BHARAT HEAVY ELECTRICALS LTD.
CENTRAL FOUNDRY FORGE PLANT

RANIPUR, HARDWAR
MAINTENANCE & SERVICES DEPARTMENT
MAINTENANCE-MACHINE SHOP

NO. : CFF/M&S/MS/Recond/2K11/002/NIT Date: October 12, 2011

TENDER NOTICE – OPEN TENDER

Two part Tenders in Sealed Envelopes are invited from technically and financially capable parties, having experience in work similar to- and interested in- the under mentioned works. The tender documents are available at website www.bhel.com/www.bhelhwr.co.in in Tender Notification Section which can be downloaded. Tender cost, as mentioned in the Tender Documents are to be deposited along with the tender itself. The tender should reach the office of the undersigned on or before **08/11/2011** at **2:30PM**, which will be opened on the same day in the office of under-signed at **3:00 PM** in presence of the bidders who wish to be present.

Bidders are advised to inspect the site/machines before quoting their rates. Bidders are also advised to go through the Special Instructions attached to this notice. (Placed at attachment-A.2).

BHEL reserves the right to reject any or all of the tenders without assigning any reason thereto.

Tender No. & Date	Description of Work	Earnest Money	Total Time of completion	Tender Cost (Rs.)
CFF/M&S/MS/ Recond/2K11/ 002/NIT Dated: October 07, 2011	Retrofitting of Electrical System of Horizontal Boring Machine WD220C in Machine Shop, CFFP	NIL	24 Weeks	1000/-

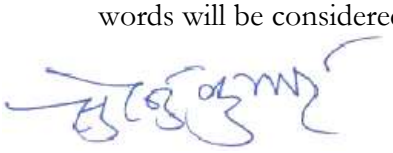
(Surendra Kumar)
DGM/M&S
CFFP, BHEL
Ranipur, Haridwar-249403
(Uttarakhand)

Copy To. : Sr. Manager. (works) : for deputing finance representative for tender opening.

ATTACHMENT-A.2

SPECIAL INSTRUCTIONS

1. Kindly read this set of Special Instructions carefully before filling up the tender form.
2. **Pre Qualification Requirements placed at Annexure C2 must be fulfilled by the vendor to participate in the tender and submitted along with Techno-Commercial Bid.**
3. Kindly read carefully Annexure-A2, B, D and F which form the "Details of Scope of Supply", "Scope of Work", "Special Terms & Conditions" & "Verification Parameters" respectively.
4. The bidders are to submit the tender form along with Annexures- A2,B, C2, D & F as well as this set of Special Instructions (Attachment-A.2); all pages duly signed.
5. The tender is to be submitted in two parts, viz.: i) Techno Commercial Bid and ii) Price Bid. Documents related with Pre-Qualification Requirements i.e. Annexure-C must be submitted along with Techno-Commercial Bid.
6. Both the Techno Commercial Bid and Price Bid are to be sealed separately in separate envelopes super-scribed with **"Techno Commercial Bid for Tender no. : CFF/M&S/MS/Recond/ 2K11/002"** and **"Price Bid for Tender no. : CFF/M&S/MS/Recond/2K11/002"** respectively and then placed in a common envelope super-scribed with **"Tender for Tender No.: CFF/M&S/MS/Recond/2K11/002"**. The Techno Commercial Bid must also contain an unpriced copy of Price Bid.
7. Vendor have to submit clause wise confirmation of Annexure A2, B, C2, D & F.
8. For faster Techno Commercial evaluation of the offers, it is desired that the Techno Commercial bid be also submitted in electronic form in Microsoft Excel Format (MS-Office-2003 or MS-Office-2007 Formats only), through e-mail. This e-mail must be addressed to e-mail id suren@bhelhwr.co.in and must be sent on the day of tender opening. Alternately, the electronic submission of Techno Commercial Bid may be done in a suitable media like USB Flash Memory/CD. **The electronic submission is to be done ONLY FOR Techno-commercial Bid and the same MUST NOT CONTAIN the Price Bid.**
9. Even where a bidder submits the Techno Commercial Bid electronically, the same is to be submitted in print as well, as per standard practice and in the Tender Form being supplied.
10. Only the Techno Commercial bid will be opened on the day of tender opening. The Priced Bid will be opened only if Techno Commercial Bid(s) are found Technically Suitable & Acceptable. Date of opening of Price Bid will be intimated to all technically suitable and acceptable bidders at a suitable time.
11. **It is strongly recommended to all potential bidders to visit the site and the machine under consideration. Any presumption by the bidders in this regard will not be entertained after opening of the tender.**
12. No accommodation facilities will be provided by BHEL to any of the staff of the contractors
13. Apart from the "Special Terms & Conditions", placed at Annexure-D, the contractor will have to comply with other Terms & Conditions including "General Terms & Conditions" & "Safety Norms" as stipulated in BHEL's Works Policy as modified from time to time and Government rules.
14. Once Price Bids are opened and accepted by BHEL, the same cannot be withdrawn by the bidder for whatsoever reasons. In case a bidder withdraws his/her/their tender, suitable action may be taken by BHEL as deemed fit. This may include black listing of bidder or legal action.
15. If there is a difference found in the figures & words of the offered price. The price given in the words will be considered.



