

**Bharat Heavy Electricals Limited,
Heavy Electrical Equipment Plant,
Haridwar - 249403, Uttarakhand, INDIA.**

**Enquiry No. &
Date:**
Due Date:
**Supplier's
Date :**

Specification cum Compliance Certificate for Single Girder EOT Crane Capacity: 5 Ton

Note:-

1. The offer and all documents enclosed with offer should be in English language only.

2. The following format must be completely filled and deviations mentioned in the appropriate columns. Inadequate /incomplete, ambiguous, or unsustainable information against any of the clauses of the specifications / requirements shall be treated as non-compliance.

3. Vendor (OEM) must submit complete information against clause no. 21 (Qualifying condition). The offer meeting this clause would only be processed (OEM : Original Equipment Manufacturer).

NAME & ADDRESS OF THE SUPPLIER :

Telephone No.

Fax No.

e-mail :

Scope: Design, Manufacturing, Supply, Erection & Commissioning & job proving of Single Girder EOT Crane 5 Ton complying with the following specifications:

Annexure 'A' to Indent No.: 20091956, Dated: 09.06.2009

MATERIAL CODE NO.: ZBTH19207018

SCOPE DESIGN, MANUFACTURING, SUPPLY, ERECTION & COMMISSIONING AND JOB PROVING OF EOT CRANE 5T WITH SPECIFICATIONS AS BELOW:

S. No.	Description - BHEL's Requirement	Specified	Offered	Deviations	Remarks
1.0.0	APPLICATION:				
1.1.0	The subject crane is meant for the purpose of handling small to medium components.	Vendor to note			
1.2.0	The crane will be put to use for 365 Days' continuous duty with CT, LT and Hoist movements.	Vendor to note			
1.3.0	The shop floor environment will be dust prone, humid, welding fume filled and ambient temperature going upto 50°C. Weather conditions are tropical. Crane shall be kept in the normal shop floor condition without any temperature controlled enclosure / shop. Max. temperature variation is 25 deg Celsius in 24 hours. Sound level should be minimum and the crane should have decent aesthetic look. Ambient Temperature: 4° C - 50° C & Relative Humidity: 95%.	Vendor to note & Sound level to be indicated			
2.0.0	SCOPE OF SUPPLY:				
2.1.0	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 - M5 for Indoor operations in New Blade Shop, Phase-V, Blanking Section for material handling.	Vendor to Comply			
3.0.0	QUANTITY REQUIRED:				
3.1.0	EOT Crane 5 Ton	1 No.			
4.0.0	Major Technical Specification: Type, Capability and general requirements				
4.1.0	Type: Single Girder EOT Crane as per IS: 807 & IS: 3177 (latest version)	Vendor to Comply			

