



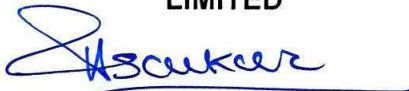
An ISO 9001
Company

Bharat Heavy Electricals Limited

(High Pressure Boiler Plant)

Tiruchirappalli – 620014, TAMIL NADU, INDIA

CAPITAL EQUIPMENT / MATERIALS MANAGEMENT

ENQUIRY		Phone: +91 431 257 7653	
NOTICE INVITING TENDER		Email : karunanidhy@bhel.in, ajayasalkar@bhel.in	
		Web : www.bhel.com	
TWO PART BID	Enquiry Number:	Enquiry Date:	Due date for submission of quotation:
Tender to be submitted in two Parts	2631800004	10.01.2018	02.02.2018
You are requested to quote the Enquiry number date and due date in all your correspondence. This is only a request for quotation and not an order. Please note that under any circumstances both delayed offer and late offers will not be considered. Hence vendors are requested to ensure that the offer is reaching physically our office before 14.00 hrs on the Date of tender opening.			
Item	Description		Quantity
10	2 X 1.5T – 14 M Span Semi Gantry Crane with Double Girder as per the technical specification & commercial conditions applicable (to be downloaded from web site www.bhel.com or https://eprocure.gov.in/epublish/app)		01 No.
Important points to be taken care during submission of offer. 1. Compliance Form No: TRY/IND/07 to be filled and enclosed along with the offer failing which, the offer will not be considered for evaluation. 2. Delivery period required is 6 months from the date of P.O. 3. Commissioning and performance prove out shall be done at BHEL Trichy by the supplier. 4. Time period required for commissioning and performance prove out shall be 1 month from the date of intimation by BHEL. 5. EMD for this tender is INR 40,000/- 6. All updates, amendments, corrigenda, etc., (if any), for each tender will be posted only on the above websites from time to time, as and when required, until each tender is opened. There will be no publication of such updates, amendments, corrigenda, etc., through newspapers or any other media. BHEL's General guidelines / instructions (refer MM/CE/GENL/001- EMD), compliance form and technical specification can be downloaded from BHEL web site http://www.bhel.com or from the Government tender website https://eprocure.gov.in/epublish/app (public sector units > Bharat Heavy Electricals Limited page) under Enquiry reference.			
(This is not an E-tender, please submit your offer in hard copies) Tenders should reach us before 14:00 hours on the due date. Tenders will be opened at 14:30 hours on the due date. Tenders would be opened in presence of the tenderers who have submitted their offers and who may like to be present.		Yours faithfully, For BHARAT HEAVY ELECTRICALS LIMITED  AJAY V. SALKAR Sr. MANAGER MM / Capital Equipment BHEL, Tiruchirappalli - 620 014 Sr. Manager / Capital Equipment / MM	

PART A**SECTION-I: -QUALIFYING CRITERIA**

The BIDDER/VENDOR (OEM) has to compulsorily meet the following requirements to get qualified for consideration of the technical offer for the SUPPLY OF EOT CRANE

S. No.	PARTICULARS	VENDOR'S RESPONSE
1.0	Only those Bidder/vendor (OEM), who have supplied and commissioned at least TWO 3Ton or higher capacity EOT crane class-3 with minimum span of 12.0 Mtr or higher, fitted in the past five years and such crane is working satisfactorily for more than one year after commissioning (on the date of opening of Tender), should quote. Copies of Purchase Order , Performance certificates shall be submitted along with the offer.	
2.0	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.	
3.0	The bidding FIRM should have 'in-house' or 'self-owned' facility for FABRICATION and TESTING at 125 % of the rated capacity	
4.0	The vendor should have minimum 5 years' experience in design, fabrication and supply of EOT cranes.	

