

FABRICATION DIVISION
TRANSFORMER TANK PLANNING

ANNEXURE- 1 "A"	PI. NO. 232626005	DATE:- 12/04/2022
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TECHNICAL REQUIREMENT

1	SCOPE OF SUPPLY	
a	Description	DETAILS AS PER ANNEXURE - 1 " B"
b	Contract No	W.O:- 67038-F-512-08, 500 MVA, M/S UPPTCL
c	Quantity	1 SET
2	CONDITION OF SUPPLY	ON MIXED BASIS.
3	RAW MATERIAL	ALL MATERIAL WILL BE ARRANGED BY SUPPLIER EXCEPT SHIPPING BEAM & CLAMP PLATE (GRADE S-690QL).
4	NO. OF COATS OF PAINT & SPECIFICATION	PAINTING INFORMATION AS PER MGES
5	INSPECTION	BHEL (QIX)
6	WELDER QUALIFICATION REQUIRED	YES
7	WPS APPROVAL REQUIRED FROM BHEL	YES
8	APPLICABILITY OF QA PLAN	YES
9	QA PLAN/ LOG SHEETS	AS PER QA/TCB/31/1236 & QA/TCB/BO/39, REV. 02, DT - 01/01/2018
10	ANY OTHER INFORMATION	N/A
11	IDENTIFICATION ON THE JOB	BY HARD PUNCH & BY WHITE PAINT FOR PO., MO NO., DRG.NO., & ITEM NO.
12	Before start of job supplier should confirm the latest revision of the drawing from the online portal of TRE .	
13	Proof marking to be done by supplier for final matching if any at BHEL. Additional drilling on Endframes to be done by subcontractor as per drawings before its dispatch to BHEL.	
14	Numbering should be done for match marking on pins & on corresponding holes	
15	Tolerance of pins & its corresponding holes should be mentioned in inspection record sheet as per drawings.	
16	All pre-machining to be done by the supplier as per detail drawing.	
17	All Drawings and BOM issued after PI/PO date shall be saved by the supplier either in soft copy or hard copy until and unless Job is dispatched on site.	
18	This PI is on Mixed Basis and inline with this HTS MATL GRD.S-690 QL and Shipping Beam will be free issued from BHEL. The weight of CLAMP PLATE (GRADE S-690QL) and Shipping Beam will be deducted from CRX weight of End Frame.	
19	All other terms and conditions as per Annexure 1 "D" and 1 "F".	
20	DRAWINGS:- As per annexure 1 "B"	


TARUN RAJ
MANAGER
 Manager
 TM Fabr
 BHEL, BHOPAL

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ANNEXURE 1"B"

