REQUEST FOR QUOTATION

MMI:PU:RF:003

BHARAT HEAVY ELECTRICALS LIMITED
Electronics Division
PB No. 2606, Mysore Road Bangalore - 560026
INDIA

RFQ NUMBER:
SGKNIC0020

RFQ DATE :
09.JUN.2021

Due Date
24.JUN.2021
Time: 13:00 HRS

PURCHASE FILE COPY

(for all correspondence)
Purchase Executive : SUYASH KUMAR
Phone : 080 26998395
Fax :
E-mail: suyash@bhel.in

This tender is meant for PA System of Yadadri Project.

The tender is being floated on NIC Portal
https://eprocurebhel.co.in/nicgep/app.

Sl No.	Description	Qty	Unit	Delivery qty	Delivery Date
1	PR0120004213 IP PA System IP Public Address System Test Certificate	1	ST	1	As per SCC
2	PR0500004219 Mandatory spares for IP PA system Mandatory spares for IP PA system Test Certificate	1	ST	1	As per SCC

Total Number of Items - 2

i). This is only RFQ not an order.
ii). In all correspondence quote RFQ No. & due date.
iii). In Quotation BHEL material code / RFQ Sl. No. should be mentioned clearly.
iv). Quotation should remain valid for a minimum peiod of 90 days from due date.
v). In case of non-receipt of Quotation or regret letter for 3 consecutive RFQs you are liable to be removed from our vendors list.
vi). All Prices should be written in words and numbers.

For and On behalf of BHEL.

ಭಾರತ್ ಹೆವಿ ಎಲೆಕ್ಟ್ರಿಕಲ್ಸ್ ಲಿಮಿಟೆಡ್
भारत हेवी इलेक्ट्रिकल्स लिमिटेड
Bharat Heavy Electricals Ltd.,
(A Government of India undertaking)
Electronics Division
PB 2606 , Mysore Road Bangalore , 560026 INDIA

CE: PR: 003- Rev 02

SPECIAL COMMERCIAL CONDITIONS OF CONTRACT

Reference is brought to BHEL's Instructions to Bidders (Document Ref: CE: PR: 001- Rev 03) and General Commercial Conditions for Contract (Document Ref: CE: PR: 002- Rev 02).

These two documents along with Special Conditions of Contract annexed to this RFQ will form an integral part of the contract as and when the RFQ culminates into a Purchase Order / Contract.

RFQ No. : **SGKNIC0020**

RFQ Date : **DTD:** 09.06.2021

RFQ Due Date : **DTD. 24.06.2021**

Customer/Project : **YADADRI TPS-5x800 MW**

Scope Description : **PUBLIC ADDRES SYSTEM**

Kindly submit your quotation as ~~single~~/**two**/~~three-part bid~~ (Pre-Qualification Criteria & Techno-Commercial bid-1 st part & Price bid-2 nd Part) in E-Procurement System portal: https://eprocurebhel.co.in within the Due Date before _13.00__ hours IST and note that tenders will be opened on the same day at 13.30 hours IST.

Purchase Executives: Clarifications with regard to the tender shall be addressed to purchase officers whose e-mail IDs are given below:

suyash@bhel.in or padmanabha@bhel.in

Splitting of tendered quantity to MSE vendors: The tendered quantity **will not be split** to MSE vendor/s subject to submission of relevant document/s by vendors. Refer clause:I of Instructions to Bidders for conditions applicable and for information on document/s to be submitted. *(Strike off, if not applicable)*

Destination: For Indigenous scope of supply, items are to be directly despatched to BHEL site office/stores located at Yadadri TPP in Telengana state, India. Detailed Consignee details will be issued by BHEL along with Despatch Clearance.

Terms of Delivery:

- **Indigenous scope of supply:** Ex-works, ___<indicate station of dispatch>_____ (including Packing & Forwarding charges but excluding Taxes). Freight up to site and Taxes has to be quoted separately.

- ~~**Imported scope of supply:**~~

  ~~F.C.A. (for air consignments) < indicate international port of dispatch > / C.I.F. (for sea consignments) < ICD, Bangalore > (including Packing, Forwarding, Handling, Ancillary charges like processing of Sight Draft/ Letter of Credit, negotiation of bank documents, Export declaration, Country of Origin etc.).~~

~~Kindly indicate the approximate weight of the total imported consignment, which is required for calculating air-freight charges:_____~~

Under-mentioned details shall be provided against indigenous supplies & services:

a. GSTIN of place of supply : _____

b. HSN (Harmonized System of Nomenclature) code : _____
Applicable tax and Rate : _____&_____

c. GSTIN of place of supply of service :

d. SAC (Service Accounting Code) :_____
Applicable tax and Rate : _____&_____

I. Bidders to mandatorily provide confirmation/compliance for the under-mentioned terms:

SL NO.	TERMS	BHEL ACCEPTABLE TERM	BIDDER'S CONFIRMATION	REMARKS,if any
01	**Reverse Auction (RA)** ~~*(strike off, if not applicable)*~~	BHEL shall be resorting to Reverse Auction (Guidelines as available on http://www.bhel.com/index.php/vender) for this tender. RA shall be conducted among all the techno-commercially qualified bidders. Price bids of all techno-commercially qualified bidders shall be opened and same shall be considered as initial bids of bidders in RA. In case any bidder(s) do(es) not participate in online Reverse Auction, their sealed envelope price bid along with applicable loading, if any, shall be considered for ranking.	AGREE	
02	~~**Parting of license for imported raw materials**~~ ~~*(strike off, if not applicable)*~~	~~In case of projects where Basic Custom Duty is NIL and vendor is importing any raw materials / components for the enquired item, same are eligible for Zero Customs duty. As per EXIM policy, BHEL will part the import licence with the vendors to obtain import licence by themselves and custom clear the raw materials/ components by availing zero customs duty. Hence, please furnish list of raw materials / components to be imported by you with Quantity and CIF value (for which BHEL has to share import licence). The benefit due to the above shall be passed on to BHEL and confirmed in the quotation.~~ ~~If there are no imported raw materials/ components, same shall be confirmed in the offer.~~	~~AGREE~~ ~~CIF value …….~~ ~~Yes, benefit passed-on to BHEL in the priced quotation.~~ ~~(or)~~ ~~We confirm that there are no imported components~~	
03	**Delivery Period**	Within 16 weeks from the date of issue of Manufacturing clearance along with approved document. Delay in contractual delivery will attract Penalty as per GCC Clause no.:04.b.	AGREE …… weeks	

04	**Terms of Payment at the time of material supply** *(strike off, whichever is not applicable)*	Refer Clause "F" of Instructions to Bidder for BHEL standard Payment terms and loading factors applicable for non-compliance against payment terms: **Indigenous Scope :** a)**Supply with Service(s)***Refer the annexure on E&C b)~~Supply only~~ ~~**Imported Scope :**~~ ~~c)Supply with Service(s)~~ ~~d)Supply only~~ ~~**High Sea sales :**~~ ~~e)Supply with Service(s)~~ ~~f)Supply only~~ **Spares :** b) and/or d)/f) depending upon the scope	AGREE	
05	**Declaration of local content :** The 'Class-I local supplier'/'Class-II local supplier' shall be required to indicate percentage of local content and provide self-certification that the item offered meets the local content requirement for 'Class-I local supplier'/'Class-II local supplier', as the case may be.	'Local content' means the amount of value added in India which shall, unless otherwise prescribed by the Nodal Ministry, be the total value of the item procured (excluding net domestic indirect taxes) minus the value of imported content in the item (including all customs duties) as a proportion of the total value, in percent. {'Class-I local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, has local content equal to or more than 50%, as defined under Public procurement order no.P-45021/2/2017-PP (BE-II) dt: 16.09.2020. 'Class-II local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, has local content more than 20% but less than 50%, as defined under Public procurement order no.P-45021/2/2017-PP (BE-II) dt: 16.09.2020. In the event of any Nodal Ministry prescribing higher or lower margin of purchase preference and/or higher or lower percentage of local content in respect of this procurement, same shall be applicable}.' (Refer Clause 'A' Sl. No. 12 of Instructions to Bidders).	Percentage of local content : _____% Details of the Location(s) at which the local value addition is made : _____ (Format is attached. CA Certificate is required against this).	
06	Declaration as a compliance to Rule 144(xi) of GFR, 2017 amendment dt 23.07.2020 issued by Ministry of Finance, Govt. of India.	The below declaration is to be submitted on Company Letter head duly signed and sealed by authorised signatory, for ascertaining the eligibility of offer in the tender. "I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I certify that our firm is not from such a country or, if from such a country, has been registered with the Competent Authority. I hereby certify that our firm fulfils all		

		requirements in this regard and is eligible to be considered." (Refer Clause 'A' Sl. No. 13 of Instructions to Bidders).		

II. **Bidder to note that Deviations shall not be permitted for the below mentioned terms and are deemed to be complied. In case of non-compliance/deviation, offer shall be liable for rejection:**

(1) **Submission of documents post PO viz., drawings /data sheet etc. as indicated in Cl: 04 of GCC:** Within 02 weeks from the date of receipt of Purchase Order. Delay in submission of complete set of specified documents in NIT, will attract Penalty as per GCC Clause no.:04.a.

(2) **Validity:** The offer will be valid for a period of 90 days from the date of part-I bid opening and in case of Negotiation/ Counter-offer/RA, price validity will apply afresh for a period of 60 days from the date of according final price by bidder (or) up to original validity period, whichever is later.

(3) **Warranty:** 36 months from the date of dispatch of goods (or) 30 months from the date of commissioning, whichever is earlier.

(4) **Performance Bank Guarantee (PBG):** PBG will be applicable for a period of 36 months from the date of dispatch of goods + claim period of 03 months, for a value equal to 10% of the basic value of purchase order. It shall however be noted that PBG is not applicable against supply of Mandatory Spares.

Refer Clause "H" of Instructions to Bidders. Also note that PBG should be in the format specified in Annexure VII of ITB and no deviation to this format will be allowed.

Note: In case PBG is not furnished, the 10% basic amount will be withheld from the supply invoice. This withheld amount will be paid either against submission of supplementary invoice & Original PBG (or) against supplementary invoice without PBG after expiry of Warranty period.

(5) **Despatch Documents:** Complete set of despatch documents (original + 1 photocopy set) as per Purchase Order shall be forwarded to Purchase Executive/BHEL directly. Depending upon the project/customer demands, Despatch documents may include one (or) more documents from the following:

Invoice (01 original and 01 copy with original sign & seal / digitally signed invoice), Lorry Receipt (L/R), Packing List, NIL Short-Shipment Certificate, insurance intimation letter, E-way bill, original Performance Bank Guarantee (directly from issuing bank to BHEL),Country of Origin certificate and original POD (Proof of Delivery) on L/R.

The precise list of despatch documents needed for the project will be specified in the Purchase Order.

One set of Invoice, Packing List, Lorry Receipt (or) AWB/BOL shall be e-mailed immediately to BHEL-EDN at the time of despatch.

Note: Detailed Packing List should indicate package-wise content details and also Net & Gross weight of each package.

(6) **Freight Charges (for indigenous scope of supply):** Freight charges shall be to vendor's account. Bidder to quote reasonable Freight charges along with applicable tax, in price bid.

(7) **Evaluation criteria to determine L1 bidder**:

(a) ~~Item wise evaluation of tendered item~~.

(or)

(b) Items will not be split on item-wise lowest offer. Evaluation of the lowest bidder will be done as a combined package basis which will include supply as well E&C.

(8) **Erection and Commissioning charges:**

E&C charges quoted by bidder should be minimum 20% of their quoted price for Main item supply. In case, the quoted total E&C value is found to less than 20% of the main supply value, BHEL shall uniformly reduce the differential amount from main item supply cost and apportion the amount in E&C charges. Refer the Annexure on E&C.

As E&C of the entire system is to be quoted in a lot and the E&C of the complete system is likely to be spread over a period of 4-5 years from deliver of the item, the payment for E&C can be claimed in parts progressively as explained in annexure on E&C.

~~After completion of E&C of first 15% of total supplied quantity of call station with loudspeaker, bidder can claim E&C payment of 15% of their total E&C charges as per purchase order. Subsequently, with E&C of each further 15% of call station with loudspeaker, bidder can claim 15% of E&C charger as per purchase order. However, if 25% quantity of call station with loudspeaker are commissioned, only 15% of E&C charges as per PO can be paid and remaining 15% will be paid after commissioning of 30% of quantity of call station with loudspeaker. E&C charge payment can not be claimed if less than 15% of quantity of call station with loudspeaker are commissioned. After bidder has claimed 15% E&C charges for 6 parts ie 90% of total E&C charges, bidder will be paid last 10% after E&C of entire system along with other required services like performance, training etc as mentioned in the technical specification~~.

~~**Erection Supervision and Commissioning charges:** *(strike off, if not applicable)*~~

~~In case the quoted total Erection Supervision & Commissioning value is less than _____ of the main supply value, BHEL shall evaluate Bidders Price deducting differential amount from main supply price and apportioning towards Erection Supervision & Commissioning charges.~~

~~Refer Sl. no. 'h' under Clause 'F' of Instructions to Bidders for Payment terms of Erection Supervision & Commissioning charges.~~

(10) ~~**Comprehensive Annual Maintenance Contract:** *(strike off, if not applicable)*~~

~~CAMC will be applicable for a period of __ years from the date of expiry of warranty period (or) from the date of completion of commissioning of equipment, whichever is later.~~

~~In case the quoted total CAMC value is less than __% of the main supply value, BHEL shall evaluate Bidders Price deducting differential amount from main supply price and apportioning towards CAMC charges. It shall also be noted that year-wise quote/ charges for CAMC should be either uniform (or) in increasing trend.~~

~~Refer Sl. no. 'i' under Clause 'F' of Instructions to Bidders for Payment terms of CAMC.~~

(11) Integrity Pact:

Execution of Integrity Pact is applicable for this tender (Refer clause "K" of Instructions to Bidders). The IP as enclosed with the tender is to be submitted (duly signed by authorized signatory who signs in the offer) along with techno-commercial bid (Part-I, in case of two/three part bid). Only those Bidders who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this Pact would be a preliminary qualification.

12. Non local vendors may also partcipate. However perference will be given to MSME & MII as govt govt. rules.

Contact details of Purchase Executive. - Mobile/ e-mail.

With this, we hereby confirm that all the terms & conditions as indicated in Instructions to Bidders (Document Ref: CE: PR: 001- Rev 03) & General Commercial Conditions for Contract (Document Ref: CE: PR: 002- Rev 02) are accepted without any deviation.

Vendor's Signature with Seal

Annexure to Tender SGKNIC0020 – For Service (E&C) Payment

BHEL EDN Tender Ref: SGKNIC0020
Scope: LOI by EDN Bangalore, PO by PSSR (Power Sector Southern Region)
Break-up: The cost of Erection and Commissioning should be 20% of Main Supply (Further it will be spelt as 100% here).
Projected time of E&C: 4 to 5 years from dispatch (Page-7 of Technical Spec)

Payment Terms:

A. Supply (Main + M. Spares) – PO by EDN Bangalore – Refer attached ITB, GCC & SCC.

B. E&C – 20% of Main Supply (Power Sector – PSSR scope)

PSSR Payment term break-up for above "20% of Main Supply":

1) Eighty Percent (80%) Payment on Pro-rata basis for work completed, as per approved billing schedule, shall be released by Site Authorities on submission of protocols, duly signed by Site/Owner.

2) Ten percent (10%) of the total value shall be release by site authorities/ region on successful commissioning of the completed/package.

3) Ten percent (10%) of the total value shall be release by site authorities/ region on successful completed of PG/Demonstration test(s) and handing over system/package to customer/BHEL as applicable.

Note:- If the PG/Demonstration Test and Handing over system/package to customer/BHEL, as applicable is not conducted upto 24 months from E&C completion for reasons not attributable to vendor then last 10% payment under Clause will be released against Bank Guarantee of an equivalent amount, valid for 12 months, provided other conditions of applicable clauses are complied with. The Bank Guarantee will be addition to Contract Performance Bank Guarantee for applicable % (as per EDN) of the contract value (Excluding taxes, duties and Freight).

Penalty / Liquidated Damages Clause for Services: LD on service portion (demonstration charges, PG test, installation check, supervision of erection / commissioning charges, engineering charges, O&M, study, calibration charges, type test, AMC, etc.) where delivery for services are defined separately in the NIT. LD shall be applicable @ ½ percent and applicable GST thereon, of the total service portion contract value excluding GST per week or part thereof. However, total LD (main supply and services) shall be limiting to 10% of cumulative total contract value (main supply +services) excluding GST.

<u>On Bidder Letter Head</u>

Date:

To,

M/s Bharat Heavy Electricals Ltd.
Electronics Division, Mysore Road,'
Bangalore – 560026

Sub: Model Clause / Certificate as per clause 9 (a) of Revised Public Procurement (Preference to Make in India Order, 2017 of DPIIT dated 13.06.2020.

Ref: BHEL Tender / RFQ / NIT Number ……

I (authorized signatory for M/s …….) a 'Class-I Local Supplier' / 'Class-II Local Supplier' at the time of tender, bidding or solicitation hereby confirm that the item meets the Local Content requirement for 'Class-I Local Supplier' / 'Class-II Local Supplier' (Tick appropriate option & cut the other one) and the Local Content percentage is ……..

The address is as below, where the local content / value addition is made:

[Factory Address]

For M/s ……

Authorized Signatory
(with company seal & Name)

<u>On Bidder Letter Head</u>

Date:

To,

M/s Bharat Heavy Electricals Ltd.
Electronics Division, Mysore Road,'
Bangalore – 560026

Sub: Model Clause / Certificate as per Annex-III (Tenders) of Restrictions Under Rule 144 (xi) of the General Financial Rules (GFRs) 2017, Dated 23.07.2020.

Ref: BHEL Tender / RFQ / NIT Number ……

I (authorized signatory for M/s …….) have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India , we certify that this bidder M/s ……..[Vendor Name & address] is not from such a country or , if from such a country , has been registered with the competent authority . We hereby certify that we fulfill all requirements in this regard and is eligible to be considered [attach evidence of valid registration certificate with competent authority].

For M/s ……

Authorized Signatory
(with company seal & Name)

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भारत हेवी इलेक्ट्रिकल्स लिमिटेड
Bharat Heavy Electricals Ltd.,
(A Government of India undertaking)
Electronics Division
PB 2606 , Mysore Road Bangalore , 560026 INDIA

CE: PR: 002- Rev 02

GENERAL COMMERCIAL CONDITIONS FOR CONTRACT

These 'General Commercial Conditions for Contract for Purchase' herein after referred to as GCC apply to all enquiries, tenders, requests for quotations, orders, contracts and agreements concerning the supply of goods and the rendering of related services (hereinafter referred to as "deliveries") to Bharat Heavy Electricals Limited and any of its units, regions or divisions (hereinafter referred to as "BHEL" or the Purchaser) or its projects/ customers.

Any deviations from or additions to these GCC require BHEL's express written consent. The general terms of business or sale of the vendor shall not apply to BHEL. Acceptance, receipt of shipments or services or effecting payment shall not mean that the general terms of business or sale of the vendor have been accepted.

Orders, agreements and amendments thereto shall be binding if made or confirmed by BHEL in writing. Only the Purchasing department of BHEL is authorized to issue the Purchase Order or any amendment thereof.

Definitions: Throughout these conditions and in the specifications, the following terms shall have the meanings assigned to them, unless the subject matter or the context requires otherwise.

a) 'The Purchaser' means Bharat Heavy Electricals Limited, Electronics division, Mysore road, Bangalore 560 026, a Unit of Bharat Heavy Electricals Limited (A Govt. of India Undertaking) incorporated under the Companies Act having its registered office at BHEL House, Siri Fort, New Delhi-110049, India and shall be deemed to include its successors and assigns. It may also be referred to as BHEL.
b) 'The vendor' means the person, firm, company or organization on whom the Purchase Order is placed and shall be deemed to include the vendor's successors, representative heirs, executors and administrator as the case may be. It may also be referred to as Seller, Contractor or Supplier.
c) 'Contract' shall mean and include the Purchase Order incorporating various agreements, viz. tender/ RFQ, offer, letter of intent/acceptance/ award, the General Conditions of Contract and Special Conditions of Contract for Purchase, Specifications, Inspection/ Quality Plan, Schedule of Prices and Quantities, Drawings, if any enclosed or to be provided by BHEL or his authorized nominee and the samples or patterns if any to be provided under the provisions of the contract.
d) 'Parties to the Contract' shall mean the 'The Vendor' and the Purchaser as named in the main body of the Purchase Order.

Order of Precedence:

In case of any inconsistency or contradiction between any of the documents, the order of precedence shall be Purchase Order, LOI / LOA, Special Conditions of Contract and General Conditions of Contract for commercial conditions; and specific agreement on technical conditions, RFQ/offer and specification for Technical Conditions.

Interpretation:

In the contract, except where the context requires otherwise:

a) words indicating one gender include all genders;
b) words indicating the singular also include the plural and words indicating the plural also include the singular;

c) provisions including the word "agree", "agreed" or "agreement" require the agreement to be recorded in writing, and
d) "Written" or "in writing" means hand-written, type-written, printed or electronically made, and resulting in a permanent record.

Applicable Conditions:

1. Price Basis: All prices shall be firm until the purchase order is executed / completed in all respects. No price variations / escalation shall be permitted.

2. Ordering and confirmation of Order:Vendor shall send the order acceptance on their company letter head/ through e-mail within a week from the date of receipt of Purchase Order or such other period as specified/ agreed by BHEL. BHEL reserves the right to revoke the order placed if the order confirmation differs from the original order placed. The acceptance of goods/services/supplies by BHEL as well as payments made in this regard shall not imply acceptance of any deviations.
   The purchase order will be deemed to have been accepted if no communication to the contrary is received within one week (or the time limit as specified/agreed by BHEL) from the date of receipt of the purchase order.

3. Documentation:After receipt of Purchase Order, vendor should submit necessary documents(if & as applicable) like drawings specified, bill of materials, datasheets, catalogues, quality plan, test procedure, type test report , O & M Manuals and/or any other relevant documents as per Specification/Purchase Order, as and when required by BHEL/Customer.
   At any stage within the contract period, the vendor shall notify of any error, fault or other defect found in BHEL's documents /specifications or any other items for reference. If and to the extent that (taking account of cost and time) any vendor exercising due care would have discovered the error, fault or other defect when examining the documents/specifications before submitting the tender, the time for completion shall not be extended. However if errors, omissions, ambiguities, inconsistencies, inadequacies or other defects are found in the vendor's documents, they shall be corrected at his cost, notwithstanding any consent or approval.

4. Penalty:
   a. For delay in documentation: In the event of delay in submission of complete set of specified documents ((like drawings, bill of materials, datasheets, catalogues, quality plan etc. as called in tender specifications including soft copies wherever applicable) in required sets beyond two(02) weeks (or as agreed/indicated in the SCC/Purchase Order) from the date of receipt of Purchase Order(by email), penalty at 0.5% (half percent) per week or part thereof, limited to a maximum of 5% (five percent) of the basic material value of the Purchase Order will be applicable.

      Penalty for delayed documentation if applicable, shall be deducted at the time of first supply payment. If penalty is applicable for duration of less than a week, penalty @ 0.5% (half percent) of the basic material value will be deducted. GST as applicable will be recovered along with penalty amount.

   b. For delay in delivery: In the event of delay in agreed contractual delivery as per Purchase Order, penalty @ 0.5 % (half percent) per week or part thereof but limited to a max of 10% (ten percent) value of undelivered portion (basic material cost) will be applicable. Delivery will commence from the date of issue of Manufacturing clearance along with approved document. The date for which Inspection call is issued by vendor along with test certificates / test reports /Certificate of Conformance / calibration reports, as proof of completion of manufacturing will be treated as date of deemed delivery for penalty calculation. In the absence of furnishing such document indicated above as proof of completion of manufacturing along with inspection call, actual date of inspection will be considered as date of deemed delivery and BHEL will not be responsible for delay in actual date of inspection.

Penalty for delayed delivery if applicable, shall be deducted at the time of first supply payment. If penalty is applicable for duration of less than a week, penalty @ 0.5% (half percent) of the basic material value will be deducted. GST as applicable will be recovered along with penalty amount.

5. Contract variations (Increase or decrease in the scope of supply): BHEL may vary the contracted scope as per requirements at site. If vendor is of the opinion that the variation has an effect on the agreed price or delivery period, BHEL shall be informed of this immediately in writing along with technical details. Where unit rates are available in the Contract, the same shall be the basis for such additional work. Vendor shall not perform additional work before BHEL has issued written instructions/ amendment to the Purchase Order to that effect. The work which the vendor should have or could have anticipated in terms of delivering the service(s) and functionality (i.e.) as described in this agreement, or which is considered to be the result of an attributable error on the vendor's part, shall not be considered additional work.

6. Inspection: Prior written notice of at least 10 days shall be given along with internal test certificates/COC and applicable test certificates. Materials will be inspected by BHEL-EDN-QS/CQS or BHEL nominated Third Party Inspection Agency (TPIA) or BHEL authorized Inspection Agency or Customer / Consultant or jointly by BHEL & Customer / consultant. All tests have to be conducted as applicable in line with approved Quality plan or QA Checklist or Purchase specification and original reports shall be furnished to BHEL-EDN, Bangalore for verification/acceptance for issue of dispatch clearance. BHEL reserves the right for conducting repeat test, if required.
   All costs related to inspections & re-inspections shall be borne by vendor. Whether the Contract provides for tests on the premises of the vendor or any of his Sub-contractor/s, vendor shall be responsible to provide such assistance, labour, materials, electricity, fuels, stores, apparatus, instruments as may be required and as may be reasonably demanded to carry out such tests efficiently. Cost of any type test or such other special tests shall be borne by BHEL only if specifically agreed to in the purchase order.

