rotating type with castor wheels at the base, shall be provided by contractor.	
g	Trolleys: Two tier trolleys 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:	
a	Visual digital display of Room Pressure, Relative humidity, and temperature (clean room monitor) in the TB Containment Lab	
b	Differential pressure through Magnehelic gauges in Anteroom, Change Room (where available) and outside TB Containment Lab	
c	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	
d	CCTV footage from the various sections in the Microbiologist's room	
e	Hooter/alarm when the emergency exit door is opened as well as when fire detection system is activated in incidence of fire.	
9	Connectivity:	
a	LAN wiring for internet access inside the lab with sockets to be provided at strategic locations (near work benches) in TB Containment Room.	
b	A suitable EPABX System shall be provided for the laboratory. Telephone instrument (5 quantities)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	

a	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 relate to 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.	
b	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 with HEPA Filtration to the environment. 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	
c	CCTV Monitoring Devices: Camera to continuously monitor the activities inside and outside the TB Containment Lab by providing Central CCTV Monitor. 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: <ul style="list-style-type: none"> • 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 32-inch LED) located in Microbiologist room or as suggested by site i/c. 	
11	Civil works and Plumbing:	
a	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.	
b	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 campus if available. All drains shall be equipped with "p traps". Penetrations made in walls and floors must be properly sealed.	
c	Water connections for the emergency shower and eye wash and wash basins to be appropriate provided.	
d	Ensure that pipes and connections are leak proof to avoid flooding behind modular walls.	
12	Labelling to be done as per following details	
a	Biohazard label should be placed outside the laboratory.	
b	Labels for all switches (to be provided) including in the MCCB panels, LT Panel and AHU Control panel	

c	Labelling of the TB Containment Lab and Ante Room/ Change room including Emergency exist.	
d	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	
a	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.	
b	<p>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:</p> <ol style="list-style-type: none"> i. For Bio Safety Cabinet: <ul style="list-style-type: none"> o 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 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 <ul style="list-style-type: none"> o Pressure in each room/zone as per the design, differential pressure readings including across filters. o 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 o Smoke pattern test for directional airflow should be performed during validation including for Pass box. o Temperature shall be maintained at 22°C±2 and humidity level should be maintained at 60±10% o HEPA Filter (in BIBO) integrity test based on PAO test and manufacturer's certifications o Electrical current readings, in amperes on full load work, average running, and on starting, Testing of power cabling, earthing, AHU control panel, MCCB panel and LT panels o Containment room -the walls, floors, ceilings, penetrations, and other containment barrier features have adequate integrity o Operational performance testing for <ul style="list-style-type: none"> • 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, • Pass boxes • 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 	

c	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.	
d	The above validation tests shall be performed Annually during the warranty as well as maintenance period for TB Containment lab.	
	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 yearly basis during the maintenance as well as defects liability period for TB Containment lab. Maintenance Services: After the completion of defect liability and 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 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.	
	SCOPE OF SERVICES (For warranty services of TB containment laboratories)	
a	Annual preventive maintenance and validation of TB containment Lab needs to be performed during warranty period or defect liability Period, as per WHO/International standards.	
b	Report after each visit needs to be provided to lab as well as procurement agency /FIND team as per the activities performed including the traceability of the standards used at the time of validation.	
c	PM/Validation schedule should be in sync with previous PM and validation date of TB containment lab.	
d	During preventive maintenance visit, service provider should carry out initial inspection of TB containment Lab as per manufacturer's protocol and submit report for the services carried out.	
e	Agency should attend unlimited break down calls during warranty period or defect liability period and replace/repair the spare parts as per the need.	
f	Service Engineer should be designated for calls at each Lab	
15	Training of personnel: Institution personnel to be trained over 2 days for	
a	Operation of HVAC Plant and all other equipment and systems.	
b	Adjustments of settings for controls and protective devices	
c	Servicing and Preventive maintenance	
d	Emergency response training.	
16	Guidelines & Standards for reference:	
a	<i>Bio safety in Microbiological and Biomedical Laboratories, 5th edition, 2007 (CDC/NIH BMBSL).</i> 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,	
b	Canadian Tuberculosis Standards 6th Edition	
c	American Society of Heating, Refrigeration and Air-Conditioning Engineers, Inc. <i>Laboratory Design Guide – 2001</i>	
d	NIH Design Policy and Guidelines, 2008	
e	American National Standards Institute (ANSI)	
f	NIH BSL 3 Certification requirement, 2006	
g	WHO TB Containment Lab Biosafety Manual, 2012	

17	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 <ul style="list-style-type: none"> o Pass boxes o Entry exit protocols 	
18	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.	
a	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.	
b	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.	
c	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.	
	DOCUMENTS TO BE SUBMITTED BY THE BIDDER ALONG WITH THEIR BIDS FOR TECHNICAL QUALIFICATION AND EVALUATION	
	Project Implementation Methodology including	
	Past experiences of developing labs including TB Containment labs (with contact details)	
	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.)	
	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 (Annexure 2) given below for the labs quoted. Any additional material proposed for construction by bidder may also be specified in the same table.	
	GANTT Chart informing timelines for executing the various stages of work	

Compliance Sheet for Additional Work Requirement and Some Site-Specific Detail for TB Containment Lab Upgradation Work

Please refer to lab layouts for clarity on below requirements:

Name of Lab	Specific Work requirement
IRL Dehradun	<p><u>Proposed TB Containment Lab (Existing Autoclave and Washing Section) and Proposed Autoclave cum washing section (Existing Microbiologist room)</u></p> <ol style="list-style-type: none"> a. Removal of existing windows (3 nos.), approx. dimension: 5 feet (W) by 4 feet(H) and 1 no. window of 2 feet(W) by 4 feet(H) of washing section and area to be closed brick mortar work along with necessary civil work. b. Removal of 1 no. of window, approx. dimension: 5 feet (W) by 4 feet(H) and 1 no. window of 3 feet(W) by 4 feet(H) of Autoclave room and area to be closed brick mortar work along with necessary civil work. c. Permanent closure of existing ventilation window (04 nos.) with brick-mortar work in existing washing section. d. Permanent closure of existing ventilation window (02 nos.) with brick-mortar work in existing autoclave room. e. Permanent closure of existing door (01 No.) with brick-mortar work in existing autoclave room and removal of the debris in proper way. f. Demolition of existing wall between autoclave and washing section, approx. dimension of 12 feet (W) by 9 feet 8 inches (H) and removal of the debris in proper way. g. Demolition of existing microbiologist room with toilet, approx. dimension of 12 feet 6 inches (L) by 12 feet 6 inches (W) plus toilet area of 4 feet by 4 feet (LXW) and removal of the debris in proper way. h. Removal of existing door of autoclave section (01 no.), dimension: 3 feet(W) by 6 feet 5 inches (H) and permanent closure required with brick-mortar work. i. Removal of existing door of Microbiologist room (01 no.), dimension: 2 feet(W) by 6 feet 5 inches (H) and permanent closure required with brick-mortar work. j. Creation of space for door of dimension: 3 feet (W)by 7 feet(H)- 1no. for proposed autoclave and washing room. k. Creation of space for Pass box of dimension: 2 feet (W) by 2 feet(H) -2 nos. for proposed TB containment lab. l. Creation of space for Emergency door of dimension: 4 feet(W) by 7 feet(H)- 1no. for proposed TB liquid containment lab. m. Shifting of existing autoclaves with appropriate packaging to safe location identified by site from the existing autoclave section. n. Provision for plumbing (inlet and outlet) and electrical and installation of two units of autoclave in the proposed autoclave room. o. Removal of existing electrical switch-sockets, ceiling fan, tube lights, electrical wiring, cemented slab from the existing washing and autoclave section. p. Plumbing work need to be carried out by identify vendor by FIND. Only primary source will be provided by site. q. Aluminium glass partition door of 6 feet (W) by 7 feet (H) with restricted entry to be installed at the entrance of proposed TB containment lab (refer the proposed layout) <p><u>Proposed UPS, Voltage stabilizer and AHU Panel room (Existing Toilet for Staff)</u></p> <ol style="list-style-type: none"> a. Existing toilet of staff in ground floor to be demolished for UPS and AHU panel room and required civil work and electrical work for proposed UPS and AHU panel room to be carried out, racks for UPS with batteries installation b. Existing wooden door to be replaced with aluminium glass partition door (2 feet 6 inches(W) by 7 feet(H) to be installed for proposed UPS, Voltage stabilizer and AHU panel room

