

भारत सरकार
अन्तरिक्ष विभाग
सतीश धवन अन्तरिक्ष केन्द्र
शार
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Government of India
Department of Space
**Satish Dhawan Space Centre
SHAR**

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GOVERNMENT OF INDIA:: DEPARTMENT OF SPACE
SATISH DHAWAN SPACE CENTER SHAR:: SRIHARIKOTA – 524 124
SRI POTTI SREERAMULU.NELLORE DISTRICT (A.P)

TENDER NOTICE NO. SDSC SHAR/Sr.HPS/PT/RO/02/2019-2020

On behalf of President of India, Sr. Head Purchase and Stores, SDSC SHAR, SRIHARIKOTA invites on line quotations for the following.

SI No	Ref. No.	Description	Qty.
01	SHAR LS 2019 0 11445 e-procurement [Two Part basis]	Supply of Concentrated Nitric Acid	Lump sum
02	SHAR LS 2019 0 11446 e-procurement [Two Part basis]	Supply of Anhydrous Liquid Ammonia	Lump sum
03	SHAR LS 2019 0 11447 e-procurement [Two Part basis]	Supply of Furnace Oil	Lump sum
04	SHAR VAST 2019 0 11066 e-procurement [Two Part basis]	Grab tackle of SS1 for SLC	Lump sum
05	SHAR VAST 2019 0 12111 e-procurement [Two Part basis]	Conversion of bubble lift to Flame proof lift	Lump sum

Last Date for downloading of tender documents : 01.10.2019 at 16:00 hrs.
Due Date for submission of bids online : 01.10.2019 at 16:00 hrs.
Due Date for Bid Sealing on : 01.10.2019 at 16:01 hrs. to 01.10.2019 at 17.30 hrs.
Due Date for Open Authorization : 01.10.2019 at 17.31 hrs. to 03.10.2019 at 17:00 hrs.
Due Date for opening of tenders : 04.10.2019 at 14:30 hrs.

Instructions to Tenderers:

Bids shall be submitted on line through EGPS only and No tender fee shall be applicable.

01. For full details/scope of work and terms and conditions etc., please see the enclosed annexures.
02. Interested tenderers can download the e-tender from ISRO e-procurement website <https://eprocure.isro.gov.in> and submit the offer on line in the e-procurement portal. Offers sent physically by post/courier/in person will not be considered.
03. Tender documents are also available on ISRO website www.isro.gov.in ISRO e-procurement website <https://eprocure.isro.gov.in> and SDSC SHAR, Sriharikota website www.shar.gov.in. The same can be down loaded and offer submitted on line in the e-procurement portal only.
04. Quotations received after the due date/time will not be considered.
05. The tender documents are available for download upto 01.10.2019 at 1600 hrs. and last date for submission of tenders on line 01.10.2019 at 1600 hrs. and Tender Opening on 04.10.2019 at 14:30 hrs.
06. Interested vendors can attend the Bid opening sessions to know the details. Presence not mandatory to consider the quote for evaluation.
07. Sr. Head, Purchase and Stores, SDSC-SHAR, Sriharikota reserves the right to accept or reject any/or all the quotations.

DT: 03.09.2019

Sr. HEAD PURCHASE AND STORES

Tender Document
For
Fabrication & Supply of pneumatically operated Vertical
Handling Grab Tackle for SSLV SS1 segments, for SLC



Satish Dhawan Space Centre SHAR

Indian Space Research Organisation

Sriharikota

August 2019

1. INTRODUCTION

- a) Vertical Handling Grab Tackle (VHGT) for SSLV SS1 segments is a welded structure with four numbers of fabricated C-arms. Details are covered in following pages. The four legged tackle handles 65 t of rocket hardware with explosive material.
- b) The scope of this purchase order covers procurement of raw materials, surface preparation, fabrication, supply, painting, inspection and load testing, packing for shipment, transportation and delivery to purchaser site as per drawings and terms and conditions in this tender document.

Reference drawing nos.:

Grab tackle for SSLV SS1 Segments:10-04-SLC-08-001/A1 (Sheet 1 to 7).

Pneumatic circuit (Schematic) along with operating pendent:10-04-SLC-08-001-A3(Sheet7 of 7).

- c) This is a two Part Bid Tender, Part –I Technical and commercial terms part bid and Part-II Price bid.
- d) Party has to submit following in their Part –I Technical and commercial terms part bid. The bid which does not satisfy the pre-qualification criteria mentioned below will not be considered for tender evaluation

Sl. No.	Description
Annexure-1	Bid Qualification Criteria
Annexure-2	Compliance Statement Form
Annexure-3	Deviations Table

- e) Part-II Price bid: The prices applicable for the items, in response to this tender shall come into this part.

2. SPECIFIC CONDITIONS

- a) No electric operations shall be involved in the pneumatic circuit for movement of C-arms.
- b) Pneumatic panel should be designed by tenderer and to be approved by purchaser (only a scheme is shown in drawing no.10-04-SLC-08-001-A3 (Sheet7 of 7).
- c) Independent operation of C-arms shall be ensured after fabrication.
- d) All C-arms shall be capable of moving on individual pivots.
- e) Operation of C-arms shall be pneumatic as shown in schematic drawing.
- f) Declutching mechanism shall be provided for air motor to move the C-arms manually.
- g) End stoppers shall be provided to arrest the over travel of C-arms.
- h) Manually applied torque to move C-arms shall not exceed 10kg.m.
- i) Tackle arms shall be operable from pendent at ground level (Appx. Maximum height of tackle is 40m from ground)
- j) All Pneumatic lines on tackle shall be of stainless steel pipes and fixed with standard clamps to the tackle.
- k) Pneumatic hoses connected to pendent side should be provided with QC/QR coupling in built check valves.
- l) Provision shall be made for receiving /storing of pneumatic hoses.
- m) Limit / suitable interlock may be incorporated for forward/reverse travel of C-arms.
- n) The length of both pneumatic hoses (Size: ½”) connected to pneumatic cylinder shall be 45 m length with QC/DC coupling connections of size: ½”.
- o) The pneumatic hose shall be tested 2 times of rated pressure and test certificate shall be provided.
- p) All pneumatic lines on the tackle structure top shall be covered with protective removal plates.
- q) Suitable lever operation ratchet/spanner (Qty.2 nos) for part no.13 (Refer 10-04-SLC-08-001/A1 Sheet 1 of 7) shall be provided for operating C-arms in case of need.
- r) Reference numbers and punch marks (2nos) with equal dimensions shall be punched/engraved on all four C-arms. This is needed for periodical inspection of C-arms.
- s) The storage stand as per drawing (10-04-SLC-08-001-A1 sheet 6 of 7) shall be freely moveable using jack castor wheels
- t) 4 No's of brackets of size (Approx.) 200mm X 200mm X 15mm are to be incorporated additionally in the tackle beams, details were not shown in the drawing, Exact location and details will be provided by the user at the time fabrication.

3. GENERAL INSTRUCTIONS TO TENDERER

- a) The system shall conform to the technical requirements covered in this specification and the relevant manufacturing/approved drawings/standards (latest revision) and bill of materials in respect of dimensions, sizes, material of construction, manufacturing, inspection and packaging.
- b) Tenderer shall not off-load the contract or part thereof to any sub-tenderer without written permission of the purchaser. In case, sub-letting of any part of the work is permitted by the purchaser, the fact that such permission has been accorded, neither shall establish any contractual relationship between sub-tenderer and the purchaser nor shall release the tenderer from any of this obligations and liabilities under specific and applicable contract.
- c) All correspondences/documents made by the tenderer shall be in English Language and the data/measurement related results in Metric Units only, unless otherwise specified.
- d) The system shall be realized strictly as per technical specifications, manufacturing/fabrication drawings and bill of materials provided.
- e) Tenderer shall clearly indicate any assumptions made in respect of specification, data or any other details that have not been mentioned in this tender but considered necessary for

meeting the specified functional and duty requirements. Any such assumptions not indicated during tendering stage will not be binding on purchaser.

- f) Approval of various procedures submitted by the successful tenderer shall not relieve the tenderer of his responsibilities towards completion of work as defined in the contract.
- g) All necessary facilities including tools, tackles, safety appliances, measuring and testing equipment/ instruments, accessories and material handling equipment, etc. shall be provided by the tenderer to enable stage wise inspection of the system during fabrication and machining.
- h) The tenderer shall be solely responsible for obtaining necessary clearances, if any from various statutory bodies including those of central & state Government, as applicable, during the course of manufacturing/fabrication, testing and transportation.
- i) The offer should be for complete scope of work as specified in tender document. Part/Spilt offer is NOT acceptable.
- j) During evaluation, purchaser may request Supplier for any clarification on the bid upon additional documents which is to be complied with; otherwise offer will be deemed incomplete.
- k) Performance of Supplier on similar works executed/ under execution shall be taken into consideration before selecting the Supplier for opening his price bid.
- l) Purchaser reserves right to visit client's site for verification/validation.
- m) Purchaser reserves the right to accept a bid other than a lowest and to accept or reject any bid in full or part without assigning any reasons. Such decisions by the Purchaser shall bear no liability on the Purchaser whatsoever consequent upon such decision.
- n) Supplier who have equipped with suitable machineries, superior welding equipments and suitable shop floor to carry out fabrication & inspections shall only quote.
- o) Party who have written down procedures for qualifying fabrication and welding procedure including technical experts only shall quote.

4. FABRICATION / WELDING AND MACHINING

4.1 General instructions for fabrication/welding

The tenderer shall follow the guidelines given below for manufacturing of vertical lifting grab tackle. The fabrication of components shall conform to provisions of IS: 800-1984.

- a) The entire fabrication activity shall be performed in a planned/sequential manner to achieve desired dimensions/geometrical tolerance.
- b) The effective area of fillet welds shall be considered as the effective length times the effective throat thickness. The effective length of fillet welds except welds in holes and slots shall be the overall length of the full size fillet.
- c) The effective throat thickness of a fillet weld shall be the shortest distance from the root to the face of the diagrammatic weld.
- d) Preheat and inter-pass temperature shall be maintained as required on either side of point of welding as per the following guidelines. However, the actual pre-heat and inter-pass temperature has to be followed based on calculation depending upon material specification and thickness.

Thickness of part at the point of welding	Minimum preheat of & Inlet pass temp	
	Other than low hydrogen welding electrode	Low hydrogen welding electrode
	IS : 2062-1992	IS : 2062-1992
Up to 20 mm	Room temp	Room temp. to 20°

20-40 mm	65°C	20°C-65°C
40-63 mm	110°C	65°C-110°C
Over 63 mm	150°C	110°C-150°C

- e) All deviations, design changes as well as failures observed during manufacturing/ fabrication and assembly shall be logged in approved formats
- f) Wherever welded attachment shall be used to facilitate fabrication/erection the same shall be removed carefully by cutting or chipping and the surface of material shall be finished smooth by grinding. As far as practicable, hammering shall be avoided
- g) All plates of 20 mm thick and above shall be ultrasonically tested as per standards for lamination and other imperfections. The manufacturer, at source may carry out such ultrasonic tests before lifting the material
- h) Adequate machining, welding, metrology and portable NDT facilities shall be arranged by the supplier

4.2 Welded construction:

Welding shall be in accordance with relevant Indian Standards and as supplemented in the specification. Welding shall be done by experienced welders, who have been qualified by tests in accordance with IS: 817-1966. WPS and PQR are to determine that the weldment proposed for construction is capable of providing the required properties for its intended operation. WPS and PQR shall be prepared, maintained as per ASME Section IX and approved by the purchaser.

4.3 Welding Sequence

In assembling and joining parts of a structure or of built-up members, the procedure and sequence of welding shall be such as to avoid needless distortion and minimize shrinkage stresses. Where it is impossible to avoid high residual stress in closing welds, at rigid assembly such welds shall be made in compression units. Thermal stress relieving shall be done for all welded construction of vertical lifting grab tackle.

4.4 Welding Inspection:

4.4.1. Non-destructive Testing

Tenderer shall satisfy himself and the purchaser as to the quality of welds by visual, liquid dye-penetrant test, magnetic particle inspection, ultrasonic or radiographic inspection as applicable and shall submit the subsequent reports for examination.

The procedure for testing preparation of surfaces of the welded area shall be as per relevant Indian codes and standards or other equivalents. All non-destructive testing shall be carried out by qualified operators. In case of radiographic and ultrasonic inspection, the operator shall report to the purchaser any circumstances, which prevent him from carrying out a full volumetric inspection of the weldments whether due to weld geometry, access or equipment limitations. Welds, which may become inaccessible or more difficult to inspection at later stage, shall be inspected during fabrication itself. This should be indicated in weld plan and QAP for welding which shall be furnished by the tenderer.

4.4.2. Extent of testing.

The general welding guidelines shall be followed.

- a) 100% visual inspection for all welds
- b) 100% Liquid penetrant (LPI)/ magnetic particle inspection (MPI) for all fillet joins. (for root and final welds only)
- c) 100% Radiography of all butt-welds.

4.4.3 Visual inspection

The component shall be checked for conformity with the detail drawings, dimensional accuracy, surface finish, fit & alignment and other related documents/specifications/codes. Particular attention shall be given to material, fit & installation, workmanship, cleanliness and completeness

Following indications are unacceptable:

- a) Cracks on external surface
- b) Undercut on surface, which is more than 1 mm deep
- c) Weld reinforcement greater than specified in table 127.4.2 of ANSI B31.1
- d) Lack of fusion on surface of weldments

4.4.4. Magnetic Particle Inspection

- a) Interpretation of magnetic particle discontinuity indications is based upon their location, size, direction and shape. For different components/equipment the exact acceptance level shall be in conformity with their reference codes/standards indicated in the specification.
- b) Discontinuities may be removed by machining or grinding where sufficient stock remains, but under such circumstances the component shall be reverted by magnetic particle inspection
- c) The requirements relating to surface preparation test materials, equipment, technique, operation, etc. shall be in accordance with Article-7 of ASME Section V and applicable IS/ASME Codes.

4.4.5 Liquid Penetrant Examination

The test results obtained regarding the type, size, location and direction of indications shall be evaluated by the standard as mentioned in Article 6 of ASME. BPV ds Section V and applicable IS/ASME Codes.

4.5 Welding acceptance:

Weld that is subjected to non-destructive testing shall be accepted. If the size frequency of occurrence of defects in the welds fall within the norms stipulated in ASME BPV SECTION VIII. As guideline, the acceptable defect levels may be taken as follows:

- a) All craters shall be filled to the full cross-section of the welds. Undercut shall not be more than 0.25 mm deep when its direction is transverse to the primary stress in the part that is undercut. Undercut shall not be more than 0.8 mm deep when its direction is parallel to the primary stress in the part that is undercut.
- b) Welds shall be free from overlap.
- c) Welds shall have no cracks.
- d) The frequency of piping porosity in fillet weld shall not exceed one in each 100 mm length of weld and the maximum diameter shall not exceed 2 mm. For non-critical fillet welds the sum of diameters of piping porosity shall not exceed 15 mm in 300 mm length of weld.
- e) The greatest dimension of any porosity or fusion type defect/group of defects that is greater than 1.5 mm or larger in its largest dimension shall not exceed $1/3^{\text{rd}}$ the effective throat thickness or weld size in which the defect is occurring. The distance between any two such

defects/group of defects or to any intersecting weld shall not be less than three times the effective throat thickness or weld size. In no case, the defect shall not larger than 12 mm in its largest dimension or shall not be spaced less than 120mm.

4.6 Standards:

Unless otherwise stated in manufacturing drawings & BOM, the latest versions of following Standards, specification/codes shall be followed by the supplier during manufacturing and supply.

SL. NO.	SPECIFICATION	DESCRIPTION
01.	IS 813 - 1986	Scheme of symbols for welding
02.	IS 817 – 1966	Code of practice for training & testing of welders
03.	IS 1852 – 1985	Specification for rolling & cutting tolerance for hot rolled steel products.
04.	IS 9595 – 1996	Recommendation for metal arc welding of carbon & carbon manganese steel.
05.	DIN 8570	Tolerance for welded construction
06.	ASME – SEC - IX	Welding procedure specification & procedure qualification records.
07.	IS 2012, PART-II ISO 2768, PART-II	Geometrical tolerance for feature without individual tolerance indication
08.	IS 4225, ASTM – 435-1972	Ultrasonic testing of plates
09.	IS 3658 ASTM E165 - 1999	Code of practice for LP flaw detection
10.	IS 5334, SE 709 - 1981	Code of practice for magnetic flaw detection
11.	ASTM E164	Practice for ultrasonic contact examination.
12.	SE 186 ASME SECTION - V	Acceptance critical for radiographic examination.
13.	ASME BPV SECTION - V	Non – destructive examination.
14.	IS 1608 - 1995	Method of tensile testing of steel products.
15.	IS 1757 - 1988	Method of beam impact test of steel
16.	IS 1599 - 1985	Method of bend test of steel products
17.	IS 228 - 1990	Method of chemical analysis of steel
18.	IS 2102- 1993 PART -I PART - II	Tolerance for linear and angular dimensions without individual tolerance indication. Geometrical tolerance for features without individual tolerance indication

4.7 General Instructions for Machining

A critical list of each mechanical system shall be prepared and inspection and tests to be carried out shall be mentioned. For dimensional recording of components, the sketch of components shall be accompanied with dimensional record sheet as per format.

Geometrical tolerances shall be checked on machine and this shall be mentioned on process sheet

4.7.1 Inspection & Tests for Machined Items:

- a) Dimensional record to be maintained
- b) Geometrical tolerance of work piece shall be checked using separate metrology equipment (Gauges, CMM, etc). For large work pieces, due size constraint, same can be checked on

machine before unloading. Machine shall be checked for geometrical accuracy before checking on machine.

- c) NDT like MPT, DP, or Radiography as applicable shall be carried out on desired portions.
- d) Quality milestone indicated in process sheet/rout card serves as a checklist for inspection during machining. After complete inspection of a component a summary sheet shall be prepared and maintained.

4.7.2 Inspection Records

Inspection record of all components shall be compiled, mentioned and furnished to the purchaser for each mechanical system.

5. SURFACE PREPARATION & PAINTING SYSTEM

This document describes standard procedures for the prevention of atmospheric corrosion of exposed carbon steel equipments/sub-systems through the application of protective coatings. It defines the requirements for the preparation of surface, materials, equipment, procedure and inspection

All the shop fabricated items shall be sand blasted, painted and then transported to site. The final coat of polyurethane enamel paint of approved quality shall be applied.

5.1 Surface Preparation:

All surfaces to be painted shall be clean, dry and free from oil, grease, dirt, dust, corrosion, weld spatters and any other surface contaminants except tightly bonded residues of mill scale rust is permissible to limit not more than 5% of whole surface and a maximum of 10% of any particular square inch area. Surface that may become inaccessible after erection or installation or both, shall be prepared and painted while accessible, with two coats of epoxy paint and one coat of polyurethane enamel final paint positively of different colour to prove application of two coats before assembly. This does not apply to the interior of sealed hollow sections. Contact surface shall be cleaned before assembly.

5.2 Sand Blasting

The entire surface of all the fabricated materials shall be sand blast as per near white quality of steel structure painting council (SSPC) standard or SA 2.5. The anchor profile of the blasted surface shall be 37-65 microns and should be of jagged in nature. As the primed steel is to be subjected to saline atmosphere, it is important that the anchor profile shall be considered in relation to the dry film thickness and type of the paint used.

Items for which surface preparation is difficult by sandblasting, manual cleaning shall be carried out by chipping, scraping and wire brush and/or abrasive wheels. All surfaces shall be degreased using a suitable solvent to remove oil & grease and shall be dried off before painting.

5.3 Painting Scheme:

- a) VHGT and storage stand shall be painted with one coat of Polyurethane base primer followed by two coats of polyurethane base paint after surface preparation. All VHGT welds shall be masked before painting in order to facilitate DP test on weld locations.
- b) Final coats of painting shall be applied at SDSC SHAR after the completion of trial suiting, load test and DP test on VHGT.
- c) Orange colour paint shall be painted on the VHGT to DFT of 150 microns.
- d) The Exact colour code of orange will be intimated later.

- e) Any intermediate cleaning required between successive coats of paint shall also be carried out as per the manufacturer's specification and guidelines.
- f) Machined surfaces of the structure shall be coated with Anti corrosion or De-rusting paint only.
- g) Final painting shall be carried out for the entire VHGT structure, C-arm and storage stand at a single time.
- h) Details given by the purchaser shall be stencilled on the VHGT & Storage stand at appropriate location such as Item description (as per drawing), SWL, load test date and due date etc.

5.4 Paint Inspection

The inspection consisting of following stages shall be carried out by the purchaser. Necessary inspection equipment like Elcometer or painting thickness measuring gauges and other tools required are to be supplied by tenderer.

- a) Pre-surface preparation inspection.
- b) Determination of surface preparation
- c) Inspection of coating equipment and coating application.
- d) Dry film thickness after completion of every stage of primer, Intermediate and final coats.

6. GENERAL INSTRUCTIONS FOR INSPECTION

6.1 Calibration of Measuring Equipment:

All the measuring equipments used for inspection and testing shall be calibrated and appropriate accuracy class of measuring equipment shall be used. Calibration standards used for calibration of measuring equipment shall be traceable to nation standard of National Physical Laboratory (NPL) New Delhi with unbroken chains of comparison.

Valid calibration certificate of all measuring equipments used during inspection and testing with trace ability to national standards of NPL/NPL accredited laboratories shall be furnished along with inspection call and during inspection by the purchaser.

6.2 Inspection Requirements:

Tenderer shall ensure that material and equipment are offered in the same priority of assembly as per agreed schedule. No material shall be painted except one coat of primer painting (except for welded joints), or dispatched to site without inspection and issuance of Acceptance certificate by the purchaser, unless such inspection is waived in writing by the purchaser.

Tenderer shall ensure that the material once rejected are not re-used and shall be promptly removed from shop and replaced with new material.

The fact that certain material has been accepted at the tenderer shop shall not invalidate final rejection at the purchaser site, if it fails to be in proper condition or has fabrication inaccuracies, which prevent proper assembly. Shop inspection by the purchaser or submission of test certificates and acceptance thereof to the purchaser shall not relieve the tenderer from the responsibility of furnishing material conforming to the requirements of these specifications. The above shall also not invalidate any claim, which the purchaser may make because of defective or unsatisfactory material and/or workmanship.

The essential stage inspections are as given below

- a) Raw material inspection & material trace ability.
- b) Edge preparation & take welded stage (weld set up)
- c) Root run inspection.
- d) Final welding.
- e) Dimensional inspection (records)
- f) NDT of weldment as per requirement
- g) Review of calibration records.
- h) Review of WPS, PQR and welders certification as required
- i) Stamping of test pieces from forgings and castings.
- j) NDT of casting and forging items as per requirement.
- k) Final dimensional inspection (records)
- l) Geometrical tolerance checking before unloading from machine.
- m) Control assembly and alignment (in the workshop)
- n) Testing to ensure functional requirement-mechanically as per requirement.
- o) Sand blasting and primer painting.

Under the essential stage inspections, the Purchaser will participate along with tenderer. If any item needs to be rectified, the tenderer shall inform the purchaser in writing and provide rectification procedure. After review and approval of rectification procedure by the purchaser only then tenderer shall undertake rectification of said item. After rectification, the same shall be re-inspected by the purchaser and after approval the item may be used in the system. In case the said item fails during functional test or operation. The tenderer shall replace the item/requirement free of cost within the warranty period.

Tenderer shall maintain records of all inspection and testing, which shall be made available to the purchaser.

6.3 Test Certificates and Documents:

For such items being manufactured as per approved QAP following test certificates and documents, as applicable for each of the equipment, in requisite copies including original shall be endorsed by the manufacturer with linkage to project, purchase order and acceptance criteria.

- a) Raw materials identification & physical and chemical test certificates for all materials used in manufacture of the equipment.
- b) WPS, PQR & WPQ Document as per applicable code.
- c) Details of stage wise inspection and rectification records for fabricated items and machined articles.
- d) Manufacturer's material and performance/relevant test certificates for all bought-out items.
- e) Non-destructive test reports as per respective code.
- f) Surface preparation and painting certificates.
- g) Certificates from competent authority for the items coming under statutory regulations, if any
- h) Alignment & Geometrical Accuracy Certificates.

Where physical and chemistry test certificates of material are not available, the tenderer shall arrange to have specimens and test samples of the materials, tested in Government approval laboratory at his cost and submit the copies of test results to the purchaser for scrutiny and approval. Number of test samples against each heat/cast/lot of batch of materials shall be as per relevant Indian or international standards.

Where facilities for testing do not exist in the tenderer's laboratories or in case of any dispute, samples and test pieces shall be drawn by the tenderer in presence of the purchaser and sealed sample shall be sent to any Government approval laboratory for necessary tests at supplier's cost.

The purchaser shall have the right to be present and witness all the tests being, carried by the tenderer at their own laboratory or Government approved laboratories. Also they shall reserve the right to call for confirmatory test on samples at their discretion.

7. QUALITY ASSURANCE PLAN (QAP)

Tenderer shall carry out all the inspections, sub-assemblies & assembly of complete systems based on QAPs. Indicative QAPs. For various stages of manufacturing are listed below.

- Quality Assurance Plan for Fabricated Items.
- Quality Assurance Plan for Machined Items.
- Quality Assurance Plan for Forged Items.

8. FINAL INSPECTION

The assembly and operation of VHGT of SSLV SS1 segments should be demonstrated at the shop floor (no load testing)

9. LOAD TESTING

Load testing of VHGT for SSLV SS1 segments will be done at Sriharikota by the successful bidder. The load testing will be done for a load of 65 ton as well as 82 ton. The load will be arranged by the purchaser. Supplier has to carry out the load test and functional test of the tackle at the purchaser site. The necessary material handling support will be provided by the purchaser free of cost. Tenderer shall be responsible for the load testing. Supplier has to make their own arrangements for the transportation of personal to the site. Accommodation if available will be provided for their staff at Sriharikota on chargeable basis.

10. PACKAGING SCHEME

The item shall be packed under the supervision of the purchaser representative. The packaging scheme should be approved by the purchaser. Transportation and packing charges should be borne by the tenderer.

11. DELIVERY

Supplier shall delivery the items within 6 months from date of purchase order to SDSC-SHAR or to the place intimated at the time of dispatch.

Cost of transpiration shall be provided in the PART-2 of the bid as follows

- Cost of transportation from party's site to SDSC-SHAR and
- Cost per km for transportation from party's site to SDSC SHAR and Number of KM from site to SDSC SHAR.

Based on KM charge for increase in distance we will amend the order...