DATE: - 12/04/2022

PI - 232626005 DT- 12/04/2022				W.O:- 67038-F-512-08, 500 MVA, M/S UPPTCL						
CORE AND END FRAME ASSY DRG. NO. 14647000167						CORE STEEL PARTS DRG. NO. - 34647000323				
PAINTING:- AS PER MGES				MTL. CODE FOR END FRAME ASSEMBLY :- TR4670386107						
END FRAME ASSEMBLY :- SL. NO. 1 TO 11				ADDL. DRILLING DRAWING AS PER MGES						
GENERAL NOTES FOR CORE CLAMPING STRUCTURE TO BE FOLLOWED AS PER DRAWING NO. - 34997000093										
WELDING DETAIL FOR CORE CLAMPING STRUCTURE TO BE FOLLOWED AS PER DRAWING NO. - 34997000095										
DLY DATE:- AS PER PO				TOTAL QTY:- 1 SET (UNIT-1)						
SL. NO.	DESCRIPTION	DRG. NO.	VAR	W/A OF ITEMS	SS WT (Kgs)	HTS WT (Kgs)	FREE ISSUE EN10025 GRADE S-690QL WT (Kgs)	MS WT (Kgs)	TOTAL QTY	TOTAL WT (Kgs)
1	HV CLAMP PLATE ASSY. # 1 OF DRG. 34647000323	14647000165	0	1, 3, 4, 7 TO 13	0	632.51	609.50	19.92	1	1261.93
2	L.V. CLAMP PLATE ASSY. # 2 OF DRG. 34647000323	14647000165	1	1, 3, 4, 7 TO 13	0	632.51	609.50	19.92	1	1261.93
3	H.V. TOP END FRAME # 3 OF DRG. 34647000323	14647000164	0	1 TO 12, 16 TO 20, 22 TO 24	0	2418.66	0.00	527.64	1	2946.30
4	L.V. TOP END FRAME # 4 OF DRG. 34647000323	14647000164	1	1 TO 14, 16 TO 20, 22 TO 24	0	2459.31	0.00	528.24	1	2987.55
5	MAIN FOOT ASSY. # 5 OF DRG. 34647000323	34997000029	0	1 TO 4	0	0.00	0.00	242.00	4	242.00
6	YOKE CLAMP END TIE PLATE # 6 OF DRG. 34647000323	34997000030	0	1 & 4	0	0.00	0.00	73.20	2	73.20
7	40TK HTS TOP LOCKING BEAM AUX # 7 OF DRG. 34647000323	34997000080	1	2, 3 & 4	0	185.72	0.00	32.40	2	218.12
8	40TK HTS MAIN TOP CROSS BEAM # 8 OF DRG. 34647000323	34997000047	1	1 & 2	0	372.25	0.00	0.00	5	372.25
9	AUX FOOT ASSY. # 9 OF DRG. 34647000323	34997000040	0	1 TO 4	0	0.00	0.00	199.68	4	199.68
10	LIFTING PIN ASSY. DIA 95 # 10 OF DRG. 34647000323	24997000047	5	12	0	15.60	0.00	0.00	4	15.60
11	LIFTING PIN ASSY. DIA 110 # 11 OF DRG. 34647000323	24997000047	1	1	0	43.44	0.00	0.00	6	43.44
TOTAL END FRAME ASSY WEIGHT IN KG.					0	6760.00	1219.00	1643.00		9622.00


TARUN RAJ
MANAGER
 एफ.टी.एम. गढ़ाई / FTM Fabrication
 बी.एच.ई.एल., भोपाल / BHEL, BHOPAL

ANNEXURE 1 "D"
PI-232626005,
W.O-67038-08,
500 MVA UPPTCL,
1 Unit of ENDFRAME
ASSEMBLY.

Seal & Signature of Vendor (for acceptance)

TENDER DOCUMENT

Issued by Bharat Heavy Electricals Limited, Bhopal Ancillary and Subcontracting dept. (Group 29/69)

FOR SUPPLY OF TRANSFORMER ENDFRAMES ON MIXED BASIS

SALIENT TECHNICAL REQUIREMENTS

1.1 The scope of work covered in this enquiry is fabrication of endframe for transformer as per our drawings on mixed basis using vendor's own material & material issued by BHEL (Clamp Plate (HITEN 780 LE/ 690 QL) & Channel/ Shipping beam). End Frame shall be supplied in painted condition, as specified in the purchase order/ annexure's. The activities mentioned below shall be in the scope of vendor:-

- All material, consumables, facilities, measuring equipment etc., required for fabrication, paint film thickness test etc called in BHEL drawings except for helical inserts.
- All machining operations- Bending/ Forming/ slot cutting/ milling etc., called in the drawing for the items; as well as assemblies shall be in the scope of vendor, including items i.e. lifting pin, screw for dashpot guide, tightening nut for bottom pins, slots on clamp plate, inner and outer band in C channel type end frame design, other hardware's as applicable etc.
- All other requirements, to satisfy relevant quality standards applicable for fabrication of product.

1.2 Vendor should ensure that the supplies are as per the latest drawings, DCA's, MID's (if issued), approved QA Plans and other related documents. The vendor should also ensure that latest revisions of these documents are collected by them from BHEL, time to time. They should obtain necessary certification about the latest revision at their B2B portal from time to time (especially before activities such as final welding, matching & dispatch) and the same to be duly certified by concerned inspection agency. Efforts will be made to supply all possible documents by BHEL along with purchase order. QA plans of customers & TRE and their latest revisions shall be applicable on the day of execution.

2. MATERIAL: Raw material should be procured from customer-approved source only; Otherwise, BHEL PMD will be followed. Confirmation to be taken from indenting/ engineering department.

