

भारत सरकार
अंतरिक्ष विभाग
सतीश धवन अंतरिक्ष केंद्र शार
श्रीहरिकोटा रेंज डा.घ. 524 124
श्री पोट्टि श्रीरामुलु नेल्लूर जिला, आं.प्र., भारत
दूरभाष : +91-8623 245060 (6 जं)
फैक्स : +91-8623 222099



Government of India
Department of Space
Satish Dhawan Space Centre SHAR
Shriharikota Range P.O. 524 124
SPSR Nellore Dist., AP., India
Telephone : +91-8623 245060 (6 Lines)
Fax : +91-8623 222099

निविदा सूचना सं. TENDER NOTICE NO. SDSC SHAR/Sr.HPS/PT/RO-VALF/19/2025-2026

भारत के राष्ट्रपति की ओर से वरि. प्रधान क्रय एवं भंडार, सतीश धवन अंतरिक्ष केंद्र श्रीहरिकोटा निम्नलिखित वस्तुओं के लिए ऑनलाइन निविदाएं आमंत्रित करते हैं/On behalf of President of India, Sr. Head Purchase and Stores, SDSC SHAR, SRIHARIKOTA invites on line quotations for the following: -

क्र.सं. SI No	संदर्भ सं. Ref. No.	विवरण Description	मात्रा Qty.
01.	SDSC SHAR /VALF PURCHASE /VALF/ 2025000897 Design, Supply, Testing and commissioning of Hydraulic Jacking System [Public Tender - Two Part]	Design, Supply, Testing and commissioning of Hydraulic Jacking System	01 Set.

निविदा दस्तावेजों को डाउनलोड करने की अंतिम तिथि Last Date for downloading of tender documents : 18.08.2025 at 16:00 hrs.
ऑनलाइन निविदा जमा करने की अंतिम तिथि Due Date for submission of bids online : 18.08.2025 at 16:30 hrs.
निविदाएं खोलने की नियत तिथि Due Date for opening of tenders : 19.08.2025 at 14:30 hrs.

निविदाकार के लिए निर्देश Instructions to Tenderers:

निविदाएं ईजीपीएस के माध्यम से ही भेजी जाएं तथा कोई निविदा शुल्क लागू नहीं होगा।
Bids shall be submitted on line through EGPS only and No tender fee shall be applicable.

- कार्य के सम्पूर्ण विवरण/जानकारी तथा नियम व शर्तों इत्यादि के लिए संलग्न अनुलग्नक को देखें। / For full details/scope of work and terms and conditions etc., please see the enclosed annexures.
- इच्छुक निविदाकार इसरो की ई-खरीद वेबसाइट इसरो न्यू ई-प्रोक्यूरमेंट www.eproc.vssc.gov.in से ई-निविदा डाउनलोड और अपनी निविदा ई-खरीद पोर्टल पर ऑनलाइन जमा कर सकते हैं। डाक / वाहक / स्वयं द्वारा प्राप्त निविदाओं पर विचार नहीं किया जाएगा। / Interested tenderers can download the e-tender from ISRO e-procurement website ISRO NEW E-PROCUREMENT www.eproc.vssc.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.
- निविदा दस्तावेज इसरो की वेबसाइट www.isro.gov.in इसरो न्यू ई-प्रोक्यूरमेंट वेबसाइट www.eproc.vssc.gov.in तथा सतीश धवन अंतरिक्ष केंद्र शार की वेबसाइट www.shar.gov.in पर भी उपलब्ध है। इन्हें केवल ई-खरीद पोर्टल से डाउनलोड और निविदा ऑनलाइन जमा कर सकते हैं। / Tender documents are also available on ISRO website www.isro.gov.in ISRO New e-procurement website www.eproc.vssc.gov.in and SDSC SHAR, Sriharikota website www.shar.gov.in. The same can be down loaded and offer submitted on line in the new e-procurement portal only.
- निर्धारित तिथि/समय के पश्चात प्राप्त बोलियों पर विचार नहीं किया जाएगा। / Quotations received after the due date/time will not be considered.
- निविदा दस्तावेज दिनांक 18.08.2025 को 16:00 बजे तक डाउनलोड करने के लिए उपलब्ध रहेंगे तथा निविदा ऑनलाइन जमा करने की अंतिम तिथि 18.08.2025 को 16:30 बजे तक है। निविदाएं दिनांक 19.08.2025 को 14:30 बजे खोली जाएंगी। / The tender documents are available for download upto 18.08.2025 at 16:00 hrs. and last date for submission of tenders on line 18.08.2025 at 16 30 hrs. and Tender Opening on 19.08.2025 at 14:30 hrs.
- इच्छुक विक्रेता विवरण जानने के लिए निविदा खोले जाने वाले सत्र में शामिल हो सकते हैं। निविदा के मूल्यांकन पर विचार करने के लिए उनकी उपस्थिति अनिवार्य नहीं है। / Interested vendors can attend the Bid opening sessions to know the details. Presence not mandatory to consider the quote for evaluation.
- वरि. प्रधान क्रय एवं भंडार, सतीश धवन अंतरिक्ष केंद्र श्रीहरिकोटा के पास किसी भी या सभी निविदाओं को स्वीकार / अस्वीकार करने का अधिकार है। / Sr. Head, Purchase and Stores, SDSC-SHAR, Sriharikota reserves the right to accept or reject any/or all the quotations.
- GeM ARPTS Report ID: GEM/GARPTS /03012025/NL9IWD69XO6K

दिनांक DT: 21.07.2025

वरि. प्रधान क्रय एवं भंडार
Sr. HEAD PURCHASE AND STORES

**GOVERNMENT OF INDIA
DEPARTMENT OF SPACE
SATISH DHAWAN SPACE CENTRE SHAR SRIHARIKOTA (SDSC SHAR)
NELLORE**

Tender for Design, supply and testing of Hydraulic Jacking System

Bids to be submitted online

Tender No.: SDSC SHAR/VALF PURCHASE/SH202500089701 dated 22-07-2025

A. Tender Details

Tender No :	SDSC SHAR/VALF PURCHASE/SH202500089701
Tender Date :	22-07-2025
Tender Classification:	GOODS
Purchase Entity :	VALF PURCHASE
Centre :	SATISH DHAWAN SPACE CENTRE SHAR SRIHARIKOTA (SDSC SHAR)

Design, supply and testing of Hydraulic Jacking System

GEM/GARPTS/03012025/NL9IWD69XO6K

As per tender documents

A.1 Tender Schedule

Bid Submission Start Date :	22-07-2025 16:10
Bid Clarification Due Date :	06-08-2025 10:00
Bid Submission Due Date :	18-08-2025 16:30
Bid Opening Date :	19-08-2025 14:30
Price Bid Opening Date :	16-09-2025 14:30

B. Tender Attachments

NA

Instructions To Vendors

1. STANDARD TERMS & CONDITIONS

1. Tele No.08623-225174/225127/226082

Fax No.08623-225170/22-5028

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

1. Instruction to Indigenous Suppliers:

a) Payment Terms shall be as specified in RFP. If not specifically mentioned Our Normal payment term is 100% within 30 days after receipt and acceptance of the item at our site. Please confirm acceptance in your quotation.

b) Our GST No. is. 37AAAGS1366J1Z1.

c) Purchase / Price preference to MSEs

Purchase/Price preference will be applicable to the product reservation admissible to the Micro and Small Enterprises. Purchase/Price Preference shall be extended to the MSEs under the Public Procurement Policy for MSEs formulated under the Micro, Small and Medium Enterprises Development Act, 2006. The participating MSEs in a tender, quoting price within the band of L-1 + 15% may also be allowed to supply a portion of the requirement by bringing down their price to the L-1 price, in a situation where L-1 price is from someone other than an MSE. Such MSEs may be allowed to supply up to 25% of the total tendered value. In case of more than one such eligible MSE, the supply will be shared equally.

Micro & Small Enterprises which have technical capability to deliver the goods & Services as per prescribed technical & quality specifications and may not be able to meet the qualification criterion relating to prior experience-prior turnover may be relaxed as per guidelines issued by Ministry of MSMEs & as amended from time to time.

Interested vendors shall specifically claim the benefit with supporting documents.

d) Purchase / Price preference to Make-in-India Products:

Preference shall be given to Class 1 local supplier as defined in public procurement (Preference to Make in India), Order 2017 as amended from time to time and its subsequent Orders/Notifications issued by concerned Nodal Ministry for specific Goods/Products. The minimum local content to qualify as a Class 1 local supplier is denoted in the bid document 50%. If the bidder wants to avail the Purchase preference, the bidder must upload a certificate from the OEM regarding the percentage of the local content and the details of locations at which the local value addition is made along with their bid, failing which no purchase preference shall be granted. In case the bid value is more than Rs. 10 Crore, the declaration relating to percentage of local content shall be certified by the statutory auditor or cost auditor, if the OEM is a company and by a practicing cost accountant or chartered accountant for OEMs other than companies as per the Public Procurement (preference to Make-in-India) order

2017 dated 04.06.2020 and amendments thereof. In case Buyer has selected Purchase preference to Micro and Small Enterprises clause in the bid, the same will get precedence over this clause.

2. Instruction to Foreign Suppliers:

a) Payment Terms shall be as specified in RFP. If not specifically mentioned Our normal payment term is SIGHT DRAFT, Please confirm acceptance in your offer, if you insist for L/C, and all bank charges shall be to your account. Confirm acceptance.

b) Please specify whether any export clearance is required in case of an order on you.

c) Warranty/Guarantee applicable for the item shall be mentioned in your offer

d) Special Certification for packing Material : as per Plant Quarantine (Regulation of Control into India) Order 2003, Articles packed with packing material of plant origin viz., hay, straw, wood shavings, wood chips, saw dust, wood waste, wooden pallets, Dunn age Mats, wooden packages, coir pith, pear or sphagnum moss etc., will be allowed entry by Customs only with a Phytosanitary Certificate. In case if a Purchase Order, if you propose to us any of the above material for packing such a certificate issued by your local Plant Quarantine Authority shall be furnished.

e) Confirm whether any Export License is required and for which End User Certificate is to be provided by us, in case of an Order on you. (Enclose format for EUC, if applicable)

f) Either Indian Agent on behalf of the foreign principals or the foreign principal directly can quote against this order, but not both. In either case an Indian agent cannot represent more than one principal against the same tender.

g) In case the quote is in INR we prefer to execute the same on HSS Basis and for which Concessional Customs duty as per Notification no.50/2017 Customs dated 30.06.2017, Serial No.539(A) as amended by Notification no.05/2018 dated 25.01.2018. In case the quote is on Indian Rupee (Outside High Sea Sale), the price shall include taxes and duties if any. We shall not able to provide any duty or IGST tax exemption/concession certificates. If the item quote is of USA make, please quote for all-inclusive price since we prefer to get the item on FOR destination basis.

h) Any bidder from a country which shares a land border with India will be eligible to bid in any procurement whether of goods, services (including consultancy services and non-consultancy services) or works (including turnkey projects) only if the bidder is registered with Competent Authority as specified in Office Memorandum no.F.No.6/18/2019-PPD, Ministry of Finance, Department of Expenditure, Public Procurement Division dated 23rd July 2020. All the conditions mentioned in the above OM is applicable for this tender.

Common terms to Indigenous and foreign suppliers:

3.Warranty

You shall provide applicable warranty for the items offered by you without fail. For the applicable period you shall provide necessary warranty certificate.

4.Performance Bank Guarantee

Towards the performance of the systems during the warranty period you shall submit a performance bank guarantee equivalent to 3% of the order value to cover the warranty period. This PBG shall be interest free and the same shall be returned to you on successful completion of all contractual obligations. The said PBG shall have a further claim period of 2 months.

5.Security Deposit

On acceptance of the order, you shall submit an interest free amount equivalent to 3% of the total contract/order value towards security deposit. This security deposit is collected towards the performance of the Contract. The said Security Deposit shall be submitted either in the form of Bank Guarantee/Demand Draft/FDR receipts duly endorsed in the name of the centre. The Security Deposit will be returned to you on successful completion of the Contractual obligations; failing which it shall be forfeited/adjusted.

6.Offer Validity

Your offer shall be valid for 180 days in case of 2 part / 90 days in case of single part from the date of tender opening. In case you offer validity is less than the mentioned above, the said offer is liable for rejection which may please be noted.

7.Liquidated Damages:

If you fail to deliver the ordered items satisfactorily within the time specified or any extension thereof, Liquidated Damage @ 0.5%(zero point five percent) of the order value or part thereof the un-delivered items for each calendar weeks of delay shall be recovered from your bill. However total Liquidated Damage shall not exceed 10% (ten percent) of the order value.

FORCE MAJEURE:

Should a part or whole work covered under this contract be delayed in delivery/completion of work due to reasons of Force majeure which shall include legal lockouts, strikes, riots, civil commotion, fire, accidents, quarantines, epidemic, acts of God & War, stoppage of deliveries by the Government , freight embargoes etc; the delivery period/completion of work referred to in this Contract shall be extended by a period not in excess of duration of such Force Majeure. The occurrence shall be notified by either party within reasonable time.

8.Offers received through post, courier, fax or email will not be considered.

9. Technical and commercial bid (Part-I) shall not contain any price details. Optional accessories or other price details, if any shall be uploaded in Supporting documents related to Price Bid, to be opened along with Price Bid.

10. In respect of FIM being issued, the fabricator shall submit Bank Guarantee for equivalent sum compulsorily. In case, submission of Bank Guarantee is not possible, the reasons there for shall be clearly mentioned. However, for such cases the fabricators at their cost shall secure such FIM through Insurance Policy with Director, SDSC SHAR as beneficiary. In case of PSU and Government Organization, Indemnity Bond in lieu of Bank Guarantee is acceptable. Balance FIM/Scrap, if any shall be returned along with the supply of the items. Please confirm acceptance in your quotation.

11. SDSC SHAR shall have the right to place part order among the parties for the items for which they are the lowest.

12. Arbitration:

In the event of any dispute/s, difference/s or claim/s arising out of or relating to the interpretation and application of the Contract, such dispute/s or difference/s or claim/s shall be settled amicably by mutual consultations of the good Offices of the respective Parties and recognizing their mutual interests attempt to reach a solution satisfactory to both the parties. If such a resolution is not possible, within 30

days from the date of receipt of written notice of the existence of such dispute/s, then the unresolved dispute/s or difference/s or claim/s shall be referred to the Sole Arbitrator appointed by the Parties by mutual consent in accordance with the rules and procedures of Arbitration and Conciliation Act 1996 as amended from time to time. The arbitration shall be conducted in Bengaluru in the Arbitration and Conciliation Centre Bengaluru (Domestic and International) as per its rules and regulations. The expenses for the Arbitration shall be shared equally or as may be determined by the Arbitrator. The considered and written decision of the Arbitrator shall be final and binding between the Parties. The applicable language for Arbitration shall be English only.

Work under the Contract shall be continued by the CONTRACTOR during the pendency of arbitration proceedings, without prejudice to a final adjustment in accordance with the decision of the Arbitrator unless otherwise directed in writing by the DEPARTMENT or unless the matter is such that the works cannot be possibly continued until the decision (whether final or interim) of the Arbitrator is obtained.

2. INSTRUCTIONS TO TWO PART TENDER

1. We are proposing to invite Tenders in Two Parts viz., Part-I Techno and Commercial & Part-II Price. All Tenderers are requested to follow carefully the following instructions before preparing their offer.

PART- I- TECHNO COMMERCIAL BID:

- (1) This part should contain detailed Specifications of the items quoted by you along with Technical Literature and Leaflets if any.
- (2) All the Commercial terms and Conditions applicable also should be indicated separately under separate heads.
- (3) The Commercial terms such as delivery terms, delivery period, payment terms, warranty, validity of the offer, Installation & Commissioning, Duties and Taxes etc shall come into this.
- (4) Either Technical Specifications or Terms & Conditions as above should be very clearly reflected items wise with reference to the items called for in the tender.
- (5) Please note that Prices should not be indicated in this part.
- (6) Any deviations from the Technical Specifications and Commercial Terms shall be indicated separately.

PART II-PRICE BID:

- (1) The prices applicable for the items, item wise in response to the tender shall come into this part.
- (2) Tender shall indicate very clearly item wise prices with reference to their Technical Offer.

Note: 1. PLEASE NOTE THAT THE OFFERS SUBMITTED CONTRADICTORY TO ABOVE INSTRUCTIONS WILL BE LIABLE FOR REJECTION. PLEASE ENSURE OFFERS ARE SUBMITTED WITHIN THE DUE DATE.

2. BEING TWO PART TENDER, WE REQUEST YOU NOT TO DISCLOSE / INDICATE ANY OF THE PRICE VALUE WHILE SEEKING / PROVIDING CLARIFICATION. YOU SHOULD INDICATE ONLY IN PERCENTAGE. IN CASE IF YOU DISCLOSE ANY OF THE PRICE AMOUNT YOUR OFFER WILL BE REJECTED.

3. General Instructions to Vendor

1. Instructions to tenderers

TeleNo.08623-225174/225127

Fax No.08623-225170/22-5028

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

1. Interested tenderers may, at their option, login to <https://eproc.isro.gov.in> and submit your offers.

2. TENDER FEE IS NOT APPLICABLE.

3. EARNEST MONEY DEPOSIT IS NOT APPLICABLE IF NOT MENTIONED IN THE RFP SPECIFICATION.

4. Indian agents while quoting on behalf of their principals are requested to attach Principals original quote, necessary authorization letter from their Principals, copy of agency agreement etc. in their bid.

5. TWO PART BIDS: In case of Two part tender, price details shall not be uploaded in the Technical & Commercial Bids (Part I), failing to which the bid will be treated as INVALID.

6. The offer should be valid for a minimum period of 180 days for 2 part / 90 days for single part from the date of opening.

7. Due date & time: Sufficient time has been allotted for Bid submission. Vendors are requested to complete Bid submission well in advance. Last minute requests for due date extension citing server problems etc. will not be entertained. Bids will not be entertained after the due date and time.

7 (A). Request for the extension of the due date will not be considered.

8.

(a) Bid Opening for Public Tender: In case of Public Tender-Two Part Tenders: Technical and Commercial Bids will be opened on the first day specified for Tender opening. Interested vendors can attend the tender opening session to know the bidding details (Bidders presence is not mandatory to consider the quote for evaluation). Price Bid opening of the selected vendors will be scheduled later and it will be intimated to the selected Bidder (s).

(b) For Limited Tender: Bidders participation is not allowed.

9. Prices are required to be quoted according to the units indicated.

10. Preference will be given to those tenderers offering supplies from ready stocks and on the basis of FOR destination delivery at site.

11. (a) All available technical literature, catalogues and other data in support of the specifications and detail of the items should be furnished as attachments.

(b) Samples, if called for, should be submitted free of all charges by the tenderer and the Purchaser shall not be responsible for any loss or damage thereof due to any reason whatsoever. In the event of non-acceptance of tender, the tenderer will have to remove the samples at his own expense.

(c) Approximate net and gross weight of the items offered shall be indicated in your offer. If dimensions details are available the same should be indicated in your offer.

(d) Specifications: Stores offered should strictly conform to our specifications. Deviations, if any, should be clearly indicated by the tenderer in their quotation. The tenderer should also indicate the Make/Type number of the stores offered and provide catalogues, technical literature and samples wherever necessary. Test certificates wherever necessary should be attached. Whenever options are called for in our specifications, the tenderer should address all such options. Wherever specifically mentioned by us the tenderer could suggest changes to specifications with appropriate response for the same.

12. The purchaser shall be under no obligation to accept the lowest or any tender and reserves the right of acceptance of the whole or any part of the tender or portion of quantity offered and the tenderers shall supply the same at the rates quoted.

13. All amounts shall be indicated both in words as well as in figures. Where there is difference between amounts quoted in words and figures, amount quoted in words shall prevail.

14. The tenderer will be required to furnish a document containing the name of his bankers as well as the latest income-tax clearance certificate duly counter signed by the Income-tax Officer of the Circle concerned under the Seal of his office, if required by the Purchaser.

15. The Purchaser reserves the right to place order on the successful tenderers for additional quantity up to 25% of the quantity offered by them at the rates quoted.

16. Sr. Head, Purchase and Stores, SDSC SHAR SRIHARIKOTA reserves the right to accept or reject any bid in part or full without assigning any reason thereof.

17. Any bidder from a country which shares a land border with India will be eligible to bid in any procurement whether of goods, services (including consultancy services and non-consultancy services) or works (including turnkey projects) only if the bidder is registered with Competent Authority as specified in Office Memorandum no.F.No.6/18/2019-PPD, Ministry of Finance, Department of Expenditure, Public Procurement Division dated 23rd July 2020. All the conditions mentioned in the above OM is applicable for this tender.

C. Bid Templates

C.1 Technical Bid - Design, supply and testing of Hydraulic Jacking System

1. HYDRAULIC JACK: Design, Supply, Testing and commissioning of Hydraulic Jacking System as per the attached RFP document and tender terms & conditions.

Document : 10-MECH-12-8-33/A1, Sh 1 of 1

Document : 10-MECH-12-8-16/A1, Sh 1 of 1

Document : 10-MECH-12-8-15/A1, Sh 1 of 1

Document : RFP of Hydraulic Jacking System

Common Specifications (Applicable for all items)

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	Party has to supply all the items as per the tender specifications	RFP document	Yes / No / Explain		

Supporting Documents required from Vendor

- 1. As per attached RFP document**
- 2. Please upload Annexure duly sealed & signed by your competent authority**
- 3. Udyam Certificate if caliming MSE purchase preference.**
- 4. Audited balance sheet**
- 5. Turnover of last three FY**
- 6. Experince certificate as mentioned in the attached RFP**
- 7. Current Solvency Certificate for an amount of Rs. 25 lakhs**

8. List of personnel with qualification &. experience

9. Firm establishment certificate and nature of work

10. Structure and Organization chart.

11. List of Machinery & Equipment to be used for the work

5 additional documents can be uploaded by the vendor

C.2 Commercial Terms / Bid

Sl. No.	Description	Compliance	Vendor Terms
1	The items shall be delivered as per instructions given in attached RFP document.	Yes / No / Explain	
2	The procurement intended for the bonafide use in Systems/Sub-systems of Launch Vehicle Project of Indian Space Research Organization, Government of India, Department of Space and eligible for IGST@5% as per guiding principles conveyed by the Ministry of Finance Dept. of Revenue Notification No. 25/2018-Integrated Tax (Rate) Schedule-I; Sl. No. 243B dated 31.12.2018 (Amendment to Notification No. 07/2018-Integrated Tax (Rate) dated 25.01.2018 and Notification No. 01/2017- Integrated Tax (Rate) dated: 28.06.2017)	Yes / No / Explain	
3	Please confirm here whether your quoted "UNIT PRICE" in our Price Bid is EXCLUDING GST or INCLUDING GST. ----- NOTE: If you are not explicitly stating "GST is Inclusive in basic cost" it will be treated as "GST is EXTRA and NOT included in the quoted Basic/Unit cost in the price bid". Your offer will be evaluated accordingly and GST will added over and above your quoted basic cost. (i.e. Whatever GST percentage you are quoting in your price bid will be added to your basic cost and evaluated accordingly. If you quote here vaguely as "YES/Accepted /Noted etc" it will be treated as "GST is not included in the quoted Basic/Unit cost".	Yes / No / Explain	
4	Delivery Term FOR : SDSC SRIHARIKOTA (MANDATORY)	Yes / No / Explain	
5	Packing and Forwarding(P & F) charges, extra if any, please mention percentage in price-bid. Please note that in case of Two part tenders, only percentage should be mentioned otherwise those offers shall be summarily rejected.	Yes / No / Explain	
6	Freight charges, extra if any, please mention percentage in price-bid Please note that in case of Two part tenders, only percentage should be mentioned otherwise those offers shall be summarily rejected.	Yes / No / Explain	

7	Delivery Period required for delivery of the items/completion of total scope of work: Detailed delivery schedule indicated in the para no 25 (Section B) of the attached RFP (Overall 318 days from the date of release of PO)	Yes / No / Explain	
8	<p>Payment Term: OPTION 1: 20% of the Order value (excluding taxes) shall be paid as an Advance against submission of Bank Guarantee for the equivalent amount from a Nationalized/Scheduled bank. 70% payment plus taxes shall be paid within 30 days after receipt of the items at our site and acceptance by CLIP. Balance 10% of PO value after successful assembly, demonstration, testing, repacking & acceptance by CLIP.</p> <p>OPTION-2 100% payment shall be made through RTGS within 30 days of receipt and acceptance of the item at our site.</p> <p>Note: 1. If you fail to execute the Order after drawing Advance, you should return the Advance amount in full with interest at Bank lending rate plus 2% beyond delivery period and all BG/FDR/etc. shall be forfeited. 2. In case of delay in execution of contractual obligations beyond delivery period, the seller is liable to pay interest on advance paid beyond the delivery period till the completion of scope of contract. 3. The rate of interest shall be loaded on option of advance by the bidder for arriving L1. 4. Bidder is requested to clearly indicate the option of payment as per detailed above.</p>	Yes / No / Explain	
9	Warranty: Warranty for the offered item shall be from the date of acceptance of the item at our site for a minimum period of 24 months or specified in the tender document.	Yes / No / Explain	
10	Liquidated Damages (LD) :- Since delivery is the essence of this order, LD @ 0.5% per week or part thereof subject to a maximum of 10% of the order value for the delayed period of supply.	Yes / No / Explain	

11	<p>Security Deposit (SD) 3% value of the order shall be deposited with SDSC within 10 days from the date of the Purchase Order towards security deposit in the form of Bank Guarantee(BG)/ FDR/DD towards performance of the Contract valid till completion of the contract period plus sixty days towards claim period. (This will be returned by SDSC immediately on execution of the order satisfactorily as per order terms. If not, the amount will be forfeited). NOT REQUIRED FOR LANDED COST BELOW RS.5 LAKHS.</p>	Yes / No / Explain	
12	<p>Performance Bank Guarantee (PBG) You have to submit a BG/DD/FDR in lieu of PBG from a Nationalized / Scheduled Bank for 3% of the order value at the time of supply valid till the completion of warranty period plus 60 days towards claim period.</p>	Yes / No / Explain	
13	<p>Combined BG for PBG cum SD In case, if parties are unable to provide two separate BGs, i.e., one for SD & one for PBG, they can submit a combined BG for SD & PBG for 3% of the Order value valid till the completion of total contractual obligation (i.e., Supply period plus warranty period plus 60 days). Please confirm.</p>	Yes / No / Explain	
14	<p>Insurance Being a Govt. Of India Dept., Insurance is not required at our cost. Please ensure the safe delivery of the ordered item with proper transport worthy packing.</p>	Yes / No / Explain	
15	<p>Validity of Offer In case of single part tender - the validity of offers/tenders should be 90 days. In case of two part tender - 120 days from the date of opening of Part-I bid and 60 days from the date of opening of Part-II bid. Tenders shorter than offer validity mentioned above will not be considered for evaluation.</p>	Yes / No / Explain	
16	<p>Overall L1: We reserve the right to place order based on MSE/MII Purchase preferences arise, if required.</p>	Yes / No / Explain	

17	The bidder shall provide compliance to Order No. F.No.7/10/2021 PPD dated 23.02.2023 and amendments thereof by Ministry of Finance, Department of Expenditure, Public Procurement Division regarding restrictions on procurement from a bidder of a country which shares a land border with India and comply to all the provisions of the Order. In this regard, you shall certify that the bidder entity is not from such a country or, is from such a country, has been registered with the Competent Authority.	Yes / No / Explain	
18	As per the above Order, are you (the Bidder/Company/Entity) OR offering product/service is from such a Country sharing Land border with INDIA.	Yes / No / Explain	
19	<p>Make-In-India (MII) Clause: Provisions contained in Public Procurement Policy (Preference to Make in India), Order 2017 issued by DPIIT vide OM No. P-45021/2/2017-PP(BE-II) dated 16.09.2020 & directives related including latest amendments (if any) is applicable for this tender.</p> <p>You are requested to provide Self Declaration Certificate that the offered Item meets Local Content Requirement of Class 1 or Class 2 as per Make in India(MII) Policy, clearly indicating the Percentage of local content & the details of Location(s) at which value addition is made in the offered product.</p> <p>It may be noted that Local Content shall not include services such as Transportation, Insurance, Installation, Commissioning, Training and after sales service support like AMC/CMC etc.</p>	Yes / No / Explain	
20	Please mention in PERCENTAGE the Value addition of offered products happened in INDIA in line with Make In India Policy. (Mandatory). You have to upload MII Declaration mentioning place and percentage of value addition along with Offer.	Yes / No / Explain	

21	<p>Purchase preference to Micro and Small Enterprises (MSEs): Purchase preference will be given to MSEs as defined in Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012 dated 23.03.2012 issued by Ministry of Micro, Small and Medium Enterprises and its subsequent Orders/Notifications issued by concerned Ministry. If the bidder wants to avail the Purchase preference, the BIDDER MUST BE MANUFACTURER OF THE OFFERED PRODUCT in case of bid for supply of goods. TRADERS ARE EXCLUDED from the purview of Public Procurement Policy for Micro and Small Enterprises. In respect of bid for Services, the bidder must be the Service provider of the offered Service. Relevant documentary evidence along with UDYAM REGISTRATION in this regard shall be uploaded along with the bid in respect of the offered product or service. If L-1 is not an MSE and MSE Seller (s) has/have quoted price within L-1 plus 15% (Selected by Buyer) of margin of purchase preference/price band defined in relevant policy, such Seller shall be given opportunity to match L-1 price and contract will be awarded for 25% (selected by Buyer) percentage of total QUANTITY.</p>	Yes / No / Explain	
22	<p>Are you claiming MSME Preference for this tendered item/service?</p> <p>Note: You should have been the MANUFACTURER of the offered product or SERVICE Provider of the said service (in service tender) as per your MSME Registration. (If YES, valid Udyam Registration documents shall be uploaded. Otherwise your claim will not be considered. False declarations will be in breach of the Code of Integrity under Rule 175(1)(i)(h))</p>	Yes / No / Explain	
23	<p>Please Select for the offered Product whether you are: (1) Manufacturer (2) Authorized Agent (3) Distributor (4) Dealer (5) Reseller (6) Others</p>	Yes / No / Explain	

