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

सत्यमेव जयते

Goverment 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/28/2025-2026

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. Sl No	संदर्भ सं. Ref. No.	विवरण Description	मात्रा Qty.
01.	**SDSC SHAR /VALF PURCHASE /VALF/ 2025001142 [Public Tender – Two Part]**	**Procurement, Manufacturing, Supply, Erection, Testing and Communication of Folding Platform for SAF of SLC Project**	**2,13,0000.00 KGs & 03.00 Lots**

निविदा दस्तावेजों को डाउनलोड करने की अंतिम तिथि Last Date for downloading of tender documents : 30.09.2025 at 16:00 hrs.
ऑनलाइन निविदा जमा करने की अंतिम तिथि Due Date for submission of bids online : 30.09.2025 at 16:00 hrs.
निविदाएं खोलने की नियत तिथि Due Date for opening of tenders : 01.10.2025 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.

01. 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.

02. इच्छुक निविदाकार इसरो की ई-खरीद वेबसाइट इसरो न्यू ई-प्रोकुरमेंट 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.

03. निविदा दस्तावेज इसरो की वेबसाइट www.isro.gov.in इसरो न्यू ई-प्रोकुरमेंट वेबसाइट www.eproc.vssc.gov.in तथा सतीश धवन अंतरिक्ष केंद्र शार की वेबसाइट www.shar.gov.in पर भी उपलब्ध हैं। 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.

04. निर्धारित तिथि/समय के पश्चात प्राप्त बोलियों पर विचार नहीं किया जाएगा। / Quotations received after the due date/time will not be considered.

05. 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.

06. 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.

दिनांक DT: 03.09.2025

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

भारतीय अंतरिक्ष अनुसंधान संगठन

इसरो isro

Indian Space Research Organisation

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

Tender for Procurement, Manufacture, Supply, Erection, Testing and Commissioning of Folding Platforms for SAF of SLC Project, Tuticorin, Tamil Nadu

Bids to be submitted online

Tender No.: SDSC SHAR/VALF PURCHASE/SH202500114201 dated 04-09-2025

A. Tender Details

Tender No :	**SDSC SHAR/VALF PURCHASE/SH202500114201**
Tender Date :	**04-09-2025**
Tender Classification:	**GOODS**
Purchase Entity :	**VALF PURCHASE**
Centre :	**SATISH DHAWAN SPACE CENTRE SHAR SRIHARIKOTA (SDSC SHAR)**

Procurement, Manufacture, Supply, Erection, Testing and Commissioning of Folding Platforms for SAF of SLC Project, Tuticorin, Tamil Nadu

As per the tender document
GEM/GARPTS/19082025/4CH053FCCKYV8

A.1 Tender Schedule

Tender Publish Date :	**04-09-2025 17:30**
Bid Clarification Due Date :	**23-09-2025 15:30**
Bid Submission Start Date :	**04-09-2025 17:30**
Bid Submission Due Date :	**30-09-2025 16:00**
Bid Opening Date :	**01-10-2025 14:30**
Price Bid Opening Date :	**08-10-2025 10:00**

A.2 Pre-bid Meeting Details

Date :	**15-09-2025 14:30**
Place :	**PPEG Conference hall,**
Location :	**Admin Building, Keepakam**

Centre :	**SATISH DHAWAN SPACE CENTRE SHAR SRIHARIKOTA (SDSC SHAR), NELLORE, ANDHRA PRADESH**
Details :	**Virtual/ Video Mode**

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 make 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 - Procurement, Manufacture, Supply, Erection, Testing and Commissioning of Folding Platforms for SAF of SLC Project, Tuticorin, Tamil Nadu

1. FABRICATION AND ASSEMBLY

Fabrication, control assembly and supply of fabricated structural steel / Mild steel conforming to IS:2062 & IS:808 items without machining as per attached RFP document.

Document : Vehicle Side Platform drawings-08

Document : Vehicle Side Platform drawings-07

Document : Vehicle Side Platform drawings-06

Document : Vehicle Side Platform drawings-05

Document : Vehicle Side Platform drawings-04

Document : Vehicle Side Platform drawings-03

Document : Vehicle Side Platform drawings-02

Document : Vehicle Side Platform drawings-01

Document : AUT Platform drawing_09

Document : AUT Platform drawing_08

Document : AUT Platform drawing_07

Document : AUT Platform drawing_06

Document : AUT Platform drawing_05

Document : AUT Platform drawing_04

Document : AUT Platform drawing_03

Document : AUT Platform drawing_02

Document : AUT Platform drawing_01

Document : CIVIL drawings indicating location of Electrical items

Document : RFP document for Folding Platform

2. FABRICATION AND ASSEMBLY
Fabrication, stress relieving, machining, control assembly and supply of fabricated structural steel / Mild steel conforming to IS: 2062 & IS: 808 items with machining as per attached RFP document.

3. FABRICATION AND ASSEMBLY
Fabrication / machining, heat treatment, control assembly and supply of forged steel / alloy steel/ cast steel like 45C8, 40C8, 20C8, 40NiCr4Mo3, 40Cr4Mo3 as per attached RFP document.

4. FABRICATION AND ASSEMBLY
Sub-assembly, Control assembly, and supply of all the bought-out items as per attached RFP document.

5. FABRICATION AND ASSEMBLY
Erection, testing & commissioning of 8 sets of vehicle side platforms and 8 sets of AUT side platforms as per attached RFP document.

6. FABRICATION AND ASSEMBLY
Third party Inspection charges for all the Platforms

Common Specifications (Applicable for all items)

Sl No	Specification	Value	Compliance	Offered Specification	Remark
1	Supply, erection and commissioning of the items :	as per attached RFP document and drawings	Yes / No / Explain		

Supporting Documents required from Vendor

1. As per attached RFP document

5 additional documents can be uploaded by the vendor

C.2 Commercial Terms / Bid

Sl. No.	Description	Compliance	Vendor Terms
1	As per guidelines mentioned in the RFP document	Yes / No / Explain	
2	HSN/SAC code shall be indicated for each item and accordingly mention the GST Rate applicable as per prevailing guidelines.	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	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)) 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.	Yes / No / Explain	
5	In case of Specific Brand items, Please provide Authorization certificate from OEM along with the Offer. (Upload OEM Certification)	Yes / No / Explain	

6	Delivery Term FOR : SLC	Yes / No / Explain	
7	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	
8	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	
9	Installation Charges, extra if any, please mention percentage. Please note that in case of Two part tenders, only percentage should be mentioned otherwise those offers shall be summarily rejected.	Yes / No / Explain	
10	Delivery Period required for delivery of the items/completion of total scope of work: As per the tender specifications (Clause no. 22 in General Specifications)	Yes / No / Explain	
11	Payment Term: As per the tender specifications (Clause no. 21 in General Specifications)	Yes / No / Explain	
12	Warranty/Guarantee:The bidder shall provide 12 months warranty for the entire system for a defect liability, after final official handing over at his cost. During this period, supplier has to provide and adhere to the following: 1. He has to attend quarterly based preventive maintenance visits and breakdown maintenance calls. All the defective components have to be replaced or rectified on one-to-one basis. 2. Break down maintenance should be responded within 48 Hours? time and shall be completed within 48 Hours after respond. 3. Department will not provide any transport/accommodation. 4. 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.t.	Yes / No / Explain	

13	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. or As per the tender specifications as9Clause no 23 in General spec)	Yes / No / Explain	
14	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.	Yes / No / Explain	
15	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.	Yes / No / Explain	
16	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.	Yes / No / Explain	
17	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.	Yes / No / Explain	
18	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.	Yes / No / Explain	

19	The bidder shall provide compliance to Order No. F.No.6/18/2019 PPD dated 23.07.2020 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	
20	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	
21	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, Installation, Commissioning, Training and after sales service support like AMC/CMC etc.	Yes / No / Explain	
22	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 Deceleration mentioning place and percentage of value addition along with Offer.	Yes / No / Explain	

23	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.	Yes / No / Explain	
24	Are you claiming MSME Preference for this tendered item/service? 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))	Yes / No / Explain	
25	Please Select for the offered Product whether you are: (1) Manufacturer (2) Authorized Agent (3) Distributor (4) Dealer (5) Reseller (6) Others	Yes / No / Explain	

26	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.	Yes / No / Explain	
27	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.	Yes / No / Explain	
28	Address on which PO is to be placed and GSTIN (GST No. for SHAR- GSTIN: 37AAAGS1366J1Z1)	-	

29	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 procurement.	Yes / No / Explain	
30	Mode of evaluation is TOTAL VALUE WISE (overall L1)	-	

C.3 Price Bid

Sl. No.	Item	Quantity	Unit Price	Currency	Total Price	Remark
1	FABRICATION AND ASSEMBLY Fabrication, control assembly and supply of fabricated structural steel / Mild steel conforming to IS:2062 & IS:808 items without machining as per attached RFP document.	140000.00 KG		-		

2	FABRICATION AND ASSEMBLY Fabrication, stress relieving, machining, control assembly and supply of fabricated structural steel / Mild steel conforming to IS: 2062 & IS: 808 items with machining as per attached RFP document.	28000.00 KG		-		
3	FABRICATION AND ASSEMBLY Fabrication / machining, heat treatment, control assembly and supply of forged steel / alloy steel/ cast steel like 45C8, 40C8, 20C8, 40NiCr4Mo3, 40Cr4Mo3 as per attached RFP document.	45000.00 KG		-		
4	FABRICATION AND ASSEMBLY Sub-assembly, Control assembly, and supply of all the bought-out items as per attached RFP document.	1.00 Lot		-		

5	FABRICATION AND ASSEMBLY Erection, testing & commissioning of 8 sets of vehicle side platforms and 8 sets of AUT side platforms as per attached RFP document.	1.00 Lot		-		
6	FABRICATION AND ASSEMBLY Third party Inspection charges for all the Platforms	1.00 Lot		-		

ANNEXURE TO INDENT NO: SDSC SHAR/VALF PURCHASE/SH2025001142

REQUEST FOR PROPOSAL (RFP)
FOR

PROCUREMENT, MANUFACTURE, SUPPLY, ERECTION, TESTING & COMMISIONING OF FOLDING PLATFORMS FOR SSLV ASSEMBLY FACILITY (SAF) AT SLC SITE,TUTICORIN, TAMIL NADU

SPECIFICATIONS & PRICE SCHEDULE

OWNER : INDIAN SPACE RESEARCH ORGANISATION

PROJECT : SSLV LAUNCH COMPLEX PROJECT

LOCATION : SLC SITE, TUTICORIN, TAMIL NADU

SSLV LAUNCH COMPLEX PROJECT (SLC)
SATISH DHAWAN SPACE CENTRE
SRIHARIKOTA -524124.

INDIAN SPACE RESEARCH ORGANISATION

ISSUE P0

REQUEST FOR PROPOSAL FOR FOLDING PLATFORMS SPECIFICATIONS & ANNEXURES			
SECTION	**SPECIFICATION NO:**	**ISSUE NO.**	**TITLE: REQUEST FOR PROPOSAL FOR FOLDING PLATFORMS**
SPECIFICATIONS			
A	SAF/SLCP-FP-001/2025	R0	GENERAL TERMS & CONDITIONS
A1	SAF/SLCP-FP-001/2025	R0	GENERAL SPECIFICATION
B	SAF/SLCP-FP-001/2025	R0	TECHNICAL SPECIFICATION
C	SAF/SLCP-FP-001/2025	R0	QUALITY ASSURANCE PLAN
D	SAF/SLCP-FP-001/2025	R0	WELDING SPECIFICATION
ANNEXURES			
E1	SAF/SLCP-FP-001/2025	R0	SCHEDULE OF PRICES
E2	SAF/SLCP-FP-001/2025	R0	PREQUALIFICATION CRITERIA
E3	SAF/SLCP-FP-001/2025	R0	SCHEDULE OF GENERAL PARTICULARS / VENDOR EVALUATION FORMAT
E4	SAF/SLCP-FP-001/2025	R0	SCHEDULE OF DEVIATIONS FROM SPECIFICATIONS
E5	SAF/SLCP-FP-001/2025	R0	SCHEDULE OF TIME FOR MANUFACTURE, DESPATCH AND SHIPMENT TO SITE
E6	SAF/SLCP-FP-001/2025	R0	SCHEDULE OF BIDDERS EXPERIENCE & DETAILS OF PRESENT WORKS BEING EXECUTED.
E7	SAF/SLCP-FP-001/2025	R0	DATA TO BE FILLED ALONG WITH BID FOR SUPPLY & COMMISSIONING OF FP
E8	SAF/SLCP-FP-001/2025	R0	CHECK LIST
E9	SAF/SLCP-FP-001/2025	R0	SPECIFICATION OF ELECTRICAL ITEMS FOR FOLDING PLATFORM
E10	SAF/SLCP-FP-001/2025	R0	BREAK UP DETAILS FOR BOUGHT OUT ITEMS

SECTION –A

GENERAL TERMS AND CONDITIONS OF THE CONTRACT

ISSUE P0

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 –A1 :General Specifications

Section –B :Scope of Work & Technical Specifications

Section –C :Quality Assurance Plan.

Section - D :Welding Specification.

Annexure – :E1 to E10

Title of the proposal:

"Procurement, Manufacture, Supply, Erection, Testing and Commissioning of FOLDING PLATFORMS for SAF"

at

SSLV launch complex, SSLV project office, Survey no. 260-3c, Madhavankurichi village – 628206, Opp. To KoodalNagar, Thiruchendur tk., Tuticorin dist., Tamilnadu

A. PROPOSAL DOCUMENT

1. Successful Bidder shall sign & stamp each page of the tender document (RFP) as token of his acceptance and submit the same along with the technical bid.
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.
3. The proposal shall be completely filled in all respects and Bid shall be tendered together with requisite information & Annexure. Any offer incomplete in any particulars is liable to be rejected.
4. The Proposal (Unpriced Techno-commercial bid) with a complete set of the required documents shall be up-loaded in E-procurement Portal.
5. The Proposals shall be submitted on-line in E-procurement Portal before the time limit for bid submission specified.

B. PREPARATION OF BIDS

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 be required 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. VALIDITY OF OFFER

Bid shall remain valid for acceptance for a minimum period of 120 days from the date of technical bid opening. 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.

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.

4. APPLICABLE LANGUAGE/ MEASUREMENTS

The bid and all correspondences 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.

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 authorized to enter into agreement on behalf of the Bidder. (Corrections / alteration, if any, shall also be signed by the same person).

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**. Hard copy of Price bid shall not be sent strictly. If hard copy of price bid is received the bid will be summarily rejected.

No copy of price bid shall be enclosed along with technical documents. Otherwise offer will be rejected.

7. DOCUMENTS COMPRISING THE BID

Bids shall be arranged in the following order.

A. Part – I: Technical and Unpriced Commercial Part

Technical and unpriced commercial part shall comprise the attachments, specifying attachment number arranged in the order as follows:

a) Submission of bid letter.
b) All the annexure in Section-E1 to E10 enclosed in proposal duly filled, signed and sealed (E1 & E10 unpriced copies only).
c) Bid qualification criteria for supply of FOLDING PLATFORMS and all supporting documents.
d) Temporary brackets / civil foundation for fixing pulleys / hooks will not be provided by SDSC SHAR on the building structure for usage of winch arrangement for erection of platforms. Hence, Write-up on the detailed procedure to be followed for erection and handling equipment including mobile cranes proposed to be used for erection of Folding Platforms.
e) Fabrication shop layout where fabrication of platforms is planned.
f) Furnace details for stress relieving brackets, hinges and rope drum etc.
g) Details of machines for machining the sub-systems like brackets, pulleys, base frames, rope drum and hinges etc.
h) Unpriced 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. Bidder to clearly indicate “quoted” / “not quoted” against each sr.no in the price column in the unpriced schedule.
i) Audited balance sheet including profit and loss account for last three financial years showing annual turnover.
j) Copy of the Income Tax returns filed for F.Y. 2024-23, 2023-22 & 2022-21.
k) Current financial year solvency certificate from a scheduled bank for a value not less than Rs.1 cr. and not before 6 months from the date of tender closing.
l) Description of the procedures adapted for material procurement, fabrication with deviations from technical specification and proposed design modifications.
m) Data sheets for all the bought-out items & checklists enclosed in proposal duly filled, signed & stamped.
n) Technical literature & data sheets of equipment / machinery used by him and any other document as mentioned in the proposal.
o) Project execution plan
p) Bar chart for supply & erection schedule indicating the date of completion of various activities so as to complete the execution of the contract within the time frame stipulated in the tender specification.
q) Any other relevant document, bidder desires to submit.

B. Part – II: Priced Commercial Bid

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

C. BID SUBMISSION

I. PART – I: UN PRICED TECHNO-COMMERCIAL PART OF THE BID FOR THE WORK

Complete Techno–commercial part of the bid shall be filled online in the vendor Specified Terms' form. 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. The deviation statement if any, and checklist shall be filled online, without which the bid will not be considered.

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

II. 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-procurement portal only.

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.

D. 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 **Annexure: E3.**

Schedule of Bidders experience and details of present works being executed are to be filled as per **Annexure: E6.**

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

If warranted, department/ third party will carry out the inspection of the vendor site / site at which vendor worked / erected for evaluation of the capability and genuineness of the documents.

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

F. BID EVALUATION

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

II. Techno-commercial discussion (pre-bid meeting) shall be arranged with Bidder in offline & online mode. Bidder shall depute his authorized representatives for attending discussions. The representatives attending the discussions shall produce authorization from his organization to attend the discussion and sign minutes of meeting on behalf of his organization. The authorized representative must be competent and empowered to settle/decide on all technical and commercial issues. Pre bid meeting shall be organized within 10 working days from the release of tender. Intimation about pre bid meeting will be informed through our E-procurement system / website.

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

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

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

VI. If necessary, to arrive at evaluated prices, wherever applicable, loading on total quoted prices shall be done.

VII. 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.

VIII. 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. Successful Bidder shall confirm acceptance by returning a signed copy of the LOI/PO.

GENERAL SPECIFICATION

ISSUE
P0

1. INTRODUCTION

SDSC SHAR invites for tenders vide E-procurement portal from reputed firms with proven ability to ***"Procurement, Manufacture, Supply, Erection, Testing and Commissioning of FOLDING PLATFORMS for SAF"*** as per the specifications.

2. SCOPE OF WORK AND TECHNICAL SPECIFICATIONS

The detailed scope of work and technical specifications are given in Sections B, C, D and Annexure E1 to E10 of RFP document. The general terms and conditions are given below.

3. SUPPLIER's OBLIGATIONS & FUNCTIONS

3.1. SPECIFICATIONS AND DRAWINGS

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

3.2. SUBMISSION OF TECHNICAL DOCUMENTS

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

3.2.1. Technical literatures & data sheets of equipment used by him.

3.2.2. Fabrication shop layout for fabricating platforms & brackets.

3.2.3. Details of heat treatment / stress relieving equipment

3.2.4. Details of Turning machines / milling machines to be used for machining.

3.2.5. Assembly Shop layout drawings suitable for control assembly of drives.

3.2.6. Erection sequence schedule along with erection drawings.

3.2.7. Detailed Quality Assurance Plan.

3.2.8. No activity shall be executed unless SDSC SHAR's approval is obtained. The above documents shall be submitted in a format approved by SDSC SHAR.

3.3. PROCUREMENT, FABRICATION & SUPPLY

Supplier shall carry out Procurement, fabrication and supply of the FOLDING PLATFORMS in accordance with the scope, technical specifications and terms & conditions of contract.

3.4. DELIVERY AND STORAGE

3.4.1. The Supplier shall be responsible for transporting all the equipment to site, unloading and storage.

3.4.2. No equipment shall be delivered without obtaining dispatch clearance from SDSC SHAR.

3.4.3. All the equipment shall be properly packed to avoid any damage during transportation / handling / storage and any damage is found to be replaced free of cost.

3.4.4. The equipment received at site shall be stored at a place assigned for this purpose.

3.4.5. **Supplier shall take proper care while storing the equipment and shall provide watch & ward at his own cost.**

4. INSTALLATION

4.1. GENERAL

4.1.1. Supplier's staff shall include adequate number of competent erection engineers with proven experience on similar works to supervise the erection works and sufficient skilled, unskilled and semiskilled labour to ensure completion of work in time.

4.1.2. Supplier's erection staff shall arrive at site on date agreed by SDSC SHAR. Prior to proceeding to work, Supplier shall however, first ensure that required/sufficient part of his supply has arrived at site.

4.1.3. Erection of equipment may be phased in such a manner so as not to obstruct the work being done by other Suppliers and / or operating staff who may be present at that time.

4.1.4. During erection, Department's quality team / their engineer will visit site from time to time with or without Supplier's engineer to establish conformity of the work with specification. Any deviations, deficiencies or evidence of unsatisfactory workmanship shall be corrected as instructed by Department.

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

4.2. RECORDS

Supplier shall maintain records pertaining to the quality of erection work in a format approved by Department. Whenever erection work is complete, Supplier shall offer erected equipment for inspection to Department's engineer who along with Supplier's engineer will sign such records on acceptance.

4.3. PLATFORMS ERECTION

4.3.1. Supplier shall carry out the works in accordance with the specific Instructions given on the approved drawings, method statements, manufacturer's drawings / documents or as directed by Department. Equipment shall be erected in neat manner so that they are level, plumb, and square and properly aligned and oriented. Tolerances shall be as established in manufactures drawings or as

stipulated by Department. No equipment shall be welded or bolted, until its alignment is checked and found acceptable by Department.

4.3.2. Supplier shall provide all supervision, labour, tools, machines, cranes, equipments, scaffolding, rigging material and incidental material such as bolts, wedges, anchors, etc. required to complete the works. supplier shall also provide at his own cost all such consumables like oxygen – acetylene gas, welding rods, grinding wheels, temporary supports, shims etc. required to complete work.

4.3.3. Supplier shall take utmost care while handling instruments, delicate equipment; panels etc. and protect all such equipment on erection.

4.4. **SAFETY**

Supplier shall follow all the safety regulations / codes and shall take necessary measures at his own cost for men, material during this project till completion including insurance of person working for erection at site and other statutory clearances.

4.5. **ERECTION, CONSTRUCTION POWER & MATERIAL HANDLING REQUIREMENTS**

4.5.1. Arrangement of electrical power supply for fabrication, erection of platform at SLC site is in the scope of vendor.

4.5.2. All the necessary material handling equipment at SLC site shall be under scope of the successful vendor only.

4.5.3. **Material handling equipment required at site along with required manpower for the following are in the scope of contractor**

- **Loading or unloading of items at the identified location for temporary storage within 500 m from the erection site / SAF.**
- **Loading, unloading and movement of stored items from the temporary storage area to the erection facility / SAF after erection clearance from department.**
- **Material handling requirement for erection and commissioning.**

4.6. **SITE PREPARATION / CLEARANCE**

No site preparation works are planned by department for site fabrication works. Only clearance will be provided for site preparation works. Preparation of required site for fabrication and approach requirements for handling the Platforms shall be in scope of contractor. The site identified in such works shall be within 300 mtr from the SAF building location.

Upon completion of work, supplier shall remove all his equipment and material from the site within one month or time mutually agreed. Supplier at all times shall keep site in clean condition and remove all unwanted material at regular intervals. In case

supplier fails to remove all their equipment and material within the mutually agreed time, it is deemed that SLC Project will arrange to remove the same at Supplier's cost.

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 department. Supplier shall make their own arrangement at their own expenses for medical facilities for site personnel.

7. WORK PROGRAMME

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

7.1. **SUB-CONTRACTS**

7.1.1. No work shall be sub-contracted without prior approval of SLC Project.

7.1.2. Supplier shall be responsible for the proper execution of any sub-contract placed by him in connection with this purchase order.

7.1.3. Supplier shall furnish to department the copies of all un-priced sub-orders showing promised delivery dates and places.

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

8.1. Supplier shall obtain approval from SDSC SHAR before initiating the action for procurement of bought out items.

8.2. During the fabrication review, supplier has to carry out the mutually agreed modifications to meet the overall requirement

9. TAXES AND DUTIES

9.1. 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)).

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.

9.2. 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.

9.3. CGST/SGST/UTGST/IGST shall be paid at actuals against Tax Invoice but restricted to the amount and percentage in the contract.

9.4. GST details of SDSC SHAR are given below:

Designation : Purchase and stores officer VALF

Contact no : 08623-226082

GSTIN : 37HYDF00385AIDZ

10. 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.

11. 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, erection, testing and commissioning at site. The period of such coverage shall be up to contractual completion period or any extension granted by Department thereof.

12. 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.

