Foundation for Innovative New Diagnostics, India
(FIND India)

Advertised Tender Enquiry (ATE)

Bid Document

For

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

Bid Ref. No.: SAMS/FIND India/Lab Renovation/ATE/03/2022

	(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

Advertised Tender Enquiry (ATE)

Bid Document for

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

Key Bidding Information

Bid Ref No.	**SAMS/FIND India/Lab Renovation/ATE/03/2022**
E-procurement Portal (FIND India)	**https://procurementindia.finddx.org/Account/Login.aspx**
Name of the Project	**Procurement of Equipment, Goods, Works Servicesand 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	**22/10/2022 from 10:00 AM** (Link https://www.samsconsult.com/FIND.aspx)
Last Date and Time for Receipt of Request for Clarifications	**27/10/2022 till 04:00 PM** (All such request must be submitted through mail to *procurement@samsconsult.com)*
Time and Date for online Pre-BidMeeting	**11.00 AM on 28/10/2022** The meeting shall be held online. Prospective bidder may use the link https://join.skype.com/yykev5da9yDX
Last Date & Time for Submission of Bids	**11/11/2022 till 03.00 PM**
Date & Time for Opening of Technical Bids	**11/11/2022 at 03.30 PM** https://join.skype.com/vdXIuAY0BgZL
Place of Pre-Bid Meeting	Hybrid Mode (Offline and Online through Skype): https://join.skype.com/q4i498yubtYJ
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

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

IFB No.: SAMS/FIND India/Lab Renovation/ATE/03/2022 **Dated: 22/10/2022**

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 FIVE (5) TB Containment Laboratories in Medical Colleges/ Govt. Hospitals / Institutions across the India for the NTEP.
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 Laboratories and associated works at 05 sites as given in 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 Declaration as per format provided in the Bid Document. Certain class of Bidders are exempted from submission of Bid Security. Details are given in Bid Documents
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 22/10/2022**. 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 28/10/2022** 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/q4i498yubtYJ 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 27/10/2022 at email procurement@samsconsult.com.
7. **Bids must be submitted online on or before 03:00 PM on 11/11/2022 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 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 Renovation, Construction, Commissioning, Testing, and Validation of TB Containment Laboratories and associated works on at **FIVE (5) sites** as given in Schedule of Requirement of the Bid Documents.

1.2 This Chapter provides the relevant information as well as instructions to assist the prospective bidders in preparation and submission of bids. It also includes the modeand 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 theBid Documents. Failure to provide required information or to comply with the instructions incorporated in this Bid Documents may result in rejection of bidssubmitted 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) 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 Employer, shall be written in English language. However, the language of any printed literature furnished by the bidder in connection with its bid may be written in any other language provided, the same is accompanied by an English translation and, for purposes of interpretation of the bid, the English translation shall govern**.**

5. BIDDER'S ELIGIBILITY

5.1 This invitation for bids is open for all Organizations (Proprietorship Firms, PartnershipFirms, 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.**

5.2 This invitation for bids is open to only Class – I Local Suppliers as per the order Ref. No. P-45021/2/2017-PP (BE-II) dated 16 September, 2020[1] issued by Department for Promotion of Industry and Internal Trade (DPIIT), Ministry of Commerce and Industry, Govt. of India. A Class-I Local Supplier means a supplier or

service provider, whose goods, services or works offered for procurement has local content equal to or more than 50%. The bidder is required to give an undertaking in the Form TECH-1: Form of Bid (Technical) of section -II of the Bid Document to the above effect. If such an undertaking given by a bidder whose bid is accepted is found to be false, this would be a ground for immediate termination and further legal action in accordance with law.

5.3 Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority. Where applicable, evidence of valid registration by the Competent Authority shall be attached, failing which their bids shall be rejected. The Competent Authority for the purpose of this clause shall be the Registration Committee constituted by the Department for Promotion of Industry and Internal Trade (DPIIT). More details may be found in the Office Memorandum (O.M.) Ref. F.No.6/18/2019-PPD dated 23/7/2020[2] issued by Public Procurement Division, Department of Expenditure, Ministry of Finance, Govt. of India. Further, A contractor shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India unless such contractor is registered with the Competent Authority in India. Bidders are required to certify about compliance of above requirement in the Form TECH-1: Form of Bid (Technical) of section -II of the Bid Document to the above effect. If such a certificate given by a bidder whose bid is accepted is found to be false, this would be a ground for immediate termination and further legal action in accordance with law.

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 ofthe bidding process.

The Bid Document can be freely downloaded from the website www.samsconsult.com starting from **10.00 AM on 22/10/2022.** 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 thestandard 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.

[2] https://www.doe.gov.in/sites/default/files/OM%20dated%2023.07.2020.pdf

8. AMENDMENTS TO BID DOCUMENTS

8.1 At any time prior to the deadline for submission of bids, the Purchaser may, for anyreason 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 actionin 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 andTechnical 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 27/10/2022**. Copies of the Purchaser's response shall be promptly published at the Purchaser's website, including a description of the inquiry but without identifying itssource.

9.2 All the prospective bidders will be notified of response to clarifications only throughSAMS 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 tonotice 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 28/11/2022 and through skype link**: https://join.skype.com/q4i498yubtYJ

10.2 During the pre-bid meeting, the clarification sought by representative of prospectivebidders shall be responded appropriately. However, they shall be asked to submit their written request by close of office next day. The Purchaser shall upload writtenresponse 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) <u>TECHNICAL BID</u>

i) Bid Security Declaration 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 asunder:
(1) Form TECH-1: Form of Bid (Technical)
(2) Form TECH-2: Bidders' Information Form
(3) Form TECH-3: Bidders' Preliminary Programme
(4) Form TECH-4: Proposed Project Team and OrganizationalStructure
(5) Form TECH-5: Works Management System
(6) Form TECH-6: Proposed Subcontractors and Suppliers
(7) Form TECH-7: Proposed Methodology to Execute the Works
(8) Form TECH-8: Technical Compliance sheet
(9) Form TECH-9: Proposed specifications and make/ manufacturerfor 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 requiredWorks as per ITB para 25 A (Assessment of Qualification)

B) PRICE BID

Bidder should submit Price Bid **<u>for each quoted Schedule</u>** 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)

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 ofthe Works including goods and services as per Scope of Services given in Bid Documents. Fixed price to be quoted against required works against each Schedule.

13.3 Prices quoted by the Bidder shall be fixed during the Bidder's performance of the Contract and not subject to variation on any account. A bid submitted with an adjustableprice quotation will be treated as nonresponsive and will be rejected, pursuant to ITBClause 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 onebid for any Schedule.

16. DOCUMENTS ESTABLISHING COMPLIANCE OF WORKS AND SERVICES ASPER 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 its bid, a Bid Security Declaration as per the format provide in Section VI – Other Standard Forms

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

17.3 Bidder will be suspended and declared ineligible for two years from the date of suspension, to submit bids / proposals against Request for Bids / Request for Proposals issued by the Purchaser, in the following cases:

(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 refuse to execute the Contract; or (ii) fail to furnish the Performance Security, if required in accordance with the Bid Documents.

17.4 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 submissionof bids. Any bid valid for a shorter period shall be treated as nonresponsive and rejected.

18.2 In exceptional situations, the bidders may be requested by the Purchaser to extendthe 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_VendorRegsitration.pdf

20. DEADLINE FOR SUBMISSION OF BIDS

20.1 Bids must be submitted online before **Bid i.e., 03.00 PM of 11/11/2022.**

20.2 The Purchaser may, at its discretion, extend the deadline for the submission of bidsby 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.** Bidders' representatives shall sign attendance sheet as proof of their attendance. The Bidders can view the online bid opening after Login as Vendor using username and password. The name of Bidders shall appear to Bidders attending online bid opening**.**

22.2 The Technical Bid shall be opened at the first instance **at 03.30 PM on 11/11/2022**. During the Technical Bid opening, the Bid opening official(s) will read the salient features of the bids like Bid Security Declaration 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 thoseBidders 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. TheBidder'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 only for qualified no. of schedules 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.

22.7 In case a bidder is determined as technically qualified for lesser no. of labs / Schedules than quoted by them, than the purchaser shall consider only the qualified no. of labs/ Schedules as per technical evaluation criteria defined at para 27 as valid bids which fall "in the order of natural sequence" and remaining shall be ignored. No representation from Bidders shall be entertained in this regard.

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 beenreceived and the information/documents given by the bidders in their bids. No new condition will be brought in while scrutinizing and evaluating the bids.

24 PRELIMINARY SCRUTINY OF BIDS

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

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

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

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

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

25 CLARIFICATION OF BIDS

25.1 During evaluation of the bids, the Purchaser may, at its discretion, ask the Bidder for a clarification of its bid. The request for clarification and the response shall be inwriting, 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 beassessed for their qualification for the Schedules quoted by them as per criteria given below:

(a) Bidders may submit their response for any ONE or MORE or ALL schedule of requirement as specified below at Sl. No. (b)
(b) To qualify **for each Schedule**, the bidder, should have achieved an average annual turnover during last three financial years (i.e., 2018-19, 2019-20 and 2020-21) as per table below:

Sequence No.	**Schedule No.**	**Brief Scope of Works and List of Sites**	**Average Annual Turnover requirement over last three F.Y.** (i.e., 2018-19, 2019-20 and 2020-21) (Rs.)
		Renovation, Construction, Testing, Commissioning and Validation of TB Containment Laboratory and associated works with two years of Comprehensive warranty period on '*Turnkey Basis'* in compliance with *National Tuberculosis Elimination Program (NTEP), Central TB Division (CTD), Govt. of India (GoI)*, and the cost of maintenance of laboratories for the period of 3 years after warranty period at following sites:	
1	(I)	IRL Hyderabad	40,00,000
2	(II)	NDTC Delhi	40,00,000
3	(III)	IRL Cuttack	40,00,000
4	(IV)	IRL Indore	40,00,000
5	(V)	IRL Nagpur	40,00,000

In case bidder quotes for multiple Schedules, the requirement of turnover shall be cumulative i.e., sum of turnover required for multiple no. of quoted Schedules

In support of the above qualification requirement, bidder should submit Copies of audited financial statements of accounts (including balance sheet, profit and loss account, auditor's reports, and IT returns) certified by the auditor of the Company for last three financial years (i.e., 2018-19, 2019-20 and 2020-21).

(c) (1) In case bidder quotes for one Schedule, Bidder should have experience of successfully executed **at least 1 (one) similar work**s* during last 5 (five) years (as on date of opening of technical bids).

(2) In case bidder quotes for 2 (Two) Schedules, Bidder should have experience of successfully executed **at least 2 (two) similar work**s* during last 5 (five) years (as on date of opening of technical bids) as specified below

(3) In case bidder quotes for 3 (three) Schedules or more, Bidders should have experience of successfully executed **at least 3 (three) similar work**s* during last 5 (five) years (as on date of opening of technical bids) as specified below

***Similar works shall mean successful construction, testing, commissioning, and validation of Bio-Safety laboratory (BSL-2/BSL-3/BSL-4 Laboratories) /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 shallnot 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 minimum qualified team of key personnel for successful execution of the work

1. The bidder should have one Project Manager, with minimum 5-years *Similar experience who shall be responsible for all the quoted Schedules.
2. The bidder shall have one (in-house or outsourced) design expertise for technicaldrawings who shall be responsible for all the quoted Schedules.
3. The bidder should have at least one Site supervisor /Mechanical Electrical and Plumbing (MEP engineer) **for each Site under the quoted Schedule.** 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-timeemployee/ consultant of the bidder and shall be ready for deployment at site(s) if contract is awarded to the bidder.

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

(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 BIDDERALONG WITH THEIR BIDS FOR TECHNICAL QUALIFICATION AND EVALUATION

Project Implementation Methodology including (under Form Tech-7)

i. Past experiences of developing labs including TB Containment labs
ii. Team (members and their qualifications) which will be building the TB Lab(including designing, HVAC and ducting team, electrical, plumbing, civil works team, interiors developing team, etc.) as format given at Standard Forms-Tech-4 Architectural layout plans- including any comments/ concerns about the design provided
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 9 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, forthe quoted Schedules, shall be considered for further evaluation of qualification as perpara (c) to (f) and also for detailed technical Evaluation.*

2. *Bidders are advised to quote for such number of Schedules for which they are qualified as per requirement given in para (a) and (b) above, as per their own assessment.*

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 basedon the information / documents submitted against Scope of Works and Technical Specifications for each quoted Schedules individually.

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

27.3 In case of Bidder quotes for multiple schedules, the average Annual turnover requirement, similar works, and Manpower requirement would be in multiples of the number of schedules quoted as specified in the evaluation criteria above at para 27 a-d.

27.4 Schedule wise technical evaluation shall be carried out and, bidder must meet technical qualification requirement for each schedule as mentioned in the para 27. Above to qualify under each schedule.

C. FINANCIAL EVALUATION:

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

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

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

(c) The cost of Annual maintenance of laboratories for the period of 3 years after comprehensive warranty period of 2 years

27.6 Financial evaluation shall be carried out only for technically qualified schedules and lowest evaluated responsive bidder under each schedule 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 evasive reply without clarifying the pointat issue in clear terms, that bid will not be evaluated further.

