



**BHARAT HEAVY ELECTRICAL LIMITED**

**UNIT'S ADDRESS:**

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

**Enquiry No. :** \_\_\_\_\_

**Due Date :** \_\_\_\_\_

**Supplier Qtn. No.:** \_\_\_\_\_

**Date :** \_\_\_\_\_

**SPECIFICATION CUM COMPLIANCE CERTIFICATE OF SCOPE OF SUPPLY FOR SUPPLY, ERECTION & COMMISSIONING OF 1 NO. 5 MT, M-5 CLASS, DOUBLE GIRDER EOT CRANE WITH 7000MM SPAN , 7000 MM H.O.L. FOR GANTRY OF 18M LENGTH AT HEIGHT OF 7 M.**

**NOTE:-**

1. Vendor must submit complete information against Qualifying Criteria - clause no. 16. 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, 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 SUPPLIER :	NAME & ADDRESS OF THE INDIAN AGENT :
TELEPHONE NOS.:	TELEPHONE NOS.:
FAX NOS.:	FAX NOS.:
E-MAIL ADDRESS :	E-MAIL ADDRESS :
SCOPE: SUPPLY, ERECTION & COMMISSIONING OF 1 NO. 5 MT DOUBLE GIRDER , M-5 CLASS EOT CRANE COMPLYING WITH THE SPECIFICATIONS AS BELOW	

SNO	DESCRIPTION FOR BHEL REQUIREMENT	SPECIFIED / TO BE CONFIRMED BY	OFFERED	DEVIATIONS	REMARKS
1.0	PURPOSE :				
1.1	Purpose: The Crane is required for lifting/ lowering/ movement/ Testing of various precision components of Tooling for manufacturing and assemblies within a shop. This is to be mounted on existing Steel Gantry Structure would run on existing Gantry Rail of 90 lbs rail and would draw power supply from existing MS DSL ( 3 Phase , & Ground Conductor system of 65mm Angle) for 15m Gantry Bay length.Precision movement(creep) is required for Tool component assembly.	Vendor to confirm			
2	SPECIFICATION:				
2.1	MACHINE CONFIGURATION: The crane would have 5 Ton capacity . The crane shall be of Double Girder box type, construction and to be designed for class M5 duty in accordance with IS 3177:2000 or latest	Vendor to confirm			
2.2	Capacity				
2.2.1	Safe Working Load (Main Hook)	5 Tons			
2.2.2	Class of Crane (IS 3177 or latest)	M5			
2.2.3	Max lift of main hook	7 m			
2.2.6	Type of Hook	Shank Type IS 3815 / Grade 3 with Bearing			
2.3	Details of Rails/ Span etc				
2.3.1	Rail Centre Span(Actual measurement shall be taken before commencement of work)	7 metres			
2.3.2	Clear Lift ( Gantry height above floor level)	7 meter			
2.3.3	Maximum Wheel Laod ( 4 nos of wheels)	Vendor to specify			
2.3.4	Distance between wheel centres of end carriage	Approx 3100			

2.3.5	Main Hook Approaches (DSL Side) - mm	Indicative values			
2.3.6	Main Hook Approaches- mm	Indicative values 850 mm( Max)			
2.3.7	Available head room above rail Centres(Actual measurement shall be taken before commencement of work) - mm	1850mm ( Max			
2.3.8	Available slide clearances from Gantry Rail centres(Actual measurement shall be taken before commencement of work)	350 mm ( Max )			
2.3.9	Overall width of the over buffers :	Vendor to Indicate			
2.3.10	Crab Track centre	Vendor to Indicate. ( approx: 1200 mm)			
2.3.11	LT Rail Available other crane is working	90 lbs available at site			
2.3.12	DSL : Though Existing, but 18m length Alternative arrangement like Festoon system shall be required to give power to Crane being VVFD operated crane.	Vendor to confirm			
2.3.13	Location :	Indoor			
2.4	Operational Speed				
a)	Main Hook	Vendor to Confirm			
2.4.1	Main Hook Hoist Speed ( Any speed as per your standrad in between the range of 2.5 to 4 ) m / min	2.5 to 4mpm± 10%			
2.4.2	Main Hook Creep Speed ( Any speed of 10% as per your standrad in between the range of 2.5 to 4 ) m / min	10% of main speed			
2.4.3	Long Travel Traverse Speed ( Any speed as per your standrad in between the range of 15 to 20 ) m / min (From Radio Remote Control /From pendant indepentant Movable in parallel to CT movement)	15 to 20± 10%			
2.4.4	Long Travel Traverse Creep Speed ( Any speed of 10% as per your standrad in between the range of 15 to 20 ) m / min (From Radio Remote Control /From Cabin Control)	10% of main speed			

