

**BHARAT HEAVY ELECTRICAL LIMITED**

Centralised Stamping Unit  
 Bharat Heavy Electricals Limited  
 Industrial Area jagdishpur, District: Sultanpur  
 Uttar Pradesh-227817 (India)  
 Ph: +91-5361-271378  
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Enquiry No. :

Due Date :

Vendor Qtn. No.:

CONTACT PERSON'S NAME/DESIGN./PHONE NO./E-MAIL (FROM PURCHASE DEPTT.)

Date :

Specification No: BHEL/CSU/PH 2/EOT 10T TS R0SPECIFICATION CUM COMPLIANCE CERTIFICATE FOR 10 TON EOT CRANE (Qty: 3Nos.)**NOTE:-**

1. Vendor must submit complete information against Qualification Criteria mentioned against clause no. 12.0 of this technical specification. The offer meeting this clause would only be processed.
2. The "Offered" Column and where applicable, the "Deviations" & "Remarks" Column of this format shall be filled in by the Vendor and submitted along with the offer. Inadequate / incomplete, ambiguous, or unsustainable information against any of the clauses of the specifications/requirements shall be treated as non-compliance.
3. The offer and all documents enclosed with offer should be in English language only.

NAME & ADDRESS OF THE Vendor :	NAME & ADDRESS OF THE INDIAN AGENTS( if any) :
TELEPHONE NOS.:	TELEPHONE NOS.:
FAX NOS.:	FAX NOS.:
E-MAIL ADDRESS :	E-MAIL ADDRESS :
DUNS NO. (Of Duns & Bradstreet of USA)	
SCOPE: DESIGN, MANUFACTURE, TESTING AT VENDOR'S WORKS, PACKING , FARWARDING & SUPPLY, ERECTION & COMMISSIONING AND PROVING AT BHEL SITE OF 10 TON EOT CRANE COMPLYING WITH SPECIFICATION AS BELOW	

SCOPE:DESIGN, MANUFACTURE, TESTING AT VENDOR'S WORKS, PACKING , FARWARDING & SUPPLY, ERECTION & COMMISSIONING AND PROVING AT BHEL SITE OF 10 TON EOT CRANE COMPLYING WITH SPECIFICATION AS BELOW					
Sr.No.	DESCRIPTION FOR BHEL REQUIREMENT	Specified/ To be confirmed by	Offered	Deviation	Remarks
<b>A</b>	<b>PURPOSE:</b>				
	The crane will be used for indoor operation in bay for manufacturing plant in three shift operation.	Vendor			
<b>B</b>	<b>SPECIFICATION:</b>				
	<b>Total 3 Nos. EOT cranes of 10 T capacity are required. Two for BAY- 3A and one for BAY-2B of Centralised Stamping Unit at BHEL, jagdishpur UP. Vendor to note followings input:</b>	<b>vendor to note</b>			
i	<b>Length of BAY-3A</b>	<b>100 meters</b>			
ii	<b>Length of BAY-2B</b>	<b>84 meters</b>			
iii	<b>Center to center Distance between of rails of EOT crane</b>	<b>18.8 meter</b>			
<b>1</b>	<b>MAIN PARAMETERS:</b>				
1.1	Type of Crane: Double girder EOT as per IS 3177-1999 for Indoor use	Vendor			
1.2	Group classification of the crane as a whole as per IS-3177-1999	A5			
1.3	Group classification of the Mechanism as a whole (as per IS-3177-1999) for:				
1.3.1	Hoist	M5			
1.3.2	Traversing	M5			
1.3.3	Travelling	M5			
1.4	Main Hoist capacity	10 Tonnes			
1.5	Span	<b>18.8 meters</b>			
1.6	Operation Speeds:				
1.6.1	<b>Main Hoist Operation Speeds, Minimum</b>	<b>3.2 Meters/Minute</b>			
1.6.2	<b>Inching Speed (Micro for main hoist), Minimum</b>	<b>0.32 Meters/Minute</b>			
1.6.3	<b>Long travel, Minimum</b>	<b>16 Meters/Minute</b>			
1.6.4	<b>Cross travel, Minimum</b>	<b>10 Meters/Minute</b>			
1.7	Working clearance distance from centre of gantry rail to nearest obstruction (with a clearance of 200 mm), maximum	400mm			
1.8	Vertical distance from top of gantry rail to lowest overhead obstruction (maximum)	2.5 meters			
1.9	Distance from floor to top of gantry rail	9.2 meters			
1.10	Lift Height:				
1.10.1	Main Hoist (above floor)	<b>9 meters</b>			
1.10.2	<b>Main Hoist (below floor)</b>	<b>4 meters</b>			
1.11	Main Hoist Hook Approach:	DSL side 1200 mm(max), Opposite side 1000 mm(max)			
1.12	Size of gantry rail (Long Travel), Shall be of CR-80 as per IS-3443 – Rail is part of VENDOR scope (total Length both side 368 meter)	Vendor to specify			
1.13	Size of CT Rail: Shall be of CR-80 as per IS-3443 (in Vendor's Scope)	Vendor to specify			
1.14	LT wheel load in Tonnes	Vendor			
1.15	Number of Trolleys	One			
1.16	Width of Crane (actual value in meters)	Vendor			
1.17	Maximum clearance from rail to bottom of crane ( actual value in meters)	Vendor			
<b>2</b>	<b>CONSTRUCTION/STRUCTURAL DETAILS:</b>				
2.1	Main Hoist hook type	Plane Shank "C"			
2.2	Hoist wire ropes	Vendor			
2.3	Number of falls Main Hoist	Vendor			
2.4	LT Drive	Twin corner drive			

