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सत्यमेव जयते

भारत सरकार

GOVERNMENT OF INDIA

भाभा परमाणु अनुसन्धान केन्द्र

BHABHA ATOMIC RESEARCH CENTRE
Nuclear Recycle Group
Technology Development Division

WIP Service
Building, Trombay,
Mumbai- 400085.

Ref.: NRG/TDD/Area 64/PTC/2018/enq/

Dt. 07 /06/2018

Dear Sir,

Sub: Minor fabrication Enquiry for “Fabrication, inspection, testing and supply of transport container with tie down arrangement and loading platform as per technical specification and scope drawing.”

We require the following work to be carried out on urgent basis:

S. No.	Description of work	Qty.	Remarks
1.	“Fabrication of transport container with tie down arrangement and loading platform as per technical specification and scope drawing.”	01 Job	The work shall be completed within <u>45 Days</u> of issue of the work order

If interested, please submit your most competitive offer for this work, in a sealed envelope by **speed post** duly writing our letter reference number, on or before 15.00 hrs. on 20/06/2018. The offers will be opened on the same day at 15.30 hrs. in the office of A.A.O, Accounts Works, NRG, BARC, Trombay.

Technical Requirements:

1. The contracting firm shall have adequate knowledge of handling of with SS /M.S materials.
2. The work shall be carried out as per instruction of BARC staff at site of work.
3. Enclosed technical specification gives the requirement of tendered work in details.
4. Safety of the operating personnel and material being handled is required to be maintained by the firm.

Please note the following points:

1. Our technical specification (Annexure I) & drawing shall form a part of the W.O.
2. No material will be provided by BARC as free issue material.
3. The work shall be completed within 45 Days of issue of the work order.
4. The enquiries should be sent only by **speed post** and should be addressed to following address:

Jitendra Kumar, Technical Officer-C
Project Engineering Section
Technology Development Division, Nuclear Recycle Group
WIP Process Building, Bhabha Atomic Research Centre,
Trombay, Mumbai-400085

The Enquiries sent by any other mode (manual, courier etc) shall be rejected without assigning any reasons as per terms and conditions of Accounts, BARC.

The offer shall be kept valid for a period of 45 days from the date of opening. All taxes, levies and transportation charges if any, shall be brought clearly in your offer.Please note that BARC is exempted from paying excise duty. Accounts Officer, BARC, shall provide necessary certificate to this effect. Hence, your offer shall not include excise duty component and, if applicable, the same shall be indicated separately.

Full payment shall be made only after successful completion and acceptance of the work.

Encl. Technical Specification

Sd/

(Jitendra Kumar)

TO/C, TDD, NRG

Phone: 022-25591002

Email:- jituk@barc.gov.in

TECHNICAL SPECIFICATION

For

TRANSPORT CONTAINER AND TIE DOWN ARRANGEMENT

**Technical Specification
For
Fabrication of transport container with tie down arrangement and loading platform**

1. Scope:

This specification includes technical requirement of the fabrication, inspection and testing of Transport containers with tie down arrangement and loading platform as per the scope drawing. The scope of the work is as given below:

- 1.1 Preparation of detailed fabrication drawings for Transport container with tie down arrangement and loading platform based on the scope drawings mentioned in this technical specification.
- 1.2 Procurement, testing, inspection & supply of complete raw material such as SS304L/Carbon steel sheets, plates, angles, channel, welding consumables, high purity Argon gas as per the actual requirement.
- 1.3 Safe Transportation, storage and handling of all the materials (raw, pre-fabricated, finished or any other) within, outside the work site or in transit locations.
- 1.4 Pickling, passivation and cleaning of all materials or pre-fabricated items as required, fit-up, stage-wise inspection as per approved QAP, final inspection and acceptance by purchaser's authorized inspector.
- 1.5 Complete Fabrication, erection, welding, testing and inspection of SS304L transport container and IS 2062 loading platform.

2. SCOPE DRAWINGS:

Following are the attached scope drawings for the Transport container with tie down arrangement and loading platform with loading platform work:

Drawing no: A3-TDD-RSMS-M-72 rev 0 (Sheet 1 and 2)

Based on the scope drawings, the Contractor shall produce fabrication drawings. These drawings shall be approved by the purchaser or its authorized representative, subsequent to which the work can be started.

