

**TENDER SPECIFICATION**

**STN- 1256 /2024**

**FOR**

**11KV/433 – 250 V, 63 KVA**

**CSP ALUMINIUM WOUND DISTRIBUTION**

**TRANSFORMERS WITH BIS EE LEVEL-2**

**(STAR-2)**

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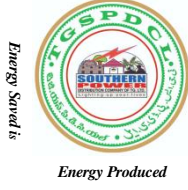
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**NOTE:**

1. Payment terms, Delivery period, Performance Bank Guarantee, applicable GST” should be in line with the terms and conditions of the specification. If any bidder does not meet any one of the conditions, such tender will not be considered. Please note that the conditional offers are also not considered. Hence the bidder shall submit the tender in line with the terms and conditions of the specification.
2. The bidders shall check the website [www.tgsouthernpower.org](http://www.tgsouthernpower.org) and [www.tender.telangana.gov.in](http://www.tender.telangana.gov.in) for amendments, if any, up to one day prior to the date of tender opening. The amendments shall be binding on the bidders.
3. The purchaser will not be responsible for any damage that may be caused to the samples at any time.
4. The bidder shall furnish required Bid Security amount and validity as per specification. If the bidder fails to furnish bid security amount and bid validity as stipulated in the specification, such tender bid will not be considered for further evaluation.
5. The prospective bidders shall attend the pre-bid meeting (date and time in NIT) for any queries. The discussed queries shall be submitted in the form of a letter during pre bid meeting or within 24 hrs of pre bid meeting. Any new queries received after pre bid meeting are not liable to be considered.
6. The bid evaluation will be carried out based on the documents uploaded through [www.tender.telangana.gov.in](http://www.tender.telangana.gov.in) against this tender.
7. The Bids received with any details pertaining to prices in the offline mode will be liable for rejected.
8. The bidder should quote price schedule only in online and specify the price of the Materials / equipment EXWORKS, Freight and Insurance separately (mandatory) and applicable GST.
9. In e-procurement commercial stage, if F&I charges are applicable then mention Freight and Insurance separately (mandatory) and applicable GST.
10. Exemption of EMD is considered Only for Government firms.
11. Applicable GST collected at source (GSTCS) is as per Government of India.

Phones : 040 - 23431035, 23431360

Sd/-  
CHIEF ENGINEER (P&MM)/TGSPDCL



**SOUTHERN POWER DISTRIBUTION COMPANY OF TELANGANA  
LIMITED  
TGSPDCL (erstwhile TSSPDCL)**

**e-Procurement Tender Notice (Paper Notification)**

TGSPDCL intends to float tenders for procurement of (1) 33KV 1 Ph PTS 100 VA Burden, 0.2 Class (2)16 MVA Power Transformers (3)63KVA DTRs with BIS EEL-2 (STAR-2) (4) 33 KV 800A (Conv.) DB AB Switches with Solid Core Insulators. on e-procurement platform.

For further details of each item above, please visit [www.tgsouthernpower.org](http://www.tgsouthernpower.org) and [www.tender.telangana.gov.in](http://www.tender.telangana.gov.in) and [www.auction.telangana.gov.in](http://www.auction.telangana.gov.in).

Phone: 040-23431360, 1033, 1035, 1026

Sd/-  
CHIEF ENGINEER (P&MM)

**SECTION-I**  
**ONLINE VERSION**  
**Tender Notice No: STN- 1256 /2024**

<b>Notice Inviting Tender Details</b>		
<b>S.No</b>	<b>Description</b>	
1	Department Name	TGSPDCL
2	Office	Purchase & Material Management Wing, Corporate Office, TGSPDCL
3	Tender Number	<b>STN- 1256 /2024</b>
4	Tender Subject	<b>63 KVA CSP Aluminium Wound Distribution Transformers with BIS Energy Efficiency Level -2 (Star-2)</b>
5	Delivery Schedule	The delivery of materials shall commence within one month and completion within three months thereafter or as per TGSPDCL delivery schedule. The quantities that can be delivered per month shall be quoted.
6	Tender Type	Open
7	Tender Category	NA
8	Bid Security (INR)	(i) Bidders shall furnish an amount equivalent to 2% of Ex-works quoted value ( <b>plus GST applicable</b> ) towards bid security (or) (ii) Exemption letter of Bid Security in case of Govt. firms
9	Bid Security Payable to	In the form of DD in favour of Pay Officer/TGSPDCL/Hyd (or) Bank Guarantee from any <b>Nationalized Bank/Scheduled Bank</b> in favour of "The Chief Engineer(P&MM), Corporate Office, TGSPDCL, Hyderabad".
10	Processing Fee (INR)	NIL
11	Transaction Fee	<b>Transaction fee:</b> All the participating bidders who submit the bids have to pay an amount @ 0.03% of their final bid value online with a cap of Rs. 10,000/- for quoted value of purchase upto Rs.50 crores and Rs.25000/- if the purchase value is above Rs.50 crores & GST applicable as levied by Govt. of India on transaction fee through online in favour of M/s. TGTS, Hyderabad. The amount payable to M/s. TGTS, Hyderabad is non refundable. <b>Corpus Fund:</b> Successful bidder has to pay an amount of 0.04% on quoted value through demand draft in favour of Managing Director, TGTS, and Hyderabad towards corpus fund at the time of concluding agreement.
12	Transaction Fee Payable to	M/s. TGTS, Hyderabad
13	Date & Time of pre-bid meeting with manufacturer	<b>03-12-2024 at 12:00 Hrs.</b>
14	Schedule Sale opening date	<b>26-11-2024</b> from 17:00 Hrs
15	Schedule Sale closing Date	<b>11 -12-2024</b> Upto 13:00 Hrs.
16	Bid Submission Closing Date & time	<b>11 -12-2024</b> Upto 13:00 Hrs
17	Bid submission	<b>On Line</b>
18	Pre-Qualification& Technical Bid Opening Date (Qualification and Eligibility Stage and Technical Bid Stage)	<b>11.12.2024 at 15:00 Hrs.</b>
19	<b>Price Bid Opening Date (Financial Bid Stage)</b>	<b>17 -12-2024 at 12:00 Hrs</b>
20	Place of Tender Opening	O/o. Chief Engineer/P&MM TGSPDCL., 4 <sup>th</sup> Floor, Corporate Office, Mint Compound, Hyderabad – 500 004.
21	Officer Inviting Bids/ Contact Person	Chief Engineer/P&MM/TGSPDCL/HYDERABAD
22	Address/E-mail id	O/o. Chief Engineer/P&MM, SPDC of TG Ltd., 4th Floor, Corporate Office, Mint Compound, Hyderabad – 500 004
23	Contact Details/Telephone, Fax	Ph. No. 040-23431319

24	Eligibility Criteria	As per Section IV
25	Procedure for Bid Submission	<p><b>Bids shall be submitted online on <a href="http://www.tender.telangana.gov.in">www.tender.telangana.gov.in</a> platform</b></p> <ol style="list-style-type: none"> <li>1. The participating bidders in the tender should register themselves free of cost on e-procurement platform in the website <a href="http://www.tender.telangana.gov.in">www.tender.telangana.gov.in</a>.</li> <li>2. Bidders can log-in to e-procurement platform in Secure mode only by signing with the Digital certificates.</li> <li>3. The bidders who are desirous of participating in e-procurement shall submit their technical bids, price bids as per the standard formats available at the e-market place.</li> <li>4. The bidders should scan and upload the following documents in support of technical bids. The bidders shall sign on all the statements, documents certificates uploaded by him, owning responsibility for their correctness/authenticity:       <ol style="list-style-type: none"> <li>a) Bid Security should be furnished           <ol style="list-style-type: none"> <li>i) In the form of DD in favour of Pay Officer/TGSPDCL/Hyderabad or BG from any Nationalized Bank/Scheduled Bank in favour of Chief Engineer/P&amp;MM/ TGSPDCL/Hyd.</li> <li>(or)</li> <li>ii) If exempted give details of Bid Security exemption (in case of Govt. organizations)</li> </ol> </li> <li>b) Details of previous supplies as per tender document</li> <li>c) Performance certificates</li> <li>d) Copies of previous supply orders in support of above.</li> <li>e) Type test certificates of any govt. NABL laboratory/International labs &amp; BIS, BEE Certificate</li> <li>f) Duly filled and signed proforma as per Format A.</li> <li>g) Transaction fee payable to TGTS, Hyderabad.</li> </ol> </li> <li>5. The rates should be quoted in online only</li> </ol>
		<ol style="list-style-type: none"> <li>6. After uploading the documents, original Demand Drafts/BG in respect of Bid Security (except the Price bid/offer/break-up of taxes) are to be submitted by the bidder to the Chief Engineer/P&amp;MM/TGSPDCL so as to reach before the date and time of opening of the technical bid. Failure to furnish original BG/DD, before the date and time of opening of technical bid will entail in rejection of the bid. The Department shall not hold any risk on account of postal delay. Similarly, if any of the certificates, documents, etc., furnished by the tenderer are found to be false/fabricated/bogus, the bidder will be disqualified, blacklisted, action will be initiated as deemed fit and the Bid Security will be forfeited.</li> <li>7. The department will not hold any risk and responsibility regulating non-visibility of the scanned and uploaded documents.</li> <li>8. The Documents that are uploaded online on e-market place will only be considered for Technical Bid Evaluation.</li> </ol>

		<p>9. Important Notice to Contractors, Suppliers and Department users</p> <p>(i) In the endeavor to bring total automation of processes in e-Procurement, the Govt. has issued orders vide G.O.Ms.No. 13 dated. 5.7.2006 permitting integration of electronic Payment Gateway of ICICI/HDFC Banks with e-Procurement platform, which provides a facility to participating suppliers/ contractors to electronically pay the transaction fee online using their credit cards.</p>
26	Rights reserved with the Department	TGSPDCL reserves the right to accept or reject any or all of the tenders received without assigning any reasons therefore. The TGSPDCL also reserves the right to split the tender and place orders on more than one renderer at its discretion
27	General Terms and Conditions	As per tender documents.

**SECTION-II**  
**SALIENT FEATURES OF THE BID**

SUPERSCRPTION ON THE TENDER COVER

Specification No : **STN- 1256 /2024**  
Material : **63 KVA CSP Aluminium Wound Distribution Transformers with BIS Energy Efficiency Level -2 (Star-2)**

Officer to whom the bid will be addressed :  
Superscription on the bid cover and the outer envelope :

- a. Specification No. : **STN- 1256 /2024**
- b. **Due date and time for online submission** : **11-12-2024 up to 13.00 Hrs**
- c. **Date and time of online opening** : **11-12-2024 at 15.00 Hrs**
- d. Payment of bid security
  - i) If paid give details: DD No.\_\_\_\_\_ Dt.\_\_\_\_\_ for Rs.\_\_\_\_\_
  - ii) If exempted give details
- e. Whether 90 days validity offered .....(yes/no).
- f. Whether bid is made accepting payment terms Clause....(yes/no).
- g. Whether delivery is as per delivery schedule indicated....(yes/no)
- h. Whether the sample (if specified) has been enclosed/sent...(yes/no)
- i. Whether the quotation is in two parts .... (Yes/no)

Content of Bidding Documents:

The materials / equipment required, bidding procedures, and contract terms are prescribed in the bidding documents as listed below:

- a. Notice Inviting Bids.
- b. Salient features of the contract.
- c. Standard General terms and conditions of contract.
- d. Standard Technical specification and drawings wherever necessary.
- e. Qualification Requirements.
- f. Schedule of requirements (Delivery Schedule)

SAMPLE FORMS.

- a. Bid Form
- b. Bid Security form
- c. Performance Security form
- d. Contract Form
- e. Performance Statement
- f. Details to be furnished by the Manufacturer
- g. Schedule of Deviations (Technical & Commercial)
- h. Declaration

The Bidder is expected to examine all instructions, forms, terms and technical specifications in the bidding documents. Failure to furnish all information required by the bidding documents or to submit a bid not substantially responsive to the bidding documents in every respect will be at Bidder's risk and may result in the rejection of its bid.

Deviations from standard bidding document

- i. General terms and Conditions of Contract
- ii Technical

The above deviations supersede the existing terms of GCC and Technical Specification

**Sd/-**  
**CHIEF ENGINEER (P&MM)/TGSPDCL**

**SECTION-III**  
**GENERAL TERMS AND CONDITIONS**

**A. Introduction**

**1. Definitions**

1.1 In this Contract, the following terms will be interpreted as indicated:

- (a) "The Contract" means the agreement entered into between the Purchaser and the Supplier, as recorded in the contract Form signed by the Parties, including all attachments and appendices thereto and all documents incorporated by reference therein.
- (b) "The Contract Price" means the price payable to the Supplier under the Contract for the full and proper performance of its contractual obligations.
- (c) "The Materials/equipment" means all of the equipment, machinery, and/or other materials which the Supplier is required to supply to the Purchaser under the Contract.
- (d) "The Services" means those services ancillary to the supply of the Materials / equipment, such as transportation and insurance, and any other incidental Services, such as installation, commissioning, provision of technical assistance, training, and other such obligations of the Supplier covered under the Contract.
- (e) "GCC" means the General Terms and Conditions of Contract contained in the section.
- (f) "The Purchaser" means the organization purchasing the Materials / equipment.
- (g) Vendor is a supplier who has registered with the purchaser for supply of materials/equipment.
- (h) "The Supplier" means the firm supplying the Materials / equipment and Services under this Contract.
- (i) "Day" means calendar day.

**2. Applicability**

2.1 These General Conditions of contract will apply to the extent that they are not superseded by provisions of Salient features of the Bid.

**3(a) Standards**

The Materials / equipment supplied under this Contract will conform to the Standards mentioned in the Technical specifications, and, when no applicable standard is mentioned, the authoritative standards appropriate to the Materials / equipment' i.e., BIS, such standards will be the latest. All material will be of the best class and will be capable of satisfactory operation under tropical conditions without distortion or deterioration.

**3(b) Interchangeability:**

All similar materials and removable parts of similar equipment will be interchangeable with each other. A specific confirmation of this should be furnished in the bid.

**4. Scope of Work:**

This specification covers design, manufacture, testing and delivery FADS (Free At Destination Stores) of the materials described at Section VII and Technical Specification at section-VI.



## 5. Eligible Bidders:

All the Manufacturers who have registered themselves with Department of Industries of State/Central Govt. with full manufacturing and testing facilities for supply of the material / equipment listed in Section No. VI, of Bid specification and meeting the qualification requirements described at section IV only need to quote. Bids received from firms not meeting the above two criteria will not be considered.

## B. THE BIDDING DOCUMENTS

### 6. Contents of Bidding Document:

6.1 The Materials / equipment required, bidding procedures, and contract terms are prescribed in the bidding documents as listed below:

1. Notice Inviting Bid
2. Technical Specifications
3. Schedule of Requirements (Delivery Schedule)
4. Bid Form and Price Schedules (online only)
5. Salient Features of the Bid
6. General Terms and Conditions of Contract
7. Qualification Requirements
8. Bid Security
9. Performance Security Form
10. Schedule of Deviations

6.2 The Bidder is expected to examine all instructions, forms, terms and Technical specifications in the bidding documents. Failure to furnish all information required by the bidding documents or to submit a bid not responsive to the bidding documents in every respect will be at Bidder's risk and may result in the rejection of its bid.

### 7. Clarification of Bidding Documents

Clarification of Bidding Documents: A prospective Bidder requiring any clarification of the bidding documents may notify the Purchaser in writing or by cable (hereinafter, the term cable is deemed to include telex and facsimile) at the Purchaser's address. The Purchaser will respond in writing to any request for clarification of the bidding documents, which it receives no later than fifteen (15) days prior to the deadline for the submission of bids. Written copies of Purchaser's response (including an explanation of the query but without identifying the source of inquiry) will be put on Website of the purchaser or intimated by mail.

**8. Amendment to Bidding Documents:**

- 8.1 At any time prior to the deadline for submission of bids, the Purchaser, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, may modify the bidding documents by amendment.
- 8.2 All such amendments also would be made available on the website of TGSPDCL and e-procurement website and such amendments will be binding on the respective Bidders.
- 8.3 In order to allow prospective Bidders reasonable time in which to take the amendment into account in preparing their bids, the Purchaser, at its discretion, may extend the deadline for the submission of bids.

## **C. PREPARATION OF BIDS**

### **9. Language of Bid:**

The bid prepared by the Bidder including all correspondence and documents relating to the bid exchanged by the Bidder and the Purchaser, will be in English.

### **10. Cost Associated with Bidding:**

The Bidder will bear all costs associated with the preparation and submission of its bid, and the Purchaser, will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

### **11. Documents Constituting the Bid:**

11.1 The bid prepared by the Bidder will comprise the following components:

- i. Bid Security in accordance with Clause No.21.
- ii. A Bid Form and appropriate Price Schedule (online) completed in accordance with Clause No.12 and 13.
- iii. Documentary evidence establishing in accordance with Clause No.19 that the Bidder is eligible to bid and is qualified to perform the contract if its bid is accepted.
- iv. Documentary evidence establishing that the Materials / equipment and ancillary services to be supplied by the Bidder are as per the Technical specification of the bidding documents; and
- v. GST (Tax) clearance certificate
- vi. Schedule of Deviations
  - (a) Commercial
  - (b) Technical

All the Schedules will be duly filled but not necessary in the sheets attached to the specification unless full details required in the schedules are furnished the Bids will be liable for rejection.

### **12. Bid Form:**

12.1 The Bidder will complete the Bid form and the appropriate Price Schedule (online) furnished in the bidding documents, indicating the Materials/equipment to be supplied, a brief description of the Materials / equipment, quantity and prices.

### **13. Bid Prices:**

13.1 The prices quoted shall be Variable. Bids will be called for with prices FADS inclusive of packing and forwarding, GST , handling charges to cover the transport by road from destination railway station to site/stores, and insurance (transit and storage at site for 45 days).

13.2 Even though composite price is given, the break-up for Applicable GST, freight, insurance, packing and forwarding etc., shall be furnished.

13.3 It is the responsibility of the Bidder to inform himself of the correct rates of Applicable GST leviable on the materials at the time of bidding.

- 13.4 The proforma credit available to the bidder on the purchases of inputs (raw materials) consequent to the introduction of "MODVAT" Scheme may be taken into account while quoting the prices.
- 13.5 The Bidder shall indicate on the appropriate Price Schedule (online submission) the unit prices (where applicable) and total bid price of the Materials / equipment it proposes to supply under the contract.  
Prices indicated on the Price Schedule (on-line) shall be entered separately in the following manner.

The price of the Materials / equipment quoted EXWORKS and Applicable GST payable on the finished Materials / equipment with individual breakup for applicable GST, packing and forwarding, freight and insurance, etc.

**14. Variable prices & price variation basis:**

- 14.1 Wherever prices quoted are not firm (variable), prices FADS, GST, freight, Insurance, packing, forwarding and other legally permissible duties and levies shall be given separately.
- 14.2 Quotations will be with prices subject to adjustment up or down as per specific variation formula with reference to the base prices of major raw-materials / components involved which will be detailed in the bid along with the respective percentage costs in the composite price for the finished goods.
- 14.3 Whenever IEEMA price variation formula is applicable, the Bidder may quote according to IEEMA formula in force at the time of bidding which will remain the same throughout the execution and completion of the order.
- 14.4 The quoted prices shall be on FADS basis inclusive of transit cum 45 days storage insurance inclusive of applicable GST.
- 14.5 The prices of raw- materials / components will be those at which Bidder actually purchases from their principal suppliers (whose names will be invariably stated) and shall not be the landed cost at the Bidder's work including transport or any other charges. The basic price of raw materials so quoted shall remain unaltered during the period of validity of bid as well as during the execution of contract.
- 14.6 Where IEEMA formula is not applicable and where the raw materials such as Steel, Aluminium, Zinc, Lead and Copper are involved the SAIL / TISCO / MUKUND price of steel for Zinc and Copper as published by IEEMA and the BALCO / HINDALCO price of Aluminium shall be applicable for price variation. The Base and final prices/indices shall correspond to same manufacturers.
- 14.7 In case of conductors, where the bidder makes his own arrangements to get the Properzi Rod made out of Aluminium, Ingot, the price of Properzi Rod as prevailing at the time of the bidder obtaining the ingot from the primary producers shall only be taken into consideration for arriving at the price variation claims irrespective of whatever expenditure the bidder might have incurred in getting the ingot converted into Properzi Rod.
- 14.8 In cases where variable prices are quoted, if complete information as above is not given, the bid is liable for rejection.  
Irrespective of the increase in the prices of raw materials the price variance (increase) will be limited to a maximum of 50% over the original quoted price and no ceiling on negative side.