4.2.0	Crane Operation: Through Radio Remote Control as also with Pendant control of Reputed Make with Push Button for ON, OFF, UP, DOWN, Forward, Reverse, Left, Right, Siren, Bridge Light & Emergency Stop with option for control selection. Operating Voltage 24Volts.	Vendor to Comply			
4.2.1	Duty Class: M5 for Indoor operations	Vendor to Comply			
4.3.0	Lifting Capacity:	5 Tonne			
4.4.0	Span:	10.5 Meter			
4.5.0	Height of Lift:	7.0 Meter			
4.6.0	LT Wheel Rail Track Size: R-52	Vendor to Note			
4.7.0	Bay Length:	60.0 Meter			
4.8.0	Clearance between Rail Top to Enclosure Roof:	1500 mm			
4.9.0	Width of the Crane	Vendor to Specify			
4.10.0	Hoist: Hoist should be as per IS: 3938 (latest version) of STAHL, DEMAG, INDEF make. Only Low Head Room Hoist shall be acceptable.	Vendor to Comply			
5.0.0	Maximum Speed (Meter / Min.):				
5.1.0	Hoisting:	4			
5.2.0	CT:	8			
5.3.0	LT:	15			
6.0.0	Total weight of Crane in MT	Vendor to Specify			
6.1.0	a. Weight of Hoist (MT)	Vendor to Specify			
6.1.1	b. Weight of Bridge Girder (MT)	Vendor to Specify			
6.1.2	c. Weight of each end carriage (MT)	Vendor to Specify			
6.1.3	d. Weight of Electricals (MT)	Vendor to Specify			
6.1.4	f. Weight of other components (Specify the component's name) (MT)	Vendor to Specify			
6.1.5	Note: Total weight of crane should match the other break-up weights	Vendor to Comply			
6.1.6	Maximum load per wheel (Wheel load diagram to be shown in drawing)	Vendor to Specify			
7.0.0	Hook Approach:				
7.1.0	Both End	Vendor to submit			
8.0.0	End Clearance: End clearance to be fixed to suit the Blanking section clearances.	Vendor to submit the clearance drawing			
9.0.0	Long Travel Motion: LT Motion shall be twin drive type.	Vendor to Comply			
10.0.0	STRUCTURAL FABRICATION (Constructional Details):				
10.1.0	Bridge Girder: Shall be of Single Girder Box Type construction having Minimum vibrations.	Vendor to Comply			
10.2.0	End Carriage: Fabricated from rolled steel sections / plates as per IS:2062.	Vendor to Comply			
10.3.0	Raw Material: Only tested quality steel Fe 410 WB as per IS-2062, IS:1964 & IS:808 and certified for quality by reputed inspection authorities, shall be used.	Vendor to Comply and produce certificates.			
10.4.0	Welded Joints (To be followed for Girder fabrication):				
10.4.1	Number of Joints allowed:	Single Joint			
10.4.2	Welding Electrodes for all <i>Horizontal Welding E 7018</i> Electrode only should be used.	Vendor to Comply			

10.4.3	Welding Electrodes for all <i>Vertical Welding E 7048</i> Electrode only should be used.	Vendor to Comply			
10.5.0	Welded Joint Testing: All Butt Welded Joints (both compression/ tension and flanges / web joints) shall be subjected to 100% X-Ray Testing and X-Ray Films to be produced for BHEL evaluation and form part of the documentation.	Vendor to Comply			
10.6.0	Mechanical Joints: Fit Bolts (as per IS 3640 –1982) for all joints coming in main members.	Vendor to Comply			
10.7.0	Heat Treatment & NDT Examination: The Trolleys shall be stress relieved, if necessary, by thermal heat-treatment process after welding & NDT. All welding shall be tested by NDT means [MPI, LPI & RT] after stress relieving operation (Govt. approved Test House & certificate). Vendor to furnish the details of facilities for Heat Treatment furnace & NDT Lab at their works. 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 Comply and produce necessary certificates			
11.0.0	MECHANICAL ELEMENTS:				
11.1.0	Wheels: Wheels shall be of forged and made of C55 Mn75 Carbon steel, Hardened to BHN 300-350.	Vendor to Comply			
11.2.0	Wheel Sizes:				
11.2.1	Cross Travel (CT) - Vendor to submit the size and supply	Vendor to submit			
11.2.2	Long Travel (LT) - Mention the wheel diameter & <i>Shall be matched with the above rails.</i>	Vendor to submit			
11.3.0	Number of Wheels:				
11.3.1	a. Bridge	Vendor to submit			
11.3.2	b. Trolley	Vendor to submit			
11.4.0	Wheel Assembly: The Wheel Assembly of Long Travel (LT) shall be of <i>Live Axle System</i> with L-Type Bearings only. Details to be submitted by the vendors.	Vendor to submit details			
11.5.0	Brake Drum Sizes:				
11.5.1	Hoist	Vendor to submit			
11.5.2	Cross Travel	Vendor to submit			
11.5.3	Long Travel	Vendor to submit			
11.6.0	Gear & Gear Boxes Details: Gear Box should be of fabricated type duly stress relieved. Pinions made of En 24 and gears of En 18. Gears in all the Stages shall be helical in design and to be of machined, lapped and hardened Straight and helical spur gearing shall normally be used for all motions. Worm and bevel gears shall not be used. First and high speed reductions shall be through helical gears. All first reduction pinions and also the other pinions if feasible shall be integral with the shafts. All gears shall be of hardened and tempered alloy or carbon steel with machine cut teeth. Gear tooth shall be cut in metric module system. Surface hardening of teeth is not allowed. The Gears / pinions should be hardened to HRC 50-55 and ground. Please note that gears and pinions must have pressure angle of 20° only.	Vendor to comply & Submit			
	Hoist				
	Cross Travel (CT)				
	Long Travel (LT): Grease packed gear box in LT.				