29. FINAL EVALUATION OF BIDDERS' CAPABILITY TO PERFORM THECONTRACT

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

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

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

G. AWARD OF CONTRACT

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

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, whatsoeverto the affected bidder(s).

32. AWARD CRITERIA

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

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

33.1 The Purchaser reserves the right at the time of Contract award and/or during validityof contract, to increase or decrease the scope of services to the extent of 25% basedon mutually agreed terms and conditions.

34. INTIMATION LETTER TO SUCCESSFUL BIDDER / NOTIFICATION OFAWARD

34.1 Before expiry of the bid validity period, the Purchaser will notify the successful bidder(s) in writing, only by speed post or by e-mail that its bid has been accepted, briefly indicating therein the essential details like description of services and corresponding prices accepted. The successful bidder must furnish to the Purchaserthe required Performance Security within 21 days along with the contract agreementfrom the date of this notification, failing which the awardwill 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 perFormat 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: Bid for Renovation, Construction, Testing, Commissioning and Validation of TB Containment Laboratory and associated works with two years of comprehensive warranty period on 'Turnkey Basis' in compliance with National Tuberculosis Elimination Program (NTEP), Central TB Division (CTD), Govt. of India (GoI).

Bid Ref. No. SAMS/FIND India/Lab Renovation/ATE/03/2022

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

Seq No	Schedule No.	Name of Laboratory

2. We warrant that in preparing and submitting this bid, we have complied with, and are willing to be bound by, 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 executedby 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 indemnifyin 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 maliciousacts 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 declaration as per format provided 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 perabove table
b. Please attach self-attested copy of Work Order / MOU / Contract or any otherdocument in support of above experience.

6. Contact details of persons who may contacted for requests for clarificationduring 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: Bidders' Preliminary Programme

***Note to bidders*: Bidders shall submit a preliminary Programme for the execution of theworks.**

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

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

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

- **a Programme narrative that describes the mechanisms and assumptions madein preparing the Programme; and**

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

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

TECHNICAL PROPOSAL- STANDARD FORMS

Form TECH-4: Proposed Project Team and Organizational Structure

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

Schedule No.___

	Position Description	Name	Qualification	Years Exp
	[*Insert Description*]	*[Insert Name]*		[*Insert No.*]
	[*Insert Description*]	*[Insert Name]*		[*Insert No.*]
	[*Insert Description*]	*[Insert Name]*		[*Insert No.*]
	[*Insert Description*]	*[Insert Name]*		[*Insert No.*]
	[*Insert Description*]	*[Insert Name]*		[*Insert No.*]
	….			

TECHNICAL PROPOSAL-STANDARD FORMS

Form TECH-5: Works Management System

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

Project implementation/quality management

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

Health and safety management

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

Environmental management

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

TECHNICAL PROPOSAL-STANDARD FORMS

Form TECH-6: Proposed Subcontractors and Suppliers

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

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

TECHNICAL PROPOSAL- STANDARD FORMS

Form TECH-7: Proposed Methodology to Execute the Works

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

I. PROPOSED METHODOLOGY

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

TECHNICAL PROPOSAL- STANDARD FORMS

Form TECH-8: Technical Compliance sheet

Sl. No.	Bid Technical Specification (Main)	Specifications Compliance /Deviation, if any (kindly specify Quantity of items, technical specifications, Make and model of the quoted items)
	SCOPE OF WORK:	
	The Scope of work involves 'Renovation, 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, complete renovation, 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:	
	a) Dismantling and removal of existing installed items of interiors, epoxy flooring, ducting, Heating Ventilation & Air Conditioning (HVAC) system & 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 renovated laboratory.	
	c) Power required for the TB Containment Laboratory shall be tapped from the AHU panels (through its expansion and laying of required power cablings) . 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	

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)
	its water supply requirements.	
	The following shall be provided to the Vendor by the institution/site:	
	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.	
	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 cablings) or panels. Supply should be three phase and with proper earthing and required capacity of 440V for AHU Unit for TB Containment lab. Adequate provision for power back up in the form connection to a green source for energy back up or Diesel Generator Set of about 120-150 KVA capacity (to be re-calculated based on requirement at time of procurement/assessment) is a must to keep lab functional all time.	
	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:	
	1. The proposed TB Containment Laboratory shall be renovated and 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.	

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)
	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	
	ENERAL 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.	

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)
	) **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:	

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)
	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. 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	

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)
	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. <u>Filters:</u>	
	○ 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. <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.	

Sl. No.	Bid Technical Specification (Main)	Specifications Compliance /Deviation, if any (kindly specify Quantity of items, technical specifications, Make and model of the quoted items)
	i. 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	

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)
	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. **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	

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	a. Framework vertically made of M S Square Pipe frame: 2 Inches X 2 Inches, 16 Gauge	
	b. Framework vertically made of M S Square Pipe frame: 2 Inches X 2 Inches, 16 Gauge	
	c. M S Fencing with wire mesh: ½ inch X ½ inch	
	d. Supporting Structure M S Angle: 50 X 5 mm	
	e. GI pre-coated corrugated profile roof sheet: 0.5 mm thick duly supported with J Hook.	
	f. 10 SWG with provision of door with lock and key AHU Shed with fencing should be duly enamel painted and with anti-rust coating from both sides. The height covered shall be at least 8 feet. There should be no gap between roof sheet and wire mesh, if any angle creates gap, it should be covered with iron bars and wire mesh in between.	
3.	**Electricals:**	
	I. The electrical power requirement (power matrix) for the TB Containment laboratory should be calculated and provided by the lab.	
	II. Supply should be three phase supply with proper earthing and required 440 V capacity to support the functioning of AHU Unit.	
	II. **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.	
	V. 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.	

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	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. <u>AHU Control panel:</u>	
	o 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.	
	o 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.	
	o Single-phase protector in the AHU control Panel	
	o Multi-function meter displaying voltage, load and power factor for electricity supply to AHU panel should be present.	
	o LED indicator for ON/OFF will be provided for RBY phase, AHU supply, AHU exhaust, Standby exhaust, Condensation unit, Heating Coil of Supply Unit	
	o DOL Starter Switch to be provided for AHU exhaust, AHU Supply and Condensation Unit (in the order)	

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	○ 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	

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	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.	

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	Vi. **Doors:**	
	i. Flush Door finishes shall be 45mm thick with chemical resistant, anti-fungal and anti-bacterial properties.1.2mm thick GPSP sheet suitable to fix on 60 mm thick wall panel with provisions for double glazing glass for all door and hardware like push plates and handle on both side, lock and key, etc. PUF Panels will be with GPSP Sheets, epoxy painted on both sides and PUF insulation of minimum 38-40 kg/m3. Concealed hardware for fixing of door frames, TS-71 door closure, SS hinges, SS Door handle, SS ball bearing butt hinges, concealed tower bolt for the double door, both sides lock and key arrangement. Suitable neoprene "Y seal" type gaskets may be used between the door jam and door stop.	
	ii. Door interlocking systems shall be complete with controller module, push button stations with LED indication, electromagnetic locks. To take care of malfunctioning of interlocking, alternative electrical switch to manually open the doors should be provided.	
	iii. Vision Glass for doors shall be fixed type vaccumised and insulated type with 6 mm toughened glass and shall be installed for natural lightening flushed with surfaces of the door. Fixed flush to both faces of the door / wall panels to provide ease of cleaning and maintenance. No crevices / joints / sloped profiles are used for fixing the glass. This will avoid particle contamination and dust accumulation.	
	iv. 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	
	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	

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	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	

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	Autoclave room shall be provided with a lid to prevent direct exposure of material to outside.	
8.	**nitoring 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. <u>Split AC for MGIT:</u> 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.	

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	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 renovation 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 **(the ducting material & External blower of adequate capacity for BSC ducting should be provided by Identified Agency.)**	
	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.	

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	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:	
	i. For Bio Safety Cabinet:	
	○ Validation of BSC: Particle count test, PAO (Filter Integrity test for pre-filters, filters ULPA filter/ HEPA filters), Air in-flow velocity and down-flow velocity test as per NSF 49and EN 12469 standards with devices traceable to National/International Standards, UV and Fluorescent light intensity	

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	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	
	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, earthling, AHU control panel, MCCB panel and LT panels	
	o 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	
	• Magnehelic Gauges	
	• Temperature control sensors; pressures control sensors,	
	• Pass boxes	
	• Split ACs	
	• Fire Detection system	
	• EPABX System	

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	• 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.	
	b. 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.	
14.	**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.	

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	b) Report after each visit needs to be provided to lab as well as procurement agency /FIND India 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 BMBSL).*This guideline recommends minimum facility and operational requirements for laboratories working with biological hazards. Primary Containment for Biohazards: Selection, Installation and Use of Biological Safety Cabinets,	
	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.	**omission 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	

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	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	
	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.	

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	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.	

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

Sr No	Name of Lab	Specific Work requirement
1	**IRL Hyderabad**	**1. For existing TB Containment lab:** a. Dismantling of existing brick wall of size 6' between the ante room and TB containment room and appropriate flooring to be done after removal of existing cemented wall (19'3"(L)x11'6"(H)). b. Existing one view panel between the passage and TB containment lab to be modified/converted into pass box. c. Existing one view panel between the passage and Ante room of TB containment lab need to be closed permanently with brick & mortar along with painting work. d. Dismantling and removal of existing list of the items of AHU/HVAC system mentioned below and handed over to site for safe and secure storage, planned in the staff room for temporary storage.

S.NO	Items to be Removed and Handed over to the site	Make and Model	Quantity
1	**Supply Air Handling Unit (AHU)**		
i)	Blower	CG	1 no
ii)	Motor	Nicotra-3HP	1 no
iii)	Cooling Coil	OEM	1 no
iv)	Pre-Filter	OEM	1 no
v)	Fine filter	OEM	1 no
vi)	HEPA Filter	OEM	1 no
2	**Exhaust Air Handling Unit**		
i)	Blower	CG 3.7KW	1 no
ii)	Motor	Nicotra 5HP	1 no
3	**Condensing Unit (17 TR):**		
i)	Compressor	Voltas 8.5TR	2 nos
4	**Puff Paneling**		
i)	Wall Panel- (Quantity in Feet)	OEM	920 SQFT
ii)	Ceiling Panel- (Quantity in Feet)	OEM	506 SQFT
iii)	Puff Insulated Door	OEM	5 nos
5	**AHU Control Panel including Wiring**	OEM	1 unit
6	**GI Ducting** Existing GI ducting (Quantity in Square Feet), Total quantity of	OEM	800 SQFT
7	**Dampers (**Existing dampers available needs to be mentioned)	OEM	1 set
8	**Interiors**		
i)	Eye wash and shower	OEM	1 no
ii)	Wash Basin	OEM	2 nos
iii)	Pass Box	OEM	1 no
iv)	Storage Rack	OEM	2 nos
v)	Shoe Rack	OEM	1 no

vi)	Split AC (Indoor Unit and Outdoor both)	CamiPro-1.5TR	1 no
vii)	Work Bench	OEM	1 no
viii)	Lab Stools	OEM	4 nos
ix)	EPBAX System	OEM	1 Set
x)	Fire Alarm System	OEM	1 Set
xi)	Access Control System	OEM	1 Set
xii)	Magnehelic Gauge	OEM	2 nos
11	**Any Other Additional Items**		
i)	Air Curtain	Almonaro	2 nos

e. Complete putty & whitewash of existing permanent wall of an area of 1000 sqft and ceiling of the area of 520 sqft after complete dismantling of existing interior (puff panels of existing TB Containment Facility).
f. Proper levelling and rework of existing cemented flooring before applying new epoxy flooring.
g. Dismantling of existing two Biosafety cabinet with external blower including ducting, and permanent closure of ducting opening at wall.
h. Shifting of two Biosafety Cabinet, three refrigerated centrifuges and two MGIT 960 system along with UPS to safe location (CBNAAT area & existing BSL 2 room) identified by the site with appropriate bubble packaging.
i. Re-shifting and installation of three Biosafety Cabinet (newly supplied), two refrigerated centrifuges, two MGIT 960 system along with UPS from the existing BSL2 Lab area to the renovated TB Containment facility in coordination with service provider /OEM.

2. For CBNAAT room

a. Uniform tile flooring along with appropriate cementing work with supply and provision of vinyl carpet for entire CBNAAT room of an area approx. 325 SQFT {16’ width and 20’3” length}
b. Complete whitewash and putty work for entire CBNAAT area of approx. 1117 SQFT
c. Closure of two existing windows of dimension 4’6’ H X 3’6” W and 3’ H X 3’ W inside the CBNAAT room permanently with brick & mortar.
d. Reinstallation of two existing BSC including appropriate ducting work.
e. Provision of two electrical sockets single phase, 15 /6 AMP in the aluminum partition for the installation of 2 numbers of BSC.
f. Shifting of 16 module GeneXpert with UPS to adjacent room.
g. Provision of three electrical 15/6 Amp socket for GeneXpert.
h. Reinstallation of 1.5 TR Split AC from existing TB containment lab to new CBNAAT room including insulation and appropriate drainage pipes.
i. Supply and provision of one no of 26 AMP MCB socket including necessary wiring for the reinstallation of 1.5 TR Split AC.
j. Provision of two ceiling lights with dedicated switch for new CBNAAT room.

