



**Government of India
Bhabha Atomic Research Centre
Atomic Fuels Division**

BARC, Trombay
Mumbai - 400 085
Phone no. 022-25594909

Ref: AFD/ESAS/22/110977

Date: 10/01/2022

Sub : Tender Enquiry for "Design, Fabrication, Supply, Erection and Commissioning of Exhaust Fan System in AFD General Workshop and supply Fan system in Chemical Analysis Lab to maintain ventilation system to get specified no. of air changes per hour at AFD, BARC, Trombay as per attached specifications and layout drawings."

Sealed offer is invited for & on behalf of The President of India for "Design, Fabrication, Supply, Erection and Commissioning of Exhaust Fan System in AFD General Workshop and supply Fan system in Chemical Analysis Lab to maintain ventilation system to get specified no. of air changes per hour at AFD, BARC, Trombay as per attached specifications and layout drawings.

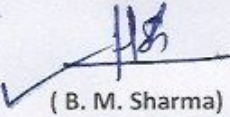
The scope of work, technical and general terms & conditions are attached Annexure-I.

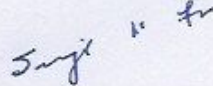
1. This tender will be processed in Two-Part Bid System.
2. The tender submitted should have two separately sealed envelopes viz.
 - 2.1 First Envelope shall contain Technical Bid (Part-A). Technical Bid (Part-A) must be written on the Envelope.
 - 2.2 Second Envelope shall contain Commercial Bid (Part-B). Commercial Bid (Part-B) must be written on the Envelope.
3. The sealed Technical Bid (Part-A) shall contain Technical details of the offer and compliance with respect to our technical requirement, clearly mentioning deviations, if any.
4. The sealed Commercial Bid (Part-B) shall contain the detailed quotation including basic cost, applicable taxes and commercial terms and conditions.
5. Sealed envelopes of the Technical Bid (Part-A) and the Commercial Bid (Part-B) shall be kept in a Single Sealed Cover/Envelope, which shall be treated as your offer against our enquiry.
6. Offers received as (i) Technical and Commercial part in one bid, or (ii) Technical and Commercial bids in single envelope or (iii) unsealed bids will be treated as Invalid and no further communication will be made to the vendor.

7. Your offer in sealed envelope bearing "Tender Enquiry No. & Due Date" should be sent to following address, so as to reach on or before 07/02/2022 by Registered / Speed Post only

B. M. Sharma
SO/F, ESAS,
Atomic Fuels Division,
Bhabha Atomic Research Centre,
Trombay, Mumbai-400085

8. Offer received through courier or person or after Due Date will be treated as Invalid.


(B. M. Sharma)
SO/F, ESAS,AFD


एस. के. झा / S. K. Jha
अध्यक्ष, ए एफ डी / Head, AFD

Technical Specifications:

A. Scope of Work and Specifications:-

1. Design selection, Fabrication , Supply, Erection and Commissioning of Exhaust Fan System in AFD General Workshop to maintain ventilation system to get specified no. of air changes per hour at AFD, BARC, Trombay as per attached specifications and layout drawings.

1.1 Design selection Criteria of Ventilation System for main working area of AFD General Workshop:

- i. Ventilation System shall be designed for approx. 8750 cubic meter volume of AFD General workshop.
- ii. Minimum 6 air changes per hour to be maintained at main working area of AFD General workshop.
- iii. Number of fans to be erected =23
- iv. Design selection of Fan:
 - a. Heavy duty Exhaust Fan, three phase motor & starter with suitable mounting fixture as per minimum capacity of Fan: 7100 CMH
 - b. Maximum speed : 700 rpm
 - c. Maximum sound level : 60 db
 - d. Cutout size in wall: 860mm x 625mm

1.2 Fabrication, Supply, Erection, testing and commissioning of exhaust fans: 25 nos.

- i. Fabrication & Supply of 25 nos. (12nos. running + 11 stand by +2nos spare) exhaust fan powder coated guard with aluminium die casting blade, motor, starter, etc & associated accessories.
- ii. As per fan and cut out, mountings MS Fixture shall be fabricated and Installed.
- iii. 23 nos of exhaust fans shall be erected as per given sketch,
- iv. Fans shall be installed at approx. 6 meter height as per given sketches and instructions.
- v. All Exhaust Fans shall be tested and commissioned.