Sr.No.	DESCRIPTION FOR BHEL REQUIREMENT	Specified/ To be confirmed by	Offered	Deviation	Remarks
2.5	Number of wheels for LT drive	Vendor			
2.6	Diameter of wheels for LT drive	Vendor			
2.7	Number of driven wheels for LT drive	Vendor			
2.8	CT Drive	With vertical gearbox			
2.9	Automatic lubrication of CT gearbox	Required			
2.10	Platform for approach for maintenance of CT gearbox	Required			
2.11	Number of wheels for CT drive	Vendor			
2.12	Diameter of wheels for CT drive	Vendor			
2.13	Type of bearings for LT/CT wheels	Anti-friction			
2.14	Type of mounting of LT/CT wheels	"L" type brackets			
2.15	Variable speed control:				
2.15.1	LT Drive	Through V V V F drive			
2.15.2	CT Drive	Through V V V F drive			
2.15.3	Speed control of Main Hoist:	Through V V V F drive			
2.16	Pendent: Shall be of movable type.	Vendor			
2.17	Brakes: Either Electro Hydraulic or Electro magnetic operated brake is to be provided for all motions and hoists. (Totally enclosed) conforming to IP: 54.	Vendor			
2.18	Gear Boxes for LT, CT and Hoists: Completely enclosed M.S fabricated and stress relieved split type or manufactured from steel casting.	Vendor			
2.19	Couplings between motor and gearbox: Geared couplings	Vendor			
2.20	Couplings between gearbox and rope drum for hoists: Geared couplings	Vendor			
2.21	Mounting: All the gearboxes, motors, brakes, bearing pedestals, etc. shall be mounted on machined surfaces	Vendor			
2.22	Lubrication of Crane: Hand Operated/Automatic, group/Point lubrication system or Splash Lubrication should be provided at three areas - two end carriages and at trolley.	Vendor			
2.23	Toe guards shall be provided for all openings including for trolley.	Vendor			
2.24	Safety hand railings of tubular construction shall be provided across full length of the bridges and end carriages, staircases and in any other places where openings have been provided.	Vendor			
2.25	Jacking pads: Suitable jacking pads should be provided on end carriages and crab for jacking up the crane and crab for changing track wheels.	Vendor			
2.26	Suitable reinforced safety pads should be provided under the end carriages and crab to prevent the crane from falling more than 25mm in the event of breakage of a track wheel/bogie/axle. These safety stops shall not interfere with the removal of wheels.	Vendor			
2.27	End buffers: Spring-loaded buffers are to be provided for long travel and cross travel.	Vendor			
2.28	Measurements: All components including fasteners should be in metric system only.	Vendor			
2.29	Locking of Parts: Bolts and screws in rotating parts shall be locked.	Vendor			
2.30	<b>Painting: The cranes should be painted with two coats of deep orange paint confirming to IS 2932 : 2003, IS No 591 (as per IS 5) after giving primary coat. Girders and trolley frame shall be shot blasted/ Chemically treated before painting.</b>	Vendor			
2.30.1	<b>Vendor to ensure that there shall not be any remained stains and peeling of paints after instalation and commissioning of cranes. in this case vendor to repaint the cranes suitably at site after installation &amp; commissioning.</b>	Vendor			
2.31	Plates used for fabrication: To be of rolled steel as per IS 2062 plates. Test certificates to be furnished	Vendor			
2.32	End carriages: To be bogey/Box type design with suitable balancing beam.	Vendor			

