

BHARAT HEAVY ELECTRICALS LIMITED
(A Government of India Undertaking)
P.O. BHEL Jhansi 284120

POWER TRANSFORMER MANUFACTURING DEPARTMENT

Notice Inviting Tender (NIT)
For

Works contract in Power Transformer Manufacturing shops, BHEL Jhansi

Tender Enquiry No.

TRM/TW/23/01

Tender due date: 23/05/2023 13:15 hrs.

Tender Opening date: 23/05/2023 14:00 hrs.

We hereby accepted above (signature & seal of bidder)



BHARAT HEAVY ELECTRICALS LIMITED

(A Govt. of India undertaking)

TRANSFORMER MANUFACTURING (TRM), JHANSI - 284120

TENDER ENQUIRY NO: TRM/TW/23/01

DATE: 09.05.2023

DETAILS OF TENDER DOCUMENT

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Transformer manufacturing department is manufacturing various size of transformer products at, BHEL Jhansi

1. TRM, BHEL JHANSI is in the process of finalizing the Works Contract for Power Transformer Manufacturing shops, BHEL Jhansi.
2. The tender document has been detailed as follows:
 - a) Notice Inviting Tender (Annexure 01)
 - b) Work Specifications including special terms and conditions (Annexure 02)
 - c) Qualifying Requirements (Annexure 03)
 - d) Other required documents (Annexure 04).
 - e) Proforma for submitting technical bid (Annexure 05).
 - f) General Terms & conditions & HSE
 - g) Forms & Formats (Annexure I, II, III & IV)
 - h) Self-declaration (Annexure V)
 - i) Contract Agreement (Annexure VI)
 - j) Indemnity Bond (Annexure VII)
 - k) Check lists of documents for enquiry (Annexure VIII)
 - l) Performa of Bank guarantee (Annexure IX)
 - m) Formats (Annexure X, XI, XII, XIII, XIV & XV)
 - n) Price Bid (Annexure JS 146)
 - o) Blank Price bid Format JS 472 attached

The duly filled in Technical and Price / Rate bids (Annexure C and JS -146, separately) along with General Terms and Conditions and all other attachments with the signature of the tenderer on all the pages and complete in all respects super scribed as "Quotation for Tender No TRM/TW/23/01 dated.....09.05.2023" should reach us in a sealed cover on or before 23.05.2023.(13.15 hours) through Registered / Speed post or the same may be dropped in the tender box available at the following address:

Tender Box
Security Control Room/Office
Administrative Building
Bharat Heavy Electricals Limited
Jhansi-284 120

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Note: (i) Incomplete offers are liable for rejection.

(ii) Technical bid and price bid should be submitted in separate sealed envelopes. In case the bids are found in one single envelope then the "bids" are liable to be rejected.

TENDER DOCUMENT FOR

WORKS CONTRACT FOR Power Transformer Manufacturing shops, BHEL
JHANSI

The tender document has been detailed as follows:

SN	Description	Annexure No.
01.	Notice Inviting Tender	01
02.	Work Specifications for Option A & Option B, Special terms and conditions	02
03.	Qualifying Requirements	03
04	Other Required Documents	04
05	Performa for submitting Technical Bid	05
06	Self Declaration	V
07	General Terms & conditions of enquiry (JHS 2055C R02) & HSE	Copy Enclosed
08	Price Bid Sheet	JS 146
09	Blank Price bid Format JS 472	JS 472
10	Clubbed Annexures (I to X) Forms & Formats	I to XV
11	Certificate by CA for MSME	Refer XI

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Annexure – '01'

NOTICE INVITING TENDER

	NIT Terms	Activity-A (Option A)	Activity-B (Option B)
1	Scope of Work	1. Power Transformer Winding, Dry Type Winding, Winding of three phase Freight Loco, Pre-coil Assembly, Machine shop work 2. Insulation of Power Transformer & Special Power Transformer & shipping work.	1. Preparation of CRGO Lamination, Core Assembly, Unlacing & re-lacing work, Core to Coil Assembly, TG 2. Servicing & Case-fitting Work, RL01
NOTE: Bidders can opt to quote either for option A or B. Further, bidders to mention the option i.e A or B in the blank price bid.			
2	Tender evaluation criteria	As per qualifying requirements (as per tender documents)	
3	Validity of Contract	12 Months from the date of award of work order	
4	Date and Time of Receipt of Tenders	23.05.2023. (13.15 hours)	23.05.2023. (13.15 hours)
5	Date and Time of Opening of Technical bids	23.05.2023. (14.00 hours)	23.05.2023. (14.00) hours
6	Address for submitting the Tender	Tender Box, Security Control Room/Office, Administrative Building, Bharat Heavy Electricals Limited, Jhansi-284120 Note: BHEL takes no responsibility for any delay / loss of documents or correspondence sent by courier or post. Late tenders shall be rejected outright	
7	Earnest Money Deposit (EMD)	Rs. 139420/- (Rupees One Lakh Thirty Nine Thousand Four hundred and Twenty Only)	Rs. 167460/- (Rupees One Lakh Sixty Seven Thousand Four hundred and Sixty Only)
7(a)	The EMD may be accepted only in the following forms: (i) Electronic Fund Transfer credited in BHEL account (before tender opening) <i>BHEL account details: Bank Name: - SBI; A/c No :- 10670828866 ; IFSC code:- SBIN0003807, A/c Holder Name:- BHARAT HEAVY ELECTRICALS LIMITED</i> (ii) Card swapping through POS machine at Cash section of BHEL Jhansi.)		
8(a)	In case of successful bidder, EMD will be converted and adjusted against the security deposit.		