	<ul style="list-style-type: none"> c. Existing wooden door to be replaced with aluminium glass partition door (2 feet 6 inches(W) by 7 feet(H) to be installed for proposed autoclave room d. Supply and provision of aluminium partition above the ceiling height 8 feet to the true ceiling height of the proposed change/ante room with a provision of a sliding service way (3 feet(W) X 4 feet(H)- 1 no. for maintenance work.
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General Work Requirement for IRL Dehradun:

- Batteries of UPS should be provided with rack. UPS with batteries and proper arranged wiring (e.g.: wire tie to be used) to be installed and well-arranged/organized for giving aesthetic look
- Dedicated earthing to be done for TB Containment Lab
- Any Minor Civil, Electrical and Plumbing works identified during Lab upgradation other than additional works mentioned needs to be carried out by identified Agency

• For AHU Placement:

Space for AHU placement identified at the ground floor for the Proposed TB Containment Lab across area of 40 feet length and 14 feet width.

Form TECH-7: 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 as per table given below.** Any additional material proposed for construction by bidder may also be specified in the same table.

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S. N	Item description	Specifications with capacity (wherever applicable) and warranty offered as specified by Manufacturer	Proposed Makes / Manufactures
1	Thermal Insulation for ducting		
2	Ducting		
3	Diffusers with dampers /Grilles		
4	Airtight and Gastight Isolation Dampers		
5	VAV dampers, Leak proof and isolation dampers		
6	Fire damper		
7	Magnehelic Gauge		
8	HEPA Filter H14		
9	Supply Containment HEPA filter housing		
10	Exhaust BIBO Indigenous		
11	AHU and Ventilation units		
12	AHU Plenum Filters G4		
13	AHU Plenum Filters F7		
14	AHU Blower- Supply		
15	AHU Blower- Exhaust		
16	AHU Motor-Supply		
17	AHU Motor- Exhaust		
18	BSC ducting blower		
19	Condensing unit		
20	Compatible cooling coil		
21	Heating element		
22	HVAC Control valves		
23	Modular Material for Ceiling and Walls		
24	Modular Doors		
25	Epoxy Flooring Material		
26	Distribution Boards		

S. N	Item description	Specifications with capacity (wherever applicable) and warranty offered as specified by Manufacturer	Proposed Makes / Manufactures
27	LT Switchgear (ACB, MCCB, MCB,ELCB, RCCB, Contactors, SFUs)		
28	Fuse		
29	VFD		
30	Timers		
31	Protection relays		
32	Selector switches		
33	Change over switch		
34	Ammeters, Voltmeters,		
35	Indication lamps (LED Type)		
36	Push buttons		
37	PF meters		
38	Energy meter		
39	Electrical multi-function meters		
40	Load managers		
41	Current transformers (Cast Resin)		
42	Telephone tag box		
43	Industrial type metallic plug sockets		
44	Modular switches, socket outlets, LED ceiling lights		
45	PVC Conduits and accessories		
46	MS Structural' s		
47	Copper wires and light wiring		
48	XLPE insulated, armoured wire		
49	Aluminium conductor cables		
50	Control Junction Boxes		
51	Single phase preventor circuit		
52	Telephone, Co-axial wires & Cables		
53	Data Cables (CAT 5e, 6)		
54	Network Switches		
55	CCTV monitor & Cameras		
56	3 KVA UPS, 30 min backup		
57	Door Interlock and Access control System		

S. N	Item description	Specifications with capacity (wherever applicable) and warranty offered as specified by Manufacturer	Proposed Makes / Manufactures
58	Smoke Detectors & Addressable analogue main panel		
59	Fire extinguisher		
60	Pass box		
61	Differential Pressure Switch/ transmitter		
62	Temperature sensor & Display		
63	Humidity sensor & Display		
64	Pressure sensor/ transmitter & Display		
65	3-Channel Digital Monitor display for temperature, pressure and Humidity with Audio-visual alarm system, wiring & accessories		
66	Laboratory stool		
67	Trolley		
68	Workbench		
69	Garment cabinet		
70	Coat Hangers		
71	Wash basin		
72	Eye wash and emergency shower		
73	Any other items		
74	Any other items		

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, if required.

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

(TO BE FILLED BY BIDDERS FOR QUOTING THEIR
PRICES)

Form FIN I - Price Bid Form
[to be submitted with Price Bid only]

To,
Director
M/s Strategic Alliance Management Services Pvt. Ltd. (SAMS),
B-18, Sector-6, Noida,
G.B. Nagar – 201301 (U.P.)

Dear Sir,

Subject: Construction, Testing, Commissioning and Validation of TB Containment Laboratory & associated works in compliance with National Tuberculosis Elimination Programme (NTEP), Central TB Division (CTD), Govt of India (GoI)

Bid Ref. No. SAMS/FIND India/G/2023/0020/Lab Upgradation/ATE/25/2023

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 site:

Sl. No.	Name of Laboratory
1	IRL Dehradun

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 applicable taxes i.e. GST for IRL Dehradun** (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 online on FIND India procurement Portal)

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Description	Name of Lab / Site	Total Cost (inclusive of all applicable taxes (i.e., GST)
Construction, Testing, Commissioning and Validation of TB Containment Laboratory & associated works in compliance with National Tuberculosis Elimination Programme (NTEP), Central TB Division (CTD), Govt of India (Gol) Note: Cost quoted should match with the total Cost as per Form FIN-3: Priced Bill of Quantity		_____
TOTAL BID PRICE		_____

Note : Bidders are requested to fill up the online price bid form as per the sample mentioned below (if there is any confusion during the submission of financial bid, kindly contact SAMS Team):

Lump sum cost of Services and works as mentioned below:

A	B	C	D	E	F	G	H	I	J	K
Sch. No.	Unit name	Unit Price	Qty.	Total Price	Tax Rate on Goods (The same column should be used for Tax on services)	Tax on Goods	Price of Related Services	Tax Rate on Related Services (%)	Tax on Related Services	Total Bid Price
1	Nos.		1	Example (1000)	Please mention "0" here	-	-	-	-	

FINANCIAL PROPOSAL- STANDARD FORMS

Form FIN-3 Cost of Works

(To be submitted on FIND India Procurement Portal with Price bid only)

Bidders shall submit detailed workings of Lump Sum Contract Price (Component-A as given in FIN-2) for Construction, Testing, Commissioning of TB Containment facility and associated works with two years of comprehensive warranty period on 'Turnkey Basis' under National Tuberculosis Elimination Program (NTEP), Central TB Division (CTD), Govt. of India. The total price mentioned in the table below should coincide with the Price Component A as given in FIN-2.

