



An ISO 9001  
Company

**Bharat Heavy Electricals Limited**  
(High Pressure Boiler Plant)  
Tiruchirappalli – 620014, TAMIL NADU, INDIA  
CAPITAL EQUIPMENT / MATERIALS MANAGEMENT

<b>ENQUIRY</b>	Phone: +91 431 257 70 49 Fax : +91 431 252 07 19 Email : <a href="mailto:csguna@bheltry.co.in">csguna@bheltry.co.in</a> Web : <a href="http://www.bhel.com">www.bhel.com</a>
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	<b>Enquiry Number:</b>	<b>Enquiry Date:</b>	<b>Due date for submission of quotation:</b>
	<b>2620800050</b>	<b>04.07.2008</b>	<b>04.08.2008</b>
You are requested to quote the Enquiry number date and due date in all your correspondences. This is only a request for quotation and not an order			

Item	Description	Quantity	Delivery (Item required at BHEL on)
10	High Mast Lightning System – 20 Mtrs as per the technical specification & commercial conditions applicable (to be downloaded from web site <a href="http://www.bhel.com">www.bhel.com</a> or <a href="http://tenders.gov.in">http://tenders.gov.in</a> )	15 Nos.	30.09.2008

**Note:**

**Guarantee:** Guarantee certificate shall be provided for a period of 24 months from the date of performance acceptance of the item at BHEL works.

**BHEL commercial terms & conditions with Price Bid and Bank Guarantee formats along with technical specifications can be downloaded from BHEL web site <http://www.bhel.com> or from the Government tender website <http://tenders.gov.in> (public sector units > Bharat Heavy Electricals Limited page) under Enquiry reference “2620800050”.**

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  
  
Manager / Capital Equipment / MM

## **TECHNICAL SPECIFICATION FOR HIGH MAST LIGHTING**

Sl. No.	Description of BHEL requirement	Offered	Deviation	Remarks.
	<b>Scope of supply, erection and commissioning:</b>			
1.0	The scope of this specification covers the manufacture, transport, installation, testing and commissioning of the complete lighting system, using Raising and Lowering type of High mast Towers, including the Civil Foundation Works. BHEL will only provide the supply point and the feeder cable of the required size, up to the bottom of the high mast. However, all items required for the safe and efficient operation and maintenance of the lighting system, including the high mast, whether explicitly stated below or not, shall be included by the Vendor.			
2.0	<p>Supply of 20 Meters High Mast system with all accessories including but not restricted to the following.</p> <p>a) Mast shaft in two section, hot dip galvanized and Suitable for wind velocity as per IS 875 part 3.</p> <p>b) Head frame, steel wire rope of min. 6 mm dia., double Drum winch.</p> <p>c) Galvanized Lantern carriage arrangement suitable for 12 nos. luminaries &amp; its control gear boxes and Lightning finial.</p> <p>d) Integral power tool installed inside base compartment for its operation.</p>			
3.0	Supply of foundation bolts manufactured from special steel along with nuts, washers, anchor plate and templates			
4.0	Design, supply and casting of suitable shallow foundation with M-15 concrete for the High mast considering safe soil bearing capacity at the site.			

Sl. No.	Description of BHEL requirement	Offered	Deviation	Remarks.
5.0	Supply of <b>12 nos.</b> non - integral 2x400watts High Pressure Sodium vapour floodlight lumininaire with two nos. 400 W HPSV lamps in each luminaries and required control gear boxes suitable for operation on 230V, 50HZ, a.c. supply. Philips: Type RVP301-2x400 SON T/HP1-T400 or Bajaj: Type BGENF22R or Crompton Greaves: Type FHD 1524 or GE type: GELF 2x400(N1)			
6.0	Supply of twin dome aviation obstruction light with 2 nos. LED lamps.			
7.0	Supply of 3 nos. of 50 mm dia. Class 'C' G.I pipe Earthing System (2 nos. for Mast and 1 no for Power Control Panel).			
8.0	Supply of control panel housing suitable control circuit for the operation of the mast, precision digital timer for automatic ON/Off control of lights and required controls for the power tool motor.			
9.0	Erection/ installation and commissioning of the High Mast system comprising of foundation, mast and its accessories, aviation warning lamps, earthing, luminaries, control panel etc. with the help of suitable equipments.			
10.0	3 sets of wiring/ connection diagram, O&M manual to be supplied along with the high mast.			
11.0	The type no and make of the luminaries and lamp to be furnished in the offer. Technical leaflet giving the dimensions, features to be attached with the offer. The fitting and control gear boxes offered should be suitable for outdoor application and properly sealed to prevent rain water entry. The lamp holders and fitting bracket fasteners and any other fasteners outside the fitting should be SS material. The gaskets sealing should be pasted around the fitting firmly to prevent rainwater entry into the fitting. The glass door locking clips should be provided with rigid SS material. The glass door shall be hinged type for easy maintenance. The lamps should be independently connected and the plated brass gland position shall be at the bottom to prevent rainwater entry. The connecting wires to the holders should be insulated with hi temp resistance material like glass wool only. The lamp fixing bracket on the tower shall be designed to hold all the fittings in the same axis			
11.1	The electrical works should be carried out by a licensed electrical contractor.			
12.0	<b>Reference List/ Qualifying Condition:</b>			
12.1	Only those vendors who have supplied and commissioned similar or higher capacity/ size high mast and working satisfactorily for at least one year after commissioning should quote.			
12.2	Information about the companies where similar equipments have been supplied, certificate about satisfactory performance are to be submitted for qualification of the offer.			

