सत्यमेव जयते

भारत सरकार
GOVERNMENT OF INDIA

भाभा परमाणु अनुसंधान केन्द्र
BHABHA ATOMIC RESEARCH CENTRE
Research Reactor Maintenance Division
Instrument Maintenance Section
Trombay, Mumbai - 400 085
Phone: 91 - 22 - 2559 4311
Fax: 91 - 22 - 2550 5311

Ref: RRMD/TR-1/TN-547/2017 10/10/2017

To,

Sub: **Minor fabrication - invitation to quote**
Last date for receiving quotations: 25th October, 2017

Dear Sir,

Sealed quotations are invited by Head, Research Reactor Maintenance Division for and on behalf of President of India for the minor fabrication job as per the requirements given in the technical Specification

No	DESCRIPTION
1	Fabrication, Supply, Erection & installation for laying 1/2" SS piping with fittings and clamping of pipes work as per specifications at Dhruva, BARC.

1.0 GENERAL

This part of the tender document deals with detailed specifications defining the technical requirements ofFabrication, Supply, Erection & installation for laying 1/2" SS piping with fittings and clamping of pipes work as per specifications at Dhruva, BARC.
These specifications are governed by technical conditions of the contract attached hereto.
Any person entering BARC shall comply with all the requirements that are imposed by Health Physics Division & Security of BARC, from time to time.
All industrial safety rules like using safety shoes, safety belts, helmets and any other gears required should be complied with.
The workmanship shall be of the highest quality giving an excellent finish to the job. High-class standard shall be maintained throughout.
Total scope of the job comprises of the following

2.0 SCOPE OF WORK

2.1 Contractor's Responsibility

2.1.1 Providing the skilled and unskilled manpower experienced supervisory and technical staff.
2.1.2 Repairs and /on replacing any component damaged by contractor while handling, installing or testing.
2.1.3 Making alterations required for minor design changes to suit site conditions or correct errors in detailing or execution of job. Detailed drawing for installation will be made available only to the bidder to whom work order is placed.
2.1.4 The bidder may be asked to carry out minor changes to suit the site conditions.

2.2 List of Jobs

List of jobs are given in the TABLE-1. During actual execution, minor changes to suit the site conditions and minor modifications may be there, which will be intimated at the time of execution.

2.3 Materials:

2.3.1 Free issue material

Water & electricity will be provided free of cost.

2.3.2 Scope of work by contractor

The contractor shall complete the job such as fabrication, supply, welding, erection, installation, testingof 1/2" SS piping with fittings and clamping of pipes work,etc. The work carried out shall satisfy concerned engineers/user department.

TABLE –1: Supply &Installation jobs

Sr.No.	Description	Qty.
1	Supply of AISI 304L, 1/2" NB SCH 40 seamless pipe suitable for forged butt weld fittings.	120 meters
2	Supply of SS 304 L, 1/2" ElbowSocket Weld.	6 Nos.
3	Supply of SS 304 L, 1/2" TeeSocket Weld.	3 Nos.
4	Supply of SS 304 L, Coupling socket to 1/2" NPT.	6 Nos.
5	Supply of SS 304 L, 1/2" 6" long threaded nipple.	3 Nos.
6	Supply of SS 304 L, 1/2" (F) plug.	3 Nos.
7	Supply of SS 304 L, 1/2" NPT X 3/8" OD Connector; Make:Swagelok/equivalent	6 Nos.
8	Supply of SS 304, Clamp; (3 Line) C(12" Long)	7 Nos.
9	Supply of SS 304 L, 1/2" Socket Weld. Make: Adco/equivalent	3 Nos.
10	Supply of MS 3 line holding stand. (2 ft.height)	2 Nos.
11	Fabrication, Welding, Installation, Testing & Erection	1 Lot.

