



DEPARTMENT OF AEROSPACE ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY MADRAS
CHENNAI – 600036, INDIA

Ref. No. ASE/1819/156/MUAY/SRCH/035

Date: 30.06.2020

Item Name: Modification Of Air Receivers And Fabrication Of A Skirt Arrangement

Due Date: 22.07.2020

1. Quotations are invited **in two-bid system** for the item described overleaf (in Annexure I). The offers /bids should be submitted as Technical bid and Financial bid separately. The Technical bid should consist of all technical details / specifications only. The Financial bid should indicate item-wise price for each item and it should contain all Commercial Terms and Conditions including Taxes, transportation, packing & forwarding, installation, guarantee, payment terms, pricing terms etc. The Technical bid and Financial bid should be put in separate covers and sealed. Both the sealed covers should be put in a bigger cover. The words “Modification Of Air Receivers And Fabrication Of A Skirt Arrangement” should be written on the left side of the Outer bigger cover and sealed.
 2. **Earnest Money Deposit:** Earnest money deposit of Rs.30,000 payable by Demand Draft drawn on any Nationalised Bank of India favouring “Registrar, IIT Madras” is to be submitted along with the technical bid. Waiver of EMD for vendors with valid MSME/MSE certificate is permitted.
 3. The quotations should be valid for sixty days from the due date and the period of delivery required should also be clearly indicated.
 4. The total cost of the equipment in terms of CIP Chennai should be clearly mentioned .
 5. Cost breakup for all modules included in the scope of supply is mandatory
 6. Terms of warranty and guarantee should be explicitly mentioned. Warranty must valid for at least for 12 months from the date of commissioning.
 7. Warranty service must be provided on-site at IIT, Madras for duration of warranty period.
 8. Packing and delivery charges, customs and clearance duty should be clearly stated.
 9. Goods shall not be supplied without an official supply order.
 10. Local firms : Quotations should be for free delivery to this institute. If quotations are for ex-godown, delivery charges should be indicated separately.
 11. Firms outside Chennai: Quotations should be for F.O.R. Chennai. If F.O.R. consignor station, freight charges by passenger train / lorry transport must be indicated. If ex-godown, packing, forwarding and freight charges must be indicated.
 12. If the required good is to be imported, delivery with CIP upto Chennai airport must be made. All relevant documents for customs clearance and other import formalities have to be provided well in advance.
 13. IIT Madras is eligible for concessional rate of GST 5%(for purchase of equipments, parts and consumables used in research). Concessional GST certificate will be issued after issue of purchase order.
 14. The rate of sales / general taxes and the percentage of such other taxes legally leviable and intended to be claimed should be distinctly shown along with the price quoted.
- Where



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15. this is not done, no claim for sales / general taxes will be admitted at any stage and on any ground whatsoever.
16. Payment :Payment is after delivery of goods. Every attempt will be made to make payment within 30 days from the date of receipt of bill / acceptance of goods, whichever is later. Advance payment will be considered only in special cases.
17. IIT Madras is eligible for concessional rate of customs duty. Necessary certificate will be issued on demand.
18. IIT Madras has the right to accept the whole or any part of the tender or portion of the quantity offered or reject it in full without assigning any reason. The selection of extended warranty / AMC is entirely at the discretion of the Principal Investigator/Co-Principal Investigator

The sealed quotation may be sent to
The Purchase Manager,
CoPT OFFICE, NCCRD Building
Behind Aerospace Engineering Dept., IIT Madras,
Chennai – 600036, Ph. (O) +91-44-22579863

ANNEXURE 1

MODIFICATION OF AIR RECEIVERS AND FABRICATION OF A SKIRT ARRANGEMENT

Sealed tenders are invited from eligible bidders for the modification of air receivers and supply of a skirt arrangement to hold 2 no.s of air receivers, as a part of a major piping work at NCCRD.

The compressed air facility at NCCRD involves two 15 m³ test air receivers which store air from the existing compressors. There are 3 screw and one reciprocating compressors which deliver air at 0.4 Kg/s at 40 bars. The air from the receivers is taken to the lab and connected to each floor with 8 “ size pipe lines.