12. DOCUMENTS TO BE SUBMITTED

12.1 Prior to start of fabrication work

- a) Fabrication and machining procedure to be followed.
- b) Quality Assurance Plan.

12.2 During fabrication

- a) Raw materials identification & physical and chemical test certificates for all materials used in manufacturing of the equipment.
- b) Details of stage wise inspection and rectification records if any for fabricated items and machined articles.

12.3 After completion of fabrication

- a) DP reports for root and final weld passes.
- b) UT test reports for plate thicknesses 20 mm or above.
- c) Radiography reports for all butt welds.
- d) Dimensional inspection report.
- e) Stress relieving chart.
- f) Specification of cylinder, flow/check valves shall be provided
- g) List of part suppliers of cylinder, flow control valves, neoprene buffers and hoses shall be provided for procurement of spares.

Bid qualification Criteria for Fabrication & supply of SSLV SS1 grab tackle

Bidders who are qualifying /meeting following technical & financial capabilities are eligible to participate in the bid for fabrication & supply of SSLV SS1 grab tackle. **Bidder shall furnish all the details with documentary proof and submit the same along with quotation.** Bids of the parties which are not meeting the following criteria will not be considered for evaluation and will be rejected without seeking any further clarification. Bidders shall furnish the details of their resources in factory viz. manpower, machinery, quality systematic. For purchaser to assess their capability.

S.no	Criteria / Requirement	Vendor Compliance (YES*/NO)
Technical Qualification Requirements: The bidders should meet the following technical qualifying requirements and shall submit relevant certificate/data to establish his credentials along with technical bids.		
1	Bidder should have at least 5 years of experience in execution of fabrication works.	
2	The job is very critical with respect to fabrication & welding. Hence superior welding, gas cutting and fabrication facilities are needed to realize the C-arm grab tackle The machine to be used for this Job and provide the major specifications of machine shall be specified.	
3	The tenderer should have fabrication facilities like superior welding and gas cutting machinery to handle job of size Ø 4.0 mtrs with total weight of 6 tons. The fabrication &, Handling equipments etc. to be used for this job shall be specified.	
4	The qualified welder qualified by a third party agencies like LLOYed, L&T, DNV, MECON, M.N.DASTUR and B.V, at least two numbers such qualified welders should be available in their pay role.	
5	The C-arm faces and its pins shall be machined with tolerance of 1.6µ to 8µ. Hence to meet the accuracy given for the job it is essential so that the tenderer should have at least once machine of such kind to carry out the machining of C-arm size: 951 mm (w) x 1280 (h) x 150 mm (thk), each weighing 542 kg. The accuracy of the machine to be used for this Job shall be specified.	
Financial Qualification Requirements: The bidder should also meet the following financial qualification requirements (please support with valid documents as proof):		
6	The company should have cash flow on financial and bank credit worthiness. The Bidder should have average annual turnover of not less than a value of Rs. 1.5 Crores per year during the last three years ending 31st March 2018.	
7	Bidder should possess a current Solvency Certificate from Nationalized Bank for an amount of not less than Rs. 25 Lakh	
8	IT return shall be submitted for last 3 years.	
9	The tenderer should have done one job of large size of similar kind involving both fabrication and machining within last 5 years.	

COMPLIANCE STATEMENT FORM

S. No.	Description	Bidder's compliance Yes/No
General terms		
1.	Confirm that the entire scope of work as given in the tender specification is considered for quoting the price. All deviations shall be brought out separately. In the absence of deviations list, it will be presumed that all the specification given is adhered to.	
2.	Fabrication, machining, painting, testing, packaging and supply of SSLV SS1 grab tackle as per the details given in Tender, Drawings and Annexure.	
3.	PBG at 10% of the value of the Purchase Order shall be submitted through bank guarantee from any of the Scheduled /Nationalized Banks executed on non-judicial stamp paper of appropriate value within 15 days from the date of acceptance, and shall be valid for a period of sixty days beyond the date for completion of warranty period.	
4.	Bidder shall submit security deposit, within 15 days of Order Acknowledgement, for 10% of the total order value. Security Deposit shall be obtained through Bank Guarantee or fixed deposit receipt from any of the Scheduled / Nationalized Banks executed on non-judicial stamp paper of appropriate value, and shall be valid for a period of sixty days beyond the date of acceptance.	
5.	If the supplies are not made by the end of delivery period, liquidated damage will be levied @ 0.5 % per week or part here of subject to a maximum of 10% of total order value.	
6.	Un priced copies of all Purchase Orders of bought out components shall be submitted after placement of order.	
7.	Bidder shall submit the project status report every 15 days mentioning the status of fabrication activity w.r.t. drawing numbers and actual photo graphs.	
8.	Bidder shall depute their Project team/ engineers for Monthly meeting to review the status and discuss/ resolve minor issues related to project execution at SDSC SHAR/ bidder's site based on mutual agreement on mutually agreeable dates.	
9.	Offer shall be valid for four months from the due date for submission of the Bid.	
10.	All the deviations are listed in Deviation table.	
11.	Other than the deviations listed in the deviation table, all other specifications mentioned in the tender are confirmed.	
12.	All the items shall be delivered within Six months from the date of award of purchase order.	

13.	Bidder shall adhere to the major milestones listed in the tender document. Deviations if any shall be brought out with giving valid reasons.	
14.	All bought out items if any shall be from enclosed vendor list only.	
15.	All the items shall be guaranteed against any manufacturing defects for a period of 12 months from the date of commissioning.	
Technical Terms		
1.	The details shown in the drawings shall be verified and changes if any required shall be incorporated after obtaining written clearance from the purchaser.	
2.	Quality assurance plan for fabrication and testing w.r.t to all the items shall be submitted for purchaser approval.	
3.	Quality records, history docket and all documentation related to manufacturing, inspection, testing and erection shall be maintained during realization and submitted after completion.	
4.	DP test for root and final weld.	
5.	UT testing of raw material.	
6.	Thermal Stress Relieving shall be carried out as per details given in the tender document.	
7.	Fabrication and machining will be carried out on parts as per details given in tender document and drawing.	
8.	Surface preparation and painting shall be carried out as per the details provided in the tender document.	
9.	All tolerances mentioned in the drawing and tender document shall be achieved. Wherever tolerance is not specified, open tolerance mentioned in the drawing shall be followed.	
10.	Bidder shall indicate clearly list of works planned to offload to his sub-vendor. In such cases, details of works and sub-vendors shall be provided.	
11.	All points given in the notes of enclosed drawings hold good for the fabrications of the items shall be complied.	

EXCEPTIONS AND DEVIATIONS

In line with Proposal Document, supplier may stipulate Exceptions and deviations to the Proposal conditions if considered unavoidable.

SL. NO	Reference in Specification		Tender Spécification	Offered Spécification	Remark
	PAGE NO	CLAUSE NO			

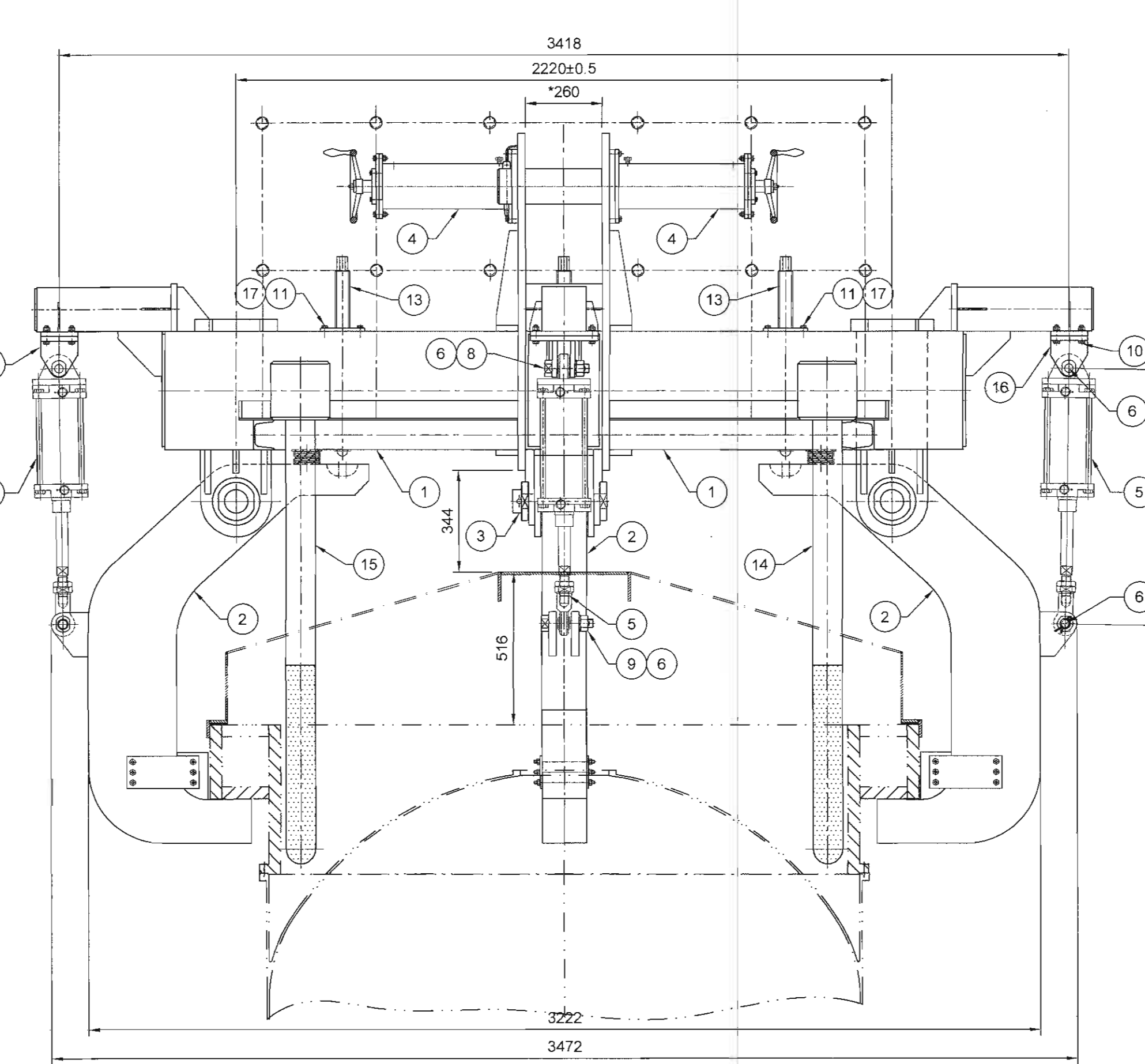
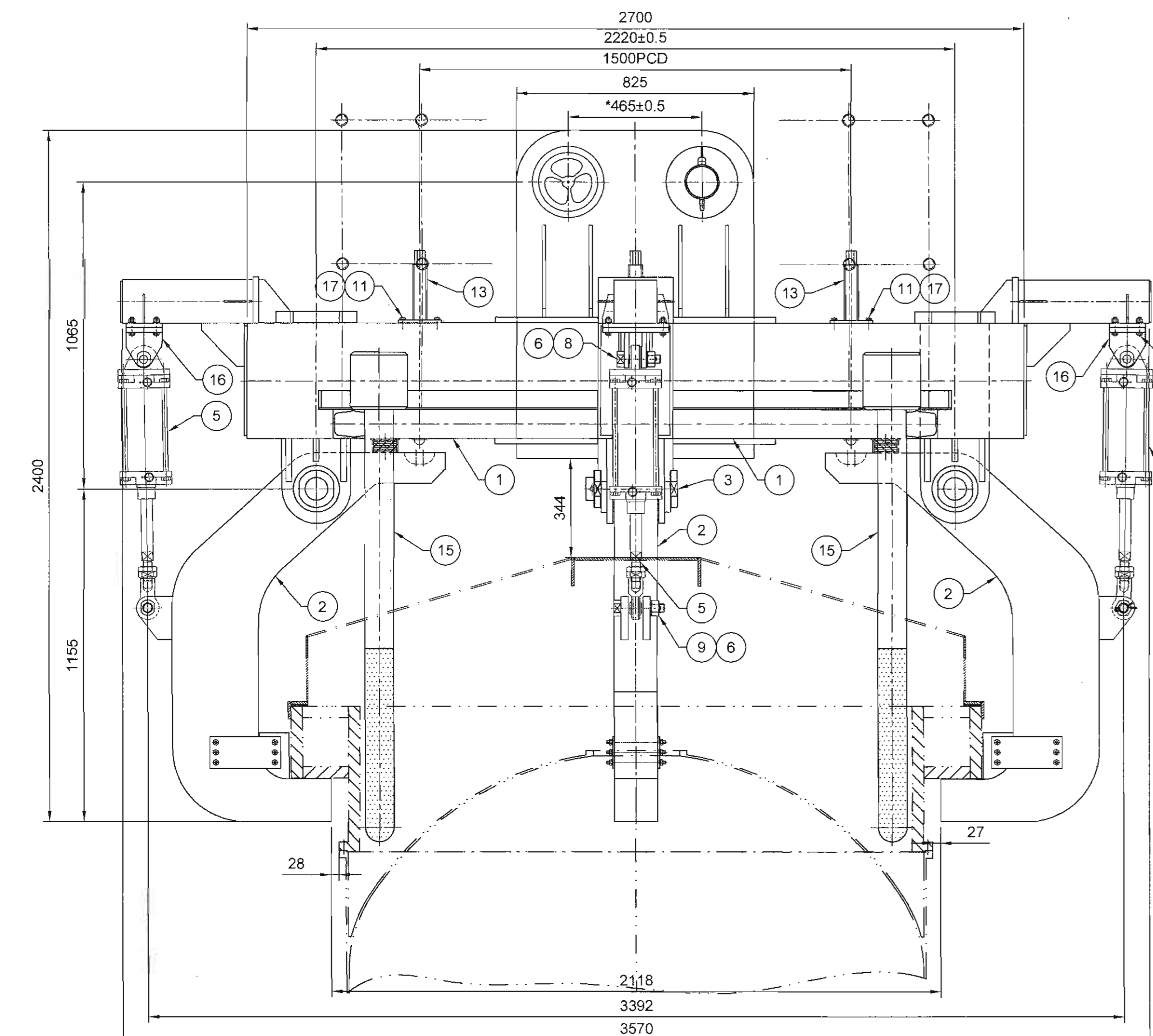
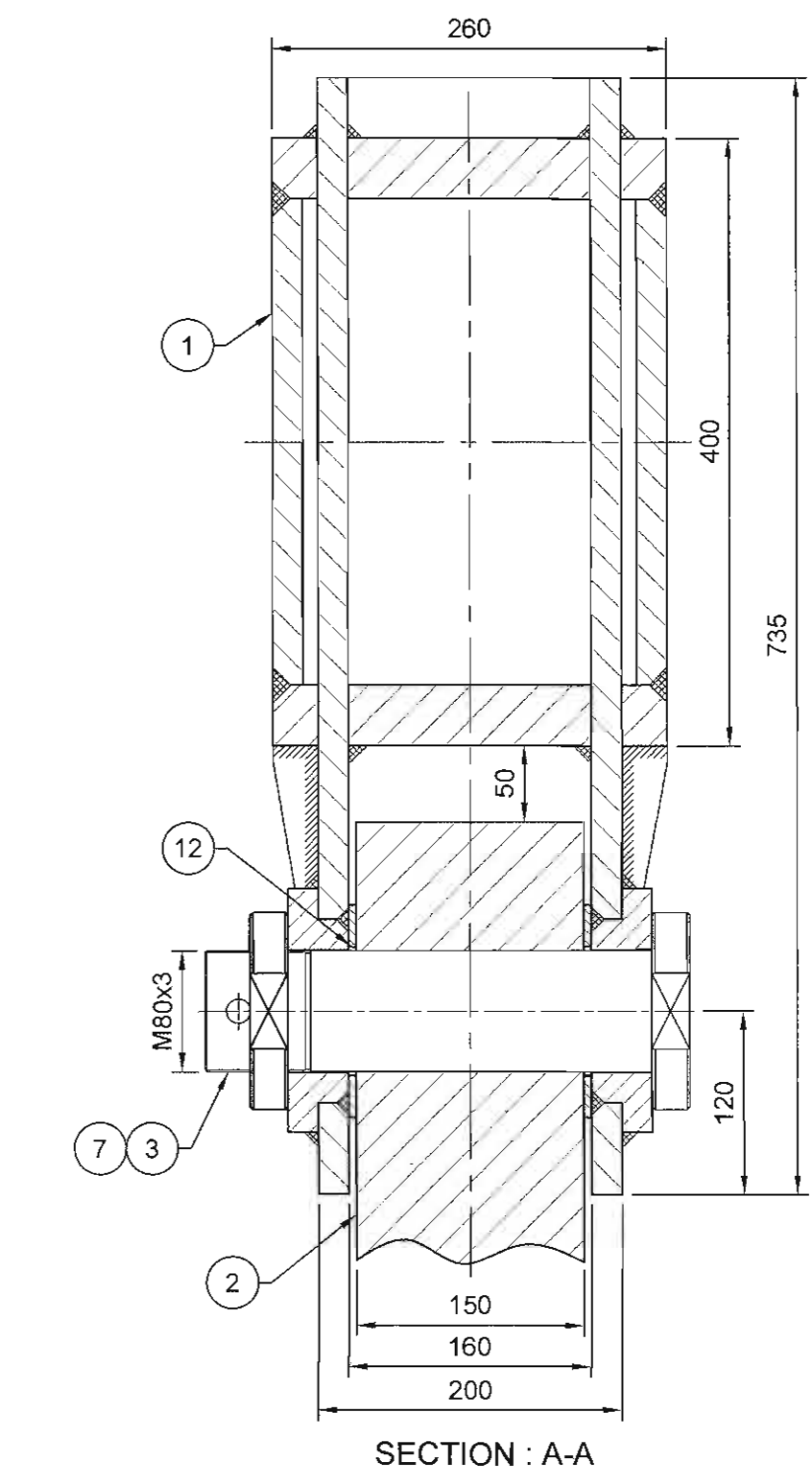
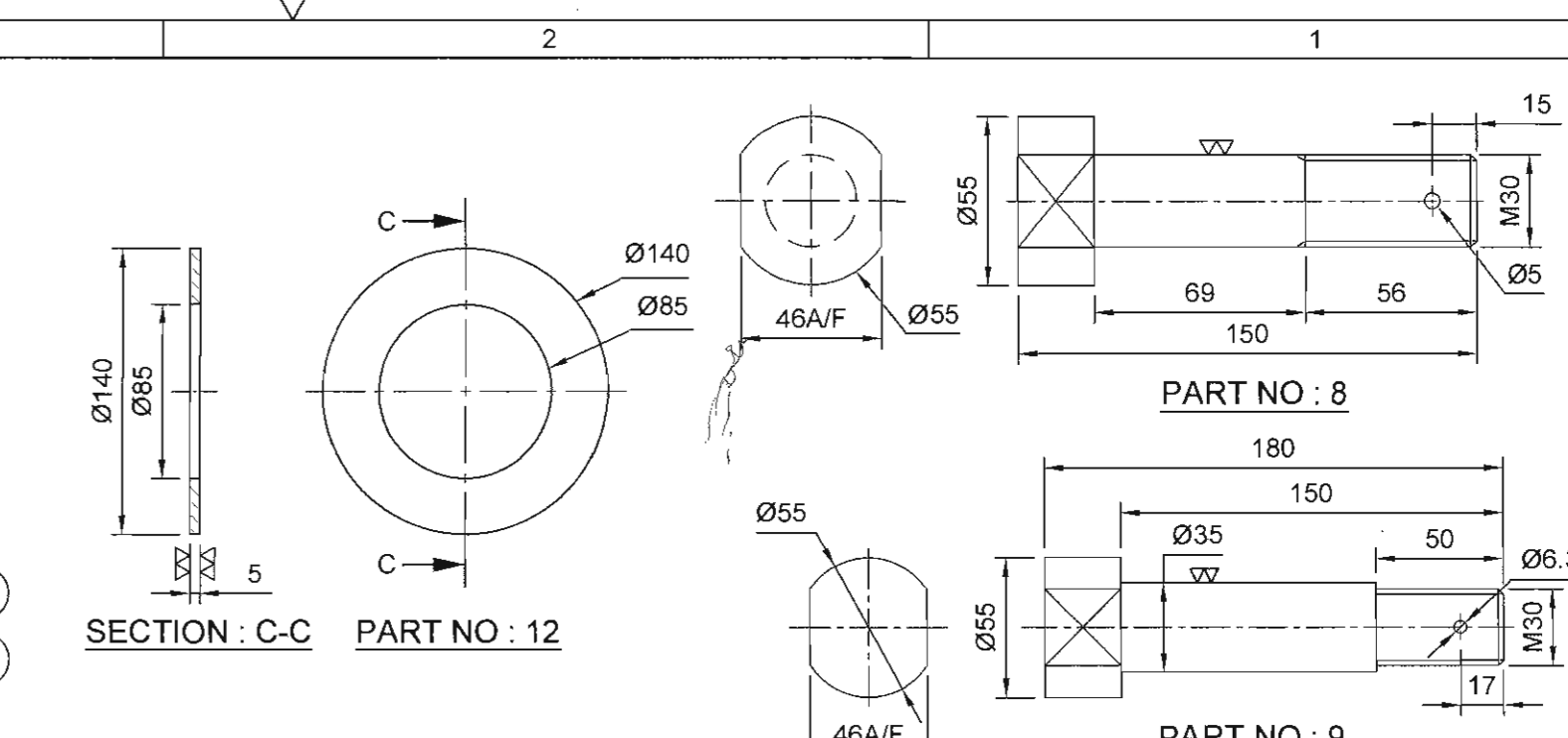
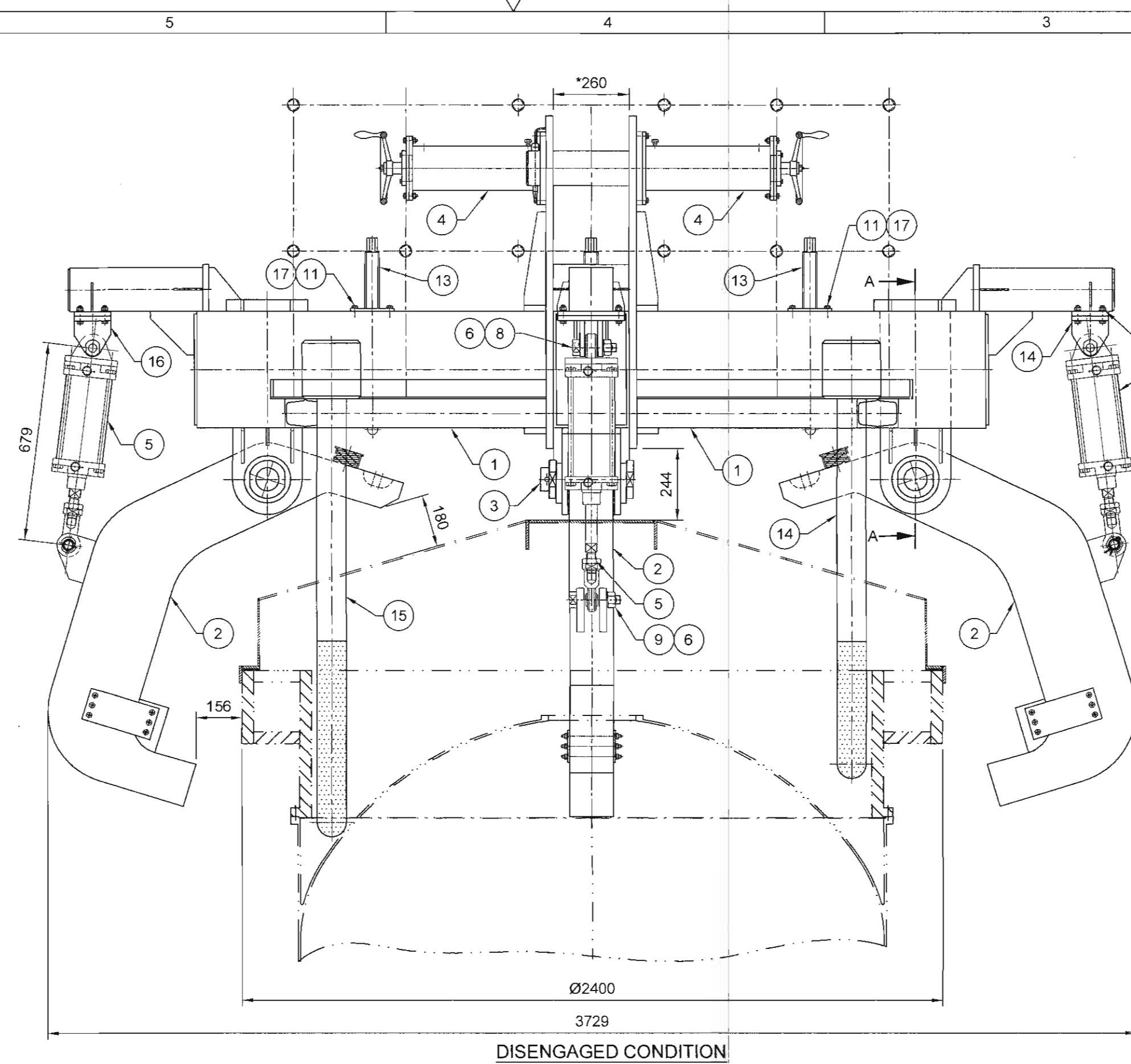
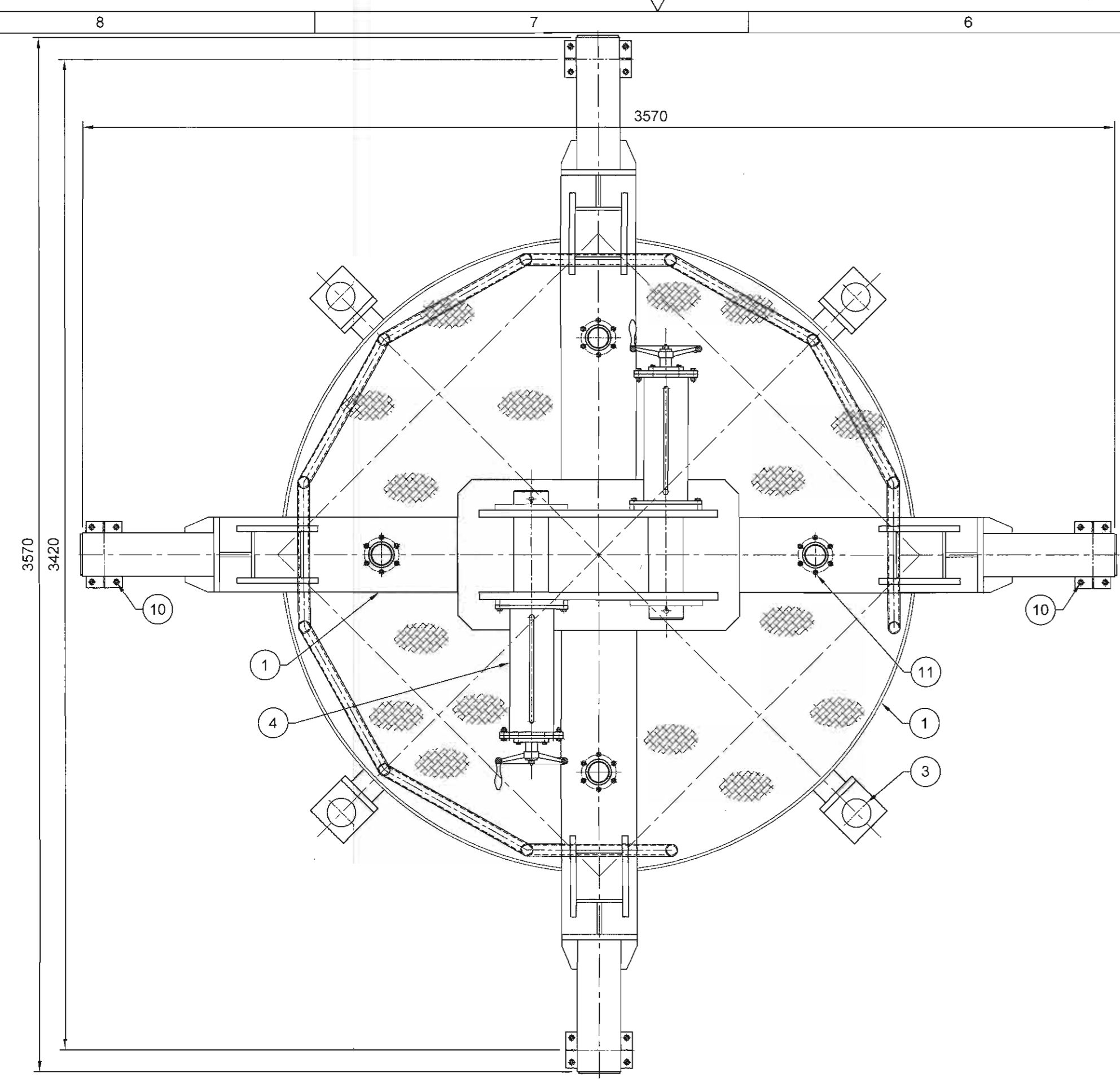
NOTE :

Any deviations taken by the Bidder to the stipulations of the Proposal document shall be brought out strictly as per this format and enclosed along with the bid.