SECTION - II

Bidder / Vendor (OEM) to note the following

S.No.	REQUIREMENTS	VENDOR'S RESPONSE
5.0	The BIDDER / VENDOR shall submit the offer in TWO PARTS - Technical [with PART A & PART B] & Commercial and Price Bid.	
6.0	The Offer shall contain a comparative statement of Technical Specifications given by BHEL and the Offer Details submitted by the Bidder, against each clause. Where details are required, a mere 'CONFIRMED' or 'COMPLIES' or 'YES' or 'NO-DEVIATION' or similar words in the technical comparative statement may lead to disqualification of the Technical Offer.	
7.0	The Technical Offer shall be supported by Product Catalogue and Data Sheets.	

PART B.**TECHNICAL SPECIFICATION FOR 2 x 1.5T 14M SPAN SEMI GANTRY CRANE WITH DOUBLE GIRDERS**

S.No.	PARTICULARS	BHEL SPECIFICATIONS	VENDOR's OFFER
1.0.0	APPLICATION	a. The subject crane is meant for the purpose of loading and unloading Tube Coils ,Tube panels in a IPW machine (within the lifting capacity of the crane) components, in a heavy and large steel fabrication shop floor. b. The crane will be put to use for continuous duty with CT, LT and Hoist movements, which may occur simultaneously (within the operating parameters specified under Clause Nos. – 3.1.0, 3.4.0 and 3.5.0). c. The shop floor environment will be dust prone, humid, welding fume filled and ambient temperature going up to 45 ° C.	
2.0.0	SCOPE OF SUPPLY	a) Design as per Tender Specifications b) Detailed Design and Manufacture as per BHEL specifications c) Complete assembly and Testing of the crane before Dispatch at supplier works d) Supply in Modules / Sub-Assemblies e) Commissioning and Performance Prove-Out of Semi Gantry crane at BHEL Works f) Performance Guarantee for 12 months, from the date of commissioning.	

PART B.**TECHNICAL SPECIFICATION FOR 2 x 1.5T 14M SPAN SEMI GANTRY CRANE WITH DOUBLE GIRDERS**

S.No.	PARTICULARS	BHEL SPECIFICATIONS	VENDOR's OFFER
3.0.0	TECHNICAL SPECIFICATIONS		
3.1.0	SPAN	Wheel Centre to Wheel Centre Dimensions	
	Long Travel (LT)	14,000mm	
	Cross Travel (CT)	1,200mm	
3.2.0	Height of Lift		
3.2.1	Height of Lift	3,000mm	
3.2.2	Rail to Rail Height	3,580mm (Rail on the Floor to Rail on top Side Bracket)	
3.3.0	HOIST		
3.3.1	No. of CT Trolleys	2 nos.	
3.3.2	Lifting capacity of each Trolley	1.5MT	
3.3.3	Hoist Assembly	Electrically operated Chain Hoist of 2MT capacity Make - Indef.	
3.3.3	Hoist Duty Cycle	40% CDF	
3.3.4	Hoist speed (Approx.)	8 - 10 mtrs/min	
3.3.5	Lifting attachment	Lifting Beam of 2MT capacity for each trolley	
3.3.6	Lifting beam length	3500mm	
3.3.7	Lifting guide rods	50mm dia solid rods of 4000mm length - 2 nos. per trolley.	
3.3.8	Hoist alignment	Shall be at the at middle of the CT gauge 1200 mm	
3.4.0	CROSS TRAVEL		
3.4.1	CT wheel base	680 mm.	
3.4.2	CT Duty cycle	40% CDF	
3.4.3	CT speed (Max.)	20 mtrs/min.	