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

13.1 PERFORMANCE BANK GUARANTEE (PBG):

Successful vendor has to submit a BG/DD/FDR in lieu of PBG from a Nationalized / Scheduled Bank for 3% of the order value after commissioning and acceptance of Folding Platforms valid till the completion of warranty period plus 60 days towards claim period.

13.2 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).

13.3 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.

14. PACKING AND FORWARDING

14.1. 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.

14.2. 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.

15. 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.

c. In case order is concluded on the public Sector Undertakings, the following Arbitration Clause will be applicable.

   In the event of any dispute or differences relating to the interpretation and application of the provisions of contracts, such dispute or difference shall be referred by either party to the Arbitration of one of the Arbitrator in the Department of Public Enterprises to be nominated by the Secretary to the Government of India in-charge of the Bureau of Public Enterprises. The Indian Arbitration and Conciliation Act, 1996 shall not be applicable to the Arbitration under this clause. The award of the arbitrator shall be binding upon the parties to the dispute provided, however, any party aggrieved by such award may make a further reference for setting aside or revision of the award to the Law Secretary, Department of Legal Affairs, Ministry of Law & Justice, Government of India. Upon such Additional Secretary when so authorised by the Law Secretary whose decision shall bind the parties finally and conclusively. The parties to the dispute will share equally the cost of arbitration as intimated by the arbitrator.

16. 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.

17. 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.

18. WARRANTY

The bidder shall provide ***12 months*** warranty for the entire system for a defect liability, after final official handing over at his cost. During this period, supplier has to provide and adhere to the following:

18.1. He has to attend quarterly based preventive maintenance visits and breakdown maintenance calls. All the defective components have to be replaced or rectified on one-to-one basis.

18.2. Break down maintenance should be responded within 48 Hours' time and shall be completed within 48 Hours after respond.

18.3. Department will not provide any transport/accommodation.

18.4. 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.

19. SCHEDULE OF PRICE

19.1. CONTRACT price shall include all costs of "Procurement, Manufacture, Supply, Erection, Testing and Commissioning of FOLDING PLATFORMS for SAF", shop testing, packing, forwarding, transport to site, unloading, storage, all risk coverage, erection, installation, testing & evaluation and commissioning of equipment including any other cost for proper and complete execution of the CONTRACT.

19.2. 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.

19.3. Supplier shall quote the prices similar to price bid format enclosed as Section – F1.

19.4. Erection charges, bought out items and third-party inspection charges shall be firm and fixed even for the **± 15%** quantity variations also.

19.5. **The contractor shall agree for addition / deletion of the works for the same quoted unit rates and such variation is limited to ± 15% of the ordered quantities.In the case of works going beyond ± 15%, the same would be settled at the unit rates as agreed upon mutual agreement basis, between SDSC SHAR and supplier.**

19.6. The rate quoted shall be on FOR SLC PROJECT SITE, TUTICORIN, TAMILNADU basis.

19.7. The taxes applicable for supply and erection & commissioning shall be indicated separately in the price bid. If the offers submitted by the tenderers are silent on taxes, it will be presumed that quoted rates are inclusive of taxes & duties and no claim in this regard will be entertained later.

20. DISCOUNTS

Tenderer shall not indicate any discount separately and quoted price should be after deducting the discount.

21. TERMS OF PAYMENTS

General guideline TERMS OF PAYMENTS are as indicted below. Any deviation to these payment terms to be brought out.

21.1. **FOR SUPPLY OF ITEMS INLCUDING BOUGHTOUT ITEMS (i.e., supply of fabrication items, supply of fabricated machined items, supply of forging machined items & supply of Bought out items)**

a. **20%** of supply cost as advance against submission of bank guarantee for an equal amount from a reputed nationalized/scheduled bank and shall be valid till Contract completion period. Format of Bank guarantee shall be obtained from Department after award of contract.

b. **60%** of supply cost payment on prorate basis against receipt of complete material at Purchasers / Department site, along with 100% GST.

c. **20%** of supply cost, after successful commissioning of equipment & system covered under contract and acceptance by the department, against submission of Performance bank guarantee valid till warranty period.

21.2. **FOR ERECTION, TESTING AND COMMISSIONING OF FOLDING PLATFORMS AT SLC SITE**

a. **100%** of erection cost after successful assembly of platforms in all respect, including testing & commissioning and acceptance of equipment & systems

covered under contract by the department, against submission of performance bank guarantee.

21.3. **FOR THIRD PARTY INSPECTION CHARGES**

a. 50% of third-party inspection charges after receipt of complete material at **purchasers / Department site.**

b. 50% of third-party inspection charges along with GST after Erection, Commissioning and acceptance of the system.

Note: if the works is not completed within the delivery schedule, then interest on advance would be levied @ MCLR of SBI plus 2%.

22. DELIVERY SCHEDULE

The realization of fabrication works within the schedule is very essential. Hence, bidders are requested to adhere to the schedules given below.

Contractor shall follow the following schedule for executing the contract:

S.No	Description of Target	Responsibility	Target Completion Date
1	Purchase Order release	Dept.	T
2	Procurement, fabrication / machining, control assembly, inspection, transportation, handling and storage at site.	Vendor	T + 6 months
3	Department clearance for erection and commissioning.	Dept.	T1
4	Erection, Commissioning of the equipment.	Vendor	T1 + 4 months from the date of site clearance for erection

Note: Site clearance for stating erection and commissioning will be given by department via official correspondance.T1 shall be considered as the date mentioned in the correspondence.

23. LIQUIDATED DAMAGES

Suppliers shall be required to adhere to the delivery schedule (including any instalment thereof or incidental Work/ Services, e.g., installation, commissioning, operator training, etc.) specified in the purchase order and, if there is any delay in supplies, recover from the contractor liquidated damages a sum equivalent to 0.5%of the undelivered portion of supplies of the delayed Goods and/ or incidental Works/ Services for each week of delay or part thereof until actual delivery or performance, subject to a maximum deduction of the 5% of the total contract value and this maximum deduction shall be 10% of the total contract value in case of

inordinate delay(i.e. Inexcusable delays of more than one-fourth (25%) of the total completion period shall be treated as inordinate delays). The LD reckoning date shall be **T+6 months** for supply portion and **T1+4 months** for the erection and commissioning portion of the contract.

24. DISCLOSURE AND USE OF INFORMATION

24.1.1. If the documents supplied by department are marked **"Strictly Confidential"**, supplier shall take all necessary steps to ensure the same.

24.1.2. 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.

24.1.3. No publicity of any kind whatsoever regarding this work shall be given without prior clearance from SDSC-SHAR.

25. 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 presentation of the Board's 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.

26. SUSPENSION:

26.1. 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 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.

26.2. 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.

27. CANCELLATION

27.1. **GENERAL RULE**

The Department shall have the right at any time to cancel a contract either holly 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.

27.2. **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.

27.3. **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.

In the event of the Supplier's failure to meet

I. The Technical requirements of the Supplier.

II. The Progress and/or delivery requirements.

If the Supplier has not observed the provisions of the contract concerning the disclosure and use of information provided by the Department.

If the Supplier fails to comply with the provisions of the contract concerning the equipment, supplies and technical documents made available by the Department.

If the Supplier transfers his contract without the Department's authorization or concludes sub-contracts against the Department's explicit directives.

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.

28. 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 shoe 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 for a minimum period of five years. A decision of the Department to the effect that a breach of the undertaking had been committed shall be final and binding on the Contractor.

29. 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 procurement.

30. 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.

31. 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, Installation, Commissioning, 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.

32. GENERAL PROJECT INFORMATION:

32.1. Project Title : SSLV LAUNCH COMPLEX (SLC)

32.2. Location of Plant : SSLV LAUNCH COMPLEX, SSLV PROJECT OFFICE, SURVEY NO. 260-3C, MADHAVANKURICHI VILLAGE – 628206, OPP. TO KOODAL NAGAR, THIRUCHENDUR TK., TUTICORIN DIST., TAMILNADU

32.3. Elevation : 22 m

32.4. Access to Site : Road about 21km from Thiruchendur and about 46km from Koodankulam approximately.

32.5. Terrain :Uneven with level varying significantly.

32.6. Climatic Conditions

32.6.1. Temperature

32.6.1.1. Mean of daily max :34 0C

32.6.1.2. Mean of daily min. :28 0C

32.6.1.3. Maximum Temperature : 39 0C

a. Design ambient temperature for performance guarantee :45.0 ^{0}C

b. For electrical system design :50 ^{0}C

32.6.2. Relative humidity

32.6.2.1. Range :58% to 95%

32.6.2.2. Design relative humidity :95%

for performance guarantee

32.6.3. Rainfall

32.6.3.1. Annual average maximum :1222.7 mm

32.6.4. Wind Load

32.6.4.1. Basic wind speed :7m/s

(Enhanced by a factor 1.4)

32.7. Seismic Data : As per IS : 1893 latest issue

Zone : Zone II

SECTION –B

TECHNICAL SPECIFICATIONS

1.0 SCOPE

ISSUE P0

This specification covers the description of scope of work, functional requirements, technical parameters, general design, materials, construction features, interfaces, list of drawings, and bought out items of foldable platforms.

The scope of the tenderer shall include understanding of Folding Platforms hereafter referred as FP and its functional requirement, submission of manufacturing & heat treatment / stress relieving methodology, procurement of raw material, fabrication, stress relieving / heat treatment, machining, assembly of sub-systems along with bought out items, electrics, shop inspection, testing at the manufacturer's works, packing , forwarding, transportation, delivery at SLC site, handling at site, erection, testing, commissioning, performance / acceptance testing as per the enclosed specification under the supervision of ISRO & Third party Inspection agency (TPIA) and handing over of Folding Platforms.

2.0 QUANTITY

Total 8 sets of folding platforms for Vehicle Side and 8 sets of folding platforms for Auxiliary Umbilical (AUT) Side are required.

Each set of Vehicle side platform consists of two folding platform leaves mounted on either side of the building to approach all around the Launch Vehicle.

Similarly, each set of AUT side platform consists of two folding platform leaves mounted on either side of the building to approach front face of the AUT.

Each folding platform will have individual drive systems for folding / unfolding operations.

Vehicle side folding platforms are equipped with motorized drive system on the other hand drive system of AUT side folding platforms are equipped with manually operated drive system.

Total no of motorized drive system requirements will be 16 nos. and total no of manually operated drive system requirements will be 16 nos.

3.0 ESTIMATED TOTAL WEIGHT

The estimated finished weight of the system in each category is approximate only. The contractor shall agree for addition / deletion of the works for the same quoted rates and such variation is limited to ± 15% of the ordered quantities. Offer shall be valid for ± 15% of the order value also. **However, payment will be made based on the final finished drawing weight only.**

3.1. FABRICATED STRUCTURAL ITEMS WITHOUT MACHINING.

Procurement, fabrication, control assembly of platform (as applicable), transportation, handling at site, erection & commissioning of structural steel / Mild steel conforming to IS:2062 & IS:808 is **140 t** (approximate). Items coming under above category are Platform structures, box sections, hand rails etc.

3.2 Fabricated structural items with machining.

Procurement, fabrication, stress relieving, machining, sub assembly, control assembly of drive units, transportation, handling at site, erection & commissioning of structural steel / Mild steel conforming to IS:2062 & IS:808 is **28 t** (approximate).

Items coming under above category are normal Hinge brackets, safety rope brackets & lifting brackets, bearing retainers, lock plates, bearing housings, bearing retainers, base frames, shims, pulley brackets and stopers etc.

3.3 Machined special steel components.

Procurement, heat treatment if required, machining, sub assembly, control assembly of drive units, transportation, handling at site, erection & commissioning of different alloy steels / forged steels / cast steels like like En24-T, En-9, Alloy steel 40NiCr4Mo3, 40Cr4M03 or any other steel mentioned in the BOQ etc. is **45 t** (approximate).

Items coming under above category are Normal hinge pins, hinge locking pins, pivot pin, axles, rope drum, shafts, pulleys etc.

3.4 Bought out items & Electrical work.

Procurement of Bought out items as per the BOQ, assembly with sub-systems, control assembly (as applicable), procurement of motors, electric cables, junction boxes, local control panels, motor control centre panels, bearings, gear boxes, lock nuts, lock washers, full gear couplings, wire ropes, limit switches, grease nipples, etc. testing of the performance of the drive systems and other functions of electrical items, transportation, handling at site, erection & commissioning and handling over of start-up spares mentioned in 21.0.

4.0 BACKGROUND INFORMATION

4.1 The SSLV Assembly Facility (SAF) is a RCC building of 22.6 m width, 26.5 m length and a height of 58 m and is 730 m away from Launch Pad.

4.2 For carrying out Vehicle integration operations in the SAF Building, operating personnel are required to reach the Vehicle at various levels throughout its height. In

order to meet these requirements, eight (8) sets of Folding Platforms for vehicle side are proposed to be provided from Elevation 9.4 m to 38.5 m inside the Integration building.

4.3 For carrying out maintenance of the AUT inside SAF building, personnel are required to reach front face of the at various levels throughout its height. In order to meet these requirements, eight (8) sets of AUT side folding platforms are proposed to be provided from Elevation 9.4 m to 34.75 m inside the Integration building.

4.4 Each set of Vehicle side folding platform and AUT side folding platform consists of two platform leaves mounted on either side of the building.

4.5 When all the Vehicle side & AUT side Platforms are folded, it will provide space for the movement of Mobile Launch Structure (MLS) along with Integrated Launch Vehicle from inside of the building to outside.

5.0 DETAILED SCOPE OF WORK / EQUIPMENT AND SERVICES TO BE PROVIDED BY SUPPLIER

For Successful realization of 8 sets of vehicle side platforms and 8 sets of AUT side platforms, the scope of supplier shall include but not limited to the following items:

5.1 Complete understanding of functional requirements of Folding Platforms, interfaces and thereby ensuring satisfactory operation of the system.

5.2 Understanding of supplied drawings and preparation of part drawings, if required.

5.3 Procurement of raw materials and bought out items with qualification.

5.4 Carrying out of fabrication as per approved fabrication drawings, stress relieving the fabricated components and machining of the items as per the drawings.

5.5 Procurement of Electrical items like motors, limits switches, cables, local control panels, motor control centre panels etc., which are required for the vehicle side platform operations.

5.6 Assembly and testing of subsystems /system such as drive units at shop along with bought out items as per approved manufacturing /fabrication drawing and bills of materials.

5.7 Receipt of manufactured items and related materials at site, unloading, storing in specified location by tenderers' in his own custody, transportation within the site.

5.8 Completing the platform fabrication at site from the transportable modules received from shop.

5.9 Finalizing the procedure for the erection, testing and commissioning of the sub system and the integrated Folding platform system to ensure all the functional requirements.

5.10 Cleaning of embedment plates mating surface and through holes in the building by using suitable power tools.

5.11 Mapping the location of embedment plate by survey team, aligning the bracket with embedment plate using suitable spacer plates. Providing final alignment of the spacer plates using survey team, before starting erection.

5.12 Carrying out erection of one set of platform and executing trial run before further platform erection (if recommended by the departmental review committee)

5.13 Implementation of suitable modifications in the erected platforms and platforms to be erected based on the trial carried out on first platform (if recommended by the departmental review committee).

5.14 Carrying out erection, testing and commissioning of subsystems and the integrated Folding Platform system to ensure all the functional requirements.

5.15 Through bolts for fixing brackets (bolt length is indicative, however, suitable length of the bolt shall be used considering required spacer thickness). All the bolts shall be minimum 8.8 grade.

5.16 Trial suiting and necessary minor corrections of the drive base frames and all brackets with embedment plates on civil building and alignment & fixing the same with embedment plate as per drawing and specification.

5.17 Arrangement of all tools, tackles, cranes etc for erection and commissioning are in the scope of vendor only.

5.18 After complete erection, acceptance test shall be carried out by the vendor for all the platforms and its drive systems as per acceptance test plane approved by the department.

5.19 Dead weights required for the acceptance test of the platforms shall be provided by the department.

5.20 Suitable camber shall be provided to the platform structure, to maintain the level deference between two leaves of the folding platforms within ± 10 mm during unfolded condition.

5.21 Suitable spacer plates required for alignment of platforms, hinge brackets, stopers, drive systems and pulley brackets etc.

5.22 Submission of execution plan for all major actives including manufacturing, testing packaging, delivery to SLC site at Tuticorin, Tamil Nadu, erection and commissioning.

5.23 Paint and painting of equipment, structures, supports etc. (Inclusive of Primer Coating).

5.24 Shop inspection (in Vendor's works & at project site) after installation along with all required calibrated measuring instruments.

5.25 All field instruments, junction boxes and Local Control Panel (LCP) along with all erection hardware & structural steel supports.

5.26 Fabrication of supports, cable trays, flexible metal conduits etc., as required to run and terminate the cables from the nearest cable tray header to the individual equipment & providing double earthing to all electrical equipment.

5.27 Installation, testing and commissioning of the electrical panels

5.28 First fill of oil, grease, lubricants consumables, etc. as required during start up and commissioning operations.

5.29 Testing, commissioning of complete folding platforms and handing over.

5.30 Arranging the third-party inspection agency to carry out the inspection works at various stages as per the approved QAP for manufacturing and testing procedures in the document are only for the general guideline of the tenderer. The tenderer shall furnish these details in their offer as required in the relevant articles of this specification.

5.31 Preparation / Revision of Drawings if any changes made and submission of as built drawings.

5.32 Arrangement of safe approach to different levels of the building for all the works related to erection and commissioning.

5.33 Embedment plates required apart from the Platform drawings are to be fixed using suitable / approved anchor bolts if required.

6.0 EQUIPMENT AND SERVICES TO BE PROVIDED BY DEPARTMENT

6.1 Embedment plates suiting the interfaces for all brackets (hinge, stoper horizontal & vertical pulley etc.) will be provided by the department.

6.2 Embedment plate with suitable bolts for the drive base frame shall be provided by department.

6.3 However, party has to trail suit the bracket and drive base frame with the erected embedment plate before erection.

6.4 If minor corrections are required in the brackets, base frame of drive assembly to suit the embedment plate, party has to correct the same in the bracket suitably with the approval of department.

7.0 PREPARATION / REVISION OF DRAWINGS AND DOCUMENTS

After the award of contract, the purchaser shall provide a set of drawings for the proposed Folding Platforms (FP) to the contractor. The contractor shall carry out

preparation / revision of drawings in order to incorporate any subsequent modifications required in the drawings before and during the manufacture of FP. Some of the conditions due to which modifications in drawings may be necessary are stated here below:

- Preparation / Revision of drawings to incorporate the Technical Deviations / Design modifications proposed by the CONTRACTOR and accepted by the PURCHASER.
- Preparation / Revision of drawings to incorporate modifications in the Folding Platforms (FP) as specified by the PURCHASER after the award of contract.
- Preparation / Revision of drawings to incorporate changes in Bought out components.
- Any other changes in the design / drawings for FP found necessary to be carried out during various stages of manufacture and erection of FP.
- Shop Erection, Inspection & testing, Packing and Forwarding, transportation to site, unloading & storage at site.
- Erection, Commissioning and Performance Testing of FP at site.

8.0 TECHNICAL SPECIFICATION OF FOLDING PLATFORMs

Eight (8) sets of Vehicle side Platforms and eight (8) sets of AUT side platforms are located in the SAF Building so as to provide approach throughout the height between 9.4 m to 34.75 m elevations as stated in the following Table:

Platform	Platform Level
FP - 1	9.4 m
FP - 2	14.0 m
FP - 3	17.5 m
FP - 4	21.0 m
FP - 5	24.25 m
FP - 6	27.5 m
FP - 7	31.5 m
FP - 8	34.75 m

The Folding Platforms shall comprise of the following major subassemblies / components:

a) Foldable platform

b) Sliding platform

c) Hinges
d) Stay ropes
e) Drive systems
f) Spring stops / buffers
g) Locking arrangement for folding platform
h) Handrails

A brief description of the constructional features required for each of the above subassemblies / components is stated in the subsequent paragraphs.

A. Foldable platform

- Foldable platform is a fabricated structure made up of rolled sections and box sections fabricated using plates. Chequered plate shall be provided on its top surface for the movement of Personnel.
- Foldable platform shall be provided with cut-outs suitable for the external configuration of launch Vehicle.
- Foldable platform shall be supported from the civil building by means of two Hinges.
- Foldable platform shall be provided with suitable Pulley Blocks and Stay rope brackets for mounting of wire ropes and Stay Ropes in order to support the Platform under various operating conditions.

B. Sliding platform

- Folding platforms at 31.5 m & 34.75 m elevations are provided with sliding platforms. The sliding platforms are equipped with manual screw system for sliding operation.

C. Hinges

- Two hinges are provided between the slab of civil building and Folding Platform.
- Hinges shall be provided with provided with Bush bearing as per drawings.

D. Drive system

- The rotational movement of the Folding Platform is achieved by means of the folding drive system. The folding operation is carried out by the electrically operated winch type folding drive system located on fixed platform and by using direction changing pulleys. The motor shaft transmits power to a rope drum through a non-reversible worm gear box. In turn, the rope drum pulls up or releases down the free end of Foldable Platform by winding or unwinding the two ropes thereby folding or unfolding the platform about the hinges. Electro-

hydraulically operated flame proof thruster brake mounted on input shaft of worm-reducer is used for the braking operation.

- The drive elements (i.e., motor, gearbox, brake, etc) for the folding operation are located on the portal area of the civil building.
- No oil shall drip from the gear box or any part of the system. However suitable oil drip tray shall be provided for folding mechanism.

Wire ropes

- The wire ropes shall be as per IS: 2266-2019 with a nominal dia of 16 mm.
- The wire rope shall be with core corresponding to 1960 (CWR) tensile designation and a breaking load of 160 kN and construction of 6 x 37 M (18/12/6-1).
- The wires shall be free from any surface defects.
- The wire rope shall be with open type thimble as per IS: 2315-1987 corresponding to a nominal rope size of dia 16 mm at both ends.
- The wire rope shall be pre stretched before forming into a sling.
- The end of the wire rope shall be secured by means of lock plate and screws on the Rope Drum.

Safety wire rope

- Polyester twin path slings with double cover (Code STP)
- Capacity of 40t (min).

Pulleys

- The Pulleys shall meet the requirements of IS: 3177
- The grooves for wire rope shall be machined of appropriate shape to suit the rope & the surface shall be finished smooth and shall be free from surface defects
- The material for pulleys shall be as per drawing.

Rope drum

- Rope Drum shall meet the requirements of IS:3177
- The Rope Drum shall have both left hand and right-hand helix grooves. The rope drum shall be machine grooved and the contour of the grooves shall be suitable for the selected wire rope. The grooves shall be finished smooth and the edges between the grooves shall be rounded.
- The material for Rope Drum shall be as per drawing. The welded joints in Rope Drum shall consist of full penetration weld.
- The Rope Drum shall be stress relieved before machining.
- The weld joints of Rope Drum shall be subjected to Ultrasonic Testing.

- The Rope Drum shall have provision for rope anchorage at both ends.
- The Stub shafts for Rope Drum shall be as per drawings. The Stub shafts shall be hardened and tempered before welding to the Rope Drum. The Stub shafts shall be subjected to Ultrasonic Testing

Reduction gear box

- Double reduction worm gearbox shall be used for the Folding drive systems of vehicle side folding platform as specified in the drawings.
- Gearboxes shall be totally enclosed having splash lubrication. The bearings shall have sufficient heat radiation area to maintain lubricant at temperatures below maximum operating temperature.
- Gearboxes shall have fill and drain connections, breather, and lubricant level indicator and shall have good accessibility for checking, maintenance and oil filling.
- Reliable sealing arrangement shall be provided for shafts of gear boxes.
- The gear box of the drive system shall be as indicated in the drawings.

Electro-hydraulic thrustor operated drum brake

- The brakes shall be “electro-hydraulic thrustor released and spring actuated” type and it shall be provided between the drive motor and the Worm Gearbox.
- Brake shall have manual release provision to permit drive movement during power stoppage.
- Brakes shall be as indicated in the drawings.

Base frame for drive

- All drive elements shall be mounted on a fabricated and machined base frame.
- The Base Frame shall be thermally stress relieved before machining.

Guards

- All exposed couplings, shafts, gear wheels, pinions, drives etc. shall be safely encased and guarded.

Key ways

- Keys and Keyways shall confirm to IS 2048 as applicable.

E. Spring stops / buffers

- Spring stops shall be provided for the Folding Drive System to ensure that the Platform is not folded beyond indicated angles in the drawings and to give initial push to unfolding operation.

F. Locking arrangement for folding platform

- The Folding Platform shall be locked in the retracted position by means of a Lock pin as sown in the attached drawings.