3. LIST OF APPLICABLE CODES & STANDARDS:

Following are the applicable codes and standards for the lining work:

Sr. No.	Code	Application
1.	ASME Section VIII Div 1	: Code of fabrication/construction
2.	ASME Section II Part A	: Ferrous Material Specification
3.	ASME Section II Part C	: Specifications for Welding Rods, Electrodes, and Filler Metals
4.	ASME Section V	: Nondestructive Examination
5.	ASME Section IX	: Welding Qualifications
6.	ASTM - E - 165	: Liquid Penetrant Examination
7.	ASTM A 240	: SS304L plates & sheets
8.	ASTM A 380	: Cleaning of Stainless Steel
9.	IS2062 E250Gr BR	: Carbon steel plates
10.	Wire rope	: IS2266

4. RAW MATERIALS:

Manufacture test certificate of all raw material proposed to used shall be submitted by contractor to BARC prior to use. The material can be used only upon receiving written acceptance from BARC. Contractor should note that no free issue material (FIM) has been envisaged for the above work. The Contractor shall arrange entire materials for the completion of the work.

The material procured by the contractor shall be of genuine quality and shall also be subject to inspection and approval by the Purchaser as per the Approved QA plan for materials.

- Stainless Steel Plates shall conform to ASTM A240 Gr. 304L
- Pipes used will be SS304L seamless pipes conforming to ASTM A312.
- Welding filler wire used in fabrication conforming to AWS A.5.9 ER308L.
- Tungsten electrodes used for TIG welding shall conform to ASME Sec II Part C, SFA 5.12, EWTh-2.
- All the materials and filler wires shall be properly identified, segregated and stored separately during fabrication.
- CS plates shall conform to IS2062 Gr E250 GR BR
- Welding electrodes for CS to CS joints will be of E6013 type.
- Nuts, bolts, and D shackles, turn buckles and other components etc shall be of reputed make and of relevant IS/ASTM standards.

The material being employed for the job shall be properly identified by the contractor and examined visually before using for the piping. During the process of identification, material will be correlated with the relevant test certificates. Only after clearance from the BARC QA, the material will be used for further process or work.

5. SALIENT TECHNICAL REQUIREMENTS FOR FABRICATION :

- 5.1 All the welding shall be done by GTAW process for SS and SMAW process for carbon steel.
- 5.2 In case the welding is being performed between CS and SS, ER309L filler wire shall be employed.
- 5.3 All weld joints shall be full penetration welds as per the approved configurations. The surfaces are to be prepared properly prior to welding.
- 5.4 The Contractor shall be responsible for qualifying the weld procedure, performance of the welders and welding operators and all such works shall in general conform to ASME Section-IX and Section-V. No production weld shall commence until such qualification is deemed complete.
- 5.5 Contractor shall make adequate arrangements to avoid any direct contact of MS items with SS to avoid any MS contamination of SS surfaces. In case the surfaces are found to be contaminated with MS, the same shall be immediately cleaned by acid wash or mechanical means.
- 5.6 Any tool (wire brush, or buffing wheel, etc.) used for cleaning of weld surfaces for spatters etc shall be of SS construction and care shall be taken to ensure that tools used for such purpose have not been previously used for any other material (MS).
- 5.7 It is the responsibility of the Contractor to check and ensure that excessive distortions/warping are not produced due to the welding process.
- 5.8 All weld seams shall be individually identified by permanent marker for the purpose of quality control & documentation which shall be removed after all the tests are completed and accepted. **Stamping, punching (light or hard), marking with paints, engraving is not permitted.**
- 5.9 In case of any discrepancy in the information provided in the drawing furnished by the Purchaser, the same shall be brought to the notice of the Purchaser before proceeding on

such work. In such cases, the decision of the Purchaser/Purchaser's Authorized Inspector shall be final.

5.10 The Contractor shall ensure that the workmanship of the job is of high quality. If any defect is found in the finished jobs/ongoing components etc or if they do not meet the technical specification, the same will be rejected. Such items shall be replaced with qualified items/components by the Contractor immediately without any additional cost to the Purchaser. Further, the Contractor shall also take back such items at his own cost.