2.4.5	Cross Travel Traverse Speed ( Any speed as per your standrad in between the range of 15 to 20 ) m / min				15to 20 mpm±10%		
2.4.6	Cross Travel Traverse Creep Speed ( Any speed of 10% as per your standrad in between the range of 15 to 20 ) m / min				10% of main speed		
	<b>2.5 MAKES OF DIFFERENT COMPONENTS</b>						
2.5.1	<b>Bought - Out Materials ( Makes ) : Best quality duly tested as per appropriate IS standard</b>						
2.5.2	Ball & Roller Bearings : SKF/FAG/TATA/TIMKEN/RHP				Vender to specify		
2.5.3	Contactors : Siemens/ BCH/Telemecanique only				Vender to specify		
2.5.4	<b>Timers</b> : <b>BCH(Bharatiya cutler hammer) / Siemens</b>				Vender to specify		
2.5.5	Resistances Punched Grid ( 1- step- 30min, rest 10 min ) : Speedocontrol/Stormkraft/Electromag/BCH				Vender to specify		
2.5.6	Thrustors: Industry syndicate Stromkraft/Speed-o- Control/				Vender to specify		
2.5.7	Cables : FR type Copper cables with ISI mark only. Asian/Lapp/ Universal/ Finolex / Torrent /anchor/ Nicco/Indian cable /				Vender to specify		
2.5.8	Gravity Limit switch Stromkraft / Stromag / Speed-o- Control/EMM/Avon / Bhomens				Vender to specify		
2.5.9	T.B Connectors : Wago/ Elmex				Vender to specify		
2.5.10	Structural Material: TATA/ SAIL / NIPPON/ESSAR (Steel )				Vender to specify		
2.5.11	Gear Boxes: Shanti Gears/ New Allenbery( Elecon ) / Bonfiglioli / INDEF / Demag/Premium ( Leak proof as crane would be put under cabssolute clean environment for Gear Measurement machine).				Vender to specify		
2.5.12	Geared/ Semi Geared Couplings : Nutech/ Fenner / Allmex/INDEF etc.				Vender to specify		

<b>2.5.13</b>	Wire rope : Usha martin only				Vender to confirm			
<b>2.5.14</b>	Paint confirming S 5: 1984, Colour Shade No. 591 of Asian/ Appcolite make				Vender to specify			
<b>2.5.15</b>	Electrical Motor : Kirloskar Electric/ Alstom/ ABB/ Siemens/ Crompton/ INDEF/ BONFIGLIOLI Crane Duty with S4, 40% CDF as per IS. 325				Vender to confirm			
<b>2.5.16</b>	MCCB: Siemens / ABB / L&T make				Vender to specify			
<b>2.5.17</b>	Flood Light: Energy Efficient Phillips/ Bajaj/ Asian make (With Protective Guard)				Vender to confirm			
<b>2.5.18</b>	Variable Frequency Drives: L&T- Yaskawa- 3 level Control ( G7) or Schneider or ABB or Allen Bradley make only				Vender to specify			
<b>2.5.19</b>	Hooter: RS Components / Farnell				Vender to confirm			
<b>2.5.20</b>	Push buttons ( Siemens/ BCH make only )				Vender to specify			
<b>2.5.21</b>	HRC Fuses: Siemens/ GE/ EE make				Vender to confirm			
<b>2.5.22</b>	Panel enclosure: Powder coated minimum 1.6mm thick sheet & having adequate avtivation door				Vender to confirm			
<b>2.5.23</b>	Radio Remote Control System : Telemotive UK make/ Acropolis/ Telecrane/ Stromag/ Telemotive make .				Vender to confirm			
<b>2.5.24</b>	EM Brakes : AC electromagnetic brake, make pathe/emco/ BCH / Sibre. To be desgind for minum 50% overlaod.				Vender to confirm			
<b>2.6</b>	<b>CONSTRUCTION:</b>							
<b>2.6.1</b>	The box should have proper Camber & fabricated with MS plate / web & proper diaphragm or stiffening plates. should be robust enough to handle the loads safely as per IS 807 / IS 800. The welded joints shall be Tested . All butt joints shall be 100% X rayed <b>both compression and tension and both flanges / webs</b>				Vendor to confirm			