(Issuing Officer)

BHARAT HEAVY ELECTRICALS LTD.
CENTRAL FOUNDRY FORGE PLANT
RANIPUR, HARDWAR
MAINTENANCE & SERVICES DEPARTMENT
MAINTENANCE-MACHINE SHOP

TENDER FORM FOR "MAINTENANCE OF MACHINES IN MACHINE SHOP"
(PRICE BID)
PRICED/UNPRICED
(PRICED PRICE BID TO BE SEALED IN SEPARATE ENVELOP)

Name & Address of Bidder	:	
Tender Notice No.	:	CFF/M&S/MS/Recond/2K11/002/NIT Dt. 12/10/2011
Last Date & Time for receipt of Tender	:	14:30 hrs on 08/11/2011
Date & Time for opening of Tenders	:	15:00 hrs on 08/11/2011
Place for opening of Tenders	:	Office of DGM (M&S)
Nature of Contract Period of Contract	: :	Retrofitting of Electrical System of Horizontal Borer 24 Weeks (18 Weeks for Supplies, 6 Weeks for Works)

Description of Work

"Retrofitting of Electrical System of Horizontal Boring Machine WD220C in Machine Shop, CFFP" consisting of :	Period of Contract	Cost (To be quoted by the Contractor) Decision of price competitiveness will be based on Combined Price of Items A and B along with loading as applicable	
	Weeks	Figure	Words
A. Supply of Material as per Annexure-A2			
B. Retrofitting Works as per Annexure-B			
Total			

Encl: Annexure-A2 : "Details of Scope of Supply"
Annexure-B : "Scope of Work"
Annexure-C2 : "Pre Qualification Requirement"
Annexure-D : "Special Terms & Conditions"
Annexure-F : "Verification Parameters"
Any Other (By Bidder) :

Signature of Issuing Officer

Signature of Bidder/Tenderer

Declaration by Bidder

I/We hereby confirm that I/we have carefully read and understood "Special Instructions", "Details of Scope of Supply", "Scope of Work," "Pre Qualification Requirement", "Special Terms & Conditions" and "Verification Parameters" placed at Attachment-A.2 to the Tender Notice and Annexures-A2, B, C2, D & F respectively and have complied/will comply with the same.

Signature of Bidder/Tenderer

(Accounts Officer) (Opening Officer) (Issuing Officer)

DETAILS OF ELECTRICAL ITEMS REUIRED TO BE SUPPLIED BY THE CONTRACTOR FOR REOCNDITIONING/ RETROFITTING WORK OF RUSSIAN MAKE HORIZONTAL BORING MACHINE WD 220C

	ITEM	BHEL Requirement	QTTY	Acceptable Makes	SUPPLIER's COMMENTS
1	**Control Panel**	Control Panel Including cabinet, voltmeters, ammeters, energy meters, indicators, MCCB, MCB, switches, sockets, etc.	01 Set		
1.1	Cabinet	Made of min 2mm Thick sheet steel painted first with corrosion resistant paint followed by suitable no. of coats of industrial grey/off-white paint. Cabinet to be provided with protection agains reptile/rodent entry and is to be made Dust & Vermin Proof	01 Set	Rittal/BCH	
1.2	Incomer Switch	MCCB of suitable rating (Min 125% of peak load of panel, 50kA Short Circuit Current) with Thermal and Magnetic over current trip (adjustable overload and fixed short circuit), Ground fault protection, tripping relay and Extended rotary drive. Incoming supply will be 415V,3-ϕ,50 Hz	01 No.	Siemens/L&T	
1.3	Switchgear	MCCBs, MPCBs, Contactors, Switches including all selector switches and push button actuators (which shall be self illuminated type), O/L Relays (if used) of suitable ratings. Min Power Contactor rating : one step higher than the current rating required considering 25% overload. Semiconductor Fuses are to be used only with semiconductor devices, all other circuits to be protected through MPCBs/MCCBs/MCBs of suitable rating.	01 Set	Siemens/L&T	
1.4	Meters				
1.4.1	Energy Meter	Microprocessor based Energy Meter	01 No.	Reputed	

DETAILS OF ELECTRICAL ITEMS REUIRED TO BE SUPPLIED BY THE CONTRACTOR FOR REOCNDITIONING/ RETROFITTING WORK OF RUSSIAN MAKE HORIZONTAL BORING MACHINE WD 220C

1.4.2	Ammeters for Incomer	Analog Ammeters of suitable rating; one for each phase	03 Nos.	AE/MECO
1.4.3	CTs	Current Transformers of suitable rating as per need	01 Set	AE/KAPPA
1.4.4	Voltmeters for Incomer	Analog Voltmeters of suitable rating; one for each phase	03 Nos.	AE/MECO
1.4.5	Indicators	High Luminosity LED Based indicators for Phase live, Motor Run-Off-Trip and Various Faults of Machine, Drives & PLC	01 Set	Rishabh/Siemens/ L&T/AB/ABB/ Telemechanic
1.5	Power Outlet Sockets	220V, 5Amp Switch Socket, 2Nos in each section of Panel and 15Amps Switch Socket, 01 No in each section	01 Set	Reputed
1.6	Panel Illumination	CFL based, Door switch operated, Panel Illumination of rating suitable for sufficient illumination of the panel during maintenance work, in each section	01 Set	CFL: Philips/GE/ Crompton Greaves Door/Sw: Reputed
1.7	Terminals & Wiring			
1.7.1	Terminals	All Power and Control Terminals arranged in different sections (Power & Control), including atleast 10% extra Terminals in each section. All control Terminals to be suitable for pin type Lugs unless otherwise specified by the manufacturer of particular control components	01 Set	LAPP/WAGO/ PHOENIX