Any deviations not brought out as per this proforma and written elsewhere in the Proposal document shall not be recognized and the same is treated as null and void.

Any wilful attempt by the Tenderer to camouflage the deviations by giving them in the covering letter or in any other documents that are enclosed may render the Bid itself non-responsive.

(SIGNATURE OF SUPPLIER)



SWL : 65t TOTAL WEIGHT: 5561 kg(Approx.)

S.NO	DESCRIPTION	MATERIAL	QTY	W.T	REMARKS
17	BUSH FOR SCREW ROD	-	1 set	47	Ref SHEET NO.5 OF
16	BRACKET	-	1 set	23	Ref SHEET NO.5 OF
15	GUIDE ROD-2	-	1	-	Ref SHEET NO.5 OF
14	GUIDE ROD-1	-	3	-	Ref SHEET NO.5 OF
13	SCREW ROD	-	1 set	42	Ref SHEET NO.5 OF
12	SHIM PLATE OD 140 x ID 85 x 5 Thk	-	8	-	
11	HEX SCREW M10 x 25Lg WITH WASHER	IS : 1364	24	-	
10	HEX BOLT M12 x 55Lg WITH NUT & WASHER	IS : 1364	16	-	
9	PIN-1 Ø55,180 Lg. WITH NUT & WASHER	En - 24 T	4	13	
8	PIN-1 Ø55,150 Lg. WITH NUT & WASHER	En - 24 T	4	11	
7	SPLIT COTTER PIN Ø13	IS : 549 STEEL	4	-	
6	SPLIT COTTER PIN Ø5	IS : 549 STEEL	8	-	
5	PNEUMATIC CYLINDER	-	4	-	Ref NOTE - 4 & SPECIFICATIONS
4	HANDLING PIN ASSEMBLY	-	1	180	Ref SHEET NO.3 OF 7
3	C-ARM PIN & NUT	-	1 set	258	Ref SHEET NO.5 OF 7
2	C-ARM	-	4	2168	Ref SHEET NO.4 OF 7
1	TACKLE STRUCTURE	-	1	2819	Ref SHEET NO.2 OF 7

- NOTE:**
- CHECK THE STATUS OF DRAWING BEFORE FABRICATION / MACHINING.
 - FABRICATOR HAS TO SUPPLY FABRICATION DRAWINGS FOR APPROVAL BY DEPT.
 - APPROVED PAINTING SCHEME SHALL BE FOLLOWED AS PER PO.
 - FOR THE SELECTED AIR CYLINDER(PART NO-5) PRIOR APPROVAL FROM THE DEPARTMENT SHALL BE TAKEN TO CHECK/MEEET THE STROKE REQUIREMENTS.
 - HANDRAILS ARE TO BE PROVIDED ALL AROUND THE CHEQUARD PLATE OF THE PLATFORM, HANDRAIL SIZE 25NB PIPE, HEIGHT 1000mm WITH SUITABLE TOE GUARD.
 - DIMENSIONS MARKED * TO SUIT THE 160T RAMSHORN HOOK.

**SPECIFICATIONS OF AIR CYLINDER :
(PART NO.5)**

MAKE : PARKER / SCHRADER / DUCAN / FESTO (REF. NOTE-4)
 OPERATING PRESSURE : 8 BAR (Kg/sq cm)
 MAXIMUM PRESSURE : 10 BAR (Kg/sq cm)
 P1-D PNEUMATIC CYLINDER, DOUBLE ACTING
 BORE : 160 mm
 STROKE : 200 mm
 CYLINDER MOUNTING : SWIVEL EYE BRACKET MP6
 PISTON ROD MOUNTING : SWIVEL ROD EYE AP6
 PARKER MODEL NO: P1D-T160MS-0200 OR EQUIVALENT.

STATUS	SIGN.	DATE
FOR DISCUSSION		
FOR TENDER		
FOR FABRICATION	<i>[Signature]</i>	20/8/19

DO NOT SCALE THE DRAWING
 ASK IF IN DOUBT
 UNLESS OTHERWISE SHOWN
 ALL DIMENSIONS ARE IN MILLIMETERS
 REMOVE SHARP EDGES & BURRS
 CHAMFER 1 M.M. X 45°
 MACHINING FINISH IN MICRONS -
 8 - 25
 0.025 - 1.6

DEVIATION FOR NON TOLERANCED DIMENSIONS (IS-2102)	
DIAMETERS & LENGTHS UPTO & INCL. 6 ± 0.1	LENGTH IN M.M. OF SHORTER SIDE OF ANGLE UPTO & INCL.
6 - 30 ± 0.2	1 - 6 ± 1°-00'
30 - 120 ± 0.3	6 - 30 ± 0°-30'
120 - 315 ± 0.5	30 - 120 ± 0°-20'
315 - 1000 ± 0.8	120 - 400 ± 0°-10'
1000 - 2000 ± 1.2	
2000 - 4000 ± 2.0	
4000 & ABOVE ± 3.0	

SCEND&ASG

DESIGNED: *[Signature]*
 DES. CHKD: *[Signature]*
 DRAWN: *[Signature]*
 DRG. CHKD: *[Signature]*
 APPROVED: *[Signature]*