G. Handrails

- Foldable Handrails are provided for the Folding Platforms which do not interfere with the Guide Frame or the Guide Column when the Platform is folded.
- Handrails are also provided for the fixed platform with required openings for entry from the catwalks.
- All entry openings shall be provided with sliding hand rails.
- All Platforms shall be provided with toe guards.

9.0 TECHNICAL SPECIFICATION FOR ELECTRICAL ITEMS FOR FOLDING PLATFORM

Specification of the electrical system is mentioned in Annexure –E9. Party shall fill up the compliance and submit along with the technical bid.

10.0 LIST OF DRAWINGS

The list of drawings of Folding Platforms is given below:

Note: These drawings are for tendering purpose only, however, final drawing will be provided along with the purchase order.

S No.	Drawing No.	Description
A.	**Folding Platforms for Vehicle Side**	
	35m Level	
	10-MECH-12-9-82/R1 (SHEET 1 OF 1)	GENERAL ASSEMBLY OF 35m LEVEL VEHICLE SIDE PLATFORM FOR SLC PROJECT
	10-MECH-12-9-77/R1 (SHEET 1 OF 1)	GENERAL ASSEMBLY OF PLATOFRM AT EL.35m
	10-MECH-12-9-73/A1/R1 (SHEET 1 OF 9)	GENERAL ASSEMBLY OF FOLDABLE PLATFORM AT EL.35m – (LEFT SIDE)
	10-MECH-12-9-73/ A1/R1 (SHEET 2 OF 9)	ASSEMBLY OF FIXED AND SLIDING PLATFORM AT EL.35m (LEFT SIDE)
	10-MECH-12-9-73/ A1/R1 (SHEET 3 OF 9)	DRIVE MECHANISM AT EL 35m LEAF-1 (LEFT SIDE)
	10-MECH-12-9-73/ A1/R1 (SHEET 4 OF 9)	PLATFORM STRUCTURE AT EL 35m (LEFT SIDE)
	10-MECH-12-9-73/ A1/R1 (SHEET 5 OF 9)	FIXED PLATFORM STRUCTURE AT 35m LEVEL (LEFT SIDE)
	10-MECH-12-9-73/ A1/R1 (SHEET 6 OF 9)	HOUSING STRUCTURE FOR 35m LEVEL SLIDING PLATFORM -LEFT SIDE
	10-MECH-12-9-73/ A2/R1 (SHEET 7 OF 9)	PART DETAILS OF HOUSING STRUCTURE
	10-MECH-12-9-73/ A2/R1 (SHEET 8 OF 9)	SLIDING PLATFORM -LEFT SIDE (FOR 35m LEVEL – LEAF 1)
	10-MECH-12-9-73/ A2/R1 (SHEET 9 OF 9)	SLIDING PLATFORM -LEFT SIDE (FOR 35m LEVEL – LEAF 2)

	10-MECH-12-9-74/A1/R1 (SHEET 1 OF 9)	GENERAL ASSEMBLY OF FOLDABLE PLATFORM AT EL.35m – (RIGHT SIDE)
	10-MECH-12-9-74/ A1/R1 (SHEET 2 OF 9)	ASSEMBLY OF FIXED AND SLIDING PLATFORM AT EL.35m (RIGHT SIDE)
	10-MECH-12-9-74/ A1/R1 (SHEET 3 OF 9)	DRIVE MECHANISM AT EL 35m (RIGHT SIDE)
	10-MECH-12-9-74/ A1/R1 (SHEET 4 OF 9)	PLATFORM STRUCTURE AT EL 35m (RIGHT SIDE)
	10-MECH-12-9-74/ A1/R1 (SHEET 5 OF 9)	FIXED PLATFORM STRUCTURE AT 35m LEVEL (RIGHT SIDE)
	10-MECH-12-9-74/ A1/R1 (SHEET 6 OF 9)	HOUSING STRUCTURE FOR 35m LEVEL SLIDING PLATFORM -RIGHT SIDE
	10-MECH-12-9-74/ A2/R1 (SHEET 7 OF 9)	PART DETAILS OF HOUSING STRUCTURE
	10-MECH-12-9-74/ A2/R1 (SHEET 8 OF 9)	SLIDING PLATFORM -RIGHT SIDE (FOR 35m LEVEL – LEAF 1)
	10-MECH-12-9-74 / A2/R1 (SHEET 9 OF 9)	SLIDING PLATFORM -RIGHT SIDE (FOR 35m LEVEL – LEAF 2)
	10-MECH-12-9-92/R1 (SHEET 1 OF 1)	MOUNTING STRUCTURE FOR PULLEY & SAFETY ROPE BRACKET TYPE -2, SSLV PLATFORM (FOR PLATFORM LEVELS OF 34.75m & 31.5m)
	10-MECH-12-9-88/R1 (SHEET 1 OF 1)	VERTICAL PULLEY VEHICLE SIDE /SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-89/R1 (SHEET 1 OF 2)	HORIZONTAL PULLEY ASSY. WITH CONNECTION BOX, SAFETY ROPE BRACKET & LIFTING BRACKET VEHICLE SIDE /SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-89/R1 (SHEET 2 OF 2)	HORIZONTAL PULLEY
	10-MECH-12-9-90/R1 (SHEET 1 OF 3)	DRIVE SYSTEM ASSEMBLY FOR VEHICLE SIDE PLATFORM/SAF BUILDING
	10-MECH-12-9-90/R1 (SHEET 2 OF 3)	PART DETAILS FOR DRIVE SYSTEM ASSY FOR VEHICLE SIDE PLATFORM/SAF BUILDING
	10-MECH-12-9-90/R1 (SHEET 3 OF 3)	DRIVE SYSTEM SUPPORT STRUCTURE FOR VEHICLE SIDE PLATFORM/SAF BUILDING
	10-MECH-12-9-93/R1 (SHEET 1 OF 1)	SUPPORT STRUCTURE FOR VERTICAL PULLEY FOR VEHICLE SIDE PLATFORMS
	10-MECH-12-9-94/R1 (SHEET 1 OF 1)	SUPPORT FOR MECHANICAL STOPPER FOR VEHICLE SIDE PLATFORMS
	31.5m Level	
	10-MECH-12-9-78/A1/R1 (SHEET 1 OF 1)	GENERAL ASSEMBLY OF PLATFORM AT EL 31.5m (SSLV APPROACH PLATFORMS, SAF BUILDING, SLC PROJECT)

	10-MECH-12-9-83/R1 (SHEET 1 OF 1)	GENERAL ASSEMBLY OF 31.5m LEVEL VEHICLE SIDE PLATFORM FOR SLC PROJECT
	10-MECH-12-9-76/A1/R1 (SHEET 1 OF 2)	GENERAL ASSEMBLY OF FOLDING PLATFORM AT EL 31.5M, 27.8M, 24.25M, 21M, 17.5M, 14M & 9.4M
	10-MECH-12-9-76/A1/R1 (SHEET 2 OF 2)	FOLDABLE PLATFORM STRUCTURE AT EL 31.5M, 27.8M, 24.25M, 21M, 17.5M, 14M & 9.4M FOR VEHICLE SIDE
	10-MECH-12-9-75/A1/R1 (SHEET 1 OF 9)	GENERAL ASSEMBLY OF FOLDABLE PLATFORM AT EL 31.5 M (RIGHT SIDE)
	10-MECH-12-9-75/ A1/R1 (SHEET 2 OF 9)	ASSEMBLY OF FIXED & SLIDING PLATFORM AT EL 31.5 M (RIGHT SIDE)
	10-MECH-12-9-75/ A1/R1 (SHEET 3 OF 9)	DRIVE MECHANISM AT EL 31.5M (RIGHT SIDE)
	10-MECH-12-9-75/ A1/R1 (SHEET 4 OF 9)	PLATFORM STRUCTURE AT EL 31.5M (RIGHT SIDE)
	10-MECH-12-9-75/ A1/R1 (SHEET 5 OF 9)	FIXED PLATFORM STRUCTURE AT 31.5M LEVEL (RIGHT SIDE)
	10-MECH-12-9-75/ A1/R1 (SHEET 6 OF 9)	HOUSING STRUCTURE FOR 31.5 M LEVEL SLIDING PLATFORM -RIGHT SIDE
	10-MECH-12-9-75/ A2/R1 (SHEET 7 OF 9)	PART DETAILS OF HOUSING STRUCTURE
	10-MECH-12-9-75/ A2/R1 (SHEET 8 OF 9)	SLIDING PLATFORM -RIGHT SIDE (FOR 31.5M LEVEL - LEAF 1)
	10-MECH-12-9-75/ A2/R1 (SHEET 9 OF 9)	SLIDING PLATFORM -RIGHT SIDE FOR 31.5M LEVEL - LEAF 2
	10-MECH-12-9-92/R1 (SHEET 1 OF 1)	MOUNTING STRUCTURE FOR PULLEY & SAFETY ROPE BRACKET TYPE -2, SSLV PLATFORM (FOR PLATFORM LEVELS OF 34.75m & 31.5m)
	10-MECH-12-9-88/R1 (SHEET 1 OF 1)	VERTICAL PULLEY VEHICLE SIDE /SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-89/R1 (SHEET 1 OF 2)	HORIZONTAL PULLEY ASSY. WITH CONNECTION BOX, SAFETY ROPE BRACKET & LIFTING BRACKET VEHICLE SIDE /SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-89/R1 (SHEET 2 OF 2)	HORIZONTAL PULLEY
	10-MECH-12-9-90/R1 (SHEET 1 OF 3)	DRIVE SYSTEM ASSEMBLY FOR VEHICLE SIDE PLATFORM/SAF BUILDING
	10-MECH-12-9-90/R1 (SHEET 2 OF 3)	PART DETAILS FOR DRIVE SYSTEM ASSY FOR VEHICLE SIDE PLATFORM/SAF BUILDING
	10-MECH-12-9-90/R1 (SHEET 3 OF 3)	DRIVE SYSTEM SUPPORT STRUCTURE FOR VEHICLE SIDE PLATFORM/SAF BUILDING

	10-MECH-12-9-93/R1 (SHEET 1 OF 1)	SUPPORT STRUCTURE FOR VERTICAL PULLEY FOR VEHICLE SIDE PLATFORMS
	10-MECH-12-9-94/R1 (SHEET 1 OF 1)	SUPPORT FOR MECHANICAL STOPPER FOR VEHICLE SIDE PLATFORMS
	27.5m Level	
	10-MECH-12-9-84/R1 (SHEET 1 OF 1)	GENERAL ASSEMBLY OF EL 27.5 M VEHICLE SIDE FOLDABLE PLATFORM FOR SLC PROJECT
	10-MECH-12-9-79/A1/R1 (SHEET 1 OF 1)	GENERAL ASSEMBLY OF PLATFORM AT EL 27.25m,24.25m,21m,17.5m,14m & 9.4m (SSLV APPRAOCH PLATFORMS, SAF BUILDING, SLC PROJECT)
	10-MECH-12-9-76/A1/R1 (SHEET 1 OF 2)	GENERAL ASSEMBLY OF FOLDING PLATFORM AT EL 31.5M, 27.8M, 24.25M, 21M, 17.5M, 14M & 9.4M
	10-MECH-12-9-76/A1/R1 (SHEET 2 OF 2)	FOLDABLE PLATFORM STRUCTURE AT EL 31.5M, 27.8M, 24.25M, 21M, 17.5M, 14M & 9.4M FOR VEHICLE SIDE
	10-MECH-12-9-88/R1 (SHEET 1 OF 1)	VERTICAL PULLEY VEHICLE SIDE /SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-89/R1 (SHEET 1 OF 2)	HORIZONTAL PULLEY ASSY. WITH CONNECTION BOX, SAFETY ROPE BRACKET & LIFTING BRACKET VEHICLE SIDE /SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-89/R1 (SHEET 2 OF 2)	HORIZONTAL PULLEY
	10-MECH-12-9-90/R1 (SHEET 1 OF 3)	DRIVE SYSTEM ASSEMBLY FOR VEHICLE SIDE PLATFORM/SAF BUILDING
	10-MECH-12-9-90/R1 (SHEET 2 OF 3)	PART DETAILS FOR DRIVE SYSTEM ASSY FOR VEHICLE SIDE PLATFORM/SAF BUILDING
	10-MECH-12-9-90/R1 (SHEET 3 OF 3)	DRIVE SYSTEM SUPPORT STRUCTURE FOR VEHICLE SIDE PLATFORM/SAF BUILDING
	10-MECH-12-9-91/R1 (SHEET 1 OF 1)	MOUNTING STRUCTURE FOR PULLEY & SAFETY ROPE BRACKET, TYPE -1 SSLV PLATFORM (FOR PLATFORM LEVELS OF 27.5M, 24.25M,21M,17.5M,14M & 9.4M)
	10-MECH-12-9-93/R1 (SHEET 1 OF 1)	SUPPORT STRUCTURE FOR VERTICAL PULLEY FOR VEHICLE SIDE PLATFORMS
	10-MECH-12-9-94/R1 (SHEET 1 OF 1)	SUPPORT FOR MECHANICAL STOPPER FOR VEHICLE SIDE PLATFORMS
	24.25m & 21m Levels	
	10-MECH-12-9-85/R1 (SHEET 1 OF 1)	GENERAL ASSEMBLY OF EL 21M & 24.5 M VEHICLE SIDE FOLDABLE PLATFORM FOR SLC PROJECT

	10-MECH-12-9-79/A1/R1 (SHEET 1 OF 1)	GENERAL ASSEMBLY OF PLATFORM AT EL 27.25m,24.25m,21m,17.5m,14m & 9.4m (SSLV APPRAOCH PLATFORMS, SAF BUILDING, SLC PROJECT)
	10-MECH-12-9-76/A1/R1 (SHEET 1 OF 2)	GENERAL ASSEMBLY OF FOLDING PLATFORM AT EL 31.5M, 27.8M, 24.25M, 21M, 17.5M, 14M & 9.4M
	10-MECH-12-9-76/A1/R1 (SHEET 2 OF 2)	FOLDABLE PLATFORM STRUCTURE AT EL 31.5M, 27.8M, 24.25M, 21M, 17.5M, 14M & 9.4M FOR VEHICLE SIDE
	10-MECH-12-9-88/R1 (SHEET 1 OF 1)	VERTICAL PULLEY VEHICLE SIDE /SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-89/R1 (SHEET 1 OF 2)	HORIZONTAL PULLEY ASSY. WITH CONNECTION BOX, SAFETY ROPE BRACKET & LIFTING BRACKET VEHICLE SIDE /SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-89/R1 (SHEET 2 OF 2)	HORIZONTAL PULLEY
	10-MECH-12-9-90/R1 (SHEET 1 OF 3)	DRIVE SYSTEM ASSEMBLY FOR VEHICLE SIDE PLATFORM/SAF BUILDING
	10-MECH-12-9-90/R1 (SHEET 2 OF 3)	PART DETAILS FOR DRIVE SYSTEM ASSY FOR VEHICLE SIDE PLATFORM/SAF BUILDING
	10-MECH-12-9-90/R1 (SHEET 3 OF 3)	DRIVE SYSTEM SUPPORT STRUCTURE FOR VEHICLE SIDE PLATFORM/SAF BUILDING
	10-MECH-12-9-91/R1 (SHEET 1 OF 1)	MOUNTING STRUCTURE FOR PULLEY & SAFETY ROPE BRACKET, TYPE -1 SSLV PLATFORM (FOR PLATFORM LEVELS OF 27.5M, 24.25M,21M,17.5M,14M & 9.4M)
	10-MECH-12-9-93/R1 (SHEET 1 OF 1)	SUPPORT STRUCTURE FOR VERTICAL PULLEY FOR VEHICLE SIDE PLATFORMS
	10-MECH-12-9-94/R1 (SHEET 1 OF 1)	SUPPORT FOR MECHANICAL STOPPER FOR VEHICLE SIDE PLATFORMS
	17.5m & 14m Levels	
	10-MECH-12-9-86/R1 (SHEET 1 OF 1)	GENERAL ASSEMBLY OF EL 14M & 17.5M VEHICLE SIDE FOLDABLE PLATFORM FOR SLC PROJECT
	10-MECH-12-9-79/A1/R1 (SHEET 1 OF 1)	GENERAL ASSEMBLY OF PLATFORM AT EL 27.25m,24.25m,21m,17.5m,14m & 9.4m (SSLV APPRAOCH PLATFORMS, SAF BUILDING, SLC PROJECT)
	10-MECH-12-9-76/A1/R1 (SHEET 1 OF 2)	GENERAL ASSEMBLY OF FOLDING PLATFORM AT EL 31.5M, 27.8M, 24.25M, 21M, 17.5M, 14M & 9.4M
	10-MECH-12-9-76/A1/R1 (SHEET 2 OF 2)	FOLDABLE PLATFORM STRUCTURE AT EL

		31.5M, 27.8M, 24.25M, 21M, 17.5M, 14M & 9.4M FOR VEHICLE SIDE
	10-MECH-12-9-88/R1 (SHEET 1 OF 1)	VERTICAL PULLEY VEHICLE SIDE /SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-89/R1 (SHEET 1 OF 2)	HORIZONTAL PULLEY ASSY. WITH CONNECTION BOX, SAFETY ROPE BRACKET & LIFTING BRACKET VEHICLE SIDE /SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-89/R1 (SHEET 2 OF 2)	HORIZONTAL PULLEY
	10-MECH-12-9-90/R1 (SHEET 1 OF 3)	DRIVE SYSTEM ASSEMBLY FOR VEHICLE SIDE PLATFORM/SAF BUILDING
	10-MECH-12-9-90/R1 (SHEET 2 OF 3)	PART DETAILS FOR DRIVE SYSTEM ASSY FOR VEHICLE SIDE PLATFORM/SAF BUILDING
	10-MECH-12-9-90/R1 (SHEET 3 OF 3)	DRIVE SYSTEM SUPPORT STRUCTURE FOR VEHICLE SIDE PLATFORM/SAF BUILDING
	10-MECH-12-9-91/R1 (SHEET 1 OF 1)	MOUNTING STRUCTURE FOR PULLEY & SAFETY ROPE BRACKET, TYPE -1 SSLV PLATFORM (FOR PLATFORM LEVELS OF 27.5M, 24.25M,21M,17.5M,14M & 9.4M)
	10-MECH-12-9-93/R1 (SHEET 1 OF 1)	SUPPORT STRUCTURE FOR VERTICAL PULLEY FOR VEHICLE SIDE PLATFORMS
	10-MECH-12-9-94/R1 (SHEET 1 OF 1)	SUPPORT FOR MECHANICAL STOPPER FOR VEHICLE SIDE PLATFORMS
	9.4m Level	
	10-MECH-12-9-87/R1 (SHEET 1 OF 1)	GENERAL ASSEMBLY OF 9.4m VEHICLE SIDE FOLDABLE PLATFORM FOR SLC PROJECT
	10-MECH-12-9-79/A1/R1 (SHEET 1 OF 1)	GENERAL ASSEMBLY OF PLATFORM AT EL 27.25m,24.25m,21m,17.5m,14m & 9.4m (SSLV APPRAOCH PLATFORMS, SAF BUILDING, SLC PROJECT)
	10-MECH-12-9-76/A1/R1 (SHEET 1 OF 2)	GENERAL ASSEMBLY OF FOLDING PLATFORM AT EL 31.5M, 27.8M, 24.25M, 21M, 17.5M, 14M & 9.4M
	10-MECH-12-9-76/A1/R1 (SHEET 2 OF 2)	FOLDABLE PLATFORM STRUCTURE AT EL 31.5M, 27.8M, 24.25M, 21M, 17.5M, 14M & 9.4M FOR VEHICLE SIDE
	10-MECH-12-9-88/R1 (SHEET 1 OF 1)	VERTICAL PULLEY VEHICLE SIDE /SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-89/R1 (SHEET 1 OF 2)	HORIZONTAL PULLEY ASSY. WITH CONNECTION BOX, SAFETY ROPE BRACKET & LIFTING BRACKET VEHICLE SIDE /SAF BUILDING OF SLC PROJECT

	10-MECH-12-9-89/R1 (SHEET 2 OF 2)	HORIZONTAL PULLEY
	10-MECH-12-9-90/R1 (SHEET 1 OF 3)	DRIVE SYSTEM ASSEMBLY FOR VEHICLE SIDE PLATFORM/SAF BUILDING
	10-MECH-12-9-90/R1 (SHEET 2 OF 3)	PART DETAILS FOR DRIVE SYSTEM ASSY FOR VEHICLE SIDE PLATFORM/SAF BUILDING
	10-MECH-12-9-90/R1 (SHEET 3 OF 3)	DRIVE SYSTEM SUPPORT STRUCTURE FOR VEHICLE SIDE PLATFORM/SAF BUILDING
	10-MECH-12-9-91/R1 (SHEET 1 OF 1)	MOUNTING STRUCTURE FOR PULLEY & SAFETY ROPE BRACKET, TYPE -1 SSLV PLATFORM (FOR PLATFORM LEVELS OF 27.5M, 24.25M,21M,17.5M,14M & 9.4M)
	10-MECH-12-9-93/R1 (SHEET 1 OF 1)	SUPPORT STRUCTURE FOR VERTICAL PULLEY FOR VEHICLE SIDE PLATFORMS
	10-MECH-12-9-94/R1 (SHEET 1 OF 1)	SUPPORT FOR MECHANICAL STOPPER FOR VEHICLE SIDE PLATFORMS

S No.	Drawing No.	Description
B.	**Folding Platforms for AUT Side**	
	35m Level	
	10-MECH-12-9-52 (SHEET 1 OF 1)	GENERAL ASSEMBLY OF 35M LEVEL FOLDABLE PLATFORM FOR SLC PROJECT
	10-MECH-12-9-45/R1 (SHEET 1 OF 1)	GENERAL ASSEMBLY OF AUT APPROACH PLATFORM AT EL 35m,31.5m,27.5m & 24.5m FOR SAF OF SLC PROJECT
	10-MECH-12-9-39/A1/R1 (SHEET 1 OF 5)	AUT APPROACH PLATFORM AT EL 35m,31.5m,27.5m & 24.25m FOR SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-39/A1/R1 (SHEET 2 OF 5)	MECHANISM DETAILS OF SLIDING PLATFORM (AUT APPROACH PLATFORM AT EL 35m,31.5m,27.5m & 24.25m FOR SAF BUILDING OF SLC PROJECT)
	10-MECH-12-9-39/A1/R1 (SHEET 3 OF 5)	DETAILS OF SLIDING PLATFORM (AUT APPROACH PLATFORM AT EL 35m,31.5m,27.5m & 24.25m FOR SAF BUILDING OF SLC PROJECT)
	10-MECH-12-9-39/A1/R1 (SHEET 4 OF 5)	DETAILS OF PLATFORM 1 (AUT APPROACH PLATFORM AT EL 35m,31.5m,27.5m & 24.25m FOR SAF BUILDING OF SLC PROJECT)
	10-MECH-12-9-39/A1/R1 (SHEET 5 OF 5)	DETAILS OF PLATFORM 2 (AUT APPROACH PLATFORM AT EL 35m,31.5m,27.5m & 24.25m FOTR SAF

		BUILDING OF SLC PROJECT)
	10-MECH-12-9-66 (SHEET 1 OF 3)	GENERAL ASSEMBLY OF PULLEYS FOR AUT/SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-66 (SHEET 2 OF 3)	HORIZONTAL PULLEY
	10-MECH-12-9-66 (SHEET 3 OF 3)	VERTICAL PULLEY
	10-MECH-12-9-80 (SHEET 1 OF 1)	MOVABLE VERTICAL PULLEY FOR AUT/SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-67 (SHEET 1 OF 2)	DRIVE SYSTEM DETAILS FOR AUT SIDE PLATFORM/ SLC PROJECT
	10-MECH-12-9-67 (SHEET 2 OF 2)	SUPPORT STRUCTURE FOR AUT SIDE PLATFORM / SLC PROJECT
	10-MECH-12-3-29 (SHEET 1 OF 1)	MOUNTING STRUCTURE FOR PULLEY & SAFETY BRACKET TYPE-1 AUT PLATFORM (FOR PLATFORM LEVELS OF 35m,31.5m,27.5M & 24.25m)
	10-MECH-12-9-98/A2 (SHEET 1 OF 1)	SAFETY ROPE BRACKET 1 & 2 FOR AUT/SAF BUILDING OF SLC PROJECT
	10-MECH-12-3-81 (SHEET 1 OF 1)	SUPPORT FOR MECHANICAL STOPPER FOR AUT SIDE PLATFORM
	10-MECH-12-9-99/A2 (SHEET 1 OF 1)	SUPPORT COLOUMN FOR VERTICAL PULLEY FOR AUT SIDE PLATFORMS
	31.5m & 24.25m Levels	
	10-MECH-12-9-53 (SHEET 1 OF 1)	GENERAL ASSEMBLY OF 31.5m & 24.25m LEVEL FOLDABLE PLATFORM FOR SLC PROJECT
	10-MECH-12-9-45/R1 (SHEET 1 OF 1)	GENERAL ASSEMBLY OF AUT APPROACH PLATFORM AT EL 35m,31.5m,27.5m & 24.5m FOR SAF OF SLC PROJECT
	10-MECH-12-9-39/A1/R1 (SHEET 1 OF 5)	AUT APPROACH PLATFORM AT EL 35m,31.5m,27.5m & 24.25m FOR SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-39/A1/R1 (SHEET 2 OF 5)	MECHANISM DETAILS OF SLIDING PLATFORM (AUT APPROACH PLATFORM AT EL 35m,31.5m,27.5m & 24.25m FOR SAF BUILDING OF SLC PROJECT)
	10-MECH-12-9-39/A1/R1 (SHEET 3 OF 5)	DETAILS OF SLIDING PLATFORM (AUT APPROACH PLATFORM AT EL 35m,31.5m,27.5m & 24.25m FOR SAF BUILDING OF SLC PROJECT)
	10-MECH-12-9-39/A1/R1 (SHEET 4 OF 5)	DETAILS OF PLATFORM 1 (AUT APPROACH PLATFORM AT EL 35m,31.5m,27.5m & 24.25m FOR SAF BUILDING OF SLC PROJECT)
	10-MECH-12-9-39/A1/R1 (SHEET 5 OF 5)	DETAILS OF PLATFORM 2 (AUT

