



Government of India
Bhabha Atomic Research Centre
Nuclear Recycle Group
Process Development Division

Ref: PSDD/MF/TM/2022/ 38200

Date: 22/04/22

Sub: Removal of ventilation exhaust fans and installation of new fans on same foundation along with duct modification, installation of SS304L solution transfer line from GB-5 to Area 59 of WIP and repair of exhaust room door at ADF as per the attached technical specification.

Dear,

You are requested to submit your quotation in sealed envelope for the above mentioned job. The material should confirm to our specifications. The reference no. given above should be clearly mentioned on the sealed envelope.

Due consideration shall be given to the following aspects while you submit your offer:

1. Quotation shall be printed on letter head in quotation format which should consist of GSTN, PAN Number of the firm etc.
2. Quotation shall be completed in all respects with regard to specifications, validity of offer etc.
3. Cost breakup may be provided as:

Sr. no.	Item	Qty.	Rate	Price
1	Removal of ventilation exhaust fans and installation of new fans on same foundation along with duct modification	1 Job		
2	Installation of SS304L solution transfer line from GB-5 to Area 59 of WIP	50 m		
3	Repair of exhaust room door at ADF	1 no		
Other charges				
Total Cost				

4. NIT will be issued to eligible tenderers from 25/04/22 to 06/05/22.
5. Sealed quotation shall reach the following address on or before 11/05/22 by 14:00 hr.

Trushit Makwana

SO/E, PSDD,

Room no. 204, CDCFT, WIP Complex,

BARC, Trombay, Mumbai-400 085

Tel: 022-25591392

6. Taxes, duties and other charges applicable, if any, shall be indicated separately.
7. Quotation shall be sent by speed post.
8. Free Issue Material (FIM) will be provided as mentioned in technical specification.
9. The work shall be completed within six calendar months from issue of work order.
10. The offer shall be valid for a period of thirty days and in case of placement of the work order, shall remain firm till the completion of the work.
11. The work will be carried out under supervision of Radiological Safety Officer (RSO), HP, WIP. Work shall be carried out using necessary radiological safety gears as per instruction of HP, WIP. All radiological safety gears will be provided by the department.
12. The contractor may visit the site to fully understand the scope of the work.

Trushit
18/04/22

Trushit Makwana
SO/E

Technical Specification

Scope of work:

Removal of ventilation exhaust fans and installation of new fans on same foundation along with duct modification, installation of SS304L solution transfer line from GB-5 to Area 59 of WIP and repair of exhaust room door at ADF as per the attached technical specification.

1. Replacement of ventilation exhaust fans

- a) Existing Fans (2 nos.) at the ADF exhaust room, WIP shall be uninstalled.
- b) New Fans shall be shifted from WMZ stores and installed at the same foundation at ADF.
- c) Old fans shall be cleaned as per the std. procedure and shifting to RSMS, Trombay site.
- d) Modification of existing connections of fans with suction and discharge side plenums as per the requirement. Required parts shall be fabricated with GI metal sheet. (MS sheet 3 mm)
- e) Noise level of fans shall be not exceed 80 dB at 1m from the fan body and vibration levels shall be less than 0.63mm along x, y and z direction.(As per ISO 2372 (Less than 4.0 mm/sec)
- f) Details of new exhaust fan to be installed and existing foundation is given as Annexure I.

2. Fabrication and Installation of active solution transfer line

- a) Line shall be from GB-5 at back access of ADF to Area 59 of WIP through the maintenance cell.
- b) Inner pipe will be 25NB Sch 40 while outer pipe will be 40NB Sch 40.
- c) Total line length: 50m
- d) Fabrication requirement is attached as Annexure II.

3. Repair of exhaust fan room doors

Exhaust fan room door at ADF requires to be repaired with replacement of damaged parts as per the requirement

