

**HINDUSTAN SHIPYARD LIMITED- VISAKHAPATNAM-5**  
**ENQUIRY TECHNICAL SPECIFICATION FOR LIGHTING FIXTURES FOR**  
**3Nos. 50TON BOLLARD PULL TUGS FOR INDIAN NAVY,HSL YARD Nos-VC.11162-64**  
**PRQ.NO:PRQE/001542 /11-12 Dt.29-07-11**

Clause No.	Description of Technical Specification	Vendor's reply Complied/ not Complied
1	<b>General:</b>	
1.1	The supply shall include complete Design, Supply of the following equipment including Spares, Manuals etc. as described in subsequent clauses of technical specification.	
1.1.1	<b>Environmental Conditions:</b> The equipment provided on the tug shall be marinised version and capable of continuously performing the specified duty under the ambient conditions in conformance to classification society rules applicable for Indian Coastal environmental conditions.	
1.1.2	The offered equipment shall be robust in construction to withstand shock / vibrations incidental to tug movements and shall be provided with necessary anti-vibration mountings as required.	
1.1.3	Salt laden atmosphere.	
1.1.4	The Lighting fixtures are required for 3 Nos. 50 Ton Bollard Pull Tugs for Indian Navy , HSL Yard Nos. VC.11162-64.	
1.1.5	<b>Manuals:</b> Nine (9) sets of maintenance & operation instruction manuals including circuit diagram and component details, technical details of all equipments in hard copies and soft copy in CD ROM shall be supplied along with the equipment for each tug.	
1.1.6	<b>Life time Support:</b> Supplier shall confirm the provision of life time support by providing for a minimum period of 20 years, except electronics where the minimum period will be 10 years after delivery of the last tug. Incase of the equipment is likely to become obsolete, the manufacturer shall be committed to give a clear 3 years notice to the Indian Navy to assess the requirement of "life time buy" of spares.	
1.1.7	<b>Tally and diagram plates:</b> All tallies and diagram plates shall be engraved and made of anodized aluminium alloy. Tally plates of the equipment should be prominently display the following information a) Manufacturer name b) Manufacturer Serial No. Type / Model c) Year of manufacture d) Electrical parameters viz ratings Voltage, Frequency, Current, Insulation details etc., as applicable. e) Details of connections f) Weight of equipment g) Danger lables in Red colour with White lettering are to be provided on all electrical equipment indicating the operating voltage.	
1.1.8	Comprehensive Part List / Part Identification List (CPL/PIL) -7Sets shall be supplied.	
1.1.9	Any damages, shortages, defectives or deviation from purchase order will be rectified by the supplier at free of cost.	
1.1.10	<b>Factory acceptance trials:</b> The Owner reserves the right to depute representative to witness factory acceptance tests of equipment, if required. The OEM shall intimate the dates of these trials atleast six weeks in advance to the Shipyard/Owner.	

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1.1.11	The equipment in its entirety shall give complete satisfaction to the shipyard and the ships owners concerned. Any other part or parts of the equipment which are missing in this specification but are still necessary for the proper and efficient functioning of the equipment as a whole, Rules & Regulations shall be included in the scope of supply.	
1.1.12	<b>Marking Plate:</b> Each light shall be indelibly marked in a conspicuous place with the following particulars :	
	Title of the fitting and Type Number.	
	Rated Voltage.	
	Weight in Kgs.	
	Manufacturer's name (or) Mark.	
2	<b>The scope of supply indicated below is for one (1) Tug. The requirement is for three (3) Nos Tugs. For certain items the quantity may change while placing order.</b>	
2.1	All the weather proof and water tight lighting fixtures in the specification shall be conformed to IP – 56 Degree of protection as per IS specification No. IS – 10322 – (Part-4) – 1984.	
2.2	The body of all the water tight switches and sockets shall be made of cast aluminium.	
2.3	Watertightness of switches, sockets and switch sockets etc., shall be as per IS-2147.	
2.4	The quantities indicated are approximate. Final quantities will be indicated at the time of placement of order.	
2.5	The shape of the body shall be such that it has to liberate more light out put per Watt and rigid construction, free from any casting flaw and detrimental defect.	
2.6	All the incandescent fittings shall be provided with heavy duty porcelain screw cap (E – 27) Lamp Holder and with rated wattage Bulb.	
2.7	For IP – 56 degree of protection, suitable soft Neoprene Gaskets and heavy duty appliance type brass cable entry glands wherever specified shall be suitable to receive electric cable of 15.6mm overall diameter and 11mm dia over inner sheath. The gland shall be complete with two brass washers, neoprene bush and brass gland nut to be supplied along with fitting.	
2.8	All Light Fittings shall be provided with hard Bakelite three way terminal connectors suitable to receive 2 nos cables of size 1.5 Sqmm.	
2.9	The wiring between the terminal connector and the lamp holder shall be made with heat resistant insulated copper conductor cable of nominal sectional area of not less than 1.5 Sqmm. and cable shall be sheathed with fibre glass sleeving.	