2. Design selection , Fabrication , Supply, Erection and Commissioning of Exhaust Fan System for Bath room in AFD General Workshop to maintain ventilation system to get specified no. of air changes per hour at AFD, BARC, Trombay as per attached specifications and layout drawings

2.1 Design selection Criteria of Ventilation System for Bathroom of AFD General Workshop;

- I. Ventilation System shall be designed for approx. 52 cubic meter Left side bathroom and approx. 40 cubic meter for Right side bathroom of AFD General workshop.
- II. Minimum 15 air changes per hour are required at workshop area.
- iii. Number of fans to be erected =5 (3 in left side bathroom- 2 working, 1 standby and 2 in right side-one working and 1 standby bathroom)
- iv. Design selection of Fan:
 - e. Heavy duty Exhaust Fan, single phase motor with flap and suitable mounting fixture as per minimum capacity of Fan: 1145 CMH
 - f. Maximum speed : 900 rpm
 - g. Maximum sound level : 40 db
 - h. Cutout size in wall: 515 mm x 318 mm and 435 mm x 275 mm

2.2 Fabrication, Supply, Erection, testing and commissioning of exhaust fans: 6 nos.

- i. Fabrication & Supply of 6 nos. (3 running+ 2 standby + 1spare) exhaust fan with Flap and powder coated guard with aluminium die casting blade, motor etc & associated accessories.
- ii. As per fan and cut out, mountings MS Fixture shall be fabricated and Installed.
- iii. 5 nos of exhaust fans shall be erected as per given sketch, and one fan is spare.
- iv. Fans shall be erected at approx. 2.5 meter height as per given sketches and instructions.
- v. All Exhaust Fans shall be tested and commissioned.

3. Design selection, Fabrication , Supply, Erection and Commissioning of Supply Fan system in Chemical Analysis Lab to maintain ventilation system to get specified no. of air changes per hour at AFD, BARC, Trombay as per attached specifications and layout drawings.

3.1 Design selection, Supply & Erection of Heavy Duty centrifugal flow tube type supply Blowers: -1no.

Design selection, Supply, Erection, testing and commissioning of Centrifugal type fan and top mounted having aerofoil blades, impeller, motor, base frame etc with associated accessories of following capacity as per technical specification.

- i. Minimum Capacity: 1700 CMH
- ii. Medium: Air
- iii. Static Pressure: 15-20 mm WC (minimum)
Type: Centrifugal
- iv. Direct drive type
- v. Construction of Blowers should be robust and durable.
- vi. Blower material shall be resistance to corrosion.
- vii. Blower shall be generating low operational noise
- viii. Insulating class: F or H

3.2 Design selection, Fabrication, Supply and Erection of 20 SWG, 250 GSM GI sheet Metal (GI) ducts for Supply air system as per specifications and attached layout drawing:-

- i. Supply air duct 7 sq m of various size as per tentative layout and site requirement i.e. (1'(W) x 1'(H) x 5 meter length.
- ii. Joint should be leak tight and flanged joint type.
- iii. Painting : Inside - 2 coats of epoxy primer,
Outside - 2 coats of epoxy primer with 2 coats of epoxy paint.
- iv. Construction: Preferably folding type Flange joint construction.
- v. Flanges shall be provided to install damper and Grills as per specification and lay out drawings.

3.3 Design selection, Fabrication, Supply and Erection of Aluminium Grill with VCD in supply air duct – 1 sq. Feet :-

- i. Al. Grill with VCD for supply air drop duct as per site requirement.
- ii. Qty of Grill with VCD - 01 nos. & Grill with VCD size has to be designed by Contractor for equal flow balancing.
- iii. Joint between duct and grill should be leak proof.
- iv. Construction: Single deflection, fixed angle type, ALuminium material. The body & louvers of grills shall be fabricated by minimum 16 Gauge thick. Blade 1mm thick.
- v. Support: Hardware will be SS and gasket shall be neoprene commercial grade only.