4. General:

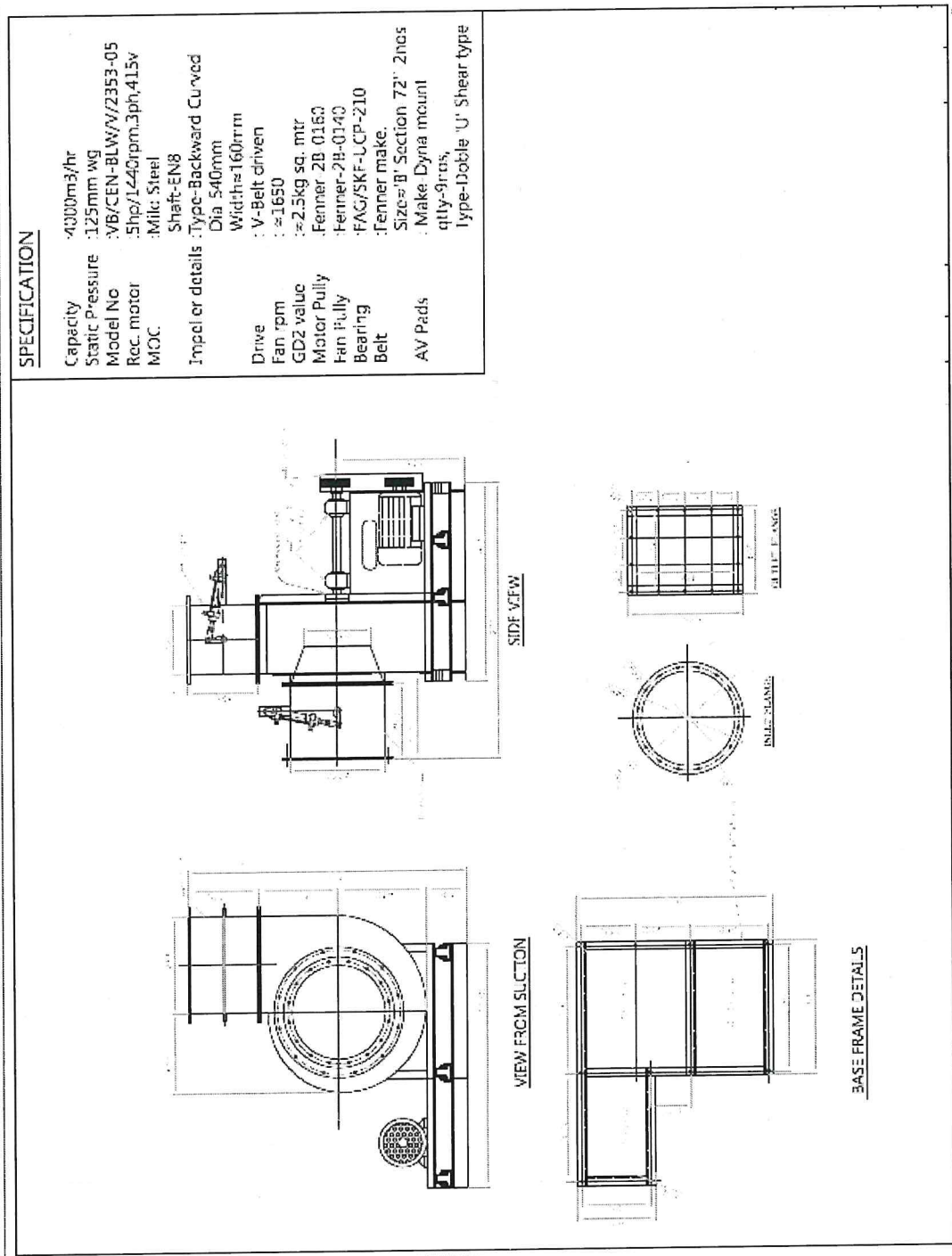
- a) Work shall be carried out at active areas of WIP like ADF operating area, ADF back access area, cell maintenance area, Area 59 etc.
- b) Std. guarantee shall be provided for 12 months against the work.
- c) All the dimensions and sizes mentioned in work details may vary as per the site requirements and shall be carried out accordingly.
- d) The contractor shall arrange all necessary equipment and personnel required for the successful completion of the work. BARC will provide only electricity and water.
- e) Contractor is requested visit the site to understand the scope of the work.
- f) The work will be carried out under supervision of Radiological Safety Officer (RSO), HP, WIP. Work shall be carried out using necessary radiological safety gears as per instruction of HP, WIP. All radiological safety gears will be provided by the department.
- g) List of FIM is attached as Annexure III.