2.4 TECHNICAL SPECIFICATIONS FOR PIPING JOB.

2.4.1 Fabrication, welding, erection and installation of 1/2" SS process piping

2.4.1.1 For the stainless steel AISI 304L, 1/2" NB SCH 40 seamless pipe suitable for forged butt weld fittings, for welding work skilled and qualified technicians can only be assigned. This piping is to be done for following process conditions: Process Fluid - Water, Temperature- 0 to 100 °C, and Pressure: 0-10 Kg/cm^2. The trade test of the technicians will be taken prior to actual starting the job. A person, who qualifies the test, shall only be allowed to do the work for the lines. Proper clamping of piping should be done.

2.4.1.2 **Pipingrouting has to be carried out from terrace of the building to ground floor from outside wall of building approx. 35 meter height**. Three runs of pipe 35 meters height have to be laid adjacent to each other. Hole of around 5" diameter has to be provided on the top floor outside wallof the building for passing 3nos. of ½" SS pipes. SS clamps to support 3 pipes in line shall be used for clamping the pipes. These clamps in turn will be welded on existing 5 nos. MS clamps fixed on the outside wall of building for existing 10" pipeline. The overall routing shall be as directed by the concerned engineer.Erected scaffoldings for working at height from outside the building will be provided, required safety gears and other equipment's to ensure safety of personnel shall be arranged by supplier. **Site and working at height is difficult and contractor is requested to visit site prior to submitting the quotation.**

2.4.1.3 Welding Specification:Gas Tungsten Arc Welding (GTAW) with Argonpurity up to 99.99% & Purging Argon Shouldalso have a Purity of 99.99%. Welding sourceshould be pulse peak power source & electrodewill be 2% ThoriatedTungsten rod.308L filler wire should be used for welding. NDT process of dye penetration test(DPT) for welding shall be carried out as per standard.

The contractor shall perform, Hydrostatic pressure test at 16 Kg/cm^2 on the pipelines before erection.

2.4.1.4 Material test certificates for SS 304L for each component should be provided.Physical testing on SS pipes and PMI &chemical testing to be carried out on all other fittings, material and SS pipes supplied. Welding procedure and welder qualification will be checked before starting the welding work. Only qualified welders as per Section IX of ASME will be allowed to perform work.

3.0 Terms and conditions.

3.1 The quotation shall be **inclusive of all the charges including taxes if any**.

3.2 GST registration number and PAN number shall be indicated in the quotation. Quotations without these numbers shall be rejected.

3.3 The prices quoted by the vendor shall be valid for at least 90 days from the date of opening of the tender.

4.0 Payment Terms and conditions:

4.1 No advance or part payment is admissible. The full and final payment will be made within 60 days after completion of the job in all respects.

4.2 Income tax and other taxes as per the prevailing rates will be deducted from the amount.

4.3 For payment the following shall be provided

a) Original Bill in duplicate
b) Taxes need to be shown separately in the bill.
c) Advance stamped receipt.
d) GST registration number, PAN number to be indicated in the stamped invoice.

4.4 Payment will be made **only** through ECS/Core Banking System. Hence, please furnish the bank details such as Bank's name & address, A/c No. and IFSC code in the invoice.

5.0 Completion schedule:

5.1 The job shall be completed within 3months from the receipt of the work order.

5.2 Time is the essence of the contract. If you fail to comply with this condition you shall be liable to pay compensation.

5.3 Penalty clause: Any delay in the completion of the job which is attributable to the vendor, is liable for a penalty @ ½ % of the work-order value per week (max. 5%).

5.4 In case extension in the job completion period is required, the vendor has to write to Head, RRMD, BARC for approval.

6.0 <u>CONFIDENTIALITY CLAUSES.</u>

(i) <u>Confidentiality :</u>

No party shall disclose any information to any third party concerning the matters under this contract generally. In particular, any information identified as **"Proprietory"** 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.

(ii) <u>"Restricted information" categories under section 18 of the Atomic Energy Act, 1962 and "Official Secrets" under Section 5 of the Official Secrets Act, 1923 :-</u>

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.

(iii) <u>Prohibition against use of BARC's name without permission for publicity purposes :-</u>

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, Radio, T.V. or Internet without the prior written approval of BARC.