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Sl. No.	Description of work	Unit of Measurement	Quantity(number/lot/job) approx.	Total cost (Including all taxes)
HVAC				
1	Thermal Insulation for Ducting	Sqft	800	
2	Ducting	Sqft	800	
3	HEPA Filter (H14) with containment HEPA Housing with Test elbow port and pressure gauge for supply	Nos.	1	
4	supply and exhaust diffusers with dampers	Nos.	10	
5	Leak proof and isolation dampers	Nos.	6	
6	Volume control dampers	Nos.	2	
7	Fire Dampers	Nos.	2	
8	Magnehelic Gauge	Nos.	3	
9	HEPA filter with BIBO Indigenous with Test elbow port and pressure gauge for exhaust	Nos.	1	
10	AHU and Ventilation units	set	2	
11	AHU Filters(G4, F7)	set	2	
12	AHU Fan/Blower	Nos.	2	
13	Motor (Including Spares) 1. 1 No. for supply and exhaust each 2. 1 No. for spare supply and exhaust each	Nos.	4	
14	Compatible cooling coil and heating element	Set	1	
15	HVAC Control Valves	Set	1	
16	VFD	Nos.	2	
17	Condensing Unit including standby unit	Nos.	3	
18	BSC ducting with exhaust blower (Damper, Pipe, other ducting accessories material and foundation work for exhaust blower)	Job	2	
19	MS structural shed for AHU with concrete cemented Foundation	Job	1	
SUB TOTAL AMOUNT				
Electrical Panel, AHU Control Panel, Electrical Cabling & accessories				
1	LT Switch Gears(ACB, MCCB, MCB, ELCB, RCCB, Contactors, SFUs)	Set	1	
2	Fuse	Set	1	
3	Protection Relays	Nos.	6	
4	Selector Switches	Nos.	2	
5	Indication Lamps(LED Type)	Nos.	12	
6	Push Buttons	Nos.	10	
7	Electric Multifunction Meter (Ammeters, Voltmeters, Load)	Set	1	
8	Load Managers	Set	1	

Sl. No.	Description of work	Unit of Measurement	Quantity(number/lot/job) approx.	Total cost (Including all taxes)
9	Current Transformers	Set	1	
10	Modular Switches, Socket outlets, Ceiling lights including wiring	Set	1	
11	PVC Conduits, Accessories	Running Meter	300	
12	Copper wires	Running Meter	300	
13	XLPE Insulated armoured wire	Running Meter	30	
14	UPS- 3KVA 30 minutes backup	Nos.	1	
15	Distribution Board	Set	1	
16	Control Junction Box	Set	2	
17	Dedicated Earthing	Job	2	
18	Single phase preventor	Nos.	1	
SUB TOTAL AMOUNT				
Interiors				
1	Modular Material for Wall Panel including coving	Sqft	760	
2	Modular (PUFF panel) Flush Doors	Nos.	4	
3	Modular Material for Ceiling including coving	Sqft	345	
4	Epoxy Flooring	Sqft	345	
5	CCTV Camera system	Set	1	
6	Fire Alarm system with Fire extinguishers system with smoke Detectors, main panel	Set	1	
7	Emergency eye wash and Shower with plumbing works	Nos.	1	
8	Pass Box	Nos.	2	
9	Supply and Installation of 2 TR Split ACs with Accessories (2 TON) with changeover timer of 4 hours	Nos.	2	
10	Data Cable (LAN cable with connection point inside the Lab)	Job	1	
11	Door interlocking & access control system	Job	1	
12	Temperature sensor & display	Set	1	
13	Humidity sensor & display	Set	1	
14	DPT Pressure sensor & display	Set	1	
15	Clean room monitor	Nos.	1	
16	EPABX box & 5 telephone set, co-axial wires & cables	Set	1	
17	Stainless steel grade 304 Laboratory Stools/ chairs	Nos.	5	
18	Stainless steel grade 304 trolley (2 Two tier trolleys +1 trolley with lid for transportation of material from lab to the Autoclave room)nos.	Nos.	3	
19	Stainless steel grade 304 Laboratory workstation 1.WS1: Laboratory workstation 1 (LxWxH)(7' x 2'6"x 2'6") 2.WS2:Laboratory workstation 1 (LxWxH)(5' x 2'6"x 2'6")	Nos.	2	
20	Stainless steel grade 304 shoe racks	Nos.	1	
21	Wash Basin and plumbing works	Job	2	
22	Stainless steel grade 304 Garment Cubicles	Nos.	1	
23	Stainless steel grade 304 Coat hangers	set	1	
24	RTV Silicon Sealant	Job	1	
25	Performance testing and validation of TB containment facility including validation of Biosafety cabinet	Job	1	
SUB TOTAL AMOUNT				
Site specific additional works (Dehradun)				
A	Proposed TB Containment Lab (Existing Autoclave and Washing Section) and Proposed Autoclave cum washing section(Existing Microbiologist room)			
1	Removal of existing windows (3 nos.) of dimension: 5 feet (W) by 4 feet(H) and 1 no. window of 2 feet(W) by 4 feet(H) of washing	Cubic meter	2	

Sl. No.	Description of work	Unit of Measurement	Quantity(number/lot/job) approx.	Total cost (Including all taxes)
	section and area to be closed brick mortar with required civil work			
2	Removal of 1 no. of window dimension: 5 feet (W) by 4 feet(H) and 1 no. window of 3 feet(W) by 4 feet(H) of Autoclave room and area to be closed brick mortar with required civil work	Cubic meter	0.91	
3	Permanent closure of existing ventilation window (04 nos.) with brick-mortar with required civil work in existing washing section	Cubic meter	0.22	
4	Permanent closure of existing ventilation window (02 nos.) with brick-mortar work in existing autoclave room	Cubic meter	0.11	
5	Removal of existing door of autoclave section (01 no.), dimension: 3 feet(W) by 6 feet 5 inches (H) and permanent closure required with brick-mortar with required civil work	Cubic meter	0.65	
6	Demolition of existing wall between autoclave and washing section, approx. dimension of 12 feet (W) by 9 feet 8 inches (H) and reflooring of the demolished area	Sqm	10.9	
7	Demolition of existing toilet of the microbiologist room of an of area of 4 feet by 4 feet(LXW) reflooring of the demolished area	Sqm	7.28	
8	Removal of existing door of Microbiologist room (01 no.), dimension: 2 feet(W) by 6 feet 5 inches (H) and permanent closure required with brick-mortar with required civil work	Cubic meter	0.36	
9	Creation of space/ opening for 2 nos. door of dimension: 4 feet (W)by 7 feet(H) for TB containment lab and 3 feet (W) by 7 feet (H) proposed autoclave and washing room	Sqm	4.3	
10	supply and Installation of 2 nos. of aluminium glass partition door one of 2 feet 6 inches (W) by 7 feet (H) and another of 3 feet(W) by 7 feet with lock and key facility in the autoclave cum washing room	Sqft	56	
11	supply and installation of automatic door closure for glass aluminium door	Nos.	3	
12	Uninstallation, packaging & shifting of 2 nos. of horizontal autoclaves from the existing autoclave room facility to the space identified by the site and reinstallation of shifted equipment	Nos	2	
13	Provision for plumbing (inlet and outlet) for re-installation of two units of autoclave in the proposed autoclave cum washing room	Job	1	
14	supply and Installation of 3 phase,4 pole, 40-amp MCB along with 4 SQMM wire size for installation of 2 nos. of Horizontal Autoclave	Nos	2	
15	supply and Installation of aluminium glass partition double door of 2 feet 6 inches (W) by 7 feet (H) each with lock and key facility at the entrance of proposed TB containment lab (refer the proposed layout)	Sqft	42	
16	supply and installation of automatic door closure for glass aluminium door	Nos.	2	
17	supply and Construction of 1 number workbench with brick and mortar with granite top of 8 feet (L) X 2 feet 6 inches (W)X 3 feet (H) with installation of Wash basin (ceramic counter type) in it with all plumbing works including proper drainage facility.	Nos.	1	
18	supply and Installation of 1 no. ceiling fan of 1200 mm sweep with all accessories including Electronic Regulator and wiring for completing installation in the proposed Autoclave room	Nos.	1	
19	supply and Installation of 3 nos. modular single phase 5/15 amp. switches, socket outlets with necessary wiring as indicated in the layout	Nos.	3	
20	supply and Installation of 2 nos. of LED light of the required capacity with necessary wiring in the proposed Autoclave room	Nos.	2	
21	supply and installation of one exhaust fan of 230mm sweep, 1400RPM,with 450 CFM free air delivery complete with all necessary accessories for completing installation of adequate	Nos	1	