24	<p>ARBITRATION:- The Contract/PO shall be interpreted, construed and governed by the Laws in India. In the event of any dispute/s, difference/s or claim/s arising out of or relating to the interpretation and application of the Contract/PO, such dispute/s or difference/s or claim/s shall be settled amicably by mutual consultations of the good Office of the respective Parties and recognizing their mutual interests attempt to reach a solution satisfactory to both the parties. If such a resolution is not possible, within 30 days from the date of receipt of written notice of the existence of such dispute/s, then the unresolved dispute/s or difference/s or claim/s shall be referred to the Sole Arbitrator appointed by the Parties by mutual consent in accordance with the rules and procedures of Arbitration and Conciliation Act 1996 as amended from time to time. The arbitration shall be conducted in Bengaluru in the Arbitration and Conciliation Centre - Bengaluru (Domestic and International) as per its rules and regulations. The expenses for the Arbitration shall be shared equally or as may be determined by the Arbitrator. The considered and written decision of the Arbitrator shall be final and binding between the Parties. The applicable language for Arbitration shall be English only.</p>	Yes / No / Explain	
25	<p>Do you have Unique GeM Seller ID? If YES, provide details If NO, As per Office Memorandum No 6/9/2020-PPD dated 24/08/2020 of Department of Expenditure, it shall be mandatory for sellers providing Goods and Services to Central Government Organizations to be registered on GeM and obtain a Unique GeM Seller ID, at the time of Placement of Order/acceptance of contract. Tenderers shall ensure the same.</p>	Yes / No / Explain	
26	<p>Address on which PO is to be placed and GSTIN (GST No. for SHAR- GSTIN: 37AAAGS1366J1Z1)</p>	-	
27	<p>Please provide valid/currently using E-mail Id & Contact no. for seeking further clarifications if any</p>	-	
28	<p>Remarks if any.</p>	-	

29	<p>Advance Bank Guarantee for payment of advance: You have to provide Advance Bank Guarantee for 20% of the value of PO value from a scheduled bank in Rs. 100-00 nonjudicial stamp paper valid till the completion of all contractual obligations plus sixty days. BG will not carry any interest and it will be returned to you once the Purchase Order Contractual obligation is successfully executed. In case of non-performance / poor performance, the BG shall be forfeited and advance payment shall be recovered from supplier with interest as per the Prime Lending Rate of RBI along with 2% penal interest from the date of release of advance payment.</p> <p>Note: In case of extension of delivery period, the validity of BG shall be extended accordingly.</p>	Yes / No / Explain	
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C.3 Price Bid

Sl. No.	Item	Quantity	Unit Price	Currency	Total Price	P&F IN PERCENTAGE	FREIGHT PERCENTAGE	Remark
1	HYDRAULIC JACK: Design, Supply, Testing and commissioning of Hydraulic Jacking System as per the attached RFP document and tender terms & conditions .	1.00 Sets		-				

SPEC NO.:
BOGIE/
JACKS

SDSC-SHAR

HYDRAULIC JACKING SYSTEM FOR WHEEL BOGIE



ANNEXURE: SDSC SHAR/VALF PURCHASE/ SH2025000897

Specification for
DESIGN, SUPPLY AND TESTING OF
HYDRAULIC JACKING SYSTEM FOR
WHEEL BOGIE

OWNER : INDIAN SPACE RESEARCH ORGANISATION

LOCATION : SDSC SHAR, SRIHARIKOTA

SATISH DHAWAN SPACE CENTRE SHAR
SRIHARIKOTA 524 124
INDIAN SPACE RESEARCH ORGANISATION

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CONTENTS

SECTION	TITLE
Section A	General Terms and Conditions of the Contract
Section B	General Specifications
Section C	General Project Information
Section D	Technical Specifications
Section E	Annexures

TITLE	DRAWING NO.
BOGIE SYSTEM	10-MECH-12-8-15/A1 Sheet 1 /1
	10-MECH-12-8-16/A1 Sheet 1 /1
	10-MECH-12-8-33/A1 Sheet 1/1
Layout of Hydraulic on Bogie	VALF-JACK-01
Schematic circuit of 300t Jacks	VALF-JACK-02

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SECTION -A

GENERAL TERMS AND CONDITIONS OF THE CONTRACT

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PROPOSAL DOCUMENT, CLARIFICATION AND ADDENDUM

Quotations are invited from the interested bidders for the enclosed scope of work in two-part bid.

Part-1 technical & unpriced part of the work and Part-2 Priced commercial part.

Only experienced Bidders who are qualifying in bid-qualification criteria given in Section E2 only should quote.

The RFP document is organized in five sections as follows.

Section –A:General Terms and Conditions of the Contract

Section –B:General Specifications

Section –C :Scope of PO and General Project Information

Section –D:Technical Specifications.

Section- E: Annexures.

Title of the proposal:

“Design, Supply and Testing of Hydraulic Jacking System for Wheel Bogie with necessary accessories as per specification”

Date Public Notification issued by ISRO: **as per the notification**

Last Date of downloading tender Document by tenderer: **as per the notification**

Last date of submission of tender documents in online by tenderer: **as per the notification**

Last date of Bid sealing in online by ISRO: **as per the notification**

Last date for giving open authorisation in online by tenderer: **as per the notification**

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1. PROPOSAL DOCUMENT

- 1.1. Successful Bidder shall sign & stamp each page of the tender document (RFP) as token of his acceptance and submit the same before order placement.
- 1.2. Proposal documents shall remain the property of SDSC SHAR and shall not be used for any another purpose without the consent of SDSC SHAR.
- 1.3. The proposal shall be completely filled in all respects and shall be tendered together with requisite information & Annexure. Any offer incomplete in any particulars is liable to be rejected.
- 1.4. The Proposal (Unpriced Techno-commercial bid) with a complete set of the required documents shall be up-loaded in ISRO e-procurement website.

1.5. AMBIGUITY

Should there be any ambiguity or doubt as to the meaning of any of the tender clause/condition or if any further information is required, the matter shall be immediately brought to the notice of Head, Purchase & Stores of SDSC SHAR in writing

2. PREPARATION OF BIDS

2.1 SITE VISIT

Bidder is advised to visit & examine the site and its surrounding to familiarize himself of the existing facilities & environment and shall collect all other information which may require for preparing & submitting the Bid and entering into the contract. Claims and objections due to ignorance of existing conditions or inadequacy of information will not be considered after submission of the Bid and during implementation.

2.2 VALIDITY OF OFFER

Bid shall remain valid for acceptance for a minimum period of 4 (four) months from the due date of submission of the Bid. The Bidder shall not be entitled during the said period to revoke or revise his Bid or to vary the Bid except and to the extent required by SDSC SHAR in writing. Bid shall be revalidated for extended period as required by SDSC SHAR in writing. In such cases, unless otherwise specified, it is understood that validity is sought and provided without varying either the quoted price or any other terms & conditions of Bid finalized till that time.

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2.3 COST OF BIDDING

All direct and indirect costs associated with the preparation and submission of bid shall be to Bidder's account and SDSC SHAR will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bid process.

2.4 APPLICABLE LANGUAGE/ MEASUREMENTS

The bid and all correspondence incidental to and concerning the bid shall be in the English Language. For supporting document and printing literature submitted in any other language, an accurate English Translation shall also be submitted. Responsibility for correctness in translation shall lie with the Bidder.

All the measurements shall be given in metric system.

2.5 ARRANGEMENT OF BID

The Bid shall be neatly presented on white paper with consecutively numbered pages. It should not contain any terms and conditions which are not applicable to the Bid. The Bid and all details submitted by the Bidder shall be signed and stamped on each page as token of acceptance, by a person legally authorised to enter into agreement on behalf of the Bidder. (Corrections / alteration, if any, shall also be signed by the same person).

2.6 SCHEDULE OF PRICES

The schedule of prices shall be read in conjunction with all the sections of proposal document. The price must be filled online in the same format of Schedule of Prices' in Section E1. No copy of price bid shall be enclosed along with other document and upload the same anywhere in the e-procurement portal.

2.7 DOCUMENTS COMPRISING THE BID

Bids shall be arranged in the following order.

2.7.1 Part – I : Technical and Un priced Commercial Part

Technical and un priced commercial part shall comprise the attachments, Specifying attachment number arranged in the order as follows:

- (a) Submission of bid letter.
- (b) Power of attorney in favour of authorised signatory of the bid / proposal documents.
- (c) All the annexure in Section-E1 to E7 enclosed in proposal duly filled, signed and sealed
- (d) Bid qualification criteria for supply of Hydraulic jacks and all supporting documents.

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- (e) Write-up on the detailed procedure to be followed for design, manufacturing, supply, testing at vendor & SDSC-SHAR and repacking of all the items.
- (f) Un priced copy of schedule of prices with all other commercial terms, taxes, duties, exemption certificates and conditions duly filled (Prices to be kept blank), signed and stamped.
- (g) Solvency certificate from a scheduled bank for a value not less than Rs. 25 lakhs and not before 6 months from the date of tender closing.
- (h) Description of the procedures adapted for material procurement, fabrication with deviations from technical specification and proposed design modifications.
- (i) Data sheets for all the equipment & checklists enclosed in proposal duly filled, signed & stamped.
- (j) Technical literature & data sheets of equipment / machinery used by him and any other document as mentioned in the proposal.
- (k) Project execution plan
- (l) Any other relevant document, bidder desires to submit.

2.7.2 Part – II: Priced Commercial Bid

Priced commercial bid shall be filled online in the price bid format. Schedule of prices also to be filled in the online format and no separate document shall be attached. Deviations in terms and conditions, assumptions, conditions, discounts etc. shall be stipulated in format specified in the portal. SDSC SHAR will not take cognizance of any such statement and may at their discretion reject such bids.

3. BID SUBMISSION

Bids duly filled in by the Bidder should invariably be submitted as stipulated in the Letter inviting bid. Bids shall be submitted in the following manner.

3.1 PART – I : UN PRICED TECHNO-COMMERCIAL PART OF THE BID FOR THEWORK

Complete Techno-commercial part of the bid shall be filled online in the “Vendor Specified Terms’ form of the e-tender. Any documents related, technical literature, guarantee / warrantee certificates and any other relevant documents as per the tender shall be scanned in lower resolution format and uploaded to the e-tender under ‘Documents solicited from Vendor’ form only in ISRO e-procurement portal (<https://eprocure.isro.gov.in>).

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The deviation statement and checklist shall be filled online, without which the bid will not be considered.

3.2 PART – II: PRICE PART OF THE BID FOR THE WORK

Price bid shall be filled in the on-line 'price bid' form of the e-tender only in ISRO e procurement website <https://eprocure.isro.gov.in> . The cost of spares and other prices shall be filled in the respective forms available on-line in the eportal. Any other terms and conditions given in this part shall not be considered and if insisted upon by the Bidder, bids are liable for rejection.

- a) SDSC SHAR may open Part – I of the bid on the due date of opening subject to meeting the minimum evaluation criteria. Price Bids (Part-II) of technically and commercially acceptable offers shall be opened at a later date.
- b) SDSC SHAR reserves the right to reject any or all the Bids without assigning any reasons thereof.
- c) **Any bids/offers with price details in Techno-Commercial Offer (Part – I) shall be rejected.**

4. Vendor Evaluation Format

SDSC SHAR seeks response to the given questionnaire for assimilating data which would be used for evaluating the capability of the supplier for executing the referred work. Hence, the supplier is requested to provide only genuine data and any discrepancy found at a later point of time may result in rejection of the supplier from purchase process. Furnishing of data cannot be construed as automatic qualification for participation in the tender. Questionnaire should be signed by a responsible and authorized person of the Company / Agency.

Schedule of general particulars / vendor evaluation format shall be filled as per Section: E3. Schedule of Bidders experience and details of present works being executed are to be filled as per Section: E5.

Note: In order to consider as valid experience, all the experience has to be supported with the technical details, completion certificate and purchase order.

5. DETERMINATION OF RESPONSIVENESS

SDSC SHAR will scrutinize tenders to determine whether the tender is substantially responsive to the requirements of the tender documents. For the purpose of this clause, a substantially responsive tender is one which inter-alia conforms to all the terms and

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conditions of the entire Tender document without any deviations and reservations. The decision of SDSC SHAR shall be final in this regard.

6. BID EVALUATION

6.1 During evaluation, SDSC SHAR may request Bidder for any clarification on the bid or additional documents.

6.2 Bidder must provide the point-by-point compliance to the technical specifications along with deviations as per "Schedule of deviations" attached in section E4. The tender will be rejected, if the deviations are not acceptable to the Department.

6.3 Performance of Bidder on similar nature of works executed/ under execution shall be taken into consideration before selecting the Bidder for opening his price bid.

6.4 The time schedule for completion is given in the Proposal document. Bidder is required to confirm the completion period unconditionally.

6.5 SDSC SHAR 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 SDSC SHAR shall bear no liability whatsoever consequent upon such decision.

6.6 The Bidder, whose bid is accepted by SDSC SHAR, shall be issued a Letter of Intent (LOI) /Purchase Order (PO) to proceed with the work. Bidder shall confirm acceptance by returning a signed copy of the LOI/PO.

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SECTION-B

GENERAL SPECIFICATION

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1. INTRODUCTION

“Design, Supply and Testing of Hydraulic Jacking System for Wheel Bogie” as per the specifications.

2. SCOPE OF WORK AND TECHNICAL SPECIFICATIONS

The detailed scope of work and technical specifications is given in Sections D of specification document. Brief scope of work is given below. Contractors shall consider detailed scope of work is given in Section: D.

- Understanding and design of Hydraulic jacking system
- Supply of Hydraulic jack & power pack system as per specifications to SDSC SHAR, Sriharikota.
- Demonstration and testing of hydraulic jack & power pack systems at SDSC SHAR.
- Re-packaging the items, tools and packing of all the items and storing at the identified area.
- Submission of all required documents as mentioned in Section: D

2.1 GENERAL SCOPE

- This specification covers design, engineering, manufacture/procurement, inspection and testing at CONTRACTOR's works, packing, transportation from place of manufacture to site, unloading and storage at site, cleaning, installation, testing, at site for 300t Hydraulic Jacks and associated accessories, with hydraulic system and repacking after successful testing (includes packing material, man power and tools), at Satish Dhawan Space Centre SHAR, Sriharikota, Tirupati District, Andhra Pradesh, India.
- It is not the intent to specify completely herein all the details of design, construction of the equipment, erection, commissioning and testing requirements. However, the component / assemblies / equipment shall conform in all respects to high standards of engineering design and workmanship and be capable of performing in continuous commercial operation up to the CONTRACTOR's guarantee ensuring high degree of reliability, ease of operation and maintenance of the equipment in a manner acceptable to the Department who will interpret the meaning of drawings and specifications and shall be entitled to reject any work or material which in his judgment is not in full accordance therewith.
- The extent of supply under the contract includes all items shown in the drawings, notwithstanding the fact that such items may have been omitted from the

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specifications or Schedules. Similarly, the extent of supply also includes all items mentioned in the specification and/or Schedules, notwithstanding the fact that such items may have been omitted in the drawings.

- In the event of conflict between requirements of any two clauses of the specification documents or requirements of different codes/standards, specified, the more stringent requirement as per the interpretation of the Department shall apply.
- All necessary co-ordination with regard to sub-contracted equipment shall be carried out by the CONTRACTOR. The Department will communicate only with the CONTRACTOR for all matters pertaining to this contract.

3. SUPPLIER's OBLIGATIONS & FUNCTIONS

A. SPECIFICATIONS AND DRAWINGS

The Supplier shall execute the works in compliance with the provisions of CONTRACT, good engineering practices and codes requirements.

B. SUBMISSION OF TECHNICAL DOCUMENTS AFTER PO PLACEMENT

Supplier shall prepare and submit to SDSC SHAR for approval of following documents and drawings:

1. Technical literature & data sheets of equipment used for the hydraulic jacking systems.
2. Design calculations for the flow rate of hydraulic fluid, tank size & pipelines etc.
3. Documents related to flame proof for the motors and relevant catalogue for all the major electrical components as specified in Section: D
4. Demonstration and testing sequence schedule along with drawings.
5. Detailed Quality Assurance Plan
6. No manufacturing or procurement shall be taken up unless SDSC SHAR's approval is obtained. The above documents shall be submitted in a format approved by SDSC SHAR.

C. DESIGN & SUPPLY

Supplier shall carry out design and supply the hydraulic jacking system in accordance with the scope, technical specifications and terms & conditions of contract.

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D. DELIVERY AND STORAGE

1. Dispatch Instructions given in the Contract shall be strictly followed. Failure to comply with the instructions may result in delay in payment apart from imposing any other charges as may be deemed fit.
2. Delivery of Hydraulic jack & power pack systems as per specifications: FOR SDSC SHAR, Sriharikota.
3. The Supplier shall be responsible for transporting all the equipment to site, unloading and storage.
4. No equipment shall be delivered without obtaining dispatch clearance from SDSC SHAR.
5. All the equipment shall be properly packed to avoid any damage during transportation / handling / storage.
6. The equipment received at site shall be stored at a place assigned for this purpose.
7. Supplier shall take proper care while storing the equipment.
8. Supplier has to pack all the items in a hermetically sealed packings in the identified place after demonstration and functional check.
9. Supplier has to provide all the packaging items required to store the item in the identified place after demonstration.
10. Packaging material should be suitable to store the items in healthy condition for minimum two years.

4. DEMONSTRATION& TESTING

A. GENERAL

1. Supplier's staff shall include adequate number of competent engineers with proven experience on similar works to supervise the demonstration and testing works and sufficient skilled, unskilled and semiskilled labour to ensure completion of work in time.
2. Supplier's staff shall arrive at site on date agreed by SDSC SHAR. Prior to proceeding to work, however supplier shall first ensure that required/sufficient part of his supply has arrived at site.
3. During demonstration and testing, Department's quality team / their engineer will visit site to establish conformity of the work with specification. Any

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deviations, deficiencies or evidence of unsatisfactory workmanship shall be corrected as instructed by Department.

4. Supplier shall carry out work in a true professional manner and strictly adhere to the approved drawings. Any damage caused by Supplier during commissioning and testing to new or existing building / environment shall be made good at no extra cost to Department.

B. RECORDS

Supplier shall maintain records pertaining to the quality of commissioning work in a format approved by Department.

Supplier shall offer the equipment for inspection to Department's engineer who along with Supplier's engineer will sign such records on acceptance.

C. SAFETY

Supplier shall follow the safety regulations / codes and shall take necessary measures at his own cost.

D. MATERIAL HANDLING AND POWER

Electrical power and available material handling equipment will be extended by SDSC SHAR on free of cost for demonstration of hydraulic jacking system.

E. WORK RULES AT SDSC-SHAR

The work shall be carried out in SDSC-SHAR on working days only or permission to be obtained from the department for late hours / holidays.

5. ACCOMMODATION

Accommodation will not be provided by SDSC SHAR to Contractors. Supplier shall make their own arrangement for accommodation, transportation & canteen facility for all his staff, technicians, labour & workers.

6. MEDICAL FACILITIES

No medical facilities will be provided by SDSC SHAR. Supplier shall make their own arrangement at their own expenses for medical facilities for site personnel.

7. WORK PROGRAMME

Supplier shall prepare a detailed program schedule for review / approval by SDSC SHAR. Supplier as per exigencies of work shall revise and update programme periodically.

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8. SUB-CONTRACTS

- a) No work shall be sub-contracted without prior approval of SDSC SHAR.
- b) Supplier shall be responsible for the proper execution of any sub-contract placed by him in connection with this purchase order.
- c) Supplier shall furnish to SDSC SHAR the copies of all un-priced sub-orders showing promised delivery dates and places.

9. CHANGES AND MODIFICATION TO SPECIFICATIONS, DRAWINGS AND QUALITATIVE / QUANTITATIVE REQUIREMENTS

- a) Supplier shall obtain approval from SDSC SHAR before initiating the action for procurement of bought out items.
- b) During the fabrication review, supplier has to carry out the mutually agreed modifications to meet the overall requirement.

10. RECORD OF DRAWINGS AND O&M MANUALS

- a) Supplier shall submit 3 hard copies & one soft copy of all the approved drawings incorporating any modification / changes made during the execution of CONTRACT. All these drawings shall be marked as 'As Built'.
- b) Supplier shall submit 3 hard & one soft copy of O&M manual. These manuals should indicate weekly, monthly and yearly maintenance schedule and other instructions necessary for safe maintenance of equipment.
- c) Submission of the drawings and manuals shall be a precondition for releasing of any final payment due to Supplier.

11. TAXES AND DUTIES

- a) The tendered items as per the above subjected tender comes under "Scientific and technical instruments, apparatus, equipment, accessories, parts, components, spares, tools, mock ups and modules, raw material and consumables required for launch vehicles and satellites and payloads" having GST @ 5% (As per Dept of Revenue IGST Notification No. 25/2018 Integrated Tax (Rate) Schedule-I; Sl. No.243B dt: 31.12.2018 (Amendment to Notifications No. 7/2018-Integrated Tax (Rate) dt: 25.01.2018. Clause A (ix) about Schedule I 243A))

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Kindly accept to offer the item with 5% GST against End User Certificate from our Competent Authority that the items belong to the above category

- b) It is the responsibility of the contractor to issue the Tax Invoice strictly as per the format prescribed under the relevant applicable GST law (CGST Act/SGST Act/UTGST Act/IGST Act). Contractor to indicate the proper GSTN Registration/ HSN code in their tax invoices.
- c) CGST/SGST/UTGST/IGST shall be paid at actuals against Tax Invoice but restricted to the amount and percentage in the contract.
- d) GST details of SDSC SHAR are given below:

Designation : Purchase and stores officer VALF

Contact no : 08623-226082

GSTIN : 37AAAGS1366J1Z1

12. STATUTORY VARIATION

Statutory variation for CGST/SGST/UGST/IGST is applicable, provided the actual completion of services does not occur beyond the period stipulated in the order/contract or any extension (without levy of penalty). For variation after the agreed completion periods, the service provider alone shall bear the impact for the upwards revisions.

For downward revisions, the Department shall be given the benefit of reduction in CGST/SGST/UGST/IGST.

13. INCOME TAX

Income tax at the prevailing rate as applicable from time to time shall be deducted from the supplier's bills as per Income Tax Act,1961 and the rules there-under or any re-enactment or modifications thereof and a TDS certificate shall be issued.

14. BANK GUARANTEE FOR SECURITY DEPOSIT, PERFORMANCE BANK GUARANTEE :

A. Performance Bank Guarantee (PBG):

You have to submit a BG/DD/FDR in lieu of PBG from a Nationalized / Scheduled Bank for 3% of the order value at the time of supply valid till the completion of warranty period plus 60 days towards claim period.

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B. Security Deposit (SD)

3% value of the order shall be deposited with SDSC within 10 days from the date of the Purchase Order towards security deposit in the form of Bank Guarantee (BG)/ FDR/DD towards performance of the Contract valid till completion of the contract period plus sixty days towards claim period. (This will be returned by SDSC immediately on execution of the order satisfactorily as per order terms. If not, the amount will be forfeited). NOT REQUIRED FOR LANDED COST BELOW RS.5 LAKHS.

C. Combined BG for PBG cum SD

In case, if parties are unable to provide two separate BGs, i.e., one for SD & one for PBG, they can submit a combined BG for SD & PBG for 3% of the Order value valid till the completion of total contractual obligation (i.e., Supply period plus warranty period plus 60 days).

Note: No interest shall be payable on any bank guarantee.

15. PACKING AND FORWARDING

- a) The Supplier shall arrange to have all the material suitably packed as per the standards and as specified in the contract. Unless otherwise provided for in the contract, all containers (including packing cases, boxes, tins, drums, and wrappings) used by the Supplier shall be non-returnable.
- b) All packing and transport charges, transit handling costs, transit risk coverage and transport fees of agents employed at the place of delivery or elsewhere, shall be deemed included in the price to be paid to the Supplier.
- c) Supplier has to repack all the items after demonstration in a hermetically sealed containers/ boxes / drums etc. and the packaging has to take care the items for minimum two years. The material, manpower and tools required to pack all the items is under the scope of the supplier.

16. RISK COVERAGE

The Supplier shall arrange comprehensive risk coverage at his own cost covering the value of equipment including transportation to the site from manufacturer's works, storage at site till demonstration, testing at site. The period of such coverage shall be up to contractual completion period or any extension granted by Department thereof.

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17. ARBITRATION

In the event of any question, dispute of difference arising under these conditions or any conditions contained in the Purchase Order or in connection with this contract, (except as to any matters the decision of which is specially provided for by these conditions) the same shall be referred to the sole arbitration of the head of the Purchase Office or some other person appointed by him, it will be no objection that the arbitrator is a Government Servant that he had to deal with matter to which the contract relates or that in the course of his duties as Government Servant he had expressed views on all or any of the matters in disputes or difference. The award of the arbitrator shall be final and binding on the parties of this contract.

It is Term of this contract:

- a. If the arbitrator be the head of the purchase office.
 - I. In the event of his being transferred or vacating his office by resignation or otherwise, it shall be lawful for his successor-in office either to proceed with the reference himself, or to appoint another person as arbitrator, (or).
 - II. In the event of his being unwilling or unable to act for any reason, it shall be lawful for the Head of the Purchase Office to appoint another person as arbitrator:
or
- b. If the arbitrator be a person appointed by the Head of the Purchase Office in the event of his dying, neglecting or refusing to act, or resigning or being unable to act, for any reason, it shall be lawful for the Head of the Purchase Office either to proceed with the reference himself or to appoint another person as arbitrator in place of the outgoing arbitrator. Subject as aforesaid, the Indian Arbitration and Conciliation Act, 1996 and the rules there under and any statutory modifications thereof for the time being in force shall be deemed to apply to the arbitration proceedings under this Clause. The arbitrator shall have the power to the extent with the consent of the Purchaser and the Contractor the time making and publishing the award. The venue of arbitration shall be place as the purchaser in his absolute discretion may determine. Work under the Contract shall, if reasonably possible, continue during arbitration Proceedings.

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18. APPLICABLE LAW AND JURISDICTION

The laws of India shall govern this purchase order for the time being in force. The Courts of Andhra Pradesh, India only shall have jurisdiction to be with and decide any legal matters or disputes what so ever arising out of the purchase order.

19. FORCE MAJEURE

Should a part or whole work covered under this purchase order be delayed due to reasons of Force Majeure which shall include legal lockouts, strikes, riots, civil commotion, fire accident, quarantines, epidemic, natural calamities and embargoes the completion period for work, equipment referred to in this agreement shall be extended by a period not in excess of the duration of such Force Majeure. The occurrence shall be notified within reasonable time.

20. WARRANTY

The contractor shall provide **24 months** warranty for the entire system for a defect liability, after installation, commissioning, acceptance, repacking & final official handing over at his cost. During this period, supplier has to provide and adhere to the following:

- a) He has to attend based on the preventive maintenance visits and breakdown maintenance calls. All the defective components have to be replaced or rectified on one-to-one basis.
- b) Break down maintenance should be responded within 48 Hours' time and shall be completed within 48 Hours after respond.
- c) Department will not provide any transport/accommodation.
- d) In case vendor failed to attend and repair the system within 7 days from the date of reporting the problem, Department will reserve right to forfeiting the BG apart from withheld of any payment payable to the vendor.
- e) Where defects in items are remedied under warranty, the period for which the warranty operates shall be extended by such period, as the items were not available to SDSC SHAR. Where defect items are replaced by new ones, the full warranty period stipulated in the purchase order shall apply to such replacement items as from the date of their delivery.

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21. SCHEDULE OF PRICE

- 21.1 CONTRACT price shall include all costs of “Design, Procurement, Manufacture, Supply, Testing and Commissioning of Hydraulic jack system for wheel bogie”, shop testing, packing, forwarding, transport to site, unloading, storage, all risk coverage, installation, testing & evaluation and repacking after test of equipment including any other cost for proper and complete execution of the CONTRACT.
- 21.2 CONTRACT prices shall also include all travelling expenses, living expenses, salaries, overtime, benefit and any other compensation for engineers, supervisors, skilled, semiskilled workmen, watch and ward staff, labours and other staff employed by the Supplier, cost of tools and tackles required for erection and other consumable material required, and all taxes, duties, and levies as applicable on the date of submission of bid.
- 21.3 Supplier shall quote the prices similar to price bid format enclosed as Section –E1 only in online.
- 21.4 The rate quoted shall be on FOR SRIHARIKOTA.

22. TERMS OF PAYMENTS:

Option-1:

- I. 20% of PO cost as Advance against submission of Advance Bank Guarantee (ABG) for an equal amount from a Nationalized /Scheduled bank and shall be valid till Contract completion period plus 06 months claim period.
- II. 70% of PO cost along with 100% GST against receipt of complete material at our site and clearance by CLIP.
- III. 10% of supply cost after successful assembly, demonstration, testing, repacking & acceptance by CLIP and on submission of PBG.

Or

Option-2:

100% payment shall be made through RTGS within 30 days of receipt, testing, demonstration, repacking and acceptance by the department of the item at our site against submission of PBG.

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23. Penal Interest Clause:

If vendor fail to execute the order after drawal of advance payment, you have to refund the advance amount along with penal interest at bank lending rate plus 2%

24. Landing Cost:

Interest will be loaded for advance payments/stage payments as per the MCLR of SBI 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

25. DELIVERY SCHEDULE

The commissioning of hydraulic jacking system within the schedule is very essential. Hence, contractors are requested to adhere to the completion time strictly.