3.4 Design selection, Fabrication, Supply and erection of Aluminium construction manually operated modulating type opposed blade multi-louvered dampers – 1 sq. Feet

- I. Isolation Dampers - 1 no. for newly constructed supply air duct as per site requirement.
- II. Damper in main supply line for balancing air flow and isolation purpose.
- III. Sizes of damper are as per site condition.
- IV. Depending on the size of the damper, thickness of the body and flanges should be selected.
- V. Construction: Al., manually operated, modulating type, opposed blade, multi-louvered. Providing of commercial grade neoprene gasket, Nut-bolts with washer will be in the scope of contractor.
- VI. Support: Any supporting MS structure (Like angle, channel, beam etc.) required for fabrication and support will be provided by supplier only.
- VII. Suitable Linkage - construction & bush or ball bearing arrangement for opening & closing of damper shall also be provided. Thickness of flange of damper shall be selected for better rigidity & strength also. Damper to be installed with 3 mm thick neoprene rubber gasket commercial grade at all flanged joints wherever necessary. Length of the blade shall be such that there is no deflection while operation required suitable support to be provide.
- VIII. Jamb seals – Flexible stainless steel spring steel sheet compression type.
- IX. Painting: Providing and painted with double coat of epoxy primer and epoxy paint
- X. Supplier shall submit the GA drawing of duct with damper and get approval from competent authority before fabrication.

3.5 Fabrication, supply and erection of MS supporting structure for air ducting girth angles, flanges (consist of channels, angle, strips , Tie rod, Nut & bolt and washer etc) :

- i. Supports for supply air duct, , dampers, enclosure and VCD .
- ii. Supports for girth angle of duct, Counter flanges.
- iii. Supports for any other work as per site requirement and mentioned in the layout drawing.
- iv. Supply of hardware's like nuts, bolts washers etc. as per requirement at site.
- v. All ducts supports, & other hardware used for duct support should also be painted with double coat of enamel paint including primer.

3.6 Fabrication, Supply and Erection of Supply Blower stand with enclosure and Pre air Filter: 1 no.

One Common stand and enclosure with 20 micron type Pre air filter for blower shall be fabricated and erected as per tentative drawings. Construction of material shall be Mild Steel. Neoprene Gasket shall be provided at all joints for sealing. Door provision shall be made in casing for observation and maintenance purpose. Structure and material of MS stand shall be strong to bear all dynamic and static load of system like blowers, duct etc. Size of enclosure shall be suitable for blower and occupied minimum space. Stand shall be painted with double coat of primer red-oxide and metallic paint.

3.7 Fabrication, supply and Erection of Flexible Bellows – 1 Sq Feet

1no. Flexible Bellows made of Canvas material for supply duct line & size as per supply blower's duct and accordingly these are to be fabricated and commissioned at near outlet of blowers.

B. Technical Terms and Conditions:

1. Work completion period is 2 months from the date of issue of the work order.
2. Supplier shall carry out actual measurements as per site condition.
3. Supplier shall prepare its own design & fabrication drawings as per actual site conditions and should get it approved from concerned authority before commencement of work.
4. All fabrication work shall be carried out as per approved drawings only.
5. All material supply is in the scope supplier. Supplier shall use all relevant IS standard material for this work. Material testing reports (Chemical, Mechanical etc.) from govt. approved labs should be submitted for approval. Material identification and stamping shall be witnessed by departmental representative.
6. Supplier shall have to pass weld qualification and only qualified welders shall perform this work.
7. In case of any technical doubts, supplier shall contact concerned authority for clarifications.
8. Supplier shall have to arrange for Arc welding m/c. along with all consumables (welding electrodes etc) required for this work.
9. Gas cutting, arc welding, grinding work etc. shall be carried out with utmost care. Supplier shall follow all safety measures while carrying out such work. Department shall provide gas cylinders for gas cutting purpose, if required.
10. Burrs, sharp edges, projections etc. caused due to cutting, welding etc shall be removed to maintain smooth surface. Supplier shall maintain best quality workmanship.
11. QAP (Quality Assurance Plan)
QAP should include:-
 - (i) Raw material Testing,
 - (ii) Manufacturing operations,
 - (iii) Fabrication Steps,

