

POLES & MAST

GeM Tender Enquiry for POLES & MASTS for 2 X 660 MW THDC KHURJA-TG PROJECT

Sl. No.	Description	Annexures
1.	Additional terms and conditions	Annexure I
2.	An undertaking regarding Model Clauses	Annexure II
3.	Instruction to Packing List	Annexure III
4.	Certificate for local Content	Annexure IV
5	DELIVERY SCHEDULE	
6.	BOQ	-
7.	PQR	-
8.	Technical Specification	-

Project: - 2 X 660 MW THDC KHURJA-TG
Package: - POLES & MAST
GeM BID No....., Dtd.
ANNEXURE –I

Additional clauses of NIT

1. Dispatch Markings: -

Each box shall be marked with Capital Letters in “Red” indicating the PEM supply (Main Supply OR Commissioning spare) for **2 X 660 MW THDC KHURJA-TG Project**. Each package delivered under the Contract shall be marked by Supplier and such marking must be distinct and in English Language (all previous irrelevant markings being carefully obliterated). Such marking shall show the description and quantity of contents, the name and address of consignee, the Gross weight and Net weight of the package, the name of the Supplier, PEM P.O. reference number, with a distinctive number of mark sufficient for purposes of identification. Besides above necessary, packing shall bear a special marking `TOP`, `BOTTOM`, `DO NOT TURN OVER`, “KEEP DRY”, “HANDLE WITH CARE”, etc.

IMPORTANT

- Two copies of respective standard manufacturer’s erection instruction/operation instruction manual shall be kept in each package / container for immediate reference by BHEL site and same shall be reflected in packing slip also
- The Packing list details for the consignment must be put inside the Box/Boxes.

2. Liquidated Damages: -

a) **Main Supply:-** Purchaser reserves the right to recover from the Seller/ Contractor, as agreed liquidated damages and not by way of penalty, a sum equivalent to half (½) percent and applicable GST thereon, of the total main supply & commissioning spares contract price excluding GST per week or part thereof, subject to a maximum of ten(10) percent of the total main supply & commissioning Spares contract price excluding GST, if the Seller/ Contractor fails to deliver any part of the ordered goods/stores within the period stipulated in the Order/ Contract.

NOTE:

i. LR/RR date for indigenous supplies (Bill of Lading/AWB for Foreign supplies) shall be treated as the date of dispatch for levying LD. However, if receipted LR date for indigenous supply is beyond 30 days for FTL/ 45 days for PTL from the date of LR (PTL to be clearly mentioned in LR), such excess period shall be considered for LD purpose irrespective of dispatch date. Import General Manifest (IGM)/Bill of entry date (whichever is earlier), for foreign supplies, is beyond 90 days from the date of Bill of Lading/AWB, such excess period shall be considered for LD purpose irrespective of dispatch date.

ii. In case of any amendment/ revision, LD shall be linked to the amended/ revised contract value and delivery date(s).

iii. If Order/ Contract involves two or more Units/ Sets/ Lots/ Stages, then Liquidated Damages shall be levied on order/ contract value excluding GST of the delayed Unit/ Set/ Lot/ Stage, provided delivery stipulated in the Order/ Contract is Unit/ Set/ Lot/Stage wise, however total LD amount shall be limited to 10% of total order/ amended

Project: - 2 X 660 MW THDC KHURJA-TG

Package: - POLES & MAST

GeM BID No....., Dtd.

order value excluding GST of delayed Unit/ Set/ Lot/Stage. Any subsequent lot released (not envisaged in original contract) due to increase in quantity within permissible quantity variation shall be treated as separate lot for the purpose of LD.

iv. The sum specified above is not a penalty but a genuine pre-estimate of the loss/ damage which will be suffered by purchaser on account of delay on the part of the Contractor/Seller and the said amount will be deductible without proof of actual loss or damage caused by such delay.

3. Risk & Cost Purchase

BHEL reserves the right to terminate the contract or withdraw portion of work and get it done through other agency, at the risk and cost of the contractor after due notice of a period of 14 days' by BHEL in any of the following cases:

i) If the Seller/Contractor fails to deliver the goods or materials or any instalment thereof within the period(s) fixed for such delivery or the Seller's poor progress of the supply/ services vis-à-vis delivery/execution timeline as stipulated in the Contract, backlog attributable to seller including unexecuted portion of supply does not appear to be executable within balance available period;

ii) Delivers goods or materials not of the contracted quality and failing to adhere to the contract specifications;

iii) Withdrawal from or repudiation/ abandonment of the supply/ services by Seller before completion as per contract or if the Seller refuses or is unable to supply goods or materials covered by the Order/Contract either in whole or in part or otherwise fails to perform the Order/Contract;

iv) Non-supply by the Seller within scheduled completion/delivery period as per Contract or as extended from time to time, for the reasons attributable to the Seller;

v) Termination of Contract on account of any other reason (s) attributable to Seller.

vi) Assignment, transfer, subletting of Contract without BHEL's written permission resulting in termination of Contract or part thereof by BHEL.

vii) If the Seller be an individual or a sole proprietorship Firm, in the event of the death or insanity of the Seller;

viii) If the Seller/Contractor being an individual or if a firm on a partnership thereof, shall at any time, be adjudged insolvent or shall have a receiving order for administration of his estate made against him or shall take any proceeding for composition under any Insolvency Act for the time being in force or make any assignment of the Order/Contract or enter into any arrangement or composition with his creditors or suspend payment or if the firm dissolved under the Partnership Act;

ix) If the Seller/Contractor being a company is wound up voluntarily or by order of a Court or a Receiver, Liquidator or Manager on behalf of the debenture holders and creditors is appointed or circumstances shall have arisen which entitles the Court of debenture holder and creditors to appoint a receiver, liquidator or manager;

x) Non-compliance to any contractual condition or any other default attributable to Seller.

Such defaulting vendor/Seller shall not be eligible to participate in re-tendering conducted on account of risk purchase made due to fault of such vendor/Seller.

Project: - 2 X 660 MW THDC KHURJA-TG

Package: - POLES & MAST

GeM BID No....., Dtd.

3.1 Risk & Cost Amount against Balance Work:

Risk & Cost amount against balance work shall be calculated as follows:

$$\text{Risk \& Cost Amount} = [(A-B) + (A \times H/100)]$$

Where,

A= Value of Balance scope of Work (*) as per rates of new contract

B= Value of Balance scope of Work (*) as per rates of old contract being paid to the contractor at the time of termination of contract i.e. inclusive of PVC & ORC, if any.

H = Overhead Factor to be taken as 5

In case (A-B) is less than 0 (zero), value of (A-B) shall be taken as 0 (zero).

3.2 Balance scope of work (in case of termination of contract):

Difference of Contract Quantities and Executed Quantities as on the date of issue of Letter for 'Termination of Contract', shall be taken as balance scope of Work for calculating risk & cost amount.

Contract quantities are the quantities as per original contract. If, Contract has been amended, quantities as per amended Contract shall be considered as Contract Quantities.

Items for which total quantities to be executed have exceeded the Contract Quantities based on drawings issued to contractor from time to time till issue of Termination letter, then for these items total Quantities as per issued drawings would be deemed to be contract quantities.

Substitute/ extra items whose rates have already been approved would form part of contract quantities for this purpose.

Substitute/ extra items which have been executed but rates have not been approved, would also form part of contract quantities for this purpose and rates of such items shall be determined in line with contractual provisions.

However, increase in quantities on account of additional scope in new tender shall not be considered for this purpose.

NOTE: In case portion of work is being withdrawn at risk & cost of contractor instead of termination of contract, contract

quantities pertaining to portion of work withdrawn shall be considered as 'Balance scope of work' for calculating Risk & Cost amount.

3.3 LD against delay in executed work in case of Termination of Contract:

LD against delay in executed work shall be calculated in line with above LD clause, for the delay attributable to contractor. For limiting the maximum value of LD, contract value shall be taken as Executed Value of work till termination of contract.

Project: - 2 X 660 MW THDC KHURJA-TG

Package: - POLES & MAST

GeM BID No....., Dtd.

Method for calculation of LD against delay in executed work in case of termination of contract” is given below.

- i. Let the time period from scheduled date of start of work till termination of contract excluding the period of Hold (if any) not attributable to contractor = T1
- ii. Let the value of executed work till the time of termination of contract = X
- iii. Let the Total Executable Value of work for which inputs/fronts were made available to contractor and were planned for execution till termination of contract = Y
- iv. Delay in executed work attributable to contractor i.e. $T2 = [1-(X/Y)] \times T1$
- v. LD shall be calculated in line with LD clause (clause 16) of the Contract for the delay attributable to contractor taking “X” as Contract Value and “T2” as period of delay attributable to contractor.

3.4 Recoveries arising out of Risk & Cost and LD or any other recoveries due from Contractor

Without prejudice to the other means of recovery of such dues from the Seller recoveries from the Seller on whom risk & cost has been invoked shall be made from the following:

- a) Dues available in the form of Bills payable to seller, SD, BGs against the same contract.
- b) Dues payable to seller against other contracts in the same Region/Unit/ Division of BHEL.
- c) Dues payable to seller against other contracts in the different Region/Unit/ division of BHEL.

In-case recoveries are not possible with any of the above available options, Legal action shall be initiated for recovery against contractor.

4. For recognition of dispatch, vendor to submit following documents to BHEL by e-mail/ fax immediately on dispatch: - GST compliant invoice, LR for Indian Vendors (indicating Invoice No., no. of boxes, PTL (if applicable) etc.) / Bill of Lading or AWB for foreign vendor, Packing List (Must be indicating No. of boxes, Packing size, Gross weight and net weight of each package, Contents of the package with cross reference to BoM item code no. or item serial no. and Quantity of each item separately), Insurance Intimation to underwriter through email/fax, Dispatch Clearance.

B. Following ATC available in GEM shall also be part of NIT: -

- i. Bidder's offer is liable to be rejected if they don't upload any of the certificates / documents sought in the Bid document, ATC and Corrigendum if any.
- ii. Bidders are advised to check applicable GST on their own before quoting. Buyer will not take any responsibility in this regards. GST reimbursement will be as per actuals or as per applicable rates (whichever is lower), subject to the maximum of quoted GST %.

Project: - 2 X 660 MW THDC KHURJA-TG

Package: - POLES & MAST

GeM BID No....., Dtd.

iii. Data Sheet of the product(s) offered in the bid, are to be uploaded along with the bid documents. Buyers can match and verify the Data Sheet with the product specifications offered. In case of any unexplained mismatch of technical parameters, the bid is liable for rejection.

iv. The bidder is required to upload, along with the bid, all relevant certificates such as BIS license, type test certificate, approval certificates and other certificates as prescribed in the Product Specification given in the bid document.

v. While generating invoice in GeM portal, the seller must upload scanned copy of GST invoice and the screenshot of GST portal confirming payment of GST.

VI. OPTION CLAUSE: The Purchaser reserves the right to increase or decrease the quantity to be ordered up to 25 percent of bid quantity at the time of placement of contract. The purchaser also reserves the right to increase the ordered quantity by up to 25% of the contracted quantity during the currency of the contract at the contracted rates. Bidders are bound to accept the orders accordingly.

VII. Nominated Inspection Agency: On behalf of the Buyer organization, any one of the following Inspection Agency would be conducting inspection of stores before acceptance:

Pre-dispatch Inspection at Seller Premises (applicable only if pre-dispatch inspection clause has been selected in ATC): BHEL TPIA

Post Receipt Inspection at consignee site before acceptance of stores: NA

Project: - 2 X 660 MW THDC KHURJA-TG

Package: - POLES & MAST

GeM BID No....., Dtd.

Additional Terms and Conditions for subject Tender Enquiry to be complied by Bidders for Consideration in this tender:

- A.** Bidders to ensure that Third party/Customer issued certificates being submitted as proof of PQR qualification should have verifiable details of document/certificate issuing authority such as name & designation of Issuing Authority and its organization contact number and E-mail Id. In case the same is found not available, BHEL has the right to reject such document from evaluation.
- B.** "This item /package/system falls under the list of items defined in para 3 of ministry of finance guideline date 20.09.16 (procurement of items related to public safety, health, critical security operations and Equipment's etc.) & hence criteria of prior experience /turnover shall be same for all bidders including start up /MSME".
- C.** **Guarantee & Warrantee** shall be as per Cl. No. 10 of GTC on GeM for the bid. However, Guarantee & Warrantee time period shall be 18 months from the date of last supply in the contract for Main Supply.
- D.** Evaluation shall be on the basis of total all inclusive, landed price at consignee destination (Refer cl. No. 6 of GTC on GEM).
- E.** **Terms of Delivery** :- Terms of delivery shall be F.O.R. dispatch station. All dispatches shall be through Road Carriers on Freight Pre-Paid basis. Road Permit/E-way Bill if required will be arranged by Supplier. However, loading & Transit insurance shall be in the scope of Seller and unloading of items at delivery point shall be in the scope of BHEL. Bidder to quote prices accordingly.
- F.** Further, w.r.t. Transit Insurance supplier has to inform the details of dispatches (such as Policy No., Consignee Name, Consignment Packing details, Project Name, Purchase Order No., LR No. & date, Invoice No. & date, Dispatch Origin & destination details etc.) to policy underwriter.
- G.** Bidder has to provide the details as per TECHNICAL PQR (attached with Specifications of product catalogue) in its offer and has to note that bids of only those bidders shall be evaluated who meet the Technical Pre-Qualifying requirements'. The terms of technical PQR shall prevail in conflict (if any).
- H.** PQR criteria uploaded with Buyer uploaded Bid Specific document shall prevail Value of Experience criteria and Past performance parameter mentioned in GeM bid.
- I.** "Due to COVID-19 pandemic condition prevailing in the country BHEL/PEM may go for Remote Inspection of Offered items if required. Vendors are requested to be equipped with the facilities/gadgets as indicated in the guidelines available at : <https://pem.bhel.com/Documents/VendorSection/Vendor/Guidelines.pdf> to take up the inspection remotely.
- J.** **Inspection call to be raised by bidder on BHEL CQIR portal** (details shall be shared at the of execution of order) and Inspection agency shall attend at the inspection within seven (07) days of the date on which the material is notified as being ready. In case of delay in witnessing of inspection beyond stipulated time (i.e. 7 days from the date on which the material is notified as being ready), by BHEL arising due to reasons not attributable to vendor, BHEL will extend the delivery period for such delay in carrying out inspection. If BHEL is not able to witness inspection up to 15 days then in addition to delay beyond stipulated period, extension in delivery time of 07 days for arranging fresh inspection will be given.

When the tests have been satisfactorily completed at Seller/ Contractor's works, the Inspection Agency shall issue an inspection report that effect within seven (07) days after completion of the tests, but if the tests were not witnessed by the Inspection Agency or his representative, the material acceptance report would be issued within seven (07) days after receipt of the test certificates by the Purchaser.

Purchaser will issue MDCC to the Seller/ Contractor within 7 days based on inspection report/ test certificates/Certificate of Conformance as applicable. In case of delay in issuance of MDCC beyond 7 days

Project: - 2 X 660 MW THDC KHURJA-TG

Package: - POLES & MAST

GeM BID No....., Dtd.

stipulated time (i.e. from the date of successful inspection report), by BHEL arising due to reasons not attributable to vendor, BHEL will extend the delivery period for such delay in issuing MDCC. If BHEL is not able to issue MDCC up to 15 days then in addition to delay beyond stipulated period, 7 days' additional time shall be given to vendor to facilitate the vendor for arranging logistics arrangements.