Sl. No.	Description of work	Unit of Measurement	Quantity(number/lot/job) approx.	Total cost (Including all taxes)
	capacity (along with appropriate civil work)			
22	Complete putty, whitewash and painting of existing wall and ceiling of the complete area	Sqft	2660	
SUB TOTAL AMOUNT				
B	Proposed UPS, Voltage stabilizer and AHU Panel room (Existing Toilet for Staff)			
1	supply and Installation of 1 no. ceiling fan of 1200 mm sweep with all accessories including Electronic Regulator and wiring for completing installation.	Nos.	1	
2	supply and Installation of 1 nos. modular single phase 5/15 amp. switches, socket outlets with necessary wiring as indicated in the layout	Nos.	1	
3	supply and Installation of 2 nos. of LED light of the required capacity with necessary wiring	Nos.	2	
4	provision and installation of MS rack with aluminium fencing along with necessary welding and painting work for the installation of UPS and the external batteries	Nos	1	
5	supply and installation of one exhaust fan of 230mm sweep, 1400RPM, with 450 CFM free air delivery complete with all necessary accessories for completing installation of adequate capacity (along with appropriate civil work)	Nos	2	
SUB TOTAL AMOUNT				
TOTAL AMOUNT				

FINANCIAL PROPOSAL- STANDARD FORMS

Form FIN-4 Cost of Annual Maintenance Services (AMC)

(To be submitted on FIND India Procurement Portal with Price bid only)

Bidders shall submit AMC cost for the three years after the completion of warranty period of 2 years.

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Year of AMC after warranty of two years	Total cost (inclusive of all applicable taxes)
3rd Year	
4th Year	
5th Year	

SECTION IV

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

A. SCHEDULE OF REQUIREMENT

Sl. No.	Brief Scope of Works
	Construction, Testing, Commissioning and Validation of TB Containment Laboratory & associated works in compliance with National Tuberculosis Elimination Programme (NTEP), Central TB Division (CTD), Govt of India (GoI)
1	IRL Dehradun

B. Schedule for Completion and Handover of Works:

Within 180 days of issuance of Notification of Award (NOA).

C. Detailed address of site:

Sr. No.	Address	Focal Person (Site)	Tel / Mobile	Email	Alternate Person (Site)	Mobile	Email
1	State TB Demonstration and Training Centre Tyagi Road 107, Chander Nagar, In front of State Nursing College Dehradun 248001 Uttarakhand	Dr Prashant Choudhury, Microbiologist	9012342359	irlurddn@rntcp.org	Ms. Anuja Bisht, EQA Microbiologist	7409033234	irlurddn@rntcp.org

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

TECHNICAL SPECIFICATIONS FOR CONSTRUCTION, TESTING, COMMISSIONING OF LIQUID CULTURE FACILITY

SCOPE OF WORK:

The Scope of work involves 'Construction, Testing, Commissioning and Validation of TB Containment Laboratory & associated works in compliance with National Tuberculosis Elimination Programme (NTEP), Central TB Division (CTD), Govt of India (GoI).

The scope of work shall include design, 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.), 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

The scope of works shall also include:

- d) Dismantling and removal of existing installed items of interiors, civil construction work & electrical systems and handed over to site.
- e) Uninstallation, packaging & shifting of equipment from the existing facility to the space identified by the site and reinstallation of shifted equipment inside the new constructed laboratory.
- f) Power required for the TB Containment Laboratory shall be tapped from the AHU panels (through its expansion and laying of required power cabling). 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.

Extension of existing water supply lines up to the TB Containment Lab to meet its water supply requirements.

The following shall be provided to the Vendor by the institution/site:

4. Three phase power supply with earthing and required capacity of 440V for A.H.U unit for TB containment lab at the AHU Panel
5. Alternative Backup- Diesel generator set of 120 -150 KVA capacity.
6. Water supply line and drainage nearby the site.

PRE-REQUISITES for the Site to comply

1. **Power required for the TB Containment Laboratory** shall be tapped from the existing feeder lines (through its expansion and laying of required power cabling) 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.
2. **Water supply to the TB Containment Laboratory** shall be provided through the existing Water distribution network in campus.
3. **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 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:

1. Restricted and controlled access shall be provided for entry into the laboratory.
2. 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.
3. 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.
4. The door interlocks, exhaust blower of BSCs, shall be provided with online, un-interrupted power supply system with minimum 30 minutes power backup.
5. Safety measures for fire and electricity shall be provided
6. 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:

- 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 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 with push button manual bypass switch for exits of the facility 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 has to flush with the side panels. Airtight 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 $22^{\circ}\text{C}\pm 2$.
- c. The air will be cooled and 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 $60 \pm 10\%$. 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. 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:
 - o 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.
 - o 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).
 - o 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.
 - o The HEPA filter plenums (Containment Housing) shall be made in SS 304 (14 gauge) with airtight 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 aluminium foil nitrile rubber (19mm) or glass wool (50mm) thick. 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.

vi. **Exhaust System**

- a. 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 programmed in such a way that the required negative pressure will be maintained irrespective of switching ON/OFF of the Biosafety cabinet and its exhaust system. 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. 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 aluminium foil nitrile rubber of thickness 13 mm or glass wool of thickness 25mm.
- 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 airtight 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.
- 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.
 - f. Framework vertically made of M S Square Pipe frame: 2 Inches X 2 Inches, 16 Gauge
 - g. M S Fencing with wire mesh: ½ inch X ½ inch
 - h. Supporting Structure M S Angle: 50 X 5 mm
 - i. GI pre-coated corrugated profile roof sheet: 0.5 mm thick duly supported with J Hook.
 - j. 10 SWG with provision of door with lock and keyAHU 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:** Two separate dedicated earthing circuit to be carried out by the vendor for TB C&DST Lab and HVAC system. Earthing should be done as per standard for the heavy machinery equipment and the value of earthing should be less than 5 ohm and the voltage between E-N should be less than 1 V.
- 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. The lighting of the total area should be at 400-450 Lux.
- 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. Electrical Switches and Sockets shall be sealed type suitable for laboratory fumigation (IP55 or better).
- 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.
 - Single-phase protector in the AHU control Panel
 - 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 (4kg) **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:**
- a. 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.
 - b. 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.
 - c. 3 KVA UNINTERRUPTED POWER SUPPLY SYSTEM (UPS): A central online 3 KVA 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: Fire detection and alarm system (FDA System) and fire extinguishers of Type ABC (4kg) **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.
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 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/m³. 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:
 - vii. 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.
 - viii. Door interlocking systems shall be complete with controller module, push button stations with LED indication, electromagnentic locks. To take care of malfunctioning of interlocking, alternative electrical switch to manually open the doors should be provided.
 - ix. Vision Glass for doors shall be fixed type vacuumised 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:

- a. **Laboratory workstations** (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.
- b. **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)
- c. **Coat hangers** 8-10 individual hangers made of SS304, in group of 4-5 each, will be provided to hang gowns/ aprons in Ante Room and change room (in consultation with site i/c)
- d. **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.
- e. **Wash Basin** (numbers as per the Lab design): 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.
- f. **Laboratory Stools** (five): Laboratory grade hydraulic SS 304 stools with back support, footrest, rotating type with castor wheels at the base, shall be provided by contractor.
- g. **Trolleys**: Two tier trolleys 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:

- a. Visual digital display of Room Pressure, Relative humidity, and temperature (clean room monitor) in the TB Containment Lab
- b. Differential pressure through Magnehelic gauges in Anteroom, Change Room (where available) and outside TB Containment Lab
- c. 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
- d. CCTV footage from the various sections in the Microbiologist's room
- e. Hooter/alarm when the emergency exit door is opened as well as when fire detection system is activated in incidence of fire.