(iv) In-process Inspection Stages,(vi) Welding procedures, Weld sequencing and Cleaning procedures, (vii) Procedures for weld checking

12. Fabrication and Testing Criteria

The surface shall be absolutely free from dents, scratches, burrs, pits and weld spatters etc. Adequate care shall be taken up to control the distortion to ensure flatness of surfaces. Workmanship shall be in accordance with high grade practice and adequate to achieve accuracies and finish to get satisfactory surface level.

13. Welding requirements

- i. Welding procedures and welder shall be qualified as per ASME section IX proper to production weld.
- ii. All the welding on MS to MS shall be done by SMAW using E6018/E7018 welding electrodes,.
- iii. Butt weld joints between structural members should be ground flushed and finished smooth.

14. Inspection and final acceptance

- i. Physical verification of all items as per technical specifications.
- ii. All weld surfaces shall have a smooth finish for easy decontamination.

15. Supplier shall clear off all left out material at the end of the work and ensure clean work area before handing over.

16. Supplier should have the previous experience of design, fabrication and erection of ventilation systems and ducting work of GI as well as M.S. at elevated height or similar nature site work along with quality assurance plan and should provide documentary evidence for the same.

17. Suppliers having knowledge and experiences of preparing above mentioned documentations, BARC procedures, standard welding procedures, safety procedures, material testing and inspection facilities, calibrated equipments etc. shall be preferred for the work contract.

18. Supplier shall give the quotation on lump sum basis having basic cost & taxes separately.

19. All the works shall be carried out at AFD, BARC, Trombay, Mumbai. The work will be subjected to inspection by the departmental personnel.

20. Prescribed Personnel Radiation Monitoring devices will be issued to the personnel carrying out work at the plant. The vendor shall ensure that his personnel use these devices as prescribed.

21. All personnel will be required to report to Health Physicist, AFD, before commencement of work and after completion of work every day.

22. During the execution of work, all safety instructions are to be followed. This work includes working in an area with possible radioactive contamination, hence the vendor should strictly ensure that the personnel carrying out work shall wear all necessary personnel protective equipment as prescribed. The Supervisor shall be present at site during the work. The supervisor shall be experienced enough for safety (fire & personal) to oversee the site activities. BARC will not be responsible for any injury or accident taking place on site. Any loss or damage to property, machine, equipment, tools will be recovered from the vendor.

23. Proportionate amount shall be deducted from vendor's bill for non-completed portion of work due to the non-availability of vendor's personnel at AFD during contract period.
24. Personal protective gears such as boiler suits, hand gloves and respirator (if required for occupational hazard) will be provided by us.
25. Personal protective gears such as safety shoes suitable for Mechanical workshop, socks, undergarments, Face cover/mask and soap shall be provided by the vendor. No personnel will be allowed to work without safety gear.
26. Personnel working at site should carry out cleaning of site and its surrounding at regular intervals, maintain safe and hygienic work environment.
27. Vendor should have previous experience of similar type of work and shall have to produce documentary evidences of the same for site visit clearance. The vendor shall have to submit the documents of relevant experience along with site visit request through email latest by 20/01/2022. The site visit will only be cleared after verifying the credentials of the vendor.
28. **Quotations submitted without documentary evidences of experience and site visit will not be considered.**