<b>2.6.2</b>	M.S. chequered plate platform shall be provided along the full length on both sides of the crane with Toe Board to comply with statutory requirement of factory . Plateform shall have clear width of 800mm	Vendor to confirm			
<b>2.6.3</b>	Box Girder & End carriage joints should have fitted bolted only.	Vendor to confirm			
<b>2.6.4</b>	For all bolted joints the holes are to be drilled and reamed and bolting to be force fitted.	Vendor to confirm			
<b>2.6.5</b>	Hand railing shall be fitted on both side of the end carriages and throughout the length of the plat form of the bridges at a height of 1.1 m. Size of the hand rail shall be not less than 1" bore heavy gauge steel pipe. <b>Suitable hand railing should be provided on CT Trolley also.</b>	Vendor to confirm			
<b>2.7</b>	<b>End Carriage</b>				
<b>2.7.1</b>	The end carriages shall be of approved design, with L type Brackets of substantial construction and ample stiffness built up of mild steel sections securely riveted or welded together. They shall project over the run way rails and shall be so arranged that in the event of derailment the drop cannot exceed 1 inch. Proper hand railing should be provided on end carriage. Suitable jacking pads should be provided on end carriages jacking up & for ease in changing track wheels	Vendor to confirm			
<b>2.7.2</b>	The end carriages of the crane are to be mounted on double flanged wheels of approved diameter in accordance with IS:3177. The Wheel should be of forged steel having composition as C55 Mn 75 ( EN 9) hardened to 250-280 BHN confirming SAE 1055 / IS 1570 & shall be fitted with roller bearings Greasing nipples should be provided and the grease be retained and dirt excluded by means of suitable seals. Size for LT wheel shall not be less than 250mm dia & CT wheel should not be less than 200mm	Vendor to confirm			
<b>2.7.3</b>	<b>Track wheels</b> : The wheels should be of heavy duty type with cast iron hub & forged steel tyres of cast steel. The wheel being machined to profile to suit the gantry rail. Clearance between the rails and the guiding wheels, if any, should be at least 3 mm (1/8") on either totaling 6 mm (1/4") for smooth running.	Vendor to confirm			

<b>2.7.4</b>	Two LT Motors : Squirrel cage Induction motor crane duty with VVFD drive with proper interlocks & safety controls.	Vendor to confirm			
<b>2.7.5</b>	2 Nos End limit Switches ( Roller Type ) , 4 Nos spring loaded Buffers to be provided.				
2.10.3	All limit switches should be connected only in interlock circuits	Vendor to confirm			
<b>2.11</b>	<b>Rope, Hook &amp; Sheaves</b>				
2.11.1	The 5 Ton loads should be supported on sufficient Nos of falls of steel wire rope, the factor of safety being not less than 6 rope for 5 Ton load should be Seale-Warrington non rotating type 9/13/16/18mmmm dia having 6X36 filler construction ungalvanised wire laid of tensile grade 180 kg. sq.mm. tensile strength, right hand ordinary lay wire ropes with fiber main core tested to IS 2266.	Vendor to confirm			
2.11.3	All pulleys/ Sheaves should essentially have Bearings.	Vendor to confirm			
<b>2.14</b>	<b>Crane Protection Panel</b>				
2.14.1	The design and construction of this panel must be of high standard conforming to latest IS standard with good aesthetic . The equipment should comprise of contactors,over load relays ,timers connected in two phases of each motor and common return relay in the third phase. An emergency 'stop' and a reset push button and an indicator pilot lamp should be incorporated. All connections Internal and external should be accessible from the front of the panel for inspection and maintenance. Push buttons should be connected only in interlock circuits. Individual isolators / MCCB should be provided to the protective panels. All limit switches to be interlocked.	Vendor to confirm			