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S.No.	PARTICULARS	BHEL SPECIFICATIONS	VENDOR's OFFER
3.4.4	CT motor	Min. 1 kW, 415V AC, S4 duty, 112M frame, 150 starts/hr. Electric Motor Ratings & Frame Sizes shall be as per IS-325 and IS-1231	
3.4.5	CT Gearbox size	Vertical 320mm (Input - Output Centre distance)	
3.4.6	CT Acceleration	300 mm/s ²	
3.4.7	CT Rail size	40 mm ² bar	
3.4.8	CT Wheel size	Dia. 200mm - 4 Nos.	
3.4.9	CT Wheel assembly	Shall be as per BHEL drawing 3-M-02R00-11993	
3.4.10	CT Brake	18kg Electro-Hydraulic Thruster Brake with 100mm Dia. drum.	
3.4.11	Coupling (Motor - Gearbox)	Size 100 Full Geared Coupling	
3.4.12	Coupling (Gearbox - Wheel)	Size 101 Half Geared Coupling	
3.5.0	LONG TRAVEL		
3.5.1	LT wheel base	3500mm	
3.5.2	LT Duty cycle	40% CDF	
3.5.3	LT speed (Max.)	40 mtrs/min	
3.5.4	LT motor	Min. 3kW, 415V AC, S4 duty, 132M 150 starts/hr. - 2 nos. Ratings & Frame Sizes shall be as per IS-325 and IS-1231	
3.5.5	LT Gearbox size	Vertical - 450mm - 2 nos.	
3.5.6	LT Acceleration	300mm/s ²	
3.5.7	LT Rail size	90 lbs/Yd. (For reference only)	
3.5.8	LT Wheel size	Dia. 400mm - 4 Nos.	
3.5.9	LT Wheel assembly	Shall be as per BHEL drawing 3-M-02R00-11993	

PART B.**TECHNICAL SPECIFICATION FOR 2 x 1.5T 14M SPAN SEMI GANTRY CRANE WITH DOUBLE GIRDERS**

S.No.	PARTICULARS	BHEL SPECIFICATIONS	VENDOR's OFFER
3.5.10	LT Brake	18kg Electro-Hydraulic Thruster Brake with 160mm Dia. drum.	
3.4.11	Coupling (Motor - Gearbox)	Size 101 Full Geared Coupling	
3.4.12	Coupling (Gearbox - Wheel)	Size 103 Half Geared Coupling	
3.5.0	CONTROL	Push button control	
3.5.1	Type of Control	Push button station	
3.5.2	Control System	Rotor Resistance control for LT motions	
3.5.3	Control Voltage	110 V AC , 50 Hz ,single phase for contactor 230V , 50 Hz ,single phase for Bell	
3.5.4	Input Power Supply	415 V with $\pm 10\%$ fluctuation , 50HZ with $\pm 3\%$ fluctuation, 3 Phase- AC	
3.5.5	Panel	Input shall have MCCB and SFU . Each Motion shall have a separate MCB. OLR shall be present for each LT motors. Minimum panel height shall be 1 meter, suitable glands and holes shall be provided. Base channel shall be provided.	
3.5.6	Control Wiring	Contactor and push button Wiring has to be done in such a way that both crabs hoist and CT has to be moved separately as well as together. Bell , Emergency ON/OFF,start , stop 4 nos Extra Push buttons shall be also provided in station. Each Push buttons and switch should have Legend Plate with Inscription of Start, Stop, Bell & Light On/Off, relative motions marked clearly.	
3.6.0	Duty Class	Class – 3 [Indoor Service]	

