

**Government of India
Bhabha Atomic Research Centre
Reactor Design & Development Group
Structural & Seismic Engineering Section**

Mumbai-85
Engg. Hall No. 7

Ref: RDDG/SSES/GRR/2018/ 232829

Dec. 06, 2018

Dear Sir,

Sealed quotations are invited by Head, SSES, RD&DG, BARC for the minor fabrication job as per enclosed Annexure - I (specifications and quantities).

SCOPE:

The scope of work involves supply and installation of piping system, pressure vessel, plunger pump and other accessories for shake table testing as per enclosed Annexure - I to study the coupled behavior of RC frame structure, piping and equipment. These systems and components need to be installed on RC frame structure located at IGCAR, Kalpakkam at bidder's cost and risk. The fabricator shall quote the cost of supply and installation in lump sum.

Notes to fabricator:

1. The taxes and excise duty shall be quoted separately.
2. **The bidder should mention PAN No./GST No. in the quotation.**
3. The Quotations must reach Head, SSES, Engg. Hall # 7, BARC, TROMBAY, MUMBAI-400 085 by **13-12-2018.**
4. Supplier should submit their offers in their letterhead, placed in sealed envelope super scribed with "MINOR FABRICATION" and indicate this **office reference number** and **due date** of opening clearly. The quotations will be opened on **14-12-2018 at 14:00 hrs.**
5. Quotations must be send by *registered post/speed post* only.
6. The items shall conform strictly to the specification and standards. **The fabricator should submit test certificate in standard format along with the items.**
7. **In case the bidder need to clarify and understand the full scope of his work before submitting the quotation, he may do so by prior appointment with Shri R. K. Verma, SO/E, Engg. Hall No. 7, BARC, Trombay, Mumbai- 400 085 on phone no. 25596746.**
8. The fabricator should inform SSES at the appropriate stage for inspection. Inspections shall be witnessed by our concerned engineer/ his authorized representative.
9. The fabrication work shall be subject to inspection at bidder's work by our concerned engineer or his authorized representative. The finished material shall not be dispatched without approval of our engineer/ authorized representative. Necessary inspection facilities shall have to be provided to our representative during fabrication job at bidder's premises.
10. Work should be completed within **60 days** from the date of receipt of the order.
11. The price quoted should be valid for atleast 90 days from the date of opening of the quotation.
12. The work for which this quotation is being invited is meant for research purpose of a research institute under Department of Atomic Energy and therefore the price to be quoted for the work should be exclusive of excise duty. The purchaser will make available to the successful bidder with whom a work order is placed, the excise

duty exemption certificate duly signed by the authorized officer in the Department of Atomic Energy, well before the completion of work by the supplier. While submitting the offer, the bidder should specify in his offer that the price quoted by him does not include any element of excise duty, subject to production of exemption certificate. Where, however the prices quoted are inclusive of excise duty, the percentage/quantum of excise duty included in the quoted price should be specifically indicated in the Tender.

13. The payment shall be made as per rules after completion of the job satisfactorily and acceptance by the user.
14. Proof of ability: A brief list of similar jobs executed, if any, and the name of the organization should be furnished.
15. Head, SSES reserves the right to accept/ reject any or all the quotations received without assigning any reason whatsoever.
16. The fabricator should strictly follow "confidentiality clause" as per Annexure - II.

Indenter:

Rajeev K. Verma
/06.12.2018



(Dr. G. R. Reddy)
OS & Head, SSES, RDDG

6/12/18

डॉ. जी. आर. रेड्डी

Dr. G. R. REDDY

अध्यक्ष, संरचनात्मक एवं भूकंप इंजिनियरी अनुभाग
Head, Structural and Seismic Engineering Section
भा.स.अ. केंद्र/BARC

Copy to:

1. Shri R. K. Verma, SSES
2. Asstt. Stores Officer, Zonal 9, Engg. Hall 7

Annexure- I (Specifications and Quantities)

Details of the piping system, pressure vessel, plunger pump and other accessories are given in following paragraph:

1. Details of Piping System

Piping system has to be fabricated as per details provided in Figure 1. Material, size and quantity of the piping system are given in Table 1. This piping has to be delivered and installed in a frame structure built at 100 ton Shake Table Facility, Reactor Design Group, IGCAR, Kalpakkam, Tamilnadu at bidder's cost and risk. Details of the frame structure is given in Figure 4.

