

**Reconditioning & CNC Retrofitting of COOPER make Vertical Turning Lathe, Model: CVT-150
(Asset No. 51-6001) of 51-PULVERISERS SHOP
TENDER NOTICE NO.: HY/M&S/10-RS/RC/20-21/CTV-150/0611/1 Date: 06.11.2020**

**BHARAT HEAVY ELECTRICALS LIMITED
RAMACHANDRAPURAM: HYDERABAD – 502032
M&S/10-REPAIR SHOP**

Phone No.: 040--23185324

E-mail: mbchandana@bhel.in

TENDER NOTICE NO.: HY/M&S/10-RS/RC/20-21/CTV-150/0611/1 Date: 06.11.2020

Bharat Heavy Electricals Limited, a Government of India Public Sector Undertaking having its registered office at Siri Fort, New Delhi through BHEL-HPEP, Ramachandrapuram, Hyderabad, one of its manufacturing units, invites sealed tenders in two-part bid (Part-A: Techno-commercial Bid & Part-B: Price Bid) from eligible contractors, who fulfill the qualifying criteria as stipulated in the NIT for the work of "**Reconditioning & CNC Retrofitting of COPPER make Vertical Turning Lathe, Model: CVT-150 (Asset No. 51-6001)**" as per scope of work, terms & conditions enclosed."

Sealed quotations in a single cover consisting of two inner sealed covers (containing **Part-A:** Techno-commercial Bid and **Part-B:** Price Bid superscribing **Collective Number: N0ATX00359 dated 20.11.2020**, Tender Notice Number, Tender Date, Name of Work, Due Date of Opening, Part A: Techno-commercial Bid or Part B: Price Bid on top of cover) will be received upto 11.00 AM on or before 12.12.2020 at Vendor Complex, Besides Administrative Building, BHEL-HPEP, Ramachandrapuram, Hyderabad-502032. Part A: Techno-commercial Bid will be opened at 14.30 PM on the due date in the presence of bidders or their authorized representatives. Further information if any, may be obtained from the office of the undersigned. Reverse Auction (RA) will be conducted online among techno-commercially qualified bidders through our service provider to arrive at optimum cost.

1. Name of work	: "Reconditioning & CNC Retrofitting of COOPER make Vertical Turning Lathe, Model: CVT-150 (Asset No. 51-6001)" as per scope of work, terms & conditions enclosed
2. Earnest Money Deposit	: Rs. 126,730/-
3. Estimated Cost to BHEL	: Rs. 63, 36,192/- + GST as applicable.
4. Cost of Tender documents	: NIL
5. Tender sale starts from	: Not applicable
6. Tender sale closes on	: Not applicable
7. Last date of receipt of tenders	: 12.12.2020 up to 11.00 AM
8. Date and time of opening of tenders	: 12.12.2020 at 14.30 PM (Part-A: Techno-commercial bid only)

Name & Address of the firm:

for BHARAT HEAVY ELECTRICALS LIMITED

-/

(CH MALLI BABU)
DGM/ 10-RS, RC, AC & RW (M&S)

INSTRUCTIONS TO TENDERER

1. The bids shall be submitted in two parts.
 - a) Part-A: Techno-commercial Bid (to be submitted in sealed cover)
 - b) Part-B: Price Bid (to be submitted sealed in cover)
2. Part-A must be duly completed and super-scribed "**Collective Number: N0ATX00359 dated 20.11.2020, Tender Notice Number, Tender Date, and Part-A: Techno-commercial Bid**". The tenderer shall not indicate the price or rate in the Part-A: Techno-commercial Bid. The tenderer shall expressly accept all the terms and conditions of the tender. The tender which does not comply with the BHEL terms & conditions may be rejected as non-responsive/non-conforming/ and non-acceptable.
3. Part-B must be duly completed with reference to the tender conditions and put in a separate sealed envelope and super-scribed "**Collective Number: N0ATX00359 dated 20.11.2020, Tender Notice Number, Tender Date, and Part-B: Price Bid**".
4. The Techno-commercial Bid (Part-A) and general terms and conditions shall be attached to Techno-commercial offer with each and every page duly signed and stamped by the tenderer (at the bottom of each page) as a token of acceptance.
5. The Price Bid (Part-B) shall not carry any conditions. Price/rate should be quoted in clear terms in the format given by BHEL. The price/rate should be quoted in figures as well as in words. If there is a discrepancy between figures and words, the amount in words shall prevail.
6. The Price Bid (Part-B) will be opened in respect of those tenderers, who are qualified techno-commercially.
7. The tender forms of both Part-A & Part-B duly filled in all aspects and shall be signed and stamped on each page of the tender document by the tenderer. The tenderer should submit the tender documents intact without detaching any page or pages. All entries in the tender document should be in one ink. Corrections, over-writings, cuttings etc. are not permitted.
8. All the columns in the tender form shall be filled without leaving any column blank in any page of the tender document. In case any of the columns left blank, the tender is liable to be rejected.
9. Before making of the offer, the tenderers are advised to carefully go through the terms and conditions, which form part of the Agreement.
10. Tender documents consisting of Part-A and Part-B duly sealed in separate envelopes should be sealed in another envelope and should be deposited in Vendor Complex, Besides Administrative Building, BHEL-HPEP, Ramachandrapuram, Hyderabad-502032 addressed to CH MALLI BABU, DGM/10-RS, AC (M&S), BHEL, Ramachandrapuram, Hyderabad-502032 so as to reach on or before 11.00 AM on 12.12.2020. The tender documents may also be sent by registered post/speed post/courier so as to reach on or before the said date and time. BHEL is not responsible for any postal delay or other delays. Part-A of tender form i.e. Techno-commercial Bid will be opened at 14.30 PM on the due date in the

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presence of tenderers or their authorized representatives who are present for the tender opening. Tenderers who qualify in Techno-commercial Bid will be intimated to attend the tender opening of Part-B: Price Bid, at a date to be notified separately. Part-B: Price Bid will be opened at the specified date in the presence of tenderers or their authorized representatives who are notified to attend the tender opening,

11. BHEL reserves the right to assess the capacity and capabilities of the parties for pre-qualification. The company also reserves the right to accept or reject any or all the tenders or any part thereof at any stage of process without assigning any reason whatsoever. The company has no obligation to accept the lowest tender.
12. **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 all the techno-commercially qualified bidders. Part B: Price bids of all techno-commercially qualified bidders shall be opened and same shall be considered as initial bids of bidders in RA. In case any bidder(s) do/does not participate in online Reverse Auction, their sealed envelope price bid along with applicable loading, if any, shall be considered for ranking.
13. For any further clarifications, SHRI A KUMARA AYYAPPA, Dy. Manager/10-RS, AC (M&S), BHEL, Ramachandrapuram, Hyderabad-502032 may be contacted in person or through phone numbers: 040-23182551, 9848998735, 8328662100

EMD Payment

EMD of 2% of the Estimated Cost (i.e. Rs. 126,730/-) shall be paid in as cash deposit in BHEL cash office or by Electronic Fund Transfer (EFT) to BHEL Account Number: 62048154115 (IFS Code: SBIN0020075) or by Demand Draft/Banker's Cheque/Pay Order drawn on any nationalised bank/scheduled bank in favour of "Bharat Heavy Electricals Limited" payable at Hyderabad shall be enclosed to the tender bid. Tender bids received without EMD will be rejected and will not be considered for evaluation. In the event of acceptance of tender, and if the contractor/bidder fails to commence the work within the promised period, BHEL shall without prejudice to any other right or remedy be at liberty to forfeit the said earnest money absolutely. EMD does not carry any interest.

Cash Office timings: 09.30 AM to 11.30 AM

&

13.30 PM to 15.30 PM

**BHARAT HEAVY ELECTRICAS LIMITED
RAMACHANDRAPURAM: HYDERABAD-502 032**

M&S/10-REPAIR SHOP

PART-A: TECHNO-COMMERCIAL BID

TENDER NOTICE NO.: HY/M&S/10-RS/RC/20-21/CTV-150/0611/1 Date: 06.11.2020

NAME OF WORK: “Reconditioning & CNC Retrofitting of COPPER make Vertical Turning Lathe, Model: CVT-150 (Asset No. 51-6001)” as per scope of work, terms & conditions enclosed.

THIS IS AN INDIVISIBLE WORKS CONTRACT AND THE CONTRACTOR SHALL FILL REMARKS COLUMN AGAINST ALL ITEMS.

This tender schedule must be submitted along with the General Conditions, Special Conditions etc. enclosed herewith duly signed and stamped on each and every page with tenderer's covering letter. Quotations should be TYPED on tender schedules only. Any deviations/deletions should be brought out separately on tenderer's letter pad and enclosed to the tender documents.