- 14.9 If the date of delivery as defined in the P.V. formula is beyond the contracted delivery date the scheduled delivery date or the actual delivery date whichever is advantageous to the Purchaser will form the basis for calculation of price variation.
- 14.10 Notwithstanding the formula applicable for regulating the price variation, if at any time any documentary evidence proof or certificate in regard to the price variation bills is required by the Purchaser, the bidder will have to furnish the same to the Purchaser.
- 14.11 The price for inland transportation, insurance, packing and forwarding and other local costs incidental to delivery of the Materials / equipment to their final destination, The price of other (incidental) services, if any.

## 15. **Applicable GST**

- 15.1 A bidder will be entirely responsible for quoting the correct applicable GST levies if any, license fees, etc., he has to incur until completion of the contract. For the purpose of evaluation the bidder should clearly indicate the applicable GST and any other levies payable. Failure to furnish the details leads to loading as indicated in the evaluation criteria.
- 15.2 If the rates of statutory levies assumed by the Bidder are less than the actual rates prevailing at the time of bidding, the Purchaser will not be responsible for such errors. If the rates of statutory levies assumed by the Bidder are later proved to be higher than the actual / correct rates prevailing at the time of bidding, the difference will be passed on to the credit of the Purchaser.
- 15.3. Deemed Export Benefits: This is not applicable for local purchases with TGSPDCL funds.
- 15.4. **Applicable GST collected at source (GSTCS) is as per Government of India.**

## 16. **Statutory Variations**

Any variation up or down in statutory levy or new levies introduced after signing of the contract under this specification will be to the account of TGSPDCL provided that during delivery schedule. In cases where delivery schedule is not adhered to by the supplier and there are upward variation / revision after the agreed delivered date the supplier will bear the impact of such levies and if there is downward variation / revision, the TGSPDCL will be given credit to that extent.

**In case of sub-vendor items applicable GST are inclusive in tender price. No Statutory variation is applicable. Further price variations in respect of sub-vendor items will be considered on tender prices". This is allowed only once during delivery period i.e. at the time of delivery of goods at factory".**

## 17. **Bid Currencies:**

Prices shall be quoted in Indian Rupees; and will be paid in Indian Rupees Only.

## 18. **Quantity to quote:**

Bidder shall quote a minimum quantity of at least 20% of the total quantity indicated in the bid Specification. Offers less than the minimum prescribed are liable for rejection.

## 19. **Documents Establishing Bidder's Eligibility and Qualifications**

The Bidder shall furnish, as part of its bid, documents establishing the Bidder's eligibility to bid and its qualifications to perform the contract if its bid is accepted.

The documentary evidence of the Bidder's qualifications to perform the contract if its bid is accepted will establish to the Purchaser's satisfaction:

- (a) that the Bidder has the financial, technical, and production capability necessary to perform the contract;
- (b) that the Bidder meets the qualification criteria listed in Section IV. In addition the Bidder may furnish full particulars regarding supply of the material in question made so far to TGSPDCL during the last 5 years and other reputed utilities.

## 20 Documents Establishing Materials / equipment Conformity to Bidding Documents.

The Bidder shall furnish as part of its bid, documents establishing conformity to the bidding documents of all Materials / equipment and services, which the Bidder proposes to supply under the Contract.

The documentary evidence of conformity of the Materials / equipment and the services to bidding documents may be in the form of literature, drawings, and data, and will consist of:

- (a) a detailed description of the essential technical and performance characteristics of the Materials /equipment;
- (b) the bidder should specifically mention about furnishing the test certificates and a specimen form of test certificate should be furnished along with the bid.
- (c) a list giving full particulars, including available sources and current prices of spare parts, special tools etc., necessary for the proper and continuous functioning of the Materials / equipment following commencement of the use of the Materials / equipment by the Purchaser; and
- (d) an item-by-item commentary on the Purchaser's Technical Specifications demonstrating substantial responsiveness of the Materials / equipment and services to those specifications, or a statement of deviations and exceptions to the provisions of the Technical Specifications.

For purposes of the commentary to be furnished pursuant to above, the Bidder will note that standards for workmanship, material, and equipment, as well as references to brand names or catalogue numbers designated by the Purchaser in its Technical Specifications, are intended to be descriptive only and not restrictive. The Bidder may substitute alternative standards, brand names, and/or catalogue numbers in its bid, provided that it demonstrates to the Purchaser's satisfaction that the substitutions ensure substantial equivalence to those designated in the Technical Specifications.

## 21. Bid Security

21.1 The Bidder shall furnish, as part of its bid, a Bid Security equivalent to 2% of Ex-works **(+ GST applicable)** quoted value towards bid security for quoting 100% quantity and bidders quoting part quantity may furnish proportionate bid security. This amount should be paid by way of a crossed demand draft drawn on any nationalized/schedule bank in favor of the Pay Officer, TGSPDCL and payable at headquarters of the Purchaser. The crossed DD should invariably be furnished along with the bids. Alternatively the bidders may furnish a B.G. in original in lieu of DD as per the proforma attached. Fax / photocopies of the bid security will not be accepted and will be rejected.

21.2 The fact of having enclosed bid security by DD/BG along with the bid should be clearly super scribed on the bid envelope. Bids, which do not have the above superscription, will be rejected and returned to the respective bidders unopened.

- 21.3 Submission of BID SECURITY by way of cheque, cash, money order, call deposit will not be accepted and will be considered as disqualification.
- 21.4 Payment of BID SECURITY will be waived at the discretion of the TGSPDCL in the case of fully owned Government undertaking of the Central or State Government. Such undertakings should immediately apply and obtain exemption before submitting their Bids. They need only refer to the details of such exemption in their Bids. Exemption accorded by any organization other than TGSPDCL will not be considered.
- 21.5 Requests for exemption from payment of BID SECURITY will not be entertained in any other cases.
- 21.6 Any bid not secured as above will be rejected by the Purchaser.
- 21.7 Unsuccessful Bidders' Bid Security will be discharged or returned as promptly as possible as but not later than thirty (30) days after the expiration of the period of bid validity prescribed by the Purchaser.
- 21.8 The successful Bidder's Bid Security will be discharged upon the Bidder signing the contract.
- 21.9 The Bid Security may be forfeited:
- (a) if a Bidder:
- i. Withdraws its bid or alters its prices during the period of bid validity specified by the Bidder on the Bid Form, or
  - ii. Does not accept the correction of errors pursuant to Clause No.30.1; or
  - iii. Offers post Bid rebates, revisions or deviations in quoted prices and / or conditions or any such offers which will give a benefit to the Bidder over others will not only be rejected outright but the original Bid itself will get disqualified on this account and the Bidder's BID SECURITY will be forfeited.
- (b) In the case of a successful Bidder, if the Bidder fails:
- i. To sign the contract in accordance with Clause No.38.
  - ii. To furnish performance security in accordance with Clause No.39.
- 21.10 In cases where the Bid Cover Contains superscription of having furnished Bid Security by way of DD/BG but if the same is not found within, such Bids will be rejected and bidder will run the risk of being banned.

NOTE : The bidder shall furnish required bid security amount and validity as per specification. If the bidder fails to furnish bid security amount and bid validity (**The validity of the bank guarantee shall be upto bid validity +45 days from the date of tender opening**) as stipulated in the specification, such tender bid will not be considered for further evaluation.

## **22. Period of Validity of Bids.**

- 22.1 Bids shall remain valid for the period of ninety (90) days from the date of bid opening prescribed by the Purchaser. A bid valid for a shorter period will be rejected.
- The bidders should clearly super scribe on the sealed envelopes of the bids about the validity. Bids not containing superscription of validity will be rejected and returned unopened.
- 22.2 In exceptional circumstances, the Purchaser may solicit the Bidder's consent to an extension of the period of validity. The request and the responses there to will be made in writing (or by cable). The Bid Security provided under Clause No.20 will also be suitably extended. A Bidder may refuse the request without forfeiting its Bid Security.

**23. Tax Clearance Certificates:**

- 23.1 Copies of Income Tax, GSTR 3B returns and Turnover Tax certificates for the latest period from the appropriate authority will invariably be enclosed to the bid. In the case of proprietary or partnership firm it will be necessary to produce the certificate / certificates for the proprietor or proprietors and for each of the partners as the case may be. If the Bidder has already produced the certificate during the calendar year in which the bid is made, it will be sufficient, if particulars are given.

**24. Service Conditions**

- 24.1 The equipment / materials offered will be entirely satisfactory for operation under the climatic conditions indicated below:
- |     |  |                   |
|-----|--|-------------------|
| (a) | Maximum ambient air temperature (in shade)     | 45 <sup>o</sup> C |
| (b) | Maximum ambient air temperature (under sun)    | 50 <sup>o</sup> C |
| (c) | Maximum daily average ambient air temperature  | 35 <sup>o</sup> C |
| (d) | Maximum yearly average ambient air temperature | 30 <sup>o</sup> C |
| (e) | Maximum humidity                               | 100%              |
| (f) | Altitude above M.S.L.                          | Up to 1000M       |
| (g) | Average No. of thunder storm days per annum    | 50                |
| (h) | Average No. of dust storm days per annum       | Occasional        |
| (i) | Average No. of rainy days / annum              | 90                |
| (j) | Average Annual Rain fall                       | 925mm             |
| (k) | Normal tropical monsoon period                 | 4 months          |
| (l) | Maximum wind pressure                          | 150 kg/Sq.M.      |

- 24.2 Due consideration will be given to any special devices or attachments put forward by the Bidder which are calculated to enhance the general utility and the safe and efficient operation of the equipment / materials.

**25. Format and Signing of Bid.**

- 25.1 The Bidder shall submit one copy of the bid, clearly marking "ORIGINAL BID with page Nos and Spiral Binded". However the bid evaluation will be done on the uploaded data on the e-procurement platform.
- 25.2 The original and the copies of the bid shall be typed and shall be signed by the Bidder or a person or persons duly authorized to bind the Bidder to the contract. The person or persons signing the bid will initial all pages of the bid, except for printed literature.
- 25.3 Any interlineations, erasures, or overwriting will be valid only if they are initialed by the person or persons signing the bid.

**D. Submission of Bids**

26. Submission, Sealing and Marking of Bids.

- 26.1 The tenderers are required to submit their bids in two parts as under:

- (i) Part-I (a) : Bid Security, Technical & Qualification Requirements.  
 (b) : Technical Bid shall contain full technical particulars and commercial terms and conditions but without prices. This should not contain any cost information whatsoever.

Part-II : Price Bid – containing Price (shall be on-line only) **Bids received with any details pertaining to prices in the offline mode will be rejected.**

- (ii) The Part-I of the tender should be furnished in a sealed cover super scribing tender enquiry number, name of material, name of the bidder and date of tender opening.



- (iii) Part-I of the bid will be opened on the due date of tender opening. In case the bidders have been granted Bid Security exemption (clause-21.4), documentary evidence for the same must be furnished. The firms whose Bid Security and Transaction Fee is not received as specified in the tender document, the price bids will not be opened and their bids will be rejected summarily.
- (iv) The price bids of only those bidders whose technical bids, on examination, are determined to be technically and commercially acceptable and meeting the specified Qualification Criteria will be opened at a later date.

### **Sealing and Marking of Bids.**

#### **26.2 The Bidder shall seal the ORIGINAL BID in envelope.**

26.3 The inner and outer envelopes will:

- (a) Be addressed to the Purchaser.
- (b) The sealed cover as well as outer envelope should be super scribed as noted below

26.4 The sealed cover as well as the outer envelope should be super scribed as follows:

- (a) Bid Enquiry No.
- (b) Due date and time for online submission.
- (c) Date and time for online opening.
- (d) Payment of Bid Security
  - (i) If paid, give details: D.D. No. Date:
  - (ii) If not paid or exempted, give details.
- (e) Whether 90 days validity offered.....YES / NO
- (f) Whether the quotation is made accepting Payment terms clause .... YES/NO
- (g) Whether the delivery is as per delivery schedule indicated.... YES/NO
- (h) Whether the sample (if specified) has been enclosed/ sent...YES/NO
- (i) Whether the bid is quoted in two parts (clause 25.1).... (YES/NO)

26.5 Bids not super scribed as above are liable to be rejected.

26.6 The Bidder shall invariably complete the Bid in full. Details to be furnished by the bidder and Schedule of Prices (On-line only) attached to the specification and enclose the same to the bid without fail.

26.7 The bids shall be in bound volumes (With the documents in the volume not detachable). All pages of the bid except in-amended printed literature shall be initiated by the person/persons signing the bid. The page number shall be referred in Index. All pages including literature, type test reports of the bid shall be numbered and the page numbers shall be continuous. Soft copy of the technical and commercial bids and designs with drawings shall be given in Floppy disc/ CD also. Summary sheet in the given format on the top of the bid duly signed and sealed by the bidder.

26.8 The time of actual receipt in the office only will count for the acceptance of the bid and either the date of bid, date stamp of post office or date stamp of any other office will not count. The TGSPDCL will not be responsible for any postal or any other transit delays.

26.9 Telegraphic quotations will not be entertained under any circumstances. Clarification, amplifications, and / or any other correspondence from the Bidder subsequent to the opening of bid will not be entertained. The Bidders are advised to ensure that their bids are sent in complete shape at the first instance itself.

26.10 The inner envelopes shall also indicate the name and address of the Bidder to enable the bid to be returned unopened in case it is declared "late".

- 26.11 If the outer envelope is not sealed and marked as required above, the Purchaser will assume no responsibility for the bid's misplacement or premature opening.

**27. Deadline for Submission of Bids.**

- 27.1 Bids together with modifications if any, or other withdrawals must be received by the Purchaser not later than the deadline for submission of bids specified in the Salient features of the Bid.
- 27.2 The Purchaser may, at its discretion, extend this deadline for the submission of bids by amending the bidding documents in which case all rights and obligations of the Purchaser and Bidders previously subject to the deadline will thereafter be subject to the deadline as extended.

**28. Late Bids**

- 28.1 Any bid received by the Purchaser after the deadline for submission of bids prescribed by the Purchaser will be rejected and returned unopened to the Bidder.
- 28.2 Modification and Withdrawal of Bids.

The Bidder may modify or withdraw its bid after the bid's submission, provided that written notice of the modification, including substitution or withdrawal of the bids, is received by the Purchaser prior to the deadline prescribed for submission of bids.

The Bidder's modification or withdrawal notice will be prepared, sealed, marked, and dispatched. A withdrawal notice may also be sent by cable, but followed by a signed confirmation copy, postmarked not later than the deadline for submission of bids. No bid may be modified after the deadline for submission of bids.

No bid may be withdrawn in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified. Withdrawal of a bid during this interval may result in the forfeiture of its Bid Security.

**E. Opening and Evaluation of Bids**

**29. Opening of Bids by the Purchaser**

- 29.1 The Purchaser will open all bids meeting above criteria, at the time, on the date, and at the place specified.
- 29.2 The Bidders' names, bid modifications or withdrawals, discounts, and the presence or absence of requisite Bid Security and such other details as the Purchaser, at its discretion, may consider appropriate, will be announced at the opening.
- 29.3 Bids that are not opened and read out at bid opening will not be considered further for evaluation, irrespective of the circumstances.

**30. Clarification of Bids**

- 30.1 During evaluation of the bids, the Purchaser may, at its discretion, ask the Bidder for a clarification of its bid. The request for clarification and the response shall be in writing, and no change in the prices or substance of the bid shall be sought, offered, or permitted.

**31. Preliminary Examination**

- 31.1 The Purchaser will examine the bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the bids are generally in order.

- 31.2 Arithmetical errors will be rectified on the following basis. If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price will prevail, and the total price will be corrected. If the Supplier does not accept the correction of the errors, its bid will be rejected, and its Bid Security may be forfeited. If there is a discrepancy between words and figures, the amount in words will prevail. If the supplier does not accept the correction of the errors, its bid will be rejected and its Bid Security may be forfeited.
- 31.3 The Purchaser may waive any minor informality, nonconformity, or irregularity in bid which does not constitute a material deviation, provided such waiver doesn't prejudice or affect the relative ranking of any Bidder.
- 31.4 Prior to the detailed evaluation, the Purchaser will determine the substantial responsiveness of each bid to the bidding documents. For purposes of these Clauses, a substantially responsive bid is one, which conforms to all the terms and conditions of the bidding documents without material deviations. Deviations from, or objections or reservations to critical provisions, such as those concerning Bid Security, and applicable GST will be deemed to be a material deviation. The Purchaser's determination of a bid's responsiveness is to be based on the contents of the bid itself without recourse to extrinsic evidence.
- 31.5 If a bid is not substantially responsive, it will be rejected by the Purchaser and may not subsequently be made responsive by the Bidder by correction of the nonconformity.

**Note : Payment terms, Delivery period, Performance Bank Guarantee, applicable GST" should be in line with the terms and conditions of the specification. If any bidder does not meet any one of the conditions, such tender will not be considered. Please note that the conditional offers are also not considered. Hence the bidder shall submit the tender in line with the terms and conditions of the specification**

**32. Evaluation and Comparison of Bids.**

- 32.1 The Purchaser will evaluate and compare the bids, which have been determined to be substantially responsive.
- 32.2 The Purchaser's evaluation of a bid will take into consideration one or more of the following factors

All the bids, which are opened, read out and considered for evaluation, will be checked for qualification requirements in respect of technical and commercial aspects. Such of the bids, which do not meet the qualification requirements, will not be evaluated further. The bid is to be checked for its conformity to the technical specification. If it does not meet the technical specification, the Bid will not be evaluated further. However, if in the opinion of the purchaser the bidder has offered equipment / material better than the technical specification the same may be considered. The bid may be rejected for the following reasons:

1. Not in the prescribed form
  2. Insufficient bid security or bid not accompanied by the required bid security or proof of bid security exemption
  3. Bids not properly signed
  4. The bidder is a vendor who is banned from further business transactions and the period of ban is still in force.
  5. Bid received after the due date and time
  6. The bid is through telegram or fax
- Further, the purchaser may enquire from the bidder in writing for any clarification of the bid. The response of the bidder will also be in writing. However no change in the prices or substance of the bid will be sought, offered or permitted.