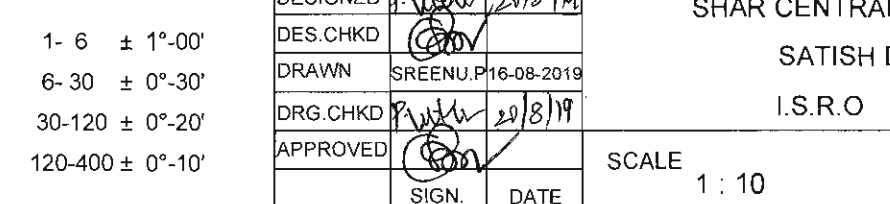
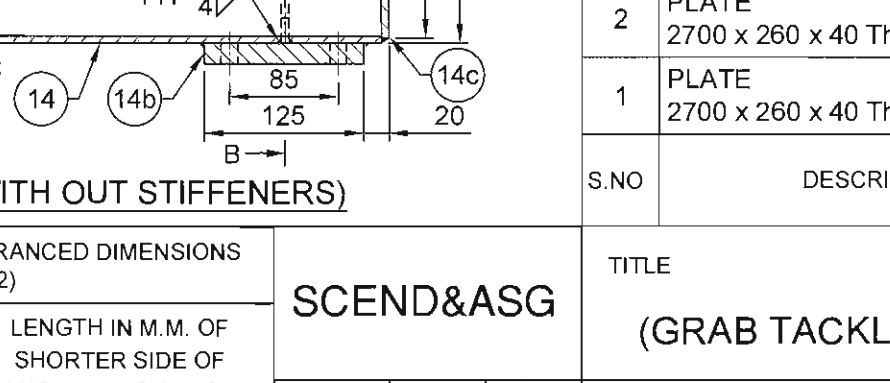
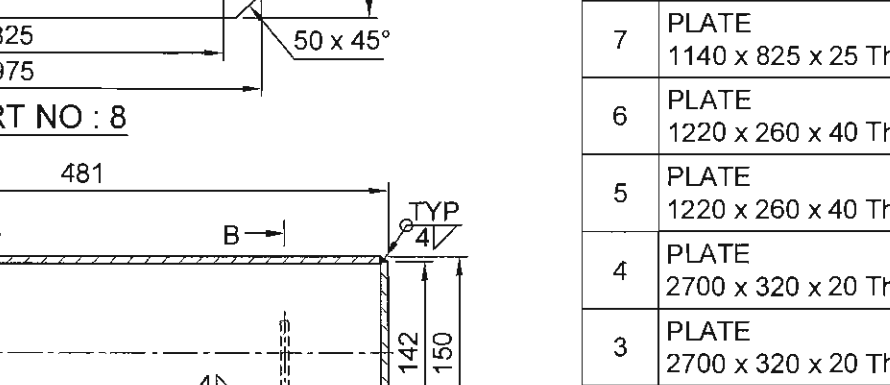
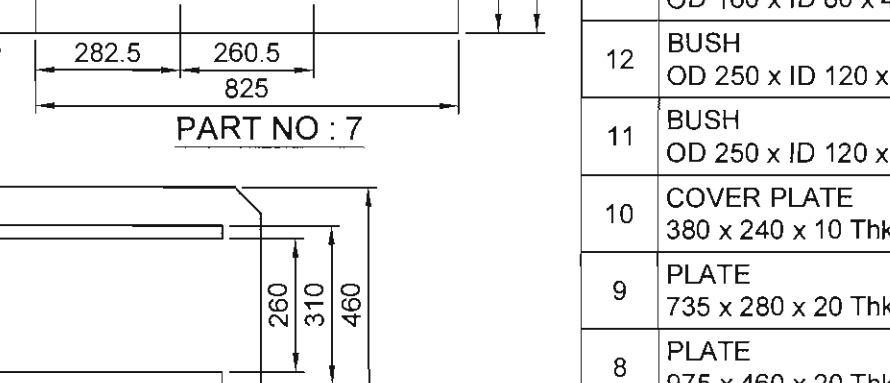
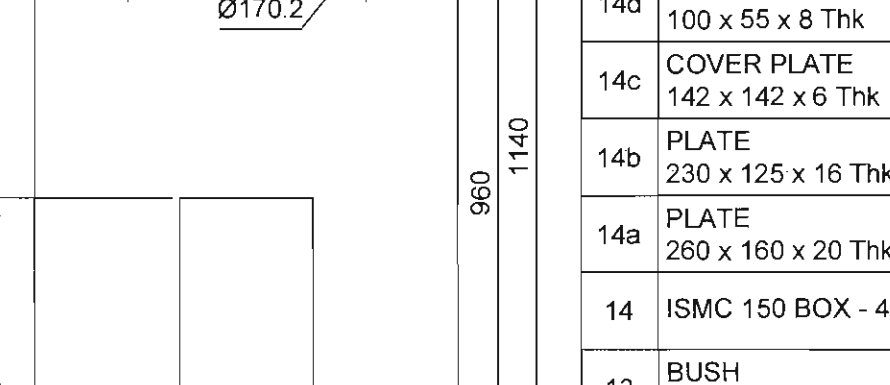
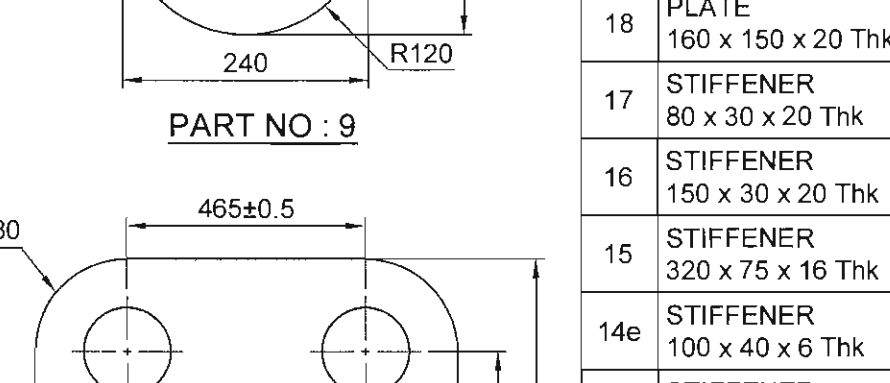
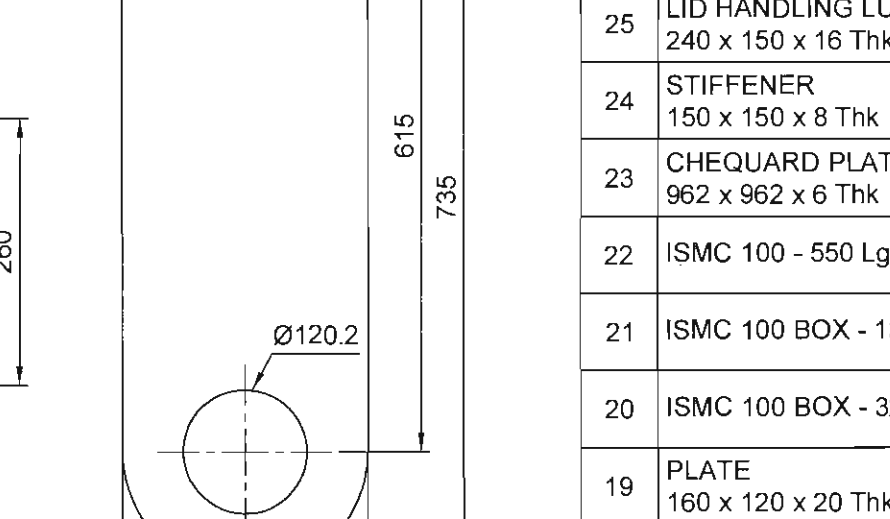
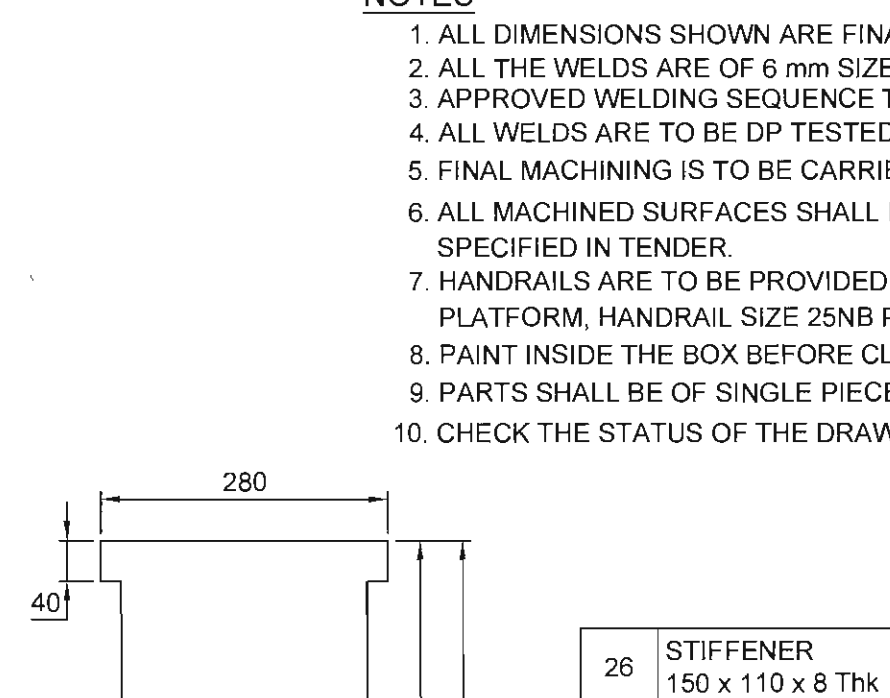
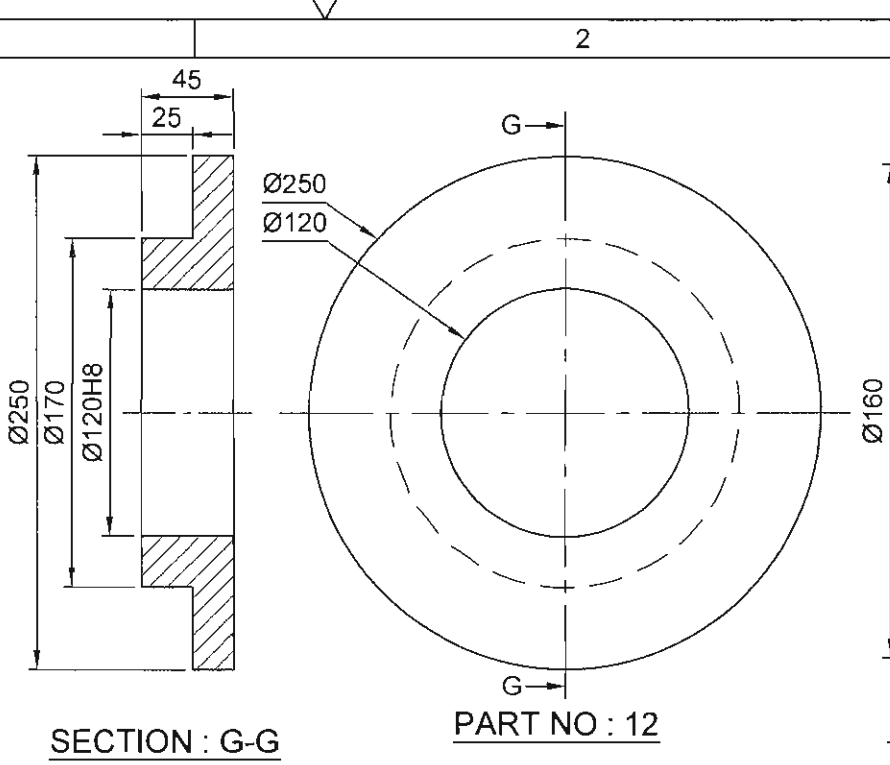
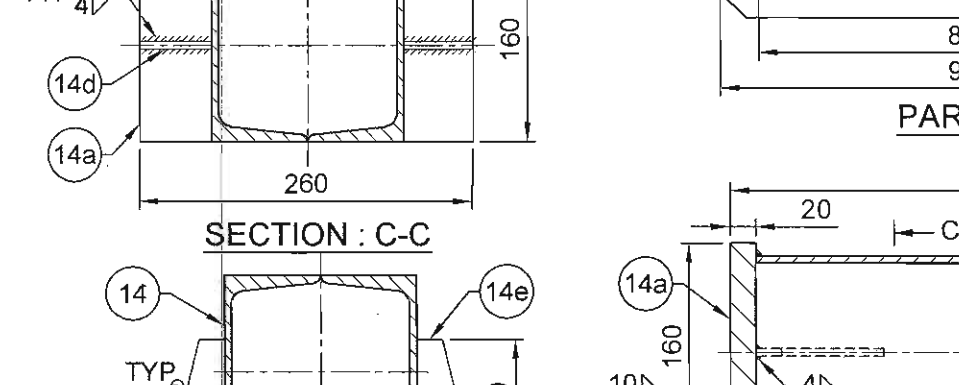
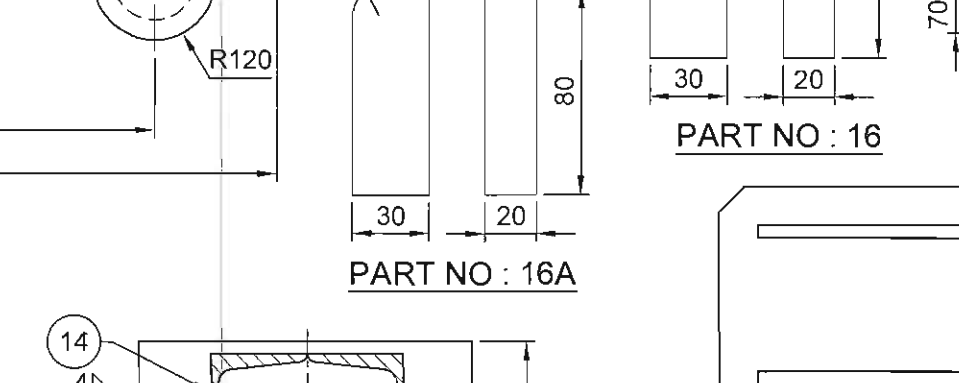
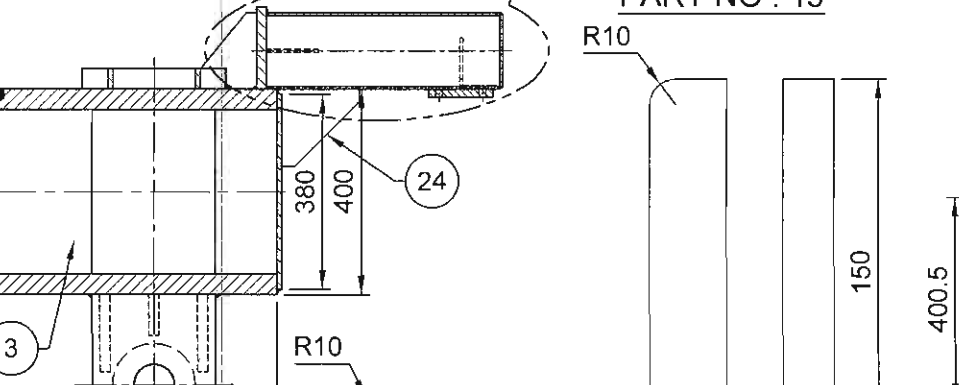
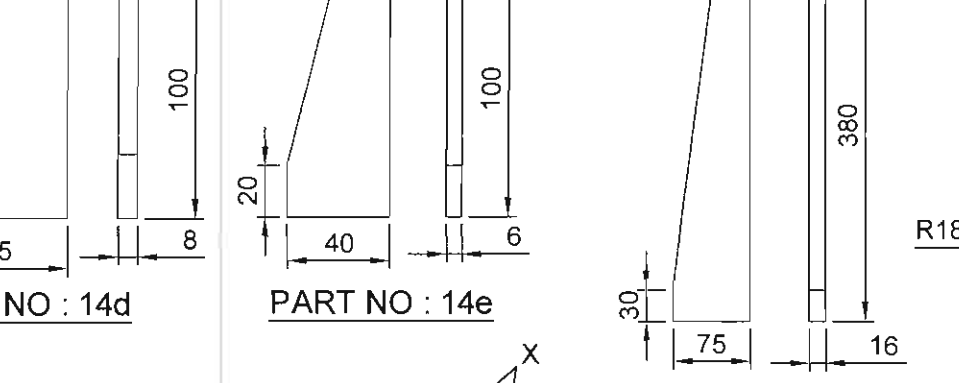
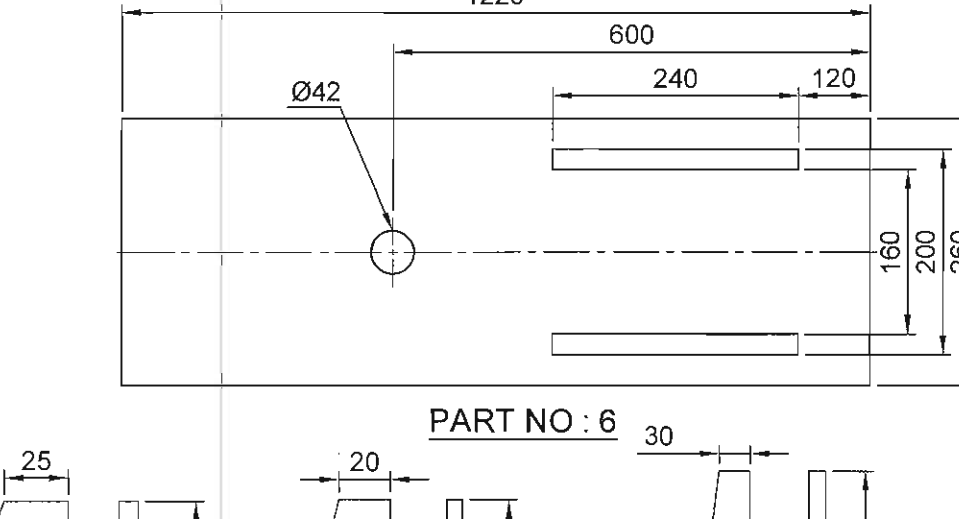
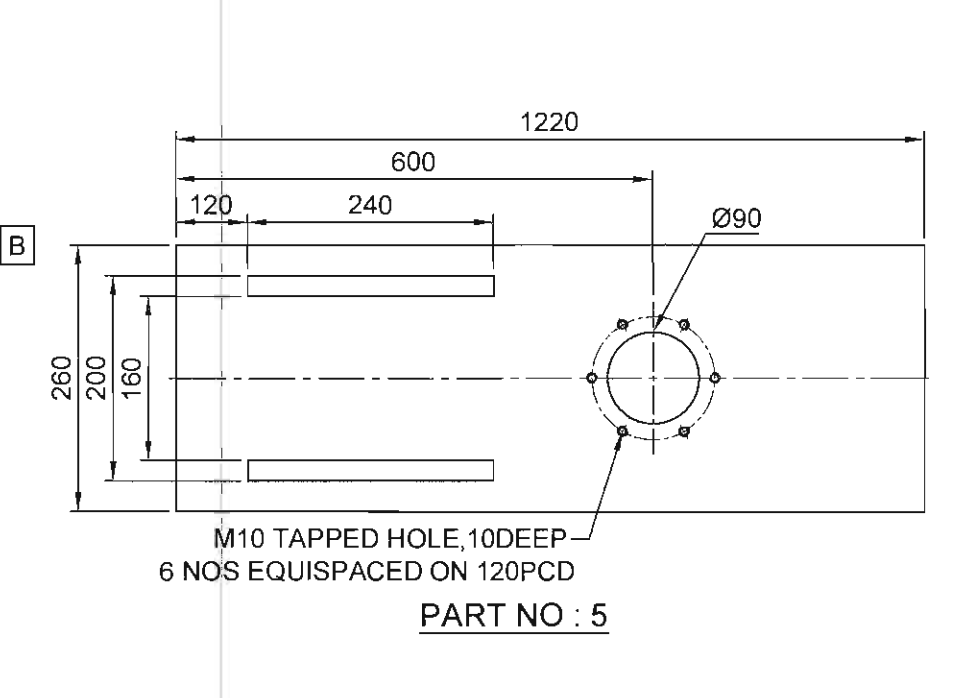
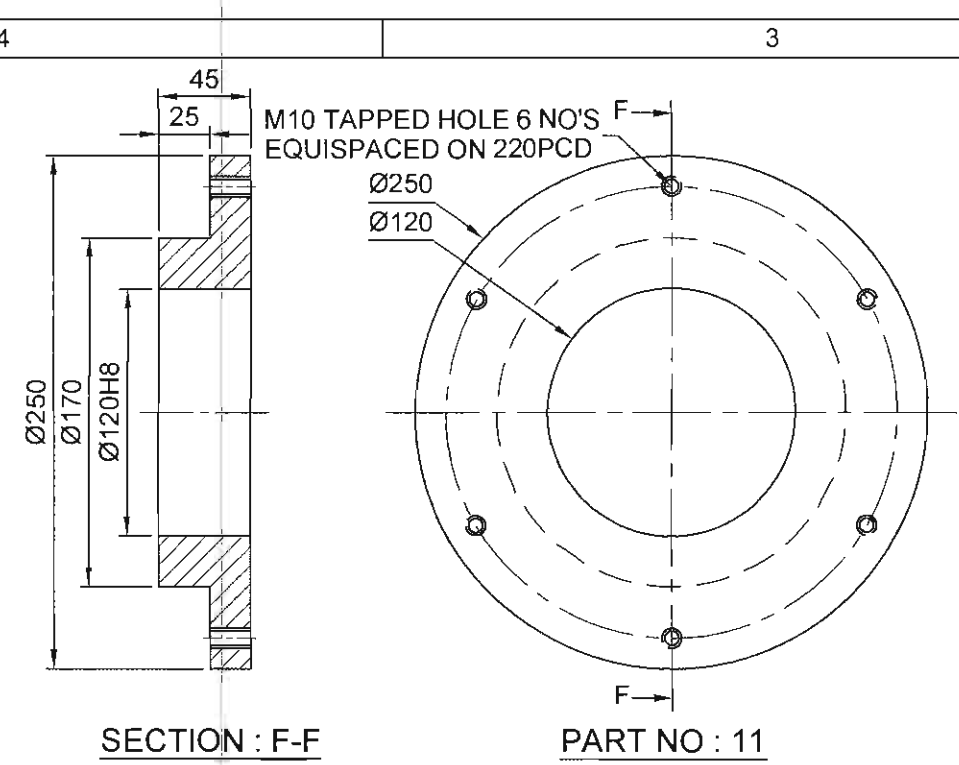
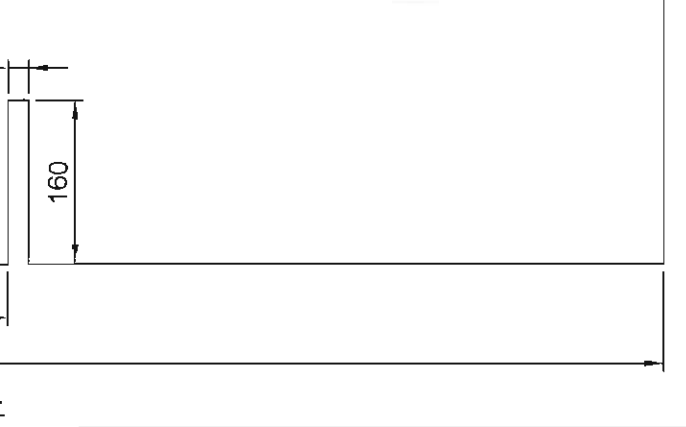
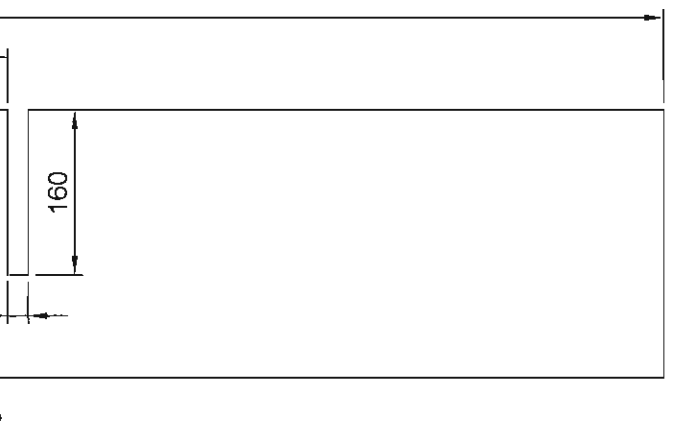
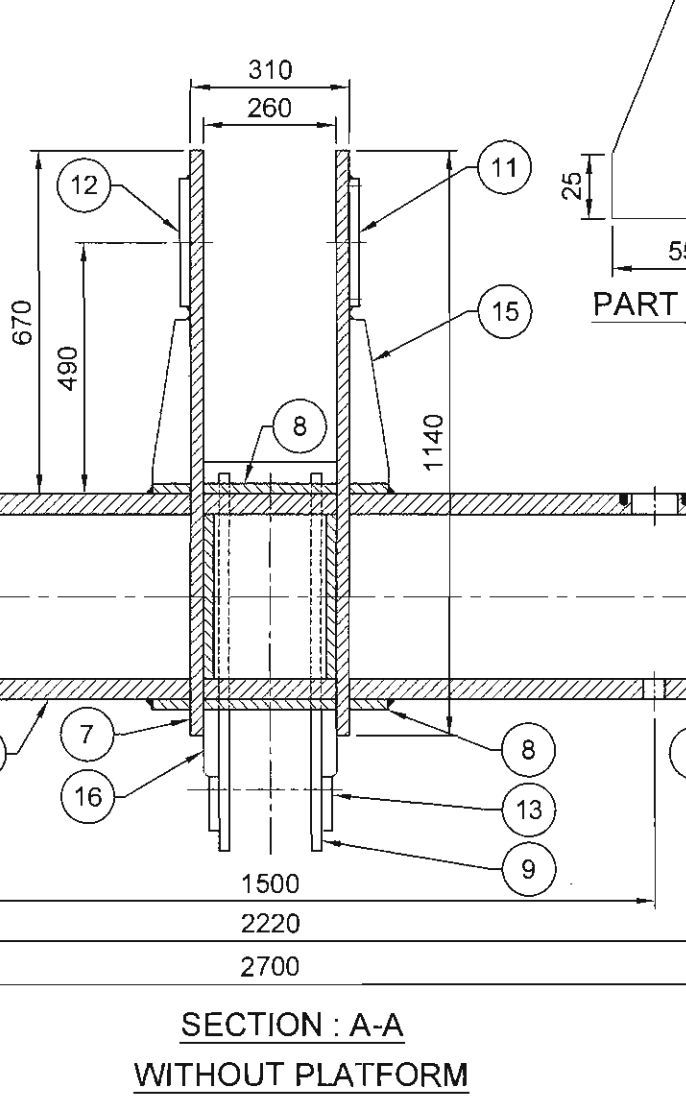
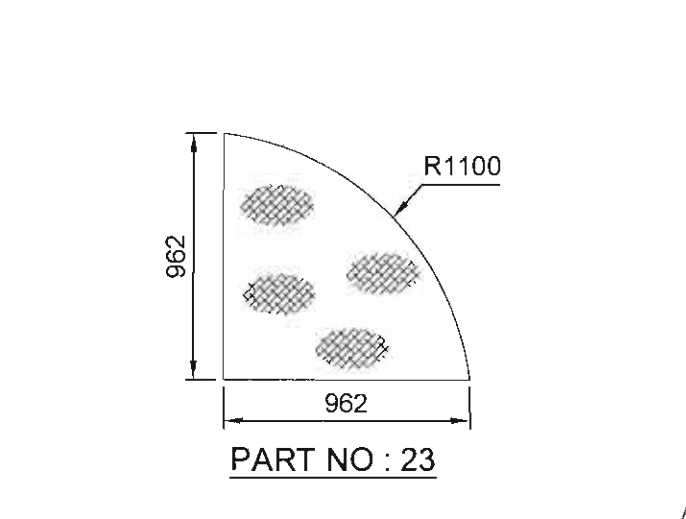
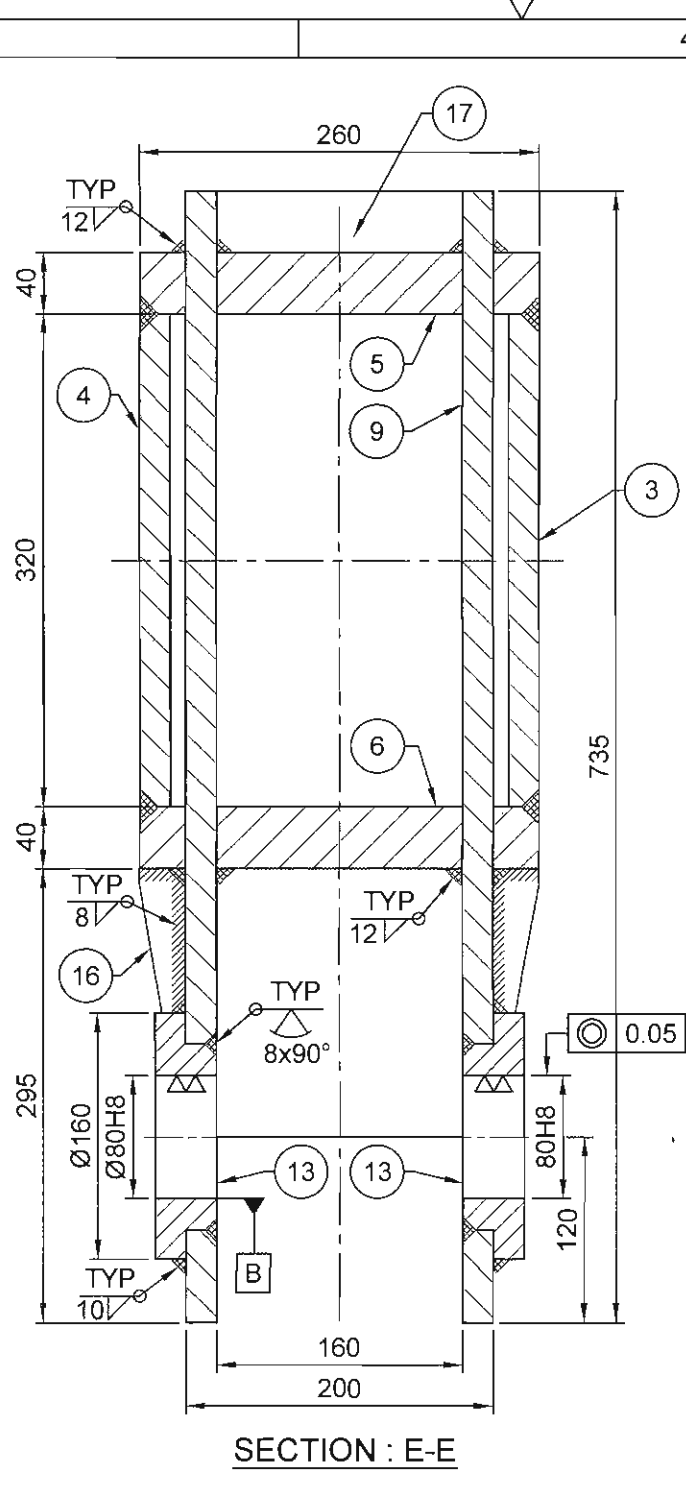
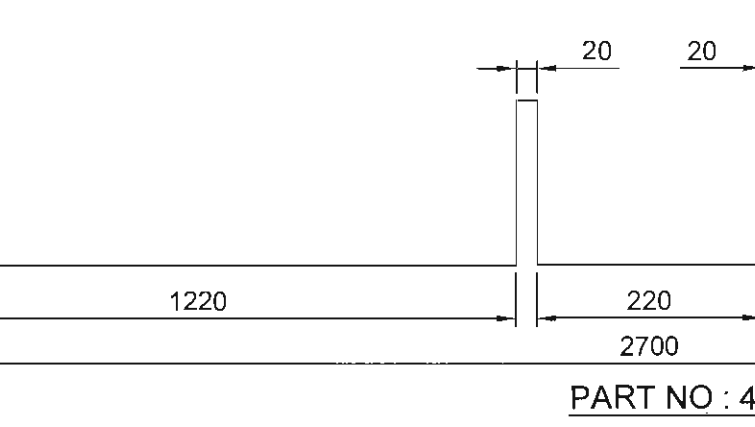
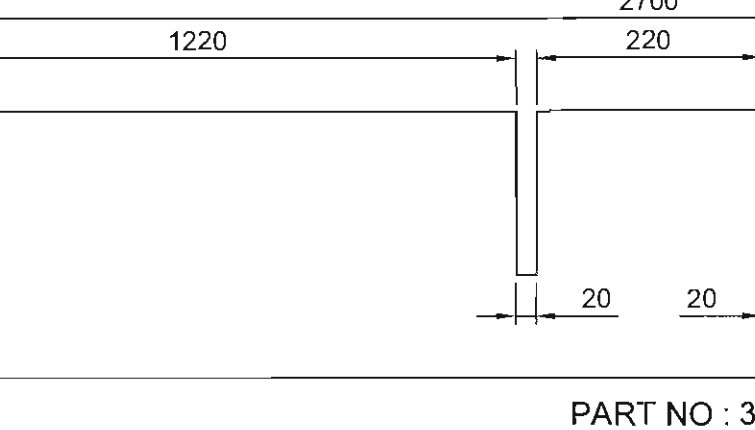
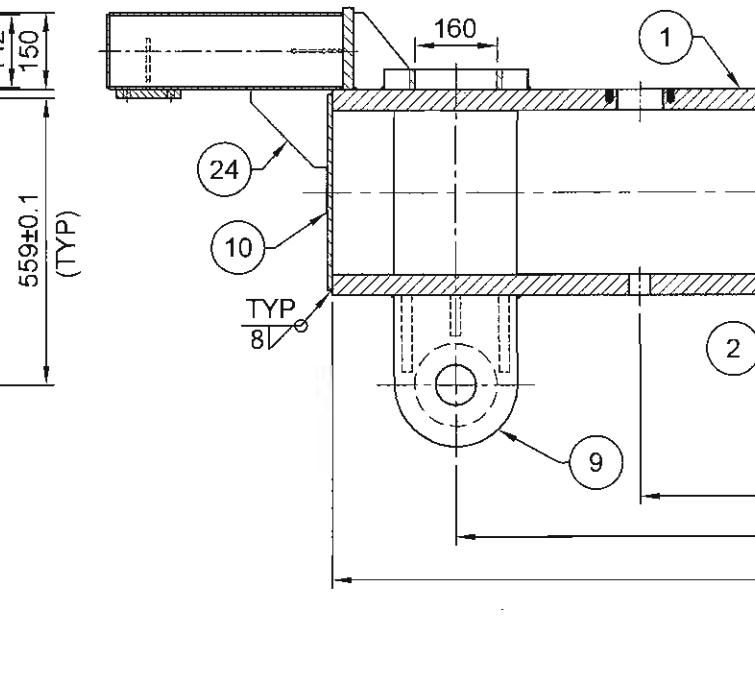
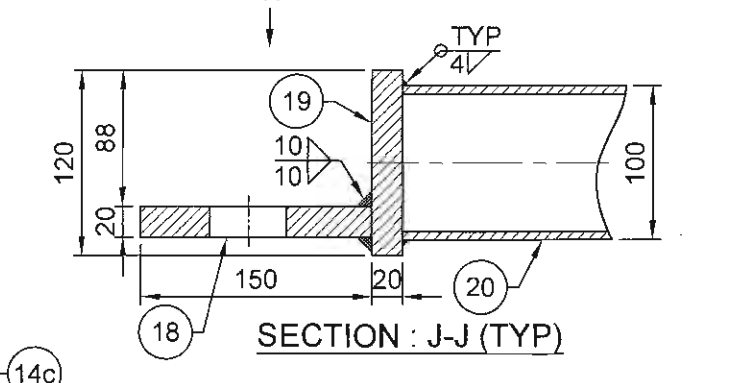
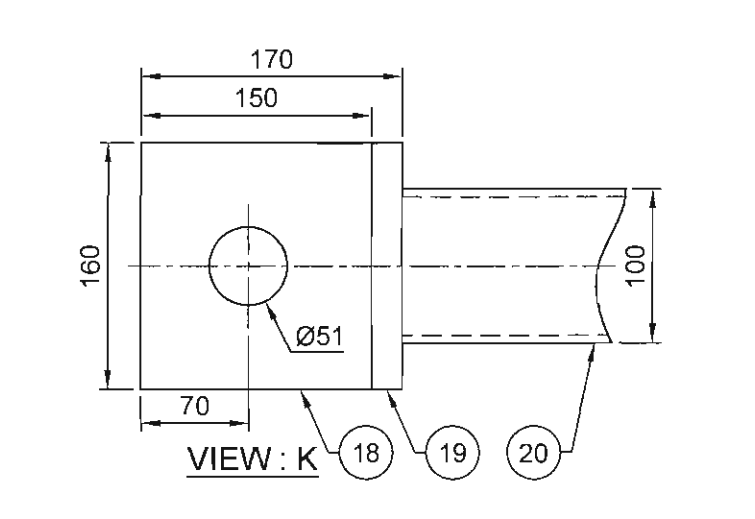
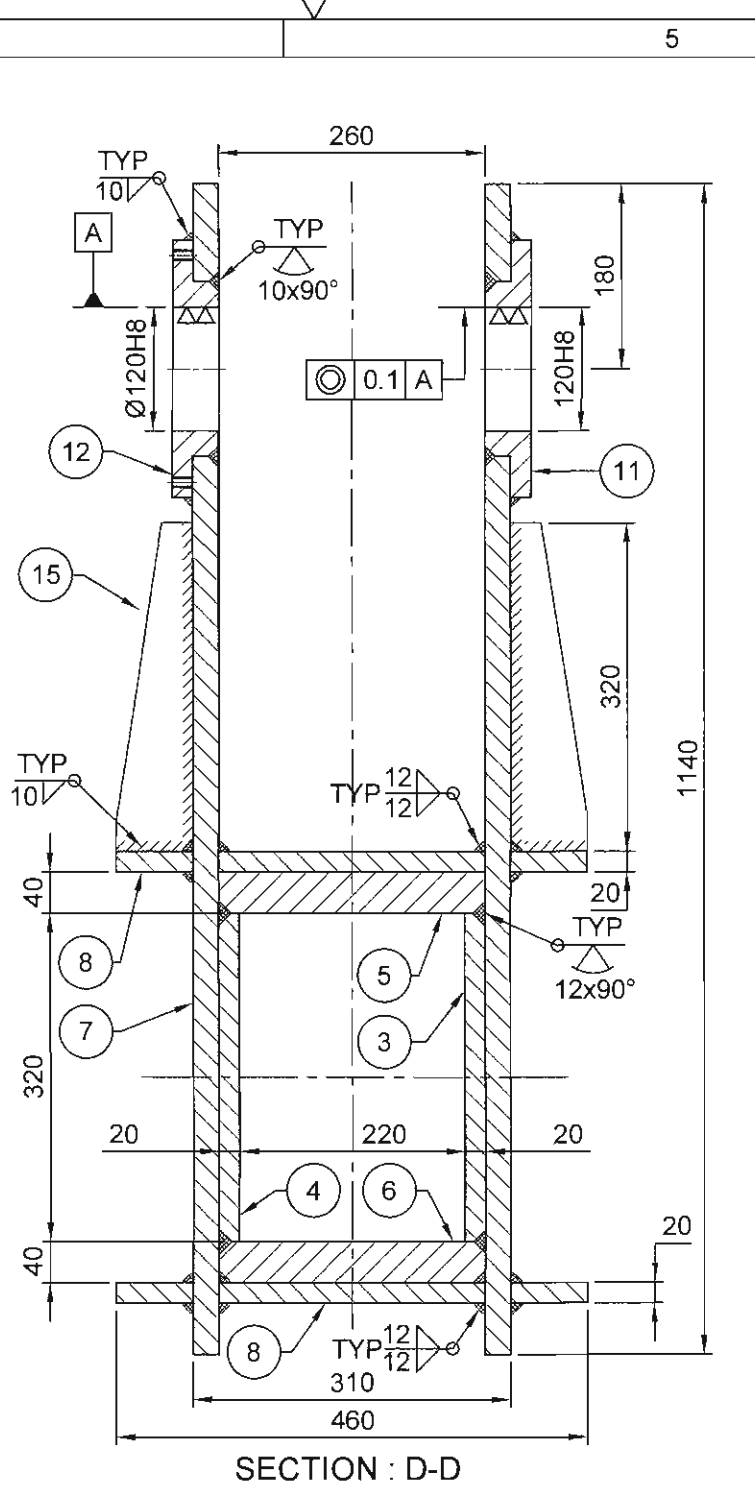
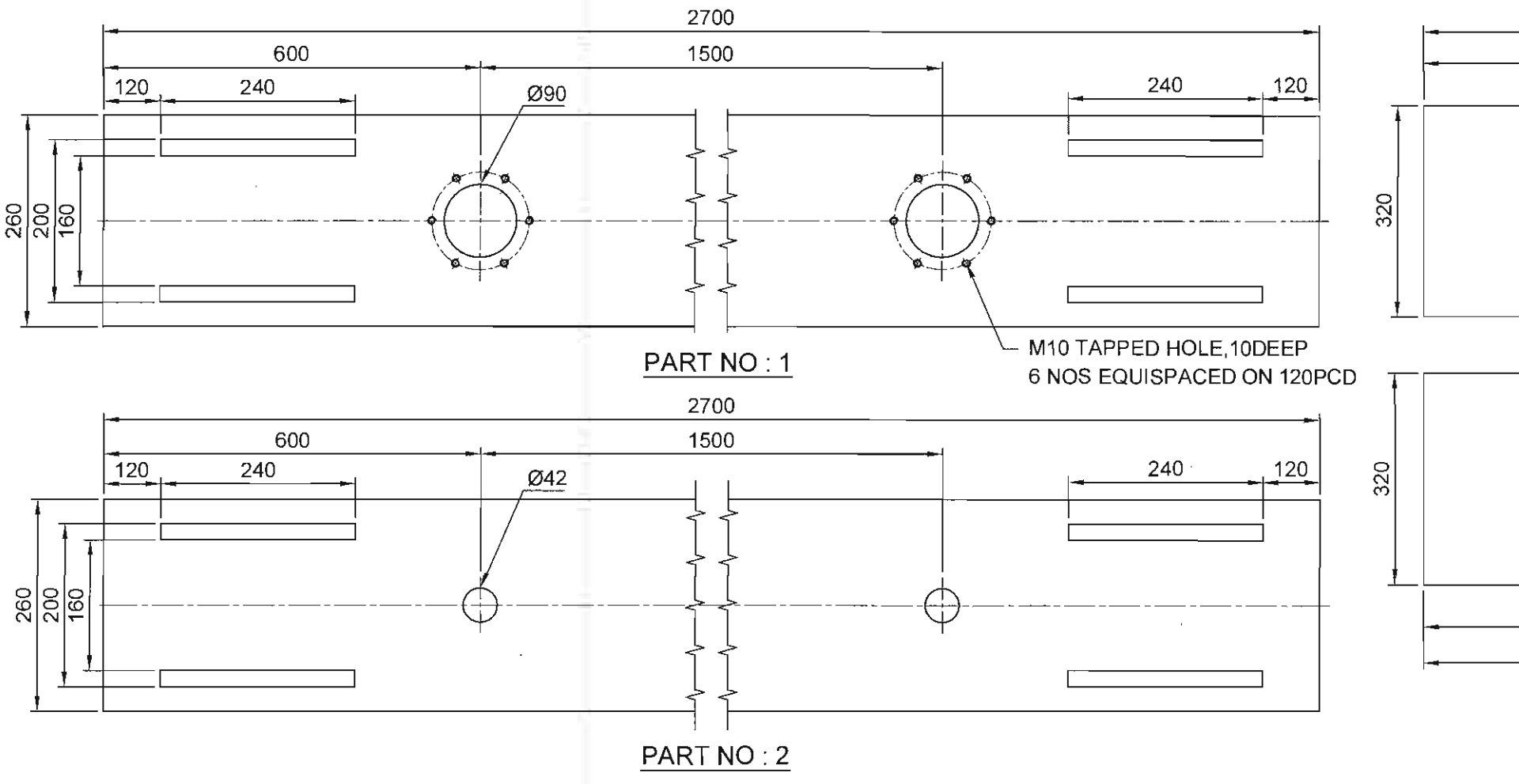
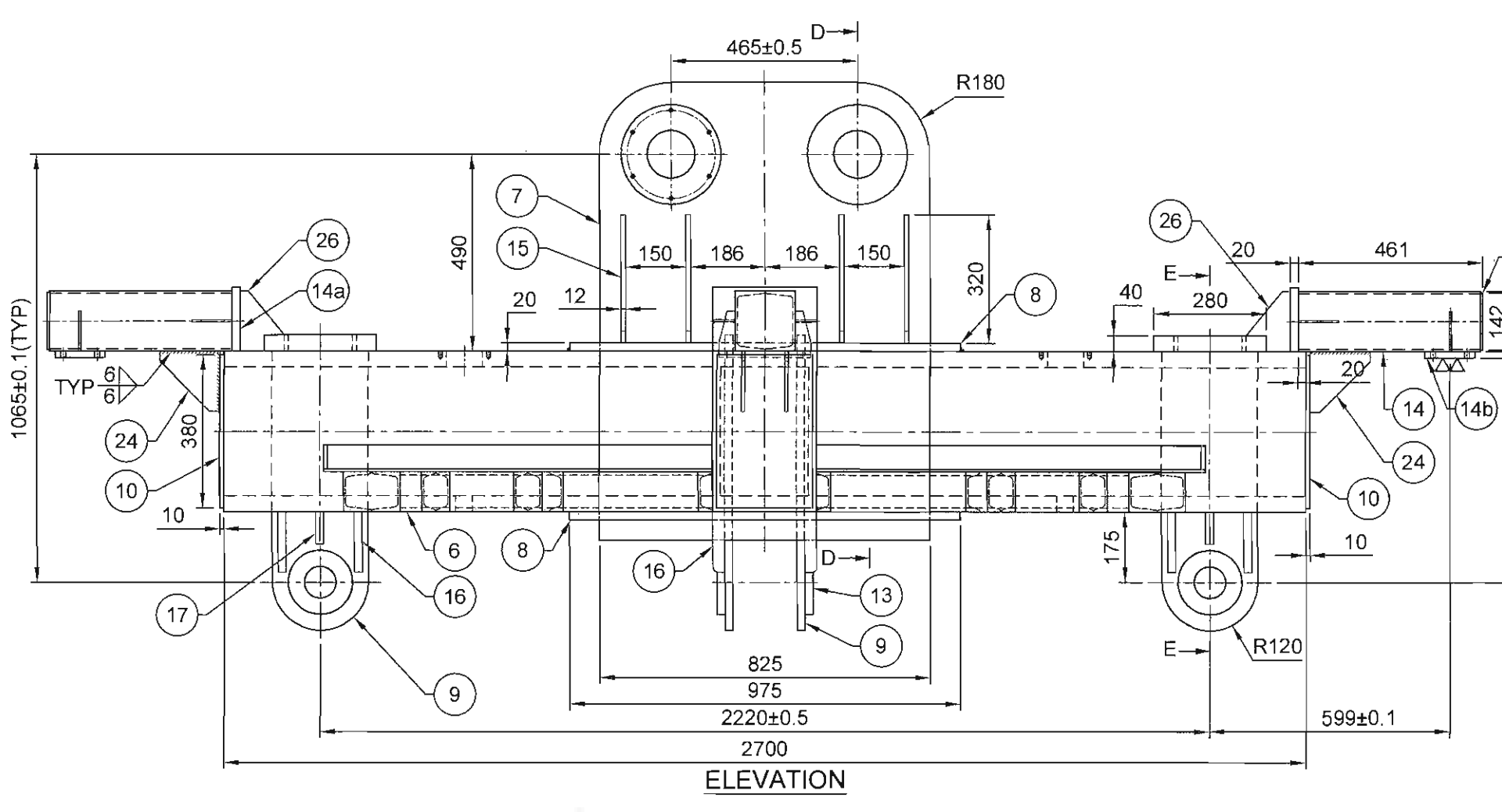
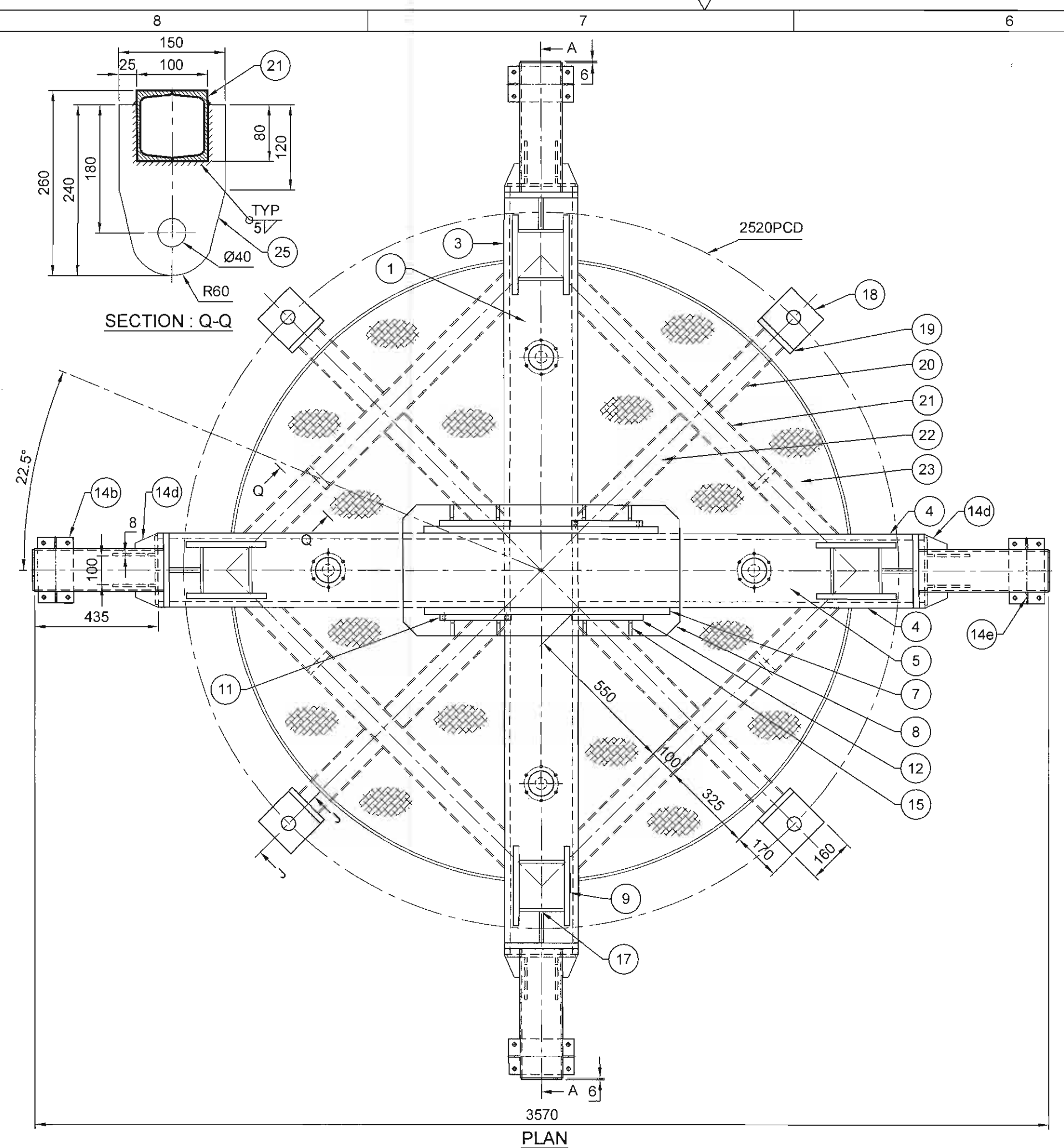
TITLE: **GENERAL ASSEMBLY OF GRAB TACKLE
 FOR SS1 SEGMENTS FOR SSM FACILITY OF SLC**