The following are to be filled up by the tenderer

Name of the Contractor :
Full Address :

Name of Contact Person :
Office Phone Number :
E-mail Address :
Mobile Number :

S No.	Description	Contractor's Remarks
1	PF CODE	
2	ESI CODE	
3	PAN	
4	GST Registration. Number	
5	Price Validity: 90 Days from Techno-commercial bid opening date	
6	EMD: Rs. 126,730/- Cash receipt/Banker's Cheque details	
7	Security Deposit Clause: Acceptance (See terms and conditions for details)	
8	Taxes and Duties: mention whether included and firm during contract period OR extra as applicable	
9	Payment Terms: Progressive payments as mentioned in the scope of work enclosed for the work completed successfully in all respects	

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S No.	Pre-Qualification	Contractor's Remarks
A	<p style="text-align: center;"><u>PRE-QUALIFICATION REQUIREMENTS</u> (documentary proofs should be enclosed)</p> <p>All the following conditions are to be satisfied by the bidder. Documentary proof is to be enclosed with techno-commercial bid satisfying all these conditions. In case the bidder fails to enclose the same, the offer is liable to be rejected.</p>	
1	<p>The average financial annual turnover during the last three years, ending 31st March 2019 should be at least 30% of the estimated cost. (vendor should submit balance sheet and P&L account for last 3 years duly certified by Charted Accountant)</p>	
2	<p>The party must be a reputed machine tool manufacturer/reconditioner of heavy/medium machine tools. Copy of purchase orders/work orders and corresponding successful completion certificates should be submitted as a proof for verification. Offers without these documents will be rejected. List of the customers along with respective contacting officer's address (including phone number/e-mail address) for whom machines were reconditioned/manufactured/rebuilt should be enclosed to the offer.</p>	
3	<p>Experience of having successfully completed similar works during the last 7 years ending 31st October-2020 shall be either of the following:</p> <p class="list-item-l1">a) Three similar completed works each costing not less than the amount equal to 40% of the estimated cost. (Each work order / purchase order shall be on single machine only)</p> <p style="text-align: center;">OR</p> <p class="list-item-l1">b) Two similar completed works each costing not less than the amount equal to 50% of the estimated cost. (Each work order / purchase order shall be on single machine only)</p> <p style="text-align: center;">OR</p> <p class="list-item-l1">c) One similar completed work costing not less than the amount equal to 80% of the estimated cost.</p>	

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	(Each work order / purchase order shall be on single machine only)	
4	<p><u>Similar Machines definition</u></p> <p>Manufacture/reconditioning of medium size machine tools like</p> <ol style="list-style-type: none"> 1. Centre lathes equivalent to L 45 of HMT make (Work piece diameter 900 mm, length 3 m, weight 3 ton) 2. Centre lathes equivalent to SU 63 of TOS make (bed length 4.9 m or more) 3. Horizontal boring machines of spindle diameter of 63 mm or more 4. Vertical boring machines equivalent to SK 12 of TOS make (table diameter 1200 mm or more) 5. Drilling machines of spindle diameter of 60 mm to 100 mm 6. Manufacturing of light or medium machines equivalent to HMT make radial drilling machines or lathes 7. General purpose CNC machines like HMC/VMC/Horizontal Borer/Vertical Borer/Lathes 	

B.	SPECIAL CONDITIONS
I	<p><u>(BANK GUARANTEE/ALL RISK INSURANCE COVERAGE AS SECURITY DEPOSIT)</u></p> <p>For safe custody of the machine and material being stationed at contractor's works)</p> <p>The contractor has to submit the bank guarantee/all risk insurance coverage for Rs. 65 lakhs for safe custody and as a security deposit for the period of machine and material being stationed at contractor's works. This bank guarantee will be released after receipt of the reconditioned and tested machine at BHEL works. Any damage/loss shall be rectified by the contractor at their cost.</p>
II	<p>EMD of 2% of the Estimated Cost (i.e. Rs. 126,730/-) shall be paid in as cash deposit at BHEL cash office or by Electronic Fund Transfer (EFT) to BHEL Account Number: 62048154115 (IFS Code: SBIN0020075) or by Demand Draft/Banker's Cheque/Pay Order drawn on any nationalised bank/scheduled bank in favour of "Bharat Heavy Electricals Limited" payable at Hyderabad shall be enclosed to the tender bid. Tender</p>

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	<p>bids received without EMD will be rejected and will not be considered for evaluation. In the event of acceptance of tender, and if the contractor/bidder fails to commence the work within the promised period, BHEL shall without prejudice to any other right or remedy be at liberty to forfeit the said earnest money absolutely. EMD does not carry any interest.</p>
III	<p><u>SECURITY DEPOSIT</u></p> <p>The total amount of Security Deposit will be 5% of the contract value. EMD of the successful tenderer shall be converted and adjusted towards the required amount of Security Deposit. Security Deposit amount shall be returned to the contractor after successful completion of the contract work, i.e. handing over of the proved-out machine to regular production at BHEL works. The security deposit shall not carry any interest.</p>
IV	<p><u>TIME SCHEDULE</u></p> <p>THIRTY TWO WEEKS for reconditioning & CNC retrofitting of the machine, from the date of receipt of the machine at contractor's works to the date of final inspection and acceptance of the reconditioned machine by BHEL at the contractor's works.</p>
V	<p><u>PAYMENT TERMS</u></p> <ol style="list-style-type: none"> 1) 30% of Part-I order (i.e. 30% of labour cost and 30% of initial spares cost) shall be paid after joint inspection of the completely dismantled machine for 1) identification of spares and 2) deciding detailed scope of repair/rework on various components/parts and submission of quotation for joint inspection spares along with manufacturing drawings. This is subject to submission of bank guarantee for like amount valid for the period till the reconditioned & retrofitted machine is reached to BHEL works. 2) 60% of Part-I order (i.e. 60% of labour cost and 60% of initial spares cost) along with 100% taxes and duties at actuals (against submission of documents to BHEL for reimbursement of the same from authorities concerned) shall be paid after re-erection, re-commissioning, job prove-out and handing over of the reconditioned & retrofitted machine for regular production at BHEL works. 3) Joint inspection spares shall be ordered separately (Part-II order). However, 90% of Part-II order shall be paid after re-erection, re-commissioning, job prove-out and handing over of the reconditioned & retrofitted machine for regular production at BHEL works. 4) Balance 10% of Part-I & Part-II orders shall be paid after submission of performance bank guarantee for like amount valid for the guarantee period of 12 months (on two-shift basis) from the date of handing over of the proved-out machine for regular production at BHEL works. <p><u>5) GST CLAUSES</u></p> <ol style="list-style-type: none"> a. In case GST credit is delayed/denied to BHEL due to non/delayed receipt of goods and/or tax invoice or expiry of time line prescribed in GST law for availing such ITC, or any other reasons not attributable to BHEL, GST amount shall be recoverable from vendor along with interest

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	<p>levied/leviable to BHEL.</p> <ul style="list-style-type: none"> b. In case vendor delays declaring such invoice in his return and GST credit availed to BHEL is denied or reversed subsequently as per GST law, GST amount paid by BHEL towards such ITC reversal as per GST law shall be recoverable from vendor/contractor along with interest levied/leviable on BHEL. c. The bidder shall arrange to send to BHEL, Hyderabad along with all the required documents as in Purchase Order, tax invoice (original for recipient) along with his bills. d. Vendor to ensure correct applicability of IGST/CGST/SGST/UTGST based on the inter/intra state movement supply of goods and services or both. e. Taxes and duties prevalent on the contractual delivery date (in case of delay) which is lower shall be applicable and paid. Composition scheme to be addressed. f. Vendor shall note that the invoice has to be raised quoting HSN code of goods or Accounting code of services or both wherever applicable. g. Invoice should mention BHEL-HPEP-HYDERABAD GSTIN: 36AAACB4146P1ZG or GSTIN of BHEL nodal agency as mentioned Purchase Order. h. In case of any short supply of goods or service, Vendor has to raise a credit note for short supplied quantity as per GST provisions. i. Any GST liability arising on BHEL under reverse charge before actual receipt of goods and/or services and/or invoice thereof subject to recovery of interest leviable for the period between the date of such liability and actual date of eligibility of ITC based on receipt of goods, receipt of invoices and other conditions specified in GST law, as applicable. j. A penalty of 0.50% of the contract value of work will be levied for every week's or part thereof delay in execution of work by the agency, subject to a maximum penalty of 10% of contract value. Penalty amount so determined along with GST, if applicable thereon shall be recovered. k. Supplier shall mention their GST registration number in all their invoices and invoices shall be in the format as specified/prescribed in GST laws. Invoices shall necessarily contain Invoice number (in case of multiple numbering system is being followed for billing like SAP invoice number, commercial invoice number etc. then the Invoice number which is linked/uploaded in GST network shall be clearly indicated), item description as per Purchase Order, Quantity, Rate, Value, applicable taxes with nomenclature (like IGST, CGST, SGST & UTGST) separately, HAS/SAC code etc.
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	<p>1. A declaration to the effect that all tax liability as per GST rules and regulations shall be discharged.</p>
VI	<p><u>PENALTY</u></p> <p>0.5% of the total contract value (including labor cost, cost of initial spares & joint inspection spares) per week or part thereof up to a maximum of 10% of the total contract value shall be levied beyond the time specified in clause-IV.</p>
VII	<p><u>PERFORMANCE BANK GUARANTEE</u></p> <p>Satisfactory performance of the reconditioned machine shall be guaranteed for a period of 12 months (on two-shift basis) from the date of handing over of the proved-out machine for regular production at BHEL works.</p> <p>a) During the guarantee period contractor shall attend to the machine/replace failed parts free of cost as and when called upon to do so for defects/failures noticed and attributable to contractor's work & supplies (both manufactured and bought-out by them).</p> <p>b) The discarded parts (old) during the guarantee period shall be taken back by the contractor at their own expenses. Repairs, if any, shall be carried out either at BHEL/contractor works as agreed mutually. But cost of transportation both ways shall be on contractor's account. BHEL will not pay for this.</p>
VIII	Bonus, PVC, ORC is not applicable.