18/04/22

Trushit Makwana
SO/E, PSDD

Annexure I

New Exhaust Fan and Foundation Details



Annexure II

Fabrication requirement for pipe in pipe liquid transfer line

A. General:

- a) Detailed QA plan shall be prepared and submitted for approval of the Purchaser prior to start of fabrication.
- b) Each weld joint (viz., butt, fillet, etc.) shall be uniquely identified/ designated and shall be referred to, in all the documents of interest (viz. fabrication drawings, Non-Destruction Examination (NDE) tables, inspection reports etc.).
- c) Fabricator shall maintain a system of identification for the materials so that all materials used can be identified with respect to test certificates.
- d) All material should be cut preferably by mechanical cutting process like shearing/hacksaw etc.
- e) All shop floor staff, technicians, supervisors, engineers, etc., deployed for the above work shall be familiar & experienced in handling and fabrication of required materials.
- f) An exclusive and adequate stock of tools, tackles, consumables, grinding wheels, sanding discs etc., shall be made available exclusively for the fabrication.
- g) Raw material procured shall be stored in dry enclosed area as per standard practice for such materials ensuring safety from cross contamination and damage.
- h) The raw materials shall be properly cleaned and degreased prior to taking up any manufacturing operation. All rollers etc. used for forming shall also be thoroughly cleaned and degreased prior to commencement of rolling operation. Suitable liners shall be used on the forming tools to avoid direct contact of metal sheets with the roll material.
- i) All material shall be properly cleaned after any forming process.
- j) All temporary fixtures in direct contact with the job shall be preferably made from the same material.
- k) The fabrication drawings shall be generated using latest AutoCAD software and soft copy of the same should also be submitted to Purchaser.

B. Applicable codes and standards:

Sr. no.	Standard/Code	Details
a.	ASME Section II, Part A, B, C	- Ferrous materials (Part A) - Non-ferrous materials (Part B) - Welding rods, electrodes and filler wires (Part C)
b.	ASME Section VIII	Fabrication and Design
c.	ASME Section V	Non-destructive tests
d.	ASME Section IX	Welding/welder qualification
e.	ASTM - E – 165	Liquid penetrant test
i.	ASTM E84	Test Methods for Tension Testing of Metallic Materials
j.	ASTM E390	Test Methods for Bend Testing of Material for ductility
l.	IS 2102	Dimensional Tolerances (for dimensions without specific tolerance covered by ASME Section – III Subsection ND)
m.	ASTM - E – 1003	Hydrostatic test
n.	ANSI - B - 16.25	Butt welded ends

- If the standard of any of the component or material is not listed here, then the relevant international standard for the same will be applicable which shall be communicated to the Purchaser for acceptance.

C. Welding Requirement:

- a) The GTAW welding process shall be employed for the fabrication.
- b) Argon gas used shall be of ultra-purity type (min. 99.999%)
- c) Only qualified welders shall be employed for all welding jobs on the same grade(s) of metals to be used in actual production.
- d) Suitable wire brushes, wire brush wheels, acetone, etc., shall be provided to the welders for proper pass-by-pass cleaning.
- e) All filler wires shall be stored in dry and enclosed area. All filler wires shall be kept in clean dispensers and cleaned with proper cleaning medium prior to use.
- f) No welding shall commence until procedure qualification is completed and approved by the Purchaser / Quality surveyor. Fabricator shall submit copies of the approved procedure and performance qualification reports. In case the fabricator has previously approved procedure & performance records, the same shall be submitted to BARC for review and acceptance before start-up of the fabrication. Tests for welding procedure & performance qualification shall be carried out in conformity with requirements of relevant codes.
- g) Cost of conducting all the tests shall be borne by the fabricator. Purchaser shall have the right to call further qualification tests from time to time for any welder who is not producing finished welds of required quality or who has discontinued welding by the particular process for more than three months.
- h) Surfaces to be welded shall be free from paint, oil, grease, dust or any other contamination. Cleaning of surfaces/weld edge preparations/ completed weld shall be done only by use of appropriate solvents.
- i) Haphazard striking of electrode on base metal for establishment of arc shall not be permitted. High frequency unit shall always be used for arc starting.
- j) Heat input to the job shall be minimized by suitable techniques.
- k) Suitable welding fixtures shall be used in achieving the requisite fit-ups for welding.
- l) Repair: In general the defects in the welding are not expected on the weld. The fabricator shall apply the best suitable fabrication and welding practices to achieve the basic intent of quality. The defective areas, as revealed by visual or applicable NDT method, shall be repaired as per the approved procedure and re-inspected as per the original NDT method.
- m) Welding Documentation: Fabricator shall maintain a proper record of the welding being performed by the welder. It is required to maintain the traceability of a particular weld to the welder responsible for its production, together with the heat / batch number(s) of the filler wires used and the welding technique adopted.