7. Transit Insurance: Transit insurance coverage between vendor's works and project site shall be to the account of BHEL, unless specifically agreed otherwise. However, vendor shall send intimation directly to insurance agency (as mentioned in dispatch instructions issued by BHEL) through fax/courier/e-mail, immediately on dispatch of goods for covering insurance. A copy of such intimation sent by vendor to insurance agency shall be given to BHEL along with dispatch documents. Dispatch documents will be treated as incomplete without such intimation copy. BHEL shall not be responsible for sending intimations to insurance agency on behalf of the vendor.

8. Mode of dispatch:
   Indigenous Scope: By road on Door Delivery Consignee Copy attached basis through your approved transporter (unless otherwise indicated in Dispatch Instructions), only on receipt of Despatch Clearance from BHEL.
   Imported Scope: By Air/Sea through BHEL approved Freight Forwarder/supplier approved Consolidator respectively as per agreed contractual terms, only on receipt of Dispatch Clearance from BHEL.

9. Changes in Statutory levies:
   If any rates of Tax are increased or decreased, a new Tax is introduced, an existing Tax is abolished, or any change in interpretation or application of any Tax occurs in the course of the execution of Contract, which was or will be assessed on the bidder in connection with performance of the Contract, an equitable adjustment of the Contract Price shall be made to fully take into account any such change by addition to the Contract Price or deduction there from, as the case may be. However, these adjustments would be restricted to direct transactions between BHEL and the bidder /agent of foreign bidder (if applicable). These adjustments shall not be applicable on procurement of raw materials, intermediary components etc. by the bidder /agent.

10. Availing duty/tax exemption benefits by bidder, wherever applicable: BHEL shall issue the required Certificate/s, as per relevant policies of the Govt. of India, to facilitate the bidders to avail any such benefits under the Contract. In case of failure of the bidders to receive the benefits partly or fully from the Govt. of India and/or in case of any delay in receipt of such benefits, BHEL shall neither be liable nor responsible in any manner whatsoever.

11. Taxes against sub-vendor dispatches: All taxes/levies, as applicable in respect of all components, equipments and material to be despatched directly from the sub-vendor's works to Site irrespective of the fact whether such taxes and levies are assessable and chargeable on Vendor or the BHEL, shall be to the vendor's account and no separate claim in this regard will be entertained by BHEL.

12. High Sea Sales (HSS): Customs clearance of the consignment landed on Indian Sea/Air ports will be done by BHEL based on the original HSS documents provided by vendors.
    Any delay in submission of complete/correct HSS documents to BHEL may incur demurrage charges. All demurrage charges on account of incomplete /incorrect HSS documents submission by vendor will be to vendor's account and all such charges will be recovered from any of the available vendor bills with BHEL.

13. Packaging and dispatch:The Seller shall package the goods safely and carefully and pack them suitably in all respects considering the peculiarity of the material for normal safe transport by Sea/ Air / Rail/ Road to its destination suitably protected against loss, damage, corrosion in transit and the effect of tropical salt laden atmosphere. The packages shall be provided with fixtures/ hooks and sling marks as may be required for easy and safe handling. If any consignment needs special handling instruction, the same shall be clearly marked with standard symbols / instructions. Hazardous material should be notified as such and their packing, transportation and other protection must conform to relevant regulations.
    The packing, shipping, storage and processing of the goods must comply with the prevailing legislation and regulations concerning safety, the environment and working conditions. Any Imported/Physical Exports items packed with raw/ solid wood packing material should be treated as per ISPM – 15 (fumigation) and accompanied by Phytosanitory/ Fumigation certificate. If safety information sheets (MSDS – Material Safety Data Sheet) exist for an item or the packaging, vendor must provide this information without fail along with the consignment.
    Each package must be marked with Consignee name, Purchase order number, Package number, Gross weight and net weight, dimensions (LxBxH) and Seller's name. Packing list of goods inside each package with PO item number and quantity must also be fixed securely outside the box to indicate the contents of each box. Total number of packages in the consignment must also be indicated in the packing list.
    Separate packing & identification of items should be as follows.
    1. Main Scope - All items must be tagged with part no. & item description.
    2. Commissioning accessories/spares - All items must be tagged with part no. & item description.
    3. Mandatory spares - All items must be tagged with part no. & item description.
    Nevertheless, vendor shall adhere to dispatch & packing instructions issued by BHEL at the time of dispatch.

14. Assignment of Rights & Obligations; Subcontracting: Vendor is not permitted to subcontract the delivery or any part thereof to third party or to assign the rights and obligations resulting from this agreement in whole or in part to third parties without prior written permission from BHEL. Any permission or approval given by the BHEL shall, however, not absolve the vendor of the responsibility of his obligations under the Contract.

15. Progress report: Vendor shall render such report as to the progress of work and in such form as may be called for by the concerned purchase officer from time to time. The submission and acceptance of such reports shall not prejudice the rights of BHEL in any manner.

16. Non-disclosure and Information Obligations: Vendor shall provide with all necessary information pertaining to the goods as it could be of importance to BHEL. Vendor shall not reveal any specified confidential information that may be divulged by BHEL to Vendor's employees not involved with the tender/ contract & its execution and delivery or to third parties, unless BHEL has agreed to this in writing beforehand. Vendor shall not be entitled to use the BHEL name in advertisements and other commercial publications without prior written permission from BHEL.

17. Cancellation /Termination of contract: BHEL shall have the right to completely or partially terminate the agreement by means of written notice to that effect. Termination of the Contract, for whatever reason, shall be without prejudice to the rights of the parties accrued under the Contract up to the time of termination.
    BHEL shall have the right to cancel/foreclose the Order/ Contract, wholly or in part, in case it is constrained to do so on account of any decline, diminution, curtailment or stoppage of the business.

18. Risk Purchase Clause: In case of failure of supplier, BHEL at its discretion may make purchase of the materials / services not supplied / rendered in time at the RISK & COST of the supplier. Under such situation, the supplier who fails to supply the goods in time shall be wholly liable to make good to BHEL any loss due to risk purchase.
    In case of items demanding services at site like erection and commissioning, vendor should send his servicemen/representatives within 7 days from the service call. In case a vendor fails to attend to the service call, BHEL at its discretion may also make arrangements to attend such service by other parties at the **RISK & COST** of the supplier. Under such situation the supplier who fails to attend the service shall be wholly liable to make good to BHEL any loss due to risk purchase/service including additional handling charges due to the change.

19. Shortages: In the event of shortage on receipt of goods and/or on opening of packages at site, all such shortages, caused by supplier's act or omission, shall be made good at free of cost within a reasonable time that BHEL may allow from such intimation.
    Transit Damages: In the event of receipt of goods in damaged condition or having found them so upon opening of packages at site, supplier shall make good of all such damages within a reasonable time from such intimation by BHEL. In case BHEL raises an insurance claim, the cost of material limited to insurance settled amount less handling charges will be reimbursed to supplier.

20. Remedial work: Notwithstanding any previous test or certification, BHEL may instruct the vendor to remove and replace materials/goods or remove and re-execute works/services which are not in accordance with the purchase order. Similarly BHEL may ask the vendor to supply materials or to execute any services which are urgently required for any safety reasons, whether arising out of or because of an accident, unforeseeable event or otherwise. In such an event, Vendor shall provide such services within a reasonable time as specified by BHEL.

21. Indemnity Clause: Vendor shall comply with all applicable safety regulations and take care for the safety of all persons involved. Vendor is fully responsible for the safety of its personnel or that of his subcontractor's men / property, during execution of the Purchase Order and related services. All statutory payments including PF, ESI or other related charges have to be borne by the vendor. Vendor is fully responsible for ensuring that all legal compliances are followed in course of such employment.

22. Product Information, Drawings and Documents: All specified drawings, technical documents or other technical information received by Vendor from BHEL or vice versa shall not, without the consent of the other party, be used for any other purpose than that for which they were provided. They may not, without the consent of the Disclosing party, otherwise be used or copied, reproduced, transmitted or communicated to third parties. All information and data contained in general product documentation, whether in electronic or any other form, are binding only to the extent that they are by reference expressly included in the contract.
    Vendor, as per agreed date/s but not later than the date of delivery, provide free of charge information and drawings which are necessary to permit and enable BHEL to erect, commission, operate and maintain the product. Such information and drawings shall be supplied in as many numbers of copies as may be agreed upon.
    All intellectual properties, including designs, drawings and product information etc. exchanged during the formation and execution of the Contract shall continue to be the property of the disclosing party.

23. Intellectual Property Rights, Licenses: If any Patent, design, Trade mark or any other intellectual property rights apply to the delivery (goods/related service) or accompanying documentation shall be the exclusive property of the Vendor and BHEL shall be entitled to the legal use thereof free of charge by means of a non-exclusive, worldwide, perpetual license. All intellectual property rights that arise during the execution of the Purchase Order/ contract for delivery by vendor and/or by its employees or third parties involved by the vendor for performance of the agreement shall belong to BHEL. Vendor shall perform everything necessary to obtain or establish the above mentioned rights. The Vendor guarantees that the delivery does not infringe on any of the intellectual property rights of third parties. The Vendor shall do everything necessary to obtain or establish the alternate acceptable arrangement pending resolution of any (alleged)

claims by third parties. The Vendor shall indemnify BHEL against any (alleged) claims by third parties in this regard and shall reimburse BHEL for any damages suffered as a result thereof.

24. Force Majeure: Notwithstanding anything contained in the purchase order or any other document relevant thereto, neither party shall be liable for any failure or delay in performance to the extent said failures or delays are caused by the "Act of God" and occurring without its fault or negligence, provided that, force majeure will apply only if the failure to perform could not be avoided by the exercise of due care and vendor doing everything reasonably possible to resume its performance.
    A party affected by an event of force majeure which may include fire, tempest, floods, earthquake, riot, war, damage by aircraft etc., shall give the other party written notice, with full details as soon as possible and in any event not later than seven (7) calendar days of the occurrence of the cause relied upon. If force majeure applies, dates by which performance obligations are scheduled to be met will be extended for a period of time equal to the time lost due to any delay so caused.

    Notwithstanding above provisions, in an event of Force Majeure, BHEL reserves for itself the right to cancel the order/ contract, wholly or partly, in order to meet the overall project schedule and make alternative arrangements for completion of deliveries and other schedules.

25. Warranty:
    Wherever required, and so provided in the specifications/ Purchaser Order, the Seller shall ensure that the goods supplied shall comply with the specifications laid down, for materials, workmanship and performance.
    Unless otherwise specified in SCC, warranty period shall be applicable for a period of 24 months from the date of delivery of goods or 18 months from the date of commissioning of goods, whichever is earlier.
    The warranty period as described above shall apply afresh to replaced, repaired or re-executed parts of a delivery. Unless otherwise specifically provided in the Purchase Order, Vendor's liability shall be co terminus with the expiration of the applicable warranty period.

26. Limitation of Liability: Vendor's liability towards this contract is limited to a maximum of 100% of the contract value and consequential damages are excluded. However the limits of liability will have no effect in cases of criminal negligence or wilful misconduct.
    The total liability of Vendor for all claims arising out of or relating to the performance or breach of the Contract or use of any Products or Services or any order shall not exceed the total Contract price.

27. Liability during warranty: Vendor shall arrange replacement / repair of all the defective materials / services under its obligation during the warranty period. The rejected goods shall be taken away by vendor and replaced / repaired. In the event of the vendor's failure to comply, BHEL may take appropriate action including disposal of rejections and replenishment by any other sources at the cost and risk of the vendor.
    In case, defects attributable to vendor are detected during Warranty period or where the commissioning call is issued within the warranty period, vendor shall be responsible for replacement/ repair of the goods as required by BHEL at vendor's cost even after expiry of warranty period.
    Further if the equipment or any part thereof cannot be used by reason of such defect and/or making good of such defect, the warranty period of the equipment or such part, as the case may be, shall be extended by a period equal to the period during which the equipment or such part cannot be used by BHEL because of any of the aforesaid reasons. Upon correction of the defects in the facilities or any part thereof by repair/replacement, such repair/replacement shall have the warranty period for a period of twelve (12) months from the time such replacement/repair of the equipment or any part thereof has been completed.

28. Liability after warranty period: At the end of the warranty, the Vendor's liability ceases except for latent defects. For the purpose of this clause, latent defects shall be the defects inherently lying within the material or arising out of design deficiency which do not manifest themselves during the warranty Period, but later. The Contractor's liability for latent defects warranty for the equipment including spares shall be limited to a period of six months from the end of the warranty period of the respective equipment including spares or first time commissioning, whichever is later but not later than one (01) year from the date of expiry of warranty period.

29. Compliance with Laws: Vendor shall, in performing the contract, comply with all applicable laws. The vendor shall make all remittances, give all notices, pay all taxes, duties and fees, and obtain all permits, licences and approvals, as required by the laws in relation to the execution and completion of the contract and for remedying of any defects; and the Contractor shall indemnify and hold BHEL harmless against and from the consequences of any failure to do so.

30. Settlement of Disputes:Except as otherwise specifically provided in the Purchase Order, decision of BHEL shall be binding on the vendor with respect to all questions relating to the interpretation or meaning of the terms and conditions and instructions herein before mentioned and as to the completion of supplies/work/services, other questions, claim, right, matter or things whatsoever in any way arising out of or relating to the contract, instructions, orders or these conditions or otherwise concerning the supply or the execution or failure to execute the order, whether arising during the schedule of supply/work or after the completion or abandonment thereof. Any disputes or differences among the parties shall to the extent possible be settled amicably between the parties thereto, failing which the disputed issues shall be settled through arbitration. Vendor shall continue to perform the contract, pending settlement of dispute(s).

31. Arbitration Clause in case of Contract with vendors other than Public Sector Enterprise (PSE) or a Government Department:

    ARBITRATION & CONCILIATION

    The parties shall attempt to settle any disputes or difference arising out of the formation, breach, termination, validity or execution of the Contract; or, the respective rights and liabilities of the parties; or, in relation to interpretation of any provision of the Contract; or, in any manner touching upon the Contract, or in connection with this contract through friendly discussions. In case no amicable settlement can be reached between the parties through such discussions, in respect of any dispute; then, either Party may, by a notice in writing to the other Party refer such dispute or difference to the sole arbitration of an arbitrator appointed by Head of the BHEL–EDN. Such Sole Arbitrator appointed, shall conduct the arbitration in English language.
    The Arbitrator shall pass a reasoned award and the award of the Arbitration shall be final and binding upon the Parties.
    Subject as aforesaid, the provisions of Arbitration and Conciliation Act 1996 (India) or statutory modifications or re-enactments thereof and the rules made thereunder and for the time being in force shall apply to the arbitration proceedings under this clause. The seat of arbitration shall be Bangalore.
    The cost of arbitration shall be borne as decided by the Arbitrator upon him entering the reference.
    Subject to the Arbitration Clause as above, the Courts at Bangalore alone shall have exclusive jurisdiction over any matter arising out of or in connection with this Contract.
    Notwithstanding the existence or any dispute or differences and/or reference for the arbitration, the parties shall proceed with and continue without hindrance the performance of its obligations under this Contract with due diligence and efficiency in a professional manner except where the Contract has been terminated by either Party in terms of this Contract.

    Arbitration Clause in case of Contract with a Public Sector Enterprise (PSE) or a Government Department:

    In the event of any dispute or difference relating to the interpretation and application of the provisions of the Contract, such dispute or difference shall be referred by either party for Arbitration to the Sole Arbitrator in the Department of Public Enterprises to be nominated by the Secretary to the Government of India in-charge of the Department of Public Enterprises. The Arbitration and Conciliation Act, 1996 shall not be applicable to arbitration under this clause. The award of the Arbitrator shall be binding upon the parties to the dispute, provided, however, any Party aggrieved by such Award may make further reference for setting aside or revision of the Award to the Law Secretary, Department of Legal Affairs, Ministry of Law and Justice, Government of India. Upon such reference the dispute shall be decided by the Law Secretary or the Special Secretary or Additional Secretary when so authorized by the Law Secretary, whose decision shall bind the Parties hereto finally and conclusively. The Parties to the dispute will share equally the cost of arbitration as intimated by the Arbitrator.'

32. Applicable Laws and Jurisdiction of Courts: Prevailing Indian laws both substantive and procedural, including modifications thereto, shall govern the Contract. Subject to the conditions as aforesaid, the competent courts in Bangalore alone shall have jurisdiction to consider over any matters touching upon this contract.

33. General Terms: That any non-exercise, forbearance or omission of any of the powers conferred on BHEL and /or any of its authorities will not in any manner constitute waiver of the conditions hereto contained in these presents.
    That the headings used in this agreement are for convenience of reference only.
    That all notices etc., to be given under the Purchase order shall be in writing, type script or printed and if sent by registered post or by courier service to the address given in this document shall be deemed to have been served on the date when in the ordinary course, they would have been delivered to the addressee.

ಭಾರತ್ ಹೆವಿ ಎಲೆಕ್ಟ್ರಿಕಲ್ಸ್ ಲಿಮಿಟೆಡ್
भारत हेवी इलेक्ट्रिकल्स लिमिटेड
Bharat Heavy Electricals Ltd.,
(A Government of India undertaking)
Electronics Division
PB 2606 , Mysore Road Bangalore , 560026 INDIA

CE:PR:001- Rev 03

INSTRUCTIONS TO BIDDERS

Bidder is requested to read the instructions carefully and submit their quotation taking into consideration of all the points:

A. GENERAL INSTRUCTIONS:

1. Any Purchase Order resulting from this enquiry shall be governed by the Instructions to Bidders (document reference: CE: PR: 001 – Rev 03), General Conditions of Contract (document reference: CE: PR: 002 - Rev 02) and Special Conditions of Contract, if any, of the enquiry.
2. Any deviations from or additions to the "General Conditions of Contract"or "Special Conditions of Contract" require BHEL's express written consent. The general terms of business or sale of the bidder shall not apply to this tender.
3. Regret letter (either through post or by mail or by EPS) indicating reasons for not quoting must be submitted without fail, in case of non-participation in this tender. Supplier shall be liable for removal as a registered vendor of BHEL when the supplier fails to quote against four consecutive tender enquiries for the same item or all enquiries in last two years for the same item, whichever is earlier.
4. Procurement directly from the manufacturers is preferred. However, if the OEM/ Principal insist on engaging the services of an agent, such agent shall not be allowed to represent more than one manufacturer/ supplier in the same tender. Moreover, either the agent could bid on behalf of the manufacturer/ supplier or the manufacturer/ supplier could bid directly but not both. Agent/Representative authorized by the OEM/Principal in turn cannot further sub authorize any other firm for submitting the offer or for placement of order.

   In case bids are received from the manufacturer/ supplier and his agent, bid received from the agent shall be ignored.
5. Consultant / firm (and any of its affiliates) shall not be eligible to participate in the tender/s for the related goods for the same project if they were engaged for consultancy services for the same project.
6. If an Indian representative/associate/liaison office quotes on behalf of a foreign based bidder, such representative shall furnish the following documents:
   a. Authorization letter to quote and negotiate on behalf of such foreign-based bidder.
   b. Undertaking from such foreign based bidder that such contract will be honored and executed according to agreed scope of supply and commercial terms and conditions.
   c. Undertaking shall be furnished by the Indian representative stating that the co-ordination and smooth execution of the contract and settlement of shortages/damages/replacement/repair of imported scope till the equipment is commissioned and handed over to customer will be the sole responsibility of the Indian representative/associates/agent/liaison office.
   d. Refer **Annexure I** on "Guidelines for Indian Agents".

7. In case of imported scope of supply, customs clearance & customs duty payment will be to BHEL account after the consignment is received at Indian Airport /Seaport. Bidders must provide all original documents required

for completing the customs clearance along with the shipment. Warehousing charges due to incomplete or missing documentation will be to supplier's account. All offers for imported scope of supply by air, must be made from any of the gateway ports (within the country) indicated **(Refer Annexure II).**

8. The offers of the bidders who are on the banned list and also the offers of the bidders, who engage the services of the banned firms, shall be rejected. The list of the banned firms is available on BHEL website: http://www.bhel.com/vender_registration/vender.php
9. Business dealings with bidders will be suspended if they are found to have indulged in any malpractices/misconduct which are contrary to business ethics like bribery, corruption, fraud, pilferage, cartel formation, submission of fake/false/forged documents, certificates, information to BHEL or if they tamper with tendering procedure affecting the ordering process or fail to execute a contract, or rejection of 3 consecutive supplies or if their firms / works are under strike/lockout for a long period.Bidder may refer "Guidelines for Suspension of Business Dealings with Suppliers/ Contractors" available on www.bhel.com for more details.
10. The bidder along with its associate/collaborators/sub-contractors/sub-vendors/consultants/service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website http://www.bhel.com and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to your notice.
11. Offers to be submitted in English language only.
12. For this procurement, Public procurement (Preference to Make in India), Order 2017 dated 15.06.2017, 28.05.2018, 29.05.2019 & 04.06.2020 and subsequent Orders issued by the respective Nodal Ministry shall be applicable even if issued after issue of this NIT but before finalization of contract/PO against this NIT.

    In the event of any Nodal Ministry prescribing higher or lower percentage of purchase preference and/or local content in respect of this procurement, same shall be applicable.

    Any Indian Bidder intending to avail the benefits shall submit the requisite documents as per the aforesaid orders.

B. <u>GUIDELINES FOR PREPARATION OF OFFER:</u>

1. Quotation shall be submitted in Single Part Bid, Two Part Bid or Three Part Bid, as called for in the tender:

    - **SINGLE PART BID**: Technical and Commercial Bid with prices along with price summary & filled in BHEL Standard Commercial terms and conditions in a single sealed envelope.

    - **TWO PART BID**: Unpriced offer i.e. "Techno-commercial Bid" with filled in BHEL Standard Commercial terms and conditions in a sealed envelope **along with the copy of the "Price Bid"without the prices** should be enclosed in one cover and the cover must be super scribed **"Techno-commercial offer)** and Priced offer i.e. "Price Bid"containing price summary in a separate sealed envelope and must be super scribed **"Price Bid"**.Both these envelopes shall be enclosed in a single sealed envelope superscribed with enquiry number, due date of tender and any other details as called for in the tender document.

    - **THREE PART BID**: Pre-qualification Bid (Part-I), Techno Commercial Bid with filled in BHEL Standard Commercial terms and conditions (Part-II), and Price Bid (Part-III). All three envelopes shall be enclosed in a single sealed envelope superscribed with enquiry number, due date of tender and any other details as called for in the tender document.

    If any of the offers (Part I, Part II or Part III) are not submitted before the due date and time of submission (or) if any part of the offer is incomplete, the entire offer of the bidder is liable for rejection.

2. Supplier shall ensure to superscribe each envelope with RFQ number, RFQ Date, RFQ Due date and time, Item Description and Project clearly & boldly. Also mention on the envelope whether it is "Techno Commercial Bid" or "Price Bid" or "Pre-Qualification Bid". Please ensure complete address, department name and purchase executive name is mentioned on the envelope (before dropping in the tender box or handing over) so that the tender is available in time for bid opening.
3. BHEL standard Commercial Terms and Conditions (duly filled, signed & stamped) must accompany Technical-Commercial offer without fail and should be submitted in original only.

   The above indicated submission of Offers in "sealed envelope/hard copy" as mentioned in points B.1-B.3 is applicable for tenders that are not floated through E-Procurement System (EPS).

4. Validity: Unless otherwise specified in SCC (special commercial conditions of contract), the offer will be valid for a period of 90 days from the date of part-I bid opening and in case of Negotiation/Counter-offer/Reverse Auction, price validity will apply afresh for a period of _60_ days from the date of according final price by bidder (or) upto original validity period, whichever is later.
5. Any of the terms and conditions not acceptable to supplier, shall be explicitly mentioned in the Techno-Commercial Bid. If no deviations are brought out in the offer it will be treated as if all terms and conditions of this enquiry are accepted by the supplier without deviation.
6. Deviation to this specification/item description, if any, shall be brought out clearly indicating "DEVIATION TO BHEL SPECIFICATION" without fail, as a part of Techno-Commercial Bid. If no deviations are brought out in the offer it will be treated as if the entire specification of this enquiry is accepted without deviation.
7. Suppliers shall submit one set of original catalogue, datasheets, bill of materials, dimensional drawings, mounting details and/or any other relevant documents called in purchase specification as part of Technical Bid.
8. "Price Bid" shall be complete in all respects containing price break-up of all components along with all applicable taxes and duties, freight charges (if applicable) etc. Once submitted no modification / addition / deletion will be allowed in the "Price Bid." Bidders are advised to thoroughly check the unit price, total price to avoid any discrepancy.
9. In addition, bidder shall also quote for erection & commissioning charges/erection supervision & commissioning charges (E&C service charges), documentation charges, testing Charges (type & routine), training charges etc. as applicable along with corresponding tax. The price summary must indicate all the elements clearly.
10. Wherever applicable, bidders should indicate "lumpsum" Erection and Commissioning (or) Erection Supervision and Commissioning charges, as applicable (including To & Fro Fare, Boarding, Lodging, Local Conveyance etc.) for carrying out E&C activity and further handing over to customer. The quotation shall clearly indicate scope of work, likely duration of commissioning, pre-commissioning checklist (if any).
11. Wherever bidders require PAC (Project Authority Certificate)/applicable certificates for import of raw materials, components required for DECC,EPCG Power Projects, Export Projects or other similar projects wherein supplies are eligible for customs duty benefits, lists and quantities of such items and their values (CIF) has to be mentioned in the offer. Prices must be quoted taking into account of such benefits.
12. Prices should be indicated in both figures & words**.** Bid should be free from correction/overwriting, using corrective fluid, etc. Any interlineation, cutting, erasure or overwriting shall be valid only if they are attested under full signature(s) of person(s) signing the bid else bid shall be liable for rejection. Any typographical error, totalling mistakes, currency mistake, multiplication mistake, summing mistakes etc. observed in the price bids will be evaluated as per **Annexure III** "Guidelines for dealing with Discrepancy in Words & Figures – quoted in price bid" and BHEL decision will be final.