3. For BSL2 Lab:

a. Supply and installation of three work benches of 6’ length & 2’6” width & 2’6” Height need to be provided. 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 have arrangement for placing the UPS below the work bench or keeping consumables. b. Provision of four numbers of electrical sockets (single phase, 15/6 AMP sockets) with dedicated switch along with necessary wiring for refrigerated centrifuges near to the new work benches.
2	**<u>NDTBC, Delhi</u>**	**I. Shifting of Equipment** 1.Shifting of a. Centrifuges (1 No. of "Hettich" Make and 1 no. of "Eppendorf" Make) from the existing TB containment Lab to the proposed extended TB Containment Lab b. MGIT 960 machines (all 3 Nos.) from the existing TB containment Lab to the proposed extended TB Containment Lab c. Biosafety cabinet (1 No. of "Heal force" Make) from the existing TB containment Lab to the proposed extended TB Containment Lab i. Pressure balancing to be done to maintain negative pressure with 3 biosafety cabinets in the existing TB Containment Lab while shifting this BSC as there are 4 BSC in the existing TB Containment lab. 2.These shifting to be done in coordination with the OEM as well as FIND India and its AMC/CMC agencies. **II. Civil, plumbing, and electrical works** 1. **<u>For existing TB Containment Lab</u>** a. **Civil and Plumbing Works:** i. Removal of ducting of one "Heal force" biosafety cabinet along with permanent closure of the holes in the wall after removal of ducting and motor blower and its exhaust. b. Electrical works: i. Removal of motor blower and its exhaust (of the "Heal force" BSC) and reinstallation at the proposed extended TB containment Lab. 2. **<u>For Existing Autoclave Room</u>** a. **Civil and Plumbing Works:** i. Creation of an opening (passage/entrance) of dimension 3'6" (W)x 7' (H) in the wall between the existing and proposed autoclave room as indicated in the Layout. This will help for ease transfer of samples from existing TB Containment lab to extended TB Containment lab. Further, it will help expand capacity for autoclaving which currently is inadequate. 3. **<u>For Proposed Autoclave Room</u>** a. **Dimensions of the proposed room: 15'6" (L)X11'4" (W)** b. **Civil and Plumbing Works:** i. To create a room of half brick wall and half glass aluminum partition of dimensions of 15'6" (L) x 11'4" (W) • The 2 walls of the room to be created with brick wall (6" Inches thick) up to a height of 6' (H) from floor. • The remaining part of wall till the ceiling of the room (approx. height 6') to be made of glass aluminum partition as per dimensions of the room as per layout ii. The existing double wooden door (for exit from storeroom 1) needs to be removed and replaced with a new single wooden laminated door of dimensions 4'(w)x6'8" (H) with proper door lock facility iii. Creation of Workbench of size 6' (L) x 2'6" (W) x 3' (H) of brick and mortar with a granite top. iv. Installation of a new modular standalone washbasin made of SS 304 with elbow or foot operated mechanism along with proper water supply and drainage lines (as per layout)

		• Wall hanging soap dispenser to be provided adjacent to wash basin unit along with a wall mounted tissue paper box with a mechanism to pull out tissue papers be provided v. Water inlet and outlet line to be provided as per layout for the horizontal autoclave c. **Electrical Works:** As per the layout: i. Installation of Ceiling Lights, Fan with dedicated switch and socket ii. Installation of 4 nos. 5/15 Amp modular switch and socket iii. Installation of 3 phase,4 pole, 40-amp MCB,4 SQMM wire size for installation of Horizontal Autoclave iv. Installation of 1 no. exhaust fan of adequate capacity (along with appropriate civil work) 4. **For Proposed UPS+ AHU Panel Room** a. **Civil and Plumbing Works:** i. Existing double wooden door needs to be replaced with a new single wooden laminated door of dimensions 3' (w) x 6'8" (H) with proper door lock facility. Suitable civil works (brick and mortar) to close out any empty space to be carried out after removal of the door. b. **Electrical Works:** As per the layout i. Installation of 3 Ceiling Lights, 1 ceiling Fan with dedicated switches Installation of 1 no. exhaust fan of adequate capacity (along with appropriate civil work) 5. **For the Proposed extended TB Containment Lab:** a. **Civil and Plumbing Works:** i. <u>Emergency exit</u>: Removal of the existing door and expansion of door space to 4' (W) to accommodate the emergency exit door dimensions (as per the layout) ii. <u>Creating a shaded cemented path</u> of dimension of 9' (W) x 11'6" (L) + 4'6" (W) x 26'6" (L). The height of the path should be same as the existing Shaded cemented path (~8') • This will help connect the cemented path leading to the external AHU unit • It will also connect to the existing cemented path in the backyard of the lab iii. <u>Creating pass box opening in the walls</u> • As indicated in the layout- openings need to be created in the walls for two pass boxes opening b. **<u>Creating small cabin for locating emergency shower and eye wash station</u>** i. This will be located just outside the emergency exit of proposed extended TB Containment Lab (right side). ii. Dimensions of the cabin will be 3'(W) x 4'(L) x 8' (H) made up of aluminium glass partition. It will have one door with a latch. iii. Inside the cabin will be installed emergency shower and eye wash station with required accessories and inlet and outlet plumbing work as indicated in the layout. c. **Electrical works:** i. Installation of ceiling light with dedicated switch inside the emergency shower and Eye washroom Cabin
3	**<u>IRL Cuttack</u>**	2. Identified area for Extension of TB Containment lab (before renovation work): a. Clearing the identified storeroom and its existing furniture, and RCC racks. b. Dismantle the RCC rack throughout the area for both the rooms.

c. General storeroom has a wall at 12 feet 6 inches from the door, that has an opening of 6 feet wide and 8 feet 7 inches high at 1 foot 4 inches from the wall left to the door. This opening has to be extended higher at around 10 feet high.
d. Removal of existing tile flooring and relaying levelled uniform tilted flooring of area (22' X 21') SQFT.
e. Closing of two existing windows of size [3' x 4'8"] each and ventilators with brick, mortar wall or RCC walls.
f. Door opening should be more than 3 feet and 6 inches from the wall to wall from the proposed ante room to TB Containment facility.
g. Removal of existing electrical fixtures like ceiling light, fan, and electrical sockets etc.
h. Supply and installation of one ceiling fan with required wiring in the AHU control panel and UPS room.

3. Identified area for extension of TB Containment lab (during renovation work):

a. Creation of partition with glass aluminium as indicated in the layout covering the width of corridor (6 feet 6 inches) and height till the ceiling (12 feet 6 inches), it will separate LPA, TB containment lab, and BSL II from rest of the lab. The partition is to be installed right after the Microbiologist room towards the LPA section. The partition will have double door of dimensions of each 2 feet wide by 7 feet high with self-closing mechanism (door closure) and with lock and key facility.
b. Supply and installation of 2 unit's Air conditioner, capacity of 1.5 tonnage for the storeroom and media room. These will be inverter ACs (minimum three star) of Hitachi/ Bluestar/ Carrier/ Lloyd/ Godrej or equivalent OEM. The outdoor unit will be suitably placed outside the lab with easy access and adequate protection from theft. Drainage pipe of ACs will be adequately long and connected into the drainage system of the institute.
c. Supply and installation of slotted angled racks (8 units)
   i. Dimension: 3'6" (L)x 1'6" (W) x 6'(H)
   ii. Material:18 Gauge Iron with anti-rusting coating
   iii. Adjustable 4 shelves for each rack
   iv. Plastic/ Rubber/ Neoprene Shoes
   v. Bolts and nuts as required for fitting of shelves
   vi. Scratch resistance smooth finish

4. Identified area for AHU Panel and UPS room:
a. supply and Installation of 1 ceiling fan of 1200 mm sweep with all accessories including electronic regulator in the UPS+ AHU control panel room

4 **<u>IRL Indore</u>**

1. For existing culture reading room:
a. Creation of door opening with supply and installation of glass aluminum double door of dimensions (4'W X 6'8"H) with lock & key assembly, auto door closure mechanism for the existing reading room from the passage area.
b. The existing granite platform needs to be resized as per layout to create the door opening and entry to the existing reading room.

2. **For existing TB containment Lab:**
a. Dismantling and removal of existing list of the items of air handling unit (AHU)/ heating, ventilation & air conditioning (HVAC) system mentioned below and handed over to site for safe and secure storage, planned outside open space of the lab near generator:

s.no	Items to be Removed and Handed over to the site	Make and Model	Quantity
1	**Supply Air Handling Unit (AHU)**		
i)	Blower	Kruger	2 numbers
ii)	Motor	Crompton Greaves 3 phase induction motor	2 numbers
iii)	Cooling Coil	8 row cooling coil 2	1 number

		circuit	
iv)	Pre-Filter	OEM	1 set
v)	Fine filter	OEM	1 set
vi)	HEPA Filter	OEM	1 set
2	**Exhaust Air Handling Unit**		
i)	Blower	Kruger	3 numbers
ii)	Motor	Crompton Greaves 3 phase induction motor 2(5HP/3.7KW) and 1(1HP/0.8KW)	3 numbers
3	**Condensing Unit**		
i)	Compressor	Carrier 8.5 Ton	2 numbers
4	**AHU Shed**	Local Made	1 set
5	**Puff Paneling**		
i)	Wall Panel- (Quantity in Feet)	OEM	840 SQFT
ii)	Ceiling Panel- (Quantity in Feet)	OEM	450 SQFT
iii)	Puff Insulated Door	OEM	4 numbers
7	**Epoxy Flooring**	OEM	450 SQFT
8	**AHU Control Panel including Wiring**	Kwality power control	1 set
9	**UPS (3KVS, 30 mins Backup) for TB Containment LAB Backup**	Not Available	NA
10	**GI Ducting:** Existing GI ducting (Quantity in Rfeet), Total quantity of	OEM	1000 SQFT
11	**Dampers (**Existing dampers available needs to be mentioned)	OEM	6 numbers
12	**Interiors**		
i)	Eye wash and shower	OEM	1 number
ii)	Wash Basin	OEM	2 numbers
iii)	Pass Box	Bio flit	2 numbers
iv)	Storage Rack	OEM	1 number
v)	Shoe Rack	OEM	1 number
vi)	Split AC (Indoor Unit and Outdoor both)	Lloyd and Samsung	2 numbers
vii)	Work Bench	OEM	2 numbers
viii)	Lab Stools	OEM	5 numbers
ix)	CCTV Camera system	I Safe	1 set
x)	EPBAX System	OEM	3 numbers
xi)	Fire Alarm System	Zicom	4 numbers
xii)	Access Control System	OEM	1 Set
Xiil)	Magnehelic gauge	OEM	2 numbers

3. Shifting and reinstallation of one modular door along with door closures and other assemblies from TB containment lab to existing master mix room of the existing LPA section.
4. Complete putty & whitewash of existing permanent wall of area 1250 sq. Ft and ceiling of the area 480 sq. Ft after complete dismantling of existing interior (puff panels of existing TB containment Facility).
5. Proper levelling and rework of existing cemented flooring before applying new epoxy flooring.
6. Removal of two numbers of split ACs of capacity 2 Tons each including removal of the existing wiring and reinstallation of the split ac in the reading room and BSL2 lab respectively including insulation and appropriate drainage pipes.
7. Supply and provision of two numbers of 32 AMP MCB including necessary wiring for the reinstallation of 2 TR Split ACs in both reading room and BSL 2 lab
8. Supply of additional 4 numbers of ergonomic laboratory chair, designed for infectious laboratory areas:
   - adjustable height to suit different users, seat range approximately 400- 490 mm