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8(b)	EMD will be forfeited in following cases		
(i)	After opening the tender, the bidder revokes his tender within the validity period or increases his quoted rate.		
(ii)	The bidder does not commence the work within the stipulated period as per LOI/ Contract. In case the LOI/contract is silent in this regard, then within 15 days after award of Contract.		
(iii)	For MSME bidder's submission of EMD and tender cost will be applicable as per MSME act.		
8(c)	EMD given by all unsuccessful tenderers shall be refunded normally within 15 days of acceptance of award of work by successful tenderer.		
8(d)	EMD shall not carry any interest.		
9	Validity of Offer	120 days from the date of opening of Technical Bid (Part-I)	
10	Security Deposit (SD)	As per General terms & conditions	
11	GST	18 % of quoted rate.	18 % of quoted rate.
12	PF & ESI	Contractor has to submit PF and ESI registration certificate after issue of LOI and before award of Work Order to him.	Contractor has to submit PF and ESI registration certificate after issue of LOI and before award of Work Order to him
13	Reverse Auction	BHEL Shall be resorting to reverse auction (RA) (Guidelines as available on www.bhel.com) for this tender. RA shall be conducted among the techno-commercially qualified bidders. Price bids of all techno-commercially qualified bidders shall be opened and same shall be considered for RA. In case any bidder(s) do(es) not participate in the reverse auction, their sealed envelope price bid along with applicable loading, if any, shall be considered for ranking.	
14	Address for issue of Tender	AGM(CCC), Bharat Heavy Electricals Limited Jhansi, PIN-284120	

Note: (i) The contractors may physically visit the work place before quoting their rates.

For relevant details please visit our website "www.bhel.com" &

www.eprocure.gov.in.

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Annexure 02

Activity-A (Option A)

WORK SPECIFICATION (Brief Description of work)

A.1) SCOPE OF WORK OF THE CONTRACTOR FOR Activity-A (Option A) SHALL BE AS FOLLOWING: In Power

Transformer Manufacturing shops following work is to be carried out:

S. No.	Description of work	Section
1	Manufacturing activities of Power Transformer Winding, Dry Type Winding, Winding of three phase Freight Loco, Pre-coil Assembly; Machine shop (For details refer A.2.1);	WINDING SHOP (Bay-4 & Bay-11); BAY 3 - MACHINE SHOP,
2	Transformer Manufacturing – Preparation at Insulation shop & shipping activity (For details refer A.2.2)	BAY 7 -INSULATION; SHIPPING

A.1.1) The details of activity involved in the above said work is given in A.2. The total work will be limited to **153915** technology hrs.

A.1.2) The contractor will have to appoint sufficient no of his own supervisors to organize and supervise the work being done by his employees in 1st, 2nd & 3rd shifts (if needed). Supervisors allocated for each section, against this Contract need to be present full day and supervise the activities. The above work should meet the requirement of the shop/CQX executive/supervisor. The above work shall be normally done in 1st & 2nd shift. Work shall also be done in 3rd shift and on Sunday/Holidays as and when required.

A.1.3) Contractor have to collect all required raw material, drawings and manufacturing information from shops/ SPC/contracting department. Required space, tools & tackles and facilities like material handling equipment, fixture and crane will be provided by BHEL subject to its availability in normal working conditions. Consumables like resin glass tape, araldite, varnish, paint, cotton waste, fevicol/feviquik etc. will be issued by BHEL, and these will be collected by contractor. Contractor will check for any defect in material and get it rectified/ replaced before starting work.

A.1.4) All the material, electricity, compressed air, consumable applicable in jobs and tools available with BHEL shall be provided by BHEL free of cost.

EOT crane shall be provided by BHEL free of cost. However, in contingency in order to meet the job requirement, any additional resources if required shall be arrange by the contractor at their cost.

A.1.5) All the job after manufacturing will be inspected by CQX/Section executive or Supervisor /customer and if any default / defect occurs, the same has to be rectified by contractor at free of cost. The contractor shall maintain proper records of all the activities/inspection stages and the same should be made available, as and when required by BHEL.

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The house keeping of the work area and maintaining work discipline shall be the contactors' responsibility.

A.1.6) Contractor is advised to visit the work place to know the work content before submission of quotation. The required documents / drawings / MI Sheet can be seen at our works.

Note: - The above work should meet the technical requirement of the BHEL and customer. Work should be carried out as per drawings, standards, procedures, laid down by BHEL, which may get revised as per requirement time to time. Party will be liable to follow drawings standards, procedures are in use at that time without any change in rates and terms and conditions of contract.