MACHINE SPECIFICATIONS

Machine Type	:	Single Column Vertical Turning Lathe
Model	:	CVT 150
Manufacturing Year	:	1981
Machine Serial Number	:	43053
Maximum Turning Diameter	:	1500 mm
Maximum Turning Diameter with side head down	:	1650 mm
Maximum Turning Height above top of Chuck	:	1100 mm
Max. Weight of work-piece (Symmetrical loading)	:	8 ton
Max. Cutting effort on Diameter of 1100 mm	:	4500 kg
Minimum Speed of Chuck	:	6.3 RPM
Maximum Speed of Chuck	:	200 RPM
Feed rate per one revolution of Chuck	:	0.05-10 mm
Rapid traverse of heads	:	2250 mm / min
Chuck Drive Motor Power	:	30 kW
Approximate Net Weight of the Machine	:	15500 kg

Scope of Work in Brief

Dismantling of the machine at BHEL works, minimum packing required for transportation of the dismantled machine parts to contractor's works, reconditioning of the machine, replacement of CNC system, PLC, Drive system, electrical control panel, operator panel, switchgear and complete wiring of the machine, machine painting, prove-out of geometrical accuracies at contractor works, dismantling of the reconditioned machine into sub-assemblies, transporting these sub-assemblies to BHEL works, re-erection & re-commissioning at BHEL works, laser calibration of X- and Z-axes, prove-out of the machine accuracies and job accuracies of components machined on the machine and handing over of the proved-out machine to regular production activities at BHEL works by the contractor. Transportation and transit insurance both ways are in BHEL's scope and cost.

Note: The existing CNC system (SINUMERIK 802D sl) shall be replaced with new SINUMERIK 828D CNC system (with latest version). Existing CNC, Full CNC Keyboard, MCP, Mini Handheld Unit (MINI-BHG), Drive System, PP module, DMC module, SMC modules, AC Servomotor Power cables and Signal/feedback cables, X- and Z-axes linear scales along with scanner heads and adaptor/extension cables shall also be replaced. Supply and replacement of electrical control panel, operator panel, switchgear and other accessories is also in contractor's scope. Complete machine wiring is to be done along with replacement of drag chains. Existing Siemens make 1FT7 series AC servomotors (2 No's) for feeds and 1PH7 series AC Squirrel Cage Induction Motor (1 No.) for chuck shall be retained.

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A	<u>MECHANICAL</u>
1	Measurement of machine geometrical accuracies and sound levels as per manufacturer's test charts before dismantling of the machine at BHEL works by the contractor with his personnel and measuring instruments.
2	Removing the machine from the foundation, dismantling it into transportable lots and minimum packing required for further transportation to the contractor's works. The necessary personnel and tools are in the contractor's scope.
3	Unpacking the transported machine assemblies at contractor's works, complete dismantling of the machine assemblies into individual parts, de-greasing, chemically cleaning, pre-painting of structural parts, joint inspection of the dismantled machine parts along with BHEL personnel to finalize the detailed list of 1) spares to be bought-out and 2) spares to be manufactured. The list has got to be approved by BHEL. Drawings of manufacturing spares and specifications of bought-out spares shall be prepared and submitted to BHEL for approval. BHEL may procure and supply these items to the contractor from any other source as well.
4	Replacement of all bearings with new ones (with SKF/FAG/NTN make only) irrespective of their size and present condition. (List of bearings is mentioned in the Annexure-A). Condition of main spindle bearing will be assessed during joint inspection at the contractor's works. Decision will be taken accordingly.
5	All slide-ways/guide-ways of machine, column, and cross-rail and tool head are worn-out and backlash is observed. These have to be ground and blue-matched with mating parts; scraping of all sliding parts; gibbs etc. to obtain final alignment and required accuracies. Pasting of Turcite® B low friction bearing material on all slides, wherever required.
6	Replacement of existing ball screws, ball nuts, timing pulleys and belts of both X- & Z-axes, irrespective of their present condition. Replacement of existing pulley and belts of spindle motor, irrespective of their present condition
7	Replacement of existing lead screw and box nut of Cross-rail, irrespective of its present condition. Cross-rail counter-weight balancing system is to be refurbished
8	New Hydraulic gear shifting mechanism with all accessories is to be provided for chuck rotation.
9	<ul style="list-style-type: none"> a) Total hydraulic system including hydraulic tank, pump and motor, solenoid valves, hoses, pipes, pressure switches, pressure gauges and other accessories for the chuck are to be provided. Make: Vickers/Rexroth/Yuken. b) Hydraulic oil leakages in the machine are to be rectified. c) Chuck gearbox lubrication system is not working. Heavy noise is observed in chuck gearbox and vibrations in the machine. These are to be rectified d) Chuck braking is through hydraulics. This feature is to be studied and is to be rectified if necessary e) Replacement of all seals, O-rings, wipers, rubber packing's etc.
10	Poor surface finish of jobs on this machine. This is to be rectified.
11	Centralized lubrication system along with required accessories is to be provided for lubrication of axes', chuck gearbox, and cross-rail guide-ways and mechanism. All lubrication pipe lines on the machine are to be replaced with new ones
12	Replacement of existing coolant motor-pump, its accessories and piping.
13	Existing chip conveyor system is to be serviced. Existing chip conveyor motor (Motor Rating: 2.3 kW) shall be replaced with new motor of sufficient higher