To meet an additional requirement of 2.5 Kg/ air, we are augmenting the system with 6 additional screw compressors. Currently, the compressors are installed in a compressor room and the two air storage tank/ receivers are kept on the terrace of the building. In order to utilize the available space better, we are planning to keep the 6 new compressors on the terrace of the building, and as a part of this work, the existing two 15 m³ air receiver tanks (40 bar pressure rated) need to be relocated and positioned vertically on the ground. The proposed new arrangement and layout of the compressors are shown Figure 1.



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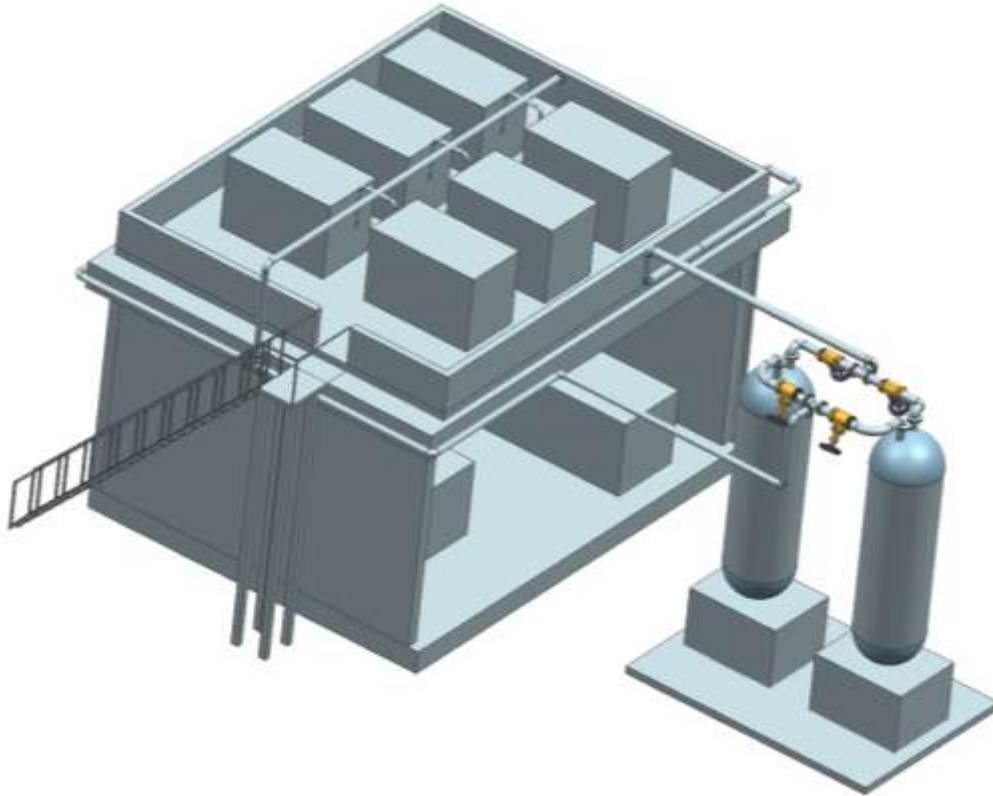


Figure 1: Proposed compressor facility along with receiver arrangement

A concrete base will be constructed by IITM and the two receivers need to be positioned vertically on a skirting arrangement. Further, few additional valves and safety features need to be added to the receiver as shown in Fig. 3. Details of the additional features are listed in Table 1.

Scope of work to the vendor

1. Dis-assembly of the receivers and removal of the current support stands
2. Modification of the 2 receivers as per the engineering drawings with necessary safety features.
3. Fabrication of the skirt arrangement
4. Integration of the air receivers and skirt assembly
5. Erection of the receivers on the concrete base
6. Hydrostatic, radiographic tests, material and manufacturing certifications

Scope of work for NCCRD

1. Relocation of the air receivers from terrace to ground using cranes
2. Construction of the concrete base to position the air receivers
3. Positioning of the skirt-receiver assembly on the base using cranes

The receiver should be modified suitably for the vertical positioning which includes fixing of the new pipe sections from the side of the receiver and closing the existing lines.