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Annexure 02

A.2) Detailed scope of Work (Activity A/Option-A)

A.2.1) Detailed Scope of Work in manufacturing activities of Power Transformer Winding, Dry Type Winding, Winding of three phase Freight Loco, Pre-coil Assembly (Winding shop/TRM Bay-4&11) and Machine Shop

Sl. No.	Work nature	Details of activity involved
1.	Power Trfr- Pasting of edge blocks, Scarf cylinder and preparation of Static Ring/Shield	<ol style="list-style-type: none">1. Setting of mould as per required diameter.2. Loading of pressboard items of edge blocks and cylinder into oven for 6-8 hours.3. Taking out the items from oven and pasting as per requirement.4. Curing for 8 hours and then smoothening the joint part by grinding from both inside and outsides.5. Removing cylinder/Edge block from mould. Cylinder sent to machine and edge block sent to insulation shop for edge cutting etc.6. Preparation of Static ring/Shields as per drawing/ES.
2.	Power TRFR-Starting of coil	<ol style="list-style-type: none">1. All below activities before start of each coil2. Collect all required material from SPC store.3. Setting of mould as per required diameter.4. Operating winding machine (both helical and vertical)5. Wrapping or lowering of cylinder as per ES/Dwg.6. Marking and dressing with Dovetail spacer and dovetail blocks.7. Checking of Copper size as per ES.8. Lead preparation as per ES/Dwg and lead mounting Etc.9. Issuing of QC tag and unloading coil from machine Etc.10. Quality check points are to be strictly followed
3.	Power Trfr-Winding of Helical and inter wound helical coil	<ol style="list-style-type: none">1. Providing Dummy blocks and end blocks as per ES.2. Tapping on first turn and then start winding3. Making Strand transpositions and block transpositions of conductor as per ES/Dwg.4. For both types sequence of conductor is must by quality after completion of coil and before cutting of conductors.5. For inter wound helical first marking of pitch then start the coil.6. All steps pitch must be accurate.7. Top lead preparation and locking of coil.8. Issuing of QC tag and unloading coil from machine Etc.9. Quality check points are to be strictly followed

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4.	Power Trfr-Winding of plain RS and interleaved coils	<ol style="list-style-type: none"> 1. Check Copper reels as per ES 2. Pasting of rider dummy, marking of rider/step dummy and cutting as required. 3. Starting of coil from first section and moving continue as per ES/Dwg/Cross over Diagram. 4. Operating resistance brazing machines. 5. Jointing copper as per design standard. 6. Making of standard transposition, strand transposition and block transposition as per standard. 7. Preparations of all leads of the coil as per standard. 8. For interleaved sections conductors sequence to be checked with buzzer before joining them in presence of BHEL person. 9. Sequence of conductors in PID coil must be check as per given check list. Etc. 10. Issuing of QC tag and unloading coil from machine Etc. 11. Quality check points are to be strictly followed as per check list.
5.	Power Trfr-Winding of double layer and composite coils	<ol style="list-style-type: none"> 1. Complete first layer winding as per above activities. 2. Alignment of the winding, lead preparation and then wrapping as per ES/Dwg. 3. Starting winding of second layer winding as per given above activities (Sr.No.3 &4 of work nature). 4. Completing the winding and unloading Etc. 5. Quality check points are to be strictly followed as per check list.
6.	Power Trfr- Coil final preparation, Rectification, Clamping and pressing	<ol style="list-style-type: none"> 1. Unloading coil from machine and shifting it to clamping area. 2. Alignment and rectification of the coil and followed by QC check. 3. Clamping the coil and loading it to vessel for heating. 4. After heating as per standard taken out coil for pressing. 5. Maintaining CD by pressing the coil and tightening. 6. Shifting the coil to Bay-4 area. 7. After testing wrapping the coil with polyfilm. 8. Handing over the coil to assembly shop. 9. Quality check points are to be strictly followed as per check list.
7.	Winding of three phase Freight loco coil	<ol style="list-style-type: none"> 1. Collection of material (Copper/insulation items, cylinder and other required material) 2. Pasting of dovetails strips on FG cylinder as per ES/Dwg. 3. Loading cylinder on mould and start winding as per ES/Dwg. 4. Joints in copper must be as per TRE Standard. 5. Complete the coil and then lock from outside with dovetails locking strips. 6. Quality check points are to be strictly followed as per check list. 7. Final preparation of coil as per point no.6.

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8.	Winding of DTT coils	<ol style="list-style-type: none">1. Mold readiness by applying mold releasing agent and loading on machine.2. Issuing material from SPC store/Main Store3. Start winding as per ES and Dwg.4. Copper joints brazing must be as per Design standard.5. Cleaning of segments and then applying releasing agent and then putting on winding before start of second layer.6. Use fiber glass mate and other insulating items as per requirement/ES/Drwg.7. Completing the coil and sending it to for preparation Etc.8. Quality check points are to be strictly followed as per check list.
9.	DTT coil Casting	<ol style="list-style-type: none">1. TG work of HV coils followed by terminal brazing.2. Jacketing of the coils.3. Loading of coils in encapsulation plant.4. Filling of Epoxy material in plant as per standard.5. Shifting of coils in heater for curing6. After heating dismantling of coil and removal of jackets and segments.7. Cutting and finishing of conductors and maintaining CD.8. Testing of coils and handing over to Assy shops.9. Quality check points are to be strictly followed as per check list.
10.	SPC Store Work	<ol style="list-style-type: none">1. Maintaining all material records.2. Providing/shifting materials to the shops as per requirement.3. Checking of items as per drawings/ES.
11.	Cleaning, Housekeeping and '5S'	<ol style="list-style-type: none">1. Proper upkeeping of items and housekeeping is to be maintain in the shop, office and spc area.2. Cleaning of machines and shop must be on regular basis.3. All items are to be placed with identification and at allocated/Defined place.4. '5S' is to be maintain in the shop.
12.	Office work	<ol style="list-style-type: none">1. Maintaining attendance of workers regular (daily and monthly) basis.2. Maintaining production records and daily work progress sheet.3. Maintain material records like copper, insulation items, FG items etc.