6. QUALITY ASSURANCE AND ACCEPTANCE CRITERIA:

6.1 The Contractor shall prepare & submit a quality assurance plan (QAP) for the Purchaser's approval before commencement of any fabrication or erection work. Stage wise inspection of the work shall be carried out during the fabrication and erection stages as per the above approved QA Plan.

6.2 LIQUID PENETRANT EXAMINATION:

Root layer & finished weld for all weld joints shall be examined by LP after visual examination. The acceptance criteria for the test shall be as per ASME Section VIII Div.1 together with following requirements as follows:

8.1.1 No linear indication is acceptable.

8.1.2 No cluster indications, aligned indications are acceptable.

8.1.3 No rounded (indications having length 3 times the width) indication beyond 1.0 mm is acceptable.

The acceptance criteria of code of construction or above which is more stringent, shall be applicable.

6.3 Radiographic testing (RT):

Radiographic testing of butt welds if any appearing in the geometry shall conform to the applicable code. For all thicknesses X-rays shall be used as source of radiation. Gamma rays shall be employed only when X-rays is not found feasible and with prior approval from BARC. Plate type Image Quality Indicator (IQI) as per ASME Sec. VIII shall be used at source side. Radiographic film interpretation shall be done by personnel certified to ASNT/ISNT, LEVEL-II. Acceptance criteria shall conform to ASME Section-VIII Div. I together with other requirements as mentioned herein.

Following defects / discontinuities as revealed by radiography shall not be acceptable.

- a. Cracks, Lack of Penetration (LOP), Lack of Fusion (LOF), Oxidation, Undercuts, Linear defects of any type.
- b. Surface defects in the region of weld and HAZ involving either stress raisers or loss of wall thickness, root concavities.
- c. Porosity and spherical inclusions major dimension more than 1.0 mm.

The Contractor shall maintain record for all inspections, which shall cover reports of dimensional inspection, visual inspection, LPE, repair joint inspection reports and any other test report generated during the execution of the work.

7. PNEUMATIC TESTING:

The containers will be pneumatically tested at a pressure of 2 kg/cm² (g) and entire assembly shall be dipped in the water. There should not be any leakage from its O rings or body.

8. HYDRO TESTING:

The containers will be hydro tested at a pressure of 2.5 kg/cm² (g) and there should not be any leakage from its O rings or body and there should not be any pressure drop. The water used for the testing shall be DM water.

9. CLEANING AND PASSIVATION:

All the surfaces of the assembly shall be thoroughly cleaned and passivated with HNO₃ (Nitric Acid) after the fabrication work is completed. The surfaces shall be cleaned by clean water to remove any traces of the remaining acids.

10. FUNCTIONAL TESTING:

The fabricated components shall be assembled at the shop floor and condition of tightening etc shall be demonstrated by the fabricator with actual dimensions of the tie down etc.

11. WEIGHT OF ASSEMBLY:

The fabricator shall try to minimize the weight of the assembly to the maximum possible to facilitate the handling of the assembly (Container inside container with 1 liter plastic bottle inside it) by a personnel of average built.

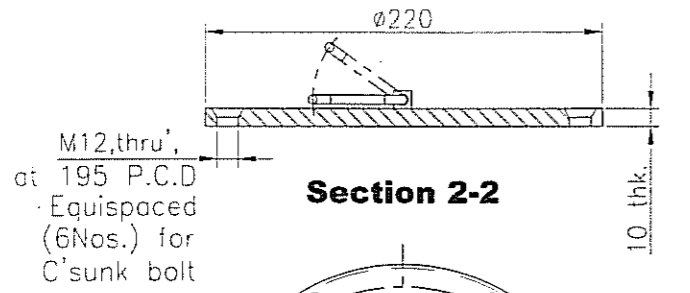
12. OTHER REQUIREMENTS:

- a. **GUARANTEE:** The Contractor shall stand guarantee for the total work carried out by him for its material and workmanship for at least for a period of **12 months (1 year)** from the date of acceptance of the entire work.
- b. **Safety and security:**
The Contractor shall observe all safe working practices and shall provide safety gears to his worker wherever necessary. He will strictly abide by the rules and regulations set by Security Section of BARC. All the personnel employed by the Contractor shall possess valid Police Verification Certificate (PVC) as required by Security Section of BARC.
- c. If any clarification is required it should be obtained before starting the work.
- d. Good safety and housekeeping practices are to be observed during the work in this area. The area is to be cleaned after each days of work. Waste material, if any, has to be stored at designated places and is to be disposed as per the rules after completion of the work.