PART B.**TECHNICAL SPECIFICATION FOR 2 x 1.5T 14M SPAN SEMI GANTRY CRANE WITH DOUBLE GIRDERS**

S.No.	PARTICULARS	BHEL SPECIFICATIONS	VENDOR's OFFER
3.7.0	Mechanism Group Classification	M6	
3.8.0	DESIGN STANDARD	IS – 807 & 3177 / 2006	
4.0.0	STRUCTURAL FABRICATION	Crane Structure Constructional Details	
4.1.0	Bridge / Leg/ End Carriage	PLATE FORMED Box type Construction for Girders, End carriages of LT and CT.	
4.1.1	Cross section of Bridge Girder and End carriage	Vertical Diaphragms shall be made of solid plates only Horizontal Stiffener to be provided- One ISA 50x50x6 shall be provided throughout the length of the web (for both webs) at about 1/3 rd of the bridge height from the top. Suitable short diaphragms shall be provided.	
4.1.2	Camber for bridge	The Crane Bridge shall be cambered at the top as well as the bottom. The final camber after erection shall be between +12mm and +14mm.	
4.1.3	Wheel Clearance	Minimum clearance to be maintained between rail top and bottom flange of end carriage shall be as follows 1. For Long travel – 60mm. 2. For Cross travel – 30mm.	
4.1.4	Gear Box clearance	The lowest point of LT gearbox shall be at least 50mm above the LT rail top in the bottom end carriage.	
4.2.0	Raw Material	IS: 2062 Only steel plates tested and certified for quality by reputed inspection authorities, shall be	

PART B.**TECHNICAL SPECIFICATION FOR 2 x 1.5T 14M SPAN SEMI GANTRY CRANE WITH DOUBLE GIRDERS**

S.No.	PARTICULARS	BHEL SPECIFICATIONS	VENDOR's OFFER
		used. Test Certificates to be produced for BHEL verification and form part of the documentation.	
4.3.0	Welded Joints	To be followed for Bridge/leg Fabrication	
4.3.1	Number of weld Joints allowed in bridge web & flange	Max. ONE joint only. Joint at the centre of girder shall be avoided.	
4.3.2	Welding Electrodes	a. For all Horizontal Welding E 7018 / ER70S-6 (MIG) Electrode only should be used. b. For all Vertical Welding E 7048 / ER70S-6 (MIG) Electrode only should be used.	
4.3.3	Welded Joint Testing	All Butt Welded Joints (compression / tension and flanges / web joints) shall be subjected to 100% X-Ray Testing and X-Ray Films to be produced for BHEL verification and form part of the documentation.	
4.3.4	Welding of web plate	Top flange shall be welded inside also with web plate and it shall be equal length stitch weld of minimum 100 mm length.	
4.3.5	Welding of stiffener plate.	All stiffener plates shall be inside welded both sides with top flange and web plates and it shall be equal length stitch weld of minimum 100 mm length.	
4.4.0	Splice Joints	NO SPLICE JOINT IS ALLOWED IN GIRDER FABRICATION [Girder has to be of SINGLE PIECE only].	
4.5.0	Platform on Girders	The Platforms provided on both the Girders shall be for full length and fixed through BOLTED JOINTS only. The platform width shall be as follows 1. Drive bridge – 1300 mm (minimum) 2. Non-drive bridge – 700 mm (minimum)	

PART B.**TECHNICAL SPECIFICATION FOR 2 x 1.5T 14M SPAN SEMI GANTRY CRANE WITH DOUBLE GIRDERS**

S.No.	PARTICULARS	BHEL SPECIFICATIONS	VENDOR's OFFER
4.6.0	Heat Treatment & NDT Examination	The Trolley shall be Stress Relieved if required after welding and NDT examinations. All weldings shall be tested by NDT means [MPI, LPI & RT].	
4.7.0	Machining Operation	All mechanical mating surfaces and wheel seating areas are to be machined to the required finish and protected	
4.8.0	Surface Cleaning	Both the Girders, legs, end-carriages and the Trolley are to be thoroughly cleaned after completion of all operations but prior to painting.	
4.9.0	Painting	The crane parts are to be painted as follows	
4.9.1	At supplier site	During Stage-I inspection the inside of the girder/end carriage shall be painted with one coat of red oxide before closing. This shall be verified during inspection. The internals of the girders and end carriages shall be inspected and only then they shall be closed.	
4.9.2	At supplier site	During Stage-II inspection, the crane shall be painted with One coat of Primer with 25 microns of DFT (Dry Film Thickness) and 48 hours of compulsory curing after painting. The crane shall be dispatched with one coat of Primer only.	
4.9.3	At Erection Site	After the crane erection is complete, the crane has to be painted as follows a. Touch-up painting of Primer wherever necessary	