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13	Preparation of machine shop Items of Power / Spl Trfr Assy.	<ol style="list-style-type: none">1. Preparations of copper TG items for Power, dry type, ESP and special transformers. It includes preparation of copper Bus bar, flexible jumper, earthing links and strips, Neutral grounding other miscellaneous items of Transformers, as per BHEL drawings.2. Slitting and cutting of CT-VT copper tubes and connecting palm preparation as per BHEL drawings.3. Preparations of steel items such as pressure bolt, cover support bolt, tie rod, square bar and other machined items.4. Machining Operation on bushing mounting steel rings etc.5. Additional copper and machined Items required at sites. Spare items required by assembly shop or any modification work related to suit to assembly work for example machining on locking channel and feet, rethreading of tie rods, nozzle requirements by different shops etc.6. All manufacturing activities of copper and steel items which involve operation of marking, bend saw & power saw cutting, tube slitting, Drilling, Grinding, Guillotine machine shearing, machining on lathe and milling machines, Bending, slot drill, hot dip tinning, brazing, heat treatment of copper sleeves and other items.7. Material movement from Stores to Shop Floor and from one work center of shop floor to another.8. Segregation and stacking of prepared material and keeping its record. In-house handling of prepared material/Raw material.9. Handing over and Maintaining the record of Dispatch Items to different Sections after getting checked from Shop Supervisors.10. Proper keeping the offcuts for further Utilization to prepare items such as small eathing links, strips and other small items.11. Stacking, Tieing, counting, Packing and Placing of finished Items in proper place as directed.12. Maintaining the housekeeping and cleaning of work area and machines on regular basis and maintaing the 5 S in the Shop Floor.13. Operation of overhead crane for loading of material on machine or at work place and fork lifter operation for material movement such as withdraw of heavy steel and copper raw material from store, scrap bins delivery to scrap yard etc.14. Attendance of workers, Production Records, daily Work progress sheets etc. to be maintained.
<p>NOTE :- For all above activities, BHEL Shop/Quality/TRE/Customer shall inspect the job at any point of time and their bookings to be attended.</p>		

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A.2.2) Detailed Scope of Work in Preparation at Insulation shop & shipping activity Scope of Work- Insulation shop, machine shop & shipping activity (BAY 7 -INSULATION SHOP & SHIPPING)

Sl. No.	Work nature	Details of activity involved
1	Insulation items preparation of Power / Spl Transformers	<ol style="list-style-type: none"> 1. Preparations of Winding Insulation and Coil Assy Insulation of Power and special transformers. It includes preparation of Spacers, Block, washers, cleats, gaskets, Bend washer, cylinders, edge block, Scarf cylinders, center block, Wrap, Barrier, Circular Barriers, F G Insulation, Crimp washer etc. and other insulation items of Transformers, as per BHEL drawings. 2. Preparations of coil Supports Top rings, Bottom rings, Ring segments, Base plate, packing, etc. as per BHEL drawings. 3. Preparation of Core Insulation and Tank Insulation items of Power and Special Power Trfr. It includes Separator, yoke Insulation, E Type Packing, Feet Insulation, Square Bar Packing, End Frame Packing etc. 4. Preparation of T G Insulation of Power and special Trfr. It includes Cleats, Packing, closing piece, Horizontal and vertical cleats, Template based items of PCB and Permawood etc. 5. Preparation of Gasket and CT Insulation of Power and Special Transformers. It includes Gasket items of erection, shipping, tanking and outside fittings of transformer tank and accessories and C T Insulation of Transformer Tanks. 6. All manufacturing activities of insulation items which involve operation of Circular saw cutting, Finishing, Marking, Drilling, Grinding, Guillotine machine shearing, Spacer Cutting machine, Gumming/ Pasting, rolling, Bending, Scarfing, circle cutting, Jig Saw machine, Die Punching Machine, Gasket Surface grinding, Hand Circular Saw, Hand Jig Saw etc. 7. Material movement from Stores to Shop Floor and from one work center of shop floor to another. 8. Segregation and stacking of prepared material and keeping its record. In-house handling of prepared material/Raw material. 9. Handing over and Maintaining the record of Dispatch Items to different Sections after getting checked from Shop Supervisors. 10. Proper keeping the offcuts for further Utilization to prepare items. 11. Stacking, Tieing, Packing and Placing of finished insulation Items in proper place as directed. 12. Maintaining the housekeeping and cleaning of work area and machines on regular basis and maintain the 5 S in the Shop Floor. 13. Attendance of workers, Production Records, daily Work progress sheets etc. to be maintained. 14. If Required Operation of overhead crane for loading of material on machine or at work place and fork lifter operation for material