- K.** All Bidders shall be required to submit applicable Freight % & GST % included in their prices during clarification stage of Tender.
- L.** Performance Bank Guarantee: shall be as per Cl. No. 7 of GTC of GeM. Performance Security amount shall be @3% of the value of contract value.

M. Payment Terms: For Supply Portion : - As per clause no. 12 (i) of GTC on GeM. Supplier has to provide original+1 copy of Tax invoice, Packing List, LR/RR or AWB, CRAC, Insurance intimation, Guarantee Certificate, E-way bill (as applicable) for payment.

Offline payment mode shall be selected. Payment will be released within 90 days for Non MSME after submission of complete documents (45 days for Micro & Small Enterprises (MSEs), 60 days for Medium Enterprises).

N. Bid reserved for Make in India products: - Procurement under this bid is reserved for purchase from Class 1 local suppliers as defined in public procurement (Preference to Make in India), Order 2017 as amended from time to time and its subsequent Orders/Notifications issued by concerned Nodal Ministry for specific Goods/Products. The minimum local content to qualify as a class 1 local supplier is denoted in the bid document as 60%. All bidders must upload a certificate from the OEM regarding the percentage of the local content and the details of locations at which the local value addition is made along with their bid, failing which the bid is liable to be rejected. Regarding verification of local content, the local supplier at the time of tender, bidding or solicitation shall be required to provide certification (as per enclosed annexure-IV) as per para 9 of PP-MII order revision dated 16.09.2020.

O. This is conditional tender enquiry. Financial bid opening (Part-II) of a bidder shall be subjected to following: -

- (i) Techno-Commercial evaluation/recommendation by BHEL.
- (ii) Qualification of Technical PQR
- (iii) Offered item should mandatorily conform to PP-MII order provisions.
- (iv)** Approval of vendor from end Customer (THDC/NTPC). shall be taken up by BHEL-PEM with customer.

Bidders who are not approved from THDC/NTPC (end customer) should furnish the credentials as per THDC/NTPC (end customer) format - (Annexure -A) along with their bid.

P. Consignee Details (for PRC - Provisional Receipt Certificate & CRAC - Consignee's Receipt cum Acceptance Certificate, as applicable) shall be as per Project Site official details.

Q. The Bidder has to declares that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Bidder(s). This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process. In case, the bidder is found having indulged in above activities, suitable action shall be taken by BHEL as per extant policies/guidelines.

R. Bidders to ensure the following: -

- Ensure compliance to Ministry of Power (MoP) Order No. 11/05/2018 Coord. dt. 28/07/2020, if applicable.

Project: - 2 X 660 MW THDC KHURJA-TG

Package: - POLES & MAST

GeM BID No....., Dtd.

• Ensure compliance of Ministry of Finance (MoF) Order (Public Procurement No. 1 & 2) F. No. 6/18/2019/PPD dt. 23/07/2020.

• to submit “Model Certificate for Tenders” as per Annexure-III of Ministry of Finance (MoF) Order (Public Procurement No. 1 & 2) F. No. 6/18/2019/PPD dt. 23/07/2020. Bidder to submit the following undertaking on their letter head duly signed from the highest competent authority at your end (i.e Owner, partner, CMD, Director etc.)

“I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I hereby certify that this bidder is not from such a country and is eligible to be considered”

Note: - This bidder is to be replaced with bidders’ organizational name.

- S. Delivery Period:** As per attached Annexure-II. Delivery Days mentioned in GeM bid is indicative only. Delivery shall be as per Annexure-II.
- T.** For registration in BHEL PEM- Online registration portal is operational, Non-registered Vendors who wish to apply for registration in BHEL-PEM can apply through Online Registration Portal available at www.pem.bhel.com - vendor section - Online Supplier Registration. All credentials and/or documents duly signed and stamped related to registration can be uploaded on the website and submit the application for registration. However, registration of suppliers is not mandatory in case of open tender
- U.** Instructions to Packing List (annexure –III) and Certification reg. Local content (annexure –IV) to be complied by bidders.
- V. Quantity Variation:** - Maximum Qty Variation shall be quantity variations as +25%, bidder to quote accordingly.
- W.** All the Buyer Added Bid Specific Additional Terms and Conditions shall supersede relevant terms & conditions of GeM GTC and shall prevail in case of conflict with any other terms & conditions of tender (if any).
- X.** All other terms & conditions shall be as per selected Additional Terms & Conditions for subject bid from GeM library and GTC version 4.0 (Version 1.3) available on GeM Portal on enquiry floating date shall be applicable.

Project: - 2 X 660 MW THDC KHURJA-TG
Package: - POLES & MAST
GeM BID No....., Dtd.

An undertaking regarding Model Clauses (To be provided alongwith bid)

Refer,

PROJECT	:- 2 X 660 MW THDC KHURJA-TG
PACKAGE	:- POLES & MAST
Primary product category on GeM	:-.....
BID No. (Through GeM)	:-, Dtd.

M/s

Reference:

TO WHOM SO IT MAY CONCERN

This is with reference to Ministry of Finance circular dated 23.07.20 reg. restriction under rule 144 (xi) of GFR.

“I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India. I hereby certify that M/s is not from such a country and is eligible to be considered against GeM enquiry no:, **Dtd.**”

Sign & Signature

Date:

Project: - 2 X 660 MW THDC KHURJA-TG
Package: - POLES & MAST
GeM BID No....., Dtd.
ANNEXURE -III TO INSTRUCTIONS TO PACKING LIST

For faster verification of bills, successful bidder to submit detailed Bill of Material (BOM) at the time of drawings/ documents submission after placement of PO. Each item of the BOM to be uniquely identified with item code no. or item Sl. No. Supplier to ensure that all items which will find separate mention in the packing list are covered in this detailed BOM.

Supplier to also give the following undertaking in the BOM:

“The BOM provided herewith completes the scope (in content and intent) of material supply under PO No. Dated Any additional material which may become necessary for the intended application of the supplied items/package will be supplied free of cost in most reasonable time.

Packing List must indicate:

- a) Packing size
- b) Gross weight and net weight of each package
- c) Contents of the package with cross reference to BOM item code no. / Sl. No.
- d) Quantity of each items separately.

The packing list must cover all the BOM items.

Supplier to give following undertaking in the packing list:

The Packing list provided herewith is as per BOM approved under PO No. ----

Project: - 2 X 660 MW THDC KHURJA-TG

Package: - POLES & MAST

GeM BID No....., Dtd.

ANNEXURE IV

Letter head of Company

Ref.....

Date.....

To,
Bharat Heavy Electricals Limited
PEM, PPEI Building, Plot No 25,
Sector 16A, Noida (U.P) 201301

Subject: Certification regarding local content

Reference: Tender Enquiry No....., **Dtd.**

Name of Package: **POLES & MAST.**

Dear Sir,

We hereby certify that items offered by us of POLES & MAST for 2 X 660 MW THDC KHURJA-TG, M/s
..... meets the requirement of minimum local content as a class – I local supplier in line with clause of NIT (GeM NIT)
and the Public Procurement (Preference to Make in India), Order 2017 dated 15.06.2017, 28.05.2018 & 29.05.2019,
04.06.20 & 16.09.20

We further confirm that details of location at which the local value addition is made will be our registered works
at

.....
...(address of the works)

Yours very truly

..... (authorized signatory of company)

..... (firm name)

authorized signatory
of company

Project: - 2 X 660 MW THDC KHURJA-TG

Package: - POLES & MAST

GeM BID No....., Dtd.

Project:- 2 X 660 MW THDC KHURJA-TG

Pacakge:- POLES & MASTS

Annexure II to NIT- Delivery Schedule

Sl. No.	Package Code	BHEL Drawing No	Drawing Title	Primary/Secondary	Drg Sch for Vendors	Standard Delivery Terms for Supply Portion
28	558-14000-A	PE-V0-XXX-558-E601	DATA SHEET OF POLES & MASTS	Primary	R-0 within 14 days from PO & subsequent revisions within 10 days of comments received from BHEL. BHEL shall furnish comments / approval on each submission within 18 days from receipt.	Within Four (04) months from date of CAT-1 approval of Primary drawing/documents, subjected to drawing/document submission/re-submission schedule as stipulated, in case of any delay in submission/re-submission of Primary drawing/documents, then same shall be reduced from the given delivery period.
		PE-V0-XXX-558-E907	QUALITY PLAN OF POLES & MASTS	Primary		
		PE-V0-XXX-558-E602	GA DRAWING OF POLES & MASTS	Primary		
		PE-V0-XXX-558-E603	FIELD QUALITY PLAN OF POLES & MASTS	Secondary	R-0 within 30 days from PO & subsequent revisions within 10 days of comments received from BHEL. BHEL shall furnish comments / approval on each submission within 18 days from receipt.	
		PE-V0-XXX-558-E604	FOUNDATION DETAILS OF POLES & MASTS	Secondary		
		PE-V0-XXX-558-E605	INSTRUCTIONS FOR ERECTION OF POLES & MASTS	Secondary		

Notes:-

- (i) The end period specified is for completion of the deliveries. Deliveries to start progressively so as to meet the completion schedule.
- (ii) The delivery conditions specified are for contractual LD purposes, however BHEL may ask for early deliveries without any compensation thereof.
- (iii) Non-applicable drawings shall be decided during bid evaluation.
- (iv) Wherever schedule of drawings/documents submission / re-submission is stipulated in the Technical Specifications, same shall be superseded by delivery specified in NIT.

	PROJECT	2X660 MW THDC KHURJA- TG PROJECT					
	PACKAGE	POLES & MAST					
BOQ CUM PRICE SCHEDULE FOR HIGH MAST							
Sr. No.	Item code	Item description	HSN CODE	Unit	Order Quantity	UNIT PRICE EX-WORKS (INR)	TOTAL PRICE (INR)
1.0							
(i)	558-14003-A	LIGHTING MAST OCTAGONAL SHAPE, LM30		NOS.	4		

Project:- 2 X 660 MW THDC KHURJA-TG
Pacakge:- POLES & MASTS
Annexure II to NIT- Delivery Schedule

Sl. No.	Package Code	BHEL Drawing No	Drawing Title	Primary/Secondary	Drg Sch for Vendors	Standard Delivery Terms for Supply Portion
28	558-14000-A	PE-V0-XXX-558-E601	DATA SHEET OF POLES & MASTS	Primary	R-0 within 14 days from PO & subsequent revisions within 10 days of comments received from BHEL. BHEL shall furnish comments / approval on each submission within 18 days from receipt.	Within Four (04) months from date of CAT-1 approval of Primary drawing/documents, subjected to drawing/document submission/re-submission schedule as stipulated, in case of any delay in submission/re-submission of Primary drawing/documents, then same shall be reduced from the given delivery period.
		PE-V0-XXX-558-E907	QUALITY PLAN OF POLES & MASTS	Primary		
		PE-V0-XXX-558-E602	GA DRAWING OF POLES & MASTS	Primary		
		PE-V0-XXX-558-E603	FIELD QUALITY PLAN OF POLES & MASTS	Secondary	R-0 within 30 days from PO & subsequent revisions within 10 days of comments received from BHEL. BHEL shall furnish comments / approval on each submission within 18 days from receipt.	
		PE-V0-XXX-558-E604	FOUNDATION DETAILS OF POLES & MASTS	Secondary		
		PE-V0-XXX-558-E605	INSTRUCTIONS FOR ERECTION OF POLES & MASTS	Secondary		

Notes:-

- (i) The end period specified is for completion of the deliveries. Deliveries to start progressively so as to meet the completion schedule.
- (ii) The delivery conditions specified are for contractual LD purposes, however BHEL may ask for early deliveries without any compensation thereof.
- (iii) Non-applicable drawings shall be decided during bid evaluation.
- (iv) Wherever schedule of drawings/documents submission / re-submission is stipulated in the Technical Specifications, same shall be superseded by delivery specified in NIT.

2X660 MW THDC KHURJA- TG PROJECT
BOQ CUM PRICE SCHEDULE FOR HIGH MAST

SL. NO.	Item Code	ITEM DESCRIPTION	UNIT	QTY	UNIT EX- WORKS PRICE (Rs.)	TOTAL EX- WORKS PRICE (Rs.)
1.0	558-14003-A	LIGHTING MAST OCTAGONAL SHAPE, LM30	Nos.	4		

NOTES:-

- 1 The quantities, which are indicated above shall be released for manufacture & supply along with LOI.
- 2 Manufacturing of above quantities shall be done after the approval of technical & quality documentation, and supply of the same shall be as per contract.
- 3 The unit price quoted by bidder for Lighting mast shall be excluding the Lighting fixture prices.
- 4 Design engineering charges are considered to be included in main equipment supply price. No separate charges shall be applicable.
- 5 Erection & commissioning of Lighting High Mast is excluded from the bidder's scope.

2 X 660 MW THDC KHURJA TG PROJECT

VOLUME – II

TECHNICAL SPECIFICATION FOR

HIGH MAST

SPECIFICATION NO: PE-TS-475-558-E004

REV-0




BHARAT HEAVY ELECTRICALS LIMITED

POWER SECTOR

PROJECT ENGINEERING MANAGEMENT

NOIDA, UTTAR PRADESH, INDIA – 201301


989739/2022/PS-PEM-EL

	TECHNICAL SPECIFICATION FOR HIGH MAST	SPECIFICATION NO. PE-TS-475-558-E004	
		VOLUME II	
		CONTENTS SHEET	
	2 X 660 MW THDC KHURJA-TG	REVISION 0	DATE: 21.05.2022
SHEET 1 OF 1			

CONTENTS

S. NO.	DESCRIPTION	NO. OF SHEETS	
01	SECTION - 'I'	COMPLIANCE CERTIFICATE	01
		SPECIFIC TECHNICAL REQUIREMENT	04
		DATA SHEET-A	05
		DATA SHEET-C	03
		SUB VENDOR'S LIST	9
02	SECTION - 'II'	GENERAL TECHNICAL REQUIRMENTS	8
		STANDARD QUALITY PLAN	04

Total number of sheets including cover & separator sheets: SHEETS

	TECHNICAL SPECIFICATION FOR HIGH MAST	SPECIFICATION NO. PE-TS-475-558-E004	
		VOLUME II	
		SECTION I	
	2 X 660 MW KHURJA- TG	REVISION 0	DATE: 21.05.2022
SHEET 1 of 1			


COMPLIANCE CERTIFICATE

The bidder shall confirm compliance to the following by signing/ stamping this compliance certificate and furnishing same with the offer.

1. The scope of supply, technical details, construction features, design parameters etc. shall be as per technical specification & there are no exclusion/ deviation with regard to same
2. There are no deviation with respect to specification other than those furnished in the 'schedule of deviations'
3. Only those technical submittals which are specifically asked for in NIT to be submitted at tender stage shall be considered as part of offer. Any other submission, even if made, shall not be considered as part of offer.
4. Any comments/ clarifications on technical/ inspection requirements furnished as part of bidder's covering letter shall not be considered by BHEL, and bidder's offer shall be construed to be in conformance with the specification.
5. Any changes made by the bidder in the price schedule with respect to the description/ quantities from those given in BOQ-Cum-Price schedule of the specification shall not be considered (i.e., technical description & quantities as per specification shall prevail).