Sr.No.	DESCRIPTION FOR BHEL REQUIREMENT	Specified/ To be confirmed by	Offered	Deviation	Remarks
2.33	Butt joints: All butt joints shall be 100% X rayed both compression and tension and both flanges / Webs	Vendor			
2.34	Girder: No splice joint – to be of single piece only. No of weldable joints along the total length of the girder should not exceed three.	Vendor			
2.35	Platform: Full length chequered platform shall be provided on bridges and wherever access is necessary for operation and maintenance. The platforms shall be bolt jointed. Width of the platform shall be >750 mm.	Vendor			
2.36	<b>DSL for LT &amp; CT of Crane shall be of P.V.C. Shrouded copper Bus Bar and shall be in vendor's scope. Total length of DSL is 184 meter.</b>	Vendor			
2.37	DSL guard	Required			
2.38	DSL maintenance cabin: To be provided at suitable height	Vendor			
2.39	Operations is required through pendent / Radio Remote Control as follows:				
2.39.1	Pendent: LT & CT 2 speed steps (10% and 100%) for all motions.	Vendor			
2.39.2	Radio Remote Control: LT & CT. 3 speed steps for all motions.	Vendor			
2.40	All Collectors of crane shall be in the scope of Vendor	Vendor			
3	<b>ELECTRICAL EQUIPMENT</b>				
3.1	<b>Power Supply at DSL: 415 volts <math>\pm</math> 10 %, 3 phase, 50 Hz: <math>\pm</math>3%, AC. Isolator switch should be provided for isolating the total supply to the crane. All cabling to the shrouded bus bar from Isolator switch(3 Nos.) provided by BHEL at floor level shall be to Vendor's scope</b>	Vendor			
3.2	Control voltage:110 Volts AC	Vendor			
3.3	Power distribution to trolley: Trailing cable supported on anti-friction wheel cable	Vendor			
3.4	Connection to pendent: Trailing cable supported on anti-friction wheel cable	Vendor			
3.5	Panels: The panels shall be painted in a colour confirming to IS-3177-1999.	Vendor			
3.6	Mounting of panels and resistance boxes: To be mounted on supporting boxes	Vendor			
3.7	Electrical Motors: Crane duty, one hour rated, F insulation, IP54 protection, CDF & starts/hour as per mechanism class, squirrel cage motors for all motions/traverses.	Vendor			
3.8	Contactors: contactor 3 TA 22-30 Amps or equivalent rating to be provided as minimum size contactor in the power circuit.	Vendor			
3.9	Overload relays: To be provided for all the motors.	Vendor			
3.10	Cables:P.V.C armoured, copper multistrand conductors, minimum size 4 mm sq. in power circuit and 2.5 mm sq in control circuit. All inter connecting wiring to be done neatly through perforated trays fixed in suitable places.	Vendor			
3.11	<b>Limit Switches for traverses: Limit switches to be provided for all the motions</b>	Vendor			
3.12	Limit Switches for Main hoists: One series limit switch with counter weight type and one rotary shunt limit switches for each hoist.	Vendor			
3.13	Earthing:Double earthing are to be provided for all the electrical equipment. A common electrical earthing bus bars to be installed on the cranes covering the entire span and trolley etc.	Vendor			
4	<b>MATERIAL: For all items standard for materials shall be confirming to IS 3177-1999 with some specific requirement for the following:</b>	Vendor			
4.1	Gears:IS 4460 Helical type	Vendor			
4.2	Hardness of Gears:217 to 255 BHN	Vendor			
4.3	Pinions: IS 4460	Vendor			
4.4	Hardness of Pinion:266 to 300 BHN	Vendor			
4.5	Heat treatment of gears/pinions	Vendor			
4.6	Diffrence of hardness of pinion and gear must not be less than 20 BHN	Vendor			
4.7	Pulleys: Cast Steel, forged steel or rolled steel, IS: 1030 grade 4	Vendor			

Sr.No.	DESCRIPTION FOR BHEL REQUIREMENT	Specified/ To be confirmed by	Offered	Deviation	Remarks
4.8	Gear Box: IS:226/ IS:2062 fabricated casing duly stress relieved confirming to IS 3177 & IS 4460	Vendor			
4.9	Wheels: C55Mn75 / forged steel with hardness of 300-350 BHN	Vendor			
4.10	Rope drum shall be made of seamless pipe as per ASTM A 106 GR A and B either of cast iron of minimum grade 25, or cast steel. Rope drum to be machine grooved in hoisting direction. Dia of drum/rope ratio to be as per IS: 3177-1999.	Vendor			
4.11	Hooks:				
4.11.1	Plane shank with swivelling arrangment and locking type	Vendor			
4.11.2	Material of class2 IS:1875 & Standard confirming to: IS:3815	Vendor			
4.12	Makes of other bought out components: To be as per annexure	Vendor			
5	<b>GENERAL</b>				
5.1	Environment: All equipment shall be tropicalised to operate in normal shop floor conditions of temperature 10 to 45 ° C and maximum relative humidity of 95 %.	Vendor			
5.2	Oils & grease: First filling of oils and grease are in supplier's scope	Vendor			
6	<b>DOCUMENTATION: List of documents to be submitted with offer (offer will likely to be rejected unless these are submitted)</b>	Vendor			
6.1	Point-wise clarifications to all points of this specification including deviations, if any	Vendor			
6.2	Sketches showing full details of cranes with dimensions / end clearances (between centre of LT rails to column face of building), overhead clearance from LT rails, hook approach limits, lift height, etc.	Vendor			
6.3	Total weight of crane in Tonnes	Vendor			
6.4	Weight of assembled trolley in Tonnes	Vendor			
6.5	Weight of crane girder in Tonnes	Vendor			
6.6	<b>Recommended List of Spares for two year normal operation of cranes ( one set for each crane): Vendor should quote for two years normal operation sparsers list for both the cranes. Each set of Spares list shall include following items:</b> 1. Fixed & moving tips for contractors 2. Contractors coil 3. Limit switch 4. Fuse Links 5. Oil seal 6. Brake liners with Rivets 7. Current Collectors (as per clause 2.40 amendment 0n 09.01.07) 8. Overload relay 9. Timer 10. Indicating Lamp of each type 11. Springs for thrustor brakes 12. Bearings for CT wheel 13. Bearings for LT wheel 14. Other recommended spare by vendor <b>A detailed break up of spares list along with quantity of each set shall be sent seperately alongwith offer.</b>	Vendor			