Sl. No.	Description	Schedule	Responsibility
1.	Release of PO	T0	Department
2.	Vendor has to submit the complete design report including the jack selection, power pack, circuit, hose selection, valve, preliminary logics etc., for Department Review and clearance.	T1= T0 + 30 days	Vendor
3.	Department Review and Clearance	T2 = T1 + 20 days	Department
4.	Submission of BOM for review and approval with all the accessories.	T3= T2 + 14 days	Vendor
5.	Department approval for BOM	T4 = T3 + 14 days	Department
6.	Readiness of the items including pre-delivery Inspection at factory and dispatch clearance. (within 6 months from the date of final approvals of drawings and calculation by department)	T5= T4 + 180days	Vendor
7.	Supply of all the Items including transportation and receipt at SDSC SHAR	T6=T5 + 20 days	Vendor
8.	Testing / demonstration along with load testing at site.	T7=T6 + 30 days	Vendor
9.	Repack of all the items	T8 =T7 + 10days	Vendor

26. LIQUIDATED DAMAGES

In the event of the Supplier failing to complete the work within the delivery period specified in the contract agreement or in extension agreed thereto, Department

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shall reserve the right to recover from the Supplier as liquidated damages, a sum of **0.5** percentage per week of the total contract price of equipment or work. However, the total liquidated damages shall not exceed **10.0** percentage of the total Contract price.

27. DISCLOSURE AND USE OF INFORMATION

- A. If the documents supplied by SDSC SHAR are marked ***“Strictly Confidential”***, supplier shall take all necessary steps to ensure the same.
- B. Supplier shall guarantee that all information and data received during execution of Purchase Order from SDSC SHAR shall be classified as ***“confidential”*** within the meaning of the Official Secrets Act and will not be divulged to any third party without prior written permission of SDSC SHAR. All drawings & documents shall be returned after execution of work.
- C. No publicity of any kind whatsoever regarding this work shall be given without prior clearance from SDSC-SHAR.

28. ACCEPTANCE AND REJECTION:

ACCEPTANCE AND REJECTION:

On completion of the work or part of the work as specified in the contract, the representative of the Department referred to, shall check as soon as possible, but in any event within one month of notification of readiness for acceptance that the work performed complies with the contract requirements as regards quantity and quality.

In the event of rejection of any of the articles, whereby the Supplier feels himself aggrieved, he may within eight days of the receipt of notification of rejection and before such articles have been removed from the place of inspection, give the Department notice of objection. Such objection shall be considered by a Board of Appeals of the Department. The Department shall, without prejudice to the arbitration clause in the contract, take a decision upon findings.

On completion of tests, the members of the Inspection Organisation of the Department or Inspection agency appointed by Department shall prepare a report, which must be countersigned by the Supplier.

29. SUSPENSION:

- A. Department may notify the Supplier to suspend performance of any or all of his obligations under the Contract. Such notice will specify the reasons for

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suspension and the effective date of suspension. Supplier there upon shall suspend the performance of such obligations until ordered in writing to resume performance of Contract by Department.

- B. If Supplier's performance or his obligations remain suspended or the rate of progress is reduced, then, the time of completion will be suitably extended and all costs incurred by Supplier as a result of suspension or reduction in rate of progress will be paid to Supplier provided that the suspension or reduction in the rate of progress is not by reasons of Supplier's default or breach of Contract.

30. CANCELLATION

A. GENERAL RULE

The Department shall have the right at any time to cancel a contract either wholly or in part by giving written notice by registered mail. From the time of receipt of the written notice, the Supplier shall undertake to observe the instructions of the Department as to the winding up of the contract both on his own part and on the part of his sub-suppliers.

B. WITHOUT FAULT OF SUPPLIER

In the case of cancellation of a contract by the Department without any fault of the Supplier, the Supplier shall on receipt of Department's instructions forthwith take the necessary steps to implement them. The period to be allowed to implement them shall be fixed by the Department after conclusion with the Supplier and, in general, shall not exceed three months.

Subject to the Supplier confirming, Department shall take over from the Supplier at a fair and reasonable price all finished parts not yet delivered to the Department, all unused and undamaged material, bought-out components and articles in course of manufacture in the possession of the supplier and property obtained by or supplied to the Supplier for the performance of the contract, except such material, bought-out components and articles in course of manufacture as the supplier shall, with the agreement of the Department, elect to retain.

C. WITH FAULT OF SUPPLIER:

The Department reserves the right, after full consideration of all relevant circumstances, including the observations of the supplier, to cancel a contract in any of the following circumstances.

- a) In the event of the Supplier's failure to meet

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(i) The Technical requirements of the Supplier.

(ii) The Progress and/or delivery requirements.

- b)** If the Supplier has not observed the provisions of the contract concerning the disclosure and use of information provided by the Department.
- c)** If the Supplier fails to comply with the provisions of the contract concerning the equipment, supplies and technical documents made available by the Department.
- d)** If the Supplier transfers his contract without the Department's authorization or concludes sub-contracts against the Department's explicit directives.
- e)** In the event that Supplier unjustifiably repudiates the Contract or fails to ship or dispatch all or part of the goods ordered for reasons other than those attributed to the Department's actions or as provided in the Force Majeure clause, the Department may, by giving an appropriate notice in writing to the Supplier, fix a Date of Essence by which the Supplier must complete the dispatch in full. If the Supplier fails to do so, the Department, in addition to his right to recover Liquidated Damages in terms of the Contract, shall also have the right to cancel this Contract and make substitute purchases from other sources. If the goods are in a partial state of fabrication, Department may have the fabrication completed by other means, in which event Supplier shall be liable to Department for the additional expenses incurred thereby, but shall not have any claim on savings, if any, in such cases.

In the event of such cancellation, the Department shall unless otherwise specified in the contract, only pays.

- In the case of a fixed-cost contract for the supply of equipment or material. The contractual value of items delivered and accepted under the contract before receipt of notification of cancellation, or to be accepted under the special conditions of cancellation.
- In the other cases, a fair and reasonable price in respect of such work as has been carried out prior to the receipt by the Supplier of notification of cancellation.

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31. FRAUDULENT PRACTICES, BRIBERY AND CORRUPTION OF GOVERNMENT SERVANTS

The contractor represents and undertakes that he has not given, offered or promised to give, directly or indirectly any amount, gift, consideration, reward, commission, fees, brokerage or inducement to any person in service of the department or otherwise in procuring the contracts or forbearing to do or for having done or forborne to do any act in relation to the obtaining or execution of the contract or any other contract with the Government for obtaining a contract or showing or forbearing to show favour or disfavour to any person in relation to the contract or any other contract with the government. Any breach of the aforesaid undertaking by the contract or any one employed by him or acting on his behalf or for his benefit (whether with or without the knowledge of the contractor) or the commissioning of any offence by contractor or any one employed by him or acting on his behalf, as defined in chapter IX of the Indian Penal code, 1860 or the prevention of corruption Act. 1947 or any other Act enacted for the prevention of corruption shall, without prejudice to any other legal action, entitle the Department to cancel the contract either wholly or in part, and all or any other contracts with Contractor and recover from the Contractor such amount or the monetary value thereof and the amount of any loss arising from such cancellation without any entitlement or compensation to the Contractor. The Department will also have the right to recover any such amount from any contracts concluded earlier between the contractor and the Government of India. The contractor will also be liable to be debarred from entering into any contract with the Government of India. A decision of the Department to the effect that a breach of the undertaking had been

32. Risk and Cost Purchase:

Timely delivery of goods/services is of prime importance and where the vendor fails to fulfil their contractual obligations, the Procuring Entity shall be entitled, and it shall be lawful on his part, to procure Stores and/ or services similar to those ordered/cancelled, with such terms and conditions and in such manner as it deems fit at the "Risk and Cost" of the Contractor and the Contractor shall be liable to the Procuring Entity for the extra expenditure, if any, incurred or accrued by the Procuring Entity for arranging such procurement. However, the Contractor shall not be entitled to benefits if any, from such procurements.

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Prior to resorting to risk purchase the Purchaser shall consider impact of the default by the contractor, proper notice to the contractor to invoke risk purchase clause and method of recovering the additional amount spent by the Purchaser. The cost as per risk purchase exercise may be recovered from the Earnest Money Deposit/ Security Deposit/ Performance Security of the supplier and/or bills submitted by the supplier against the same contract or any other contract. GST will be charged / levied on Risk Purchase as per the provision of GST Act Rule thereon.

Risk purchase action may be initiated under any of the following conditions.

- a. When the supplier fails to deliver the materials even after extending the delivery period.
- b. When the supplier fails to respond to purchases request for supply of the materials and fails to provide any genuine and bonafide reason for the delay in supply.
- c. When the supplier breaches any of the terms and conditions of the supply order/ contract and as a result fails to execute the order satisfactorily.

33. Land Boarder Sharing Deceleration

The bidder shall provide compliance to Order No. F.No.7/10/2021 PPD dated 23.02.2023 and amendments thereof by Ministry of Finance, Department of Expenditure, Public Procurement Division regarding restrictions on procurement from a bidder of a country which shares a land border with India and comply to all the provisions of the Order. In this regard, you shall certify that the bidder entity is not from such a country or, is from such a country, has been registered with the Competent Authority.

34. Make-In-India (MII) Clause:

Provisions contained in Public Procurement Policy (Preference to Make in India); Order 2017 issued by DPIIT vide OM No. P-45021/2/2017-PP(BE-II) dated 16.09.2020 & directives related including latest amendments (if any) is applicable for this tender. You are requested to provide Self Declaration Certificate that the offered Item meets Local Content Requirement of Class 1 or Class 2 as per Make in India (MII) Policy, clearly indicating the Percentage of local content & the details of Location(s) at which value addition is made in the offered product. It may be noted that Local Content shall not include services such as Transportation, Insurance,

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Installation, Commissioning, and Training and after sales service support like AMC/CMC etc. Minimum 50% local content for Class-1 local supplier and minimum 20% local content for class 2 local suppliers.

Bidders shall submit self declaration indicating percentage of local content along with location of value addition in INDIA.

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SECTION C

GENERAL PROJECT INFORMATION

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PROJECT INFORMATION

- | | | |
|-----|---|---|
| 1.0 | Project Title | :Hydraulic Jack for bogie system of SDSC-SHAR |
| 2.0 | Location of Delivery Point | :Sriharikota, AP |
| 3.0 | Elevation | : 4.2 m |
| 4.0 | Access to Site | : Road
From North of Chennai is approx. 100 km.
From East of Sullurpeta in Tirupati dist. is approx. 28km.

Rail
Chennai – Vijayawada rail track line. |
| 5.0 | Terrain | : Uneven with minor level variation |
| 6.0 | Climatic Conditions | |
| a) | Temperature | |
| | Mean of daily max | :42.2 °C |
| | Mean of daily min. | :11.8 °C |
| | Maximum Temperature | :44.6 °C |
| | i. Design ambient temperature for performance guarantee | :45.0 °C |
| | ii. For electrical system design | :50 °C |
| b) | Relative humidity | |
| | i. Range | :15% to 100% |
| | ii. Design relative humidity for performance guarantee | :70% |
| c) | Rainfall | |
| | i. Annual average maximum | :1331.3 mm |
| 7.0 | Wind Load | |
| | Basic wind speed | :65m/s
(Enhanced by a factor 1.3) |
| 8.0 | Seismic Data | : As per IS: 1893 latest issue |
| | Zone | :Zone II |

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SECTION -D

TECHNICAL SPECIFICATION

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1.0 OVERALL, SCOPE OF WORKS

The scope of Design, Supply and Testing of Hydraulic Jacking System for Wheel Bogie shall include the following:

Sl.no	Description	Quantity
1.	300t lifting capacity double acting hydraulic jack assembly with stroke length of 150 mm and close height of 420 mm with mechanical safety lock nut and tilting saddle for MLP lifting and trolley assembly with pressure, displacement sensors, counter balance valves or equivalent, mechanical pressure gauges and accessories. The hydraulic jacks shall be provided with redundant seal configuration.	6 nos. [4 nos. (Working) + 2 nos. (stand by)]
2.	Hydraulic four split flow power unit (Half flow rate capacity) with flame proof electric motor, Ex. proof solenoid directional control valves, needle valves, system fluid, pressure gauges and along with necessary accessories	2 set
3.	Hydraulic four split flow power unit (half flow rate capacity) with provision for driving pneumatically as a stand by unit	1 set
4.	Electrical system	1 set
5.	PLC Control System	1 set
6.	Display panel	1 Set
7.	Interconnection tubing, tube fitting, clamps, hose assemblies, manifold block etc. for piping between hydraulic unit, manifold and hydraulic jacks (located at 4 corners at 9m x 6.5m span bogie unit as indicated in the drawing)	1 set
8.	Seal kits for 300t hydraulic jacks	2 sets
9.	Seal kits for hydraulic power unit	1 set
10.	Testing and demonstration of hydraulic jacks, power packs, control panel and display panel as integrated system at SDSC SHAR	1 lot
11.	Packing material for packing all the items after testing and demonstrating.	1lot

Note: Detail specifications for the above items has been elaborated in subsequent pages.

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2.0 BACKGROUND INFORMATION / FUNCTIONAL REQUIREMENT

2.1. MLP anchoring and de-anchoring Operation

In Assembly Facility, the following systems are involved for the operation.

- a. Mobile Launch Pad Structure
- b. Bogie system

Weight of MLP with launch vehicle is 550 t (approx.).

The MLP is positioned and anchored at ground anchors. The MLP is a steel structure on which the launch vehicle is integrated. When the MLP with the launch vehicle in assembled condition is to be moved to the Launch Pad (LP), the bogie structure is brought under the MLP. Using MLP lifting jacks (4nos of 300t) resting on the Bogie structure at its four corners, lift the MLP+ Launch vehicle, anchor spacer plates are removed and then the MLP lifting jacks are lowered so that the MLP along with vehicle rests on the bogie structure for transportation. Similar reverse sequence operation is followed when the MLP along with the Launch vehicle is to be anchored in the launch pad area. The bogie structure runs on a single rail track pulled/pushed by a road moving hauler.

2.2. Hydraulic operation

In order to achieve all the hydraulic functions of jack operation, the Hydraulic Power Unit shall be mounted on the Bogie system structure (Ref Dwg.No:VALF - JACK-01) and all the jacks for MLP lifting (4 X 300t) shall be piped up by interconnecting piping from the power pack. The jack lifting shall be achieved through Solenoid operated Direction Control Valves remotely controlled by operator from a control cabin also to be located in the Bogie structure. All the four MLP lifting jacks will be operated simultaneously.

In order to achieve the above functional requirement of controlled & precision lifting of MLP and Bogie system, the entire hydraulic equipment covered under the scope of this tender shall consist of Six(4 + 2(standby)) Nos. 300t hydraulic Jack assemblies (for lifting MLP) complete with associated hydraulic power unit, accessories and control systems, PLC system for synchronized lifting and lowering of MLP and Bogie with accuracy of ± 1 mm shall be configured & supplied.

Vendor to Note:

Center of gravity (C.G) of the MLP is not coinciding with its geometrical center line. Hence, during lifting and lowering of MLP, **the 4 nos. of hydraulic jacks will be loaded unsymmetrical for about 100 t (approx.) about center line of the Bogie.** It should be ensured that, **the lifting and lowering of MLP shall be**

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done synchronously within ± 1 mm (difference between jacks has to be maintained below ± 1 mm).

Provision shall be made for individual operation also for MLP lifting jacks.

Initially all the four jacks will be operated simultaneously. Later, individual jacks may be operated based on the requirement and level difference of each bogie unit.

2.3. MLP lifting measurement system

As the MLP has to be lifted/ lowered precisely, it is required to monitor the level at each corner so that the operation can be done uniformly by isolating a particular jack. To achieve this, stroke length/piston movement distance measurement system (sensors) shall be positioned at each hydraulic jack and display of stroke length for each jack shall be displayed in the display panel as mentioned in this document.

2.4. Pressure monitoring system

Pressure gauge and pressure transmitters to be provided at pump outlet location, inlet / outlet for jack locations and all the readings should be displayed at the display unit.

2.5. Display panel:

Stroke lengths and pressure values read by the respective sensors shall be displayed in the display panel. Stroke length reset push button shall be provided on the display panel. Display unit shall be suitable for Ex d II B, Zone-1, T4 Class.

2.6. Electrical & PLC control panel:

It shall be equipped with suitable electrical and control systems in place to accommodate the operation described in this document.

2.7. Hydraulic Pump unit:

The hydraulic system shall be provided with three sets of four split hydraulic pump. Capacity of each pump shall be suitable for operating the four 300t capacity hydraulic jacks for lifting MLP in half of the rated speed. For lifting at rated speed, two pumps shall be operated simultaneously. 3rd pump shall be provided with provision to operate pneumatically as a stand by unit.

Pumps shall be mounted on the common tank with necessary accessories. The hydraulic oil shall be flame retardant type.

3.0 DETAILED SCOPE OF WORK

3.1. Understanding the Bogie Jacking System for lifting MLP individually and

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designing the complete hydraulic system (Power Pack and other associated components).

- 3.2. Submission of design reports, QAP, electrical & control system details and obtaining approval from the Department (SDSC SHAR).
- 3.3. Submission of the drawings and documents as per the technical specification.
- 3.4. Supply of all the equipment to SDSC SHAR, Sriharikota.
- 3.5. Testing of Jacking system at SDSC SHAR as per departmental approved testing scheme as per clause no 12 of this section.
- 3.6. Re-packaging the items, tools and packing of all the items and storing at the identified area.
- 3.7. Submission of warrantee for efficient and specified performance of the total equipment. In case, any item is found to mal-operate or fails to provide specified performance during inspection/ testing at SDSC SHAR or during trial runs of the system or during warrantee period of one year after commissioning, the Supplier shall attend to the faulty/defective item within shortest possible time and make necessary repairs/ replacements to the satisfaction of the Department, without any commercial implication.

4.0 EQUIPMENT AND SERVICES TO BE PROVIDED BY THE CONTRACTOR

- 4.1. Supply of 6 nos. of 300 t capacity (or more) double acting hydraulic jacks for MLP lifting, with closed shut height less than 420 mm and fully extended height more than 570 mm including tilting saddle, mechanical lock nut with trolley assembly (jack in suspended condition). Stroke length of each jack shall be at least 150mm.

All the jacks shall be provided with suitable redundant sealing system shall be provided on the piston head.

- 4.2. Electrical control panel (for entire system).
- 4.3. Power pack shall be provided with oil tank with filters, air breather, level gauge, and temperature gauges etc.
- 4.4. Power pack shall be split flow type with 4 outlets for simultaneous operation of 4 number of jacks with adequate flow rate and pressure rating.

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- 4.5. Pneumatically operated 4 split flow pump in case of power failure.
- 4.6. Directional Control Valves, Check Valves, Safety Relief Valves (for smooth retraction of jacks) etc. suitable for Ex d II B, Zone-1, T4 Class.
- 4.7. Pressure gauges, pipelines, counter balance check valves etc.
- 4.8. Entire length of piping required from power pack to the four nos. Hydraulic jacks for MLP lifting, mounted at 9 m x 6.5 m span on bogie structure with suitable clamping arrangement including manifold.

(Supply of sufficient quantity of the piping, clamps and manifolds are under scope of this tender. **Installation of jacks and piping to the bogie is excluded from the scope of this tender**)
- 4.9. Flexible hoses with QCDC couplings, required for connecting hydraulic jacks with the pipelines.
- 4.10. MLP lifting measurements system in jacks, with display provision in the display panel.
- 4.11. Pressure monitoring system by incorporating suitable pressure transducers/ pressure transmitters for monitoring the outlet pressures of four outlets for MLP lifting system of hydraulic power pack.
- 4.12. Electrical power/ control/ data cables required for erection of the Hydraulic Jacking system including power cables from building electrical panel to power panel of jacking system and their installation.
- 4.13. All other items, which are not listed in the above description, but are required for successful operation of Hydraulic Jacking System.
- 4.14. Inspection and testing at Supplier's shop, packing and forwarding, transportation to SDSC SHAR.
- 4.15. Testing and demonstration of Hydraulic Jacking System with load (load will be provided by department) at SDSC SHAR.

5.0 DESIGN INPUT

Design input for sizing and selection of jacks and associated hydraulic equipment (preliminary design parameters) is given below for guidance to the Supplier. The Supplier shall work out and submit detailed technical specification of the Jacks

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and the associated hydraulic system and controls that would meet the exact functional requirement of the Jack system.

5.1. MLP Lifting Jacks

Specifications:

Total Number of Jacks	4 nos. (in operation) + 2nos. (standby)
Jack Type	Double acting hydraulic cylinder with lock/safety nut, tilt saddle and transport trolley. The piston shall be provided with redundant seal. All Advance/Retract ports shall be positioned suitably for installation easiness of the hydraulic jack in pocket of size 1000 mm (L) x 520 mm (W) x 420 mm (H).
Capacity of each jack (lifting)	300t (min)
Rated Pressure	700 bar (max)
Closed shut-off height of Jacks with trolley, tilting saddle and lock nut	Less than 420 mm
Stroke length	150mm (nominal) with mechanical lock nut
Rate of lift under load	7 to 15 mm / minute (approx..)
Rate of lower under load	7 to 15 mm / minute (approx..)

Design Features of jack components:

Sl.no	Description	Remarks
1)	Parts	a. Counter balance valve and pilot pipe b. Fitted with screw type quick couplers c. 2nos. of suitable mechanical pressure gauge per jack. d. Safety relief valve for return line e. Lift/stroke measuring device (Ex d II B or better)
2)	Ram	Screwed type with Acme/square thread and complete with locking collar. Threads on lock nut, ram and Jack body shall be designed to take the full load and up to an overload of 150%. Piston/ Ram head shall be provided with provision of accommodate double seal system.
3)	Saddle	Nominal diameter of 300 mm, swiveling type with tilting angle of ± 5 degrees and equipped with anti-skid top surface. Jack Saddle shall be with suitable spring-based

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		arrangement.
4)	Cylinder	<p>The size of cylinder may be suitably selected to accommodate the jack in available space as per the enclosed drawing (10-MECH-12-8-15 & 10-MECH-12-8-16). Operating pressure can be selected in accordance with testing requirements as per ASME B 30.1-1992 or better.</p> <p>Cylinder shall be manufactured from bar stock. Welded cylinders are not acceptable.</p>
5)	Material	Forged carbon steel or better.
6)	Surface Quality	<p>Inner surface of the cylinder shall be honed and shall be nitrocarburized. Outside body of the jack shall be anti-corrosive treated.</p> <p>Cylinder shall comply to the standards laid by ASME B30.1</p>
7)	Sealing	The seals shall be of very high quality compatible with system fluid.
8)	Hose connection	From termination of rigid piping up to the jacks, hoses of metal braided high-pressure of suitable length are to be provided. The hose end connection shall be QCDC type. Mechanical pressure gauges (0-1000 bar) shall be mounted near the jacks (two gauges for each jack, one in supply & return line) for visual indication of pressure.
9)	Operation	Control panel with selector switches (for each individual outlet, allowing single or multiple cylinder operation) suitable for Ex d IIB, Zone-1, T4 Class. Cable connecting control panel to power pack shall be at least 10 m.
10)	Operational requirement	Synchronous movement of all jacks with an error not exceeding ± 1 mm over full stroke (by help of PLC control). All the four (4) jacks shall lift/lower equally and positively throughout the movement to prevent tilting of load lifted/ lowered. Provision shall be available for simultaneous lifting/lowering of all jacks or lifting/lowering of selected jacks based on the requirement.
11)	Trolleys	The trolleys for jacks shall be meant for easy maneuverability. It should be sturdy with four nos. of lockable swivel able cast iron castor wheels of suitable capacity. When jack is loaded, caster wheels of trolley has to be unloaded, so that jacks only will take the

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		full load.
12)	Hydraulic fluid	Fire retardant type hydraulic oil.

5.2. Hydraulic Power pack for MLP jacks Operation

The supplier has to specify capacities of all items and submit calculations to establish adequacies of capacities.

Function: To supply high pressure hydraulic fluid to four(4) nos. 300t jacks for MLP lifting.

The power pack shall be complete with two (2) nos. high pressure 4-split flow type pumps operated by flame proof Electric motor (Group IIB class) and one (1) no of 4-split flow type manually operated pump as stand by for emergency purpose. The capacity of the pump shall be selected, such that any one (1) pump is suitable for lifting/lowering operation of four (4) nos. of 300 t hydraulic jacks simultaneously by half of the rated speed.

The stainless-steel oil tank shall be complete with all the accessories, viz. oil level indicator, filter-breather, level switch, temperature gauge, temperature switch, return line filter, drain cock etc.

The power pack shall have safety relief valves and the entire necessary jack operating control components suitably mounted, piped-up with stainless steel pipe work and wired to a common junction box. Operating valves shall be mounted on suitable manifold blocks so that piping work is minimized to avoid leakage points.

Directions Control Valves with 24 V DC Class F solenoids.

Pilot operated check valve / Counter balance valve shall be provided on individual 300 t MLP lifting jacks for holding the load.

5.3. Description of system unit

The hydraulic system has been shown schematically in Dwg. No. VALF-JACK-01&02. This shall be used for guidance purpose to the supplier for this detailed engineering of the system & equipment.

Major units of the hydraulic system have been indicated below.

- **Tank unit with mounted accessories**
- **Pumping unit**
- **Valve Stand**
- **Pipe Mounted Items**
- **Jacks with Mounted Items**
- **Interconnecting Piping**

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All other items required for complete package in all respect to achieve the functional requirements of jack operations in an integrated manner as envisaged for the project are included in the scope of supply of the supplier.

Broad coverage of items for above major units is also indicated below for guidance.

Sl. No.	Item Description	Operation	Qty.
1.	Tank		
	Fluid tank	100 litres capacity Stainless Steel 316, rectangular design for fluid storage	1 no
	Working Fluid	100 litter + 200 litter spares	
2.	Tank Accessories		
	Oil level indicator	For visual level indication	1 no
	Filler/breather	To compensate level difference and to refill fluid	1 no
	Temperature gauge	For visual temperature reading	1 no
	Drain Valve	For drain the tank	1 no
	Return line filter	To filter the fluid coming back to tank	1 no
	Pump suction filter/ Strainer	To filter the fluid before pumping	1 no
	Junction box	All control wires of solenoids & instrumentation items terminated in the terminal strip in the junction box	As per design
	Level Switch	For level control	1 no
3.	Pumping Unit (electric motor operated)		
	4-split flow pump	To supply pressurized fluid	2 nos.
	Flame proof Electric motor	To drive the pump	2 nos.
	Coupling for Pump Motor	To transmit power from motor to pump	2 nos.
	Pressure Relief Valve	safety protection against	As per design

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		excessive pressure	
	Check Valve	To avoid back flow	As per design
4.	Pumping Unit (Manually operated)		
	4-split flow pump	To supply pressurized oil, by operating pneumatically in case of emergency	1 no.
	Coupling with pneumatic drive	To transmit power from pneumatic drive to pump	1 no.
	Pressure Relief Valve	safety protection against excessive pressure	As per design.
	Check Valve	To avoid back flow	As per design
5.	Valve Stand		
	Check Valve	To avoid back flow	As per Design
	Circuit Dump Valve	To dump/load pump flow	
	Direction Control Valve	To control lifting/ lowering of Jacks (with provision of manual operation)	
	Pressure Relief Valve	Safety protection against excessive pressure	
	Throttle check valve	To control speed of 300t jacks	
	Pressure Gauge, 0 -1000 bar	To read pressure	
	Note: Power unit consisting of all the above units shall be assembled in a composite manner complete with piping work up to the take-off point interconnecting piping for connecting to the cylinder ports as shown in the schematic Drawing. (Installation of piping system for the bogie is not in scope of vendor, but supply of suitable quantity pipes and test & demonstration of complete system at SDSC SHAR shall be under the scope of the qualified vendor.)		
6.	Jack, Jack Mounted/ Line Mounted Items and Hose Assemblies		
	Pilot operated check valve/ counter balancing Valve block for jacks (Jack mounted type)	To prevent drifting of 300t load	As per Design
	High Pressure steel braided Hose Assemblies	To provide flexibility	

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	300 t Jack	To lift MLP	6 nos. [4 (W) +2(S)]
	Pressure gauge (0 to 1000 bar)	To read pressure	As per Design

The tank and entire piping and fittings shall be of stainless steel. The hydraulic unit consisting of Tank, Pumping Unit, Filters, Valves, etc. has to be fitted inside the cabinet of size: 2000mm (L) x 2000mm (B) x 1500mm (H).

Note: One spare oil barrel of approximately 200 liters shall be supplied apart from the required quantity for the operation/ testing.

5.4. Interconnecting plumbing and manifold block: The supply of interconnecting piping including entire piping work complete with tubing, tube fitting, end fittings, tube clamps & mounting brackets, manifold block and hose assemblies with QCDC. Any additional interfaces required for testing and commissioning of the piping network also to be arranged by vendor. Installation of piping in the bogie is not under scope of vendor. However, for testing/ demonstration at SDSC-SHAR, party has to arrange all the pipe fittings.

5.5. Pressure measurement system: Pressure sensors shall be positioned near to manifold. Pressure sensors data shall be displayed in the display panel. Sensors shall be compatible with Ex d IIB, Zone-1, T4 Class environment or better.

5.6. Stroke length measurement system: Stroke length/piston movement distance measurement system (sensors) shall be positioned at each hydraulic jack and display of stroke length for each jack shall be displayed in the display panel. Sensors shall be compatible with Ex d IIB, Zone-1, T4 Class environment or better.

6.0 Electrical and Control System

6.1. Scope

Supply includes all equipment of power and controls to meet the functional requirement as per the control philosophy of the jack operations.

All the electrical equipment should conform to latest standard BIS codes and the

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practices followed for design, installation, testing, commissioning, operation and maintenance. Tests shall also conform to international standards IEC/VDE/DIN/BS. The supplier shall submit all the relevant test certificates to ISRO.