7.0 Security Instructions

Please indicate whether any of your relatives are employed in BARC or you or any of your employees were employed in BARC or any other units of DAE.

Police Clearance: The bidder shall note that entry inside BARC is restricted and it is compulsory for contractor to get police clearance for all his staff who will be entering BARC for work.

8.0 General:

1. You may contact Shri S. B. Wankhede, SO/E, at Telephone No. 25596210, for further clarifications.
2. The names of your authorized representatives to whom official instruction can be given may please be communicated.
3. The contractor may fill up the Schedule B format attached and submit along with the quotation.

The quotation shall be addressed to **APO, RRMD Office, BARC, Trombay, Mumbai – 400 085,** super- scribing our reference no, so as to reach latest by**<u>15.00 hrs. on25/10/2017</u>.**
Submission of tender documents should be done only through **registered post/speed post through Indian Postal Services.**

Encl: 1. Schedule B
2. ANNEXURE A

Thanking you,

Yours faithfully,

Maint. Supdt. (I)

RRMD

Schedule- B

Sr. No.	Description	Unit	Qty.	Unit Rate ₹	Total ₹
1	Supply of AISI 304L, 1/2" NB SCH 40 seamless pipe suitable for forged butt weld fittings.	Meter	120		
2	Supply of SS 304 L, 1/2" Elbow Socket Weld.	Nos.	6		
3	Supply of SS 304 L, 1/2" Tee Socket Weld.	Nos.	3		
4	Supply of SS 304 L, Coupling socket to 1/2" NPT.	Nos.	6		
5	Supply of SS 304 L, 1/2" 6” long threaded nipple.	Nos.	3		
6	Supply of SS 304 L, 1/2" (F) plug.	Nos.	3		
7	Supply of SS 304 L, 1/2" NPT X 3/8” OD Connector; Make:Swagelok/equivalent	Nos.	6		
8	Supply of SS 304, Clamp; (3 Line) C(12” Long)	Nos.	7		
9	Supply of SS 304 L, 1/2" Socket Weld. Make: Adco/equivalent	Nos.	3		
10	Supply of MS 3 line holding stand. (2 ft.height)	Nos.	2		
11	Fabrication, Welding, Installation, Testing & Erection	Nos.	1		
Total:					

(Stamp and Signature of Contractor)

ANNEXURE A

SPECIFICATIONS FOR SS COMPRESSION TYPE (FLARELESS) TUBE FITTINGS

1. APPLICABLE SPECIFICATIONS:

The design, manufacture and performance assessment shall conform to the following Specifications:

ANSI. B2.1: American National Standard Pipe Threads (Except Dryseal)
ANSI. B1.1: Unified Screw Threads Class 2A & 2B or B.S. Equivalent for tube end.
ASTM A-276: Stainless and Heat Resisting Steel Bars and Shapes
ASTM A-269: Seamless and Welded Austenitic Stainless Tubing for General Service
ISOR 261: ISO General Purpose Metric Screw threads
SAE J 514 i : Hydraulic Tube fittings

2. **MATERIAL AND WORKMANSHIP**

2.1 Materials, Processes and Parts

Material, processes and standard parts shall be of good quality and in accordance with good practices pertinent to the manufacture of high quality fittings.

2.2 Workmanship

Workmanship shall be in accordance with high grade practice adequate to ensure satisfactory operation and service life. Fittings shall be free from all burrs loose scale and sliver which might become dislodged in usage and all other defects which might affect their serviceability. All sealing surfaces must be smooth to one micron. No annular tool marks shall be permitted on the sealing surfaces. On other surfaces annular tool marks up to a maximum of 3 microns shall be permitted.

3. **REQUIREMENTS**:

3.1 Material Requirements

All these fittings including Straight bodies, nuts, ferrules , Tees & elbows shall be from 316 S.S. conforming to ASTM A-276. These fittings shall be suitable for use on S.S. 304L tubings conforming to ASTM A-269, but with dimensional tolerances for 3/8 inch stainless steel tube with -0.000 inch and +0.004inch.