2.1 The Shipping Beam/Transport beam along with Clamp Plate (as per Annexure 1A & 1B) will be supplied by FBM Division as free issue item. Weight of the free issued items will be deducted from final weight of assembly/ SRV weight. Excise Duty on material issued, if any will be on supplier's account. Excise duty paid initially by BHEL through excise gate must be pass on to BHEL through bill invoices else we shall recover from vendors bills. Delivery will not be governed on the basis of issue date of shipping beam/ channel as it has no role in the fabrication of end frame.

2.2 End Frame are combined fabrication of Mild Steel, High Tensile Steel (HTS) & Stainless Steel (SS), hence in line with it additional charges has been fixed. However in free issue material the same has been issued after final cutting as per the drawing hence scrap generation is negligible as it lies in the form of powder, chips etc.

2.3 Epoxy painting shall be done as per BHEL Product Standard TR 10005P Sl. No. 20 & 22. The paints will be procured from BHEL approved vendors only.

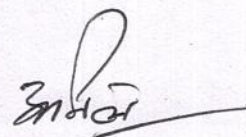
2.4 Paints of TRE specifications along with matching thinner should be procured from BHEL approved vendors only.

2.5 Customer inspection co-ordination will be done by vendor through QIX as per existing practice.

3. QUALITY REQUIREMENTS: BHEL will accept End frames & their accessories only after ensuring compliance of the following checklist.

- Transformer core plate and End frame checklist (Checklist No. QC/TCB/EF/01 with latest revision)
- Reactor core & Clamp plate checklist (Checklist No. QC/TCB/EF/02 with latest revision)
- Individual hole dimensions of end plate and pin OD and the resulted clearance to be recorded in prescribed format already in practice.
- Finally inspection by the BHEL inspection team after routine inspection by QIX

Seal & Signature of Vendor (for acceptance)



3.1 End frames shall be matched with all items and inspected at vendor works as per the drawing/ TRM requirement & the approved QAP. All welding shall be done as per BHEL/ Customer approved WPS (Welding Procedure Specification) and ASME section IX qualified welder.

3.2 End frames shall be free from shots, dust, weld slags and other foreign materials from inside & outside surfaces. This has to be ensured strictly. Penalty/ deductions will be imposed for non-compliance.

3.3 All tapped holes shall be blanked with insulation adhesive tape. For bigger size hole such as. 110 mm diameter, thick and strong polythene sheet will be put to cover them to prevent entry of dust, dirt, and other foreign materials.

3.4 All loose items like feet's, cross beams, side plates etc should be packed in bubble polythene & Lifting all pins should be tightened with End frames with proper identification.

3.5 Painting outside/ inside should be excellent. Only approved make & types of paint should be used as called in TR10005P (latest revision).

3.6 Suppliers to ensure scratch free and good aesthetics delivery of end frame to BHEL. Penalty will be imposed for quality related issues in painting like paint peel off, de-colourization etc.

GENERAL NOTES DRAWING 34997000093 & 34997000095 TO BE REFERRED IN EACH CASE OF FABRICATION OF END FRAME ASSEMBLY

4. SHOT BLASTING/ GRIT BLASTING & PAINTING: All grinding work is to be completed before shot blasting with soft grinder. Deep grinding marks to be avoided. All the threaded portion to be protected by putting suitable caps and nylon plugs on tapped items, all machined surface to be protected before shot blasting.

5. TESTING REQUIREMENT

5.1 Only tested and approved materials are to be used. MS material (AA10108) shall be tested in line with TR-30141T.

5.2 NDT (if applicable) shall be carried out by BHEL approved personnel/ agencies. The details of agency carrying out NDT shall be intimated by Vendor to BHEL NDT division/ third party inspection for their approval.

5.3 Vendors have to arrange for radiographic test at their works as per customer's QAP/ BHEL drawings (if applicable).

6. QUALITY REQUIREMENTS: - Quality requirements mentioned below are only for guidance and not exhaustive. Supplier has to take all necessary care and deliver the item to satisfy all relevant quality standards applicable for such product.

6.1 Inspection co-ordination will be done by the vendor through concerned inspection agencies as per existing practice. Prior/ advance notice is to be given by the vendor for necessary & timely allocation of the inspection.