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	capacity. Old motor shall be handed over to BHEL.																					
14	Existing machine guards and chuck guards are damaged. These are to be replaced with new guards. Arrangement of these guards shall be in line with existing arrangement on the machine for the purpose of easy maintenance of the machine.																					
15	Dials, name plates, instruction plates shall be replaced with new ones. One plate with machine specifications in brief, name & address of the reconditioning party, year of reconditioning etc. shall be riveted on top of the machine surface.																					
16	Oiling points with periodicity, type of oil to be used shall be indicated on the machine at appropriate places.																					
17	Any modifications carried out shall not sacrifice the original traverses, speed, feed ranges and machine functionality.																					
18	<p><u>PAINTING</u></p> <p>Machine outside body shall be painted with two coats of Apcolite (Asian Paints) premium enamel opaline green color paint. Interior of the machine shall be painted with two coats of red enamel paint. Wherever, oil comes in contact with the interior of the body, oil resistant paint shall be used. Letters, numerals etc. will have to be painted with a different color as required/indicated by BHEL at the time of final painting. For electrical control panel, the interior of the panel shall be painted with two coats of white enamel paint. Painting shall be carried out according to the standard procedure for painting including cleaning and removing of the old paint, applying metal primer putty etc. Good finish should be ensured. Overall machine aesthetic view should be taken care of.</p>																					
B	<u>ELECTRICAL & ELECTRONICS SCOPE OF MATERIAL SUPPLY</u>																					
1	<p>a) The existing CNC system (SINUMERIK 802D sl) shall be replaced with new SINUMERIK 828D CNC (with latest version). Existing CNC, Mini Handheld Unit (MINI-BHG), Drive System, Power cables, signal/feedback cables of AC Servomotors and Chuck motor, X- and Z-axes linear scales along with scanner heads, and adaptor/extension cables shall also be replaced.</p> <p><u>Existing 1FT7 series AC servomotors (2 No's) for feeds and 1PH7 series AC Induction Motor (1 No.) for chuck shall be retained.</u></p> <p>b) Existing isolation transformer, line filter & line reactor (3-φ choke) shall also be retained. All these are in working condition.</p> <p>c) Existing configuration of CNC system, Drive system, feed motors and chuck motor of the machine are as given below for the purpose of information of the contractor.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">1</td> <td>6FC5370-0AA00-3AA0</td> <td>802D sl T/M pro CNC (HW 03.02.00.01 and SW 01.04.06.00)</td> </tr> <tr> <td>2</td> <td>6FC5303-0DM13-1AA1</td> <td>802D sl Full CNC Keyboard (Horizontal format)</td> </tr> <tr> <td>3</td> <td>6FC5303-0AF30-1AA0</td> <td>802D sl MCP (Vertical Format)</td> </tr> <tr> <td>4</td> <td>6SN1111-0AA00-0DA1</td> <td>SINAMICS HF Line Reactor (Choke), 55 kW</td> </tr> <tr> <td>5</td> <td>6SL3000-0BE25-5DA0</td> <td>Basic Line Filter</td> </tr> <tr> <td>6</td> <td>1PH7163-2QF03-0CA3</td> <td>AC Induction Motor, 30 kW (S1), 236 Nm, 82 A, 1500 RPM with DRIVE CLiQ interface (for Chuck)</td> </tr> <tr> <td>7</td> <td>1FT7086-1AF71-1DH1 (Qty. 2)</td> <td>AC Servomotor, 28 Nm, 15.5 A, 3000 RPM, with DRIVE CLiQ interface and brake (for X & Z axes)</td> </tr> </table>	1	6FC5370-0AA00-3AA0	802D sl T/M pro CNC (HW 03.02.00.01 and SW 01.04.06.00)	2	6FC5303-0DM13-1AA1	802D sl Full CNC Keyboard (Horizontal format)	3	6FC5303-0AF30-1AA0	802D sl MCP (Vertical Format)	4	6SN1111-0AA00-0DA1	SINAMICS HF Line Reactor (Choke), 55 kW	5	6SL3000-0BE25-5DA0	Basic Line Filter	6	1PH7163-2QF03-0CA3	AC Induction Motor, 30 kW (S1), 236 Nm, 82 A, 1500 RPM with DRIVE CLiQ interface (for Chuck)	7	1FT7086-1AF71-1DH1 (Qty. 2)	AC Servomotor, 28 Nm, 15.5 A, 3000 RPM, with DRIVE CLiQ interface and brake (for X & Z axes)
1	6FC5370-0AA00-3AA0	802D sl T/M pro CNC (HW 03.02.00.01 and SW 01.04.06.00)																				
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**Reconditioning & CNC Retrofitting of COOPER make Vertical Turning Lathe, Model: CVT-150
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	Out of the above items, S No. 1 to 3 is to be replaced with new CNC system & accessories. <u>S No. 4 to 7 shall be retained.</u>
2	<p><u>NEW CNC SYSTEM: SIEMENS SINUMERIK 828D</u></p> <p>Type: 6FC5370-7AA30-0AA0, CNC-HARDWARE PPU 271.4 / PPU 281.3 HORIZONTAL (or latest successor with same or more features) with relevant keyboard, system software, hardware & accessories shall be supplied.</p> <p>The CNC system shall be with all standard and necessary optional features required for a Turning Machine. The following additional features are also required for the supplied CNC system.</p> <p>a) Bidirectional compensation software option b) Network drive management software option</p> <p>Note: The contractor shall submit the Bill of Materials (BoM) of CNC retrofit package to BHEL for approval, before procurement of the same.</p> <p><u>SPECIFICATIONS OF CNC SYSTEM</u></p> <ol style="list-style-type: none"> 1. Controlled axes (No. of axes displayed) : 2 linear axes and 1 spindle 2. Simultaneously controllable axes : 2 linear axes 3. Least input increment : 0.001 mm (Linear axis) 4. Least command increment : 0.001 mm (Linear axis) 5. Rapid traverse rate : 5000 mm/min (Linear axes) 6. CNC display : minimum 10.4" colour 7. RS-232 communication port for transfer of part programs 8. Ethernet connection facility supporting TCP/IP protocol 9. Tool path simulation (Graphics) 10. CNC system should support position feedback from HEIDENHAIN make linear scales and/or SIEMENS/HEIDENHAIN make rotary encoders, apart from the integral motor encoders 11. Position control loop of all axes is to be through the CNC only.
3	Machine Control Panel MCP 483C PN for CNC system MCP Type: 6FC5303-0AF22-0AA1, Make: Siemens
4	Mini-Handheld Unit Type: 6FX2007-1AD03 with holder and sufficient length of cable to conveniently carry out job setting. Make: Siemens
5	PLC (integral with CNC) with minimum 72 inputs and 48 outputs PLC I/O Module, PP 72/48D PN, Type: 6FC5311-0AA00-0AA0, Make: Siemens
6	SINAMICS S120 (or latest) Drive system for the above AC Servomotors (2 No's) for feeds and 30 kW AC Induction Motor (1 No.) for Chuck.
7	SINAMICS Drive CLiQ Module Cabinet, DMC (Qty. 1 No.) SINAMICS Sensor Module Cabinet, SMC (Qty. 3 No's.) required for interfacing of position feedback systems to CNC system
8	Supply of suitable pre-assembled cables required to connect amongst CNC, PPU, OP, MCP, Mini-Handheld Unit, Drive System, PP module, DMC module, SMC modules etc. Existing power cables, signal/measuring system cables and DRIVE CLiQ

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	<p>cables of AC Servomotors and Chuck motor, communication cables, interface cables shall also be replaced with new cables. Make: Siemens</p> <p>Distance between operator panel & electrical control panel is 20 metres (approx.)</p>
9	<p><u>FEED BACK SYSTEMS</u></p> <p>The following scales & encoders shall be supplied, installed & commissioned on the machine</p> <p>a) X - axis: Sealed incremental linear scale with distance coded (20 mm) reference mark, Type: LS 187C, 1Vpp, Measuring Length: 1140 mm Make: HEIDENHAIN</p> <p>b) Z - axis: Sealed incremental linear scale with distance coded (20 mm) reference mark, Type: LS 187C, 1Vpp, Measuring Length: 840 mm Make: HEIDENHAIN</p> <p>c) Chuck: Incremental Rotary Encoder Type: 6FX2001-3CB02, 1Vpp Incremental Rotary Encoder, 1024 PPR Make: HEIDENHAIN/SIEMENS</p> <p>The scope of supply shall also include</p> <p>a) Supply of required hardware, mounting brackets, clamping pins, couplings and other accessories suitable to mount the above scales & encoders.</p> <p>b) Pre-assembled signal cables and adapter cables (of sufficient length) of Heidenhain/Siemens make for interfacing with CNC system.</p> <p>c) Metallic protection covers for both the scales and scanner heads to protect them from oil, coolant, chips, dust etc.</p> <p>Note: The existing linear scales of X- & Z-axes, other accessories shall be removed and handed over to BHEL.</p>
10	Compact Flash cards (2 No's) of the CNC system with complete commissioning data (after machine prove out) shall be provided after testing on the machine. 32 GB pen drives (3 No's) are to be provided for part program transfer & complete machine commissioning data backup and archives back up.
11	Existing electrical control panel of the machine shall be replaced with new panel of RITTAL make and shifted from the present position to towards the machine. New Drive system, PLC, cables and other switchgear and accessories shall be mounted in this panel. Complete panel wiring is to be done. Sufficient illumination along with ON/OFF switch is to be provided in main electrical control panel.
12	New Swivel type operator panel for mounting of CNC System with display and keyboard, Machine Control Panel and Operating controls with IP 54/55 degree of protection. The supplied new operator panel shall be with similar dimensions to the existing operator panel on the machine.
	<p>The operator panel must be locked for 180° swivelling.</p>

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	Operating controls shall include required pushbuttons, selector switches for machine ON, coolant ON/OFF, Cross-rail UP/DOWN, Chip Conveyor ON/OFF, Machine lamp ON/OFF etc.
13	<p>Air Conditioning Units of sufficient capacity each for operator panel & electrical control panel. Make Rittal/Sunbeam/Advance/Werner Finley.</p> <p>For monitoring of electrical control panel & operator panel temperature, separate controllers shall be provided. The Digital inputs/outputs of these controllers are to be configured with PLC for triggering “Over Temperature Alarm“ on the CNC display. These controllers should have a provision to configure the alarm trigger (temperature) set point.</p>
14	<p>Complete machine re-wiring is to be done along with replacement of drag chains. All control cables, power cables and other cables routed from main electrical control panel, operator panel etc. to machine shall be replaced with new cables of high quality and shall be provided with flexible, oil resistant non-metallic conduits. Make of cables: LAPP KABEL</p> <p>Supply and laying of two industrial grade Ethernet cables from main electrical control panel to operator panel is also in the contractor's scope.</p>
15	LED machine lamp with sufficient illumination shall be mounted at appropriate location on the machine. Two (2 No's) 5/15 A power sockets are to be provided each inside the main electrical control panel & operator panel for troubleshooting purpose of the machine.
16	<p>Digital Energy Meter of Siemens PAC3220 or equivalent with Ethernet communication facility shall be provided on main electrical control panel to indicate and record the total consumption of electric power by the machine including auxiliary systems. Scope shall also include necessary current transformers & relevant accessories.</p> <p>(Vendor shall get approval from BHEL with respect to model of Digital Energy Meter before procurement of the same)</p>
17	All switchgear items like MCBs, OLRS, contactors, control relays etc. shall be of SIEMENS/any other reputed make. Terminal blocks shall be of WAGO make
18	All the limit switches and other sensors (if any) along with brackets are to be replaced with BALLUF/ TEKNIC EUCHNER make
19	Indication lamps wherever required are to be provided with new ones.
20	Indicating instruments/gauges shall be replaced with new ones of reputed make
21	True RMS Digital Multi-meters along with probes (Qty. 2 No's), Type: Fluke 115 400A AC/DC True RMS Clamp meter with probes (Qty. 1 No.), Type: Fluke 325 Taparia make screwdriver sets (Qty. 2 sets) Model 840 for maintenance of the reconditioned equipment.
22	All cables other than in-coming power supply are in the scope of contractor.
23	<p>Training: The contractor should arrange training on maintenance of CNC and PLC system for 2 Persons free of cost at CNC system manufacturer's training facility.</p> <p>Training on CNC Programming & Operation for 4 Persons free of cost at the supplier's works.</p> <p>(Expenditure for lodging & boarding will be borne by BHEL)</p>
24	Any other item (mechanical, electrical or electronic) not mentioned in this scope,