13. DOCUMENTATION:

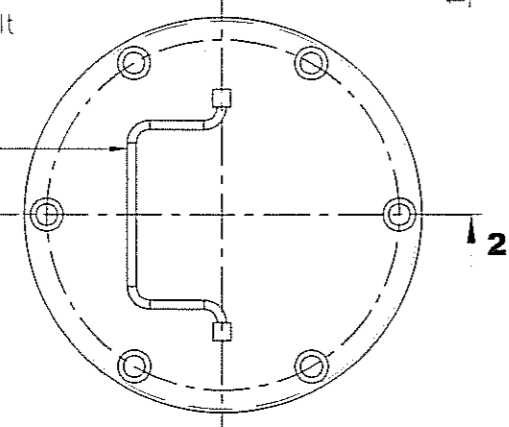
The fabricator shall compile a Completion Document in bound form. The document shall contain the following information:

- a. A material utilization chart giving the each part numbers and designations along with the heat numbers lot numbers of plates, pipes, filler wires etc which have been used in its fabrication. Complete traceability of material heat numbers to each part/component shall be available from the chart.
- b. A complete radiographic inspection chart for pipes showing all weld joints and their radiographic identification numbers.
- c. All test certificates relevant to the material heats used in fabrication of pipe, pipe support etc
- d. All test reports for mechanical tests, chemical analysis, contamination check test, mock-up tests, pneumatic tests etc. in respect of materials.
- e. Approved fabrication drawing.
- f. As built drawing for each part/component on paper and soft copy on CD/DVD.
- g. Detailed Inspection and QAP
- h. Procedure for tests such as Radiographic test, DP, Pneumatic test, pickling passivation etc.
- i. WPS, PQR, WPQ, etc as per ASME Section IX requirements.
- j. Stage wise inspections carried out by BARC QA.
- k. All radiographs.