DESIGNED BY: *[Signature]*
 DES. CHKD BY: *[Signature]*
 DRAWN BY: *[Signature]*
 DRG. CHKD BY: *[Signature]*
 APPROVED BY: *[Signature]*

SCALE: 1 : 20

DRG. NO. 10-04-SLC-08-001A1

SHEET 1 OF 7



- NOTES**
1. ALL DIMENSIONS SHOWN ARE FINAL MACHINED DIMENSIONS.
 2. ALL THE WELDS ARE OF 6 mm SIZE FILLET UNLESS OTHERWISE SPECIFIED.
 3. APPROVED WELDING SEQUENCE TO BE FOLLOWED.
 4. ALL WELDS ARE TO BE DP TESTED FOR ROOT AND FINAL PASSES TO ENSURE WELD QUALITY.
 5. FINAL MACHINING IS TO BE CARRIED OUT AFTER WELDING AND STRESS RELIEVING.
 6. ALL MACHINED SURFACES SHALL BE PAINTED WITH ANTICORROSIVE PAINT AS SPECIFIED IN TENDER.
 7. HANDRAILS ARE TO BE PROVIDED ALL AROUND THE CHEQUARD PLATE OF THE PLATFORM. HANDRAIL SIZE 25NB PIPE, HEIGHT 1000mm WITH SUITABLE TOE GUARD.
 8. PAINT INSIDE THE BOX BEFORE CLOSING.
 9. PARTS SHALL BE OF SINGLE PIECE ONLY. JOINTS ARE NOT ALLOWED.
 10. CHECK THE STATUS OF THE DRAWING BEFORE FABRICATION / MACHINING.

TOTAL WEIGHT: 2819 kg(Approx.)

S.NO	DESCRIPTION	MATERIAL	QTY	W.T	REMARKS
26	STIFFENER 150 x 110 x 8 Thk	IS : 2062 Gr : B	4	4	
25	LID HANDLING LUG 240 x 150 x 16 Thk	IS : 2062 Gr : B	4	18	
24	STIFFENER 150 x 150 x 8 Thk	IS : 2062 Gr : B	8	11	
23	CHEQUARD PLATE 962 x 962 x 6 Thk	IS : 2062 Gr : B	4	174	
22	ISMC 100 - 550 Lg	IS : 808	4	20	
21	ISMC 100 BOX - 1300 Lg	IS : 808	4	96	
20	ISMC 100 BOX - 325 Lg	IS : 808	4	24	
19	PLATE 160 x 120 x 20 Thk	IS : 2062 Gr : B	4	12	
18	PLATE 160 x 150 x 20 Thk	IS : 2062 Gr : B	4	15	
17	STIFFENER 80 x 30 x 20 Thk	IS : 2062 Gr : B	8	30	
16	STIFFENER 150 x 30 x 20 Thk	IS : 2062 Gr : B	16	11	
15	STIFFENER 320 x 75 x 16 Thk	IS : 2062 Gr : B	8	24	
14e	STIFFENER 100 x 40 x 6 Thk	IS : 2062 Gr : B	8	2	
14d	STIFFENER 100 x 55 x 8 Thk	IS : 2062 Gr : B	8	3	
14c	COVER PLATE 142 x 142 x 6 Thk	IS : 2062 Gr : B	4	4	
14b	PLATE 230 x 125 x 16 Thk	IS : 2062 Gr : B	4	14	
14a	PLATE 260 x 160 x 20 Thk	IS : 2062 Gr : B	4	26	
14	ISMC 150 BOX - 455 Lg	IS : 808	4	60	
13	BUSH OD 160 x ID 80 x 40 Thk	IS : 2062 Gr : B	8	38	
12	BUSH OD 250 x ID 120 x 45 Thk	IS : 2062 Gr : B	2	27	
11	BUSH OD 250 x ID 120 x 45 Thk	IS : 2062 Gr : B	2	27	
10	COVER PLATE 380 x 240 x 10 Thk	IS : 2062 Gr : B	4	29	
9	PLATE 735 x 280 x 20 Thk	IS : 2062 Gr : B	8	258	
8	PLATE 975 x 460 x 20 Thk	IS : 2062 Gr : B	2	141	
7	PLATE 1140 x 825 x 25 Thk	IS : 2062 Gr : B	2	369	
6	PLATE 1220 x 260 x 40 Thk	IS : 2062 Gr : B	2	199	
5	PLATE 1220 x 260 x 40 Thk	IS : 2062 Gr : B	2	199	
4	PLATE 2700 x 320 x 20 Thk	IS : 2062 Gr : B	2	271	
3	PLATE 2700 x 320 x 20 Thk	IS : 2062 Gr : B	2	271	
2	PLATE 2700 x 260 x 40 Thk	IS : 2062 Gr : B	1	220	
1	PLATE 2700 x 260 x 40 Thk	IS : 2062 Gr : B	1	220	

DO NOT SCALE THE DRAWING
 ASK IF IN DOUBT
 UNLESS OTHERWISE SHOWN
 ALL DIMENSIONS ARE IN MILLIMETERS
 REMOVE SHARP EDGES & BURRS
 CHAMFER 1MM X 45°
 MACHINING FINISH IN MICRONS -
 8 - 25
 0.025 - 1.6

STATUS	SIGN.	DATE
FOR DISCUSSION		
FOR TENDER		
FOR FABRICATION		20/11/19

DIAMETERS & LENGTHS UPTO & INCL.		LENGTH IN M.M. OF SHORTER SIDE OF ANGLE UPTO & INCL.	
6 - 30	± 0.1	1 - 6	± 1°-00'
30 - 120	± 0.3	6 - 30	± 0°-30'
120 - 315	± 0.5	30 - 120	± 0°-20'
315 - 1000	± 0.8	1000 - 2000	± 1.2
1000 - 2000	± 1.2	2000 - 4000	± 2.0
2000 - 4000	± 2.0	4000 & ABOVE	± 3.0

DEVIATION FOR NON TOLERANCED DIMENSIONS (IS - 2102)

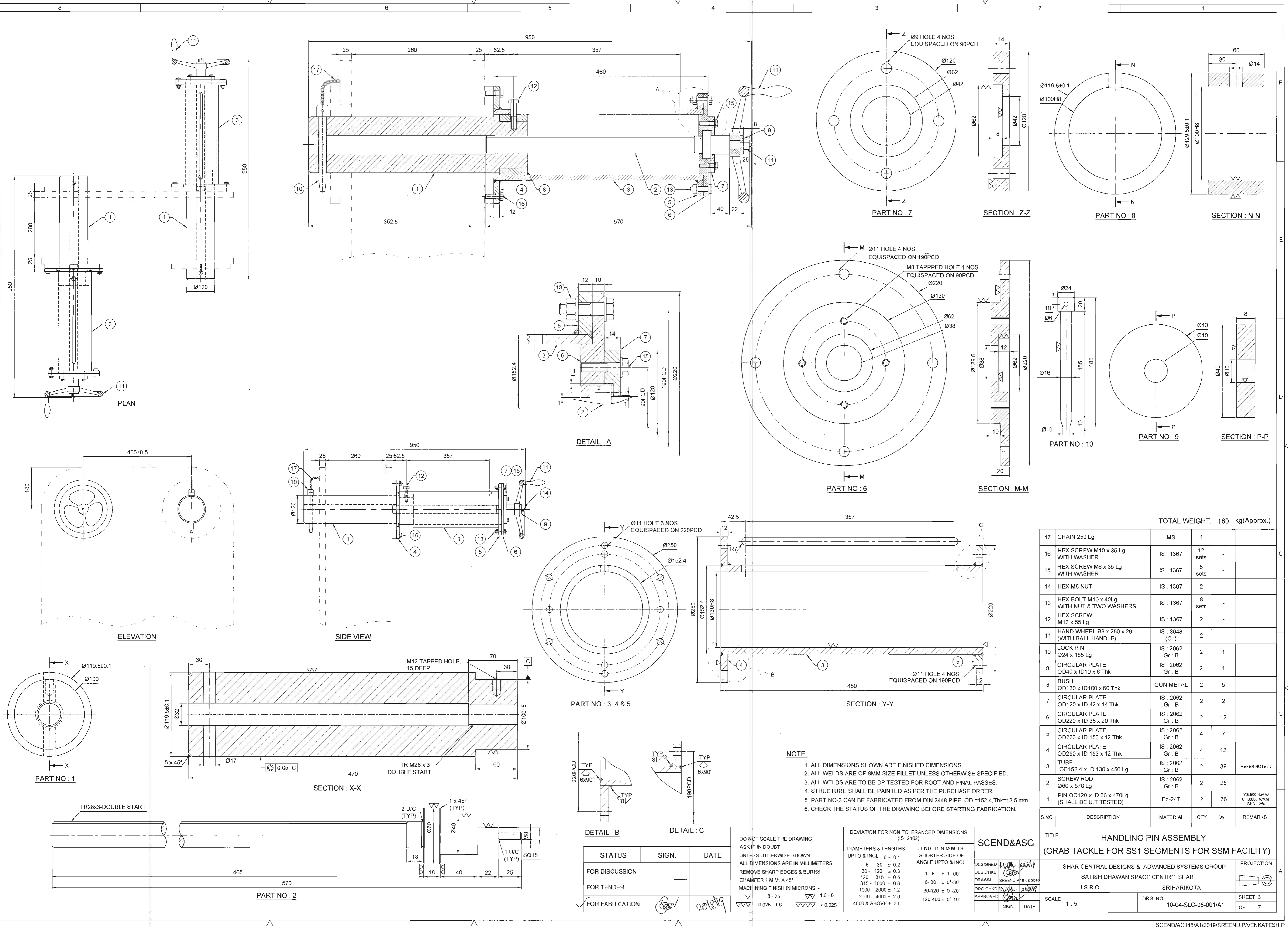
SCEND&ASG

DESIGNED: [Signature]
 DES. CHKD: [Signature]
 DRAWN: [Signature]
 DRG. CHKD: [Signature]
 APPROVED: [Signature]

TITLE: **TACKLE STRUCTURE**
 (GRAB TACKLE FOR SS1 SEGMENTS FOR SSM FACILITY)

SHAR CENTRAL DESIGNS & ADVANCED SYSTEMS GROUP
 SATISH DHAWAN SPACE CENTRE SHAR
 I.S.R.O. SRIHARIKOTA

SCALE: 1 : 10
 DRG. NO.: 10-04-SL-C-08-001/A1
 SHEET 2 OF 7



TOTAL WEIGHT: 180 kg(Approx.)

S.NO	DESCRIPTION	MATERIAL	QTY	W.T	REMARKS
17	CHAIN 250 Lg	MS	1	-	
16	HEX SCREW M10 x 35 Lg WITH WASHER	IS : 1367	12 sets	-	
15	HEX SCREW M8 x 35 Lg WITH WASHER	IS : 1367	8 sets	-	
14	HEX M8 NUT	IS : 1367	2	-	
13	HEX BOLT M10 x 40Lg WITH NUT & TWO WASHERS	IS : 1367	8 sets	-	
12	HEX SCREW M12 x 55 Lg	IS : 1367	2	-	
11	HAND WHEEL B8 x 250 x 26 (WITH BALL HANDLE)	IS : 3048 (C.1)	2	-	
10	LOCK PIN Ø24 x 185 Lg	IS : 2062 Gr : B	2	1	
9	CIRCULAR PLATE OD40 x ID10 x 8 Thk	IS : 2062 Gr : B	2	1	
8	BUSH OD130 x ID100 x 60 Thk	GUN METAL	2	5	
7	CIRCULAR PLATE OD120 x ID 42 x 14 Thk	IS : 2062 Gr : B	2	2	
6	CIRCULAR PLATE OD220 x ID 38 x 20 Thk	IS : 2062 Gr : B	2	12	
5	CIRCULAR PLATE OD220 x ID 153 x 12 Thk	IS : 2062 Gr : B	4	7	
4	CIRCULAR PLATE OD250 x ID 153 x 12 Thk	IS : 2062 Gr : B	4	12	
3	TUBE OD152.4 x ID 130 x 450 Lg	IS : 2062 Gr : B	2	39	REFER NOTE : 5
2	SCREW ROD Ø60 x 570 Lg	IS : 2062 Gr : B	2	25	
1	PIN OD120 x ID 36 x 470Lg (SHALL BE U.T TESTED)	En-24T	2	76	YS-600 NMMF UTS-800 NMMF BHN : 252

- NOTE:**
1. ALL DIMENSIONS SHOWN ARE FINISHED DIMENSIONS.
 2. ALL WELDS ARE OF 8MM SIZE FILLET UNLESS OTHERWISE SPECIFIED.
 3. ALL WELDS ARE TO BE DP TESTED FOR ROOT AND FINAL PASSES.
 4. STRUCTURE SHALL BE PAINTED AS PER THE PURCHASE ORDER.
 5. PART NO-3 CAN BE FABRICATED FROM DIN 2448 PIPE, OD =152.4,Thk=12.5 mm.
 6. CHECK THE STATUS OF THE DRAWING BEFORE STARTING FABRICATION.

STATUS	SIGN.	DATE
FOR DISCUSSION		
FOR TENDER		
FOR FABRICATION	<i>[Signature]</i>	20/01/19

DEVIATION FOR NON TOLERANCED DIMENSIONS (IS -2102)	
DIAMETERS & LENGTHS UPTO & INCL. 6 ± 0.1	LENGTH IN M.M. OF SHORTER SIDE OF ANGLE UPTO & INCL. 1- 6 ± 1°-00'
6 - 30 ± 0.2	6- 30 ± 0°-30'
30 - 120 ± 0.3	30-120 ± 0°-20'
120 - 315 ± 0.5	30-120 ± 0°-20'
315 - 1000 ± 0.8	120-400 ± 0°-10'
1000 - 2000 ± 1.2	
2000 - 4000 ± 2.0	
4000 & ABOVE ± 3.0	

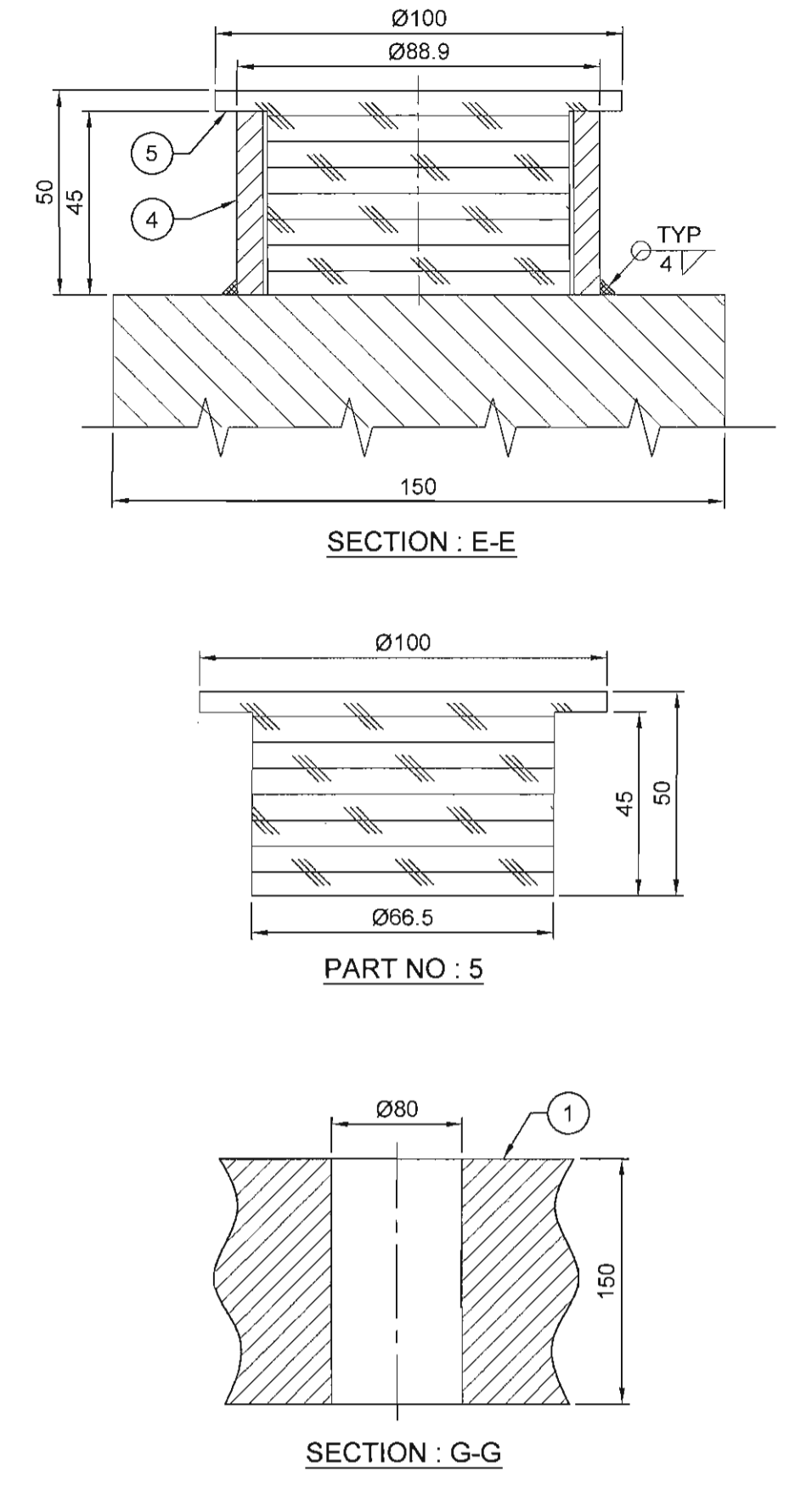
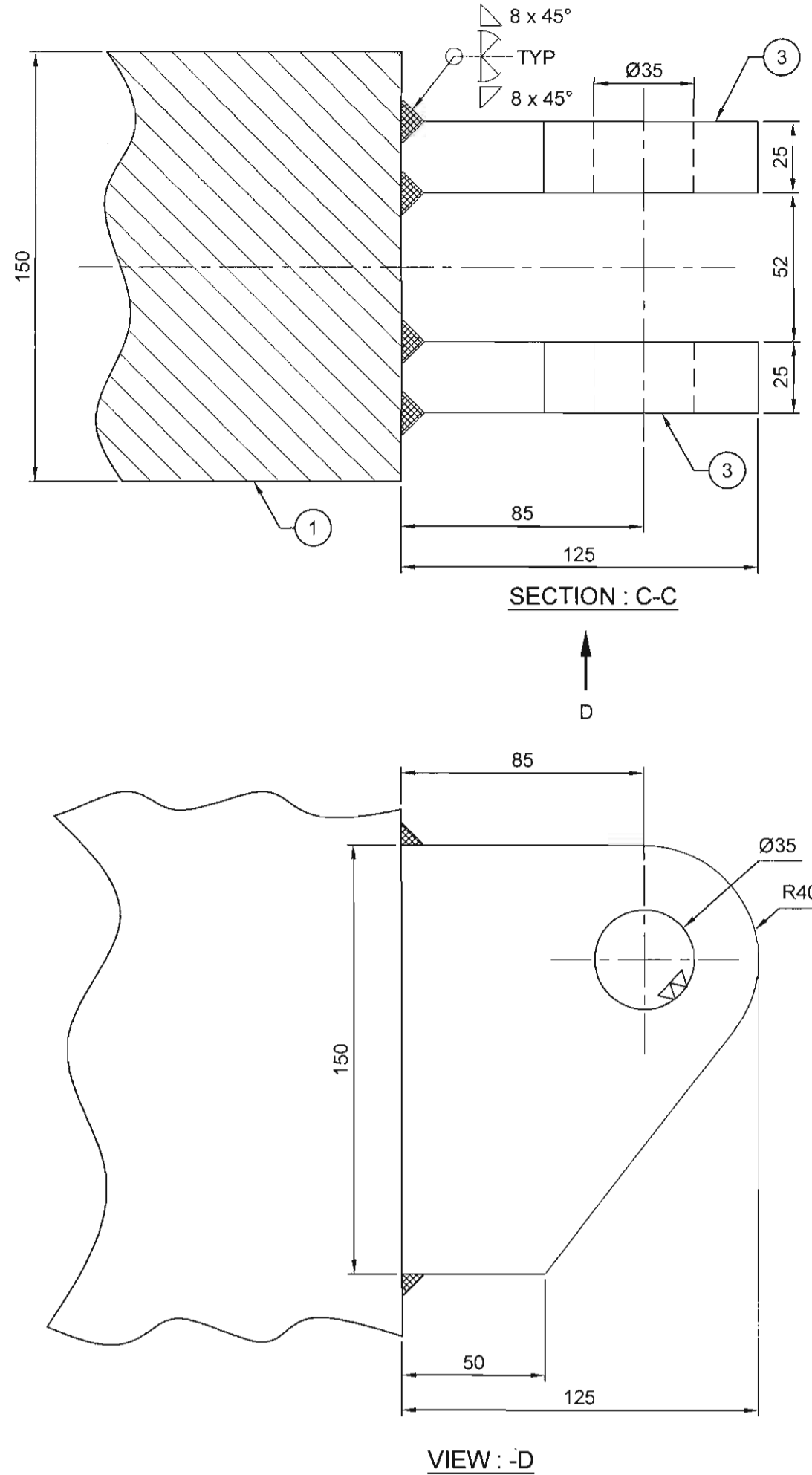
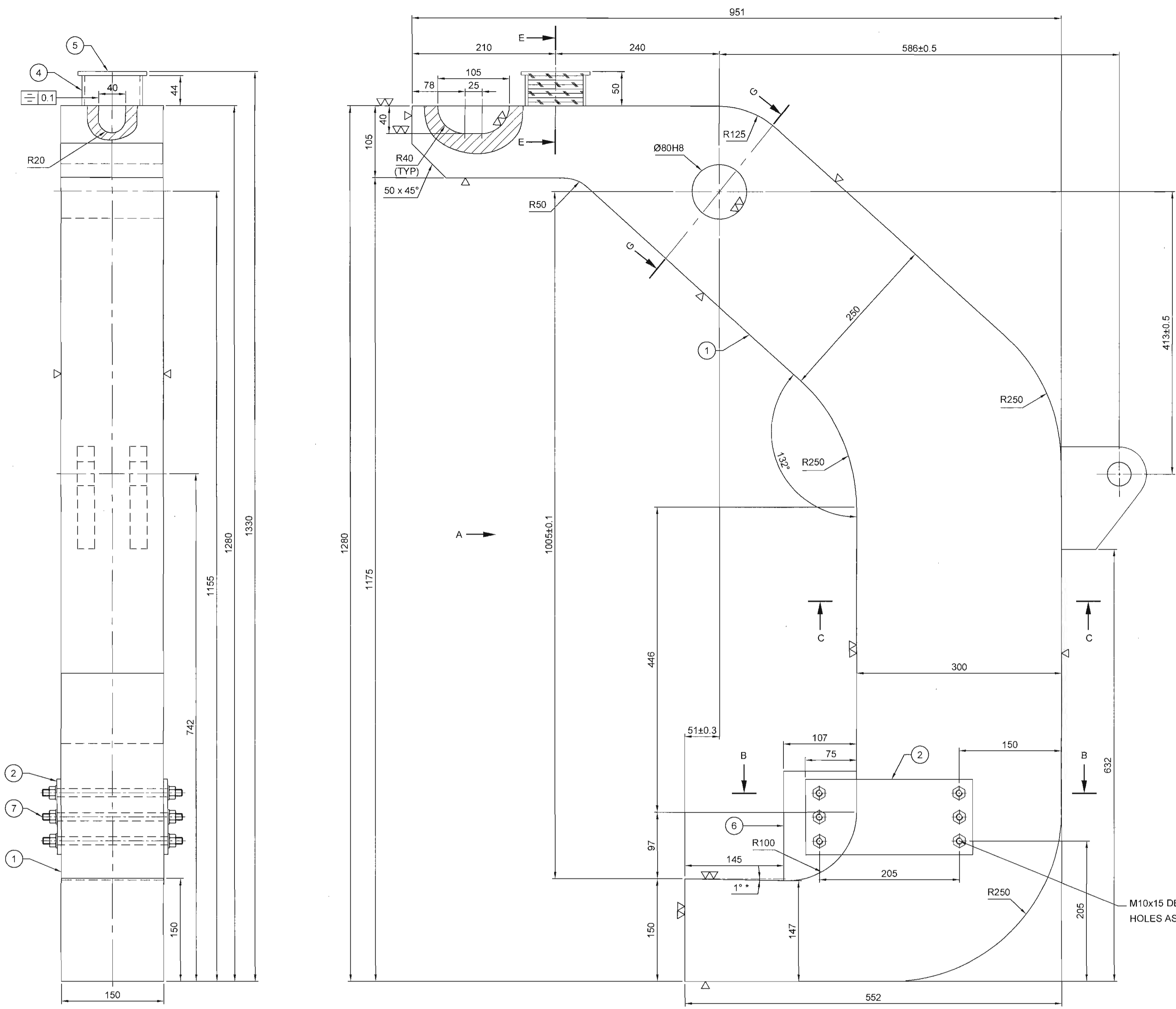
SCEND&ASG