Table 1: Piping System

Item	Material	Quantity
Straight Pipe(80NB,Sch 40)	SA-333 Grade 6	~12m
LR Elbow (80NB,Sch 40)	SA-333 Grade 6	02 Nos.
0.5" Weldolet	CS	03 Nos.
Concentrated Mass (Fig. 1a)	CS	03 Nos. (Weight 50kg each)
Flange (1500lbs) as per ASME B16.5	CS	02 Nos.
Circular Disc (Fig. 1b)	CS	01 No.
Blind Flange (1500lbs) as per ASME B16.5	CS	01 No.
0.5" Pressure Relief Valve (200bar)	-	01 No.
0.5", 0-250 bar Pressure Gauge (Dial Dia 100mm)	-	01 No.

2. Details of Pressure Vessel

Pressure vessel has to be fabricated as per details provided in Figure 2. Material, size and quantity of the pressure vessel are given in Table 2. This vessel has to be delivered and installed in a frame structure built at 100 ton Shake Table Facility, Reactor Design Group, IGCAR, Kalpakkam, Tamilnadu at bidder's cost and risk. Details of the frame structure is given in Figure 4.

Table 2: Pressure Vessel

Item	Material	Quantity
Pressure Vessel	SA-333 Grade 6	01 No.
Flange (1500lbs) as per ASME B16.5	CS	01 No.
Flange (400lbs) as per ASME B16.5	CS	01 No.
Blind Flange (400lbs) as per ASME B16.5	CS	01 No.
0.5" Pressure Relief Valve (50bar)	-	01 No.
Leg Support	ISA 50×50×5	04 Nos.
EP Plate (Fig. 2a)	CS	08 Nos.
Base Plate (Fig. 2b)	CS	04 Nos.
180mm long High Strength M10 Bolts and Nuts (Class 8.8)	-	20 Nos. each
500mm long High Strength M24 Studs (Class 8.8)	-	40 Nos.
High Strength M24 Nuts (Class 8.8)	-	80 Nos.
0.5" Weldolet	CS	01 No.
1" Drain Valve at the bottom of the Vessel	CS	01 No.

3. Details of Trolley Mounted Plunger Pump

Specifications of the plunger pump is listed in Table 3. Material of construction for major components are listed in Table 4. Scope of supply is given in Table 5.

Table 3:Plunger Pump Specification

Flow Rate	15 LPM
Pressure	250 BAR
Inlet Size	1/2" BSPF
Outlet Size	3/8" BSPF
Suitable Motor HP	10 HP/1450 RPM, Ambient Temp. 45 degree C, Horizontal foot Mounted, Power Supply 415 V / Three Phase/ 50 Hz
Drive Arrangement	Directed coupled with motor
Suction Condition	Positive feed required
Mounting	MS Fabricated Trolley Mounted
Operating Temperature	Ambient
Media	Clean water, Filtration 80 Micron at 2-4 Bar Pressure @ ambient Temp.

Table 4:Material of Construction

Main Body	Aluminium Die Cast
Crankshaft	Forged, Hardened & Ground-Alloy Steel
Plunger	Ceramic (<0.20 Ra)
Plunger Seal	Buna-N Seal
Cylinder	Brass Forged
Valve Assembly	Stainless Steel

Table 5: Scope of Supply

Item	Quantity
High pressure (250bar) triplex plunger pump	1 No
Electric motor 10 HP -3Ph- 50Hz-1740RPM	1 No
DOL Starter ML 1.5	1 No
Trolley Mounted Base Frame	1 No
Tyre Coupling With Safe Guard	1 No
Pressure regulating valve	1 No
Filter For Positive Suction	1 No
Safety Valve	1 No
Pressure gauge glycerin filled 2 1/2" (0-420 Bar)	1 No
High Pressure Needle Valve	1 No
3/8" BSP Non return valve	1 No
3/8" BSP High pressure ball valve	1 No
3/4" Hose Pipe for Inlet	3m
1/2" Hose Pipe for By Pass	2m
3/8" High Pressure Hose Pipe R2	10m

4. Extension Fixture

One no. of fixture made of carbon steel need to be fabricated as per details provided in Fig. 3.

5. Hose Pipe

3" size, 20 bar operating, 50 bar burst pressure (min.) and 20m long hose pipe with flange at one end matching with vessel flange (400lbs) need to be supplied.

6. Tank

500 litre water tank made of plastic need to be supplied.