Sr.No.	DESCRIPTION FOR BHEL REQUIREMENT	Specified/ To be confirmed by	Offered	Deviation	Remarks
6.7	Tools & Tackles for maintenance: vendor should supply following tools & tackles one set for each crane for maintenance. each set shall include following items: 1. Tool Box 2. D/G spanner of required size 3. Grease Gun 4. Oil Can 5. Screw driver of required size 6. Nose Pliers 7. Insulated Pliers 8. Hammer of required size 9. Allen Keys of required size 10. Line tester 11. Wrench Set	Vendor			
6.8	List of drawings/documents for approval with in one month after placement of LOI/Purchase Order (Note: It is the responsibility of the supplier to get the drawings/documents approved. No extension of delivery will be accepted in case of any delay in submission/approval of drawings).	Vendor			
6.9	General Arrangement (GA) drawing of crane	Vendor			
6.10	GA Drawing of Trolley	Vendor			
6.11	GA Drawing of individual mechanism	Vendor			
6.12	Drawings of bridges, end carriage, and their connections	Vendor			
6.13	Sub-assembly drawings for wheels, hook blocks, gearboxes, and rope drums	Vendor			
6.14	Calculation for selection of motor, gearbox and brake	Vendor			
6.15	Calculation for bridge girder, end carriage and selection of wheels	Vendor			
6.16	Total weight of structural, mechanical and electrical equipment separately	Vendor			
6.17	Weight of operator's cabin (if any) together with all equipment mounted in it.	Vendor			
6.18	<b>Quality Plan</b>	Vendor			
6.19	Electrical/electronic circuit diagrams for total crane	Vendor			
6.20	List of drawings/documents to be submitted at the time of inspection of crane at supplier's works and at BHEL	Vendor			
6.21	<b>Test certificates of all bought out items like hooks, steel plates, wire ropes, etc and for crane (certified by "Competent person" as per as per Applicable Factories Rules/Acts/Laws.</b>	Vendor			
6.22	3 Nos. Cranes operation and maintenance manuals.	Vendor			
6.23	3 No. spare parts manual	Vendor			

Sr.No.	DESCRIPTION FOR BHEL REQUIREMENT	Specified/ To be confirmed by	Offered	Deviation	Remarks
6.24	Drawings of all wheels	Vendor			
6.25	3 sets of drive manuals	Vendor			
6.26	Cabling scheme / interconnection diagram	Vendor			
<b>7</b>	<b>TESTING/INSPECTION</b>				
7.1	During manufacture: Will be checked/inspected by BHEL/third party appointed by BHEL	Vendor			
7.2	After manufacture: Will be checked/inspected by BHEL/third party appointed by BHEL. The crane will be checked for all functions and operations.	Vendor			
7.3	Crane span: Check of Crane span and diagonal - 10Kg pull should be applied while checking.	Vendor			
7.4	Clearance for dispatch: The equipment shall be dispatched only after testing/inspection at supplier's works and on written clearance from BHEL.	Vendor			
<b>8</b>	<b>INSTALLATION &amp; COMMISSIONING</b>				
8.1	At BHEL works: Will be the part of supplier's scope.	Vendor			
8.2	Material(lifting equipment, lifting tackles,etc) required during Installation and commissioning: Part of supplier's scope. All lifting machines/tackles to be inspected and certified by "Competent Person" as per Applicable Factories Rules/Acts/Laws before use.				
<b>8.3</b>	<b>Load test: To be done as per relevant IS standards. Load will be provided by BHEL</b>	<b>Vendor</b>			
8.4	Test certificate for crane: Part of supplier's scope. To be inspected and certified by "Competent Person" as per Applicable Factories Rules/Acts/Laws before use.	Vendor			
<b>8.5</b>	<b>Training of BHEL personels for atleast three working days after its commissioning at BHEL site.</b>	<b>Vendor</b>			
<b>9.0</b>	<b>PACKING:</b>				
9.1	Rigid packing/fixing for all items of complete machine, all Accessories and other supplied items to avoid any damage/loss in transit.	Vendor			
<b>10.0</b>	<b>GUARANTEE :</b>				
10.1	24 months from the date of acceptance of the machine.	Vendor			
<b>11.0</b>	<b>GENERAL :</b>				
11.1	Machine Model No.	Vendor			
11.2	Total connected load (KVA):	Vendor			
11.3	Floor area required (Length, Width, Height) for complete machine & accessories.	Vendor			
11.4	Total weight of the machine	Vendor			
11.5	Weight of heaviest part of machine	Vendor			
11.6	Weight of the heaviest assembly / sub-assembly of the Machine	Vendor			
11.7	Dimensions of largest part/ sub-assembly/ assembly of the machine	Vendor			
11.8	Hydraulic, Pneumatic & oil pipings should be preferably metallic except places where flexible pipings are essential. All the pipes required for the same shall be included in the standard scope of the machine.				
11.9	Latest available versions of the applicable IS shall be followed.	Vendor			
11.20	<b>BHEL shall provide electrical connections for each crane separately only at single point as specified by vendors in their GA drawing. Rest all electrical connections shall be in vendor's scope.</b>	Vendor to note			
11.21	<b>List of suppliers of bought out Item is enclosed as per Annexure-A. vendor to ensure the bought out itmes as per list enclosed</b>	Vendor to note			
11.22	<b>Any other acessories required for smooth and efficient operation of cranes shall be provided by vendor.</b>	Vendor to note			
<b>12</b>	<b>QUALIFICATION REQUIREMENT</b>				