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13.0	<b>General Features:</b>			
13.1	<b>Winch</b>			
	<p>The winch shall be of completely self sustaining type, without the need for brake shoe, springs or clutches. Each driving spindle of the winch shall be positively locked when not in use. Individual drum also should be operated for fine adjustment of lantern carriage. The capacity, operating speed, safe working load, recommended lubrication and serial number of the winch shall be clearly marked on each winch. The winch drums shall be grooved to ensure perfect seat for stable and tidy rope lay, with no chances of rope slippage. The rope termination in the winch shall be such that distortion or twisting is eliminated and at least 5 to 6 turns of rope remains on the drum even when the lantern carriage is fully lowered and rested on the rest pads. It should be possible to operate the winch manually by a suitable handle by an integral power tool.</p>			
13.2	<b>Head Frame</b>			
	<p>The head frame, which is to be designed as a capping unit of the mast, shall be of welded steel construction, galvanized both internally and externally after assembly. The top pulley shall be of appropriate diameter, large enough to accommodate the stainless steel wire ropes and the multi-core electric cable. The pulley block shall be made of non-corrodible material, and shall be of die cast Aluminum Alloy. Pulleys made of synthetic materials such as Plastic or PVC are not acceptable. Self-lubricating bearings and stainless steel shaft shall be provided to facilitate smooth and maintenance free operation for a long period. The pulley assembly shall be fully protected by a canopy galvanized internally and externally. Close fittings guides and sleeves shall be provided to ensure that the ropes and cables do not get dislodged from their respective positions in the grooves. The head frame shall be provided with guides and stops with PVC buffer for docking the lantern carriage.</p>			

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13.3	<b>Stainless Steel Wire Ropes :</b>			
	The suspension system shall essentially be without any intermediate joint and shall consist of only non-corrodible stainless steel of AISI 316 or better grade. The stainless steel wire ropes shall be of suitable size, the central core being of the same material. The overall diameter of the rope shall not be less than 6 mm. The thimbles shall be secured on ropes by compression splices. Two continuous lengths of stainless steel wire ropes shall be used in the system and no intermediate joints are acceptable in view of the required safety. No intermediate joints / terminations, either bolted or else, shall be provided on the wire ropes between winch and lantern carriage.			
13.4	<b>Electrical System, Cable and Cable Connections.</b>			
	A suitable terminal box shall be provided as part of the contract at the base compartment of the high mast for terminating the incoming cable. The electrical connections from the bottom to the top shall be made by special trailing cable and size of the cable shall be minimum 5 core 4 sq.mm. copper. At the top there shall be weather proof junction box to terminate the trailing cable. Connections from the top junction box to the individual luminaries shall be made by using 3 cores 2.5 sq.mm. Copper flexible PVC cables of reputed make. The system shall have in-built facilities for testing the luminaries while in lowered position. Also suitable provision shall be made at the base compartment of the mast to facilitate the operation of internally mounted, electrically operated power tool for raising and lowering of the lantern carriage assembly. The trailing cables of the lantern carriage rings shall be terminated by means of metal clad, multipin plug and socket provided in the base compartment to enable easy disconnection when required.			
13.5	<b>Power Tool for the Winch:</b>			
	A suitable, high-powered, electrically driven, internally mounted power tool, with manual over ride shall be supplied for the raising and lowering of the lantern carriage for maintenance purposes. The speed of the power tool shall be to suit the system. The power tool shall be single speed, provided with a motor of the required rating. The power tool shall be supplied complete with suitable control. The capacity and speed of the electric motor used in the power tool shall be suitable for the lifting of the design load installed on the lantern carriage. The power tool mounting shall be so designed that it will be not only self-supporting but also aligns the power tool perfectly with respect to the winch spindle during the operations. Also, a handle for the manual operation of the winches in case of problems with the electrically operated tool shall be provided.			

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13.6	<b>Lightning Finial:</b>			
	One number heavy duty hot dip galvanized lighting finial shall be provided for each mast. The lightning finial shall be minimum 1.2 M in length and shall be provided at the center of the head frame. It shall be bolted solidly to the head frame to get a direct conducting path to the earth through the mast.			
13.7	<b>Aviation Obstruction Lights:</b>			
	Suitable 2nos LED Aviation Obstruction Lights of reliable design and reputed manufacturer shall be provided on top of each mast.			
13.8	<b>Earthing Terminals:</b>			
	Supply and installation of 3 nos. earthing systems with 50 mm dia. Class 'C' G.I pipe as per IS3043 with necessary inter connections.(2 nos. for Mast and 1 no for Power Control Panel).			
13.9	<b>Feeder Pillar:</b>			
	Each mast shall be provided with a feeder pillar fabricated out of 14 SWG CRCA sheet and finished with two coats of red oxide primer and grey enamel paint. The feeder pillar shall comprise of incoming TPN Switch Fuse Unit with HRC fuses or MCCB of suitable current rating, incoming / outgoing terminals and control for the power motor. Feeder pillar shall be mounted near to the mast. Suitable digital timer of reputed make, with necessary contactors, wiring etc. for ON/OFF control of the lamps should be provided and connected in the circuit.			
13.10	<b>Power Cable:</b>			
	Power Supply cable of size 4 x 10 sq.mm. PVC AA cables and 4 x 1.5 sq.mm. Copper cable for geared motor shall be provided from electrical control panel to the base compartment of the high mast. Cable shall be taken to the base compartment of the high mast through the PVC conduit laid in the foundation. Incoming power supply cable of suitable size up to the electrical control panel will be provided by BHEL.			