DETAILS OF ELECTRICAL ITEMS REUIRED TO BE SUPPLIED BY THE CONTRACTOR FOR REOCNDITIONING/ RETROFITTING WORK OF RUSSIAN MAKE HORIZONTAL BORING MACHINE WD 220C

1.7.2	Wiring (Wires and Cables)	All wiring including wires/cables within panel and from panel to the field devices. Within panel, all wires to be laid in suitable, covered wiring troughs/channels/trays. Between panel and field devices, all wires/cables are to be laid through suitable, covered, cable trays/drag chains/flexible, reinforced conduits etc. All drag chains to be fully covered metallic drag chains. Between Panel and Field devices, atleast 10% extra wires must be laid.	01 Set	General purpose Wires/Cables:Lapp/ Finolex, Special Purpose Wires/Cables: Lapp or as specified by drive/PLC/ Encoder manufacturer
1.7.3	Cable Lugs	All Lugs to be provided. 10% extra lugs to be provided separately as spare	01 Set	Reputed
1.7.4	Cable Marking Ferrules	All wires (Power & Control) to be suitably marked with marking ferrules of appropriate size at each end.	01 Set	Reputed
1.7.5	Cable Glands	All cabling to be done through Cable Glands, suitable for each individual cable. All cable entry to be through removable gland plate provided at the bottom of the panel.	01 Set	Reputed
1.7.6	Cable Trays/Troughs/ Channels/Drag Chains /Flexible or Fixed Conduits etc.	Ref 1.7.2 above	01 Set	Reputed
1.8	Control Supply	All Control and Auxilary Supplies to be derived from incomer 3-Ø, 3-Wire, 415VAC supply using suitable transformers / Rectifiers / Converters / Regulators / Power Supply Units etc. All contactors and relays except relays driven directly by PLC O/P to be at 220V AC. Relays driven by PLC O/P to be of 24V DC. All solenoids / electromagnets in existing machines not being replaced, are to be driven by voltages as per existing scheme.		

DETAILS OF ELECTRICAL ITEMS REUIRED TO BE SUPPLIED BY THE CONTRACTOR FOR REOCNDITIONING/ RETROFITTING WORK OF RUSSIAN MAKE HORIZONTAL BORING MACHINE WD 220C

1.8.1	Control Transformers	Control Transformers of rating equal to min 125% of total control/auxilary load connected to the transformer.	As per Need	Reputed
1.8.2	Rectifiers/Converters/ Regulators	To provide various DC Power Supplies, including supplies to existing electromagnetic devices as per existing scheme are to be installed in the panel. All such devices to be protected through suitable protective devices in accordance with 1.3 above	As per Need	Reputed
1.8.3	Unstabilized DC Supply 24VDC	This supply will be required for operation of Electromagnetic Solenoid Coils/Valve Controllers. Normally there will be 10 nos. such electromagnetic coils working at voltage 24VDC with a nominal load of 2Amps each. Supply to each such coil will be through a separate combination of MCB & Contactor.	01 Set	Reputed
2	**PLC**	Profibus enabled Siemens make Simatic S7-300 PLC including CPU, Centralized (for devices within panel) and Distributed (for devices in field) IO Cards, 120DI, 80DO, 8AI, 8AO, Power Supply Cards, Relay Cards, Profibus Cables. All hardware to be of same basic type. Hardwares with mixed basic types (e.g. CPU S7-300 with I/Os of S7-200) will not be accepted.	01 Set	Siemens
2.1		The complete PLC Section will be housed in a separate compartment, isolated from Power and other control sections.		
2.2		This section will consist of all the components related with the PLC i.e. Power Supply, Microprocessor, IO Cards, Relay Cards and Terminal Blocks interfacing directly to PLC.		

DETAILS OF ELECTRICAL ITEMS REUIRED TO BE SUPPLIED BY THE CONTRACTOR FOR REOCNDITIONING/ RETROFITTING WORK OF RUSSIAN MAKE HORIZONTAL BORING MACHINE WD 220C

2.3		All the wiring, from PLC Section to the other sections of the panel will be through terminal blocks only.		
2.4		One extra module each of DI, DO, AI and AO will be provided in the PLC section, pre-wired to the Terminal Blocks. (This is in addition to the DI,DO,AI,AO mentioined above at 2)		
2.5		There will be at least 15% extra terminal blocks provided in the section		
2.6	Relay Board	8-Channel, 2-Pole (2NO+2NC), relay boards, prewired to the terminal blocks/PLC Ios. There will be two nos. Relay boards provided as spare in the panel and prewired to the terminal blocks.	10Nos.	Same as make of PLC or Phoenix
3	**Motors**	The supplies will include following motors:		
3.1	Spindle Motor	Separately (forced) cooled,Foot Mounted,min 70KW rated Power, 1000 rated RPM, AC Squirrel Cage Induction Spindle Motor along with cooling blower, speed feedback device (Incremental Pulse Encoder), Mounting Accessories and all necessarry cables	01 No.	Motor: Siemens Encoder: Same as make of motor or Hubner Cables: Same as make of motor or Lapp
3.2	Feed Motors	Permanent magnet excited,Flange Mounted, synchronous, three phase, AC Servo motor: Rated torque as specified below or higher, over load torque capacity>=300% and incremental pulse encoder		Motor: Siemens Encoder: Same as make of motor or Hubner Cables: Same as make of motor or drive or Lapp
3.2.1	For Saddle, H/S Carriage, Spindle and Column Feed	Rated torque 42Nm , 3000 RPM with natural cooling	04 Nos.	
3.2.2	For Slide Plate Feed	Rated torque 11Nm , 3000 RPM with natural cooling	01 No.	