BIDDER'S STAMP & SIGNATURE

989739/2022/PS-PEM-EL

	TECHNICAL SPECIFICATION FOR HIGH MAST	SPECIFICATION NO. PE-TS-475-558-E004	
		VOLUME II	
		SECTION - I	
	2 X 660 MW KHURJA-TG	REVISION 0	DATE: 21.05.2022
SHEET 1 OF 4			

SECTION – 'I'

SPECIFIC TECHNICAL REQUIREMENTS

	TECHNICAL SPECIFICATION FOR HIGH MAST	SPECIFICATION NO. PE-TS-475-558-E004	
		VOLUME II	
		SECTION - I	
	2 X 660 MW KHURJA-TG	REVISION 0	DATE: 21.05.2022
SHEET 2 OF 4			

1.0 SCOPE OF ENQUIRY


- 1.1 Design, manufacture, assembly, inspection & testing at manufacturer's works, proper packing and delivery to site of HIGH MAST as mentioned in different sections of this specification, complete with all accessories for efficient and trouble-free operation.
- 1.2 Standard technical requirements of the HIGH MAST are indicated in Section-II. Project specific requirements/changes are listed in Section-I.
- 1.3 The requirements of Section-I shall prevail and govern in case of conflict between the corresponding requirements of Section-I and Section-II.
- 1.4 Review of sub vendor's documents by the vendor shall not relieve the vendor from the responsibility of design and supply.
- 1.5 The documents shall be in English language and MKS system of units.

2.0 BILL OF QUANTITIES:

- 2.1 Quantity requirements shall be as per BOQ-cum-price schedule as part of NIT.

3.0 SPECIFIC TECHNICAL REQUIREMENTS

S.No.	Reference Clause No. of Section- II	Specific Requirement/ Change
1	Clause 4 section-II	4 X 16 mm ² Al cable shall be read as 3.5 X 50 mm ² Al cable.
2	3.1.1 JB-M TYPE	Provided with four (4) way stud type terminals, each terminal suitable for terminating upto two nos. of 3.5Cx50 mm ² stranded aluminium conductors & tap off of 3 nos. 2C x 2.5 sq. mm. Cu cable.
3	7.0 (TOOLS & TACKLES)	Bidder to supply necessary accessories required for installation of its supplied equipment's without any cost implication to BHEL.
4	Sub-vendor list	Following clause is added: The approval on Sub-vendor list shall be obtained from end customer after award of contract for various projects (as applicable on projects wise purchase orders) & same shall be subjected to modification without any commercial implication to BHEL.
5	Clause 3.1.1 section-II	Lighting Mast shall be of continuously tapered polygonal cross section hot dip galvanised. The Mast shall be of 30 M or


	TECHNICAL SPECIFICATION FOR HIGH MAST	SPECIFICATION NO. PE-TS-475-558-E004	
		VOLUME II	
		SECTION - I	
	2 X 660 MW KHURJA-TG	REVISION 0	DATE: 21.05.2022
SHEET 3 OF 4			

		<p>suitable height with lantern carriage to enable raising/lowering for ease of maintenance, including the Head Frame, Double Drum Winch, continuous stainless steel wire rope, in built power tool, suitable aviation warning light (LED type), lightning protection arrangement along with necessary power cables within the mast. The mast shall be delivered in not more than three sections & shall be joined together by slip stressed fit method at site. No site welding or bolted joints shall be done on the mast The Mast together with the fixtures shall be capable of withstanding the appropriate wind loads as per IS: 875. The Mast shall be fabricated from special steel plates conforming to BS-EN10-025 and folded to form a polygonal section. Suitable feeder pillar with TPN MCB, contactors, timer, MCB and other necessary accessories for operation & protection of the mast and fixtures shall be provided.</p>
--	--	---

4.0 DOCUMENTATION

- 4.1 Documents required after award of LOI shall be as per attachment-I (to be submitted by successful bidder).

989739/2022/PS-PEM-EL

	TECHNICAL SPECIFICATION FOR HIGH MAST	SPECIFICATION NO. PE-TS-475-558-E004	
		VOLUME II	
		SECTION - I	
	2 X 660 MW KHURJA-TG	REVISION 0	DATE: 21.05.2022
SHEET 4 OF 4			

ATTACHMENT – I

DOCUMENTS REQUIRED AFTER AWARD OF LOI
(To be submitted by successful bidder)

SL. No.	DOCUMENT TITLE	DWG. / DOCUMENT No.	CATEGORY
1	TECHNICAL DATASHEET FOR HIGH MAST	PE-V0-475-558-E601	APPROVAL
2	GA DRAWING OF HIGH MAST (including feeder panel, structural calculation & foundation calculation, Bill of Material)	PE-V0-475-558-E602	APPROVAL
3	QUALITY PLAN FOR HIGH MAST	PE-V0-475-558-E907	APPROVAL
4	FIELD QUALITY PLAN FOR HIGH MAST	PE-V0-475-558-E603	INFORMATION
5	FOUNDATION DETAILS/ DRAWING OF MASTS	PE-V0-475-558-E604	INFORMATION
6	INSTRUCTION FOR ERECTION OF HIGH MAST	PE-V0-475-558-E605	INFORMATION



**TECHNICAL SPECIFICATION FOR
HIGH MAST
DATASHEET-A**

SPECIFICATION NO. PE-TS-475-558-E004

VOLUME II

SECTION I

REVISION: 0

DATE: 21.05.2022

SHEET 1 OF 5

1.0 APPLICABLE STANDARDS & CODES

[A] POLES AND HIGH MAST

- | | | |
|-----|---|-----------------|
| 1. | Tubular steel poles for over head power lines | IS 2713 |
| 2. | Code and practice for design loads for structures | IS 875 Part III |
| 3. | Code of practice for general construction in steel | IS 800 |
| 4. | European structural steel standard | BS-EN 10025 |
| 5. | Code of practice for phosphating of iron and steel | IS 6005 |
| 6. | Colour for ready mixed paints & enamels | IS 5 |
| 7. | Recommended practice for hot dip galvanising of iron & steel | IS 2629 |
| 8. | Method of testing uniformity of coating on zinc coated articles | IS 2603 |
| 8. | Method of sampling for steel pipes, tubes & fittings | IS 4711 |
| 10. | Method of chemical analysis of pig iron, cast iron and plain carbon & low alloy steel | IS 228 |
| 11. | Steel tubes for structural purposes | IS 1161 |
| 12. | Mechanical testing of metals-Tensile Testing | IS 1608 |
| 13. | Specification for hot dip zinc coatings on structural steel and allied products | IS 4759 |
| 14. | Method for testing uniformity of coating on zinc coated articles | IS 2633 |

[B] ADDITIONAL STANDARDS FOR MAST

- | | | |
|----|-------------|-------------|
| 1. | Welding | BS 5135/AWS |
| 2. | Galvanizing | BS.ISO 1461 |



**TECHNICAL SPECIFICATION FOR
HIGH MAST
DATASHEET-A**

SPECIFICATION NO. PE-TS-475-558-E004

VOLUME II

SECTION I

REVISION: 0

DATE: 21.05.2022

SHEET 2 OF 5

3. UK Specification for Mast & Foundation TR No. 7200 of ILE

[C] ASSEMBLED EQUIPMENT AND COMPONENTS

- | | | |
|----|--|-----------|
| 1. | Low voltage switchgear and controlgear | IEC 60947 |
| 2. | General requirements for enclosures for accessories for household and similar fixed electrical installations | IS 14772 |
| 3. | Electrical accessories- Circuit breaker for overcurrent protection for household and similar installations | IEC 60898 |
| 4. | Low voltage Fuses for voltages not exceeding 1100V AC or 1500V DC | IS 13703 |
| 5. | Visual indicator lamps | IS 1901 |

2.0 TECHNICAL DETAILS

S. No.	Description	Unit	Value
1.0	System Design Data		
a	Rated voltage	V	415
b	Rated frequency	Hz	50
c	Voltage and frequency variation (permissible)	%	Voltage: $\pm 10\%$ Frequency: $\pm 5\%$
d	Combined voltage & frequency variation (permissible)	%	10% absolute
e	System fault level & duration	kA, sec	50kA for 1 sec
2.0	Lighting Masts		
a	Number of luminaires on each mast	nos.	[<input checked="" type="checkbox"/>] 12 [<input type="checkbox"/>] 16, [<i>Bidder to make arrangements of 12 nos. luminaires in each mast. Supply of luminaires are excluded from the scope of supply of bidder</i>]
b	Type of design		Telescopic tubular, Polygonal shape
c	Material		GI
d	Height	meter	[<input type="checkbox"/>] 20 [<input type="checkbox"/>] 25 [<input checked="" type="checkbox"/>] 30



**TECHNICAL SPECIFICATION FOR
HIGH MAST
DATASHEET-A**

SPECIFICATION NO. PE-TS-475-558-E004

VOLUME II

SECTION I

REVISION: 0

DATE: 21.05.2022

SHEET 3 OF 5

e	Grade of concrete [Details provided for consideration of design. Erection, commissioning & foundation material i.e. concrete is excluded from the supply of bidder)		[] M20 [✓] M25 [] M30
f	Galvanisation details		Galvanization [✓] YES [] NO
i)	Process		Hot dip
ii)	Min weight of zinc coating	gm/m ²	610
iii)	Avg. thickness of zinc coating	Microns	86
3.0	Feeder Panel		
a	Enclosure material		[] FRP [✓] CRCA Sheet.
b	Enclosure thickness	mm	2
c	Degree of protection		IP-55 (min.) with canopy
d	Paint shade		RAL9002
i)	Paint type		Electrostatic coating/ Powder coating
ii)	Paint thickness	micron	50
5.1	Switch-Fuse Unit		
a	Utilisation category for main contacts		AC23
5.2	Miniature Circuit Breaker		
a	SPN MCB rating (min)	A	20
b	DP MCB rating (min)	A	20
c	TPN MCB rating (min)	A	63
d	Short time rating	kA	10
e	Magnetic short circuit protection required		[✓] Yes [] No
f	Thermal overload protection required		[✓] Yes [] No
5.3	Power Contactors		
a	AC contactors voltage coil rating	V	240
b	DC contactors voltage coil rating	V	220
5.4	Selector switch		
a	Type of selector switch		[✓] Stay put [] Wing knob



**TECHNICAL SPECIFICATION FOR
HIGH MAST
DATASHEET-A**

SPECIFICATION NO. PE-TS-475-558-E004

VOLUME II

SECTION I

REVISION: 0

DATE: 21.05.2022

SHEET 4 OF 5

b	Lockable		<input checked="" type="checkbox"/> Yes [] No
5.5	Push Button		
a	Voltage grade	V	500
b	Potential free contacts		2NO+2NC
5.6	Time switch		
a	Type		Digital synchronous
b	Range	Hr	00-24
c	Coil voltage rating	V	240
5.7	Timer		
a	Type		
b	ON delay timer range	Sec	0-5
c	OFF delay timer range	Sec	0-180
d	AC Coil voltage rating	V	240
e	DC Coil voltage rating	V	220
6.0	Cable Glands		By vendor for all incoming and outgoing cables at Pole JB and feeder panel
a	Type		<input checked="" type="checkbox"/> Double compression <input type="checkbox"/> Single compression
b	Material		Brass
c	Nickel Plating provided		<input checked="" type="checkbox"/> Yes [] No
d	Size		During detailed engineering.
7.0	Cable Lugs		By vendor for all incoming and outgoing cables at Pole JB and feeder panel
a	Type		<input checked="" type="checkbox"/> Crimping type [] Ring type
b	Material		Tinned copper
c	Size		During detailed engineering.
8.0	OTHER DETAILS		
a	Cable Gland of Nickel Plating, Brass, Double Compression Type		YES (Suitable for Cable Size 3.5Cx50 Sq.mm Al) 3
b	Cable lugs of Tinned Copper, Crimping Type		YES (Suitable for Cable Size 3.5Cx50 Sq.mm Al)
c	Supply of 3.5Cx50 sqmm cable (from Feeder pillar to power source i.e.LDB/ MCC)		This cable is excluded from bidder's scope. All other cable/ wires required in lighting high mast shall be in bidder's scope.

989739/2022/PS-PEM-EL



**TECHNICAL SPECIFICATION FOR
HIGH MAST
DATASHEET-A**

SPECIFICATION NO. PE-TS-475-558-E004

VOLUME II

SECTION I

REVISION: 0

DATE: 21.05.2022

SHEET 5 OF 5

d	BIS		YES
e	Availability of Type Test Reports of the product from Central Govt/NABL accredited Lab showing compliance to the specification		YES
f	Test report and approvals to be furnished to the buyer on demand		YES
g	Drg./Docs w.r.t. GA of mast, feeder pillar, circuit/ wiring diagram including components make & qty., structural design calculation and foundation arrangement of Mast etc. to be furnished for purchaser's approval.		YES



**TECHNICAL SPECIFICATION FOR
HIGH MAST
DATASHEET-C**

SPECIFICATION NO. PE-TS-475-558-E004

VOLUME II

SECTION I

REVISION: 0

DATE: 21.05.2022

SHEET 1 OF 3

1.0 TECHNICAL DETAILS

S. No.	Description	Unit	Value
1.0	System Design Data		
a	Rated voltage	V	
b	Rated frequency	Hz	
c	Voltage and frequency variation (permissible)	%	
d	Combined voltage & frequency variation (permissible)	%	
e	System fault level & duration	kA, sec	
2.0	Lighting Masts		
a	Number of luminaires on each mast	nos.	
b	Type of design		
c	Material		
d	Height	meter	
e	Grade of concrete		
f	Galvanisation details		
i)	Process		
ii)	Min weight of zinc coating	gm/m ²	
iii)	Avg. thickness of zinc coating	Microns	
3.0	Feeder Panel		
a	Enclosure material		
b	Enclosure thickness	mm	
c	Degree of protection		
d	Galvanisation details		
i)	Process		



**TECHNICAL SPECIFICATION FOR
HIGH MAST
DATASHEET-C**

SPECIFICATION NO. PE-TS-475-558-E004

VOLUME II

SECTION I

REVISION: 0

DATE: 21.05.2022

SHEET 2 OF 3

ii)	Min weight of zinc coating	gm/m ²	
iii)	Avg. thickness of zinc coating	Microns	
5.1	Switch-Fuse Unit		
a	Utilisation category for main contacts		
5.2	Miniature Circuit Breaker		
a	SPN MCB rating (min)	A	
b	DP MCB rating (min)	A	
c	TPN MCB rating (min)	A	
d	Short time rating	kA	
e	Magnetic short circuit protection required		
f	Thermal overload protection required		
5.3	Power Contactors		
a	AC contactors voltage coil rating	V	
b	DC contactors voltage coil rating	V	
5.4	Selector switch		
a	Type of selector switch		
b	Lockable		
5.5	Push Button		
a	Voltage grade	V	
b	Potential free contacts		
5.6	Time switch		
a	Type		
b	Range	Hr	
c	Coil voltage rating	V	
5.7	Timer		
a	Type		
b	ON delay timer range	Sec	
c	OFF delay timer range	Sec	
d	AC Coil voltage rating	V	
e	DC Coil voltage rating	V	
6.0	Cable Glands		By vendor for all incoming and outgoing cables at Pole JB and feeder panel