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	but required to keep the machine in working condition with all features and functions are in the scope of the contractor.
C	<u>ELECTRICAL & ELECTRONICS SCOPE OF WORK</u>
1	Dismantling of existing operator panel and 802D sl CNC system along with associated cables & accessories.
2	Installation of new swivel type operator panel consisting new 828D CNC system, Display, MCP, Operating panel, Mini Handheld unit etc.
3	Installation of new electrical control panel and interfacing & commissioning of new CNC system.
4	Interfacing & Commissioning of existing feed motors, chuck motor & new drive system with new CNC system.
5	Development of new PLC logic in line with existing PLC logic & drawings
6	All auxiliary AC motors other than the replaced motors have to be rewound, serviced and bearings are to be replaced with new ones. Insulation resistance (IR) values are to be improved. Terminal blocks are to be replaced with new ones.
7	Interfacing of auxiliary motors like Hydraulic motor, Cross-rail motor, Lubrication motor, Coolant motor, Chip Conveyor Motor etc. to the new CNC system.
8	Interfacing of RS232 communication system with the control system for transfer of part programs and PLC logic.
9	Installation, interfacing and commissioning of X- & Z-axes linear scales and chuck encoder to the new CNC system.
10	Installation, interfacing and commissioning of Digital Energy Meter (with Ethernet facility) on main electrical control panel
11	BHEL is not responsible for any failure/damage to any part/system (electronics) of the machine during reconditioning. Contractor should own the responsibility for above and put back the machine into working condition.
12	All the material (mechanical, electrical and electronics) including cables & accessories removed from the machine and the parts that are discarded/replaced shall be returned to BHEL. These are BHEL's property.
13	All the conduits must be Steel reinforced PVC and of reputed make. All switchgear items like MCBs, OLRs, contactors, control relays, switches, and pushbuttons shall be of SIEMENS make only.
14	All electrical & electronic cabinets/panels shall be ensured to be dust & vermin proof. Contractor should properly close the panel holes to prevent the entry of rodents, rats, and vermin into the panels/pendants/cabinets.
15	Planning and laying of all necessary cables are in the contractor's scope.
16	All equipment must be suitable to run with input voltage of 3 wire, 3 phase, 415 V AC $\pm 10\%$, 50Hz ± 2 Hz.
17	All equipment shall be tropicalized and suitable for operation in shop floor conditions, where temperature variation is between 10° C to 45° C.
18	Before commencing the manufacture of the panels, electrical and general arrangement drawings should be submitted to BHEL for approval.
19	Each panel and the equipment mounted in each panel shall be securely connected to the earth bus. For this purpose, the earth wire shall be looped from equipment to equipment and both ends of the earth wire shall be connected to the earth bus
20	All non-current carrying metallic parts shall be earthed. All doors and movable parts shall be connected to the earth bus with flexible copper connections.
21	Any other work (mechanical, electrical) not mentioned in this scope of work, but

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	required to keep the machine in working condition with all features and functions are in the scope of the contractor.
D	<u>RECONDITIONING & COMMISSIONING AT CONTRACTOR WORKS</u>
1	The machine shall be reconditioned and retrofitted as per the above scope at the contractor's work only. After successful reconditioning and retrofitting, the machine shall be offered for Pre-Dispatch Inspection (PDI) to BHEL at contractor's works. BHEL shall be intimated in advance for deputing the team for PDI. The PDI shall include following activities
2	Checking of geometric accuracies as per original test chart supplied by BHEL. The machine should be brought back to 100% of the original accuracies as specified by the original machine manufacturer and same are to be recorded.
3	Testing of the machine for complete functioning and total features of the machine. Contractor has to prove out all the functions of the machine and demonstrate working of the machine to the satisfaction of BHEL.
4	<p>Laser calibration of positional accuracies and repeatability as per VDI/DGQ 3441 (latest version) by linear method. Pitch Errors are to be compensated bi-directionally. Laser calibration is to be done with external measuring system only. Necessary equipment and personnel are in the contractor's scope. At contractor's works, laser calibration results are to be shown to BHEL team for dispatch clearance of the reconditioned machine. The values shall be as follows</p> <p>a. Positioning Uncertainty (P) X-axis: 0.020 (over full length) Z-axis: 0.020 (over full length)</p> <p>b. Repeatability (Ps max.) X-axis: 0.010 (over full length) Z-axis: 0.010 (over full length)</p>
5	Dismantling of the machine after satisfactory final pre-dispatch inspection (PDI) at contractor works; minimum packing required for further transportation to BHEL
6	The contractor has to dispatch the reconditioned and tested machine by BHEL approved transporter with proper care. Transportation cost is to BHEL account.
E	<u>RE-ERECTION, RE-COMMISSIONING OF THE RECONDITIONED & RETROFITTED MACHINE AND JOB PROVE-OUT AT BHEL WORKS</u>
1	The machine is to be re-erected and re-commissioned at BHEL works by the contractor. The necessary personnel and tools are in the contractor's scope.
2	Checking of geometric accuracies as per original test chart supplied by BHEL. These accuracies shall be brought back to the accuracies mentioned in the original test chart.
3	<p>Laser calibration for checking of positional accuracies and repeatability of X- & Z-axes as per VDI/DGQ 3441 (latest version) by linear method. Errors are to be compensated bi-directionally. Laser calibration is to be done with external measuring system only. Necessary equipment and personnel are in the contractor's scope.</p> <p>The values shall be as follows</p> <p>a. Positioning Uncertainty (P) X-axis: 0.020 mm (over full length) Z-axis: 0.020 mm (over full length)</p>

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	b. Repeatability (Ps max.) X-axis: 0.010 mm (over full length) Z-axis: 0.010 mm (over full length)
4	Two sample work-pieces have to be machined on this machine, to check the accuracy of the jobs. All these tests should be witnessed and certified by our representatives.
5	Handing over of the proved-out machine to BHEL for regular production.
F	<u>DOCUMENTATION</u>
1	Detailed and complete drawings of electrical circuit, hydraulics, lubrication system and mechanical drawings (modified portions) along with location and lay-out of various components on the machine - (3 hard copies)
2	Catalogues of all bought-out items - (3 hard copies)
3	PLC logic in English along with comments - (3 hard copies)
4	Complete data backup of NC/PLC/drives - (3 soft copies)
5	PLC logic in S7 format & PDF format - (3 soft copies)
6	One complete set of above documentation on CD/DVD or any other storage media.
G	<u>GENERAL CONDITIONS</u>
1	The machine shall be reconditioned at contractor works. Contractor's personnel will be allowed to work inside BHEL works only during checking of the machine before dismantling and taking out for reconditioning, during re-erection, re-commissioning and any maintenance work during the guarantee period.
2	Before submitting the offer, the contractor may visit BHEL works to see/study the machine, which is presently in working condition. The contractor is required to study the scope of supply & work and certify the completeness of the scope to execute the work. In case of any discrepancies in the scope, the contractor is required to highlight the same to BHEL.
3	Transport & transit insurance for both ways are in BHEL scope and cost.
4	All works connected to guide-ways of all axes (e.g. slide-ways, gibbs), repair by machining (grinding, milling, hand scraping), suiting with Turcite® B low friction bearing material and matching are also covered under labour charges.
5	<p>SPARES: The spare parts (mechanical/electrical/electronic) required to be replaced (manufacturing spares and bought-out spares) will be to BHEL account. Contractor has to quote for these spares along with manufacturing drawings for manufacturing items and specifications for bought-out items for approval. BHEL may supply these spares, if available or may procure and supply these spares to the contractor from any other source as well. Spares, that are not supplied by BHEL shall be purchased or manufactured by the contractor.</p> <p>a) Spares required to be replaced other than those agreed to during joint inspection will have to be approved by BHEL before such replacement. Cost of such spares shall be borne by the contractor. BHEL will not pay for these items</p> <p>b) For joint inspection of the dismantled machine at contractor's works, prior intimation shall be given to BHEL by the contractor for deputing the team.</p> <p>c) Contractor shall submit the quotation for joint inspection spares within a</p>

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	week from the date of joint inspection.
6	<p><u>REWORK IN LIEU OF REPLACEMENT</u></p> <p>Reworks in lieu of replacement of all parts (guide-ways/sliding surfaces, spindle, bushes, box-nuts, screw rods etc.) by machining, scrapping, grinding/chrome plating/welding etc. identified initially and also during joint inspection are covered under labour charges only. For such works BHEL will not pay.</p>
7	<p>General tools/instruments/gauges required for</p> <p>a) Checking and packing of the machine at BHEL works for transporting the same to contractor works for reconditioning shall be arranged by the contractor.</p> <p>b) Re-commissioning and prove out of the reconditioned machine at BHEL work's shall be arranged for by the contractor.</p> <p>Special tools/instruments/ gauges for these works will be provided by BHEL</p>
8	BHEL reserves the right to inspect the progress as well as workmanship at any stage of the work. Decision of BHEL representative shall be final in the matter of inspection at any stage. Contractor shall extend necessary co-operation to enable such inspection
9	All discarded parts shall be returned to BHEL
10	MACHINE will be kept in open condition. No air conditioner is provided for this machine. The machine shall be given specified accuracies in these conditions only.
11	General terms and conditions of BHEL as per enclosure shall be acceptable.
12	Lodging & Boarding facilities for the contractor's personnel are at Contractor's scope (during dismantling period, re-erection & re-commissioning period and for troubleshooting during performance guarantee period). BHEL is not responsible for this.
13	Material handling facilities such as crane, battery truck, slings, lifting tackles etc. along with operator, consumables like cleaning solvents, cotton waste etc. and utilities like electric power, compressed air etc. shall be provided by BHEL for the works performed at BHEL works
14	The enclosed National Electronic Funds Transfer Format should be submitted along with offer for payments (CVC Guidelines).