13. Documents submitted with the offer shall be signed and stamped in each page by authorized representative of the bidder. However, this requirement is not mandatory for offers uploaded through E-Procurement System (EPS).

C. <u>GUIDELINES FOR OFFER SUBMISSION:</u>

The under-mentioned clauses 1, 2&3 will not be applicable for EPS tenders.

1. Offers / Quotations must be dropped in tender box before 13.00 Hrs. on or before due date mentioned in RFQ.The offers are to be dropped in the proper slot of the Tender Box kept in our reception area with caption "CE, SC&PV, DEFENCE". Tenders are opened on 3 days in a week (Monday/Wednesday/Friday). Tender must be deposited in the slot corresponding to the day (Monday - Box no.4/Wednesday - Box no. 6 /Friday - Box no.8) while depositing the offer.

2. E-Mail/ Internet/EDI offers received in time shall be considered only when such offers are complete in all respects. In case of offers received through E-mail, please send the offer to the email ID specified in the SCC document of the tender.

3. Offers of Vendors who already have a valid Technical/Commercial MOU with BHEL-EDN for the items of the RFQ shall mention the relevant MOU reference no. and give only such other details not covered in the MOU.

4. In cases where tender documents are bulky, or due to some reasons tender documents are required to be submitted by hand or through posts/couriers, the offers are to be handed over either of the two purchase officers whose names are mentioned in the SCC document of tender RFQ.
5. Tenders will be opened on due date, time and venue as indicated in the RFQ in the presence of bidders at the venue indicated in the RFQ. For EPS tenders, e-mail notifications will be automatically generated and forwarded to registered e-mail ID/s of bidders during opening of tenders.
6. Bidder will be solely responsible:
   a. For submission of offers before due date and time. Offers submitted after due date and time will be treated as "Late offers" and will be rejected.

   b. For submission of offers in the correct compartment of the tender box based on the day of due date (Monday/Wednesday/Friday). Please check before dropping your offer in the correct tender box.

   c. For depositing offers in proper sealed condition in the tender box. If the bidder drops the tender in the wrong tender box (or) if the tender document is handed over to the wrong person, BHEL will not be responsible for any such delays.

   d. For offers received through email etc., suppliers are fully responsible for lack of secrecy on information and ensuring timely receipt of such offers in the tender box before due date & time (This clause will not be applicable for EPS tenders).

   The above indicated submission of Offers as mentioned in points 6.a-6.d is applicable for tenders that are not floated through EPS.

   e. In case of e-tender, all required documents should be uploaded before due date and time. Availability of power, internet connections, system/software requirements etc. will be the sole responsibility of the bidder. Wherever assistance is needed for submission of e-tenders, help-line numbers as available in the web-site of service provider of BHEL may be contacted.

   Purchase Executive/ BHEL shall not be responsible for any of the activities relating to submission of offer.

D. PROCESSING OF OFFERS RECEIVED:

1. Any discount/ revised offer submitted by the supplier on its own shall be accepted provided it is received on or before the due date and time of offer submission (i.e. Part-I bid). The discount shall be applied on pro-rata basis to all items unless specified otherwise by the bidder.
2. Changes in offers or Revised offers given after Part-I bid opening shall not be considered as a part of the original offer unless such changes/revisions are requested by BHEL. In case of withdrawal of any Technical/Commercial deviation(s) by the bidder before opening of price bids/conducting the Reverse Auction, revision of price/impact bid will not be accepted.
3. In case there is no change in the technical scope and/ or specifications and/ or commercial terms & conditions, the supplier will not be allowed to change any of their bids after Technical bids are opened (after the due date and time of tender opening).
4. In case of changes in scope and/ or technical specifications and/ or commercial terms & conditions by BHEL and it accounts for price implications from bidders, all techno-commercially acceptable bidders shall be asked by BHEL (after freezing the scope, technical specifications and commercial terms & conditions) to submit the impact of such changes on their price bid. Impact price will be applicable only for changes in technical specification / commercial conditions by BHEL. The impact price must be submitted on or before the cut-off date specified by BHEL and the original price bid and the price impact bid will be opened together at the time of price bid opening.
5. Un-opened bids (including price bids) will be returned to the respective bidders after release of Purchase order. Regarding Offers for EPS tenders that get rejected on PQC/ techno-commercial grounds, the bids for the subsequent parts will not be opened i.e., both technical bid and price bid (Parts-II & III)will not be opened in case of rejection on PQC ground and price bid (Part-II/Part-III, as applicable) will not be opened in case of rejection on techno-commercial ground.
6. After receipt of Purchase Order, supplier should submit required documents viz.,specified drawings, bill of materials, datasheets, catalogues, quality plan, test procedure, type test report , O & M Manuals and/or any other relevant documents as per Specification/Purchase Order, as and when required by BHEL/Customer.
7. Any deviation to the terms and conditions not mentioned in the quotation by supplier in response to this enquiry will not be considered, if put forth subsequently or after issue of Purchase Order, unless clarification is sought for by BHEL and agreed upon in the Purchase Order.
8. Evaluation shall be on the basis of delivered cost (i.e. “Total Cost to BHEL").
   “Total Cost to BHEL” shall include total basic cost, packing & forwarding charges, taxes and/or duties(as applicable), freight charges, taxes on Services, customs clearance charges for imported items, any other cost indicated by bidder for execution of the contract and loading factors (for non-compliance to BHEL Standard Commercial Terms & Conditions). Benefits arising out of Nil Import Duty on DEEC, EPCG, DFIA Projects, Physical Exports or such 100% exemptions (statutory benefits), project imports, customer reimbursements of statutory duties (like Basic Customs Duty and cess on customs duty), Input tax credits as applicable will also be taken into account for arriving at the Total cost to BHEL (wherever applicable and as indicated in SCC document of tender).

   For EPS tenders, it shall be noted that the prices (including discounts) vis-a-vis currency quoted in EPS portal only will be considered as Final for the purpose of evaluation of the lowest bidder. Bidder shall ensure to indicate the applicable taxes against each line item in online portal, failing to which the same will be considered as inclusive/NIL.

In the course of evaluation, if more than one bidder happens to occupy L-1 status, effective L-1 will be decided by soliciting discounts from the respective L-1 bidders.
Incase more than one bidder happens to occupy the L-1 status even after soliciting discounts, the L-1 bidder shall be decided by a toss/draw of lots, in the presence of the respective L-1 bidder(s) or their representative(s).
Ranking will be done accordingly. BHEL's decision in such situations shall be final and binding.

9. For evaluation of offers in foreign currency, the exchange rate (TT selling rate of SBI) shall be taken as under:

   Single part bids: Date of tender opening

   Two/three part bids: Date of Part-I bid opening

   Reverse Auction: Date of Part-I bid opening

   In case of Performance Bank Guarantee (PBG) also, exchange rate will be considered as mentioned above for converting foreign currency to Indian currency and vice versa.

   If the relevant day happens to be a bank holiday, then the exchange rate as on the previous working day of the bank (SBI) shall be taken.

10. Ranking (L-1, L-2 etc.) shall be done only for the techno-commercially acceptable offers.

E. <u>INFORMATION ON PAYMENT TERMS:</u>

1. All payments will be through Electronic Fund transfer (EFT). Vendor has to furnish necessary details as per BHEL standard format **(Refer Annexure IV)** for receiving all payments through NEFT.(Applicable for Indian vendors only).
2. In case of High Sea Sales transaction, customs clearance of the consignment landed on Indian Sea/Air ports will be done by BHEL based on the original HSS documents provided by vendors. All warehousing charges due to delay in submission of complete and or correct HSS documents to BHEL will be to supplier's account only. Such recovery will be made out of any of the available bills **(Refer Annexure V)**.
3. Statutory deductions, if any, will be made and the deduction certificate shall be issued.
   A. In case vendor does not provide PAN details, the TDS deduction shall be at the maximum percentage stipulated as per the provisions of Income Tax Act.

      In addition to the above, Foreign vendors shall also submit relevant details of their bankers like Swift Code, Banker's Name &Address etc.

   B. TDS deduction as per section 51 of CGST Act,2017 shall be applicable as per Gazette Notification No. 50/2018-Central Tax, Dated: 13th September 2018 and subsequent notification/s, as and when released by Govt. authorities.
4. Incomplete documentation will not be accepted. Delayed submission of invoice / documents may result in corresponding delay in payment. In this connection, request to also refer clause: G about invoicing & payment formalities under GST regime. Applicable documents shall be submitted to the purchaser at the time of execution of supplies/services for availing GST input credits.

F. STANDARD PAYMENT TERMS OF BHEL-EDN:

PURCHASE ORDERS FOR:	**SUPPLY WITH SERVICE(S)**	**SUPPLY ONLY**
INDIGENOUS PROCUREMENT	a. 100% of basic value with taxes and freight will be paid in 45 days from the date of dispatch or 15 days from the date of submission of complete set of documentation, whichever is later. Note: In case PBG is not furnished, only 90% payment will be released against 100% claim without the consent of Vendor. This 10% basic amount withheld towards PBG will be paid either against submission of supplementary invoice & Original PBG (or) against supplementary invoice without PBG after expiry of Warranty period.	b. 100% of PO value with taxes and freight will be paid in 45 days from the date of dispatch or 15 days from the date of submission of complete set of documentation, whichever is later.
IMPORT PROCUREMENT	c. 100% of basic value will be paid against usance draft of 45 days from the date of AWB/BOL on submission of complete set of documents. Note: In case PBG is not furnished, only 90% payment will be released against 100% claim without the consent of Vendor. This 10% basic amount withheld towards PBG will be paid either against submission of supplementary invoice & Original PBG (or) against supplementary invoice without PBG after expiry of Warranty period.	d. 100% of PO value will be paid against usance draft of 45 days from the date of AWB/BOL on submission of complete set of documents.
HIGH-SEA SALES PROCUREMENT	e. 100% of basic value will be paid in 45 days from the date of signing of High Sea Sale agreement or 15 days from the date of submission of complete set of documentation, whichever is later Note: In case PBG is not furnished, only 90% payment will be released against 100% claim without the consent of Vendor. This 10% basic amount withheld towards PBG will be paid either against submission of supplementary invoice & Original PBG (or) against supplementary invoice without PBG after expiry of Warranty period.	f. 100% of basic value will be paid in 45 days from the date of signing of High Sea Sale agreement or 15 days from the date of submission of complete set of documentation, whichever is later.

g. Erection and Commissioning:

Evaluation methodology: Unless and otherwise specified in SCC, E&C charges should not be less than 10% of the main supply value. In case the quoted total E&C value is less than 10% of the main supply value, BHEL shall evaluate Bidders Price deducting differential amount from main supply price proportionally from all items and apportioning towards E&C charges.
Payment term: 100% E&C charges along with tax as applicable, will be paid in 15 days from the date of submission of supplementary invoice/documents against proof of completion of E&C.

h. Erection Supervision and Commissioning:

Evaluation methodology: Unless and otherwise specified in SCC, E&C charges should not be less than 5% of the main supply value. In case the quoted total E&C value is less than 5% of the main supply value, BHEL shall evaluate Bidders Price deducting differential amount from main supply price proportionally from all items and apportioning towards E&C charges.
Payment term: 100% E&C charges along with tax as applicable, will be paid in 15 days from the date of submission of supplementary invoice/documents against proof of completion of E&C.

i. Comprehensive Annual Maintenance Contract:

Evaluation methodology: Unless and otherwise specified in SCC, CAMC will be applicable for a period of 04 years from the date of expiry of warranty period (or) from the date of completion of commissioning of equipment, whichever is later and the total CAMC value should not be less than 20% of the main supply value. In case the quoted total CAMC value is less than 20% of the main supply value, BHEL shall evaluate Bidders Price deducting differential amount from main supply price proportionally from all items and apportioning towards CAMC charges.

Payment terms: 100% CAMC charges along with tax as applicable, will be paid in 15 days from the date of submission of supplementary invoice/documents against proof of completion of CAMC on yearly basis.

j. Terms of Payment for Training: 100% payment will be made in 45 days from the date of completion of Training or 15 days from the date of submission of complete set of invoice along with documentary evidence, whichever is later.

LOADING FACTORS FOR DEVIATION IN PAYMENT TERMS (APPLICABLE FOR IMPORT PROCUREMENT ONLY):

1) For offers received with Sight draft payment term in place of Usance draft, loading applicable will be 1.0% of basic value.

2) For offers received with Letter of Credit payment term with Usance of 45 days, loading applicable will be 2.5% of basic value.
   Additional loading of 2% will be applicable for payment term as Letter of Credit at Sight.

k. Any payment term with credit period of less than 45 days for indigenous supply/HSS and any other variation of payment terms are liable for rejection.

l. Standard payment terms indicated in Clauses: F (a), (b), (c), (d), (e), (f), (g), (h), (i) & (j) will not attract any loading.

Note 1: Basic value of Purchase Order mentioned above will include all components of the purchase order and will exclude only taxes, duties, freight, training charges, E&C and AMC charges (wherever applicable). Wherever the Purchase Order is split into import portion and indigenous portion of supply, minimum % to be quoted for Services, wherever mentioned, will be of both purchase order values put together.

Note 2: In case of multiple packages/units in a power plant, payment of E&C charges will be processed on pro-rata basis.

Note 3: No deviation will be permitted from the duration of Guarantee/Warranty and/or Comprehensive Annual Maintenance Contract period specified in SCC.

G. Terms & Conditions to be complied under GST regime:

1. All invoices to contain BHEL-EDN (buyer) GSTIN number: 29AAACB4146P1ZB. However for CGST +SGST/UGST billing outside the state of Karnataka, invoice has to be generated with BHEL's Nodal Agency GSTIN number. Address of Nodal Agency along with GSTIN number will be provided by BHEL at the time of issuing dispatch clearance.

2. The Bidder shall mention Bidder's GSTIN number in all quotations and Invoices submitted.

3. The Bidder shall also mention HSN (Harmonized System of Nomenclature) / SAC (Services Accounting Code) mandatorily in all quotations and invoices submitted.

4. Invoice submitted should be in the format as specified under GST Laws viz., all details as mentioned in Invoice Rules like GST registration number(GSTIN), invoice number with date of issue, quantity, rate, value, taxes with nomenclature – CGST, SGST, UGST,IGST mentioned separately, HSN Code / SAC Code etc. Invoice should be submitted in original for buyer plus duplicate for credit availment.

5. Payment of GST to Vendor will be made only if it is matching with data uploaded by the Vendor in GST portal.

6. For invoices paid on Reverse charge basis – "Tax payable on reverse charge basis" to be mentioned on the invoice.

7. In case GST credit is delayed/denied to BHEL due to non/delayed receipt of goods and/or tax invoice or expiry of timeline prescribed in GST law for availing such ITC, or any other reasons not attributable to BHEL, GST amount will be recoverable from vendor along with interest levied/ leviable on BHEL.

8. In case vendor delays declaring such invoice in his return and GST credit availed by BHEL is denied or reversed subsequently as per GST law, GST amount paid by BHEL towards such ITC reversal as per GST law will be recoverable from vendor/contractor along with interest levied/ leviable on BHEL.

9. Vendor should intimate BHEL immediately on the same date of invoicing without any delay.

10. In case of discrepancy in the data uploaded by supplier in the GSTN portal or in case of any shortages or rejection in the supply, then BHEL will not be able to avail the tax credit and will notify the supplier of the same. Supplier has to rectify the data discrepancy in the GSTN portal or issue credit note (details to be uploaded in GSTN portal) for the shortages or rejections in the supplies, within the calendar month notified by BHEL.

11. Bidders to note that Rules & Regulations pertaining to E-way bill system are to be strictly adhered to, as and when notified by Govt. authorities.

H. Performance bank guarantee (PBG):

Performance bank guarantee (PBG) will be applicable as called in the tender documents. Unless otherwise specified in the SCC, the PBG against performance of the contract shall be valid for a period of 24 months from the date of dispatch of goods + claim period of 03 months, for a value equal to 10 % of the basic value of the purchase order which will include all components of the purchase order and will exclude only taxes, duties, freight, training charges, E&C and AMC charges (wherever applicable).

1. The BG issued in Indian Rupees by Banks in India is to be executed on Non-Judicial Stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the State(s) where the BG is submitted or is to be acted upon or the rate prevailing in the State where the BG was executed, whichever is higher. The Stamp Paper/e-stamp paper shall be purchased in the name of Vendor/Bank issuing the guarantee.
2. No deviation for the duration and value of PBG will be permitted.
3. PBG shall be from any of the BHEL consortium of bankers **(refer Annexure VI)**.
4. PBGs from nationalized banks are also acceptable.
5. PBG should be sent directly by the bank to the dealing executive mentioned in the purchase order located at the address mentioned in the purchase order.
6. PBG should be in the format specified **(refer Annexure VII)**. No deviation to this format will be allowed. However in case BHEL changes the PBG format, bidder shall honor the same.
7. Bank Guarantee should be enforceable in Bangalore.
8. In Case of Bank Guarantees submitted by Foreign Vendors-

   a. From Nationalized/Public Sector / Private Sector/ Foreign Banks (BG issued by Branches in India) can be accepted subject to the condition that the Bank Guarantee should be enforceable in Bangalore.

   b. From Foreign Banks (wherein Foreign Vendors intend to provide BG from local branch of the Vendor country's Bank)

   b.1 Please note that Bank Guarantee issued by any of the Consortium Banks only will be accepted by BHEL. As such, Foreign Vendor needs to make necessary arrangements for issuance of Counter-Guarantee by Foreign Bank in favour of the Indian Bank's (BHEL's Consortium Bank) branch in India. It shall be noted that all charges for issuance of Bank Guarantee/ counter- Guarantee should be borne by the Foreign Vendor.

   b.2 In case, Foreign Vendors intend to provide BG from Overseas Branch of our Consortium Bank (e.g. if a BG is to be issued by SBI Frankfurt), the same is acceptable. However, the procedure at sl.no. b.1 is required to be followed.

   b.3 The BG issued may preferably be subject to Uniform Rules for Demand Guarantees (URDG) 758 (as amended from time to time).
9. Expired PBGs will be returned only after expiry of the claim period.
10. PBG shall not be applicable for spares.

I. PROVISONS APPLICABLE FOR MSE VENDORS (MICRO AND SMALL ENTERPRISES) :

Benefits/facilities as applicable for Micro and Small Enterprises (MSEs) shall be available to MSEs registered with Government designated authorities as per the Purchase & Price Preference Policy of the Government subject to them becoming eligible otherwise.

Vendors who qualify as MSE vendors are requested to submit applicable certificates (as specified by the Ministry of Micro, Small and Medium Enterprises) at the time of vendor registration. Vendors have to submit the Udyog Aadhaar/Udyam Registration certificate along with attested copy of a CA certificate (Annexure VIII) applicable for the relevant financial year (latest audited) along with the tender documents in the Part-I bid to avail the applicable benefits.

Date to be reckoned for determining the deemed validity will be the date of bid opening (Part-I in case of two-part bid and three-part bid).

Documents have to be notarized/attested by a Gazetted officer and must be valid as on the date of part I bid opening for the vendors to be eligible for the benefits applicable for MSE vendors. Please note that no benefit shall be applicable if any deficiency in the above required documents are not submitted before the price bid opening/Reverse Auction. If the tender is to be submitted through e-procurement portal, then the above required documents are to be uploaded on the portal.

Bidders to however note the documents that shall be furnished in order to establish credentials as MSE vendor should be as per the extant statutory requirements specified by the Ministry of Micro, Small and Medium Enterprises.

PURCHASE PREFERENCE FOR MSE VENDORS:

MSE vendors quoting within a price band of L1 + 15% shall be allowed to supply up to 25% of the requirement against this tender provided

1. The MSE vendor matches the L1 price.
2. L1 price is from a non MSE vendor.
3. L1 price will be offered to the vendor nearest to L1 in terms of price ranking (L2 - nearest to L1). In case of non-acceptance by the MSE vendor (L2), next ranking MSE vendor will be offered who is within the L1 + 15% band (if L3 is also within 15% band).
4. 3% of the 25% will be earmarked for women owned MSEs.
5. 25% of the 25% (i.e., 6.25% of the total enquired quantity) will be earmarked for SC/ST owned MSE firms provided conditions as mentioned in (1) & (2) are fulfilled.
6. In case where no SC/ST category firms are meeting the conditions mentioned in (1) and (2) or have not participated in the tender, the 6.25% of earmarked quantity for SC/ST owned MSE firms will be distributed among the other eligible MSE vendors who have participated in the tender.
7. In case after the bid opening it is seen that no MSE has become L1, then depending on the nature of the item, if it is not possible to split the tendered items/quantities on account of reasons like customer contract requirements of supplying one make for a given project or technical reasons like the tendered item being a system etc., then BHEL would not counter offer the L1 prices even though there may be MSE bidders within the +15% band of L1. Such information that tendered quantity will not be split shall be indicated in the SCC.

J. INTEGRITY COMMITMENT IN THE TENDER PROCESS, AND EXECUTION OF CONTRACTS:

1. Commitment by BHEL: BHEL commits to take all measures necessary to prevent corruption in connection with the Tender process and execution of the Contract. BHEL will, during the tender process, treat all bidder / suppliers in a transparent and fair manner, and with equity.

2. Commitment by Bidder(s)/ Contractor(s):

   a. The Bidder(s)/ Contractor(s) commit(s) to take all measures to prevent corruption and will not directly or indirectly try to influence any decision or benefit which he is not legally entitled to.
   b. The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any undisclosed agreement or understanding or any actions to restrict competition.

c. The Bidder(s)/ Contractor(s) will not commit any offence under the relevant Acts. The Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain or pass on to others, any information or document provided by BHEL as part of business relationship.
d. The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract and shall adhere to the relevant guidelines issued from time to time by Government of India/ BHEL.

If the Bidder(s) / Contractor(s), before award or during execution of the Contract commit(s) a transgression of the above or in any other manner such as to put his reliability or credibility in question, BHEL is entitled to disqualify the Bidder(s) / Contractor (s) from the tender process or terminate the contract and/ or take suitable action as deemed fit.

K. <u>Integrity Pact (IP):</u>

a) IP is a tool to ensure that activities and transactions between the Company and its Bidders/ Contractors are handled in a fair, transparent and corruption free manner.
A panel of independent External Monitors (IEMs) have been appointed to oversee implementation of IP in BHEL.
The IP as enclosed with the tender is to be submitted (duly signed by authorized signatory who signs in the offer) along with techno-commercial bid. Only those Bidders who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this Pact would be a preliminary qualification.
b) Please refer Section-8 of the IP for Role and Responsibilities of IEMs (Annexure IX). In case of any complaint arising out of the tendering process, the matter may be referred to the IEM mentioned in the tender.

Note: No routine correspondence shall be addressed to the IEM (phone/ post/ email) regarding the clarifications, time extensions or any other administrative queries, etc. on the tender issued. All such clarification/ issues shall be addressed directly to the tender issuing (procurement) department."

Annexure

Annexure I

Guidelines for Indian Agents

- **Definition of Indian Agent**: An Indian Agent of foreign prinicipal is an individual, a partnership, an association of persons, a private or pubile company, that carries our specific obligation(s) towards processing of BHEL tender or finalization or execution of BHEL's contract on behalf of the foreign supplier.

In case of yes, vendor to note the following and reply accordingly:

i. BHEL shall deal directly with foreign vendors, wherever required, for procurement of goods. However, if the foreign principal desires to avail of the services of an Indian agent, then the foreign principal should ensure compliance to regulatory guidelines - which require mandatory submission of an Agency Agreement.

ii. It shall be incumbent on the Indian agent and the foreign principal to adhere to the relevant guidelines of Government of India, issued from time to time.

iii. The Agency Agreement should specify the precise relationship between the foreign OEM / foreign principal and their Indian agent and their mutual interest in the business. All services to be rendered by agent/ associate, whether of general nature or in relation to the particular contract, must be clearly stated by the foreign supplier/ Indian agent. Any payment, which the agent or associate receives in India or abroad from the OEM, whether as commission or as a general retainer fee should be brought on record in the Agreement and be made explicit in order to ensure compliance to laws of the country.

iv. Any agency commission to be paid by BHEL to the Indian agent shall be in Indian currency only.

v. Tax deduction at source is applicable to the agency commission paid to the Indian agent as per the prevailing rules.

vi. In the absence of any agency agreement, BHEL shall not deal with any Indian agent (authorized representatives / associate / consultant, or by whatever name called) and shall deal directly with the foreign principal only for all correspondence and business purposes.

vii. The "Guidelines for Indian Agents of Foreign Suppliers" enclosed at annexure –'A' shall apply in all such cases.

viii. The supply and execution of the Purchase Order (including indigenous supplies/ service) shall be in the scope of the OEM/ foreign principal. The OEM/ foreign principal should submit their offer inclusive of all indigenous supplies/ services and evaluation will be based on 'total cost to BHEL'. In case OEM/ foreign principal recommends placement of order(s) towards indigenous portion of supplies/ services on Indian supplier(s)/ agent on their behalf, the credentials/ capacity/ capability of the Indian supplier(s)/ agent to make the supplies/ services shall be checked by BHEL as per the extant guidelines of Supplier Evaluation, Approval & Review Procedure (SEARP), before opening of price bids. In this regard, details may be checked as per Annexure-B (copy enclosed). It will be the responsibility of the OEM/ foreign principal to get acquainted with the evaluation requirements of Indian supplier/ agent as per SEARP available on www.bhel.com.