Sr.No.	DESCRIPTION FOR BHEL REQUIREMENT	Specified/ To be confirmed by	Offered	Deviation	Remarks
12.1	Only those vendors who have been manufactured, supplied and commissioned at least two EOT cranes of capacity 10T or higher in capacity having span 18 meter or higher in past five years and these cranes are working satisfactorily as on date of opening of tender ,should quote. Vendor to provide the performace report of staisfactory operation of crane after one year of it's commissioning at customers's site (as on the date of opening of tender).	Vendor to submit			
12.2	Name & Complete Postal address of customer to whom simmlar or higher capacity machine is supplied with Phone No., Fax No. & Email ID	Required			
12.3	Vendor to submit , along with offer, reference list of customers where similar machines have been supplied mentioning broad specifications of the supplied machine i.e. Model, Swing Over Carriage, Center Distance, Load Carrying Capacity, Main Drive Rating, etc	Required			
12.4	Detailed catalogues , sketch/ photographs of the m/c and accessories/ attachments should be submitted with the offer.	Required			



**List of suppliers for Brought Out items of cranes**

<b>Item</b>	<b>Make</b>
Bearings	SKF/ FAG/ TATA/ NORMA/ NBC
Cables (ISI Approved)	A) Power cable: Nicco/ Universal/ Incab/ Fort Gloster/ Torrent/ ICL/ Radiant B) Control cable: Nicco/ Universal/ Incab/ Fort Gloster/ Finolex/ Torrent/ ICL/ CCI/ Radiant C) Trailing Cables: Nicco/ Universal/ Incab/ ICL
Connectors	Elmex / Wago
Contactors	SIEMENS/ L&T/ TELE MECHANIQUE/ BCH
Controller	Siemens/SOC/WMI
Couplings	Hi-Cliff / WMI
Fuse/Fuse holders	SIEMENS/ L&T/ English Electric
Hooks	MOOZUMDAR/ KARACHIWALA/ SIMRITI FORGING/ HARMAN MOHTA/ Steel Forging & Engg. Co. Kolkata
Isolator Switch	SIEMENS/ L&T/ GECA/ CONTROL & SWITCH GEAR
Isolators	SIEMENS/ L&T/ GECA/ CONTROL & SWITCH GEAR
Limit Switches	Siemens / Speed-o-control/ Electromag/ JAI BALA JI/ SOC
Lubrication Pump/motor	SIEMENS/ ABB/NGEF/ CROMPTON/ KIRLOSKAR/ GECA/ BHARAT BIJLI/ REMI/ ALSTOM
MCB	SIEMENS/ MDS/ Indo Copp/ Standard/ Standard Kopp
MCCB	SIEMENS/ MDS/ Indo Copp/ Standard/ Standard Kopp
Motors ( Auxiliary)	SIEMENS/ ABB/NGEF/ CROMPTON/ KIRLOSKAR/ GECA/ BHARAT BIJLI/ REMI/ ALSTOM
Motors (Slip Ring)	SIEMENS/ ABB/NGEF/ CROMPTON/ KIRLOSKAR/ GECA/ BHARAT BIJLI/ REMI/ ALSTOM
Overload relay (Electrical)	SIEMENS/ L&T/ TELE MECHANIQUE/ ABB
Overload relay (Mechanical)	ELECTROGEAR
Panels	SIEMENS / GODAVARI ELECTRICALS / DANDAPANI
Pendent pushbutton station	HANSU/ SIEMENS/ L&T/ BCH
Pneumatic timers	SIEMENS/ L&T/ BCH