C. General Terms & Condition: -

1. **Tender evaluation procedure:** - Only Valid 'Technical bids will be opened first and evaluated Commercial bids of only technically qualified vendors' will be opened and the lowest quoted offer shall be recommended for placing the work order.
2. Quotations are to be printed on letter head.
3. Lump sum amount shall be quoted for completion of work mentioned in the enquiry. **Quotations received on per person basis or individual work basis will not be considered.**
4. In case of award of work order, the vendor shall give his acceptance through email or letter within 15 days from the date of issue of work order.
5. The Vendor shall deploy the required manpower at AFD, BARC within 3 weeks after issue of work order. Work order will be communicated to the vendor through email also.
6. Work order will be cancelled, if the vendor fails to start the work within 1 month from the date of issue of work order or within 15 days of start of contract period, whichever is later. Further the vendor will not be permitted to bid against future tender enquiries raised by AFD, BARC.
7. Vendor working inside BARC is subjected to security clearance by BARC security, before or during the period of contract.
8. Income tax @2% and GST TDS@2% will be deducted from the bill of vendor.

9. The vendor shall clearly indicate following in the quotation.

- Lump sum Price
- Taxes & duties applicable, if any
- PAN No., GST Registration No.

10. Payment will be arranged only after satisfactory completion of work at AFD and on submission of following documents,

- a) Bills/Invoice in triplicate
- b) Advanced stamped receipt in favor of Accounts officer BARC.
- c) GST Undertaking
- d) ECS form dully filled.

Advance or Part Payment will not be made.

11. Any delay in completion of work, which is attributable to the vendor, is liable for penalty @0.5 % per week (max 5 %) to be imposed on the vendor.

12. Prior to submitting the quotation, visit of the vendor or his representative to AFD, BARC to understand the work and site condition, is compulsory. The vendor or his representative may visit AFD, BARC, for inspecting the site with prior intimation of at least 2 clear working days to Shri B.M. Sharma, SO/F, ESAS, AFD, BARC, Ph-022-25594909, email: bmsharma@barc.gov.in. or to Shri Surendra Kumar, Head, ESAS, AFD, BARC, Mumbai-400085, Ph: 022-25594614, email: surendrak@barc.gov.in or to Shri H. Sharma, TO/D, ESAS, AFD, BARC, Ph-022-25594927, email: hsharma@barc.gov.in . The visit will be approved only after verification of credentials of the visitor. The visit may be carried out on 24/01/2022 between 10.30 am to 4.30 pm. The visitor must have original identity proof and report before 12:00pm on the day of visit.

13. Quotation received from any vendor, without visit to AFD/BARC, will not be considered and will be rejected.

14. In case of any clarification required, vendor shall contact above mentioned contact details during office hours.

14. Any casualty during this work period of contractor work men will not be born by organisation. Organisation is not liable for any type of compensation for any casualties.

15. This Work Order tentatively will start on 01/02/2022. The vendor shall arrange for the Police verification certificate of their personnel. No person will be allowed to enter inside BARC without PVC.

16.

Technical Requirements shall be filled by Bidder

Sr. No.	Description	Acceptability of requirement (Yes/No) (Deviation if any)
1.	<p>Design selection of exhaust fan to meet the ventilation requirement shall be submitted for Main working area of AFD General workshop along with Technical bid.</p> <p>a Design selection criteria of Exhaust Fan: Volume of Workshop - 8750 cubic meter Minimum no. of air changes per hour - 6 (throughout the workshop area) Size of cut out to accommodate exhaust fan for main area - 860mm x 625mm</p> <p>b Make and model of selected fans (3 phase) with starter- Almonard, Crompton Qty of Fans- 25 nos. (12 running + 11 Standby + 2 spare)</p> <p>c Minimum Capacity of fan (Free air Delivery at Fan) - 7100 CMH (Along with existing grill)</p> <p>d Fan mounting Fixture : MS fixture suitable to fan and cutout on wall</p> <p>e Speed of Fan (Maximum) – 700 rpm</p> <p>f Sound level (Maximum) – 60 db</p> <p>g Mounting of Fan: At 6 meter height</p>	
2.	<p>Design selection of exhaust fan to meet the ventilation requirement shall be submitted for Bath rooms of AFD General workshop along with Tech. bid</p> <p>a Design selection criteria of Exhaust Fan: Volume of Workshop -100 cubic meter (approx.) Minimum no. of air changes per hour - 17 Size of cut out to accommodate exhaust fan for bath room area - 515 mm x 318 mm and 435 mm x 275 mm</p> <p>b Make and model of selected fans (1 phase)- Almonard, Crompton Qty of Fans- 6 nos. (3 working + 2 standby +1 spare)</p> <p>c Minimum Capacity of fan (Free air Delivery at Fan) - 1145 CMH</p> <p>d Fan mounting Fixture : MS fixture suitable to fan and cutout on wall</p> <p>d Speed of Fan (Maximum) – 900 rpm</p> <p>f Sound level (Maximum) – 40 db</p>	