2.14.2	The relays and contactors should be robust design & generally in conformity with IS 13947-4 . the contactors should be suitable for Class IV duty . Current rating of contactors should be one step higher than required.	Vendor to confirm			
2.14.3	Isolators/MCCB should be capable of load breaking and mechanically robust to vibration / jerks during crane start/stop operation.	Vendor to confirm			
2.15	<b>Resistance Boxes:</b> All resistance should be of minimum 10 minutes rating . These shall be punched grid from Stainless Steel Wire / Feclal sheet. Appropriate rating of DBR to be selected.				
<b>2.16</b>	<b>(Independent Movable pendant is required )</b>				
2.16.1	A pendant should have ON-OFF, EMERGENCY -OFF, Light switch, Hooter switch along with other usual switches. It should be tied with 3mm steel wire rope so that cables are not in tension in any moment. Warning Light ( Blinking ) to be provided when crane is under operation. It should have main Switch ( ICTP) for switching off in case of emergency.	Vendor to confirm			
<b>2.16.2</b>	<b>Crane Bridge Lighting :</b> Four Nos HPSV, Phillips make HPL 125 Watts flood lights with fittings should be provided with suitable guard protection below the Platform. As the power supply will be only 415 volts, 3 phase, 3 wire, 50 cycles. Step down transformer required for bridge lights, cabin lights, fan, inspection hand lamp and for any other equipment should be supplied alongwith individual main switch for each, directly connected with the incoming supply and not in the crane circuit.	Vendor to confirm			



<b>2.18</b>	<b>Wiring:</b>								
2.18.1	The crane shall be supplied complete with all wiring & materials excluding long travel conductors. The cross traverse conductors shall be TRS type 1100 Volt class only. All internal wiring inside control panels should be copper wires having armoured PVC insulation with ISI mark only.				Vendor to confirm				
2.18.2	All wiring shall be with either PVC insulated FR type and armoured (similar to trapdoor) cables having copper conductors of 1100 Volts grade or PVC insulated copper wire 1100 volts grade laid in cable trays and trunking				Vendor to confirm				
2.18.3	All internal wiring inside control panels should be 2.5 sq.mm copper wires having PVC insulation. All copper wire terminals will be either lug of soldered / Crimping type.				Vendor to confirm				
2.18.4	All control terminations should be ferruled such that the numbers are clearly visible from outside. Crimped terminations should be provided for control cables and as far as possible for main cables. All device reference shall be painted or labelled or engraved for identification.				Vendor to confirm				
2.18.5	Double earthing by bare copper wire ( 8 SWG ) shall be provided throughout the crane.				Vendor to confirm				

<b>2.19</b>	<b>Miscellaneous</b>				
2.19.1	The structural steel work in the box Girder and crab frame should be given one coat of suitable primer during fabrication. Gear boxes and similar parts to be given coat one coat of oil paint & bright parts be given coats of rust preventive paint. After erection at site the crane should be given two coats of deep orange synthetic enamel conforming to IS 5 Shade 591	Vendor to confirm			
2.19.2	The first fill of oil, grease etc. for the commissioning of the crane shall be provided by the supplier	Vendor to confirm			
2.19.3	The tool box with standard tools shall be supplied with the crane and suitable heater should be provided inside the cabin.	Vendor to confirm			
2.19.4	A list of bought out items should be furnished with name of makers & BHEL's approval obtained before placing order to ensure that they are of best quality and standard make	Vendor to confirm			
<b>2.20</b>	<b>Radio Remote Controller: (3 Motion push button type, hand held system), comprising of following.</b>	Vendor to confirm			
2.20.1	<b>I) Transmitter with protective leather cover. It shall have following functions</b> <ul style="list-style-type: none"> <li>• Main Hoist: Two speed with two-step pushbuttons, up/down (2-0-2)</li> <li>• Long Travel: Two speed with two-step pushbuttons, left/right (2-0-2)</li> </ul>	Vendor to confirm			
2.20.2	<b>Transmitter:</b> The transmitter shall be lightweight, rugged, reliable and made from ABS plastic having highly reliable, fail safe, rugged two-step	Vendor to confirm			
2.20.3	<b>Receiver:</b> It shall be supplied housed in a suitable panel and shall have antenna for receiving transmitter signals. It shall have following features:	Vendor to confirm			
2.20.4	Microprocessor based digital encoding and decoding system with immunity from spurious signals and should use 16 bits identity code unique to each RRC system.	Vendor to confirm			