9. Connectivity:

- a. LAN wiring for internet access inside the lab with sockets to be provided at strategic locations (near work benches) in TB Containment Room.
- b. A suitable EPABX System shall be provided for the laboratory. Telephone instrument (5 quantities)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

- a. **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 relate to 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.

- b. **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 with HEPA Filtration to the environment. 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
- c. **CCTV Monitoring Devices:** Camera to continuously monitor the activities inside and outside the TB Containment Lab by providing Central CCTV Monitor. 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 32-inch LED) located in Microbiologist room or as suggested by site i/c.

11. Civil works and Plumbing:

- a. 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.
- b. 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 campus if available. All drains shall be equipped with "p traps". Penetrations made in walls and floors must be properly sealed.
- c. Water connections for the emergency shower and eye wash and wash basins to be appropriate provided.
- d. Ensure that pipes and connections are leak proof to avoid flooding behind modular walls.

12. Labelling to be done as per following details:

- a. Biohazard label should be placed outside the laboratory.
- b. Labels for all switches (to be provided) including in the MCCB panels, LT Panel and AHU Control panel
- c. Labelling of the TB Containment Lab and Ante Room/ Change room including Emergency exist.
- d. 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.

- a) 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.
- b) 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:
 - iii. For Bio Safety Cabinet:
 - o 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
 - iv. 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 Pass box.
 - Temperature shall be maintained at $22^{\circ}\text{C}\pm 2$ and humidity level should be maintained at $60\pm 10\%$
 - 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, earthing, 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,
 - Pass boxes
 - 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
- c) Prior to validation, the contractor shall prepare and submit a detailed 'Validation Document' for approval.
- iv. The Validation Document shall provide the detailed procedure for validation, parameters for validation, validation schemes and formats for recording the validation details.
- v. The contractor shall arrange to do a mandatory third-party validation
- vi. 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.
- d) The above validation tests shall be performed Annually during the warranty as well as maintenance period for TB Containment lab.

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 yearly basis during the maintenance as well as defects liability period for TB Containment lab.

Maintenance Services: After the completion of defect liability and 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 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.

SCOPE OF SERVICES (For warranty services of TB containment laboratories)

- a) Annual preventive maintenance and validation of TB containment Lab needs to be performed during warranty period or defect liability Period, as per WHO/International standards.
- b) Report after each visit needs to be provided to lab as well as procurement agency /FIND team as per the activities performed including the traceability of the standards used at the time of validation.
- c) PM/Validation schedule should be in sync with previous PM and validation date of TB containment lab.
- d) During preventive maintenance visit, service provider should carry out initial inspection of TB containment Lab as per manufacturer's protocol and submit report for the services carried out.
- e) Agency should attend unlimited break down calls during warranty period or defect liability period and replace/repair the spare parts as per the need.
- f) Service Engineer should be designated for calls at each Lab

15.Training of personnel: Institution personnel to be trained over 2 days for:

- a. Operation of HVAC Plant and all other equipment and systems.
- b. Adjustments of settings for controls and protective devices
- c. Servicing and Preventive maintenance
- d. Emergency response training.

16.Guidelines & Standards for reference:

- a. *Bio safety in Microbiological and Biomedical Laboratories, 5th edition, 2007 (CDC/NIH BMBL)*. 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,
- b. Canadian Tuberculosis Standards 6th Edition
- c. American Society of Heating, Refrigeration and Air-Conditioning Engineers, Inc. *Laboratory Design Guide - 2001*
- d. NIH Design Policy and Guidelines, 2008
- e. American National Standards Institute (ANSI)
- f. NIH BSL 3 Certification requirement, 2006
- g. WHO TB Containment Lab Biosafety Manual, 2012

17.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

- b. HVAC system (including Air filtration system Drawing of Supply AHU, Drawing of Exhaust AHU, Ducting drawing)
- c. Pressure control system including differential pressure zones
- d. Fire Detection and Alarm system
- e. Air distribution System including ACH ((Heat load calculation & Design Data)
- f. Electrical distribution system (including Single Line Diagram with UPS system)
- g. Monitoring system including CCTV and three important parameter monitoring (pressure, temp and humidity)
- h. Water supply and drainage system
- i. AHU Control Panel System with VFD controls and SOP for lab condition for operating VFD with selector switch for manual operation of AHU
- j. Chart for defining the AHU fan and its speed for air quantity being delivered by supply and exhaust blower at different speed
- k. Un-interrupted Power Supply system
- l. Specialized laboratory support equipment/ primary containment barriers such as
 - o Pass boxes
 - o Entry exit protocols

18. 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.

- a. 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.
- b. 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.

c. 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.

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

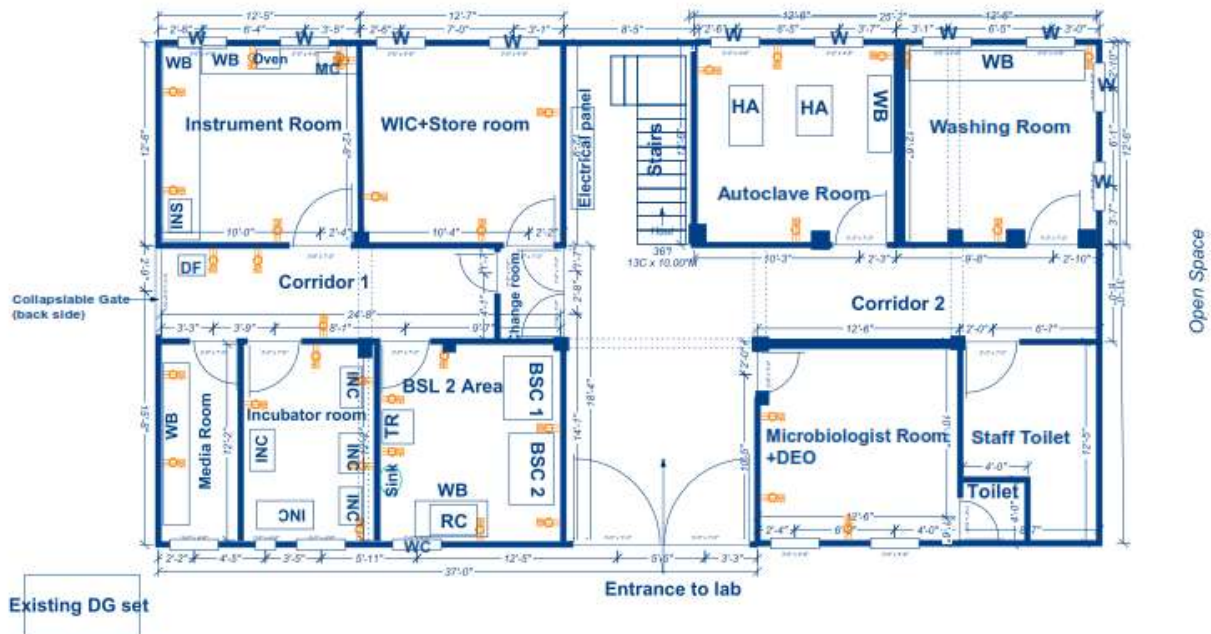
Project Implementation Methodology including

- Past experiences of developing labs including TB Containment labs (with contact details)
- 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.)
- 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 (Annexure 2) given below for the labs quoted. Any additional material proposed for construction by bidder may also be specified in the same table.
- GANTT Chart informing timelines for executing the various stages of work

Annexure 1

Existing and proposed Drawings/ Layout of TB Containment Lab of IRL Dehradun

Existing TB C&DST Lab Layout, Ground Floor, IRL Dehradun



Room Dimension:

Instrument Room(LXW): 12'6" * 12'6"
 WIC+Store room (LXW):12'6" * 12'6"
 Stairs(LXW):12'6" * 8'3"
 Autoclave room(LXW):12'6" * 12'6"
 Washing Room(LXW):12'6" * 12'6"
 Corridor 1(LXW): 25' * 6'
 Corridor 2 (LXW): 21'1" * 6'
 Media Room(LXW): 12'6" * 5'
 Incubator Room(LXW):12'6" * 9'
 BSL2 Area(LXW): 12'6" * 11'
 Microbiologist room(LXW): 12'6" * 12'6"
 Staff Toilet(LXW):12'6" * 8'7"

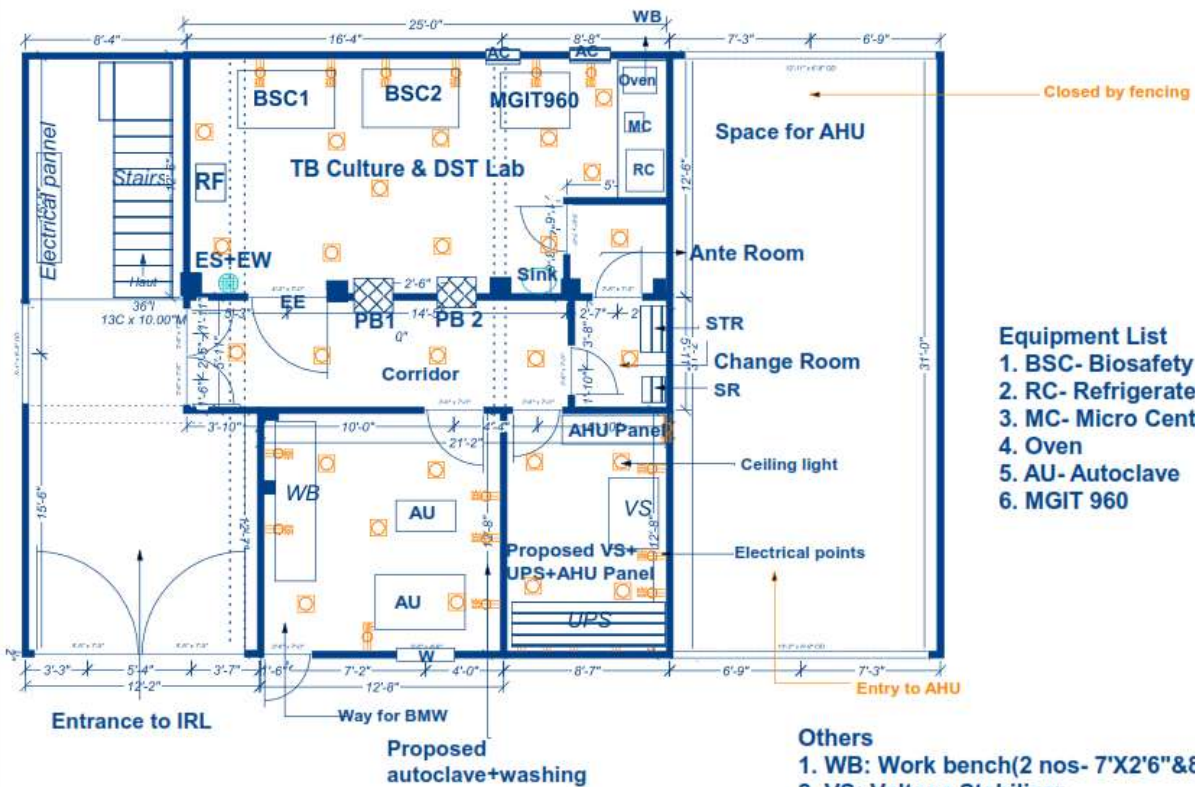
Equipment List

1. RC- Refrigerated Centrifuge
2. DF- Deep Freezer
3. INC- Incubator
4. INS- Inspissator
5. BSC(1&2)- Biosafety Cabinet
6. MC- Micro-Centrifuge
7. Oven
8. HA- Horizontal Autoclave

Others

1. WC:Window AC
2. WB: Work bench
3. TR: Trolley

Proposed TB Culture & DST lab layout, Ground floor, IRL Dehradun



- Equipment List**
1. BSC- Biosafety Cabinet
 2. RC- Refrigerated Centrifuge
 3. MC- Micro Centrifuge
 4. Oven
 5. AU- Autoclave
 6. MGIT 960

Room Dimensions

- Proposed TB Liquid culture & DST Lab(L*W): 25'*12'6"
- Proposed Ante Room (L*W): 5' * 5'
- Proposed Change Room(L*W): 6' * 5'
- Corridor (L*W): 25* 6'
- Proposed Autoclave+ Washing room (L*W): 12'6"* 12'6"
- Proposed UPS+VS room+AHU Panel(L*W): 12'6" *8'7"

Others

1. WB: Work bench(2 nos- 7'X2'6"&8'X2'6")
2. VS: Voltage Stabilizer
3. AC- Split AC for MGIT
4. PB-1: Passbox(2'X2')- 1 No for Sample Entry
5. PB-2: Passbox(2'X2')- 1 No for Discard
6. SR: Shoe Rack
7. STR: Storage Rack
8. UPS- Stand for UPS and batteries
9. ES: Emergency Shower
10. EW: Eye Wash

Annexure-2

Area Details of 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 *	Total quantity of AC in Proposed TB containment Lab	Location of AHU
			Dimensions	Area (sq.ft.)	Dimensions	Area (sq.ft.)	Dimensions	Area (sq.ft.)						
1	Intermediate Reference Laboratory, Deharadun, Uttarakhand	Ground floor	25' L x 12'6" W	290	5' L x 5'W	25	6' L x 5' W	30	345	2	3 (2 Two tier trolleys +1 trolley with lid for transportation of material from lab to the Autoclave room)	2 TR	2	Space for HVAC unit placement is identified on the ground floor adjacent of the proposed TB Containment Room

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

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	1/2/3*	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 Incinerator Mico	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

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

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

Inspections and Validation Visits by FIND India/ LABS

Sr. No.	Scheduled Inspection Visit by FIND/SAMS team	Activity
1	Agency Introduction visit to site with FIND team	<u>Visit from FIND Technical Team & Agency:</u> <ol style="list-style-type: none"> 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	HVAC Ducting & commissioning	<u>Visit by FIND Technical team</u> 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.
3	Midterm Assessment: Interiors , BSC Installation and Civil, electrical and plumbing works,	<u>Visit by FIND Technical team</u> 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
4	Performance testing of HVAC(Dry Run) and Validation of TB Containment Lab and BSC and Handover of Lab	<u>Visit by FIND Technical team</u> at least for 2 days Visit by FIND's Technical Representative(s) to ensure all the activities as per checklist & Specification in coordination with Lab's Representative for final testing , validation and handover of lab to site

Annexure-5

Schedule of Payment and Reporting Requirements

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	Nil	5%	1. Signed contract copy with valid performance bank guarantee 2. Submission of Advance payment bank Guarantee for the amount equivalent to 5% of contract value.
2	Joint visit to Site and finalization of Drawings	Contractor's Introduction visit to site with FIND India team: 1) Contractor will give detail work plan along with timelines for the project 2) Any support required from Site (Approvals/road permits). 3) The requirement from Site (electrical requirement, water lines, drainage line/any other) 4) Checklist to be used for Monitoring of Project 5) Finalization of Drawings	5%	1.Submission of Inception Report by Contractor 2.Approval of working drawings by FIND India
3	Completion of Ventilation Unit (HVAC) ducting, Filters, Air conditioning Unit and AHU installation, Transducers and control systems, dampers, AHU Shed and confirmation from FIND's Technical Representative(s)	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	20%	Visit Report (Signed Quality Checklist) along with photographs of site and confirmation from FIND's Technical Representative
4	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,	Interior, BSC Installation, Midterm assessment Visit by FIND's Technical Representative(s) to ensure all the activities as per checklist & Specification in coordination with Lab's Representative	40%	Visit Report (Signed Quality Checklist) along with photographs of site & confirmation from FIND's Technical Representative