Important Notes to Bidder:

1. The fabricator should possess experience in fabrication and installation of piping system and pressure vessel.
2. The fabricator should supply and install the piping system, pressure vessel, plunger pump and other accessories at site (IGCAR, Kalpakkam). Installation at site may require welding and drilling.
3. Dimensional tolerances on external linear dimensions can be considered as ± 1 mm.
4. Material should strictly follow the ASTM standards for mechanical and chemical composition.
5. Bidder shall submit the material test certificate for chemical and mechanical specifications and only after getting clearance from the indenter or his representative, fabrication shall be started.
6. **Weld size should be at least minimum plate thickness to be welded.**
7. **All welding shall be done by qualified welder by SMAW using E7018 or electrode with higher strength.**
8. After making the root joint, vendor shall inform the indenter for DPI.
 - 7.1 DPI of all joints shall be performed in presence of indenter or his representative.
 - 7.2 All selected joints should pass the DPI as per ASME Sec VIII Div-1.
 - 7.3 Rejected joints shall be repaired and re-examined and additional cost of welding and inspection shall be borne by vendor.
9. Weld shall be properly cleaned after every pass to remove the flux in order to avoid inclusion of flux into the weld.
10. In case any ambiguity or doubt, the bidder shall not assume anything and shall contact the indenter to clarify the same.
11. **Inspection:** The supplier shall arrange to have all the components covered in the scope of supply inspected by the indenter or his representative.
12. **Warranty:** The supplier shall provide an onsite component warranty (including maintenance and service related jobs if any) for at least one year.
13. **Testing:** Hydraulic test of pressure vessel and piping at site as per ASME Section VIII Div. 1.
14. Work should be completed within **60 days** from the date of receipt of the order. Any delay which is attributable to the contractor is liable for penalty @ ½ % per week (max. 5%) to be imposed on the contractor.
15. All the items need to be supplied at 100 ton Shake Table Facility, Reactor Design Group, IGCAR, Kalpakkam, Tamilnadu at bidder's cost and risk.