		APPROACH PLATFORM AT EL 35m,31.5m,27.5m & 24.25m FOTR SAF BUILDING OF SLC PROJECT)
	10-MECH-12-9-66 (SHEET 1 OF 3)	GENERAL ASSEMBLY OF PULLEYS FOR AUT/SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-66 (SHEET 2 OF 3)	HORIZONTAL PULLEY
	10-MECH-12-9-66 (SHEET 3 OF 3)	VERTICAL PULLEY
	10-MECH-12-9-80 (SHEET 1 OF 1)	MOVABLE VERTICAL PULLEY FOR AUT/SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-67 (SHEET 1 OF 2)	DRIVE SYSTEM DETAILS FOR AUT SIDE PLATFORM/ SLC PROJECT
	10-MECH-12-9-67 (SHEET 2 OF 2)	SUPPORT STRUCTURE FOR AUT SIDE PLATFORM / SLC PROJECT
	10-MECH-12-3-29 (SHEET 1 OF 1)	MOUNTING STRUCTURE FOR PULLEY & SAFETY BRACKET TYPE-1 AUT PLATFORM (FOR PLATFORM LEVELS OF 35m,31.5m,27.5M & 24.25m)
	10-MECH-12-9-98/A2 (SHEET 1 OF 1)	SAFETY ROPE BRACKET 1 & 2 FOR AUT/SAF BUILDING OF SLC PROJECT
	10-MECH-12-3-81 (SHEET 1 OF 1)	SUPPORT FOR MECHANICAL STOPPER FOR AUT SIDE PLATFORM
	10-MECH-12-9-99/A2 (SHEET 1 OF 1)	SUPPORT COLOUMN FOR VERTICAL PULLEY FOR AUT SIDE PLATFORMS
	27.5m Level	
	10-MECH-12-9-54 (SHEET 1 OF 1)	GENERAL ASSEMBLY OF 27.5m LEVEL FOLDABLE PLATFORM FOR SLC PROJECT
	10-MECH-12-9-45/R1 (SHEET 1 OF 1)	GENERAL ASSEMBLY OF AUT APPROACH PLATFORM AT EL 35m,31.5m,27.5m & 24.5m FOR SAF OF SLC PROJECT
	10-MECH-12-9-39/A1/R1 (SHEET 1 OF 5)	AUT APPROACH PLATFORM AT EL 35m,31.5m,27.5m & 24.25m FOR SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-39/A1/R1 (SHEET 2 OF 5)	MECHANISM DETAILS OF SLIDING PLATFORM (AUT APPROACH PLATFORM AT EL 35m,31.5m,27.5m & 24.25m FOR SAF BUILDING OF SLC PROJECT)
	10-MECH-12-9-39/A1/R1 (SHEET 3 OF 5)	DETAILS OF SLIDING PLATFORM (AUT APPROACH PLATFORM AT EL 35m,31.5m,27.5m & 24.25m FOR SAF BUILDING OF SLC PROJECT)
	10-MECH-12-9-39/A1/R1 (SHEET 4 OF 5)	DETAILS OF PLATFORM 1 (AUT APPROACH PLATFORM AT EL 35m,31.5m,27.5m & 24.25m FOR SAF BUILDING OF SLC PROJECT)

	10-MECH-12-9-39/A1/R1 (SHEET 5 OF 5)	DETAILS OF PLATFORM 2 (AUT APPROACH PLATFORM AT EL 35m,31.5m,27.5m & 24.25m FOTR SAF BUILDING OF SLC PROJECT)
	10-MECH-12-9-66 (SHEET 1 OF 3)	GENERAL ASSEMBLY OF PULLEYS FOR AUT/SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-66 (SHEET 2 OF 3)	HORIZONTAL PULLEY
	10-MECH-12-9-66 (SHEET 3 OF 3)	VERTICAL PULLEY
	10-MECH-12-9-80 (SHEET 1 OF 1)	MOVABLE VERTICAL PULLEY FOR AUT/SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-67 (SHEET 1 OF 2)	DRIVE SYSTEM DETAILS FOR AUT SIDE PLATFORM/ SLC PROJECT
	10-MECH-12-9-67 (SHEET 2 OF 2)	SUPPORT STRUCTURE FOR AUT SIDE PLATFORM / SLC PROJECT
	10-MECH-12-3-29 (SHEET 1 OF 1)	MOUNTING STRUCTURE FOR PULLEY & SAFETY BRACKET TYPE-1 AUT PLATFORM (FOR PLATFORM LEVELS OF 35m,31.5m,27.5M & 24.25m)
	10-MECH-12-9-98/A2 (SHEET 1 OF 1)	SAFETY ROPE BRACKET 1 & 2 FOR AUT/SAF BUILDING OF SLC PROJECT
	10-MECH-12-3-81 (SHEET 1 OF 1)	SUPPORT FOR MECHANICAL STOPPER FOR AUT SIDE PLATFORM
	10-MECH-12-9-99/A2 (SHEET 1 OF 1)	SUPPORT COLOUMN FOR VERTICAL PULLEY FOR AUT SIDE PLATFORMS
	21m Level	
	10-MECH-12-9-55 (SHEET 1 OF 1)	GENERAL ASSEMBLY OF 21m LEVEL FOLDABLE PLATFORM FOR SLC PROJECT
	10-MECH-12-9-41/A1/R1(SHEET 1 OF 2)	GENERAL ASSEMBLY OF AUT SIDE PLATFORM AT EL 21m FOR SAF OF SLC PROJECT
	10-MECH-12-9-41/A1/R1 (SHEET 2 OF 2)	AUT SIDE PLATFORM AT EL 21m FOR SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-66 (SHEET 1 OF 3)	GENERAL ASSEMBLY OF PULLEYS FOR AUT/SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-66 (SHEET 2 OF 3)	HORIZONTAL PULLEY
	10-MECH-12-9-66 (SHEET 3 OF 3)	VERTICAL PULLEY
	10-MECH-12-9-80 (SHEET 1 OF 1)	MOVABLE VERTICAL PULLEY FOR AUT/SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-67 (SHEET 1 OF 2)	DRIVE SYSTEM DETAILS FOR AUT SIDE PLATFORM/ SLC PROJECT
	10-MECH-12-9-67 (SHEET 2 OF 2)	SUPPORT STRUCTURE FOR AUT SIDE PLATFORM / SLC PROJECT
	10-MECH-12-9-47 (SHEET 1 OF 1)	MOUNTING STRUCTURE FOR PULLEY & SAFETY BRACKET TYPE 2 AUT PLATFORM

		(FOR PLATFORM LEVELS OF 21m & 17.5m)
	10-MECH-12-9-98/A2 (SHEET 1 OF 1)	SAFETY ROPE BRACKET 1 & 2 FOR AUT/SAF BUILDING OF SLC PROJECT
	10-MECH-12-3-81 (SHEET 1 OF 1)	SUPPORT FOR MECHANICAL STOPPER FOR AUT SIDE PLATFORM
	10-MECH-12-9-99/A2 (SHEET 1 OF 1)	SUPPORT COLOUMN FOR VERTICAL PULLEY FOR AUT SIDE PLATFORMS
	17.5m Level	
	10-MECH-12-9-56 (SHEET 1 OF 1)	GENERAL ASSEMBLY OF 17.5m LEVEL FOLDABLE PLATFORM FOR SLC PROJECT
	10-MECH-12-9-42/A1/R1(SHEET 1 OF 2)	GENERAL ASSEMBLY OF AUT SIDE PLATFORM AT EL 17.5m FOR SAF OF SLC PROJECT
	10-MECH-12-9-42/A1/R1 (SHEET 2 OF 2)	AUT SIDE PLATFORM AT LEVEL 17.5m FOR SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-66 (SHEET 1 OF 3)	GENERAL ASSEMBLY OF PULLEYS FOR AUT/SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-66 (SHEET 2 OF 3)	HORIZONTAL PULLEY
	10-MECH-12-9-66 (SHEET 3 OF 3)	VERTICAL PULLEY
	10-MECH-12-9-80 (SHEET 1 OF 1)	MOVABLE VERTICAL PULLEY FOR AUT/SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-67 (SHEET 1 OF 2)	DRIVE SYSTEM DETAILS FOR AUT SIDE PLATFORM/ SLC PROJECT
	10-MECH-12-9-67 (SHEET 2 OF 2)	SUPPORT STRUCTURE FOR AUT SIDE PLATFORM / SLC PROJECT
	10-MECH-12-9-47 (SHEET 1 OF 1)	MOUNTING STRUCTURE FOR PULLEY & SAFETY BRACKET TYPE 2 AUT PLATFORM (FOR PLATFORM LEVELS OF 21m & 17.5m)
	10-MECH-12-9-98/A2 (SHEET 1 OF 1)	SAFETY ROPE BRACKET 1 & 2 FOR AUT/SAF BUILDING OF SLC PROJECT
	10-MECH-12-3-81 (SHEET 1 OF 1)	SUPPORT FOR MECHANICAL STOPPER FOR AUT SIDE PLATFORM
	10-MECH-12-9-99/A2 (SHEET 1 OF 1)	SUPPORT COLOUMN FOR VERTICAL PULLEY FOR AUT SIDE PLATFORMS
	14m Level	
	10-MECH-12-9-57 (SHEET 1 OF 1)	GENERAL ASSEMBLY OF 14m LEVEL FOLDABLE PLATFORM FOR SLC PROJECT
	10-MECH-12-9-43/A1/R1(SHEET 1 OF 2)	GENERAL ASSEMBLY OF AUT SIDE PLATFORM AT EL 14m FOR SAF OF SLC PROJECT
	10-MECH-12-9-43/A1/R1 (SHEET 2 OF 2)	AUT SIDE PLATFORM AT LEVEL OF 14m FOR SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-66 (SHEET 1 OF 3)	GENERAL ASSEMBLY OF PULLEYS FOR AUT/SAF BUILDING OF SLC PROJECT

	10-MECH-12-9-66 (SHEET 2 OF 3)	HORIZONTAL PULLEY
	10-MECH-12-9-66 (SHEET 3 OF 3)	VERTICAL PULLEY
	10-MECH-12-9-80 (SHEET 1 OF 1)	MOVABLE VERTICAL PULLEY FOR AUT/SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-67 (SHEET 1 OF 2)	DRIVE SYSTEM DETAILS FOR AUT SIDE PLATFORM/ SLC PROJECT
	10-MECH-12-9-67 (SHEET 2 OF 2)	SUPPORT STRUCTURE FOR AUT SIDE PLATFORM / SLC PROJECT
	10-MECH-12-9-100 (SHEET 1 OF 1)	MOUNTING STRUCTURE FOR PULLEY & SAFETY BRACKET, TYPE-3, AUT PLATFORM (FOR PLATFORM LEVELS OF 14m & 9.4m)
	10-MECH-12-9-98/A2 (SHEET 1 OF 1)	SAFETY ROPE BRACKET 1 & 2 FOR AUT/SAF BUILDING OF SLC PROJECT
	10-MECH-12-3-81 (SHEET 1 OF 1)	SUPPORT FOR MECHANICAL STOPPER FOR AUT SIDE PLATFORM
	10-MECH-12-9-99/A2 (SHEET 1 OF 1)	SUPPORT COLOUMN FOR VERTICAL PULLEY FOR AUT SIDE PLATFORMS
	9.4m Level	
	10-MECH-12-9-58 (SHEET 1 OF 1)	GENERAL ASSEMBLY OF 9.4m LEVEL FOLDABLE PLATFORM FOR SLC PROJECT
	10-MECH-12-9-101/A1/R1(SHEET 1 OF 2)	GENERAL ASSEMBLY OF AUT SIDE PLATFORM AT EL 9.4m FOR SAF OF SLC PROJECT
	10-MECH-12-9-101/A1/R1(SHEET 2 OF 2)	AUT SIDE PLATFORM AT LEVEL OF 9.4m FOR SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-66 (SHEET 1 OF 3)	GENERAL ASSEMBLY OF PULLEYS FOR AUT/SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-66 (SHEET 2 OF 3)	HORIZONTAL PULLEY
	10-MECH-12-9-66 (SHEET 3 OF 3)	VERTICAL PULLEY
	10-MECH-12-9-80 (SHEET 1 OF 1)	MOVABLE VERTICAL PULLEY FOR AUT/SAF BUILDING OF SLC PROJECT
	10-MECH-12-9-67 (SHEET 1 OF 2)	DRIVE SYSTEM DETAILS FOR AUT SIDE PLATFORM/ SLC PROJECT
	10-MECH-12-9-67 (SHEET 2 OF 2)	SUPPORT STRUCTURE FOR AUT SIDE PLATFORM / SLC PROJECT
	10-MECH-12-9-100 (SHEET 1 OF 1)	MOUNTING STRUCTURE FOR PULLEY & SAFETY BRACKET, TYPE-3, AUT PLATFORM (FOR PLATFORM LEVELS OF 14m & 9.4m)
	10-MECH-12-9-98/A2 (SHEET 1 OF 1)	SAFETY ROPE BRACKET 1 & 2 FOR AUT/SAF BUILDING OF SLC PROJECT
	10-MECH-12-3-81 (SHEET 1 OF 1)	SUPPORT FOR MECHANICAL STOPPER FOR AUT SIDE PLATFORM

	10-MECH-12-9-99/A2 (SHEET 1 OF 1)	SUPPORT COLOUMN FOR VERTICAL PULLEY FOR AUT SIDE PLATFORMS

11.0 MANUFACTURING, ASSEMBLY AND ERECTION SEQUENCE

11.1. The general instructions for fabrication are specified in the subsequent clauses.

11.2. The fabrication of components shall conform to the requirements of IS: 800.

11.3. All rolled steel sections before being used for fabrication shall be clean, free from bends, twists, etc. and straight within tolerances specified by IS: 1852 – 1985. If straightening or flattening is necessary, it shall be done by methods that will not injure the material. Long plates shall be straightened by passing through a mandrel or levelling rolls and structural shapes by the use of mechanical or hydraulic bar/section straightening machines. Heating or forging shall not be resorted to without the prior approval of the PURCHASER in writing. In case of site fabrication, CONTRACTOR shall obtain PURCHASER's approval in writing on the straightening method proposed to be adopted before commencing the work.

11.4. Welding shall be performed as per IS: 9595.

11.5. All welding shall be carried out by qualified and approved welders in accordance to ASME Sec IX.

11.6. Unless otherwise specified on drawings, tolerances for fabrication shall be as per ISO: 13920.

11.7. Edge preparation shall be carried out for all plates before welding. For butt-weld joints, edge preparation shall be preferably done by machining and may be done by mechanically controlled gas cutting machine. Sub surfaces shall be ground, cleaned and inspected before fitting / welding.

11.8. Unless otherwise specified on drawings, all butt welds shall be full penetration welds.

11.9. Unless otherwise specified on drawings, all fillet welds shall be at least 50% of the minimum plate thickness and shall be on both sides of the plate. Also, the weld shall be continuous.

11.10. Welding sequence shall be such that the distortion and residual stresses are minimised. All welds shall be deposited in proper sequence so as to balance the applied heat as far as possible. (A wandering sequence shall be used whenever necessary).

11.11. The procedure to be followed by CONTRACTOR for all weld repairs shall be subject to approval by the PURCHASER.

11.12. Threaded joints that are to be seal welded shall be thoroughly cleaned before welding.

11.13. Stress relieving shall be carried out for all fabricated components prior to its machining.

11.14. All sharp corners of machined / fabricated items shall be smoothened by de-burring, hand grinding, chipping and filing.

11.15. Fabricator employed at site shall have adequate machining, welding, metrology and portable NDT facilities.

11.16. All fabrication work undertaken in parts shall bear distinct match marking to facilitate further identification and erection.

11.17. During manufacturing, assembly, erection and commissioning, bolt tightening shall be carried out using torque wrench / impact wrench to ensure required tightening / tension in the bolts.

12.0 FABRICATION & INSPECTION AT SHOP

The CONTRACTOR shall procure the raw material, manufacture, assemble, test and inspect the FOLDING PLATFORM in the following manner at his shop.

12.1. The fabrication of Foldable platforms and all components for drive systems shall be carried out.

12.2. The CONTRACTOR shall prepare a Test Rig at his shop for the purpose of Assembly, Testing & Inspection of Folding Platform. The Test Rig shall be a suitable structure fabricated and firmly secured to the foundation. This structure shall facilitate the mounting of hinge support Brackets, Base Frame of drive system fitted with drive elements (like Rope drum, Gearbox motor, Motor, Brake, etc.), brackets for mounting pulleys, Stay Ropes, Safety Ropes, etc.

12.3. The CONTRACTOR shall carry out the complete assembly of one Folding Platform in the Test Rig. The assembly and inspection of the remaining nine Folding Platform shall also be subsequently carried out one at a time in the same Test Rig.

12.4. A suitable Electrical test Bench shall also be prepared to supply power for conducting the functional test of the Mechanical systems during inspection.

12.5. The following features shall be inspected at shop assembly:

a. Dimensions, various clearances, surface finish etc as specified in drawings.

b. Levelling, alignment of all sub systems.

c. Free movement of Rope Drum, all Pulleys (this shall also be checked manually / mechanically during various stages of assembly)

d. Easy engagement and Disengagement of the lock pins for rear Hinge lock.

e. Alignment of shafts of Gearboxes, Motors, Brakes, Rope Drums, etc.

f. Assembly and dismantling of platform locking arrangement.

g. No load running test of motor prior to the laying of ropes.

13.0 ERECTION OF FOLDING PLATFORM AT SITE

13.1. Transportation & Temporary Placement

a. After the completion of Inspection & Testing at shop, the equipment shall be dismantled with proper match marking into transportable modules.

b. The Contingency Foldable Platforms which are having an approximate size of 6 m(L) x 3 m(W) shall be transported as single piece & not split up into smaller segments for the purpose of Transportation.

c. The Platforms, folding drives etc. shall be loaded on trailers at vendor's shop and transported to erection site and unloaded at site at a place designated for the purpose of erection.

d. No site preparation works are planned by department for fabrication works. Only site clearance will be provided for site preparation works.

e. For fabrication of platforms at site, accurately levelled floor bed shall be constructed at site by vendor.

f. **Mobile Crane of adequate capacity, chain pulley blocks and motorised winch shall be used (as and when required) for unloading and subsequent erection.**

13.2. Erection Sequence

a. The equipment delivered at site shall be inspected and checked as per packing list for totality of requirement.

b. The machinery parts shall be cleaned and the corrosion preventing coating shall be removed from surface of the machinery. The parts, which are delivered in dismantled condition, shall be cleaned prior to their assembly.

c. The CONTRACTOR shall submit documents depicting Fabrication and Erection Procedure at site, Alignment Sequence, Detailed Trial / Test Runs at site based on the guide lines indicated in this document.

d. The centrelines & benchmarks shall be checked and established in suitable place for easy reference.

e. The subassemblies shall be dismantled and all the antifriction bearings, if necessary, shall be thoroughly re-visited and lubricated prior to assembly.

f. The items / components / sub-assemblies shall be erected / mounted in the following sequence. However, the sequence may be altered due to site condition and local constraints which cannot be envisaged now.

g. The Hinge Brackets of the lowest platform (FP-1) shall be erected initially on the embedded plates provided on the civil building.

h. Then, the Foldable Platform leaf shall be assembled on the Hinges and held in position with crane for ensuring that there is no mismatch and misalignments. This shall be achieved by addition of shims between mating surfaces of Brackets and Embedment plates.

i. Subsequently, stay ropes and Safety ropes of the Foldable Platform shall be assembled.

j. Subsequently, the Pulleys shall be erected and the Ropes shall be assembled for the folding operation.

k. The stopers and platform locking arrangement shall be erected.

l. The Folding Platforms located at higher elevations shall be erected progressively as per the above sequence.

m. The first fill of lubricating oil shall be added & the system shall be made ready for operation.

n. All electrical equipment & interconnecting cables shall be installed.

Note: if recommended by the review committee following steps needs to followed up for erection

1. Contractor has to erect one set of complete folding platform (2 leaves on the same level) including complete drive system and execute trial run.

2. After successful trail run and clearance by the department, other platforms shall be erected.

3. Any modification required based on the first set of platform assembly and trail run, has to be carried out as per the instructions by the department for all the platforms.

14.0 PRELIMINARY SPECIFICATION OF BOUGHT OUT ITEMS

Contractor has to approval from the ISRO for specification of Bought –out items before procurement.

All bought items are to be inspected by departmental representative & TPIA before despatching to SLC site.