6.2. Electrical Equipment Environment

1. Items supplied should be suitable for Hazardous Area: Zone1, Gas Group IIA/IIB, T4 as per IS 5572, IS 5571, IS 2148 and IS 5780 or equivalent IEC 60079-1:2001 and IEC 60079-0:2004 standards.
2. All the equipment's to be considered for weather proof protection (IP-65)
3. Item supplied should be suitable for tropical and humid climate: Temperature of 50°C & RH 90%
4. De-rating: All the drive motors, power cables etc., shall be done for ambient temperature of 50°C
5. Item supplied should be suitable for the following power supply variation: Voltage $\pm 10\%$ and Frequency $\pm 3\%$.

6.3. Voltage

1. Power supply to panels: 3 Ph, 4 Wire, 415 V AC $\pm 10\%$, 50 Hz $\pm 3\%$.
2. Control Voltage inside the Electrical Panel:
 - a. 1 Ph, 3 Wire, 230 V AC for all lights, power sockets, etc.
3. Control Voltage in the Pendant push button, limit switches, indication lamps in pendant, etc: 8.9 V, Intrinsic safe module supply. Make: M/s P&F or equivalent after departmental approval.

6.4. Electric Motor

1. Should accept the input from either DOL or Star Delta, Class 'F' insulation, 60% CDF, min of with 300 starts per hours, IP55, or as approved by department and suitable for hazardous area mentioned above.
2. Terminal blocks of all motors
 - a. Preferably on top of the motor.
 - b. Wherever it is on the side of the motor, a minimum clearance of 600 mm to be maintained to approach for maintenance.
3. Current drawn by the Motors: Maximum Current drawn by all motors with SWL operable conditions should not exceed 80 % of the full load rated current even at slower speeds.
4. Over load capability: 150% of full load current for 2 minutes without damage or permanent deformation from zero to base speed.
5. Motors shall be of Crompton Greaves / ABB / Bharat Bijlee make. Any other make shall be with the approval of department.

6.5. Control Philosophy for the system

Hydraulic power unit of jacking system shall be provided with following control with appropriate selection as described in this document:

1. Auto mode of operation with suitable control system
2. Semi-Auto mode of operation in case of control system failure

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3. Manual mode of operation.

6.6. Junction Boxes

1. Flame Proof Junction Boxes (Applicable only for the voltage system 24 V DC and above)
 - a. FLP junction boxes need to be planned for inter facing of all the equipment which are powered not through intrinsic safe supply (i.e., > 8.9 V).
 - b. All the equipments and system connected to this JB shall be terminated using double compression flame proof glands only.
 - c. Preferred Make: M/s BALIGA or M/s FCG or equivalent after departmental approval
2. Non-Flame Proof Junction Boxes (Applicable only for the voltage system of 8.9 V)
 - a. Non-FLP junction boxes need to be planned for inter facing of all the equipment which are powered through intrinsic safe supply (i.e., push button control, selector switches, indication lamps, etc).
 - b. Preferred Make: Rittal, P&F or President or equivalent after departmental approval
3. The above junction boxes need to be mounted separately on bogie structure near to power pack for easy maintenance of the hydraulic units of power pack. Suitable interface required for the mounting is in the scope of the supplier.

6.7. Power Cables

1. All the power cables shall be of 5 cores only.
2. Minimum size shall be of 4 sq.mm.
3. The cable running between panel to field equipment are of 1.1 kV Grade, XLPE insulated, copper conductor, G.I. armoured cables only.
4. Power cables towards the motors are to be selected as follows:
 - a. Voltage Drop: 3% Maximum only accepted.
 - b. Incomer cables rating to be considered with all the loads are in operation.
5. All the cables to be routed through suitable size cable tray only. Cable tray to be covered with cable tray covers. This tray shall be supplied with suitable bends, tees, etc. in a standard as per the requirement. Fabricating the bends and tees in site not acceptable.
6. Main power will be made available by SDSC SHAR at one point for the entire power and control requirement. Distribution of power from this point to a power panel and from there to the control panel is in the scope of the supplier.

6.8. Control Cables

1. All the control cables shall be minimum of 12 core which are running between intrinsic safe junction box to various panels.
2. For the End equipment 4 core to be considered (direction control valve, level

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switches, etc).

3. The cable running between panel to field equipment are of 1.1 kV Grade, FRLS, XLPE insulated, copper conductor, G.I. armoured cables only.
4. Out of used cores, 30% of core shall be kept as spare with respect to each size of the cables from panel to junction boxes.

6.9. Cable Identification

1. Cable tags indicating the source and destination to be provided for all the cables.
2. The ferrules shall be of ring type and of non-deteriorating material.

6.10. Indication Lamps

1. It shall be of cluster LED provided with translucent lamp covers.
2. Main Power ON / OFF
3. Motor Power ON / OFF (for individual Electric motor)
4. Selection of Mode
5. Selection of Jacks
6. Ready status of PLC.

All shall be driven by Intrinsic Safe relay.

6.11. Selector Switch

Following operations to be performed.

1. Key authorized main power ON / OFF with the provision of key removal in OFF condition.
2. Selection of mode of operation. Manual / Auto / Semi-auto / *neutral* mode operation for MLP lifting / lowering.
3. Key authorized for the operation with the provision of key removal in OFF condition.
4. Power Pack ON / OFF (provision for independent pump to be considered)
5. Selection of individual Jacks operation for MLP lifting / lowering.
6. Failure of PLC

All the above selector switch shall be driven by Intrinsic Safe relay (i.e., through intrinsic safe digital barrier).

6.12. Push buttons

Following operations to be performed.

1. Jack UP & DOWN.
2. Motor Power ON & OFF (for individual Electric motor)
3. Emergency Push button.
4. Reset operation.

All the above push button shall be driven by Intrinsic Safe relay.

6.13. Panel

1. Design Construction (FLP Panel)
 - a. Enclosure – Floor/wall mounting, Front operated free standing.

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- b. Lifting arrangements - Suitable Lifting Arrangement shall be provided
- c. Degree of protection – IP 54.
- d. Shrouding – As per standard (to be provided inside the panel, in front of power components and power terminals).
- e. Cable entry (power and control) – preferably bottom.
- 2. Design Construction (Non-FLP Panel)
 - a. Enclosure –Floor/wall mounting, Front operated free standing.
 - b. Frame, mounting plates, Doors & Covers – 2.0 mm Thickness CRCA.
 - c. Degree of protection – IP 65.
 - d. Shrouding – As per standard (to be provided inside the panel, in front of power components and power terminals).
 - e. Cable entry (power and control) – preferably bottom.
- 3. Name Plate (Panel and components)
 - a. Material – Transparent acrylic.
 - b. Colour of letter – white letter in black background.
- 4. Terminal blocks
 - a. Terminal blocks shall be of 750 Volts grade of the stud type and shrouded.
 - b. Insulating barriers shall be provided between adjacent terminals.
 - c. All the terminal blocks are grouped with respect to the following:
 - i. 24 V Power distribution (separately for positive and negative).
 - ii. 230 V Power distribution (separately for phase and neutral).
 - iii. 415 V Power distribution if any.
 - iv. Motor power distribution.
 - d. Short linked Terminal blocks are to be used for terminal multiplication. More than one wires need to be avoided in one terminal block.
 - e. All future interlocks to be provided with permanent shorting link.
 - f. Interlocking between the panels is to be routed through respective panel terminal blocks only. Direct wiring between the components of two different panels to be avoided.
 - g. Power & Control circuit (used for field cables) – Ring type end termination of suitable size.
 - h. All the terminals need to be provided with group markers.
 - i. 25% Spare Terminals Shall be provided for both Power and Control in each Panel.
 - j. Make: Connectwell / Wago / Elmexor equivalent after departmental approval.
- 5. Rubber mats
 - a. Rubber mats to be supplied and provided in-front of the panels as per the designed length of panels including Transformer and DBR panels.
 - b. Class 'A', 3.3 kV ac (rms), 2.0mm ± 10% thickness as per IS 15652/2006
 - c. Width: 1 mtrs. (maximum)

6.14. Electrical Specifications

- 1. MCCB with adjustable overload, adjustable short circuit protection,

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adjustable ground fault and Instantaneous protection to be provided as the Incomer.

2. MCB

- a. Individual components control shall be planned by a dedicated MCB control.

3. Cable Tray

- a. Perforated G.I. cable trays need to be planned for routing the cables from the panel to end equipment.
- b. Necessary supports (like angles, etc) for running the cable tray on the bogie structure, etc need to be supplied.
- c. Entire length of the cable trays needs to be covered with G.I. sheet cover with bolts and nuts and all bolts and nuts shall be of G.I coated.
- d. No cables are routed without cable trays and cover anywhere from panel room to top of the crane.
- e. The cable trays are also to be earthed with respect to the common ground.
- f. Aluminium strip shall not be used for earthing the cable tray. Only G.I strip alone shall be used.

4. Inside the Panel (Common for FLP and Non-FLP):

- a. Power circuit – Minimum size: 4 Sq.mm.
- b. Control circuit – Minimum size: 2.5 Sq.mm.
- c. Signal wire (for Control Unit and Encoder module) - Maximum size: 0.5 Sq.mm.
- d. Colour coding should be followed as:
 - i. 240 V AC Phase – Grey with RED sleeve.
 - ii. 240 V AC Neutral– Grey with BLACK sleeve.
 - iii. 415 V AC – Black with RED, YELLOW, BLUE and / BLACK.
 - iv. 24 V DC Positive– Red.
 - v. 24 V DC Negative– Blue.
 - vi. 8.9 V DC – Orange.
 - vii. Earth cable – Green & Yellow.

5. Contactor

a. Auxiliary Contactor

- i. Shall be used as intermediate contactors to the power contactors.
- ii. All the field interlocks need to be wired to the auxiliary contactor level.
- iii. Suitable surge suppressor needs to be supplied along with auxiliary contactor.
- iv. It shall be utilized for contact multiplication instead of add-on NO, NC contacts for power and auxiliary contactor.

b. Power Contactors

- i. Duty: AC-3.
- ii. The contactors shall be able to withstand their rated current for one second without welding / fusing of the contacts.
- iii. Individual Power Contactors are to be provided for each motor for controlling.

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- iv. All the power contactors need to be powered viz. auxiliary or interposing contactors / relays with suitable rating along with surge suppressor
 - v. Any multiplication of NO, NC points – auxiliary contactor need to utilize.
 - vi. NO add-on blocks will be allowed for power contactors.
 - vii. Suitable power isolation (both input and output side) using this power contactors need to be planned for the selection of spare / standby drives as applicable.
6. Intrinsic Safe Relay
- a. Input Relay:
 - i. All the field signals like push button, selector switches, etc. to be wired to this relay.
 - ii. This relay shall be located in safe area (inside the FLP panel) only. Make: M/s P&F or equivalent.
 - iii. All this relay shall be selected to suitable for operating with either 24 V or 110V AC supply.
 - b. Output Relay:
 - i. These relays shall be used for powering indication lamps& Solenoid valves in the hazardous location.
 - ii. This relay shall be located in safe area (inside the FLP panel) only. Make: M/s P&F or equivalent after departmental approval.
 - iii. All this relay shall be selected to suitable for operating with either 24 V or 110V AC supply.
 - iv. The contactors shall be able to withstand their rated current for one second without welding / fusing of the contacts.

Relay specifications:

S. No	Description	Specification
1	Type	PCB mountable ON/OFF Relay Epoxy sealed, metal casing (for environment protection)
2	Coil voltage	24VDC
3	Contact rating Max. continuous current	7A DC
4	No of Poles	6
5	Coil resistance	400 \pm 10% Ω
6	Life expectancy	1x10 ⁵ Operations @24VDC or more
7	Insulation resistance at 500VDC	500M Ω min
8	Dielectric strength between coil	1 KV or more for coil& contacts
9	Connector interface	Suitable mating connector/cables shall be provided for each module.

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6.15. PLC System

PLC system shall be provided with following control features

1. Synchronized lifting and lowering of MLP with accuracy of ± 1 mm, by help of 4 nos. of 300t Hydraulic Jacks.

6.16. Field Operator Station

Field Operator Station shall be provided with following control features

- A. If PLC is healthy and operational
 1. Specification of the system mentioned in the table titles as" Field Operator Station – HMI Panel for PC".
 2. It has to display the
 - a. Mode of operation chosen.
 - b. Selection of operation
 - c. Pressure (all the location indicated above measurement clause).
 - d. Stroke Length (all the jacks indicated above measurement clause)
 - e. Voltage as specified in the measurement clause
 - f. Current Drawn by the motor and system.
 - g. Provision of reset as per the requirement (either for values or faults)
- B. If PLC is not healthy and not operational
 1. Following parameters to be displayed in the intrinsic safe display unit or normal display unit with Flame proof enclosure.
 2. This display shall be connected directly through analog signals either 4-20mA/0-10V
 3. It has to display the
 - a. Pressure (all the location indicated above measurement clause).
 - b. Stroke Length (all the jacks indicated above measurement clause)

6.17. Technical Specifications (Data Sheets)

Specification of Programmable Logic Controller	
Description	Essential Specification
Manufacturer	Siemens / Schneider / Allen Bradley or equivalent after departmental approval
Location	CPU racks shall be mounted and located in Control Panel.
CPU features	Work memory: min 13 MB (12MB for program &1MB for data)
	Expandable flash (4 GB for data storage): to be provided
	Scan cycle less than 100ms
	I/O process image minimum of 1024 bytes.
	Number of ports: Ethernet ports – min. 2 Nos.
CPU rack power	CPU rack shall have 2 Nos. of power supply

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Supply	modules in redundant configuration in each rack.
Interface for communication between PLC to I/O modules & 3rd party devices.	1) Add-on card required to support redundancy in each CPU rack. 2) Communication technologies like; MODBUS (TCP/IP)/ Ethernet / any standard industrial communication shall be used as per OEM standard.
Interface for communication between SCADA Server to CPU	Ethernet communication. 2 Nos. of communication modules in redundant configuration in each CPU rack. Communication speed at 100 Mbps or better.
Self-diagnostics Features	Required for each and every module available in the PLC (i.e., CPU, PS, I/O modules, other Communication interface modules etc).
Programming Languages	SCL, STL, Ladder (all IEC61131 languages) shall be supported.
User programme password protection	Password protection and block encryption. The same to be shared to the department.
Quantity	2 Nos. (1 Working + 1 Spare)

Specification of Input / Output modules (Located in Non-Hazardous area)		
Description	Essential Specification	
Manufacturer	Siemens / Schneider / Allen Bradley or equivalent after departmental approval	
I/O rack power supply	Redundant power supply module (2 Nos.) for each I/O rack is required.	
Interface module	Required with redundancy (2 Nos.) to communicate with CPU rack.	
Analog input module	Channels per module (Nos.)	Min. 8 Channels.
	4 – 20 mA / 0 – 10 volt and RTD	2, 3 & 4 wire selectable
	Accuracy	0.25 % of FS or better
	Resolution	15 bit with sign or better
	Type of Isolation	Galvanic / optical
	CMRR	> 100 dB
Digital input module	Channels per module (Nos.)	32 Channels.

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Specification of Input / Output modules (Located in Non-Hazardous area)		
Description	Essential Specification	
	Type of input	Potential free/ NAMUR (proximity sensors).
	Interrogation voltage	24 V DC
	Type of Isolation	Optical
	LED status indication	Required for each channel
Digital output module	Channels per module (Nos.)	32 Channels.
	Type of output	Relay / TTL outputs for operating solenoid valves, relays, indication lamps etc.,
	Interrogation voltage	24 V DC
	Type of Isolation	Optical
	LED status indication	Required for each channel
3rd party devices interface	All 3rd party devices for communicating with PLC.	
LED display	Required for all channels in all modules.	
Short circuit/ wire break/ reverse polarity protection/ monitoring.	Required.	
Isolation required	Between channels and backplane bus. Between channels and power supply of the electronics. Between channels and load voltage (L+). Between channels in group.	
Self diagnostics data	Required.	
Hot swappable features	Required for all modules including power supply and communication interface modules.	
Quantity	As per the requirement.	

Field operator station – HMI panel PC	
Description	Essential Specification
Manufacturer	Siemens / MTL / P&F / Red Lion / STAHL / Blue Line or equivalent after departmental approval
Design	Panel PC built in unit with protective

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	FLP enclosure suitable for Explosive atmosphere / ATEX and IECEx certified.
Front Display	Min. 15" touch screen display with function keys. (Preferably equal size & resolution with SCADA clients-Process operator stations)
Processor	Intel Atom N270 with 1.6 GHz or better
RAM	2 GB or better
Operating System	Windows 8 / 10 or latest (suitable to SCADA version)
Mass storage	Minimum 128 GB
Power supply	24 V DC
Interfaces	Ethernet: 10/100 Mbit Exe USB 2.0: 2 x Ex i
Degree of protection	IP66 water and dust proof
Approvals	Zone-1, Gas Group IIA, IIB & T4
Keyboard	Pluggable Required.
USB drive	Required.
CD's for all software & drivers	Required.
Quantity	1 No

Programming device	
Description	Essential Specification
Manufacturer	Dell / Sony / HP or equivalent after departmental approval
Processor	INTEL i7 processor or latest
Hard disk capacity	1TB (or above) Solid State Drive + 1TB HDD
Motherboard	INTEL original (Suitable for the configuration)
DDR RAM (DDR4)	16 GB
Graphics card	2 GB
Network Cards	Ethernet card: 1 Nos. (100 Mbps / 1 Gpbs)
Optical Drive	DVD RW (Multi Layer)
Power Supply	Suitable 230 V AC Adaptor with Indian Pin
Operating System	Licensed version of Windows 11 (64 bit) ultimate or latest (Compatible with SCADA & PLC software versions).
Licensed Software to be supplied and loaded on system.	1. MS Visio Professional 2. MS Office Professional latest. 3.Latest version of Antivirus with 3 years validity
Monitor Screen	14" FHD, supported resolution 1920x1200

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Programming device	
Description	Essential Specification
	and above.
Optical Mouse (additional)	Standard USB Mouse with scroll.
CD's for all software & Drivers	Required.
Quantity	2 Nos.

6.18. Functional requirements of the system

1. Control system shall be capable of acquiring and monitoring the following sensors
 - a. Pressure transmitters of 4-20 mA rating to be acquired-12 Nos + 20 % spares
 - b. Four numbers of LVDT displacement measurement sensors of 4-20mA/0-10V rating
 - c. Oil Float switch
 - d. Oil temperature switch
 - e. Selection switches and Push button status as per the engineering of the panel for jacking operations
2. Control system shall be capable of switching (ON-OFF) electrical motors and solenoid valves
3. Control system shall have the provision to display the readings of various sensors, status of the operation preferably in a HMI of minimum 15 inch in size.
4. Control system shall have a provision to incorporate 20% additional channels (Analog, digital inputs and outputs) to meet future requirements.
5. Control system shall be designed to operate in 3 modes
 - a. **Auto mode-** In this mode, jack lifting and lowering operations to be carried out considering LVDT displacement sensors i.e., solenoid valves to be switched on/off automatically to maintain synchronised lifting and lowering operations within a tolerance of +/- 1mm.
 - b. **Semi auto mode of operation with control system / PLC failure–** All operations related to Pumps and solenoid valve switching to be carried out based on operator selections through manual push buttons.
 - c. **Manual mode -** In this mode lifting/lowering operations to be carried out through pneumatically operated split Pump. However, all sequence of operations (except for electrical motor) shall be carried out similar to Auto mode sequence from control system.

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6. In Semi-auto mode of operation, there should be a provision to operate individual jacks, electrical motors separately for fine adjustments. For this operation, selector switches and push buttons are to be considered.
7. All the PLC/controller-based control system components shall be in a Group 2B, Flame proof enclosure
8. All electrical wiring related to control circuitry, DOL starter of electrical motors etc. shall be in a Group 2B, Flame proof enclosure
9. Number of glands to the flame proof junction box to be chosen as per the engineering
10. All signals which are acquired from the field like pressure, displacement, float, temperature, and push button status to be acquired via Intrinsic safe barriers.
11. Wiring of all digital commands to be provided via relays of suitable rating. Please refer relay specifications.
12. Major considerations for switching ON and switching OFF of electrical motors and solenoid valves are as follows. However, based on the site requirements some additional interlocks to be incorporated.
 - a. Level difference between any two hydraulic jacks should not exceed +/- 1mm during lifting and lowering operation.
 - b. Pressure values at all the hydraulic jacks to be monitored continuously and jacking operation should be safely halted if pressure exceeds 700 bar.
 - c. Oil level and temperature in the hydraulic tank should be monitored during the operation and operation should be safely halted if low oil level or high temperature (60 °C) sensors got activated.
13. Data logging provision for I/O channels with sampling rate of 1 second should be provided for 10 hours of duration. It is to be selected as per the operational requirement or de-bugging requirement.
14. Relays to be assembled with a proper clamping mechanism to avoid loose contact as the system is subjected to vibration during operations
15. Applicable software (for application and HMI screen development) shall be provided with necessary license
16. Logic & screens shall be developed in coordination with the department
17. Interlocks along with flow charts shall be documented and provided for each function
18. Diagnostics, contingency procedure document shall be submitted during development and testing
19. Entire application software / HMI backup along with settings to be provided to the department with appropriate license.
20. Measurement of critical parameters

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All the critical parameters as listed below to be taken care for the system performance in addition to the above:

1. Pressure Transmitter
 - a. Common outlet of split flow pumps
 - b. Inlet and outlet jacks
2. Stroke Length
 - a. Jacks operated for MLP system
3. Current drawn by the Hydraulic motor.
4. LVDT
5. Command status
6. Selection status

Mode of operation	System to be in operational (Ref. Clause 6.11 & 6.12 for the Sl. No. mentioned under selector switch and pushbutton)			
	PLC +Electrical Motor	PLC + Pneumatic operated	Manual operation (No PLC) + electric motor	Manual operation (No PLC) + Pneumatic operated
Auto Mode	Selector Switch 1, 2 & 3 Pushbutton 2, 3 & 4 Display 1	NA	NA	NA
Semi Auto mode (Failure of Electric Motor + pump) or Failure of PLC	NA	NA	Selector Switch 1, 2, 3, 4 & 5 Pushbutton 1, 2, 3 & 4 Display 2	NA
Manual (Electrical Power failure) or Failure of PLC	NA	Selector Switch 1, 2 & 3 Pushbutton 1, 3 & 4 Display 1 <i>With different source of supply</i>	NA	Required (with manual valve operation)
Neutral	NA	NA	NA	NA

Display:

1. Communicable HMI with PLC
2. Display, which accepts hardwired Analog Input signals.

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7.0 TESTING AND DEMONSTRATION

Sl. No	Description
1)	All the items as per supply portion and items required for installation shall be supplied at SDSC SHAR site
2)	Unpacking and Inspection of items shall be carried out by vendor.
3)	Item shall be mobilized to testing site from SDSC SHAR storage room.
4)	Necessary items like hoses, QCDC Couplings, compatible end fittings for testing shall be arranged by the vendor. Support members for plumbing, welding machines, welding consumables with welders (if any) shall be arranged by vendor.
5)	Jack assemblies shall be positioned suitably with permission of departmental representative for conducting complete T&E of the jacking systems, is under scope of vendor. Material handling support shall be arranged by department, subjected to availability on free basis.
6)	Electrical & control panel shall be assembled in suitable place identified by the department as per the general arrangement layout approved by department.
7)	All power cables & data cables required for the system along with suitable cable tray to meet the requirement as per the general arrangement layout as specified has to be connected / arranged / shown.
8)	Oil filling in power pack has to be carried out by vendor as per OEM guidelines. One spare oil barrel of approximately 200 liters shall be supplied.
9)	Priming of power pack, valves, lines, jacks shall be carried out to remove entrapped air by the vendor as per OEM guidelines.
10)	Direction of rotation of pump shall be ensured by vendor. Necessary electrical connections have to be ensured by the vendor.
11)	Functional testing of jacks, power packs, valves & sensors has to be carried out by vendor as per mutual agreed QAP.
12)	Dead weight for the load testing will be provided by the department at SDSC SHAR.
13)	All the operational & maintenance manuals, test certificates, calibration certificates for gauges & sensors from OEMs /Approved LAB shall be provided.
14)	FMECA shall be provided for the approved design

8.0 DESIGN CONSIDERATIONS AND TECHNICAL NOTES

8.1. Application software & HMI screens based on the operational requirements to be built along with departmental representative.

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8.2. All PLC, HMI, third party software's to be provided with installed condition along with license

8.3. Pump-motor units/ Power Unit Assembly, electrical and control panel shall be mounted on anti-vibration pads.

8.4. The unit shall be provided with Anodised Circuit Plates and same shall be suitably fixed on the power unit for direct reading

8.5. All the plumbing joints shall be with compression fittings.

8.6. The supplier shall submit the material test certificate for manifold block.

- a) All solenoid coils to be rated for continuous duty.
- b) All electrical items such as direction control valves, level switches etc. to be temporarily wired up to the control panel.
- c) Sizes and model numbers of different valves as indicated in quotations will be binding on supplier. After placement of order, during approval of schematic drawings if supplier finds certain valves having more pressure drops than stipulated in the tender specification or in the circuit including manifold the total pressure drop is found to be more than 15 bar for the same flow as mentioned in the tender drawings, the supplier shall use higher size valves (without any price implication) to limit the pressure drops.
- d) Inspection shall be carried out on the basis of approved drawings and QAP. The supplier for the complete package shall arrange inspection and testing. Representative of ISRO will participate in the inspection at supplier's works. The supplier shall arrange everything including power, consumables, manpower, equipment, instruments etc. required for inspection and testing. Two-week prior notice shall be given to ISRO for inspection along with all vendor factory test reports. Pressure test certificates, internal inspection report, material test certificates shall be enclosed with the inspection call.
- e) All systems and piping (except jacks, which will be tested as per ASME B 30.1-1992) shall be pressure tested at 1.5 times system working pressure. Performance test and pressure drop test shall be carried out during inspection as per submitted QAP by contractor and approved by ISRO. After testing, the unit (including tank) shall be filled with the system fluid and all open terminations shall be closed for air tightness.

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9.0 PACKING, TRANSPORTATION &SAFE STORAGE OF ITEMS AT SDSC SHAR

- a) No equipment shall be delivered without obtaining dispatch clearance from SDSC SHAR.
- b) Party has to pack all the items in seaworthy packing to protect against corrosion. All the equipment shall be properly packed to avoid any damage during transportation/ handling/storage
- c) The supplier shall be responsible for transporting all the equipment to site, unloading and storage.
- d) The equipment received at site shall be stored at a place assigned for this purpose.

10.0 PIPELINE

Supply of sufficient quantity of piping fulfilling following requirements shall be under scope of the vendor:

- a) Quantity of Pipelines shall be suitable for connecting to mechanical equipment for final alignment and levelling based on the circuit design. The connections shall be free from stresses.
- b) Pipelines shall not interfere with other pipes/equipment/installations. (Note: Bogie drawing is attached along with this tender for estimation of piping quantity)
- c) Piping routing close to equipment shall be such a way that dismantling and inspection of the equipment will not be hindered.
- d) Hydraulic pressure testing of piping for hydraulic lines shall be carried out at 1.5 times system working pressure.

11.0 PIPE CLAMPING

Supply of sufficient quantity of clamping fulfilling following requirements shall be under scope of the vendor:

- a) All the pipes has to be clamped and supported with Polypropylene Pipe Clamps (PP Clamps).
- b) Generally, pipes shall be clamped at every 1.5 meters in straight run. At

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bends clamps shall be provided on either side of bend, on straight length of pipe, as close to bend as possible.

- c) The support can be provided from top/bottom of pipe as per site condition.
- d) The clamp should be capable of directly welding to the structural body or to the angle/channel welded to the structural body depending upon the site condition.

12.0 INSPECTION& TESTING AT SUPPLIER'S SITE

- a. All the jacks to be tested to rated pressure and load in both directions
- b. All the jacks to be tested to load of 300tonne on the lock nut
- c. Power pack to be tested with calibrated pressure gauge.
- d. All the cylinders are to be interconnected and operated for synchronisation using different modes (preferably with load).

All other tests shall be carried out as per the approved QAP and test sequence.

13.0 INSPECTION, TESTING AT DEPT. SITE

- a) Checking the operation of all hydraulic pumps from control panel.
- b) Checking the combined and individual operation of all four (4) nos. of 300t hydraulic jacks for MLP lifting, for their raising/lowering for minimum five times with different types of loads to check the synchronisation of jacks with unsymmetrical loading (suitable load will be provided by the department at SDSC-SHAR).
- c) Checking the raising / lowering values of 300t hydraulic jacks at display panel during their operations.
- d) Checking the indication of pressure of four (4) outlets of power pack at display panel.
- e) Stage wise and/or final inspection will be carried out on the basis of approved circuit drawings and QAP. Pressure test certificates, internal inspection reports, material test certificates and manufacturer test certificates shall be enclosed with the inspection call.
- f) In case, any equipment is found to malfunction or give sub-standard

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performance during this activity, it shall be replaced free of cost.

14.0 DOCUMENTS TO BE SUBMITTED

DOCUMENTS TO BE SUBMITTED AFTER PLACEMENT OF OFFER

- a) A bar-chart for all activities such as design, approval, procurement, manufacturing, assembly, testing, inspection, delivery and commissioning etc. shall be submitted within one month of placement of order.
- b) Detailed specification, schematic drawing, Bill of Material (BOM), complete with makes and model no. of all components incorporating all the required details against the features indicated in the order specification
- c) Hydraulic circuit diagram indicating each component.
- d) FMECA report
- e) Electrical and control circuit as per the operational control scheme.