Sl. No.	Suggested milestones for TB Containment Lab establishment	Project activity in brief	Payment Slab	Documents to be submitted for processing the payment
	Emergency preparedness +Civil, plumbing and Electrical works of TB containment Lab			
5	Performance testing of HVAC, Final commissioning and validation, labelling, Training, Laboratory documents submission and handover of TB Containment Lab +Additional works associated with Site	Performance testing of HVAC (Dry Run), validation and handover of TB containment lab: Visit by FIND's Technical Representative(s) to ensure all the activities as per checklist & Specification in coordination with Lab's Representative	30%	Visit Report (Signed contract compliance checklist & Quality Checklist) along with photographs of site & confirmation from FIND's Technical Representative along with taking over and final work completion certificate issued from site

Note:- Payment shall be released as per the schedule of payments (as above), within 60 days upon submission of Invoice along-with supporting documents (two copies – One original and one duplicate copy).

PBG of 10% amount equivalent to the total contract value against the performance security to be submitted by the bidder at the time of award of contract.

Section V- CONTRACT FORM and CONDITIONS OF CONTRACT

Construction, Testing, Commissioning of liquid culture facility and associated works with two years of comprehensive warranty period on 'Turnkey Basis' under National Tuberculosis Elimination Program (NTEP), Central TB Division (CTD), Govt. of India.

Laboratory Site Address:

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

- and -

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

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

CONTRACT FORM

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

BETWEEN

- 1) Strategic Alliance Management Services Pvt. Ltd. (SAMS), having its postal address at B-18, Sector-6, Noida, G.B. Nagar, Uttar Pradesh - 20130 ("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) The Contractor shall ensure compliance of The Global Fund's Code of Conduct for Suppliers

(https://www.theglobalfund.org/media/3275/corporate_codeofconductforsuppliers_policy_en.pdf), as amended from time to time.

- 3) In the Contract words and expressions will have the same meanings as are respectively assigned to them in the General Conditions.
- 4) The following documents, listed in the order of priority, are deemed to form and be read and construed as part of the Contract:
 - 4.1 this Instrument of Agreement;
 - 4.2 the Schedule of Details;
 - 4.3 the Particular Conditions;
 - 4.4 the General Conditions;
 - 4.5 the Specification;
 - 4.6 the Drawings; and
 - 4.7 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 Purchaser,

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 Purchaser.

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

"Purchaser'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 Purchaser.

"Purchaser'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 civil war 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 Details" is Schedule 1.

"Schedule of Works" is Schedule 2.

"Schedule of Site" is Schedule 3.

"Schedule of Contract Price" is Schedule 4

"Schedule of Payment" is Schedule 5.

"Schedule of Security" is Schedule 6.

"Bank Guarantee for Advance Payment" is Schedule 7.

"Schedule of Programme" is Schedule 8.

"Schedule of Key Personnel" is Schedule 9.

"Schedule of Forms of Certificates " is Schedule 10.

"Schedule of Schedule of permitted subcontractors" is Schedule 11.

"Schedule of nominated subcontractors " is Schedule 12.

"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 Purchaser'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 Purchaser's Representative in accordance with this Contract or as directed by the Purchaser's Representative from time to time;
- (d) all third party warranties and certificates and local authority approvals have been issued and provided to the Purchaser'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 Purchaser'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 Purchaser'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 Purchaser. 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 Purchaser, 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 Purchaser) 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 Purchaser's Instructions

The Contractor must comply with all instructions given by the Purchaser or the Purchaser's Representative in respect of Works. The Purchaser or the Purchaser'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 Purchaser'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 Purchaser's Representative's permission to proceed with the Works. If the Purchaser's Representative does not give permission within 28 days after being requested to do so, the Contractor may, by giving notice to the Purchaser'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 Purchaser's Representative will affect the Contractor's obligations.

3. PURCHASER'S REPRESENTATIVE

3.1 Purchaser's Representative

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

3.2 Purchaser's Representative's Assistant

The Purchaser'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 Purchaser'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 Purchaser.

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 Purchaser'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 Purchaser's Representative, provide the Purchaser's Representative with monthly, or more frequently on request by the

Purchaser'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 Purchaser's Representative and must submit to the Purchaser'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 Purchaser'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 Purchaser, 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 Purchaser, 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 Purchaser'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 Purchaser'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 Purchaser'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 Purchaser'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 Purchaser'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 Purchaser'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 Purchaser.

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 Purchaser, 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 Purchaser, its agents or servants. The Contractor is responsible for all costs, including legal costs, charges and expenses whatsoever associated with the defence of the Purchaser. In defending the Purchaser, the Contractor shall not enter into a settlement agreement without the prior written approval of the Purchaser.

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 Purchaser, nor must the Contractor, in any manner whatsoever use the name, emblem or official seal of the Purchaser, or any abbreviation of their name in connection with its business or otherwise without the written permission of the Purchaser. This Sub-Clause 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 Purchaser, involving, in any way whatsoever, any Purchaser's personnel or representative, official, or other agent of the Purchaser.
- 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 Purchaser; 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 Purchaser.

- 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 Purchaser.
- 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.

4.8 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.

4.9 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.

4.10 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.

4.11 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.

4.12 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.

4.13 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 Purchaser's personnel and any other personnel notified to the Contractor, by the Purchaser or the Purchaser's Representative, as authorised personnel of the Purchaser or the Purchaser's other contractors on the Site. The security and safety of the Site, the Contractor's Equipment, the Purchaser'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 Purchaser'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 Purchaser's Representative that it is 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 Purchaser's Representative all designs prepared by the Contractor. Within 14 days of receipt the Purchaser'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 Purchaser'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. PURCHASER'S RISKS

6.1 Purchaser's Risks

In this Contract, Purchaser'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 Purchaser'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 Purchaser'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 Purchaser's Risks.

Despite any other provision in this Contract, the Purchaser'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 Purchaser'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 Purchaser'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 Purchaser'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 Purchaser'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 Purchaser'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 Purchaser'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 Purchaser's Representative.

If the Contractor fails to rectify the defect within the time agreed or specified, the Purchaser'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 Purchaser.

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 Purchaser'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 Purchaser'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 Purchaser'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 Purchaser'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 Purchaser'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 Purchaser. Notwithstanding this the Purchaser may issue the Final Completion Certificate at any time after the Purchaser'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 Purchaser'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 Purchaser'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 Purchaser'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 Purchaser'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 Purchaser's Representative, or
- d) if the Purchaser'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 Purchaser'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 Purchaser'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 Purchaser'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 Purchaser'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 Purchaser'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 Purchaser'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 Purchaser's Representative in accordance with the requirements and timings stated in the Schedule of Payment or otherwise as notified by the Purchaser's Representative in writing. Each statement must be in a form approved by the Purchaser'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 Purchaser'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 Purchaser's Representative issues the Taking-Over Certificate, the Contractor must submit a statement to the Purchaser'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 Purchaser, 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 Purchaser. 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 Purchaser.

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 Purchaser'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 Purchaser'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 Purchaser's Representative directs the Contractor to perform the work or item to which the provisional sum relates. If the Purchaser's Representative directs the Contractor to perform that work, the work or item will be

priced by the Purchaser'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 Purchaser.

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 Purchaser's Representative or fails to proceed expeditiously and without delay, or is in breach of the Contract, the Purchaser'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 Purchaser'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 Purchaser) and take such action as necessary or as the Purchaser's Representative directs, for the transfer, protection and preservation of the Purchaser's property and deliver any required goods and documents to the Purchaser'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 Purchaser'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 Purchaser.