989739/2022/PS-PEM-EL



**TECHNICAL SPECIFICATION FOR
HIGH MAST
DATASHEET-C**

SPECIFICATION NO. PE-TS-475-558-E004

VOLUME II

SECTION I

REVISION: 0

DATE: 21.05.2022

SHEET 3 OF 3

a	Type		
b	Material		
c	Nickel Plating provided		
d	Size		
7.0	Cable Lugs		By vendor for all incoming and outgoing cables at Pole JB and feeder panel
a	Type		
b	Material		
c	Size		

ITEM CODE	ITEM/SERVICE DESCR	SL NO.	VENDOR CODE	VENDOR NAME	ADDRESS	PHONE	REMARKS
ES1	AC CONTACTORS	1	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhadauria@siemens.com	
	AC CONTACTORS	2	A35	GE-POWER	KAMAK TOWER, 3RD FLOOR, PLOT NO. 12-A, TVK INDUSTRIAL ESTATE, EKKADUTHANGAL, GUINDY, CHENNAI-600032	044-49681447	
	AC CONTACTORS	3	E1144	TELEMECHANIQUE/ SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON-122002	0124-3940400	TAKEN OVER BY SCHNEIDE
	AC CONTACTORS	4	L01	L&T	32, SHIVAJI MARG, P.O. BOX- 6223, NEW DELHI-110015	011-41419554/59	
	AC CONTACTORS	5	B04	BCH	20/4, MATHURA ROAD, FARIDABAD, HARYANA-121006	0129-4293000	
ES3	AC MCCB	1	C01	C&S ELECTRIC LTD.	222, OKHLA IND. ESTATE, PH-III, NEW DELHI-110020	011-3088 7520-29	
	AC MCCB	2	S03	SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON-122002	0124-3940400	
	AC MCCB	3	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhadauria@siemens.com	
	AC MCCB	4	A35	GE-POWER	KAMAK TOWER, 3RD FLOOR, PLOT NO. 12-A, TVK INDUSTRIAL ESTATE, EKKADUTHANGAL, GUINDY, CHENNAI-600032	044-49681447	
	AC MCCB	5	L01	L&T	32, SHIVAJI MARG, P.O. BOX- 6223, NEW DELHI-110015	011-41419554/59	
	AC MCCB	6	C02	CROMPTON GREAVES	RAIL TRANSPORTATION SYSTEMS,VANDANA BUILDING, 11, TOLSTOY MARG, TOLSTOY MARG, NEW DELHI, DL 110001	011 3041 6300	
ES7	AUXILIARY RELAYS	1	A24	ABB	14, MATHURA ROAD, FARIDABAD, HARYANA-121003	0129-2567580, 09871799449	
	AUXILIARY RELAYS	2	G01	ALSTOM LTD	A-7, SEC-65, NOIDA	0120-479 0000	
	AUXILIARY RELAYS	3	E1075	JYOTI LTD.	JYOTI LIMITED, E&CS DIVISION,3/15, BIDC, GORWA,VADODARA - 390 016, E-MAIL ID: ECS@JYOTI.COM	Ph. No.:+91-265-2281214 , Fax No.:+91-265-2281214	
	AUXILIARY RELAYS	4	E1099	OEN INDIA LTD	29/1479, VYTILLA, COCHIN - 682 019 KERALA, INDIA	Phone : +91 484 2301132, 2303709 Fax : +91 484 2302287, 2302221 sales@oenindia.com	
	AUXILIARY RELAYS	5	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhadauria@siemens.com	
ES11	CABLE GLANDS	1	E1201	ALLIED TRADERS & EXPORTERS	C-124 A, SECTOR-2, NOIDA -201 301, UTTAR PRADESH, INDIA	Mr. Vijay Mohan Sood +(91)-(120)-2525694 +(91)-(120)-3052594 +(91)-(11)-23287156 vijay_mohansood@yahoo.com	
	CABLE GLANDS	2	E1017	ARUP ENGG & FOUNDARY WORKS	391/119,PRINCE ANWAR SHAH ROAD, CALCUTTA-700068	033 2473 0850	
	CABLE GLANDS	3	E1206	BALIGA LIGHTING EQPT.PVT.LTD.	63A,CP RAMASWAMY ROAD, ALWARPET,P.B.No 6910, CHENNAI-600018	44-24995505,22680990-4	
	CABLE GLANDS	4	E1036	COMMET BRASS PRODUCTS	NUTAN CHEMICAL COMPOUND, WALBHAT ROAD, GOREGAON, MUMBAI-400063	91-022-26852961/62/63 comet@vsnl.net	
	CABLE GLANDS	5	DW08	DOWELLS	M/S. DOWELLS ELECTRICALS 47/47A, SATGURU INDUSTRIAL ESTATE. OFF AAREY ROAD, GOREGOAN (EAST). MUMBAI 400 063.	CEO : Mr. Jayantibhai S. Patel TEL: 022-32504770./022- 29270876/ 022-29270878.	
	CABLE GLANDS	6	E1044	ELECTROMAC INDUSTRIES	27/28AF NEW EMPIRE IND.ESTT., R.KRISHNA MANDIR RD.JB NGR ,ANDHERI(E),MUMBAI- 400059	91-22-28324829 / 66919034 devang@electromacglands.com	
	CABLE GLANDS	7	I01	INCAB	HARE STREET,KOLKATA,WEST BENGAL- 700001	91-33-2480161/62/63/64 Fax : 91-33-2485766	
	CABLE LUGS	1	E1040	DOWELLS	M/S. DOWELLS ELECTRICALS 47/47A, SATGURU INDUSTRIAL ESTATE. OFF AAREY ROAD, GOREGOAN (EAST).	CEO : Mr. Jayantibhai S. Patel TEL: 022-32504770./022- 29270876/	

ITEM CODE	ITEM/SERVICE DESCR	SL NO.	VENDOR CODE	VENDOR NAME	ADDRESS	PHONE	REMARKS
ES12	CABLE LUGS	2	E1149	UNIVERSAL MACHINES LTD.	4,B.B.D.BAG (EAST) 90,STEPHEN HOUSE,5TH FLR CALCUTTA-700001	033 2282 2540	
ES13	D.C. MCCB	1	C02	CROMPTON GREAVES	RAIL TRANSPORTATION SYSTEMS,VANDANA BUILDING, 11, TOLSTOY MARG, TOLSTOY MARG, NEW DELHI, DL 110001	011 3041 6300	
	D.C. MCCB	2	L01	L&T	32, SHIVAJI MARG, P.O. BOX- 6223, NEW DELHI-110015	011-41419554/59	
	D.C. MCCB	3	A35	GE-POWER	KAMAK TOWER, 3RD FLOOR, PLOT NO. 12-A, TVK INDUSTRIAL ESTATE, EKKADUTHANGAL,	044-49681447	
	D.C. MCCB	4	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhadauria@siemens.com	
ES14	EARTH LEAKAGE CB	1	L01	L&T	32, SHIVAJI MARG, P.O. BOX- 6223, NEW DELHI-110015	011-41419554/59	
	EARTH LEAKAGE CB	2	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhadauria@siemens.com	
	EARTH LEAKAGE CB	3	A35	GE-POWER	KAMAK TOWER, 3RD FLOOR, PLOT NO. 12-A, TVK INDUSTRIAL ESTATE, EKKADUTHANGAL, GUINDY, CHENNAI-600032	044-49681447	
	EARTH LEAKAGE CB	4	S03	SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON-122002	0124-3940400	
	EARTH LEAKAGE CB	5	C01	C&S ELECTRIC LTD.	222, OKHLA IND. ESTATE, PH-III, NEW DELHI-110020	011-3088 7520-29	
	EARTH LEAKAGE CB	6	A24	ABB	14, MATHURA ROAD, FARIDABAD, HARYANA-121003	0129-2567580, 09871799449	
	EARTH LEAKAGE CB	7	E1068	INDO ASIAN	B-24, PHASE - II , NOIDA - 201305, U.P.	120-3042222	
	EARTH LEAKAGE CB	8	E1088	MDS SWITCHGEAR LTD	314-317SHAH NAHAR ESTATE	011 - 25793021	
	EARTH LEAKAGE CB	9	E1120	S&S POWER SWITCHGEAR LTD,	NEW NO. 67, OLD NO. 19, DR. RANGA ROAD, MYLAPORE, CHENNAI - 600004	044 - 24988056, 044 - 24988057, 044 - 24988058	
ES20	DC CONTACTORS	1	S03	SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON-122002	0124-3940400	
	DC CONTACTORS	2	E1030	BHEL (BHOPAL)	HEAVY ELECTRICAL PLANT		
	DC CONTACTORS	3	E1044	ELECTROMAC INDUSTRIES	27/28AF NEW EMPIRE IND.ESTT., R.KRISHNA MANDIR RD.JB NGR ,ANDHERI(E),MUMBAI-400059	91-22-28324829 / 66919034 devang@electromacglands.com	
	DC CONTACTORS	4	L01	L&T	32, SHIVAJI MARG, P.O. BOX- 6223, NEW DELHI-110015	011-41419554/59	
	DC CONTACTORS	5	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhadauria@siemens.com	
	DC CONTACTORS	6	E1144	TELEMECHANIQUE/ SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON-122002	0124-3940400	TAKEN OVER BY SCHNEIDE
	DC CONTACTORS	7	A35	GE-POWER	KAMAK TOWER, 3RD FLOOR, PLOT NO. 12-A, TVK INDUSTRIAL ESTATE, EKKADUTHANGAL, GUINDY, CHENNAI-600032	044-49681447	
ES21	CONTROL SWITCHES/ SELECTOR SWITCH	1	E1076	KAYCEE	KAYCEE INDUSTRIES LTD., C/O-CMS COMPUTERS LTD., 35A, REAR BLDG., KILOKARI, NEW DELHI-110014	Rajiv Sharma-9312004687	
	CONTROL SWITCHES/ SELECTOR SWITCH	2	A35	GE-POWER	KAMAK TOWER, 3RD FLOOR, PLOT NO. 12-A, TVK INDUSTRIAL ESTATE, EKKADUTHANGAL, GUINDY, CHENNAI-600032	044-49681447	
	CONTROL SWITCHES/ SELECTOR SWITCH	3	G01	ALSTOM LTD	A-7, SEC-65, NOIDA	0120-479000	
	CONTROL SWITCHES/ SELECTOR SWITCH	4	S03	SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON-122002	0124-3940400	
	CONTROL SWITCHES/ SELECTOR SWITCH	5	SRC01	M/s Shrenik & Co.	39A/3, PANCHRATNA INDUSTRIAL ESTATE, SARKHEJ-BAVLA ROAD, CHANGODAR,		
	CONTROL SWITCHES/ SELECTOR SWITCH	6	RE05	RECOM PVT. LTD.	M/S RECOM PVT. LTD.,16A , 2ND FLOOR A, WING RAJ INDUSTRIAL COMPLEX, MILITARY	Mr. Chandrashekar Kamath (MD) : 09820249503	
LT- CURRENT TRANSFORMER	LT- CURRENT TRANSFORMER	1	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhadauria@siemens.com	
	LT- CURRENT TRANSFORMER	2	E1009	AUTOMATIC ELECTRIC LTD.	96 AB LONAVLA INDUSTRIAL ESTATE NANGARGAON, LONAVLA-410401	Phone : +91 2114323665 Fax : +91 2114273482	
	LT- CURRENT TRANSFORMER	3	E1066	INDCOIL	PLOT NO. A- 150/ 151, 23RD U ROAD, WAGLE ESTATE, THANE WEST, CST RD, FRIENDS COLONY, HALLOW PUL, KURLA WEST, MUMBAI, MAHARASHTRA 400070	Phone:022 2583 8305	

ITEM CODE	ITEM/SERVICE DESCR	SL NO.	VENDOR CODE	VENDOR NAME	ADDRESS	PHONE	REMARKS
ES23	LT- CURRENT TRANSFORMER	4	K18	KAPPA ELECTRICALS	KAPPA ELECTRICALS, KAPPA CONSOLIDATED PVT. LTD., SOUTHERN ELECTRIKS 14, CART TRACK ROAD, MADUVANKARAI, CHENNAI - 600 042, INDIA.	PHONE: +91 - 44 - 22454709, 22454516, 22450794, 22450795 FAX: +91 - 44 - 22351662, 22451693 E-MAIL: mira@kappaelectricals.com sales@kappaelectricals.com	
	LT- CURRENT TRANSFORMER	5	E1104	PRAGATI ELECTRICALS	280/3,II POKHRAN RD	5341779,5427041	
	LT- CURRENT TRANSFORMER	6	E1106	PRECISE ELECTRICALS	47A-49A,CHAKALA ROAD ANDHERI(E),MUMBAI-99 MUMBAI, MAHARASHTRA, INDIA PIN-400 099	022-8323402 / 022-8216433	
	LT- CURRENT TRANSFORMER	7	E1128	SILKAANS ELECT.MFG.CO.PVT.LTD	PLOT NO: R-247, T.T.C. INDUSTRIAL AREA, M.I.D.C , RABALE, NAVI MUMBAI- 400 701 INDIA	+91-22- 27607787 / 27607927 +91-22- 27607997	
	LT- CURRENT TRANSFORMER	8	E1111	PRAYOG ELECTRICALS PVT. LTD.	GROUND FLOOR, THAKORE INDUSTRIAL COMPUND, STATION ROAD, VIDYA VIHAR (W), NATHANI ROAD , OPP. AMIBIKA TEMPLE,MUMBAI Mumbai - 400086, Maharashtra, India	91-22-25164288/25133146 Mr. P. U. PATWARDHAN (MANAGING DIRECTOR)	
	LT- CURRENT TRANSFORMER	9	C01	C&S ELECTRIC LTD.	222, OKHLA IND. ESTATE, PH-III, NEW DELHI- 110020	011-3088 7520-29	
	LT- CURRENT TRANSFORMER	10	NK09	M/s Newtek Electricals	M-90, M.I.D.C, Waluj, Aurangabad 431136, Maharashtra, India	Tel/Fax: +91 240 2551555 E-mail: mkt.north@newtekelectricals.co m, sales@newtekelectricals.com Mr Sanjeev Aggarwal (9958897890)	
ES24	LT- POTENTIAL TRANSFORMER	1	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER- B, PLOT NO. 78, SECTOR 18, GURGAON- 122015, INDIA	0124-2842000, 9873424331 amit.bhadauria@siemens.com	
	LT- POTENTIAL TRANSFORMER	2	E1009	AUTOMATIC ELECTRIC LTD.	96 AB LONAVLA INDUSTRIAL ESTATE NANGARGAON, LONAVLA-410401	Phone : +91 2114323665 Fax : +91 2114273482	
	LT- POTENTIAL TRANSFORMER	3	E1066	INDCOIL	PLOT NO. A- 150/ 151, 23RD U ROAD, WAGLE ESTATE, THANE WEST, CST RD, FRIENDS COLONY, HALLOW PUL, KURLA WEST, MUMBAI, MAHARASHTRA 400070	Phone:022 2583 8305	
	LT- POTENTIAL TRANSFORMER	4	K18	KAPPA ELECTRICALS	KAPPA ELECTRICALS, KAPPA CONSOLIDATED PVT. LTD., SOUTHERN ELECTRIKS 14, CART TRACK ROAD, MADUVANKARAI, CHENNAI - 600 042, INDIA.	PHONE: +91 - 44 - 22454709, 22454516, 22450794, 22450795 FAX: +91 - 44 - 22351662, 22451693 E-MAIL: mira@kappaelectricals.com sales@kappaelectricals.com	
	LT- POTENTIAL TRANSFORMER	5	E1104	PRAGATI ELECTRICALS	280/3,II POKHRAN RD	5341779,5427041	
	LT- POTENTIAL TRANSFORMER	6	E1106	PRECISE ELECTRICALS	47A-49A,CHAKALA ROAD ANDHERI(E),MUMBAI-99 MUMBAI, MAHARASHTRA, INDIA PIN-400 099	022-8323402 / 022-8216433	
	LT- POTENTIAL TRANSFORMER	7	E1128	SILKAANS ELECT.MFG.CO.PVT.LTD	PLOT NO: R-247, T.T.C. INDUSTRIAL AREA, M.I.D.C , RABALE, NAVI MUMBAI- 400 701 INDIA	+91-22- 27607787 / 27607927 +91-22- 27607997	
LT- POTENTIAL TRANSFORMER	8	E1111	PRAYOG ELECTRICALS PVT. LTD.	GROUND FLOOR, THAKORE INDUSTRIAL COMPUND, STATION ROAD, VIDYA VIHAR (W), NATHANI ROAD , OPP. AMIBIKA TEMPLE,MUMBAI Mumbai - 400086, Maharashtra, India	91-22-25164288/25133146 Mr. P. U. PATWARDHAN (MANAGING DIRECTOR)		
LT- POTENTIAL TRANSFORMER	9	NK09	M/s Newtek Electricals	M-90, M.I.D.C, Waluj, Aurangabad 431136, Maharashtra, India	Tel/Fax: +91 240 2551555 E-mail: mkt.north@newtekelectricals.co m, sales@newtekelectricals.com Mr Sanjeev Aggarwal (9958897890)		
ES25	DC SWITCH	1	A35	GE-POWER	KAMAK TOWER, 3RD FLOOR, PLOT NO. 12-A, TVK INDUSTRIAL ESTATE, EKKADUTHANGAL, GUINDY, CHENNAI-600032	044-49681447	
	DC SWITCH	2	E1076	KAYCEE	KAYCEE INDUSTRIES LTD., C/O-CMS COMPUTERS LTD., 35A, REAR BLDG., KILOKARI, NEW DELHI-110014	Rajiv Sharma-9312004687	
	DC SWITCH	3	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER- B, PLOT NO. 78, SECTOR 18, GURGAON- 122015, INDIA	0124-2842000, 9873424331 amit.bhadauria@siemens.com	