1. Motors

- I. No. of motors, Power of motor, Frame size, make, duty, no. of starts/hr, type and No. of poles, Insulation, Ambient Temperature, applicable IS for construction, bearing, accessories, terminal position from drive end, drawing nos. used for FLP certification, etc.
- II. Torque and speed curves, thermal withstand time curve, efficiency and power factor with respect to loading of the motor, speed and time with respect to current and complete G.A of motor, terminal box / boxes by mentioning the approved drawing reference and nos.

2. Sizing Calculation

- 1.1 Control Transformer (with considering closed VA).
 - 1.2 Lighting Transformer.
 - 1.3 SMPS with and without loading.
 - 1.4 Power Cables and its schedule.
 - 1.5 Control Cables with respect to no. of cores.
 - 1.6 Heat loss calculation towards panel AC selection.
- f) General arrangement drawings and cross-sectional details indicating dimensional details for the equipment and bill of material.

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- g) Piping layout and BOM
- h) Detailed technical literature of all components highlighting all the features of the items finally selected.
- i) Quality assurance plan for supply and acceptance test.
- j) Testing and calibration procedures for each type of instrumentation.
- k) Installation drawings and instructions for various units and for each type of equipment.
- l) Weight of each unit.
- m) Copies of Purchase Orders for bought-out items blanking price part (one copy only)
- n) Any other relevant data/information.

DOCUMENTS TO BE SUBMITTED DURING DELIVERY OF THE ITEMS

- a) Three (3) sets of Operation and Maintenance Manuals, spare parts catalogue, engineering data sheets and part lists covering each item including bought out components along with all drawing shall be compiled and submitted.
- b) One set of reproducible and soft copy on CD/DVD for all drawing and operation & maintained manuals.
- c) Complete PLC coding with interlocks along with passwords if any.
- d) Test Reports
 - 1. Flame proof electrical fittings / equipment test reports along with approved drawings (Either by CIMFR / ERTL (E)) with respect to all the annexure and amendment if available need to be submitted for review and acceptance of all FLP items.
 - 2. Space heaters and its thermostat.
 - 3. Transformer.
- e) Technical Catalogue / data sheets
 - 1. Switchgear components.
 - 2. Power and Control Cables.

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3. Limit switches.
 4. Intrinsic safe relays.
 5. Panel.
- f) As built mechanical, electrical, control and instrumentation drawings (3 copies).
 - g) Complete Inspection / test results (3 copies).
 - h) Inspection certificate & warranty certificate (3 copies).

15.0 QUALITY ASSURANCE PLAN

- a) Contractor shall have an established and effective Quality Assurance plan during manufacturing the system. The Quality assurance plan (QAP) shall be submitted for approval of ISRO along with design document.
- b) Contractor shall ensure that the item supplied is absolutely safe for use in the stipulated work environment and conform to applicable safety norms and standards.
- c) During manufacture, fabrication assembly, testing and delivery, the vendor shall strictly comply with Quality Assurance instruction including Cleanliness Control, procurement Control, Design change Control, Deviation Control, Failure Reporting & Analysis, Calibration Control, documents control & Training requirements.

Sl. no	Description	Remarks
	QAP for Supply portion	
1)	Hydraulic jack	a) OEM Test certificates complying for ASME B30.1-1992. b) Functional & pressure (to rated pressure) testing at supplier/department site. c) Physical & dimensional inspection.
2)	Power pack	a) OEM Test certificates. b) Functional & pressure (to rated pressure) testing at supplier/department site.

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		c) Physical & dimensional inspection. d) Verification of BOM.
3)	Piping & fittings	a) OEM Test certificates. b) Verification of BOM.
4)	Electrical & control panel	a) OEM test certificates & flame proof certificates as applicable. b) Functional testing at supplier/department site. c) Verification of BOM.
5)	Sensors	a) Test & calibration certificates b) Verification of BOM.
	QAP for testing	
6)	Whole system	a) Verification of BOM. b) Site inspection for plumbing, clamps, end fittings and jack interfaces. c) Hydro-testing of plumbing & hose network with fittings. d) Site inspection for whole system connectivity. e) Functional testing of power packs & jacks without load. f) Functional testing of display panel & control panel. g) Functional testing of whole system with load. h) Generation of test reports and submission to department.

16.0 GENERAL INSTRUCTION TO THE CONTRACTOR

- a) The items covered in this specification shall confirm to technical specifications, latest revision of relevant standards and requirements in respect of accuracy, response time, performance, dimensions, materials of construction, manufacturing, safety, reliability & quality assurance, inspection and testing.
- b) The supplier shall keep essential commissioning spares available at Sriharikota during testing phase, a list of such spares shall be furnished by vendor.
- c) All the equipment and accessories to be supplied under this package shall

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be new & from the latest product range of the supplier.

- d) The Supplier shall list out all the equipment along with their components/ parts, including make, type, model number and the other details for the approval of SDSC SHAR. Any deviation from it after approval shall be permitted.
- e) All correspondences /documents shall be in English language and the data / calibration details shall be submitted in Metric Units only.
- f) The supplier shall indicate any assumption made in respect of specification, data of any other details that have not been mentioned in this order but considered necessary for sizing & selection of equipment to meet the specified application requirements. All such assumptions will not be binding on ISRO unless expressly agreed upon. The supplier, under these conditions, shall supply equipment based on the data accepted to ISRO without any commercial implication.
- g) All necessary facilities including tools, tackles, testing equipment, instruments, accessories, system fluid, manpower assistance etc. shall be provided by the supplier to enable inspection of equipment by ISRO during its manufacture/ fabrication/ assembly & inspection.
- h) The supplier shall be responsible for adherence to all the applicable rules, regulations & requirements of statutory bodies of the Andhra Pradesh State Government and Central Government of India, as required.

17.0 COMPLIANCE TO STANDARDS

All the items supplied or used shall be new and of first quality and shall be manufactured/ fabricated and tested in accordance with the latest editions of the relevant Indian / International Standards. All components shall be manufactured in accordance with the relevant standards published in the country of manufacture after allowing for the specific aspects under the Indian site conditions such as tropical station etc. Any components or systems where no specific standards are applicable shall be fabricated as per the instructions and directions of the purchaser or its authorized nominee.

18.0 QUALITY OF MATERIALS AND WORKMANSHIP

All equipment, materials and articles incorporated in the work should be new, free from defects and of the most suitable grade for the purpose intended. All work under this contract shall be performed in a skilful and workman-like manner and shall be

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consistent with the best practices of the industry.

If at any time SDSC SHAR (ISRO) notifies that any such equipment, material, article or workmanship fails to meet the foregoing standards, the contractor shall promptly take all the remedial steps required to meet those standards.

19.0 OPERATION INSTRUCTION AND PROCEDURE

The Supplier has to submit the 'brief step-by-step operation procedure' as conceived by the designer for approval at detailed design stage itself. After testing and commissioning stage the updated document shall be submitted for final clearance and approval. Three copies of the same shall be supplied. Permanent physical identification, which are legible, clearly visible at any stage of operation etc. and markings shall be given on the system where the operator has to carry out his work. Procedure should be well detailed and it should identify all checkpoints before carrying out any operation. For each operation, a checklist has to be made for systematic check-up and operation.

Operation manual shall include all minute activities and checkpoints in very detailed manner. The manual also shall include trouble shooting, possible causes and remedial measures to be adopted.

Operation manual should include block diagrams showing clearly identification marks, operations and checklist number for each system. It shall also mark clearly possible areas of interference and the problem areas corresponding to each point in the checklist. These diagrams may preferably be A3 size sheets or bigger size sheets.

20.0 MAINTENANCE INSTRUCTIONS AND PROCEDURE

- a) Vendor has to submit full-fledged operation & maintenance document showing the procedure for assembly & dis-assembly of jacks and power packs with necessary general/special tools.
- b) After testing, commissioning & acceptance stage, the detailed operation & maintenance document shall be submitted to department for final clearance and approval, without which payment will not be processed.

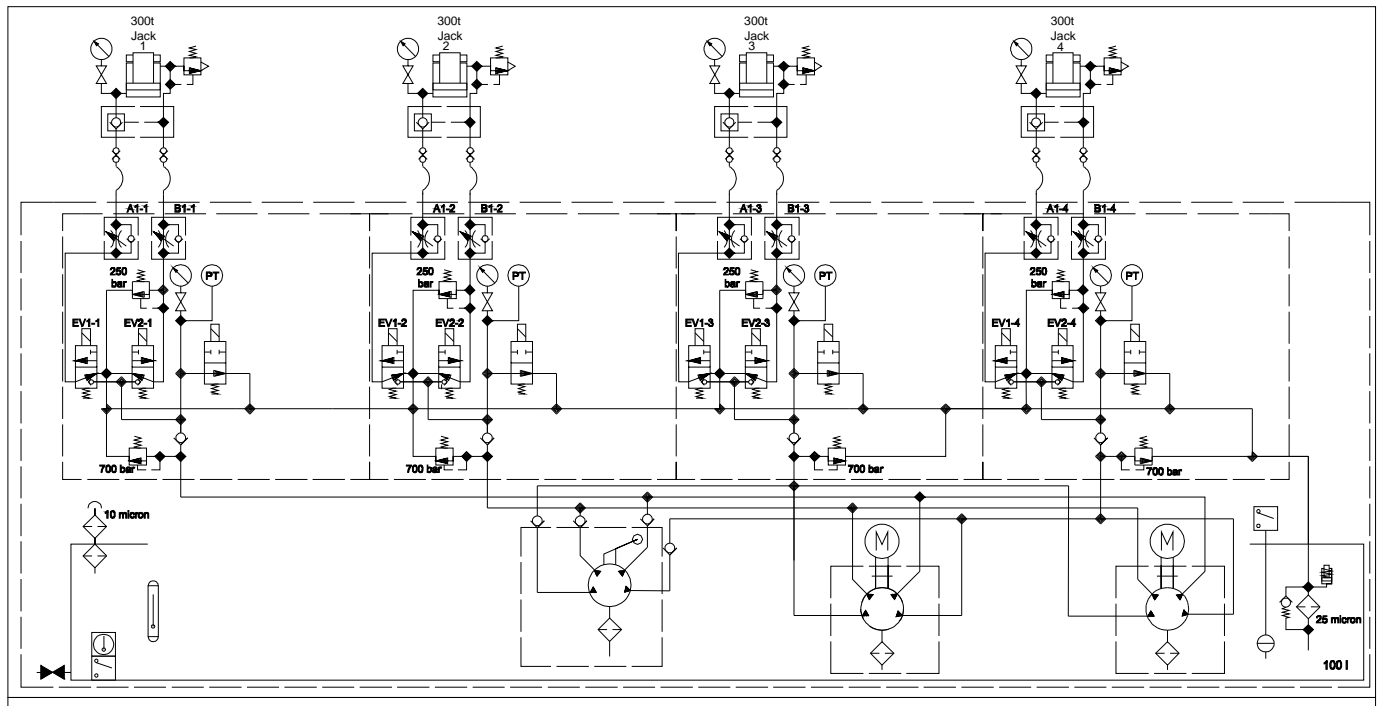
Three copies of the same shall be supplied.

Maintenance document shall include but shall not be limited to the following:

01. Block diagram of the system

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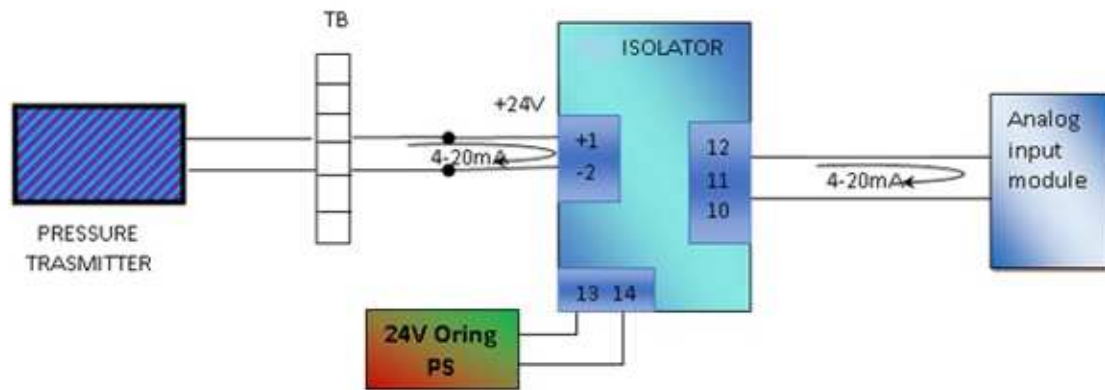
02. Applicable drawings
03. List of all bought out items, detailed specifications and catalogues
04. History of the system
05. List of tools
06. Parts bins
07. List of consumables and maintenance schedules
08. List of spares
09. Systematic health checks procedure
10. Work prior to starting maintenance
11. Torque levels
12. Clearance
13. DB levels
14. Step by step procedure for dismantling of a sub-system
15. Step by step procedure for carrying of repair
16. Step by step procedure for re-assembling
17. Test results
18. Final report



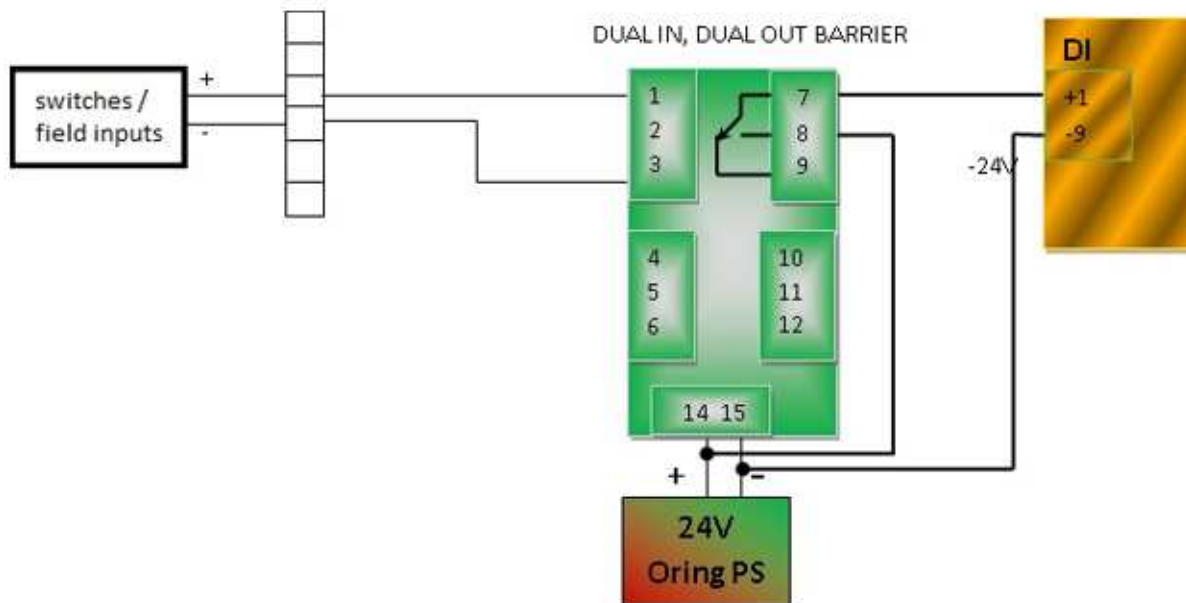
Schematic Circuit of 300t Jacks (VALF-JACK-02)

SCHEMES FOR JACK LIFTING SYSTEM

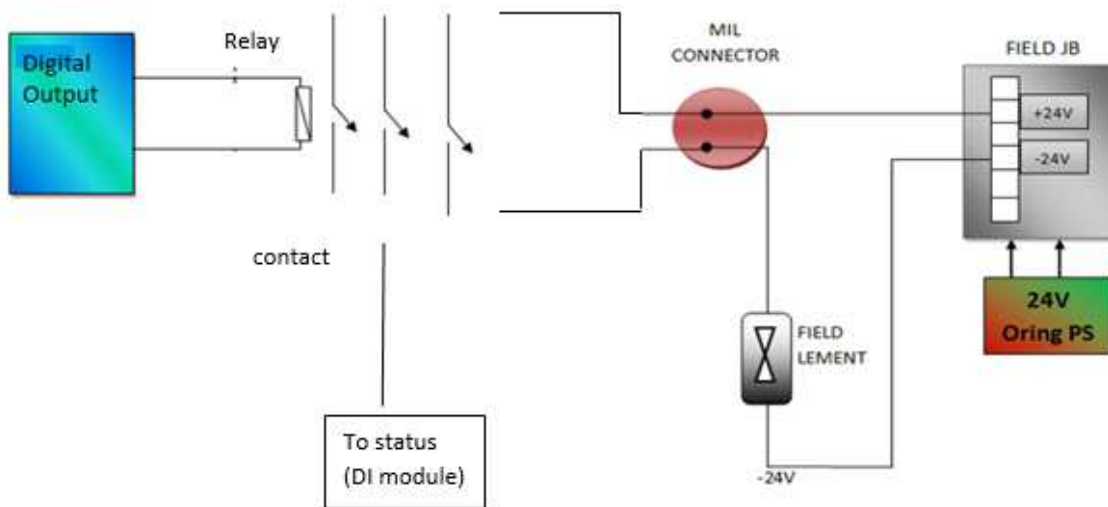
Analog inputs:



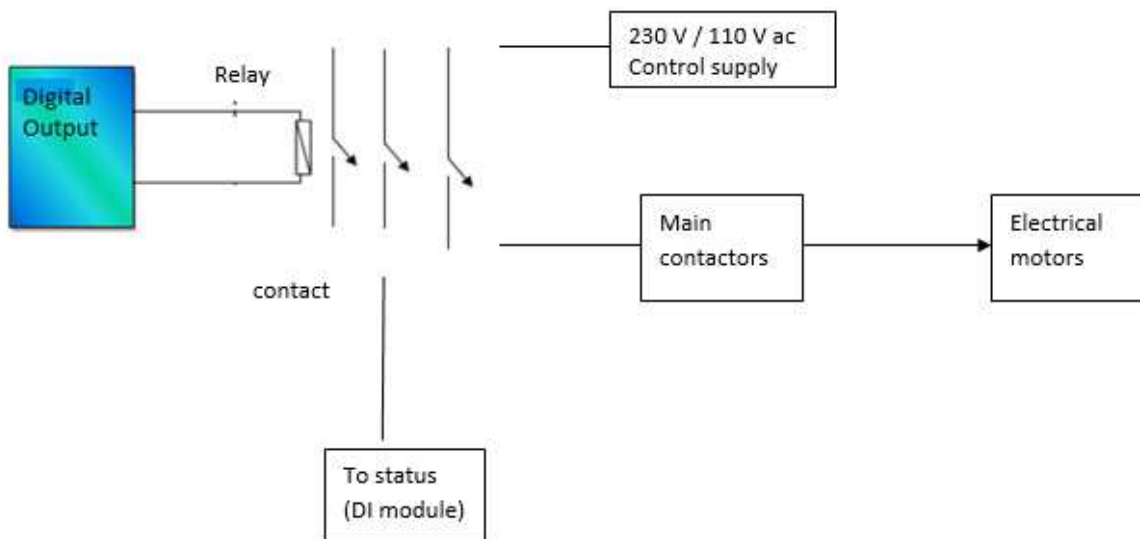
Digital Inputs:



OUTPUT RELAY (SOLENOID VALVE PURPOSE)



OUTPUT RELAY (ELECTRICAL MOTOR POWERING PURPOSE)



Note: Relay type & contacts shown here are for understanding purpose only. However, no. of contacts will vary based on the application.

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SCHEDULE OF PRICES & GENERAL PARTICULARS

1. Bidders shall not alter the contents of this schedule of prices. If the bidder wants any additions / alterations, these shall be brought out separately in the format as given in this schedule of prices.
2. Equipment and material to be supplied shall be in accordance with section A, B, C & D of this specification.
3. The quoted price shall be price in Indian Rupees for Design, supply of material, manufacture, inspection and testing at manufacturer's works, packing, forwarding, transportation from place of manufacture to site, transit insurance, unloading / receipt at site, storage / handling at site, erection, testing, commissioning and carrying out performance test at site inclusive of all taxes and duties as applicable except sales tax on finished products, and service tax which shall be separately indicated in the price bid.

(A) SCHEDULE OF UNIT PRICE

Note:

1. Cost off packing, forwarding and transportation shall be loaded to the unit rate, not to be quoted extra.
2. Any bids/offers with price details in Techno-Commercial Offer (Part –I) shall be rejected.

Sl.no	Item	Qty.	Cost in Rs.
1	"Design, Supply, Testing, Demonstration& repacking of Hydraulic Jacking System for Wheel Bogie with necessary accessories as per specification".	1set	
2	GST @ ____%	-	
3	Total cost		

SIGNATURE

NAME :

DESIGNATION:

SEAL OF THE COMPANY

DATE

:

SPEC NO.: BOGIE/ JACKS	SDSC-SHAR	SECTION: E2
	HYDRAULIC JACKING SYSTEM FOR WHEEL BOGIE	SHEET NO.: Page 1 of 2

BID QUALIFICATION CRITERIA FOR DESIGN, MANUFACTURING, SUPPLY AND TESTING OF HYDRAULIC JACKS

Bidders who are qualifying / meeting following Technical and financial criteria are eligible to participate in the bid for supply of Hydraulic jacks. Bidder shall furnish all the information mentioned in the criteria with documentary proof and submit 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 clarifications.

A. Technical Qualification Requirements:

The bidder shall meet the following technical qualifying requirements and shall submit relevant certificates to establish his credentials.

1. The Bidder shall be an organization with minimum 3 years of experience ending by 30.06.2025 having executed contracts for design, manufacture, supply, erection, testing and commissioning of hydraulic jacks.
2. The firm shall have successfully completed Design, Manufacture, Installation, Testing and Commissioning of at least 1 project having handled synchronised operation of minimum 4 nos. of 50 t capacity hydraulic jacks using PLC system in single work order during last 10 years ending with 31.07.2025.

And

The firm shall have successfully completed Design, Manufacture, Installation, Testing and Commissioning of at least one hydraulic jack of capacity 300t during last 10 years ending with 31.07.2025.

Bidders have to provide relevant documentary proof for the above experience, along with the submission of bid for consideration of bid document.

B. Financial Qualification Requirements:

1. The Bidder should have annual turnover of not less than a value of Rs. 150 Lakhs per year in last three financial years ending with 31.03.2025.
2. Firm should have successfully completed works of design, manufacturing and commissioning of hydraulic jacks for the given value of works in last 10 (ten) years
 - not less than Rs.75 lakh in a single order
OR
 - not less than Rs.50 lakh in two separate orders (each)
OR
 - not less than Rs.30 lakh in three separate orders (each)
3. Bidder shall submit audited statement of financial status for last three years.

SPEC NO.: BOGIE/ JACKS	SDSC-SHAR	SECTION: E2
	HYDRAULIC JACKING SYSTEM FOR WHEEL BOGIE	SHEET NO.: Page 2 of 2

C. The following documents shall be submitted along with the Techno commercial bid for prequalification of Bidder.

1. Firm establishment certificate and nature of work.
2. Details of work of similar type completed during the last ten years ending with 31.07.2025
3. Satisfactory work Completion certificates from the clients, with the work order copies.
4. Performance Report of Hydraulic jacks established (with years of service) from End users, with addresses and contact person with phone numbers.
5. Documentary evidence (Technical details & drawings) for fulfilling special technical conditions as per the RFP document
6. Copy of audited Balance Sheets for last three years
7. Solvency certificate from a scheduled bank for a value not less than Rs. 25 lakhs and not before 6 months from the date of tender closing.
8. Structure and Organization chart.
9. List of personnel with qualification & experience in the firm in the areas of design, production, quality, safety, administration etc.,
10. List of Machinery & Equipment to be used for the work.

E. Bid Selection Procedure and Process of Pre-Qualification

1. Short listing based on documents submitted, satisfying the all-eligibility criteria given above by the firm or individual along with their Bid / application. (No submission of any document as given in above list within stipulated time leads to rejection of Bid).
2. Subsequently Bidder's competency, their technical achievements and financial status will be evaluated suitable for this project. Feedbacks from Bidder's clients will be verified.
3. Visit to sites by technical team (ISRO or Third party) where Bidder has established above mentioned works.
4. If required, visit will be made to their factory/ firm by technical team (ISRO or third party) for accessing the capability of manufacturer.
5. Scrutiny of all technical specification and supply conditions mentioned in techno commercial bid.

SPEC NO.: BOGIE/ JACKS	SDSC-SHAR	SECTION: E3
	HYDRAULIC JACKING SYSTEM FOR WHEEL BOGIE	SHEET NO.: Page 1 of 2

SCHEDULE FOR GENERAL PARTICULARS / VENDOR EVALUATION FORMAT

SR. NO.	DESCRIPTION	
1.	Name of Company	
2.	Address of Company	
3.	Type of Company (Proprietary/Pvt.Ltd/Public Ltd/Joint Venure/Consortium)	
4.	Registration number	
5.	Year of inception of the company	
6.	Registered address	
7.	Name & address of the office of the Chief Executive of the company	
8.	Name & Designation of the officer of the Bidder to whom all correspondence shall be made for expeditious technical/ commercial co-ordination. Telephone number Fax number E-mail address	
9.	Locations of the Branches of Company (if any)	
10.	Annual turn-over of the company for the last three years	
11.	Major customers (Enclose copies of the Purchase Orders)	
12.	Any customers feedback on the services which is in writing (Pl. enclose copies)	
13.	Quality certification of the company	
14.	Orders executed during last three years, (Separate sheet can be attached).	
15.	Shop floor area covered	
16.	No. of employees (Supplier shall mention contract personnel separately) Engineers Supervisors Technicians Quality control engineers Administrative Staff.	
17.	Handling facility available:	
18.	Load testing facility Available:	

SPEC NO.: BOGIE/ JACKS	SDSC-SHAR	SECTION: E3
	HYDRAULIC JACKING SYSTEM FOR WHEEL BOGIE	SHEET NO.: Page 2 of 2

SR. NO.	DESCRIPTION	
19.	Welding professionals:	
20.	Forming facilities available (with brief specification of each machine)	
21.	Machining Facilities available (with brief specification of each machine)	
22.	Details of inspection facilities / Instruments available (Brief description & specifications shall be provided)	
23.	If third party Inspection Services are taken for fabricating similar works give details.	
24.	Design Software's available Design Engineers (with qualification & experience)	
25.	Bid validity period (Min. 4 months from date of bid opening)	

SIGNATURE :

NAME :

DESIGNATION:

SEAL OF THE COMPANY DATE :

SPEC NO.: BOGIE/ JACKS	SDSC-SHAR		SECTION: E4
	HYDRAULIC JACKING SYSTEM FOR WHEEL BOGIE		SHEET NO.: Page 1 of 1

EXCEPTIONS AND DEVIATIONS

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

Sno	Reference in Specification		Dept. Specification	Offered Specification	Deviation
	Page no	Clause no			

NOTE:

Only deviations are to be written in the above form.

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 in 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 Bidders 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 :

NAME :

DESIGNATION:

SEAL OF THE COMPANY DATE :

SPEC NO.: BOGIE/ JACKS	SDSC-SHAR	SECTION: E5
	HYDRAULIC JACKING SYSTEM FOR WHEEL BOGIE	SHEET NO.: Page 1 of 1

SCHEDULE OF BIDDERS EXPERIENCE

The bidder shall furnish here under a list of works executed by him to whom a reference may be made by the PURCHASER in case the PURCHASER considers such a reference necessary.