## Annexure-A

Push Buttons	SIEMENS/ L&T/ BCH
Radio Remote Control	Stromag/ SNT
Resistance Box	BCH / SOC / WMI / OMEGA
Thrustor Brakes	SOC / WMI / OMEGA
Squirrel cage induction motors (suitable for crane duty application and to run with VVVF drives)	SIEMENS/ ABB/NGEF/ CROMPTON/ KIRLOSKAR/ GECA/ BHARAT BIJLI/ REMI/ ALSTOM
Variable frequency drives with regenerative braking resistance	ABB/ SIEMENS/ L& T
Wire Rope	Usha Martin / Fort William / Bharat wire ropes/ Bombay wire rope/ united wire rope

**List of Maintenance Tools & Tackles (at no additional cost)**

1. Tool Box
2. D/G spanner of required size
3. Grease Gun
4. Oil Can
5. Screw driver of required size
6. Nose Pliers
7. Insulated Pliers
8. Hammer of required size
9. Allen Keys of required size
10. Line tester
11. Wrench Set

**Mandatory/recommended spares for two year operation (quoted items)**

1. Fixed & moving tips for contractors
2. Contractors coil
3. Limit switch
4. Fuse Links
5. Oil seal
6. Brake liners with Rivets
7. Current Collectors (as per clause 2.40 amendment On 09.01.07)
8. Overload relay
9. Timer
10. Indicating Lamp of each type
11. Springs for thruster brakes
12. Bearings for CT wheel
13. Bearings for LT wheel

**SPECIFICATIONS OF SINGLE GIRDER E.O.T. CRANE  
CAPACITY: 5 MT**

**QUALIFICATION CRITERIA**

Vendor has to compulsorily meet the following requirements to get qualified for consideration of the technical offer for the SUPPLY OF EOT CRANES

<b>Sr. No.</b>	<b>Particulars</b>	<b>Vendor's Response</b>
<b>1</b>	Only those vendors, who have supplied and commissioned at least ONE Crane of Rated capacity or more in the past five years and such crane is presently working satisfactorily for more than one year after commissioning (on the date of opening of Tender), should quote.	
	Performance certificate from the customers (minimum 2) regarding satisfactory performance of Crane supplied to them should be sent along with technical offer.	
<b>2</b>	BHEL reserves the right to verify the information provided by vendor. In case the information provided by vendor is found to be false/ incorrect, the offer shall be rejected.	

**SCOPE OF WORK:**

Design, Manufacturing, Supply, Erection & Commissioning and Job Proving of floor operated (Pendent) and also Radio Remote Controlled Single Girder EOT Crane, Capacity 5 Tonne, Crane duty class- II (M5) for Indoor operations with following specifications: -

Sr. No.	DESCRIPTION / SPECIFICATIONS	REQUIRED	Vendor's OFFER / COMMENTS	DEVIATION	REMARKS
1	<b>Type:</b>				
1.1	Single Girder EOT Crane as per IS: 807 & IS: 3177 (latest version)	Vendor to confirm			
2	<b>Duty Class:</b> M5 (Class-II) for Indoor operations	Vendor to confirm			
3	<b>Lifting Capacity:</b> 5 Tonne	Vendor to confirm			
4	<b>Span:</b> 6.8 Meter	Vendor to confirm			
5	<b>Height of Lift:</b> 5.5 Meter (upto the hook)	Vendor to confirm			
6	<b>LT Wheel Track : (in vendor's Scope)</b>				
6.1	Size: 50x50 mm Sq. Bar	Vendor to confirm			
6.2	Length: 19.6 Meters (@ 9.8 Meter for each side)	Vendor to confirm			
6.3	Material : Vendor to specify	Vendor to specify			
7	<b>Long. Travel:</b> 9.80 Meter	Vendor to confirm			
8	<b>Cross Traverse:</b> 6 mts.(min.)	Vendor to confirm			
9	<b>Clearance between Rail Top to Enclosure Roof:</b> 650MM	Vendor to confirm			
9.1	<b><u>DSL (in vendor's scope):</u></b>				
9.1.1	Length: 9.8 Meters (Erection and Commissioning in vendor's Scope)	Vendor to confirm			
9.1.2	Type: PVC Shrouded Copper Bus Bar	Vendor to confirm			

9.1.3	<b>Inserts / Insert Plates:</b> All inserts, insert plates required for mounting DSL and LT wheel track etc. shall be in Vendor's scope.	Vendor to confirm			
10	<b>Hoist:</b>				
10.1	Hoist should be as per IS: 3938 (latest version) of reputed make (Hoist may be used preferably of Indef make). Only Low Head Room Hoist shall be acceptable.	Vendor to confirm			
11	<b>Speed (Meter / Min.):</b> (Otherwise mention)				
11.1	Hoisting: 4	Vendor to confirm			
11.2	CT: 8	Vendor to confirm			
11.3	LT: 12	Vendor to confirm			
12	<b>Hook:</b>				
12.1	Drop Forged, Plain 'C' type, Swiveling on Thrust Bearing, Duly tested as per IS: 3815 / 8610 (latest version)	Vendor to confirm			
13	<b>Gear Boxes:</b>				
13.1	Gear boxes should be totally enclosed oil bath splash lubricated in Hoist and grease packed gear box in LT.	Vendor to confirm			
14	<b>Gears:</b>				
14.1	Spur / Helical gears / Pinion (in Module) machined and toothed on precision Hobbing M/c. Worm reducers not acceptable. Pinions made of preferably En 24 and gears of En-8, hardened to HRC 50-55 and ground.	Vendor to confirm			
15	<b>LT Wheel:</b>				
15.1	LT Wheel should be made of C55Mn <u>75</u> , Mention the wheel dia meter.	Vendor to confirm/mention			
16	<b>Wire Rope:</b>				
16.1	Fiber core confirming to IS: 2266 preferably of Usha Martin / Fort Williams make. Mention Wire rope dia, No. of fall & Construction.	Vendor to confirm/mention			