S.No	Item	Specification
1	Bearing-1	Manufacturer: SKF, Bearing: Self Aligning Ball, Bearing designation: 1303ETN9, Load capacity: 3.4kN
2	Bearing-2	Make: SKF or equivalent, Type: Spherical roller bearing, Bearing: 22212E, Bore: 60mm, Outer dia: 110mm, Width: 28mm, Static load: 166kN, Dynamic Load:156kN
3	Bearing-3	Make: SKF or equivalent, Type: Spherical roller bearing, Bearing: 22208E, Bore: 40mm, Outer dia: 80mm, Width: 23mm, Static load: 90kN, Dynamic load:96kN
	Bearing-4	Manufacturer: SKF, Bearing: Self Aligning Ball, Bearing designation: 1304ETN9,
4	Gear Box-1	Manufacturer: SERVOMECH, Gear: Bevel gear box, series: BG86 S S1, Scheme:70, Gear ratio: 1:1, Required torque: 5Nm
5	Gear Box-2	Make: To meet below specifications, Type: Double reduction worm gear box, Series: Foot mounted flame proof, Reduction ratio : 75:1, Output torque: 3082Nm, Input power: 4.14kW, Size of unit: Interface shall match with frame, Self locking provision: Required, Efficiency:50%
6	Foot Mounted Motor	Make: Siemens or equivalent, Type: Foot mounted Flame proof, Power:1.5kW, RPM: 1500rpm, Frame size: 90L
7	Double Reduction Geared Motor	Make: Elecon or equivalent, Type: Double reduction worm gear box, Size: 5/105 Foot mounted flame proof, Reduction ratio: 1000:1, Output torque: 14208Nm, Efficiency:50%
8	Motor Side Gear Coupling	Type: Gear coupling, Make: Fenner or equivalent, Designation:FGC1, Power@100rpm 11.5kW,Torque:1100Nm
9	Gear Coupling-1	Type: Gear coupling, Make: Fenner or equivalent, Designation:FGC5, Power@100rpm 150kW, Torque:14320Nm
11	Plummer Block-1	Make: SKF or equivalent, Type: SE510-608, Bearing:22210E, Bore:50mm, Safe load:26kN
12	Plummer Block-2	Make: SKF or equivalent, Type: SE522-619, Bearing:22222E, Bore:110mm, Safe load:68kN
13	Plummer Block-3	Make: SKF or equivalent, Type: SE515-612, Bearing:22215EK, Bore:65mm, Adaptor sleeve: H315, End cover: ASNH 515-612

14	Thruster Brake (K-EHDB)	Make: M/s Kateel or equivalent, Type: K-EHDB, Thruster brake, Size: KHT-30/5, Brake drum diameter:160mm, Capacity braking torque: 220Nm
15	Wheel Ø 125 X 54thk	Manufacturer: MUVTONS castors pvt ltd, Diameter of the wheel: 125mm, Series-DF series drop forged steel wheels, Part no-DF-52-BB20
16	Wheel Sliding	Make: V-Groove steel wheels (Brauer), Type: SVT125/40, Load capacity: 1500kg, Diameter of the wheel: 125mm, Type of bearing: ball bearing (SVT125/40/BJM20)
17	Wheel OD 125 X ID 20 X 54 X Thk	Make: DF series drop forged steel wheels (MUVTONS),DF-52-BB20 Load capacity: 1000kg, Dia of the wheel: 125mm, Type of bearing: Roller bearing
	Lead screw, Ø25x1640Lg	Rolled trapezoidal Thread, C45 /equivalent, Surface hardness -210HB
18	Flexible Coupling	Type: Flexible coupling, Make: Elecon (Elflex flexible coupling), Size: EFC-02, Torque: 10.8 da Nm
19	Key	To suit gear box
21	Miscellaneous Items	Felt, Cotter pin, Rubber pad, Washers, Nuts, Lock nut, Lock washers, Hex socket bolt, Double washers & nut, HSH bolt & Nut etc. as per BOQ.
22	Wire Rope	Wire rope shall be as per IS:2266-2019 with a nominal diameter of 16mm with steel core corresponding to 1960 (CWR) tensile designation and a breaking load of 160kN and construction of 6 x 37M (18/12/6-1) Open type thimble shall be as per IS:2315-1978 corresponding to a nominal rope size of diameter 16mm at both ends. Wire rope shall be pre-stretched before forming into a sling.
	Wire Rope-2	Wire rope shall be as per IS:2266-2019 with a nominal diameter of 10mm with steel core corresponding to 1960 (CWR) tensile designation and a breaking load of 62kN and construction of 6 x 37M (18/12/6-1) Open type thimble shall be as per IS:2315-1978 corresponding to a nominal rope size of diameter 10mm at both ends. Wire rope shall be pre-stretched before forming into a sling.
	Safety wire rope	Polyester twin path slings with double cover (CODE STP), Capacity – 25t

15.0 MAKES OF BOUGHT OUT ITEMS

S.no	Item	Makes
1	Wire ropes	Usha martin only
2	Thruster brakes	BUBenzer bremzen, WITTON KRAMMER, SIBRE, GALVI, Kateel
3	Gear boxes	Elecon / Shanti / Greaves (premium transmission)/ Flender-siemen.
4	Bearings	SKF, FAG, TIMKEN
5	Couplings	Fenner, Elecon, Shanthi, All flex & Love-joy
6	Paints	Bombay paints, Berger paints, Asian paints, Grand poly coats.
7	Structural Steel	SAIL / TATA/ JINDAL / ESSAR make only
8	FASTENERS	UNBRAKO / TVS
9	Third Party Inspection Agency	TCE / LLOYDS / MN DUSTUR / MECON / DNV
Note: As far as possible single brand components shall be used. All models used shall be of latest but at least 2 years in the market and next 10 years' service availability.		

16.0 CODES AND STANDARDS

All equipment, system and services covered under this specification shall comply with all currently applicable statutes, regulations and safety codes. Nothing in this specification shall be construed to relieve the BIDDER of his responsibility.

In particular, the latest editions of following standards are applicable:

IS: 808	Dimensions for Hot Rolled Steel Beam, Column, Channel and Angle sections
IS: 3177	Code of practice for Electric Overhead Travelling Cranes and Gantry Cranes other than Steel Work Cranes
IS: 2062	Hot Rolled Medium and High Tensile Structural Steel - Specification
IS: 1364	Hexagon Head Bolts, Screws and Nuts of Product Grades A and B
IS: 2266	Steel Wire Ropes for General Engineering Purposes - Specification
IS: 1570	Schedules for Wrought Steels
IS: 800	General Construction in Steel – Code of practice
IS: 6594	Technical Supply Conditions for Steel Wire Ropes and Strands
IS: 816	Code of practice for Use of Metal Arc Welding for General

	Construction in Mild Steel
IS: 823	Code of procedure for Manual Metal Arc Welding of Mild steel
IS: 1181	Qualifying Tests for Metal Arc Welders (engaged in Welding Structures other than Pipes)
IS: 1323	Code of practice for Oxy-Acetylene Welding for Structural work in Mild Steel
ASTM E94	Standard Guide for Radiographic Examination
ASTM E165	Standard Test Method for Liquid Penetrant Examination
ASTM E709	Standard Guide for Magnetic Particle Examination
ASTM A370	Standard Test Methods and Definitions for Mechanical Testing of Steel Products
ASTM A388	Standard Practice for Ultrasonic Examination of Steel Forgings
ASTM A275	Standard practice for Magnetic Particle Examination of Steel Forgings

16.1. Other national standards established to be equivalent or superior to the codes and standards specified are also acceptable. The BIDDER shall furnish English translation of all standards specified in this specification.

16.2. In the event of any conflict between the codes and standards referred to in the specification and the requirements of this specification, the more stringent of these requirements shall govern.

16.3. Unless indicated otherwise, all codes and standards referred to in this enquiry specification shall be understood to be the latest version on the date of offer made by the Bidder.

17.0 SPECIFIC REQUIREMENTS / INSTRUCTIONS TO BIDDERS

17.1. BIDDER shall carefully study all sections of this specification and indicate all deviations in the Schedule of Deviations. If no deviations are indicated in the Schedule of Deviations, it will be presumed that the offer conforms in all other respects to the specification and PURCHASER reserves the right to evaluate the BIDDER. If the BIDDER indicates any Deviations / Comments on the specification elsewhere in his bid, the same will not be accepted. It is binding on the BIDDER to supply the equipment and systems in conformity with the specification except for deviations taken in the bid under “Schedule of Deviations” and accepted by the PURCHASER. No extra claims on this account after award of contract will be entertained by the PURCHASER.

17.2. BIDDER shall furnish all the information called for in the various sections of this Specification failing which the bid will be considered incomplete and PURCHASER reserves the right to reject the bid.

17.3. BIDDER is advised to quote for the complete scope and partial response will not be entertained. In case of few items which do not directly fall under BIDDER's manufacturing range and / or are not available from indigenous source, BIDDER should take the responsibility upon themselves to arrange to procure them and supply to ensure that their offer is complete in all respects.

17.4. All bought out items supplied shall have capacities not less than those stated in this specification and necessary test certificates shall be furnished in this regard. However, if the BIDDER considers that higher capacity is required to meet guarantee requirements, he should offer the same and substantiate the same by calculations.

17.5. The BIDDER shall specify all the Design modifications which he considers are necessary for him to carry out in order to meet the guarantee requirements. The details of design modifications proposed to be carried out shall be attached as Annexure to the Schedule of Deviations from Technical Specifications.

17.6. Any items which may not have been specifically mentioned herein but are needed to complete the equipment / system shall also be treated as included and the same shall also be furnished and erected, unless otherwise specifically excluded as indicated.

17.7. All tools and tackles required during various stages of execution of order right from manufacture at shop to the erection and testing at site shall be in the scope of the CONTRACTOR. The BIDDER shall quote his prices in the format as indicated in Section-F in the "Schedule of Prices and Delivery" of the specification. Presentation of prices in any other format is not acceptable.

17.8. BIDDER shall furnish within 15 days of receipt of letter of Intent, a detailed network schedule covering all activities for execution of his contract.

17.9. The BIDDER shall furnish one complete set of any special maintenance tools required for normal maintenance of equipment. The prices for the same shall be indicated in **Section-E**– Schedule of prices and delivery.

17.10. The prices quoted shall be firm.

18.0 RELIABILITY AND QUALITY ASSURANCE PLAN

INSPECTION and testing shall be carried out as per QAP enclosed here with in Section-C. The Schedule of Inspections shall be strictly adhered to and shall be witnessed by Third Party Inspection Agency (TPIA) and/or Department. All the critical inspections shall be done in the presence of Third Party and Department personnel.

19.0 INSPECTION AND TESTING PROCEDURES AND SCOPE OF INSPECTION

19.1 Raw material inspection shall be carried out at the vendor's works for compliance of the raw materials to the specified standards.

19.2 Bought out components shall be inspected either at Vendor's works or at the Sub-contractor's premises for compliance with the Specifications.

19.3 Fabricated components shall be inspected at the Vendor's works for compliance with the component drawings. Sub-Assemblies shall be inspected at the Vendor's works for compliance with the Sub-Assembly drawings and for performance requirements. Also, full Assembly of the FP shall be inspected at Vendor's works after shop assembly for compliance with assembly drawings and performance requirements.

19.4 Full Assembly of the FP shall be inspected at Purchaser's premises after site assembly for compliance with the Assembly Drawings and performance requirements.

19.5 After the award of contract, CONTRACTOR shall prepare detailed Quality Assurance Plan (QAP) for inspection & testing of all subassemblies / components of the Folding Platforms (FP). The QAP shall be reviewed and approved by the Third-Party Inspection Agency and the PURCHASER. Indicative QAPs for FP are enclosed in Section-C of this specification.

19.6 The procedure to be followed for testing the accuracy requirements for FP shall be as specified by the PURCHASER.

19.7 All measuring and testing instruments / equipment required for carrying out all tests at vendor's works and at purchaser's site shall be provided by the contractor.

19.8 Contractor shall furnish calibration certificates for the instruments to be used for testing at shop and site. The calibration certificates furnished by the contractor shall not be more than 12 months old.

19.9 TESTING:

FP mainly comprises of drive mechanism and structure from the point of view of testing. In order to realise successful operation of the platform following testing activities shall be performed.

<u>TESTING AT MANUFACTURER'S WORKS</u>

A. DRIVE SYSTEM (NO LOAD AND WITH LOAD)

No load run test shall be carried out for the fully assembled drive continuously for minimum 1 hour and shall be tested for its ability to move the FP-1 with intended overload (125%). The adequacy of drive power, functioning of mechanism and

effectiveness of braking shall be checked. The surface temperature of the gear box shall not exceed 90°c and dB level also should be in the acceptable limits.

B. TEST FOR MAJOR SUB-ASSEMBLIES

Hinge pin assembly for normal folding platforms, Hinge pin assembly for contingency folding platforms, hinge locking pin assembly shall be tested for proper functioning, etc. and shall be brought to site in grease packed condition.

TESTING AT SITE

For Smooth movement of platforms without noise & jerks and the items shall be brought to site in grease packed condition.

20.0 WARRANTEE AND PERFORMANCE REQUIREMENTS

The Folding platforms shall perform satisfactorily to meet the warrantee requirements stated in this specification to the entire satisfaction of the PURCHASER.

21.0 ACCEPTANCE TEST

21.1 After the entire installation work has been completed, the CONTRACTOR shall make all required adjustments until all warrantee performance requirements are met. All instruments, services required for the above tests shall be furnished by the CONTRACTOR.

21.2 If the stipulated performance requirements are not fulfilled, the CONTRACTOR shall make good the deficiency by providing it in every case, by altering and/ or replacing the parts or the whole equipment / system free of charge to the PURCHASER immediately. All rejected equipment shall be removed from the site at CONTRACTOR’s expense.

22.0 SURFACE PREPARATION AND PAINTING

Complete FP structure and sub-assemblies shall be painted as per the instructions given below. All the shop-fabricated items shall be grit blasted; primer painted. The site fabrication items also shall be grit-blasted and primer painted before erection. After completion of the erection, all the damaged primer painted area shall be rectified. After primer painting, the total surface shall be final painted with sufficient number of coats using acrylic aliphatic polyurethane finish paint, having a DFT of 40 microns. All box sections, before closing, shall be painted with primer and finish paint inside the Box.

22.1 **Preparation of surfaces**

All surfaces to be painted shall be clean, dry and free from oil, grease, dirt, dust, corrosion and weld spatters. Any other surface contaminant except tightly bonded residues of mill scale rust is permissible to a limit of not more than 5% of whole surface and a maximum of 10% on any particular square inch area. Surfaces that may become inaccessible after erection or installation or both, shall be prepared and painted while still accessible as per the same procedure mentioned.

22.2 **Grit Blasting**

The entire surface of all the fabricated materials is to be Grit blasted as per near white quality of steel structures painting council (SSPC) standard of SA 2.5 of SIS 055900. The surface profile after blasting shall be between 37-65 microns and should be of jagged in nature. Hand cleaning shall be carried out by chipping and scraping followed by wire brushing/abrasive wheels for items for which surface preparation is difficult by Grit blasting after taking approval from purchaser / TPIA. All surfaces shall be degreased using a suitable solvent to remove oil and grease and shall be dried off before painting.

22.3 **Painting Scheme:**

Immediately after grit blasting, one coat of inorganic zinc silicate primer shall be applied to a dry film thickness (DFT) of 75 microns, Intermediate coat of High Build MIO Epoxy paint (75 micron) and Final coat of Aliphatic Polyurethane paint (50 micron) shall be given.

All paint and primer shall be of standard quality and procured from approved manufacturers as prescribed in the list furnished. The TENDERER shall provide the purchaser “Elcometer” / Paint thickness measuring gauges free of charge and shall measure the thickness of paint in the presence of the representative of the purchaser at random locations selected by him.

Machine finished surfaces shall be protected against corrosion by a rust inhibiting coating that can be easily removed prior to erection or which has characteristics that make removal unnecessary prior to erection.

Field painting shall only be done after the structure is erected, levelled, plumbed, aligned and welded/connected in its final position, tested and commissioned. However, touch up painting, making good to any damaged shop painting and completing any unfinished portion of the shop coat shall be carried out by the

TENDERER free of cost. The materials and specification for such painting in the field shall be in accordance with the requirements of the specification for shop painting.

Painting shall not be done in frosty or foggy weather or when humidity is such as to cause condensation on the surfaces to be painted. Before painting of steel, which is delivered unpainted, is commenced, all surfaces to be painted shall be dried and thoroughly cleaned from all loose scale and rust.

All field rivets, bolts, welds and abrasions to the shop coat shall be spot painted with the same paint used for the shop coat. Where specified, surfaces which will be in contact after site assembling shall receive a coat of paint (in addition to the shop coat, if any) and shall be brought together while the paint is still wet.

Bolts and fabricated steel members, which are galvanized or otherwise treated, shall not be painted.

Paints shall be stored under cover in airtight containers. Paints supplied in sealed containers shall be used up as soon as possible once the container is opened.

While painting the new structures, the already finished floors and structures shall not be spoilt. If there is any spillage of paint on the floors or members on the finished structures, the TENDERER has to clear and provide the painting to the spoiled areas.

Paints supply shall be checked for shelf life to meet the requirements before application. Proper action shall be taken well in advance prior to actual usage.

22.4 **Paint specifications:**

a) **Primer:**

- Inorganic Zinc Silicate Primer (75 Microns):
- Minimum shelf life of 12 months
- Excellent abrasion resistance

b) **Intermediate coat:**

- High Build MIO Epoxy paint: 75 microns

c) **Final coat**:

- Aliphatic acrylic Polyurethane paint: 50 microns
- As per approved manufacturer’s specifications.
- Colour code will be finalised by the department after award of contract.

23.0 START-UP SPARES & MAINTENANCE TOOLS

23.1 The bidder shall include in start-up spares & maintenance tools in his scope.

23.2 The spares supplied shall be directly interchangeable with parts for which they are intended for replacement.

23.3 The spares shall be treated and packed for long storage (minimum 5 years) Under the climatic conditions prevailing at the site.

23.4 The bidder shall indicate the service expectancy periods for all the spare parts in terms of hours of operation under normal operating conditions after which replacement will become necessary.

23.5 The start-up spares are those spares which will be required during start-up and commissioning of the equipment / systems until the equipment/systems are handed over to the department after completion of performance testing.

23.6 The prices of the start-up spares and tools shall be included in the lump sum Supply price of the total system. An adequate stock of start-up spares shall be available at the site such that the start-up and Commissioning of the equipment / systems, performance testing and handing Over the equipment/ systems to the department can be carried out without Hindrance or delay.

23.7 following are the list of minimum number of start-up spares for FP to be Included in the bidder's scope.

SL.NO	DESCRIPTION	QUANTITY
MECHANICAL SPARES		
1	Linings for brakes	2 pairs
2	Oil seals for each gear box	1 sets (1 set for Vehicle side and 1 set for AUT side)
3	Set of gaskets of all sizes wherever applicable	3 sets
ELECTRICAL SPARES		
1	Fuse links	3 no.s each category.
2	Power contactors	1 no. minimum or 10% of total qty.
3	Push buttons	4 no. minimum or 10% of total qty.
4	Limit switches	2 nos
5	Spare LCP ready to replace at site.	2 nos
6	Folding motor	2 nos
7	Load cell	1 unit

24.0 TENDER EVALUATION AND PENALTY FACTOR

24.1 The BIDDER shall comply with all systems / parameters specified in section B, C, D & E.

24.2 Deviation from the specifications, if acceptable to the PURCHASER insofar as practicable will be converted to rupee value and added to the bid price to compensate for the deviation from the specification. In determining the rupee value of the deviations, the PURCHASER will use the parameters consistent with those specific in the documents and specifications and other information as necessary and available to the PURCHASER.

25.0 DATA TO BE FURNISHED ALONG WITH BID AND AFTER AWARD OF CONTRACT

The BIDDER shall ensure the following documentation are prepared and submitted to PURCHASER for his review / record.

25.1 **ALONG WITH BID**

a. Description of the bought-out items offered along with catalogues, drawings, etc. along with deviations from Technical Specification and proposed Design modifications.

b. All data of the tender specification duly filled in as applicable.

c. Project execution plan.

d. Bar chart for supply & erection schedule indicating the date of completion of various activities so as to complete the execution of the contract within the time frame stipulated in the tender specification.

e. All section duly filled.

25.2 **AFTER AWARD OF CONTRACT**

a. Schedule of Assembly & Detailed drawings and documents to be submitted for review & approval with submission dates.

b. Quality Assurance Plan (QAP)

c. Bar chart for supply & erection schedule indicating the date of completion of various activities so as to complete execution of the contract within the time frame stipulated in the LOI / Purchase order.

d. Progress Reports

e. Instrument data sheets

f. Electrical wiring diagrams showing interlocks, controls, wiring sizes, rating of each electrical component etc. and logic diagrams

g. Dimensioned general arrangement and section drawings of control and instrumentation panels and switchgear panel

h. Detailed description of operating sequence and control and interlock system

i. Erection, start-up, operation and maintenance manual complete with lubrication schedule etc.

j. As-built drawings.

k. Quality Assurance documentation compiled for the project.

l. The above list of documents is indicative and not exhaustive. The BIDDER / CONTRACTOR shall submit documents as specified in various sections of this specification and also as per the specific instructions of the PURCHASER.

26.0 FINAL DOCUMENTS

CONTRACTOR shall submit the copies of operation and maintenance manuals well before the despatch of the equipment. The manual shall be in sufficient detail with step-by-step instructions to enable others to inspect, erect, commission, maintain, dismantle, repair, reassemble and adjust all parts of the equipment. Each manual shall also include a complete set of approved as built drawings together with performance / rating curves / charts of the equipment, maintenance schedule and test certificates wherever applicable.

CONTRACTOR shall submit all the raw material test certificates, Ultrasonic testing of the raw material, Ultrasonic / radiography test certificates of all necessary welds. Stress relieving charts, Hardness test certificates and Dimensional inspection reports of individual components. Quality assurance documentation compiled for the project.

SECTION –C

QUALITY ASSURANCE PLAN

SL. NO.	COMPONENT/ OPERATION	CHARACTERISTICS TO BE CHECKED	METHOD OF CHECKING	CATEGORY	EXTENT OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE NORMS	FORMAT OF RECORDS	INSPECTION AGENCY			REMARKS
									VR	TP	IS	
A.	MATERIAL (RAW MATERIALS & BOUGHTOUTS)											
1	Rolled plates & sections Forged steel & Castings High Yield Steel	a. Appearance	Visual	Major	100%	IS:2062	Freedom from defects like pitting, cracks, etc.	--	H	W	R	
		b. Properties	Chemical analysis & physical test	Major	100%	IS:2062	Drawing, specification	Mill test certificates/ Lab reports	H	R	R	
		c. Internal flaws	UT	Critical	100% for plates ≥20mm thick, 100% for Castings & Forgings	ASTM A435	Specification	NDT reports	H	W	R	
2	Fasteners (through bolts, high tensile bolts & nuts etc.), Wheels and Screw rods for sliding platforms,	a. Quality	Visual	Major	Sample check as per relevant specification	IS:1367	a. No cracks b. Proper matching with nuts	Test certificates	H	W	R	
		b. Chemical composition & physical properties	Chemical analysis, mechanical test	Major	Sample check as per relevant specification	IS:1367	IS:1367 Part III	Manufacturer's test certificates	H	R	R	
		c. Dimensional	Measurements	Major	Sample check as per relevant specification	IS:1367	IS:1367 Part III & XIII		H	W	R	

Legend:
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IS – ISRO
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R – Review of records & results
W – Test/inspection to be witnessed

Signature Signature Signature Date :

For VENDOR For THIRD PARTY For ISRO Place:

SL. NO.	COMPONENT/ OPERATION	CHARACTERISTICS TO BE CHECKED	METHOD OF CHECKING	CATEGORY	EXTENT OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE NORMS	FORMAT OF RECORDS	INSPECTION AGENCY			REMARKS
									VR	TP	IS	
3	**For Vehicle side folding Platforms** Bearings, Vertical & Horizontal Pulleys, Clamp, Drive systems (Gear Box, Thruster Breaks, Couplings, Plumer Blocks, Ropes, Rope Drums etc.), Electrical Components (Electric Motors, Limit Switch, LCP, Main Control panel, Power cable & Control cable etc)	Dimensional conformance	Measurements	Major	100%	As per Manufacturer's Specification	As per Manufacturer's Specification	IR	H	W	R	
		Performance Tests	Verification	Major	100%	As per Manufacturer's Specification	As per Manufacturer's Specification	IR	H	W	W	
4	**For AUT side folding Platforms** Bearings, Vertical & Horizontal Pulleys, Clamp, Drive systems (Gear Box, Couplings, Plumer Blocks, Ropes, Rope Drums etc.),	Dimensional conformance	Measurements	Major	100%	As per Manufacturer's Specification	As per Manufacturer's Specification	IR	H	W	R	
		Performance Tests	Verification	Major	100%	As per Manufacturer's Specification	As per Manufacturer's Specification	IR	H	W	W	

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B. WELDING PROCEDURE, WELDER'S QUALIFICATION, ETC.												
1	Welding	WPS, Welder's & Welding operator's qualification	Test piece, Visual, Physical & NDT (RT)	Critical	100%	ASME Sec IX	ASME Sec IX	WPS, PQR & WPQ	H	W	R	
C. FABRICATION ITEMS OF FOLDING PLATFORM (Platform structure, support for mechanical stopper, support column for vertical pulley, Horizontal & Vertical Pulley Bracket, safety rope bracket, mounting structure for pulley & safety bracket, Drive Base Frame, etc.)												
1	Setting out / Layout / Marking / CNC programming	Layout	Measurement	Major	100%	Relevant drawings	Full scale layout to be checked before cutting	Shop register	H	W	R	
2	Fitup before welding.	Quality	Visual alignment & check of major dimensions	Major	100%	Drawings	a. proper edge preparation b. proper tack welds c. minimum gap for butt joints as per WPS d. DIN-8570	IR	H	W	R	Members requiring site welding shall be match marked at joining ends for site erection
3	Welding (fillet joints)	Profile, fillet size, overall physical appearance	Visual/ gauge, DP/ MPT after final welding	Major	100%	ASME SecVIII, Vol-1	Drawings	IR	H	W	R	100% DP test shall be carried out
4	Full penetration welding	a. Root inspection after back gouging	Visual & LPI	Major	100%	IS:3658	No cracks allowed	IR	H	W	R	
		b. Internal defects	UT / RT	Critical	Wherever asked in the drawing	ASME Sec-VIII, Vol-1	ASME Sec-VIII, Vol-1	Test report	H	W	R	

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For VENDOR For THIRD PARTY For ISRO Place:

SL. NO.	COMPONENT/ OPERATION	CHARACTERISTICS TO BE CHECKED	METHOD OF CHECKING	CATEGORY	EXTENT OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE NORMS	FORMAT OF RECORDS	INSPECTION AGENCY			REMARKS
									VR	TP	IS	
		c. Welding quality, surface defects	LPI / MPI	Critical	Wherever asked in the drawing	ASME Sec-VIII, Vol-1	ASME Sec-VIII, Vol-1	Test report	H	R	R	
5	Stress relieving (after complete welding)	T-T curves	T-T curve verification	Major	100%	ASME Sec-VIII, Vol-I	Drawings	T-T graph	H	R	R	Where ever applicable
6	Dimensional inspection after welding & stress relieving	Dimensional	Measurement of major dimensions & full-size shop layout checking	Major	100%	Drawing / DIN 8570	Drawings	IR	H	H	W	
D. MACHINING ITEMS for Folding Platform system (Rope drum, wheels for sliding platforms, track for sliding platform, Shaft, Hinge pin, Stoper, Shear block, Baring retainers etc.)												
1	Machining	Overall dimensions	Measurement & visual	Major	100%	Drawing	Drawing	IR	H	W	R	
2	Drilling, etc.	Drilling & tapping	Measurement of hole size & center distances	Critical	100%	Drawing & DIN 8570	Drawing	IR	H	W	R	
E. GRIT BLASTING & PAINTING												
1	Grit blasting & painting	Paint thickness	Visual & measurement by paint thickness gauge	Major	At random for paint thickness	Drawing & specification	Drawings & specification	IR	H	W	R	

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Signature For VENDOR

Signature For THIRD PARTY

Signature For ISRO

Date :

Place:

SL. NO.	COMPONENT/ OPERATION	CHARACTERISTICS TO BE CHECKED	METHOD OF CHECKING	CATEGORY	EXTENT OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE NORMS	FORMAT OF RECORDS	INSPECTION AGENCY			REMARKS
									VR	TP	IS	
F.	SUB – ASSEMBLIES of Folding Platform System at vendor site (Pulley and pulley bracket, Vertical wheel assembly, Lateral roller guide, Drive mechanism for vehicle side platform and Drive mechanism for AUT side platform, mechanism of sliding platform etc.)											
1.	SUB – ASSEMBLIES of Folding Platform System	Level, Alignment & Free Movement	Measurement, visual & Manually movement	Critical	100 %	Drawing	Drawing	IR	H	W	W	
G.	Control Assembly of Folding Platform with hinge and hinge brackets at SLC site											
1.	Control assembly works	Dimensions, Levels, Alignment, Erection of clits with fasteners	Visual & Measurement	Critical	100 %	Drawings	Drawings	IR	H	W	W	Before erection

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For VENDOR For THIRD PARTY For ISRO Place:

SL. NO	COMPONENT/ OPERATION	CHARACTERISTICS TO BE CHECKED	METHOD OF CHECKING	CATEGORY	EXTENT OF CHECK	REFERENCE DOCUMENTS	ACCEPTANCE NORMS	FORMAT OF RECORDS	INSPECTION AGENCY			REMARKS
									VR	TP	IS	
H.	ERECTION AT SLC SITE											
1.	Fabricated material inspection	Visual, dimensional, review of TC & IR	Visual & measurement	Major	100%	TS & approved drawings	TS & approved drawings	IR	H	R	R	
2.	Welding & welder qualification	WPS, Welder's & Welding operator's qualification	Test piece, Visual, Physical & NDT (RT)	Critical	100%	ASME Sec IX	ASME Sec IX	WPS, PQR & WPQ	H	W	R	
3.	Welding	Preheat / interpass / sequence of welding	Visual	Major	100%	Drawing & TS	Drawing & TS	IR	H	W	R	
4.	Complete welding	Visual, DPT, UT	Visual & UT	Major	100%	TS & drawings	TS & drawings	IR	H	W	R	
5.	Dimensional check of whole assembly	Position, level, alignment and other dimensions, clearances	Measurement & Visual	Major	100%	Drawings	Drawings	IR	H	W	W	
6.	Mapping of Embedment plate (EP) on Civil wall, assembly of wheel brackets with EP by using through bolts and alignment of the brackets with inserting suitable spacer	Position, level, alignment and other dimensions, clearances	Measurement & Visual	Major	100%	Drawings	Drawings	IR	H	W	W	
7.	Assembly and alignment of Drive system on portal area of civil building, pulley bracket assembly, wire rope routing	Position, level, alignment and other dimensions, clearances	Measurement & Visual	Major	100%	Drawings	Drawings	IR	H	W	W	
8.	Assembly and alignment of Platforms	Position, level, alignment and other dimensions, clearances	Measurement & Visual	Major	100%	Drawings	Drawings	IR	H	W	W	

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For VENDOR For THIRD PARTY For ISRO Place:

9.	Platform folding and un folding	Clearance	Visual & Measurement	Major	100%	TS & Drawings	TS & Drawings	IR	H	W	W	

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Signature	Signature	Signature	Date :
For VENDOR	For THIRD PARTY	For ISRO	Place:

1.0 SCOPE

This specification shall apply to shop and site fabrication of all welded joints in carbon steel. Low alloy steel and stainless-steel equipment like pressure vessels, tank, columns and heat exchangers etc. The specification shall apply to all the joints indicated below:

(a) Butt joints produced by double sided welding which produce the same quality of deposited weld metal on both inside and outside weld surfaces.

(b) Butt joints produced by single sided welding having backing strip which remains in place and full penetration butt weld without backing strip

(c) Corner or those joints connecting two (2) members approximately at right angles to each other in the form of L or T

(d) Partial penetration welds of the groove type which are used for connections not subjected to external loading

(e) Fillet welded joints of approximately triangular cross-section joining two (2) surfaces at approximately right angles to each other and having a throat dimension at least 70% of the thinner of the parts being joined but not less than 6mm

(f) Welds attaching nozzles and other connections

(g) Welds which are used to join non-pressure parts like supports, lugs, brackets, stiffeners and other attachments to the vessel wall

(h) Any other similar joint which is not specified above but may be encountered during fabrication

2.0 CODES AND STANDARDS

2.1 The welding equipment, welding consumables, preheating, Post weld Heat Treatment (PWHT), other auxiliary functions and welding personnel shall comply with all currently applicable statutes, regulations and safety codes in the locality where the equipment are to be fabricated and installed. Nothing in this specification shall be construed to relive the VENDOR/CONTRACTOR of his responsibility. Specifically, the latest editions of the codes and standards listed below shall apply:

(a) ASME Boiler and Pressure Vessel Code (BPV Code), Section II Part C- Material Specification for Welding Rods. Electrodes, and Filler Metals

(b) ASME BPV Code, Section V-Non-destructive Examination (NDE)

(c) ASME BPV Code, Section VIII Division I-Rules for construction of Pressure Vessels

(d) ASME BPV Code, Section IX – Welding and Brazing Qualifications

(e) American Society of Non-destructive Testing (ASNT) SNT-TC-IA, Recommended Practice

(f) Indian Boiler Regulations (IBR)

(g) Any other codes and standards specified in Section B, C & D of enquiry specification

2.1.1 The codes and standards listed in para 2.1 form an integral part of this specification. In the event of conflict between this specification and the codes & standards, the more stringent shall govern.

2.1.2 If no specific requirements are given in this specification, the requirements of the applicable code shall govern.

3.0 WELDING PROCESSES

The following welding processes shall be used:

3.1 GAS TUNGSTEN ARC WELDING (GTAW)

3.1.1 The root pass of single-sided groove welds without backing

3.1.2 Full penetration nozzle connection where other side is inaccessible

3.1.3 Any butt and fillet weld on equipment with thickness 5 mm or less

3.1.4 For all passes of butt and fillet welding of nozzles on equipment and integral piping of size 50 mm NB or smaller

3.2 Shielded Metal-Arc Welding (SAW)\

3.3 SUBMERGED ARC WELDING (SAW)

Maximum weld deposit per pass shall be 12.7 mm for carbon steel (p-1) and 9.5 mm for other materials.

3.4 Gas Metal Arc Welding (GMAW) and Flux Cored Arc Welding (FCAW) processes

3.5 Other processes such as plasma-arc and electro-slag welding may be used only with the approval of the PURCHASER and depending upon the process and application proposed. These processes may require testing in addition to that specified by the governing procedure qualification code.

3.6 Table 1 gives recommendations for welding processes to be used for carbon, low alloy and austenitic stainless steels.

4.0 WELDING CONSUMABLES

4.1 The VENDOR/CONTRACTOR shall provide, at no additional cost, all the welding consumables such as electrodes, filler wires, flux, oxygen, acetylene, argon etc., in order to complete the welding in all respects. The consumables shall be from reputed and approved manufacturers. All the consumables shall be approved by the PURCHASER / TPI.

4.2 The electrodes and filler wires shall be of the class specified in Table 1 Welding specification chart.

4.3 Electrodes qualification test records shall be submitted for the PURCHASER'S approval. The VENDOR/CONTRACTOR shall also submit batch test certificates from the electrodes manufacturer for physical and chemical tests.

4.4 Electrodes shall be in sealed containers and adequate care shall be taken for storage, strictly in accordance with the manufacturer's recommendations.

4.5 Electrodes, which have been removed from the original containers, shall be kept in baking ovens as per the manufacturer's recommendations and, once these are taken out, shall be consumed within the time limits stipulated by the manufacturer. Care shall be taken in handling the electrodes to prevent any damage to the flux covering. Portable ovens shall be used for carrying the electrodes from the main oven to the field. Electrodes of different specifications shall be stored in different compartments of a baking oven to avoid mix up.

4.6 The electrodes, filler wires and flux used shall be free from contamination such as rust, oil, grease and such foreign matter.

4.7 Low hydrogen electrodes shall be used for weld joints in carbon steel if the wall thickness exceeds 19 mm and low alloy steel of all thickness except that non low hydrogen electrodes shall be permitted for the root pass of carbon steel only.

4.8 If ultimate tensile strength of base material permits, E 6010 electrodes may be used for root pass of butt welds and for fillet welds in carbon steel.

5.0 WELDING QUALIFICATIONS

5.1 Qualification of the welding procedures to be used and the performance of welders and welding operators shall conform to the requirements of the BPV Codes and Section IX. For equipment under the purview of IBR, these shall also meet the requirements of IBR.

5.2 No production welds shall be undertaken until the qualification requirements are completed to the satisfaction of the PURCHASER.

5.3 When impact testing is required by the code or by the specification, these requirements shall be met in qualifying welding procedures.

5.4 The VENDOR/CONTRACTOR shall be responsible for qualifying any welding procedure, welders and welding operators intended to be deployed. The VENDOR/CONTRACTOR shall submit the welding procedure specification (WPS) for acceptance by the PURCHASER. After approval by the PURCHASER, the procedure qualification test shall be carried out by the VENDOR/CONRACTOR, at his own expense, duly witnessed by the TPI / PURCHASER. A complete set of test results, in specified format, shall be submitted to the PURCHASER for approval immediately after successful completion of procedure qualification test. All tests as required by the BPV code Section IX or IBR shall be carried out. The WPS shall require re-qualification, if any of the essential variables of supplementary variable is altered.

5.5 Welders and welding operators shall be qualified in accordance with BPV code and Section IX or IBR, as applicable. The qualification shall be carried out in the presence of the PURCHASER / TPI. Only those welders and welding operators who are qualified shall be deployed on the job. For equipment under the purview of IBR, approval of the local IBR inspector shall be obtained by the VENDOR/CONTRACTOR.

5.6 Welders and welding operators shall always keep their identification cards with them and shall produce them on demand. The VENDOR/CONTRACTOR shall issue the identity cards after the same are duly certified by the PURCHASER Welder or welding operator, who is not in possession of the identity card, shall not be allowed to work.

5.7 The VENDOR/CONTRACTOR shall use forms as per BPV code, section IX, form QW-482, form QW-483 and form QW-484. Other forms are also acceptable subject to approval by the PURCHASER.

5.8 Unless agreed otherwise, the VENDOR/CONTRACTOR shall advise the PURCHASER, in writing, at least three (3) weeks before any welder or welding operator is deployed on the work, the names and qualification of the proposed welders, welding operators and welding supervisors. It shall be the VENDOR/CONRTRACTOR'S responsibility to ensure that all welders and welding operators employed by him or his SUB-VENDORS/SUB-CONTRACTORS at works or at site are fully qualified as required by the code. Each welder and welding operator shall qualify for all types of welds, positions and materials or material combinations he may be called upon to weld.

5.9 Should the PURCHASER require to qualify or requalify any welder or welding operator, the VENDOR/CONTRACTOR shall make available, at no extra cost to the PURCHASER the men, equipment and materials for the tests. The cost, of testing the welds shall be borne by the VENDOR/CONTRACTOR.

5.10 Welding supervisors shall have qualifications such as engineering degree or engineering diploma in welding technology with adequate knowledge of welding

consumables welding machines & NDE and a minimum of five (5) years of experience in supervising welding of joints.

5.11 All welding, including the tacking up of welds shall be carried out by qualified welders and welding operators as per approved WPS. Any weld made by other than a qualified welder or welding operator or not carried out as per approved WPS shall be cut out and re-welded.

5.12 For purpose of identification and to enable tracing full history of each joint, each welder and welding operator employed on the work shall be given a designation. The welder and welding operator's designation and the date on which the joint is made, shall be stamped near the relevant joint and on the relevant drawings also. Copies of the drawings so marked shall be furnished to the PURCHASER for record purposes.

5.13 For each welder and welding operator, a record card shall be maintained showing the procedures for which he is qualified. These cards shall note the production welds, the date of the welding done, the type of defects produced and their frequency. The record shall be reviewed once in a week by the PURCHASER and those welders & welding operators whose work required a disproportionate amount of repair shall be disqualified from welding. Re-qualification of welders and welding operators disqualified more than three (3) times shall be entirely at the discretion of the PURCHASER. As far as possible, the qualification shall be carried out at the location (site or shop) where the actual fabrication and welding work is to be carried out.

6.0 PERPARATION FOR WELDING

6.1` Surface to be welded shall be smooth uniform and free from fins, tears and other defects, which would adversely affect the quality of the weld. All welding faces and adjoining surfaces, for a distance of at least 50 mm from the edge of the welding groove or 12 mm from the toe of the fillet in the case of socket welded or fillet welded joints, shall be thoroughly cleaned of rust, scale, paint, oil or grease, on both inside and outside.

6.2 Joints for welding shall be as per the project specifications and approved fabrication drawings.

6.3 Butt joints shall be prepared as per ASME BPV code Section VIII Division 1, unless specified otherwise. For equipment under the purview of IBR, these shall be as per IBR. Any other end preparation which meets the WPS is acceptable.

6.4 Internal misalignment shall be reduced by trimming but such trimming shall not reduce the finished wall thickness below the required minimum wall thickness. Trimming shall not be abrupt. It shall be tapered with a minimum slope of 1:3. Root opening of the joint shall be within the tolerance limits of the WPS.

6.5 Welds shall be as per ASME BPV code section VIII Division 1 or in accordance with IBR for equipment under the purview of IBR

6.6 Reinforcing pads and saddles shall have a good fit with the parts to which they are attached. A tell-tale hole shall be provided on the side of any pad or saddle to reveal leakage in the weld and to allow venting during welding and heat treatment. Pad or saddle shall be added, after the branch weld has undergone satisfactory visual and NDE.

6.7 The ends shall be prepared by machining, grinding, flame cutting or plasma cutting. Where flame cutting is used, the effect on the mechanical and metallurgical properties of the base metal shall be taken into consideration. Flame cutting of alloy steel is not advisable. If alloy steel is cut using flame, the heat affected zone shall be removed completely by grinding and/or machining. Magnetic Particle (MT) or Liquid Penetrant (PT) testing shall be carried out to ensure soundness of edges. However, flame cutting of carbon steel is permitted. Wherever practicable, flame cutting shall be carried out by machine shall be cleaned free of slag. Manual flame cutting shall be permitted only where machine flame cutting is not practicable and with the approval of the PURCHASER, and such surfaces shall be ground or dressed to a smooth finish as required by the specification and to the satisfaction of the PURCHASER. Slag, scale or oxides shall be removed by grinding to bright metal at least two (2) mm beyond the burnt area.

6.8 Thermal cutting of carbon steel shall be performed under the same conditions of preheating and PWHT as for the welding of each class of material. However, PWHT is not required when:

(a) The heat affected zone produced by thermal cutting is removed by mechanical means immediately after cutting. However, in any case, all remaining slag, scale or oxides shall be removed by grinding to bright metal at least two (2) mm beyond the burnt area, or

(b) Thermal cutting is part of fabrication, manufacturing or erection sequence leading to a weld end preparation where welding immediately follows.

6.9 Before fitting up the weld joint, the profile and dimensions of the weld end preparation shall be checked by the PURCHASER. If the specified tolerances are exceeded, this shall be corrected (with prior approval) by grinding, machining or any other method acceptable to the PURCHASER.

6.11 Fit-ups shall be examined by the PURCHASER prior to welding the root pass.

7.0 TECHNIQUE AND WORKMANSHIP

7.1 Components to be welded shall be aligned and spaced as per the requirements of the code and WPS.

7.3 Alignment and spacing shall be achieved using suitable wires to maintain the gap. These shall be removed after tack welding. The ends to be welded shall be held using suitable clamps, yokes or other devices which will not damage the

surfaces in any manner. It shall be ensured that welding operations do not result in distortions.

7.4 Earthing shall be provided on the job using earthing clamps of similar material as the job. Earthing shall not be given through welding rotators.

7.5 Tack welds at the root joint, for maintaining joint alignment, shall be made only by qualified welders or welding operators and with filler metal equivalent to that used in the root pass. Tack welds shall be fused with the root pass weld, except that those which have cracked shall be removed. Peening is prohibited on the root and final passes of a weld. The required preheat shall be maintained prior to tack welding. Means shall be made available to measure preheat temperature.

7.6 No welding shall be carried out if there is any impingement in the weld area of rain, snow, excessive wind or if the weld area is wet.

7.7 Irrespective of the class of steel, root runs shall be made without interruption other than for changing the electrodes or to allow the welder or welding operator to reposition himself. Root runs made in the shop may afterwards be allowed to cool by taking suitable precautions to ensure slow cooling e.g. by wrapping in a dry asbestos blanket. Welds made at site shall not be allowed to cool until the thickness of weld metal deposited exceeds one third of the final weld thickness or 10 mm, whichever is greater.

7.8 When welding alloy steels, it is strongly recommended that interruption of welding be avoided. Where such interruption is unavoidable, either the preheat shall be maintained during the interruption or the joint shall be post heated or wrapped in dry asbestos blankets to ensure slow cooling. Before recommencing welding, preheat shall be applied again.

7.9 Welding-on bridge pieces and temporary attachments shall preferably be avoided. Where approved by the PURCHASER, these may be used. Material of these shall be compatible with material with which they are temporarily welded. All such pieces shall be removed after welding of joints and the weld area ground flush. These areas shall be subjected to MT and PT examination. These pieces shall be welded by qualified welders & welding operators and with electrodes compatible with the parent material. The preheating requirements of material shall be applied and maintained during the welding of attachments. These temporary attachments shall be removed by grinding, chipping, sawing or by arc or flame gouging. When arc or flame gouging is used, at least three (3) mm of metal shall be left around the surface which shall be removed by grinding. This metal shall not be removed by hammering or by use of force.

7.10 The arc shall be struck only on those parts of parent metal where weld metal is to be deposited. When inadvertent arc-strikes are made on the base metal surfaces outside the joint groove, the arc-strikes shall be removed by grinding and shall be examined by MT and PT procedures.

7.11 Oxides shall not be permitted to form during welding or heat treatment or both, on the internal surfaces which will not be subsequently cleaned. Inert gas purging is an acceptable method to prevent such oxidation. All joints in materials which contain more than 1¼ % chromium shall be purged to assure that less that 1% of oxygen is present on the joint underside before initiation of the welding. The purging operation shall be maintained for a minimum of two (2) passes.

7.12 Argon gas used in GTAW process for shielding and purging shall be at least 99.95% pure. Purging shall be carried out at a flow rate depending on diameter until at least five (5) times the volume between dams is displaced. In no case shall the initial purging period be less than 10 minutes. After initial purging, the flow of backing gas shall be reduced to a point where only a slight positive pressure prevails. Any dams used in purging shall be fully identified and removed after welding and accounted for in order to avoid leaving them in the system. The rate of flow for shielding purposes shall be established in the procedure qualification.

7.13 Thorough check shall be exercised to maintain the required inter-pass temperature.

7.14 All equipment necessary to carry out the welding, for supporting the work, for preheating and PWHT including thermal insulation for retaining the heat and for the protection of the welder & welding operator shall be provided by the VENDOR/CONTRACTOR at no extra cost. All necessary precautions shall be taken during cutting and welding operations. It shall be ensured that proper ventilation is available in the welding area and adequate protective gear such as goggles, masks, gloves, protection for the ears and body are used at all times. For guidelines refer ASME standard Z49.1, “Safety in Welding and Cutting”.

7.15 After deposition, each layer of weld metal shall be cleaned with a wire brush to remove all slag, scale and defects, to prepare for the proper deposition of the next layer. The material of wire brush shall be compatible with parent material. Special care shall be taken to secure complete and thorough penetration of the fusion zone into the bottom of the weld. It is recommended that the root run be checked by MT or PT procedures for critical equipment.

7.16 If specified, upon completion of welding, the joints shall be wrapped in dry asbestos blankets to ensure slow cooling, unless PWHT is applied immediately.

7.17 No welding or welded parts shall be painted, plated, galvanised or heat treated until inspected and approved by the PURCHASER. Welds shall be prepared and ground in such a way that the weld surfaces merge smoothly into the base metal surface, particularly for welds which are to undergo NDE.

7.18 Except where necessary to grind flush for NDE, reinforcement for butt welds may be provided. The height of such reinforcement shall meet the requirements of the code. The reinforcement shall be crowned at the centre and tapered on each side of the joined members. The exposed surface of the weld shall be ground where required to present a workmanlike appearance and shall be free from depressions below the surface of the joined members. The exposed surface of

the butt welds shall be free from undercuts, overlaps or abrupt ridges or valleys and shall merge smoothly into the surface at the weld toe.

7.19 Repair of weld metal defects shall meet the requirements of the code.

7.20 Any weld repair shall be subject to the approval of the PURCHASER.

7.21 In the event of several unsuccessful repair attempts or if the PURCHASER feels that a satisfactory repair is not feasible, the joint shall be completely remade.

7.22 It is preferable to use welding rectifier or DC generator for welding of ausenitic steels and while using low hydrogen electrodes.

7.23 **IDENTIFICATION OF WELDS**

Wherever code symbol stamps are required on carbon steel and ferritic alloy steel they shall be applied directly on to the member with low stress dotted design metal die stamps or to a small stainless-steel plate especially provided for such marks. These plates shall be lightly tack welded using electrodes, of diameter three (3) mm or less, of the type specified for the material. Before making the required tack weld, the material in the immediate surrounding area shall be preheated, as required, by electric means or propane or natural gas burners. Cooling shall take place under asbestos insulation in a draft-free area. Stress relieving of these welds is not required. Steel stamping directly on the surface of alloy steel with other than low stress die stamps shall not be used.

7.24 **SEAL WELDS**

7.24.1 Seal welding shall be carried out by qualified welders & welding operators and in accordance with approved drawings.

7.24.2 Threaded joints that are to be seal welded shall be made without the use of thread lubricating compound. Seal weld shall cover all exposed threads.

7.25 **WELD ENCROACHMENT AND MINIMUM DISTANCE BETWEEN WELDS**

7.25.1 Welded joints, more specifically longitudinal welds, shall be placed not closer than 50 mm to opening or branch welds, reinforcements, attachment devices or from supports etc. In case of deviation, the PURCHASER may specify additional NDE.

7.25.2 The longitudinal welds of two adjacent components shall be staggered by at least 30°. The minimum distance between welds shall be 50 mm or eight (8) times the wall thickness, whichever is greater. Intersection of welds shall be avoided as far as possible. If such welds are present, they shall be subject to suitable NDE at the discretion of the PURCHASER.

8.0 **PREHEATING**

8.1 Preheating prior to tack welding, welding and thermal cutting shall be used as a means of crack prevention and improving weld reliability. The general requirements of PWHT also apply to preheating.

8.2 Preheating shall be used as per the recommendations of ASME BPV Code Section VIII Division 1. For equipment under the purview of IBR, the requirement of IBR shall govern, Table 2 gives the requirements of preheating for commonly used materials.

8.3 The preheating zone shall extend to 75 mm or a distance equal to four (4) times the material thickness, whichever is greater, beyond the edges of the weld.

8.4 The preheat temperature shall be measured at least 75 mm away from the weld preparation.

8.5 Where preheating is specified, welding shall continue without interruption. In case interruption cannot be avoided, preheating shall be carried out before re-commencement of welding.

8.6 Oxy-acetylene preheating shall not be applied.

8.7 For preheating, fuel gas/air torches, burner systems (high velocity gas or oil burners) or electrical heating may be used either locally or in a furnace. For preheating above 250°C, electric heating (resistance or inductive heating) is recommended.