The responsibility for successful execution of the contract (including indigenous supplies/ services) lies with the OEM/ foreign principal. All bank guarantees to this effect shall be in the scope of the OEM/ foreign principal.

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Vendor's Signature with Seal

Annexure-A

Guidelines for Indian Agents of Foreign Suppliers

1.0 There shall be compulsory registration of agents for all Global (Open) Tender and Limited Tender. An agent who is not registered with BHEL shall apply for registration in the registration form in line with SEARP.

1.1 Registered agents will file an authenticated Photostat copy duly attested by a Notary Public/Original certificate of the Principal confirming the agency agreement and giving the status being enjoyed by the agent and the commission/ remuneration/ salary/ retainership being paid by the principal to the agent before the placement of order by BHEL.

1.2 Wherever the Indian representatives have communicated on behalf of their principals and the foreign parties have stated that they are not paying any commission to the Indian agents, and the Indian representative is working on the basis of salary or as retainer, a written declaration to this effect should be submitted by the party (i.e. Principal) before finalizing the order.

2.0 Disclosure of particulars of agents/ representatives in India, if any.

2.1 Tenderers of Foreign nationality shall furnish the following details in their offers:

2.1.1 The Bidder(s)/ Contractor(s) of foreign origin shall disclose the name and address of the agents/ representatives in India if any and the extent of authorization and authority given to commit the Principals. In case the agent/ representative be a foreign Company, it shall be confirmed whether it is existing Company and details of the same shall be furnished.

2.1.2 The amount of commission/ remuneration included in the quoted price(s) for such agents/ representatives in India.

2.1.3 Confirmation of the Tenderer that the commission/ remuneration, if any, payable to his agents/ representatives in India, may be paid by BHEL in Indian Rupees only.

2.2 Tenderers of Indian Nationality shall furnish the following details in their offers:

2.2.1 The Bidder(s)/ Contractor(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any, indicating their nationality as well as their status, i.e. whether manufacturer or agents of manufacturer holding the Letter of Authority of the Principal specifically authorizing the agent to make an offer in India in response to tender either directly or through the agents/ representatives.

2.2.2 The amount of commission/ remuneration included in the price (s) quoted by the Tenderer for himself.

2.2.3 Confirmation of the foreign principals of the Tenderer that the commission/ remuneration, if any, reserved for the Tenderer in the quoted price(s), may be paid by BHEL in India in equivalent Indian Rupees on satisfactory completion of the Project or supplies of Stores and Spares in case of operation items.

2.3 In either case, in the event of contract materializing, the terms of payment will provide for payment of the commission/ remuneration, if any payable to the agents/ representatives in India in Indian Rupees on expiry of 90 days after the discharge of the obligations under the contract.

2.4 Failure to furnish correct and detailed information as called for in paragraph 2.0 above will render the concerned tender liable to rejection or in the event of a contract materializing, the same liable to termination by BHEL. Besides this there would be a penalty of banning business dealings with BHEL or damage or payment of a named sum.

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ANNEXURE - II
LIST OF INTERNATIONAL GATEWAY AIRPORTS

For air based consignment, terms of delivery will be on FCA basis from following listed airports only. Vendors are requested to verify this list for use before submission of offer.

SCHEDULE NO	COUNTRY	CURRENCY CODE	AIRPORT
D01	UK	GBP	LONDON (HEATHROW)
D02	UK	GBP	NEW CASTLE
D03	UK	GBP	OXFORD. CHETLAM
D04	UK	GBP	BRISTOL. WELLINGBOROUGH
D0S	UK	GBP	BIRMINGHAM
DO6	UK	GBP	EAST MIDLANDS
D07	UK	GBP	MANCHESTER
D08	UK	GBP	LEEDS
D09	UK	GBP	GLASGOW
D10	FRANCE	EURO	PARIS (ROISSY) & LYON
D11	SWEDEN	EURO	STOCKHOLM
D12	SWEDEN	EURO	GOTHENBERG & MALMO
D13	ITALY	EURO	ROMA, MILAN
D14	ITALY	EURO	TURIN, BOLOGNA, FLORENCE
D1S	NETHERLANDS	EURO	AMSTERDAM, ROTTERDAM
D16	AUSTRIA	EURO	VIENNA, LINZ, GRAZ
D17	BELGIUM	EURO	ANTWERP, BRUSSELS
D18	DENMARK	DKK	COPENHAGEN
D19	JAPAN	JPY	TOKYO, OSAKA
D20	SINGAPORE	SGD	SINGAPORE
D21	CANADA	CAD	TORONTO
D22	CANADA	CAD	MONTREAL
D23	USA	USD	NEW YORK, BOSTON
D24	USA	USD	CHICAGO
D2S	USA	USD	SAN FRANCISCO, LOS ANGELES
D26	USA	USD	ALANTA, HOUSTON
D27	GERMANY	EURO	MUNICH, KOLN, DUSSELDORF, HANNOVER, HAMBURG, STUTTGART, DAMSTADT, MANIHIEM, NURUMBERG
D28	GERMANY	EURO	FRANKFURT
D29	GERMANY	EURO	BERLIN
D30	SWITZERLAND	SFR	BASLE, ZURICH, GENEVA
D31	SPAIN	EURO	BARCELONA
D32	AUSTRALIA	AUD	SYDNEY
D33	AUSTRALIA	AUD	MELBOURNE
D34	AUSTRALIA	AUD	PERTH
D3S	CZECH	EURO	PRAGUE
D36	HONG KONG	HKD	HONG KONG
D37	NEW ZELAND	NZD	AUCKLAND
D38	RUSSIA	USD	MOSCOW
D39	SOUTH KOREA	USD	KIMPO INTERNATIONAL, INCHEON
D40	FINLAND	EURO	HELSINKI
D41	ROMANIA	EURO	BUCHAREST
D42	NORWAY	EURO	OSLO
D43	IRELAND	EURO	DUBLIN
D44	ISRAEL	USD	TEL AVIV
D45	UAE	USD	DUBAI
D46	OMAN	USD	MUSCAT
D47	EGYPT	USD	CAIRO
D48	TAIWAN	USD	TAIPEI
D49	UKRAINE	USD	KIEV
D50	CHINA	USD	SHANGHAI, SHENZHEN
D51	PHILIPINES	USD	MANILA
D52	MALAYSIA	USD	KUALALUMPUR, PE NANG
D53	CYPRUS	USD	LARNACA
D54	SOUTH AFRICA	USD	JOHANNESBERG, DURBAN
D55	SLOVAKIA	EURO	BARTISLOVA
D56	SAUDI ARABIA	SAR	RIYADH
D57	TURKEY	EURO	ISTANBUL
D58	THAILAND	USD	BANGKOK
D59	BRAZIL	USD	SAO PAULO, RIO DE JANEIRO

ANNEXURE – III

DISCREPANCY IN WORDS & FIGURES – QUOTED IN PRICE BID

Following guidelines will be followed in case of discrepancy in words & figures-quoted in price bid:

(a) If, in the price structure quoted for the required goods/services/works, there is discrepancy between the unit price and the total price (which is obtained by multiplying the unit price by the quantity), the unit price shall prevail and the total price corrected accordingly, unless in the opinion of the purchaser there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price corrected accordingly.

(b) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and

(c) If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.

(d) If there is such discrepancy in an offer, the same shall be conveyed to the bidder with target date upto which the bidder has to send his acceptance on the above lines and if the bidder does not agree to the decision of the purchaser, the bid is liable to be ignored.

ANNEXURE - IV

Electronic Funds Transfer (EFT) OR Paylink Direct Credit Form

Please Fill up the form in CAPITAL LETTERS only.
TYPE OF REQUEST(Tick one): _____ CREATE _____ CHANGE

BHEL Vendor / Supplier Code:
Company Name :
Permanent Account Number(PAN):
Address

City: PINCODE STATE

Contact Person(s)
Telephone No:
Fax No:
e-mail id:

1 Bank Name:
2 Bank Address:

3 Bank Telephone No:
4 Bank Account No:
5 Account Type: Savings/Cash Credit
6 9 Digit Code Number of Bank and branch appearing on MICR cheque issued by Bank
7 Bank IFSC Code(applicable for NEFT)
8 Bank IFSC code(applicable for RTGS) (Indian Financial System Code)

A I hereby certify that the particulars given above are true, correct and complete and that I, as a representative for the above named Company, hereby authorise BHEL, EDN, Bangalore to electronically deposit payments to the designated bank account.

B If the transaction is delayed or not effected at all for reasons of incomplete or incorrect information, I would not hold BHEL / transfering Bank responsible.

C This authority remains in full force until BHEL, EDN,Bangalore receives written notification requesting a change or cancellation.

D I have read the contents of the covering letter and agree to discharge the responsibility expected of me as a participant under ECS / EFT.

Date:

Authorised Signatory:
Designation: Telephone No. with STD Code

Company Seal

Bank Certificate

We certify that_____has an Account No_____ with us and we confirm that the bank details given above are correct as per our records.

Date: (.....)
Place: Signature

Please return completed form **along with a blank cancelled cheque or photocopy** thereof to:
Bharath Heavy Electricals Ltd,
Attn:
Electronics Division, Mysore Road,
BANGALORE - 560 026
In case of any Querry, please call concerned purchase executive.

ANNEXURE - V

PRESENT PROCEDURE FOR SALE IN TRANSIT (HIGH SEA SALES)

In case of High Sea Sales, vendor should submit following documents:

1. **ORIGINAL HIGH SEA SALES AGREEMENT**
   - Sale agreement (on Rs. 200/- non-judicial stamp paper & notarised with 2 witnesses with identity) has to be signed between BHEL and the Party importing material. The date of the sale documents should be in between the date of House Air Way Bill / Bill of Lading and before landing of the goods in Indian origin.
   - Following shall be included in the High Sea Sales Agreement:
     "THE BUYER ALSO UNDERTAKE DISCHARGES, THE OBLIGATION AND FULFILLMENT OF CONDITIONS, IF ANY, ATTACHED TO THE IMPORTATION, ASSESSMENT AND CLEARANCE OF THE GOODS IN TERMS CUSTOMS TARIFF ACT 1975, THE CUSTOMS ACT 1962 & RULES & REGULATIONS MADE THERE UNDER AND OTHER RELEVANT ACTS, ORDERS, NOTIFICATIONS".

2. **ORIGINAL INVOICES: INDIGENOUS RUPEE INVOICE & FOREIGN CURRENCY INVOICE**
   - Prices should be C.I.F., designated airport/seaport basis.
   - I.E.C., C.S.T., K.S.T. Nos. to be mentioned.
   - Description of item (Nomenclature), Unit & Quantity in both the Foreign Currency & the Indigenous Invoice in Rupee shall be exactly as per Purchase Order Description of item, Quantity and Unit. The Indigenous Invoice value shall be exactly as per Purchase Order value.
   - Seller should give Foreign Currency Invoice from the original consignor. The Foreign Currency Invoice value should be at least 2% (two per cent) less than the Indigenous Rupee Invoice value in equivalent foreign currency.

4. **ORIGINAL HOUSE AIR WAY BILL/ BILL OF LADING**
   - The sale agents should duly endorse House Air Way Bill (HAWB) for air shipments or original Bill of Lading (O.B.L.) for sea shipments and Foreign Currency Invoice in favour of BHEL-EDN.

5. **ORIGINAL CARGO ARRIVAL NOTICE FROM FORWARDER.**

6. **ORIGINAL DELIVERY ORDER ISSUED IN NAME OF BHEL-EDN.**

7. **ORIGINAL PACKING LIST.**

8. **A LETTER TO THE COMMISSIONER OF CUSTOMS FOR EFFECTING ABOVE SALE.**

9. **A LETTER TO THE DEPUTY ASSESSOR (OCTROI) FOR EFFECTING ABOVE SALE IN FAVOUR OF BHEL.**

REMARKS: In case vendor needs any clarifications on the above, the same may be sought in writing.

ELECTRONICS DIVISION, BANGALORE

Annexure-VI

BHEL MEMBER BANKS (LIST OF CONSORTIUM BANKS)

Bank Guarantee (BG) shall be issued from the following banks only:

Sl. No.	Nationalised Banks	Sl. No.	Public Sector Banks
1	Allahabad Bank	18	IDBI
2	Andhra Bank		
3	Bank of Baroda	Sl. No.	**Foreign Banks**
4	Canara Bank	19	CITI Bank N.A
5	Corporation Bank	20	Deutsche Bank AG
6	Central Bank	21	The Hongkong and Shanghai Banking Corporation Ltd. (HSBC)
7	Indian Bank	22	Standard Chartered Bank
8	Indian Overseas Bank	23	J P Morgan
9	Oriental Bank of Commerce		
10	Punjab National Bank	**Sl. No.**	**Private Banks**
11	Punjab & Sindh Bank	24	Axis Bank
12	State Bank of India	25	The Federal Bank Limited
13	Syndicate Bank	26	HDFC Bank
14	UCO Bank	27	Kotak Mahindra Bank Ltd
15	Union Bank of India	28	ICICI Bank
16	United Bank of India	29	IndusInd Bank
17	Vijaya Bank	30	Yes Bank

Note:

- All BGs must be issued from BHEL consortium banks listed above.
- This list is subject to changes. Hence vendors are requested to check this list every time before issuing BGs.
- Bank Guarantees issued by Co-operative Banks/Financial Institutions cannot be accepted under any circumstance.

Annexure-VII

BANK GUARANTEE FOR PERFORMANCE SECURITY

Bank Guarantee No:

Date:

To

NAME

& ADDRESSES OF THE BENEFICIARY

Dear Sirs,

In consideration of Bharat Heavy Electricals Limited (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at _____[1] through its Unit at.....(name of the Unit) having awarded to (Name of the Vendor / Contractor / Supplier) with its registered office at_____[2] hereinafter referred to as the ' Vendor / Contractor / Supplier ', which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns), a contract Ref No.....dated .....[3] valued at Rs.....[4] (Rupees ----------)/FC.....(in words.....) for .....[5] (hereinafter called the 'Contract') and the Vendor / Contractor / Supplier having agreed to provide a Contract Performance Bank Guarantee, equivalent to .....% (.... Percent) of the said value of the Contract to the Employer for the faithful performance of the Contract,

we, ..., (hereinafter referred to as the Bank), having registered/Head office at ..... and inter alia a branch at ..... being the Guarantor under this Guarantee, hereby, irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer any sum or sums upto a maximum amount of Rs -- ---------- [6] (Rupees ----------) without any demur, immediately on first demand from the Employer and without any reservation, protest, and recourse and without the Employer needing to prove or demonstrate reasons for its such demand.

Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____.

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Vendor / Contractor / Supplier in any suit or proceeding pending before any Court or Tribunal, Arbitrator or any other authority, our liability under this present being absolute and unequivocal.

The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment thereunder and the Vendor / Contractor / Supplier shall have no claim against us for making such payment.

We the .....bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract/satisfactory completion of the performance guarantee period as per the terms of the Contract and that it shall continue to be enforceable till

all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged.

We .....BANK further agree with the Employer that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said Vendor / Contractor / Supplier from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Vendor / Contractor / Supplier and to forbear or enforce any of the terms and conditions relating to the said Contract and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Vendor / Contractor / Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Vendor / Contractor / Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Vendor / Contractor / Supplier and notwithstanding any security or other guarantee that the Employer may have in relation to the Vendor / Contractor / Supplier 's liabilities.

This Guarantee shall remain in force upto and including..... [7] and shall be extended from time to time for such period as may be desired by Employer.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Vendor / Contractor / Supplier but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms thereof.

Unless a demand or claim under this guarantee is made on us in writing on or before the .....[8]we shall be discharged from all liabilities under this guarantee thereafter.

We, ... BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

a) The liability of the Bank under this Guarantee shall not exceed..... [6]
b) This Guarantee shall be valid up to .....[7]
c) Unless the Bank is served a written claim or demand on or before _____[8] all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

We, _____ Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

For and on behalf of
(Name of the Bank)

Dated.....

Place of Issue.....

[1] *NAME AND ADDRESS OF EMPLOYER I.e Bharat Heavy Electricals Limited*

[2] *NAME AND ADDRESS OF THE VENDOR /CONTRACTOR / SUPPLIER.*

[3] *DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE*

[4] *CONTRACT VALUE*

[5] *PROJECT/SUPPLY DETAILS*

[6] *BG AMOUNT IN FIGURES AND WORDS*

[7] *VALIDITY DATE*

[8] *DATE OF EXPIRY OF CLAIM PERIOD*

Annexure – VIII
(Applicable only for MSE suppliers)
Certificate by Chartered Accountant on Letter Head

This is to certify that M/s ....(hereinafter referred to as `Company') having its registered office at ..... is registered under MSMED Act 2006, (Entrepreneur Memorandum No (Part-11 ..... dtd ....., Category: ..... (Micro/Small) (Copy enclosed).

Further verified from the Books of Accounts that the investment of the company as per the latest audited financial year..... as per MSMED Act 2006 is as follows:

1. **For Manufacturing Enterprises:** Investment in plant and machinery (i.e. original cost excluding land and building and the items specified by the Ministry of Small Scale Industries vide its notification No.S.O.1722 (E) dated October 5, 2006:
   Rs.....Lacs.

2. **For Service Enterprises:** Investment in equipment (original cost excluding land and building and furniture, fittings and other items not directly related to the service rendered or as may be notified under the MSMED Act, 2006:
   Rs. .....Lacs.

The above investment of Rs. .....Lacs in within permissible limit of Rs.....Lacs for.....Micro / Small (Strike off which is not applicable) Category under MSMED Act 2006.

Or

The company has been graduated from its original category (Micro/ Small) (**Strike off which is not applicable**) and the date of graduation of such enterprise from its original category is ..... (dd/mm/yyyy) which is within the period of 3 years from the date of graduation of such enterprise from its original category as notified vide S.O. No. 3322(E) dated 01.11.2013 published in the gazette notification dated 04.11.2013 by Ministry of MSME.

Date:

(Signature)

Name:

Membership Number:

Seal of Chartered Accountant

Annexure-1

INTEGRITY PACT

Between

Bharat Heavy Electricals Ltd. (BHEL), a company registered under the Companies Act 1956 and having its registered office at "BHEL House", Siri Fort, New Delhi - 110049 (India) hereinafter referred to as "The Principal", which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the ONE PART

and

_____, (description of the party along with address), hereinafter referred to as "The Bidder/ Contractor" which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART

Preamble

The Principal intends to award, under laid-down organizational procedures, contract/s for PA System for YADADRI Project. _____. The Principal values full compliance with all relevant laws of the land, rules and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ Contractor(s).

In order to achieve these goals, the Principal will appoint Independent External Monitor(s), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1- Commitments of the Principal

1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:-

1.1.1 No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

1.1.2 The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/ additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.

1.1.3 The Principal will exclude from the process all known prejudiced persons.

1.2 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions:

Section 2 - Commitments of the Bidder(s)/ Contractor(s)

2.1 The Bidder(s)/ Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.

2.1.1 The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material, immaterial or any other benefit which he/ she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

2.1.2 The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. 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.

2.1.3 The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant Indian Penal Code (IPC) and Prevention of Corruption Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

2.1.4 Foreign Bidder(s)/ Contractor(s) shall disclose the name and address of agents and representatives in India and Indian Bidder(s)/ Contractor(s) to disclose their foreign principals or associates. The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

2.2 The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

2.3 The Bidder(s)/ Contractor(s) shall not approach the Courts while representing the matters to IEMs and will await their decision in the matter.

Section 3 - Disqualification from tender process and exclusion from future contracts

If the Bidder(s)/ Contractor(s), before award or during execution has committed a transgression through a violation of Section 2 above, or acts in any other manner such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/ Contractor(s) from the tender process or take action as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors", framed by the Principal.

Section 4 - Compensation for Damages

4.1 If the Principal has disqualified the Bidder from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent Earnest Money Deposit/ Bid Security.

4.2 If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to section 3, the Principal shall be entitled to

demand and recover from the Contractor liquidated damages equivalent to 5% of the contract value or the amount equivalent to Security Deposit/ Performance Bank Guarantee, whichever is higher.

Section 5 - Previous Transgression

5.1 The Bidder declares that no previous transgressions occurred in the last 3 years with any other company in any country conforming to the anti-corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.

5.2 If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

Section 6 - Equal treatment of all Bidders/ Contractors / Sub-contractors

6.1 The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors. In case of sub-contracting, the Principal contractor shall be responsible for the adoption of IP by his sub-contractors and shall continue to remain responsible for any default by his sub-contractors.

6.2 The Principal will disqualify from the tender process all bidders who do not sign this pact or violate its provisions.

Section 7 - Criminal Charges against violating Bidders/ Contractors /Subcontractors

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

Section 8 - Independent External Monitor(s)

8.1 The Principal appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.

8.2 The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.

8.3 The Bidder(s)/ Contractor(s) accepts that the Monitor has the right to access without restriction to all contract documentation of the Principal including that provided by the Bidder(s)/ Contractor(s). The Bidder(s)/ Contractor(s) will grant the monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his contract documentation. The same is applicable to Sub-contractor(s). The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s) / Sub-contractor(s) with confidentiality in line with Non- disclosure agreement.

8.4 The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the contract provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.

8.5 The role of IEMs is advisory, would not be legally binding and it is restricted to resolving issues raised by an intending bidder regarding any aspect of the tender which allegedly restricts competition or bias towards some bidders. At the same time, it must be understood that IEMs are not consultants to the Management. Their role is independent in nature and the advice once tendered would not be subject to review at the request of the organization.

8.6 For ensuring the desired transparency and objectivity in dealing with the complaints arising out of any tendering process, the matter should be examined by the full panel of IEMs jointly as far as possible, who would look into the records, conduct an investigation, and submit their joint recommendations to the Management.

8.7 The IEMs would examine all complaints received by them and give their recommendations/ views to CMD, BHEL, at the earliest. They may also send their report directly to the CVO and the Commission, in case of suspicion of serious irregularities requiring legal/ administrative action. IEMs will tender their advice on the complaints within 10 days as far as possible.

8.8 The CMD, BHEL shall decide the compensation to be paid to the Monitor and its terms and conditions.

8.9 IEM should examine the process integrity, they are not expected to concern themselves with fixing of responsibility of officers. Complaints alleging mala fide on the part of any officer of the organization should be looked into by the CVO of the concerned organisation.

8.10 If the Monitor has reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant Indian Penal Code/ Prevention of Corruption Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.

8.11 The number of Independent External Monitor(s) shall be decided by the CMD, BHEL.

8.12 The word 'Monitor' would include both singular and plural.

Section 9 - Pact Duration

9.1 This Pact shall be operative from the date IP is signed by both the parties till the final completion of contract for successful bidder and for all other bidders 6 months after the contract has been awarded. Issues like warranty / guarantee etc. should be outside the purview of IEMs.

9.2 If any claim is made/ lodged during currency of IP, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged/ determined by the CMD, BHEL.

Section 10 - Other Provisions

10.1 This agreement is subject to Indian Laws and jurisdiction shall be registered office of the Principal, i.e. New Delhi.

10.2 Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.

10.3 If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.

10.4 Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

10.5 Only those bidders / contractors who have entered into this agreement with the Principal would be competent to participate in the bidding. In other words, entering into this agreement would be a preliminary qualification.

For & On behalf of the Principal

ಸುಯಶ್ ಕುಮಾರ್ ಗೌತಮ್, ಹಿರಿಯ ಎಂಜಿನಿಯರ್/ಸಿ.ಐ.ಎಂ.-ಎಂ.ಪಿ.ಆರ್.
सुयश कुमार गौतम, वरि. अभियंता/सी.ई.-एम एम पी आर.
SUYASH KUMAR GAUTAM, SR. ENGINEER/CE-MM PR
BHEL-EDN, MYSURU ROAD, BENGALURU-560026

(Office Seal)

Place---Bangalore

Date---

Witness

(Name & Address)

For & On behalf of the Bidder/

Contractor

(Office Seal)

Witness:_____

(Name & Address) _____

_____

PROJECT : YADADRI 5x800MW

CUSTOMER : M/s TSGENCO

EQUIPMENT : IP PUBLIC ADDRESS SYSTEM

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	DRN.	NAME	SIGN	DATE
Dept Code 416				
	PREPARED	Amit Kr Sharma		09.04.2021
	CHECKED & APPROVED	Sapna Rao		09.04.2021

REVISION HISTORY SHEET

REV No.	DATE	NATURE OF CHANGE	REASON	PREPARED BY	REVIEWED & APPROVED BY
00	09.04.2021	FIRST ISSUE	---	AKS	SAP

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SECTION-A

GENERAL INSTRUCTIONS TO BIDDERS

INTRODUCTION: Bidders are required to submit complete technical offer for supply, erection, commissioning and handing over of IP based PA SYSTEM for thermal power plants of M/s TSGENCO located at Yadadri 5x800MW. All documents submitted by bidders shall be in English language only.
Pre-Qualification Requirement (henceforth referred as PQR) for bidders are mentioned in section-B and technical requirement are mentioned in section-C of this document.

Evaluation Methodology
a) PART-1 bid related to PQR qualification will be opened first for review and evaluation by BHEL. If a bidder does not submit complete PQR document or document submitted by bidder does not meet the PQR criteria mentioned, offer of such bidders will be rejected and will not be considered for further evaluation in the tender.

b) Credential of Bidder as well as their offered make of PA system (as submitted under cl 9 & 10 below and section-B) shall be forwarded to M/s TSGENCO for approval.
If a bidder (system integrator) is not approved by M/s TSGENCO, then offer of such bidders shall be rejected.
If make of PA system offered by a bidder is not approved, then such bidders will be permitted once to change the make of PA system to any approved makes without cost implication.

c) If bidder's offered make of PA system is not found meeting PQR criteria / technical specification, offer of such bidders will be rejected and no change of make of PA system shall be allowed. Therefore, bidders are advised to quote most suitable make / model of PA SYSTEM which meets all PQR criteria and technical specification requirements of the PA system mentioned in Section-C

4. If required during evaluation of PQR / Technical bids, the bidder should visit BHEL- Electronics Division, Bangalore for discussion in 3 day's notice and failure of this can result in rejection of bid. Further in event of order and if required, the successful bidder along with PA system OEM representative shall visit M/s TSGENCO for discussion on document approval, on as required basis.