2.20.5	Continuous auto checking between transmitter and receiver communication, so as to stop the complete system in case of failure at either end.	Vendor to confirm			
2.20.6	Auto checking of the commanded motion and stopping of all the motions in case of any misbehavior either way	Vendor to confirm			
2.20.7	System should have self-diagnostic and alphanumeric fault display.	Vendor to confirm			
2.20.8	System should confirm to national and international safety standards like IS 3771:1999 CLAUSE 14.5, BS 466 etc. & furnish details of safety & QA plan followed.	Vendor to confirm			
2.20.9	Operating range should be 100 mtrs.	Vendor to confirm			
2.20.10	The output relays for driving motion contactors shall be heavy duty, rated for 10Amps at 110VAC	Vendor to confirm			
2.21.0	<b>General Conditions for RRC:</b>	Vendor to confirm			
2.21.1	System should be able to operate in harsh environmental conditions like temp up to 60*c and humidity 0-100%. It should be able to with stand high level of vibrations, electrical noise arising out of the movement of the crane.	Vendor to confirm			
2.21.2	Incoming supply available is 415 V, +/- 15%, 3 Phase, 3 wire, 50 Hz.	Vendor to confirm			
2.21.3	<b>Party shall clearly indicate whether license is required to operate the RRC System. If required then it has to be arranged by the supplier. If not then enclose the necessary documents.</b>	Vendor to confirm			
2.21.4	<b>Battery Charger:</b> It shall be suitable for charging the Ni-Cd batteries of transmitter. It shall constant current type with auto-cutoff facility on full charge. Indication shall also be available for charging cycle and status of the battery etc.	Vendor to confirm			
2.21.5	<b>Batteries:</b> 3 sets of batteries suitable for 72 Hrs operation of transmitter are to be supplied	Vendor to confirm			
2.21.6	<b>Interface Panel:</b> The panel shall be of good quality powder coated of IP42 grade, crane duty and shall contain following accessories	Vendor to confirm			
2.21.7	Incomer Switch fuse unit (SFU).	Vendor to confirm			

2.21.8	Emergency Stop Contactor to be provided to cut power to all motors emergency conditions.	Vendor to confirm			
2.21.9	Illuminating lamps LED Type (R, Y & B) for three phase supply indication	Vendor to confirm			
2.21.10	Suitable RC surge suppressors shall be provided across coil of each contactor/ Timer . Interlocking to be provided with existing limit switches of all the motions for safe operation of the crane.	Vendor to confirm			
2.21.11	Mounting of all the devices of the interface panel shall be designed for operation under heavy vibration on EOT cranes. Ease in maintenance aspect should be integral aspect while deciding size of panel / designing of panel.	Vendor to confirm			
2.21.12	<b>Hooter:</b> It shall be high output, weather resistant sounders used in fire/security applications. It shall have features like a) High Output (110 dB or more), b) Selectable tone (minimum three), c) Continuously rated etc. Make: RS component.	Vendor to confirm			
<b>3.0</b>	<b>ERECTION &amp; COMMISSIONING:</b>				
3.1	The crane is to be Erected at site by the supplier with their own labour, tools and tackles; Commissioned and the undermentioned tests conducted before Handing over	Vendor to confirm			
3.2	Various tests like gradual loading , overload at 125%, Camber / Deflection test , Braking, Operational Speeds etc shall be conducted after proving of the crane w.r.t technical, Safety Parameters etc the Crane shall be commissioned.	Vendor to confirm			
3.3	Commissioning-spares, required for commissioning of the crane shall be brought by the supplier on returnable basis.	Vendor to confirm			
3.4	Portion, if any, of the crane / sub- assemblies / panel or other accessories where paint has rubbed off or peeled during transit or erection should be repainted and merged with the original surrounding paint by the vendor. For this purpose, the vendor should supply sufficient quantity of touch-up paint of various colours of paint used.	Vendor to confirm			
3.5	Schedule of Erection and Commissioning shall be submitted with the offer.	Vendor to confirm			
3.6	Charges, duration, terms & conditions for E&C should be furnished in detail separately by vendor along with offer.	Vendor to confirm			