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		<p>movement such as Placing Pre-Compress Pressboards and Perma wood sheets and coil supports, picking raw material from store, scrap bins delivery to scrap yard etc.</p>
2	Activities of Shipping	<ol style="list-style-type: none"> 1. Foundation bolt, Hardware, Roller preparation. 2. Breather bracket, m box bracket, shim, tool kit, tie bar, valve preparation and testing. 3. Gasket, MDU, OLTC gear and shaft preparation. 4. PRV, buchholz relay, RPR, OTI & WTI, 0.6 Kg/cm² pressure gauge, 1.6 kg/cm² pressure gauge, OFI, WFI, OFM, WFM, oil sampling bottle, breather with silica gel preparation. 5. Ladder assembly, cable box preparation. 6. Turret, Radiator, Fan and Fan support Assy preparation. 7. Header and its pipework, A frame preparation. 8. Oil pump and motor preparation. 9. Conservator and its pipework preparation. 10. OLTC conservator and its pipe work preparation. 11. Terminal Connector for HV and LV bushing preparation. 12. Post insulator and its support, expansion joint preparation. 13. Copper items and Oil preparation. 14. Cable marking, cutting and cable tray preparation. 15. Marshelling box, RTCC, MFB preparation and testing. 16. Thermosyphen, Alumina, Cooler preparation. 17. Hydraulic jack preparation. 18. All Types bushing preparation. 19. NIFPS, NGR preparation. 20. Online DGA and Online IODS preparation. 21. Instruction manual preparation. 22. Welding & brazing activity. 23. Painting and touch up. 24. Paper work between store, QC, CDC and shipping. 25. Crane, battery trolley, fork lifter operation. 26. Store activity. 27. Transportation of material from store to shipping and from shipping to CDC. 28. Office activity etc.
<p>NOTE :- For all above activities from SI No 1 to 23, BHEL Shop/Quality/TRE/Customer shall inspect the job at any point of time and their bookings to be attended</p>		

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Annexure 02

Activity-B (Option B)

WORK SPECIFICATION (Brief Description of work)

B.1) SCOPE OF WORK OF THE CONTRACTOR FOR Activity-B (Option B) SHALL BE AS FOLLOWING: In Power Transformer Manufacturing shops following work is to be carried out:

S. No.	Description of work	Section
1	Transformer Manufacturing - PREPARATION OF CRGO LAMINATION; CORE ASSEMBLY, UNLACING & RELACING; COIL ASSEMBLY & TG.	BAY-5; BAY 9 & 10 - BTG
2	Transformer Manufacturing – SERVICING & CASE+FITTING; HANDING OVER TO DISPATCH SECTION (RL-01)	BAY 9 & 10 - ATG

B.1.1) The details of activity involved in the above said work is given in Annexure-XI. The total work will be limited to **175903** technology hrs.

B.1.2) The contractor will have to appoint sufficient no. of his own supervisors to organize and supervise the work being done by his employees in 1st, 2nd & 3rd shifts (if needed). Supervisors allocated for each section, against this contract need to be present full day and supervise the activities. The above work should meet the requirement of the shop/CQX executive/supervisor. The above work shall be normally done in 1st & 2nd shift. Work shall also be done in 3rd shift and on Sunday/Holidays as and when required.

B.1.3) Contractor have to collect all required raw material, drawings and manufacturing information from shops/ SPC/contracting department. Required space, tools & tackles and facilities like material handling equipment, fixture and crane will be provided by BHEL subject to its availability in normal working conditions. Consumables like resin glass tape, araldite, varnish, paint, cotton waste, Fevicol/feviquik etc. will be issued by BHEL, and these will be collected by contractor. Contractor will check for any defect in material and get it rectified/ replaced before starting work.

B.1.4) All the material, electricity, compressed air, consumable applicable in jobs and tools available with BHEL shall be provided by BHEL free of cost.

EOT crane shall be provided by BHEL free of cost. However, in contingency in order to meet the job requirement, any additional resources if required shall be arrange by the contractor at their cost.

B.1.5) All the job after manufacturing will be inspected by CQX/Section executive or Supervisor /customer and if any default / defect occurs, the same has to be rectified by contractor at free of cost.

The contractor shall maintain proper records of all the activities/inspection stages and the same should be made available, as and when required by BHEL.

The house keeping of the work area and maintaining work discipline shall be the contactors' responsibility.

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B.1.6) Contractor is advised to visit the work place to know the work content before submission of quotation. The required documents / drawings / MI Sheet can be seen at our works.

Note: - The Above work should meet the technical requirement of the BHEL and customer. Work should be carried out as per drawings, standards, procedures, laid down by BHEL, which may get revised as per requirement time to time. Party will be liable to follow drawings standards, procedures are in use at that time without any change in rates and terms and conditions of contract.