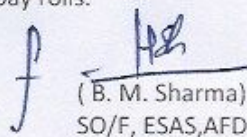
	g	Mounting of Fan: At 2.5 meter height	
3.		Design selection, Fabrication , Supply, Erection and Commissioning of Supply Fan system in Chemical Analysis Lab	
	a	Design selection criteria of Exhaust Fan: Volume of Lab. -100 cubic meter (approx.) Minimum no. of air changes per hour - 17	
	d	Minimum Capacity of Blower: 1700 CMH Static pressure: 20-25 mm WG Type: Centrifugal, Direct drive type	
	e	Make and Model of Blower : Kruger, Nadi	
	f	Aluminium Grill with VCD – 1no.	
	g	Aluminium Isolation Damper-1no	
	g	Blower enclosure(MS) with pre- filter and GI duct -01 no.	

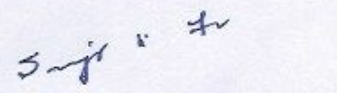
D. Confidentiality Clause :-

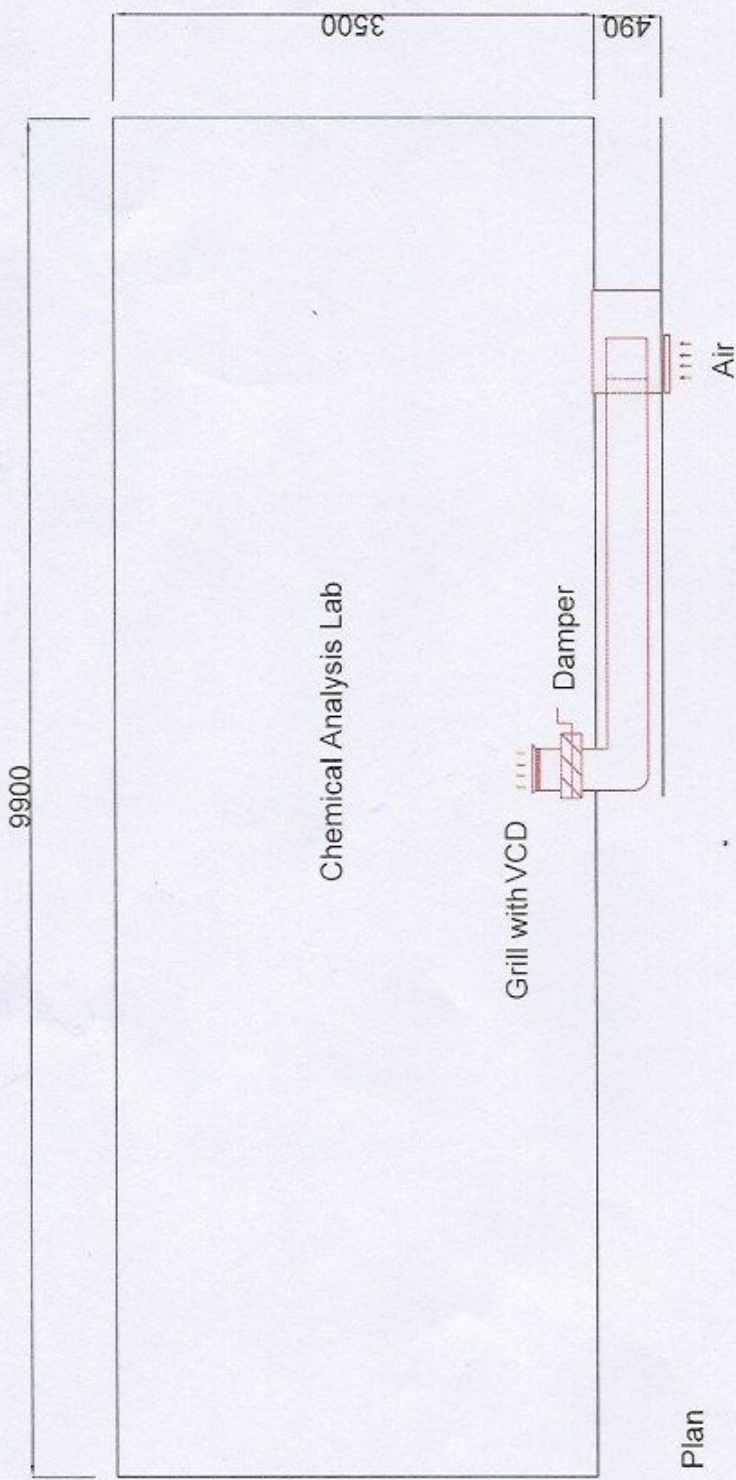
- No party shall disclose any information to any third party concerning the matters under this contract generally. In particular, any information identified as "Proprietary" in nature by the disclosing party shall be kept strictly confidential by the receiving party and shall not be disclosed to any third party without the prior written consent of the original disclosing party. This clause shall apply to the sub-contractors, consultants, advisers or the employees engaged by a party with equal force.
- "Restricted information" categories under Section 18 of the Atomic Energy Act 1962 and "Official Secrets" under Section 5 of the Official Secrets Act 1923. :-
- Any contravention of the above-mentioned provisions by any contractor, sub-contractor, consultant adviser or the employees of a contractor will invite penal consequences under the aforesaid legislation.
- Prohibition against use of BARC's name without permission for publicity purposes.
- The contractor or sub-contractor, consultant, adviser or the employees engaged by the contractor shall not use BARC's name for any publicity purpose through any public media like Press, T.V. or Internet without the prior written approval of BARC.