Annexure – A

Bearings to be replaced for CVT 150 Vertical Turning Lathe (Asset No. 51-6001)

S No.	Description	Bearing No.	Qty.
1	Tapered Roller Bearing	32218	2
2	Tapered Roller Bearing	32214	2
3	Double Row Ball Bearing	33127	1
4	Cylindrical Roller Bearing	210	1
5	Double Row Self Aligning Ball Bearing	1219	1
6	Double Row Self Aligning Ball Bearing	1313	1
7	Double Row Self Aligning Ball Bearing	2312	1
8	Deep Groove Ball Bearing	6009	1
9	Deep Groove Ball Bearing	6206	1
10	Deep Groove Ball Bearing	6209	1
11	Thrust Ball Bearing	51113	1
12	Thrust Ball Bearing	51213	2
13	Thrust Ball Bearing	52307	1

Price Estimation for Reconditioning & CNC Retrofitting of COOPER make Vertical Turning Lathe, Model: CVT-150 (Asset No. 51-6001)

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PART – I

S No.	Description	BHEL Estimate in INR
A	LABOUR: Activities A to F of the scope of work including Engineering & Design charges	18,40,000
B1	INITIAL SPARES	
B1.1	Mechanical	
B1.1.1	Replacement of all bearings as per Annexure-A of the above scope (with SKF/FAG/NTN make)	8,48,000
B1.1.2	Turcite® B low friction bearing material for all slides, wherever required	1,00,000
B1.1.3	New ball screws, ball nuts, timing pulleys and belts of both X- & Z-axes. New pulley and belts of spindle motor	3,60,000
B1.1.4	New lead screw and box nut for Cross-rail	1,36,800
B1.1.5	New Hydraulic gear shifting mechanism with all accessories is to be provided for chuck rotation	2,16,576
B1.1.6	Total hydraulics including hydraulic tank, pump and motor, solenoid valves, hoses/pipes, pressure switches, pressure gauges and other accessories for the machine are to be replaced with new ones. Make: Vickers/Rexroth/Yuken New Seals, O-rings, wipers, rubber packing etc.	6,00,320
B1.1.7	New Centralized lubrication system along with required accessories is to be provided for lubrication of axes', chuck gearbox, and cross-rail guide-ways and mechanism. All lubrication pipe lines on the machine are to be replaced	67,200
B1.1.8	New coolant motor-pump, its accessories and piping	89,600
B1.1.9	Existing chip conveyor motor (2.3 kW) shall be replaced with new motor of higher capacity	33,600
B1.1.10	Existing machine guards and table guards are to be replaced with new guards. Arrangement of these guards shall be in line with existing arrangement	2,56,000

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B1.1.11	Dials, name plates, instruction plates including speed and feed chart plates shall be replaced with new ones to the extent possible.	30,400
B1.1.12	Cable drag chains for X- & Z-axes.	1,60,000
B1.1.13	Machine painting as per scope (Clause A-18)	93,696
	Total B1.1 (Mechanical Spares)	29,92,192
B1.2	Electrical & Electronics	
B1.2.1	CNC System (SINUMERIK 828D with PPU 271.4 /PPU 281.3 HORIZONTAL or latest successor version) retrofit package along with scales and encoder as per Clause B1 to B10 of above scope	8,00,000
B1.2.2	New electrical control panel of RITTAL make for the machine to mount Drive system, switchgear and accessories.	92,000
B1.2.3	New Swivel type Operator Panel for mounting of CNC System, Display, Machine Control Panel and Operating Panel with IP 54/55 degree of protection. The operator pendant must be locked for 180° swivelling.	1,16,000
B1.2.4	Air Conditioning Units of sufficient capacity each for operator panel & electrical control panel. Make Rittal/Sunbeam/Advance/Werner Finley . For automatic monitoring of electrical control panel & operator panel temperature, separate controllers shall be provided.	40,000
B1.2.5	All the cables, switchgear, related items and other accessories as per Clause B14 to B20 of above scope.	4,24,000
B1.2.6	True RMS Digital Multi-meters along with probes (Qty. 2 No's), Type: Fluke 115 400A AC/DC True RMS Clamp meter with probes (Qty. 1 No.), Type: Fluke 325 Taparia make screwdriver sets (Qty. 2 Sets) Model 840 for maintenance of the machine	32,000
	Total B1.2 (Electrical & Electronics Spares)	15,04,000
B	Total Material (Initial Spares) Cost B1=B1.1+B1.2	44,96,192
C	Grand Total, C = A+B	63,36,192
D	GST @18 % on C = D	11,40,515
E	Grand Total including GST i.e. E=C+D	74,76,707
F	Cost to BHEL i.e. F=E-D	63,36,192

**BHARAT HEAVY ELECTRICAS LIMITED
RAMACHANDRAPURAM: HYDERABAD-502 032**

M&S/10-REPAIR SHOP

PART-B: PRICE BID

TENDER NOTICE NO.: HY/M&S/10-RS/RC/20-21/CTV-150/0611/1 Date: 06.11.2020

1. Tenderer is required to quote their percentage of less/excess/at par in figures and words over the estimate as stated above.
2. Tenderer is not allowed to change the estimate. Alteration of the estimate by the tenderer leads to rejection of his bid.
3. The below offered percentage by the tenderer is proportionately applicable for all item rates.

Tender %	In Words	Figures
Excess		
Less		
Estimate		

Note

1. If there is a discrepancy between figures and words, the amount in words shall prevail.
2. GST @ 18% extra on total order value.
3. Kindly note that, the vendor has to bear the excess in taxes and duties in case of delayed delivery schedule.

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NATIONAL ELECTRONIC FUND TRANSFER FORMAT

(To be furnished on Contractor's Letter head)

Ref No.:

Date:

Dy. Manager/Finance-CM
Bharat Heavy Electricals Limited
Ramachandrapuram
Hyderabad 502 032

Dear Sir,

Sub: Details for National Electronic Fund Transfer

We request and authorize you to effect payment through NEFT to our Bank account, subject to RBI Guidelines, as per the details given below.

A. Supplier code (As per PO/SCO) :
B. Beneficiary (Name as per PO/SCO) :
C. PAN of Beneficiary :
D. TIN of Beneficiary :
E. e-mail address of Beneficiary :
F. City (of Beneficiary) :
G. Bank Name :
H. Branch Name (of Bank) :
I. Account Number :
J. Account Type (Savings or Current) :
K. MICR Code of the branch (9-digit) :
L. IFSC for EFT (11 char) :
M. IFSC for RTGS (if different from L) :

Thanking you,

(Signature with Seal)
Authorized Signatory

Name :
Designation :

Certified that the particulars, furnished above, are correct as per our records

Date:

(Signature of authorized official of bank)
Bank Stamp

BHEL TERMS AND CONDITIONS

A. CONTRACTUAL

- 1) The Contractor will ensure that the employees deployed by him in the premises of BHEL are physically and mentally fit and do not have any criminal record.
- 2) The Contractor will maintain records of his employees deployed to carry out the job. The Contractor will provide Employment card/Identity card with photograph duly attested by him to his employees.
- 3) In the event of termination of contract for any reason whatsoever, the contractor shall withdraw all his employees from the establishment of BHEL.
- 4) The Contractor will obtain insurance cover for his employees and take third party risk insurance coverage at his own cost.
- 5) The Contractor will be solely entitled to dictate such workers about the manner of carrying out the work.
- 6) The Contractor or his authorized representative will supervise the work allotted to him and being carried out by his employees or will post a Supervisor for this purpose.
- 7) The Contractor will be responsible for the good conduct of his employees. In case of any misconduct/misbehavior by any employee, contractor will replace such employee immediately.
- 8) The Contractor will keep watch on his employees and he will be liable for any pilferage / loss to BHEL due to acts of omission and commission by his employees. Similarly, liability for any compensation to outsiders on account of any act of omission and commission by the employees deployed by the contractor shall lie exclusively with him.
- 9) The Contractor will ensure that all precautions are taken for the safety of his employees.
- 10) The Contractor will provide to his employees all tools, tackles and equipment required to carry out the job under the contract at his own cost.
- 11) The Contractor will provide safety appliances at his own cost which may be required under the statute or otherwise.
- 12) The Contractor will provide all material at his own cost as mentioned in the contract to his employees for carrying out the job.
- 13) Transportation facility for the employees to come to BHEL works is in the scope of the contractor.
- 14) Consumables like air, water, power supply will be supplied by BHEL free of cost.

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15) No accommodation will be provided by BHEL to the contractor personnel deputed for performing the contract work.