8.8 Approved temperature – indicating crayons, thermocouples or digital contact or laser pyrometers shall be used to measure preheat and inter-pass temperatures. A calibration report of the pyrometers and thermocouples shall be available.

8.9 When the preheat temperature is 150°C or higher, the metal shall be maintained at or above the preheat temperature until the weld is completed.

8.10 The welding of groove welds in low alloy steels of P-3 to P-5 groups with wall thickness of 19 mm or greater may only be interrupted, provided at least 10 mm of weld metal is deposited, or 25% of the welding groove is filled, whichever is greater. If the welding is interrupted prior to the above, the weld area shall be adequately covered with insulating material to ensure slow cooling. After cooling and before welding is resumed, visual examination of the weld shall be performed to assure that no cracks are formed. Required preheat shall be applied before welding is resumed.

9.0 <u>POSTWELD HEAT TREATMENT (PWHT)</u>

PWHT shall meet the requirement of ASME BPV code Section VIII Division 1. Table 3 summaries the PWTH requirement for commonly used materials. For equipment under the purview of IBR, PWHT shall be as per IBR.

9.1 <u>GENERAL REQUIREMENTS</u>

9.1.1 A complete automatic temperature recording shall be made of preheating and stress relieving operations. Where propane gas burners or electrical resistance coils are employed, a complete temperature record of the preheating and stress relieving operation shall be made by means of a box type potentiometer. Other means of recording temperatures are permissible, subject to the PURCHASER'S approval.

9.1.2 Stress relieving may be local or full furnace. Local stress relieving shall be performed with electric induction or electric resistance coils. Suitable gas burning equipment using natural gas or propane may be employed.

9.1.3 At no time during a stress relieving/preheating cycle, shall any water or liquid cooling medium be employed.

9.1.4 Where members being joined are unequal in thickness, the dimension of the heavier section shall govern the selection of width of the heated band and the duration of holding period shall be based on maximum weld thickness.

9.1.5 For local stress relief, using electrical methods, a minimum of two (2) thermocouples tack-welded to the surface and potentiometers shall be used on the part under at least four (4) layers of asbestos paper. The hot junctions of the thermocouples shall be located on either side of the joint at least 12 mm from the edge of the joint but no farther away than 100 mm. When employing induction heating, at least six (6) turns of induction cable shall be used on each side of the weld. Induction coils shall be wrapped on top of the asbestos paper protecting the thermocouples with the first turn approximately 150 mm from the centre of the weld.

9.1.6 Local stress relieving, using gas torches or ring burners may be employed. However, the procedure shall be limited to small items and shall be approved by the PURCHASER.

9.1.7 The stress relieving temperature shall be maintained for a period of time proportioned on the basis of one (1) hour per 25 mm of weld thickness at the joint, but in no case less than one (1) hour.

9.1.8 For piping joints and socket welded joints, pads, bosses, branch welds and couplings, one (1) thermocouple shall be positioned at a minimum distance of two (2) pipe wall thickness from the weld.

9.1.9 Equipment on both sides of any joint shall be adequately supported throughout the preheating, welding and stress relieving operations to prevent distortion.

9.1.10 All heating and cooling rates shall be maintained as per ASME BVP Code and time-temperature charts from the recorder shall be made available for review and acceptance.

9.1.11 The VENDOR/CONTRACTOR shall submit a detailed written procedure for the PWHT for approval of the PURCHASER.

9.2 CARBON STEEL

9.2.1 Welded joints in carbon steel shall be stress relieved, upon completion of the welding operation, in accordance with Table 3.

9.2.2 When local stress relief is employed, the welded joint shall be heated to a temperature of not less than 600°C. The temperature level shall be maintained between 600 and 650°C, one (1) hour per 25 mm of weld thickness but in no case less than one (1) hour. The weld area shall then be allowed to cool undisturbed in still air to a temperature not exceeding 315°C.

9.2.3 Heating and Cooling

Carbon steels, after having reached their specific stress relief temperatures, may be cooled in the furnace or under wraps, i.e., leaving the induction coils or resistance heaters and insulation in place. This means that, at the stress relief temperatures, power to the furnace or heating coils may be shut off and cooling takes place in the furnace or with all insulation and coils remaining on the part. For furnace stress relief, the doors of the furnace may be opened after the power is shut off, at or below 315°C. Thermocouples controlling the temperature shall remain during the cooling cycle so that excessive cooling, if it occurs, can be observed and immediately corrected. The stress relieving coils and insulation shall only be removed after the part has cooled to below 315°C or if stress relieved in a furnace the part may be removed from the furnace and permitted to cool in still air at a temperature not below 10°C.

9.3 ALLOY STEEL

9.3.1 Welds in alloy steel shall be stress relieved after the welding operation in accordance with Table 3.

9.3.2 For full furnace stress relief of a welded assembly, the entire fabricated section shall be heated uniformly to the temperature specified. The temperature shall be maintained for a period of time proportioned on the basis of one (1) hour per 25 mm of weld thickness of the piece having the greatest weld thickness in the furnace charge, but in no case, less than one (1) hour.

10.0 ELETRODES

10.1 The specification and size of the electrodes, voltages and amperages, thickness of beads and number of passes shall be as specified in the approved welding procedure or otherwise agreed in writing. Only basic coated electrodes shall be used, which will deposit weld metal having the same or higher physical properties and similar chemical composition to the members being joined. For each batch of approved brand, certificate showing compliance with the specification shall be submitted to the PURCHASER for review before being released for use. All electrodes shall be purchased in sealed containers and stored properly to prevent deterioration. As welding electrodes deteriorate under adverse conditions of storage leading to dampness in the electrode coating, they shall normally be stored in dehumidified air-conditioned rooms or in hot boxes or

ovens in their original sealed containers whose temperature shall be maintained within specified limits. The conditions of electrodes shall be frequently inspected. Electrodes with damage to coating shall not be used. Electrodes shall remain identified until consumed. It is preferable to produce low hydrogen electrodes in hermetically sealed containers and preserve them without damage to the containers.

10.2 All low hydrogen electrodes, after baking as per the manufacturer's recommendations, shall be stored in ovens kept at 80 to 100°C before being used. Recommendations of the electrode manufacturer shall be strictly followed. Until the electrodes are taken out for welding, they shall be stored in portable ovens. The electrodes shall not be exposed to open atmosphere.

10.3 For welding of all grades of steel and alloys by the GTAW process, a 2% thoriated tungsten electrode conforming to SFA-5.12-86 EWTh-2(AWS-A5.12-80, EWTh-2) classification shall be used.

10.4 All electrodes to be used on alloy and carbon steel shall conform to ASME BPV Code Section II part C or any other equivalent code.

10.5 The type of electrodes used shall be only those recommended by the manufacturer for the use in the position in which the welds are to be made.

10.6 Current and polarity shall be maintained as recommended by the electrode manufacturer.

11.0 INSPECTION AND TESTING

11.1 The PURCHASER shall have free access to inspect welding or any other related operations at any time and at any stage of fabrication.

11.2 The PURCHASER may require NDE of any weld for reasons other than those given in the specification. The responsibility for the cost of such testing shall lie with the VENDOR/CONTRACTOR.

11.3 The VENDOR/CONTRACTOR shall inform the PURCHASER when the weld preparation and set-up for welding of various members selected by the PURCHASER are in progress so that the PURCHASER can inspect the assembly before welding starts.

11.4 The responsibilities of the PURCHASER's representative shall in no way reduce the VENDOR/CONTRACTOR's responsibilities to ensure that the work is carried out in accordance with the specification.

11.5 Any examination by NDE methods shall be performed before or after PWHT based on the applicable code requirements.

11.6 For a welded branch connection and for any weld, necessary repairs and NDE shall be completed before any reinforcing pad is added.

12.0 EXAMINATION OF WELDS

12.1 Examination refers to the quality control functions performed by the VENDOR/CONTRACTOR during fabrication, erection and testing.

12.2 As a minimum, the following shall be examined by visual examination:

(a) Materials and components to ensure that these are as per the specification and are free from defects. If defects are noticed on “free-issue” items, these shall be brought to the notice of the PURCHASER without delay.

(b) Joint preparation and cleanliness

(c) Fit-up, joint clearance and internal alignment prior to joining

(d) Preheating as applicable

(e) Variables specified by the welding procedure, including filler material, position and electrode

(f) Condition of the root pass after cleaning- external and where accessible, internal

(g) Slag removal and weld condition between passes

(h) Appearance of the finished joint and weld dimensions

13.0 QUALIFICATION AND CERTIFICATION OF NDE PERSONNEL

13.1 Approved and documented NDE procedure prepared by level III personnel shall be made available.

13.2 The VENDOR’s/CONTRACTOR’s examining personnel shall have training and experience commensurate with the needs of the specified examinations. NDE supervisors/examiners shall be qualified at level II or above of ASME BPV Code Section V.

13.3 The VENDOR/CONTRACTOR shall make available to the purchaser copies of certificates of qualification of the examiners he proposes to use for the PURCHASER’s approval.

14.0 METHODS OF EXAMINATION

The methods of examination used, viz. Ultrasonic (UT), Radiographic (RT), MT and PT shall be in accordance with ASME BPV Code Section V.

15.0 ACCEPTANCE STANDARDS

15.1 Levels of acceptance of defects in welds shall be in accordance with ASME BPV Code Section VIII Division 1.

15.2 For equipment under the purview of IBR, the levels of acceptable defects shall be as per IBR.

16.0 REPAIR WELDING

16.1 All defects in welds requiring repair shall be removed by flame or arc gouging, grinding, chipping or machining. The major repairs may involve:

(a) Cutting through the weld

(b) Cutting out a portion of material containing the weld, or

(c) Removing the weld metal down to the root depending upon the magnitude of the defects.

16.2 After removing the defect, the repaired portion and adjacent area shall be examined by the same NDE methods as specified for the original weld and the same acceptance criteria shall hold good.

16.3 All the repair welds shall be made using the same or other specified welding procedures as those used in making the original welds including preheating and stress relieving if originally required.

TABLE 1

WELDING SPECIFICATION CHART FOR COMMONLY USED MATERIALS

SL. NO.	BASE MATERIAL	P NO	WELDING PROCESS		FILLER MATERIAL		NOTES
			ROOT	FILLER	ROOT	FILLER	
1.0	CARBON STEELS	1	GTAW	GTAW	ER 70S2 OR ER 70S3	ER 70S2 OR ER 70S3	
1.1	< 5 mm THICK						
1.2	>5mm AND < 19mm THICK	1	GTAW OR SMAW	SMAW OR SAW	ER 70S2 OR ER 70S3 OR E 6010	E6013 F6—EL8 OR F7—EL12	
1.3	> 19 mm THK	1	GTAW OR SMAW	SMAW OR SAW	ER 70S2 OR ER 70S3 OR E 6010	E 7018 F7—EL12	1
2.0	LOW ALLOY STEELS	4	GTAW	GTAW	ER 80S B2	ER 80S B2	
2.1	1¼%Cr ½% MO < 5mm THICK						
2.2	1¼%Cr 1% MO > 5mm THICK	4	GTAW	SMAW	ER 80S B2	ER 8016 OR E8018-B2	

2.3	2¼%Cr 1% MO < 5mm THICK	5	GTAW	GTAW	ER 90S B3	ER 90S B3	2 TO 7
2.4	1¼%Cr 1% MO > 5mm THICK	5	GTAW	SMAW	ER 90S B3	E9015 OR E9016 OR E9018-B3	2 TO 7

NOTES

1. Low hydrogen electrodes shall be used for critical systems such as chlorine, hydrogen, caustic and similar toxic inflammable fluids and also when ever the wall thickness exceeds 19mm.
2. The argon shielding gas flow rate shall not be less than 0.34 M^3/Hr.
3. For purging and shielding argon gas shall be used. However, nitrogen may be used as an alternative to argon for purging purpose only. In case of stainless steel, nitrogen may be used where corrosion resistance is not critical.
4. For fillet welds, SMAW may be used instead of GTAW for thickness above 5 mm.
5. For GTAW, electrode shall be 2% thoriated tungsten.
6. Initial purging prior to welding process shall be a minimum of five (5) times the volume between dams or ten minutes minimum whichever is higher. Where welding commences, the purge gas flow shall ensure that the gas pressure is only marginally higher than atmospheric pressure to ensure no root concavity.
7. Back purging using argon/nitrogen shall be maintained for the root run and a minimum of one (1) additional pass.
8. Electrodes and filler wires manufactured by reputed firms duly approved by the PURCHASER shall only be used.
9. Electrodes shall have at least the same or higher physical properties and similar chemical composition to the members being joined.
10. Read the table in conjunction with para 3.0

TABLE-2

PREHEAT REQIREMENTS

SL NO.	BASE MATERIAL	P.NO	NOMINAL WALL THICKNESS, Mm	SPECIFIED MINIMUM TENSILE STRENGTH, mPa	RECOMMENDED MINIMUM PREHEAT TEMPERATURE, °C
1.	CARBON STEEL	1	<25	490	10
2.	CARBON STEEL	1	>25	490	100

3.	LOW ALLOY STEEL-1¼%Cr ½%M0	4	ALL	ALL	149
4.	LOW ALLOY STEEL-2¼%Cr 1%M0	5	ALL	ALL	210

TABLE-3

POSTWELD HEAT TREATMENT REQUIREMENTS

(FOR COMMONLY USED STEEL MATERIALS)

SL. NO.	BASE MATERIAL	P.NO.	NOMIANL WALL THICKNESS mm	METAL TEMPREATURE RANGE °C
1.	CARBON STEEL	1	<32	NONE
2.	CARBON STEEL	1	>32	600 TO 650
3.	LOW ALLOY STEEL 1¼%Cr ½%M0	4 GR 1 AND 2	ALL	600 TO 650
4.	LOW ALLOY STEEL 2¼%Cr 1%M0	5A GR 1	ALL	680 TO 700

NOTES

1. In IBR systems, in carbon steels, PWHT is also required, when the carbon percentage exceeds 0.25% at the temperature range of 600+/- 20°C.
2. For all low alloy steel welds under the purview of IBR, the PWHT shall be carried out at the temperature range of 620 to 660°C for 1 ¼% Cr ½% M0 steels and at a range of 660 to 750°C for 2 ¼% Cr 1% M0 steels.
3. Solution annealing shall be carried out after welding of austenitic stainless steel as per the applicable services.
4. For equipment in carbon steels or alloy steels and meant for lethal service, PWHT of all welds shall be carried out.

SCHEDULE OF PRICES (UN PRICED COPY) & 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 and erected shall be in accordance with section A, A1, B, C, D & E of this specification.
3. The estimated finished weight of the system in each category in price bid format is approximate only. In case there is any variation in the quantities of items actually supplied and installed from the quoted quantities, the price of the same shall be adjusted based on the unit rates furnished by the bidder. The such variation is limited to ± 15% of the order value. Offer shall be valid for ± 15% of the order value. However, payment will be made based on the final finished drawings weight only.
4. 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 on finished products, and GST which shall be separately indicated in the price bid.
5. Total price towards Third Party Inspection (to be borne by the supplier) shall be indicated separately in the price bid.
6. Transportation, handling & storage of the items at SLC site are under scope of the vendor only.
7. Split-up of the order is not acceptable and overall L1 will be considered for placing the order.

Schedule of Price

S. no.	Item	Unit	Qty.	Unit Cost (in Rs)	Total Cost (in Rs.)
1	Fabrication, control assembly and supply of fabricated structural steel / Mild steel conforming to IS:2062 & IS:808 items **without machining** (Items are coming under above category are platform leaf structures, box sections, stiffeners, side covers and hand rails etc.) as per specification enclosed with this tender but excluding taxes and duties.	tonne	140		
2	Fabrication, stress relieving, machining, control assembly and supply of fabricated structural steel / Mild steel conforming to IS: 2062 & IS: 808 items **with machining** (items like Hinge brackets, Stopers, pulley mounting brackets, bearing retainer, lock plates, bearing housings, base frames, Drum mounting brackets, base & striker for limit switch for etc.) as per specification enclosed with this tender but excluding taxes and duties.	tonne	28		
3	Fabrication / machining, heat treatment, control assembly and supply of forged steel / alloy steel/ cast steel like 45C8, 40C8, 20C8, 40NiCr4Mo3, 40Cr4Mo3, (items like axles, rope drum, shafts, pulleys, hinge pins for hinges couplers, spacers with special steel, through bolts, fasteners etc.) as per specification enclosed with	tonne	45		

	this tender but excluding taxes and duties				
4	Sub-assembly, Control assembly, and supply of all the bought-out items (for vehicle side platforms: 16 nos. of electric motors, complete electrical system like LCP, MCC panels, cables, glands, other electrical miscellaneous, 16 nos. of Double reduction worm gear boxes ,16 nos of thruster brakes, 32 nos. of limit switches, 32 nos. full gear couplings. For AUT side platforms: 16 nos. of Manual winch drive and handing over of start-up spares as mentioned in 21.0 in Section B etc.) Mentioned in the specification. Note: The total list of bought out items are listed in Annexure E9.	Lot	1		
5	Erection and commissioning of 8 sets of vehicle side platforms and 8 sets of AUT side platforms including storage / handling at site, erection, testing, commissioning and carrying out performance test of platforms as per specification enclosed with this tender but excluding taxes and duties.	Lot	1		
6	Third party Inspection charges for all the Platforms	Lot	1		
7	Cost of complete start up spares as mentioned in Section-B, Clause 21	Lot	1		
8	Total Cost: (1+2+3+4+5+6+7)				
9	GST@5% on total cost				
	Total cost including GST (8+9)				

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.**

SIGNATURE: _____

NAME: _____

DESIGNATION: _____

DATE _____

SEAL OF THE COMPANY

BID QUALIFICATION CRITERIA FOR SUPPLY OF FOLDING PLATFORMS FOR SAF

Bidders who are qualifying / meeting following Technical and financial criteria are eligible to participate in the bid for supply of Folding Platforms for SAF. 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 5 years of experience in having executed contracts for manufacture, supply, erection, testing and commissioning of heavy structural works using structural built-up sections.
2. The firm shall have successfully completed Manufacture, Installation, Testing and Commissioning of at least 1 no heavy structural work of total 165t in single work order or at least 2 nos. heavy structural work of each 100t , during last 10 (ten) years ending with 31.03.2025. Bidders have to provide relevant certificates, PO copy, Completion certificates along with the submission of bid for consideration of bid document.
3. The firm should have experience in erection and commissioning of structural items at elevated heights. The firm should have erected and commissioned structural items of minimum weight 6t at a minimum height of 25 m in the last 10 years ending with 31.03.2025. Bidders have to provide relevant certificates PO copy, Completion certificates along with the submission of bid for consideration of bid document.
4. The firm shall have facilities for fabrication and handling big structural items of 6 m long and 3 m wide for fitment, alignment, welding etc.
5. The firm should have successfully completed manufacture, and establishment of high Structures to the satisfaction of reputed third-party inspection agencies like M/s MECON, M/s M N Dastur, M/s TCE and M/s Lloyds.
6. **The firm should not have any pending purchase orders from government organization/PSU which are delayed more than 18 months from the original delivery period due to reasons attributed to the party.**

B. Financial Qualification Requirements:

1. The Bidder should have annual turnover of not less than a value of Rs. 4 cr. per year in last three financial years ending with 31.03.2024.
2. The firm should have undertaken and successfully completed single work of heavy fabrication works not less than: Rs.4 cr. value of works or 2 nos. works of heavy fabrication works not less than: Rs. 2.5 cr. value during last 10 (Ten) years.
3. Bidder shall submit audited statement of financial status for last three years.

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 three years ending with 31.03.2025
3. Satisfactory work Completion certificates from the clients, with the work order copies
4. Performance Report (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. IT / TDS certificates for last three years.
8. Solvency certificates from a scheduled bank for a value not less than Rs. 1 Cr and not more than 6 months from the date of tender closing.
9. List of heavy fabrication works (for capacity 100 t and above) completed from last ten (10) years with purchase order copies.
10. List of value, and work order copies of total projects under Execution with purchase order name and address.
11. Structure and Organization chart.
12. List of personnel with qualification &. experience in the firm in the areas of design, production, quality, safety, administration etc.,
13. List of Machinery & Equipment to be used for the work.

D. 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.

SIGNATURE: _____

NAME _____

DESIGNATION _____

DATE: _____

SEAL OF THE COMPANY

SCHEDULE OF GENERAL PARTICULARS / VENDOR EVALUATION FORMAT

S.n	Description	:	
1	Name of Company		
2	Address of Company	:	
3	Type of Company Proprietary/Pvt.Ltd/Public Ltd/Joint Venture)		
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.		
9	Telephone number E-mail address		
10	Locations of the Branches of Company (if any)		
11	Annual turn-over of the company for the last three years		
12	IT returns for the last 3 years		
13	Major customers (Enclose copies of the Purchase Orders)		
14	Any customers feedback on the services which is in writing (Pl. enclose copies)		
15	Quality certification of the company		
16	PAN Card Copy		
17	The Profit & Loss Account details for the last 3 years which is duly audited and submitted as part of the Annual Report		
18	Orders executed during last three years, > 100 T or >Rs. 2.5 crores, references are to be mentioned. (Separate sheet can be attached).		
19	Shop floor area covered		
20	No. of employees (Supplier shall mention contract personnel separately) Engineers Supervisors Technicians Quality control engineers Administrative Staff.		
21	Handling facility available: Overhead / Gantry Crane details (Capacity, span lift). Mobile Cranes.		
22	Welding / fabrication workshop (Type / capacity / quantity of machines shall be provided) MMAW machines GMAW machines Gas cutting machines Plasma cutting machines Welding Fixtures		
23	No. of Welders (MMAW), Qualification details,		

	No. of Welders (GMAW), Qualification details, No. of Welders (TIG), Qualification details, Welders Qualified by:		
24	Details of welding Inspection Equipment & Welding inspector available with supplier (LPT, UT, MPT, Xray,etc)		
25	Forming facilities available (with brief specification of each machine Shearing Machine Cutting Machine Cutting Machine Bending Machine		
26	Machining Facilities available (with brief specification of each machine) Turning lathe (Conventional /CNC) Milling Machine (Conventional / CNC) Gear Cutting / Hobbing Machines Drilling Machines (conventional / CNC) Cylindrical Grinding Machine (Conventional / CNC) Any other machines		
27	Details of inspection facilities / Instruments available (Brief description & specifications shall be provided)		
28	If third party Inspection Services are taken for fabricating similar works give details.		
29	Design Software's available Drafting & modelling software packages FEM software Other softwares Design Engineers (with qualification & experience)		
30	Bid validity period (Min. 120 days from the date if technical bid opening)		

SIGNATURE :

NAME :

SEAL OF THE COMPANY DESIGNATION :

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ISSUE P0

EXCEPTIONS AND DEVIATIONS

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

Sl.no	Reference in Specification	Dept. Specification	Offered specification	Deviation

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: _____

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DATE _____

SEAL OF THE COMPANY

SCHEDULE OF TIME FOR MANUFACTURE, DESPATCH AND SHIPMENT TO SITE

Equipment	Time for manufacture from date of LOI / PO excluding control assembly	Time for packing and ready for despatch from Works	Time for shipment to site	Deviation	Total time from date of LOI / PO to shipment to site.