11.7.0	Lubrication: Suitable lubrication system shall be provided for gear box, all rotating parts wherever applicable. Details of the same to be furnished. Please indicate the type of Lub. Oil & grease, quantity also.	Vendor to furnish			
11.8.0	Rope Drum: Shall be of fabricated type stress relieved or seamless pipe. The circumferential weld joints shall be tested by 100% X-Ray quality (Please mention the size).	Vendor to submit & Comply			
11.9.0	Type of Coupling: Couplings should be flexible geared Barrel type. No pin / bush / rubber type coupling to be used	Vendor to Comply			
11.10.0	Machining Operation: All mechanical mating surfaces and wheel seating areas are to be machined to the required finish and protected.	Vendor to Comply			
11.11.0	Hoist Wire Rope Details: Fiber core confirming to IS: 2266. Mention Wire rope dia, No. of fall & Construction. Minimum Factors of Safety & Tensile Strength (1960N/mm ² for wire rope) as per ISO: 4309:1990.	Vendor to Comply & submit details			
11.12.0	Lifting Hook: Drop Forged with latch, Plain 'C' type, Swiveling on Thrust Bearing, Duly tested as per IS: 15560 (latest version)	Vendor to Comply & submit details			
11.13.0	Buffers (End Stoppers): Buffers of adequate size shall be provided.	Vendor to provide			
11.14.0	Maintenance Platform: Maintenance / service platform of load carrying capacity apprx. 250 Kgs. of sufficient width shall be provided & fixed through bolted joints only. A hand railing sufficient height and toe guard (Min 100mm) shall also be provided. Platform shall have anti-skid grating.	Vendor to provide			
11.15.0	Guards: 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 also be provided, wherever required.	Vendor to provide			
12.0.0	Electricals:				
12.1.0	Input Power Supply: Shall be 415 ± 10% Volts, 50 ± 3% Hz, 3 Phase, AC.	Vendor to note			
12.2.0	Control Voltage: Shall be 110V AC	Vendor to note			
12.3.0	Protection: All Panels, Limit-Switches and Motors shall have IP 54 protection.	Vendor to Comply			
12.4.0	Motor Details: Squirrel Cage Induction Crane duty motors, Totally enclosed, fan cooled, Insulation Class-F & confirming to relevant latest IS:325, and IS-123, S4 duty, 150 starts per hour and 40% CDF. Vendor to provide other details like No. of motors, capacity of motor, Frame size, make, type and No. of poles etc.	Vendor to Comply & submit details			
	Hoist				
	Cross Travel (CT)				
	Long Travel (LT) with soft starter / Hydraulic Coupling / Torque converter				
12.5.0	Type & details of Brakes for all motions: 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 submit			
12.6.0	Electric Contactors: shall have SIEMENS / L&T / GE contactors suitable for Crane operations. Crane duty AC-4 ratings.	Vendor to Comply			