We hereby accepted above (signature & seal of bidder)



BHARAT HEAVY ELECTRICALS LIMITED

(A Govt. of India undertaking)

TRANSFORMER MANUFACTURING (TRM), JHANSI - 284120

TENDER ENQUIRY NO: TRM/TW/23/01

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Annexure 02

Detailed scope of Work (Activity B/Option-B)

1. **B.2.1)** Detailed Scope of Work in Preparation of Preparation of CRGO Lamination, Core Assembly, Unlacing & re-lacing work, Core to Coil Assembly, TG is as under:

Sl. No	Work nature	Details of activity involved
1	Preparation of CRGO Lamination	<ol style="list-style-type: none">1. Preparations of CRGO Laminations for power transformer, dry type transformer, Traction transformer, ESP transformers including laminations for ACR core. which involves all manufacturing activities of slitting, cropping and punching of laminations on CNC cropping line, CNC slitting line, RedMan machine, guillotine machines, punching machines and manual slitting machine in bay 5 and new bay 7. This also includes the operation of applying blue lacquer (the anti-rust compound).2. Preparation of ring core for power transformer, rectifier transformer & special transformers. This involves winding, welding, annealing, testing, varnishing.3. Preparations of yoke shunt for power transformer and cropping of wall shunt laminations.4. Stacking of laminations by counting the number of sheets for each and every job.5. CRGO sample preparation as per BHEL quality plan.6. Additional work for CRGO shortage preparation by assembly shop.7. Segregation and proper keeping the offcuts for further Utilization to prepare dry type, esp transformer laminations.8. Packing and dispatch of all finished product.9. Segregation and stacking of prepared material and keeping its record. In-house handling of prepared material/Raw material.10. Handing over and Maintaining the record of Dispatch Items to different Sections after getting checked from Shop Supervisors.11. Material movement from Stores to Shop Floor and from one work center of shop floor to another and un-packing of CRGO roll.12. Maintaining the housekeeping and cleaning of work area and machines on regular basis and maintain the 5 S in the Shop Floor.13. Attendance of workers, Production Records, daily Work progress sheets etc. to be maintained.

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2	Core assembly	<ol style="list-style-type: none">1. Drg availability.2. Material Availability as per drg.3. Collection of hardware/consumable material from store/CRX/Insulation Shop4. Layout of cradle beam & end-frame, cleaning of thread (taping) of end-frame etc.5. Preparation of insulation item of core.6. Shifting of lamination from store to core layout,7. Core build up, clamping, preparation of belts, tightening, & lifting of core8. Application of blue –lacquer & Epilux hardener, application of resin-glass belt & curing,9. Paint touch up, cleaning of core & readiness for testing.
3	Core coil assembly	<ol style="list-style-type: none">1. Drg availability.2. Material Availability as per drg.3. Collection of hardware/consumable material from store/CRX/Bay-74. Station preparation, unlacing of core, bottom ring assembly arrangement.5. yoke shunt preparation if any & assembly6. lead preparation, assy of block washer and spacer, lowering of coil etc into core as per drawing,7. end frame and pressure bolt mounting after taping,8. preparation of job to be sent for process9. cleaning of job before loading for processing.
4	Unlacing	<ol style="list-style-type: none">1. Drg availability.2. Material Availability as per drg.3. Collection of hardware/consumable material from store/CRX/Bay-74. Station preparation, unlacing of core.
5	Re-lacing	<ol style="list-style-type: none">1. Pressing to achieve required re-lacing level & re-lacing of job after process2. Additional work if required in case level not achieved as per CQX/ TRE /Shop guidelines.3. placement of insulation items & tightening of end-frame, application of pressure, mounting of cover support bolt etc.4. cleaning of job

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6	Terminal Gear Assembly	<ol style="list-style-type: none"> 1. Drg availability. 2. Material Availability as per drg. 3. Collection of hardware/consumable material from store/CRX/Bay-7 4. Removal of enamel of CTC conductor. 5. cleat fitting, preparation of copper cable/bus bars and its crimping/brazing with winding conductors, cleaning of brazing joints 6. OLTC assy. 7. mounting of OLTC bracket & OLTC, connection of copper cables with OLTC, 8. finishing of complete active part in all respect, cleaning & readiness for testing. 9. Additional work if required in case any testing failure
<p>NOTE :- For all above activities, BHEL Shop/Quality/TRE/Customer shall inspect the job at any point of time and their bookings to be attended</p>		

B.2.2) Detailed Scope of Work in Preparation of Servicing & Case-fitting Work, **RLO1** is as under:

Sl. No	Work nature	Details of activity involved
4	Tank and turret preparation	<ol style="list-style-type: none"> 1. Drg availability. 2. Material Availability as per drg. 3. Collection of material from store/CRX/Bay-7. 4. Assy of items, valves, hardwares, cord, gaskets etc. as per drg. 5. Assy of CTs in turret and tank as per drg. 6. CT board assy. 7. Mounting of turrets on tank. 8. Copper earthing of turret with tank and top& bottom tank to be done as per requirement. 9. Shunt and barrier assy to be done as per requirement in drg. 10. BHEL Shop/Quality/TRE/Customer shall inspect the job at any point of time and their bookings to be attended. 11. Store Keeping for raw materials & hardwares. 12. Tank TG to be done as per requirement in drawing.
5	Trial Tanking	<ol style="list-style-type: none"> 1. OLTC flange to be removed. 2. Transformer to be placed in tank. 3. Top tank to be placed. 4. Ferrule brazing /lug crimping in low voltage winding, intermediate winding, high voltage winding to be done as per drg /suit to assembly. 5. Locking channel fouling/resting to be checked and rectified to suit to assembly. 6. Flange matching to be checked for the OLTC bracket down/up scope.