The Bidder hereby undertakes to meet the above time schedule from the date of LOI / PO

SIGNATURE: _____

NAME: _____

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DATE _____

SEAL OF THE COMPANY

SCHEDULE OF BIDDERS EXPERIENCE

The bidder shall furnish here under a list of STRUCTURAL 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: _____

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SEAL OF THE COMPAN

DATA TO BE FILLED ALONG WITH THE BID FOR SUPPLY & COMMISSIONING OF PLATFORMS

SR. NO.	DESCRIPTION	TENDERS OFFER
1.0	Confirm that the system shall be realised as per technical specification, approved manufacturing drawings, bill of material to meet the functional requirement.	Yes / No
2.0	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
3.0	Confirm that all the bought-out items are to be procured as per the specification from the approved parties	Yes / No
4.0	Confirm that all the bought-out items are to be inspected at the inspected by TPIA / Departmental representative at Vendors shop before reaching to manufacturer's shop	Yes / No
5.0	Confirm that fabrication of all items shall be done as per IS: 800 & tolerance in fabrication shall be maintained as specified in relevant drawings.	Yes / No
6.0	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
7.0	Confirm that all the drive components like motor, gear box, couplings, brake, rope drum shall be assembled in machined base frame & no-load test of drive mechanism shall be carried out at shop.	Yes / No
8.0	Confirm that all the items shall be painted asper painting scheme.	Yes / No
9.0	Erection sequence shall be submitted along with offer.	Yes / No
10.0	Manufacturing schedule & Erection schedule shall be submitted along with offer.	Yes / No
11.0	Resources planning shall be submitted along with offer	Yes / No
12.0	Man power planning for erection shall be submitted along	Yes / No
13.0	Confirm that survey of all civil inserts will be carried out with own equipment's & man power and based on survey reports, all subassemblies shall be erected & aligned and hinge brackets and hinge pins with platform structure. Also confirm that necessary packing plates will be supplied if required during erection.	Yes / No
14.0	Grouting of all drive assemblies will be carried out	Yes / No
15.0	Confirm that all the through bolts required for erection of subassemblies will be supplied.	Yes / No
16.0	Confirm that testing and commissioning of the total system shall be carried out as per specification.	Yes / No
17.0	Confirm that QAP for fabricated items machined items, Subassemblies and for total platform in assembled condition shall be submitted for approval.	Yes / No
18.0	Confirm that during execution of works, If required addition / deletion of the works will be carried out and such variation is limited to ± 15% of the total order quantity. The unit rates quoted shall be valid for the quantity variation of ± 15%. In the case of works going beyond ± 15%, the same would be settled at the unit rates as agreed upon mutual agreement basis, between SDSC SHAR and supplier.	Yes / No
19.	The rates quoted for the erection, bought out items and Third-party inspection is fixed and shall be valid even for a quantity variation of ± 15%.	Yes / No

SIGNATURE: _____

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DATE _____

SEAL OF THE COMPANY

ISSUE P0

CHECK LIST

S.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, A1, B, C, D & Annexure E1 to E10and commercial details as called for in schedule of prices are 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
8	Delivery Schedule with milestones	Yes / No
9	Acceptance of departmental payment terms & conditions as per para no.21 of Section A1	Yes / No
10	Are General terms and Conditions of Contract for Supply & Erection included in proposal acceptable?	Yes / No
11	If not acceptable, are the deviations brought out in the "Schedule of Deviations"	Yes / No
12	Are there any deviations from enquiry technical specifications?	Yes / No
13	If there are technical deviations, are these filled in "Schedule of Deviations from Tech. Specifications"?	Yes / No
14	Warranty for the fully commissioned and accepted system is 12 months	Yes / No
15	PBG of 3% as per clause 13.1 of Section-A1	Yes / No
16	SD of 3% as per clause 13.2 of Section-A1	Yes / No
17	Combined BG for SD & PBG for 3% as per clause 13.3 of Section-A1	Yes / No
18	Liquidated Damages as specified in the specification document are acceptable	Yes / No
19	Last three years audited financial results are enclosed	Yes / No
20	Registration certificate of the company is enclosed	Yes / No
21	All the forms in Section E1 to E10 are filled	Yes / No
23	Section E1 & E10 unpriced copy enclosed along with technical-unpriced bid.	Yes / No
24	Section Priced Bid Format (E1) filled in E-procurement portal Price Bid form only.	Yes / No
25	Signed copy of the complete RFP document.	Yes / No
26	The firm should not have any pending purchase orders from government organization/PSU which are delayed more than 18 months from the original delivery period.	Yes / No

SIGNATURE: _____

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DESIGNATION: _____

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SEAL OF THE COMPANY

SPECIFICATION OF ELECTRICAL ITEMS FOR VEHICLE SIDE FOLDING PLATFORM

ISSUE P0

Sl. No.	Technical Specifications		Compliance
1.1.	Electrical motors and brakes shall be equipped with flame proof electrical systems suitable for operating in hazardous area classified as Zone 1, Gas group IIA/IIB, T4 temperature classification as per IS/IEC:60079, IS:5571, IS:5572, IS:2148, IS:5780, IS:8239 and other relevant IS standards		
1.2.	Electrical equipment environment	All Electrical equipments shall be supplied for tropical and humid climate (Temperature of 50°C & RH not less than 95%) . De-rating of drive motors, power cables etc., shall be done for ambient temperature of 50°C.	
		Flame proof electrical fittings and controls shall be selected, assembled and tested as per relevant Indian/ IEC standards.	
	The Electrical equipment shall conform to the latest Indian electricity rules and regulations as regards safety requirements, earthing and other essential provisions specified therein.		
1.3.	Voltage		
a)	Power supply to panels	3 Ph, 4 Wire, 415 V AC ± 10%, 50 Hz ± 3%.	
b)	Control Voltage inside the Electrical Panel:	1 Ph, 2 Wire, 230 V AC for all contactors, relay, indication lamps, etc. 1 Ph, 3 Wire, 230 V AC for all lights, power sockets, etc.	
c)	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 only.	
1.4.	**Electric Motor**		
a)	Should accept the input from DOL starter, Intermediate Duty (inching operations), Class ‘F’ insulation limited to class 'B', 60% CDF, min of with 300 starts per hours, IP55, or as approved by department and suitable for hazardous area mentioned above.		
b)	Terminal blocks of all motors	1. Preferably on top of the motor	
		2. Wherever it is on the side of the motor, a minimum clearance of 600 mm (without affecting hook approaches) to be maintained to approach for maintenance.	
c)	Bearing	1. Type: ‘ZZ’ bearing.	
		2. Suitable lubrication provision to be provided.	
d)	Current drawn by the Motors	Maximum Current drawn by all motors (rating more than 2 hp) with SWL should not exceed 80 % of the full load rated current even at slower speeds.	
e)	Over load capability	150% of full load current for 2 minutes without damage or permanent deformation	

Sl. No.	Technical Specifications		Compliance
		from zero to base speed.	
1.5.	**Brakes Control**	All the brakes need to be powered with suitable rated Motor Protection Circuit Breaker (MPCB)	
1.6.	**Limit Switches**	1. Lever Limit switch: Should control the folding movement and unfolding movement of the platform. (Qty: 4 Nos. per platform to be planned – 2 Nos. for each direction)	
		2. Individual limit status need to be wired individually and it shall not be looped in series till intrinsic safe isolator point at control panel.	
1.7.	**Junction Boxes**		
a)	Non-Flame Proof Junction Boxes	1. Non-FLP junction boxes need to be planned for inter facing of all the equipment which are powered **through intrinsic safe** supply (i.e., pendant control, limit switches, etc)	
		2. The probable locations of the JB is on the HSD	
1.8.	**Push Button Stations**	**Push Button Station (PBS): For individual Platform**	
		1. Shall be provided with Key way switch Lockable at OFF, Mush room head Emergency OFF.	
		2. Push button for control On and Off	
		3. Control ON/OFF indication lamp powered through Intrinsic Safe circuit.	
		4. Shall be provided with push buttons for controlling upwards and downward operation.	
		5. Minimum 50 % Spare Core shall be provided in PBS with respect to the used cores.	
		6. All push buttons are to be powered through intrinsic safe module only apart from other control elements like limit switch, etc.,	
		7. It has to be located near to the Platform for ease of operation.	
		Connection to pendent:	
		1. The pendant control cables are to be routed properly in suitable cable trays along the building structure.	
		2. Junction box to be positioned nearby Platform. From this junction, all the field elements like limit switches, push buttons, etc to be connected.	

Sl. No.	Technical Specifications		Compliance
1.9.	**Cables**	All the cables need to laid and end-terminated as per the site requirement.	
		Following cables are mentioned for one no. of Platform panel. The same to be followed for all the floors Platforms.	
a)	Power Cables	The following area cables need to be supplied, laid and end terminated:	
		1. All the power cables shall be of 5 core 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. From power supply source (Electrical Panel of HSD in Electrical room) at SLC Complex to Platform Panel Incomer. Refer Drawings.	
		5. From Platform panel to all the other local control panels, field equipments like motor, brakes, etc.	
		6. Power cables towards the motors and brake are to be selected as follows:	
		a. Selected / approved motor electrical kW and rated current to be selected for the voltage drop calculation.	
		b. Maximum 3% of Voltage drop only will be accepted in the selected cables with respect to the incoming voltage levels.	
		c. All the cable selection chart along with Voltage drop calculation to be submitted for review and clearance.	
b)	Control Cables	The following area cables need to be supplied:	
		1. All the control cables shall be minimum of 12 core which are running between local control panel to junction box.	
		2. All the control cables shall be minimum of 4 core from Platform Main panel to all the EMG. OFF push button, field equipment like limit switches, local control panel, etc.	
		3. Separate control core to be considered for extending control supply to the local control panel from Main panel. Main supply towards local control panel not to be used for the control supply.	
		4. Out of used cores, 30% of core shall be kept as spare with respect to each size of the cables from Local control panel to field junction boxes.	

Sl. No.	Technical Specifications		Compliance
c)	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.	
d)	Inside the panel	The following cable management to the planned:	
		1. Power circuit – Minimum size: 4 Sq.mm	
		2. Control circuit – Minimum size: 1.5 Sq.mm	
		3. Signal wire (for Control Unit and Encoder module) - Maximum size: 0.5 Sq.mm	
		4. Colour coding should be followed as:	
		a. 240 V AC Phase – Grey with RED sleeve.	
		b. 240 V AC Neutral– Grey with BLACK sleeve.	
		c. 415 V AC – Black with RED, YELLOW, BLUE and / BLACK.	
		d. 8.9 V DC – Orange.	
		e. Earth cable – Green & Yellow.	
		5. All the limit switch terminals (Upward and downward) need to be wired up to the terminal block of the field Junction box.	
		6. Interconnecting / looping of above terminals need to be carried out in the Local control panel intrinsic safe module terminals only.	
		7. Interconnecting of above terminals in the equipment's and bringing the common terminals to the Local control panel is not acceptable.	
e)	Earthing	The following area cables/strips need to be supplied:	
		1. Earth strip (min. 25 x 6 mm) need to be supplied from Main Platform panel to individual floor level.	
		2. Platform structure at both the sides of the platform needs to be earthed.	
		3. All the equipment including the mechanical structure needs to be grounded effectively with double earthing.	
		4. Suitable bridge clamp need to be positioned near to the Platform for tapping of earth points.	

Sl. No.	Technical Specifications		Compliance
		5. Main Panel shall be provided with earthing provision at both the ends. Same shall be connected with plant earth by the supplier.	
1.10.	**MCCB**	1. Protective Panel - MCCB with adjustable overload, adjustable short circuit protection, adjustable ground fault and Instantaneous protection to be provided.	
		2. Protective Panel - MCCB handle (door operated) shall have an illumination kit for indicating ON / OFF / TRIP	
1.11.	**MCB**	1. Individual components control shall be planned by a dedicated MCB control.	
1.12.	**Cable Tray**	1. Perforated G.I. cable trays need to be planned for routing the cables from the Main Platform panel to individual Platform floor.	
		2. Necessary supports (like beam / angles, etc) for running the cable tray inside the trench (bottom of the panel), on the wall, structure, on the crane, etc need to be supplied.	
		3. Entire length of the cable trays need to be covered with G.I. sheet cover with bolts and nuts and all bolts and nuts shall be of G.I coated.	
		4. No cables are routed without cable trays and cover anywhere from panel room to top of the crane.	
		5. The cable trays are also to be earthed with respect to the common ground.	
		6. Aluminium strip shall not be used for earthing the cable tray. Only G.I strip alone shall be used.	
1.13.	**Panel**		
a)	Local Control Panel (LCP)		
1.	Individual floor where Platforms are positioned, this control panel to be considered. Positioning of this LCP is indicated in the drawing		
2.	Fuse less DOL starter to be considered in individual LCP for Motor and Brake independently.		
a.	Motor Protection Circuit Breaker (MPCB)	1. Rating shall be selected as per the type-2 co-ordination chart with respect to fuse-less feeder (motor and brake independently)	
		2. It shall have a overload and short circuit protection along with signalling switch contact.	

Sl. No.	Technical Specifications		Compliance
		3. It shall have lateral auxiliary switches with 4 contacts (Status and feedback).	
		4. 230 V shunt release with change over contact to be provided.	
		5. Shall be supplied with front operated rotary mechanism along with door-coupling rotary operating mechanism.	
b.	Indication Lamps	1. It shall be of cluster LED provided with translucent lamp covers	
		2. Cluster LED module shall be suitable for direct operation on 230 V, 50 Hz AC.	
		3. LCP shall have the ON, OFF, EMG-OFF, Trip for over load and Trip for Short circuit.	
		4. LCP shall have the 3-phase indication lamps in the door with 4-pole MCB which shall indicate the power supply.	
c.	Emergency Pushbutton	Shall be provided with key way switch Lockable at OFF, Mush room head Emergency OFF.	
3.	**Contactor**		
a)	Auxiliary Contactor	1. Shall be used as intermediate contactors to the power contactors.	
		2. Suitable surge suppressor need to be supplied along with auxiliary contactor.	
		3. It shall be utilized for contact multiplication instead of add-on NO, NC contacts for power and auxiliary contactor.	
b)	Power Contactors	1. Duty: AC-4	
		2. The contactors shall be able to withstand their rated current for one second without welding / fusing of the contacts	
		3. Individual Power Contactors are to be provided for each motion (motor and brake) for controlling.	
		4. All the power contactors need to be powered viz. auxiliary contactors with suitable rating along with surge suppressor.	
		5. Any multiplication of NO, NC points – auxiliary contactor need to utilize.	
		6. NO add-on blocks will be allowed for power contactors.	
		7. Separate Power contactor to be kept for Emergency off. This shall be considered for all the Platform feeders in the Main Platform Panel.	

Sl. No.	Technical Specifications		Compliance
		7. Power to the individual LCP to be enabled through the above power contactor (which is kept feeder wise inside the Main Platform panel).	
4.	**Intrinsic Safe Relay**	Input Relay:	
		1. All the field signals like push button, limit switches to be wired to this relay.	
		2. This relay shall be located in safe area (inside the local control panel) only. Make: M/s P&F	
		Output Relay:	
		1. These relays shall be used for powering indication lamps in the hazardous location.	
		2. This relay shall be located in safe area (inside the local control panel) only.	
b)	Main Electrical Panel		
a.	Individual panels shall be designed for effective utilization of inbuilt ventilation system. Preferred make of panel is M/s Rittal or President		
	Main Platform Panel (2 Nos.) – one per side of the facility, Control & Transformer– All the panels shall be maintained at same height and the proposal shall be submitted for Department Clearance before ordering the panel.		
b.	Emergency switch	1. Shall be provided with key way switch Lockable at OFF, Mushroom head Emergency OFF	
		2. Individual Platform feeder shall be provided with the same.	
		3. This switch shall control the power contactor of the feeder.	
		4. It shall be wired in series with the field Emergency pushbuttons (planned in LCP and Field push button)	
		5. When all these three (3) Emergency pushbuttons are in healthy condition, three (3) phase power supply to individual LCP to be ensured.	
c.	Painting	1. Paint shade – RAL 7032 / 7035.	
		2. Base frame – Matt black.	
		3. Mounting plate – Orange.	
d.	Indication Lamps	1. It shall be of cluster LED provided with translucent lamp covers	
		2. Cluster LED module shall be suitable for direct operation on 230 V, 50 Hz AC.	
		3. Panel shall have the 3-phase indication lamps in the metering cubicle controlled by 4-pole MCB.	

Sl. No.	Technical Specifications		Compliance
e.	Design & Construction	1. Enclosure – Indoor, Floor mounting, Front operated free standing	
		2. Frame, Mounting plates, Doors & Covers – 2.0 mm Thickness CRCA	
		3. Lifting arrangements - Suitable Lifting Arrangement shall be provided for each panel on the Top on all four sides	
		4. Base frame – ISMC 100 x 50 with Matt black	
		5. Degree of protection – IP 54.	
		6. Shrouding – As per standard (to be provided inside the panel, in front of power components and power terminals).	
		7. Cable entry (Suitable for site condition)	
		8. The panels to be provided with inbuilt ventilation system.	
		9. The panels need to be provided with panel lamps (LED) along with door limit switches.	
f.	Name Plate (Panel and field components)	1. Material – Transparent acrylic.	
		2. Colour of letter – white letter in black background.	
g.	Earth busbar	1. Size – Minimum 30 x 10 mm Copper with nuts, bolts & washers at each end is to be provided per panel	
		2. Necessary earth strip need to be supplied for the following	
		a. To link panel to individual Platform structure at the respective floor.	
		b. To link structure and all the electrical elements on the Platform.	
		c. To link the panel to the earth strip.	
h.	Multifunction meter	1. Panel shall be provided with Multifunction meter	
i.	Terminal blocks	1. Terminal blocks shall be of 750 Volts grade of the stud type and shrouded.	
		2. Insulating barriers shall be provided between adjacent terminals.	
		3. All the terminal blocks are grouped with respect to the following:	
		a. 230 V Power distribution (separately for phase and neutral).	
		b. 415 V Power distribution if any	
		c. Motor and brake power distribution	
		4. Short linked Terminal blocks are to be used for terminal multiplication. More than one wires need to be avoided in	

Sl. No.	Technical Specifications		Compliance
		one terminal block.	
		5. Power & Control circuit (used for field cables) – Ring type end termination of suitable size	
		6. All the terminals needs to be provided with group markers	
		7. 25% Spare Terminals Shall be provided for both Power and Control in each Panel	
		8. Make: Connectwell / Wago / Elmex	
j.	Rubber mats	1. Rubber mats to be supplied and provided in-front of all the panels (both main and local panels) as per the designed length of panels.	
		2. Class 'A', 3.3 kV ac (rms), 2.0mm ± 10% thickness as per IS 15652/2006	
		3. Width: 1 mtrs. (maximum)	
4.1.	**To be considered during Detailed Engineering:**		
a)	Panel	1. Height of the main panel shall be not less than 2000 mm excluding the base frame of 100 mm. Overall height of the panel not less than 2100 mm.	
		2. Width of all the panels is to be maintained uniformly. Door opening and rear access will be decided based on the requirement during detailed engineering.	
		3. Enamel Danger plates shall be provided on the Panel inscribed in Hindi, Tamil and English languages as directed by department.	
		4. Drawing pocket needs to be considered.	
b)	Interlock Scheme	1. Auxiliary Contactor level:	
		a. Hard wired interlocks for the push button command are to be provided at auxiliary contactor.	
		b. When Aux. contactor operates with respect to the motion selected, remaining Aux. contactors with respect to other motions should not be operated. Aux. contactor shall be operated only when main power contactor is in ON condition.	

	MAKE OF THE BOUGHT-OUT ITEMS		
1.	Push Buttons	M/s Werner with configurable tiles	

2.	All Electrical Switch gear / SMPS	M/s Siemens / ABB / Schneider	
3.	Flame Proof Motors	Bharat Bijilee / Crompton Greaves	
4.	Limit switches	M/s. Sterling controls / Speed-O-Control / Electromag.	
5.	LT power & control cables	M/s. Lapp / Universal / Nicco / Finolex / RPG / Uniflex, M/s Polycab/Finolex/Incab/ Svarn/ Apar	
6.	Panels	M/s. Rittal / M/s President	
7.	Terminal Blocks	M/s. Elmex / Connectwell / Wago	
8.	Junction Boxes (Non-FLP)	M/s. Rittal	
9.	Intrinsic Safe Relays	M/s P&F	

COST BREAKUP IS TO BE GIVEN FOR SUPPLY OF BOUGHT OUT ITEMS:

S.No	Item	Specification	Unit	Qty reqd	Unit Cost	Total cost
1	Bearing-1	Manufacturer: SKF, Bearing: Self Aligning Ball, Bearing designation: 1303ETN9, Load capacity: 3.4kN	Nos.	28		
2	Bearing-2	Make: SKF or equivalent, Type: Spherical roller bearing, Bearing: 22212E, Bore: 60mm, Outer dia: 110mm, Width: 28mm, Static load: 166kN, Dynamic Load:156kN	Nos.	448		
3	Bearing-3	Make: SKF or equivalent, Type: Spherical roller bearing, Bearing: 22208E, Bore: 40mm, Outer dia: 80mm, Width: 23mm, Static load: 90kN, Dynamic load:96kN	Nos.	288		
4	Gear Box-1	Manufacturer: SERVOMECH, Gear: Bevel gear box, series: BG86 S S1, Scheme:70, Gear ratio: 1:1, Required torque: 5Nm	Nos.	14		
5	Gear Box-2	Make: To meet below specifcations, Type: Double reduction worm gear box, Series: Foot mounted flame proof, Reduction ratio : 75:1, Output torque: 3082Nm, Input power: 4.14kW, Size of unit: Interface shall match with frame, Self locking provision: Required, Efficiency:50%	Nos.	16		
6	Foot Mounted Motor	Make:Siemens or equivalent, Type: Foot mounted Flame proof, Power:1.5kW, RPM: 1500rpm, Frame size: 90L	Nos.	16		
7	Double Reduction Geared Motor	Make: Elecon or equivalent, Type: Double reduction worm gear box, Size: 5/105 Foot mounted flame proof, Reduction ratio: 1000:1, Output torque: 14208Nm, Efficiency:50%	Nos.	16		

8	Motor Side Gear Coupling	Type:Gear coupling, Make:Fenner or equivalent, Designation:FGC1, Power@100rpm 11.5kW,Torque:1100Nm	Nos.	32		
9	Gear Coupling-1	Type:Gear coupling, Make:Fenner or equivalent, Designation:FGC5, Power@100rpm 150kW, Torque:14320Nm	Nos.	16		
10	Gear Coupling -2	Type:Gear coupling, Make:Fenner or equivalent, Designation:FGC5, Power@100rpm 150kw, Torque:14320nm	Nos.	16		
11	Plumber Block-1	Make: SKF or equivalent, Type: SE510-608, Bearing:22210E, Bore:50mm, Safe load:26kN	Nos.	32		
12	Plumber Block-2	Make: SKF or equivalent, Type: SE522-619, Bearing:22222E, Bore:110mm, Safe load:68kN	Nos.	32		
13	Plumber Block-3	Make: SKF or equivalent, Type: SE515-612, Bearing:22215EK, Bore:65mm, Adaptor sleeve: H315, End cover: ASNH 515-612	Nos.	32		
14	Thruster Brake (K-EHDB)	Make: M/s Kateel or equivalent, Type: K-EHDB, Thruster brake, Size: KHT-30/5, Brake drum diameter:160mm, Capacity braking torque: 220Nm	Nos.	16		
15	Wheel Ø 125 X 54thk	Manufacturer: MUVTONS castors pvt ltd, Diameter of the wheel: 125mm, Series-DF series drop forged steel wheels, Part no-DF-52-BB20	Nos.	12		
16	Wheel Sliding	Make: V-Groove steel wheels (Brauer), Type: SVT125/40, Load capacity: 1500kg, Diameter of the wheel: 125mm, Type of bearing: ball bearing (SVT125/40/BJM20)	Nos.	28		

17	Wheel OD 125 X ID 20 X 54 X Thk	Make: DF series drop forged steel wheels (MUVTONS), Load capacity: 1000kg, Dia of the wheel: 125mm, Type of bearing: Roller bearing	Nos.	16		
18	Flexible Coupling	Type: Flexible coupling, Make: Elecon (Elflex flexible coupling), Size: EFC-02, Torque: 10.9 da Nm	Nos.	38		
19	Key	To suit gear box	Nos.	6		
20	CHQ Plate	Aluminium (material). As per dimensions mentioned in the drawing	Lot	1		
21	Miscellaneous Items	Felt, Cotter pin, Rubber pad, Washers, Nuts, Lock nut, Lock washers, Hex socket bolt, Double washers & nut, HSH bolt & Nut etc. as per BOQ.	Lot	1		
22	Wire Rope	Wire rope shall be as per IS:2266-2019 with a nominal diameter of 16mm with steel core corresponding to 1960 (CWR) tensile designation and a breaking load of 160kN and construction of 6 x 37M (18/12/6-1) Open type thimble shall be as per IS:2315-1978 corresponding to a nominal rope size of diameter 16mm at both ends. Wire rope shall be pre-stretched before forming into a sling.	Lot	1		
23	Track type Limit switch	As per Specification	Nos	32		
24	Start-up spares	As per Specification	Lot	1		
25	Complete electrics.	Complete electrics required for functioning of 16 nos of Vehicle side folding platform leaves at SAF of SLC except electric motor s& limit switches (Note: Complete electric other than spare include following items: i. Local Control Panel	-	-		

		ii. Electrical Cables iii. Cable trays iv. Earthing related items v. Control cables etc.				
26		Main Electrical Panel	Nos	2		
27		LCP, field push button & EMG	Set	16		
28		Power, control cables, cable tray and earthling for complete Folding Platform systems	Lot	1		

Note:

1. The quantity required given is tentative only. It may vary with respect to final fabrication drawings.
2. **Any bids/offers with price details in Techno-Commercial Offer (Part –I) shall be rejected.**

SIGNATURE:
NAME
DESIGNATION:
DATE

SEAL OF THE COMPANY :