12.7.0	Contactors Rating: The rating of all Contactors shall be at least 50% higher than the respective electric motor full load current, at the specified duty cycle.	Vendor to Comply			
12.8.0	Wiring: All the panel wiring should be done by using standard multi core Copper highly flexible, double insulated cables and of Butyl Rubber.	Vendor to Comply			
12.9.0	Trailing Cables: 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 Comply			
12.10.0	Illumination: 2 Nos. of 400 Watts HPMV Lamps & fittings shall be provided under the Bridge and 1 No. shall be provided under CT Trolley. Fittings shall be of non-integral type. (Total lights 3 Nos.).	Vendor to Comply			
12.11.0	Limits Switches: Hoist shall be provided with both rotary and counter weight type (Over Hoisting and Over lowering) Shunt, adjustable type limit switches. Limit switches shall be provided for both CT & LT. Two way lever type for CT both direction and LT both direction.	Vendor to Comply			
12.12.0	Supply and Erection of DSL: The details of DSL to be provided by vendor for CT & LT and in scope of vendor.	Vendor to note & submit details			
12.13.0	Remote Control: Push Button Type Radio Remote control for all motions shall be supplied. Radio remote control should be multi speed steps of operation. The unit work with rechargeable batteries. Battery charger to be provided along with the unit & rechargeable batteries.	Vendor to comply			
12.14.0	Pendent: Pendent should be of Die cast Aluminum or Hard un-breakable plastic having push buttons for each motion e.g. Bridge light, Siren/bell On and off switches and stay put type emergency stop switch along with mode (RRC or Pendant) selector switch. Pendent shall be hanged in the middle of Bridge Girder with Chrome plated steel chain & duly covered with sleeve.	Vendor to confirm			
13.0.0	Painting Instructions:				
13.1.0	Surface Cleaning: Girder to be shot blasted or chemically treated for surface cleaning, after completion of all operations but prior to painting. Vendor to furnish the details of facilities for Shot Blasting M/c at their works.	Vendor to Comply & produce necessary certificates			
13.2.0	Painting: One coat of Red Oxide Primer with 25 micron DFT (Dry Film Thickness) and 48 hours of compulsory curing after painting.	Vendor to Comply			
	The crane should be thoroughly cleaned and final painting with two coats of Enamel Paint (Colour – Golden Yellow) each with a DFT of 25 micron and intermittent curing of 16 hours. Final touching will be done after erection & commissioning at site if required.				
14.0.0	Spares: The vendor shall offer electrical/ electronic / mechanical mandatory spares for 2 years trouble free operation of the crane as per annexure-'B'. (Unit Price of each item of spare should be offered in the price bid).	Vendor to offer			
15.0.0	MAKES OF BOUGHT OUT ITEMS: (Shall be as per the list given below)				
15.1.1	Hoist Hooks: Herman Mohhta / Hercules / Silpa Udyog / Smriti Forgings/ Karachiwala	Vendor to Comply			
15.1.2	Wire Ropes: Usha Martin / Fort William	Vendor to Comply			
15.1.3	Electric Motors: GE / Bharat Bijlee / Siemens / KEC / ABB / Crompton / Alstom / Marathan	Vendor to Comply			
15.1.4	DCEM Brake Unit: BCH / EPC	Vendor to Comply			