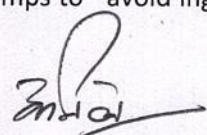
6.2 Material identification, co-relation etc. shall be done as per referred QA plan. In any case, vendor shall have to keep complete record of material identification and test certificate co-relation as per quality system for review.

6.3 Endframe and other fabricated components shall be free from shots, dust, weld slag and other foreign materials.

6.4 All Tapped holes must be cleared by vendors at their works to avoid re-tapping at BHEL. The tapped holes shall be thoroughly cleaned after application of third tap to remove any burr, chips, paint etc. QC must ensure this operation after final painting and before dispatch to BHEL. Tapped holes meant for hot dip galvanized hardware's shall be tapped oversize as given in table 1 of IS 1367 Pt III.

6.5 Items, having male threading shall be protected using PVC tube. All tapped holes shall be blanked with insulation adhesive tape/ plastic plugs. For bigger size holes e.g. 110 mm dia & above, thick and strong polythene sheet will be put to cover them which will be sealed using insulation adhesive tapes/ clamps to avoid ingress of

Seal & Signature of Vendor (for acceptance)



moisture and dust during transportation. No grease shall be applied. All inside/ outside threads, machined surfaces are to be duly protected with suitable means during shot blasting, painting and transportation.

6.6 Care should be taken during loading/ unloading of items on trolley at supplier's end & BHEL to avoid damage to painted surface. BHEL will take extra care during unloading of the job.

6.7 Drilling to be done by flat nose tip only to avoid puncher on main plate.

6.8. Painting is to be carried out in dedicated painting area..

6.9 Checklist duly signed covering all items, their dimensions; quantity etc should be furnished to QC.

6.10 Stage inspection should not be skipped, in case it is skipped deduction will be imposed as established in QDRC.

7. MATCHING REQUIREMENTS: Following matching criteria shall be adopted:-

7.1 Complete matching of HV part with LV part may be ensured with all the matching counterparts such as clamp plates, foot assy, cross beams, locking arrangements, end tie plates etc.

7.2 QC should ensure all items & fitting on HV & LV part are as per drawings & within tolerance.

7.3 Photographs of all matching work of assemblies shall be presented along with SRV as proof.

8. MISCELLANEOUS REQUIREMENTS:-

8.1 Dispatch clearance shall be given after inspection at vendor's works. However, final acceptance will be given only after proper assy. of active part inside tank at BHEL works.

8.2 Endframe assemblies shall be manufactured maintaining the fabrication tolerances called in the drawings.

8.3 Painting & related quality checks shall be done as per process/ specification called in the drawings/ MID's.

8.4 Suppliers to ensure to maintain weld sizes using weld checking gauges. Any lumps, scars or under cuts etc. are ground smooth for neat appearance.

8.5 To ensure desired aesthetics all sharp points cut edges dents etc. shall be grounded smooth wherever radius or rounded off is called in drawing; it should be ground as per drawing without any surface defect.

8.6 Supplier to put proper identifications covering-work order, project, vendor's name & PO details at a suitable location by contrast paint and hard punch mark.

8.7 Endframe shall be free from shots, dust, weld slags and other foreign materials from inside & outside surfaces. This has to be ensured strictly. Penalty as per QDRC will be deducted.

8.8 Suppliers to ensure scratch free and good aesthetics delivery of endframe to BHEL. Heavy penalty will be imposed for quality related issues in painting like paint peel off, de-colourization etc. Penalty as per QDRC will be deducted.

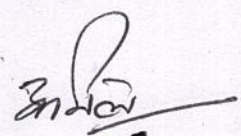
9. PRE-QUALIFICATION REQUIREMENT (PQR):- Refer Annexure 1 "F".

BHEL SHALL RESERVE THE RIGHT TO CONDUCT QUALITY AUDIT OF VENDORS AND COMPLIANCE OF SAME WITHIN REASONABLE TIME IS TO BE ENSURED BY VENDOR FOR GETTING FURTHER ORDERS.