SL. NO.	Name & address of Client / Name & address of project or plant (incl. tel.no., fax no., e-mail and name & Designation of person who can be contacted.	Purchase Order / Contact no. and Date.	Brief details of equipment / system covered	Scope of services	Contract price (Rs)	Scheduled date of completion	Actual date of completion	Reasons for delay in completion, if applicable.	REMARKS

SIGNATURE :
NAME :
DESIGNATION:
COMPANY :

SPEC NO.: BOGIE/ JACKS	SDSC-SHAR	SECTION: E6
	HYDRAULIC JACKING SYSTEM FOR WHEEL BOGIE	SHEET NO.: Page 1 of 1

DATA TO BE FILLED ALONG WITH THE BID

SR. NO.	DESCRIPTION	TENDERS OFFER
1.	Confirm that the system shall be realised as per technical specification, approved manufacturing drawings, bill of material to meet the functional requirement.	Yes / No
2.	Confirm that all the electrical items (motors, limit switches, local control panels, cables) shall be procured as per specification and to be erected tested & commissioned at site.	Yes / No
3.	Confirm that all the bought-out items are to be procured as per the specification from the approved parties	Yes / No
4.	Confirm that all the bought-out items are to be inspected at the vendor site by Departmental representative before reaching to manufacturer's shop	Yes / No
5.	Confirm that fabrication of all items shall be done as per tolerance specified and fabrication shall be maintained as specified in relevant drawings approved by department.	Yes / No
6.	Confirm that all sub-assemblies shall be tested for proper functioning, free running, bearing noise etc. & shall be brought to site in grease packed condition.	Yes / No
7.	Erection/ testing sequence shall be submitted along with offer.	Yes / No
8.	Manufacturing schedule & Erection/ testing schedule shall be submitted along with offer.	Yes / No
9.	Resources planning shall be submitted along with offer	Yes / No
10.	Man power planning for erection/ testing shall be submitted	Yes / No
11.	Confirm that testing and demonstration of the total system shall be carried out as per specification.	Yes / No
12.	Confirm that QAP for fabricated items, machined items, Subassemblies shall be submitted for approval.	Yes / No

SPEC NO.: BOGIE/ JACKS	SDSC-SHAR	SECTION: E7
	HYDRAULIC JACKING SYSTEM FOR WHEEL BOGIE	SHEET NO.: Page 1 of 1

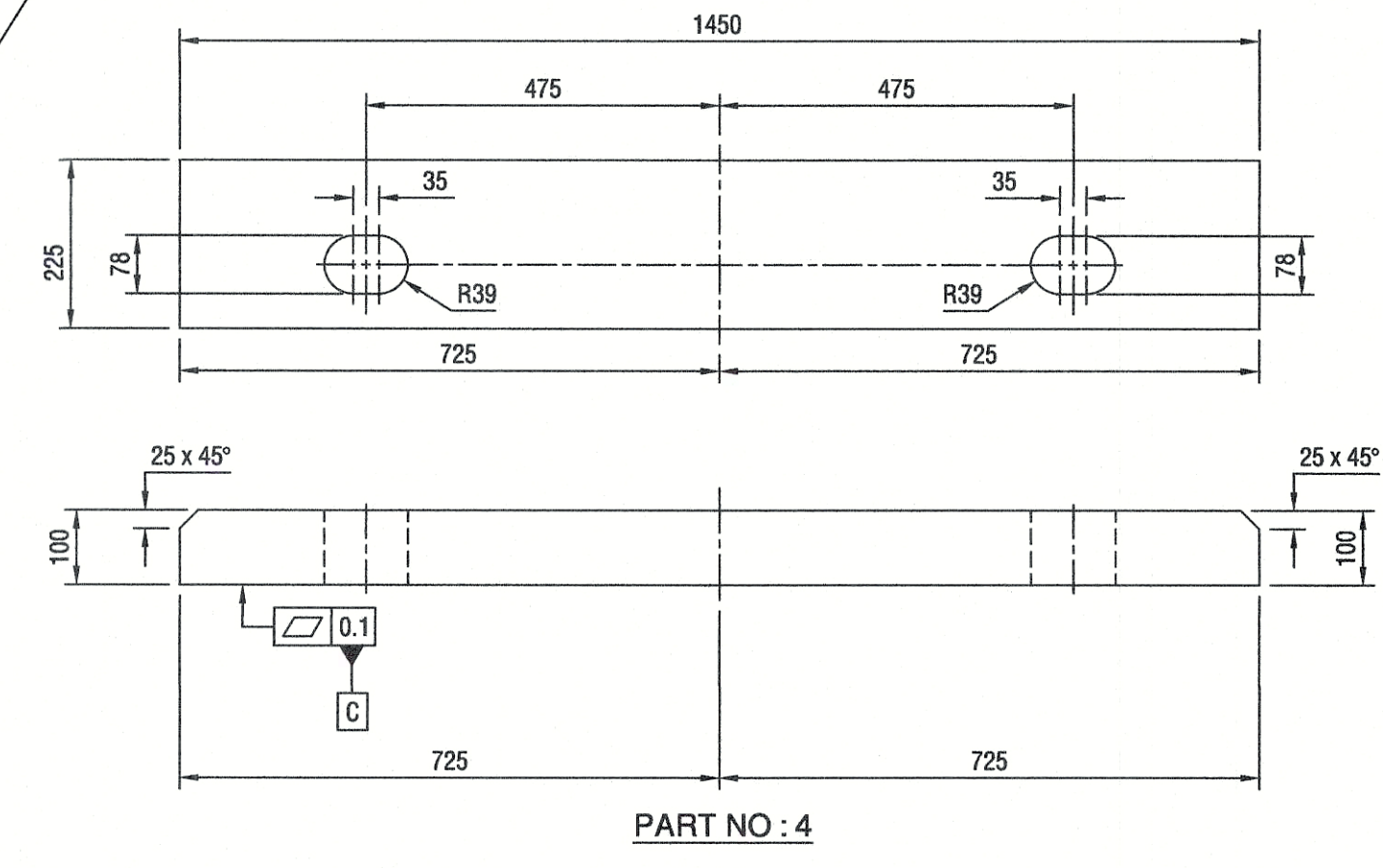
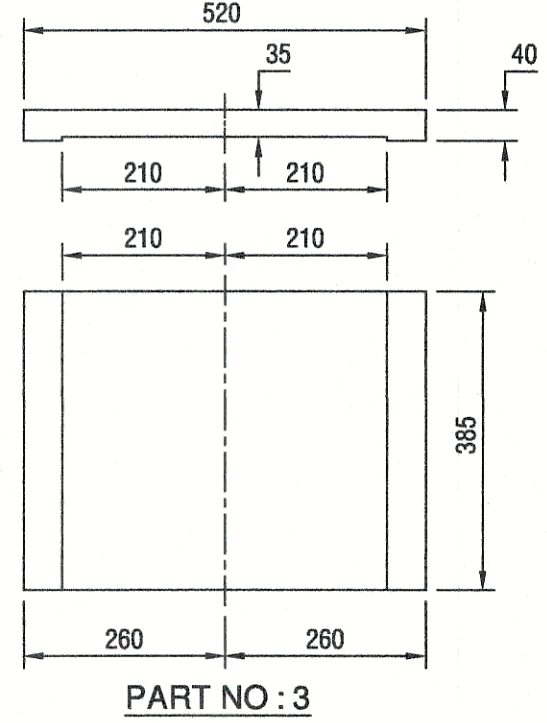
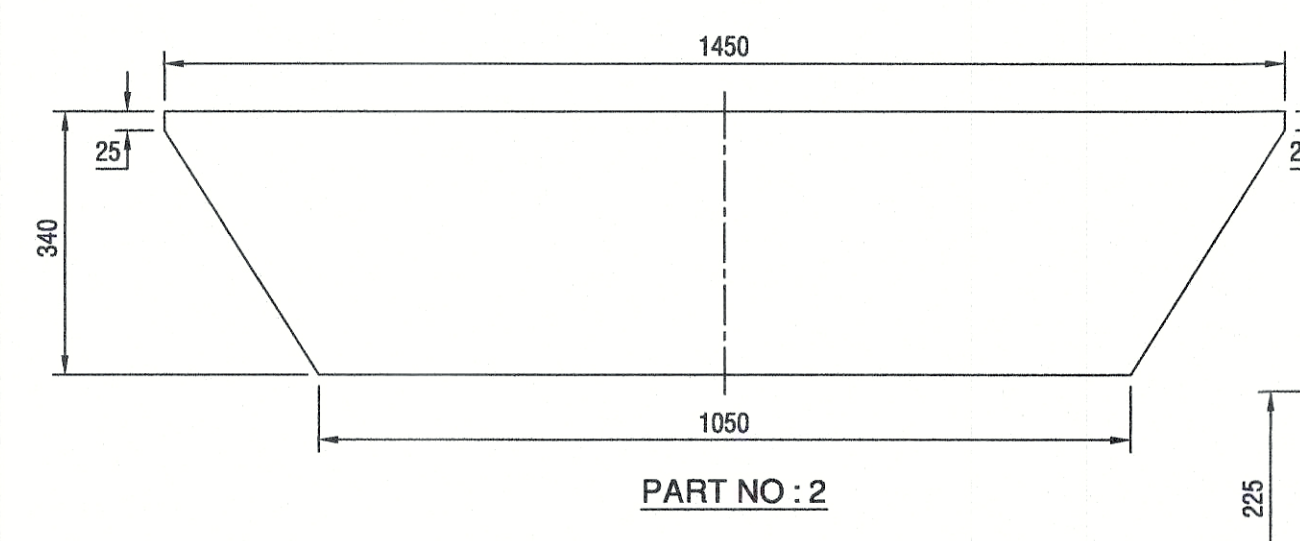
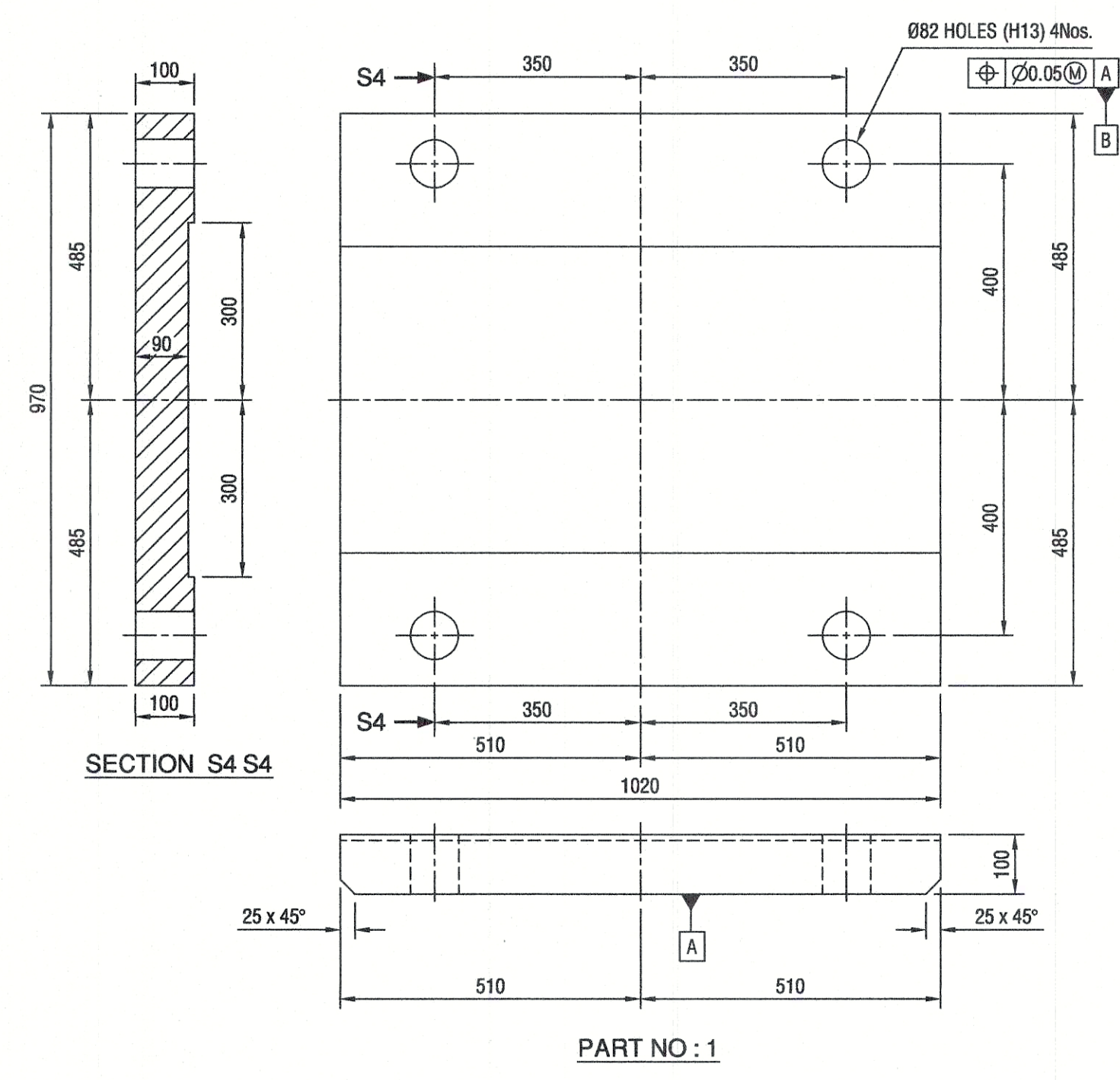
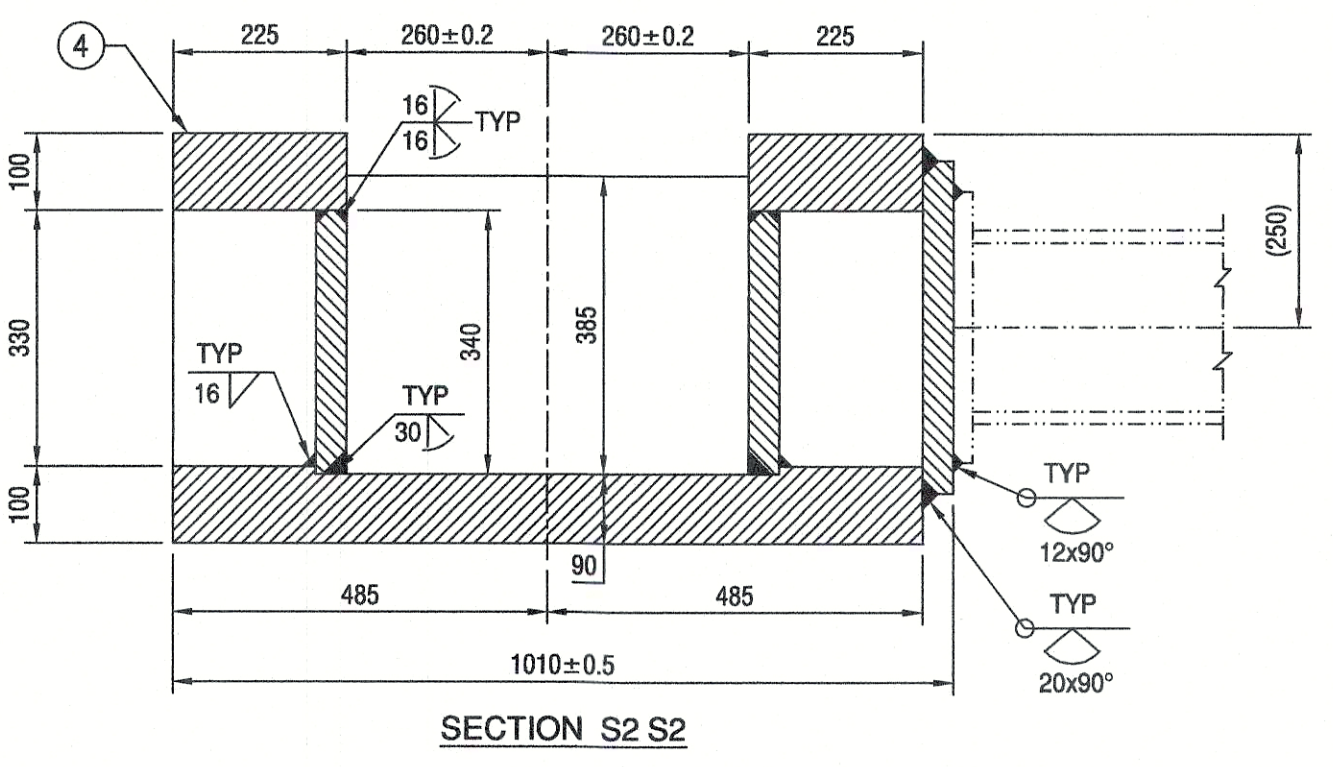
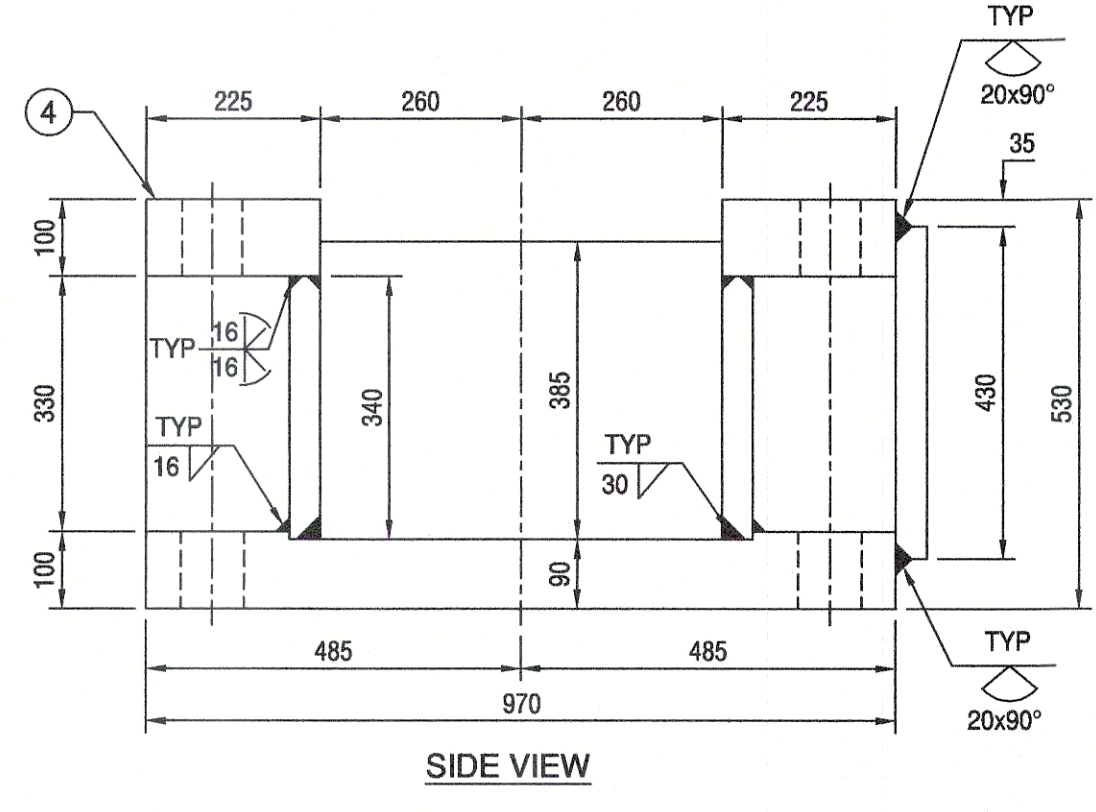
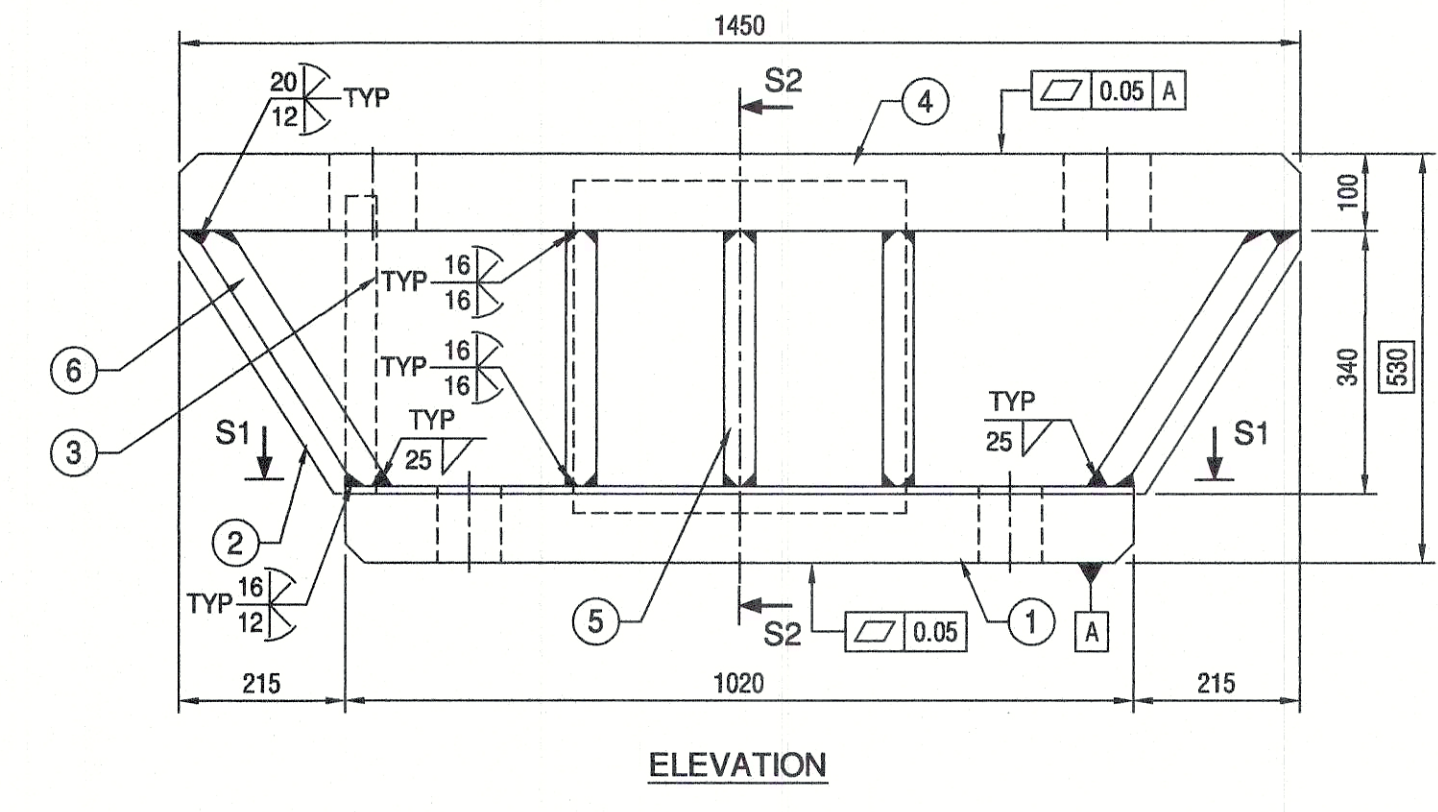
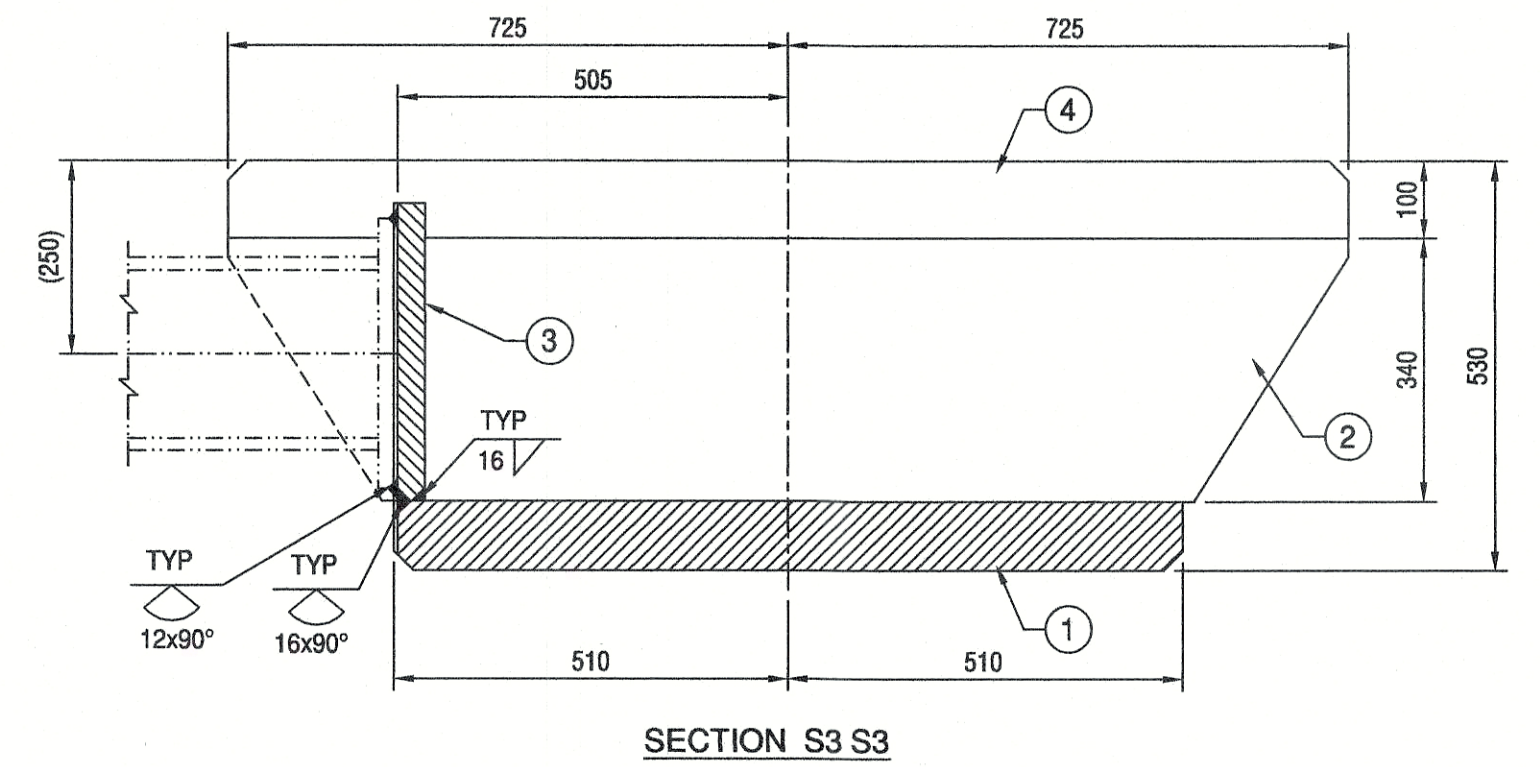
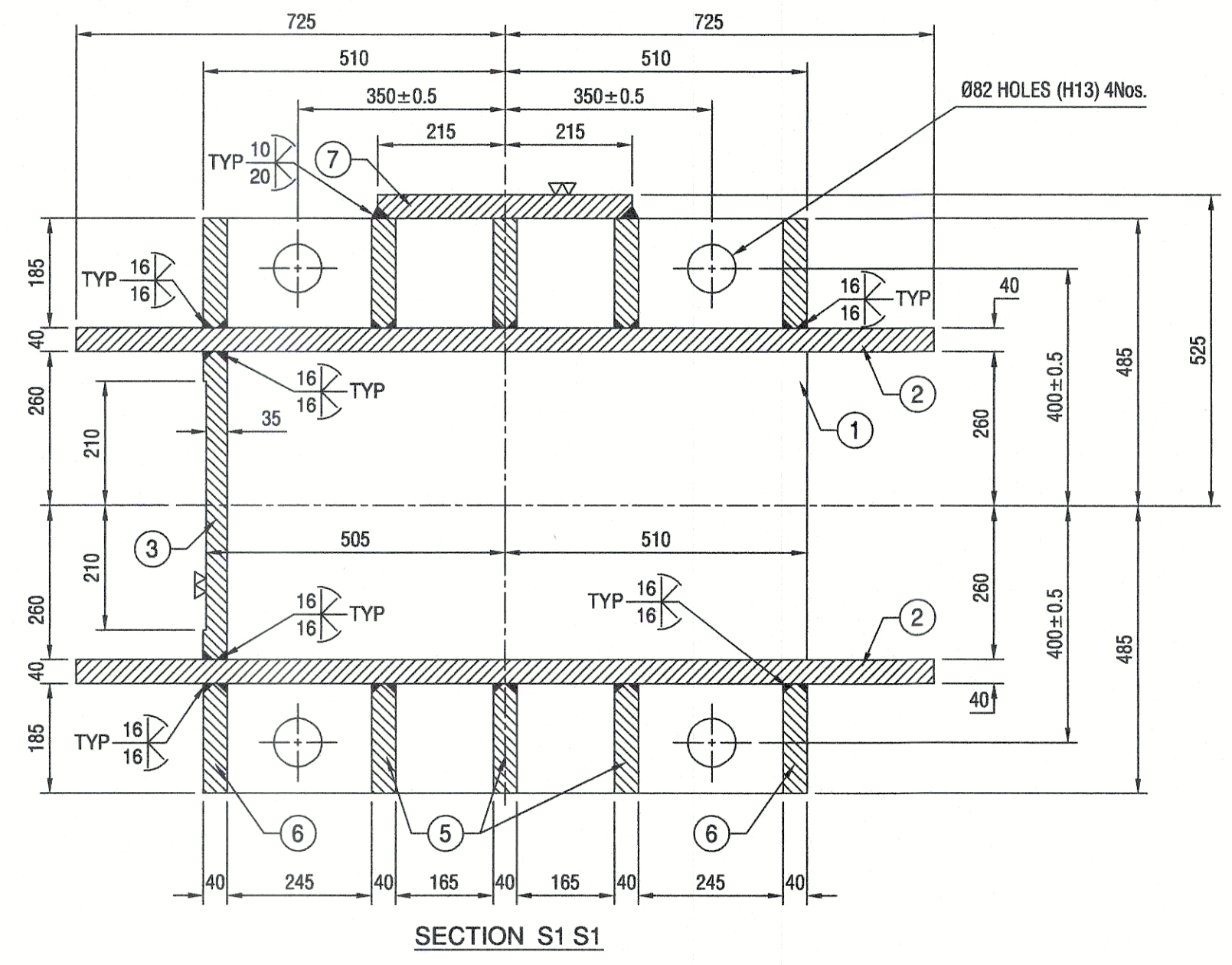
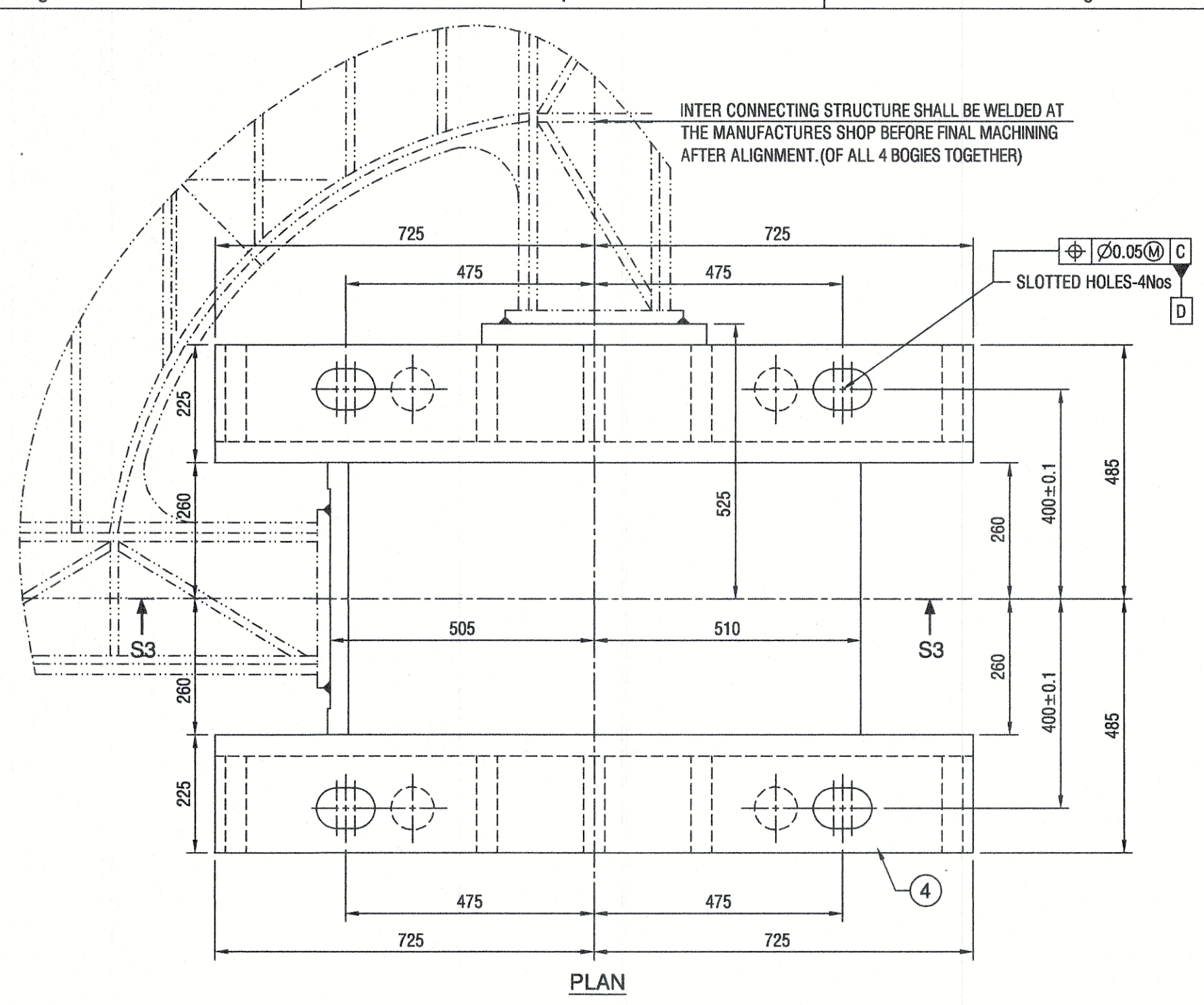
CHECK LIST