5. This specification does not prohibit any bidder to quote / participate in this tender with deviation from the specification. Changes in technical specification / scope / BOM, if any, shall be informed to participating bidders only.

6. All bidders, irrespective of their existing approval with BHEL / other units of BHEL / TSGENCO, should submit all above mentioned documents.

7. Consolidated Pre-Bid queries must be sought by Bidders through email within 7days from floating the tender and it is suggested & preferred that bidders may visit BHEL-EDN for seeking clarifications to such queries. Clarification sought within 4 days from due date of bid submission will not be entertained and replied.

8. Multiple make / model number are not acceptable for any major active components like call station, loudspeaker, servers, network switch etc. For indigenous components, bidder can offer maximum two makes / model no's within approved makes mentioned in Annexure-IV of this specification.

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9. **Bidders can also quote any other make for any or all items, which is not an already approved make of such item(s) as mentioned in Annexure-IV. However, acceptance of such new makes shall be subject to approval by TSGENCO. In case, the proposed new makes are not approved by TSGENCO, bidder will have to offer alternate approved make without any cost implication to BHEL.** For taking up approval of such makes, bidder should submit following documents:

i. Company Profile of the new make offered
ii. Tabular List such makes already installed & commissioned. The list should mention name of project, year of supply /commissioning / handing over, contact details of user/owner etc.
iii. Technical compliance of offered unapproved makes along with supporting documents of past supplies / performances, if available.

10. Approval of bidders by TSGENCO is also required for acceptance of such bidder's offer in the tender. Bidder must furnish following documents for taking up with customer their approval as system integrator:

i. Company Profile of the bidder
ii. Tabular List of IP PA system already executed / orders in hand of bidder (especially in power plants, cement plants, petroleum refinery, steel plant, coal mines) clearly mentioning name of project, year of supply /commissioning / handing over, make of PA system and contact details of user/owner etc.
iii. Unpriced Copy of Purchase order, Performance certificates, handing over protocols of PA system commissioned by bidder.
iv. Technical compliance of offered unapproved makes along with supporting documents of past supplies / performances, if available.

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SECTION-B

PRE-QUALIFICATION REQUIREMENTS

All of the following Pre-qualification requirements are to be met by all bidders. Bidders should submit tabular compliance on how they are meeting these PQR criteria and shall also submit all documents mentioned against each PQR:

1. **The bidder should have supplied and commissioned at least one IP PA SYSTEM having 50nos of call station in a power plant or gas/gas refinery.** Bidder should furnish all of following document for meeting this requirement:

   i) Unpriced PO copy issued in name of bidder

   ii) Commissioning report/MOM signed by user of the system to ascertain that 50nos of call stations are commissioned.

2. Make of the IP PA system (OEM) quoted by bidders should have a minimum of 2-year satisfactory operation track record in a power plant or oil/gas refinery. The quantity of outdoor call station commissioned in such PA system shall be minimum 100nos.

The bidder shall submit following supporting documents for this requirement:

   a) Performance certificate issued by user along with other supporting documents to ascertain that 100nos of call stations have satisfactorily worked for 2 years. If the make or quantity of call stations of PA system are not mentioned in the performance certificate, then other user signed/approved documents like PO, LOI, design document, commissioning report etc. to be submitted

   b) Contact details of end user

3. All PA system components offered by bidder like control station, call stations, extension amplifier, software etc. shall be from same OEM and the OEM shall have its own in-house manufacturing facility for these items.

Bidder should submit OEM's document like factory license certificate, details of factory for manufacturing of the items, quality plan for raw material selection/inspection and production, organization details of the factory, list of machines and facility in factory required for manufacturing of the products offered etc. Type test report of call station (as per relevant international/Indian standard) should also be submitted.

4. **Bidders should submit colour scanned pdf file of Manufacturer Authorisation Letter issued by the OEM for their consent to participate in this tender and confirmation following**

   a. OEM shall provide support / troubleshooting during commissioning and operation of the systems within warranty period.

   b. OEMs offered products are new (not refurbished) and not in an existing End of Life product list

   c. Spares (both finished product and spare parts) of their products shall be available for 5 years from dispatch of the PA system by their system integrator.

5. **Bidder should have a clean track record, i.e. the bidder should not be under hold or blacklist by any of the BHEL units / any Govt of India PSU / Govt of India as on bid submission date.** Bidder should submit a declaration for this on their letter head duly signed by competent authority of the organization.

6. The bidder should have an average financial turnover of more than Rs 400 Lakhs for last three financial years viz 2019-20, 2018-19 & 2017-18.

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SECTION-C
GENERAL SPECIFICATION

1. Project Location:

Yadadri 5x800MW Power plant:
The 5x800 MW project site is located near Damarcherla of Miryalguda town in Nalgonda District. The site is approachable from Nalgonda city by road. The nearest airport is at Hyderabad.

2. INTENTOF SPECIFICATION

2.01.01 This specification is intended to cover the design, manufacture, assembly, Inspection and testing at Bidder's works; delivery including packaging in container for road worthy shipping for the items and all accessories specified in the scope of supply and as required for safe and trouble free operation of IP PUBLIC ADDRESS (PA) SYSTEM.

2.01.02 All systems covered herein shall be for the permanent phase of the project and shall include but not be limited to; design, supply, supervision of interface installation Bidder's works, test, commission and hand over to End user.

2.01.03 It is not the intent to completely specify all details of design and construction herein. Nevertheless, the system shall conform to high standard of engineering, design and workmanship in all respects and shall be capable of performing satisfactorily in continuous commercial operation under the prevailing environmental condition of the project site.

3. SCOPE OF WORK AND EXCLUSIONS

GENERAL
The scope of work in this document specifies the technical & contractual requirements for the design, supply, erection, testing and commissioning of IP PA SYSTEM. Bidder shall be fully responsible for compliance of the system to be supplied in line with the requirements of this specification. Provisions included in the specification will not be limitative to the scope of work and bidder shall be responsible for supply, installation, erection, commissioning and handing over of complete system. Bidder shall provide supply/services for any further activities which will improve the quality & performance of the system offered within the quoted price. Tentative list of distribution of call station and speakers are listed in the Annexure-II of this specification. The plot plan of the projects is enclosed as Annexure-VI for estimating the quantity of cables and other associated accessories called in sets /lots in the BOM (Annexure-I) of this specification. **The project is spread in a very wide area having a boundary wall of approx 22Km.**

INCLUSION IN SUPPLY: The scope of supply in this specification includes complete design, fabrication, manufacture and assembly, inspection, shop testing at manufactures works, supply, transportation to site, site testing, erection and commissioning and performance testing of the complete PA SYSTEM. All items mentioned in the BOM of the PA system at Annexure-I along with all other miscellaneous consumables required for meeting the functional requirement of the system or for erection and commissioning of the system are to be supplied on as required basis.

SCOPE OF SERVICE
Following service shall also be provided by Bidder for equipment & systems supplied under this specification except specific exclusion mentioned in later section of the specification: -

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- Carrying out detail engineering, preparation and submission of all drawings as specified elsewhere in this specification including preparation and submission of area wise bill of materials, layout and erection drawings showing location of all system equipment and components, cable schedule, cable tray/rack and conduit routing.
- Inspection and testing at Bidder's works as per TSGENCO approved Quality Assurance Plan (after ordering).
- Packing and forwarding of all items (except cables) included under this specification in a weather proof container with lock and key. The bidder shall be responsible for safe storage of the items inside the container. It shall be bidder's responsibility to take required materials out of container for erection and commissioning of the systems and keep the remaining in the container.
- The erection, installation and commissioning of the complete PA SYSTEM will be in bidder scope of services. This will include but not limited to following
  - i. Storage in weather proof container during entire period of E&C
  - ii. Erection (including civil work), Mounting, Installation, programming and commissioning of all items supplied for PA system (as per site requirement on as required basis)
  - iii. Laying, splicing, testing and termination of all type of cables
  - iv. The cables of the systems will be generally laid on the cable tray where ever available in the plant. For remaining areas, required cable trays and its erection shall be in bidder scope. Last section of cables may be required to be laid inside conduits/cable trays. Underground cabling is also to be done on as required basis.
  - v. Erection of conduit/cable tray, network panels, enclosure, switch, LIU, patch cords etc.
  - vi. Erection and commissioning of all the interfaces
  - vii. Installation and configuration of all the software
  - viii. Travel to site, stay at site and local travel at site. Any incidental expenses at site to engage local man power.
  - ix. Demonstration of functionality to BHEL/END users
  - x. Training on operation and maintenance to end users

- Bidder will, during the time of detail engineering and installation of the quoted system, interact and coordinate with any other agency regarding collection/retrieval of inputs/information/data and all such works shall be under the scope of this Bidder. If necessary, bidder may contact purchaser for clarifications before submission of their Bid.
- Site modification and preparation of "as-built" documentation".
- Securing certification from relevant authorities, wherever applicable.
- Project management and scheduling including micro-planning in specific work area and reporting progress periodically.
- Bidder has to provide the services required for completeness and correctness of the system irrespective of whether it is mentioned in the specification or not.
- **The complete erection and commissioning of PA SYSTEM are to be done as per availability of fronts in the power plant. E&C will have to be done in parts spreading over a period of around 3-4 years from delivery of the materials at site. The erection and commissioning would therefore require multiple visits to site for survey, planning, cable schedule preparation, laying of cables, call station / loudspeaker mounting, sever installation and commissioning and call station / loudspeaker commissioning etc. Bidders should consider these aspects in their E&C offer.**

EXCLUSIONS from scope of supply / services:

a) Unloading of container and other items at site
b) Lifting of 42U panels from BHEL stores to respective control room

4. ENVIORNMENTAL CONDITIONS

Instruments, devices and equipment for location in outdoors/indoor/air-conditioned areas shall be designed to suit the environmental conditions indicated below and shall be suitable for continuous operation in the operating environment of a coal fired utility station and also during periods of air conditioning failure without any loss of function, or departure from the specification requirements covered under this specification.

Ambient Temperature Class	Pressure	Relative Humidity	Atmosphere	IP
Outdoor Location				
55 degree C max.	Atmosphere	100 % Max.	Air (dirty)	IP 55
10 degree C min.	Atmosphere	5 % min.	Air (dirty)	IP 55
Indoor Location				
55 degree C max.	Atmosphere	95 % Max.	Air	IP 54**
10 degree C min.	Atmosphere	5 % min.	Air	IP 54**
Air-Conditioned Areas				
24 +/- 5 degree C normal	Atmosphere	95 %Max.	Air	IP 22***
55 degree C max.*	Atmosphere	5 %min.	Air	IP 22***

* During air conditioning failure.
**For non-ventilated enclosures. For ventilated enclosures, protection class shall be IP 42.
***With a suitable canopy at the top to prevent ingress of dripping water.
For Hazardous areas the protection class shall be in accordance with the requirements of the relevant NEC code for the location

PCs, OWS, EWS, Servers, Printers, mini UPS and other peripherals, maximum ambient temperature shall be 40 Deg. C.

5. FACTORY ACCEPTANCE TEST (FAT)

i. Factory Acceptance Test procedure shall be prepared by Bidder along with Quality Assurance Plan. The document shall be subject to End user's approval.
ii. All System equipment shall be tested at bidder's work prior to clearance for shipping. The FAT shall include individual equipment tests and integrated under fully assembled condition.
iii. The FAT shall demonstrate adherence that the equipment meets the design standards and functional compliance.
iv. One (1) month prior to the FAT, Bidder shall submit a test procedure to End user for approval.
v. Factory Acceptance Tests (FATs) shall be documented with the results obtained and the success or failure of the test. The test results shall be submitted to End user prior to clearance of the FAT and authority by End user is given to ship
vi. Typical applicable Quality plan for FAT is attached as Annexure-V.

6. DISCREPANCIES

In case of discrepancies between the technical requirements and other applicable Engineering Standards, Materials System Specifications, Standard Drawings, or industry standards, codes, and forms shall be resolved in writing by Bidder with Purchase. Before

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starting the manufacturing / supply, Bidder shall inform Purchase of any discrepancy between the instructions of the present specification and Bidder's standard. Bidder is also advised to discuss on any clarification required before submitting their offer to avoid any ambiguity/dispute later on.

It shall be the responsibility of Bidder to determine and comply with the statutory regulation (i.e. city, state, national, provincial, etc. codes or ordinances) which will apply in the location where the item is to be installed. Mandatory regulations cannot be superseded by this specification.

In case of any discrepancy in specification / parameter mentioned in this purchase specification, the stringent one shall be applicable and to be considered & offered.

7. Technical Specification Requirements

It is highly preferable to provide the PA SYSTEM solution based on open architecture as described in the specification. Proprietary products / solutions are not acceptable. All software offered in the system including OS shall be offered with lifetime validity permanent licenses for the required quantities. The software supplied should be latest at the time of dispatch.

7.1 Interface of the PA SYSTEM:

i. Interface from Master Clock System: Complete PA SYSTEM has to be time synchronized with Master Clock (MC) available at site. This has to be achieved by acquiring clock signal either to servers or to network switch using Network Time Protocol (NTP). Subsequently rest of PA SYSTEM items i.e., other servers, client stations, call stations and network switches shall be time synchronized with master clock.

ii an interface to the telephone system shall be provided to enable users to broadcast routine speech announcements from telephones assigned the correct class-of-service. The system interface to the telephone system shall be via a 2- wire/4-wire E & M tie-line/E1 line /SIP channel. Facilities shall be included to prevent acoustic feedback that may be generated from telephones situated close to loudspeakers.

iii. The PA system shall have to be interfaced / linked to CCTV system of the project. Details of linking and functionalities of integration shall be finalized during detailed engineering.

7.2 Detailed specifications of system components: The detailed technical specification of the PA SYSTEM is available at later sections and BOM is available as Annexure-I. However, technical requirement for other components are mentioned below.

LED Backlit Monitor:

Viewable size min	As per BOM
Max resolution	1920 x 1080 Pixels.
Contrast ratio	1000:1
Brightness	250 cd /m^2.
Viewing angle	160V / 170H Typical (@ 10:1 CR)
Interface	HDMI
Power supply	100 to 240 VAC; 50/60Hz.
Other features	Tilt and swivel provisions to be present.

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Alarm I/O Device:

Input ports	As required
Output ports	As required
Interface	RJ-45, 10/100 mbps Ethernet.
Mounting kit	DIN Rail or Rack Mount.
Compatibility	Should seamlessly integrate with proposed system

a) N/A

b) Uninterruptible Power Supply (UPS):
1KVA UPS with 30min backup with SMF VRLA battery. The UPS should have following features:

i) Input: 140-270V AC
ii) Frequency: 47 – 53Hz
iii) Output: 1KVA
iv) Rated voltage: 230V AC 50Hz
v) Power factor: >= 0.7
vi) Overall efficiency: >= 85%
vii) Automatic Switchover time: <5msec or better
viii) Other features: overload, short circuit, over voltage and under voltage protections

c) Rack End Patch Cord
The Patch Cord shall be of CAT6 STP PATCH CORD –min 1 MTR (3 feet) Blue Colour factory molded as per EIA/TIA standards.

d) End User Site Patch Cord
End User Site Patch Cord shall be of CAT6 STP LSC2 PATCH CORD –min 2 MTR (7 feet) Blue Colour factory molded as per EIA/TIA standards.

e) 19" rack mountable 24 Port CAT6 STP Patch Panel Loaded
This item shall be 24 port PATCH PANEL RJ-45 Loaded CAT-6 STP 19" rack mountable patch panel preferably with front loaded 6 in a block as per EIA/TIA standards, modular in mechanism.

f) 9U cabinet 65X600X500 (HXWXD) - Wall Mounting Rack
9U cabinet shall be of Width (mm)-600, Depth (mm) - 500, Approx. Wt (kg) - 20, CRCA 'D' Grade thickness (mm) - 1.2, Powder Colour for Cabinet - RAL9002, Glass - 4mm Toughened Tinted Glass Door,
Accessories: Cable Manager Metal- 2 Nos, Mounting Hardware, rubber grommet (nickel coated), Door Lock – 1no

g) 42U cabinet 2026X800X800mm (HXWXD)–
Standalone Rack42U cabinet shall be minimum of Width (mm) 800, Depth (mm) 800, Powder Colour for Cabinet, Glass: 4mm Toughened Tinted Glass Door, Accessories: Cooling Fan (230V A/C 90 CFM), Heavy Duty Stationary Shelf, Mounting Hardware, earthing Strips 150mm, Door Lock - 1No

1. Material of Construction: Cold Rolled Coal Annealed (CRCA) steel sheet
2. Thickness of Sheet:
    a) 2.0 mm for faces supporting instruments / terminals
    b) 1.6 mm for other sides and top
3. Construction: Welded throughout as per approved National Standards

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4. Post welding operation:
    a) Grounding of all welds to smoothness
    b) Rounding of corners
    c) Cleaning of weld spatters
5. Panel height: 2300 mm (approx.)
6. Corners: 7 mm inner radius
7. Dimensional Tolerances:
    a) In height & length - 3 mm
    b) In height between adjacent sections - 2 mm
    c) Total for a group - 6 mm
8. Doors: Double, recessed, turned back edges, full height front & rear
    i) Thickness of Sheet: 2 mm
    ii) Hinges: Stainless steel
    iii) Door latches: Three-point type
    iv) Door gaskets: Neoprene rubber on fixed frame to result dust proof/weatherproof enclosure
    v) Opening of the doors: Outward
    vi) Louvers: With removable wire mesh to ensure dust and vermin proof
9. Gland plates: Removable in sections 4 mm thick (bottom)
10. Cable entry: Bottom
11. Hardware:
    a) Anti vibration pad- 15 mm
    b) Predrilled base channel ISMC – 100 or equivalent for all sides
    c) Stainless steel buff- finished 2 mm thick kick plate for all sides
    d) Stainless steel scratch strips along desk edges fixed with pan-head recessed screws
    e) Rubber strips to ensure air tightness between kick plate and finished floor
    f) Lifting hook / Eye bolt
    g) Drawing pocket
    h) Door switch, lamps, thermostat, heaters and industrial grade cooling fans, illumination fixtures
12. Name Plate: Both at front and back surface of the panel
13. Fixing of name plate: Stainless steel pan head screws
14. Name plate material: Laminated phenolic (3 layers)
15. Lettering: Black with white engraved
16. Mounting of terminal blocks: Vertical angle support bracket tack welded on sheet steel plate, screwed on internal wall of enclosure

h) Splicing Tray - It shall be Modular Splice Tray Cassette for pigtails 12 fiber capacity.

i) 19" LCS2 Modular LIU-Fiber Optic Drawer-24 Port The item shall be Modular fiber optic drawer modular 19"(LIU) 24 port - FIBER OPTIC
DRAWER loaded with SC Pigtail - 9/125 µm for 6 Cr. OFC armored LCS2 and adapter for 6 OFC SM LCS2 without Blanking plate. The LIU should either be suitable for outdoor mounting/fixing or suitable enclosure for outdoor mounting to be provided

j) HDPE pipe
The HDPE pipe shall be used for laying OFC and STP cables for underground cabling. HDPE pipe shall be permanently lubricated type with ISI marked. The internal diameter of the HDPE pipe shall be suitably selected so that 50% free space is maintained during cable

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drawing. The pipe shall conform to DOT standard GR/CDS-08/02 Nov. 2004 with latest amendments.

k) Power Supply Unit

BHEL will provide 230 VAC 50HZ single phase centralized UPS power supply at each power generation unit of the project's in CCR area for the PA system. Bidder has to use this UPS supply to power the entire PA SYSTEM including items like Servers, Clients, Network active components, call stations, amplifiers, loudspeakers etc. For equipment far away PA system's PDB mounted in the 42U panels, shall be powered from 1 KVA online mini UPS. Any power conversion needed by PA system / other equipment due to their rated operating voltage level / types the suitable power packs shall be included from the same make of the main equipment.

ii) The component level power supply unit shall have stabilized voltage outputs for input variation between-10% and +10%.

iii) The power supply unit shall be able to supply the whole equipment load and allow 50%future growth. It shall be fitted with suitable optical indication of correct working condition.

l) RIGID STEEL CONDUIT

i) Conduits up to and including 25 mm shall be of 16 SWG and conduits above 25 mm shall be of 14 I size of conduits shall be 19 mm.

ii) Each piece of conduit shall be straight, free from blister and other defects and covered with capped bushing at both ends.

iii) All rigid conduit couplings and elbows shall be hot dip galvanized rigid mild steel in accordance withIS:9537 Part-I (1980) and Part-II (1981). The conduit interior and exterior surfaces shall have a continuous zinc coating with an over coat of transparent enamel lacquer or zinc chromate. Conduits shall be furnished in standard length of 3 meters, threaded at both ends.

iv) All rigid conduit fittings shall conform to requirements of IS:2667,1976. Galvanized steel fittings shall be used with steel conduit. All flexible conduit fittings shall be liquid tight, galvanized steel. The end fitting shall be compatible with the flexible conduit supplied.

m) FLEXIBLE CONDUIT

i) Flexible conduit shall be of three-layer construction of very high quality of lead coated steel. Outside and inside layer shall be reinforced with heat resistant material.

ii) Lead coating outside and inside of the conduit steel surface shall provide a non-corrosive characteristic. Besides flexibility, this shall be strong enough to stay at the desired profile without support and shall be durable and strong so as to offer sufficient mechanical protection. It shall also be fully liquid dust and air tight and shall withstand temperature up to 100 °C.

n) Cable Tray:

Perforated mild steel, hot dip Galvanized cable trays with cover – Height 25mm, Width 50mm, and thickness 2.0mm, Coupler plate and cover are also of 2mm thick mild steel and hot dip galvanized. Associated fasteners shall be zinc passivated/electroplated. (Standard length of each tray: 2.5m).

Perforated cable trays along with associated accessories such as coupler plates, bends, and covers shall be fabricated from minimum 2.0 mm thick mild steel sheets.

The hot dip galvanized coupler plates thickness of 2mm shall be provided.
All trays with above mentioned accessories shall be hot dip galvanized after fabrication.
Weight of zinc coating shall be 610gm/sq. mtrs with minimum thickness of zinc deposit at any spot as 86 microns.
Cable trays shall be supplied in standard length of 2500 mm.
Finished cable trays and accessories shall be free from sharp edges, corners, burrs and unevenness.
Coupler plates and accessories like fasteners etc.; shall be provided on “As required” basis. Fasteners shall be zinc passivated / electroplated.

o) Junction Box

a) Material- min 4mm thick FRP (Fiberglass Reinforced Polyester)
b) Type- Screwed at four corners of door, door gasket shall be synthetic rubber
c) Mounting clamps and accessories: Mounting plate of 2mm thick mild steel to be provided inside JB, mounting clamps suitable for mounting on walls, columns, structures etc. shall be provided. The brackets, bolts, nuts, screws, glands, SS handle and Lugs required for erection shall be of SS304, included in Bidders scope of supply. M6 earthing to be provided.
d) Protection Type: IP55 of indoor and IP65 for outdoor

p) OWS

1. Processor : Latest, minimum Intel Core i5 or equivalent
2. Configuration : Tower
3. Internal clock : 3.2 GHz (minm.)
4. Architecture : 32 bit
5. Video Card : PCI
6. RAM : 4 GB (Minimum) DDR
7. Hard drive : 500 GB SATA
8. Cache : 512 KB Level 2
9. CD/DVD Drive : DVD - Both Read & Write for OWS.
10. Audio controller : 16-bit
11. Operating system : Latest Windows
12. Communication ports : minimum 2nos Ethernet ports(1000 MB) & 4nos USB ports

Monitor:
1. Type : TFT monitor
2 Screen diagonal : 24 inch flat
3 Display : XGA or better
4 Resolution : 1024 X 768 or better
5 Degree of protection : IP-30
6 External Controls : Brightness, contrast, Horizontal / Vertical amplification & shift
7 Power supply : 240 V, 50 Hz, 1 phase
8 Ambient temperature: 0-50 Deg C
9 Humidity : 95% non-condensing

q) SERVER- Rack mountable

1. Processor : Latest, minimum Quad core intel xeon or equivalent
2. Mother board : Intel C600 series chipset or equivalent

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3. Internal clock : 3.2 GHz (min.)
4. Raid support : SAS Raid Controller with support for RAID 0/1/1+0/5/5+
5. Video Card : Min 4 PCI-Express slots using single processor
6. RAM : 16 GB (Minimum) DDR3
7. Hard drive : Server should support minimum eight 2.5" HDD bays as Standard, expandable to 16 HDD bays. The chassis should be capable of supporting SAS/SATA/SSD drives. The storage capacity of server shall be adequate for storing all voice and data of PA system of respective zone for 1month.
8. Power supply : Redundant hot swappable
9. Operating system : Latest Windows server
10. Communication ports: minimum 5nos Ethernet ports(1000 MB) & 6nos USB ports

8.00.00ENGINEERING DESIGN DOCUMENTATION

8.0.01 Bidder will produce drawings of complete system to be submitted to Owner for approval, indicating upon each the following:

a) Overall dimensional drawing of system cabinet, console and its accessories. Block diagram of system offered with a brief write-up on operation including hook-up arrangement with existing system.
b) Data sheets.
c) Bill of Materials.
d) Typical general arrangement drawings of various call station and speaker stations.
e) Schematic diagram of each type of station.
f) Mounting details.
g) Cable connection diagram for various type of stations, clearly indicating cable size, number of pairs/cores etc.
h) Total power consumption details.
i) Heat load details of panel equipment.
j) Technical leaflets on each piece of equipment viz call station, speaker etc

8.0.02 The Systems Design Manual shall contain all relevant information pertaining to the design and operation of the delivered equipment.