		- adjustable-angle back rest (no arm rest) - castor wheels - all metal parts chrome plated - disinfect able with alcohol-containing disinfectants 9. Provision of three service windows to access the ceiling for maintenance purpose as shown in the layout annex 2. 10. Dismantling of existing three Biosafety cabinet (BSC) with external blower including ducting, and permanent closure of ducting opening at wall. 11. Shifting of three BSCs, three refrigerated centrifuges, two microliter centrifuge and two MGIT 960 system along with UPS to safe location (corridor area/existing BSL II room) identified by the site with appropriate bubble packaging. 12. Reinstallation of one BSC (Nuaire make) in the existing BSL 2 Lab including the ducting work. 13. Re-shifting and installation of two BSCs, three refrigerated centrifuges, two MGIT 960 system along with UPS from the corridor area to the renovated TB Containment facility in coordination with service provider /OEM.
5	**<u>IRL Nagpur</u>**	**1.For existing BSL II Lab:** a) Removal of RCC-brick granite platform of dimension (16' (L) X 2'6" (W)). b) Removal of existing tile flooring of entire BSL II lab area and disposal of waste to a suitable area identified by the site. c) Uniform Kota stone flooring of entire BSL II room of dimension (23'8" (L) X 16' (W)) with appropriate cementing mixture to ensure proper levelling of existing flooring. d) Removal of three numbers of split ACs of capacity 2 Tons each including the existing wiring and reinstallation work in TrueNaat room, Data entry Room and Cold room respectively. e) Supply and provision of three numbers of 32 AMP MCB including necessary wiring for the reinstallation of 2TR Split ACs in TrueNaat room, Data entry Room and Cold room respectively. f) Supply and provision of additional 21 feet copper pipes including insulation and appropriate drainage pipes for the reinstallation of 2TR Split ACs and its outdoor units. g) Dismantling of existing two Biosafety cabinet with external blower including ducting, and permanent closure of ducting opening at wall. h) Shifting of 2 Biosafety cabinets with appropriate bubble packaging to safe location identified by site. i) Two refrigerated centrifuges will be shifted to existing TB Containment Lab and one refrigerated centrifuge will be shifted to safe and secure location with proper packaging by vendor identified by FIND India. j) Removal of existing electrical switch-sockets, ceiling fan, tube lights, CCTV Camera (2nos.) with wiring form the proposed TB Containment Lab including change room and ante room and hand over to the site. k) Removal of existing wash basin including the plumbing lines. l) Existing one glass aluminium window of dimension (5'10" W X 4' H) to be converted in door of dimension (3' W X 6'8" H) and rest space should be covered with brick-mortar with tile dadoing work. m) Existing one glass aluminium window of dimension (2'6" W X 4' H) need to be closed permanently by brick-mortar with tile dadoing work. n) Removal of existing glass aluminum partition from ante room of BSL II lab. o) Removal of existing glass aluminium door (4'10"X 6 '8") to this be converted in emergency exit and the remaining space needs to be closed permanently by brick and mortar with tile dadoing work. p) Removal of existing two glass aluminium-metal grill window of dimension (5'10" W X 4'H) of each (including window of microscopy room and corridor refer existing layout annexure 1) and close the space permanently by brick-mortar with tile dadoing work. q) Permanent closure of existing ventilation window (13 no.) with brick-mortar work.

		r) Supply and provision of aluminium partition above the ceiling height 8' to the true ceiling height of the proposed change/ante room with a provision of a sliding service passage for maintenance work.

Sl. No.	General Works for All Sites	Specifications Compliance /Deviation, if any along with Make andModel of Item Quoted
1	Batteries of UPS should be provided with rack. UPS's with batteries and proper arranged wiring (e.g: wire tie to be used) to be installed and well-arranged/organized for giving aesthetic look	
2	Dedicated earthing to be done for TB Containment Lab	
3	Any Minor Civil, Electrical and Plumbing works identified during Lab renovation other than additional works mentioned needs to be carried out by identified Agency	

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

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

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		
27	LT Switchgear (ACB, MCCB, MCB,ELCB, RCCB, Contactors, SFUs)		

S. N	Item description	Specifications with capacity (wherever applicable) and warranty offered as specified by Manufacturer	Proposed Makes / Manufactures
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		
58	Smoke Detectors & Addressable analogue main panel		
59	Fire extinguisher		
60	Pass box		

S. N	Item description	Specifications with capacity (wherever applicable) and warranty offered as specified by Manufacturer	Proposed Makes / Manufactures
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.
Use separate table as above for each quoted Schedule, if required.

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

(TO BE FILLED BY BIDDERS FOR QUOTING THEIR PRICES -SCHEDULEWISE.)

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

Bid Ref. No. SAMS/FIND India/Lab Renovation/ATE/03/2022

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

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

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

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

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

Name:_____

Title:_____

Date:_____

Signature: _____

FINANCIAL PROPOSAL- STANDARD FORMS

Form FIN-2 : Lump sum Contract Price

(To be submitted for each quoted Schedules individually)

Schedule No.___

Description	**Name of Lab / Site**	**Costs (**inclusive of all applicable taxes i.e. GST)	**Total Cost (inclusive of all applicable taxes (i.e. GST)**
A. Cost of Financial Bid for Renovation, Construction, Testing, Commissioningand Validation of TB Containment Laboratory and associated works with two year comprehensive warranty on 'Turnkey Basis' and additional works (if any) **Note: Cost quoted should match with the total Cost as per Form FIN-3: Priced Bill of Quantity**		_____	_____
B. Cost of Annual Maintenance Services after completion of warranty period of 2years			
3rd Year		_____	_____
4th Year		_____	
5th Year		_____	
C**TOTAL BID PRICE = (A + B)**			_____

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

ANNEXURE-A

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

Sr. No.	Name of Spare Part	Unit Price (exclusive of GST)
1	**LT / AHU Control Panel**	
a	Fuse	
	16 A	
	32 A	
	63 A	
b	Relay /5 amp	
c	Contactor -3 pole/100 Amp	
d	Phase preventer 3 phase	
e	Indication Lamp	
f	ON/OFF Push button	
g	Selector switch 3 Position 100A 600V	
h	Variable Frequency Drive	
	3 HP rating	
	5 HP rating	
i	MCB	
	16 A	
	32 A	
	63 A	
	100 A	
j	4-Pole Isolator (Main incomer)	
	63 A	
	100 A	
k	Switchgear	
	TPN MCCB - 32 A	
	TPN MCCB - 63 A	
	4 P MCB - 32 A	
	4 P MCB - 63 A	
l	Time Delay Relay	
	(TDR)	
2	**Air Handling Unit**	
a	Bearing	
b	Fan Belt	
c	Pulley	
d	AHU Blower	
	1000 CFM	
	1500 CFM	

	2000 CFM	
e	AHU Motor (Single Phase)	
	1 HP (2800 rpm)	
	3 HP (2800 rpm)	
	5 HP (2800 rpm)	
f	AHU Motor (Three Phase)	
	1 HP (2800 rpm)	
	3 HP (2800 rpm)	
	5 HP (2800 rpm)	
3	**Exhaust Blower**	
a	Bearing	
b	Fan Belt	
c	Pulley	
d	Blower	
	2000 CFM	
	2500 CFM	
	3000 CFM	
	3500 CFM	
e	Motor (Single Phase)	
	1 HP (2800 rpm)	
	1.5 HP (2800 rpm)	
	3 HP (2800 rpm)	
	5 HP (2800 rpm)	
f	Motor(Three Phase)	
	1 HP (2800 rpm)	
	1.5 HP (2800 rpm)	
	3 HP (2800 rpm)	
	5 HP (2800 rpm)	
4	**Condensing Unit**	
a	Compressor	
	5.5 TR	
	8.5 TR	
	11 TR	
s	Refrigerant Gas Charging (Including Pressure test/Leak Test/LN2 Flushing	
c	Contactor -3 pole/100 Amp	
d	Relay/5 amp	
e	Phase preventer (3 Phase)	
f	HP switch	
g	LP Switch	
H	Condenser Fan Blower	
i	Condenser fan motor	
	0.5 HP	
	1 HP	

	3 HP	
J	Dryer Filter assembly	
k	Suction & Discharge valve	
7	**Sensors & Controls**	
	Magnehelic Gauge (-50 to +50 Pa range)	
	Room Pressure Sensor	
	Pressure Transmitter	
	Room Temperature Sensor	
	Temperature Transmitter	
	Room Humidity Sensor	
	Humidity Transmitter	
8	**Electrical Installations**	
a	Light Fixtures - Complete assembly	
b	Light Fixture Choke	
	1 x 18 W	
	2 x 36 W	
c	Light CFL/Lamps	
	18 W	
	36 W	
d	5 A Socket	
e	5/15 A Sockets	
f	5 A Switches	
g	15 A Switches	
h	16 A MCB	
i	32 A MCB	
j	32 A DP MCB	
k	63 A 4P MCB	
9	**Fire Alarm System**	
a	Smoke Detector	
b	Fire Alarm Panel	
c	Response Indicator	
d	Manual Call Point	
10	**Access Control System**	
a	Door Electromagnet	
b	Door release Push Button	
c	12 V / 24 V SMPS	
d	Controller	
e	Card reader	
f	Biometric reader/Numerical keypad	
14	**Split AC**	
a	Compressor	
	1.0 TR	
	1.5 TR	

	2.0 TR	
b	Condenser fan/blower for upto 2.0 TR unit	
c	Condenser blower motor for upto 2.0 TR	
	Unit	
d	Evaporator blower for upto 2.0 TR unit	
e	Evaporator blower motor for upto 2.0 TR	
	Unit	
f	Refrigerant Gas Charging (Including Pressure test/Leak Test/LN2	
	Flushing	
g	Remote Control Circuit including	
	remote control	
h	Electronic Voltage Stabilizer with	
	TDR	
	4 KVA	
i	MCB	
	16 A	
	32 A	
15	**UV System**	
	UV Lamp/light (2ft)	
	Timer switch for UV	
16	**Pass box**	
	Door Interlock magnet	
	Control Unit	
	UV lamp (1.5ft)	
	Silicon Sealant	
	Florescent Tube - U type (36 Watt)	
	Wires	
N.		

FINANCIAL PROPOSAL- STANDARD FORMS

Form FIN-3 Cost of Works

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

Bidders shall submit detailed workings of Lump Sum Contract Price (Component-A as given in FIN-2) for renovation, Construction, Testing, Commissioning and Validation of TB Containment Laboratory and associated works on 'Turnkey Basis' including cost of additional works, if any. The total price mentionedin the table below should coincide with the Price Component A as given in FIN-2 for eachSchedule.

Schedule No.	**I**
Name of Site	**IRL Hyderabad**

Sl. No.	Description of work	Unit of Measurement	Quantity (number/lot/job) approx.	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
HVAC					
1	Thermal Insulation for Ducting	Sqft	890		
2	Ducting	Sqft	890		
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.	12		
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 (H14) 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	3		
19	MS structural shed for AHU with concrete cemented Foundation	Job	1		
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		

Sl. No.	Description of work	Unit of Measurement	Quantity (number/lot/job) approx.	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
6	Push Buttons	Nos.	10		
7	Electric Multifunction Meter (Ammeters, Voltmeters, Load)	Set	1		
8	Load Managers	Set	1		
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		
Interiors					
1	Modular Material for Wall Panel including coving	Sqft	830		
2	Modular (PUFF panel) Flush Doors	No.	4		
3	Modular Material for Ceiling including coving	Sqft	452		
4	Epoxy Flooring	Sqft	452		
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 (CATFI Cable connection point)	Job	1		
11	Door interlocking & access control system	Job	1		
12	Temperature sensor & display	Set	1		
13	Humidity sensor & display	Set	1		
14	Pressure sensor & display	Set	1		
15	Clean room monitor	Nos.	1		
16	EPABX Box & Telephone set, Co-axial wires & cables	Set	1		
17	Stainless steel grade 304 Laboratory Stools	Nos.	5		
18	Stainless steel grade 304 trolley	Nos.	4		
19	Stainless steel grade 304 workbench 1.WB1: Work Bench1 (LxWxH)(6'6"x2'6"x2'6") 2.WB2: Work Bench2 (LxWxH)(4'x2'6"x2'6") 3.WB3:Work Bench3 (LxWxH)(3'6"x2'x2'6")	Nos.	3		
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		

Sl. No.	Description of work	Unit of Measurement	Quantity (number/lot/job) approx.	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
Site specific additional works (IRL Hyderabad)					
A	**Existing BSL3 Room**				
1	Dismantling of existing brick wall of size 6' between the ante room and BSL-3 room and appropriate flooring after removal of existing cemented wall(19'3"(L)x11'6"(H))	Sqm	20.7		
2	Existing one view panel of size (2' x 3') between the passage and TB containment lab need to be closed permanently with brick & mortar with painting work.	Cubic meter	0.2		
3	Dismantling and removal of existing installed items of interiors, epoxy flooring, ducting, Heating Ventilation & Air Conditioning (HVAC) system & electrical systems as mentioned in the site-specific additional work for Hyderabad and handed over to site	Job	1		
4	Complete putty & whitewash of existing permanent wall of area 1000 sqft and ceiling of the area 520 sqft after complete dismantling of existing interior (puff panels of existing TB containment Facility).	Sqft	1520		
5	Uninstallation, packaging & shifting of equipment from the existing facility to the space identified by the site and reinstallation of shifted equipment inside the renovated laboratory: - two Biosafety Cabinet, three refrigerated centrifuges and two MGIT 960 system along with UPS to be shifted to safe location (CBNAAT area & existing BSL II room) identified by the site with appropriate bubble packaging. - Shifting of 16 module GeneXpert with UPS to adjacent room	Job	8		
6	Dismantling of existing two Biosafety cabinet with external blower including ducting, and permanent closure of ducting opening at wall	Job	2		
B	**For CBNAAT room**				
1	Uniform tile flooring along with appropriate cementing work for entire CBNAAT room of area approx. 325 SQFT {16' width and 20'3" length}	Sqm	30.2		
2	Supply and provision of vinyl carpet for entire CBNAAT room of area approx. 325 SQFT {16' width and 20'3" length}	Sqm	30.2		
3	Complete whitewash and putty work for entire CBNAAT area of area approx. 1117 SQFT	Sqft	1117		
4	Closure of two existing two windows of dimension 4'6' H X 3'6" W and 3' H X 3' W inside the CBNAAT room permanently with brick & mortar	Cubic meter	0.72		
5	Reinstallation of two existing BSC including appropriate ducting work (Damper, Pipe, other ducting accessories material and foundation work for exhaust blower)	Job	2		
6	Provision of two electrical switch and sockets single phase, 15 /6 AMP for the BSC in the aluminium partition.	Nos	2		