16) Shift timings: 1st shift – 06:30 to 14:45 Hrs with Lunch break from 11:00 to 11:30 Hrs
 2nd shift - 14:45 to 22:45 Hrs with Dinner break from 19:00 to 19:30 Hrs

B. STATUTORY

- 1) The Contractor shall comply with all statutory requirements, rules, regulations, and notifications in relation to employment of his employees issued from time to time by the concerned authorities.
- 2) The Contractor shall provide PF passbook to his employees and ensure payment of PF, EDLI, and pension dues under EPF & MP Act, 1952 to the RPFC.
- 3) The Contractor shall produce proof of deductions as well as remittances of PF, EDLI, Pension, ESI contribution, administrative charges etc. wherever applicable and shall maintain proper records.
- 4) The Contractor shall furnish proper returns to the concerned statutory authorities.
- 5) The Contractor shall be solely responsible for nonpayment/delayed payment of wages, contributions under EPF & MP Act, ESI Act etc.
- 6) In case the contractor fails to make payment of wages to his employees or remittance of contribution to the concerned authorities, the security deposit/other dues under the contract can be utilized by BHEL to discharge the liability of the contractor.
- 7) The Contractor shall indemnify BHEL against all claims and losses under various statutes or any civil or criminal law in connection with employees deployed by him.
- 8) The liability for any compensation on account of injury sustained by an employee of the contractor will be exclusively that of the contractor.
- 9) The Contractor shall obtain license under CL(R&A) Act, 1970.

C. GENERAL

- 1) The contractor shall pay minimum wages to workers as per minimum wages act. Contractor shall make PF, ESI contributions as per applicable rules. ESI Cards should be arranged to contract labour and their wards by the contractor. These records need to be preserved for a period of at least 3 years and made available even after the contract is over for any verification by the statutory authorities.
- 2) Contractor shall provide personnel protective equipment like safety uniform in blue color, safety shoe in black colour and should ensure that they wear them daily while on work.
- 3) Contract operates on Unit rates, contract labour should get at least Daily Unit rate as per the minimum wages act from the contractor.

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- 4) Contractor should pay double amount to the contract labour, if they are engaged more than 8 hours (normal).
- 5) Permissions for labour and materials shall be obtained in the prescribed formats.
- 6) **Break:** contract labour should be given break period for about 15 days once in every 6 months in case of long duration contracts, for one time/ short period contracts this clause will not apply
- 7) The contractor is wholly responsible for any loss of life or partial disability of any of their labour while on duty
- 8) In case of occurrence of any accident/ injury of contractor's staff, BHEL will not pay any compensation while they are on duty and contractor has to take care of health of workers under statutory obligation.
- 9) BHEL reserve the right to cancel the work order in part or in full without assigning any reason.
- 10) Upon awardal of the work, the contractor has to execute an agreement with BHEL on a non-judicial stamp paper worth Rs.200/- as per General Agreement Conditions before commencement of work.
- 11) BHEL shall have the privities of the contract with the contractor only and will give instructions to the contractor or his authorized representative. BHEL will have nothing to do or be concerned with the employment of employees working for the contractor. The relationship between BHEL and the Contractor will be that of independent entities and nothing herein contained will amount to joint venture, partnership or an employer-employee relationship.
- 12) The contractor shall maintain regular contact with the designated employee(s) of BHEL and will interact on matters relating to the work awarded under this contract.
- 13) In case the Contractor does not carry out the Contractual/Statutory obligations or the services rendered by him are found to be unsatisfactory, BHEL shall bring the same to his notice and he will be obliged to discharge the obligations and rectify the efficiency/anomaly within three days' time failing which, BHEL reserves the right to terminate the contract without assigning any reason whatsoever. In such an event, no damages will be payable for short closure of the contract.
- 14) Notwithstanding anything contained in the contract Agreement which will be entered after awardal of work, the contract may be terminated by BHEL without assigning any reason thereof by giving a notice of 30 days to the contractor.
- 15) The Entry permits are to be issued to the Contract Labour by Assistant Commandant/CISF (Plant), based on the requisition submitted by Contract Executing Officer and forwarded by DGM/Personnel.

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- 16) Every contractor shall submit a notice regarding commencement and completion of work in form – VI A&B [Rule 25 (VIII) & 81 (3)] to HR Department, IR section through his contract executing officer, for forwarding the same to State Labour Department.
- 17) Non – compliance of any provisions under the act/rule/instructions/guidelines shall make the contractor liable for penal action including termination of contract.
- 18) Contractor shall furnish in a separate letter his place of residence and postal address. The delivery at the above named place or posting in a Post box regularly maintained by the post and telegraph Department or sending letters registered for acknowledgement of any notice, letter or other communication to the contractor. Change in address shall come into force at any time by an instrument executed by the contractor and delivered to the Company official who has signed the contract.
- 19) The contractor must satisfy himself by personal study and examination of the drawings/specifications furnished and understands thoroughly the scope of proposed work in detail and all conditions affecting the work before entering into the contract. There shall not be at any time dispute/complaint of any misunderstanding with regard to scope of work and interpretation of specifications or any misunderstanding with regard to nature or omission of the work to be done not shall any application for compensation in terms of time and money shall be accepted by company regarding the above.
- 20) Contractor shall in his absence keep competent agent constantly on the works and any directions or explanations given by the “Contract Signing Officer” or his representative to such agent shall be held to have been given to the contractor himself.
- 21) It shall be contractor’s sole responsibility to protect the public and his employees against accident from any cause and provide required safety equipment and shall indemnify, the company against any claims for damages for injury to the person or property resulting from any such accidents and shall, where the provisions of the workmen’s compensation act apply, take steps to properly insure against any claims there under.
- 22) In the event of any accident in respect of which compensation may become payable under the Employees’ Compensation Act VIII of 1923 whether by the contractor or by the company as principle employer, it shall be lawful for the company to retain out of monies due and payable to the contractor such sum or sums of money as may, in the opinion of the company shall be final in regard to all matter arising in this clause.
- 23) No work shall be done on Sundays or on other declared holidays of the company without the written permission of the company officer in-charge of the work. The contractor shall comply with the provisions of the Factories Act Rules framed there under if the same are applicable.
- 24) The contractor shall keep his work place clean and safe to avoid injuries to men and damage to finished products / equipment.
- 25) On the occurrence of an accident, which results in the death of any of the workmen employed by the contractor or which is so serious as to be likely to result in the death of any such workmen, the contractor shall intimate within 24 hours of the happening of such an accident intimate in writing to the company official in-charge of the work.

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- 26) The contractor shall indemnify the company against all losses or damages sustained by the company resulting directly or indirectly from his failure to give intimation in the manner aforesaid including the penalties or dues if any and become payable by the company, as a consequence of failure, the company to give notice under the workmen's compensation act or otherwise confirm to the provisions of the said act in regard to such accident.
- 27) The contractor shall ensure adherence to all statutory requirements applicable to BHARAT HEAVY ELECTRICALS LIMITED, RAMACHANDRAPURAM, HYDERABAD-502032.
- 28) Notwithstanding the clause, in case of any financial loss incurred by the company on account of contravention of the Provident Fund regulations or any regulations of rule touching the same by the contractor, the contractor shall submit an undertaking to indemnify the company to the extent of the loss incurred by the company.
- 29) The contractor should engage only those labourers who shall be more than 18 (eighteen) years of age.
- 30) The contractor shall not resort to subcontracting under any circumstances. If found subcontracting at a later date, BHEL reserves the right to take whatever action it deems fit, including cancellation of the contract.
- 31) The contractor shall be responsible to settle any grievances of the labour deployed by him.
- 32) Whenever the term "CONTRACTOR" is used, it shall be understood to refer to the particular person, firm or corporation with whom an agreement has been made by the concerned company official for executing the work defined in the concerned agreement and for the purpose of instructions regarding compliance with contract conditions, it shall include the contractor's authorized agents, who are entrusted with the work by contractor.
- 33) The quantities mentioned in the agreement schedule are worked out from the relevant drawings in the company and may not be the actuals required for execution. The company does not expressly or by implication agree that the actual amount of the work to be done shall correspond therewith, but reserves the right to increase or decrease the quantity of any class or portion of the work as he deems necessary.
- 34) All the works shall be carried out in accordance with the directions and to the satisfaction of the company official in accordance with the drawings, specifications and instructions. Supplementing or explaining the same from time to time shall be done by the company official.
- 35) For all modifications, omissions or additions to the approved drawings and specifications, the company shall issue revised plans or written instructions and no modifications, omission or addition shall be made unless at any time before completion of the work.
- 36) All materials, articles, and workmanship shall be the best of their respective kinds for the class of work described in the contract specifications and schedule and materials to be obtained by the contractor shall be from sources approved by the company.
- 37) Sample of materials shall be furnished by the contractor at his expense to the company when called for before execution of any work.