DETAILS OF ELECTRICAL ITEMS REUIRED TO BE SUPPLIED BY THE CONTRACTOR FOR REOCNDITIONING/ RETROFITTING WORK OF RUSSIAN MAKE HORIZONTAL BORING MACHINE WD 220C

3.2.3	Mounting Accessories for Motor	All the accessories like couplings/coupling Extension to suit existing driven shaft, motor mounting accessories including any motor mounting saddle, locators, fasteners, keys etc. to be supplied with motor. Mounting of motor to be done by party	01 Set for each motor	
3.3	**Position Feedback Devices**	DRO system for indicating positions of Lower Saddle X axis, Upper Saddle V1 axis, Head Stock Carriage Y axis, Spindle Z axis, Table V2 axis & Table Angular B axis including Display units , Magnetic Scales, Cables, Connectors with necessary mounting accessaries will be supplied & installed by the vendor along with any modification required. System is to be provided with zeroing at any position in all the Axes. Travel for Lower Saddle X axis : 6000 mm Travel for Upper Saddle V1 axis : 300 mm Travel for Head Stock Carriage Y axis : 3000 mm Travel for Spindle Z axis : 1800 mm Travel for Table V2 axis : 1200 mm Resolution: 5 micron Accuracy: + - 10 micron Rotation for Table Angular B axis : 0-360 deg Resolution: 5 seconds Accuracy: + - 10 seconds	06 Sets	Electronica/ Hubner/ Heidenhein/ Fagor
3.4	**Auxilary Motors**	The following Auxilary motors are to be supplied and installed.		Siemens/ABB/BBL/ Crompton Greaves/ Kirlosker
3.4.0a		All the motors are to be supplied with the mounting, coupling and wiring accessories. All the motors to be installed by the suppliers		

DETAILS OF ELECTRICAL ITEMS REUIRED TO BE SUPPLIED BY THE CONTRACTOR FOR REOCNDITIONING/ RETROFITTING WORK OF RUSSIAN MAKE HORIZONTAL BORING MACHINE WD 220C

3.4.0b		All the power ratings mentioned below are minimum ratings	
3.4.1	Pendant Panel Vertical Movement Motor	Flange Mounted,0.4KW, 1400RPM, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor.	01 No.
3.4.2	Pendant Panel Lateral Shifting Motor	Flange Mounted,0.4KW, 1400RPM, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor.	01 No.
3.4.3	Motor for Tool & Tackle Lifter Lateral Shift	Flange Mounted,0.4KW, 1400RPM, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor.	01 No.
3.4.4	Motor for Tool & Tackle Lifter Vertical Shift	Flange Mounted,0.8KW, 1400RPM, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor.	01 No.
3.4.5	Upper Saddle Clamp-Unclamp Oil Pump Motor	Flange Mounted,1.1KW, 1420RPM, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor.	02 Nos.
3.4.6	Head Stock Lubrication Pump Motor	Flange Mounted,1.7KW, 930RPM, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor.	01 No.
3.4.7	Motor for Chip Conveyor	Foot Mounted,1.7KW, 950RPM, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor.	1 No.
3.4.8	Column Lubrication Pump Motor	Foot Mounted,4KW, 1420RPM, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor.	01 No.
3.4.9	Motor for Tool Back Rest	Flange Mounted,4.5KW, 950RPM, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor.	01 No.
3.4.10	Motor for Spindle Rapid Movement	Flange Mounted,2.8KW, 1450RPM, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor.	01 No.
3.4.11	Motor for Rotary Table Travel & Rotation	Flange Mounted,3.7 KW, 1440 RPM, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor.	1 No.
4	**DRIVE SECTION**	Consisting of Spindle and Servo Drives including all hardware like Infeed Modules, Inverter Modules, Switchgear, Controlgear, Protectivegear etc.	One set

DETAILS OF ELECTRICAL ITEMS REUIRED TO BE SUPPLIED BY THE CONTRACTOR FOR REOCNDITIONING/ RETROFITTING WORK OF RUSSIAN MAKE HORIZONTAL BORING MACHINE WD 220C

4.1	Spindle Drive	Spindle Drive shall be capable to operate spindle motor as detailed in clause 3.1. This will be an A.C. Universal Drive, Continuous Duty , 80KW or higher, with regenerative braking capacity. PROFIBUS enabled, forced cooling,should be able to work in Open loop & Closed loop system	01 Set	Siemens
4.2.1	Feed Drive for Spindle, Face Slide & Carriage Feed Motors	Three-Axis, A.C. Universal Servo Drive with regenerative braking capacity capable of driving 2 motors as per 3.2.1 above and one motor at 3.2.2 above. It must be able to work in Open loop & Closed loop system and must be PROFIBUS enabled and having forced cooling.	01 Set	Siemens
4.2.2	Feed Drive for Saddle & Column Feed Motors	Two-Axis, A.C. Universal Servo Drive with regenerative braking capacity capable of driving 2 motors as per 3.2.1 above. It must be able to work in Open loop & Closed loop system and must be PROFIBUS enabled and having forced cooling.	01 Set	Siemens
4.3		All the three of above drive groups are to be totally independent of each other physically, having no common circuit component and must be installed in separate cabinets.Available input supply 415V,3-ϕ,50 Hz		
5	**Starter Section**	This will include MPCB-Power Contactor based DOL/RDOL starters for Auxilary Motors as detailed at clauses 3.4.3 to 3.4.9		All switchgear and protectivegear to be Siemens/L&T make only.
5.0		No motor circuit is to be provided with Fuse. All motors to be protected through MPCBs only		
5.1	For 0.4KW Motors	RDOL Starter suitable for 0.4KW, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor.	03 Nos.	
5.2	For 0.8KW Motors	RDOL Starter suitable for 0.4KW, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor.	01 No.	