DESIGNED: *[Signature]* 20/01/19
 DES. CHKD: *[Signature]*
 DRAWN: SREENU.P/16-08-2019
 DRG. CHKD: *[Signature]* 20/01/19
 APPROVED: *[Signature]*

TITLE
 HANDLING PIN ASSEMBLY
 (GRAB TACKLE FOR SS1 SEGMENTS FOR SSM FACILITY)

SHAR CENTRAL DESIGNS & ADVANCED SYSTEMS GROUP
 SATISH DHAWAN SPACE CENTRE SHAR
 I.S.R.O SRIHARIKOTA

SCALE: 1:5
 DRG. NO: 10-04-SLC-08-001/A1
 SHEET 3 OF 7



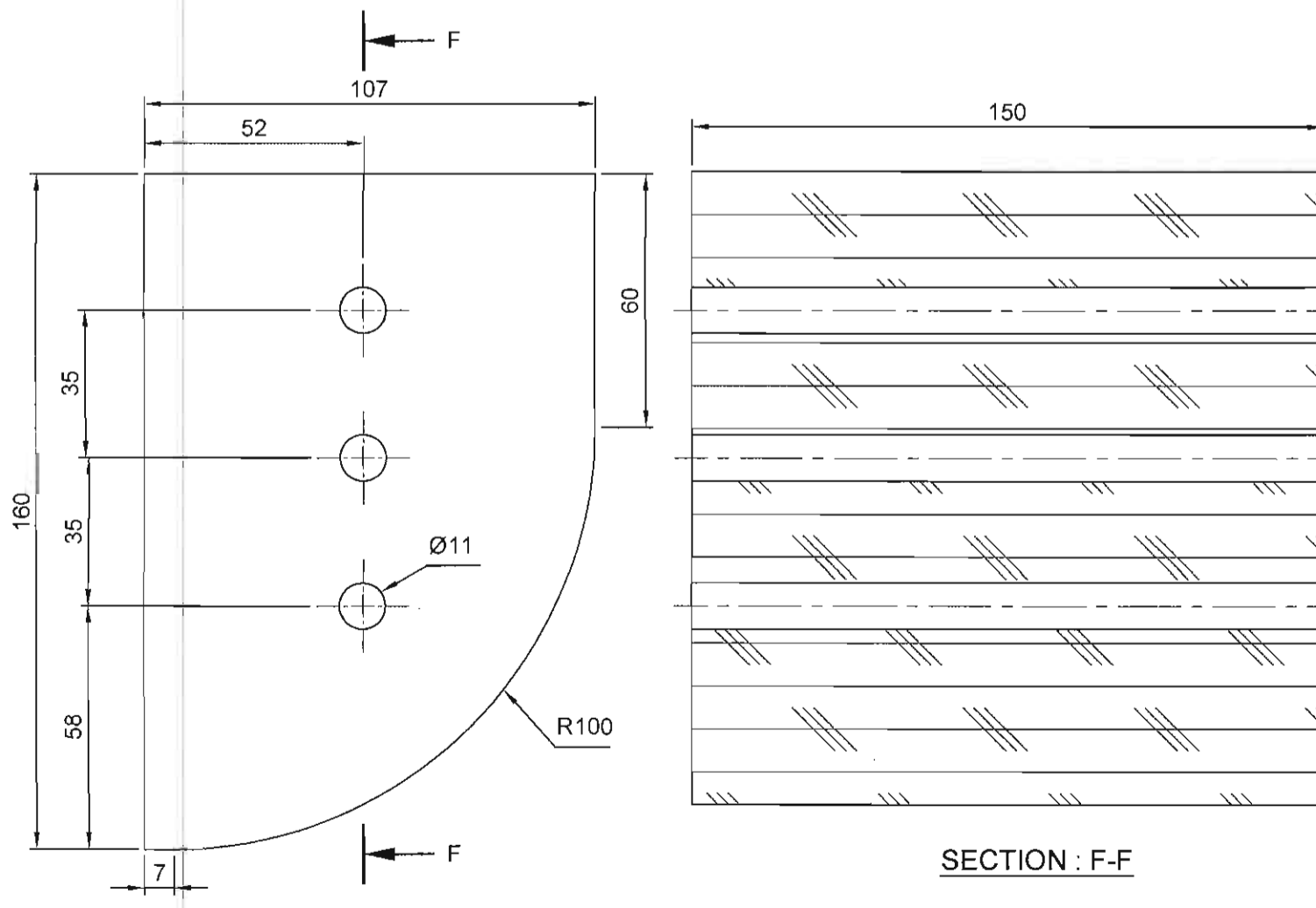
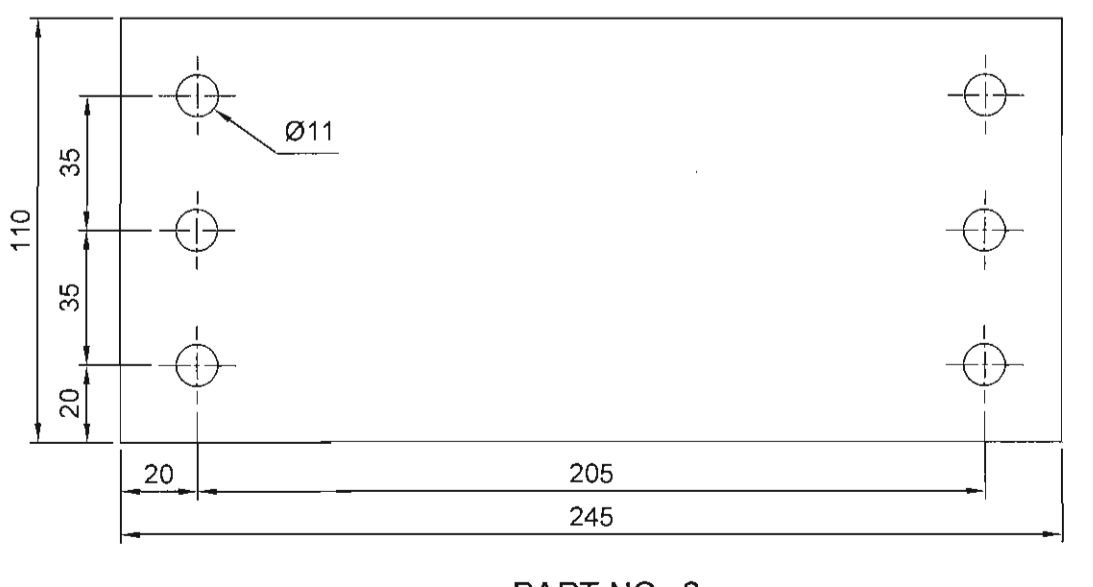
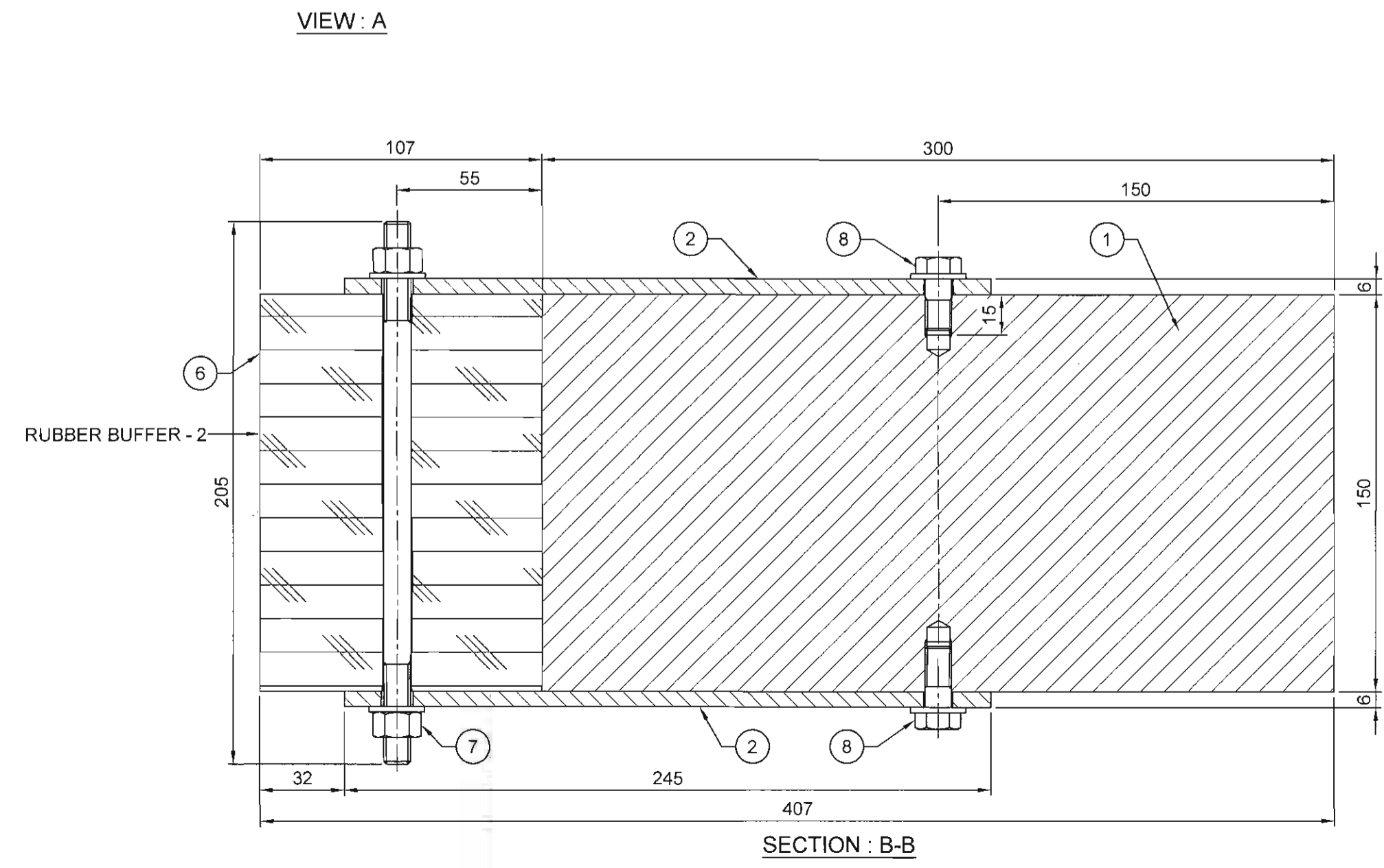
C-ARM MATERIAL: WITH OUT LAMINATION AND ULTRASONICALLY TESTED AS PER STANDARDS.

MATERIAL OPTION-1	S355J2+N Tensile Strength : 450-600 MPa Yield Strength : 275-285 MPa Percentage of Elongation : 17
MATERIAL OPTION-2	EN10025 S690QL Tensile Strength : 710 MPa(Min.) Yield Strength : 630 MPa(Min.) Percentage of Elongation : 14

- NOTE:**
- ALL FILLET WELDS ARE TO BE DP TESTED FOR ROOT AND FINAL PASSES.
 - ALL SHARP CORNERS/EDGES SHALL BE REMOVED WITH 2 mm FILLET.
 - * INDICATES THAT 1° TAPER SHALL BE PROVIDED IN BETWEEN OF 150 TO 147.

TOTAL WEIGHT: 542 kg(Approx.)

S.NO	DESCRIPTION	MATERIAL	QTY	W.T	REMARKS
8	M10 x 20 Lg HEX BOLT WITH WASHER	IS : 2062 Gr : B	3 sets	-	
7	M10 STUD - 205 Lg. WITH NUT & WASHER	IS : 2062 Gr : B	3 sets	-	
6	RUBBER BUFFER-2	NEOPRENE	1	-	SHORE 70A
5	RUBBER BUFFER-1	NEOPRENE	1	-	SHORE 70A
4	PIPE Ø88.9 WALL Thk 11.1 x 45 Lg	ASTM	1	-	
3	LIFTING LUG 150 x 125 x 25 Thk	IS : 2062 Gr : B	2	7	
2	PLATE 245 x 110 x 6 Thk	IS : 2062 Gr : B	2	3	
1	C-ARM		1	532	Ref SPECIFICATIONS



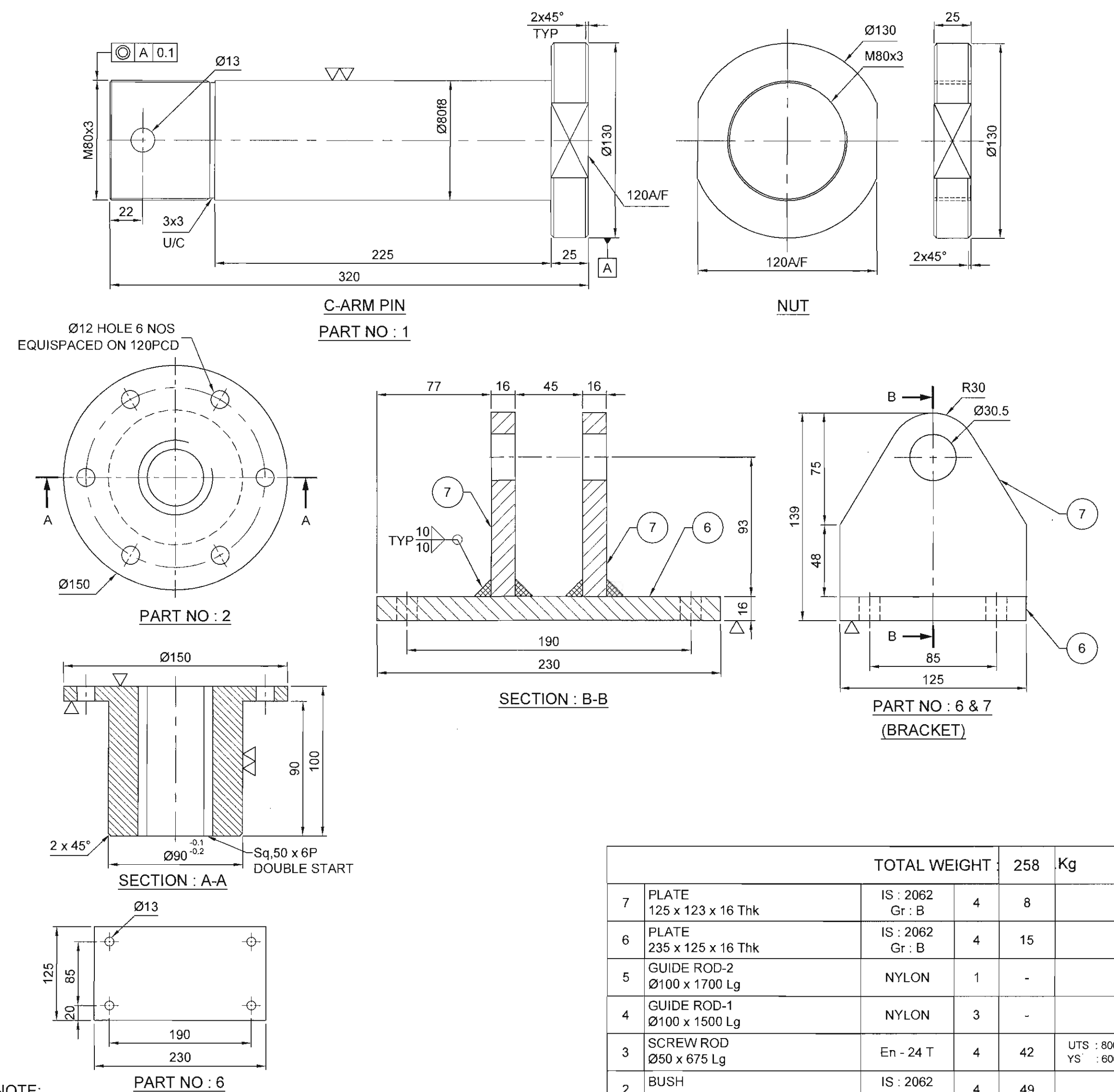
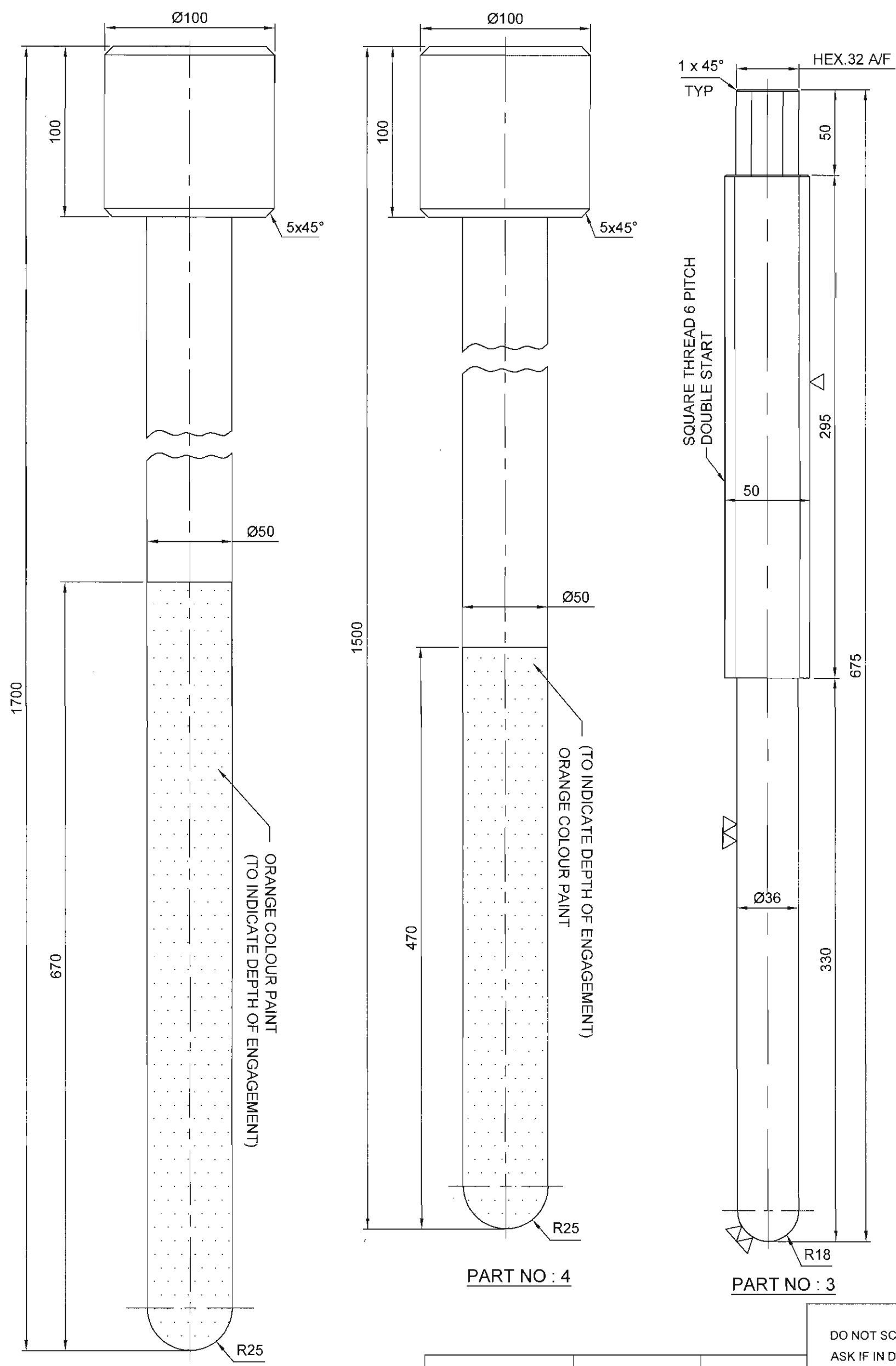
STATUS	SIGN.	DATE
FOR DISCUSSION		
FOR TENDER		
FOR FABRICATION	<i>[Signature]</i>	20/8/19

DO NOT SCALE THE DRAWING
 ASK IF IN DOUBT
 UNLESS OTHERWISE SHOWN
 ALL DIMENSIONS ARE IN MILLIMETERS
 REMOVE SHARP EDGES & BURRS
 CHAMFER 1 MM. X 45°
 MACHINING FINISH IN MICRONS -
 8-25
 0.025-1.6

DIAMETERS & LENGTHS UPTO & INCL.	LENGTH IN M.M. OF SHORTER SIDE OF ANGLE UPTO & INCL.
6 - 30 ± 0.2	1-6 ± 1°-00'
30 - 120 ± 0.3	6-30 ± 0°-30'
120 - 315 ± 0.5	30-120 ± 0°-20'
315 - 1000 ± 0.8	120-400 ± 0°-10'
1000 - 2000 ± 1.2	
2000 - 4000 ± 2.0	
4000 & ABOVE ± 3.0	

SCEND&ASG
 DESIGNED: *[Signature]* 20/8/19
 DRAWN: *[Signature]* 18-08-2019
 DRG.CHECK: *[Signature]* 21/8/19
 APPROVED: *[Signature]*
 SIGN. DATE

TITLE	PROJECTION
C-ARM (GRAB TACKLE FOR SS1 SEGMENTS FOR SSM FACILITY)	<i>[Projection Symbol]</i>
SHAR CENTRAL DESIGNS & ADVANCED SYSTEMS GROUP SATISH DHAWAN SPACE CENTRE SHAR I.S.R.O SRIHARIKOTA	
SCALE: 1:10	SHEET 4 OF 7



- NOTE:**
1. ALL DIMENSIONS SHOWN ARE FINISHED DIMENSIONS.
 2. ALL WELD JOINTS SHALL BE DP TESTED TO ENSURE WELD QUALITY.
 3. CHECK THE STATUS OF THE DRAWING BEFORE STARTING FABRICATION/MACHINING.