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2.10	All the light fittings shall be suitable to operate on 230V, 50Hz AC single phase supply, except for the item mentioned vide para 16 for which the bulb shall be suitable to operate on 24V DC.	
2.11	The 'U' glasses provided for 100W WT standard deck head fittings with guard, 100W WT standard deck head fittings without guard and hand lamps shall be interchangeable.	
3	<b>Painting:</b>	
3.1	All the light fittings surface shall be degreased and primed before final coat of paint. Two coats of synthetic enamel paint of minimum 75microns shall be stoved to give smooth and aesthetic look.	
3.2	Tenderer has to furnish the drawings/ technical pamphlets along with technical offer indicating the following details :	
	[1] Clause-wise compliance table indicating deviations/ alternative, if any, for consideration.	
	[2] Un-priced copy of Price bid to verify the scope of supply.	
	[3] Detailed drawings indicating shape, overall dimensions, dimensions of fixing centres, fixing arrangement of Acrylic covers /glass dooms to the base etc. shall be furnished.	
	[4] Wiring diagram.	
	[5] Materials List indicating make and quantity of internal component for each item.	
	[6] Illumination level/ polar curves of the offered light fittings.	
3.3	As against order, one set of samples for complete ordered items shall be submitted to HSL for approval and if any modifications are required to improve the standard of the fittings and to suit shipboard installation shall be effected without any extra cost. If the samples do not conform to the specification and drawings, the order is liable for cancellation without any financial repercussions on either sides. Bulk manufacture of fittings shall be commenced only after obtaining HSL approval.	
3.4	The light fittings shall be tested in the presence of IRS or MMD Surveyor in respect of dimensions, weather proofness, high voltage and insulation level and obtain test certificate. One original and two photocopies shall be forwarded before dispatching the material.	
3.5	All the weather proof light fittings shall conform to IP-55 degree of protection while the water tight fittings shall conform to IP – 56 degree of protection. The cabin type light fittings shall conform to IP-42 (Vermi-proof) degree of protection.	
3.6	Any item not mentioned in the above specification, but necessary for the completion and satisfactory working of all the above equipment shall also be included in the scope of supply.	
4	<b>Technical Specification:</b>	
4.1	<b>Acrylic covers :</b>	