DETAILS OF ELECTRICAL ITEMS REUIRED TO BE SUPPLIED BY THE CONTRACTOR FOR REOCNDITIONING/ RETROFITTING WORK OF RUSSIAN MAKE HORIZONTAL BORING MACHINE WD 220C

5.3	For 1.1KW Motors	DOL Starter suitable for 1.1KW, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor.	02 Nos.	
5.4	For 1.7KW Motors	DOL Starter suitable for 1.7KW, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor.	02 Nos.	
5.5	For 2.8KW Motors	RDOL Starter suitable for 2.8KW, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor.	01 Nos.	
5.6	For 3.7KW Motor	RDOL Starter suitable for 3.7KW, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor.	01 No.	
5.7	For 4.0KW Motors	DOL Starter suitable for 4.0KW, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor.	01 No.	
5.8	For 4.5KW Motors	RDOL Starter suitable for 4.5KW, 415V, 3-Ø, 50Hz, AC, Squirrel Cage Induction Motor.	01 No.	
6	**Limit Switches**	All the existing limit switches are to be replaced with equivalent new limit switches with required necessary modification work.	25 Nos.	Reputed
7	**Pressure Switches**	All the existing pressure switches are to be replaced with equivalent new pressure switches with required necessary modification work.	4 Nos.	Reputed
8	**Solenoid Valves**	All the existing solenoid valves are to be replaced with equvalent valves of 24V DC.	10 Nos.	Reputed

DETAILS OF ELECTRICAL ITEMS REUIRED TO BE SUPPLIED BY THE CONTRACTOR FOR REOCNDITIONING/ RETROFITTING WORK OF RUSSIAN MAKE HORIZONTAL BORING MACHINE WD 220C

9	**Pendant Panel**	Hanging Type Control Pendant for operation and control of the complete machine, including Cabinet, Distributed IOs, Push Button Actuators, Switches, Including Multi-Position Selector Switches, Any Control POTs, Indicators, Spindle/Chuck RPM & Feed Rate Meters etc. One Emergency Stop Switch is also to be provided on the Pendant Panel in addition to the Emergency Switch provided in the main Panel. The Pendant Panel is to be supported using Wire Rope Sling, suitable for carrying the load of Pendant and Cables to Pendant. The cable entry to the pendant will be through top and through suitable cable hose. Pendant Panel must be able to move Up-Down and swing side-ways through the respective motors with control switches provided at the Pendant itself. The pendant panel will be able to give access to the operator over total control of the machine and also will include all indications related with operation and major faults in the machine. One 12" Touch Panel is to be provided for faults & alarms of different sections of the machine. It may also be used for the display of RPM & Feed Rates.	01 Set	Panel Body: Rittal Dist IOs and Touch Panel: Same as PLC Switches etc.: Siemens/L&T Indicators: Reputed. The required material for pendant support mechanism to be supplied alongwith the pendant and to be installed.
10	**Tools & Tackles**	All the tools and tackles for installing the system including any special tools shall be arranged by the supplier. All the special tools and tackles will be retained by BHEL for the maintenance purposes. BHEL will provide if the need be and subject to availability, only EOT crane facillities, power and water for use during installation of the system		

DETAILS OF ELECTRICAL ITEMS REUIRED TO BE SUPPLIED BY THE CONTRACTOR FOR REOCNDITIONING/ RETROFITTING WORK OF RUSSIAN MAKE HORIZONTAL BORING MACHINE WD 220C

11	**Training**	Two persons from the BHEL maintenance staff shall be trained for min. one week for the Drives & min. one week for the PLC at any authorized training centre of Siemens as per Siemens Training Shedule.This is to be done within one year from the date of Purchase/Work Order.
12	**General Comments**	
12.1		The supplier shall provide a list of spares required for trouble free operation of the machine after completion of the work.
12.2		All the switchgear components including MPCBs, Contactors, Overload relays, Push Buttons etc. shall be of Siemens/L&T make only unless otherwise specified.
12.3		All other components shall be of reputed make if not specified above.
12.4		The panel shall be provided with at least 10% extra terminals in each of the power and control section.
12.5		All the drawings including structural and circuit diagrams, shall be approved by BHEL, prior to commencement of manufacturing of the Panel/Desks/Stations etc.
12.6		The cables, conduits, wires should be Lapp make only unless otherwise specified.
12.7		Connectors, din rail mounting, terminals etc. should be Lapp/Wago/Phoenix make only unless otherwise specified.
12.8		**The offer must include detailed BOM including makes, types and ratings of all the components. Offers without detailed BOM will be liable to be rejected**