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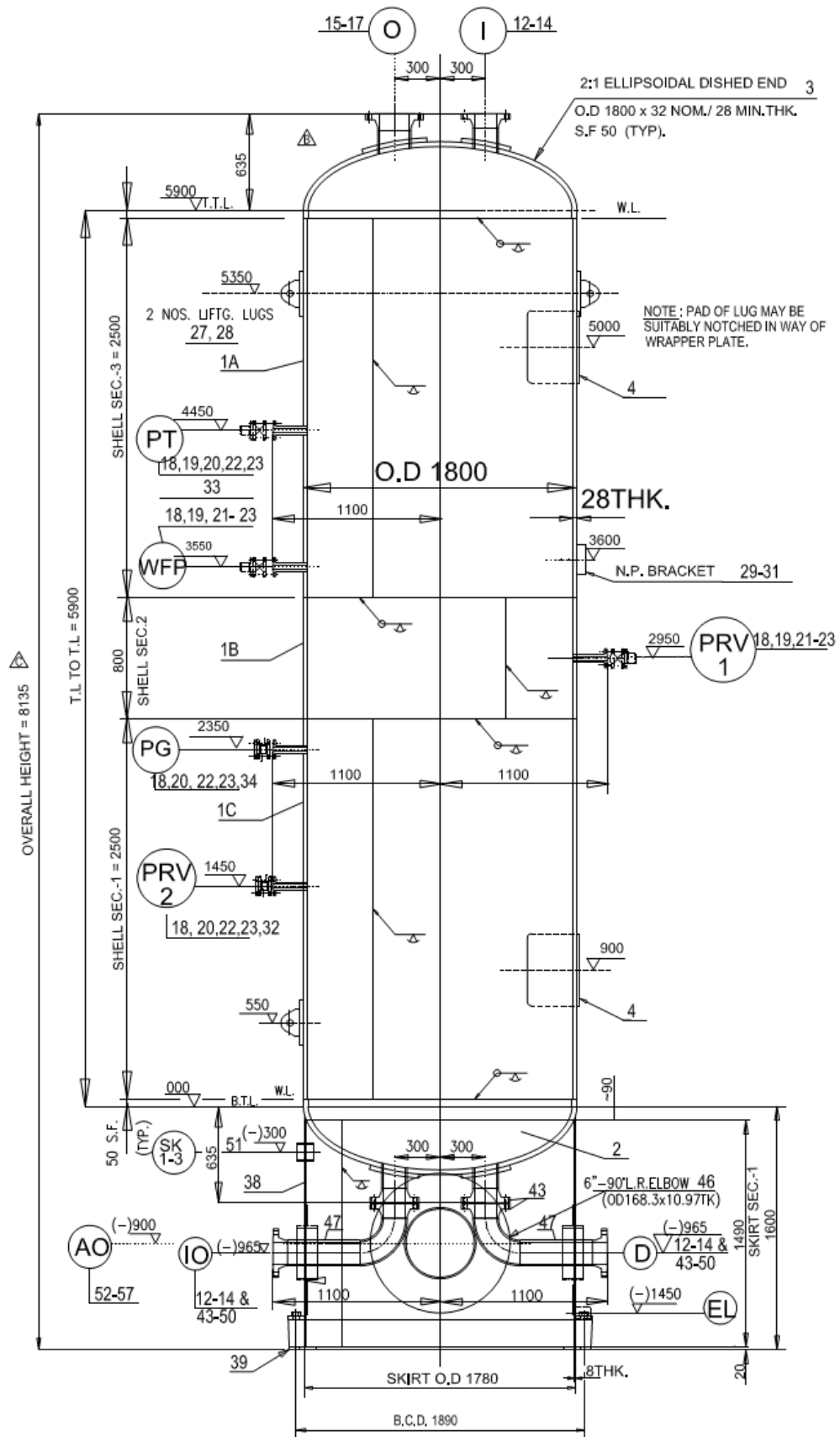
Further, vent valves, pressure, temperature sensors, additional PRVs, diaphragms need to be added as per the bill of materials and drawings. Detailed drawing of the receiver is shown in the Figure 2 and the skirt assembly drawings are shown in Fig.4. Vendors are requested to obtain the detailed manufacturing drawings of the receivers from NCCRD office. Modifications and detailed spec are listed below.