Sl. No.	Description of work	Unit of Measurement	Quantity (number/lot/job) approx.	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
7	Provision of three electrical 15Amp socket for GeneXpert room	Nos	3		
8	Reinstallation of 1.5 TR Split AC from existing TB containment lab to new CBNAAT room including insulation and appropriate drainage pipes	Job	1		
9	Supply and provision of one no of 26 AMP MCB socket including necessary wiring for the reinstallation of 1.5 TR Split AC.	Nos	1		
10	Provision of two ceiling lights with dedicated switch for new CBNAAT room	Nos	2		
C	**For Existing BSL2 Room**				
1	Supply and installation of three work benches of 6' length & 2'6" width & 2'6" Height need to be provided. 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 have arrangement for placing the UPS below the work bench or keeping consumables.	Nos	3		
2	Provision of four electrical sockets (single phase , 15/6 AMP sockets) with dedicated switch along with necessary wiring for refrigerated centrifuges near to the new work bench.	Nos	4		
D	**Any other items**				
FINAL TOTAL AMOUNT					

Schedule No.	II
Name of Site	NDTC Delhi

Sl. No.	Description of work	Unit of Measurement	Quantity (number/lot/job) approx.	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
HVAC					
1	Thermal Insulation for Ducting	Sqft	1100		
2	Ducting	Sqft	1100		
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.	12		
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	3		
19	MS structural shed for AHU with concrete cemented Foundation	Job	1		
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		
9	Current Transformers	Set	1		

Sl. No.	Description of work	Unit of Measurement	Quantity (number/lot/job) approx.	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
10	Modular Switches, Socket outlets, Ceiling lights including wiring	Set	1		
11	PVC Conduits, Accessories	Running Meter	350		
12	Copper wires	Running Meter	350		
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		
Interiors					
1	Modular Material for Wall Panel including coving	Sqft	950		
2	Modular (PUFF panel) Flush Doors	No.	4		
3	Modular Material for Ceiling including coving	Sqft	502		
4	Epoxy Flooring	Sqft	502		
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 change over timer of 4 hours	Nos.	2		
10	Data Cable (CATFI Cable connection point)	Job	1		
11	Door interlocking & access control system	Job	1		
12	Temperature sensor & display	Set	1		
13	Humidity sensor & display	Set	1		
14	Pressure sensor & display	Set	1		
15	Clean room monitor	Nos.	1		
16	EPABX Box & Telephone set, Co-axial wires & cables	Set	1		
17	Stainless steel grade 304 Laboratory Stools	Nos.	5		
18	Stainless steel grade 304 trolley	Nos.	4		
19	Stainless steel grade 304 workbench 1.WB1:Work Bench1 (LxWxH)(6'x2'6"x2'6") 2.WB2:Work Bench2 (LxWxH)(6'x2'6"x2'6") 3. WB3: Work Bench 3(LXWXH)(4'X2'6"X2'6")	Nos.	3		
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		
Site-specific additional works (NDTBC)					
A	**For Existing BSL3 Room**				

Sl. No.	Description of work	Unit of Measurement	Quantity (number/lot/job) approx.	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
1	Uninstallation, packaging & shifting of equipment from the existing facility to the space identified by the site and reinstallation of shifted equipment: a. Centrifuges (1 No. of “Hettich” Make and 1 no. of “Eppendorf” Make) from the existing TB containment Lab to the proposed Extended TB Containment Lab b. MGIT 960 machines (all 3 Nos.) from the existing TB containment Lab to the proposed Extended TB Containment Lab c. Biosafety cabinet (1 No. of “Healforce” Make) from the existing TB containment Lab to the proposed Extended TB Containment Lab.Pressure balancing to be done to maintain negative pressure with 3 biosafety cabinets in the existing TB Containment Lab while shifting this BSC as there are 4 BSC in the existing TB Containment lab. d.Uninstallation of motor blower and its exhaust (of the “Healforce” BSC) and reinstallation at the new site.	Nos	6		
2	Removal of ducting of one “Healforce” biosafety cabinet along with permanent closure of the holes in the wall after removal of ducting and motor blower and its exhaust	Job	1		
3	Performance testing and validation of existing TB Containment facility including validation of BSC	Job	1		
B	**For Existing Autoclave Room**				
1	Creation of an opening (passage/entrance) of dimension 3’6” (W)x 7’ (H) in the wall between the existing and Proposed Autoclave room as indicated in the Layout. This will help for ease transfer of samples from existing TB Containment lab to extended TB Containment lab. Further, it will help expand capacity for autoclaving which currently is inadequate	Sqm	2.4		
C	**For Proposed Autoclave Room**				
1	Construction of brick wall of dimensions 15’6”x4'x6" (L) + 11’4”x4'x6" (W)	Cubic meter	1.5		
2	Construction of glass aluminium partition of dimensions 15’6”x6 (L) + 11’4”x6 (W)	Sqft	165		
3	The existing double wooden door (for exit from Storeroom 1) needs to be removed and replaced with a new single wooden laminated door of dimensions 4’(w)x6’8” (H) with proper door lock facility	Job	1		
4	Creation of Workbench of size 6’ (L) x 2’6” (W) x 3’ (H) of brick and mortar with a granite top	Job	1		
5	Installation of a new modular standalone hand washing sinks made of SS 304 with elbow or foot operated mechanism along with proper water supply and drainage lines (as per layout) - Wall hanging soap dispenser to be provided adjacent to wash basin unit. - Also Adjacent to the wash basin, a wall mounted tissue paper box with a mechanism to pull out tissue papers be provided	Job	1		

Sl. No.	Description of work	Unit of Measurement	Quantity (number/lot/job) approx.	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
6	Water inlet and outlet line to be provided as per layout for the horizontal autoclave	Job	1		
7	Installation of 4 nos of Ceiling Lights, 1 no of ceiling Fan with dedicated switch and socket	Nos	5		
8	Installation of 4 nos. 5/15 Amp modular switch and socket	Nos	4		
9	Installation of 3 phase,4 pole, 40-amp MCB,4 SQMM wire size for installation of Horizontal Autoclave	Nos	1		
10	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	1		
D	**For Proposed UPS+ AHU Panel Room**				
1	Existing double wooden door needs to be replaced with a new single wooded laminated door of dimensions 3' (w) x 6'8" (H) with proper door lock facility	Job	1		
2	Closure of the existing excess space with brick and mortar after the new door size is created	Cubic meter	0.3		
3	Installation of 3 Ceiling Lights, 1 ceiling Fan with dedicated switches	Nos	4		
4	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 adequate capacity (along with appropriate civil work)	Nos	1		
E	**For the Proposed extended TB Containment Lab**				
1	Removal of the existing door and expansion of door space to 4' (W) to accommodate the emergency exit door dimensions	Job	1		
2	Creating a cemented path of dimension of 9' (W) x 11'6" (L)x1'+ 4'6" (W) x 26'6"x1' (L).	Cubic meter	6.4		
3	Creating a tin shaded path with iron stand support of dimension of 9' (W) x 11'6" (L) + 4'6" (W) x 26'6" (L). The height of the path should be same as the existing Shaded cemented path (~8')	Sqft	226.8		
4	Creating small cabin for locating emergency shower and eye wash station i. This will be located just outside the Emergency Exit of proposed Extended TB Containment Lab (right side). ii. Dimensions of the cabin will be 3'(W) x 4'(L) x 8' (H) made up of aluminium glass partition. It will have one door with a latch.	Sq.ft	124		
5	Installation of ceiling light with dedicated switch inside the Emergency shower and Eye washroom Cabin	Nos.	1		
F	**Any other items**				
	FINAL TOTAL AMOUNT				

Schedule No.	III
Name of Site	IRL Cuttack

Sl. No.	Description of work	Unit of Measurement	Quantity (number/lot/job) approx.	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
HVAC					
1	Thermal Insulation for Ducting	Sqft	850		
2	Ducting	Sqft	850		
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.	12		
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		
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		
9	Current Transformers	Set	1		

Sl. No.	Description of work	Unit of Measurement	Quantity (number/lot/job) approx.	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
10	Modular Switches, Socket outlets, Ceiling lights including wiring	Set	1		
11	PVC Conduits, Accessories	Running Meter	250		
12	Copper wires	Running Meter	250		
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		
Interiors					
1	Modular Material for Wall Panel including coving	Sqft	970		
2	Modular (PUFF panel) Flush Doors	No.	4		
3	Modular Material for Ceiling including coving	Sqft	333		
4	Epoxy Flooring	Sqft	333		
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.	1		
9	Supply and Installation of 2 TR Split ACs with Accessories (2 TON) with change over timer of 4 hours	Nos.	2		
10	Data Cable (CATFI Cable connection point)	Job	1		
11	Door interlocking & access control system	Job	1		
12	Temperature sensor & display	Set	1		
13	Humidity sensor & display	Set	1		
14	Pressure sensor & display	Set	1		
15	clean room monitor	Nos.	1		
16	EPABX Box & Telephone set, Co-axial wires & cables	Set	1		
17	Stainless steel grade 304 Laboratory Stools	Nos.	5		
18	Stainless steel grade 304 trolley	Nos.	3		
19	Stainless steel grade 304 workbench 1) WB 1: Work Bench (LxWxH) (4'0" x 2'6" x 2'6") 2) WB 2: Work Bench (LxWxH) (4'0" 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		
Site specific additional works (IRL Cuttack)					

Sl. No.	Description of work	Unit of Measurement	Quantity (number/lot/job) approx.	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
1	a. Clearing the identified storeroom and its existing furniture, and RCC racks. b. Dismantle the RCC rack throughout the area for both the rooms	Sqm	35		
2	Relaying levelled uniform tilted flooring of area (22' X 21') SQFT	Sqm	43		
3	Closing of two existing windows of size [3' x 4'8"] each and ventilators with brick, mortar wall or RCC walls	Cubic meter	1.5		
4	Door opening should be more than 3 feet and 6 inches from the wall to wall from the proposed ante room to TB Containment facility	Sqm	2.6		
5	Removal of existing electrical fixtures like ceiling light, fan, and electrical sockets etc	Job	1		
6	Creation of partition with glass aluminium as mentioned in the layout covering the width of corridor (6 feet 6 inches) and height till the ceiling (12 feet 6 inches), with double door of dimensions of each 2 feet wide by 7 feet high	Sqft	83.2		
6(i)	Door closure for Glass Aluminium door with lock and key facility	Nos.	2		
7	Supply and installation of 2 unit's Air conditioner, capacity of 1.5 tonnage for the storeroom and media room. These will be inverter ACs (minimum three star) of Hitachi/ Bluestar/ Carrier/ Lloyd/ Godrej or equivalent OEM. The outdoor unit will be suitably placed outside the lab with easy access and adequate protection from theft. Drainage pipe of ACs will be adequately long and connected into the drainage system of the institute	Nos.	2		
8	supply and Installation of 1 ceiling fan of 1200 mm sweep with all accessories including electronic regulator in the UPS+control panel room	Nos.	1		
9	Supply and installation of slotted angled racks (8 units) i. Dimension: 3'6" (L)x 1'6" (W) x 6'(H) ii. Material:18 Gauge Iron with anti-rusting coating iii. Adjustable 4 shelves for each rack iv. Plastic/ Rubber/ Neoprene Shoes v. Bolts and nuts as required for fitting of shelves vi. Scratch resistance smooth finish	Nos.	8		
10	Any other items				
FINAL TOTAL AMOUNT					

Schedule No.	IV
Name of Site	IRL Indore

Sl. No.	Description of work	Unit of Measurement	Quantity (number/lot/job) approx.	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
HVAC					
1	Thermal Insulation for Ducting	Sqft	850		
2	Ducting	Sqft	850		
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.	12		
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	3		
19	MS structural shed for AHU with concrete cemented Foundation	Job	1		
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		
9	Current Transformers	Set	1		
10	Modular Switches, Socket outlets, Ceiling lights including wiring	Set	1		