E. Declaration to be submitted along with the offer:

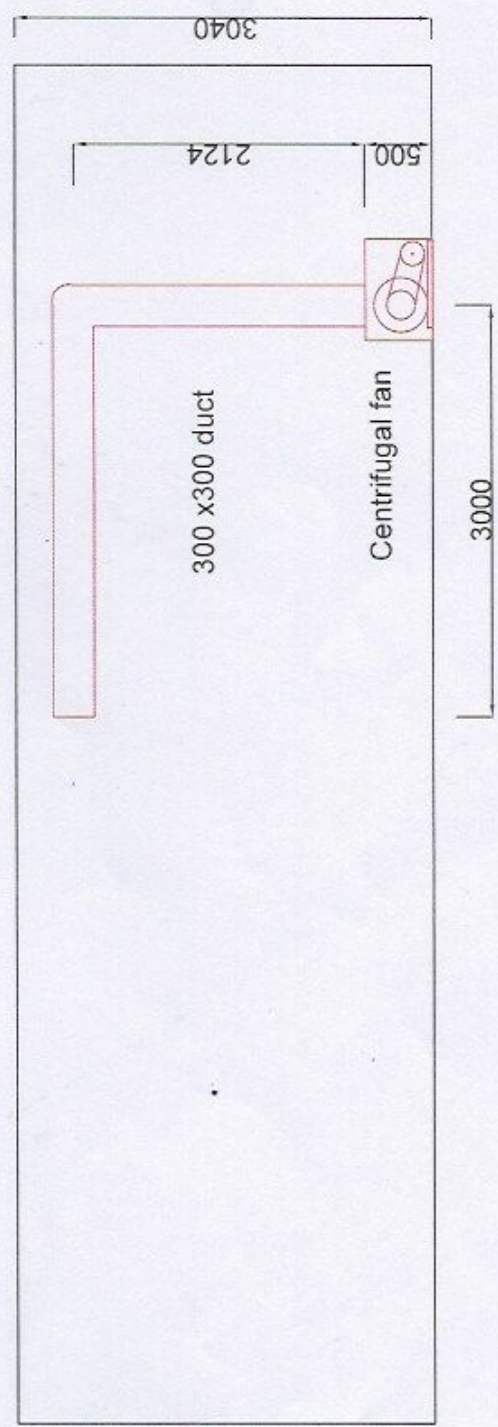
- (i) The vendor shall declare as to whether he has any relative working in BARC, or himself is an ex-employee of BARC, or has an ex-employee of DAE on his pay rolls.