15.1.5	Thruster Brake Unit: Electromag / Speed-O-Control / Omega	Vendor to Comply			
15.1.6	Radio Remote Control: SNT / Acropolis	Vendor to Comply			
15.1.7	Radio Remote Control Model No.:	Vendor to submit			
15.1.8	Limit Switches (Gravity Type): Siemens / EMM / BCH / SOC / SKC	Vendor to Comply			
15.1.9	Contactors: Siemens / L&T / GE / BCH	Vendor to Comply			
15.1.10	Over Load Relay: Siemens / L&T / GE / BCH	Vendor to Comply			
15.1.11	HRC Fuses: Siemens / L&T / GE	Vendor to Comply			
15.1.12	Rotary limit switch: Siemens/Omega/SOC	Vendor to Comply			
15.1.13	Resistance Box: Stromkraft / BCH / Ohmark	Vendor to Comply			
15.1.14	Switch fuse unit: Siemens / L & T / GE	Vendor to Comply			
15.1.15	Timer: BCH / Siemens / L & T / GE	Vendor to Comply			
15.1.16	MCB / MCCB: Siemens / L & T / GE	Vendor to Comply			
15.1.17	Push Buttons: Siemens / L & T / BCH	Vendor to Comply			
15.1.18	Couplings: WMI / Fenner / ALFEX	Vendor to Comply			
15.1.19	Bearings: SKF / FAG / NTN / INA only	Vendor to Comply			
15.1.20	Cables: LAPP / Schiess Kabel / CCI / Fort Gloster / Grandley / Finolex confirming to relevant IS/ DIN.	Vendor to Comply			
15.1.21	Bridge Light Fittings: Philips/GE/Crompton	Vendor to Comply			
15.1.22	Transformers: logicstast or reputed make	Vendor to Comply			
15.1.23	Master Controller: S-O-C / speed age / BCH	Vendor to Comply			
15.1.24	Resistors: Enapros	Vendor to Comply			
15.1.25	Control Panel: RETAL / BCH	Vendor to Comply			
16.0.0	Documents / Details for submission: The following documents / details shall be submitted to BHEL for reference / checking within 30 days from the date PO placement, prior to taking up the manufacture of the crane.	Vendor to Comply			
16.1.0	Drawings / Documents:				
16.1.1	GA Drawing of the Crane (for approval)	Vendor to submit			
16.1.2	GA Drawing of Hoist / Trolley (for approval)	Vendor to submit			
16.1.3	Calculations for Bridge Girder.	Vendor to submit			
16.1.4	QAP for manufacturing & erection shall be submitted for approval.				
16.1.5	GA Drawing of Individual Mechanisms (for approval).	Vendor to submit			
16.1.6	Drawings of Bridge, End-Carriage, Leg and their connections.	Vendor to submit			
16.1.7	Sub-Assembly Drawing for Wheels, Gear Boxes & Hoist.	Vendor to submit			
16.1.8	Calculations for Selection of Electric Motors, Gears, Brakes, Couplings, Wheels, Wire Rope etc.	Vendor to submit			
16.1.9	Design calculations for Bridge Girder, Crab etc.	Vendor to submit			
16.1.10	Wiring Diagram with Logic Circuits and Bill of Material (for approval)	Vendor to submit			
16.1.11	Cable Selection based on current rating.	Vendor to submit			

17.0.0	INSPECTION: The following Schedule of Inspections shall be strictly adhered to, prior to dispatch from the Supplier's Works, witness by BHEL. Stage / pre-dispatch inspection shall be carried out according to these drawings only.	Vendor to Comply			
17.1.1	Verification of Test Certificate for Raw Materials used for Girders, End-Carriages, Hoist, Gear Box Casings etc	Vendor to Comply			
17.1.2	Verification of X-Ray Report of Butt-Joints coming in the Girders and Random Testing on the Welds, by physical examination.	Vendor to Comply			
17.1.3	Inspection of Bridges and End – Carriages with Wheel Assembly and Alignment checking	Vendor to Comply			
17.1.4	Verification of Span & Diagonal Dimensions, Checking of Wheel Alignment, Mechanical Assemblies and Total Alignment.	Vendor to Comply			
17.1.5	Free running of the all the Mechanisms.	Vendor to Comply			
17.1.6	Check of Crane span and diagonal - 10 Kg pull should be applied while checking	Vendor to Comply			
17.1.7	Measurement of CAMBER in the Bridges.	Vendor to Comply			
17.1.8	Full / Rated Load Test and Deflection Test.	Vendor to Comply			
17.1.9	Deflection and Permanent Set Measurement.	Vendor to Comply			
17.1.10	25% OVER-LOAD Lifting Ability Check.	Vendor to Comply			
18.0.0	CRANE ERECTION & COMMISSIONING:				
18.1.0	Unloading & Erection: For unloading the consignment, BHEL will provide crane at free of cost. However, the vendor shall shift the all crane material to site & erect the crane at BHEL works. Necessary tools & equipments required for erection shall be brought by the supplier.	Vendor to note			
18.2.0	Crane Commissioning: Prove out for the Crane's Capacity and Smooth Functioning of the Crane (at BHEL Works) shall be the responsibility of the supplier. Final Load testing as per IS at 125% of rated load shall be conducted at site & Load shall be provided by BHEL at site. Acceptance of Crane by competent person as approved by Govt of Uttarakhand has to be done by Vendor and certificate is to submitted.	Vendor to Comply			
18.2.1	All safety equipments like safety boot, safety belt, helmet, gloves, loader, goggles etc. required for erection personnel shall be brought by the vendor.	Vendor to Comply			
19.0.0	O&M MANUALS: 5 Sets of Erection, Operation & Maintenance Manual with 2 set of CDs, containing the following technical drawings & details shall be submitted. All copies shall be hard bound in high quality leather folders, encased in decent individual boxes.	Vendor to Comply			
19.1.0	Drawings & Details:				
19.1.1	Crane GA Drawing	Vendor to Comply			
19.1.2	Hoist Assembly Drawing	Vendor to Comply			
19.1.3	Total Crane Wiring Schematics	Vendor to Comply			
19.1.4	Detailed Wiring Diagrams for Sub-Systems / Panels	Vendor to Comply			
19.1.5	Wheel Assembly Drawings	Vendor to Comply			
19.1.7	Gear Box Assembly, Sub assembly Drawings	Vendor to Comply			