12.2 Default by Purchaser

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 Purchaser'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 Purchaser'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 Purchaser'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 Purchaser's Entitlement to Terminate for Convenience

The Purchaser may in its absolute discretion terminate the Contract, at any time for the Purchaser'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 Purchaser) and take such action as necessary or as directed by the Purchaser, for the transfer, protection and preservation of the Purchaser'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 Purchaser. 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 Purchaser, 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 Purchaser, the Contractor shall not enter into a settlement agreement without the prior written approval of the Purchaser.

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 Purchaser's Representative, the Contractor must suspend the execution of the affected Works and, to the extent agreed with the Purchaser'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 Purchaser, 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

- c) Contractor's liability for damage to the Purchaser's property other than the Works, and for liability of both Parties and of any Purchaser's personnel for death or injury to the Contractor's Personnel except to the extent that liability arises from the negligence of the Purchaser, any Purchaser'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 Purchaser. 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 Arbitration and Conciliation Act, 1996 (the "Conciliation Rules")
- b) 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

- 1) 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 Arbitration and Conciliation Act, 1996 ("Arbitration Rules") then in effect.
- 2) The arbitral tribunal shall consist of 3 arbitrators one each to be appointed by the Purchaser and the Supplier. The third Arbitrator shall be chosen by the two Arbitrators so appointed by the Parties and shall act as Presiding arbitrator. In case of failure of the two arbitrators appointed by the parties to reach upon a consensus within a period of 30 days from the appointment of the arbitrator appointed subsequently, the Presiding Arbitrator shall be appointed in accordance with the provisions of the Arbitration and Conciliation Act 1996.
- 3) If one of the parties fails to appoint its arbitrator in pursuance of sub-clause 2) above, within 30 days after receipt of the notice of the appointment of its arbitrator by the other party, then the appointment of the Arbitrator shall be made in accordance with the provisions of the

Arbitration and Conciliation Act 1996

- 4) The venue of Arbitration shall be New Delhi and the language of the arbitration proceedings and that of all councils and communications between the parties shall be English
- 5) The decision of the majority of arbitrators shall be final and binding upon parties. The cost and expenses of Arbitration proceedings will be paid as determined by the arbitral tribunal. However, the expenses incurred by each party in connection with the preparation, presentation, etc. of its proceedings as also the fees and expenses paid to the arbitrator appointed by such party or on its behalf shall be borne by each party itself
- 6) The provisions of the Arbitration and Conciliation Act of 1996 along with the Rules herewith and any statutory modification or reenactment thereof shall apply to arbitration proceedings
- 7) 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)	<i>[If this is a lump sum contract insert the following: “The lump sum amount of [insert the amount in words and figures]”</i> See the Schedule of Contract Price & Payment for a breakdown of the Contract Price
Contractor’s Representative(Sub- Clause 1.1)	<i>[name, position title and contact details to be inserted]</i>
Defects Liability Period (Comprehensive Warranty) (Sub-Clause 1.1)	24 months from the date of Final Work Completion Certificate
Purchaser’s Representative (Sub-Clause 1.1)	<i>[insert name, position title and contact details]</i>
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)	Purchaser Attention: Sanjay Rastogi Strategic Alliance Management Services Pvt.Ltd. B-18, Sector-6, Noida, G.B. Nagar – 201301 (Uttar Pradesh) 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 Purchaser's Risks (Sub-Clause 6.1)	If Site is not ready.
Time for Programme Submission (Sub-Clause 7.2)	Within 14 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 0.5% for each week or part thereof of delay 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)	Purchaser: Sanjay Rastogi, Director Strategic Alliance Management Services Pvt. Ltd. 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

As per Payment Slab

SCHEDULE 6 - SCHEDULE OF SECURITY

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

Date: [insert]

To
The Director
M/s Strategic Alliance Management Services Pvt.
Ltd. B-18, Sector-6,
Noida, G.B. Nagar Uttar Pradesh - 201301

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 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 of 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 Arbitration and Conciliation Act 1996 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))
.....)
Address of witness)
.....)
Occupation of witness

.....
..... By executing this
agreement the attorney states
that the attorney has received no
notice of revocation of the power
of attorney

Address for notices
[insert address]

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

Date: *[insert]*

To:

The Director
M/s Strategic Alliance Management Services Pvt.
Ltd. B-18, Sector-6,
Noida, G.B. Nagar, Uttar Pradesh - 201301

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 **5 %** 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 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 Arbitration and Conciliation Act 1996 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)

.....
.....
Address of witness

.....
.....
Occupation of witness

Address for notices
[insert address]

.....
.....
By executing this agreement the attorney states that the attorney has received no notice of revocation of the power of attorney

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 Purchaser'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 Purchaser'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 Purchaser'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 recognized computer programme or as otherwise directed by the Purchaser'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 Purchaser'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 colored 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 Purchaser's Representative's approval.

SCHEDULE 9 - SCHEDULE OF KEY PERSONNEL

The Contractor's Key Personnel for the Project are:

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

If there is a position stated in this Schedule but no person is named in that particular role, then the Contractor shall obtain the Purchaser'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
- (D) Form of Warranty Services Performance 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 Contractor 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*]s

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 Purchaser.

This Final Completion Certificate is executed by an official representative duly authorized to bind the Purchaser.

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 Contractor at law.

Yours sincerely

.....

[*insert*]

Purchaser's Representative

(C) 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**")

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 Purchaser] [the Purchaser by the Contractor]: INR

Yours sincerely

.....

[*insert*]

Purchaser's Representative

(D) Form of Warranty Services Performance Certificate

[insert Date]

Contractor's Representative

[Address]

Warranty Services Performance Certificate

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

We refer to Sub-Clause 9.3 of the Contract.

We advise that on **[insert date]** you have completed your obligations under the Contract towards First / Second year warranty in accordance with the Contract.

By signing this Certificate, the Purchaser acknowledges and accepts that your obligations under the Contract have been completed, which includes the following:

- 1) Annual third-party validation of laboratory
- 2) Closure of all breakdown / maintenance calls logged during the warranty period

This Certificate is executed by an official representative duly authorised to bind the Purchaser.

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

Yours sincerely

.....

[insert]

Purchaser's Representative

SCHEDULE 11 - SCHEDULE OF PERMITTED SUBCONTRACTORS

Subcontract Works	Permitted Subcontractors
<i>[insert description]</i>	<i>[insert]</i>
<i>[insert description]</i>	<i>[insert]</i>
<i>[insert description]</i>	<i>[insert]</i>
<i>[insert description]</i>	<i>[insert]</i>
<i>[insert description]</i>	<i>[insert]</i>
<i>[insert description]</i>	<i>[insert]</i>
<i>[insert description]</i>	<i>[insert]</i>
<i>[insert description]</i>	<i>[insert]</i>
<i>[insert description]</i>	<i>[insert]</i>

For all other subcontract works not listed above, the Contractor must obtain the Purchaser'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 Purchaser's prior written consent before subcontracting any part of the Works.

SCHEDULE 12 - SCHEDULE OF NOMINATED SUBCONTRACTORS

Subcontract Works	Nominated Subcontractors
<i>[insert description]</i>	<i>[insert]</i>
<i>[insert description]</i>	<i>[insert]</i>
<i>[insert description]</i>	<i>[insert]</i>
<i>[insert description]</i>	<i>[insert]</i>
<i>[insert description]</i>	<i>[insert]</i>
<i>[insert description]</i>	<i>[insert]</i>
<i>[insert description]</i>	<i>[insert]</i>
<i>[insert description]</i>	<i>[insert]</i>
<i>[insert description]</i>	<i>[insert]</i>

For all other subcontract works not listed above or in Schedule 15, the Contractor must obtain the Purchaser'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.