Sl. No.	Description of work	Unit of Measurement	Quantity (number/lot/job) approx.	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
11	PVC Conduits, Accessories	Running Meter	350		
12	Copper wires	Running Meter	350		
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		
Interiors					
1	Modular Material for Wall Panel including coving	Sqft	890		
2	Modular (PUFF panel) Flush Doors	Nos.	4		
3	Modular Material for Ceiling including coving	Sqft	479		
4	Epoxy Flooring	Sqft	479		
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 (CATFI Cable connection point)	Job	1		
11	Door interlocking & access control system	Job	1		
12	Temperature sensor & display	Set	1		
13	Humidity sensor & display	Set	1		
14	Pressure sensor & display	Set	1		
15	Clean room monitor	Nos.	1		
16	EPABX Box & Telephone set, Co-axial wires & cables	Set	1		
17	Stainless steel grade 304 Laboratory Stools	Nos.	5		
18	Stainless steel grade 304 trolley	Nos.	4		
19	Stainless steel grade 304 workbench 1.WB1: Work Bench1 (LxWxH)(7'x2'6"x2'6") 2.WB2: Work Bench2 (LxWxH)(6'x2'6"x2'6") 3.WB3:Work Bench3 (LxWxH)(5'x2'6"x2'6")	Nos.	3		
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		
Site specific additional works (IRL Indore)					
1	Creation of door opening of dimensions (4'W X 6'8"H) for the existing reading room from the passage area	Sqm	2.52		

Sl. No.	Description of work	Unit of Measurement	Quantity (number/lot/job) approx.	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
1(i)	supply and installation of glass double aluminium door of dimensions (4'W X 6'8"H) with lock & key assembly	Sqft	27.2		
1(ii)	auto door closure mechanism for the aluminium door	Nos.	1		
2	The existing granite platform needs to be resized as per layout to create the door opening and entry to the existing reading room	Job	1		
3	Dismantling and removal of existing list of the items of air handling unit (AHU)/ heating, ventilation & air conditioning (HVAC) system and interiors of existing TB containment laboratory as mentioned in the site specific additional work requirement and handed over to site for safe and secure storage, planned outside open space of the lab near generator. Shifting and reinstallation of one puff panel door along with door closures and other assemblies from TB containment lab to master mix room of the existing LPA section	Job	1		
4	Permanent closure of ducting opening at wall after removal of BSC	Job	2		
5	Complete putty & whitewash of existing permanent wall of area 1250 sq. Ft and ceiling of the area 480 sq. Ft after complete dismantling of existing interior (puff panels of existing BSL3 Facility).	Sqft	1730		
6	Removal of two numbers of split AC of capacity 2 Tons each including the existing wiring and reinstallation work at reading room and BSL2 lab respectively including insulation and appropriate drainage pipes.	Job	2		
7	Supply and provision of two numbers of 32 AMP MCB including necessary wiring for the reinstallation of 2 TR Split ACs in both reading room and BSL 2 lab	Nos.	2		
8	Supply of additional 4 numbers of Ergonomic laboratory chair, designed for infectious laboratory areas: - adjustable height to suit different users, seat range approximately 400- 490 mm - adjustable-angle back rest (no arm rest) - caster wheels - all metal parts chrome plated - disinfect able with alcohol-containing disinfectants	Nos.	4		
9	Uninstallation, packaging & shifting of equipment from the existing facility to the space identified by the site and reinstallation of shifted equipment inside the renovated laboratory: Shifting of three BSCs, three refrigerated centrifuges, two microliter centrifuge and two MGIT 960 system along with UPS to be shifted to safe location (corridor area/existing BSL II room) identified by the site with appropriate bubble packaging	Job	8		
10	Reinstallation of one BSC (Nuaire make) in the existing BSL 2 Lab including the ducting work (Damper, Pipe, other ducting accessories material and foundation work for exhaust blower)	Job	1		
11	Any other items				
	FINAL TOTAL AMOUNT				

Schedule No.	V
Name of Site	IRL Nagpur

Sl. No.	Description of work	Unit of Measurement	Quantity (number/lot/job) approx.	Unit Price (inclusive of all applicable taxes)	Total Price (inclusive of all applicable taxes)
HVAC					
1	Thermal Insulation for Ducting	Sqft	850		
2	Ducting	Sqft	850		
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.	12		
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	3		
19	MS structural shed for AHU with concrete cemented Foundation	Job	1		
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		
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		
Interiors					
1	Modular Material for Wall Panel including coving	Sqft	900		
2	Modular (PUFF panel) Flush Doors	No.	4		
3	Modular Material for Ceiling including coving	Sqft	436		
4	Epoxy Flooring	Sqft	436		
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 (CATFI Cable connection point)	Job	1		
11	Door interlocking & access control system	Job	1		
12	Temperature sensor & display	Set	1		
13	Humidity sensor & display	Set	1		
14	Pressure sensor & display	Set	1		
15	Clean room monitor	Nos.	1		
16	EPABX Box & Telephone set, Co-axial wires & cables	Set	1		
17	Stainless steel grade 304 Laboratory Stools	Nos.	5		
18	Stainless steel grade 304 trolley	Nos.	4		
19	Stainless steel grade 304 workbench 1.WB1: Work Bench1 (LxWxH)(6'x2'6"x2'6") 2.WB2: Work Bench2 (LxWxH)(6'x2'6"x2'6") 3.WB3: Work Bench3 (LxWxH)(5'x2'6"x2'6")	Nos.	3		
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		
Site specific additional works (IRL Nagpur)					
For existing BSL-2 Lab					
1	Removal of RCC-brick Granite platform of dimension (16' (L) X 2'6" (W)).	Sqm	3.8		

2	i) Removal of existing tile flooring of entire BSL II lab area and disposal of waste to a suitable area identified by the site ii) Uniform Kota stone flooring of entire BSLII room of dimension (23'8" (L) X 16' (W)) with appropriate cementing mixture to ensure proper levelling of existing flooring	Sqm	36		
3	Removal of three no's of split AC of capacity 2 Tons each including the existing wiring and reinstallation work at TrueNaat room, Data entry Room and Cold room respectively	Job	3		
4	Supply and provision of three no's of 20/25 AMP MCB with 2 earthing terminal, Incoming & outgoing cable terminal etc. with required hardware & fasteners for the reinstallation of 2TR Split AC'S	Nos	3		
5	Supply and provision of additional 21 feet copper pipes including insulation and appropriate drainage pipes for the reinstallation of 2TR Split AC'S and the outdoor units	Rmeter	7		
6	Uninstallation, packaging & shifting of equipment from the existing facility to the space identified by the site and reinstallation of shifted equipment inside the renovated laboratory: i)Shifting of 2 Biosafety Cabinet with appropriate bubble packaging to safe location identified by site ii) Two refrigerated centrifuges will be shifted to existing old TB Containment Lab and one refrigerated centrifuge will be shifted to safe and secure location with proper packaging	Job	5		
7	Permanent closure of ducting opening at wall after removal of BSC	Job	2		
8	Removal of existing fixtures:				
8(a)	Removal of existing electrical switch-sockets, ceiling fan, tube lights, CCTV Camera (2no.), existing wash basin including plumbing lines with wiring from the proposed TB Containment Lab including change room and ante room and hand over to the site.	Job	1		
8(b)	Existing one glass aluminium window of dimension (5'10" W X 4' H) to be converted into door opening of dimension (3' W X 6'8" H) and rest space should be covered with brick-mortar with tile dadoing work	Job	1		
8 (c)	Existing one glass aluminium window of dimension (2'6" W X 4' H) need to be closed permanently by brick-mortar with tile dadoing work	Job	1		
8 (d)	Removal of existing glass aluminium partition of ante room of BSL II lab Removal of existing glass aluminium door (4'10"X 6 '8") to be converted in emergency exit and the remaining space needs to be closed permanently by brick and mortar with tile dadoing work	Job	1		

8 (e)	Removal of existing **two glass** aluminium-metal grill window of dimension (5'10" W X 4'H) of each (including window of microscopy room and corridor refer existing layout annexure 1) and close the space permanently by brick-mortar with tile dadoing work	Job	2		
8 (f)	Permanent closure of existing ventilation window (13 no.) with brick-mortar work.	Cubic meter	1.1		
9	Supply and provision of aluminium partition above the ceiling hight 8' to the true ceiling height of the proposed change/ante room with a provision of a sliding service path for maintenance work.	Sqft	52.5		
10	Any other items				
	FINAL TOTAL AMOUNT				

Chapter IV

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

Chapter IV

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

A. SCHEDULE OF REQUIREMENT

Schedule No.	Brief Scope of Works and List of Sites
	Renovation, Construction, Testing, Commissioning and Validation of TB Containment Laboratory and associated works with two years of Comprehensive warranty period on '*Turnkey Basis*' in compliance with *National Tuberculosis Elimination Program(NTEP), Central TB Division(CTD), Govt. of India(GoI)*, and the cost of maintenance of laboratories for the period of 3 years after warranty period at following sites:
I	IRL Hyderabad, State TB Training and Demonstration Centre Campus, Telangana
II	NDTBC, Delhi, State TB Training and Demonstration Centre, Delhi
III	IRL Cuttack, Anti TB Training and Demonstration Centre, Odisha
IV	IRL Indore, MRTB Hospital / Chest Centre Group of MGM Collage, Madhya Pradesh
V	IRL Nagpur, State TB Demonstration and Training Centre, Govt. Medical College, Maharashtra

B. Schedule for Completion and Handover of Works:

Within 180 days of issuance of Notification of Award (NOA) for each quoted Schedules.

C. Detailed address of sites:

Sl. No.	Address	consignee's representative	Tel / Mobile	Email	Alternate Staff Officer	Mobile	Alternate Staff Email
1	IRL Hyderabad, State TB Training and Demonstration Centre Campus, Besides AP Chest Hospital, Erramnuma(SR Nagar),Hyderabad-500038	Mrs. Harika Kala, Technical officer	9676022968	irltshyd@rntcp.org	Dr. Devi, Bacteriologist	8179358567	irltshyd@rntcp.org
2	NDTBC, Delhi State TB Training and Demonstration Centre, Jawahar Lal Nehru Marg Delhi Gate, New Delhi -110002 Telephone: 23239056	Dr. M. Hanif, Bacteriologissst	9810979064	irldlndc@rntcp.org	Dr. Kaushal	9899371930	
3	IRL Cuttack,Anti TB Training and Demonstration Centre,Medical College Campus,Odisha-753007	Dr Paresh Nath Mohant	9238579352	stdcor@rntcp.org	Dr. ispita Jena	9937874653	ispitajena@gmail.com>
4	IRL Indore, MRTB Hospital / Chest Centre Group of MGM Collage, Indore KEH Compound Opp.Gokuldas Hospital, INDORE- 452001 Madhya Pradesh (INDIA)	Dr. Ashutosh Kumar Srivastava Associate Professor, Incharge IRL Indore	7000481025	ashupersonalshish@gmail.com	Mr. Niti K. Doshi	9406604215	IRL Indore <IRLMPIND@rntcp.org>
5	State TB Demonstration and Training Centre,Govt. Medical College, Ajni Road, Nagpur, Maharastra, Pin-440003	Dr. VIJAY DOIFODE Director & Chief Medical Officer	9975493100	irlmhngp@rntcp.org	Dr.Dongre	9404084333	irlmhngp@rntcp.org

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

SCOPE OF WORK:

***The Scope of work involves 'Renovation, 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, complete renovation, 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, epoxy flooring, ducting, Heating Ventilation & Air Conditioning (HVAC) system & 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 renovated laboratory.
f) Power required for the TB Containment Laboratory shall be tapped from the AHU panels (through its expansion and laying of required power cablings) . 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

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

7. Restricted and controlled access shall be provided for entry into the laboratory.
8. 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.
9. 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.
10. The door interlocks, exhaust blower of BSCs, shall be provided with online, un-interrupted power supply system with minimum 30 minutes power backup.
11. Safety measures for fire and electricity shall be provided
12. 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:

d) **Building Planning Concept**:
The proposed TB Containment laboratory building shall be constructed on primary and secondary containment barrier system concept.

e) **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.

f) **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.

g) **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

2. **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.

3. **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. 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:

- 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. 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.

g. Framework vertically made of M S Square Pipe frame: 2 Inches X 2 Inches, 16 Gauge
h. M S Fencing with wire mesh: ½ inch X ½ inch
i. Supporting Structure M S Angle: 50 X 5 mm
j. GI pre-coated corrugated profile roof sheet: 0.5 mm thick duly supported with J Hook.
k. 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.

4. 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.

5. **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.

6. **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.

7. **Interiors of the TB Containment Lab:**
   i. <u>Modular walls</u>**:** 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. <u>Modular false ceiling</u>: The internal building finishes shall be monolithic, impervious, non-particle shredding, chemical resistant especially to Hypochlorite cleaning and suitable to withstand chemical use during decontamination/ fumigation. Modular false ceiling panels should be made for Clean Room application, pre-engineered 60 mm thick PUF panels with GPSP Sheets with

PUF insulation of minimum 38-40 kg/m^3. Both surfaces should be 0.8 mm thick GPSP sheet and has to be installed along the ceiling, to create an impervious shell which is fully sealed. The panels on inner side will be coated with Epoxy painted and powder coated on outer side. These panels must have good aesthetic appeal as well and have to be easily maintainable. The construction of false ceiling shall be strong to allow 1 person weighing 50-60 kg to easily walk/crawl above it for necessary work. Service window will be provided for access above false ceiling preferably outside TB containment lab.

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

iv. Doors:

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

   ii. Door interlocking systems shall be complete with controller module, push button stations with LED indication, electromagnetic locks. To take care of malfunctioning of interlocking, alternative electrical switch to manually open the doors should be provided.