PART B.**TECHNICAL SPECIFICATION FOR 2 x 1.5T 14M SPAN SEMI GANTRY CRANE WITH DOUBLE GIRDERS**

S.No.	PARTICULARS	BHEL SPECIFICATIONS	VENDOR's OFFER
		b. Two coats of Enamel Paint (Color – Tractor Orange) each with a DFT of 25 microns and intermittent curing of minimum 16 hours.	
4.9.4	Paint & labor	All paints and labor etc. for painting at site also shall be the scope of the crane supplier.	
5.0.0	MECHANICAL ELEMENTS		
5.1.0	Gears	Gears in all the Stages shall be helical in design and to be of machined, lapped/ground and hardened.	
5.2.0	Gear Box Casing	Shall be of fabricated type and stress relived by thermal heat-treatment process, prior to machining.	
5.3.0	Gear & thruster oil	Required grade oil should be supplied	
6.7.0	Mechanical Joints	Fit Bolts as per IS 3640-1982 for all joints coming in main members and platform with reamed holes.	
6.9.0	Hook	Hook latch shall be provided for hook.	
7.0.0	ELECTRICAL ELEMENTS		
7.4.0	Protection	All Panels, Limit-Switches and Motors shall have IP 54 protection. (Outdoor Service)	
7.5.0	Electric Contactors	All Panels shall have only SIEMENS / L&T Contactors and shall be suitable for AC3 Duty Class.	
7.6.0	Contactors Rating	The rating of all Contactors shall be atleast 50% higher than the respective electric motor full load current, at the specified duty cycle.	
7.7.0	Long Travel Motion	A Dual Drive Mechanism shall be provided for LT (Long Travel) Motion.	
7.8.0	Control	Push button Control be provided for Hoist 1, hoist 2 (separate and together) Lower 1, Lower 2 (separate and together)	

PART B.**TECHNICAL SPECIFICATION FOR 2 x 1.5T 14M SPAN SEMI GANTRY CRANE WITH DOUBLE GIRDERS**

S.No.	PARTICULARS	BHEL SPECIFICATIONS	VENDOR's OFFER
		Cross travel 1, Cross travel 2 (separate and together) Long Travel	
7.9.0	Crab Wiring	The Crabs shall be fully wired without junction box.	
7.11.0	Under Voltage Relay	An Under voltage relay shall be provided on the output of control transformer.	
7.12.0	Crab wiring	Crab shall be fully wired.	
7.13.0	Limit Switches	The crane shall be provided with the following limit switches. 1. Hoist Limit- Each hoist shall be provided with both rotary and counter weight limits. 2. CT Limit – Lever type limit switch 3. LT Limit – Lever type limit switch	
7.14.0	Electric Cables and recommended current rating	All the cables used in the crane shall be insulated flexible copper cables as per IS:1554 (Part-I)- 1964 and the current rating shall be as per IS: 3961 (Part-II)- 1967	
7.22.0	Compulsory Spares	The following spares shall be compulsorily supplied along with each crane. 1. Hoist Unit Brake coil – 1 nos. 2. Friction Disk with Hub – 2 nos. 3. Friction plate – 2 nos. 4. Push buttons -5 nos	
8.0.0	SELECTION of BOI and COMPONENTS	The makes of Components or Bought-Out-Items shall be strictly as per the list given below.	
8.1.0	Hoist Assembly	Indef make only.	
8.3.0	Electric Motors	GEC / BHARAT BIJLEE / SIEMENS / KEC/ MARATHON	