ITEM CODE	ITEM/SERVICE DESCR	SL NO.	VENDOR CODE	VENDOR NAME	ADDRESS	PHONE	REMARKS
ES26	DISTRIBUTION BOX	1	SRC01	M/S SHRENK & CO.	39A/3, PANCHRATNA INDUSTRIAL ESTATE, SARKHEJ-BAVLA ROAD, CHANGODAR, AHMEDABAD – 382 213		
ES28	FUSE BASE	1	E1068	INDO ASIAN	B-24, PHASE - II, NOIDA - 201305, U.P.	120-3042222	
	FUSE BASE	2	G01	GE-POWER	KAMAK TOWER, 3RD FLOOR, PLOT NO. 12-A, TVK INDUSTRIAL ESTATE, EKKADUTHANGAL, GUINDY, CHENNAI-600032	044-49681447	
	FUSE BASE	3	L01	L&T	32, SHIVAJI MARG, P.O. BOX- 6223, NEW DELHI-110015	011-41419554/59	
	FUSE BASE	4	C01	C&S ELECTRIC LTD.	222, OKHLA IND. ESTATE, PH-III, NEW DELHI-110020	011-3088 7520-29	
	FUSE BASE	5	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 ;amit.bhadauria@siemens.com	
	FUSE BASE	6	A24	ABB	14, MATHURA ROAD, FARIDABAD, HARYANA-121003	0129-2567580, 09871799449	
	FUSE BASE	7	S02	SPACEAGE SWITCHGEARS LTD.	68 & 13-A INDUSTRIAL DEVELOPMENT COLONY, MEHRAULI ROAD GURGAON, HARYANA-122001	0124-2302711, 4085091	
	FUSE BASE	8	S03	SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON-122002	0124-3940400	
	FUSE BASE	9	G01	ALSTOM LTD	A-7, SEC-65, NOIDA	0120-479 0000	
	FUSE BASE	10	E1050	ESSEN DEINKI	FLAT NO. 502, SKYLINE HOUSE 85, NEHRU PLACE NEW DELHI	011-26217060	
ES29	HRC FUSES	1	E1068	INDO ASIAN	B-24, PHASE - II, NOIDA - 201305, U.P.	120-3042222	
	HRC FUSES	2	G01	GE-POWER	KAMAK TOWER, 3RD FLOOR, PLOT NO. 12-A, TVK INDUSTRIAL ESTATE, EKKADUTHANGAL, GUINDY, CHENNAI-600032	044-49681447	
	HRC FUSES	3	L01	L&T	32, SHIVAJI MARG, P.O. BOX- 6223, NEW DELHI-110015	011-41419554/59	
	HRC FUSES	4	C01	C&S ELECTRIC LTD.	222, OKHLA IND. ESTATE, PH-III, NEW DELHI-110020	011-3088 7520-29	
	HRC FUSES	5	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 ;amit.bhadauria@siemens.com	
	HRC FUSES	6	A24	ABB	14, MATHURA ROAD, FARIDABAD, HARYANA-121003	0129-2567580, 09871799449	
	HRC FUSES	7	S02	SPACEAGE SWITCHGEARS LTD.	68 & 13-A INDUSTRIAL DEVELOPMENT COLONY, MEHRAULI ROAD GURGAON, HARYANA-122001	0124-2302711, 4085091	
	HRC FUSES	8	S03	SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON-122002	0124-3940400	
	HRC FUSES	9	G01	ALSTOM LTD	A-7, SEC-65, NOIDA	0120-479 0000	
	HRC FUSES	10	E1050	ESSEN DEINKI	FLAT NO. 502, SKYLINE HOUSE 85, NEHRU PLACE NEW DELHI	011-26217060	
	GI WIRE & FLAT	1	I039	INDUSTRIAL PERFORATION (I) PVT.LTD.	MR. A. K. SAHA 327, R.N.GUHA ROAD, DUM DUM KOLKATA-West Bengal-India Phone-9830241788 Pincode : 700028 Email : ipipl@cal2.vsnl.net.in	011 2737 3579	
	GI WIRE & FLAT	2	I070	INDIA ELECTRICALS SYNDICATE	Mr. Suresh Kumar Agarwal 55, Ezra Street, Kolkata-West Bengal-India Phone- 033-22354047 Pincode : 700001 Email : cabletray@vsnl.com	022-28511704	
	GI WIRE & FLAT	3	I072	INDMARK FORMTECH PVT. LTD.	Mr. Narendra R. Meher J Block, Plot No.-375, MIDC BHOSARI PUNE-MAHARASHTRA-INDIA Phone- 020-27130546 Pincode : 411026 Email : indmarkformtech@vsnl.net		
	GI WIRE & FLAT	4	P039	PREMIER POWER PRODUCTS (CAL) PVT. LTD.	Chatterjee International Centre, 33A, Jawaharlal Nehru Road, 6th Floor, Suit No. - 11A, Kolkata,-West Bengal-India Phone-9331008739 Pincode : 700071 Email : hemantdaga@dagaventures.com		

ITEM CODE	ITEM/SERVICE DESCR	SL NO.	VENDOR CODE	VENDOR NAME	ADDRESS	PHONE	REMARKS
ES31	GI WIRE & FLAT	5	P050	PATNY SYSTEMS (P) LTD	PATNY PLAZA 160 , SARDAR PATEL ROAD SEUNDRABAD SECUNDRABAD-TELANGANA-INDIA Phone- 040-27902451 Pincode : 500003 Email : mr.mkt@patnysystems.com		
	GI WIRE & FLAT	6	P079	PASSIVE INFRA PROJECTS PVT. LTD.	MR. VARUN AGRAWAL 182, VAISHALI, PITAMPURA Delhi-DELHI-INDIA Phone- 9871183059 Pincode : 110088 Email : ATANU.SAHA@PASSIVEINFRA.COM		
	GI WIRE & FLAT	7	R036	RUKMANI ELECTRICAL & COMPONENTS PVT LTD	11A , MAHARISHI DEBENDRA ROAD 1ST FL , ROOM NO.4 KOLKATA-WEST BENGAL-INDIA Phone- Pincode : 700007 Email : maruthikabra@gmail.com		
	GI WIRE & FLAT	8	R037	RATAN PROJECTS & ENGINEERING CO. PVT.LTD.	MR. G.D. SINGHEE/MR. MAHESH SINGHEE 26, P.K. TAGORE STREET, MAIN BUILDING KOLKATA-WEST BENGAL-INDIA Phone- 9830177331 Pincode : 700006 Email : mahesh@ratans.com		
	GI WIRE & FLAT	9	R041	RABI ENGINEERING WORKS PVT. LTD.	MR. TAPAN KUMAR SEN/MR. SIDDHARTHA 327, R.N. GUHA ROAD, DUM DUM, KOLKATA WEST BENGAL-INDIA Phone- 9748753002 Pincode : 700028 Email : rabiengineering@gmail.com		
	GI WIRE & FLAT	10	R200	RAJASTHAN METAL SMELTING CO.	Mr. R. K. Tibrewala D-80, Road No. 7, V.K.I.A., Jaipur-Rajasthan-India Phone- 0141-2332269 Pincode : 302013 Email : info@rmscoindia.com		
	GI WIRE & FLAT	11	S210	SARAL INDUSTRIES	Mr. Y.K. Gupta L-1, L-2, Industrial Area-1 Sultanpur Road Rae Bareli-Uttar Pradesh-India Phone- 0535-2702474 Pincode : 229010 Email : saralindustries@gmail.com		
	GI WIRE & FLAT	12		PARCO Engineers Pvt. Ltd.	401, skyline Epitom Building ,Near to Jolly Gym Khana, Kirol Road , Vidhyavihar, MH 400086 India		
	GI WIRE & FLAT	13	U019	UNITECH FABRICATORS and ENGINEERS PVT LTD	INDRAPRASHTHA APARTMENT 24 , M.B.RAOD , BIRATI KALABAGAN KOLKATA KOLKATA-WEST BENGAL-INDIA Phone- Pincode : 700051 Email : ufepl@vsnl.net;	022 - 26230814	
ES35	INDICATING LAMPS	1	B04	BCH	20/4, MATHURA ROAD, FARIDABAD, HARYANA-121006	0129-4293000	
	INDICATING LAMPS	2	C01	C&S ELECTRIC LTD.	222, OKHLA IND. ESTATE, PH-III, NEW DELHI-110020	6832259,6918834-37	
	INDICATING LAMPS	3	E1050	ESSEN DEINKI	FLAT NO. 502, SKYLINE HOUSE 85, NEHRU PLACE NEW DELHI	011-26217060	
	INDICATING LAMPS	4	E1153	VAISHNO(HOTLINE SWGR.& CONTROL)	G-19, SECTOR - 11, NOIDA - 201301, UTTAR PRADESH, INDIA	8377805157 9818338922	
	INDICATING LAMPS	5	A35	GE-POWER	KAMAK TOWER, 3RD FLOOR, PLOT NO. 12-A, TVK INDUSTRIAL ESTATE, EKKADUTHANGAL, GUINDY, CHENNAI-600032	9818338922	
	INDICATING LAMPS	6	S01	SIEMENS	RC-IN I 5 NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhadauria@siemens.com	
	INDICATING LAMPS	7	S03	SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON-122002	0124-3940400	
JUNCTION BOXES (NON FLAME PROOF)	JUNCTION BOXES (NON FLAME PROOF)	1	J01	JASPER ENGINEERS PVT. LTD.	A-23, SECTOR - 8, NOIDA-201301	0120-4033520/533	
	JUNCTION BOXES (NON FLAME PROOF)	2	EC05	Electro Controls & Devices	M/S ELECTRO CONTROLS & DEVICES, F-41, SITE-C, SURAJPUR INDUSTRIAL AREA GREATER NOIDA, UTTAR PRADESH :201308	Mr. Sanjay Sharma (Chief Promoter) 0120-2569487, 2560100,2560300	
	JUNCTION BOXES (NON FLAME PROOF)	3	SRC01	M/s Shrenik & Co.	39A/3, PANCHRATNA INDUSTRIAL ESTATE, SARKHEJ-BAVLA ROAD, CHANGODAR, AHMEDABAD – 382 213	020-026708100	
	JUNCTION BOXES (NON FLAME PROOF)	4	PME-01	M/s PHOENIX MECANO LTD.,	388 BHARE, TALUKA MULSHI, POST GHOTAWADE, PIRANGOOT, INDUSTRIAL AREA, PUNE-412115	Awasthi(09971119006) Tel: ++91 20 6674 5103, Mobile: +91 90499 95985, Fax: ++91 20 6674 5126	
	JUNCTION BOXES (NON FLAME PROOF)	5	ACE01	Adroit Control Engineers Pvt.Ltd.	M/S ADROIT CONTROL ENGINEERS PVT.LTD. PLOT-3, KRISHNA INDL. AREA, SECTOR-25 FARIDABAD – 121004	011-47600700, 0129-4251400	