3.2 Service Conditions

The fittings shall be suitable for the service under the following conditions:

Process fluid	: Water, air, hydraulic oil or steam
Pressure of Process Fluid	: up to 250 Kg/cm^2 max.
Temperature	: up to 320 Deg.C max.

Design of the fitting should be such that the tube fittings when assembled with the recommended tubings must be capable of withstanding the following types of forces:
Internal pressure, tension or axial pull, compression or axial push, torque or twist , vibration , temperature variation and any combination of all forces is possible.

3.3 Screw Threads

All fittings shall have American National Standard Taper Pipe Threads (NPT) as per ANSI B2.1 and straight Threads as per ISOR 261. ANSI/B.S. equivalent threads may be used at the tube end, where the ferrules are swaged at manufacturer's option.

3.4 Leak Tightness

Fittings and their component parts when assembled with appropriate S.S. tubing shall be capable of withstanding an internal pressure of 375 kgf/cm2 for at least ten minutes without any visible leak. Manufacturer should demonstrate this test.

3.5 Wall Thickness

Unless otherwise specified the wall thickness at any point on the fittings shall conform to SAE J514i.

3.6 Hardness

The hardness of the ferrules shall not be less than Rockwell B-90.

3.7 Reassembly

The fittings shall be capable of having the joint broken and re-made at least 25 times and shall provide a sound joint. (refer Section 4.1.5).

3.8 Cleanliness

The fittings shall be free from any metal particles, contaminant and other forms of dirt. Manufacturer have to follow the Purchaser's instructions specified in "General Cleaning and Handling Requirements for Instruments and Fittings for use in Water and Helium Services" (annexure-I). Failure to meet this requirement shall result either in rejection or clean-up of all the fittings at the discretion of the Purchaser. Fittings in the made-up condition shall be suitably heat sealed in polythene bags and shall be stored in clean storage.

3.9 Certificate of Compliance

The manufacturer shall supply in triplicate, certificate of compliance stating that the material supplied is in accordance with all the provisions of this specification.

3.10 Quality Control at Manufacturer's Works

The manufacturer shall submit as part of the tender, his incoming inspection procedures for the raw materials to be used in the manufacture of the fittings. It is required that the manufacturer shall formulated sound quality control procedures and also systematic documentation. The manufacturer will submit this plan to the purchaser for approval. The plan should clearly mention the points for inspection and testing by purchaser or his representative.

4. **INSPECTION AND TESTING**:

4.1 Inspection

The fittings shall be inspected to determine conformance with all the provisions of this specification with respect to material, workmanship and cleanliness. The manufacturer should submit the chemical analysis report and mechanical test report of the raw material as per the requirements of relevant standard/codes from a reputed test laboratory.

The following tests shall be done on 1% or one number of each type fitting (whichever is more) of the lot of fittings and in case of any failure, whole lot will be rejected. This testing/inspection shall be carried out in presence of purchaser or his representative.

4.1.1 Chemical analysis

The chemical analysis of the finished product selected at random is to be done at manufacturer's cost in the approved test laboratories of the purchaser. Acceptance criteria for chemical composition is conforming the material as per ASTM A-276.

4.1.2 Hydro Test

To be conducted to verify conformance with the leak tightness requirement of Section 3.4.

4.1.3 Hardness Test

To be conducted to verify conformance with the hardness requirement of Section 3.6.

4.1.4 Dimensional Checks

The following dimensional checks shall be carried out on 2% or one no. whichever is higher of each size of fittings selected at random by the Purchaser.

(a) Complete checks of threads with applicable gauges or profile

projector.

(b) Micrometer check on land diameter and body and depth of connection, not less than one dia. of tube.

(c) Complete check of O.D. of fittings and ferrules.

(d) Visual check under magnification of ferrule surfaces, body seats and threads.

4.1.5 Reassembly

One percent or one no. which ever is higher of each type of leak tight assemblies shall be disassembled and remade 25 times. After the twenty-fifth assembly, the fittings shall be leak tested.