PART B.**TECHNICAL SPECIFICATION FOR 2 x 1.5T 14M SPAN SEMI GANTRY CRANE WITH DOUBLE GIRDERS**

S.No.	PARTICULARS	BHEL SPECIFICATIONS	VENDOR's OFFER
8.4.0	Thruster Brake Unit	ELECTROMAG / SPEED-O-CONTROL / OMEGA	
8.5.0	Limit Switch (Gravity Type)	SIEMENS / INDUSTRIAL SYNDICATE / BCH / SKC / SOC	
8.6.0	Contactors	SIEMENS / L&T	
8.7.0	Over-Load-Relay	SIEMENS / L&T (THERMAL TYPE)	
8.8.0	HRC Fuses	GE / L&T /SIEMENS	
8.9.0	Rotary limit switch	SIEMENS / OMEGA / SOC / INDUSTRIAL SYNDICATE	
8.10.0	Switch fuse unit	L&T / SIEMENS / GEC	
8.11.0	Moulded case CB	SIEMENS / L&T	
8.12.0	Pneumatic Time Delay	Only BCH make	
8.13.0	Push - Buttons	SIEMENS / L&T /AIRON	
8.14.0	Connectors	ELMAX make or reputed make with IS approved with acceptable BHEL	
8.15.0	Couplings	WMI / FENNER / ALFEX/ Love-Joy	
8.16.0	Bearings	SKF / NBC / ZKL	
8.17.0	Cables	Reputed Makes & ISI Approved acceptable by BHEL.	
8.18.0	Resistance box	OHMARK / BCH only	
8.21.0	Gear boxes	ELECON / SHANTHI GEARS / RADICON / CROMTON GREAVES / NU-TECK.	
8.23.0	Catalogues of brought out items	The vendor shall provide the Technical catalogues of the following bought-out items along with the offer. 1. Steel Wire rope 2. Crane duty electric motors 3. Gearbox 4. Thruster Brake 5. Radio Remote	

PART B.**TECHNICAL SPECIFICATION FOR 2 x 1.5T 14M SPAN SEMI GANTRY CRANE WITH DOUBLE GIRDERS**

S.No.	PARTICULARS	BHEL SPECIFICATIONS	VENDOR's OFFER
		6. Limit Switches 7. Cables	
9.0.0	DOCUMENTS/ DETAILS for APPROVAL	The following documents and details are to be submitted for BHEL Approval, prior to taking up the manufacture of the crane.	
9.1.0	Drawings and Documents	<u>Set-I:</u> a. Calculations for Selection of Electric Motors, Gear Reducers, Brakes, Couplings, etc. b. Calculations for Bridge Girder, Legs, Crab, End - Carriage and their connections. c. GA Drawing of the Crane. d. GA Drawing of Trolley e. GA Drawing of Individual Mechanisms.	
9.1.0	Drawings and Documents	<u>Set-II:</u> a. Drawings of Bridge, Legs, End-Carriage bogies and their connection. b. Sub-Assembly Drawing for Wheels, Hook Blocks, Gear Boxes, Hoist rope drums and all brake Drums. c. Wiring Diagram with Logic Circuits. d. Cable Selection based on Current Rating. Initially Set-I drawings to be submitted in one lot and approval to be obtained from BHEL. Based on this, set-II drawings to be submitted for approval.	
9.2.0	Technical Details	a. Total Weight of the Crane including all Electrical Equipment.	

PART B.**TECHNICAL SPECIFICATION FOR 2 x 1.5T 14M SPAN SEMI GANTRY CRANE WITH DOUBLE GIRDERS**

S.No.	PARTICULARS	BHEL SPECIFICATIONS	VENDOR's OFFER
		b. Total Weight of Trolleys including all Electrical Equipment. c. Weight of each Bridge assembled and ready for erection with and without Mechanical and Electrical Equipment. d. Weight of End-carriage assembled and ready for erection. e. Total Weight of Structural, Mechanical and electrical Equipment and indicated separately also.	
10.0.0	INSPECTION	The following Schedule of Stage Inspections is to be strictly adhered to, prior to dispatch from the Supplier's Works.	
10.1.0	STAGE – I	a. Verification of Test Certificate for Raw Materials used for Girders, legs, End-Carriages, Trolley, Gear Box Casings, etc. b. Verification of X-Ray Report of Butt-Joints coming in the Girders and Random Testing on the Welds, by physical examination. c. Box Girder setting before closing of the Bottom Flanges – for inspecting the quality of welding and presence of waviness d. Trolley Frame Fabrication before setting the Mechanisms e. End-Carriage Fabrication before closing of the Bottom Flanges	