8.0.03 This is intended to provide Owner with an understanding of the operational and design parameters of the equipment and to resolve System operational problems.

9.00.00 SITE ACCEPTANCE TEST (SAT)

9.0.01 Site acceptance test shall be performed by Bidder to verify the full operational functionality of the System.

9.0.02 Four weeks prior to the SAT Bidder shall submit a test procedure to Owner for approval.

9.0.03 All SAT tests shall be documented with the results obtained and their success or failure. These test results shall be submitted to Owner prior to clearance of the SAT and proceeding to the final performance tests.

10.00.00 TOOLS & TACKLE

Bidder, in his proposal, shall include and provide a list of all tools and tackle which may be required for erection, maintenance, overhaul and replacement of equipment / component to be supplied under this specification. Unit rate of the same shall be provided.

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11.00.00 CLEANING, PROTECTION AND PAINTING

11.00.01 All equipment shall be shipped in properly cleaned condition. All the equipment shall be thoroughly cleaned to remove mill scales, rust etc. and properly painted with anti-rust primer, where applicable

11.00.02 Some of the equipment and accessories, after arrival at site, are likely to be in storage for long periods before they are taken up for erection. Bidder may provide adequate protection for preventing damage due to corrosion, dust / dirt ingress, ageing etc.

11.00.03 Plugs shall be provided at cable entry holes/adapters to avoid entry of dust and foreign particles. Paper cap will not be acceptable.

12.00.00 IDENTIFICATION, MARKING, PACKING AND STORING

12.00.01 Each equipment shall be individually packed, tagged and protected.

12.00.02 Inscription on equipment (labels) shall be in English.

12.00.03 Packing must be such to protect all goods from possible impacts and foreign matters; moreover, it must limit the influence of both the climate and the environment, and be suitable for the kind of shipping provided for.

12.00.04 In packing the equipment and accessories, all necessary precautions will have to be taken to avoid any damage during transport and delivery.

12.00.05 All items supplied shall be packed for long term storage under the climatic conditions prevailing at the site. Small items shall be packed in sealed transparent plastic bags with desiccator packs as necessary. Each item shall be clearly marked with its description, purpose and plant designation code as applicable. When more than one item is packed in a single case a general description of the contents is to be shown on the outside of each case and a detailed list enclosed. All cases and other packages must be suitably marked and numbered for identification purposes.

13.00.00 SHIPMENT

Bidder shall be responsible for ensuring that all equipment is carefully and/or suitably packed for shipment, so that they arrive at site in good condition and remain so during storage at site. Before dispatch, all exposed surface shall be protected by applying anti rust primer (two coats) and suitable cover shall be provided for the equipment to be supplied. Bidder will be responsible for all damages due to improper preparation of the goods for shipment.

14.00.00:

Documents to be submitted Along with offer

- Data sheets / catalog for all the items offered in the system.
- Signed Technical compliance to each clause of this specification.
- Deviation list, if any; Bidder may note that for all the items of exact or better specifications (if model meeting exact specification is not available) are acceptable but not inferior.
- Block diagram for connectivity of PA SYSTEM
- Write-up on functionality of each item and overall system

Documents to be submitted after receipt of order

- On receiving the order prior to supply, manufacturing datasheet for all the items to be provided which will be approved by end user
- Quality plan based on format attached in this specification.
- Power distribution scheme drawing.
- Network scheme drawing.

- General Arrangement (GA) of Power Distribution, Network panel and wall mount Enclosure.
- User manuals for all the equipment.
- Original Software Set up CDs OS, VMS, VCA and any other relevant CDs.
- Standard Test certificates for Call stations, loud speakers, accessories, Computers, Storage, Network switches, cables.

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PROJECT SPECIFIC TECHNICAL SPECIFICATION

1.0 PURPOSE:
The purpose of this design document is to cover basic approach for designing of Public Address System (PA System) for the 5x800MW Yadadri power plant.

2.0 DESCRIPTION:
The System offered shall be minimum 2-Channel Page & Party configuration with various area wise zone stations forming functional groups comprising Field Call Stations and Loudspeakers. The PA system shall be Paging System shall be IP based. The field call stations shall be IP addressable whereas the speakers shall be of analogue type without IP addresses. The field call stations shall have additional amplifier to drive additional one speaker.

3.0 ZONE WISE DISTRIBUTION OF SYSTEM:
PA system shall comprise following separate zones:

a) Zone-I for Unit 1
b) Zone-II for Unit 2
c) Zone-III for Unit 3
d) Zone-IV for Unit 4
e) Zone-V for Unit 5
f) Zone-VI Common area
g) Zone-VII for CHP Area
h) Zone-VIII for Plant Water System

3.01.02 The system shall be based on distributed network the system shall provide coverage to various locations within the plant. The distributed nodes shall be interconnected through OFC based network.
3.01.03 The system will be installed in an adverse industrial environment. Equipment in some areas will be subject to vibration, dust, oil/water vapours as prevalent in thermal generating plant.
3.01.04 The design shall be such as to provide highly intelligible minimum two-channel voice communication even in areas of high background noise (50 dB to 100 dB).
3.01.05 The system under this tender shall make use of the Optical Fiber Cable backbone, laid for connecting two geographically separated PA controllers. The PA and Industrial Talkback Controller at CCR shall cater the areas such as DM water, Boiler and Turbine, ESP, Admin Building, Security office, gates, Chemical Building, CW Plant, Switchyard etc. The PA Controller at CHP Control Room shall serve the areas around CHP such as wagon tippler, CHP Electrical Control Room. The speakers, FCS shall be connected to their respective PA controller thoroughfare optic cable network. The structure of the fiber optic cable backbone, field Ethernet switches, number of master call stations etc may be subject to changes during detail engineering stage. The different types of speakers and Call Stations shall be deployed over locations around each of the nodes. In noisy areas shall bemused along with acoustic booth. The speakers and FCS in each zone shall be connected through Star fashion to the respective ethernet switch.
3.01.06 Each node location and some other locations equipped with a Field Ethernet Distribution switch and shall also be equipped with PA Remote Interface equipped switching technology, which form part of the In-Plant paging and PA remote node. L2 field/edge switches shall be minimum Layer-2 managed type with minimum 8 port 10/100 Mbps port and

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2 Nos. SFP FO Port. L2 distribution switch shall be minimum Layer-2 managed type and minimum 24 port 10/100 Mbps port and 2 Nos. SFP FO Port. These switches should be connected in a ring network and 20% spare port of each type shall be available in each switch.

3.01.07 Equipment shall be self-protecting against transients in the input A.C supply and against failure of any component or cable in the entire communication system. The in-Plant Paging system shall provide zoned and plant-wide paging together with amin 2 party communication channels within each zone or plant area.
3.01.08 Required functions for individual stations shall be programmable and configurable through pre-loaded software that permits local changes to the configuration. Levels of system access and privileges shall only be assignable to selected individuals.
3.01.09 The PA and Industrial Talkback system shall be expandable to cater for future expansion phases in terms of additional nodes, zone expansion and additional control and access panels.
3.01.10 Speaker cabling and visual alert cabling shall all be on a ring to provide resilience.
3.01.11 Calls will be carried out through loudspeakers installed in the various locations across the Project.
3.01.12 The area coverage will be such that calls will be clearly audible in the paged operating areas and their surrounding space.
3.01.13 The plant area shall be divided into zones each with sections. Final distribution of units over the zones will be finalised during detailed design. This will be related to area configuration and other operational objectives.
3.01.14 Some PA and Industrial Talkback field call station units may be located in areas with a fair degree of background noise. Therefore, the requirements shall be for directional dynamic microphones, with strong noise suppression together with input/pre-amplifier sections including filtering and speech compression giving the highest practicable levels of intelligibility.
3.01.15 The In-Plant Paging system shall provide zoned and plant-wide paging together with a minimum of 1 Channel-party communication channels within each zone or plant area and allowing minimum one (1) simultaneous conversation within the area (zone).
3.01.16 The system shall be capable of providing an audio output to a Digital Voice Recording System.
3.01.17 Facilities shall be provided for local loudspeaker muting to prevent acoustic feedback that may be generated from nearby access panels.
3.01.18 Each operator's control set will be able to:

a) Address a call to one or multiple sections.
b) Address a call to one or multiple zones, by activating the selected zones.
c) Transmit a general call to the whole area activating all sections simultaneously.

3.01.19 The system shall also provide the following facilities:

a) A two-wire telephone interface is to be connected to the telephone system.
The PABX to which this is to be connected shall be designated during the detailed engineering phase.
b) The interface shall provide 48 V supply on the two wires respectively with600 ohm impedance.
c) An acoustical feedback suppresser.
d) Integrated test equipment to identify faults on the external loudspeaker lines along with a Notebook PC for testing purposes at remote locations as a maintenance terminal together with the existing PC shall be utilized for testing purposes at the main equipment.

3.01.20 The following shall form part of the central equipment located in the CCR:

a) PABX Interface
b) Acoustic feedback suppression

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c) CD audio player

3.01.21 The operator control sets shall be provided in key location.

3.01.22 CD audio player shall be provided as one of the input/output sources to/from the public address system which shall have the capability to broadcast the player output.

3.01.23 Any field call station can selectively dial any other call station from its inbuilt dialling pad without the manual intervention of any zonal operator. **The intelligent unit, dialling button/keypad etc shall be an integral part of the call station and shall not be procured from different OEMs and combined.**

3.01.24 All the system elements in PA and Industrial Talkback system viz. Controller, field call station, amplifier, software shall be offered from the same OEM.

3.01.25 The powering philosophy for PA system and other allied accessories shall be as under.

a) At Power House, PS power points shall be provided by the Owner within 3meters of the point of location of the 42U panel housing PA system server and allied accessories.

b) At other locations, a PDB shall be provided by the Bidder to distribute UPS power supply to PA system components. All required components for PDB like MCB, fuses, power supply cable etc shall be provided by the Bidder on as required basis.

3.01.26 The Bidder shall provide the earthing of the system as per their industry standard. The telecom earth shall be connected to the main Electrical earthing system by the Bidder under their scope.

3.02.00 DETAILED CHARACTERISTICS

3.02.01 The equipment shall be fully solid-state type / microprocessor based and programmable.

3.02.02 The Operator Access Units shall be IP based and shall be connected to the central control cabinet using Cat6 or suitable cable cables.

3.02.03 PA Controllers/Servers at CCR and CHP Control Room shall be fibre optic interfaces to establish optical communication over OFC link between two PA Controllers.

3.02.04 Configuration of the system shall be achieved by software for maximum flexibility. A “user friendly” setting up and checking routine shall be provided which enables an operator using a PC to implement speed commissioning and fault-finding functions. The use of these methods shall allow adjustments to be easily made when the system is installed without resulting in modifications to the system wiring. The system shall be provided with standard serial interface (preferably a USB connection) to be connected with a laptop for local and remote access for maintenance and operations activities. One Notebook PC shall be provided for these functions.

3.02.05 All software utilized shall be the latest and upgraded version.

3.02.06 The system shall be designed to comply with EMI and RFI regulations, particularly the requirements of IEC 61000 series.

3.03.00 MAIN SYSTEM FEATURES

3.03.01 Configuration of Announcement Priorities Announcements from different sources can be configured to override others. Fixed frequency preannouncement tones can be generated under software control.

3.03.02 Gain Control of Announcements shall be individually configurable to different levels. This is a useful feature which allows an alarm to be muted while a broadcast is made and then increased back to its original level afterwards.

3.03.03 Software

a) The software shall be “user Friendly”, for easy re-configuration, maintenance and future expansions.

b) The software shall be able to work with the latest windows version.

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3.03.04 Speaker/Line Monitoring

a) The system shall provide the facility for monitoring speaker loop status. Automatic setting procedures shall be able to be programmed in order to check and set all output line condition.

b) Difference above a set percentage will result in an alarm indication on the control mimic panel.

3.04.00 TECHNICAL FEATURES

3.04.01 The design of the system and distribution of loudspeakers and flashing lights shall be based on the following requirements:

a) The alarm signal level at every location on the installation shall exceed background noise level, at that location, by at least 10 dB. Greater than20dB is undesirable.

3.04.02 The main design criteria for coverage shall be:

a) Areas with average noise level below 86 dBA shall have complete audible voice and alarm coverage with all loudspeakers working, and complete alarm tone coverage with half the loudspeakers on.

b) Areas with average noise level above 83 dBA shall have a partial audible voice coverage during operation. Alarm and voice signals shall be completely audible when ambient sound level is reduced below 83 dBA as during maintenance.

c) Loudspeakers will also be installed in areas where the audible communication is impossible during normal operation due to high ambient noise level. The system in that particular area shall be designed for the situation when the particular noise is shut off.

d) The Bidder shall be fully responsible for the design and distribution of loudspeakers across the plant including all buildings to ensure intelligible and adequate message broadcast.

3.04.03 After the completion of installation the system coverage shall be tested using SPL meter to ensure adequate coverage of the plant and its associated buildings.

3.05.00 SYSTEM CABINET

3.05.01 The control sub-system, speech amplifiers and their ancillary devices shall be housed in a 19” standard rack mounted system cabinet with all control, power circuits and necessary amplifiers and shall be supplied in pre-wired conditioned and shall be completely tested at manufacturer’s works prior to despatch.

3.05.02 This shall meet the technical requirements as described in Section VI and VII of this volume of the specification.

3.06.00 DIGITAL VOICE STORAGE / PLAYBACK UNIT (DVSP)

3.06.01 This unit is used, as above, to gain access to the PA system by telephone or radio, but the message to be broadcast is digitally stored and played through the DVSP monitor speaker on the Engineers Test Panel, this allows the engineer to intercept calls which he does not think are suitable for broadcast.

3.06.02 The DVSP shall record calls that cannot be sent to all required zones because some are occupied by a higher priority call. The unit shall store up to minimum 15calls in high quality format with a maximum of three minutes for each call, including chimes and pre-recorded messages. Playback of a call can start while it is still being recorded. The unit can record and/or playback up to minimum eight calls simultaneously

3.07.00 PROGRAMMING AND INTERFACE

a) The system functions may be programmed from a variety of external and/or internal sources such as via the connection to a Notebook PC.

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b) Long range remote access which may be used for setting up, fault finding, system parameter changes etc., using the PTT network via 32 bit dial up modem is an advantage.

3.08.00 CONTROL SETS

3.08.01 A directional gooseneck microphone shall form part of each control set. When the microphone shall be use, nearby loudspeakers shall be muted to avoid acoustic feedback. The microphone amplifier shall be fitted with an automatic gain control for convenience in use.

3.08.02 Each control set shall be equipped as minimum with the following:

a) A magnet dynamic, gooseneck microphone and a telephone call station with automatic switch from the microphone to the call station upon lifting the last one.

b) Necessary lamps, push buttons, switches, display and indicators to monitor and control the system.

4.00.00 LOUD SPEAKER

4.01.00 General Requirements

a) The loudspeakers shall be normal, weatherproof in all locations and explosion proof type, depending upon the location in which they will be installed.

b) The nominal power is intended as the power of a sinusoidal signal continuously applicable without damage. All speakers shall have the same rated power and shall be adjusted to provide the required coverage.

c) The primary winding of the transformer shall be tapped so that the loudspeakers will absorb from the line 100%, 50%, 20%, or 10% of its power, according to the tap used.

d) The reproduced frequency band shall be at least 370 to 6000 Hz for all the transducers, within +/-6 dB range.

4.02.00 Weatherproof Loudspeakers

a) They shall have protection to meet IP 65, IEC 60529 Publication.

b) The explosion proof requirement shall be in accordance with the area classification in which it will be installed.

c) The utilised material shall be polyester resin armoured with fibre glass or equivalent, suitable to resist the aggressive atmosphere. The loudspeakers shall have a diffusion angle between 100° and 120° with the minimum sound pressure level, measured 1 m away along the diffusion axis, when a continuous constant level sinusoidal sound signal with 1 W power is applied and the transformer is tapped for the maximum absorbed power shall be minimum 107 dBA.

d) The indoor loudspeakers installed in various buildings shall provide pleasant appearance and blend with the surroundings.

e) The flashing light shall be addressable for remote maintenance and checking from the PA Administration station.

4.03.00 Acoustic Feedback Protection

The system shall be fitted with devices to enable and affect frequency shifting of voice input during PABX radio access. Acoustic feedback via telephone or radio connection to the PA/alarm system can only be totally eliminated by the use of a digital voice storage/play-back (DVSP) unit.

5.01 TECHNICAL PARAMETERS- PUBLIC ADDRES SYSTEM:

01. System	: Min.2-Channel Page & Party
02. System Architecture	: Separate functional groups (Field call stations / Loudspeakers)
03. Zone Station	: Area-wise
04. Master Control	: One station (1)-coordination Zone Stations.
05. Zone call discipline	: Between Zones & Master station

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06. Master call discipline : All Zone stations
07. Alarm siren : From MCS on Zone basis/plant basis
08. Override : From MCS for broadcast.
09. Operating Voltage : 240 Volts 50 Hz AC
10. Master Control Station : Rack mounted, free standing
11. Location : Indoor, air-conditioned
12. Support capability : Expandable to 100 zone stations
13. Interface required : EPABX & Radio
14. Input sources : Voice, tones, pre-recorded messages, music
15. System features : Private communication, conference call, PA
16. System programming : Field Programmable
17. Master Access Panel : Desk-top, Indoor, air-conditioned
    - Microphone : Gooseneck(>400mm)
    - Enclosure : Anodized aluminium / ABS plastic
    - Zone selection : Dedicated buttons
    - Emergency features : One touch paging, caller ID, Speed dialling
18. Zone Station : Hands-free, wall mounted/desk top, dual direct.
    - Location : Indoor/Outdoor
    - Mounting : Desk/Wall mounted
    - Protection : Corrosion resistant & pilfer proof.
    - Protection Class : IP65 for outdoor and IP40 for indoor
    - Body : Heavy duty GRP.
    - Microphone Type : Gooseneck (>400mm).
    - Volume Control : Via keypad.
    - Body : Moulded Polyurethane
    - Operating voltage : 24 V DC.
    - Distance : 2Km (max.).
    - Loudspeaker output: Yes

5.02 TECHNICAL PARAMETERS- WEATHER PROOF HORN TYPE SPEAKER

01. Housing : Special Plastic
02. Connection : Screw Terminal
03. Ingress Protection : IP65
04. Weight : Bidder to quote
05. Colour : Light
06. Mounting : Plastic Bracket/Stainless Bracket
07. Rated Power : 25 watts
08. Transformer : 100v; 25/14/7. 5/2 watt
09. Sound Pressure Level1W,1m: 110dB
10. Sound Pressure Level25W,1m: 120dB
11. Frequency Range: 370Hz to 7000Hz
12. Dispersion-6dB-1KHz/4KHZ: 140° /40°
13. Operating Temperature: -10°C to 60°C

5.03 TECHNICAL PARAMETERS- INDOOR CONE SPEAKER

01. Housing : Special Plastic
02. Ingress Protection : IP40
03. Weight : Bidder to quote
04. Connection : Clamp
05. Volume Control : Required
06. Rated Power : 15 Watt

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07. Transformer : 100v 6/3/. 5watt
08. Sound Pressure Level1W,1m: 91dB
09. Effective Frequency Range: 100 to 15000Hz

5.04 TECHNICAL PARAMETERS- INDOOR CEILING MOUNTED SPEAKER (6WATT)

01. Housing : Mild steel
02. Sound pressure level, power Watts/1m, Db: 103 dB
03. Nett weight, Kg : Bidder to quote
04. Effective frequency range : 100-20,000 Hz
05. Transformer Power tapings, Watts : 0.75, 1.5, 3.0, 6.0, 10
06. Input impedance standard model, Ω : 13.33k, 6.6k, 3.3k, 1.66k, 1.0k
07. Impedance : 8 Ω
08. Operating Temperature : 0°C to +50°C
09. Protection class : IP-40

5.05 TECHNICAL PARAMETERS- WEATHERPROOF OUTDOOR CALL STATION (TYPE-B)

01. Glass FRP / ABS housing, pilfer proof type
02. Plug in front unit with all functional parts
03. Dial keypad
04. Call or busy signal by light emitting diodes
05. Noise compensated inbuilt microphone with dynamic compression and PTT operation
06. Microphone sensitivity and volume control
07. Potential free relay point
08. Connector for optional amplifier booster amplifier
09. Direct intercom connections
10. Can be switched to low volume
11. Led indication of incoming call and line busy, prioritized
12. Supply voltage range : 48-60 v dc
13. Max. Quiescent current : 25 mA
14. Max. Operating current : Approx. 125 ma
15. External Loud speaker : 25 W
16. Frequency range : 300 hz to 3.4 khz
17. Electrical data booster amplifier - output power: 25 w / 400 ohm
18. Operating temperature : -10° to +60° Celsius
19. Protection class : IP-65
20. Area of use : Non hazardous
21. Inbuilt Loudspeaker : 1 watt

5.06 TECHNICAL PARAMETERS- INDOOR CALL STATION (TYPE-A)

01. Plastic housing (ABS) with aluminium base plate, pilfer proof type
02. Humidity non-condensing : 80%
03. Integrated full range speaker : 1W 8 Ω
04. All keys with individual labelling area
05. Call or busy signal by light emitting diodes
07. Microphone sensitivity and loudspeaker volume control
08. Monitoring of microphone function
09. Potential free relay contact
10. Supply voltage range : 48-60 V DC
11. Frequency range : 300 hz to 3.4 khz
12. Max. Quiescent current : 50 ma

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13. Max. Operating current : 180 ma
14. Amplifier power rating : 25 Watt
15. External Loudspeaker : 25Watt
16. Average speech power : (1 W / 1 m) 86 dB
17. Electrical data booster amplifier - output power - 25 W / 400 Ohm
18. Operating Temperature : 0° to +40° C
19. Protection class : IP30 or better

5.07 TECHNICAL PARAMETERS- MASTER CALL STATION

1. Frequency range : 300 Hz to 7 khz
2. Inbuilt Loudspeaker : 1 Watt/8Ohm
3. Electrical data booster amplifier : output power: 25w / 400 Ohm
4. Protection class : IP30 or better
5. Microphone : Gooseneck & handset
6. Enclosure : ABS plastic
7. Number of Keys : 40 direct keys with individual labelling area & LED

5.08 TECHNICAL PARAMETERS- DESKTOP MOUNTED CALL STATION (TYPE-C)

1. Frequency range : 300 Hz to 7 khz
2. Inbuilt Loudspeaker : 1 Watt/8Ohm
3. Electrical data booster amplifier : output power: 25w / 400 Ohm
4. Protection class : IP30 or better
5. Microphone : Gooseneck & handset
6. Enclosure : ABS plastic

All outdoor call stations and their components shall be capable of continuous satisfactory operation at an ambient temperature of 55 degree centigrade.

6.00 DIFFERENT TYPE OF CALL STATIONS:

a) Type-A: PA Instrument complete with or without wired call station and amplifier with **indoor-type** enclosure. It shall be suitable for mounting on wall/column with in covered area inside building.

b) Type-B: PA Instrument complete with or without wired call station & amplifier with **outdoor-type** enclosure. It shall be suitable for mounting on wall/column in open area. The enclosure shall be dust proof, water proof as per industrial standard. It shall be provided with canopy.

c) Type-C: Desk Top Mounted PA Instrument complete with call station and amplifier. It shall be suitable for mounting/placing on table with in control rooms.

d) Type-D: Outdoor type PA Instrument complete with microphone, speaker and amplifier, but without wired call station. The communication shall be possible thru built in microphone. The enclosure shall be dust proof, flame/explosion proof (EEX-D type), water proof as per industrial standard. It shall be provided with canopy. For areas with explosive gaseous environment, the call station shall also meet explosive gas requirement of Gas group-IIC.

7.00 POWER SUPPLY:

The system shall be suitable for operation from 240V AC 1-phase, 50Hz supply. Redundant power supply will be provided to PA system cabinets (housing servers / switches etc) to be mounted in various locations. The redundant power supply will be distributed to various components and also field components. For certain location where it is not possible to power field components from PA system cabinet, mini UPS shall be provided with2hrs back to power

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such field components. The power supply to such mini UPS shall be fed from nearest Lighting Panel/ Power DB/Lighting receptacle.

8.00 ACOUSTIC HOOD/BOOTH:

01) Housing - Rot/vandal resistant glass reinforced polyester /Hot-galvanized sheet steel or stainless steel with 15-watt lamp
02) Self colour-yellow, visible during emergency/Paint- Powder Coated
03) Luminous yellow green glow in dark condition, lasting up to minimum 10 hours or more
04) Sound absorbent- Up to 12 dB(A) when it will be used as Acoustic Hood
05) Resistant to chemical spillage/vapours and are fire-retardant and weather proof
06) Flashing beacons telephones and sounders can be attached to the hood
07) Temperature Range: +60 Deg C to -10 Deg C
08) Humidity: Up to 100%
09) Insulation: Rockwool RAF-SE
10) Dimension: As per Vendor

Sound proof booths shall be provided in BFP, ID, FD, PA, MILLS, BOILER BURNER FLOOR, TG 8.5 MTRS, TG 17 MTRS, feeder floor, AHP Silo, Crusher House, Air Compressor, DG Building.