<b>4.0 ELECTRICAL System :</b>					
4.1	415V $\pm$ 10% 50Hz $\pm$ 1.5 Hz, 3 Phase AC (3 wire system with ground ) Power Supply Source will be provided by BHEL by means of mains switch from which cable to MS DSL to be supplied along with MS DSL. All types of cables, connections, circuit breakers, transformers, current collectors etc. required for connecting CRANE (panels etc) to DSL and different parts of the crane / control cabinets, shall be the responsibility of vendor. Control Supply for crane shall be 110V ac.	Vendor to confirm			
4.2	<b>Tropicalisation:</b> All electrical / electronic equipment shall be tropicalized	Vendor to confirm			
4.3	All electrical & electronic control cabinets & panels should be dust and vermin proof	Vendor to confirm			
4.4	All electrical components in the cabinets should be mounted firmly on backlite plate or on DIN Rail .	Vendor to confirm			
4.5	All electrical and electronic panels including operator's panel should be provided with fluorescent lamps for sufficient illumination and power receptacles of 220Volts, 5/15 Amp AC. All adapters/receptacles should have compatibility with Indian equivalents.	Vendor to confirm			
4.6	All cables moving with trolley on the crane should be movable on suitable Cable - Trolley moving on T- Track. Suitable Dragging Chain shall also be provided so that in no-case Cables are put under tension. All Cables should be properly dressed in cable trays/ trunking with appropriate clamps. Cable for Crane lighting shall be in flexible Ms- Conduit pipe.	Vendor to confirm			
4.7	Vendor should ensure the proper earthing for the crane's electrical equipment & its peripherals .	Vendor to confirm			

<b>5.0</b>	<b>SAFETY ARRANGEMENTS: Following safety features in addition to other standard safety features should be provided on the crane .</b>					
5.1	Crane should have adequate and reliable safety interlocks / devices to avoid damage to the crane, workpiece and the operator due to the malfunctioning or mistakes. Crane functions should be continuously monitored and alarm / warning indications through lights/ alarms should be available.	Vendor to confirm				
5.2	A detailed list of all alarms / indications provided on Crane should be submitted by the supplier.	Vendor to confirm				
5.3	All the pipes, cables etc. on the crane should be well supported and protected.	Vendor to confirm				
5.4	All the rotating parts used on machine should be statically & dynamically balanced to avoid undue vibrations. Open gears, couplings, fans/ rotating parts should be provided with suitably guarded.	Vendor to confirm				
5.5	Emergency Switches should be provided at suitable locations.	Vendor to confirm				
5.6	Electrical cable & signalling cables should be suitably separated.	Vendor to confirm				
5.7	DSL Guard should be provided	Vendor to confirm				
	<b>6.0 ENVIRONMENTAL PERFORMANCE OF THE MACHINE :</b>					
6.1	The Crane shall conform to following factors related to environment :					
6.2	Maximum noise level shall be 85 dB(A) at normal load condition, 1 M away from the crane with correction factor for back ground noise, if necessary. This will be measured as per international standards like DIN 45635-16. Supplier to demonstrate compliance to noise level, if so required.	Vendor to confirm				
6.3	Paint of the Crane should be applied only after providing rust-preventor ( primer ) coat..	Vendor to confirm				
6.4	Oil / Grease should not dip/ fall from the Crane	Vendor to confirm				