ITEM CODE	ITEM/SERVICE DESCR	SL NO.	VENDOR CODE	VENDOR NAME	ADDRESS	PHONE	REMARKS
ES36	JUNCTION BOXES (NON FLAME PROOF)	6	PME-01	M/s PHOENIX MECANO LTD.,	388 BHARE, TALUKA MULSHI, POST GHOTAWADE, PIRANGOOT, INDUSTRIAL AREA, PUNE-412115	Awasthi(09971119006) Tel: ++91 20 6674 5103, Mobile: +91 90499 95985, Fax: ++91 20 6674 5126 contact person : Vishwa bandhu E-mail:d.gupta@pmipl-online.com ;admin@pmipl-	
	JUNCTION BOXES (NON FLAME PROOF)	7	MK01	MIKA ENGINEERS	BRANCH OFFICE : 'D'-101, DHEERAJ HERITAGE RESIDENCY II, SHASTRI NAGAR, SANTACRUZ (W), MUMBAI 400 054.	Director : Mr. Asgar Karimi Email: asgar@mikaengineers.com E-mail : mika@mtnl.net.inTelfax : 022-26610081/82/83/84Tel : 02527-249066/70 Cell : 099230 74373	TYPE-S ONLY
	JUNCTION BOXES (NON FLAME PROOF)	8	PME-01	M/s PHOENIX MECANO LTD.,	388 BHARE, TALUKA MULSHI, POST GHOTAWADE, PIRANGOOT, INDUSTRIAL AREA, PUNE-412115	TEL.- +912066745000 Awasthi(09971119006) Tel: ++91 20 6674 5103, Mobile: +91 90499 95985, Fax: ++91 20 6674 5126 contact person : Vishwa bandhu E-mail:d.gupta@pmipl-online.com ;admin@pmipl-online.com	
	JUNCTION BOXES (NON FLAME PROOF)	9	B05	BAJAJ ELECTRICALS	BAJAJ ELECTRICALS LTD. ENGINEERING & PROJECTS BU (NORTH) 3rd FLOOR, GULMOHARHOUSE, COMMUNITY CENTRE 161/B-4, GAUTAM NAGAR, YUSUF SARAI NEW DELHI – 110049	CONTACT PERSON : Mr. S. SREEMANY. SR. MANAGER (PROJECTS) CONTACT DETAILS : (+91) 9871025705. MAIL ID : srabans@bajajelectricals.com;	
	JUNCTION BOXES (NON FLAME PROOF)	10	A03	AJMERA INDUSTRIES & ENGG. WORKS	AJMERA INDL AND ENGG. WORKS. AJMERA HOUSE, A-61 / KHAIRANE MIDC. , TTC INDL. AREA, NAVI MUMBAI – 400705.	Tel : 022 27620299 / 97 / 96 mail@ajmera.net	
	JUNCTION BOXES (NON FLAME PROOF)	11	SB02	S.B. ELECTRICAL ENGINEERING CORPORATION	03, SARDAR GRIHA BUILDING, LOHAR CHAWAL, MUMBAI-400002	022- 22069831; 022-66637259	
	JUNCTION BOXES (NON FLAME PROOF)	12	RT13	RITTAL INDIA PVT. LTD.	Espire Building ,Level -1 A-41, Mohan Co-Operative Industrial Estate ,Mathura Road, New Delhi -110044	Amit Bansal Phone: 011-42004000, D: 011-42004033 - Mobile: +91 9717772245 - mailto:amit.b@rittal-india.com www.rittal-india.com	
JUNCTION BOXES (NON FLAME PROOF)	13	HP08	HPL ELECTRIC AND POWER LTD.	Works Address: Village Shavella, PO:Jabli, Teh- Kasauli, Dist-Solan, Himachal Pradesh-173209	Mr. Ashwani Kumar mailto:'ashwani@hplindia.com' M:9971127370		
ES45	LIGHTING SWITCH , SOCKET & S/F UNIT	1	F04	ELEXPRO ELECTRICALS PVT/ LTD.	C 1/27 & 37 GIDC KABILPORE NAVSARI-396424	02637-265140, Mr. Jssk kumar	
	LIGHTING SWITCH , SOCKET & S/F UNIT	2	E1012	ANCHOR	STEEL HOUSE, B WING, PLOT NO. 24, MAHAL INDUSTRIAL ESTATE, MAHAKALI CAVES ROAD, NEAR PAPER BOX, ANDHERI (E), MUMBAI, MAHARASHTRA.- 400093	022-30418888.	
	LIGHTING SWITCH , SOCKET & S/F UNIT	3	E1076	KAYCEE	KAYCEE INDUSTRIES LTD., C/O-CMS COMPUTERS LTD., 35A, REAR BLDG., KILOKARI, NEW DELHI-110014	Rajiv Sharma-9312004687	
	LIGHTING SWITCH , SOCKET & S/F UNIT	4	L01	L&T	32, SHIVAJI MARG, P.O. BOX- 6223, NEW DELHI-110015	011-41419554/59	
	LIGHTING SWITCH , SOCKET & S/F UNIT	5	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhadauria@siemens.com	
	LIGHTING SWITCH , SOCKET & S/F UNIT	6	E1068	INDO ASIAN	B-24, PHASE - II , NOIDA - 201305, U.P.	120-3042222	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	8	A35	GE-POWER	KAMAK TOWER, 3RD FLOOR, PLOT NO. 12-A, TVK INDUSTRIAL ESTATE, EKKADUTHANGAL, GUINDY, CHENNAI-600032	044-49681447	

ITEM CODE	ITEM/SERVICE DESCR	SL NO.	VENDOR CODE	VENDOR NAME	ADDRESS	PHONE	REMARKS
ES47	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	9	E1019	ASIATIC	A-58 NARAINA IND. AREA, PHASE-I, NEW DELHI 110028	011 - 25796330, 25796617	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	10	C01	C&S ELECTRIC LTD.	222, OKHLA IND. ESTATE, PH-III, NEW DELHI-110020	011 - 25793021	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	11	E1051	EVERGREEN ENGG. CO.	EVERGREEN ENGG COMPANY WORKS-5, PLOT NO. 9,10,11,12, SURVEY NO. 242, CHINCH PADA, VASAI EAST-401208	(0250) 6458250	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	12	E1143	TECKNIC CONTROLS	703, MADHAVA, BANDRA, KURLA COMPLEX, BANDRA EAST, MUMBAI, MAHARASHTRA 400051	022-42532507/00 022-24451648	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	13	E1053	EX-PROTECTA LIGHTING EQUIPMENT	305-306, GIDC ESTATE, VITHAL UDYOGNAGAR - 388121 DIST. ANAND, GUJARAT 388121 INDIA	02692-237823	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	14	E1206	BALIGA ELECTRICALS	63A,CP RAMASWAMY ROAD, PB NO 6910, CHENNAI-600018	44-24995505,22680990-4	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	15	E1210	ENPRO ENGG.	NO.995P, DIAMOND PLAZA, 2ND FLOOR, 12TH MAIN ROAD, ANNA NAGAR, CHENNAI-40	044 - 42611526 / 42170338 / 26262716 enproengg@enproengineering.com	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	16	E1132	STERLING SWGR CONTROL PVT.LTD.	P.O. BOX NO. 17023, SORAB HOUSE, 2ND FLOOR, 555, S.B. MARG, DADAR, MUMBAI - 400028, MAHARASHTRA, INDIA	91-22-24222297/24222298/24224236	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	17	F04	ELEXPRO ELECTRICALS PVT/ LTD.	C 1/27 & 37 GIDC KABILPORE NAVSARI-396424	02637-265140, Mr. Jssk kumar	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	18	E1153	VAISHNO(HOTLINE SWGR & CONTROL)	G-19, SECTOR - 11, NOIDA - 201301, UTTAR PRADESH, INDIA	8377805157 9818338922	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	19	J01	JASPER ENGINEERS PVT. LTD.	A-23, SECTOR - 8, NOIDA-201301	0120-4033520/533	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	20	KM1	KMG ATOZ SYSTEMS	C-49, SECTOR-81-NOIDA-201305	120-4207920, 08527897328	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	21	E05	UNILEC ENGINEERS PVT. LTD.	BEHRAMPUR INDUSTRIAL AREA, BEGAMPUR KHATOLA ROAD, GURGAON-122001	0124-4030247,248, 4559700, 9911087173	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	22	B04	BCH	20/4, MATHURA ROAD, FARIDABAD, HARYANA-121006	0129-4293000	
LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	23	E1035	CANDS	J/202, ANSA INDUSTRIAL ESTATE, SAKI VIHAR ROAD, SAKINAKA, ANDHERI (EAST), MUMBAI-72	022-28570858		
LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	24	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhadauria@siemens.com		

ITEM CODE	ITEM/SERVICE DESCR	SL NO.	VENDOR CODE	VENDOR NAME	ADDRESS	PHONE	REMARKS
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	25	S03	SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON-122002	0124-3940400	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	26	E1143	TECKNIC CONTROLS	703, MADHAVA, BANDRA, KURLA COMPLEX, BANDRA EAST, MUMBAI, MAHARASHTRA 400051	022-42532507/00 022-24451648	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	27	E1148	UNITED ELECTRIC	97 UDYOG VIHAR PHASE-I, GURGAON 122015, HARYANA	124 4002970 72	
	LOCAL PUSH BUTTON STATION (NON FLAME PROOF)	28	SRC01	M/s Shrenik & Co.	39A/3, PANCHRATNA INDUSTRIAL ESTATE, SARKHEJ-BAVLA ROAD, CHANGODAR, AHMEDABAD – 382 213		
ES48	LOCAL PUSH BUTTON STATION (FLAME						
ES51	MCB	1	E1088	MDS SWITCHGEAR LTD	314-317SHAH NAHAR ESTATE	011 - 25793021	
	MCB	2	E1068	INDO ASIAN	B-24, PHASE - II , NOIDA - 201305, U.P.	120-3042222	
	MCB	3	S03	SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON-122002	0124-3940400	
	MCB	4	E1120	S&S POWER SWITCHGEAR LTD,	NEW NO. 67, OLD NO. 19, DR. RANGA ROAD, MYLAPORE, CHENNAI - 600004	044 - 24988056, 044 - 24988057, 044 - 24988058	
ES61	SWITCH BOX	1	E1012	ANCHOR	STEEL HOUSE, B WING, PLOT NO. 24, MAHAL INDUSTRIAL ESTATE, MAHAKALI CAVES ROAD, NEAR PAPER BOX, ANDHERI (E), MUMBAI, MAHARASHTRA.- 400093	022-30418888.	
	SWITCH BOX	2	F04	ELEXPRO ELECTRICALS PVT/ LTD.	C 1/27 & 37 GIDC KABILPORE NAVSARI-396424	02637-265140, Mr. Jssk kumar	
	SWITCH BOX	3	B05	BAJAJ ELECTRICALS	BAJAJ ELECTRICALS LTD. ENGINEERING & PROJECTS BU (NORTH) 3rd FLOOR, GULMOHARHOUSE, COMMUNITY CENTRE 161/B-4, GAUTAM NAGAR, YUSUF SARAI NEW DELHI – 110049	CONTACT PERSON : Mr. S. SREEMANY. SR. MANAGER (PROJECTS) CONTACT DETAILS : (+91) 9871025705. MAIL ID : srbans@bajajelectricals.com;	
	SWITCH BOX	4	A03	AJMERA INDUSTRIES & ENGG. WORKS	AJMERA INDL. AND ENGG. WORKS. AJMERA HOUSE, A-61 / KHAIRANE MIDC. , TTC INDL. AREA, NAVI MUMBAI – 400705.	Tel : 022 27620299 / 97 / 96 mail@ajmerna.net	
	SWITCH BOX	5	SB02	S.B. ELECTRICAL ENGINEERING CORPORATION	03, SARDAR GRIHA BUILDING, LOHAR CHAWAL, MUMBAI-400002	022- 22069831; 022-66637259	
ES62	TERMINAL BLOCKS	1	C01	WAGO-CONTROLS	C 27, GREATER NOIDA, SECTOR 58, C BLOCK, SECTOR 58, NOIDA, UTTAR PRADESH 201307	0120-2580409/10	
	TERMINAL BLOCKS	2	E1038	CONNECT WELL	309A/4, 3RD FLOOR, KALKAJI, OKHLA IND AREA PH-2, GOVINDPURI, NEW DELHI, DL 110019	9811881085 09871419996 011-65908877	
	TERMINAL BLOCKS	3	E1047	ELMEX CONTROLS PVT. LTD.	12,G.I.D.C.ESTATE,MUKARPURA ROAD,VADODARA-390010	9374631074	
	TERMINAL BLOCKS	4	E1050	ESSEN DEINKI	FLAT NO. 502, SKYLINE HOUSE 85, NEHRU PLACE NEW DELHI	011-26217060	
	TERMINAL BLOCKS	5	E1142	TECHNOPLAST	OPP.I.M.INTER COLLEGE, BEGUM SARAI KHURD ROAD, AMROHA - 244221, U.P.	PH:- 05922 264006 CELL NO:- 9012676000, 9319520799, 9319582467	
	TERMINAL BLOCKS	6	PME-01	M/s PHOENIX MECANO LTD.,	388 BHARE, TALUKA MULSHI, POST GHOTAWADE, PIRANGOOT, INDUSTRIAL AREA, PUNE-412115	TEL.- +912066745000 Awasthi(09971119006) Tel: ++91 20 6674 5103, Mobile: +91 90499 95985, Fax: ++91 20 6674 5126 contact person : Vishwa bandhu E-mail:d.gupta@pmipl-online.com ;admin@pmipl-online.com	
	TERMINAL BLOCKS	7	E1050	ESSEN DEINKI	FLAT NO. 502, SKYLINE HOUSE 85, NEHRU PLACE NEW DELHI	011-26217060	
ES64	TIMERS - ELECTRONIC	1	E1050	ESSEN DEINKI	FLAT NO. 502, SKYLINE HOUSE 85, NEHRU PLACE NEW DELHI	011-26217060	

ITEM CODE	ITEM/SERVICE DESCR	SL NO.	VENDOR CODE	VENDOR NAME	ADDRESS	PHONE	REMARKS
ES74	AMMETER	1	E1009	AUTOMATIC ELECTRIC LTD.	96 AB LONAVLA INDUSTRIAL ESTATE NANGARGAON, LONAVLA-410401	Phone : +91 2114323665 Fax : +91 2114273482	
	AMMETER	2	R01	RISHABH INST.PVT LTD	RISHABH INSTRUMENTS PVT. LTD. F-31, MIDC, SATPUR NASHIK - 422007 MAHARASHTRA INDIA	marketing@rishabh.co.in 91-253 2202202/203 Fax: 91 253 2351064	
	AMMETER	3	NK09	M/s Newtek Electricals	M-90, M.I.D.C, Waluj, Aurangabad 431136, Maharashtra, India	Tel/Fax: +91 240 2551555 E-mail: mkt.north@newtekelectricals.com, sales@newtekelectricals.com Mr Sanjeev Aggarwal (9958897890)	
ES75	VOLTMETER	1	E1009	AUTOMATIC ELECTRIC LTD.	96 AB LONAVLA INDUSTRIAL ESTATE NANGARGAON, LONAVLA-410401	Phone : +91 2114323665 Fax : +91 2114273482	
	VOLTMETER	2	R01	RISHABH INST.PVT LTD	RISHABH INSTRUMENTS PVT. LTD. F-31, MIDC, SATPUR NASHIK - 422007 MAHARASHTRA INDIA	marketing@rishabh.co.in 91-253 2202202/203 Fax: 91 253 2351064	
	VOLTMETER	3	NK09	M/s Newtek Electricals	M-90, M.I.D.C, Waluj, Aurangabad 431136, Maharashtra, India	Tel/Fax: +91 240 2551555 E-mail: mkt.north@newtekelectricals.com, sales@newtekelectricals.com Mr Sanjeev Aggarwal (9958897890)	
ES79	RCCB	1	C01	C&S ELECTRIC LTD.	222, OKHLA IND. ESTATE, PH-III, NEW DELHI-110020	011-3088 7520-29	
	RCCB	2	S03	SCHNEIDER ELECTRIC INDIA PVT. LTD.	9TH FLOOR, BLDG. NO. 10, TOWER-C, DLF CYBER CITY, PH-II, GURGAON-122002	0124-3940400	
	RCCB	3	S01	SIEMENS	RC-IN I S NR DEL AREA, JIL BUILDING, TOWER-B, PLOT NO. 78, SECTOR 18, GURGAON-122015, INDIA	0124-2842000, 9873424331 amit.bhadauria@siemens.com	
	RCCB	4	A35	GE-POWER	KAMAK TOWER, 3RD FLOOR, PLOT NO. 12-A, TVK INDUSTRIAL ESTATE, EKKADUTHANGAL, GUINDY, CHENNAI-600032	044-49681447	
	RCCB	5	L01	L&T	32, SHIVAJI MARG, P.O. BOX- 6223, NEW DELHI-110015	011-41419554/59	
	RCCB	6	C02	CROMPTON GREAVES	RAIL TRANSPORTATION SYSTEMS,VANDANA BUILDING, 11, TOLSTOY MARG, TOLSTOY MARG, NEW DELHI, DL 110001	011 3041 6300	
ES80	PVC WIRES				BIS APPROVED MAKE		
ES86	PHOTOELECTRIC SWIT				REPUTED MAKE		

989739/2022/PS-PEM-EL

**TECHNICAL SPECIFICATION FOR
HIGH MAST**

SPECIFICATION NO. PE-SS-999-558-E004

VOLUME II

SECTION II

REVISION: 0

DATE: 21.05.2022

SHEET 1 OF 8

SECTION-II**GENERAL REQUIREMENTS**



TECHNICAL SPECIFICATION FOR HIGH MAST

SPECIFICATION NO. PE-SS-999-558-E004

VOLUME II

SECTION II

REVISION: 0

DATE: 21.05.2022

SHEET 2 OF 8

1.0 INTENT OF SPECIFICATION

- 1.1 The requirement of this specification shall be fully complied with.
- 1.2 The “design” shall broadly cover the selection of components, materials, sizes etc. for the equipment of supply in vendor’s scope. Complete responsibility of establishing the correctness of equipment design rests with the vendor.
- 1.3 It is not the intent to specify here all the details of design and manufacture. However, the equipment shall conform in all respects to high standards of design, engineering and workmanship, and shall be capable of performing the required duties in a manner acceptable to Engineer / purchaser, who will interpret the meaning of drawings and specifications and shall be entitled to reject any work or material, which in his judgement is not in full accordance herewith.
- 1.4 Make of all equipment and components shall be as per sub vendor list (Section I) and subjected to the approval of BHEL/BHEL’s customer without any commercial implication.