PART B.**TECHNICAL SPECIFICATION FOR 2 x 1.5T 14M SPAN SEMI GANTRY CRANE WITH DOUBLE GIRDERS**

S.No.	PARTICULARS	BHEL SPECIFICATIONS	VENDOR's OFFER
10.2.0	STAGE – II [Final Inspection]	a. Inspection of Bridges, legs, End–Carriages and platform fabrication. b. Verification of Span & Diagonal Dimensions, Checking of Wheel Alignment, Mechanical Assemblies and Total Alignment. c. Free running of all the Mechanisms. d. Measurement of CAMBER in the Bridges. e. Full / Rated Load Test for bridges and trolley and Deflection Test f. Deflection and Permanent Set measurement. g. 25% OVER-LOAD Lifting Ability Check. <u>The following Test Certificates to be produced during Stage-II / Final Inspection.</u> 1. TC for Hoist assemblies. 2. TC for Steel Wire ropes. 3. TC for Heat treatment and final hardness for all gears. 4. TC for Wheel Hardness for LT and CT. 5. TC for all thruster brakes. 6. TC for all motors. 7. TC for all limit switches.	
11.0.0	CRANE ERECTION & COMMISSIONING		
11.1.0	Unloading of all crane parts (like Girders, end carriage,	Unloading of all crane components at BHEL site shall be the scope of BHEL.	

PART B.**TECHNICAL SPECIFICATION FOR 2 x 1.5T 14M SPAN SEMI GANTRY CRANE WITH DOUBLE GIRDERS**

S.No.	PARTICULARS	BHEL SPECIFICATIONS	VENDOR's OFFER
	CT assembly, LT Mechanism & other components)		
11.2.0	Crane Erection & Cabling	BHEL scope , Necessary assistance any required shall be provided by supplier.	
11.3.0	Crane Commissioning	Commissioning of the Crane and Performance Prove –Out for 125% of Crane's Capacity and Smooth Functioning of the Crane (at BHEL Works) shall be also the RESPONSIBILITY of the supplier. Required Test load and lifting tackles shall be previously by BHEL at free of cost.	
12.0.0	O & M MANUALS	Each Crane shall be provided with THREE Copies of Erection, Operation & Maintenance Manual hard copy as well as soft copy in CD, containing the following technical details	
12.1.0	Drawings & Details	a. Crane GA Drawing. b. Crab Assembly Drawing. c. Total Crane Wiring Schematics. d. Detailed Wiring Diagrams for Sub-Systems / Panels. e. Wheel Assembly Drawings. f. Bottom Block Assembly Drawing. g. Gear Box Assembly Drawings. h. Coupling Drawing and Details. i. Specifications/Ratings of All Bought-Out-Items. j. Warranty/Guarantee Card for all Bought-Out items. k. Trouble Shooting Chart for all Systems.	

PART B.**TECHNICAL SPECIFICATION FOR 2 x 1.5T 14M SPAN SEMI GANTRY CRANE WITH DOUBLE GIRDERS**

S.No.	PARTICULARS	BHEL SPECIFICATIONS	VENDOR's OFFER
13.0.0	PERFORMANCE GUARANTEE	The Performance of the Total Crane and/or the Components / Sub-Assemblies / Bought-Out-Items shall be guaranteed for a minimum period of twelve months from the date of performance acceptance at BHEL Works or 18 months from the date of supply whichever is earlier.	