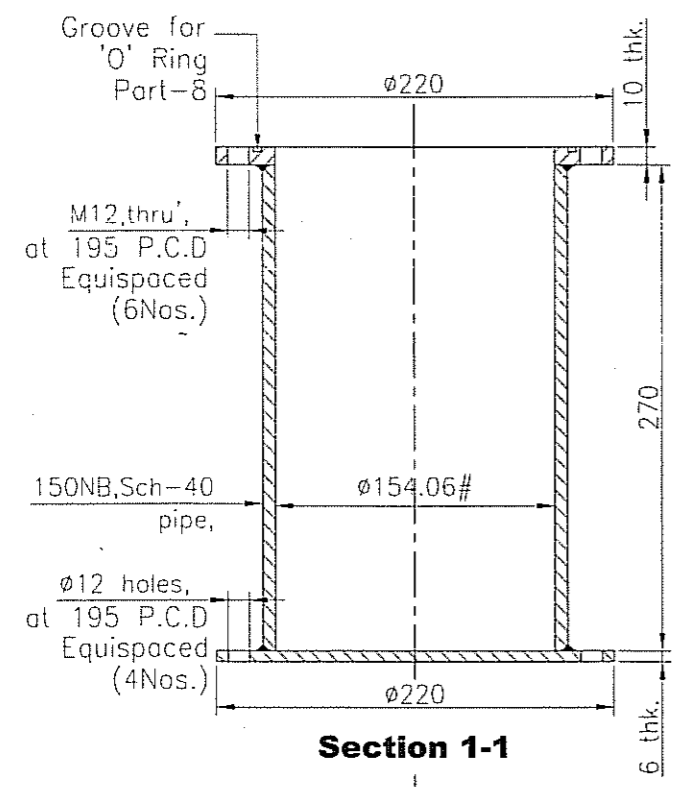


Section 2-2

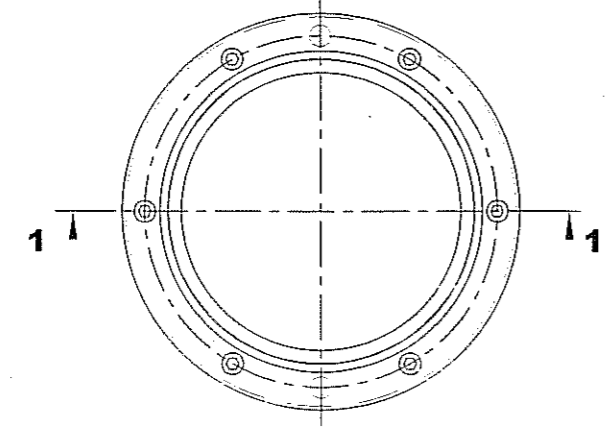
Swing Type Lifting Hook typ.



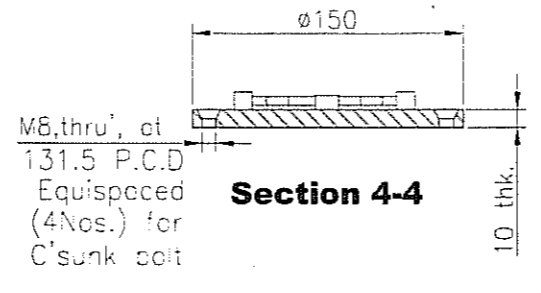
PART-2



Section 1-1

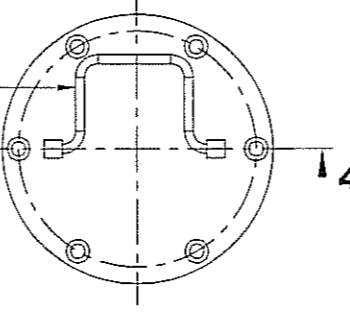


PART-1

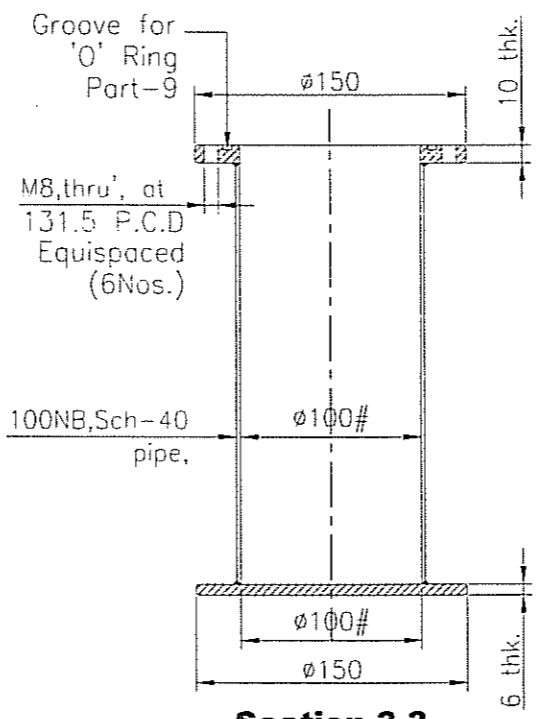


Section 4-4

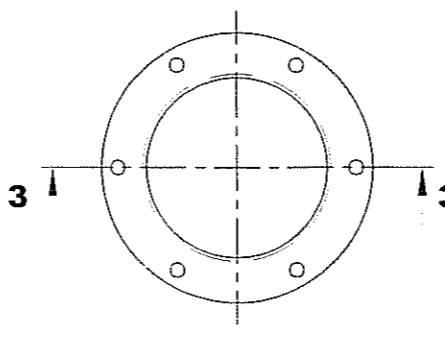
Swing Type Lifting Hook typ.