<b>7.0 TOOLS FOR ERECTION, OPERATION &amp; MAINTENANCE :</b>					
7.1 Lifting Hook at the top of Block -Truss is available for Crane erection purpose, other equipment like Winch, Sheave Pulley Blocks etc shall be brought by the Supplier on returnable basis. Other Special tools and equipment required for erection of the Crane shall be brought by the vendor on returnable basis. Necessary tools like Torque Wrench, Spanners, Keys, grease guns etc. for operation and maintenance of the crane should be supplied. List of such tools should be submitted with offer .				Vendor to confirm	
7.2 All necessary levels / other instruments and devices for testing of the Crane except load blocks should be brought by Vendor on returnable basis.				Vendor to confirm	
7.3 <b>Maintenance: Adequate maintenance facility shall be provided for ease in maintenance for assemblies/sub-assemblies including gear boxes / machinery / Panel / wiring/ etc.</b>					
<b>8.0 SPARES: ( Optional )</b>					
8.1 Itemised breakup of mechanical, hydraulic, electrical and electronic spares used on the crane in sufficient quantity as per recommendation of Vendor for 2 years for trouble free operation on three shifts continuous running basis should be offered by vendor. The list to include following, in addition to other recommended spares: (Unit Price of each item of spare should be offered)				Vendor to Specify	

8.2	<b>Mechanical &amp; Hydraulic Spares:</b> AC electromagnetic Brake, Gears, Pinions, Shafts, Wheels, Hydraulic Seals for Gear Boxes, Drum etc .	Vendor to Specify			
8.3	<b>Electrical /Electronic Spares:</b> All types of Transmitter/ Receiver spares like PCBs relays etc other electronic spares for RRC / VFD Spares.	Vendor to Specify			
8.4	Vendor to confirm that complete list of spares for the crane and its controls along with specification / type / model, and name & address of the spare supplier shall be furnished along with documentation to be supplied with the Crane	Vendor to confirm			
	<b>9.0 DOCUMENTATION :</b>				
9.1	During participation in technical Bid				
9.1.1	G.A. Drawing				
9.1.2	Wheel Load Diagram				
9.1.3	Sketches showing full details of cranes with dimensions / end clearances				
9.1.4	Vendor to submit, along with offer, the reference list of customers where				
9.2	After Receipt of Order:				
9.2.1	Calculation for Box Girder, End Carriage structural plates/ Web / Stiffner plate, Wheel Load calculation & Calculation for selection of Diameter of Wheel, Motor, Gearbox and Brake etc. 5 - sets of followings documents like G. A Drawings, Structural drawings like End- carriage, Box Girder, Assembly Drawings/ Sub- assembly Drawings, Gear Box Drawings, Hook Block, LT & CT wheel, Main Hook & Aux. Hook assembly LT machinery, Hoisting machinery, Electrical Drawings comprising Power , Control Circuits , Electronic Circuitry diagram for RRC etc. No fabrication / purchase of BO. items should be taken up before the approval of the drawings.	Vendor to confirm			



9.2.2	5 - sets of Operating manuals of Crane					
9.2.3	Detailed Maintenance manual of Crane. Spares- part list / concerned			Vendor to confirm		
9.2.4	Maintenance, Interface & commissioning manuals for Controller & drives.			Vendor to confirm		
9.2.5	Catalogues, O&M Manuals of all bought out items including drawings, wherever applicable.			Vendor to confirm		
9.2.6	Detailed specification of all rubber items like Oil- Seals / O- Rings etc			Vendor to confirm		
9.2.7	One Soft copy for the above requisites shall also be supplied in CD			Vendor to confirm		
9.2.8	RRC's frequency allocation license, Chemical & Proof load certificates of Hooks ( Test certificates from a recognized Government Test House) , Wire Rope ( Break load test Certificate having Factor of safety not less than 6 shall also be furnished) , Forgings, wheels - Chemical composition, UV test report , Weld joints X- ray Test reports, Test report of Structural material, Electrical components, Brakes etc shall also be furnished.			Vendor to confirm		
<b>10.0</b>	<b>TRAINING:</b>					
10.1	Vendor to impart trainings to BHEL personnel for operation & for maintenance at BHEL works for a period of 3 days after Erection,			Vendor to confirm		
<b>11.0</b>	<b>AMBIENT CONDITIONS &amp; THERMAL STABILITY :</b>					
11.1	Total Crane including Controller system and all supplied items should work trouble free and efficiently under following operating conditions:- Power Supply:			Vendor to confirm		