- Bids will be examined for completeness and for any computational errors.
- Arithmetical errors will be rectified on the following basis.
  - Where there is a discrepancy between the unit price and total price, the unit price will prevail and the total price will be corrected accordingly.
  - Where there is a discrepancy between words and figures, the amount in words will prevail.
  - Failure on the part of the bidder to agree to the above corrections will result in rejection of his offer and forfeiture of his bid security.
- It will be ensured that the required sureties have been furnished and that the documents have been properly signed.
- The purchaser's evaluation of a bid will take into consideration one or more of the following factors
  - (a) Delivery schedule offered in the bid;
  - (b) Deviations in payment schedule from that specified in the general terms and conditions of the contract and technical deviations.
  - (c) The cost of components, mandatory spare parts, and service;
  - (d) The availability of spare parts and after-sales services for the equipment offered in the Bid;
  - (e) The projected operating and maintenance costs during the life of the equipment;
  - (f) The performance and productivity of the equipment offered;
  - (g) Other specific criteria indicated in the Bidding documents.
- In addition the Purchaser's evaluation of a bid will take into account the net landed cost of the material at the final destination. For the purpose of evaluation net landed cost is arrived at by adding all elements of the basic price, allowable discount, GST, any other levies, packing & forwarding, freight charges, insurance (transit & storage) as quoted by the bidder, interest on advance if any, erection, servicing and other charges as called for.
- In addition any variation up or down in GST levies introduced subsequent to bid opening and before award will be considered for comparison purposes.  
The following criteria may be adopted for GST for evaluation
  - a. It is the responsibility of the bidder to quote applicable GST correctly without leaving any column unfilled. Where GST are not applicable, the bidder should enter "NA". If no duty / tax is leviable the same may be entered as "NIL". If any column is left blank or filled vaguely like "as applicable", the same will be loaded with the maximum of the other eligible Bids.
  - b. Where there is an exemption of GST, the documentary evidence to that effect will be enclosed by the supplier.
  - c. The bidders for supply and works shall invariably possess the TIN number and PAN Number for the bids above Rs. 5.00 lakhs and this must be verified before entering into contract.

- Prior to detailed evaluation, the responsiveness of each bid will be determined. A substantially responsive bid is one that conforms to all the terms and conditions of the bidding documents without material deviations. For this purpose superscription, qualification requirement, bid security, validity, delivery, payment terms, price schedule, applicable GST will be deemed to be the critical provisions and deviations in any one of these items will be deemed to be a material deviation.
- The purchaser may waive any minor informality, non-conformity or irregularity in the bid which does not constitute a material deviation, provided such waiver does not affect the relative ranking of any bidder. The purchaser will clearly indicate in the bid specification the methodology for evaluation of bids.
  - (a) Bid price, which will include all, costs of manufacture and services at manufacturing place as well as, Transportation to destination stores, packing and forwarding, insurance and applicable GST& other legally permissible duties & levies payable.
  - (b) Delivery schedule offered in the bid.
  - (c) Deviations in payment schedule from that specified in the general terms and conditions of the contract.
  - (d) The cost of components, mandatory spare parts, and service
  - (e) The availability of spare parts and after-sales services for the equipment offered in the Bid;
  - (f) The projected operating and maintenance costs during the life of the equipment;
  - (g) The performance and productivity of the equipment offered; and/or
  - (h) Other specific criteria indicated in the Bid Specification.

32.3(a) The Purchaser's evaluation of a bid will take into account the Net Landed Cost of the Material at destination stores inclusive of applicable GST and quoted by the Bidder. It is the responsibility of the bidder to quote applicable GST correctly without leaving any column unfilled. Where not applicable the column may be filled as "NA". If no duty /tax is leviable, the same may be filled as "NIL". If any column is left blank, the same is loaded with maximum of other eligible Bids.

32.3(b) Any statutory variations of applicable GST and new levies imposed after opening of the bid and before award of the contract will be taken into consideration for the purpose of evaluation.

32.4 A substantially responsive bid is one, which conforms to all the terms and conditions of the bidding documents without material deviations. For this purpose superscription, qualification requirement, bid security, validity, delivery, payment terms, price schedule, applicable GST will be deemed to the critical provisions and deviations in any one of these things will be deemed to be a material deviation.

### **33. Contacting the Purchaser.**

33.1 From the time of the bid opening to the time of contract award, if any Bidder wishes to contact the Purchaser on any matter related to the bid, it should do so in writing.

33.2 Any effort by a Bidder to influence the Purchaser in its decisions on bid evaluation, bid comparison, or contract award will result in the rejection of the Bidder's bid.

**F. Award of Contract.**

**34. Post Qualification**

- 34.1 In the absence of pre-qualification, the Purchaser will determine to its satisfaction whether the Bidder that is selected as having submitted the lowest evaluated responsive bid is qualified to perform the contract satisfactorily.
- 34.2 The determination will take into account the Bidder's financial, and production capabilities. It will be based upon an examination of the documentary evidence of the Bidder's qualification submitted by the Bidder, as well as such other information as the Purchaser deems necessary and appropriate.

**35. Award Criteria:**

- 35.1 The Purchaser will award the contract to the successful Bidder / Bidders whose bid has / have been determined to be substantially responsive.

However it is not binding on TGSPDCL to accept the lowest or any other Bid. It reserves the right to place orders on different Bidders.

**36. Purchaser's Right to Vary Quantities at Time of Award**

- 36.1 The Purchaser reserves the right at the time of contract award to increase or decrease by a certain percentage up to 50% of the quantity of Materials / equipment and services originally specified in the Schedule of Requirements without any change in unit price or other terms and conditions.
- 36.2 The purchaser reserves the right to vary the ordered quantity by +/- 50% during the execution of the contract.

**37. Purchaser's Right to Accept Any Bid and to Reject Any or All Bids**

- 37.1 The Purchaser reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to contract award, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders.

**38. Notification of Award**

- 38.1 Prior to the expiration of the period of bid validity, the Purchaser will notify the Successful Bidder in writing by registered letter or by cable, to be confirmed in writing by registered letter, that its bid has been accepted.
- 38.2 The notification of award will constitute the formation of the Contract.
- 38.3 Upon the successful Bidder's furnishing of the performance security, the Purchaser enters into contract with successful Bidder / Bidders. The Purchaser will notify each unsuccessful Bidder and will discharge its Bid Security.

**39. Signing of Contract:**

The Purchaser notifies the successful Bidder that its bid has been accepted. Within 30 (thirty days) of receipt of notification of award of Contract, the successful Bidder will sign and date the contract. Failure to comply with this stipulation will entail cancellation of the contract besides forfeiture of the bid security.

**40. Performance Security:**

40.1 Within Fifteen (15) days of receipt of the notification of Contract award, the successful Bidder shall furnish to the Purchaser the performance security for an amount 10% of the contract value for proper fulfillment of the contract, which will include the warranty period, and completion of performance obligations including Warranty obligations. The Performance Security will cover 60 days beyond the date of completion of performance obligations including Warranty obligations. The Bank Guarantee shall be from Nationalized/Scheduled banks only.

In the event of any correction of defects or replacement of defective material during the warranty period, the warranty for the corrected / replaced material will be extended to a further period of 12 months and the Performance Bank Guarantee for proportionate value will be extended 60 days over and above the extended warranty period.

40.2 The proceeds of the performance security will be payable to the Purchaser as compensation for any loss resulting from the Supplier's failure to complete its obligations under the Contract.

40.3 The performance security will be...

(a) A bank guarantee issued by a nationalized bank/scheduled bank acceptable to the Purchaser, in the form provided in the bidding documents.

(b) A banker's cheque or crossed DD or Pay Order payable at the Head quarter of the Purchaser in favour of the Purchaser drawn on any scheduled bank.

40.4 The performance security will be discharged by the Purchaser and returned to the Supplier not later than sixty (60) days after the expiry date.

40.5 Failure of the successful Bidder to comply with the above requirement will entail cancellation of the award and forfeiture of the Bid Security and the balance to make up the performance security deposit will be deducted from pending payments if any due to the tenderer from TGSPDCL on other orders in addition the company will also become liable for being blacklisted by TGSPDCL.

**41. Corrupt or Fraudulent Practices**

It is essential that the Purchaser as well as Bidder / supplier / contractor for the purposes of this provision, the terms set forth below as follows:

(i) "Corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution, and

(ii) "Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the purchaser, and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the purchaser of the benefits of free and open competition;

(iii) Will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;

(iv) Will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract if it at anytime determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a contract.

**42. Use of Contract Documents and Information:**

- 42.1 The Supplier will not, without the Purchaser's prior written consent, disclose the Contract, or any provision thereof, of any specification, plan, drawing, pattern, sample, or information furnished by or on behalf of the Purchaser in connection therewith, to any person other than a person employed by the Supplier in the performance of the Contract. Disclosure to any such employed person will be made in confidence and will extend only so far as may be necessary for purposes of such performance.
- 42.2 The Supplier will not, without the Purchaser's prior written consent, make use of any document or information except for purposes of performing the Contract.
- 42.3 Any document, other than the Contract itself, will remain the property of the Purchaser and will be returned ( in all copies) to the Purchaser on completion of the supplier's performance under the Contract if so required by the Purchaser.
- 42.4 The Supplier will permit the Purchaser or his authorized representative to inspect the Supplier's accounts and records relating to the performance of the Supplier and to have them audited by auditors appointed by the Supplier.

**43. Patent Rights**

- 43.1 The Supplier will indemnify the Purchaser against all third-party claims of infringement of patent, trademark, or industrial design rights arising from use of the Materials / equipment or any part thereof.

**44. Places /Locations:**

- 44.1 Particulars of site location and nearest rail heads to which the equipments / material have to be supplied will be given to successful Bidders.

**45. Delivery:**

- 45.1 Delivery period will be reckoned from the date of signing of the contract. The delivery quoted will be firm, definite, unconditional and on the basis of receipt of materials at destination in good condition without any bearing on the procurement of raw materials or any similar prerequisites. The commencement date and date of delivery will be indicated. The preferred delivery time, which is the essence of this specification, is indicated in the schedule. Final deliveries are however, subject to confirmation at the time of Contract. Delay in delivery of materials FADS – (Free At Destination Stores) due to non-availability of railway booking, non-allotment of wagons and any such reasons will not be considered. It is the responsibility of the supplier to make alternative arrangements for transporting the materials by road or rail so as to see that the material reaches the destination within the stipulated period. The Purchaser reserves its right to defer the delivery date at any time after orders are placed without any change in the conclusion of contract other conditions supply. The delivery period, which will be reckoned from the date of the Contract, will be guaranteed under penalty as in Clause 61.

**46. Inspections and Tests**

- (i) The supplier will keep the Purchaser informed in advance of the time of the starting and the progress of manufacture of equipment in its various stages so that arrangement could be made for inspection. The accredited representative of the TGSPDCL will have access to the supplier's or his subcontractor's work at any time during working hours for the purpose of inspecting the materials during manufacturing of the materials/equipment and testing and may select test samples from the materials going into plant and equipment. The supplier will provide the facilities for testing such samples at any time including access to drawings and production data at no charge to Purchaser. As soon as the materials are ready the supplier



will duly send intimation to TGSPDCL by Registered Post and carry out the tests in the presence of representative of the TGSPDCL.

- (ii) The TGSPDCL may at its option get the materials inspected by the third party if it feels necessary and all inspection charges in this connection will be borne by the TGSPDCL. In case of materials not of acceptable quality or not conforming to the specification, the materials will be rejected. You have to re-offer the material for inspection. In such a case the 2nd inspection charges are to the suppliers account. In case the materials are rejected in the 2nd inspection also, the TGSPDCL reserves the right to cancel the order.
- (iii) The dispatches will be affected only if the test results comply with the specification. The dispatches will be made only after the inspection by the TGSPDCL Officer is completed to the TGSPDCL satisfaction or such inspection is waived by the competent authority.
- (iv) The acceptance of any quantity of materials will in no way relieve the supplier of its responsibility for meeting all the requirements of this specification and will not prevent subsequent rejection if such materials are later found to be defective.
- (v) The supplier will give 15 days advance intimation to enable the Purchaser to depute his representative for witnessing the acceptance and routine tests.
- (vi) Should any inspected or tested materials / equipment fail to conform to the specification, the Purchaser may reject the materials and supplier will either replace the rejected materials or make alterations necessary to meet specifications requirements free of costs to the Purchaser.
- (vii) In the case of transformers, instrument transformers and meters, inspection will be conducted every year, for the first 5 years on a 2% sample of the quantities supplied. Samples will be collected at random to establish that the guaranteed technical parameters are as per the submitted bid by the supplier. In the case of non-adherence, the purchaser may take suitable action on the supplier including cancellation of vendor registration and banning further dealings, depending on the gravity of the deviation. These random inspections may be entrusted to a third party.
- (viii) Inspection not carried out due to non-readiness of the material even after contacting / confirmed over phone from the supplier about availability of material and physical verification at the supplier premises, the charges @ 0.21% of Ex-works price of material offered for inspection (inclusive of GST, travelling expenses, boarding and lodging charges at the place of inspection and all incidental charges) shall be paid by supplier subject to a maximum of Rs. 10,000.00.**

**47. Name Plate:**

Equipment should be provided with name plate giving full details of manufacture, capacities and other details as specified in the relevant ISS or other specification stipulated. The contract No. and date and year of supply and the words "TGSPDCL" must be etched on the name plate.

**48. Packing**

48.1 The Supplier will provide such packing of the Materials / equipment as is required to prevent their damage or deterioration during transit to their final destination, as indicated in the Contract. The packing will be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit, and open storage. Packing case size and weights will take into consideration, where appropriate, the remoteness of the Materials / equipment' final destination and the absence of heavy handling facilities at all points in transit.

48.2 The packing, marking, and documentation and outside the packages will comply strictly with such special requirements as will be expressly provided for in the Contract and in any subsequent instructions ordered by the Purchaser. The supplier will be required to make separate packages for each consignee, each package will be marked on three sides with proper paint / indelible ink with the following;

1. Contract Number
2. Supplier's name

### 3 Packing list reference number

- 48.3 The supplier, whenever dispatches material to a destination should prepare the following information in the form of packing slip in quadruplicate and send the same to the consignee and obtain his acknowledgement. The consignee will return to the supplier one copy of the packing slip with his remarks. The proforma of packing slip will be as follows:

#### **PACKING SLIP**

1. Contract No. & Date.
2. Quantity allotted to the stores and rate applicable.
3. Quantity so far supplied to the stores and the rate applied.
4. Quantity now supplied and the rate applied.
5. Total quantity supplied under the Contract with rates applied.
6. Programme for supplying the balance quantity to the Stores.

### **49. Delivery Documents**

- 49.1 Delivery of the Materials/equipment will be made by the Supplier in accordance with the terms specified in the contract.

The latest test certificates containing the result of the tests as per the relevant ISS or other specification stipulated must be submitted to the Chief Engineer (P&MM) and got approved by him.

- 49.2 Documents to be submitted by the Supplier are specified as under...
- (i) Insurance certificate;
  - (ii) Supplier's certificate certifying that the defects if any pointed out during inspection have been rectified (3 copies).
  - (iii) Manuals in Six sets and one set of reproducible drawings.

The Purchaser will receive the above documents soon after the dispatch of materials and if not received, the supplier will be responsible for any consequent expenses.

### **50. Insurance**

- 50.1 The Materials / equipment supplied under the Contract will be fully insured against loss or damage incidental to manufacture or acquisition, transportation and delivery and also storage for 45 days at destination stores before taking into stock.

- 50.2 The bidder shall a) Initiate and pursue insurance claim till settlement, and b) Promptly arrange for repair and/or replacement of any damaged items in full irrespective of settlement of insurance claim by the under Writers. c) All costs because of insurance liabilities covered under the contract will be to supplier's account. The supplier shall provide the Purchaser with a copy of all insurance policies and documents taken out by him in pursuance of the 'Contract'. Such copies of documents shall be submitted to the purchaser immediately after such insurance coverage. The supplier shall also inform the Purchaser in writing at least sixty (60) days in advance, regarding the expiry, cancellation and/or change in any of such documents and ensure revalidation/renewal etc., as may be necessary well in time.

The risks that are to be covered under the insurance shall be comprehensive and shall include but not limited to, the loss or damage in transit, storage, due to theft, pilferage, riot, civil commotion, weather conditions, accident of all kinds, fire, flood, war risk (during ocean transportation) bad or rough handling etc. The scope of such insurance shall cover the entire contract value.

The insurance will be in an amount equal to 100% FADS value of Materials / equipment on all risks basis. The policy will have a provision for extension to cover further storage if necessary at destination stores/site at TGSPDCL cost. The insurance beneficiary shall be of TGSPDCL.

## **51. Transportation**

- 51.1 The Supplier is required under the Contract to transport the Materials/equipment to a specified place of destination defined as normally the district stores, transport to such place of destination, including insurance and storage, will be arranged by the Supplier, and the related costs will be included in the Contract Price only.

## **52. Incidental Services**

- 52.1 The Supplier may be required to provide any or all of the following services, including additional services, if any.
- (a) Performance or supervision of on-site assembly and/or start-up of the supplied Materials / equipment;
  - (b) Furnishing of tools required for assembly and/or maintenance of the supplied Materials / equipment;
  - (c) Furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied Materials / equipment;
  - (d) Performance or supervision or maintenance and/or repair of the supplied Materials / equipment, during warranty period, provided that this service will not relieve the Supplier of any warranty obligations under this contract; and
  - (e) Training of the Purchaser's personnel, at the Suppliers' plant and/or on-site, in assembly, start-up, operation, maintenance, and/or repair of the supplied Materials / equipment.

## **53. Spare Parts**

- 53.1 The Supplier may be required to provide any or all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the Supplier.
- (a) Such spare parts as the Purchaser may choose to purchase from the Supplier, provided that this election will not relieve the supplier of any warranty obligations under the contract; and
  - (b) In the event of termination of production of the spare parts:
  - (c) Advance notification to the Purchaser of the impending termination.
  - (d) Time to permit the Purchaser to procure needed requirement; and following such termination, furnishing at no cost to the Purchaser, the blueprints, drawings, and specifications of the spare parts, if requested.

## **54. Warranty**

- 54.1 The supplier will warrant for the satisfactory functioning of the material/equipment as per specification for a minimum period of 5 years (five years) from the date of receipt of the material/equipment in good condition.
- 54.2 The Supplier warrants that the Materials / equipment supplied under the Contract are new, unused, of the most recent or current models, and that they incorporate all recent improvements in design and materials unless provided otherwise the special guarantee sought in technical specification. The supplier further warrants that all Materials / equipment supplied

under this Contract will have no defect, arising from a design and / or materials as required by the Purchaser's specifications or from any act of omission of the Supplier, that may develop under normal use of the supplied Materials / equipment.

- 54.3 All the materials will be of the best class and will be capable of satisfactory operation in the tropics under service conditions indicated in clause 24.1 without distortion or deterioration. No welding filling or plugging of defective parts will be permitted, unless otherwise specified, they will conform to the requirements of the appropriate Indian, British or American Standards. (Where a standard specification covering the material in question has not been published, the standards of the American Society for testing of Materials should be followed).
- 54.4 The entire designs and construction will be capable of withstanding the severest stresses likely to occur in actual service and of resisting rough handling during transport.
- 54.5 Unless otherwise specified the warranty period will be 5 years from the date of acceptance of the Materials / equipment. The Supplier will, in addition, comply with the performance guarantees specified under the contract. If, for reasons attributable to the Supplier, these guarantees are not attained in whole or in part, the supplier will at its discretion either, Make such changes, modifications, and/or additions to the Materials / equipment or any part thereof as may be necessary in order to attain the contractual guarantees specified in the contract at its own cost and expense and to carry out further performance tests as per the relevant standards.
- 54.6 The Purchaser will promptly notify the supplier in writing of any claims arising under this warranty.
- 54.7 "Upon receipt of such notice, the Supplier will within 30 days repair or replace the defective Materials / equipment or parts thereof, free of cost at the ultimate destination. The supplier will take over the replaced parts/Materials/equipment at the time of their replacement. No claim whatsoever will lie on the Purchaser for the replaced parts/Materials /equipment thereafter". In the event of any correction of defects or replacement of defective material during the warranty period, the warranty for the corrected/replaced material will be extended to a further period of 12 months.
- 54.8 ***In case of delay in repair of WGP failed Distribution Transformers beyond 30 days from the receipt of intimation of defects, will attract Penalty @ 1% of value of unit cost per week of delay till the date of rectification / replacement. The above penalty for the period of delay to the extent of failed units will be deducted from the subsequent bills / bank guarantee. If the period of delay exceeds a maximum of three months, the purchaser has the right to recover the cost of unit from the pending bills if any or from the available performance Security Deposit***
- 54.9 If the Supplier, having been notified, fails to remedy the defect(s) within the above period, the Purchaser may proceed to take such remedial action as may be necessary, at the Supplier's risk and expense duly deducting the expenditure from subsequent bills / bank guarantee and without prejudice to any other rights which the Purchaser may have against the Supplier under the Contract.