PART-4



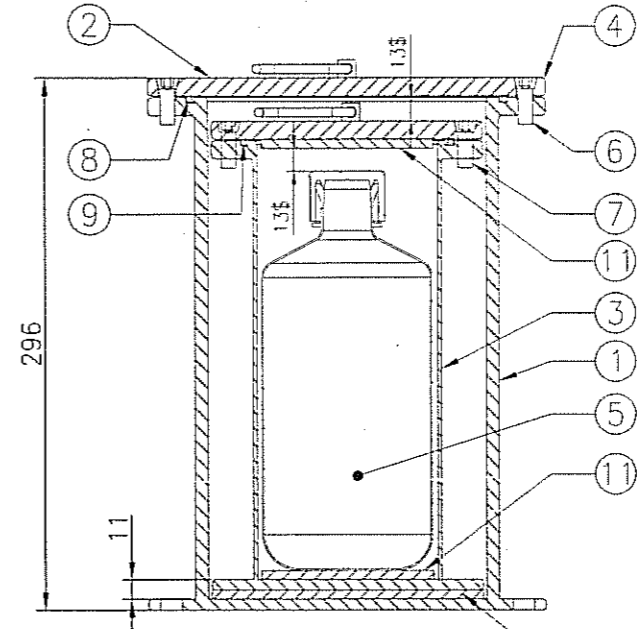
Section 3-3



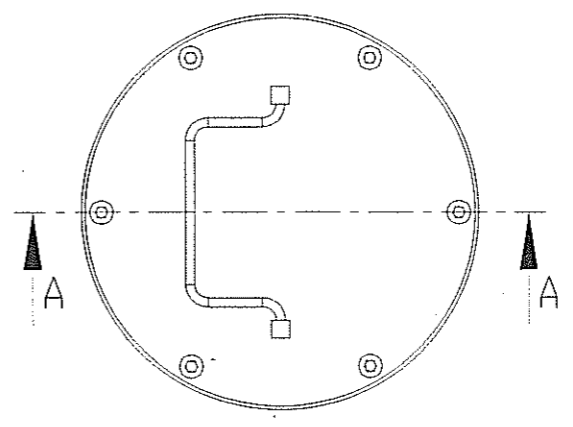
PART-3

ITEM NO.	DESCRIPTION	SIZE	MATERIAL	QTY.	ITEM NO.	DESCRIPTION	SIZE	MATERIAL	QTY.
1	Outer Container	AS SHOWN	SS304L	1	7	Fastner-2	M8,25 long,C'sunk head	SS304L	6
2	Outer Container Lid	AS SHOWN	SS304L	1	8	O' Ring-1	AS per Spec.	Neoprin	1
3	Inner Container	AS SHOWN	SS304L	1	9	O' Ring-2	AS per Spec.	Neoprin	1
4	Inner Container Lid	AS SHOWN	SS304L	1	10	Resting Pad-1	ø150X5thk.	SS304L	1
5	Bottle	Not in scope of supply	SS304L	1	11	Resting Pad-2	ø95X5thk.	SS304L	1
6	Fastner-1	M12,25 long,C'sunk head	SS304L	6	-	-	-	-	-

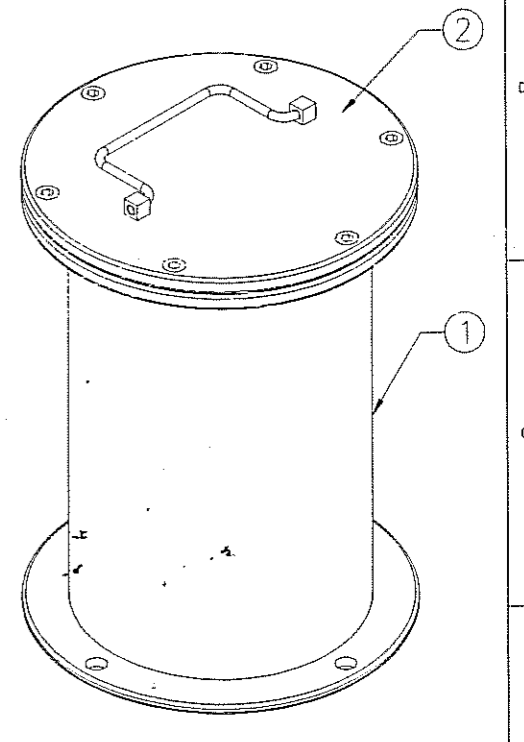
- Note:**
1. All Dimension are in mm,unless Specified
 2. '#'Dimension Shall be achieved by Machining
 3. Fastner Shall be operated by Allen Key
 4. 'S"Dimension Shall be Maintained
 5. Supplier Shall make Proper fabrication Drg.
 6. Groove for 'O' Ring As per std.
 7. Refer to Technical Specification as required.
 8. Linear Tolerance as per Std.
 9. Geometrical Tolerance As per std.