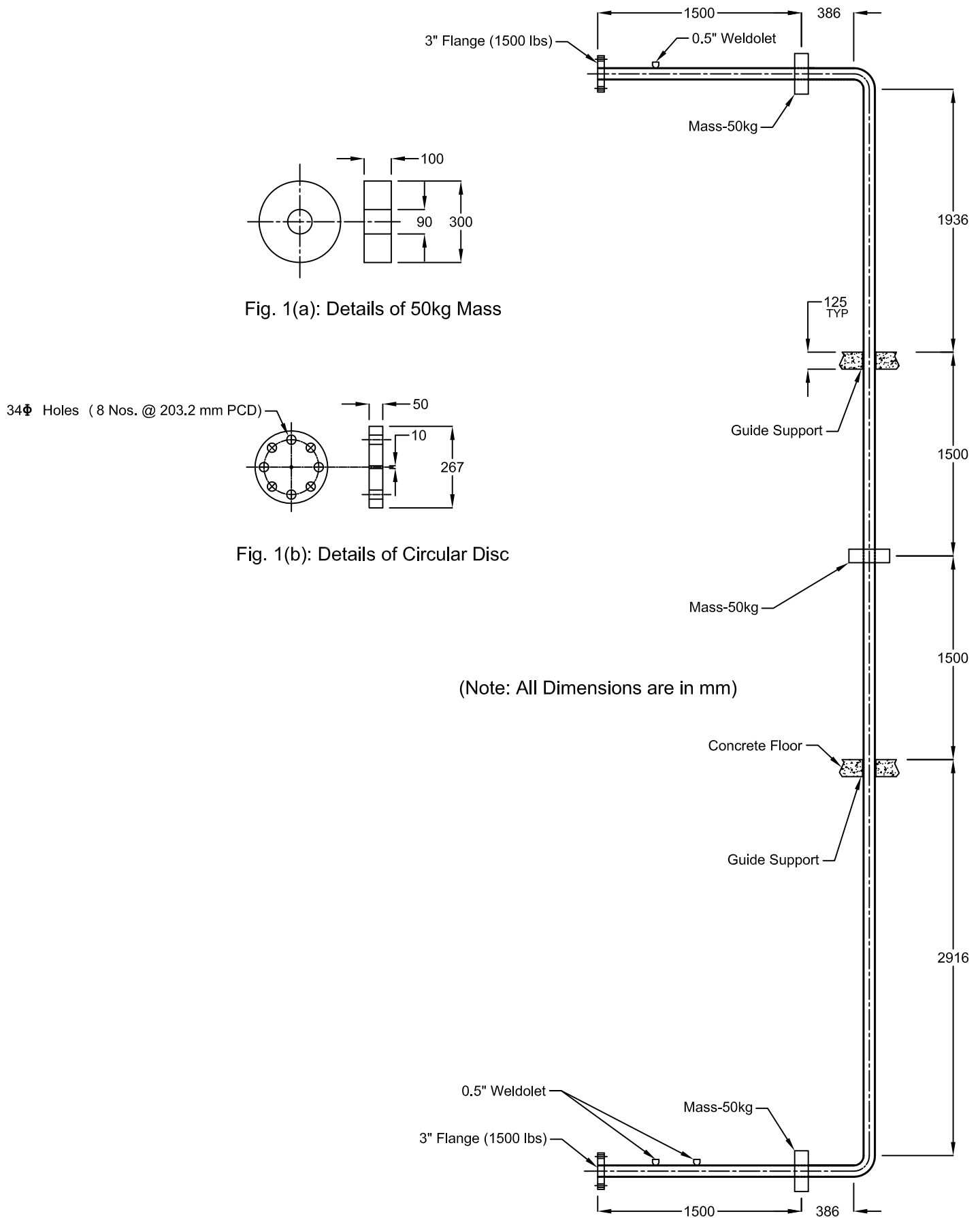


Figure 1: Piping System

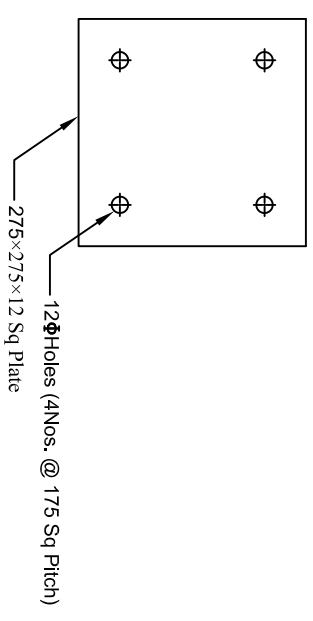
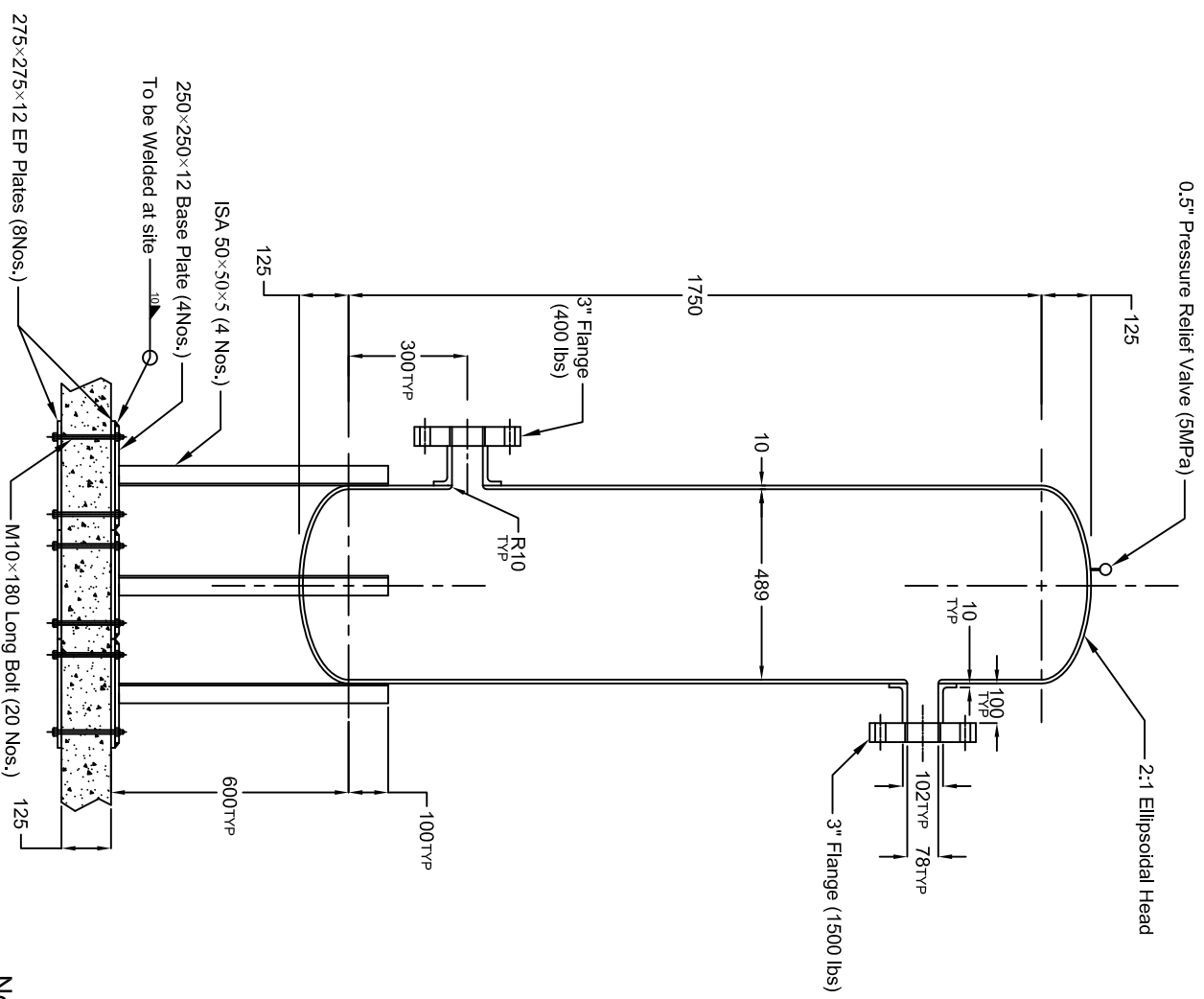