## **55. Payment**

- 55.1 **100% payment** along with F&I, applicable GST will be made on or after 30 days reckoned from the date of receipt of material/ equipment at destination/ stores (**i.e., 103 entry in SAP module**), duly transferring the said amount to the bank account of the supplier by the purchaser bank. The supplier will have to predefine the Bank details while entering into contract for electronic transfer of payments.

- 55.2 The 100% payment mentioned above is subject to on submission of performance security as per Clause 40 by the supplier.
- 55.3 The supplier should invariably submit test certificates and other documents, the purchaser specifies as soon as dispatch is made so that they can be checked and approved well in advance.
- 55.4 The performance guarantee to be executed in accordance with this specification will be furnished on a stamp paper of value Rs.100/-. The Bank Guarantee will be extended if required suitably. In accordance with the provisions of Clause No.40. The Bank Guarantee shall be from any of the nationalized banks / scheduled banks.
- 55.5 If the supplier has received any over payments by mistake or if any amounts are due to the TGSPDCL due to any other reason, when it is not possible to recover such amounts under the contract resulting out of this specification, the TGSPDCL reserves the right to collect the same from any other amount and / or Bank Guarantees given by the company due to or with the TGSPDCL.
- 55.6 When the supplier does not at any time, fulfill his obligations in replacing/rectifying etc. of the damaged/defective materials in part or whole promptly to the satisfaction of the TGSPDCL Officers, the TGSPDCL reserves the right not to accept the bills against subsequent dispatches made by the supplier and only the supplier will be responsible for any demurrages, wharf ages or damage occurring to the consignments so dispatched.

## **56. Prices**

- 56.1 Prices charged by the Supplier for Materials / equipment delivered and Services performed under the Contract will not vary from the prices quoted by the supplier in its bid, with the exception of any price adjustment authorized in the contract.

## **57. Change Orders**

- 57.1 The Purchaser may at any time, by a written order given to the Supplier make changes within the general scope of the Contract in any one or more of the following:
- (a) Drawings, designs, or specifications, where Materials / equipment to be furnished under the Contract are to be specifically manufactured for the Purchaser;
  - (b) The method of shipment or packing;
  - (c) The place of delivery; and/or
  - (d) The Services to be provided by the Supplier.

## **58. Contract Amendments**

- 58.1 No variation in or modification of the terms of the Contract will be made except by written amendment by the Purchaser and accepted by the supplier.

## **59. Assignment**

- 59.1 The Supplier will not assign, in whole or in part, its obligations to perform under this Contract, except with the Purchaser's prior written consent.

**60. Delays in Supplier's Performance**

- 60.1 Delivery of the Materials / equipment will be made by the Supplier in accordance with the time schedule prescribed by the Purchaser in the Schedule of Requirements.
- 60.2 If at any time during performance of the Contract, the Supplier should encounter conditions impeding timely delivery of the Materials / equipment, the Supplier will promptly notify the Purchaser in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the Supplier's notice, the Purchaser will evaluate the situation and may at its discretion extend the Supplier's time for performance, with or without liquidated damages, in which case the extension will be ratified by the parties by amendment of the Contract.
- 60.3 Except as provided under force majeure clause a delay by the Supplier in the performance of its delivery obligations will render the Supplier liable to the imposition of liquidated damages unless an extension of time is agreed upon without the application of liquidated damages.

**61. Penalty for delay in supplies**

The time for and the dates for delivery mentioned in the contract will be deemed to be the essence of the contract. Subject to force majeure Clause No.66, if the Supplier fails to deliver any or all of the Materials / equipment or to perform the Services within the period(s) specified in the Contract, the Purchaser will, without prejudice to its other remedies under the Contract, deduct from the total contract value, as liquidated damages, a sum equivalent to 0.5% per week on the undelivered portion subject to a maximum of 5% of the cost of the undelivered portion within the scheduled time. The number of days would be rounded off to the nearest week and penalty calculated accordingly. Once the maximum is reached the Purchaser may consider termination of the contract.

The check measurement date i.e., the date of receipt of materials at destination stores in good condition will be taken as the date of delivery. For calculation of penalty, the date of receipt of material at the destination stores is the date of delivery subject to the condition that the goods/ material is received in good condition. Materials/Equipment which are not of acceptable quality or are not confirming to the specification would be deemed to be not delivered. For penalty, the number of days would be rounded off to the nearest week and penalty calculated accordingly.

The penalty specified above will be levied and would be adjusted against subsequent pending bills.

In cases where new vendors fail to meet the requirement of the Contract there would be no penalty to such vendors but they will be excluded from the next bid for the particular item of the material.

Any failure on the part of new vendors for a second time would cause them to be removed from the list of registered vendors.

**62. RISK PURCHASE:**

In case of supplier who has not adhered to the delivery schedule, the TGSPDCL reserves the right to purchase the balance quantity from the open market/floating another tender and recover the extra expenditure thus incurred from the supplier.

**63. Termination for Default**

- 63.1 The Purchaser, without prejudice to any other remedy for breach of Contract, by written notice of default sent to the Supplier, may terminate this Contract in whole or in part:
- i. If the Supplier fails to deliver any or all of the Materials / equipment within the period(s) specified in the Contract, or within any extension thereof granted by the Purchaser.
  - ii. If the Supplier fails to perform any other obligation(s) under the Contract.
  - iii. If the Supplier, in the judgment of the Purchaser has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.

- 63.2 In the event the Purchaser terminates the Contract in whole or in part, the Purchaser may procure, upon such terms and in such manner, as it deems appropriate, Materials / equipment or services similar to those undelivered, and the Supplier will be liable to the Purchaser for any excess costs for such similar Materials / equipment or Services. However, the Supplier will continue performance of the Contract to the extent not terminated.

#### **64. Termination for Insolvency**

- 64.1 The Purchaser may at any time terminate the Contract by giving written notice to the Supplier if the Supplier becomes bankrupt or otherwise insolvent. In this event, termination will be without compensation to the supplier, provided that such termination will not prejudice or not affect any right of action or remedy, which has accrued or will accrue thereafter to the Purchaser.

#### **65. Termination for Convenience**

- 65.1 The Purchaser, by written notice sent to the Supplier, may terminate the Contract, in whole or in part, at any time for its convenience. The notice of termination will specify the termination is for the Purchaser's convenience, the extent to which performance of the supplier under the Contract is terminated, and date upon which termination becomes effective.
- 65.2 However the Materials / equipment that are complete and ready for shipment within thirty (30) days after the supplier's receipt of notice of termination will be accepted by the Purchaser at the Contract terms and prices.

#### **66. Force Majeure**

- 66.1 The Supplier will not be liable for forfeiture of its performance security, penalty for late delivery, or termination for default if and to the extent that its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.
- 66.2 For purposes of this clause, "Force Majeure" means an event beyond the control of the Supplier and not involving the Supplier's fault or negligence and not foreseeable. Such events may include, but are not restricted to, wars or revolutions, fires, floods, epidemics, quarantine restrictions, and freight embargoes.
- 66.3 If a Force Majeure situation arises, the supplier will promptly notify the Purchaser in writing of such condition and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier will continue to perform its obligations under the Contract as far as is reasonably practice, and will seek all reasonable alternative means for performance not prevented by the Force Majeure event.

No price variance will be allowed during the period of force majeure.

#### **67. Settlement of Disputes**

- 67.1 If any dispute or difference of any kind whatsoever will arise between the Purchaser and the Supplier in connection with or arising out of the Contract, the parties will make every effort to resolve amicably such dispute or difference by mutual consultation.
- 67.2 If, after thirty (30) days the parties have failed to resolve their dispute or difference by such mutual consultation, then either the Purchaser or the Supplier may give notice to the other party of its intention to commence arbitration, as hereinafter provided, as to the matter in dispute, and no arbitration in respect of this matter may be commenced unless such notice is given.
- 67.3 Any dispute of difference in respect of which a notice of intention to commence arbitration has been given in accordance with this Clause will be finally settled by arbitration. Arbitration may be commenced prior to or after delivery of the Materials / equipment under the Contract.
- 67.4 Arbitration proceedings will be conducted in accordance with the following rules of procedure. The dispute resolution mechanism will be as follows:
- (a) In the case of a dispute or difference arising between the Purchaser and a Supplier relating to any matter arising out of or connected with this agreement, such dispute or difference will be settled in accordance with the Arbitration and Conciliation Act, 1996. The Arbitral Tribunal will consist of three Arbitrators one each to be appointed by the Purchaser and the supplier the Third Arbitrator will be chosen by the two Arbitrators so appointed by the parties and will act as Presiding Arbitrator. In case of failure of the two Arbitrators appointed by the parties to reach upon a consensus within a period of 30 days from the appointment of the Arbitrator appointed subsequently, the Presiding Arbitrator will be appointed by The Institution of Engineers (India).
  - (b) If one of the Parties fails to appoint its Arbitrator in pursuance of Sub-Clause (a) within 30 days after receipt of the notice of the appointment of its Arbitrator by The Institution of Engineers (India), will appoint the Arbitrator. A certified copy of the order of the Institution of Engineers (India), making such an appointment will be furnished to each to the parties.
  - (c) Arbitration Proceedings will be held at Purchaser's Headquarters, and the language of the Arbitration Proceedings and that of all documents and communication between the parties will be English.
  - (d) The decision of the majority of Arbitrators will be final and binding upon both parties. The cost and expenses of Arbitration Proceedings will be paid as determined by the Arbitral Tribunal. However, the expenses incurred by each party in connection with the preparation, presentation etc., of its proceedings as also the fees and expenses paid to the Arbitrator appointed by such party or on its behalf will be borne by each party itself.
  - (e) Where the value of the Contract is Rs. One Crore and below, the disputes or differences arising will be referred to the Sole Arbitrator. The Sole Arbitrator should be appointed by agreement between the parties; failing such agreement, by the appointing authority namely The Institution of Engineers (India).
- 67.5 Notwithstanding any reference to arbitration herein,
- (a) The parties will continue to perform their respective obligations under the Contract unless they otherwise agree; and
  - (b) The Purchaser will pay the Supplier any monies due to the Supplier.



**68. Jurisdiction**

- 68.1 All and any disputes or differences arising out of or touching this contract will be decided by the Courts or Tribunals situated in Purchaser's Headquarters only. No suit or other legal proceedings will be instituted elsewhere.

**69. Notices**

- 69.1 Any notice given by one party to the other pursuant to this Contract will be sent to the other party in writing or by cable, telex, or facsimile and confirmed in writing to the other party's address.
- 69.2 A notice will be effective when delivered or on the notice's effective date, whichever is later.

**70. Foreign Exchange**

- 70.1 No Foreign Exchange is available or expected for this purchase. Offers which do not require release of F.E. or procurement of import license by TGSPDCL only will be considered. Where some of the components are to be imported the manufacturer will have to make their own arrangements for import license etc., and should not look for any assistance from TGSPDCL.

**71. Extension Order**

All supply contracts will contain a provision for increasing or decreasing the quantity to be supplied by an agreed percentage during the schedule delivery period. In the case of any emergency, increasing the quantity to the extent provided in the contract may be necessary. In the case of piling up of stock or if prices have generally reduced, decreasing the quantity may be considered with the approval of the concerned Director and Director (Finance).

**SECTION – IV**  
**QUALIFICATION REQUIREMENTS**

1. The bidder should be a manufacturer who must have designed, manufactured, tested and supplied to Govt. power utilities/Distribution power utilities atleast 40% of the quoted quantity of the goods/equipment of same or higher rating of Distribution Transformers indicated in the "Schedule of Requirement" in one continuous period of 12 months during the last 5 years period and its financial turnover during any one year of the last five years should have been equal or more than 100% value of the material now quoted.

At least 20% of similar material offered against this Specification should be in successful operation since 2 years as on the date of opening of the Bid with documentary evidence. Fresh bidders can be given order upto 15% of the total quantity as a trial order, if equipment justified.

**However, for placing the trial order the destination price shall be lower by at least 5% of L1 price. Performance Certificates issued by the purchasing authority will only be considered.**

NOTE : As the transformers are being procured with BIS rating, past supplies will be taken into consideration for qualification and performance requirements for evaluation, whereas the type test reports and **BIS** and **BEE** certification with Energy Efficiency Level-2(Star 2) shall be as per IS 1180 (Part-1) : 2014.

Any company/vendor/supplier/contractor that is blacklisted/debarred by any other power utility is not eligible to participate in the tenders.

The bidder shall have to furnish an undertaking in the prescribed format (at page no. 41) regarding any relation to the promoters of blacklisted / debarred companies by any utility. Any false information furnished in the declaration while rendering bid, such contract is liable for termination as well as recovery of damages.

2. The bidder should furnish the information on all past supplies and satisfactory performance in proforma under Form 6 attested by a CA. **Performance Certificates issued by the purchasing authority will only be considered.**
3. All bids submitted will also include the following information:
- i. Copies of original documents defining the constitution or legal status, place of registration and principle place of business of the company or firm or partnership, etc.,
  - ii. The bidder should furnish a brief write-up, backed with adequate data, explaining his available capacity and experience (both technical and commercial) for the manufacture and supply of the required equipment within the specified time of completion after meeting all their current commitments.
  - iii. The bidder should clearly confirm that all the facilities exist in his factory for inspection and testing and these will be made available to the purchaser or his representative for inspection.
  - iv. Reports on financial standing of the Bidder such as profit and loss statement, balance sheets and auditor's report for the past five years, bankers certificates etc.
  - v. If the firm is new to TGSPDCL, the firm is expected to furnish failure percentage rate within guarantee period for 3-ph 63 KVA distribution transformer supplied by them in any Govt /Power utilities duly signed by the concerned purchasing authority, in the last 5years.

4. The bidder should furnish Type Test Results. The type tests must have been conducted on the material offered as per the relevant IS in recognized laboratory **(NABL)**/ International Labs as per the latest revision of the Technical Specification and the date of Type tests will not be later than **5 years** if there is no change in design criteria. **The Bids received without/partial type test reports will be treated as Non-Responsive.** Also, the bids received with type test reports conducted in their own lab will also be not considered for evaluation and will be treated as non-responsive.
5. **If the firm's failure percentage rate within the guarantee period of 3-ph 63 KVA Distribution Transformers supplied to TGSPDCL is more than 5 % in the last 5 years , this may lead to non- consideration as eligible bidder.**
6. Even though the bidder meets the above qualifying criteria, they are subject to be disqualified if they have...
  - a. made misleading or false representations in the forms statements and attachments submitted in proof of qualification requirements and / or
  - b. record of poor performance such as not properly completing the contract, inordinate delays in supply completion, litigation history or financial failure etc.
  - c. *Poor performance in rectifying/replacement of material within the guarantee period in the past supplies in TGSPDCL*
7. Notwithstanding anything stated above the purchaser reserves the right to assess bidder's capability and capacity to perform the contract should circumstances warrant such an assessment in the overall interest of the purchaser.

**SECTION-V**  
**SAMPLE FORMS**

**1. BID FORM**

Date. ....

TO: (Name and Address of Purchaser)  
Gentlemen and/or Ladies:

Having examined the Bidding documents, the receipt of which is hereby duly acknowledged, we, the undersigned, offer to supply and deliver. .... (Description of Materials / equipment) in conformity with the said bidding documents for the sum of. .... (total bid amount in words and in figures) or such other sums as may be ascertained in accordance with the schedule of prices (online only) and made part of this Bid.

We undertake, if our Bid is accepted, to deliver the Materials / equipment in accordance with the delivery schedule specified in the Schedule of Requirements.

If our Bid is accepted, we will obtain the guarantee of a bank in a sum equivalent to. 10% of the Contract Price for the due performance of the Contract, in the form prescribed by the Purchaser.

We agree to abide by this Bid upto ..... (for the Bid Validity Period) specified in Clause and it will remain binding upon us and may be accepted at any time before the expiration of that period.

Until a formal contract is prepared and executed, this Bid, together with your written acceptance thereof and your notification of award, will constitute a binding Contract between us.

We understand that you are not bound to accept the lowest or any bid you may receive.

We certify / confirm that we comply with the eligibility requirements as per clause of the bidding documents.

Dated this. ....day of. ....20

\_\_\_\_\_  
\_\_\_\_\_  
[Signature]

[in the capacity of]

Duly authorized to sign Bid for and on behalf of \_\_\_\_\_

## **2. (a) BID SECURITY FORM**

Whereas. .... (hereinafter called "the Bidder") has submitted its Bid dated (date of submission of bid) for the supply of. ....(name and /or description of the Materials / equipment) (hereinafter called "the Bid").

KNOW ALL PEOPLE by these presents that WE. ....(name of bank) having our registered office at. ....(address of bank)(hereinafter called "the Bank"), are bound unto. ....(name of Purchaser) (hereinafter called "the Purchaser") in the sum of \_\_\_\_\_ for which payment well and truly to be made to the said Purchaser, the Bank binds itself, its successors, and assigns by these presents. Sealed with the Common Seal of the said Bank this \_\_\_\_day of \_\_\_\_\_ 20 .

THE CONDITIONS of this obligation are:

1. If the Bidder
  - a) withdraws its Bid during the period of bid validity specified by the Bidder on the Bid Form; or
  - a) does not accept the correction of errors in accordance with the Bid Specification, or
2. If the Bidder, having been notified of the acceptance of its bid by the Purchaser during the period of bid validity;
  - (a) fails or refuses to furnish the performance security, in accordance with the Bid Specification.
  - (b) fails or refuses to execute the Contract Form if required; or

We undertake to pay the Purchaser up to the above amount upon receipt of its first written demand, without the Purchaser having to substantiate its demand, provided that in its demand the Purchaser will note that the amount claimed by it is due to it, owing to the occurrence of one or both of the two conditions, specifying the occurred condition or conditions.

This guarantee will remain in force up to and including forty five (45) days after .....(Specification Date) the period of the bid validity, and any demand in respect thereof should reach the Bank not later than the above date.

. ....  
(Signature of the Bank)

**NOTE:** This will be executed on a Rs.100/- non-judicial stamp paper issued by c/ scheduled Bank.

**2. (b) PERFORMANCE SECURITY FORM**

To: \_\_\_\_\_(Name of Purchaser)

**WHEREAS**.....(Name of Supplier)  
(hereinafter called "the Supplier") has undertaken, in pursuance of Contract No.....dated.....20  
to supply. ....(Description of Materials / equipment and Services)  
(hereinafter called "the Contract").

**AND WHEREAS** it has been stipulated by you in the said Contract that the Supplier will furnish you with a Bank Guarantee by a recognized Bank for the sum specified therein as security for compliance with the Supplier's performance obligations in accordance with the Contract.

**AND WHEREAS** we have agreed to give the Supplier a Guarantee:

**THEREFORE WE** hereby affirm that we are Guarantors and responsible to you, on behalf of the Supplier, up to a total of. .... (Amount of the Guarantee in Words and Figures) and we undertake to pay you, upon your first written demand declaring the Supplier to be in default under the Contract and without cavil or argument, any sum or sums within the limit of..... (Amount of Guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

This guarantee is valid until the. ... day of. .... 20 .

Signature and Seal of Guarantors

.....

Date. ....20.

.....

.....

Address:.....

.....

.....

**NOTE:** This will be executed on a Rs.100/- non-judicial stamp paper by any nationalized/scheduled Bank.

### **3. CONTRACT FORM**

**THIS AGREEMENT** made the. .... day of. .... 20 Between. ....(Name of Purchaser) of the one part and. ....(Name of Supplier) of the other part:

**WHEREAS** the Purchaser invited bids for certain Materials / equipment and ancillary services viz., .....(Brief description of Materials / equipment and Services) and has accepted a bid by the Supplier for the supply of those Materials / equipment and services in the sum of. ....(Contract Price in Words and Figures)(hereinafter called "the Contract Price").

**NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:**

1. In this Agreement words and expressions will have the same meanings as are respectively assigned to them in the Conditions of Contract referred to.
2. The following documents will be deemed to form and be read and construed as part of this Agreement, viz.:
  - (a) the Bid Form and the Price Schedule submitted by the Bidder;
  - (b) the Schedule of Requirements;
  - (c) the Technical Specifications;
  - (d) the General Conditions of Contract;
  - (e) the Purchaser's Notification of Award.
3. In consideration of the payments to be made by the Purchaser to the Supplier as hereinafter mentioned, the Supplier hereby covenants with the Purchaser to provide the Materials / equipment and services and to remedy defects therein in conformity in all respects with the provisions of the Contract.
4. The Purchaser hereby covenants to pay the Supplier in consideration of the provision of the Materials / equipment and services and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

Brief particulars of the Materials / equipment and services which will be supplied/ provided by the Supplier are as under:

Sl. No.	Brief Description of Materials / Equipment & services	Quantity to be supplied	Unit Price Rs.	Total Price Rs.	Delivery Terms

**TOTAL VALUE: (Rupees \_\_\_\_\_ only)**



**DELIVERY SCHEDULE:**

**IN WITNESS** whereof the parties hereto have caused this Agreement to be executed on the day and year first above written.

Signed, Sealed and Delivered by the

said. ....(for the Purchaser)

in the presence of. ....

Signed, Sealed and Delivered by the

said. ....(for the Supplier)

in the presence of. ....

**NOTE: To be executed on a Rs.100/- Non-judicial stamp paper.**

**4. PROFORMA FOR PERFORMANCE STATEMENT**

Bid No. \_\_\_\_\_

Date of Opening \_\_\_\_\_

Time \_\_\_\_\_ Hours

Name of the Firm \_\_\_\_\_

Order placed by (full address of purchaser)	Order No. and Date	Description and quantity of ordered equipment	Date of Completion of Delivery	
			As per Contract	Actual

Remarks indicating reasons for late delivery, if any	Has the equipment been satisfactorily functioning? (Attach a Certificate from the Purchaser)

Signature of the Bidder \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**5. DETAILS TO BE FURNISHED BY THE MANUFACTURER (Format – A)**

1. Specification No.	:	
2. Name of the Material	:	
3. Quantity to be procured	:	
4. Last date and time for submission of Bid	:	
5. Date and time for opening of Bid	:	
6. State whether Bid security is enclosed	:	
7. State whether the quotation in two parts has been submitted.	:	
8. State whether 20% minimum quantity for each item is quoted	:	
9. Whether willing to furnish performance B.G. @ <b>10%</b> if order is placed	:	
10. Whether month wise delivery schedule indicated	:	
11. Prices whether Firm	:	
12. Whether any other tax / duty payable. If so give details and the same is included / not included.	:	
13. State whether TGSPDCL terms of payment are accepted.	:	
14. Quantity offered for supply	:	
15. State whether 90 days validity offered	:	
16. Whether sample is enclosed (if specified)	:	
17. Whether the material/equipment offered conforms to the relevant TGSPDCL Specification	:	
18. Whether you have executed orders of the TGSPDCL previously for these items. (Please give details)	:	
19. Similar details in respect of supplies made to other utilities	:	
20. Whether Bid security exemption letter enclosed, if exempted in case of Govt. firms.	:	
21. Whether GSTR 3B returns enclosed	:	
22. Whether Income-tax clearance certificate enclosed.	:	
23. Whether Warranty clause accepted	:	
24. Whether Penalty clause accepted	:	
25. Whether delivery schedule accepted	:	

**6. DECLARATION FORM****Declaration to be given by the Company in regard to relation to promoters of Blacklisted / debarred companies by any power utilities.**

I declare that, myself or any of the representatives of my company / firm do not have any relatives with promoters of blacklisted / debarred companies by any utilities.

It is certified that the information furnished above is true to the best of my knowledge and belief. It is hereby undertaken that in the event of the above information found to be false or incorrect at a later date, the TGSPDCL is entitled to terminate the contract/agreement entered into besides recovering damages as may be found necessary, with due notice.

**Signature of authorized representative**

**7. SCHEDULE OF DEVIATION****(i) TECHNICAL**

<b>Sl. No.</b>	<b>Requirements / Equipment</b>	<b>Specification Clause No.</b>	<b>Deviations</b>	<b>Remarks</b>

It is hereby conformed that except for deviations mentioned above, the offer conforms to all the other features specified in Technical Specification Section \_\_\_\_ of this Bid Document

Place :

Signature of the Bidder :

Date :

Name :

Business address :

**8. SCHEDULE OF DEVIATION****(ii) COMMERCIAL**

<b>Sl. No.</b>	<b>Requirements / Equipment</b>	<b>Specification Clause No.</b>	<b>Deviations</b>	<b>Remarks</b>

It is hereby conformed that except for deviations mentioned above, the offer conforms to all the other features specified in Commercial Specification Section \_\_\_\_ of this Bid Document

Place :

Signature of the Bidder :

Date :

Name :

Business address:

**SECTION-VI - (STN- 1256 /2024)****TECHNICAL SPECIFICATION FOR 63 KVA CSP ALUMINIUM WOUND DISTRIBUTION TRANSFORMERS WITH BIS EE LEVEL-2 (STAR-2)****1. SCOPE :**

- 1.1 This specification covers design, engineering, manufacture assembly stage, testing, inspection and testing before supply and delivery at stores of oil immersed naturally cooled 11kV/433-250 V, 63 KVA CSP Aluminum wound Distribution Transformer with BIS EE Level-2(star 2) for outdoor use.
- 1.2 It is not the intention to specify completely herein all the details of the design and construction of equipment. However, the equipment shall conform in all respects to high standards of engineering, design and workmanship and shall be capable of performing in continuous commercial operation up to the Bidder's guarantee in a manner acceptable to the purchaser, who will interpret the meaning of drawings and specification and shall have the power to reject any work or material which, in his judgment is not in accordance therewith. The offered equipment shall be complete with all components necessary for their effective and trouble free operation. Such, components shall be deemed to be within the scope of Bidder's supply irrespective of whether those are specifically brought out in this specification and/or the commercial order or not.
- 1.3 The transformer and accessories shall be designed to facilitate operation, inspection, maintenance and repairs. The design shall incorporate every precaution and provision for the safety of equipment as well as staff engaged in operation and maintenance of equipment.
- 1.4 All outdoor apparatus, including bushing insulators with their mountings, shall be designed so as to avoid any accumulation of water.

**2.0. STANDARDS :**

- 2.1. The material shall conform in all respects to the relevant Indian/ International Standard specifications, with latest amendments thereof, some of them are listed below.

<b>Indian Standard</b>	<b>Title</b>	<b>International and Internationally recognized standards</b>
IS -2026	Specification for Power Transformers	IEC 76
IS 1180 & IS – 1180 (Part-1) : 2014	Outdoor distribution Transformer up to and including 2500 KVA, 33KV class	
IS 12444	Specification for Copper wire rod	ASTM B-49
IS -3347	Specification for porcelain Transformer bushing	DIN 42531,23,3
IS-335	Specification for Transformer Oil	BS 148, D-1473, D-1533- 1934 IEC Pub 296
IS - 5	Specification for colors for ready mixed paints	

IS - 104	Ready mixed paint, brushing zinc chromate, priming	
IS - 2099	specification for high voltage porcelain bushing	
IS - 649	Testing for steel sheets and strips and magnetic circuits	
IS - 4257	Dimensions for clamping arrangements for bushings	
IS - 7421	Specification for Low Voltage bushings	
IS - 3347	Specification for Outdoor Bushings	DIN 42531 to 33
IS - 5484	Specification for Al Wire rods	ASTM B - 233
IS - 9335	Specification for Insulating Kraft Paper	IEC 554
IS - 1576	Specification for Insulating Press Board	IEC 641
IS / 6600	Guide for loading of oil Immersed Transformers	IEC 76
IS 2362	Determination of water content in oil for porcelain bushing of transformer	
IS 6162	Paper covered aluminium conductor	
IS 6160	Rectangular Electrical conductor for electrical machines	
IS 5561	Electrical power connector	
IS 6103	Testing of specific resistance of electrical insulating liquids	
IS 6262	Method of test for power factor and dielectric constant of electrical insulating liquids	
IS 6792	Determination of electrical strength of insulating oil	
IS 10028	Installation and maintenance of transformers.	

Material conforming to other internationally accepted standards, which ensure equal or higher quality than the standards mentioned above would also be acceptable. In case the bidders who wish to offer material conforming to the other standards, salient points of difference between the standards adopted and the specific standards shall clear out in relevant schedule. Four copies of such standards with authentic English translations shall be furnished along with the offer.

### 3.0. SERVICE CONDITIONS:

The Distribution Transformers to be supplied against this specification shall suitable for satisfactory continuous operation under the following climatic conditions.

i)	Location	:	At various locations in the State of T.G.
ii)	Max. ambient air temp. (Deg.C)	:	50
iii)	Min. ambient air temp. (Deg.C)	:	7.5
iv)	Average daily ambient air temperature (Deg.C)	:	35
v)	Max. relative humidity (%)	:	100
vi)	Max. altitude above mean sea level (meters)	:	1000
vii)	Average annual rainfall (mm)	:	9100
viii)	Max. wind pressure (Kg./Sq.mm)	:	200
ix)	Isoceraunic level (days per year)	:	50
x)	Seismic level (Horizontal accn. )	:	0.10 g.

The equipment shall be for use in moderately hot and humid tropical climate, conducive to rust and fungus growth.



#### 4.0. PRINCIPAL PARAMETERS :

The transformers shall be suitable for outdoor installation with three phase, 50 c/s. 11kV System in which the neutral is effectively earthed and they should be suitable for service under fluctuations in supply voltage up to plus 12.5% to minus 12.5% and frequency +/- 5%.

The transformer shall conform to the following specific parameters.

Sl. No.	Item	Specification
1.	Continuous rated capacity.	63 KVA
2.	System voltage.	12 KV
3.	Rated voltage HV	11KV
4.	Rated voltage LV	433V-250V
5.	Line current HV	3.306 A
6.	Line current LV	84 A
7.	Frequency	50 c/s +/- 5%
8.	No. of phases.	Three
9.	Connection HV	Delta
10.	Connection LV	Star (neutral brought out)
11.	Vector group	DYn-11
12.	Type of cooling	ONAN
13.	Tap changing arrangement.	Not applicable.
14.	Over fluxing limit.	12.5%
15.	Noise level at rated voltage and frequency.	51 db
16.	Permissible temperature rise over ambient.	
	(i) of top oil measured by thermometer.	35 Deg. C
	(ii) of winding measured by resistance.	40 Deg. C.
17.	Minimum clearances in air.	
	a) HV b) LV	As per IS/IEC.

#### 5.0. TECHNICAL REQUIREMENTS:

##### 5.1 DESIGN & CONSTRUCTION: CORE

##### 5.1.1 CRGO Material:

(a) The core shall be Stack/wound generally of M4 or high grade cold rolled grain oriented annealed steel lamination having low loss and good grain properties, coated with hot oil proof insulation, bolted together and to the frames firmly to prevent vibration or noise. All core clamping bolts shall be effectively insulated. The complete design of core must ensure permanency of the core losses with continuous working of the transformers.

b) The transformer core shall be suitable for over fluxing due to combined effect of voltage and frequency upto 12.5% without injurious heating at full load conditions and shall not get saturated. The bidder shall furnish necessary design data in support of this situation.

c) **Flux density should not be more than 1.55 webers m<sup>2</sup> (Tesla) with+12.5%** combined voltage and frequency variation with rated voltage and frequency. **Flux density should not be more than 1.38 webers m<sup>2</sup> (Tesla)** for CRGO core .No load current shall not exceed 3% of full load current and will be measured by energizing the transformer at 433 volts 50 c/s on the secondary. Increase of voltage of 433 volts by 12.5% shall not increase the no load current disproportionately high and shall not exceed i.e., **6%**. Test for magnetic balance by connecting the LV phase by phase to rated phase voltage and measurement of an, bn, cn voltage will be carried out. .

## d) Core clamping:

- i. MS Channel of 75 x 40 mm min. size shall be used on top and bottom (for stacked core transformers).
- ii. 2 x 12 mm high tensile bolts to be used in parallel at each end.
- iii. Channel on LV side to be reinforced at equidistance, if holes/cutting is done for LT lead in order to avoid bending of channel.
- iv. MS channel shall be painted with varnish or oil-resistant paint.

e) Tie-rods : **4 Nos. of M12 High Tensile steel rods** shall be effectively insulated.

- f) i) All top and bottom yoke nuts & bolts and tie rods shall be painted with oil and corrosion-resistant paint **and phosphate coated paint for Tie rods** before use.

ii) Core base and bottom yoke shall be supported with 75 x 40 mm MS channel (for stacked, CRGO wound and amorphous core transformers) with proper bolting/welding. Flat or cut channels will not be accepted.

g) Only prime quality CRGO sheets should be used in the transformers and no Second/Defective/Scrap CRGO finds way into transformers. Therefore regarding quality control following documents are to be furnished along with bid documents.

**AMORPHOUS METAL:**

a) The core shall be high quality Amorphous ribbons having very low loss formed into wound cores of rectangular shape, bolted together to the frames firmly to prevent vibration or noise. The complete design of core must ensure permanency of the core loss with continuous working of the transformers. The value of the flux density allowed in the design shall be clearly stated in the offer. Curve showing the properties of the metal shall be attached with the offer.

## b) Core Clamping – Amorphous Metal and CRGO wound core Transformers

1. Core clamping shall be with top and bottom U-shaped core clamps made of sheet steel clamped with MS tie rods for efficient clamping.
2. MS core clamps shall be painted with varnish or hot oil resistant paint
3. Suitable provision shall be made in the bottom core clamp / bottom plate of the transformer to Arrest movement of the active part.

c) The transformer core shall be suitable for over fluxing (due to combined effect of voltage and frequency upto 12.5% without injurious heating at full load conditions and shall not get saturated. The Bidder shall furnish necessary design data in support of this situation.

d) **Flux density should not be more than 1.55 webers m<sup>2</sup> (Tesla) with+12.5%** combined voltage and frequency variation with rated voltage and frequency. **Flux density should not be more than 1.38 webers m<sup>2</sup> (Tesla)** for Amorphous core. No load current shall not exceed 3% of full load current and will be measured by energizing the transformer at 433 volts 50 c/s on the secondary. Increase of voltage of 433 volts by 12.5% shall not increase the no load current disproportionately high and shall not exceed i.e., 5%. Test for magnetic balance by connecting the LV phase by phase to rated phase voltage and measurement of an, bn, cn voltage will be carried out.

**NOTE:** Equal Weightage shall be given to the transformers with Amorphous metal core and CRGO.

The bidder should offer the core for inspection and approval by the purchaser during manufacturing stage. Bidder shall give note for inspection with the following documents as applicable as a proof of towards use of prime core material.

1. Invoices of supplier
2. Mill's test certificate
3. Packing list.
4. Bill of landing
5. Bill of entry certificate by custom
6. Description of material, electrical analysis, Physical inspection, certificate for surface defects, thickness and width of the material.

Subjecting to at least 10% of the transformers to routine tests and no load and load loss measurement

It is note that, using seconds /defective CRGO sheets or Load losses found to be more than stipulated limit, heavy penalty will be imposed or the suppliers will be black listed.

## 5.2. WINDINGS:

Material: Double paper covered insulated electrolytic Aluminum conductor/ **Super Enamel Aluminium** shall be used.

- a) Current density for HV and LV should not be more than **1.6 A/sq.mm**
- b) All delta leads from the HT Coils as well as HT line leads should be taken out through DPC covered copper wires of sufficient cross sectional area, to impart the desired strength. The current density in HV lead wires shall not exceed 0.8 A/ Sq.mm.
- c) L.V winding shall be in even layers so that neutral formation will be at top.
- d) Vertical ducts and spacers shall be provided within each coil for HV & LV windings. Dovetail spacers are not applicable in case of wound core construction, since it has a single coil. However, ducts shall be provided as per specification.
- e) Wedges of 3 mm shall be provided at 50% of the HV coil and LV coils in all types of transformers.
- f) The no. of HV coil for HV winding is one / multi coils for stacked core and one for wound core /amorphous core transformers.
- g) Proper binding of inter layer insulation with the conductors shall be ensured. Test for binding strength conducted.
- h) Dimensions of winding coils are very critical. Dimension tolerance for winding coils shall be within limits (+5% and no negative tolerance).
- i) Inter layer insulation shall be *Epoxy dotted paper. Minimum 2 Nos. of 2 mil Epoxy Dotted papers are to be used for interlayer insulation in HV & LV winding.*
- j) Formation of Delta on HV side shall be with 13 SWG super enameled copper wire with multi layered (not less than 13 layers) paper insulation. Necessary resin bonded paper insulation tubes or bakelite bits may be used through. This shall be done with ferrules and crimping/brazing.
- k) The HT jumpers from winding to the HT bushing (fuse link) inside the transformer should be provided with lugs to bolts and nuts. The jumper wires should pass through resin bonded paper cylinders and fiberglass sleeves.
- l) The star point shall be done with and aluminum ferrules and crimping.

- m) The Un-balanced current i.e., current flowing in neutral during Short Circuit test at full load current shall not be more than 2% of the full load current.
- n) All the sleeves used in construction shall be fibre glass material
- o) No tapping shall be provided upto 63 KVA.

**NOTE :** The tenderer shall furnish the design details of the core construction such as number of steps, thickness of core sheet, stacking factor, core building factor, core length, width, stack height per step, core diameter, gross and net areas of core, etc., along with their offer with references to the losses at 50% and 100% load calculated at 75 deg.C as quoted and calculation sheets for heat dissipation calculation and oil quantity calculation.

### 5.3. OIL:

The insulating oil shall comply with the requirements of relevant standards IS : 335/2018 Type II U. Total minimum oil volume is

Sl. No	Rating in KVA	Oil in Ltrs. (Including of oil observed in core coil assembly)	Permissible oil absorption
1	63	150	7 Ltrs

### 5.4. LOSSES :

The total losses (includes no- load & load losses ) at 50% and 100% loading equivalent to BIS EE Level-2 shall not exceed the values at rated voltage and rated frequency permitted at 75 Deg.C are indicated below.

KVA rating	Voltage ratio	Max. Losses @ 50% load, Watts	Max. Losses @ 100% load, Watts
63	11000/433 V	300	1050

The above losses are maximum allowable and there would not be any positive tolerance. Bids with higher losses than the above specified values would treat as non-responsive. There is no price preference for lower losses. Bidder has to supply the transformer as per no load losses, load losses and Maximum losses at 50% and 100% as mentioned GTP. Further providing of cooling tubes / fins to DTR should be calculated to the Maximum of BIS EE Level-2 losses.

#### 5.4.1. Percentage Impedance :

The percentage impedance at rated frequency is 4.5% (subject to tolerance as per IS:2026)

#### 5.4.2. Temperature Rise :

Temperature rise over ambient of 50 deg. C shall not exceed the limits described below.

- Top oil temp. rise measured by thermometer : 35 Deg. C
- Winding temp. rise measured by resistance : 40 Deg. C

Bid not meeting the limits of temperature rise will be treated as non responsive.