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

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

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

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

8. Furniture inside the lab:

h. **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.

i. **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)
j. **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)
k. **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.
l. **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.
m. **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.
n. **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.

9. Monitoring Mechanism: Monitoring of crucial parameters will be made available in the lab for the following:

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

10. **Connectivity:**

c. LAN wiring for internet access inside the lab with sockets to be provided at strategic locations (near work benches) in TB Containment Room.
d. 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.

11. SPECIALIZED LABORATORY SUPPORT EQUIPMENTS AND SYSTEMS

d. **<u>Split AC for MGIT:</u>** 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.

e. **<u>Biological Safety Cabinets</u>**: 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 renovation 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. (**The exhaust from the Biological Safety Cabinets shall be thimble connected and individually ducted out with HEPA Filtration to the Environment. The ducting material & External blower of adequate capacity for BSC ducting should be provided by Identified Agency)**

f. **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.

12. 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.

13. 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

14. **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:

- 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°C±2 and humidity level should be maintained at 60±10%
- HEPA Filter (in BIBO) integrity test based on PAO test and manufacturer’s certifications

- Electrical current readings, in amperes on full load work, average running, and on starting, Testing of power cabling, earthling, AHU control panel, MCCB panel and LT panels
- Containment room -the walls, floors, ceilings, penetrations, and other containment barrier features have adequate integrity
- Operational performance testing for
    - HVAC including Blower motors in the Supply, exhaust including emergency, extractor of BSC ducting and condensation unit
    - Ducting for any potential leakages and insulation breakage
    - Dampers including variable control, leak proof and fire control (only verification)
    - Magnehelic Gauges
    - Temperature control sensors; pressures control sensors,
    - 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)

g) 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.
h) Report after each visit needs to be provided to lab as well as procurement agency /FIND India team as per the activities performed including the traceability of the standards used at the time of validation.
i) PM/Validation schedule should be in sync with previous PM and validation date of TB containment lab.
j) 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.
k) Agency should attend unlimited break down calls during warranty period or defect liability period and replace/repair the spare parts as per the need.
l) Service Engineer should be designated for calls at each Lab

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

e. Operation of HVAC Plant and all other equipment and systems.
f. Adjustments of settings for controls and protective devices

g. Servicing and Preventive maintenance
h. Emergency response training.

16.Guidelines & Standards for reference:

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

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

d. 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.
e. 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.
f. 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

Schedule Wise (five sites) existing and proposed Drawings/ Layout of TB Containment Lab

(Downloadable PDF files of drawings are attached separately at Annexure A)

Annexure-2

Area Details of TB Containment Lab

Sl. No.	Name of the Site	Lab Location	TB Containment Lab		Ante Room		Change Room		Total Area (D+F+H)	No. of BSC to be installed	No. of Trolley	Capacity of split AC*	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 **(IRL) Hyderabad**, Erramnuma, Telangana State	First Floor	12' X 18'3"+11' X 13'8"	369	6' X 6'8"	40	6'6" X 6'8"	43	452	3	4 (3 Two tier trolleys for each BSC +1 trolley with lid for transportation of material from lab to the Autoclave room	2 TR	2	Space for HVAC unit placement is identified on the roof top of the proposed TB Containment Room
2	Intermediate Reference Laboratory **(IRL) at NDTB Center New Delhi**	Ground Floor	26'6"X16'	424	7'x4'6"	32	7'x6'6"	46	502	3	4 (3 Two tier trolleys for each BSC +1 trolley with lid for transportation of material from lab to the Autoclave room)	2 TR	2	On the Ground floor behind the proposed TB Containment Lab
3	Intermediate Reference Laboratory **(IRL) Cuttack**, Odisha State	Ground Floor	13'3" X 11'6"+5'9" X 16'	248	5'6" X 7'	**39**	6'6" X 7'	46	333	2	3 (2 Two tier trolleys for each BSC +1 trolley with lid for transportation of material from lab to the Autoclave room)	2 TR	2	On the roof top of the 1st floor (36 feet from ground level)

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.)						
4	Intermediate Reference Laboratory **(IRL) Indore**, KEH Compound, Opposite Gokuldas Hospital, Sarju Prasad Marg, Maharaja Yeshwantrao Hospital Backside Rd, South Tukoganj, Indore, Madhya Pradesh	Ground Floor	18' X 21'5"	387	7' X 6'3"	44	7'6" X 6'3"	48	479	3	4 (3 Two tier trolleys for each BSC +1 trolley with lid for transportation of material from lab to the Autoclave room)	2 TR	2	Space for HVAC unit placement is identified on the roof top of the proposed TB Containment Room
5	Intermediate Reference Laboratory **(IRL) Nagpur**, Ajani Road, TB Ward Campus, Government Medical College Nagpur, Maharashtra.	Ground Floor	15' X 23'	345	7'6" X 5'6"	42	7'6" X 6'6"	49	436	3	4 (3 Two tier trolleys for each BSC +1 trolley with lid for transportation of material from lab to the Autoclave room)	2 TR	2	Space for HVAC unit placement is identified on the roof top of the proposed TB Containment Room across area 25 ' L and 14 ' width

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

Annexure 3

Power Load for Equipment planned for TB Containment Lab:

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

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

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

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

Annexure 4

Inspections and Validation Visits by FIND India/ LABS

Sr. No.	Scheduled Inspection Visit by FIND India/SAMS team	Activity
1	**Agency Introduction visit to site with FIND India team**	Visit from FIND India Technical Team & Agency: 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 renovation work
2	**HVAC Ducting & commissioning**	Visit by FIND India Technical team to ensure all the activities as per checklist & Specification in coordination with Lab. If anything, pending during that visit, Agency will give submit photographs against that pending work.
3	**Midterm Assessment: Interiors, BSC Installation and Civil, electrical and plumbing works,**	Visit by FIND India Technical team to ensure all the activities as per checklist & specification in coordination with Lab. If anything, pending during that visit, Agency will submit photographs against that pending work. FIND Technical team also to confirm completion of previous pending activity
4	**Performance testing of HVAC (Dry Run) and Validation of TB Containment Lab and BSC and Handover of Lab**	Visit by FIND India Technical team at least for 2 days Visit by FIND India 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 India Technical Representative(s)	HVAC Ducting & commissioning: Visit by FIND India 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 India 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, Emergency preparedness +Civil ,plumbing and Electrical works of TB containment Lab	Interior, BSC Installation, Midterm assessment Visit by FIND India 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 India Technical Representative

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 India 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 India 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).

100% payment will be released at the time of handing over of site (as per the payment schedule). Bidders are requested to submit the Performance Bank Guarantee (PBG) of 10% amount equivalent to the total contract value (to monitor the two-year warranty services) and PBG of 3% amount equivalent to the total contract value against the performance security. In total 13% PBG against the total contract value submitted by the bidder at the time of award of contract.

Section V- CONTRACT FORM and CONDITIONS OF CONTRACT

RENOVATION, CONSTRUCTION, TESTING, COMMISSIONING AND VALIDATION OF TB CONTAINMENT LABORATORIES AND ASSOCIATED WORKS ON 'TURNKEY BASIS' UNDER RNTCPACROSS INDIA

Laboratory Site Address:_____

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

- and –

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

Contract No.: [***insert***][***insert month***] **20**22

CONTRACT FORM

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

BETWEEN

1) Strategic Alliance Management Services Pvt. Ltd. (SAMS), having its postal address at 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 agreedto 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 willundertake 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 theirrespective duly authorised representatives as of the date first written above:

SIGNED BY _____

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

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

SAMS:In the presence of:

Signature _____(witness)

Address _____

Occupation _____

SIGNED BY _____

[***Insert name of authorized signatory of the Contractor***]Duly authorised to sign this Contract for and on behalf of the Contractor, [***insert***]:In the presence of:

Signature _____(witness)

Address _____

Occupation _____

CONDITIONS OF CONTRACT

General Conditions

1. GENERAL PROVISIONS

1.1 Definitions

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

"Defects Notification Period or Comprehensive Warranty Period" means the periodfor notifying defects in the Works under Sub-Clause 9.1, as stated in the Schedule of Details (with any extension under Sub-Clause 9.1), calculated from the Date of Substantial Completion as stated in the Taking-Over Certificate issued under Sub-Clause 8.2.

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

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

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

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

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

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

a) war, (whether war be declared or not), invasion, act of foreign enemies within the Country;
b) rebellion, terrorism, revolution, insurrection, military or usurped power, orcivil0020war within the Country;
c) munitions of war, ionising radiation or contamination by radio-activity within theCountry, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity; and
d) earthquake, hurricane, typhoon, tsunami or fire emanating from outside the Site within the Country that are outside the normal range for that place at that time of year, but excluding any other weather conditions regardless of the severity.

"General Conditions" means these general conditions of Contract.

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

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

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

"Party" means either the Purchaser or the Contractor.

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

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

"Schedule of Contract Price" is Schedule 4.

"Schedule of Details" is Schedule 1.

"Schedule of Payment" is Schedule 5.

"Schedule of Security" is Schedule 6.

"Schedule of Site" is Schedule 3.

"Schedule of Works" is Schedule 2.

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

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

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

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

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

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

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

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

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

1.2 Interpretation

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

1.3 Priority of Documents

The documents forming the Contract are to be taken as mutually explanatory of one another. If an ambiguity or discrepancy is found in the documents, the Employer's Representative will issue any necessary instructions to the Contractor, and the priorityof 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 mustbe in writing, signed, dated and marked to the relevant representative of the Parties and sent to the address for service of notices and communications set out in the Schedule of Details.

1.6 Statutory Obligations

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

1.7 Assignment

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

1.8 Confidential Details

The Contractor must keep confidential and must not, without the written consent of the Employer, disclose to any third party the terms and conditions of the Contract, or any documents or other information furnished directly or indirectly by either Party in connection with the Contract or the Works, except if disclosure is required by law or for outside consultants engaged to act in connection with the Works (including insuranceand legal advisers). In addition, the Contractor must not (without the prior written consent of the Employer) take, or authorize the taking of, any photograph of the Worksor 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. TheContractor 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 theContract. The Purchaser must, if requested, assist the Contractor in applying for suchpermits, licences, authorisations or approvals which are required for the Works.

2.3 Employer's Instructions

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

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

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

2.4 Approvals

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

3. EMPLOYER'S REPRESENTATIVE

3.1 Employer's Representative

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

3.2 Employer's Representative's Assistant

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

4. THE CONTRACTOR & PERFORMANCE OF THE WORKS

4.1 General Obligations

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

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

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

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

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

4.2 Contractor's Representative

The Contractor's Representative is named in the Schedule of Details. The Contractormust not replace the Contractor's Representative without the prior written consent of the Employer's Representative and must submit to the Employer's Representative forapproval 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 onthe Contractor's behalf under the Contract.

4.3 Subcontracting

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

4.4 Bank Guarantee for Performance

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

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

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

4.5 Contractor's Personnel

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

a) persists in any misconduct or lack of care;
b) carries out duties incompetently or negligently;
c) fails to conform with any provisions of the Contract; or
d) persists in any conduct which is prejudicial to safety, health, or the protection ofthe 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 facilitiesfor the Contractor's personnel and must at all times take all reasonable precautions tomaintain the health and safety of the Contractor's personnel and comply with all relevant labour laws.

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

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

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

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

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

4.6 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 otherliability of any kind.

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

a) The Contractor warrants that it has not engaged, or attempted to engage, in any way whatsoever, in any corruption or fraud in connection with the selection process or the execution of this Contract or any other activities of the Employer, involving, in any way whatsoever, any Employer's personnel or representative, official, or other agent of the Employer.

b) In this Sub-Clause 4.8, "corruption" means the offering, giving, receiving or soliciting from or to any person, directly or indirectly, anything of value as an inducement or reward:

i. for doing or forbearing to do any action in relation to the Contract, the selection process or any other activities of the Employer; or

ii. for showing or forbearing to show favour or disfavour to any person in relation to the Contract, or any other activities of theEmployer.

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 orthe execution of this Contract or any other activities of the Employer.

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

4.9 Supply of Water

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

4.10 Alcoholic Liquor or Drugs

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

4.11 Arms, Ammunition & Explosives

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

4.12 Festivals and Religious Customs

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

4.13 Epidemics

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

4.14 Fundamental Principles and Rights at Work:

a) The Contractor warrants that it will comply with, and ensure the Contractor’s Personnel will comply with, the 1998 International Labour Organization (ILO) Declaration on Fundamental Principles and Rights at Work. These universal rights, as applied in the context of ILO, are freedom of association and the effective recognition of the right to collective bargaining, the elimination of forcedor 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 ofthe 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 complyfully with all existing Acts, regulations and bylaws including all statutory amendments and re-enactments and acts that may be passed in future either bythe 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 caseany 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 Rightsof 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 tointerfere 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 andappropriate measures to prohibit its employees or other persons engaged andcontrolled by it from exchanging any money, goods, services, or other things ofvalue, 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 chargesor any other liability of any kind.