Fig. 2a: Details of EP Plate

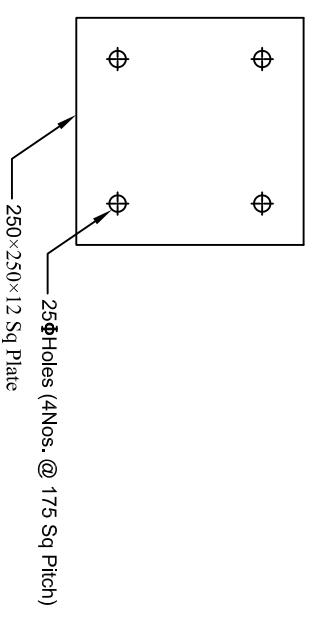
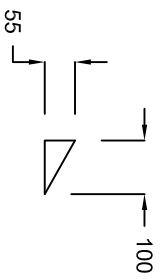


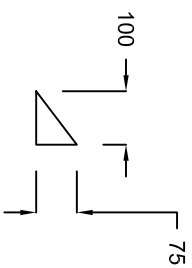
Fig. 2b: Details of Base Plate

Note: All Dimensions are in mm

Figure 2: Pressure Vessel



(Details of Stiffeners (12 Nos.))



(Details of Stiffeners (8 Nos.))