(B. M. Sharma)
SO/F, ESAS,AFD


एस. के. झा / S. K. Jha
अध्यक्ष, ए एफ डी / Head, AFD

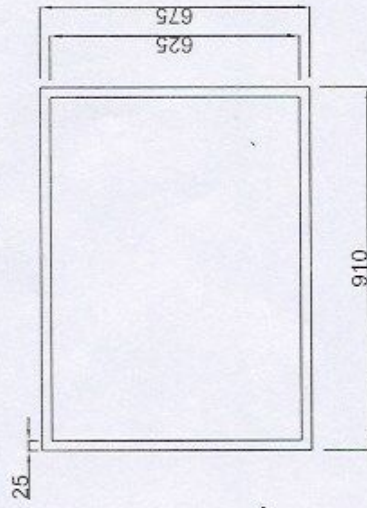


Plan

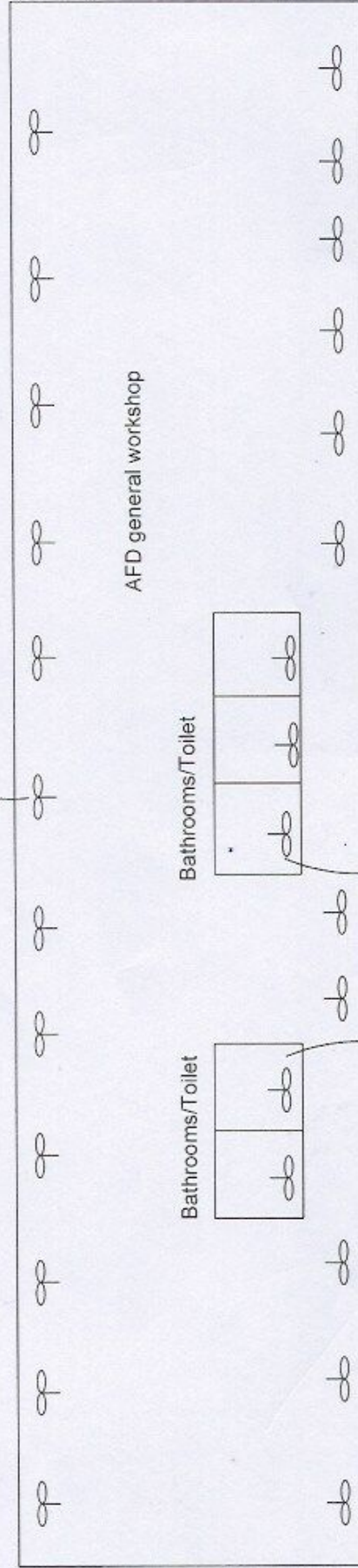


Elevation

■ Proposed ventilation design



Cut out for exhaust fan
Road side -12nos
Hill side -11nos

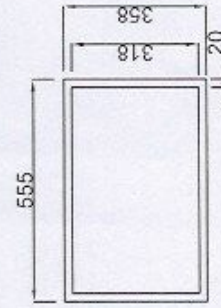
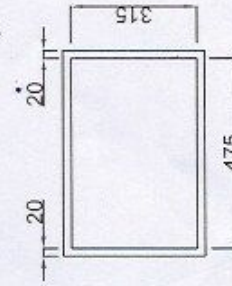


AFD general workshop

Bathrooms/Toilet

Bathrooms/Toilet

Plan



Exhaust Fans	
AFD general workshop	

Wall ventilator cut out