4.17 Security of the Site

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

4.18 Unexploded Ordinances

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

5. DESIGN BY CONTRACTOR

5.1 Contractor's Design

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

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

5.2 Design by Contractor

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

6. EMPLOYER'S RISKS

6.1 Employer's Risks

In this Contract, Employer's Risks mean:

a) a Force Majeure event,
b) a suspension under Sub-Clause 2.3 unless it is attributable to the Contractor'sfailure, act, omission or breach,
c) any delay or disruption caused by any Variation, except where that Variation iscaused 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 Timefor Completion.

7.2 Programme

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

7.3 Extension of Time

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

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

7.4 Late Completion

If the Contractor fails to complete the Works within the Time for Completion, the Contractor must pay delay damages for such failure in the amount stated in the Schedule of Details for each day for which the Contractor fails to complete the Worksup 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 Scheduleof Details, the Purchaser may terminate the Contract at any time in accordance with Sub-Clause 12.1.

8. TAKING OVER

8.1 Completion

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

8.2 Taking-Over Certificate

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

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

The Contractor acknowledges and agrees that it takes full responsibility for the care ofthe 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 underor 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 inthe Schedule of Works, and must agree, with the Employer's Representative, 4 days prior written notice of the time and place for the specified testing of any Plant, Materials and other parts of the Works.

9. REMEDYING DEFECTS

9.1 Remedying Defects

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

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

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

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

9.2 Uncovering and Testing

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

9.3 Final Completion Certificate

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

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

9.4 Unfulfilled Obligations

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

10. VARIATIONS AND CLAIM

10.1 Right to Vary

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

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

10.2 Valuation of Variations

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

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

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

10.3 Notice of Delay

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

The notice submitted by the Contractor under this Sub-Clause 10.3 must set out details of the event or circumstance giving rise to the claim, and if requested supply supporting documents, stating a reasonable period by which the Contractor believes the Time for Completion should be extended and the nature and extent of any additional resultant Costs. As soon as practicable after the receipt of this notice, the Employer's Representative will notify the Contractor of the period, if any, by which the Time for Completion will be extended and additional payment of Costs (if any) to which the Contractor is entitled under the Contract. The Employer's Representative may alsorespond 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 waivedits entitlement to make such claim, the Purchaser will be discharged from all liability arising out of or in connection with the claim and the Contractor must comply with its obligations to perform the Works by the Time for Completion and for the Contract Price.

10.4 Right to Claim

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

10.5 Adjustments for Changes in Cost

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

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

11. CONTRACT PRICE AND PAYMENT

11.1 Contract Price & Valuation of the Works

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

11.2 Statements

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

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

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

Within 28 days after the Employer's Representative issues the Taking-Over Certificate,the Contractor must submit a statement to the Employer's Representative as its final statement in respect of the Contract Price and any claim the Contractor has in respectof 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 tothe 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 totalcontract value (if any) set out in the Schedule of Payment, as a loan for mobilisation, when the Contractor submits a Bank Guarantee for advance payment in accordance with this Sub-Clause 11.3. If no advance payment is set out in the Schedule of Payment, then this Sub-Clause 11.3 will not apply.

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

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

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

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

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

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

11.4 Interim Payment

Within 28 days of delivery of each statement submitted in accordance with Sub-Clause11.2, the Purchaser will pay to the Contractor the amount shown in the Contractor's statement at the rate stated in the Schedule of Details and less any amounts to be deducted for advance payment and repayments in accordance with Sub-Clause 11.3,and less any other amount for which the Employer's Representative has specified its reasons for disagreement or that has become due under the Contract. The Purchaseris 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 performancesecurity under Sub-Clause 4.4 (if any).

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11.5 Final Payment

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

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

11.6 Currency

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

11.7 Delayed Payment

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

11.8 Provisional Sums

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

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

11.9 Audit and Investigations

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

12. DEFAULT & TERMINATION

12.1 Default by Contractor

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

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

The Purchaser may terminate the Contract immediately by written notice if the Contractor is declared insolvent under Sub-Clause 12.3 or is in breach of Sub-Clauses4.7, 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 noticefrom the Employer) and take such action as necessary or as the Employer's Representative directs, for the transfer, protection and preservation of the Employer'sproperty and deliver any required goods and documents to the Employer's Representative. The Contractor must use its best efforts to comply immediately with any reasonable instructions included in the notice for the assignment of any

subcontract and for the protection of life or property or for the safety of the Works. The Contractor must leave behind any Contractor's Equipment, Materials and Plant whichthe Purchaser or the Employer's Representative instructs, in writing, is to be used untilthe 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 debtdue from the Contractor to the Employer.

12.2 Default by Employer

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

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

12.3 Insolvency

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

12.4 Payment upon Termination

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

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

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

12.5 Employer's Entitlement to Terminate for Convenience

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

12.6 Cessation of Work and Removal of Contractor's Equipment

After a notice of termination under Sub-Clauses 12.2, 12.5, 13.2 or 12.3 has taken effect, the Contractor must promptly cease all further work (except to the extent specified in the notice from the Employer) and take such action as necessary or as directed by the Employer, for the transfer, protection and preservation of the Employer's property, protection of life or for the safety of the Works. Unless otherwisenotified 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 Dateuntil the date the taking-over Certificate is issued under Sub-Clause 8.2. Responsibilitywill then pass to the Employer. If any loss or damage happens to the Works during theabove period, the Contractor must rectify such loss or damage so that the Works conform with the Contract and the requirements of any relevant authorities.

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

13.2 Force Majeure

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

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

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

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

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

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

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

14. INSURANCES

14.1 Extent of Cover

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

a) for loss and damage to the Works, Materials, Plant and the Contractor's Equipment,
b) for liability of both Parties for loss, damage, death or injury to third parties or their property arising out of the Contractor's performance of the Contract, including the Contractor's

liability for damage to the Employer's property otherthan the Works, and

c) for liability of both Parties and of any Employer's personnel for death or injury to the Contractor's Personnel except to the extent that liability arises from the negligence of the Employer, any Employer's representative or their employees.

14.2 Arrangements

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

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

14.3 Failure to Insure

If the Contractor fails to effect or keep in force any of the insurances referred to in the previous Sub-Clauses, or fails to provide satisfactory evidence, policies or receipts, the Purchaser may, without prejudice to any other right or remedy, effect insurance for thecover 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 tothem 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 toconciliate 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-Clause15.3.

15.3 Arbitration

1) If the Parties are unable to resolve the Dispute in accordance with Sub-Clause 15.1 or15.2, the Dispute must, if requested by either Party, be referred to and finally resolvedby 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 ofthe privileges and immunities whatsoever.

PARTICULAR CONDITIONS

Additional Clauses

The General Conditions are amended by the inclusion of the following additional conditions:If nothing is stated, then no additional conditions apply.

Clause	Additional General Condition

Schedules

SCHEDULE 1 - SCHEDULE OF DETAILS

Commencement Date (Sub-Clause 1.1)	Date.....
Contract Price (Sub-Clause 1.1)	[***If this is a lump sum contract insert thefollowing: "The lump sum amount of [insert the amount in words and figures]"*** See the Schedule of Contract Price & Payment for a breakdown of the Contract Price
Contractor's Representative (Sub-Clause 1.1)	[***name, position title and contact detailsto be inserted***]
Defects Liability Period (Comprehensive Warranty) (Sub-Clause 1.1)	**24 months from the date of Final Work Completion Certificate**
Employer's Representative (Sub-Clause 1.1)	[***insert name, position title and contactdetails***]
Project (Sub-Clause 1.1)	
Substantial Completion (Sub-Clause 1.1)	No additional grounds.
Time for Completion (Sub-Clause 1.1)	
Address for Service of Notices and Communications (Sub-Clause 1.5)	**Employer** **Attention: Sanjay Rastogi** **Strategic Alliance Management Services Pvt.Ltd. B-18, Sector-6, Noida, G.B. Nagar – 201301 (Uttar Pradesh** **Facsimile :: +91-11-26312514Contractor :** 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 **3%** of the Contract Price. The initial validity of the performance security shall be at least more than two months of warranty period.
Additional Employer's Risks (Sub-Clause 6.1)	If Site is not ready.
Time for Programme Submission (Sub-Clause 7.2)	Within14 days from the Commencement Date
Delay Damages for failure to complete the Works within the Times for Completion (Sub-Clause 7.4)	**Whole of the Works** 0.05% of the total contract amount per day subject to a maximum of 10% of the contract value.
Cumulative Amount of Delay Damages (Sub-Clause 7.4)	10%
Percentage of Plant & Materials (Sub-Clause 11.2)	Nil
Percentage deduction for Retention (Sub-Clause 11.4)	Nil
Currencies of payment (Sub-Clause 11.8)	Payments will be made in INR only.
Insurance Details (Sub-Clause 14.2)	[***insert insurance requirements and amounts***]
Senior Representatives (Sub-Clause 15.1)	**Employer:** Sanjay Rastogi, Director Strategic Alliance Management ServicesPvt. 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 theclearest breakdown of the Contract Price. This may be in tabular form.]

2. Bill of Quantities

SCHEDULE 5 - SCHEDULE OF PAYMENT

SCHEDULE 6 - SCHEDULE OF SECURITY

BANK GUARANTEE FOR PERFORMANCE

[***On the letterhead of the Bank***] Date: [***insert***]

T
o

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 givewritten notice to us stating that in your sole and absolute judgment the Contractor has failed toobserve or perform any of the terms, conditions or provisions of the Contract on its part to beobserved 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 ***3*** % of the Accepted Contract Amount ("**Guaranteed Sum**").

This Bank Guarantee for Performance ("**Guarantee**") is valid and will continue to be valid fromthe 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 postor 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 affectingour 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 GuaranteedSum does not increase or decrease.

No action, event or condition which by any applicable law may operate to free us from liabilityunder this Guarantee will have any effect. We waive any right we may have to apply such lawso 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 1996then 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 statedabove.

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 hasreceived no notice of revocation of the power of attorney

<u>Address for notices</u>
[***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 1996then 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

<u>Address for notices</u>
[***insert address***]

SCHEDULE 8 - SCHEDULE OF PROGRAMME

(A) Approved Preliminary Programme

(B) Milestone Dates

(C) Contract Programme Requirements

(A) Approved Preliminary Programme

The Approved Preliminary Programme is attached to this Schedule and setout 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, testingand completion of Road Section XX)	(insert date)
2	(insert a detailed description of the Milestone)	(insert date)
3	(insert a detailed description of the Milestone)	(insert date)
4	(insert a detailed description of the Milestone)	(insert date)
5	(insert a detailed description of the Milestone)	(insert date)

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

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

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

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

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

The Contract Programme must be prepared in sufficient detail to ensure the adequate planning, execution and monitoring of the Works. The networked activities mustbe 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 Employer's Representative.

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

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

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

Contract Programme; and

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

SUBMISSIONS

All programme submissions by the Contractor are to include:

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

CALENDARS

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

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

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

SCHEDULE 9 - SCHEDULE OF KEY PERSONNEL

The Contractor's Key Personnel for the Project are:

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

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

Schedule 10 - SCHEDULE OF FORMS OF CERTIFICATES

(A) Form of Taking Over Certificate

(B) Form of Final Completion Certificate

(C) Form of Final Payment Certificate

(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***]

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 toa stage ready for the Final Completion Certificate to be issued by the Purchaser in accordance with the Contract.

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

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

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

Yours sincerely

.....

[***insert***]

Employer'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 Employer][the Purchaserby the Contractor]: INR

Yours sincerely

.....

[***insert***]

Employer'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 Employer.

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

Yours sincerely

.....

[***insert***]

Employer's Representative

SCHEDULE 11 - SCHEDULE OF PERMITTED SUBCONTRACTORS

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

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

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

SCHEDULE 12 - SCHEDULE OF NOMINATED SUBCONTRACTORS

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

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

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

Chapter VI– Other Standard Form

Form of Bid Security Declaration

[Please refer to ITB Para 17 of the Bid Document]
[The Bidder shall fill in this form in accordance with the instructions indicated below. No alterations to its format shall be permitted and no substitutions shall be accepted.]

Date: *[date (as day, month and year)]*
Bid Ref. No.: *[number of bidding process]*

Ref:

To

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

We, the undersigned, declare that:

We understand that, according to your conditions, bids must be supported by a Bid Securing Declaration.

We accept that we will automatically be suspended from being eligible for bidding in any contract with the Purchaser for the period of 2 (two) years starting on *the date of suspension,* if we are in breach of our obligation(s) under the bid conditions, because we:

(a) have withdrawn our Bid during the period of bid validity specified in the Letter of Technical Bid; or

(b) having been notified of the acceptance of our Bid by the Purchaser during the period of bid validity, (i) fail or refuse to execute the Contract; or (ii) fail or refuse to furnish the Performance Security, if required, in accordance with the ITB.

We understand this Bid Securing Declaration shall expire if we are not the successful Bidder, upon the earlier of (i) our receipt of your notification to us of the name of the successful Bidder; or (ii) twenty-eight days after the expiration of our Bid.

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 _____