2.0 CODES & STANDARDS

- 2.1 The material shall comply with all currently applicable safety codes and statutory regulations of India as well of the locality where the material is to be installed.
- 2.2 The material, construction, manufacture, inspection and testing shall conform to the latest revisions of standards as specified in Datasheet-A.
- 2.3 In case of conflict between the applicable reference standard and this specification, stringent requirement shall govern.

3 DESIGN REQUIREMENTS

3.1 LIGHTING MASTS

- 3.1.1 Lighting mast shall be continuously tapered polygonal cross section hot dip galvanised. The Mast shall be of height as specified in Datasheet-A with lantern carriage to enable raising/lowering for ease of maintenance, including the Head Frame, Double Drum Winch, continuous stainless steel wire rope, in built power tool, aviation warning light, lightning protection arrangement along with necessary power cables within the mast. The mast shall be delivered only in three sections & shall be joined together by slip stressed fit method without carrying out any welding or bolting of joints at site. Lantern carriage shall be suitable for mounting flood light fixtures, numbers as specified in Datasheet-A (fixture details shall be provided during detailed engineering). Carriage shall be provided with JB type M to facilitate interconnection to lighting fixtures.
- 3.1.2 Permissible design parameters should be according to relevant standard. The deflection under the maximum wind pressure of 150 kg/sq.m shall not exceed 1 in 360. The Mast together with the fixtures shall be capable of withstanding the appropriate wind loads as per IS: 875 Part III.
- 3.1.3 The Mast shall be fabricated from special steel plates conforming to BS-EN10-025 and folded to form a polygonal section.



TECHNICAL SPECIFICATION FOR HIGH MAST

SPECIFICATION NO. PE-SS-999-558-E004

VOLUME II

SECTION II

REVISION: 0

DATE: 21.05.2022

SHEET 3 OF 8

- 3.1.4 A suitable winch arrangement shall be provided to lower & raise the Lantern Carriage Assembly. Winch shall be of completely self-sustaining type without the need for brake shoe, springs or clutches. The min. working load shall not be less than 750 kg. The winch drum shall be grooved to ensure perfect seat for stable and tidy rope lay with no chances for slippage. Winch shall be operated by an internally mounted three phase motor/power tool with necessary reduction gear mechanism. A handle for manual operation of winch shall also be provided. An adequate door opening shall be provided at the base of the Mast.
- 3.1.5 All surfaces (inside & outside) of steel sections, members and hardware used shall be hot dip galvanised as per applicable standard.
- 3.1.6 Necessary mounting facilities for mounting of luminaires and control gear boxes shall be provided at top platform. This shall include provision of holes in the fixing bracket for movable fixing plate. Adequate number of movable plates affixed to the bracket shall also be provided. Size of movable plates and the position of holes shall match with the luminaire fixing arrangement.
- 3.1.7 Mast shall be provided with 1200mm long air termination for the lightning protection (at top of the mast as per IS-2309). Suitable arrangement for connection of down conductor (not in the scope of vendor) shall be provided. Provision of earth connection of GI strip shall also be kept at a height of one metre from the ground (conductor size shall be informed during detailed engineering).
- 3.1.8 Types of Lighting Masts
- a) LM20 - Lighting Mast with 20 m height
 - b) LM25 - Lighting Mast with 25 m height
 - c) LM30 - Lighting Mast with 30 m height

4 COMPONENTS OF MAST FEEDER PANEL

Lighting mast shall be complete in all respect and shall be provided with feeder panel complete with power/control circuit along with 63A TPN MCB, contactors, timers, photocell, MCB's, motor protections (O/L & single phase), start/stop PB with indication lamps. Feeder pillar shall have provision of receiving 4Cx16 sq mm. cable. All necessary cables between feeder panel & JB-M and between JB-M & fixtures are also included in the scope of mast and same shall be of proven design.

4.1 SWITCH-FUSE UNITS

- 4.1.1 These units shall preferably comprise of switches having integral fuses, called composite units. Alternatively, combination units of separate switch and fuse may also be acceptable.
- 4.1.2 These units shall be provided for general purpose i.e. incoming or outgoing units.
- 4.1.3 The units shall be of the air break air insulated type and designed to ensure safety to operating personnel.
- 4.1.4 Composite units shall have integral fuses i.e. fuse carrier with fuse link (fuse link forming the moving contact). The design shall ensure that the moving contact is not live when switch is open i.e. in OFF position, so as to facilitate removal of fuse.



TECHNICAL SPECIFICATION FOR HIGH MAST

SPECIFICATION NO. PE-SS-999-558-E004

VOLUME II

SECTION II

REVISION: 0

DATE: 21.05.2022

SHEET 4 OF 8

- 4.1.5 The switch shall be capable making and carrying the system prospective fault current, but limited in magnitude and duration by the cut off characteristics of the largest HRC fuse link that may be fitted to that unit.
- 4.1.6 The fixed contact shall be so shrouded that maintenance of the unit can be carried out in safety with the busbars live.
- 4.1.7 Where one isolating switch is used as the incoming device, the incoming side fixed contacts shall be shrouded to ensure that maintenance can be carried out with the remote fuse and switch closed.
- 4.1.8 Composite switch-fuse or the combination of switch and fuse shall meet the requirements of its components as follows:
- 4.1.8.1 Isolating Switch
- Switches shall be air-break, quick make, and quick break heavy duty type conforming to applicable standard.
 - All switches shall have visible ON / OFF position indication and shall be padlockable in any (ON / OFF) position.
 - Switches shall be door interlocked such that it shall not be possible to gain access to inside the unit unless the isolating switch is in OFF position.
 - The switches shall be suitable for independent manual operation.
 - The switch contacts shall be of silver alloy or silver plated copper and springs of non-corrosive material.
 - Inter-phase barriers shall be provided to prevent possibilities of phase to phase fault in the switch. The switch shall also be shrouded from all sides to prevent access to live parts on the switch after opening the unit door. The barriers and shrouding shall extend upto the height of switch to fully enclose both side terminals of the device. The arrangement shall permit easy maintenance.
- 4.1.8.2 High Rupturing Capacity (HRC) Fuses
- The fuse serving as the short-circuit protective device in isolating fuse-switch units shall be of HRC cartridge, current limiting and plug-in non-deteriorating type.
 - The fuse carriers shall be easily withdrawable for replacement of fuse. Insulated fuse pullers shall be provided where fuses are not mounted in insulating carriers to remove and replace fuses in live conditions.
 - Fuses shall preferably be fitted with a device to indicate operation (i.e. when the fuse has blown).
 - Live terminals of fuse bases shall be shrouded to prevent contact with personnel where fuse links are not mounted in carriers and are directly plugged into the fuse base. Inter-phase barriers extending throughout the length of the fuse base shall be provided to prevent inter-phase short circuit. They shall be shrouded from all sides to prevent accidental contact.
 - Fuse carriers and bases shall be of good quality moulded insulating material. Porcelain fuse bases and carriers will not be accepted.
 - The rating and characteristics of fuse links shall be chosen appropriately for short circuit protection of circuits down stream.



TECHNICAL SPECIFICATION FOR HIGH MAST

SPECIFICATION NO. PE-SS-999-558-E004

VOLUME II

SECTION II

REVISION: 0

DATE: 21.05.2022

SHEET 5 OF 8

4.2 CONTACTORS

- 4.2.1 Contactors shall be of the air break type fitted with arc shields.
- 4.2.2 The operating coil shall be suitable for satisfactory operation in the range of 85% - 110% of nominal voltage, as specified in Datasheet-A. The coil shall be tropicalized having insulation not less than class 'E'.
- 4.2.3 Electrically independent auxiliary contacts not less than 2NO + 2NC for interlocking and indication shall be fitted to individual power contactor.
- 4.2.4 All springs shall be made out of a corrosion proof material.

4.3 MINIATURE CIRCUIT BREAKERS

- 4.3.1 The use of miniature circuit breakers (MCBs) combining thermal overload and magnetic short circuit protection shall be application for the outgoing circuits.
- 4.3.2 MCBs shall have suitable rating but not less than 20A, 10kA.
- 4.3.3 MCBs shall be suitable for housing in the panel and for connection of copper link bus bar at the incoming and copper lugs at the outgoing ends.
- 4.3.4 The terminals of MCB and ON / OFF positions shall be clearly and indelibly marked.

4.4 SELECTOR SWITCHES

- 4.4.1 The rating and other features of the switches shall be suitable for the application. The number of positions and the number of contacts required for each switch shall be as required.
- 4.4.2 Selector switches shall be stay put type, provided with properly designated escutcheon plates clearly marked to show operating position.
- 4.4.3 Terminals carrying potential above 120 Volts shall be shrouded to prevent accidental contact with personnel.
- 4.4.4 Ammeter selector switches shall have make before break contacts.
- 4.4.5 The switches shall be suitable for semi-flush mounting with the front plate and operating handle projecting out. All connection to the switches shall be from the back.
- 4.4.6 The arrangement for front mounting of these devices shall be such as to make them reasonably dust free so as not to interfere with normal operation.

4.5 INDICATION LAMPS

- 4.5.1 Indication lamps shall be complete with lens covers and holders.
- 4.5.2 Each lamp shall be fitted with a durable resistance integrally wired in series with the lamp. Alternatively, lamps with built in transformers are acceptable.
- 4.5.3 The lamp cover (lens) shall be translucent of appropriate colour.
- 4.5.4 Bulbs and covers shall be interchangeable, easily replaceable from the front without the need for any special means.
- 4.5.5 Terminals having potential above 120V shall be shrouded to prevent contact with personnel.

4.6 PUSH BUTTONS

- 4.6.1 Push button shall be heavy duty, flush mounted suitable for the application.



TECHNICAL SPECIFICATION FOR HIGH MAST

SPECIFICATION NO. PE-SS-999-558-E004

VOLUME II

SECTION II

REVISION: 0

DATE: 21.05.2022

SHEET 6 OF 8

- 4.6.2 Push button shall be provided with integral escutcheon plates marked with its function identified as per schemes.
- 4.6.3 Colour shall be appropriate to the function.
- 4.6.4 Minimum number of contacts shall be 1 NO + 1 NC or as per the requirements of control scheme.
- 4.7 TERMINALS
- 4.7.1 Terminals shall be stud type of copper material.
- 4.7.2 Terminals shall be provided with transparent cover(s).
- 4.7.3 Separate terminals shall be available for each termination of loop-in and loop-out power connections.
- 4.7.4 Terminals shall be suitable for ring type copper cable lugs of size depending upon the circuit rating.
- 4.8 CABLE GLANDS
- 4.8.1 Whether specifically mentioned or not, cable glands of suitable sizes shall be supplied along with each equipment for power and control cables.
- 4.8.2 Rubber components used in the gland shall be of neoprene.
- 4.8.3 Name / trade name of manufacturer, type no. and applicable range of outer diameter of cable shall be engraved / indelibly printed on the cable gland.
- 4.9 CABLE LUGS
- 4.9.1 All equipment shall be supplied with the power and control cable lugs of suitable size, whether specifically mentioned or not.
- 4.9.2 Name / trade name and size of lug shall be engraved/ indelibly printed on each cable lug.
- 4.10 TIMERS
- 4.10.1 Time Switch
- Time switch shall be suitable for automatic switching ON and OFF of street lighting / flood lighting circuits.
 - Time switch have 00 - 24 hrs clock base.
 - Time switch shall indicate actual time and shall permit accurate time setting.
 - Time switch shall be rugged, independent of normal fluctuations of voltage / frequency and free from maintenance.
 - Contact rating, clock accuracy, rated voltage rating and frequency rating of timer shall be suitable to its application.
 - Time switch shall be provided with Ni-Cd battery.
 - Time switch shall be suitable for mounting inside the panel.
- 4.10.2 On Delay Timer



TECHNICAL SPECIFICATION FOR HIGH MAST

SPECIFICATION NO. PE-SS-999-558-E004

VOLUME II

SECTION II

REVISION: 0

DATE: 21.05.2022

SHEET 7 OF 8

- (a) Timer shall be fully static and suitable for operation on normal frequency and system voltage.
- (b) Timer shall have high setting accuracy, high repeat accuracy, low reset time and low power consumption.
- (c) Timer shall have the time setting range of 24 - 240 seconds, unless mentioned otherwise in Data Sheet A.
- (d) Timer shall be suitable for mounting inside the panel.

4.11 CIRCUIT DIAGRAM / DIRECTORY PLATE

- 4.11.1 A diagram is to be prepared for fixing to the inside cover of every mast feeder panel giving details of the points controlled by each circuit.

4.12 SURFACE TREATMENT FOR PANEL

- 4.12.1 All metal parts and the surfaces (exterior & interior) of equipment shall be degreased by dipping in hot alkaline solution and rubbed with wire brush to remove oil & scale from them & then rinsed in water. Alternatively, they may be shot / sand blasted.
- 4.12.2 Parts shall be pickled by dipping in hydrochloric acid tank to remove the rust from the surfaces formed during storage of sheets & then rinsed to remove traces of the acid. The cleaning and pretreatment of all metal parts shall be as per applicable standard.
- 4.12.3 The surfaces to be painted shall then be prepared by phosphatizing to protect them from further rusting & to create a good bond with the paint. The pretreatment shall conform to the applicable standard.
- 4.12.4 All parts shall then be subjected to a coat of red oxide primer paint.
- 4.12.5 All inside and outside surfaces of panel shall be spray painted with synthetic enamel of the shade as per Data Sheet A.
- 4.12.6 Electrostatic or powder coating painting shall be done as specified in Data Sheet A.
- 4.12.7 Wherever possible, finished parts shall be coated with peelable compound by spraying method to protect the finished product from scratches, grease, dirty and oily spots during handling and transportation.

5 PACKING

- 5.1 Loose items shall be packed, duly labelled in a box and sealed properly to avoid damage during transportation. Packing list shall be pasted on every box, listing the contents of the box.