Section A-A

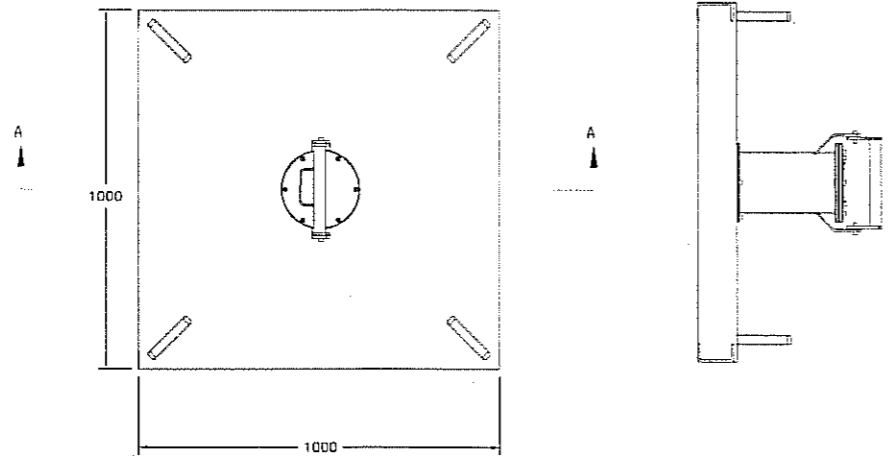


Assembly View

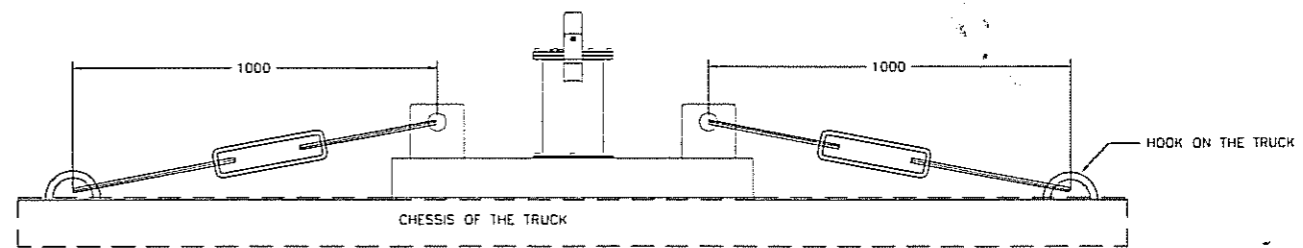


Isometric View

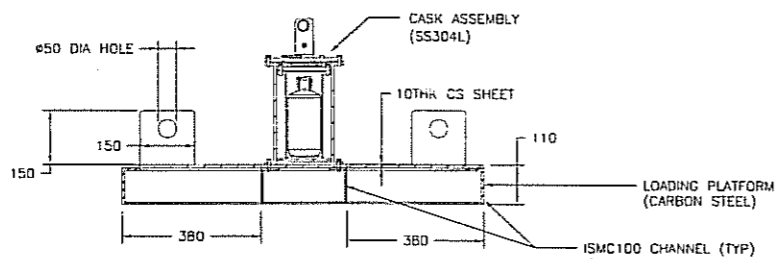
Drawing No. A3-TDD-RSMS-M-72 rev 0 Sheet1
(Scope Drawing – Product Transfer Container)