19.1.8	Sectional drawings of gear boxes, Gears with no. of teeth, module, helix angle, center distance, size & no. of bearings, Drive shafts, wheels, pulleys drums & seals etc. Supplier shall supply the drawings of item manufactured by them without additional charges.	Vendor to Comply			
19.1.9	Coupling Drawing and Details.	Vendor to Comply			
19.1.10	Complete detail of BOI including Technical specifications & catalogue shall be part of O&M manual. List of suppliers of BOI with mailing address including phone no. should also be submitted.	Vendor to Comply			
19.1.11	Warranty / Guarantee Card for all Bought-Out-Items.	Vendor to Comply			
19.1.12	Trouble Shooting Chart for Main and all Sub-Systems.	Vendor to Comply			
19.1.13	1 No. spare parts manual.	Vendor to Comply			
20.0.0	PERFORMANCE GUARANTEE:				
20.1.0	The Performance of the Total Crane and / or the Components / Sub-Assemblies / Bought out Items shall be guaranteed for a minimum period of 24 months from the date of acceptance of the crane at BHEL Works.	Vendor to Comply			
21.0.0	QUALIFYING CONDITIONS :				
21.1.0	Only those vendors (OEMs), who have supplied and commissioned at least one EOT Crane min. cap. 05T for similar applications or more in the past ten years (on the date of opening of Tender) and referred EOT Crane is presently working satisfactorily for more than one year (on the date of opening of Tender) after commissioning, should quote. The following information should be submitted by the vendor about the companies where referred Crane (s) have been supplied. This is required from all the vendors for qualification of their offer.	Vendor to accept and confirm			
21.2.0	Name of the customer / company where similar EOT Crane is installed.	Vendor to inform			
21.3.0	Complete postal address of the customer.	Vendor to inform			
21.4.0	Month & Year of commissioning.	Vendor to inform			
21.5.0	Parameters of EOT Crane (s) supplied.	Vendor to inform			
21.6.0	Name and designation of the contact person of the customer.	Vendor to inform			
21.7.0	Phone, FAX no. and e-mail address of the contact person of the customer.	Vendor to inform			
21.8.0	Performance certificate from the customers regarding satisfactory performance of EOT Crane supplied to them (Original Certificate or Through E-mail directly from the customer). The original performance certificate may be returned after verification by BHEL, if required.	Vendor to submit			
21.9.0	BHEL reserves the right to verify information submitted by vendor. In case the information is found to be false/incorrect, the offer shall be rejected.	Vendor to accept & confirm			
22.0.0	SPECIAL INSTRUCTIONS:				
22.1.0	In the design of Crane, all safety regulations as applicable under provision of factory Act, Indian Electricity rules etc. as prevailing in the country / State of Uttarakhand (site of installation) shall be taken into consideration.	Vendor to confirm			
22.2.0	Vendor to make sure that proposed RRC (Radio Remote Control) device doesn't interfere with existing RRCs installed on nearby Cranes.	Vendor to confirm			