Table 1: Receiver modifications: bill of materials

| S/no | Item | Nos. | Specifications |
|------|------------------------------------|------|--|
| 1 | pressure monitoring valves (PT,PG) | 2 | 40 bar rated nozzle and ball valve (SS material), size 1", Protrusion : 300 mm |
| 2 | Temperature monitoring valve | 2 | 40 bar rated nozzle and ball valve (SS material), size 1", Protrusion : 300 mm |
| 3 | Auto drain valve (D) | 2 | 1 "Valve and a 1" pipe line of 3 meter length. Cast iron material, port size 1", max operating pressure 40 bar. Temperature 5-35 deg.C, Media: compressed air moisture |
| 4 | Manual drain valve (AO) | 2 | 1" valve and a 1" pipe line of 3 meter length, Cast iron material, 40 bar working pressure, Media: compressed air moisture, Temperature 5-35 deg.C |
| 5 | Water filling point (WFP) | 2 | 2" nozzle and valve, 40 bar MS/ cast iron material |
| 6 | Charging point | 2 | 1" nozzle and valve, 40 bar MS/ cast iron material |
| 7 | Pressure relief valve (PRV) | 4 | 40 bar max pressure, opening pressure > 5% of max pressure, SS material, 1 " size, ASME std. |

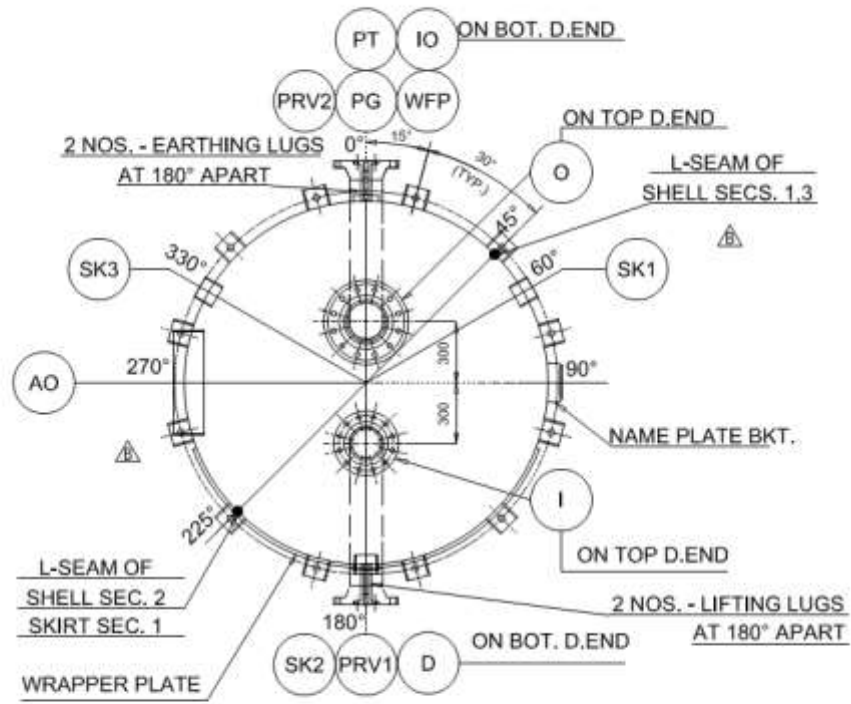


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PLAN VIEW



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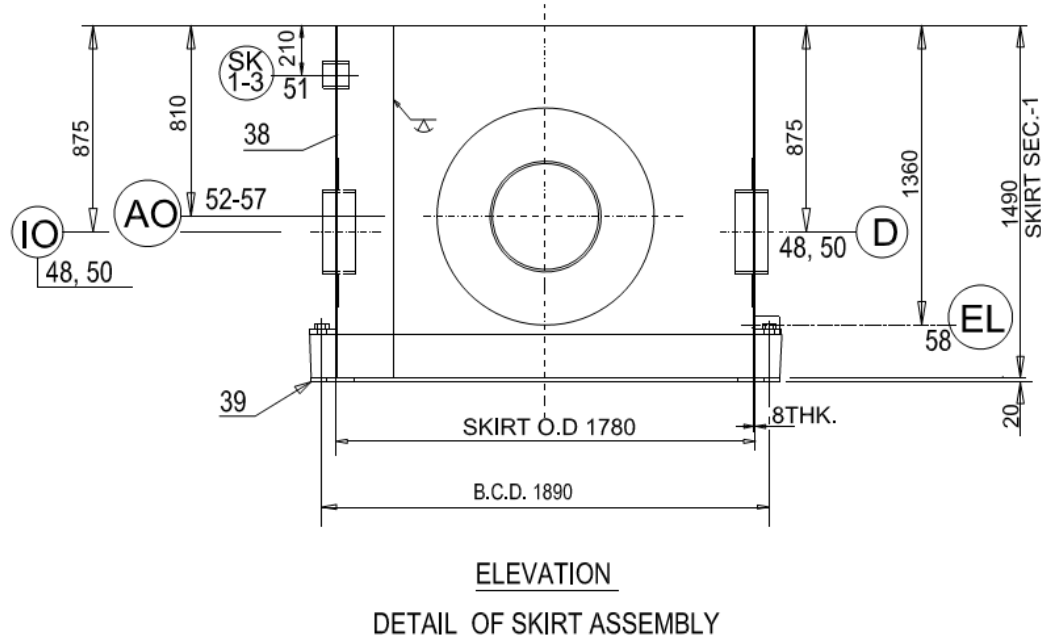


Figure 3: Drawings of skirt assembly

Work Specifications:

The material used and work should be of the specification given below:-

- 1) **Material selection and fabrication of the skating and receiver should be carried out as per the details mentioned (notes and design data) in the manufacturing drawings.**
- 2) **Bill of materials and certifications should be as per the details mentioned in the manufacturing drawings.**
- 3) Test Certificate : Test certificates for the plates and fittings should be furnished by the bidder.
- 4) Pressure Testing : The pipelines should be pressure tested at 1.3 times of the working pressure.
- 5) Test Certificate : Test certificates for the pipes and fittings should be furnished by the bidder.