COMMERCIAL TERMS & CONDITIONS

10. SCOPE OF WORK:- The scope of work covered in this enquiry is fabrication of END FRAME on mixed basis in all respects using supplier's own material. However, Clamp Plate (HITEN 780 LE/ 690 QL) & Shipping beam/ Channel shall be issued on free issue basis. Components and assemblies should be fabricated and supplied as per the technical scope, drawings & QA plan. Technical scope shall be as per Annexure 1A, but it is only for guidance and not exhaustive. Supplier has to take all necessary care and deliver the item to satisfy relevant quality standard applicable for such product as per refer drawings, standard drawings & documents.

Seal & Signature of Vendor (for acceptance)



11. RATES:-

11.1 Enquiry is issued in kg (weight) basis. Single rate is to be submitted in Rupees per kg inclusive of shot blasting & epoxy painting with own material & Free issue material by BHEL (as per annexure-1A & 1B). Lowest price quoted in Rupees per kg shall be declared as L1.

11.2 Rates quoted on mixed basis should be with vendor's own material considering all the process charges on total material i.e. material procured by vendor & free issue material from BHEL. Rates quoted may be inclusive of transportation charges up to BHEL Bhopal.

11.3 Quoted rates should be valid for ordering for 90 days from the date of tender opening. Offers received with validity period less than 90 days shall not be considered.

12. DELIVERY PERIOD & ORDERING PROPOSAL:

Ordering shall be done among:-

- **Single vendor**, necessary loading will be 100%.

Thus delivery in the above such cases will be (including final clearance from the Committee) will be 8 weeks. Final delivery in case of fabrication will be accounted against following criteria's:-

- 8 weeks from date of issue of PO.
- 4 weeks from date of issue of free issue materials (In case of Clamp Plate Assy) OR PO delivery whichever is later.
- Issue of channel/ shipping beam may not be related to delivery, as it is only required to avoid any sorts of distortion during handling/ transportation
- Delivery extension for delay (attributed to BHEL) may be provided (case to case basis) for reasons such as delay encountered in inspection or delay due to any other technical reason, for which vendor has to submit proper evidence for further perusal.

12.1 Delivery mentioned in the purchase order can be preponed/ postponed as per the project schedule & TRM requirement. Accordingly, supplier will be required to meet the revised delivery schedule. Early delivery of endframe assembly is acceptable.

13. BASIS FOR DECIDING LOWEST (L1) OFFER:

Vendor should quote their lowest single rate for complete fabrication work of END FRAMES with own material, in epoxy painted condition, on per kg. F.O.R. BHEL, Bhopal basis in the Bid format enclosed

13.1 Only offers meeting the terms and conditions of the enquiry will be considered.

13.2 All offers shall be compared for Total cost to BHEL at BHEL Bhopal stores to derive L1 status.

13.3 L1 will be decided on Total L-1 basis/Total package basis

13.4 In cases where more than one offer is at on the same price, supplier having higher vender performance rating (VPR) shall be placed at higher rank.

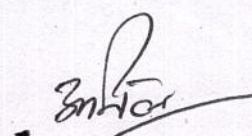
13.5 Offer having deviations to the terms and conditions will be suitably loaded with BHEL Current/ Standard loading factors to derive the L1 status on total landed cost basis.

13.6 Current rate GST shall be taken wherever it is not indicated in the offer, to arrive the price to BHEL Bhopal.

13.7 Decision of BHEL in this regard will be final and binding without any further correspondence with the supplier.

13.8 During bid evaluation, no loading of price with regard to preferential payment within 45 days will be made to vendors falling under MSMED ACT – October- 2006. Vendor has to submit MSME/CA certificate to avail MSME benefit along with offer.

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13.9 This enquiry is in two-part bid system. "BHEL reserves the right to go in for Reverse Auction instead of opening the submitted sealed bid, which will be decided after technical evaluation". For instructions for submission of two-part bid & reverse auction.

13.10 Rate quoted in unit other than called in the enquiry will be calculated as per the design weight

14. TAXES & DUTIES:-

14.1 Applicable Duties & Taxes, which BHEL is required to pay, should be clearly declared considering the offer validity and quoted delivery period. Otherwise, BHEL will not be responsible for payment of any kind of duties & taxes.

14.2 Taxes and duties will be paid extra as applicable on the date/ dates of contractual delivery or actual delivery whichever is lower.