22.3.0	Bolts used in shear should be fitted into reamed holes.	Vendor to confirm			
22.4.0	All nuts should have chuck Nut / Locking nut / suitable locking arrangement to eliminate loosening.	Vendor to confirm			
22.5.0	No cast iron part should be used on the crane except for electrical equipment. Similarly wood or combustible material and Bush bearing should not be used in any part of the crane. Open gears should not be used in any drive / motion.	Vendor to confirm			
22.6.0	All the components should be in metric sizes only.	Vendor to confirm			
22.7.0	DOL Starter Suitable DOL Starter of reputed make shall be supplied by supplier. BHEL shall provide power supply upto starter only.	Vendor to confirm			
22.8.0	Rope Guide: 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			
22.9.0	Anti-friction Ball/Roller/Needle bearing. Grease nipples to be provided wherever required. Bushings are not acceptable.	Vendor to confirm			
22.10.0	Any component / part damaged during erection and commissioning or job proving to be replaced by supplier free of cost.	Vendor to confirm			
22.11.0	List of free supply maintenance tools should be submitted with the offer.	Vendor to confirm			
22.12.0	All cables should be properly covered and protected.	Vendor to confirm			
22.13.0	Counter weight to keep hoist horizontal shall be provided by supplier.	Vendor to confirm			
22.14.0	Technical offer must have 3 view GA drawing with complete details of parts / components, clearances, hook approaches, wheel loads, Wheel base, Crab, Total crane weight, motor rating, frame size, Brake drum dia. Thruster rating, Gearbox details for all the motions.	Vendor to submit			
22.15.0	TC / GC in respect of Crane & BOI to be submitted by the supplier.	Vendor to confirm			
22.16.0	Supplier must submit point wise reply to specifications, Deviations if any must be separately submitted with reasons for each.	Vendor to confirm			
22.17.0	DUPLICATE COPY OF TECHNICAL OFFER MUST BE SUBMITTED.	Vendor to confirm			
22.18.0	The successful Vendor is required to measure all necessary dimensions i.e. Span, Head Room, Clearances between rail center to existing column and rail size etc, at site before starting of the crane design / manufacturing.	Vendor to confirm			
(MK GARG)		(AK GARG)		(V. K. CHUGH)	
SDGM (WEX-MCR)		SM (WEX-CMWS, ERS, FE & CRANES)		D.G.M. (NBS & BLADE TECH.)	
				(PRAVEEN KUMAR)	
				Sr. Engineer (WEX-FE)	

Annexure-'B'

LIST OF MANDATORY SPARES					
SN	Item Description	Unit	Quantity	Unit Price	Total Price
	Tools & Tackles	UNIT	No.		
1	Grease Gun	Set	1		
2	Oil Can	Set	1		
3	Spanner (6mm to 32)	Set	1		
4	Allen Key	Set	1		
5	Adjustable Wrench 150mm	No.	1		
6	Hammer 1 kg	No.	1		
7	Screw Driver, 200 mm	No.	1		
8	Tool Box with lock and key	No.	1		
	Spares				
1	Contact Kits for each Contactor	Set	1		
2	Brake Coils for Disc Brake (2 Nos. of each size)	Set	2		
3	Limit Switch complete (one each)	Set	1		
4	Cards for Radio remote Control each motion	No.	3		
5	Bearing each type	No.	1		
6	Motor for LT & CT (One each)	No.	2		
7	LT Wheel	No.	2		