17	<b>Rope Guide:</b>				
17.1	Precision machined Rope Guide nut to suit rope drum grooves and moving over the drum like a nut to be provided to prevent overlapping / loosening of rope over drum.	Vendor to confirm			
18	<b>Bearings:</b>				
18.1	Anti-friction Ball/Roller/Needle bearing of SKF / FAG / NTN / INA Make only. Grease nipples to be provided wherever required. Bushings are not acceptable.	Vendor to confirm			
19	<b>Bridge Girder:</b> fabricated from I-section.	Vendor to confirm			
20	<b>End Carriage:</b> Fabricated from rolled steel sections / plates	Vendor to confirm			
21	<b>Control:</b>				
21.1	Through reputed make (Preferably SNT make) Radio Remote Control as also with Master Controller through Pendant control of Reputed Make with Push Button for ON, OFF, UP, DOWN, Forward, Reverse, Left, Right, Bridge Light & Emergency Stop. Operating Voltage 24Volts., hanging in the middle of Bridge Girder.	Vendor to confirm			
22	<b>Control Panel:</b>				
22.1	The control panel of crane should consist of HRC Fuses, reversing air breakers, step down transformer, relay etc. The wires / cables should be numbered as per circuit diagram, 10% spare terminals should be provided. 220 Volts, 15 Amp, 3 pin socket with switch to be provided. Circuit diagram covered with perplex sheet to be provided on the inside of panel door.	Vendor to confirm			
23	<b>Types of Motors:</b>				
23.1	Squirrel Cage Induction Crane duty motors of reputed make (Motors may be used preferably of Alstom / Siemens / GEC make) , CDF 40%, Totally enclosed, fan cooled, Insulation Class-F & confirming to relevant latest IS:325.	Vendor to confirm			

24	<b>Motor Rating (Please mention):</b>				
24.1	Hoisting:	Vendor to mention			
24.2	CT:	Vendor to mention			
24.3	LT:	Vendor to mention			
25	<b>Brakes:</b>				
25.1	Conical rotor type or "Fail to safe" action type Electromagnetic shoe / disc brakes type to be provided to hold the mechanism in position instantaneously as soon as the power supply is 'OFF' either accidentally or intentionally for all motions.	Vendor to confirm			
26	<b>Limit Switches:</b>				
26.1	For over Hoisting and Over lowering: Shunt, adjustable type. Two way lever type for CT both direction and LT both direction of reputed make.	Vendor to confirm			
27	<b>Power Supply:</b> 415±10%Volts, 50 Hz, 3 phase, 3 wire AC.	Vendor to confirm			
28	<b>Wiring:</b>				
28.1	All the penal wiring should be done by using standard multi core Copper PVC insulated cables of reputed make.	Vendor to confirm			
29	<b>Bridge Lights:</b>				
29.1	2 Nos. 500 watts (Phillips / Crompton Make) one each end of Girder.	Vendor to confirm			
30	<b>Trailing Cables:</b>				
30.1	Trailing cables (Extra flexible having copper conductors only) should be traveling on rollers moving on separate I-Beam parallel to Bridge Girder and both for LT & CT shall be supplied and Erected by supplier.	Vendor to confirm			
31	<b>DOL Starter:</b>				
31.1	Suitable DOL Starter of reputed make shall be supplied supplier. BHEL shall provide power supply upto starter only.	Vendor to confirm			



32	<b>Ambient Conditions:</b>				
32.1	<b>Temperature:</b> 4° C - 50° C.	Vendor to Note			
32.2	<b>Working Condition:</b> NDT Lab.	Vendor to Note			
33	<b>Painting:</b>				
33.1	The crane should be thoroughly cleaned and two coats of Red Oxide primer to be applied before despatch, final painting with two coats of Post Office Red enamel paint to be done by supplier after job proving.	Vendor to confirm			
<b>General:</b>					
1	Five sets of operation and maintenance manuals having adequate details of machinery and electrical diagrams shall have to be supplied. 2 set of CDs having complete manual also to be provided.	Vendor to confirm			
2	Errection & commissioning charges shall have to be separately quoted. Errection & commissioning tools and tackles shall be arranged by supplier. BHEL shall provide power supply at single point.	Vendor to confirm			
3	Crane shall be load tested as per IS at 125% of rated load shall be conducted at site. Load shall be provided by BHEL for the same.	Vendor to confirm			
4	Spares as per Annexure-A recommended for two years trouble free maintenance should also be quoted as per price bid. Item wise quantity and rate should be mentioned.	Vendor to confirm			
5	All the components should be in metric sizes only.	Vendor to confirm			
6	All the welded joints should be NDT tested by Govt. approved Test House & certificate / X-Ray films to be submitted at time of inspection.	Vendor to confirm			
7	The Equipment shall be guaranteed by the Vendor for a period of 18 months from the date of commissioning or 24 (twenty four) months from the date of supply whichever is earlier.	Vendor to confirm			