Sl no	Description	Response by supplier
1.	All documents related to Prequalification criteria mention in Section E2 have been met and all related documents are enclosed in technical Bid	Yes / No
2.	Are all the technical particulars as called for in the data sheets section A, B, C, D & E and commercial details as called for in schedule of prices filled up	Yes / No
3.	The detailed scope of work and technical specifications are understood and price was quoted accordingly.	Yes / No
4.	Confirmation that the quoted prices are firm and fixed till the completion of scope of work.	Yes / No
5.	Validity of Offer is 4 months (minimum).	Yes / No
6.	Vendor Evaluation Format is attached	Yes / No
7.	Delivery Schedule with milestones	Yes / No
8.	Accepted the Department Payment Terms as per para no 22 of sec B	-
	Option-1 (With advance)	Yes / No
	Option-2 (without advance)	Yes / No
9.	Are General terms and Conditions of Contract for Supply & Erection included in proposal acceptable?	Yes / No
10	If not acceptable, are the deviations brought out in the "Schedule of Deviations"	Yes / No
11	Are there any deviations from enquiry technical specifications?	Yes / No
12	If there are technical deviations, are these filled in "Schedule of Deviations from Tech. Specifications"?	Yes / No
13	Warranty for the fully commissioned and accepted system is 24 months	Yes / No
14	PBG of 3% as per Section-B, 14-A	Yes / No
15	SD of 3% as per Section-B, 14-B	Yes / No
16	Combined BG for SD & PBG for 3% as per Section-B, 14-C	Yes / No
17	Liquidated Damages as specified in the specification document are acceptable	Yes / No
18	Registration certificate of the company is enclosed	Yes / No
19	All the forms in Section E1 to E7 are filled	Yes / No
20	Technical documents / drawings are attached along with technical bid	Yes / No
21	Solvency certificate from a scheduled bank for a value not less than Rs. 25 lakhs and not before 6 months from the date of tender closing.	Yes / No

SIGNATURE : _____
NAME : _____
DESIGNATION: _____

SEAL OF THE COMPANY

DATE : _____



- NOTES**
1. ALL DIMENSIONS SHOWN ARE FINAL MACHINED DIMENSIONS
 2. ALL THE WELDS ARE OF 20 mm SIZE FILLET UNLESS OTHERWISE SPECIFIED
 3. ALL WELDS ARE TO BE DP TESTED FOR ROOT AND FINAL PASSES TO ENSURE WELD QUALITY
 4. ALL WELDING SHALL BE CARRIED OUT AS PER IS : 9595
 5. ALL PLATES ABOVE 16mm THICKNESS SHALL BE QUALIFIED BY U. T
 6. APPROVED PAINTING SHALL BE FOLLOWED AS PER PURCHASE ORDER
 7. QUANTITY IS GIVEN FOR ONE ASSEMBLY ONLY. NUMBER OF ASSEMBLIES REQUIRED IS TWO (BOGIE - 1 & BOGIE - 3)
 8. ALL MATING SURFACES, BORES & THREADED HOLES SHALL BE GREASED
 9. STRESS RELIEVING IS TO BE CARRIED OUT AFTER COMPLETION OF ALL WELDING & BEFORE MACHINING
 10. CHECK THE STATUS OF THE DRAWING BEFORE FABRICATION / MACHINING

TOTAL WEIGHT : 1886 Kgs. (Approx)

S.NO	DESCRIPTION	MATERIAL	QTY	W.T	REMARKS
7	PLATE 430 x 430 x 40Thk	ASTM SA 517 GRADE - F	1	58	
6	STIFENNER PLATE 390 x 185 x 40Thk	ASTM SA 517 GRADE - F	4	91	
5	STIFENNER PLATE 330 x 185 x 40Thk	ASTM SA 517 GRADE - F	6	115	
4	PLATE 1450 x 225 x 100Thk	ASTM SA 517 GRADE - F	2	512	
3	PLATE 520 x 385 x 40Thk	ASTM SA 517 GRADE - F	1	63	
2	PLATE 1450 x 340 x 40Thk	ASTM SA 517 GRADE - F	2	270	
1	PLATE 1020 x 970 x 100Thk	ASTM SA 517 GRADE - F	1	777	

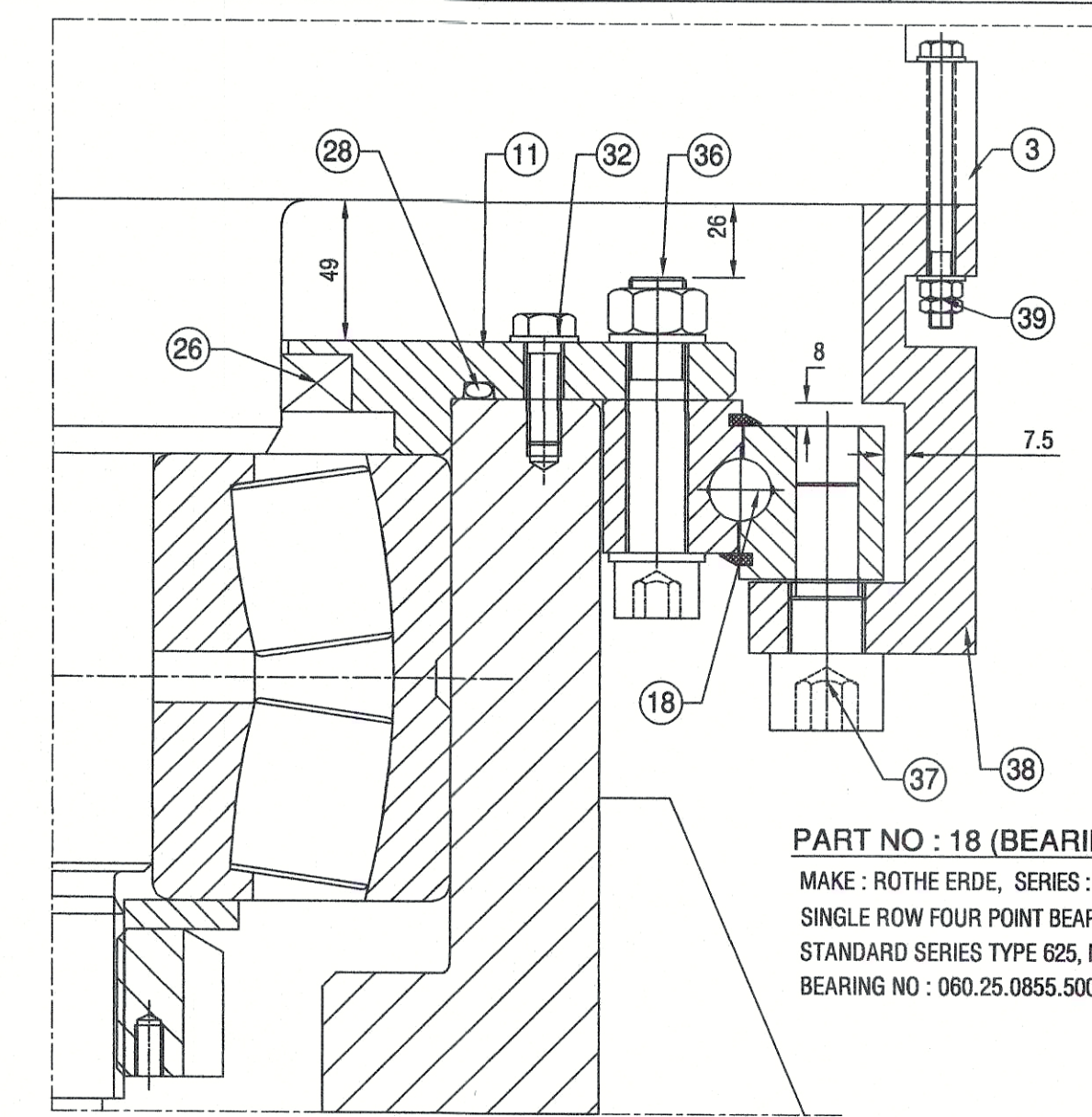
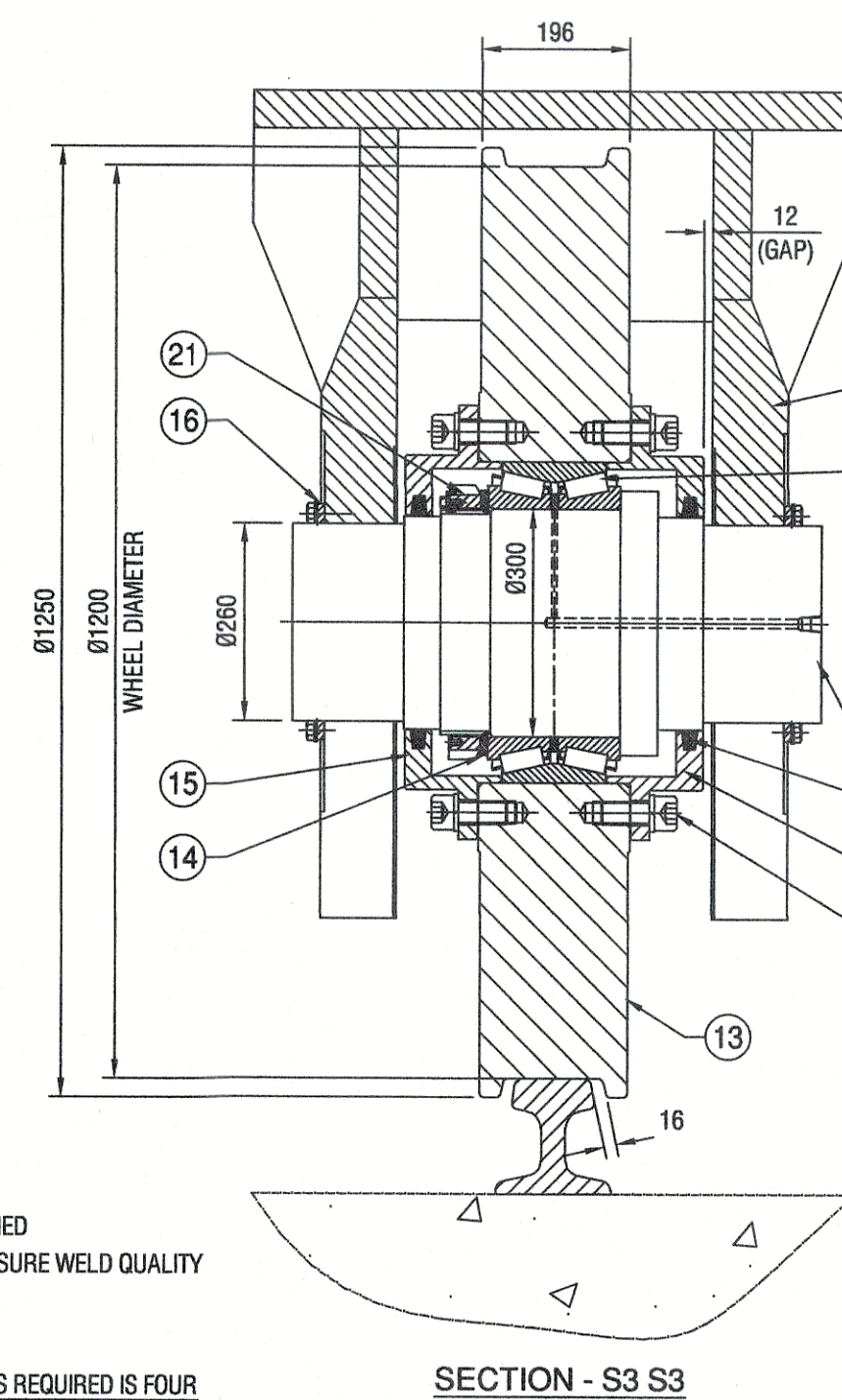
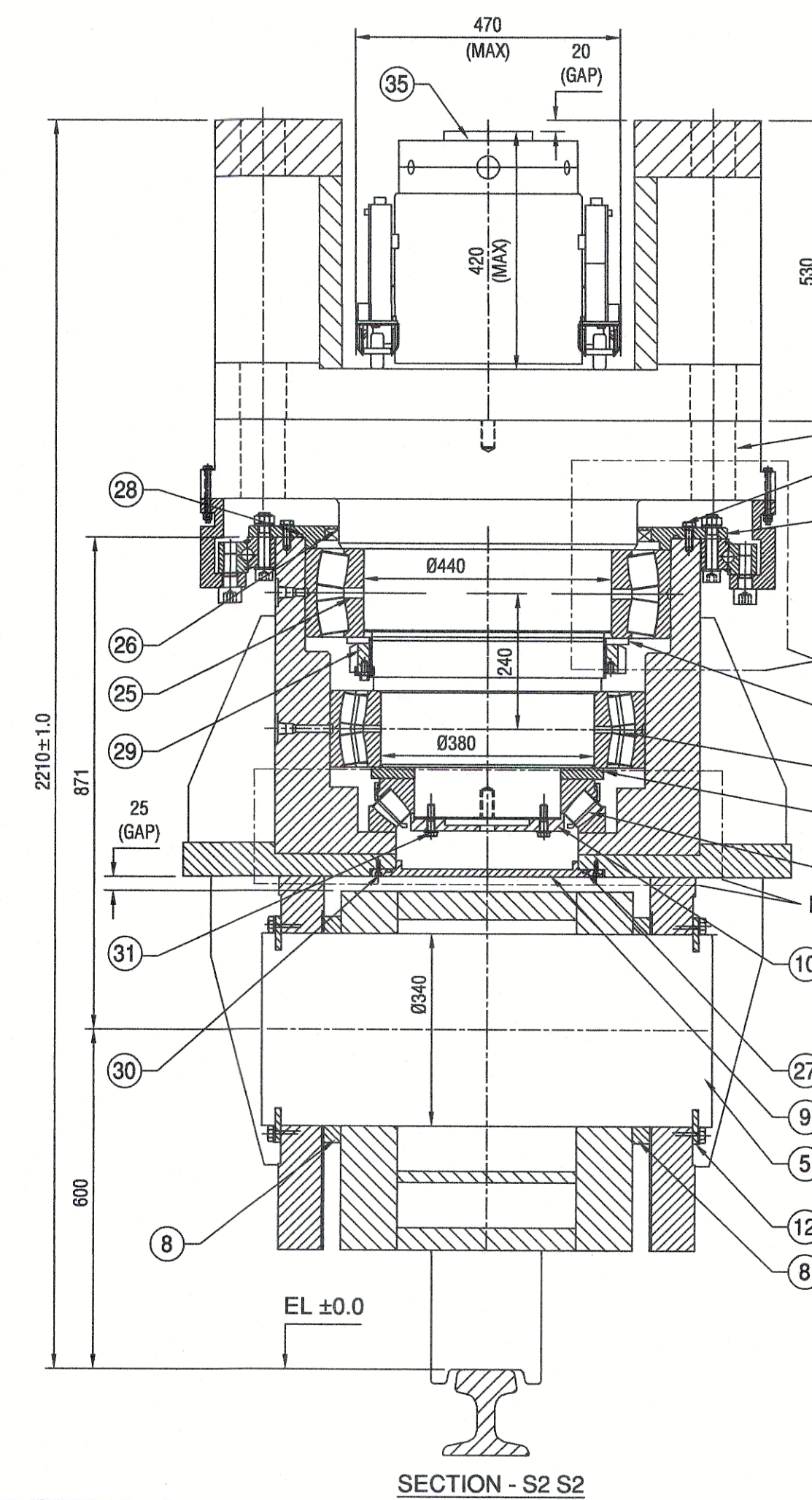
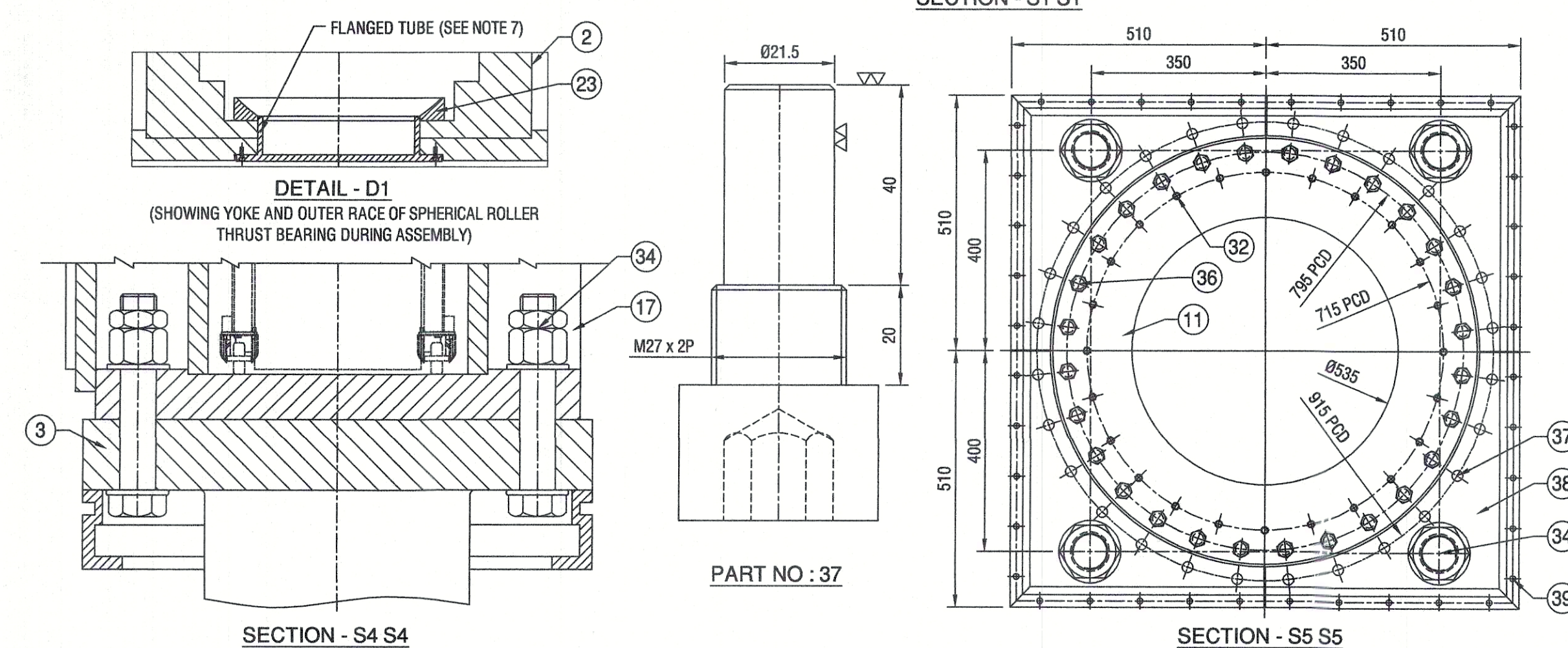
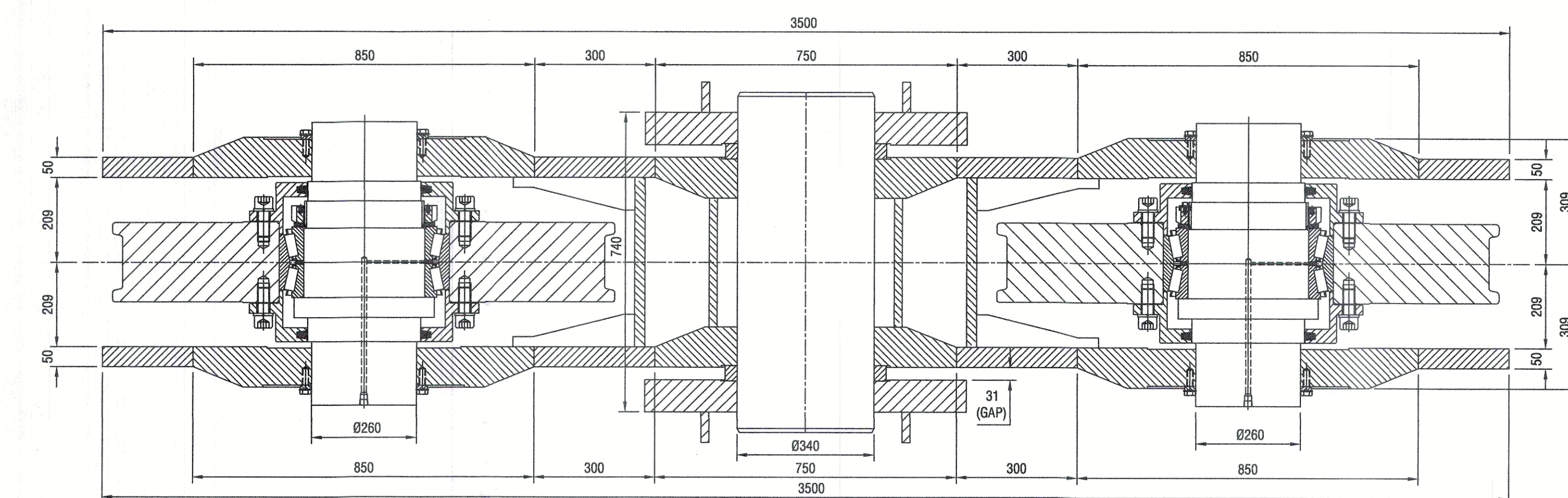
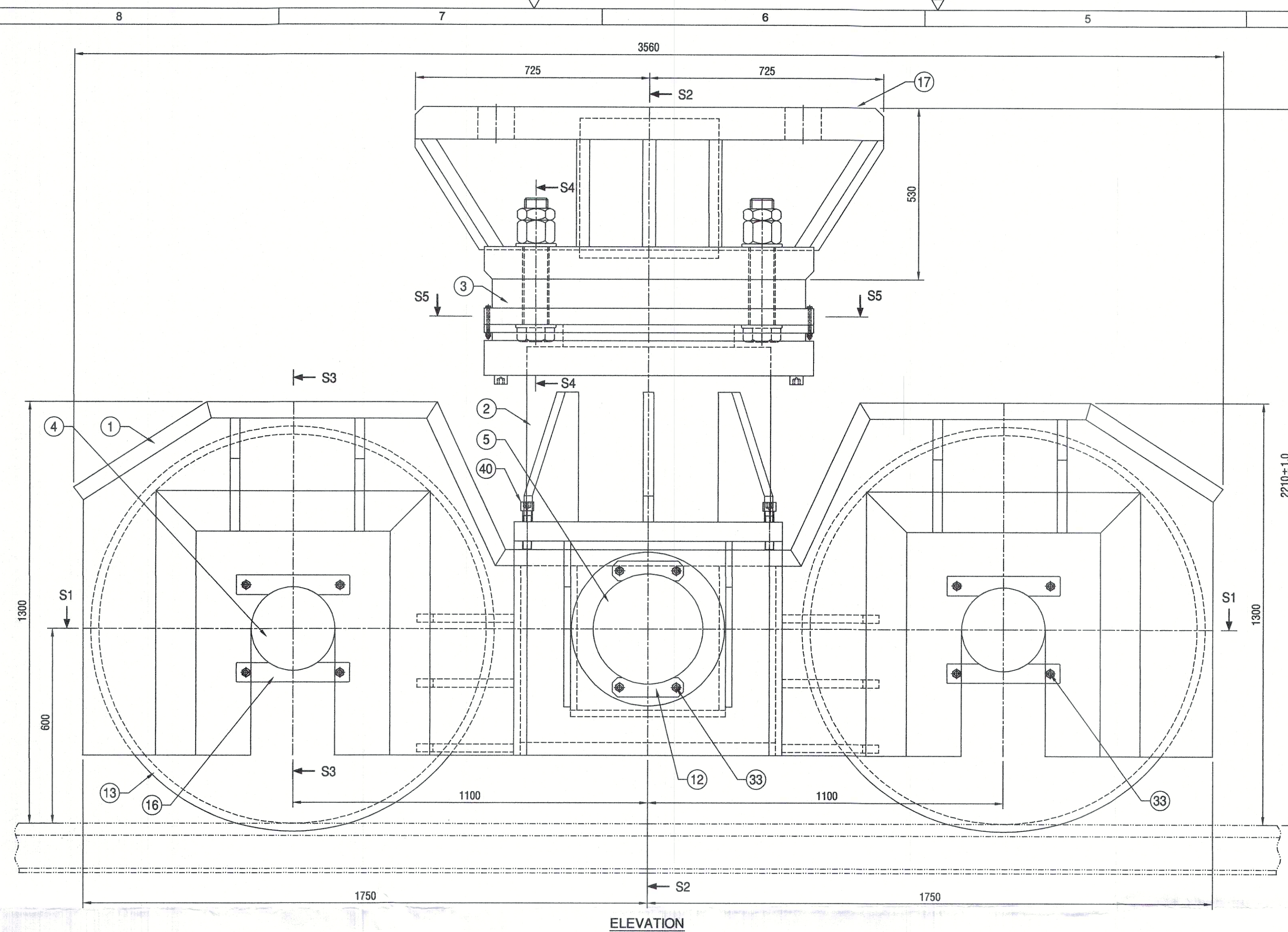
STATUS	SIGN	DATE
DISCUSSION / REVIEW		
TENDER PURPOSE		
FABRICATION		29/12/24
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ALL DIMENSIONS ARE IN MILLIMETERS
REMOVE SHARP EDGES & BURRS
CHAMFER 1 M.M. X 45°
MACHINING FINISH IN MICRONS :-
▽ 8 - 25 ▽ 1.6 - 8
▽▽ 0.025 - 1.6 ▽▽▽ < 0.025

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

SCEND
SHAR CENTRAL DESIGNS
DESIGNED: [Signature]
DRAWN: V. V. R 24.01.24
DRG.CHKD: [Signature]
APPROVED: [Signature]
SIGN. DATE

TITLE		SPACER BLOCK - 1	
		FOR WHEEL BOGIE SYSTEM OF SLC PROJECT	
		GOVERNMENT OF INDIA INDIAN SPACE RESEARCH ORGANISATION SATISH DHAWAN SPACE CENTRE SHAR SRIHARIKOTA	
SCALE		1 : 10	DRG. NO. 10-MECH-12-8-33/A1/R1
			SHEET 1 OF 1



PART NO : 18 (BEARING) SPECIFICATION
MAKE : ROTHE ERDE, SERIES : 06
SINGLE ROW FOUR POINT BEARING
STANDARD SERIES TYPE 625, NORMAL BEARING
BEARING NO : 060.25.0855.500.11.1503

TOTAL WEIGHT : 15544 Kgs. (Approx)