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- 38) The company shall have power to reject at any stage, any work which is considered to be defective in quality of materials of workmanship and shall not be debarred from rejecting wrong material by reasons of having previously passed them in an unworked condition. Any portion of the work or materials rejected or pronounced to be inferior or not in accordance with specifications shall be taken down and removed from the work site at the contractor's expenses.
- 39) The decision of the company shall be final and binding on the contractor on all technical questions which may arise in the contract with respect to material, workmanship, removal; of improper work, interpretation of the working drawings, specifications, notes, procedures etc.
- 40) The decision of the "Contract Signing Officer" or any officer deputed by him duly authorized on his behalf, in respect of the rate of progress and the quality of work or material shall be final.
- 41) Contracts shall be deemed to have included in his tender price of all the plant, machinery and appliances required for the purpose of all operations connected to secure a satisfactory quality of work within the opinion of the company will ensure the completion of the work within the time specified.
- 42) It is open to the company to lend or supply to the contractor any tools, implement, material and machinery that are needed by the contractor, which in the opinion of the company is essential to improve the quality or progress of work. The contractor shall pay such deposit or charges that may be fixed or determined by the company for any such articles or machinery lent or hired to the contractor.
- 43) All rubbish as it accumulates shall be removed from the site to the point of disposal as indicated from time to time by the company. If this is not adhered to, the company shall remove the scrap and recover the cost of these operations from the bills of the contractor.
- 44) Any sum due from the contractor on account of tools and plants, stores, or any other items provided by the company shall be deducted from the respective bill due to him.
- 45) In case the contractor does not execute the work awarded to him as per the terms and conditions of the agreement, the same shall be got executed by some other contractor and the excess cost incurred shall be recovered from the contractor's security deposit/pending bills.
- 46) In case of breach of any of the terms and conditions of the contract, a claim shall be lodged under the bank guarantee with the guarantor at the discretion of the competent authority of the company. On successful completion of the contract to the satisfaction of the company, the bank guarantee shall be released after due claim period.
- 47) In the event of any question or dispute or under this contract, the same shall be referred to a competent Authority in the company for sole arbitration and his decision shall be final and binding on the parties to the contract.
- 48) In case of any suit or other legal proceeding arising under this contract, the courts at Sangareddy (Sangareddy Dist.), Telangana State only shall have the Jurisdiction.

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- 49) Disputes, grievances between the contractor and his labour, will have to be settled by the contractor only.
- 50) The labour employed by the contractor, if found in abetting and fellow labour or contractors or any BHEL employee, the same shall be considered as an act of indiscipline. Such labourers shall be removed from the services of the contractor, on the advice of BHEL. Further the contractor shall initiate every necessary action in accordance with the relevant Laws, Rules & Regulations and enactments of State and Central Government.
- 51) Wherever, BHEL/COMPANY standards are mentioned shall be strictly followed.
- 52) Nothing contained in the contract agreement and its conditions shall be deemed to preclude or render inoperative the service of any notice, letter or other communication upon the contractor personally.
- 53) The decision of the “Contracting Signing Officer” shall be final and binding on the contractor on all technical questions which may arise touching the contract with respect to the quality of material, workmanship, removal of improper work, interpretation of the working drawings, specifications, notes, procedures etc.
- 54) All disputes, claims and demands arising in connection with the contract shall be settled by mutual consultation. If no such agreement is reached between the parties each party can appoint one Arbitrator and the Arbitrators so appointed can appoint a Presiding Arbitrator. The proceedings of the tribunal shall be in accordance with the provisions of the Arbitration and Conciliation Act, 1996 and the rules made there under. The venue of the Arbitration shall be at BHEL, Hyderabad or at such place as the Arbitrators may direct. The Award to be given by the Arbitral Tribunal shall be a speaking award. The arbitration costs, fees and expenses shall be borne by both the parties equally. The award of the tribunal shall be final and binding on both the parties equally. The award of the tribunal shall be final and binding on both the parties. All questions, disputes, differences arising under, out of or in connection with this contract shall be exclusive jurisdiction of the Courts at Sangareddy, Sangareddy District, Telangana State.

D. GENERAL INSTRUCTIONS REGARDING BHEL TENDERING PROCESS

1. If the tender is made by an individual, it shall be signed with his full name and his address shall be furnished. If it is made by firm, it shall be signed with the co-partnership name by a member of the firm, who shall also sign his own name, also furnish the name and address of each member of the firm. If the tender is made by a corporation, it shall be signed by a duly authorized officer who shall produce with the tender, satisfactory evidence of his authorization. Such tendering corporation/firm is required to furnish evidence of its existence along with bid.
2. The EMD will be refunded to the unsuccessful Tenderers after rejection of the tender is intimated. The earnest money will be retained in the case of the successful tenderers and either of the cases will not carry any interest. It will be dealt with as provided in the conditions attached to the tender.
3. Whenever a tender is to be accepted, the tenderer, whose tender is under consideration, shall attend the Office of " Officer Inviting the Tender " on the date fixed by written intimation to

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him. He shall forthwith, upon intimation being given to him by the "Officer Inviting the Tender" for acceptance of his tender, complete the execution of the agreement by signing all documents connected therewith. Failure to do so and not to commence the work within one month from the date of intimation shall entail forfeiture of the earnest money.

4. Tenderers shall pursue carefully the instructions and directions to the parties given in the tender document and the conditions thereof and all other relevant documents before quoting the rates for the work. The approximate quantity of work to be executed under each class is given in the schedule. The quantities are given with a view to enable tenderer to quote his overall rate for each class of work in the tender form and for a uniform comparison of tenders. It shall be definitely understood that the schedule is liable to alterations at the discretion of accepting authority.
5. Tenderers shall keep the offer valid for a period of 90 days from the date of opening of tender. After submitting the tender, he will not recall his offer or modify the terms and conditions thereof. Should the tenderer fail to observe or comply with the foregoing stipulations, the EMD shall be forfeited.
6. Tenderers have to quote their rates in the tender schedule legibly written in figures and words and those not submitted in proper form are liable for rejection.
7. The bidder declares that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other bidder(s). This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process. In case the bidder is found having indulged in above activities, suitable action shall be taken by BHEL as per extant policies/guidelines.
8. The submission of tender shall be strictly in accordance with the terms and conditions stipulated in this tender notice. No counter conditions will be acceptable or valid.
9. Contractor shall be deemed to have included in his tender price of all the plant, machinery and appliances required for the purpose of all operations connected with the work embraced under the contract to secure a satisfactory quality of work and rate of progress which in the opinion of the "Contract Signing Officer" will ensure the completion of the work within the time specified.
10. The rates quoted by the contractor should be firm for the contract period. There shall be no revision in contract rates during the period of the contract. Any increase of statutory levies during the period of the contract will be reimbursed on production of relevant proof of incurring expenditure for the same.
11. BHEL reserves the right to negotiate for price reduction with lowest quoted (L1) party and negotiated price will be considered as contract amount for all practical purposes.
12. The contractor must have phone facility at his office/residence or cellular phone for proper communication.
13. Withdrawal from contract during contract period in BHEL will entail forfeiture of security deposit.

14. The contractor should abide by the company's **CISF** Security/safety rules and provide such safety requirements as per statutory rules and requirements of the factories act.
15. In case of breach of any of the terms and conditions of the contractor, BHEL reserves the right to cancel the contract either in part or full.
16. Contractor shall provide uniform, shoes and other Personal Protective Equipment (like safety helmet) wherever applicable to their labour.
17. **Earnest Money Deposit:** Earnest Money is to be paid by tenderers to for securing fulfillment of any obligations in terms of NIT. EMD is to be paid by each tenderer to ensure that the tenderer does not refuse to execute the work, after it is awarded to him. The rate of earnest money deposit shall be as per tender schedule. EMD shall not carry any interest.

EMD by the tenderer will be forfeited as per Tender Documents if:

- i). After opening the tender and within the offer validity period, the tenderer revokes his tender or makes any modifications in his tender, which is not acceptable to BHEL.
- ii). The contractor fails to deposit the required Security Deposit or commence the work within the period as LOI/Contract.
- iii). EMD by the tenderer shall be withheld in case any action on tenderer is envisaged.

18. **SECURITY DEPOSIT:** Security Deposit is to be provided by the contractor towards fulfillment of any obligations in terms of the provisions of the contract. SD shall be 5% of the contract value. EMD of the successful tenderer shall be converted and adjusted towards required amount of Security Deposit.

➤ The SD may be accepted only in the following forms

- Cash deposit as permissible under the extant Income Tax act
- Electronic Fund Transfer (EFT) to BHEL Account Number: 62048154115 (IFS Code: SBIN0020075)
- Banker's Cheques of Scheduled Banks/Pay Order/Demand Draft, in favour of BHEL
- Bank Guarantee from Schedules Banks/Public Financial Institutions as defined in the Companies Act. The Bank Guarantee format should have the approval of BHEL
- Fixed Deposit Receipt issued by Schedules Banks/Public Financial Institutions as defined in the Companies Act. (FDR should be in the name of Contractor, Account of BHEL)
- Securities available from Indian Post Office, such as National Savings Certificates, Kisan Vikas Patras etc. (held in the name of Contractor furnishing the security and duly endorsed/hypothecated/pledged, as applicable, in favour of BHEL)

- At least 50% of required SD, including EMD should be collected before start of the work. Balance can be collected by deducting 10% of gross amount progressively from each of the running bills.
- If the value of work done at any time exceeds the contract value, the amount of SD shall be correspondingly enhanced and additional SD shall be collected from the Contractor or recovered from the payments due to the Contractor
- In case of (a) small value contracts not exceeding Rs. 20 lakhs or (b) SAS jobs, work can be started before the required SD is collected. However, payments can be released only after collection/recovery of initial 50% SD
- SD shall be released to the Contractor upon fulfillment of contractual obligations as per terms of the contract

Signature of the Bidder with seal