9.00 JUNCTION BOXES: All junction boxes (JB) shall be made of Fibreglass reinforced polyester material with min thickness 4 mm, door handle, self-locking with common key, door gasket shall be of Synthetic rubber & provided with cage clamp type terminal blocks. Protection class of junction box shall be IP-65.

10.00 CABLES:

Following cables shall be used:

a) Optical fiber Cable: For Connecting two separated PA controllers
b) CAT-6: Ethernet Switch to PA speaker & Call Station
c) Power cable: For powering the equipment like server, network switches etc.

CAT6 STP Cable

Cat6 cable shall be shielded Twisted Pair (STP- CAT6 Cable) category 6 LAN (local area network) four pair cable per box 305 mtrs 23 AWG, which is UL listed, conforming to the following standards in Cat 6 STP cable like IEC 11801 edition 2.0, Nominal Velocity Propagation (NVP) 72%, as per EIA/TIA standards and cable laying shall be through MS/PVC conduit or floor raceways including connections etc. as required complete in all respects. Screened Twisted Pair (STP) Cables conforming to ANSI/TIA/EIA 568-B.2-1, 4pair UL/NEC rated and shall have maximum attenuation of 54.8 dB/100m at 600 MHz Each pair shall be separately shielded with polyester aluminum foil.

01. No of Pairs	: 4 Pair
02. Conductor	: Solid tinned copper
03. Construction Parameters	: Values
04. Nominal DC Resistance	: 67 ohms/1km
05. Nominal Impedance	: 100 ohms+/-15 Ohms
06. Nominal Capacitance	: 46pf/m
07. Nominal Velocity of Propagation	: 68%
08. Nominal Attention	: 100 MHz: - 19.9 dB/100m 155 MHz: - 25.3 dB/100m 200 MHz: - 29.2 dB/100m

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09. Insulation Materials : Poly Vinyl Chloride
10. Cable Outer Diameter : 0.38 mm+/-0.15 mm
11. Nominal Outer Diameter : 6.35 mm
12. Bend Radius : 0.90 For 6.35 mm

FIBRE OPTIC CABLE

Fibre Optic cable shall be single mode 4F, full spectrum, low water peak type fibre core, with polyethylene inner and outer sheath, armoured cable conforming to IEC 60793-2-50 and ITU-T Recommendation G 652D. All OFC should be laid in conduits.

01. No. of fiber : 4F
02. Core : The fiber shall be full spectrum, low water peak type
03. Guiding standard : ITU-T recommendation G.652.D and IEC60793-2-50
04. Bandwidth : 10Gbps
05. Core Diameter : 9 µm
06. Cladding diameter : 125 µm
07. Nominal Velocity of Propagation: 68%
08. Nominal Attenuation : 100 MHz: - 19.9 dB/100m
155 MHz: - 25.3 dB/100m
200 MHz: - 29.2 dB/100m
09. Optical laser source wave length: 1310nm/1550 nm
10. Attenuation level: 0.34 dB/km or better at 1310 nm, 0.21dB/km or better at 1550 nm
11. Inner Sheath and Outer Sheath: Polyethylene
12. Armouring : Corrugated steel tape
13. Patch cord, Pigtails and connectors: Single mode and duplex type and same through out the network.
14. Bend Radius : 20X outside diameter for installed load and10X outside diameter for long term load

(Refer Annexure-III for more details of FO Cable)

POWER CABLE

Power cables shall be Annealed tinned copper conductor, armoured FRLS type with PVC inner and outer sheath (yellow colour) conforming to IS 1554. Cable Glands shall be Double Compression type.

SL.NO.	PARAMETER	SPECIFICATION
01.	Component Copper	: Auxiliary power Four conductors, 14AWG,0.9mm
02.	Shielding	: Unshielded
03.	Jacket	: HDPE
04.	Insulation	: PE
05.	Overall Copper Braiding: Overall 80% Tinned Copper Braiding	

(Refer Annexure-III for more details of Power Cable)

11.00 NETOWRK REQUIREMENTS: ETHERNET SWITCHES

Data highway shall be of high-speed Ethernet and full duplex configuration. Network shall be built on the Managed Ethernet switches for better control of data traffic & performance and future expansion. Switch configuration shall be redundant with seamless changeover without any upset in the process or equipment. The bidder shall select the port architecture of each switch by considering adequate nos of SFP and ethernet port for connection to calls station as well as other IP equipment in the system. Failure reporting shall be available at HMI. MTBF of the switch shall be more than 20 Years. Configuration shall be automatic. Other requirements shall be as follows.

FIELD SWITCHES

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a) All managed switches shall work in IEC-61850-3 protocol environment and shall support IEC-62439 standard ring redundancy topology (MRP) and also fast MRP. It shall also support IEC-62439-3 standard PRP& HSR technology with 0ms recovery time and also support IEC-61850 switch (RSP & MSP switches).
b) Switch shall act as IGMP-querier and minimum 2 alarm contacts shall be available
c) It shall have High MTBF value
d) It shall support ACA adaptor for reconfiguration of the switch in case of failure to reduce MTTR value to less than one minute and shall have minimum of 4 fibre and 4 copper din rail switch RSPL.
e) It shall be of POE type (i.e Power over Ethernet)

L3 CORE / DISTRIBUTION SWITCH
a) Switch shall have the capacity for maximum of 4nos Giga bit fiber port and 24nos ethernet ports ensuring 30% spare port of each type in each switch.
b) The Central control switch shall be manageable type with minimum Layer-3 functionality. The switch shall have required nos. of fiber optic (FO)/SFP and RJ-45 port including 20% Spare ports for each type. No media converter shall be used for connecting OFC cable to switches or call station to field/distribution switches. All the switches shall be powered from UPS
c) All the switches shall operate with wire speed switching on the same Network Management Software and shall have required intelligence and synchronization to control, monitor and maintain the IP network of the CCTV system. It shall be possible to administer all the switches from a pre define PC in the network.
d) Following is indicative network ring to be followed. However, the network shall be as per actual site requirement based on location finalisation of all call station and loudpseakers.

RING-1
CCR-Boiler and Turbine Area-> CPU Generation Plant -> DG &Compress House -> 400KV Switchyard->400KV Switchyard Control Room-> Service Build-> HFO, LDO Pumphouse->Ash Water Pump House->CCR
RING-2
CCR-> Ash Slurry Pump House ->AHP Control Room-> AHP Compressor House ->ESP Control Room ->FGD Plant->Vacuum Pump House->Silo Utility HCSD Pump House-> CCR
RING-3
CCR->Switch Yard Control Room->DM Plant Building->Cooling Water Pump House->CW Plant->Chemical House->Clarified Water Pump House-> Centrifuge Building->CCR
RING-4
CCR->CHP Area-> CCR

12.0 CABLE ROUTING:
The PA system cables will be laid in already routed cable trays in different areas of power plant for power& signal cables.
12.0.1 The VOIP (voice over IP) server shall have the provision for telephone/EPBAX interface in line with specification.
12.0.2 The system distribution nodes shall be interconnected through OFC based network in line with specification.
12.0.3 System shall have CD audio player as one of I/O sources to/from the PA system which shall have the capability to broadcast the player Output.
12.0.4 System shall be such that fixed frequency pre annunciation tones can be generated under software control.

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13.0 MEAN TIME TO REPAIR (MTTR)

The design and construction of the PA system shall ensure high reliability and availability. The PA system shall employ modular constructional techniques in its design. Allowing a first line maintenance philosophy of module replacement to be implemented.

The average module replacement time for the system is less than 1 hour as long as the correct spares holding are maintained as recommended by Bidder.

14.0 LOCATION OF CALL STATIONS, SPEAKERS ETC:

Locations for different type of call station and loudspeakers in general shall be as per Annexure-II. However, these are tentative location and there can be some change in the exact location depending on functional requirements of the system / mounting feasibilities etc. Bidder has to supply all items called in lots in BOM on as required basis as per location finalised during E&C stage of the system.

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Annexure-I
Bill of Material

	Quantity to be offered		Reference Quantity	
ITEMS DESCRIPTION	**UNIT**	**Qty**	**UNIT**	**Qty**
MAIN SUPPLY				
CALL STATIONS				
OUTDOOR WALL MOUNTING TYPE WITH AMPLIFIER	NOS	255		
INDOOR WALL MOUNTING TYPE WITH AMPLIFIER	NOS	193		
Desktop mount call station	NOS	17		
Flame proof type call station	NOS	10		
LOUDSPEAKERS				
OUTDOOR INDUSTRIAL HORN TYPE	NOS	301		
CEILING TYPE	NOS	71		
INDOOR WALL MOUNTED CONE TYPE	NOS	103		
ACOUSTIC BOOTH	NOS	39		
ACOUSTIC HOOD	NOS	87		
MASTER CONTROL UNIT	NOS	15		
EXTENSION AMPLIFIER-25W (each call station) along with power supply	NOS	475		
REDUNDANT SERVER for call station (excluding CHP Area)	SET	1	NOS	1 (redundant)
REDUNDANT SERVER for call station in CHP Area	SET	1	NOS	1 (redundant)
OWS with 24" Monitor	SETS	4		
NETWORK SWITCHES (INCL 20% SPARE PORT OF EACH TYPE OF PORT IN EACH SWITCH)				
L3 Core Switches	LOT	1	Nos	1
Distribution Switches	LOT	1	Nos	2
NETWORK Switch(Edge Switch) - PoE with min 4Tx and 4Fx ports (Bidder can offer combination of various type of switch to optimise qty)	LOT	1	Nos	200
CABLES & ASSOCIATED ACCESSORIES				
POWER CABLE ARMOURED (MIN 2.5SQMM OR AS REQD) FOR CONNECTING call station& FIELD SWITCHES	LOT	1	MTRS	80,000
POWER CABLE UNMOURED (MIN 0.75SQMM 2 core) BETWEEN call station TO LOUDSPEAKER	LOT	1	MTRS	6,000
CAT6 CABLE (incl 5000mtrs mandatory spared to be handed over loose)	LOT	1	MTRS	37,000
ARMOURED FO CABLE 6F (incl 5750mtrs to be given as loose spare)	LOT	1	MTRS	95,750
Cable Tray with necessary mounting accessories	Lot	1	MTRS	3,000
Flexible GI Conduit for power cable to loudspeaker, FO cable, CAT6 cable on as required basis with necessary accessories	Lot	1	MTRS	15,000
Rigid Conduit for all CAT6 cables and FO cable (where ever required)	Lot	1	MTRS	10,000
HDPE 32mm ISI, with bends, coupler and other mounting accessories	Lot	1	Lot	10,000
PVC conduit 25/32mm along with all mounting/jointing accessories	Lot	1	MTRS	5,000
Miscellaneous items	LOT	1	As required for entire system	
Fiber optic accessories like Fiber Patch Cable, LIUs, Pigtails etc required for completion of the splicing and termination of FOC				
Cat-6 cable accessories like UTP Patch Cable, patch panel, etc for Termination of all CAT5e cables.				
Electrical items such as TBs, MCBs, cable coverings, cable managers, RJ45 connectors, power distribution boards etc.				

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Mechanical items such as G/C channels, DIN Rail, JBs, cable glands, lugs, mounting accessory for call stations/speakers etc.				
IP65 Industrial Wall Mount Enclosure or JBs with other electrical/FO accessories for housing field switches along	Lot	1	NOS	100
IP65 Industrial Wall Mount Enclosure or JBs with glass door & other electrical/FO accessory (for housing Field call station, amplifier, Power supply for call station and amplifier).	Nos	255	NOS	255
Mini UPS OF SUITABLE RATING WITH PDB FOR POWERING 4-6 CALL STATION & LOUDSPEAKER WITH 60MIN BATTERY BACKUP	Lot	1	NOS	20
42U panel for housing SERVER, NETWORK SWITCH, PDB etc in control room	Lot	1	NOS	2
Interface to/from GSM system, plant EPABX system and CCTV system along with required hardware, software, cables etc on as required basis	Lot	1	As required.	
ANY OTHER HARDWARE, SOFTWARE, ACCESSORY, CABLE ETC REQUIRED TO COMPLETE THE SYSTEM AND ALSO ITEMS MENTIONED IN TECHNICAL SPECIFICATION BUT NOT COVERED IN THIS BOM	Lot	1	As required.	
Weather proof Container of suitable size and quantity as required for with lock and key for storing PA SYSTEM components except cables	SETS	1	As required.	
SERVICES				
ERECTION, CABLE LAYING, INSTALLATION, COMMISSIONING & HANDING OVER OF ALL ITEMS FOR THE COMPLETE PA SYSTEM and Training for 5 days to TANGEDCO officials on operation and maintenance of the system	LOT	1	As required.	
MANDATORY SPARES				
CALL STATIONS				
OUTDOOR WALL MOUNTING TYPE WITH AMPLIFIER	NOS	37	NOS	37
INDOOR WALL MOUNTING TYPE WITH AMPLIFIER	NOS	28	NOS	28
Desktop mount call station	NOS	3	NOS	3
Flame proof type call station	NOS	2	NOS	2
LOUDSPEAKERS				
OUTDOOR INDUSTRIAL HORN TYPE	NOS	56	NOS	56
CEILING TYPE	NOS	14	NOS	14
INDOOR WALL MOUNTED CONE TYPE	NOS	20	NOS	20
MASTER CONTROL UNIT	NOS	2	NOS	2
Power supply Module	NOS	86	NOS	86
EXTENSION AMPLIFIER-25W offered for call station	NOS	70	NOS	70
Panel wiring cables & Special cables (if any)- 20% used in Panel	LOT	1		
Terminal Blocks- 20% used in entire system	LOT	1		
Fuses – 20% used in entire system	LOT	1		

Note: The quantity mentioned under column "Reference quantity" are indicative quantity which may be required for the PA system. These quantities are neither minimum nor maximum quantity to be offered/supplied. Bidder should refer the plot plan & call station/ loudspeaker location provided in this specification to "estimate & offer" quantities on as required basis, for all items which are called in lots/sets in above BOM, without any cost implication to BHEL.

ANNEXURE-II-LOCATION OF CALL STAION / SPEAKER/HOOD/BOOTH

SL. NO	DESCRIPTION OF LOCATION	CONTROL / ZONE STATION	FCS TYPE-A	FCS TYPE-B	FCS TYPE-C	FCS TYPE-D	CEILING TYPE SPEAKER	INDOOR CONE SPEAKER	HORN TYPE SPEAKER	ACOUSTIC HOOD	ACOUSTIC BOOTH
A.	**Unit Area Zone**										
1	Power House Bldg (Exact Location finalisation later)	1	11	4	1	1	5	5	5	2	1
2	Boiler Area (Exact Location finalisation later)			16					16	4	1
3	ESP Area		1	1				1	1		
4	Mill Bay Area			2					2	1	1
5	FD/PA/ID Fan Area		1	1				1	1		1
6	AHP Unit area		3	2			1	2	2		
	Total ZONE-1 (Unit Area)	**1**	**16**	**26**	**1**	**1**	**6**	**9**	**27**	**7**	**4**
	Total for 5 units (5 zones # 1-5)	**5**	**80**	**130**	**5**	**5**	**30**	**45**	**135**	**35**	**20**
B	**ZONE-6 (Common services Area)**										
1	Power House Building Control Room	1	1				1		1		
2	Switchyard Area			6	1			1	6	6	
3	Fuel Oil Unloading					1			1		
4	Fuel Oil Pump House					1			1		
5	LDO					1			1		
6	Central Control Building	1					2				
7	Chemical LAB (Neumatic Lab) Stg-1		1					1	1		
8	Chemical LAB (Neumatic Lab) Stg-2		1					1	1		
9	Chemical House		3					1	2		
10	Air Conditioning Plant Stg-1		1	1				1	1		
11	Air Conditioning Plant Stg-2		1	1				1	1		
12	Air Conditioning Plant Stg-3		1	1				1	1		
13	Emergency DG Building-1		2					1	1		1
14	Emergency DG Building-2		2					1	1		1
15	Emergency DG Building-3		2					1	1		1
16	Ash slurry pump house-1		2					1	1		
17	Ash slurry pump house-2		2					1	1		
18	AWR P/H		3					1	2		
19	Fly Ash Silo Area		3					1	2		
20	Service Building Stg-1 (including Elec and C&I lab)		8				2	4	2		

ANNEXURE-II-LOCATION OF CALL STAION / SPEAKER/HOOD/BOOTH

SL. NO	DESCRIPTION OF LOCATION	CONTROL / ZONE STATION	FCS TYPE-A	FCS TYPE-B	FCS TYPE-C	FCS TYPE-D	CEILING TYPE SPEAKER	INDOOR CONE SPEAKER	HORN TYPE SPEAKER	ACOUSTIC HOOD	ACOUSTIC BOOTH
21	Service Building Stg-2 (including Elec and C&I lab)		8				2	4	2		
22	Fire Station Building		2				1	1			
23	Air Comp. House Area-1		1	1				1	1	1	
24	Air Comp. House Area-2		1	1				1	1	1	
25	Hydrogen generation Building					1			2	1	
26	Administration Building		5		2		2	5			
27	Canteen (2 nos)		2						4		
28	Security & Time Office		3				1		2		
29	Workshop Building			1					1		
30	AHP Compressor Building-1	1	2				1		1		
31	AHP Compressor Building-2		2				1		1		
32	AHP Control Building		2					2			
33	FGD Area (3 nos)			3					6	1	
34	FGD MCC -1		2	1			1	1	1		
35	FGD MCC -2		2	1			1	1	1		
36	Gypsum & Limestone Area Stg-1		1	1				1	1		
37	Gypsum & Limestone Area Stg-2		1	1				1	1		
38	Premanent Store		1						2		
39	Watch Tower			6					6		
40	Gate Complex & Security Bldg		1		1		1	1	1		
41	Weigh Bridge			2					2	2	
42	Boiler SWgr Room 1,2 &3			3					3		
43	SWAS Room (5 Nos)		5				2	3			
44	Parking Area			3					3	2	
45	SCR		1	5				1	5	1	2
	TOTAL ZONE-6	**3**	**75**	**38**	**4**	**4**	**18**	**41**	**75**	**15**	**5**

ANNEXURE-II-LOCATION OF CALL STAION / SPEAKER/HOOD/BOOTH

SL. NO	DESCRIPTION OF LOCATION	CONTROL / ZONE STATION	FCS TYPE-A	FCS TYPE-B	FCS TYPE-C	FCS TYPE-D	CEILING TYPE SPEAKER	INDOOR CONE SPEAKER	HORN TYPE SPEAKER	ACOUSTIC HOOD	ACOUSTIC BOOTH
G.	**ZONE-7 (CHP Area)**										
1	CHP Areas	2		35					35	15	10
2	Coal Bulldozer House			2					2	2	1
3	Coal complex office building (6 Nos)		16		2		6	12	3		
4	Wagon Tippler Control Room	2	2	2			1	1	2	1	1
5	Coal transfer tower			15					15	7	
6	Crusher house		1	2			1		2		2
	TOTAL ZONE-7	**4**	**19**	**56**	**2**	**0**	**8**	**13**	**59**	**25**	**14**
H.	**ZONE-8 (Plant Water)**										
1	Raw Water Pump House	1	1	2			1		2	1	
2	Raw Water reservoir			3					3	3	
3	Effluent Treatment Plant		1	2			1		2	1	
4	Clarified Water Pump House		1	2			1		2	1	
5	Sewage Treatment Plant		1	2			1		2	1	
6	Water Service S/S & DM Plant Area		1	2			1		2	1	
7	CW Pump House Area (2 Nos)		2	2			2		2	1	
8	Chlorination & CWT Area-1	1	1	1			1		1	1	
9	Chlorination & CWT Area-2		1	1			1		1	1	
10	PTP Plant		1	1			1		1	1	
	TOTAL ZONE-8	**2**	**10**	**18**	**0**	**0**	**10**	**0**	**18**	**12**	**0**
	SPARE (Location to be decided during E&C)	**1**	**9**	**13**	**6**	**1**	**5**	**4**	**14**	**0**	**0**
	GRAND TOTAL	**15**	**193**	**255**	**17**	**10**	**71**	**103**	**301**	**87**	**39**
		Total qty of cal station- 475					**Total qty of loudspeakers - 475**				

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ANNEXURE- III

Specification of FO Cable: 4F, multi-tube, Armoured, Direct Burial 9µm/125µm SM FO cable

FOUR FIBRE MULTI TUBE CONSTRUCTION GEL FILLED, SINGLE MODE OPTICAL FIBRE CABLE (OFC) WITH 04 Nos. 9/125 MICRONS COLOR CODED FIBRES AS PER G.652 STANDARDS, ECCST ARMOUR, CENTRAL FRP STRENGTH MEMBERS, INNER SHEATH, WATER SWELLABLE/WATER BLOCKING TAPE, OUTER UV RESISTANT AND FIRE RETARDANT LSZH SHEATH HAVING ANTI-TERMITE AND ANTI-RODENT PROPERTIES, SUITABLE FOR DIRECT/DUCT BURIAL AND LAYING ON CABLE TRAYS. QUANTITY TOLERANCE: UPTO +5% OF TOTAL LENGTH EXTRA

Cables with fibers in jelly filled construction with ECCST Armour with WATER SWELLABLE/WATER BLOCKING TAPE for water ingress protection, provided with Central FRP strength member and inner sheath.
Outer UV resistant and fire retardant LSZH jacket having anti-termite and Anti-rodent properties
Provided with sequential length marking suitable for direct/duct burial, laying on cable tray

Single-mode fiber utilized in the optical fiber cable shall meet ITU G.651D, IEC Specification 60793-2-50 Type B1.3, with following specifications:

i. Fiber and buffering:

a) Fiber type: Stepped single mode Fiber
b) Core diameter 9 ± 1micron
c) 125 microns ± 0.7 micron
d) Cladding non-circularity ≤1.0 %
e) Core non-circularity ≤ 0.8µm
f) Primary coating diameter 245µm + 5µm

ii. Attenuation & Bandwidth:

a) At 1550 nm, attenuation < = 0.23dB / Km
b) At 1310 nm, attenuation < = 0.35dB / Km

General Specifications

Mechanical, Geometrical, Transmission and Environmental characteristics should be as per relevant IEC 60794-1-2-X spec
Stripping ability: All layers easily removed with commercially available tools.
Fiber Identification: All the fibers in the PBT lose tube are to be color for identification purpose with UV curable inks i.e., Blue, Orange, Green and natural. The tube color will be natural.
Marking: The cable should have identification marking at regular intervals of 1 meter which will be of permanent nature. The accuracy of the sequential marking should be within +/- 0.5%. The optical fiber cable shall as a minimum have the
following markings in every meter.
i) Type of Cable,
ii) Running meter length,
iii) Number of fibers,
iv) Type of fiber,
v) Manufacturer's name
vi) Supplier's Name – BHEL-EDN

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Immunity: The cables shall be immune to corrosive element found naturally in the ground. Optical fibers shall be coated with protective materials / coatings and should not have any reaction with cladding or core materials.
Life of cable: The minimum expected life of the cable shall be 25 years.
Cable Ends: Running end shall be provided with pulling eye & the other end shall be sealed with thermal shrink cap
Length of the cable drum: The length can be standard factory length. Care to be taken to minimize wastage while cutting to length by optimizing drum length in line with site requirement
Compliance: Cable should, in general, be ISO/IEC and EIA/TIA compliant and conform to Mechanical conditions as per IEC 60794-1-2-X Standards for Tensile force, Crush Resistance, Impact Resistance, Torsion, Kink, Repeated Bending and Water Penetration, etc.

Tests as per IEC 60794-1-2-X and other relevant specs have to be carried out and reports to be submitted:

1. Attenuation And Dispersion Characteristics Tests
2. Proof Tests
3. Macro-Bend resistance Test
4. Mechanical Tests
5. Low and High Temperature Cable Bend Test
6. Impact Resistance Test
7. Compressive Strength Test
8. Tensile Strength Test
9. Cable Twist Test
10. Cable Cyclic Flexing Test
11. Environmental Characteristics Test 12. Temperature Cycling Test
13. Color Performance Test
14. Cable Aging Test
15. Water Penetration Test
16. Lightning Test
17. FRLS Test

2.5 sq.mm 1100V GRADE, 85 deg. C TEMP. GRADE POWER CABLE :

1) The conductor material shall be of stranded, non-compacted & circular, high conductivity annealed plain copper, Armoured cables with voltage grade of 1100 V & temperature grade of 85 deg. C.
2) The cables shall be of 2.5 sq.mm cross-section, 7 strands high conductivity annealed bare copper conductor [7X0.67 mm for 2.5 sq.mm] (as per IS-8130).
3) The insulation material shall be extruded HR PVC type C (as per IS-5831). PVC insulation shall be suitable for continuous conductor temperature of 85 deg. C and short circuit Conductor temperature of 160 deg. C.
4) The minimum volume resistivity of cables shall be 3.5 X 10^{14} ohm-cm at 27° C & 3.5 X 10^{11} ohm-cm at 85° C
5) The inner & outer sheath material shall be extruded HR PVC type ST2 (as per IS-5831) with FRLS properties. The FRLS properties shall be identical to those required under Instrumentation cables
The thickness of insulation, inner sheath & outer sheath shall be conforming to IS- 1554, part 1 & other relevant standards. Filler material shall be same as inner sheath material.

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Cable shall be generally conforming to IS-1554, part 1 and shall also comply with other relevant standards for specific requirements. The list of relevant standards for this cable includes the following - IS-1554, part 1, IS-3961, IS-3975, IS-5831, IS-8130, IS- 10418, IS-10810, ASTMD-2863 & 2843, IEC-754-1, IEEE-383, IEC-332 (latest editions) and their amendments.