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6	Servicing	<ol style="list-style-type: none"> 1. Servicing (all hardware/permalite tightening, core padding, pressure by dash pot/bolt etc.) of transformer to be done as per technology. Any other requirement related to SCT jobs to be done as per instruction BHEL Shop/Quality/TRE. Any mechanical/testing failure to be taken care by contractor. 2. Testing will be done by testing department, any issue faced (testing failure) will be taken care by contractor. 3. Required earthing of core, end frame, and tank to be done after successful testing.
7	Tanking	<ol style="list-style-type: none"> 1. After point 3 transformer to be placed in its respective tank. 2. Clearances etc. to be taken by BHEL Shop/Quality/TRE/Customer and their bookings to be attended. 3. Tank to be tightened by giving specified torque using torque wrench. 4. All the inspection covers except on top to be tightened for oil filling purpose. 5. OLTC flange matching, diverter insertion and necessary connection of bushing, earthing lead, CT leads etc. to be done. 6. Necessary earthing at required places to be done.
8	Case fitting	<ol style="list-style-type: none"> 1. Bushing assy of various rating to be done on transformer. 2. Lead taping to be ensured up to bushing bowl. 3. MDU mounting and coupling with OLTC to be done. 4. All the inspection covers to be tightened properly. 5. Locking channel insulation packing. 6. Top up of the job with mobile conservator and any leakage point to be attended. 7. Leakage point during oil pressure to be attended.
9	Dismantling	<ol style="list-style-type: none"> 1. Dismantling of all the bushing and turrets. 2. Proper tying of leads/jumper with polyester. 3. Cleaning of tank and active parts from inside. 4. Epoxy plate mounting & connection and tightening.
10	RL01: Heat Run Preparation	<ol style="list-style-type: none"> 1. Main transformer preparation for dispatch etc. 2. Radiator, Fan and Fan support mounting and dismantling. 3. Header, A Frame and Pipework assy and dismantling. 4. Oil pump and motor assy and dismantling. 5. Conservator and conservator pipework assy and dismantling etc.
<p>6. NOTE :- For all above activities, BHEL Shop/Quality/TRE/Customer shall inspect the job at any point of time and their bookings to be attended</p>		

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Annexure 02

SPECIAL TERMS AND CONDITIONS FOR BOTH (Activity A/Option-A & Activity B/Option-B)

- 1) Bidders can opt to quote either for option A or B. Further bidders to mention option i.e A or B in the blank price bid.
- 2) **Taxes and Duties:** GST shall be applicable @18 % of total contract value. In case of credit is not available as denied by GST portal due to improper documentation of wrong uploading of data by bidder, the same will be recovered from the bidder along with interest, if any.
- 3) **Payment Terms:** The work shall be measured in terms of technological hrs provided by the technology department of work completed and payment shall be made on ₹ / technological hrs. as quoted by successful lowest bidder on the basis of total technological hours dully approved as per measurement book placed at annexure 'XII'.
Finance department shall, on satisfactory compliance, and after deduction (if any) on account of defaults / Penalties / TDS, will make the due payment to the contractor.
- 4) **LD/Penalty Clause:** Any delay in execution of specified work will attract penalty. Contract has to deploy adequate number of workers to execute the quantum of work. The quantum of work will be monthly production plan which shall be reviewed/monitored on weekly basis. Delay if attributable to firm; penalty shall be imposed @0.5% per week for delayed work and maximum up to the ceiling of 10 % of the contract value for the delayed work. If any defect is noticed in the work at later stage, the firm shall repair the same, in short time free of cost. Cost of rework / rejection will be recovered from the contractor, if the same is found to be occurred due to negligence/lack of skill of the worker. Executive in charge shall keep proper records for above purpose. The Penalty shall be recovered from the EMD, Security Deposit, Contract amount and running bills etc.
- 5) For all technical operation only suitable skilled /experience workers to be engaged.
- 6) **PVC/ORC** : Not applicable
- 7) **Bonus Clause:** Not applicable, however the contractors to comply the statutory obligations as per the extant statute.
- 8) RA shall be conducted among the techno-commercially qualified bidders.
- 9) Quantity variation (Technological Man hours) is + 30%.
- 10) **Splitting of Contract:** Each activity A & B will be spilt into two bidders. The L1 price will be offered to L2 bidder, if L2 do not accept then will be offered to L3 and so on based on no. of qualified bidders and their acceptance. Splitting will be as L1: L2 :: 70: 30 (approximately) respectively. If L1 rate not accepted by other bidders, then total quantity will be awarded to L1 bidder.
- 11) No relaxation in PQR for MSE vendor, however benefit to MSE vendor shall be available as per the attached annexure "XIV".