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4.1.1	Acrylic covers shall be made out of sheet from original manomar but not from its scrap and shall be free from air bubbles. The cover shall be moderate in transmission factor and brilliance. The thickness of acrylic cover shall not be less than 2mm. The shape of acrylic cover shall be such that it can deliver maximum output.	
4.1.2	The acrylic covers for all the fittings shall be fitted in such a way that replacement of internal component is feasible from front side only.	
5	<b>Material specification for cabin type fluorescent light fitting canopy, acrylic cover with frame:</b>	
5.1	<b>Canopy :</b>	
5.1.2	Body of the fitting shall be of 18 Gauge (1.2mm) thick sheet steel.	
5.1.3	<b>Acrylic cover fixing arrangement :</b>	
5.1.4	Fixing acrylic cover shall be from front side only. The fixing arrangement shall satisfy the following :	
	[a] The fixing and removal arrangement of the acrylic cover shall be simple enough to be carried out while at maintenance during the vessel on sailing.	
	[b] Rigid and shall firmly hold the body/ canopy during ship's rolling and pitching.	
	All acrylic covers shall be made of opal white sheet.	
5.2	<b>Material specification for weather proof fluorescent light fitting canopy, acrylic cover with frame :</b>	
5.2.1	<b>Canopy :</b>	
5.2.2	Body and reflector (electrical mounting plate) of the fitting shall be of 18 gauge (1.2mm ) thick sheet steel.	
5.2.3	<b>Reflector cum component mounting plate :</b>	
5.2.3.1	Reflector cum component plate shall be mounted with the components such as chokes, terminal blocks on the rear side of the plate. The front side shall be white powder coated so as to get maximum reflection. The front face of the plate shall be provided with the following:	
	[1] Two sets of lamp holders	
	[2] Two sets of starter holders	
5.2.3.2	<b>Acrylic covers fixing :</b>	
	All acrylic covers shall be made of clear acrylic sheet.	
5.2.3.3	<b>Acrylic cover fixing frame :</b>	

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	Acrylic cover shall be fixed in a suitable frame with heavy duty hinges on one side to the canopy and held in position on the other side by means of not less than 3 strong stainless steel toggles to brass wing nuts with brackets.	
	Continuous length of high quality neoprene gasket (single piece) shall be inserted into the acrylic to arrest entry of water/ moisture and to ensure water tightness when all the toggles are closed.	
6	<b>Heavy duty stainless steel toggles :</b>	
6.1	3 Nos. suitable gauge bright finished stainless steel fixing toggles shall be provided for each fitting to ensure water tightness. The toggle shall press the acrylic frame uniformly to press the gasket on the canopy.	
6.1.1	The stainless steel toggles shall not damage acrylic cover during operation even if the toggles are quickly operated.	
6.1.2	<b>Internal Wiring :</b>	
	The internal wiring of all the light fitting shall be capable of enduring continuous use at 75°C, shall be of 250V grade vinyl insulated standard copper conductor and of nominal conductor sectional area of not less than 0.75Sqmm (for wiring of assembled components) and 1.5Sqmm (for termination of wiring between two porcelain connector).	
6.1.3	<b>The Porcelain connectors :</b>	
	Best quality heavy duty 3-pin porcelain connectors one at each end (diagonally) of the fitting suitable to receive 2 Nos. cables each of 1.5Sqmm.	
7	<b>Constructional Details of fittings :</b>	
7.1	<b>2 X 20 Cabin type Decorative modular type fluorescent light fittings with tubes :</b> <b>Quantity : 99 Nos.</b> Degree of protection : IP - 42 All the component material specification shall be as per above technical specification	
7.1.1	<b>Canopy :</b> The fittings shall be suitable for flush mounting with ceiling and shall have high decorative value. Hence, suitable fixing holes shall be provided on the canopy with doubler (stiffner) plate for adequate strength. Request forward the fixing details of the offer to light fitting.	
7.1.2	The canopy shall be powder coated ivory white outside and inside finish.	
7.1.3	The canopy shall be provided with 2 Nos. knock-outs with neoprene gromate one at each end (near the porcelain connector). The fitting shall accommodate 2 Nos. 20W fluorescent tubes side by side, horizontally. Following components shall be mounted on the base of the canopy.	
7.1.4	<b>Internal Components :</b>	