DETAILS OF ELECTRICAL ITEMS REUIRED TO BE SUPPLIED BY THE CONTRACTOR FOR REOCNDITIONING/ RETROFITTING WORK OF RUSSIAN MAKE HORIZONTAL BORING MACHINE WD 220C

12.9		**IT IS STRONGLY RECOMMENDED TO ALL POTENTIAL BIDDERS TO VISIT THE PLANT AND THE MACHINE BEFORE BIDDING. ANY PRESUMPTION BY THE BIDDER REGARDING THE CONDITION OF THE MACHINE, ITS COMPNENTS ETC. SHALL NOT BE ENTERTAINED BY BHEL ONCE THE PRICES ARE FIRMED UP.**		
13	**Machine Light**	The machine is to be provided with enough light using High Discharge Metal Halide Lamps of suitable rating (minimum 70W) for sufficient illumination of Job. Light fittings are to be provided with proper protection against chips.	02 Set	Crompton Greaves/ Philips/ Bajaj/ GE
14	**Ambient Conditions**			
14.1	Max temperature	50°C		
14.2	Min temperature	0°C		
14.3	Relative humidity	97% max		
14.4	Altitude	300m above MSL		

ANNEXURE-B

SCOPE OF WORK

For the work Electrical Retrofitting of HBM-WD 220C

The scope of work will consist of Design, Selection of Components, Procurement, Assembly, Supply and Installation of required material as per Specifications placed at Annexure-A. The installation will consist of:

1. Dispatch of all the required material to Machine Shop, CFFP.
2. Civil work required, if any, should be communicated atleast 4 weaks in advance & before supply of material. All necessary consutruction drawings will also have to be supplied by the contractor along with this communication.
3. Dismantling, removal & shifting to a place, designated by the executive in-charge, Maintenance –Machine Shop, of all the existing Panels, Motors, MG-Sets, Control Desks, Pendants, Cables etc. at BHEL Hardwar and handing over the same to the executive in-charge, Maintenance –Machine Shop.
4. Mounting of all supplied Motors, Panels, Drives, Control Panels, Control Desks, Control Pendants, etc. at appropriate locations.
5. Laying of New Cables, including Power, Control & Signal Cables at appropriate locations and through proper Cable Routing Accessories like Drag Chains/Cable Hoses/Cable Laying Trays etc.
6. Inter connection of Panels, Cables and Field Devices including motors, drives, feedback devices etc.
7. Modifications of any nature including modifications in mounting devices of motors, encoders etc. as and wherever required, in a manner suitable for the best performance of machine in its present mechanical condition.
8. Cleaning of the work area after total installation work is completed.
9. Testing and proving out. This will include no load trial run, idle running for 24Hours as per BHEL requirement at the time of commissioning, load test etc.
10. Drawing and Supply of 4 Sets (3 Hard Copies and One Soft Copy in a suitable Media, preferably USB Flash Storage Device) of All the relevant drawings including but not limited to:
    a. Complete List of Components used along with their designation in the circuit diagrams,
    b. Complete Circuit Diagram, preferably in Standard German Format,
    c. Complete Wiring Diagram, including Termination Details, Cable Identification Details, Cable/Wire Lengths & Locations and Cable/Wire Route etc.,
    d. List of Parameters for each drive, individually,
    e. Complete PLC Program in Ladder and STL Formats (both) including Process Logic, Input/Output/Flag Lists, Cross References etc.
    f. Configuration Details of all special connectors etc.
    g. Panel/Pendant/Desk Layout including layout of components within Panel/Pendant/Desk. Etc.

QUALIFYING CRITERIA

This section details Qualifying Criteria or Pre-Qualification Requirements to be fulfilled by the bidders in order to their Bids being acceptable. This page is to be signed by the authorized representative of Bidder indicating conformance to all the clauses of this section.

For their Bids to be acceptable, all of the following conditions must be fulfilled by the bidder:

1. Bidder must be of Indian origin and based in India. Indian agents of foreign establishments will be considered as Foreign Bidder and thus their bids will not be acceptable.
2. The Bidder must have experience of electrical reconditioning, retrofitting or manufacturing of similar machines.
3. Annual Turnover of the bidder during last 3 years must not be less than Rs. 300Lacs.
4. Bidder must have successfully executed at least one reconditioning/retrofitting job of a Horizontal Boring Machine with Spindle Dia 160mm or more with a contract value of not less than Rs. 30.00Lacs in last 5 years or manufactured one Horizontal Boring Machine with Spindle Dia 160mm or more during last 10 years.
5. All such machines manufactured/reconditioned/manufactured by the Bidder must be performing satisfactorily for more than 12 months. A performance certificate from their customer(s) in this regard is required to be submitted along with the offer. BHEL, at its own discretion and its own cost, may visit such machines for verifying the performance of the bidder. Such visit will however have to be arranged with their customer(s) by the bidder. Any such visit, if felt necessary by BHEL, will be carried out before opening of price bid.
6. Documents supporting the aforementioned qualifying criteria MUST be submitted by the bidders along with the Technical Bid. If it is found at any time that the particulars submitted by the contractor are false, suitable action will be taken & contract/registration may be cancelled.