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- 12) In case there are multiple MSE vendors who satisfies the condition mentioned in sl.no "d" above, then the 25% qty allocation shall be limited to one MSE vendor who sequentially (i.e. L2, L3....) accepts the L1 vendor rates.
- 13) The Contractor should abide by the "Payment of Wage Act 1936/ Minimum Wage Act 1948 "for disbursement of wages. Wherever delays are observed in disbursement of wages to labour for two consecutive months, for every week or part thereof of delay, penalty shall be at the rate of 0.05% of the bill amount for the month due to the Contractor, or Rs. 500/- whichever is higher of the bill amount for the month (last month of the two consecutive months) due to contractor. This shall be deducted from the respective bill of the Contractor. This does not absolve the contractor from abiding the wage act. GST shall be deducted extra over the penalty amount

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Annexure 03

Qualifying Requirement

S.No	NIT Terms	Activity-A (Option A)	Activity-B (Option B)
1	Name of Work	1. Power Transformer Winding, Dry Type Winding, Winding of three phase Freight Loco, Pre-coil Assembly & Machine shop work 2. Insulation of Power Transformer & Special Power Transformer, shipping work.	1. Preparation of CRGO Lamination, Core Assembly, Unlacing & re-lacing work, Core to Coil Assembly, TG 2) Servicing & Case-fitting Work, RL01
2	Annual Turnover		
2a	The average annual financial turnover in the past 3 years, ending 31st March 2023 , should be at least X (Refer 2b for respective column for value of 'X' Contract), wherein the bidder(s) has to attach Income tax return along with balance sheet, Profit & Loss Account of last three financial years, ending 31st March 2023, or Certificate of CA. Provisional /Actual Turnover for financial year 2022-23 duly certified by CA shall also be acceptable for evaluation purpose. If turn over details of 3 years are not available, then available years turnover shall be evaluated by dividing it by 3.		
2b	Annual Turnover (Refer 2a above)	Rs 20.91 Lakhs	Rs 25.12 Lakhs
3	Experience of having successfully completed similar works* (defined below) in past 7 years, ending last day of the month previous to the one in which tender are invited should be either of the following:		
3a	Three works each costing not less than	Rs 27.88 Lakhs	Rs 33.49 Lakhs
3b	Two similar works each costing not less than	Rs 34.86 Lakhs	Rs 41.87 Lakhs
3c	One similar works, each costing not less than	Rs 55.77 Lakhs	Rs 66.98 Lakhs

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3d	<p><u>Similar Work</u> means any type of contract involving manufacturing or assistance in manufacturing activities of electrical equipment of requisite value even if the contract has not been completed or closed (in any PSU / CPSU / State govt. / Central Govt./ Private sector).</p> <p>Documentary proof (Completion Certificate and WO/PO / LOI) & TDC certificate issued from traces (Form16A/26AS) for the experience performance report issued by Customer for successful execution of the requisite value to be submitted. In case experience is submitted for work done in BHEL, TDS certificate is not required.</p>
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Annexure-04

S.No	Other required documents
1	Contractor Should have PAN number.
2	Contractor Should have GST (PAN based)
3	Bidders are required to submit a self-declaration on their letter head as per the Format enclosed in Annexure V.
4	The bidder should submit the required documents for the proof of their firm as legal entity under whose name and style Contractor has participated in the tender as given below: i. Partnership Firm: Partnership Deed registered at the office of Registrar of Firms. ii. Company: Certified copy of Memorandum of Association, Article of Association and Incorporation Certificate. iii. Society: Registration certificate issued by Registrar of societies. Sole Proprietor-ship Firm: Profession Tax Regn./ Municipal Regn/ PAN of Firm (Proprietor) along with Self declaration on Letter head.
5	Declaration by bidder w.r.t sister firms (Annexure-X)

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Annexure 05

PROFORMA FOR SUBMITTING TECHNICAL BID

1	Name of the firm (Essential)	
2	Address and Contact Numbers (Essential)	
3	Name of the Proprietor (Essential)	
4	Registration Number of the Firm (If Applicable) (Essential)	
	Copy of the Certificate	Enclosed / Not Enclosed
5	Proprietorship/ partnership deed	
6	PAN/TAN Number (Essential)	
7	GST Number (PAN Based) (Essential)	
8	Copy of PF registration	PF no-
9	Copy of ESI Registration	ESI No-
10	Experience Certificate (Along with balance sheet & profit and loss account/ turnover certificate issued by CA) (Essential)	Enclosed / Not Enclosed
11	Earnest Money Deposit (Essential, if applicable)	
	Receipt No. & Date	
	Electronic fund Transfer no. (Bank)	
12	Validity of offer	120 days from the date opening of technical bid
13	Blank Price bid 'JS-472' (Essential)	Enclosed / Not Enclosed
14	Valid E-Mail Id (Essential)	
15	Participation in RA	YES / NO

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16	Copy of turn over for last three year (Essential) (refer Qualifying requirement) i. 2020-21 ii. 2021-22 iii. 2022-23	Submitted/ Not submitted
17	Work Experience (refer Qualifying requirement) (Essential) i. Work order ii. Completion Certificate iii. Relevant TDS/TRACES (in case of Experience in private sector)	Submitted/ Not submitted
18	Copy of Income Tax return i. F.Y 2020-21 ii. F.Y 2021-22 iii. F Y 2022-23	Submitted/ Not submitted
19	Acceptance of Scope of work (for quoted option A or option B), Special terms and conditions & General Terms & conditions Signature on all pages without deviation by bidder	YES / NO
20	Submission of Security Deposit after issue of LOI and before award of Work Order to contractor.	YES / NO
21	Self declaration as per as per Annexure V on Rs 100 stamp paper	Submitted/ Not submitted

We will fulfill all the obligations of the contractor and abide by the Terms & Conditions mentioned in the enquiry.

We hereby accepted above (signature & seal of bidder)