		TOTAL WEIGHT :		258	Kg
7	PLATE 125 x 123 x 16 Thk	IS : 2062 Gr : B	4	8	
6	PLATE 235 x 125 x 16 Thk	IS : 2062 Gr : B	4	15	
5	GUIDE ROD-2 Ø100 x 1700 Lg	NYLON	1	-	
4	GUIDE ROD-1 Ø100 x 1500 Lg	NYLON	3	-	
3	SCREW ROD Ø50 x 675 Lg	En - 24 T	4	42	UTS : 800Mpa YS : 600Mpa
2	BUSH OD150 x ID 50 x 100 Thk	IS : 2062 Gr : B	4	49	
1	C-ARM PIN & NUT Ø130 x 320 Lg (UT TESTED)	En - 24 T	4	144	UTS : 800Mpa YS : 600Mpa
S.NO	DESCRIPTION	MATERIAL	QTY	W.T	REMARKS

STATUS	SIGN.	DATE
FOR DISCUSSION		
FOR TENDER		
FOR FABRICATION		20/8/19

DO NOT SCALE THE DRAWING
ASK IF IN DOUBT
UNLESS OTHERWISE SHOWN
ALL DIMENSIONS ARE IN MILLIMETERS
REMOVE SHARP EDGES & BURRS
CHAMFER 1 M.M. X 45°
MACHINING FINISH IN MICRONS :-
▽ 8 - 25 ▽ 1.6 - 8
▽▽ 0.025 - 1.6 ▽▽▽ < 0.025

DEVIATION FOR NON TOLERANCED DIMENSIONS (IS - 2102)	
DIAMETERS & LENGTHS UPTO & INCL. 6 ± 0.1	LENGTH IN M.M. OF SHORTER SIDE OF ANGLE UPTO & INCL.
6 - 30 ± 0.2	1- 6 ± 1°-00'
30 - 120 ± 0.3	6- 30 ± 0°-30'
120 - 315 ± 0.5	30-120 ± 0°-20'
315 - 1000 ± 0.8	120-400 ± 0°-10'
1000 - 2000 ± 1.2	
2000 - 4000 ± 2.0	
4000 & ABOVE ± 3.0	

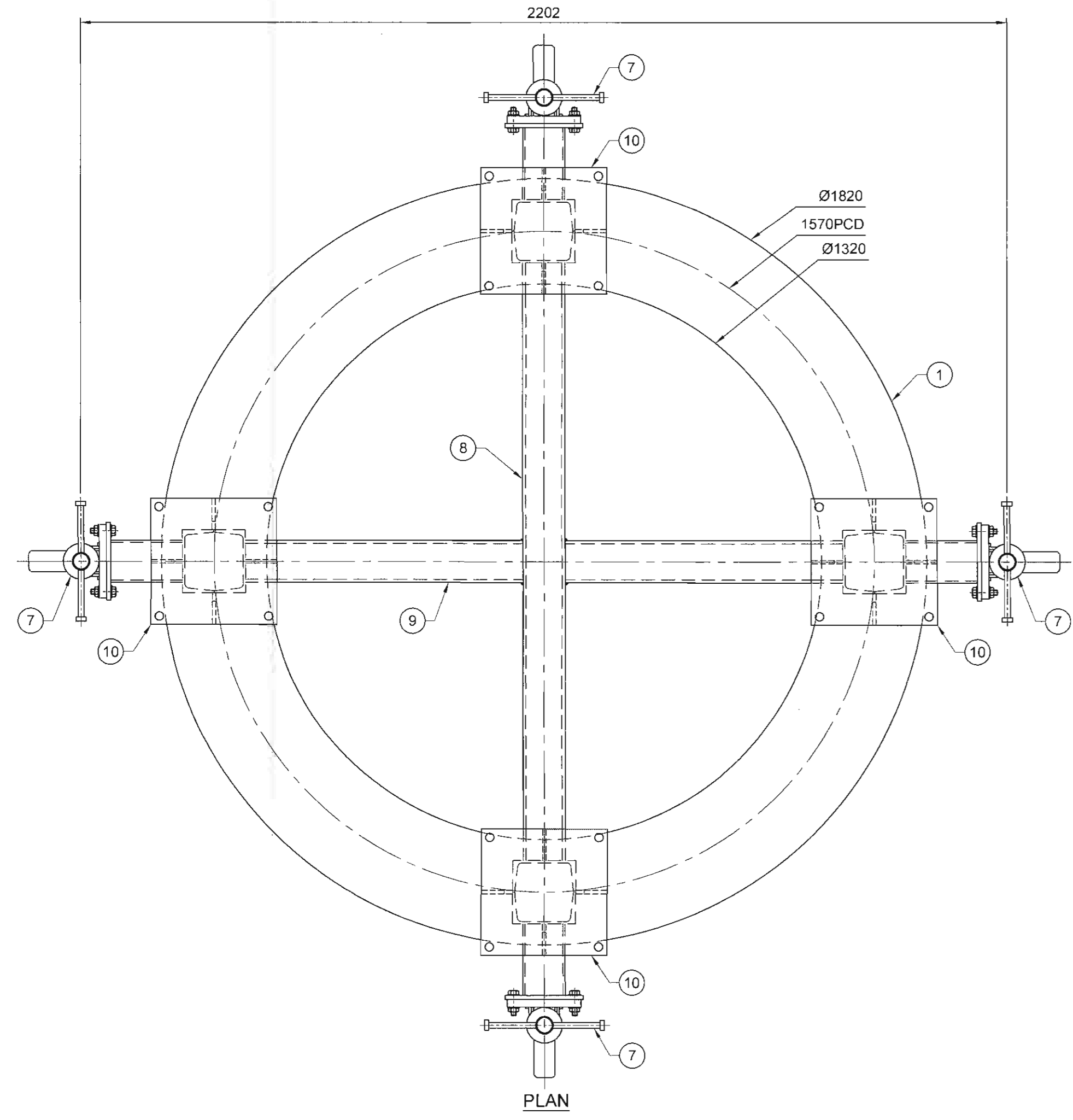
SCEND&ASG

DESIGNED: 20/8/19
 DES.CHKD:
 DRAWN: SREENU.P 16-08-2019
 DRG.CHKD: 20/8/19
 APPROVED:

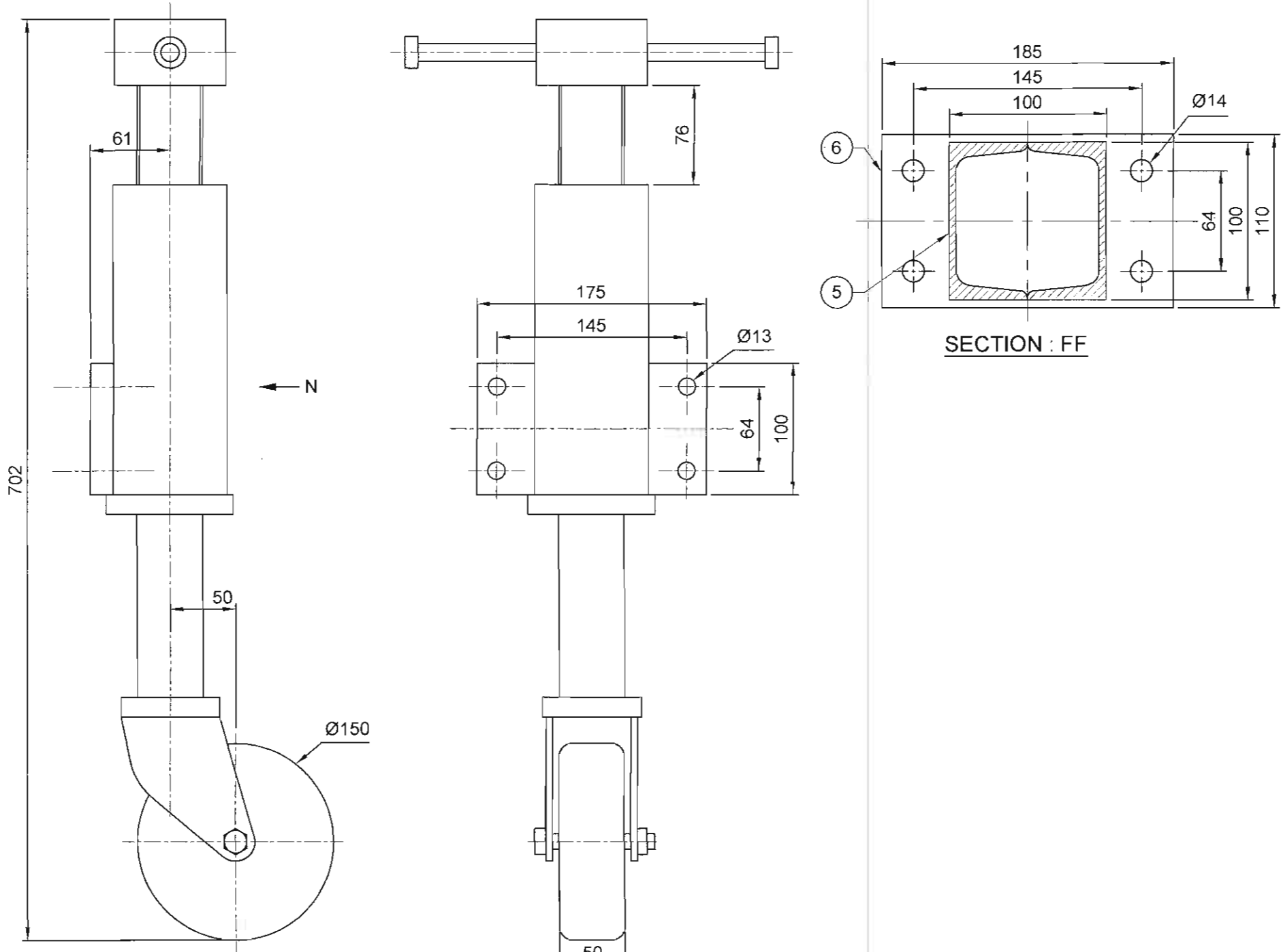
TITLE: **PART DETAILS (GRAB TACKLE FOR SS1 SEGMENTS FOR SSM FACILITY)**

SHAR CENTRAL DESIGNS & ADVANCED SYSTEMS GROUP
 SATISH DHAWAN SPACE CENTRE SHAR
 I.S.R.O SRIHARIKOTA

SCALE: 1 : 5 DRG. NO. 10-04-SLC-08-001-A2 SHEET 5 OF 7

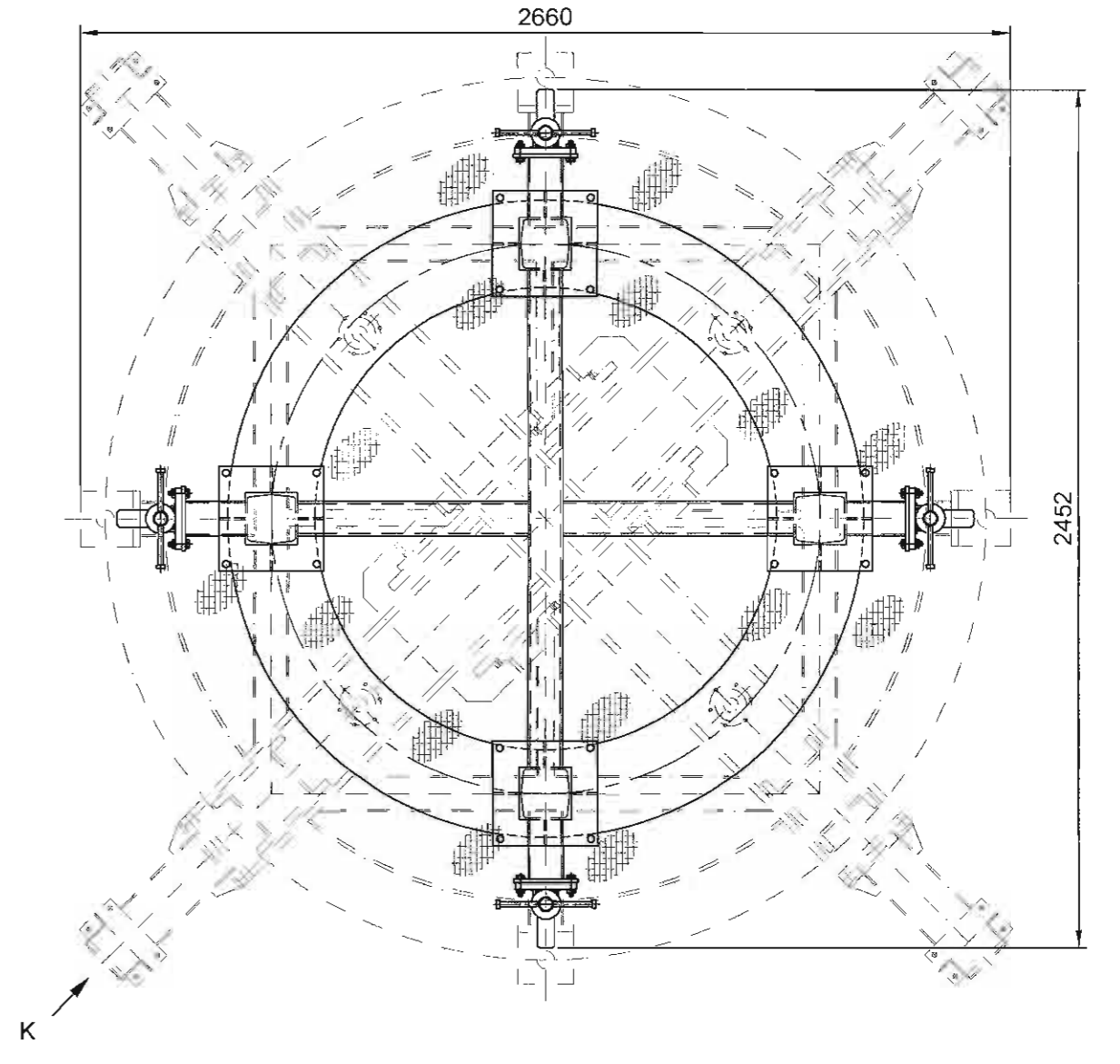


PLAN

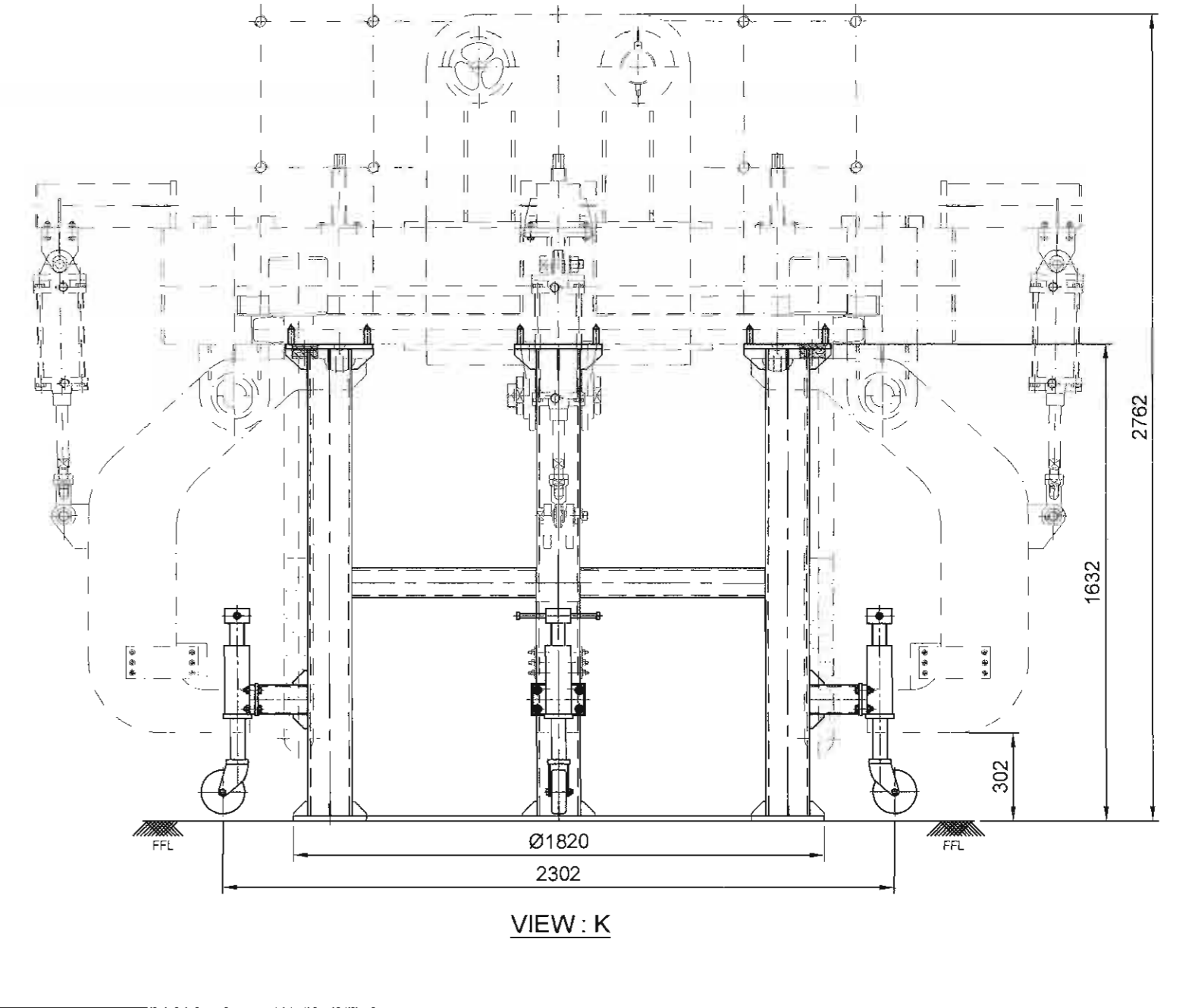


PART NO : 7

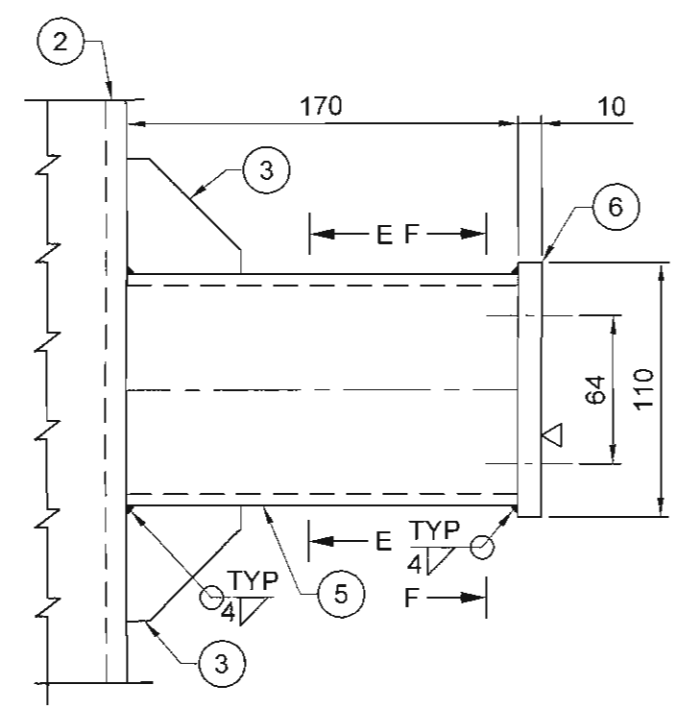
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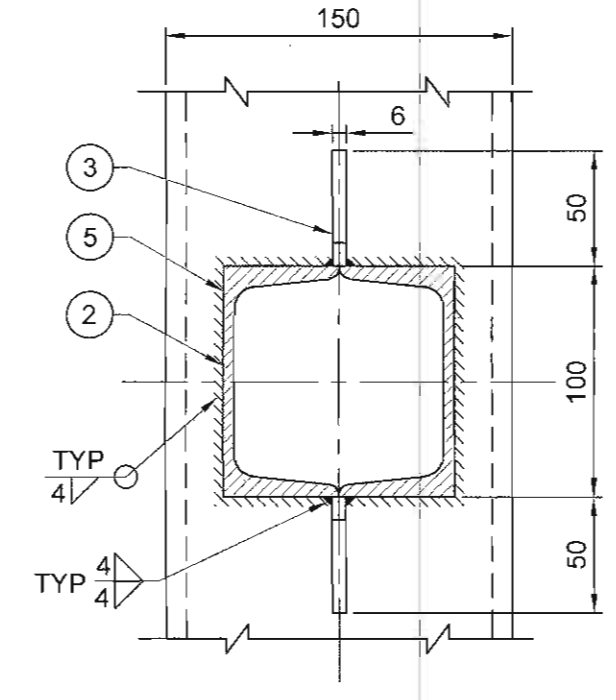
SECTION : FF



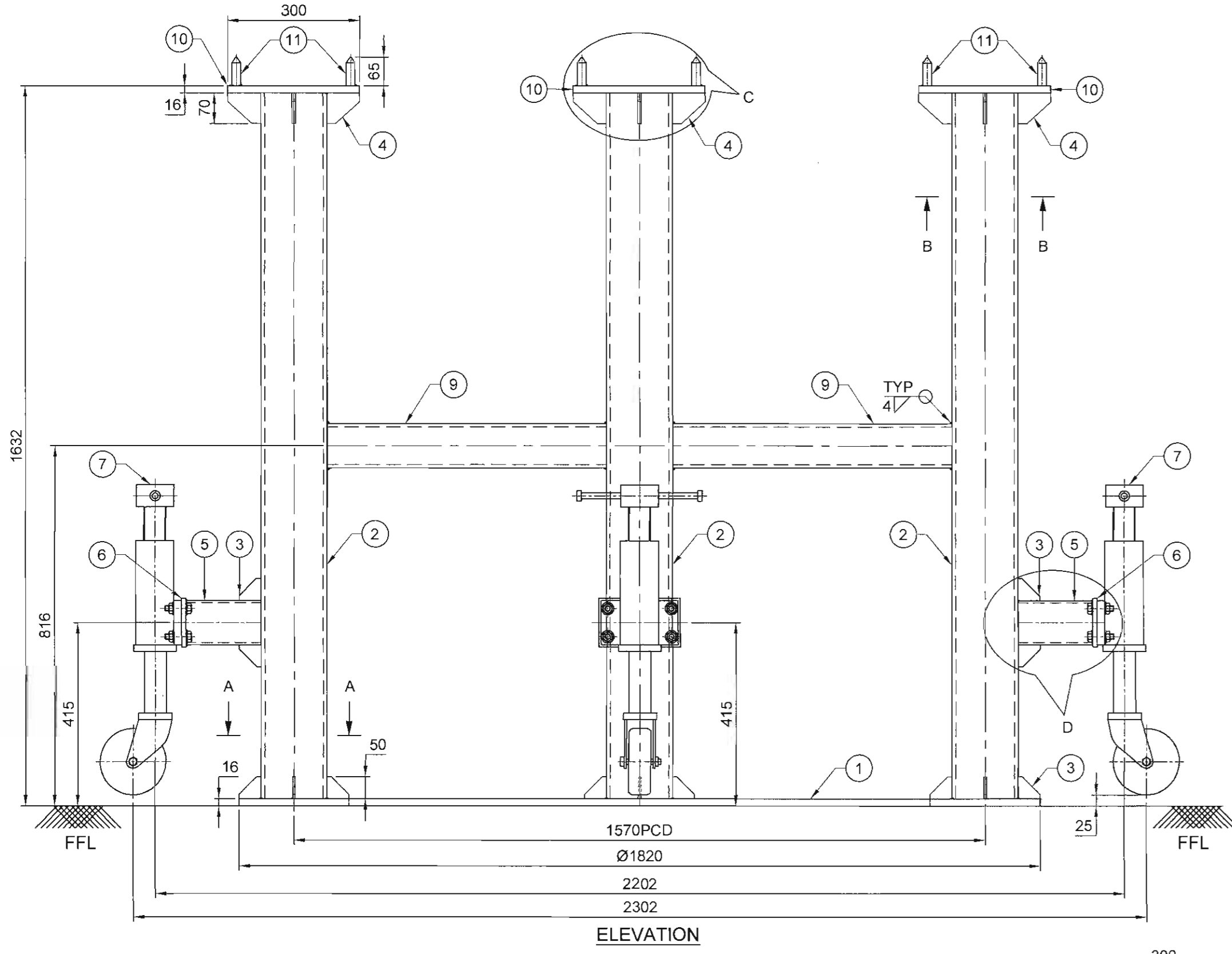
VIEW : K



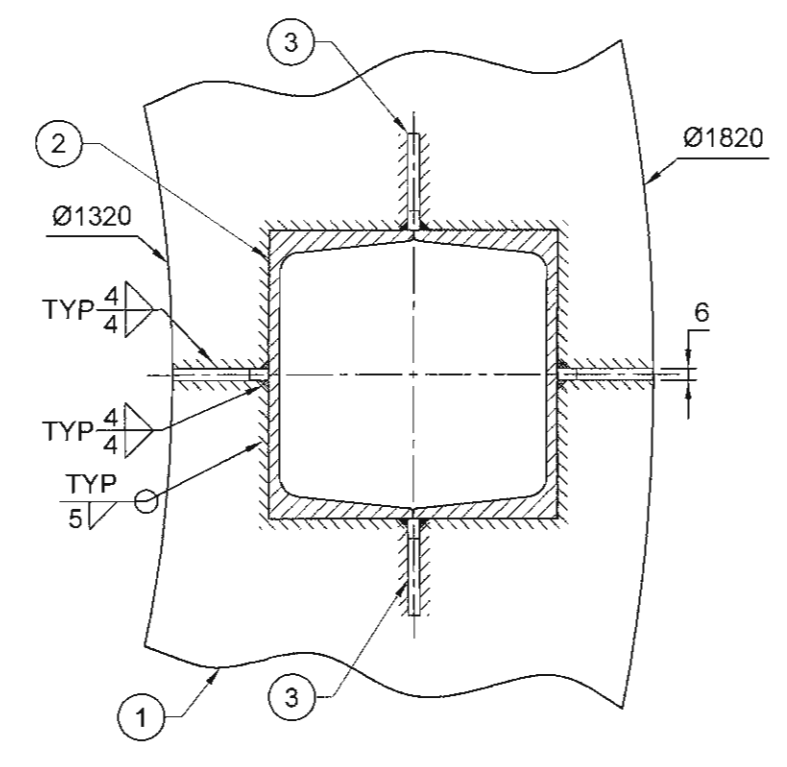
DETAIL : D (WITHOUT PART NO : 7)