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7.1.5	2 Nos, 20W Copper wire wound ballasts (one for each tube) conforming to IS – 2215/1968.	
7.1.6	2 pairs of spring loaded rotary type lamp holders conforming to IS – 3323/ 1965	
7.1.7	2 Nos., 20W, 230V starters with starter holders (one for each tube) conforming to IS – 3224/ 1965.	
7.1.8	One power factor improvement and RIS condensor with discharge resistor conforming to IS – 1569/ 1976.	
7.1.9	2 Nos. heavy duty porcelain connectors.	
7.1.10	Earth terminal shall be fixed at an appropriate place inside the light fitting with earth symbol marked.	
7.1.11	The shape of the acrylic cover shall be in such a way that the light shall deliver maximum light output and also the distribution of the light shall be uniform.	
7.2	<b>60/100W Cast Aluminium Water tight Stand deck head fitting with guard :</b>	
	<b>Quantity :</b> 159 Nos. for 3 Nos. tugs. Degree of protection : IP – 56	
7.2.1	Cast aluminium housing with 2 Nos. brass cable entry glands on same side. Housing shall have 3mm thick, in general and 5mm thick in way of threaded portions and shall be powder coated.	
7.2.2	Fitting shall be provided with the following :	
	One No. 60W, 230V screw cap incandescent bulb (PHILLIPS/ GE/ OSAKA Make).	
	One No. E- 27 porcelain lamp holder of 'Binani' Make (Cat No. : ESB – 202).	
	Heat resistant, bubble free quality transparent clear glass with heavy duty neoprene gasket.	
	6mm round or square aluminium rod protecting guard with threaded ring for holding and also protecting the glass.	
7.3	<b>60/100W Weather proof Oval shaped Bulk head fitting :</b> <b>Quantity :</b> 27 Nos. for 3 Nos. tugs. Degree of protection : IP – 55	
7.3.1	Cast aluminium oval shaped body with grey powder coating outside and white inside. Polished aluminium of the SS sheet reflector shall be provided inside the fitting. The fitting shall be provided with 2 Nos. brass cable entry glands on the same side. Housing shall be 3mm thick in general and 5mm in way of fixing lugs and fixing bolt eyes.	
7.3.2	The fittings shall be provided with the following :	
	One no. 100W, 230V incandescent bulb (PHILLIPS/ GE/ OSAKA Make).	
	One No. E- 27 porcelain lamp holder of 'Binani' Make (Cat No. : ESB – 202).	

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	Heat resistant prismatic obscure glass cover with heavy duty neoprene gasket suitably fitted by means of 2 Nos. brass/ stainless steel screws to the body from the front side. The glass is to be cemented to the metal ring.	
7.4	<b>2 X 20W Engine room water tight fluorescent fittings with tubes :</b> <b>Quantity :</b> 231 Nos. for 3 Nos. tugs. Degree of protection : IP – 56	
7.4.1	All the component material specification shall be as per above technical specification.	
7.4.2	<b>Canopy :</b>	
	The canopy shall be powder coated ivory white outside and inside finish.	
	The canopy shall be provided with four cable entries , 2 Nos on either sides. Out of four nos. cable entries, 2 Nos. shall be provided with single compression type brass cable glands diagonally and 2 entries shall be provided with solid neoprene rubber bushes of best quality. The cable glands shall be suitable to receive cable of 16mm overall dia and 11mm dia over inner sheath.	
	The canopy shall be provided with 2 Nos. of adequate thickness 90mm length M.S. Brackets for mounting the fittings to the ceiling. The fixing brackets shall be riveted to the canopy.	
	These light fittings are to be installed in the Engine room and are exposed to the risk of mechanical damage. Hence, these light fittings shall be provided with suitable grilled mechanical guards to protect their lamps and glass globes against such damage.	
7.4.3	<b>Electrical units and mounting plates :</b>	
	20 Guage sheet steel plate with white finish on the reflecting surface suitable to accommodate two 20W tubes side by side horizontally.	
	The mounting plate shall be completely pre-wired with following accessories and wiring shall be terminated in 2 Nos. porcelain connectors fixed one at each end near the glands.	
	All the component material specification shall be as per above technical specification.	
7.5	<b>1 X 20W Cabin type mirror light fitting with tube and built-in switch with shaver socket :</b> <b>Quantity :</b> 17 Nos for 3 Tugs. Degree of protection : IP - 42	
	All the component material specification shall be as per above technical specification.	
7.5.1	<b>Canopy :</b>	