SPECIAL TERMS & CONDITIONS

This section details Special Terms & Conditions under which the contract is to be executed. These Terms & Conditions are in addition to the General, Safety and Other Terms & Conditions of BHEL, applicable to the Works Contracts, as per BHEL Works Policy. The Special Terms and Conditions applicable are as below:

A. For acceptance of the tender submitted by BHEL:
   a. All the bidders are recommended to visit the plant (CFFP) for a first hand appraisal of the machines. Any presumption regarding the condition of the machine, by the bidder, shall not be entertained at a later stage.
   b. It is necessary for all the bidders to submit their bids in two parts viz. i. Techno-Commercial bid and, ii. Price Bid.
   c. No Earnest Money Deposit is required to be submitted for this tender.
   d. For all material part, all the components are to be of same make as specified under Annexure A. **Complete and detailed Bill of Material is to be submitted by the bidder** along with reference of Annexure A. Any deviation from the specified makes may result into rejection of the tender without any further communication.
   e. All the bidders have to specify the delivery schedule of material part of the contract in the technical bid. Normally accepted delivery period will be 18 Weeks from the date of issue of work order. Any deviation will attract loading as specified in Part I of this annexure. Also, this will form the basis for finalizing the date of handing over the machine to contractor, by BHEL, for the purpose of start of work.
   f. Bidders have to specify the time period required for dismantling of old and installation of new system, from the date of handing over the machine to them for the purpose of installation work, separately. The upper limit to this period will be 6 weeks. Any deviation will attract loading as specified in Part I of this annexure.

B. At the award of contract:
   a. The successful bidder will have to submit a security deposit as per BHEL Works Policy, within 15 days of award of work. The rates are as here under:
      i. Up to Rs. 10Lakhs : 10%
      ii. Above Rs. 10Lakhs up to Rs. 50Lakhs : Rs. 1Lakh+7.5% of amount above Rs. 10Lakh.
      iii. Above Rs. 50Lakhs : Rs. 4Lakhs+5% of amount exceeding Rs. 50Lakhs.

SPECIAL TERMS & CONDITIONS

b. Alternatively the 50% of Security Deposit must have to be submitted before start of the work. Balance 50% will be deducted from the first payment.

c. The Security Deposit is acceptable only in the form of Demand Draft/Pay Order drawn in favor of CFFP, BHEL payable at Haridwar. If vendor fails to submit the Security Deposit with in specified time frame the Work Order may be treated as cancelled.

d. The security deposit shall not carry any interest.

e. The machine will be handed over to the contractor for a period not exceeding 3 days (including intervening Sundays/Holidays) for the purpose of getting measurements for development of such mounting devices. This activity will necessary have to be carried out by the contractor within 12 weeks of award of the Work Order or before dispatch of material from their end, whichever is earlier.

f. The exact time of handing over the machine to the successful bidder (contractor) by BHEL for the purpose of work, will be intimated to the contractor along with the work order or at a later stage after confirmation from the contractor regarding readiness of all mechanical items as required for mounting of motors, feedback devices etc. and the contractor will have to start the work within a week's time from the stipulated date of start of work. The work can be started only after deposit of the Security Deposit as mentioned at B.b above. The time of handing over the machine for retrofitting/reconditioning work by BHEL will however not bear any implication on the supply of material part.

C. For the purpose of execution of work at BHEL:

a. All the bidders have to ensure that all their workmen, proposed to be engaged for the work within BHEL Premises are covered under PF & ESI for the duration for which work is to be carried out or the Vendor must have to submit a notarized affidavit to the effect that by virtue of no of employees being less (less than 20 for PF & less than 10 for ESI) exemption from PF and/or ESI is applicable. In such a case, the vendor will not be allowed to deploy employees, in number, more than the numbers as applicable at any point of time during the execution of the work in BHEL Premises and Vendor will also ascertain the same in the same affidavit. **While execution of the work all the labor laws will be followed by the vendor**.

SPECIAL TERMS & CONDITIONS

b. All the material required for the execution of work will have to be supplied by the contractor to CFFP, BHEL before handing over of the machine to the contractor. All such material is liable to be inspected by BHEL either at the works of the contractor (before dispatch) or at CFFP after receipt of material. In case the material is inspected at CFFP, the same will be done within a week's time from the date of receipt of complete set of material.

c. BHEL, for the works being carried out within BHEL factory premises, will provide only following facilities to the contractor, free of cost:

   i. EOT Crane along with crane operator, as per requirement and availability,
   ii. Electricity & Water
   iii. Welding Machine, Maximum one no., subject to availability,

   Welders and all consumables will have to be arranged by the contractor at their own cost.

d. All the dismantling work of machine will be carried out by the contractor in presence of the executive in charge of Maintenance-Machine Shop or other BHEL representative, deputed by Head of Department, Maintenance & Services Department.

e. BHEL, at its discretion, may inspect some or all the components before their dispatch from the contractor's works.

f. While working within BHEL factory area, the contractor will use their own tools and tackles except EOT Crane and Welding Machine. Any Tool or Tackle which may be required for maintenance of the reconditioned/retrofitted machine in future will be retained by BHEL after acceptance of machine by BHEL.

D. Payment Terms:

a. 70% of material cost after receipt of material at CFFP, BHEL, and its inspection and acceptance at CFFP. Balance 30% of material value after completion of commissioning work & acceptance of machine by BHEL (Also refer Clause E below) after submission of Performance Bank (PBG) Guarantee of 10% of contract value. If vendor fails to provide the PBG for the required value, the payment will be made deducting the PBG amount. Cost of installation & proving out along with security deposit will be paid after 3 months satisfactory performance of the machine.

b. No advance payment will be made by BHEL.