D. Cleanliness & Surface Finish:

- a) All welds shall have smooth contour and merge smoothly into the parent metal. The welds on the inside surfaces are to be ground smooth and flush with the parent metal. The general surface finish shall be equal to or better than a standard pickle and passivated finish.
- b) All scales, dents, burrs, weld spatter, oxide, oil and other foreign materials shall be completely removed from inside and outside of the component. Items which cannot be cleaned after complete fabrication shall be cleaned prior to the assembly.
- c) Fabricator shall take care to see that all chemicals/materials used for cleaning, marking and degreasing etc. are iron, halogen and sulphur free.

- d) Hammering on weld is not permitted. Removal of undercut when carried out shall not result in under flushing of the parent plate.
- e) All necessary precautions shall be taken to prevent from any kind of damage.

E. Inspection & Testing:

Certificate of Manufacture & Inspection:

The case history of manufacture, certification and inspection shall be prepared concurrently with the manufacturing activities. The fabricator shall, upon completion of each stage of the fabrication, certify that it has been manufactured inspected & tested in accordance with these specifications, relevant drawings and applicable documents. If any deviations have been made during manufacture, these shall be clearly stated and covered by authorized documents. This certificate shall form part of the completed documentation for the fabricated item.

Dye Penetrant Examination:

- a. Acceptance of the Dye Penetrant (DP) examination method shall conform to ASME Sec. III Div. 1 ND together with the requirements given in relevant clauses of this specification.
- b. Dye penetrant examination shall be carried out on all the weld layers together with their HAZ (minimum ½ inch on either side of the weld) as well as other areas wherever specified.
- c. Only visible dye-penetrant solvent (removable type) method shall be employed for all welds and other metallic surfaces. The residual amount of total sulphur in the penetrant, developer and cleaner used shall not exceed 1% by weight and halogens shall not exceed 25 ppm. Fabricator shall obtain certification of these tests for the penetrant materials used giving batch numbers and test results.
- d. Acceptance standards:
 - Any linear indication is not acceptable.
 - Single rounded indications more than 0.8 mm diameter on the outside surface or any cluster of indications are not acceptable.

Radiographic Examination:

- a. 100% radiography to be carried out for internal pipe while 10% radiography for outer pipe.
- b. Radiographic examination of the welds shall be carried out in the finished condition (e.g. after heat treatment if any or after back chipping/re-welding/flushing the welds from inside etc.)
- c. Examination will be in accordance with the requirements of ASME Sec. III Div 1 NC.
- d. For all thickness X-rays shall be used as the source of radiation. Gamma rays shall be employed only when use of X-ray is not feasible and this shall be with the written clearance from the Purchaser's Quality Surveyor, who shall ensure that the radiography image quality and other requirements are fully met with the use of gamma ray radiography.
- e. Radiographic examination shall be carried out employing a procedure approved by the Purchaser.
- f. Acceptance standards for defects/discontinuities as shown in radiographs shall be in accordance with requirements of ASME Sec. III Div 1 NC together with following unacceptable indications:
 - Under cutting on either surface (inside or outside).
 - Oxidation.
 - Cracks, linear defects / indications etc.

- Root concavities if resulting in weld thickness becoming lesser than the parent plate
- Following rounded indications are not acceptable:
 - Single isolated indication > 1 mm size or $\frac{1}{4}T$ whichever is smaller
 - Where 'T' is thickness of thinner component being joined.
 - Cluster of any size and aligned indications.
 - Five or more number of acceptable rounded indications in a length of 300mm

F. Drawings and Documents to be provided:

Print out of Approved fabrication drawing.

Prints of the 'As built' drawing (after completion of fabrication) and a soft copy

One set of the following duly approved Documents/ Procedures/ Reports:

- a) Detailed manufacturing Plan.
- b) Detailed Inspection and QA Plan.
- c) Detailed procedure for fabrication of formed components.
- d) Detailed procedure for other tests such as D.P. Test, hydrostatic test, weld repair etc.
- e) WPS, PQR, WPQ etc.

Annexure III

List of FIM

Sr. no.	Item	Qty.
1	25NB Sch 40 SS304L Pipe	50m
2	40NB Sch 40 SS304L Pipe	50m
3	Reducer SS304L 25NB x 15 NB	2 nos.
4	Plate SS304L, 6 mm Thk., 200mm x 200mm	1 no.
5	Filler wire, Dia 1.6mm, SS304L	7 kg

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18/10/22