8	The 3 view drawing with complete details and Bill of quantity and complete specifications of BOI.	Vendor to submit			
9	Any component / part damaged during erection and commissioning or job proving to be replaced by supplier free of cost.	Vendor to confirm			
10	Free supply maintenance tools should be submitted with the offer as per attached Annexure-B.	Vendor to confirm			
11	The crane should have decent aesthetic look and Sound level should be minimum (Crane shall be installed in enclosure).	Vendor to confirm			
12	All cables should be properly covered and protected.	Vendor to confirm			
13	All the moving parts should be duly covered with guards as per safety norm. Proper guard / cover / tray to prevent falling of bolts from coupling etc should be also provided wherever required.	Vendor to confirm			
14	Counter weight to keep hoist horizontal should be provided by supplier.	Vendor to confirm			
15	Rubber buffers to be provided on both side end of End Carriages.	Vendor to confirm			
16	All contactors, over load relays & fuses may be used preferably of Siemens / L&T / English Electric make. All Time delay relays may be used preferably of Cutler Hammer make.	Vendor to confirm			
17	Festoon cable & Pendent should be traveling on separate independent track.	Vendor to confirm			
18	All the control panel components are to be enclosed in dust proof box. The panel components should be of reputed make like L&T / Siemens / CH / EE / TELEMACHENQUE.	Vendor to confirm			
19	Full length walk way platform alongwith CT Girder to be provided for maintenance / regular checkup and should have suitable railing and 100 high toe guards..	Vendor to confirm			
20	TC / GC in respect of Crane & BOI to be submitted by the supplier.	Vendor to confirm			

**Important:** Following information also to be submitted at the time of offer.

A	LT Wheel Base	Vendor to submit			
B	LT Wheel Load	Vendor to submit			
C	Total weight of Crane	Vendor to submit			

**NOTE:**

i	<b>Technical offer must have 3 view drawing with complete details of parts / components, clearances , hook approaches, wheel loads, Wheel base, trolley Beam Size, Total crane weight, motor rating, frame size, Brake drum dia. Thruster rating, Gearbox details for all the motions.</b>
ii	<b><u>DUPLICATE COPY OF TECHNICAL OFFER MUST BE SUBMITTED</u></b>
iii	<b>Supplier must submit point wise reply to specifications and general. Deviations, if any, must be separately submitted with reasons for each.</b>

**1 Recommended Spares for 2 years normal operation of Crane****Annexure-A**

<b>Sr. No.</b>	<b>Description</b>	<b>Qty.</b>
1	Input Shaft	1 No.
2	Input Shaft bearing	2 Nos.
3	Hook Thrust Bearing	1 No.
4	Bottom block bearing	4 Nos.
5	Gear coupling for LT	2 Sets
6	Half geared coupling for Hoist Brake	1 No.
7	Limit Switch for LT & CT	2 Nos.
8	LT Bearings	8 Nos.
9	Output oil seal for hoist	2 Nos.
10	Input shaft oil seal or hoist	2 Nos.
11	Contactor - main	1 No.
12	Contactor - hoist	2 Nos.
13	Contactor - CT	1 No.
14	Overload relay for Hoist	1 No.
15	Overload relay for CT	1 No.
16	Overload relay for LT	2 Nos.
17	CT Bearings	8 Nos.
18	Wire Rope	50 Mtrs.
19	Input Gear	1 No.
20	Gear Box Bearings	8 Nos.
21	Brake Shoes for Hoist	1 Set
22	Brake Shoes for LT	2 Sets
23	Brake Shoes for CT	1 Set
24	Brake Thruster for Hoist	1 Set
25	Cards of Radio remote system	2 Nos.

**2 Maintenance Tools and Tackles****Annexure-B**

<b>Sr. No.</b>	<b>Description</b>	<b>Qty.</b>
1	Complete set of ring spanners	1 No.
2	Complete set of screw drives	1 No.
3	Adjustable Spanner	1 No.
4	Insulated Plier for EOT crane only	1 No.
5	Wrench spanner	1 No.
6	Grease Gun'	1 No.
7	Oil Gun	1 No.
8	Hand Lamp for EOT crane only	1 No.
9	Line tester for EOT crane only	1 No.
10	Tool Box	1 No.