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	The canopy shall be suitable to accommodate one no. 20W fluorescent tube.	
	The canopy shall be finished with powder coating enameled ivory white outside and inside.	
	The canopy shall be suitable for fixing on wall (bulk head) as such suitable fixing provision shall be made for the same.	
	Knock-outs with neoprene bush for the cable entries shall be provided on the back side of the fitting.	
7.5.2	<b>Acrylic cover fixing :</b>	
	L' shaped acrylic cover fitted in a powder coated white finished sheet steel end covers by means of decorative chromium plated hand grip screws.	
	Suitable arrangement shall be made to remove acrylic covers without opening entire fitting.	
7.5.3	<b>Component mounting plate :</b>	
	Component plate is to be provided with the following accessories and wiring shall be terminated between 2 Nos. porcelain connectors provided one at each end.	
	One No. 20W copper wire wound ballast.	
	One pair of Rotary type lamp holders.	
	One No. 20W starter with starter holder.	
	One No. power factor improvement and RIS condensor with discharge resistor.	
	One No. earth terminal with earth marking.	
	Two Nos. heavy duty porcelain connectors.	
	One No. 5A 3-pin / 2-pin flush mounted miniature type shaver socket and one No. 2-pole ON/ OFF Toggle switch shall be mounted on front face of the mirror light.	
7.6	<b>25W Berth lamp fitting :</b>	
	<b>Quantity :</b> 47 Nos. Degree of protection : IP – 42	
	Regarding technical specification, refer enclosed sketch for the above item.	
7.7	<b>2 X 20W Decorative Cabin type surface mounted corner light fluorescent fitting with tube:</b>	
	<b>Quantity :</b> 20 Nos. for 3 Nos. tugs. Degree of protection : IP – 42	
	All the component material specification shall be as per above technical specification.	
7.7.1	<b>Canopy :</b>	
7.7.2	The fitting shall be suitable for fixing on bulkhead (surface mounting by means of screws) and to accommodate 2 Nos. 20W fluorescent tubes, horizontally.	

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7.7.3	<b>Acrylic cover fixing :</b>	
	Arc type opal acrylic cover shall be fixed by means of 2 Nos. white finished end plates. End plates shall be provided with felt or foam gasket and nickel plated hand grip brass screws to fix the acrylic cover firmly to the canopy.	
	The fitting shall be designed to have high brilliant light output and the light shall be spread uniformly.	
7.8	<b>200W W.T. HPMV Brass body flood light fitting :</b>	
	<b>Quantity :</b> 33 Nos. for 3 Nos. tugs. <b>Degree of protection :</b> IP – 56	
	The fitting shall be suitable to mount on bulk head or pillar on open deck.	
	The fitting shall be provided with suitable lamp holder for 200W HPMV light.	
	Construction of light fitting shall be as above technical specification.	
	The fitting shall be supplied with 200W, 230V HPMV bulb/ lamp.	
7.9	<b>15W, 24V DC Emergency light fitting :</b>	
	<b>Quantity :</b> 99 Nos. for 3 Nos. tugs. <b>Degree of protection :</b> IP – 56	
	The fitting shall be suitable to accommodate 15W, 24V DC pin type bulb with weather proof construction. The fitting shall be painted with Red colour. The fitting shall be supplied with 24V, 15W bulb(as per the enclosed drawing).	
	The internal wiring shall be carried out with 2.5Sqmm. Cable and the same shall be terminated at the bottom of the box, on suitable clip-on type cable terminals. The cable shall be of 600V grade PVC and flame retardant type.	
	The HPMV control gear box shall contain copper choke, capacitor, clip-on type 2.5Sqmm terminal with din-channel arrangement, terminals for earthing stud, 3 Nos. brass cable glands, 2 Nos. suitable EE Make HRC fuses.	
7.10	<b>40W, 230V Water tight Hand Lamps:</b>	
	<b>Quantity:</b> 33 Nos. for 3 Nos. tugs. <b>Degree of protection :</b> IP – 56	
	The fitting shall be of cast aluminium housing with guard and handle.	
	The fitting shall be provided with brass wire guard with hook and with bubble free clear glass. The wire guard shall be fitted with cast aluminium body by means of threading.	
	The fitting shall be provided with hard rubber/ ebonite handle to hold safely. The handle is to be fitted with the leather ring to facilitate the fitting to hang wherever required.	