15. **Q.A. PLAN** of the concerned project in addition to BHEL STD quality plan are to be strictly followed without any deviation. Qualified welders approved by BHEL will be employed as per job requirement & QA plan.

16. **TESTING:** All types of NDT will be in the scope of supplier and will be carried out through BHEL approved agencies unless specified otherwise in technical specification subject to review of NDT reports by BHEL. Testing of sample will be done in BHEL TSD department on chargeable basis as per plant standard no. B.P. 0460298.

17. **INSPECTION** shall be done by concerned inspection agency/ customer, as mentioned in the QA plan /annexure. Intimation of readiness of job for calling the inspection agency/ customer should be given in advance.

18. **TEST CERTIFICATE & CORRELATION:** - In all cases, material should be procured from BHEL's approved vendors with correlated test certificates. Where, material is procured by the supplier without test certificate & correlation, it will be tested as per the instruction/requirement of BHEL and testing charges will be borne by the supplier.

19. No jigs & fixture/ tools etc will be issued by BHEL for fabrication work except those jigs and fixtures which have been specified in the technical scope and drawing(s). Vendors are requested to return the tools immediately on completion of jobs. In case the tools are not returned within 3 months of issue of the same, the bills of the vendors may be kept under hold till return of the tools

20. **PROGRESS REPORT:** – Supplier will be required to send progress report via email (skbarnwal@@bhel.in) OR in hard copy indicating status of each purchase order.

21. Apart from the above, Terms & conditions of indigenous enquiry and P.O. issued by material management department vide BP200102 will also be applicable (already available with the suppliers).

22. Extended of help is required from vendor for difficulties, if any, faced during erection & commissioning of the jobs in BHEL. Vendors to comply the same.

23. PAYMENT:-

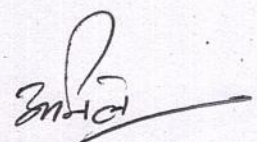
23.1 In cases where the variation in the actual weight is more than 5%, the same shall refer to concerned Engg. dept. and payment on account of increased weight beyond 5 % shall be released as per the decision of concerned Engg. dept.

23.2 Where due to subsequent changes/ modification in drawing, there is variation in the design weight, the purchase order value shall be revised as per actual weight.

23.3 In cases where the job weight exceeds the weigh bridge capacity, design weight given in drawing would be taken as basis for payment.

23.4 Payment shall be made within 90 days as per BHEL norms. Preferential payment within 45 days will be made to vendors falling under MSMED Act, October-2006.

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24. ISSUE's WITH RESPECT TO FREE ISSUE ITEMS FROM BHEL:

24.1 Material shall be issued in form of raw material & components as mentioned in the technical scope with adequate allowance as per prevailing engineering practice.

24.2 It shall be the responsibility of Subcontractor to check the raw materials received by them for quality & quantity and ensure its correctness before removing it from BHEL premises.

24.3 Any wrong material collected should be immediately communicated for remedy. Excess material collected should be immediately returned in the usable form.

24.4 Material issued for job work shall be taken back only in exceptional circumstances and upon written request of vendor with due justification.

24.5 The cost of rework or rejection, and any cost of freight incidental to such work will be to the Subcontractor's account. The cost of rejected/damaged raw material shall be recovered from the supplier at the rate(s) as declared in free issue material details ["A" Form]

24.6 In cases wherever availability of material becomes critical for certain work order, BHEL has the right to either take back or transfer the balance, material available with the Subcontractor to other, with due material accounting.

24.7 Supplier has to ensure the return of all the free issue material issued by BHEL either in assembled or in raw form if left unused to BHEL.

25. If any vendor is under hold by BHEL/Customer on enquiry due date then its offer shall be technically rejected, irrespective of vendor qualifying the PQR conditions at SI No 9 of the salient technical requirement

ANY DEVIATION TO ANY POINTS OF THIS ANNEXURE OR ENQUIRY SHOULD BE CLEARLY MENTIONED IN OFFER. OTHERWISE, IT WILL BE PRESUMED THAT SUPPLIER AGREES TO THESE CONDITIONS.

Seal & Signature of Vendor (for acceptance)