### 5.5. PENALTY FOR EXCESSIVE LOSSES: (During Guarantee period).

- 5.5.1. During testing, if it is found that the actual measured losses are more than values quoted by the bidder, penalty shall be recovered from the bidder at double the loss capitalization formula as mentioned below.
- (a) No load losses Rs. 288.23 per watt or part there of excessive loss.  
 (b) Load loss: Rs. 93.68 per watt or part there of excessive loss
- For fraction of a KW, proportionate penalty will be recovered.  
 For large variation in losses the purchase order is liable for cancellation.
- 5.5.2 Transformers with temperature rise and impedance beyond guaranteed values not be accepted.
- 5.5.3 Purchaser reserves the right to reject any transformer during the test at supplier's works, if the losses, temperature rise and impedance values differ from the guaranteed values.
- 5.5.4 Purchaser also reserves the right to retain the rejected transformer and take it into service until the Bidder replaces it with a new transformer at no extra cost. The delivery as per contract will be counted when the new transformer as per specification is provided by the manufacture.
- 5.5.5 One transformer shall be selected from every 200Nos. lot and shall be sent to CPRI for loss measurement at supplier's cost.

### 5.6 INSULATION MATERIAL & CLEARANCES :

a) Materials : Electrical grade insulation epoxy dotted Kraft paper of standard make or better material subject to approval of the purchaser. Press Board of standard make or better material and subject to approval of purchaser. **Inter layer insulation shall be Epoxy dotted paper**

b) All spacers, axial wedges/runners used in windings shall be made of pre-compressed Pressboard- solid, conforming to type B 3.1 of IEC 641-3-2. All spacers shall be properly sheared and dovetail punched to ensure proper locking. All axial wedges/ runners shall be properly milled to dovetail shape so that they pass through the designed spacers freely. Insulation shearing, cutting milling and punching operations shall be carried out in such a way, that there should not be any burr and dimensional variations

**5.6.1 CLEARANCES:** The clearances for the CRGO stacked core, CRGO wound core and Amorphous core are as follows.

1	Radial clearance of LV coil to core (bare conductor)	not less than 4.0 mm.
2	Radial clearance between HV & LV	not less than 11.0 mm
3	Phase to Phase clearance between HV conductors.	not less than 10 mm for 11kV with a min. of 2x1 mm press board to cover the tie rods.
4	The minimum electrical clearance between the winding and body of the tank (between inside surface of the tank and outside edge of the winding)	not less than 30 mm on non bushing side not less than 40 mm on bushing side
5	Minimum end insulation to earth	not less than 25 mm.
6	No. of coils HV/Phase.	One / multi coils (stacked core).
7	Thickness of locking spacers between HV coils.	10 mm min.
8	No. of axial wedges between LV and HV	shall be 8 winding equi-spaced.
9	Terminal lead insulation	1.5 mm thick with paper for HV side.

10	Minimum external clearances of Bushing terminals on HV Side (Phase to Phase)	255 mm
11	Minimum external clearances of Bushing terminals on HV Side (Phase to Earth)	140 mm
12	Minimum external clearances of Bushing terminals on LV Side (Phase to Phase)	75 mm
13	Minimum external clearances of Bushing terminals on LV Side (Phase to Earth)	40 mm

### 5.7. TANK :

Circular cross section cooling tubes of not less than 38 mm dia and 1.25 mm thick bent & directly welded to tank shall be provided. Corrugated type cooling tubes are also accepted. The transformer shall be capable of giving continuous rated output without exceeding the specified temperature rise and shall accommodate the all materials and free space required. Bidder shall submit the calculation sheets.

"For Corrugated tanks : Corrugation shall be built up with CRCA sheets of 1.2 mm thickness and Tanks with corrugations shall be tested for leakage test at a pressure of 0.15 kg/cm<sup>2</sup> measured at the bottom of the tank.

(i) Pressure Release Device: For corrugated tanks, PRD will be provided instead of Explosion vent and it operates at the pressure before 0.25 kg/cm<sup>2</sup>. Corrugated fins shall be provided underneath the LV bushings.

### OR

The radiators can be Press fin type of 1.2mm thickness to achieve the desired cooling to limit the specified temperature rise. They should be fixed at right angles to the sides and not diagonally. The transformer shall be capable of giving continuous rated output without exceeding the specified temperature rise. The size of the radiator shall be such that it covers at least 50% of the bottom yoke, full core and complete top yoke. Bidder shall submit the calculation sheet.

5.7.1. The transformer tank shall be of robust construction rectangular in shape and shall be built up of tested MS sheets of the following thickness with the tolerance applicable as per IS:1852.

- i) Side walls (min) : 3.15 mm thickness.
- ii) Top and bottom plates (min) : 5.0 mm thickness.
- iii) Bottom plates (Min.) : 5 mm thickness.

5.7.2. The internal clearance of tank shall be such that, it shall facilitate easy lifting of core with coils from the tank without dismantling LV bushings.

The four walls of the tank shall be made of TWO "L" shaped sheets (without joints) / one 'U' shaped bend sheet and one flat sheet fully welded at the corners from inside and outside of the tank. Two sides corner shall be welded for withstanding a pressure of 1Kg/Sq.cm for 10 minutes. All the tank plates shall be of such strength that the complete transformer with oil and fittings can be lifted bodily by means of lifting lugs provided. The top cover of the tank shall be bent 'L' shape four sides to avoid entry of water through cracks of gasket.

5.7.3. All joints of tank and fittings shall be oil tight and no bulging should occur during service. The tank design shall be such that the core and windings can be lifted freely. The tank plate shall be of such strength that the complete transformer when filled with oil may be lifted bodily by means of lifting lugs provided. Inside of tank shall be painted with *hot oil proof paint*.

5.7.4. Manufacturer should carry out all welding operations as per the relevant ASME standards and submit a copy of the welding procedure qualifications and welder performance qualification certificate to the customer.

- 5.7.5. The tank shall be reinforced by welded angle (40x40x5 mm) on all the outside wall on the edge of the tank to form three equal compartments. Permanent deflection when the tank without oil is subject to a vacuum of 760 mm of mercury shall not be more than 5 mm up to 750 mm length and 6 mm up to 11000 mm length. The tank shall further be capable of withstanding a pressure of 0.8 kg/sq.cm (g) and a vacuum of 0.3 kg/sq.cm (g) without any deformation.
- 5.7.6 Pressure test will be conducted by the inspecting officer on a transformer vent pipe against each lot offered for inspection. The diaphragm should burst at a pressure between 0.76Kg./Sq.mm to 0.95Kg./Sq.mm. For any operational failure of vent pipe and consequent damaged to the tank an addition to insisting for free replacement of the tank, the TGSPDCL may at its option, recover an estimated loss sustained by it from the manufacturer.
- 5.7.7 The transformer tank top cover shall be fixed with M12/M14 bolts (hot dip galvanized/stainless steel) as per IS 1180 (Part-1) : 2014 spaced not more than 100 mm between each bolt. Two M12 anti theft SS bolts (fasteners) / M12 Anti theft bolts shall be fixed with provision to put seals (2 mm hole on tail side) and four corner bolt-nuts shall be fixed to prevent opening of the cover at site by miscreants and suitable continuous neoprene gasket (Rectangular) to avoid leakage of Nitrogen/dry air and all the fittings including bushings in position shall be tested for leakage at a pressure of 0.7Kg./Sq.cm inside the tank for 10 minutes. The above test shall be carried out before final sealing of the transformers.
- 5.7.8. Heat dissipation by tank walls up to oil level should be limited to 500 W/sq.m (excluding top and bottom) cooling tube limited to (300) W/Sq.m. The cooling tubes shall not be provided underneath the LV bushing to avoid puncturing of the tubes due to falling down of LV lead on them. Heat dissipation calculations shall be furnished with respect to the maximum 100% load losses specified to the corresponding BEE rating.
- 5.7.9. Lifting Lugs: 2 Nos. welded heavy duty lifting lugs of MS plate 8 mm thick suitably reinforced by vertical supporting flat welded edgewise below the lug on the side wall.
- 5.7.10. Top cover shall be fixed with 6 mm continuous Neoprene gaskets (Rectangular) without any joint conforming to IS: 4253 Part-II will be placed between tank and cover. The bots outside tank shall have 2 flat washers & one spring washer.
- 5.7.11. The size of the tank shall be such that sufficient space is available for the oil to expand at extreme conditions. The volume of the free space above oil level shall not be less than 55% of the volume of the oil.  
All transformers shall be capable of giving their continuous rated output without exceeding the specified temperature rise.
- 5.7.12 The sealing:** The space on the top of the oil shall be filled with nitrogen/ dry air. The nitrogen/ dry air plus oil volume inside the tank shall be such that even under extreme operating conditions, the pressure generated inside the tank does not exceed 0.406 Kg/Sq.cm positive or negative. The volume of space above oil level shall normally be not less in volume than 55% of the volume of oil. The nitrogen/dry air shall conform to commercial grade of the relevant standard.

'U' shaped pressure relief vent of 2" diameter pipe with 0.025mm copper shim sheet/ Bakelite of 0.4mm thick as diaphragm or **Pressure relief device as per IS standards** shall be provided on the top of the cover of the tank such that the pressure released should be directed to the ground. The vent shall be provided on opposite side of the circuit breaker operating rod. The other end of the vent pipe shall be guarded with wire mesh for preventing the entry of worms and nesting. The diaphragm shall burst at a pressure of 0.76 to 0.95 kg/ sq.cm. Conservator shall not be provided for these transformers.

5.7.13. Manufacturer has to emboss his company monogram and The word "TGSPDCL" shall be embossed on the side sheet of the Tank above rating & diagram plate. The size of the embossing of the word "TGSPDCL" is of 2" Inches.

The following information shall also be embossed on a separate MS sheet of thickness 2mm and firmly welded (No Tack welding) on one side of the transformer. The size of the word is of 1" inch. (a) P.O. No. & Date, (b) Year of manufacture, (c) Make and Serial No. d) 5 Years Guarantee period.

## **5.8. SURFACE, PREPARATION AND PAINTING**

### **5.8.1 GENERAL**

5.8.1.1. All paints shall be applied in accordance with the paint manufacturer's recommendations. Particular attention shall be paid to the following:

- a) Proper storage to avoid exposure as well as extremes of temperature.
- b) Surface preparation prior to painting.
- c) Mixing and thinning
- d) Application of paints and the recommended limit on time intervals between coats.
- e) Shelf life for storage.

5.8.1.2 All paints, when applied in a normal full coat, shall be free from runs, sags, wrinkles, patchiness, brush marks or other defects.

5.8.1.3 All primers shall be well marked into the surface, particularly in areas where painting is evident, and the first priming coat shall be applied as soon as possible after clearing. The paint shall be applied by airless spray according to manufacturer's recommendations. However, where ever airless spray is not possible, CONVENTIONAL spray be used with prior approval of purchaser.

5.8.1.4 The Supplier shall, prior to protect nameplates, lettering gauges. Sight glasses, light fittings and similar such items.

### **5.8.2 Cleaning and Surface preparation**

5.8.2.1 After all machining, forming and welding has been completed, all steel work surfaces shall be thoroughly cleaned of rust, scale, welding slag or spatter and other contamination prior to any painting.

5.8.2.2 Steel surfaces shall be prepared by Sand / Shot blast cleaning or Chemical cleaning by Seven Tank process including Phosphating to the appropriate quality.



5.8.2.3 The pressure and volume of the compressed air supply for blast cleaning shall meet the work requirements and shall be sufficiently free from all water contamination to ensure that the cleaning process is not impaired.

5.8.2.4 Chipping, scraping and steel wire brushing using manual or power driven tools cannot remove firmly adherent mill-scale shall only be used where blast cleaning is impractical. Manufacturer to explain such areas in his technical offer clearly.

### **5.8.3. Protective Coating**

As soon as all items have been cleaned and within 4 hours of the subsequent drying, they shall be given suitable anti-corrosion protection.

### **5.8.4 .Paint Material**

Followings are the types of paint that may be suitably used for the items to be painted at shop and supply of matching paint to site:

5.8.4.1. Heat resistant paint (Hot oil proof) for inside surface.

5.8.4.2. For external surface one coat of Thermo Setting paint or 1 coat of Zinc chromate primer followed by 2 coats of Polyurethane base paint. These paints can be either air drying or staving.

5.8.4.3. The color of the finishing coats shall be **Air Craft Blue Colour conforming to Paint Shade No. 108 of IS-5 for finishing coats.**

### **5.8.5. Painting procedure**

5.8.5.1. All painting shall be carried out in conformity with both specification and with the paint manufacturer's recommendation. All paints in any one particular system, whether shop or site applied, shall originate from one paint manufacturer.

5.8.5.2. Particular attention shall be paid to the manufacturer's instructions on storage, mixing, thinning and pot life. The paint shall only be applied in the manner detailed by the manufacturer e.g. brush, roller, CONVENTIONAL or airless spray and shall be applied under the manufacturer's recommended condition. Minimum and maximum time intervals between coats shall be closely followed.

5.8.5.3. All prepared steel surfaces should be primed before visible re-rusting occurs or within 4 hours, whichever is sooner. Chemical treated steel surfaces shall be primed as soon as the surface is dry and while the surface is still warm.

5.8.5.4. Where the quality of film is impaired by excess film thickness (winkling, mud cracking or general softness) the Supplier shall remove the unsatisfactory paint coating and apply another. As a general rule, dry film thickness should not exceed the specified minimum dry film thickness by more than 100%. In all instances where two or more coats of the same paint are specified, such coatings may or may not be of contrasting colours.

5.8.5.5. Paint applied to items that are not be painted shall be removed at supplier's expense, leaving the surface clean, unstained and undamaged.

### **5.8.6. Damaged paintwork**

5.8.6.1. Any damage occurring to any part of a painting scheme shall be made good to the same standard of corrosion protection and appearance as that originally employed.

5.8.6.2. Any damaged paint work shall be made good as follows:

The damaged area, together with an area extending 100 mm around its boundary, shall be cleaned down to bare metal.

A priming coat shall be immediately applied, followed by a full paint finish equal to that originally applied and extending 50 mm around the perimeter of the original damage.

The repainted surface shall present a smooth surface. This shall be obtained by carefully chamfering the paint edges before and after priming.

### 5.8.7 Dry Film Thickness

5.8.7.1 To the maximum extent practicable the coats shall be applied as a continuous film of uniform thickness and free of pores. Overspray, skips, runs, sags and drips should be avoided. The different coat may or may not be of the same colour.

5.8.7.2 Each coat of paint shall be allowed to harden before the next is applied as per manufacturer's recommendation.

5.8.7.3 Particular attention must be paid to full film thickness at edges.

5.8.7.4. The requirements for the dry film thickness (DFT) of paint and the materials to be used shall be as given below:

Sl. No.	Paint type	Area to be painted	No. of coats	Total Dry film thickness (9 min.)
1	Thermo setting paint.	inside outside	01 01	30 microns 60 microns
2	<b>Liquid paint</b> Epoxy (primer) Polyurethane (Finish coat) Hot oil paint/varnish	outside outside inside	01 02 01	30 microns 25 microns each 35 / 10 microns

### 5.8.8. Tests

5.8.8.1 The painted surface shall be tested for paint thickness.

5.8.8.2 The painted surface shall pass the Cross Hatch Adhesion test, Salt spray test and hardness test as per the relevant ASTM standards.

### 5.8.9 FINISHING:

The exterior of the transformer and other ferrous fittings shall be thoroughly cleaned, scraped and given a primary coat and the two finishing coats of durable oil and weather resisting paint of polyurethane. The colour of the finishing coats shall be **Air Craft Blue Colour conforming to Paint Shade No. 108 of IS-5 for finishing coats.**

### 5.9. BUSHINGS:

5.9.1 The bushings shall conform to the relevant standards specified and shall be outdoor. The bushing rods and nuts shall be made of brass material 12 mm diameter for both HT & LT. The bushings shall be fixed to the transformers on sides with straight/slant pockets and in the same plane. The tests as per IS:2099/1962 shall be conducted on the transformer bushings as detailed below.

- i) Dry flashover voltage.
- ii) Wet flashover voltage.
- iii) Dry 1 min. withstand voltage.
- iv) Wet 1 min. withstand voltage.
- v) Impulse withstand voltage (1.2/50 micro sec. Positive wave).

5.9.2 For 11 KV, 17.5 kV class bushings shall be used and for 0.433 KV, 1.0 KV class bushings shall be used. Bushings of plain sheds as per IS: 3347 shall be mounted on the side of the tank and not on top cover.

5.9.3 Dimensions of the bushings of the voltage class shall conform to the standards specified.

5.9.4 A minimum phase to phase clearance of 75 mm for LV (up to 1.0 kV Bushing) and 255 mm for HV (3.3 kV and above) bushings shall be obtained with the bushing mounted on the transformer.

5.9.5 The bushings shall be fixed on sides with pockets in the same plane. Brass caps shall be provided.

5.9.6 Brazing of all inter connections, jumpers from winding to bushing shall have cross section larger than the winding conductor. For Aluminium standard make Aluminium Brazing rods shall be used.

5.9.7 In the case of LV bushing, the internal bushing shall be made of tough insulating material like epoxy and shall have embedded stem and a strong coupling connection (screwed) properly secured shall be used between stem of the internal and external bushings. The bushing shall be fixed to a cable box such that in case the active part is to be lifted the LV epoxy and porcelain bushings need not be removed.

5.9.8 The LV bushings shall be so located that even under the hottest conditions the level of the transformer oil shall be below the opening meant for fixing the LV bushings. The LV jumpers and bushing material shall be selected and designed for this condition.

5.9.9 The design of the internal bushing for LV shall be such as to provide adequate earth clearance and creepage distance as stipulated in the standards specified. All other tests as per relevant standards shall be applicable.

5.9.10 The bushings shall be of reputed make supplied by the those manufacturers who are having manufacturing and testing facilities for manufacture of HT insulators.

5.9.11 The terminal arrangement shall not require a separate oil chamber not connected to oil in the main tank. The LV & HV bushing rods shall be made of brass of dia 12 mm as IS 3347.

5.9.12 The LV bushing and HV bushing stems shall be provided with suitable terminal connectors so as to connect the jumper without disturbing the bushing stem. High voltage phase windings shall be marked both in the terminal boards inside the tank and on the outside with capital letters 1U, 1V, 1W and low voltage winding for the same phase marked by corresponding small letters 2U, 2V, 2W. The neutral point terminal shall be indicated by the letter 2n.

5.9.13 The vector diagram plate shall clearly indicate the method adopted for marking the terminals both outside and interior.

#### **5.10 Terminal connectors:**

The L V bushing and HV busing stems shall be provided with suitable terminal connectors so as to connect the jumper without disturbing the bushing stem. Connectors shall be with bi-metallic connectors so as to receive 55 sq.mm conductor for HV Terminal connectors must have type tested as per IS:5561

### 5.11. Rating Plates and BIS Labeling :

The rating plates on the transformer containing the information specified in clause 15.2 of IS : 2026-1977 (Part-i). 50% & 100% load losses of the transformer should also be mentioned on the rating plate.

**BIS Labeling:** ISI labeling in accordance with colour design, logo etc., shall be provided on each transformer as per the design/recommendations of Bureau of Indian Standards (BIS). Expenses incurred to get labeling is in the account of suppliers only. The certificate of registration issued by BIS shall be submitted.

**5.12. Arcing Horns** are to be provided as per latest IS 1180 (Part-1) : 2014.

**5.13. FITTINGS :** The following standard fittings shall be provided.

- a) Rating and terminal marking plates non detachable -1No.
- b) Earthing terminals with bolt, nuts & washers for connecting earth wire - 2Nos.
- c) Lifting lugs – 2 Nos. for main tank and 2Nos. for top cover
- d) Bimetallic terminal connectors on the HV/LV bushings – 7 Nos.
- e) Thermometer pocket with cap – 1 No.
- f) U shaped Pressure relief vent pipe of 2' dia with 0.025 mm diaphragm on the top of the top cover or Pressure relief device as per IS Standards for breaking at a pressure of 0.76 to 0.95 Kg/cm<sup>2</sup> such that the pressure released should be directed to the ground and other end of the vent pipe shall be guarded with suitable mesh against entering of worm and resting.
- g) HV bushings – 3 Nos.
- h) LV bushings – 4 Nos.
- i) Stiffener angle 40x40x5 mm (and vertical strip of 50x5 mm flat if required).
- j) Cooling tubes – No. & lengths may be mentioned (as per heat dissipation calculations).
- k) Arcing Horns to be provided as per latest IS 1180 (Part – 1) : 2014.
- l) Base channels 75 x 40 mm.
- m) LV epoxy bushings – 4 Nos.
- n) HT fuse links.
- o) indicating lamp.
- p) Circuit breaker operating mechanism along with operating rod..
- q) 5years guarantee embossed plate welded below name plate.
- r) Internally oil flow screwing fixing arrangement of die cast oil gauge I indicating three positions of oil marked as minimum and maximum.
- s) Tank and over all dimensions.
- t) Weight content of a) core b) windings c) tank & fittings d) weight/qty. of oil e) over all weight.
- u) Oil level guage ( 30 deg C indication)
- v) Nitrogen/air filling device/pipe with welded cover capable after reuse.