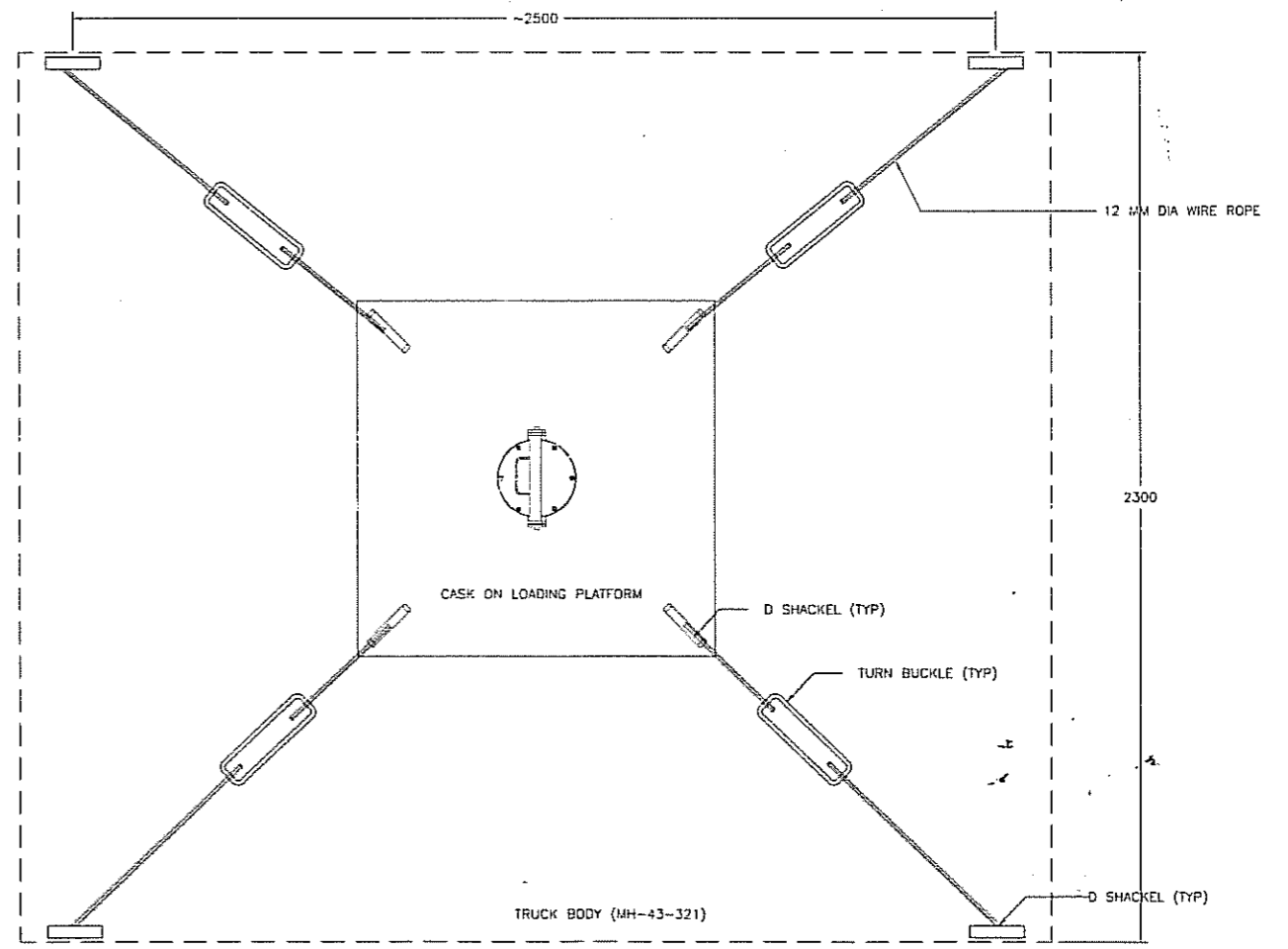
PLAN VIEW



SIDE VIEW OF UNIT ON TRUCK MOUNT



SECTION A-A



PLAN VIEW OF UNIT ON TRUCK MOUNT

- NOTES:
1. ALL DIMENSIONS ARE IN MM
 2. THIS IS AN ASSEMBLY DRAWING
 3. REFER TO THE SHEET NO. 2 FOR DETAILS OF THE CASK
 4. MOC FOR LOADING PLATFORM IS IS2062 E250 GR BR
 5. MOC FOR TRANSFER CASKS IS SS304L

Drawing No. A3-TDD-RSMS-M-72 rev 0 Sheet2
 (Scope Drawing – Product Transfer Container)