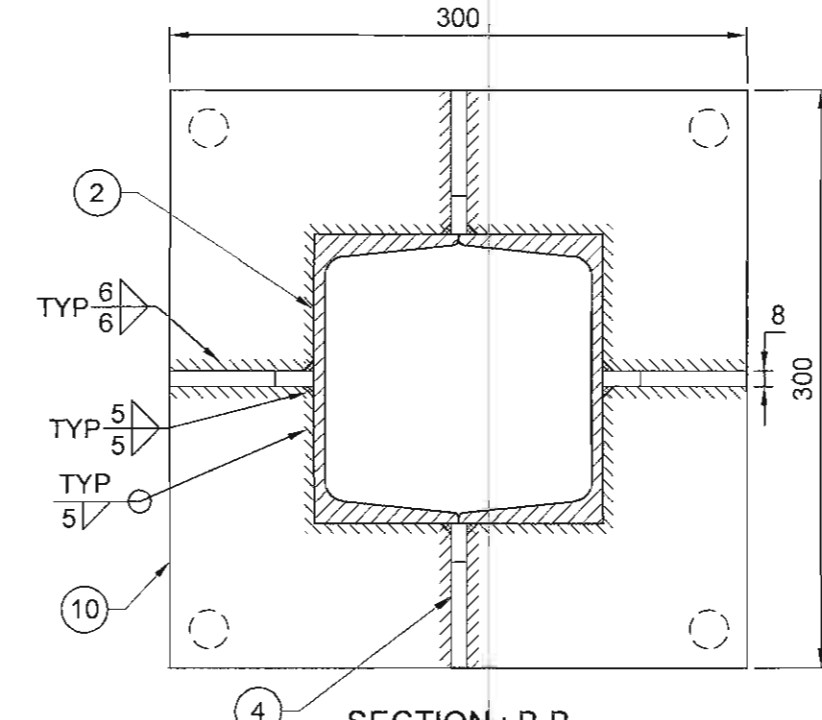
SECTION : EE



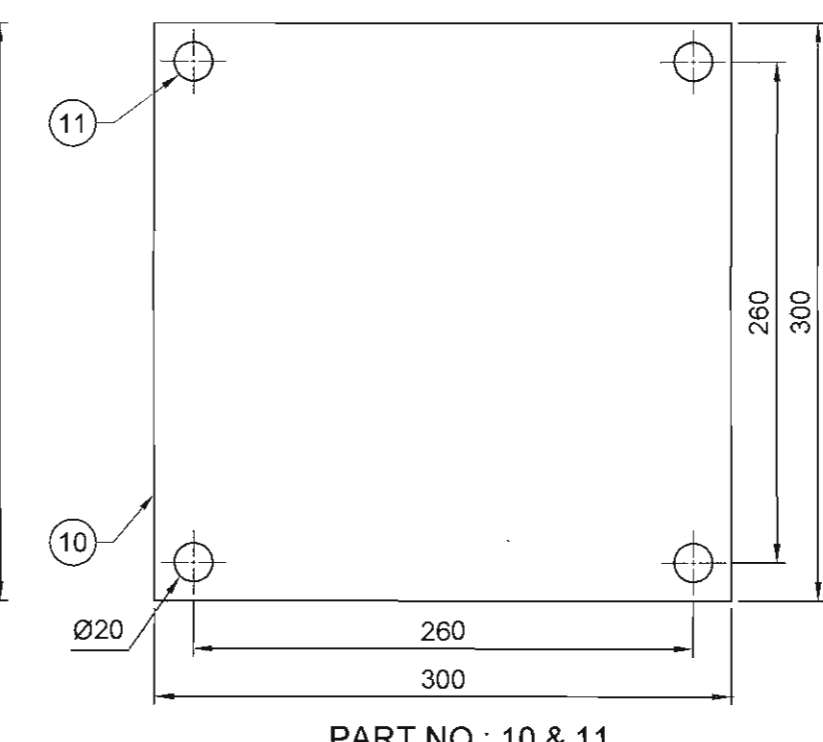
ELEVATION



SECTION : A-A



SECTION : B-B



PART NO : 10 & 11

SPECIFICATIONS OF JACK CASTOR WHEEL

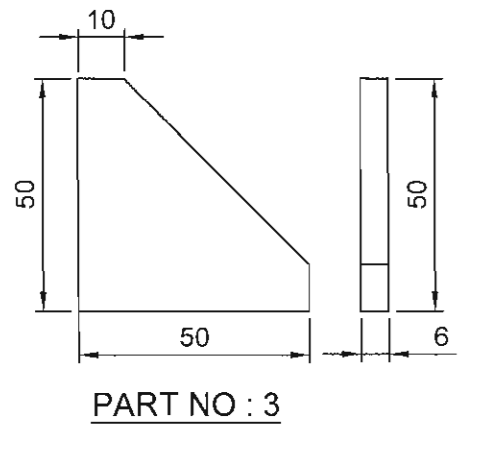
MAKE	: REXELLO
SPECIFICATION	: RJK/RPU62
TREAD WIDTH	: 50 mm
CAPACITY	: 725 kgs
WHEEL DIA	: 150 mm
OVERALL HEIGHT	: 702 mm

NOTE:

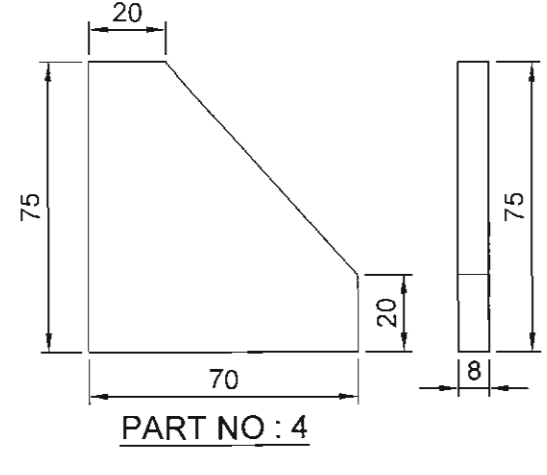
1. ALL DIMENSIONS ARE SHOWN FINISHED DIMENSIONS.
2. ALL WELD JOINTS SHALL BE DP TESTED TO ENSURE WELD QUALITY.
3. ALL THE FILLET WELDS ARE OF 4mm SIZE UNLESS OTHERWISE SPECIFIED.
4. CHECK THE STATUS OF THE DRAWING BEFORE STARTING FABRICATION/MACHINING.
5. JACK CASTOR IS PROVIDED FOR MOVING EMPTY STAND ONLY

TOTAL WEIGHT : 500 Kg(Approx.)

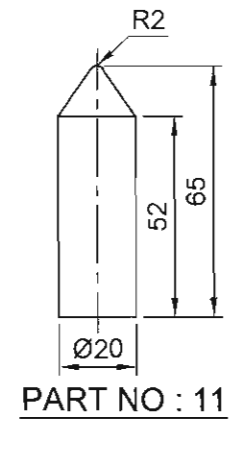
S.NO	DESCRIPTION	MATERIAL	QTY	W.T	REMARKS
11	PIN Ø20 x 65Lg	IS : 2062 E 250	16	3	
10	PLATE 300 x 300 x 16Thk	IS : 2062 E 250	4	45	
9	ISMC 100 BOX - 660 Lg	IS : 808	2	24	
8	ISMC 100 BOX - 1420 Lg	IS : 808	1	26	
7	JACK CASTER WHEEL	--	4	--	Refer SPECIFICATIONS
6	PLATE 185 x 110 x 10Thk	IS : 2062 E 250	4	6	
5	ISMC 150 BOX - 170 Lg	IS : 808	4	22	
4	STIFFENER 75 x 70 x 8Thk	IS : 2062 E 250	16	5	
3	STIFFENER 50 x 50 x 6Thk	IS : 2062 E 250	24	3	
2	ISMC 150 BOX - 1600 Lg	IS : 808	4	210	
1	BASE PLATE Ø1820 X 1320 X 16THK	IS : 2062 E 250	1	155	



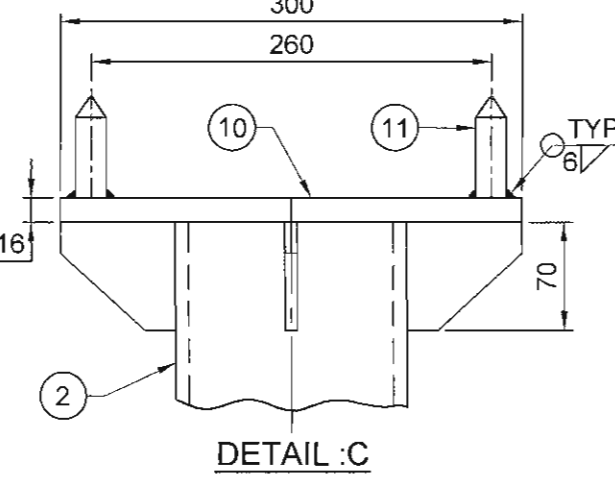
PART NO : 3



PART NO : 4



PART NO : 11



DETAIL : C

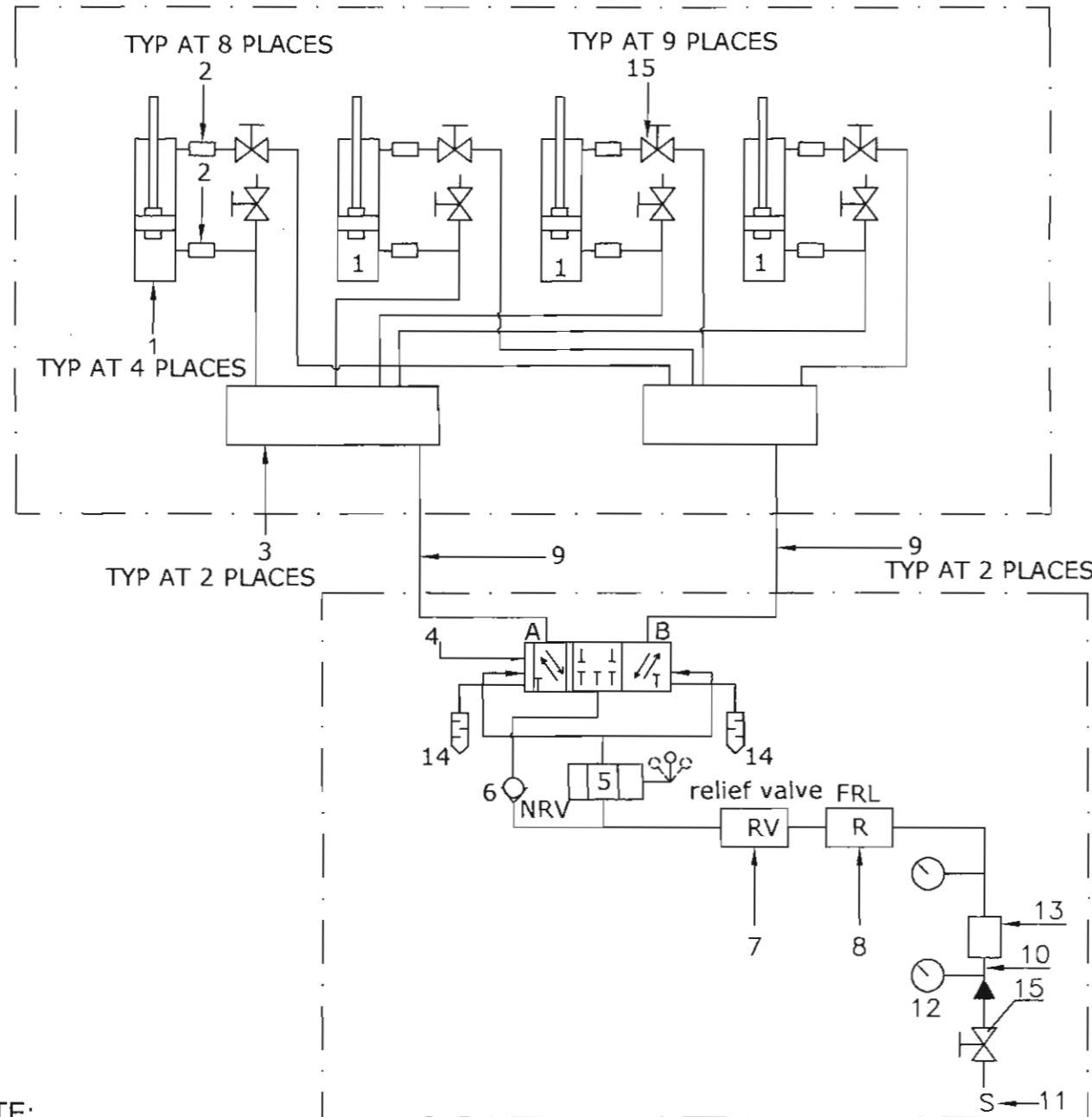
STATUS	SIGN.	DATE
FOR DISCUSSION		
FOR TENDER		
FOR FABRICATION		20/8/19

DO NOT SCALE THE DRAWING
 ASK IF IN DOUBT
 UNLESS OTHERWISE SHOWN
 ALL DIMENSIONS ARE IN MILLIMETERS
 REMOVE SHARP EDGES & BURRS
 CHAMFER 1 M.M. X 45°
 MACHINING FINISH IN MICRONS :-
 8-25
 0.025-1.6

DEVIATION FOR NON TOLERANCED DIMENSIONS (IS-2102)	
DIAMETERS & LENGTHS UPTO & INCL. 6 ± 0.1	LENGTH IN M.M. OF SHORTER SIDE OF ANGLE UPTO & INCL.
6 - 30 ± 0.2	1-6 ± 1°-00'
30 - 120 ± 0.3	6-30 ± 0°-30'
120 - 315 ± 0.5	30-120 ± 0°-20'
315 - 1000 ± 0.8	120-400 ± 0°-10'
1000 - 2000 ± 1.2	
2000 - 4000 ± 2.0	
4000 & ABOVE ± 3.0	

SCEND&ASG
 DESIGNED: P. Venkatesh
 DES. CHKD: [Signature]
 DRAWN: SREENU.P/16-08-2019
 DRG. CHKD: [Signature]
 APPROVED: [Signature]

TITLE		SCALE		DRG. NO.	
STORAGE STAND (GRAB TACKLE FOR SS1 SEGMENTS FOR SSM FACILITY)		1 : 10		10-04-SLC-08-001-A1	
SHAR CENTRAL DESIGNS & ADVANCED SYSTEMS GROUP SATISH DHAWAN SPACE CENTRE SHAR I.S.R.O SRIHARIKOTA		SHEET 6 OF 7		PROJECTION	



NOTE:

1. THIS DRAWING PRESENTS BASIC SCHEME FOR PNEUMATIC SYSTEM. EXACT CIRCUIT AND COMPONENTS SHALL BE DESIGNED BY SUPPLIER IN CONSULTATION WITH THE DEPARTMENT(USER).
2. HOSES FROM HEADER TO CYLINDER WILL BE PARTLY RIGID AND PARTLY FLEXIBLE.
3. 1/4" COPPER TUBING AND BRASS FITTINGS SHALL BE USED.
4. COMPLETE CIRCUIT SHALL BE TESTED FOR 1.25 TIMES TO RATED PRESSURE OF 10 BAR AND FLOW RATE OF 20 lpm.
5. TOTAL NO. OF PNEUMATIC CYLINDERS REQUIRED ARE FOUR + FOUR
6. SUITABLE CONTROL PENDENT TO BE PROVIDED FOR THE PNEUMATIC CIRCUIT CONTROL OF THE TACKLE AT ABOUT 25 METRE BELOW THE TACKLE
7. REFER SHEET 1 OF 7 ASSEMBLY DRAWING
- *8. MAKE CAN BE SCHRADER/MERCURY/DANCAL/SHAVO/PARKER/FESTO.

STATUS	
DISCUSSION / REVIEW	
TENDER PURPOSE	
FABRICATION	<i>[Signature]</i> 20/8/19

SCEND	TITLE PNEUMATIC CIRCUIT (SCHEMATIC) (SS1 SEGMENT VERTICAL HANDLING TACKLE-SSM FACILITY)		PROJECTION
	SATISH DHAWAN SPACE CENTRE SHAR		
	SHAR CENTRAL DESIGNS & ADVANCED SYSTEMS GROUP SRIHARIKOTA		
	DESIGNED <i>[Signature]</i> 20/8/19	DRG. NO. 10-04-SLC-08-001-A3	SHEET 7 OF 7
DES.CHKD <i>[Signature]</i>	SCALE 1 : 5		
DRAWN SREENU.P 16-08-2019			
DRG.CHKD <i>[Signature]</i> 20/8/19			
APPROVED <i>[Signature]</i>			
SIGN. DATE			

S.NO	DESCRIPTION	QTY	MAKE	REMARKS
15.	Valve	9		
14.	Silencers	2		
13.	Differential Pressure Regulator	1		Pressure : 7bar
12.	Pressure gauge	2		Max 20 bar
11.	Air supply (Pressure 10 bar)			Not in suppliers scope
10.	1/2" Flexible pneumatic hose with QRV	1	Mercury*	L = AS PER P.O
9.	1/2" Flexible pneumatic hose with QRV	2	Mercury*	L = AS PER P.O
8.	FRL Unit with gauge	1	Shavo*	
7.	Relief valve	1	Mercury*	
6.	Non return valve	1	Dancal*	
5.	Pilot operated PHN Directional control valve	1	Mercury*	
4.	Double pilot operated PHN Direction control valve	1		
3.	Header Manifold 4 way	2	Schrader*	
2.	In-line flow control valve	8	Schrader*	
1.	Pneumatic cylinder	4	Schrader*	REFER. SHEET 1 OF 7



Satish Dhawan Space Center SHAR

Welcome, Materials Master (isro)

31 August 2017,
17:16:08 IST

[MAIN VIEW](#)

[HELP](#)

Preview For STANDARD TERMS AND CONDITIONS

Page Destination: Tender Header **Format Type :** Normal

. :

GOVERNMENT OF INDIA

DEPARTMENT OF SPACE

SATISH DHAWAN SPACE CENTRE

PURCHASE DIVISION

Tele No.08623-225023/225174/225127

Fax No.08623-225170/22-5028

e-Mail ID : hps@shar.gov.in, hasan@shar.gov.in, sselvan@shar.gov.in

STANDARD TERMS & CONDITIONS

1.OFFERS SHALL BE SENT ONLINE ONLY USING STANDARD DIGITAL SIGNATURE CERTIFICATE OF CLASS III WITH ENCRYPTION / DECRYPTION. THE TENDERS AUTHORISED ONLINE ON OR BEFORE THE OPEN AUTHORISATION DATE AND TIME ONLY WILL BE CONSIDERED AS VALID TENDERS EVEN THOUGH THE BIDS ARE SUBMITTED ONLINE.

2.THE TENDERER MUST AUTHORISE BID OPENING WITHIN THE TIME STIPULATED IN THE SCHEDULE BY SDSC SHAR. OTHERWISE THE ONLINE BID SUBMITTED WILL NOT BE CONSIDERED FOR EVALUATION. PHYSICAL COPY WILL NOT BE CONSIDERED EVEN THOUGH IT IS RECEIVED BEFORE THE BID SUBMISSION DATE.

In case of two-part tenders, parties shall submit their offers as follows:-

1) Part-I – Techno-commercial Bid

(No price details shall be mentioned in this bid and shall not upload the details of price along with the techno-commercial bid)

2) Part-II – Price Bid

In view of Two Part Tender, the Offers submitted contrary to above instructions will be summarily rejected.

3.In case, the tenderer is not interested to participate in the tender, the tenderer shall submit regret letter giving reasons, failing which future enquiries will not be sent.

4.**Offer Validity:** The validity of the offers / tenders should be 90 days (in case of single part tender) and 120 days (in case two part tender) from the date of opening of the tenders. Tenders with offer validity less than the period mentioned above, will not be considered for evaluation.

5.**GST** - GST and/or other duties/levies legally leviable and intended to be claimed should be distinctly shown separately in the tender. GST details are given below

GSTIN: 37AAAGS1366J1Z1

LEGAL NAME : SATISH DHAWAN SPACE CENTRE SHAR

VALIDITY FROM:29/08/2017

TYPE OF REGISTRATION:REGULAR

6.**Customs Duty** - SDSC-SHAR is eligible for 100% Customs Duty exemption as per Notification No. 050/2017 539 (b) Dt: 30.06.2017. This may be taken into account while quoting for import items, if any.

In case tenderers offering items considering customs duty exemption, they should also indicate the bill of materials and price, separately, with Customs Duty component and terms and conditions thereto.

8.**Advance Payment** - Wherever advance payment is requested, Bank Guarantee from any Nationalized Bank/Scheduled Bank should be furnished. In case of advance payments, if the party is not supplying the material within the delivery schedule, interest will be levied as per the Prime Lending Rate of RBI plus 2% penal interest.

Interest will be loaded for advance payments/stage payments as per the prime lending rate of RBI and will be added to the landed cost for comparison purpose. In case of different milestone payments submitted by the parties, a standard and transparent methodology like NPV will be adopted for evaluating the offers.

9.**Liquidated Damages** - In all cases, delivery schedule indicated in the Purchase Order/Contract is the essence of the contract and if the party fails to deliver the material within the delivery schedule, Liquidated Damages will be levied @ 0.5% per week or part thereof subject to a maximum of 10% of total order value.

10.**Performance Bank Guarantee** - Performance Bank Guarantee for 10% of the order value should be furnished in the form of Bank Guarantee from nationalized/scheduled bank or by Demand Draft valid till warranty period plus sixty days as claim period.

11. **Security Deposit** – Security Deposit for 10% of the order value is mandatory, if the ordered value is Rs.5.00 lakhs and above. Party shall furnish the Security Deposit in the form of Bank Guarantee from nationalized/scheduled bank or by Demand Draft valid till completion of the contract period plus sixty days towards claim period for faithful execution of the contract.

12. **BANK GUARANTEE FOR FIM:** Supplier has to submit Bank guarantee for equal value of Free Issue of Materials (FIM) issued by the Department from Nationalised / Scheduled Bank valid till receipt and acceptance of supply and satisfactory accounting of FIM plus sixty days as claim period.

13. The delivery period mentioned in the tender enquiry, IF ANY, is with the stipulation that no credit will be given for earlier deliveries and offers with delivery beyond the period will be treated as unresponsive.

14. The Department will have the option to consider more than one source of supply and final orders will be given accordingly.

15. The bidders should note that conditional discounts would not have edge in the evaluation process of tenders.

16. Non-acceptance of any conditions wherever called for related to Guarantee/ Warranty, Performance Bank Guarantee, Security Deposit, Liquidated damages are liable for disqualification.

17. Wherever installation/ commissioning involved, the guarantee/warranty period shall reckon only from the date of installation and commissioning.

18. Purchase/Price Preference will be extended to the MSMEs under the Public Procurement Policy for MSMEs formulated under the Micro, Small and Medium Enterprises Development Act, 2006 and instructions issued by Government of India from time to time. Vendors who would like to avail the benefit of MSME should clearly mention the same and submit all the documentary evidences to substantiate their claim along with tender itself.

19. The drawings, specifications, end use etc., given by the Centre/Unit along with the tender enquiry are confidential and shall not be disclosed to any third party.

20. **SPECIAL CONDITIONS FOR SUBMITTING QUOTATIONS IN FOREIGN CURRENCY BY THE INDIAN AGENTS**

The Tenderer should submit the following documents/information while quoting:-

a) Foreign Principal's proforma invoice/quote indicating the commission payable to the Indian Agent and nature of after sales service to be rendered by the Indian Agent.

b) Copy of Agency agreement with the Foreign Principal and the Indian Agent, precise relationship between them and their mutual interest in the business.

c) Registration and item empanelment of the Indian Agent.

d) Agency Commission will be paid only Indian Currency.

e) Compliance of the tax laws by the Indian Agent.

21. **High Sea Sales**- Against High Sea Sale transactions:

a. Offers shall be on all inclusive basis including delivery upto Sriharikota at the risk and cost of the supplier. Customs Clearance is the responsibility of the supplier and at his cost and risk.

b. 100% payment will be made within 30 days after receipt and acceptance of the items at our site.

c. GST as applicable

d. Customs Duty Exemption Certificate and other relevant documents required for Customs clearance will be provided.

e. High Sea Sales Agreement furnished by the supplier in accordance with the terms and conditions of our purchase order will be signed and issued by SDSC-SHAR.

22. The following information/ documents are to be submitted wherever applicable.

1. Product Literature

2. Core banking account number of SBI, RTGS Details

3. PAN No. in quotation and invoices

4. GST Registration details.

5. In case of MSME, registration details / documents from Competent Authority.

23. **EXCLUSION OF TENDERS**

The following tenders shall be summarily rejected from the procurement process

a. Tenders received from vendors who have not qualified in terms of their registration.

b. Tenders received against publishing of a limited tender in the CPP portal.

c. Tenders of vendors who have been removed from the vendor list or banned/debarred from having business dealings.

d. Unsolicited tenders from vendors.

e. The tenders which materially depart from the requirements specified in the tender document or which contain false information.

f. The tenders which are not accompanied by the prescribed Earnest Money Deposit.

g. The tenders of vendors who have not agreed to furnish Security Deposit, Performance Bank Guarantee and Liquidated Damages.

h. The validity of the tenders is shorter than the period specified in the tender enquiry.

i. The tenders received from vendors or their agents or anyone acting on their behalf, who have promised or given to any official of the Centre/Unit/Department, a gratification in any form, or anything of value, so as to unduly influence the procurement process.

j. The tenders received from vendors, who, in the opinion of the Centre/Unit, have a conflict of interest materially affecting fair competition.

k.The tenders received from Indian agents on behalf of their foreign Principals/OEMs (in cases where the Principals/OEMs also submit their tenders simultaneously for the same item/product in the same tender).

l.In case two or more tenders are received from an Indian agent on behalf of more than one foreign Principal/OEM, in the same tender for the same item/product.

m.If a firm quotes 'NIL' charges / consideration, the bid shall be treated as un-responsive and will not be considered.