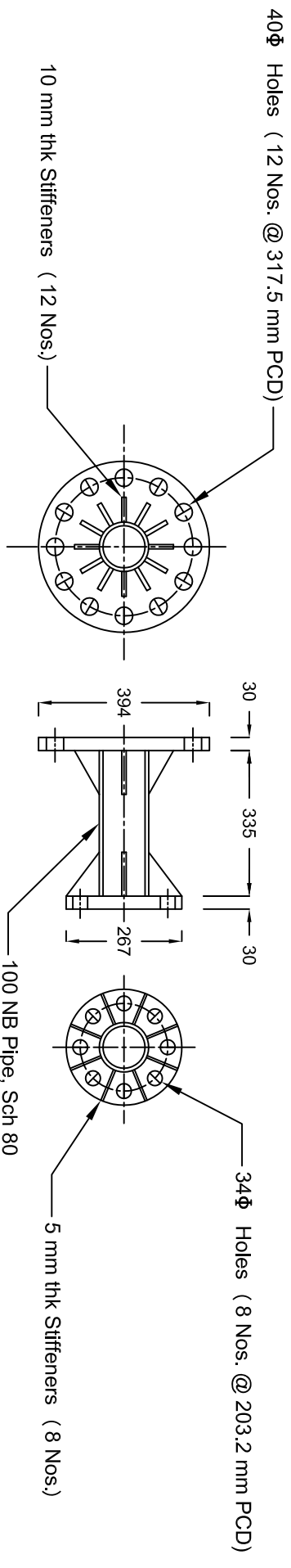


Figure 3: Extension Fixture

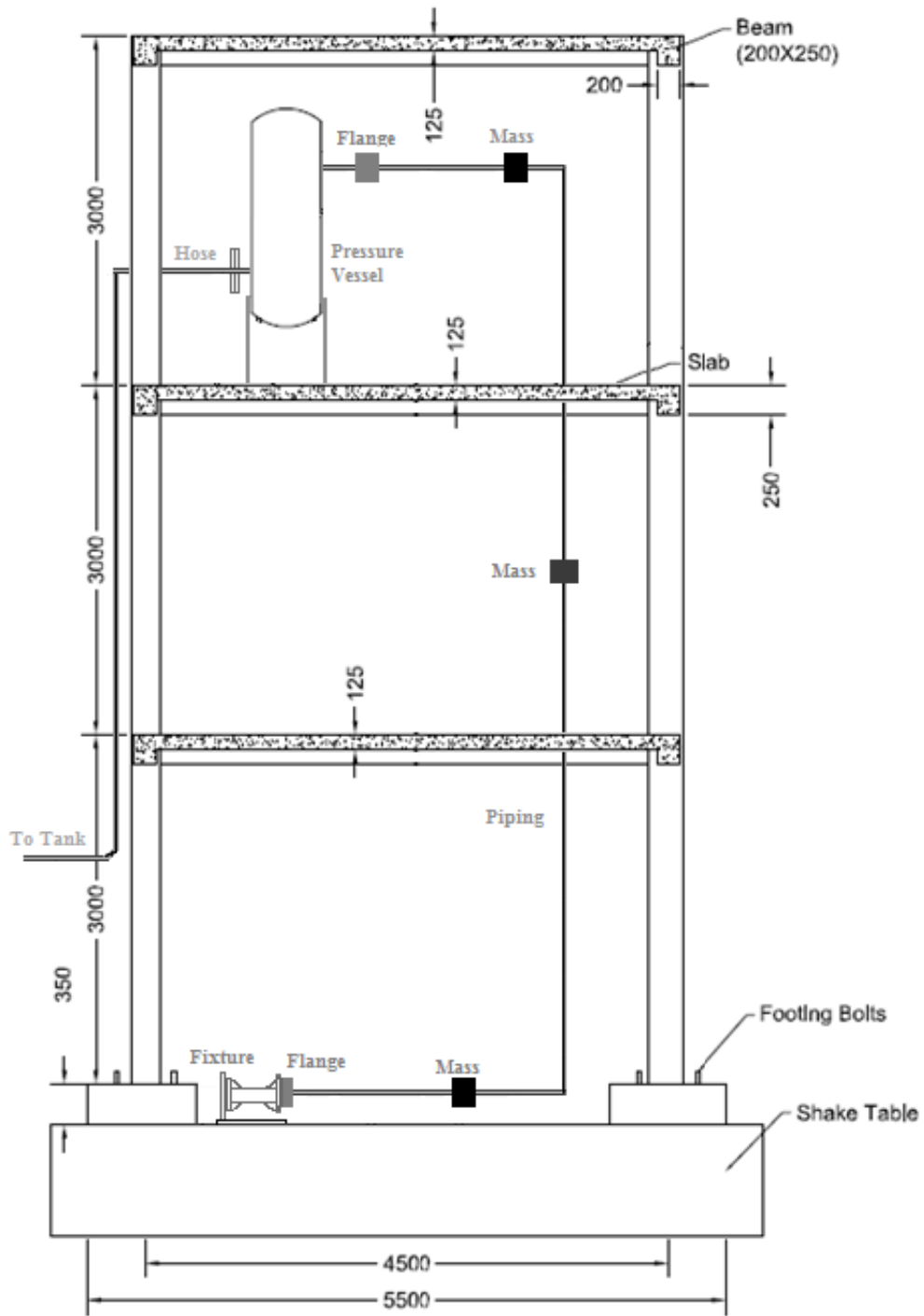


Figure 4: Frame Structure

Note: This frame structure is not in the scope of this minor fabrication.

Annexure - II

1. **Confidentiality:** 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 also apply to the sub-contractors consultants, advisers or the employees engaged by a party with equal force.

2. **“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.

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