6) The cable shall also conform to other general requirements for Instrumentation cables under Clause 1 (1.2 through 1.11) & Clause 2 (E, H, J & L). The standard drum length shall be 1000 ± 5% meters, with balance quantity to complete the supply being given as a separate drum.

7) Cores of the cables shall be identified by coloring of insulation. Following color scheme shall be adopted:

1 Core Cable - Red, Black, Yellow or Blue.
2 Core Cable - Red, Black.
3 Core Cable - Red, Yellow, Blue.
4 Core Cable - Red, Yellow, Blue, Black.
5 Core Cable - Red, Yellow, Blue, Black, Grey.
3.8) The color of inner sheath & outer sheath shall be black.

8) HV Test to be 3kV rms core to core for 5 min.

Type Tests for power cables:

All cables to be supplied will be of type tested quality. The list of type tests applicable for Instrumentation, thermocouple & control cables is given in table below this clause. The vendor shall submit the reports of all the type tests listed in the below table for each size & type of cable under the supply (for each variety) for Customer/BHEL approval. The reports should be of type tests conducted within 5 years. The type tests should have been either conducted at an independent laboratory or should have been witnessed by a client. The type test reports in compliance to these requirements shall be submitted for Customer/BHEL approval. In case the vendor is not able to submit type test reports of earlier conducted type tests in compliance to above requirements, or, the type test reports submitted by the vendor is not approved/not accepted by Customer/BHEL, then the vendor shall conduct all such tests and submit the reports for Customer/BHEL approval.

TYPE TESTS FOR INSTRUMENTATION CABLES				
Sl. No.	Component	Test	Standard	Remarks
1	For Conductor (including drain wire)	Resistance test	IS-10810	
2		Diameter test	IS-10810	
3		Tin coating test (Persulphate test)	IS-8130	
4	For PVC Insulation and PVC Sheath (Outer)	Test for Thickness		
5		Tensile Strength & Elongation (before & after ageing)	IS-5831	
6		Ageing in air ovens	IS-10810	
7		Loss of mass	IS-10810	
8		Hot deformation	IS-10810	
9		Heat shock	IS-10810	
10		Shrinkage	IS-10810	

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11		Color fastness to water	IS-5831	Only for outer sheath
12		Bleeding & Blooming	IS-10810	
13		Cold bend/ Cold impact test	IS-10810	
14		Thermal stability test		
15		Volume resistivity & water immersion test (at room & elevated temperature)	IS-5831	
16		Oxygen Index & Temperature Index Test	ASTMD-2863	
17		Smoke Density Rating Test	ASTMD-2843	
18		Acid gas generation test	IEC-60754-1	
19		Oxygen index & Temperature index test for fillers	ASTMD-2863	
20		Acid gas generation test for fillers	IEC-60754-1	
21	For Al-Mylar Shield	Continuity test		
22		Shield thickness test		
23		Overlap & coverage test		
25	For Armoring	Tensile Strength		
26		Elongation		
27		Winding / Torsion test		
28		Resistivity		
29		Dimensions		
30		Uniformity of zinc coating		
31		Dip test		
32		Mass of zinc coating		
33		Tightness and gap test		

34	For Completed Cable	Constructional Details (Conductor & drain wire - number of strands & diameter of strands, Twisting & Lay of pairs Thickness of Insulation and Sheath, Dia of Armor, overall diameter, color & marking on outer sheath, numbering of pairs, core color, band marking, unit identification, visual & surface finish etc.)	BS-EN-50288-7	
35		Electrical Parameters (Mutual capacitance, Cross talk, Attenuation,	VDE-0472	

		Characteristic Impedance etc. as applicable)		
36		Insulation resistance		
37		High Voltage test	BS-EN-50288-7	
38		Noise Interference	IEEE Transactions	
39		Flammability test	IEEE-383, IEC-332-1	
40		Swedish Chimney test	SEN-4241475	
41		Drain wire continuity		
42		Anti-rodent, anti-termite, test on sheath		

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ANNEXURE- IV (APPROVED MAKES OF COMPONENTS)
Power cable
ADVANCE CABLES TECHNOLOGIES, BANGALORE
SUYOG ELECTRICALS LTD. ALKAPURI, BARODA Gemscab industries ltd, Bhiwadi
Gemscab industries ltd, Bhiwadi
NICCO cables,kolkata
KEC international ltd, Bangalore
Special Cables Pvt Ltd, New Delhi
CORDS CABLES, RAJASTHAN
DELTON CABLES,FARIDABAD
GOYOLENE FIBRES ,MUMBAI
ELKAY TELELINKS LTD FARIDABAD, HARYANA
INCAB, PUNE
KEI INDUSTRIES LTD, CHENNAI
T C COMMUNICATION PVT. LTD, NEW DELHI
MANSFIELD CABLES COMPANY LTD. NOIDA, U.P.
PARAMOUNT CABLES,ALWAR
POLYCAB,DAMAN
M/s THERMO CABLES, HYDERABAD
Cable Tray
M/s GEE DEE PACKAGES PVT LTD, MYSORE
M/s PRAMMEN INDUSTRIES, PUDUKKOTTAI
M/s PATNY SYSTEMS PVT. LTD, SECUNDARABAD
M/s M.J.ENGINEERING WORKS PVT. LTD, NEW DELHI
M/s]AMNA METAL COMPANY, NEW DELHI
M/s INNOSPACER ENGIN EERING TECHNOLOGIES, BANGALORE
M/s INDIA ELECTRICALS SYNDICATE, KOLKATA
M/s APT ENGINEERING WORKS, NEW DELHI
M/s RUKMANI ELECTRICAL & COMPONENTS PW, KOIKATA
M/s VATCO, KHAIRHNE, NAVI MUMBAI
M/s KANADE ANAND UDYOG PVT. LTD, ANDHERI
M/s CHEMIN CONTROLS AND INSTRI.JMENTATION" PONDICHERRY
M/s Silverline Power Infrastructurre Fvt Ltd"
M/S Indiana Gratings - Pune/Mumbai
M/S Industrial Perforation, Kolkata
MIS Ratan Engineerong and Projects, Kolkata
M/S Steelite Engg, Mumbai
M/S Amtech, Pune
FO CABLE
AKSH FIBRE, BHIWADI

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HFCL-GOA
FINOLEX , PUNE/GOA
D-LINK
BIRI.A ERICSSON,REWA
STERLITE
TERRACOM
MINI UPS
HITACHI HI-REI- POWER ELECTRINICS, BANGALORE
SCHNEIDER ELECTRIC, BAN GALORE
EMERSON NETWORK iNDIA,BANGALORE
APLAB LIMITED ,THANE
EMERSON NETWORK,PUNE
MONITOR
HP
DELL
IBM-LENOVO
SAMSUNG
OWS & SERVER
HP
DELL
IBM-LENOVO
NETWORK SWITCH
HIRSHMANN
CAT 5e UTP CABLE / PATCH CABLE/PATCH PANEL/LIU
AMP / DIGILINK / D-LIK / SYSTEMAX
SINGLE MODE FIBER PATCH CABLE / SC PIGTAIL
Avaya / Belden /D-Link / Digilink / Tyco

Note:

1. The makes mentioned above makes are approved makes approved by M/s TSGENCO as on date. However, bidders can offer other equivalent makes. BHEL will take up with M/s TSGENCO for approval of such makes offered by bidders for approval. In case offered make of an item(s) is not approved by M/s TSGENCO, bidder will be permitted to change and offer approved makes of such item(s) without any price implication.
2. For all other items whose makes are not mentioned above, for such items, bidder should offer only reputed makes which have been previously supplied and are in use in power plants or similar industries.
3. M/s TSGENCO has expressed that products of Chinese make are not preferred by them. In case bidder is offering any product made in china, the same should be clearly brought out in their bid so that the consent of M/s TSGENCO for such makes are obtained.

ANNEXURE- V FACTORY ACCEPTANCE TEST PLAN (TENTATIVE)

PROJECT: TSGENCO YADADRI 5x800MW			QUALITY ASSURANCE PLAN IP PA SYSTEM				EPC CONTRACTOR: BHEL SUB VENDOR:					
S.No.	COMPONENT & OPERATION	CHARACTERISTICS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENTS	ACCEPTANCE NORMS	FORMAT OF RECORD	INSPECTION AGENCY			REMARKS
				M	C&N				M	C	N	
1	Call station (outdoor / Indoor / Portable)	Aesthetic	Visual	100%	10%	Approved Datashet	Approved documents/Internal TC/OEM TC	internal inspection Report	P	V	V	
		Mechanical	Visual						P	V	V	
		Power on checks	Functional						P	V	V	
2	Loudspeaker (outdoor / Indoor)	Aesthetic	Visual	100%	10%	Approved Datashet	Approved documents/Internal TC/OEM TC		P	V	V	
		Mechanical	Visual						P	V	V	
		SPL level & sweep test response	Measurement									
		Dimensional	Measurement									
		Power on checks	Functional						P	V	V	
3	ACOUSTIC HOOD (BOOTH)	Aesthetic	Visual	100%	10%	NTPC Approved Datashet	Approved documents/Internal TC/OEM TC		P	W	V	
		dimensional	Measurement									
		Mechanical	Visual						P	W	V	
4	MASTER CONTROL UNIT	Aesthetic	Visual	100%	10%	Approved Drawing & datasheet	Approved documents/Internal TC/OEM TC		P	W	V	
		Mechanical	Visual						P	W	V	
		Power on checks	Functional						P	W	V	
5	STAND ALONE AMPLIFIER	Aesthetic	Visual	100%	10%		Approved documents/Internal TC/OEM TC		P	W	V	
		Mechanical	Visual						P	W	V	
		Power on checks	Functional						P	W	V	
6	Workstation with monitor, keyboard	Aesthetic	Visual	100%	10%		Approved documents/Internal TC/OEM TC		P	W	V	
		Mechanical	Visual						P	W	V	
		Power on checks	Functional						P	W	V	
7	Network Switches	Aesthetic	Visual	100%	10%		Approved documents/Internal TC		P	W	V	
		Mechanical	Visual						P	W	V	
		Power on checks	Functional						P	W	V	
~~8~~	~~Ethernet Media Converter 10/100~~	Aesthetic	Visual	100%	10%		Approved documents/Internal TC		P	W	V	
		Mechanical	Visual						P	W	V	
		Power on checks	Functional						P	W	V	
9	19" Control Rack (42U)	Aesthetic	Visual	100%	10%		Approved documents/Internal TC/OEM TC		P	W	V	
		Mechanical	Visual						P	W	V	
10	Mini UPS	Aesthetic	Visual	100%	10%		Approved documents/Internal TC/OEM TC		P	-	V	
		Mechanical	Visual						P	W	V	
		Power on checks	Functional						P	W	V	
11	5C x 1.5 sq mm Power Cable		Visual	100%	10%		Approved documents/Internal TC		P	W	V	
12	12P x 0.5 sq mm alarm Cable		Visual	100%	10%		Approved documents/Internal TC		P	W	V	

LEGENDS:
1) IIR=Internal Inspection Report
2) M=Manufacturer/Sub-Supplier
3) C=BHEL EDN
4) N= TSGENCO
5) P=Perform
6) W=Witness
7) V=Verf ication

FOR USE BY NTPC:

REVIEWED BY:

APPROVAL SEAL:

MANUFACTURER / SUB-SUPPLIER
SIGNATURE WITH SEAL

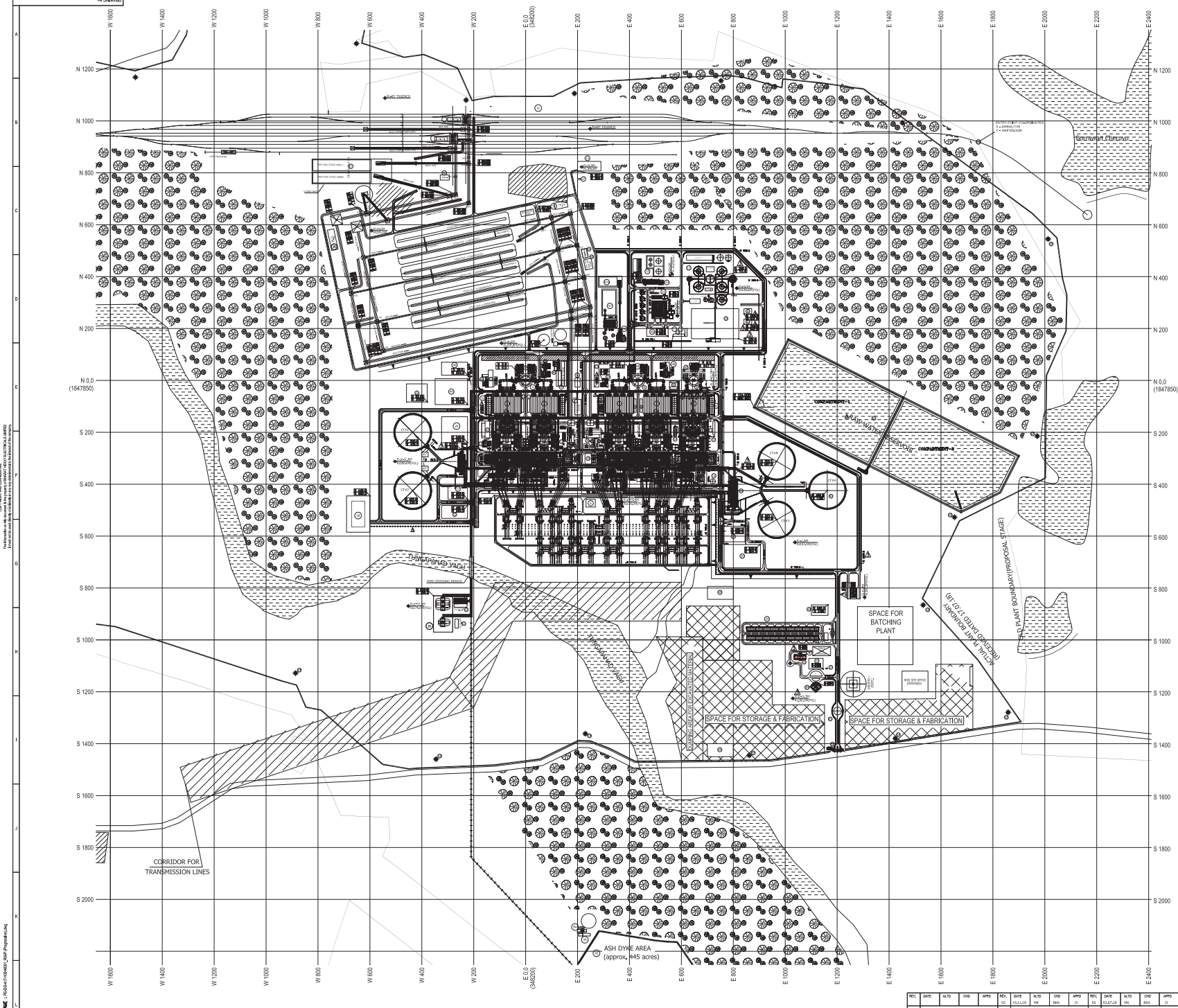
EPC CONTRACTOR
SIGNATURE WITH SEAL

PROJECT: TSGENCO YADADRI 5x800MW			QUALITY ASSURANCE PLAN IP PA SYSTEM				EPC CONTRACTOR: BHEL SUB VENDOR:					
S.No.	COMPONENT & OPERATION	CHARACTERISTICS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENTS	ACCEPTANCE NORMS	FORMAT OF RECORD	INSPECTION AGENCY			REMARKS
				M	C&N				M	C	N	
13	Cable Tray	Aesthetic	Visual	100%	10%	Approved Datashet	Approved documents/Internal TC/OEM TC	internal inspection Report	P	W	V	
		Mechanical	Visual						P	W	V	
14	1 inch Flexible GI Conduit	Aesthetic	Visual	100%	10%	Approved Datashet	Approved documents/Internal TC/OEM TC		P	W	V	
		Mechanical	Visual						P	W	V	
15	50 mm HDPE pipe	Aesthetic	Visual	100%	10%		Approved documents/Internal TC/OEM TC		P	W	V	
		Mechanical	Visual						P	W	V	
B. FINAL INSPECTION												
1	BOM & Model Nos.	Verify	Visual	100%	100%		Approved documents/Internal TC		P	W	W	1. For all Imported items- 100 % OEM TC/COC review. 2. For all Indigenous items- Mfr's TC/COC/Internal TC review.
2	Complete functional test of system using 1 sample of each type of call station & loupspeaker, server, Workstation and network switch	Functional	Functional	1 Sample	1 Sample		Approved documents/System Functionality	-	P	W	W	
				LEGENDS: 1) IIR=Internal Inspection Report 2) M=Manufacturer/Sub-Supplier 3) C=BHEL EDN 4) N= TSGENCO 5) P=Perform 6) W=Witness 7) V=Verf ication				FOR USE BY NTPC:	REVIEWED BY:		APPROVAL SEAL:	
MANUFACTURER / SUB-SUPPLIER		EPC CONTRACTOR										
SIGNATURE WITH SEAL		SIGNATURE WITH SEAL										

FIRST ANGLE PROJECTION

ALL DIMENSIONS ARE IN MM

DRAWING No. PE-DG-417-100-M001



S.No.	DESCRIPTION	CONFIG	SCOPE	ZONE
1	POWER HOUSE BLDG	-	BHEL	F-G,TBD
2	BOILER	-	BHEL	F-G,TBD
3	ESP	-	BHEL	F-G,TBD
3a	ESP CONTROL BUILDING	5	BHEL	F-G,TBD
4	CHIMNEY	2x2+1	BHEL	F-G,TBD
5	TRANSFORMER YARD	-	BHEL	F-G,TBD
6	SWITCHYARD & SWG CONT.ROOM	-	BHEL	F-G
7	SERVICE BLDG.	2 Nos.	TSGENCO	F-G,B-D
8	DESUB BLDG	1 No.	BHEL	F-G,B-D
9	SPACE FOR ISP WASHER	-	BHEL	F-G,T,B-D
10	DM PLANT	COMMON	BHEL	B-D
10a	CPU RESIN PLANT	COMMON	BHEL	B-D
11	FUEL OIL UNLOADING BY RAIL/RTO	COMMON	BHEL	B-D
11a	FUEL OIL TRANSFER AREA	COMMON	BHEL	B-D
12a	FUEL OIL FORWARDING PH	COMMON	BHEL	B-D
13	PRE-TREATMENT PLANT	COMMON	BHEL	B-D
14	DM OVERHEAD TANK	2NOs.	BHEL	B-D
15	RAW WATER PH CLAR TANK	COMMON	BHEL	B-D
16	CLARIFIED WATER PH CLAR TANK	COMMON	BHEL	B-D
17	RCC STRENGTH STATION	4 + 1	BHEL	B-D,PH
18	FLOCCUL PLANT & CYCL.BOXES SHED	COMMON	BHEL	B-D
19	CW PH & FOREBAY	2 + 2	BHEL	B-D,PH
20	COLORIMETRIC & CW TREAT. PLANT	2 + 1	BHEL	B-D,PH
21	EFFLUENT TREAT. PLANT	COMMON	BHEL	B-D
22	SEWAGE TREAT. PLANT	COMMON	BHEL	B-D
23	ADMIN. BUILDING	COMMON	TSGENCO	B-D
24	FIRE STATION BUILDING	COMMON	TSGENCO	B-D
25	CANTEEN	2NOs.	TSGENCO	B-D,B-D
26	FLY ASH SILO AREA	COMMON	BHEL	B-D
27	~~WORKSHOP~~ (PART OF PI PLANT)			
28	WORKSHOP	COMMON	TSGENCO	B-D
29	COMPRESSOR HOUSE	2 + 1	BHEL	B-D,B-D
30	COAL STOCK AREA	COMMON	BHEL	B-D,T,B-D
31	MARSHALLING YARD (WB TSGENCO)	COMMON	TSGENCO	B-D,T,D-B
32	GATE COMPLEX (LIM SECURITY BLDG)	COMMON	TSGENCO	B-D
33	PERMANENT STORES (YAMDONA)	8+1	TSGENCO	B-D,TB
34	AUXILIARY BOILER	COMMON	BHEL	B-D,B-D
35	CHP & ELECTRICAL BLDG.1	1 No.	BHEL	B-D,B
	CHP & ELECTRICAL BLDG.2	1 No.	BHEL	B-D,B
	CHP & ELECTRICAL BLDG.3	1 No.	BHEL	B-D
	CHP & ELECTRICAL BLDG.4	1 No.	BHEL	B-D
	CHP & ELECTRICAL BLDG.5	1 No.	BHEL	B-D
36	CHEMICAL LAB PLANT	1 No.	TSGENCO	B-D
37	ASHES (WAGAN SHED)	4 NOs.	BHEL	B-D,P-D,T,B-D
38	CST + PUMP HOUSE	2 Nos.	BHEL	B-D
39	AMPERI CLARIFIER, CHEM.BLDG & MCC	COMMON	BHEL	B-D
40	NDCT	3 NOs.	BHEL	B-D,T,B-D,TB
41	RAW WATER RESERVOIR	COMMON	TSGENCO	B-D,TB
42	PULVERIZED FUEL STONE	-	TSGENCO	B-D
43	ASH DYKE AREA (WB TSGENCO)	-	TSGENCO	B-D
44	ABRASIVE STORAGE & HANDLING PLANT	COMMON	BHEL	B-D
45	TBN	-	BHEL	B-D,T,B-D
46	LIME STONE PREPRESSION AREA	COMMON	BHEL	B-D,B
47	GYPSUM DEHYDRATION & STORAGE	COMMON	BHEL	B-D,B
47a	LIME STONE STORAGE SHADE	COMMON	BHEL	B-D,B
48	PCD MCC & CONTROL ROOM	2 Nos.	BHEL	B-D,B
49	RAIN WATER HARVESTING POND	1 Nos.	TSGENCO	B-D,B-D,B-D
50	ASH SLURRY PUMP HOUSE	3 Nos.	BHEL	B-D,T,B-D
51	ANCILLARY PUMP HOUSE	8 Nos.	BHEL	B-D,T,B
52	SUMPS & CHEM.BLDG	COMMON	BHEL	B-D
52A	ASH WATER PH VERT.TANK	COMMON	BHEL	B-D
53	AIR COMPRESSOR HOUSE	2 Nos.	BHEL	B-D
54	AHP & ELECTRICAL BLDG.1	1 No.	BHEL	B-D,T,B-D,P-D
	AHP & ELECTRICAL BLDG.2	1 No.	BHEL	B-D,B-D,B-D,T
	AHP & ELECTRICAL BLDG.3	1 No.	BHEL	
	AHP & ELECTRICAL BLDG.4	1 No.	BHEL	
	AHP & ELECTRICAL BLDG.5	1 No.	BHEL	
	AHP & ELECTRICAL BLDG.6	1 No.	BHEL	
55	~~ASH WATER PH VERT.TANK~~			
56	SWPH	10 NOs.	BHEL	B-D,P-D,B-D
57	RAW COAL STOCKYARD	-	BHEL	B-D,T,B-D
58	COAL TRE RUN OF POND	-	BHEL	B-D
59	BALLASTING TRAMWAY BLDG.	COMMON	TSGENCO	B-D
60	HIGH BRIDGE (PBW)	1 No.	BHEL	B-D
61	TWO & A LINK BRGR	2 Nos.	BHEL	B-D,B
62	FLY ASH EQUIPMENT TOWER	5 Nos. UNIT	BHEL	B-D,TB
63	HDB PAPHOOS (SIDE & LIMP HOLES)	1 No.	BHEL	B-D
	HDB PAPHOOS (SIDE & LIMP HOLES)	1 No.	BHEL	B-D
64	BA CHER FLOW TANK (CLAY SEAL) SUMP	1 No. UNIT	BHEL	B-D,TB
65	WATCH TOWER	20 Nos.	TSGENCO	B-D,C-D,D-B,B

NORTH
CONSTRL NORTH

WIND ROSE

REV.	DATE	ALTD	CHD	APPD

REV.	DATE	ALTD	CHD	APPD
01	15.11.18	MK	BKA	JJ
02	PLOT PLAN REVISED AS PER COMMENTS RECEIVED DATED 19.07.18 REVISED AS MARKED 1.			

REV.	DATE	ALTD	CHD	APPD
02	03.07.18	MK	BKA	JJ
01	PLOT PLAN REVISED AS PER MOM OF MEETING HELD ON 19.04.18 AT VIDYUT SOUDHA, HYDERABAD			
02	REVISED AS MARKED 2.			

REV.	DATE	ALTD	CHD	APPD
01	06.04.18	APB	BKA/MK	JJ
02	PLOT PLAN REVISED AS PER MOM OF KICK-OFF MEETING HELD ON 26.02.18 AT VIDYUT SOUDHA, HYDERABAD REVISED IN LINE WITH THE COMMENTS RECEIVED VIA EMAIL DATED 19.03.18.			

JOB NO. 417

STATUS CONTRACT

DISTRIBUTION

CUSTOMER: TELANGANA STATE POWER GENERATION CORPORATION LTD
TELANGANA INDIA
YADADRI TPS (5X800 MW)

CONSULTANT: TATA CONSULTING ENGINEERS LIMITED
BANGALORE INDIA

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR PROJECT ENGINEERING MANAGEMENT
NOIDA

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DEPT CODE	NAME	SIGN	DATE
DRN	AMS	-Sd-	15.12.17
DSGN	MK	-Sd-	15.12.17
CHD	BKA	-Sd-	15.12.17
APPD	JJ	-Sd-	15.12.17

TITLE

PLOT PLAN

DEPT. SCALE 1:5000 DRAWING NO. PE-DG-417-100-M001

SIGN

SHEET 1 OF 1 REV. 03

SIZE-A0

ELECTRONIC FILE NAME : PE-DG-417-100-M001_DMP-Proposal-R.dwg

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