**5.14. FASTENERS:**

All bolts, studs, screw threads, pipe threads, bolt heads and nuts shall comply with the appropriate Indian Standards for metric threads, or the technical equivalent.

Bolts or studs shall not be less than 6 mm in diameter except when used for small wiring terminals.

All nuts and pins shall be adequately locked.

Wherever possible bolts shall be fitted in such a manner that in the event of failure of locking resulting in the nuts working loose and falling off, the bolt will remain in position.

All ferrous bolts, nuts and washers placed in outdoor positions shall be treated to prevent corrosion, by hot dip galvanizing, except high tensile steel bolts and spring washers which shall be electro-galvanized / plated. Appropriate precautions shall be taken to prevent electrolytic action between dissimilar metals.

Each bolt or stud shall project at least one thread but not more than three threads through the nut, except when otherwise approved for terminal board studs or relay stems. If bolts nuts are placed so that they are inaccessible by means of ordinary spanners, special spanners shall be provided.

The length of the screwed portion of the bolts shall be such that no screw thread may form part of a shear plane between members.

Taper washers shall be provided where necessary.

**5.15. MOUNTING ARRANGEMENT :** The under base of all transformers shall be provided with two 75 x 40mm channels 460 mm long with holes to make them suitable for fixing on a platform or plinth.

**5.16 OVER LOAD CAPACITY:** The transformers shall be suitable for loading as per relevant standard (IS-6600/1972). The tendered should state clearly the percentage overload the transformers can take for a continuous period of 1 hour.

**5.17 The transformers shall have the following CSP features.**

**i) INTERNAL HV FUSES ON THE HT SIDE OF TRANSFORMER:** Specification for the H.T FUSES: Expulsion/any other suitable fuse placed in series with the primary windings. This fuse is mounted normally inside of the primary bushing and is connected to the high voltage winding through a terminal block. This has to protect that part of the electrical distribution system which is ahead of the distribution transformers from faults which occur inside the distribution transformer i.e, either to the winding or to the other part of the transformer. It shall be ensured that this fuse does not blow for faulting on the secondary side (LT side) of the transformer i.e., the blowing characteristics of the fuse and LT breakers shall be so coordinated that the fuse shall not blow for any faults on the secondary side of the transformer beyond LT breaker and these faults shall be cleared by the LT breaker only.

**ii) INTERNALLY MOUNTED OIL IMMERSSED LT BREAKER ON THE LV SIDE OF THE TRANSFORMER:**

LT Circuit Breaker: All LT faults after the breaker shall be cleared by this breaker. As such it shall be designed for perfect coordination with the HT Fuse link. The supplier shall furnish the time-current characteristic of LT Circuit breaker and 11 KV fuses for various current multiples. The two characteristics shall be drawn on the same sheet to indicate coordination between the carried out on one of the transformers. In addition the supplier shall carry out coordination test as indicated above, and this forms one of the tests for acceptance test.

The breaker is to be mounted on the secondary side of the transformer under oil to minimize premature operations from primary surges as would be with undersized line fuses. Three single pole

elements are preferred. The breaker shall be coordinated thermally with the transformer rating to follow closely the variations of coil temperature due to fluctuations and ambient temperatures.

This is to be accomplished by connecting the breaker in series between the secondary winding and the load current. The breaker shall be located in the same oil as the core and coil assembly so that the bimetal and sensitive to be temperature of oil as well as the load current (offers with LV breakers of MCCB type are not acceptable for Board.)

The circuit breaker may be an electro-mechanical device with three main elements viz., (a) temperature sensing, (b) latching and tripping and (c) current interruption.

The temperature sensing function might be accomplished through the use of bimetallic string which would be built into the breaker such that load current of the transformer flows through them. In addition to this a magnetic tripping device is to be provided for 63 KVA and above rating transformers. The circuit breaker shall be mounted inside of the transformer so that these bimetallic string are within the top oil layer of the transformer. The latching and tripping functions of the circuit breaker may be carried out within an assembly parts similar to those used in industrial type air circuit breaker. The circuit breaker shall also be closed and opened manually standing on ground. The current carrying parts of the breakers shall be cover plus a set of copper tungsten current interrupting contacts. The cross section of the current carrying parts of the breaker shall withstand the full load current at a current density not more than  $2.0 \text{ A/Sq.mm}$  (for additional mechanical strength the area should be more).

Beside, a signal light, controlled by a bimetal in the breaker shall switch on when the transformer load reaches a pre-determined level indicating that the transformer has been over-loaded and change out shall have to be scheduled without causing an unplanned service interruptions.

**iii) LOAD MANAGEMENT SIGNAL LIGHT:** The load management signal light shall perform two functions. It shall show visually when the particular transformer has been operating in an overload condition and shall provide knowledge that for good system management, the economical change out point for the transformer is fast approaching. The signal light need not indicate temporary over loads and shall turn and only when the over load condition has existed at a given level for a certain length of time. The LT CSP circuit breaker shall have a set of auxiliary contact built in for signal light operation. These normally open contacts shall form part of the signal light circuit.

The signal light circuit shall consist of an auxiliary transformer winding (one or two turns) which generate about 4 volts, for the signal light contacts set within the circuit breakers and the signal light is to be mounted on the transformer tank. The signal light contact set is mechanical connected to the main circuit breaker latching and bimetal system. The signal light mechanism is adjusted so that the signal light contacts will close at a present thermal condition, which occurs before the main latching system opens the main contracts. The net results are a visual, external indication that the present load condition has been reached by the transformer. The signal light mechanism does not reset itself when the load drops off; the signal light remains lighted once the signal light contacts close and can only be turned off by manually operating the external circuit breaker handle.

**5.18. TRANSFORMER OIL :** The transformer shall be supplied complete with first filling oil as per IS:335/2018, Type-II U with latest amendments and the same shall comply with relevant standards specified. The characteristics of the oil shall be as follows.

Sr.No.	Property	Test Method	IS:335:2018 Type II Transformer Oil
<b>A</b>	<b>Function</b>		
i.	Viscosity at 40°C	IS 1448 (Part 25)	15 mm <sup>2</sup> /s, Max
ii.	Viscosity at 0°C	IS 1448 (Part 25)	1800 mm <sup>2</sup> /s, Max
iii.	Pour Point	IS 1448 (Part 10/Sec 2)	-10°C, Max To be based on LCSET
iv.	Water Content	IEC 60814	30 mg/kg/40 mg/kg, Max
v.	Breakdown Voltage	IS 6792	30 kV/70 kV, Min
vi.	Density at 20°C	IS 1448 (Part 16)	0.895 g/ml, Max
vii.	DDF at 90°C	IS 16086	0.005, Max
viii.	Particle Content	IS 13236	No general requirement
<b>B</b>	<b>Refining /stability</b>		
ix.	Appearance	-	Clear, free from sediment and suspended matter
x.	Acidity	IEC 62021-1	0.01 mg KOH/g, Max
xi.	Interfacial tension	ASTM D971	No general requirement
xii.	Total Sulphur content	ISO 14596 or ASTM D4294	No general requirement
xv.	Corrosive Sulphur	DIN 51353	Not corrosive
xvi.	Potentially corrosive sulphur	IS 16310	Not corrosive
xvii.	DBDS	IS 16497 (Part I)	Not detectable (<5 mg/kg)

Test report for each batch of oil shall be submitted.

## 6.0. TESTS:

**6.1 ACCEPTANCE & ROUTINE TESTS :** All transformers shall be subjected to routine tests at the manufacturer's works. The following routine tests shall be carried out in accordance with the details specified in REC Specification No: 23/1983, IS: 1180 (Part-II) and IS:2026 or as agreed upon between the TGSPDCL and the manufacturer.

1. Checking of weights, dimensions fitting and accessories, tank thickness, oil qty., material, finish and workmanship as per purchaser order and contract drawings.
2. Physical verification of core coil assembly and measurement of flux density of one unit of each rating, in every inspection with reference to short circuit test report.
3. Measurement of winding resistance
4. Measurement of voltage ratio, polarity and check of voltage vector relationship
5. Measurement of Impedance voltage, short circuit impedance and load loss at rated current and normal frequency.
6. Measurement of No Load loss and current at service voltage and normal frequency.
7. Measurement of No load current and losses at 112.5% of rated voltage.
8. Measurement of Insulation resistance
9. Induced of over voltage with stand test
10. Separate source voltage withstand test
11. Checking of name plate and marking on the tank.
12. Checking of di-electric strength of transformer oil
13. Air pressure test : (Routine Test) : As per IS 1180 (Part-1) : 2014.

All above acceptance and routine tests shall be carried out by the supplier in presence of purchaser's representative on atleast 10% of quantity offered every time.

**In addition to the above measurement of losses at 50% load and 100% load calculations at 75 Degrees for 100% transformers is to conducted and report submitted.**

Following tests shall be carried out at manufacturer's works on one unit of each rating by the supplier in presence of purchase representative.

- I. Temperature rise test.
- II. Measurement of unbalance current.
- III. Air pressure test on empty tank of transformer opened for physical verification test (Once only)
- IV. Breakdown voltage test of transformer oil.
- V. Heat run test- One unit of the ordered quantity of each rating.
- VI. Functional test on Over-load Protection System to check the function of Over-load Protection System at full load current and at 20% overload current (or as per approved GTP).
- VII. Heat run test shall have to be conducted at suppliers cost on one transformer of each rating, generally from first offered lot, during the course of supplies.

To facilitate conduction of heat run test on any unit in any lot at any point of time during the supply, the manufacturer will provide a thermometer pocket which gets immersed in oil on the side of the transformer in all the transformers. The depth of the projecting stem of this pocket inside the transformer will be below oil level. It shall not fringe with electrical clearance nor obstruct the un tanking of the active part.

The test certificates for all routine and type tests for the transformers and also for the bushings and transformer oil shall be submitted with the tender.

Tests at site: The purchaser reserves the right to conduct all tests on Transformer after arrival at site and the contractor shall guarantee test certificate figures under actual service conditions.

## **6.2 TYPE TESTS:**

The transformers offered should have been got type tested. The type test must have been conducted on a transformer (same serial no.) as per the tender specification and shall furnish type test reports along with the bid. **Bids without/partial type test reports will be treated as non-responsive.**

The following Type tests shall be conducted and reports furnished along with the tender.

1. Impulse voltage test: with chopped wave of IS 2026 part-III. BIL for 11 kV shall be 75 kV.
2. Short circuit withstand test: Thermal and Dynamic ability.
3. Temperature Rise Test
4. Air pressure test as per IS 1180 (Part-1) : 2014
5. Special tests other type and routine tests, as agreed between purchaser and Tenderer shall also be carried out as per the relevant standards.
6. Manufacturer's routine test certificates shall be furnished before offering the transformer for inspection.

**6.3** The purchaser or third party shall witness the type test on randomly selected distribution transformers. The supplier shall make all arrangements for witnessing type test at his own cost.



**6.4. TOLERANCE:** Unless otherwise specified herein the test value of the transformers supplied should be within the tolerance permitted in the relevant standards. No positive tolerance is allowed on guaranteed 50% and 100% load losses.

**6.5 TESTING FACILITIES:** The tenderer should have adequate testing facility and also arrange for measurement of losses, resistance etc. All test equipments shall be calibrated at NABL accredited laboratory and reports shall be within one year.

**6.5.1 TEST CERTIFICATES :** The test certificates for all routine and latest (within 5 years) type tests for the transformers as per offered design and also the bushing and transformer oil shall be submitted with tender.

**6.5.2 INSPECTION AND TESTING OF TRANSFORMER OIL :** To ascertain the quality of transformer oil the manufacturer's test report should be submitted at the time of inspection. Arrangements should also be made for testing the transformer oil, after taking out the samples from the manufactured transformer and tested in the presence of TGSPDCL's representative (or) if desired, in an independent laboratory.

**6.5.3 DRAWINGS ;** 2 copies of the dimensional drawings and internal assembly drawings of each transformers shall be submitted with the tender

**6.6. STAGE INSPECTIONS:** The stage inspection of the transformers during the manufacturing/assembling stage shall be carried out by the purchaser's representative. The purchaser have absolute right to reject the raw materials/ components not conforming to the requirements of the specifications or of poor quality/workmanship. The purchaser at his option may collect the samples of the following raw material/ components for his independent testing.

- |    |                 |   |   |
|----|-----------------|---|---|
| a. | CRGO lamination | : | One specimen sheet of 300-500 mm length and 500 mm width (for each lot of raw material used by the supplier). |
| b) | HV winding wire | : | 11000 mm length specimen for each type.   |
| c) | LV winding wire | : | 1240 mm length specimen for each type.  |
| d) | Transformer oil | : | 5 lit. in bottle of 1 Lt. Each.   |

## **7.0. INSPECTION:**

All tests and inspection shall be made at the place of manufacturer 10% of the quantity offered inspection for routine tests and 100% transformers for no load and load loss measurement to calculate losses at 50% and 100% and unless other wise especially agreed upon the manufacturer and the purchaser at the time of purchase. The manufacturer shall afford the inspector representing the purchaser all reasonable facilities, without charge to satisfy him that the material is being furnished in accordance with specification.

The manufacturer shall provide all services to establish and maintain quality of workman ship in his works and that of his sub-contractors to ensure the mechanical / electrical performance of components, compliance with drawings, identification and acceptability of all materials, parts and equipment as per latest quality standards of ISO 9000.

Along with the bid the manufacturer shall prepare Quality Assurance Plan identifying the various stages of manufacture, quality checks performed at each stage and the Customer hold points. The document shall also furnish details of method of checking, inspection and acceptance standards / values and get the approval of purchaser or his representative before proceeding with manufacturing. However, purchaser or his representative shall have the right to review the inspection reports, quality checks and results of manufacturer's in house inspection department which are not customer hold points and the manufacturer shall comply with the remarks made by purchaser or his representative on such reviews with regards to further testing, rectification or rejection etc. Manufacturer should submit the list of equipment for testing along with latest calibration accredited laboratory valid within one year to the purchaser.

Purchaser shall have every right to appoint a third party inspection to carry out the inspection process. The purchaser has the right to have the test carried out at his own cost by an independent agency wherever the dispute regarding the quality of supply. Purchaser has right to test 100% of the supply selected either from the store or field to check the quality of the product. In case of any deviation purchaser has every right to reject the entire lot or penalize the manufacturer, which may lead to blacklisting among other things.

The successful bidder shall give 15 days advance intimation to enable the TGSPDCL to depute his representative/ third party agency for witnessing acceptance/ routine tests.

#### **7.1 SEALING OF TRANSFORMERS AFTER TESTING AND INDIVIDUAL TEST REPORTS:**

After witnessing testing on sample quantity and physical inspection of all offered Transformers, the purchaser's representative will provide numbered lead/ plastic seal bits to two opposite corners of tank and inspection cover of all offered Transformers, for delivery of correct inspected materials only. The seal bit numbers against each transformer shall also be mentioned in the test reports signed by purchaser's representative submitted for delivery instructions. ***The transformer serial numbers and the seal bit numbers will be verified at the stores before accepting the material.***

Manufacturer should submit the list of equipment for testing along with latest calibration certificates to the purchaser.

The TGSPDCL may, at its option open a Transformer supplied to stores in your presence at TGSPDCL's laboratory. If any of the guaranteed technical particulars are found to be at variance during this test the TGSPDCL reserves the right to reject the whole lot supplied.

In addition to the above, the TGSPDCL may pick up any Transformer and decide to get it type-tested at CPRI at TGSPDCL cost. The tenderer will have to organize packing etc. at TGSPDCL stores for which charges will be paid by TGSPDCL. If the Transformer fails to meet the requirements of type tests, the quantity of Transformers ordered on them will be rejected and TGSPDCL may go in for risk purchase.

#### **8.0. QUALITY ASSURANCE PLAN :**

- 8.1. The bidder shall invariably furnish following information along with his bid, failing which his bid shall be liable for rejection. Information shall be separately given for individual type of equipment offered.
- i) Statement giving list of important raw materials, names of sub-suppliers for the raw materials, list of standards according to which the raw material are tested. List of tests normally carried out on raw materials in the presence of Bidder's representative, copies of test certificates.
  - ii) Information and copies of test certificates as in (1) above in respect of bought out accessories.
  - iii) List of manufacturing facilities available.
  - iv) Level of automation achieved and list of areas where manual processing exists.
  - v) List of areas in manufacturing process, where stage inspections are normally carried out for quality control and details of such tests and inspections.
  - vi) List of testing equipment available with the bidder for final testing of equipment specified and test plant limitation. If any, vis-à-vis the type, special acceptance and routine tests specified in the relevant standards. These limitations shall be very clearly brought out in schedule of deviations from specified test requirements.

8.2. The successful bidder shall within 30 days of placement of order, submit following information to the purchaser.

- i) List of raw materials as well as bought out accessories and the names of sub suppliers selected from those furnished along with offer.
- ii) Type test certificates of the raw materials and bought out accessories.
- iii) Quality Assurance Plan (QAP) with hold points for purchaser's inspection. The quality assurance plan and purchasers hold points shall be discussed between the purchaser and bidder before the QAP is finalised.

8.3. The successful bidder shall submit the routine test certificate of bought out accessories and central excise passes for raw material at the time of routine testing.

**9.0. DOCUMENTATION :** The bidder shall furnish along with the bid the dimensional drawings of the items offered indicating all the fittings.

- (i) tolerance in dimensions.
- (ii) Weight of individual components and total weight.

**10.0** The marking on each transformer shall be as per the relevant IS and shall also contain TGSPDCL, Hyderabad.

**11.0** The tenderers shall quote the prices for CSP type Distribution Transformers.

**12.0** The transformer make shall be reputed and from the vendor and who satisfies all above technical requirements as per relevant standards.

**13.0** The price quoted shall be Variable and inclusive of applicable GST.

**14.0 LIST OF DRAWINGS AND DOCUMENTS:**

The bidder shall furnish two sets of following drawings along with his offer.

- a) General outline drawing showing plan, elevation and end view dimensions, assembly and list of fittings of the equipment.
- b) Name plate details and schematic drawing. Name plate details should consist of trade mark month and year of manufacturer P.O.No. and date, guarantee period, losses, percentage impedance, Voltage ratio, vector group, full load and no load losses temperature rise, weight of core oil, total weight of transformer and other important factors etc.
- c) Core coil assembly drawing with bill of materials.

14.1 Two sets of the type test reports, duly approved by the purchaser, shall be submitted by the supplier for distribution before commencement of supply. Adequate copies of acceptance and routine test certificates, duly approved by the purchaser, shall accompany the dispatch consignment. The manufacturing of the equipment shall be strictly in accordance with the approved drawings and no deviation shall be permitted without the written approval of the purchaser. All manufacturing and fabrication work in connection with the equipment prior to the approval of the drawing shall be at the supplier's risk.

**15.0 GUARANTEED TECHNICAL PARTICULARS :** The guarantee technical particulars of the transformer offered shall be given by the tenderer (as per Annexure – I, II).