E. Penalty Clause:

SPECIAL TERMS & CONDITIONS

a. A delay in handing over the machine to BHEL, by the contractor, beyond scheduled date as specified in the Work Order or otherwise shall attract a penalty of 0.5% per fortnight or part of that, subject to a maximum of 10% of contract value. Penalty will be calculated based on total time period taken by the contractor for supply of material and execution of the installation work. The total period of execution will be calculated from issue of work order to handing over the machine to BHEL less any time taken by BHEL for handing over the machine to contractor for installation work.

F. Guarantee/Warranty:

a. The contractor will provide a guarantee/warranty of minimum 24 months for all the material supplied under this contract and also the retrofitted system as whole. Any deviation from the specified period will attract loading as detailed in part I of this annexure. In any case, guarantee/warranty less than 12months will not be acceptable. The guarantee/warranty will be supported by submission of a Performance Bank Guarantee of 10% of contract value. The guarantee/warranty period will start immediately after the acceptance of machine by BHEL.

b. If breakdown of the machine is not responded within 48 hrs during the guarantee/warranty period, the guarantee/warranty period will stand extended for double the corresponding period.

c. Breakdowns not attended during the guarantee/warranty period will lead forfeiting of PBG.

G. Acceptance of Machine as commissioned:

a. The machine will be verified through joint inspection by BHEL & Contractor for the acceptance of the machine as per the verification parameters placed at Annexure F.

b. The machine, after commissioning will be put to production activities for a period of one week during which the machine must be able to operate uninterruptedly. During this period, the contractor will ensure that any snag in the machine is rectified immediately.

c. The contractor will have to submit a bank guarantee of 10% of total contract value for a period equal to guarantee/warrantee period from the date of final acceptance of the machine as performance guarantee for the reconditioned/retrofitted machine.

H. Risk Purchase:

a. In case the L-1 bidder refuses to accept the work order or after acceptance of work order, refuses to or is unable to execute the contract successfully, BHEL reserves the right to award the work to any

SPECIAL TERMS & CONDITIONS

other participating vendor at their offered price and the difference will have to be borne by the L-1 vendor.

I. Deviations and Loading:

a. Loading will be calculated on the total price offered by the bidder and the total loaded price will be used for identifying the L-1 bidder.

b. In case, after loading, two bidders are found to be at exactly same price, the actual offered price will be considered for comparison.

c. The loaded price will be used only for comparison purposes. Loading will not affect the work order price which will be the quoted price or the negotiated price whichever is less.

d. Deviations other than those mentioned at I.e below will not be accepted by BHEL.

e. Loading against various deviations will be as detailed below, the total loading will be sum of all the three loading factors:

Sl. No.	Clause No.	Deviation allowed with Loading	Rate of Loading	Remarks
1.	A.e	Bidder may offer a delivery longer than 18 weeks for material supply part but in no case more than 24weeks	@1% per week (or part thereof) above 18 weeks subject to a maximum of 5%	Delivery period more than 24weeks will not be acceptable in any case.
2.	A.f	Bidder may offer Execution period of more than 6 weeks for work part but in no case more than 10 weeks	@1.25% per week (or part thereof) above 6 weeks subject to a maximum of 5%	Execution period more than 10weeks will not be acceptable in any case.
3.	F.a	Bidder may offer a guarantee/ warrantee period of less than 24months but in no case less than 12months from the date of acceptance of machine by BHEL.	@0.5% per month (or part thereof) below 24 months subject to a maximum of 5%	Guarantee/Warrantee of less than 12months from the date of acceptance of machine by BHEL will not be acceptable in any case.

Annexure-F

VERIFICATION PARAMETERS APPLICABLE FOR HBM 220C

Following points will be verified through joint inspection by BHEL & Contractor for the acceptance of the machine.

A. Different functionality of Machine as per following list is to be demonstrated by the contractor in idle & load running condition.

Sl. No.	Function
A.1	Movement of Lower Saddle in X- Axis & position display on DRO
A.2	Movement of Upper Saddle in V1- Axis & position display on DRO
A.3	Movement of Head Stock Carriage in Y- Axis & position display on DRO
A.4	Movement of Spindle in Z- Axis through Feed Motor & Rapid motor & position display on DRO
A.5	Clamping & unclamping of Head Stock & Saddle
A.6	Running of Chip Conveyer Motor
A.7	Rotation of Spindle & Chuck
A.8	Movement of Pendant Panel laterally & vertically
A.9	Running of all the lubrication & hydraulic motors
A.10	Machine Lights on/off
A.11	Running of tool & tackle motors
A.12	Rotation & movement of table & position display on DRO

B. The contractor will have to demonstrate all the feed rates & RPM as per the following table in idle & load running condition.

Sl. No.	Feed Rates/RPM	Range
B.1	Feed for Lower Saddle X-Axis	0-1200 mm/min
B.2	Feed for Upper Saddle V1-Axis	0 - 400 mm/min
B.3	Feed for Head Stock Carriage Y-Axis	0 - 400 mm/min
B.4	Feed for Spindle Z-Axis	0 - 1200 mm/min
B.5	RPM of Chuck 1^{ST} Gear	0-41
B.6	RPM of Chuck 2^{ND} Gear	0-135
B.7	RPM of Spindle	0-510

C. All the wiring with ferrules & proper dressing of cables & wires.

D. Interlocking of limit switches, pressure switches & lubrication motors.

E. Compatibility of display with actual feed rates & Spindle/Chuck RPM in different gears.

F. All the Meters & Indicators in working condition.