- 6) Radiography : 15% of the joints selected at random by the end user should be Radiographically tested for defects by a third party.
- 7) Welder should furnish WQR with a valid certificate along with a recent photograph
- 8) PMI test certificate for fittings should be provided by 3rd party.



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- 9) Painting : The entire length of the receivers should be given 1 coat of Zinc Chromate Primer & 2 coats of Enamel as per Standard blue colour for compressor air supply lines, and the supports should be painted Black as per IS 5 standard.

Terms and Conditions:

1. Vendor should perform all the pipeline and receiver modifications as per the relevant ASME standards.
2. Warranty terms:
All the components quoted in the tender bid should be covered under warranty for 3 years.
3. Warranty service must be provided on-site at IIT, Madras for duration of warranty period.
4. Vendors should provide continuous technical support and maintenance of work done. The vendor must have at least 10 years of experience in similar works as required in the tender.
5. Vendors must have sufficient experience in executing major piping and erection works in reputed organisations (end users) of value not less than Rs.30 lakhs. Experience of the vendors will also be used as a criterion for the selection of bids that meet technical requirements. List of reputed end users inclusive of educational institutions in India (at least 3) with contact details wherein similar works have been executed should be furnished.
6. The vendor should complete all the works within 30 days from the date of release of PO.
7. Vendors must provide detailed documentation for the work to be done along with complete information on the makes of the hardware items, fabrication and erection standards.
8. For any technical clarifications please contact Mr.P.John George/ Shanmugadas (9042301070, 8939576224).
9. To obtain any detailed drawing files of skirt arrangement and receiver, vendors are requested to email Project engineer Mr. Sundararajan sundar.nccrd@gmail.com