11.2	Weather conditions are tropical, Atmosphere may be dust laden during some part of the year. Machine shall be kept in the normal shop floor condition. Max. temperature variation is up to 25 deg Celsius in 24 hours.	Vendor to confirm			
12.0	<b>CRANE ACCEPTANCE: (Tests/Activities to be Performed by Vendor)</b>				
12.1	<b>At Vendor Works: Inspection And Test</b>				
12.2	BHEL Officials may inspect the crane in the usual course during various stages of manufacture. However During Final inspection before dispatch, the supplier shall assemble the complete crane and arrange for its load testing / camber as per IS 3177, the same shall be witnessed by BHEL officials. During this relevant Test certificates by Oem of Hooks, Wire Rope, Thruster Brakes, Master Controllers, Limit Switches, Gear Boxes etc shall also be examined.	Vendor to confirm			
12.3	<b>At BHEL Works: Inspection And Test</b>	Vendor to confirm			
12.4	Span, Diagonal, & other Dimensions shall be examined. Deflection at 100 % load & overloading at 125% load shall be performed. Operational Speed & braking etc shall be tested. Relevant Test- Reports & other documents shall be examined. If found satisfactory , the crane shall be accepted considered Handed Over	Vendor to confirm			
13.0	<b>PACKING:</b>				
13.1	Rigid packing for all End Carriages, Girders etc . Other parts like sub-	Vendor to confirm			
14.0	<b>GUARANTEE :</b>				
14.1	24 months from the date of handing over of the Crane.	Vendor to confirm			

<b>15</b>	<b>GENERAL : The vendor should submit the following information:</b>					
15.1	Total connected load (KVA):			Vendor to confirm		
15.2	Total weight of the Crane			Vendor to specify		
15.3	Weight of heaviest part of Crane			Vendor to specify		
15.4	Weight of the heaviest assembly/ subassembly of the Crane			Vendor to specify		
15.5	Dimensions of largest part/ subassembly/ assembly of the crane.			Vendor to specify		
<b>16.0</b>	<b>Erection And Commissioning</b>			Vendor to confirm		
16.1	The crane is to be erected at site by the supplier with their own labour, tools and tackles, commissioned and the undermentioned tests conducted before handing over.			Vendor to confirm		
16.2	In accordance with IS 3177 after tests but before the crane is put into service, it shall be tested with appropriate overloads / Camber / Deflection test t and sustain a minimum test load of 125 percent safe working load when located at the centre of the span.For load test the structural material /fabricated / heavy machined component shall be given by BHEL.			Vendor to confirm		
16.3	During the over load each motion in turn shall be moved in both directors and the crane shall sustain the load under full control.			Vendor to confirm		
<b>17.0</b>	<b>QUALIFYING CONDITIONS :</b>					
17.1	Only those vendors, who have supplied and commissioned at least 10 Nos. 5 Ton Crane for similar applications in the past ten years . The Crane is presently working satisfactorily for more than three year after commissioning , should quote. The following information is to be submitted by the vendor about the companies where similar Cranes have been supplied. This is required from all the vendors for qualification of their offer.			Vendor to confirm		
17.2	Name of the customer / company where similar Crane is installed. (Copy of Purchase Order should be furnished)			Vendor to specify		

17.3	Complete postal address of the customer.		Vendor to specify			
17.4	Year of commissioning. (Copy of Commissioning Report should be furnished)		Vendor to specify			
17.5	Application for which the machine is supplied with details of accuracies achieved on the job.		Vendor to specify			
17.6	Name and designation of the contact person of the customer.		Vendor to specify			
17.7	Phone, FAX no. and email address of the contact person of the customer.		Vendor to specify			
17.8	Performance certificate from the customers, on their letter head, regarding satisfactory performance of machine supplied to them		Vendor to specify			