6.0 INSPECTION & TESTING

- 6.1 Bidder shall confirm compliance with the BHEL Standard Quality Plan (PE-QP-999-558-E004) without any deviations. At contract stage, the successful bidder shall submit the same QP for BHEL/ ultimate customer's approval. In case bidder has reference QP agreed with ultimate customer, same can be submitted for specific project after award of contract for BHEL/ ultimate customer's approval. There shall be no commercial implication to BHEL on account of any changes in QP during contract stage.



TECHNICAL SPECIFICATION FOR HIGH MAST

SPECIFICATION NO. PE-SS-999-558-E004

VOLUME II

SECTION II

REVISION: 0

DATE: 21.05.2022

SHEET 8 OF 8

- 6.2 All the components and completely assembled equipment shall be tested as per the latest edition of standards. Any charges for these shall be deemed to be included in equipment price.
- 6.3 All the specified tests shall be carried out to verify the rating and performance of the equipment.
- 6.4 All manufacturing processes viz. machining, sheet forming, electroplating, wire routing, cleating & crimping, assembly, surface preparation shall conform to good manufacturing practices.
- 7.0 TOOLS AND TACKLE
- 7.1 Tools & tackle which are essential to facilitate assembly, adjustments, erection, maintenance & dismantling of equipment shall be provided as part of equipment supplied.
- 7.2 The above tools shall be supplied along with the initial consignment of equipment so as to be available prior to erection but may not be used for erection purposes.
- 7.3 Vendor shall also submit a list of recommended tools and tackle. Acceptance of these tools and tackle shall not be a binding on the purchaser.
- 7.4 Schedule of tools & tackle shall be filled up by bidder.
- 8.0 SPARES
- 8.1 Mandatory spares (if applicable) are indicated in BOQ-cum-price schedule.
- 8.2 Erection & commissioning spares are included in the bidder's scope of supply. Bidder to furnish list of E&C spares in the relevant schedules of the Bid Form and Price Schedules.

ITEM (MATERIAL CLASS, GRADE, RATING, RANGE, SIZE ETC.) LIGHTING MAST WITH RASIE & LOWER TYPE LANTERN CARRIAGE		STANDARD QUALITY PLAN CONFORMING TO CODE : NTPC TECHNICAL SPECIFICATION										Q.P. NO: 0000-999-QOEL-S-52	REVIEWED BY	APPROVED BY		
Sl No	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD			Date 31-01-13	Rev No.: 0	V. Talwar Small Making	REMARKS	
					6M	6CN			M	C	N					
1	Steel for mast shaft / gussets / Head Frame	Chemical composition: Mechanical properties	Major	Chemical & Mechanical	Sample as per manfr std	Same as 6 M	NTPC Specification / Manufacturer's plant standard	NTPC Specification / Manufacturer's plant standard	TC	9						
		Thickness	Major	Measurement	Sample as per manfr std	Same as 6 M	NTPC Specification / Manufacturer's plant standard	NTPC Specification / Manufacturer's plant standard	TC							
2	High Mast continuously tapered, polygonal cross section	Dimension, Cross Section	Major	Measurement	100%		NTPC approved Drawing	NTPC approved Drawing	Internal Inspection Report							
		Longitudinal weld	Critical	Visual	Sample as per manfr std	Same as 6 M	NTPC Appd Drg/Data sheet / Manufacturer Standard	Single defect free longitudinal weld	Internal Inspection Report							
		Galvanisation checks (Thickness, uniformity of coating & adhesion)	Major	Measurement	Sample as per manfr std	Same as 6 M	NTPC approved Datasheet/ Drawing: IS 2629/IS 2633/ ISO : 1461	NTPC approved Datasheet/ Drawing	Internal Inspection Report							
3	Luminaire Casing, Head Frame, Pulley Block	Dimension, Matd of inner Lining with PVC sleeve	Major	Measurement / verify	100%	Same as 6 M	NTPC approved Drawing	NTPC approved Drawing	Internal Inspection Report							
		Weld Joint	Major	Visual	Sample as per manfr std	Same as 6 M	Manufacturer Standard	No abnormality	Internal Inspection Report							
		Galvanisation checks (Thickness, uniformity of coating & adhesion), if applicable	Major	Measurement	Sample as per manfr std	Same as 6 M	NTPC approved Datasheet/ Drawing: IS 2629/IS 2633/ ISO : 1461	NTPC approved Datasheet/ Drawing	Internal Inspection Report							
		Luminaire mounting / fixing dimensions check	critical	Measurement	100%	Same as 6 M	NTPC approved Drg./ Manufacturer drg.	NTPC approved Drg./ Manufacturer drg.	Internal Inspection Report							
		Pulley Block, Material & Smooth Rotation	critical	Verify	100%	Same as 6 N	NTPC approved Drg./ Manufacturer drg.	NTPC approved Drg./ Manufacturer drg.	TC							

LEGEND * RECORDS, IDENTIFIED WITH "TICK" SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M : MANUFACTURER/SUB SUPPLIER; C: MAIN CONTRACTOR
N: NTPC; P: PERFORM, W: WITNESS, V: VERIFICATION, CHP: CUSTOMER HOLD POINT BY NTPC SHALL BE IDENTIFIED UNDER AGENCY COLUMN "N" AS "W"
FORMAT NO. QS-01-QAI-P-10 / F 3 R0
ENGG DIV QA&I

ITEM (MATERIAL, CLASS, GRADE, RATING, RANGE, SOZE ETC.) LIGHTING MAST WITH RASIE & LOWER TYPE LANTERN CARRIAGE		STANDARD QUALITY PLAN CONFORMING TO CODE : NTPC TECHNICAL SPECIFICATION										REVIEWER	APPROVED			
Sl No	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD			AGENCY	REMARKS			
					6M	6CN			M	C	N					
4	Reining / Lowering Mechanism	3 Type & rating check on Winch, power tool & torque limiter	4 Major	5 Visual	100%	Same as 6 M	7 NTPC approved Databases/ Drg.	8 NTPC approved Databases/ Drg.	9 Internal Inspection Report	✓	D*	✓	P	✓	V	CoC of motor manufacturer shall be submitted for NTPC's review
		b Load testing on winches	Major	Mechanical	Sample as per mntf std	Same as 6 M	Manufacturer Standard	Manufacturer Standard	TC	✓	P	✓	P	✓	V	
		c Functional testing on Load limiter	Major	Mechanical	Sample as per mntf std	Same as 6 M	Manufacturer Standard	Manufacturer Standard	TC	✓	P	✓	P	✓	V	
		d Check - manual & motorised	Major	Mechanical	100%	Same as 6 M	Manufacturer Standard	Manufacturer Standard	Internal Inspection Report	✓	P	✓	P	✓	V	
5	Stainless Steel Wire Rope	a Mechanical Properties including breaking load	Major	Mechanical	Sample as per mntf std	Same as 6 M	NTPC approved Databases/ Drawing	NTPC approved Databases/ Drawing	TC	✓	P	✓	P	✓	V	
		b Continuous rope without any joint	Major	Visual	100%	Same as 6 M	NTPC approved Databases/ Drawing	NTPC approved Databases/ Drawing	Internal Inspection Report	✓	P	✓	P	✓	V	
		c Dimension & Construction	Major	Measurement	100%	Same as 6 M	NTPC approved Databases/ Drawing	NTPC approved Databases/ Drawing	Internal Inspection Report	✓	P	✓	P	✓	V	
6	Foundation Bolt	a Mechanical Properties	Major	Mechanical	Sample as per mntf std	Same as 6 M	NTPC approved Databases/ Drawing / IS 1367	NTPC approved Databases/ Drawing / IS 1367	TC	✓	P	✓	P	✓	V	
		b Dimensions	Major	Measurement	Sample as per mntf std	Same as 6 M	NTPC approved Drg./ Manufacturer drg.	NTPC approved Drg./ Manufacturer drg.	TC	✓	P	✓	P	✓	V	
7	Power Cable & Connector	a Size, rating & Type	Major	Visual	100%	-	NTPC approved Databases/ Drg	NTPC approved Databases/ Drg	Internal Inspection Report	✓	P	✓	P	✓	V	
		b Routine Test Reports (for cable only)	Major	Visual	100%	-	IS 9968	IS 9968	TC	✓	P	✓	P	✓	V	BIS mark cable

LEGEND * RECORDS, IDENTIFIED WITH "TICK" SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M : MANUFACTURER/SUB SUPPLIER; C: MAIN CONTRACTOR
N: NTPC; P: PERFORM; W: WITNESS; V: VERIFICATION. CHP; CUSTOMER HOLD POINT BY NTPC SHALL BE IDENTIFIED UNDER AGENCY COLUMN "N" AS "W"
FORMAT NO. QS-01-QAL-P-10 / P 3 R0
EVGG DIV QA&I

ITEM (MATERIAL, CLASS, GRADE, RATING, RANGE, SIZE ETC.) LIGHTING MAST WITH KASIE & LOWER TYPE LANTERN CARRIAGE		STANDARD QUALITY PLAN CONFORMING TO CODE : NTPC TECHNICAL SPECIFICATION										REVIEWER'S APPROVAL BY				
S/No	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD				REMARKS	APPROVED BY		
					4M	6CN			9	D*	**	10			X	
1			4	5			7	8								
8	Feeder Pillar Panel	a	Pre-treatment chemical records verification	critical	Verification	Sample as per mntf. std	Chemical regime supplier recommendations & Manufacturer Standard	Chemical regime supplier recommendations & Manufacturer Standard	Internal Inspection Report	✓	V	V	V	V	D.E. Dicit	Records of chemical concentration of pre-treatment tanks to be verified
		b	Dimensions, Degree of protection check by paper insertion method	Major	Measurement & Test	100%	NTPC approved datasheet / Drg.	NTPC approved datasheet / Drg.	Internal Inspection Report	✓	P	V	V	V	V. Tabbar	
		c	Powder coating shade & thickness check	Major	Mechanical check	Random sample	NTPC approved datasheet / Drg.	NTPC approved datasheet / Drg.	Internal Inspection Report	✓	P	V	V	V	Small Malani	
		d	Powder coating adhesion check by cross hatch method using packing tape	Major	Mechanical check	Random sample	NTPC approved datasheet / Drg.	NTPC approved datasheet / Drg.	Internal Inspection Report	✓	P	V	V	V		
		e	Make, type & rating check of components mounted in feeder pillar	Major	Visual	100%	NTPC approved datasheet / Drg. / IS	NTPC approved datasheet / Drg.	Internal Inspection Report	✓	P	V	V	V		
		f	HV & IR check	Major	Electrical	100%	NTPC approved datasheet / Drg. / IS	NTPC approved datasheet / Drg.	Internal Inspection Report	✓	P	V	V	V		
		g	Functional testing	Major	Electrical	100%	NTPC approved datasheet / Drg. / IS	NTPC approved datasheet / Drg.	Internal Inspection Report	✓	P	V	V	V		
		h	Make, type & rating check	critical	Visual	100%	NTPC approved datasheet / Drg.	NTPC approved datasheet / Drg.	Internal Inspection Report	✓	P	V	V	V		Make shall be initiated in the proj-pbg specific endorsement sheet and shall be subject to NTPC approval
9	Luminaires with controller and Aviation Obstruction light	a	Make, type & rating check	critical	Visual	100%	NTPC approved datasheet / Drg.	NTPC approved datasheet / Drg.	Internal Inspection Report	✓	P	V	V		Make shall be initiated in the proj-pbg specific endorsement sheet and shall be subject to NTPC approval	
		b	Outline & batch Test Certificates	Major	Verification	100%	NTPC approved datasheet / Drg. / IS	NTPC approved datasheet / Drg.	TC	✓	V	V	V		Mtr's CoC for aviation obstruction light	

LEGEND * RECORDS, IDENTIFIED WITH "TICK" SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M - MANUFACTURER/SUB SUPPLIER; C- MAIN CONTRACTOR
N: NTPC; P: PERFORM, W: WITNESS, V: VERIFICATION, CHP: CUSTOMER HOLD POINT BY NTPC SHALL BE IDENTIFIED UNDER AGENCY COLUMN "N" AS "W"
FORMAT NO. QS-01-QAI-P-10 / F 3 R0
ENGG DIV QA&I

ITEM (MATERIAL, CLASS, GRADE, RATING, RANGE, SIZE ETC.) LIGHTING MAST WITH BASE & LOWER TYPE LANTERN CARRIAGE		STANDARD QUALITY PLAN										REVIEWER'S APPROVED BY		
		CONFORMING TO CODE : NTPC TECHNICAL SPECIFICATION										D.K. Didi V. Talwar Small Material 1 Contractor		
Sl No	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY				REMARKS
					6 M	6 C/N				M	C	I	N	
1	10 Final test		4	5	100%	100%	NTPC approved Drawing	NTPC approved Drawing	Internal Inspection Report	P	W	W		
a	High Mast Structure Cross-section and Dimension Measurement	Major		Measurement	100%	100%	NTPC approved Drawing	NTPC approved Drawing	Internal Inspection Report	P	W	W		
b	Galvanizing Coating Thickness, uniformity of coating & adhesion	Major		Measurement	1 sample per shaft	1 sample per shaft	NTPC approved Datasheet / Drawing IS 2633/ ISO : 1461	NTPC approved Datasheet	Internal Inspection Report	P	W	W		
c	Feeder Pillar Dimensions check	Major		Measurement	100%	Same as 6 M	NTPC approved datasheet / Drg.	NTPC approved datasheet / Drg.	Internal Inspection Report	P	W	W		
d	Feeder Pillar Powder coating shade & thickness check	Major		Mechanical check	Random sample	Same as 6 M	NTPC approved datasheet / Drg.	NTPC approved datasheet / Drg.	Internal Inspection Report	P	W	W		
e	Feeder Pillar powder coating adhesion check by cross hatch method using packing tape	Major		Mechanical check	Random sample	Same as 6 M	NTPC approved datasheet / Drg.	NTPC approved datasheet / Drg.	Internal Inspection Report	P	W	W		
f	Feeder Pillar make, type & rating check of components mounted in feeder pillar	Major		Visual	100%	Same as 6 M	NTPC approved datasheet / Drg. / IS	NTPC approved datasheet / Drg.	Internal Inspection Report	P	W	W		Unless of Bolt shall be indicated in the proj-pkg specific endorsement sheet and shall be subject to NTPC approval
g	Feeder Pillar Functional Test	Major		Electrical	100%	100%	NTPC Specification/ Approved Drawing	NTPC Specification/ Approved Drawing	Internal Inspection Report	P	W	W		
h	Feeder Pillar IR test before & after HV	Major		Electrical	100%	100%	As per IS 8623	As per IS 8624	Internal Inspection Report	P	W	W		
i	Feeder Pillar HV test	Major		Measurement	100%	100%	As per IS 8623	As per IS 8624	Internal Inspection Report	P	W	W		
j	Completeness of lighting mast components	Major		Visual	100%	100%	NTPC Specification/ Approved Drawing	NTPC Specification/ Approved Drawing	Internal Inspection Report	P	W	W		

LEGEND * RECORDS, IDENTIFIED WITH "TICK" SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M : MANUFACTURER/SUB SUPPLIER; C: MAIN CONTRACTOR
N: NTPC; P: PERFORM, W: WITNESS, V: VERIFICATION, CHP: CUSTOMER HOLD POINT BY NTPC SHALL BE IDENTIFIED UNDER AGENCY COLUMN "N" AS "W"
ENGG DIV QA&I