40	M30 x 120Lg HEX. SOC. HEAD CAP SCREW	IS : 2269	4	--	P. CLASS 8.8
39	M8 x 95Lg HEX. HEAD BOLT, NUT, LOCK NUT WITH TWO SPRING WASHERS	IS : 1364	40	--	P. CLASS 8.8
38	BEARING RETAINER		1	210	REF. DRG. NO. 10-MECH-12-9-35
37	M27 x 2P, 60Lg HEX. SOC. HEAD CAP SCREW	IS : 2269	28	--	P. CLASS 8.8
36	M20 x 100Lg HEX. SOC. HEAD CAP SCREW FLANGE LOCK NUT & TWO SPRING WASHERS	IS : 2269	28	--	P. CLASS 8.8
35	HYDRAULIC JACK WITH TROLLEY		1	--	
34	M72 x 400Lg HEX. HEAD BOLT, NUT, LOCK NUT WITH TWO MACHINED WASHERS	IS : 1364	4	--	P. CLASS 8.8
33	M16 x 55Lg HEX. SOC. HEAD CAP SCREW WITH MACHINED WASHERS	IS : 2269	24	--	P. CLASS 8.8
32	M10 x 38Lg HEX. HEAD SCREW, WASHER	IS : 1364	24	--	P. CLASS 8.8
31	M12 x 50Lg HEX. HEAD SCREW, WASHER	IS : 1364	8	--	P. CLASS 8.8
30	M6 x 28Lg HEX. SOC. HEAD CAP SCREW	IS : 2269	8	--	P. CLASS 8.8
29	LOCK NUT SKF HM3084		1	--	
28	O - RING Ø660 x 7.0 WIDTH		1	--	2x2xanti life
27	O - RING Ø342.27 x 6.99 WIDTH		1	--	2x2xanti life
26	OLL SEAL Ø530 x Ø580 x 20 W SPARE TYPE ACB8300801		1	--	
25	SPHERICAL ROLLER BEARING SKF 23088 CC / W33		1	--	
24	SPHERICAL ROLLER BEARING SKF 23076 CC / W33		1	--	
23	SPHERICAL ROLLER THRUST BEARING SKF 29352E		1	--	
22	M30 x 70Lg HEX. SOC. HEAD CAP SCREW WITH MACHINED WASHERS	IS : 2269	48	--	P. CLASS 8.8
21	LOCK NUT SKF HM3080		2	--	
20	DOUBLE ROW TAPER ROLLER BEARING TIMKEN HM256849 / HM256810CD		2	--	
19	FELT STRIP (26 x 16 x 104SLg)	PRESSED WOOLEN FELT AS PER IS:1719	4	--	
18	ROTTE ERDE SLEWING BEARING		1	--	REFER SPECIFICATION
17	SPACER BLOCK - 1 & SPACER BLOCK - 2		1	1886	REF. DRG. NO. 10-MECH-12-9-33
16	LOCK PLATE FOR WHEEL SHAFT		8	32	REF. DRG. NO. 10-MECH-12-9-32
15	BEARING COVER		4	368	
14	SPACER FOR WHEEL SHAFT		2	4	
13	WHEEL		2	3160	
12	LOCK PLATE FOR HINGE PIN		4	8	REF. DRG. NO. 10-MECH-12-9-31
11	BEARING COVER FOR YOKE		1	51	
10	BEARING RETAINER FOR YOKE		1	9	
9	BOTTOM COVER FOR YOKE		1	15	
8	SPACER FOR HINGE PIN		2	22	
7	SPACER TYPE - 2		1	5	
6	SPACER TYPE - 1		1	1	
5	HINGE PIN		1	570	
4	WHEEL SHAFT		2	740	REF. DRG. NO. 10-MECH-12-9-30
3	YOKE PIN		1	1505	REF. DRG. NO. 10-MECH-12-9-29
2	YOKE		1	2755	REF. DRG. NO. 10-MECH-12-9-28
1	BALANCER		1	4203	REF. DRG. NO. 10-MECH-12-9-27

STATUS	SIGN	DATE
DISCUSSION / REVIEW		
TENDER PURPOSE		
✓ FABRICATION	✓	3/1/12
UNRESTRICTED	RESTRICTED	CONFIDENTIAL

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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

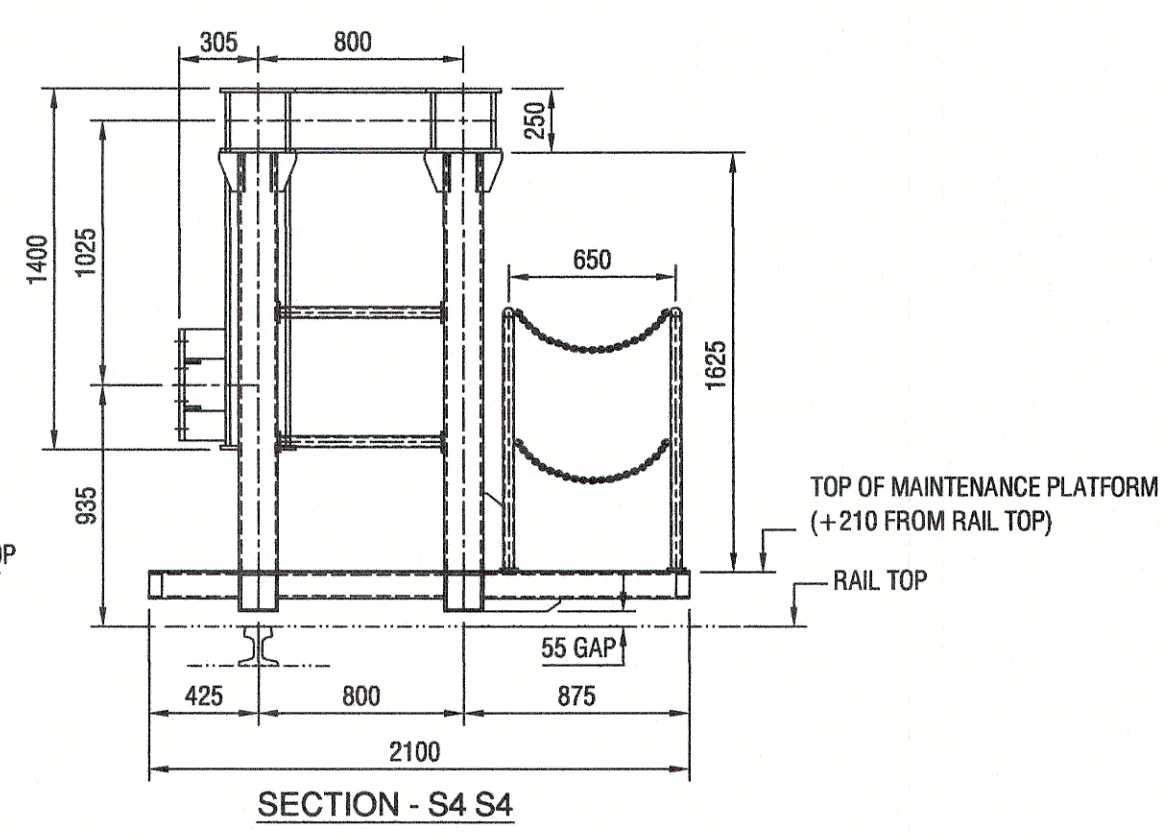
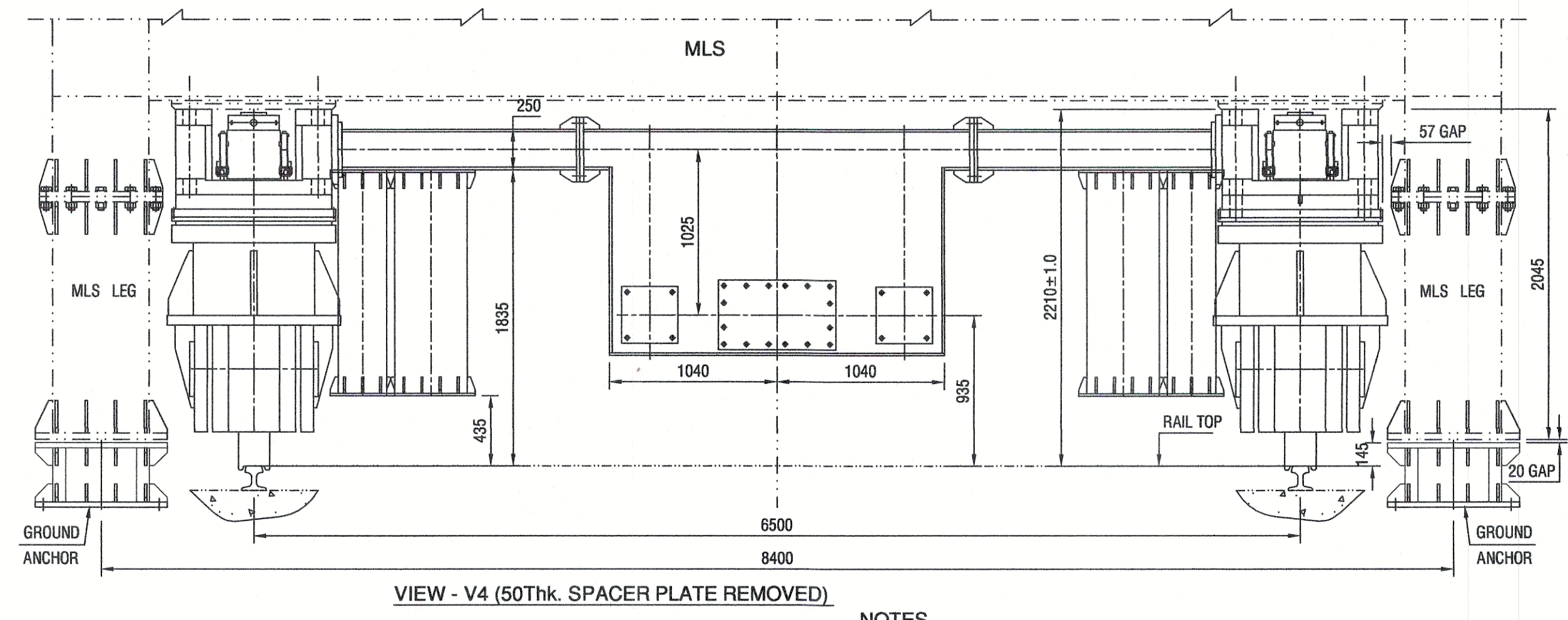
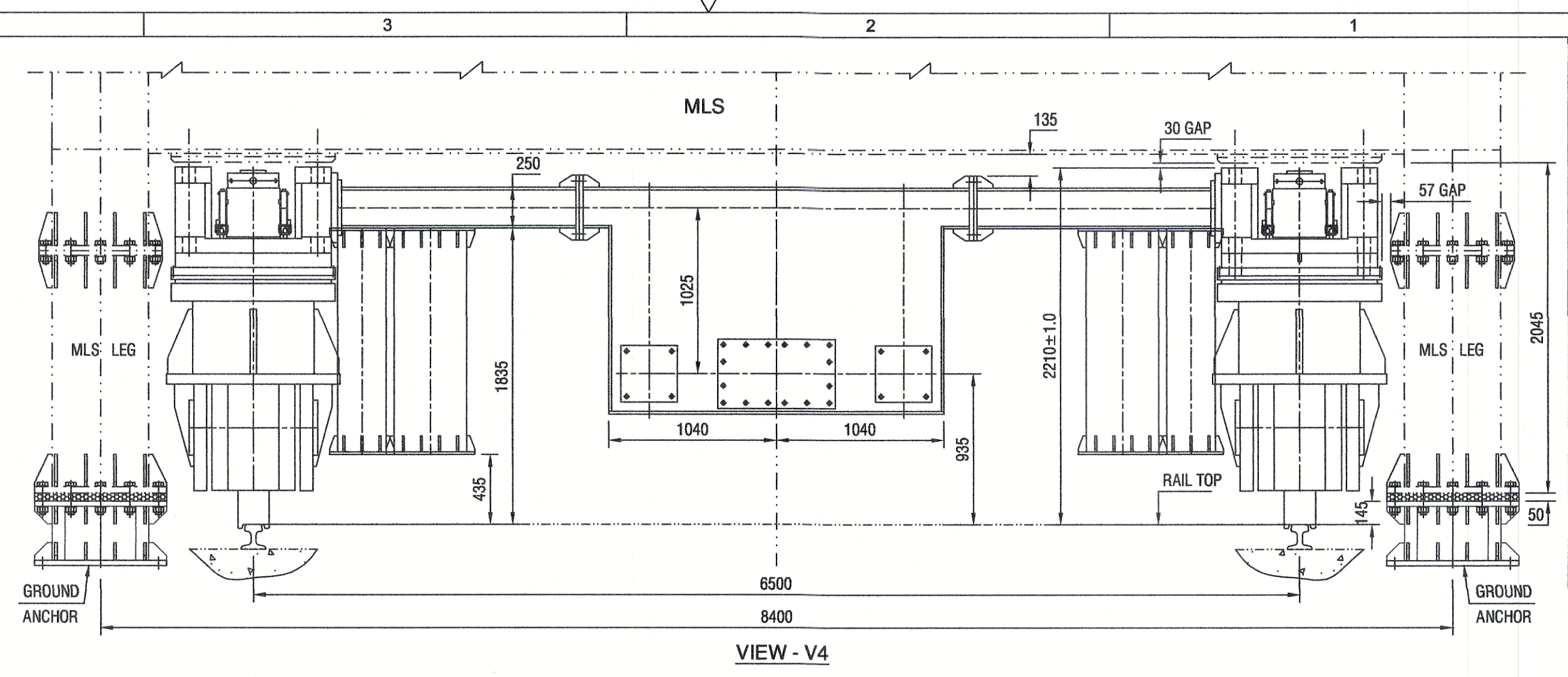
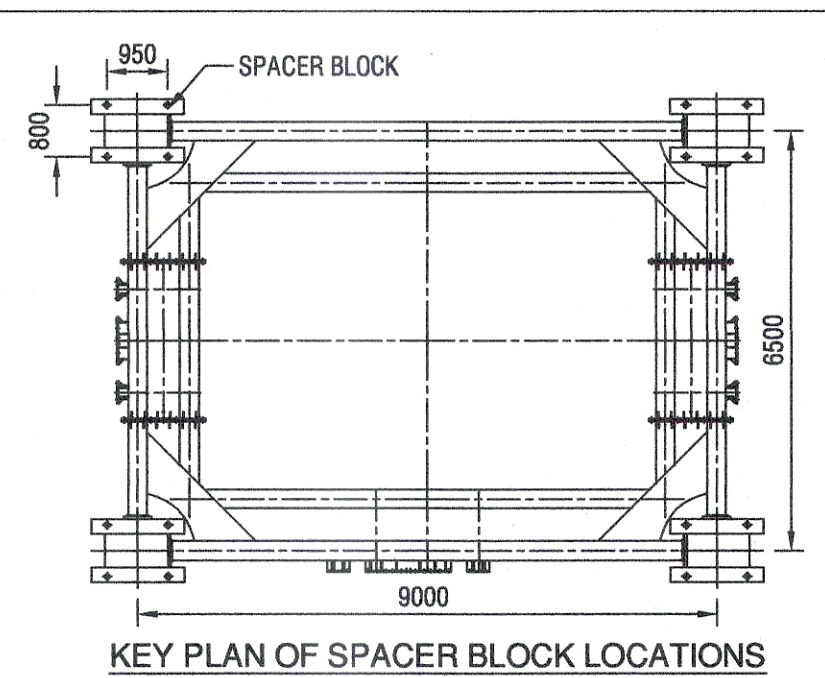
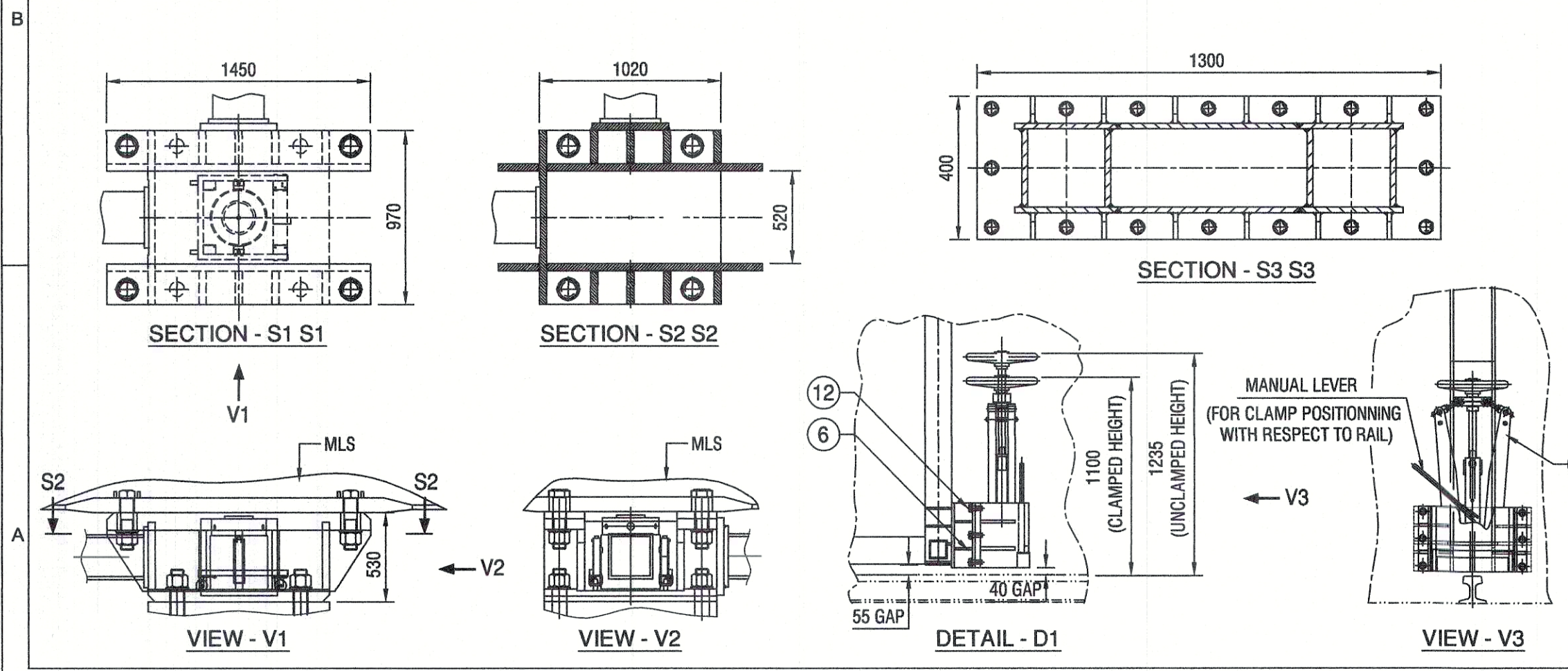
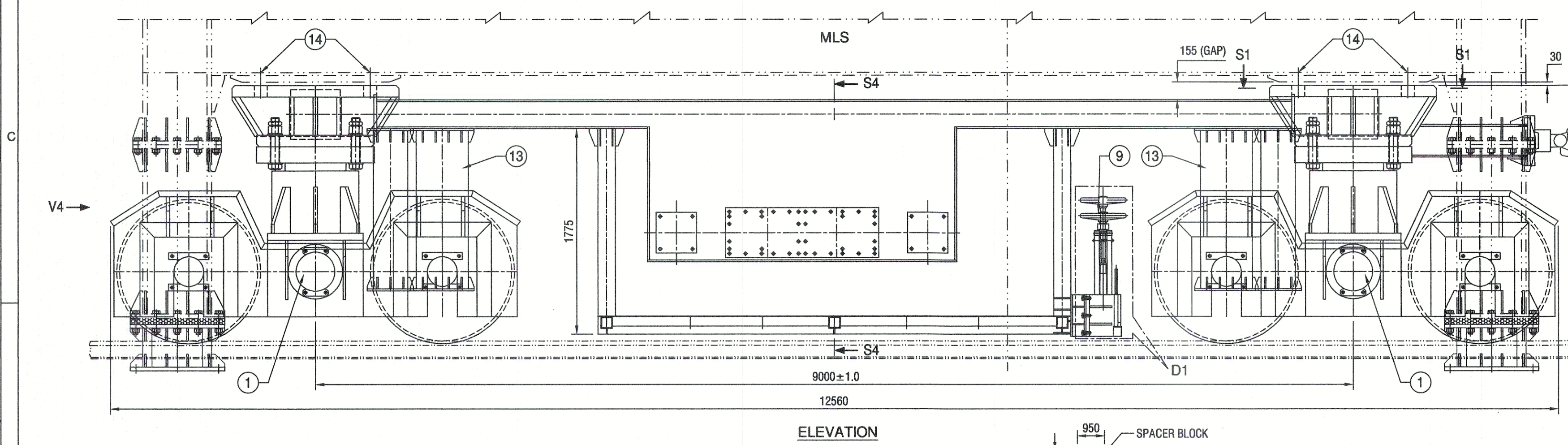
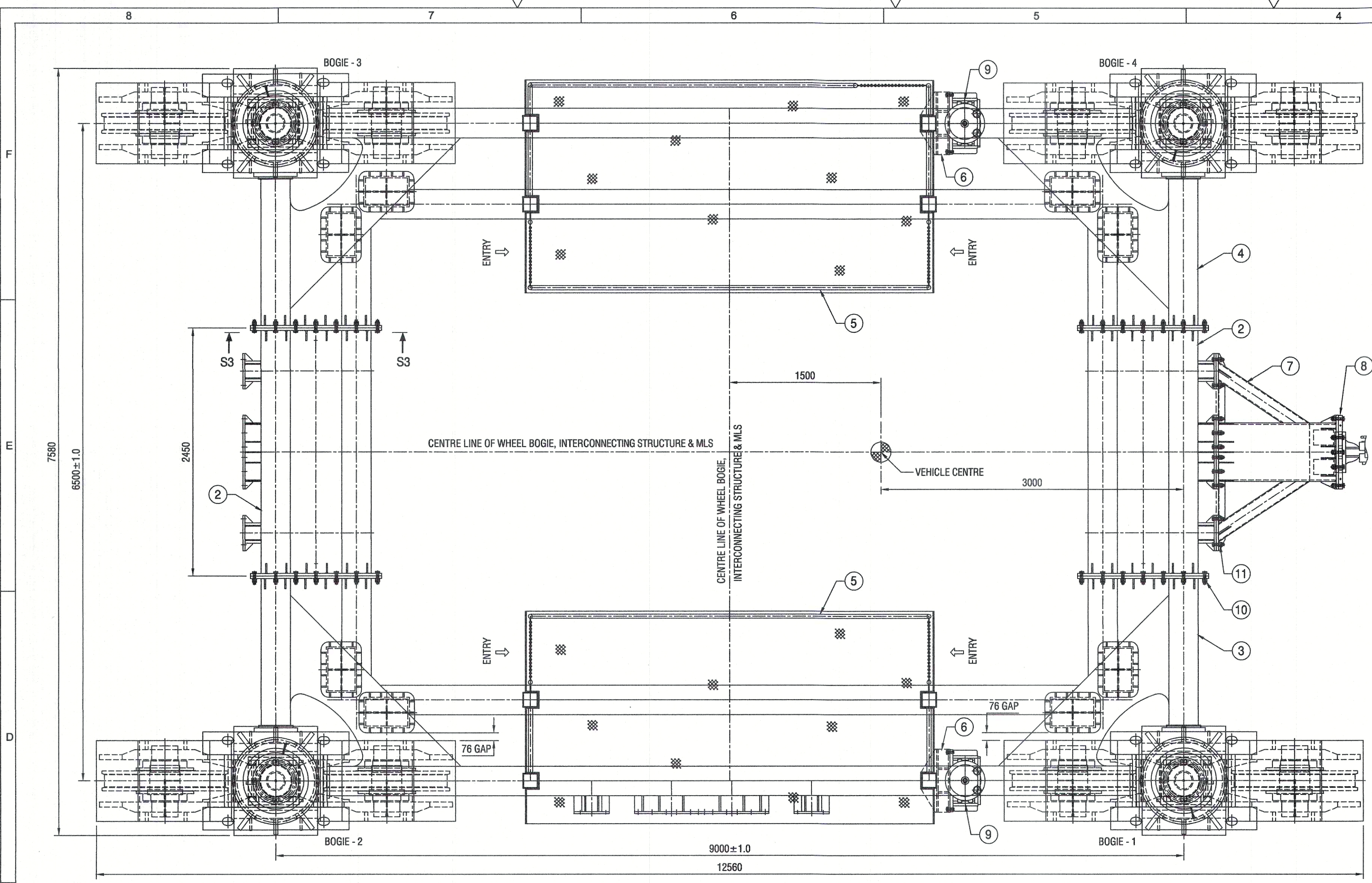
DEVIATION FOR NON TOLERANCED DIMENSIONS (IS -2102)	
DIAMETERS & LENGTHS	LENGTH IN M.M. OF SHORTER SIDE OF ANGLE UPTO & INCL
UPTO & INCL 6 ± 0.1	
6 - 30 ± 0.2	
30 - 120 ± 0.3	
120 - 315 ± 0.5	1- 6 $\pm 1' - 00''$
315 - 1000 ± 0.8	6- 30 $\pm 0' - 30''$
1000 - 2000 ± 1.2	30-120 $\pm 0' - 20''$
2000 - 4000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

SCEND		
SHAR CENTRAL DESIGN		
DESIGNED	<i>KAR</i>	21/2/16
DES.CHKD	<i>Ch</i>	
DRAWN	V. V. R	06.02.16
DRG.CHKD	<i>KAR</i>	06/2/16
APPROVED	<i>Ch</i>	
	SIGN.	DATE

TITLE	WHEEL BOGIE ASSEMBLY FOR WHEEL BOGIE SYSTEM OF SLC PROJECT
-------	---

**GOVERNMENT OF INDIA
INDIAN SPACE RESEARCH ORGANISATION
SATISH DHAWAN SPACE CENTRE SHAR
SRIHARIKOTA**

SCALE	1 : 10	DRG. NO. 10-MECH-12-8-16/A1/R1
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- NOTES**
- ALL DIMENSIONS SHOWN ARE FINAL MACHINED DIMENSIONS
 - INTERCONNECTING FLANGES SHALL BE WELDED ALL AROUND AT SITE AFTER ALIGNMENT AND ASSEMBLY OF THE BOLTS, MAINTAINING RECTANGULAR OF WHEEL BOGIE WELDING SHALL BE DONE CAUTIOUSLY TAKING SUFFICIENT TIME TO AVOID DISTORTION OF WHEEL BOGIE ASSEMBLY
 - INTERCONNECTING STRUCTURE SHALL BE WELDED WITH SPACER BLOCKS AT THE MANUFACTURES SHOP BEFORE FINAL MACHINING AFTER ALIGNMENT (OF ALL 4 WHEEL BOGIES TOGETHER)
 - WHEREVER WIRE LOCKING OR OTHER METHODS OF LOCKING ARE NOT FEASIBLE, LOCK WITH LOCTITE OF APPROPRIATE GRADE, APPLY LOCTITE ON FASTENER THREADS ONLY. NO LOCTITE SHALL BE APPLIED ON THE HEAD SEATING SURFACE
 - WHEREVER LOCTITE IS USED, NO OTHER LUBRICANT SHALL BE USED ON FASTENER THREADS OR HEAD SEATING SURFACES
 - ALL FASTENERS SHALL BE PROVIDED WITH SUITABLE CORROSION PROTECTION COATING
 - APPROVED PAINTING SHALL BE FOLLOWED AS PER PURCHASE ORDER
 - CHECK THE STATUS OF THE DRAWING BEFORE FABRICATION / MACHINING

TOTAL WEIGHT : 88722 Kgs. (Approx)					
S.NO	DESCRIPTION	MATERIAL	QTY	W.T	REMARKS
14	M72 x 1000g HEX. HEAD BOLT, NUT, LOCK NUT WITH MACHINED WASHERS	IS : 1364	16	--	P. CLASS 8.8
13	JACK SUPPORT STRUCTURE		8	3240	REFER DRG. NO. 10-MECH-12-8-36
12	M24 x 50Lg HEX. HEAD BOLT, NUT, WITH MACHINED WASHERS	IS : 1364	12	--	P. CLASS 8.8
11	M24 x 100Lg HEX. HEAD BOLT, NUT, LOCK NUT WITH MACHINED WASHERS	IS : 1364	24	--	P. CLASS 8.8
10	M24 x 110Lg HEX. HEAD BOLT, NUT, LOCK NUT WITH MACHINED WASHERS	IS : 1364	80	--	P. CLASS 8.8
9	RAIL CLAMP WITH LEVER FOR MANUAL LATERAL POSITIONING		2		TYPE: VZM-2, MAKE: ROMER Fordertechnik GmbH
8	TOWING PLATE		1	96	REFER DRG. NO. 10-MECH-12-8-26
7	HAULER INTERFACE FRAME		1	530	
6	RAIL CLAMP BRACKET		2	178	REFER DRG. NO. 10-MECH-12-8-25
5	MAINTENANCE PLATFORM		2	2610	REFER DRG. NO. 10-MECH-12-8-23
4	INTERCONNECTING STRUCTURE - LH		1	5569	REFER DRG. NO. 10-MECH-12-8-21
3	INTERCONNECTING STRUCTURE - RH		1	7613	REFER DRG. NO. 10-MECH-12-8-19
2	INTERCONNECTING FRAME		2	6710	REFER DRG. NO. 10-MECH-12-8-17
1	WHEEL BOGIE ASSEMBLY		4	82176	REFER DRG. NO. 10-MECH-12-8-16

STATUS	SIGN	DATE
DISCUSSION / REVIEW		
TENDER PURPOSE		
FABRICATION		
UNRESTRICTED	RESTRICTED	CONFIDENTIAL
THIS DRAWING IS THE PROPERTY OF SDSC-SHAR AND IS ISSUED FOR THE SPECIFIC WORK / PROJECT MENTIONED THEREIN. THIS IS NOT TO BE COPIED OR USED FOR OTHER WORKS / PROJECTS UNLESS EXPRESSLY PERMITTED BY SDSC-SHAR.		

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 6 - 30 ±0.2 30 - 120 ±0.3 120 - 315 ±0.5 315 - 1000 ±0.8 1000 - 2000 ±1.2 2000 - 4000 ±2.0 4000 & ABOVE ±3.0	LENGTH IN M.M. OF SHORTER SIDE OF ANGLE UPTO & INCL 1 - 6 ± 1'-0° 6 - 30 ± 0'-30° 30-120 ± 0'-20° 120-400 ± 0'-10°
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SCEND	
DESIGNED	3/24/24
DRAWN	V.V.R. 14.02.24
DRG.CHECKED	3/24/24
APPROVED	
SIGN.	DATE

TITLE		PROJECTION	
GENERAL ASSEMBLY OF BOGIE SYSTEM FOR WHEEL BOGIE SYSTEM OF SLC PROJECT		FIRST ANGLE	
GOVERNMENT OF INDIA SPACE RESEARCH ORGANISATION SATISH DHAWAN SPACE CENTRE SHAR SRIHARIKOTA		SHEET 1 OF 1	
SCALE	1 : 30	DRG. NO.	10-MECH-12-8-15/A1/R1