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	The handle is to be provided with suitable cable entry hole and with gland to draw TRS cable of 3 X 1.5 Sqmm.	
	The body of the fitting is to be cleaned de-greased and powder coated with grey colour paint. The fitting is to be provided with 'BINANI' make heavy duty brass lamp holder covered with porcelain lining suitable to accommodate E – 27 cap incandescent bulb.	
	The height of the fitting is to be suitably designed so as to accommodate the rated bulb.	
7.11	<b>10A,230V DP water tight switch:</b>	
	<b>Quantity:</b> 83 Nos. for 3 Nos. tugs. Degree of protection : IP – 56	
	Water tight enclosure shall withstand submersion to a depth of 5cm at its highest point without water entering but not intended to be used permanently submerged in water.	
	The water tightness of the switch shall be as per IS-2147.	
	Cover mounting double pole rotary switch inserted with brass terminals and molded Bakelite knob. The switch shall be of heavy duty type and shall be of KAYCEE/ BALSON/ Standard Gold.	
	ON/ OFF positions shall be indelibly marked on a conspicuous place of the switch.	
	The insulation distance between the live parts of the switch and earth or switch body shall not be less than 10mm.	
	The switch shall be provided with 2 nos heavy duty brass cable glands on the same side.	
	The unit shall be painted with powder coating Grey colour paint.	
7.12	<b>10A, 230V DP Water tight switch socket with plug(2P+1E):</b>	
	<b>Quantity:</b> 50 Nos. for 3 Nos. tugs. Degree of protection : IP – 56	
	10A, double pole switch with 3 pin (2 pole+Earth) socket unit and plug shall comprise the specification as under para 7.11 of above as far as switch part is concerned.	
	The fitting shall be provided with 3 pin (2P+E) socket embodied in porcelain/ hard ebonite insulating material and covered with suitable cap and chain arrangement.	
	The fitting shall be provided with 3 pin (2P+E) cargo pin suitable for above socket.	
	The suitable arrangement shall be made to lock the cargo plug to the unit when the plug is inserted into the socket.	

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	The unit shall be wired with FRLS cables of 2.5Sqmm copper conductor between switch and socket.	
	Suitable copper crimping lugs shall be used to ensure perfect connectivity.	
7.13	<b>10A,230V Water tight socket with plug:</b>	
	<b>Quantity:</b> 116 Nos. for 3 Nos. tugs. Degree of protection : IP – 56	
	The specification shall be as per paragraphs 7.12 of above as far as socket and cargo plug.	
7.14	<b>15A, 415V Water tight switch socket with plug (3P+1E):</b>	
	<b>Quantity:</b> 43 Nos. for 3 Nos. tugs. Degree of protection : IP – 56	
	15A, Three pole switch with 4 pin (3 pole+Earth) socket unit and plug shall comprise the specification as under para 7.11 of above as far as switch part is concerned.	
	The fitting shall be provided with 4 pin (3P+E) socket embodied in porcelain/ hard ebonite insulating material and covered with suitable cap and chain arrangement.	
	The fitting shall be provided with 4 pin (3P+E) cargo pin suitable for above socket.	
	The suitable arrangement shall be made to lock the cargo plug to the unit when the plug is inserted into the socket.	
	The unit shall be wired with FRLS cables of suitable Sqmm copper conductor between switch and socket.	
	Suitable copper crimping lugs shall be used to ensure perfect connectivity.	
7.15	<b>Tests and Inspection :</b>	
	The following Tests/ Inspection shall be carried out at Manufacturer's Workshop and their Test certificates 1 in original + 3 photocopies per tug, shall be furnished.	
7.16	<b>Construction Inspection :</b>	
	The construction, dimensions and materials shall be inspected as per HSL approved drawings and shall be comply with requirements specified vide Para – 4 to 7.14.	
8	<b>Temperature Inspection for Copper Ballast :</b>	
	Winding temperature of the ballast is to be measured by resistance method. After the temperature of each part reaches a fixed point by using an applicable fluorescent discharge lamp, under the rated voltage and frequency, the ballast shall work at a temperature of 100°C satisfactorily. The tenderer has to submit National Test House Certificate indicating the test results of the offered chokes, starters etc.	

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8.1	<b>Performance Inspection :</b>	
	When the light is switched ON or OFF continuously several times under the rated voltage at the rated frequency by using an applicable fluorescent discharge lamp, there shall not be any abnormality.	
8.2	<b>High Voltage Test :</b>	
	A test voltage at applicable frequency and of approximately sine waveform shall be applied to live parts and dead metallic parts and slowly the voltage is increased to 2000V, the di-electric strength of the parts shall withstand for one minute.	
8.3	<b>Insulation Resistance Inspection :</b>	
	After high voltage test when insulation resistance between live parts and dead metallic parts are measured with a DC 500V insulation tester the value shall not be less than One Mega Ohm.	
	All the above tests (except temperature inspection test) shall be conducted on all the fittings before dispatch of the material and test certificates shall be supplied along with the material. However, the temperature inspection test shall be performed on the first product under each design by the manufacturer and the relevant TC shall be supplied.	
	Any item not mentioned in the above specification, but necessary for the completion and satisfactory working of all the above equipment shall also be included in the scope of supply.	
	All tenderers shall necessarily enclose the following documents to the technical offer, failing which the offer is liable for rejection.	
	Clause-wise compliance table for technical specification indicating deviations/ alternative, if any, for consideration.	
	Complete bill of materials with quantity and make/ type etc.	
	Technical leaflets/ drawings with detailed technical specification for all the offered models of light fittings, switches, sockets etc.	
8.4	<b>Spares:</b> Manufacturer recommended spares & Class spares as required.	
	Manufacturer standard spares & Class spares for all the above lights if required to be provided and properly labeled in English language for identification and to be supplied in well packed rigid boxes.	
8.4.1	<b>On Board spares:</b> The OB Spares as recommended by manufacturer for scheduled servicing & maintenance of equipment falling due within the first operational cycle of the tug of 2 years shall be quoted with separate unit prices. The order for OB spares, tool and test equipment shall be done concurrently while placing the order for main equipment. The spares consumed within the guarantee period to rectify/liquidated known defects shall be replaced free of cost. The unpriced list of OB Spares shall be enclosed to the technical offer.	

**HINDUSTAN SHIPYARD LIMITED- VISAKHAPATNAM-5**  
**ENQUIRY TECHNICAL SPECIFICATION FOR LIGHTING FIXTURES FOR**  
**3Nos. 50TON BOLLARD PULL TUGS FOR INDIAN NAVY,HSL YARD Nos-VC.11162-64**  
**PRQ.NO:PRQE/001542 /11-12 Dt.29-07-11**

Clause No.	Description of Technical Specification	Vendor's reply Complied/ not Complied
8.4.2	<b>Base &amp; Depot spares:</b> The B&D Spares as recommended by the manufacturer for 5 years exploitation of the tug shall be quoted separately with unit price of each Item offered. The quotation from OEM shall be in ILMS format. The quotation shall be valid for 18 Months. The Part Identification List (PIL) shall be enclosed to the technical bid for scrutiny.	
8.4.3	Separate unit prices shall be indicated in the price-bid, for all the above Spare parts.	
8.5	<b>Note:</b> Tenderers are to furnish the following along with the offer for technical scrutiny:	
	Type approval certificates	
	OEM authorization certificate for sales & services in India	
	Detailed scope of supply indicating list of equipment/components together with their type & make etc.,	
	Relevant technical leaflets and brochures	
	Model schematic drawings	
	Weight, CG and Dimensions of offered equipment and units.	
	Preference will be given for compact size and least weight equipment meeting all the above requirements.	
	Compliance to Technical specification confirming all requirements stated at respective Clauses and sub Clauses Deviations/waivers if any, need to be indicated against respective Clauses and sub Clauses.	
	Schematic diagrams/General Arrangement with dimensional details.	
	Tender has to clearly specify the sizes of cables required for all the systems so as to take necessary procurement action for the cables.	
	Tenderer shall enclose the Price-bid copy without prices to the technical bid to verify the scope of supply.	
	Offers received without above will be rejected with out any further correspondence.	

MANAGER (EDM)