**16.0 GUARANTEE:**

The period of Guarantee will be 5 years (Five years ) from the date of acceptance of the material in stores i.e. Form-13 date of last consignment.

**16.1 Further if the manufacturer fails to carry out repairs of WGP Distribution Transformers within 30 days from the date of intimation, the Distribution Transformer would be repaired by the DISCOM at the cost of the manufacturer. The cost shall be recovered from the amount due, to the manufacturer in any**

of the two DISCOMs". However, the firm has to extend the guarantee for these transformers even though the transformers were repaired by departmentally for the balance guarantee period. In such cases, the firm will be blacklisted from participating in future tenders.

**17. PRICE VARIATION :** The schedule of requirements is indicated in Section-IV. The prices shall be Variable as per latest IEEMA formula applicable **and base date will be taken the date one month prior to the date of tender opening** with 50% ceiling limit on positive side and there is no limit on negative side.

**18. CHALLENGE TESTING:** "The other manufacture can also request challenge testing for any test based on specification and losses. The challenger would request for testing with testing fee. The challenge test fees are proposed at least three times the cost of testing. This is likely to deter unnecessary challenges. The challenger would have the opportunity to select the sample from the store and any such challenge should be made within the guarantee period. The party challenged, and the utility could witness the challenged testing.

The challenged testing would cover the

1. Measurement of magnetizing current
2. No Load losses test.
3. Load Losses test (At 50% loading or as per acceptance test)
4. Temperature rise test.
5. Physical verification test.

The challenge test could be conducted at NABL accredited laboratory, like ERDA and CPRI. If the values are within limit the product gets confirmed else not confirmed. No positive tolerance in losses is permitted. If the product is not confirmed the manufacture would pay the challenge fee and challenger would get the fee refunded. However as redressal system the challenger would allowed to ask for fresh testing of two more samples from the store and the same be tested in NABL laboratory in presence of party challenged, challenger and the utility.

If any one or both sample does not confirm the test then the product said to have failed the test. In such cases the manufacture will be declared as unsuccessful manufacturer for the said product with wide publicity and would not be allowed to compete in tenders of the Boards for the period of three years and heavy penalty would be imposed.

#### **19.0 TESTING EQUIPMENT :**

The following guidelines are issued for completion of inspections.

- All the testing equipment for testing the offered material shall be available in good condition.
- The testing equipment shall be calibrated yearly at any of the NABL labs and a certificate to this effect made available to the inspection officer.
- If the testing equipment is not available as indicated above, the third party inspection officers will not carryout the inspection till the above stipulations are complied with and subsequent visits charges for inspection of the material shall be borne by the supplier.

The third party inspecting officers are entrusted with the work of capacity, inspection of the factory covering the various manufacturing and testing equipment available, sources of purchase of raw material, quality control, man power available etc.

The bidders are requested to extend full support to the third party agencies wherever they want to conduct the capacity inspection of the factory.

## ANNEXURE – I

## GUARANTEED TECHNICAL &amp; OTHER PARTICULARS FOR DISTRIBUTION TRANSFORMERS

Sl. No.	Description	63 KVA
1	Make & Manufacturer	
2	Place of Manufacture	
3	Voltage Ratio	
4	Rating in KVA	
<b>5. Core Details:</b>		
1	Core Grade	
2	Thickness of core plates	
3	Flux density (Max)	TESLA
4	Over fluxing without saturation	
5	Core Details. 1) No. of Core steps. 2) Max. width of first step lamination. 3) Stacking factor 4) Core building factor.	
6	Core diameter	cm
7	Gross Core area	cm
8	Net Core area	cm
9	Wt. Core	Kg.
10	Loss per Kg. of core at the specified Flux Density	Watts/kg
11	No load loss in watts	watts
11	Core loss in watts a) Normal Voltage b) Maximum Voltage	
12	Power factor magnetizing current (lag max)	
13	Magnetizing (No load) current at a) Normal Voltage b) Maximum Voltage	
14	Core window height	mm
15	Center to center distance of the core	mm
16	Maximum temperature rise of Core by Thermometer	
<b>6. Winding Details</b>		
1	Maximum temperature rise of Windings by resistance method	
2	Winding material : LV : HV	
3	Resistance of windings at 20 Deg. C (with 5% tolerance) a) HV Winding (ohms) b) LV winding (ohms)	

4	No. of LV Turns	
5	No. of HV Turns	
6	Size of LV conductor bare/covered	mm
7	Rounding Factor for LV	
8	No. of parallels	
9	Area of LV cross section (sq.mm)	sq.mm
10	Size of HV conductor bare/covered	mm
11	Area of HV cross section (sq.mm)	sq.mm
12	Current density of LV winding	Amp/sq.mm
13	Current density of HV winding	Amp/sq.mm
14	Wt. Of the HV winding for transformers	Kg.
15	Wt. Of the LV winding for transformers	Kg.
16	No. of LV Coils/Phase	
17	No. of HV Coils/Phase	
18	ID/OD of LV winding	mm
19	ID/OD of HV winding	mm
20	Height of LV winding	mm
21	Height of HV winding	mm
22	Axial height of HV coil	mm
23	Axial height of LV coil	mm
24	Radial depth of LV coil	mm
100	Radial depth of HV coil	mm
26	Full load current HV	Amps
27	Full load current LV	Amps
28	Full load losses (watts) at 75 Deg. C	Watts
29	Estimated stray losses	Watts
30	Estimated Breaker Losses	Watts
31	Total Losses(Full load losses+ stray losses+ Breaker Losses)	Watts
32	Maximum losses at 50% loading	watts
33	Maximum losses at 100% loading	watts
34	Calculated Impedance	%
35	Edge strip size on LV coil (top & Bottom)	mm
<b>7.Clearances</b>		
1	Size of the duct in HV winding	mm
2	Size of the duct in LV winding	mm
3	Size of the duct between HV & LV	mm
4	HV winding to LV clearance	mm
5	HV winding to tank clearance	mm
6	HV to earth creepage distance	mm

7	LV to earth creepage distance	mm
8	Clearances (minimum) a) Core & LV b) LV & HV c) HV Phase to phase d) End insulation clearance to Earth e) Any point of winding to tank	mm
<b><u>8.Heat Dissipation Calculations</u></b>		
1	Maximum temperature rise of Oil by Thermometer	
2	Transformer (minimum) Overall length x breadth x height 2) Tank length x breath x height (internal) 3) Height of Oil level in tank 4) Thickness of plates a) Side walls (min.) b) Top & bottom plate (min.)	1)
3	Radiation: 1) Heat dissipation by tank walls exclusive top & bottom 2) Heat dissipation by cooling tube 3) Dia & thickness of cooling tube 4) Whether calculation sheet for selecting cooling area to ensure to ensure that the transformer is capable of giving continuous rated output without exceeding temperature rise & also transformer tank size is sufficient is enclosed. 5) Minimum free space available above oil level.	
4	Weight content of a) Core lamination (min.) b) Windings (min.) c) Tank & Fittings d) Oil e) Oil Qty in liters(min.) f) Core channels, rods, bolts, etc g) Insulation material inside tank. h) Total Weight	
5	Oil Data 1) Qty. for first filling (min.) 2) Grade of oil used 3) Maker's name 4) BDV at the time of filling	
<b><u>9.Efficiency,Regulation, and other particulars</u></b>		
1	Efficiency at 75 Deg. C a) Unity P.F. & b) 0.8 P.F. 1100% load    100% load    75% load    50% load 100% load	

2	Regulation at a) Unity P.F. b) 0.8 P.F at 75 Deg. C	
3	Percentage Impedance at 75 Deg. C	
4	Flash Test HV 28 KV/50Hz for 1 minute LV 3 KV/50 Hz for 1 minute	
5	Over potential Test Double Voltage & Double frequency for 1 minute	
6	Impulse test	
7	Inter layer insulation provided in design for 1) Top & Bottom layer 2) In between all layer 3) Details of end insulation 4) Whether wedges are provided at 50% turn of the HV coil.	
8	Insulation materials provided a) For Conductors (1) HV (2) LV b) For Core	
9	Is the name plate gives all particulars are required in tender	
10	Particulars of Bushing HV/LV 1) Maker's name 2) Type IS-3347/IS-1180 3) Rating as per I.S. 4) Dry power frequency voltage withstand test 5) Wet power frequency voltage withstand test	
11	Particulars of metal oxide Lightning arrestor	
12	Medium of free space above oil level Transformer	
13	Details of type tests conducted (indicating rating, year of testing, details of tests)	

**NOTE :** The following shall be specifically confirmed.

1. Whether the offer conforms to the limits of impedance mentioned in the specification
2. Whether the offer conforms to the limits of temperature rise mentioned in the specification
3. Whether the losses of the transformers offered are within the limits specified
4. Whether the transformer offered is already type tested for the design and test reports enclosed.
5. *The tenderer shall furnish the design details of the core construction such as number of steps, thickness of core sheet, stacking factor, core building factor, core length, width, stack height per step, core diameter, gross and net areas of core, etc., along with their offer with references to the full load and no load losses quoted and calculation sheets for heat dissipation calculation, minimum available free space, oil quantity calculation etc.,*



**ANNEXURE – II**  
**SOURCE OF MATERIALS/PLACES OF MANUFACTURE, TESTING AND INSPECTION**

<b>Sl. No.</b>	<b>Item</b>	<b>Source of Material</b>	<b>Place of Manufacture</b>	<b>Place of testing and inspection</b>
1	Core Laminations			
2	Copper winding wire			
3	Steel Castings/sections			
4	Tank			
5	Insulating Cylinders			
6	Bushing HV/LV			
7	Oil			
8	Las			
9	Radiators			
10	Insulators			
11	Insulation Paper			

Note: The bidder has to invariable furnish the above information.

**PRICE VARIATION CLAUSE FOR ALUMINIUM WOUND DISTRIBUTION TRANSFORMERS  
COMPLETE WITH ALL ACCESSORIES AND COMPONENTS  
(For single & three phase of ratings up to and including 2,500 KVA and voltage class up to 33 KV)  
supplied against domestic contracts**

The price quoted/confirmed is based on the input cost of raw materials/components and labour cost as on the date of quotation and the same is deemed to be related to prices of raw materials and all India average consumer price index number for industrial workers as specified in the price variation clause given below. In case of any variation in these prices/indices, the price payable shall be subject to adjustment, up or down in accordance with the following formula:

$$P = \frac{P_0}{100} \left\{ 8+22 \frac{AL}{AL_0} + 36 \frac{ES}{ES_0} + 12 \frac{IS}{IS_0} + 5 \frac{IM}{IM_0} + 10 \frac{TO}{TO_0} + 7 \frac{W}{W_0} \right\}$$

Wherein.

P = Price payable as adjusted in accordance with the above formula.

P0 = Price quoted/confirmed.

AL0 = LME CSP Average of Aluminium (refer notes)

This price is as applicable for the month, ONE month prior to the date of tendering.

ES0 = Price of CRGO Electrical Steel Lamination (refer notes)

This price is as applicable for the month, ONE month prior to the date of tendering.

IS0 = Price of HR Coil of 3.15 mm thickness (refer notes)

This price is as applicable for the month, ONE month prior to the date of tendering.

IM0 = Price of Insulating Materials (refer notes)

This price is as applicable for the month, ONE month prior to the date of tendering.

TO0 = Price of Transformer Oil (refer notes)

This price is as applicable for the month, ONE month prior to the date of tendering.

W0 = All India average consumer price index number for industrial workers, as published by the Labour Bureau, Ministry of Labour, Govt. of India (Base: 2016 = 100)

This index number is as applicable for the month, THREE months prior to the date of tendering.

**For example, if date of tendering falls in December 2021, applicable prices of Aluminium (AL0), Transformer Oil (TO0), CRGO Steel Sheets (ES0), HR Coil (IS0) and Insulating material (IM0) should be as on 1<sup>st</sup> November 2021 and all India average consumer price index no. (W0) should be for the month of September 2021.**

**The above prices and indices are as published by IEEMA vide circular reference number IEEMA(PVC)/PWR\_DIST\_TRF (R-1)/\_/ \_ ONE month prior to the date of tendering.**

AL = LME CSP Average of Aluminium (refer notes)

This price is as applicable for the month, ONE month prior to the date of delivery.

ES = Price of CRGO Electrical Steel Lamination (refer notes)

This price is as applicable for the month, ONE month prior to the date of delivery.

IS = Price of HR Coil of 3.15 mm thickness (refer notes)

This price is as applicable for the month, ONE month prior to the date of delivery.

IM = Price of Insulating Materials (refer notes)

This price is as applicable for the month, ONE month prior to the date of delivery.

TO = Price of Transformer Oil (refer notes)

This price is as applicable for the month, ONE month prior to the date of delivery.

W = All India average consumer price index number for industrial workers, as published by the Labour Bureau, Ministry of Labour, Govt. of India

(Base: 2016 = 100)

This index number is as applicable for the month, THREE months prior to the date of delivery.

The date of delivery is the date on which the transformer is notified as being ready for inspection/ dispatch (in the absence of such notification, the date of manufactures dispatch note(**i.e., 103 entry in SAP module**) is to be considered as the date of delivery) or the contracted delivery date (including any agreed extension thereto), whichever is advantageous to purchaser

**Sd/-  
CHIEF ENGINEER (P&MM)  
TGSPDCL**

**SECTION – VII**  
**SPECIFICATION NO. STN-1256/2024**  
**SCHEDULE OF MATERIALS**

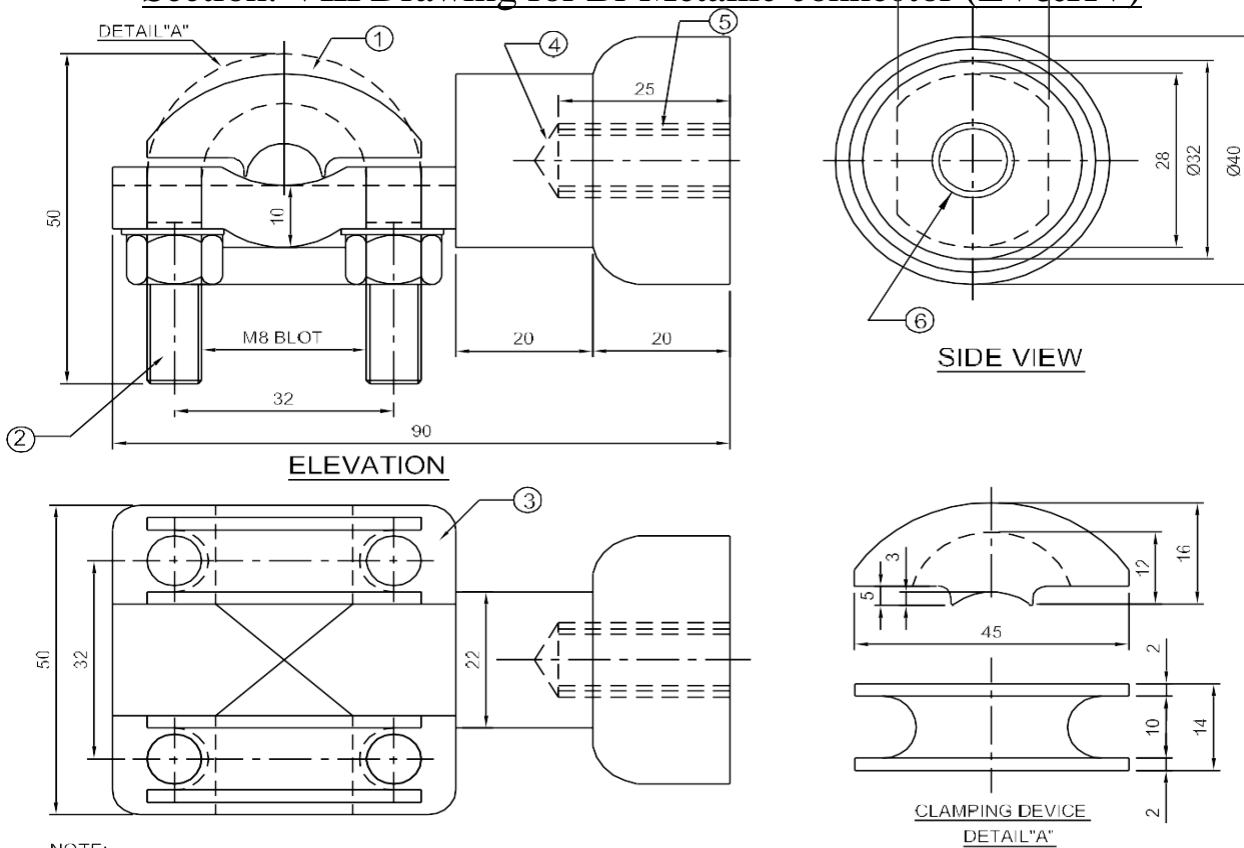
Sl. No.	Description of Material	Qty. in (Nos.)	Stores
1	11KV/433 – 250V 63 KVA CSP oil immersed naturally cooled three phase, 50 Hz double wound, <b>CRGO Core/Amorphous Core Aluminum Winding</b> , outdoor type, <b>BIS Energy Efficiency Level-2 (Star-2) Distribution Transformers</b> top cover fixed with nut and bolt and neoprene continuous gasket arrangement generally conforming to <b>IS-1180 (Part-I) : 2014</b> and IS-2026/1977 latest versions except where specified otherwise with first filling of oil generally as per IS-335/2018 type II U and as per specification.	<b>3500 Nos.</b>	FADS at TGSPDCL stores

**Note: - The prices shall be Variable with 50% ceiling limit on positive side and there is no limit on negative side with base date will be taken, the date one month prior to the date of tender opening.**

1. Free at destination stores and ex-factory rate shall be quoted. The delivery of the transformers shall commence within one month and completion within three months thereafter or as per TGSPDCL requirement. The quantities that can be delivered per month shall be quoted.
2. **The bidder should quote price schedule only in online and specify the price of the Materials / equipment EXWORKS, Freight and Insurance separately (mandatory) and applicable GST.**

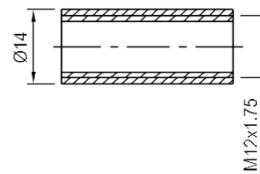
Sd/-  
**CHIEF ENGINEER/P&MM/TGSPDCL**

## Section: VIII Drawing for Bi-Metallic connector (LV&HV)



### NOTE:-

1. ALUMINIUM ALLOY '4600(LM6)-IS:617-1994 CONDUCTOR CLAMPING DEVICE
2. MS ELECTRIC GALVANISED / SS - M8 'U' BOLT WITH NUT, PLAIN & SPRING WASHERS.IS:1367-PART-13
3. ALUMINIUM ALLOY '4600(LM6)-IS:617-1994 BODY OF THE CONNECTOR.
4. HIGH PRESSURE FIT JOINT BETWEEN ALUMINIUM ALLOY AND BRASS BODY
5. HIGH STRENGTH CORROSION RESISTANT BRASS BODY
6. THREAD TO SUIT M12x1.75 STEM OF THE TRANSFORMER BUSHINGS.
7. CONNECTOR IS SUITABLE FOR 7.08 TO 14 mm<sup>2</sup> DIA ACSR/AAC CONDUCTOR
8. TOLERANCE ON DIMENSIONS :  $\pm 5\%$
9. REFERENCE STANDARD : IS:5561-1970
10. RATED SYSTEM VOLTAGE : 12 kV, 24 kV & 36 kV.
11. CURRENT RATING : 200A FOR 40°C RISE OVER 45°C
12. RATED SHORT TIME CURRENT : 3 kA FOR 3 SEC.
13. TENSILE LOAD : 110 kgt.
14. ALL SHARP CORNERS SHALL BE SMOOTHLY ROUNDED OFF
15. BOLT TIGHTENING TORQUE : M8-16 N-m
16. SURFACE FINISH: ELECTRO TINNING CONFORMING TO IS:1359-1992 ,CLASS:C<sub>u</sub>/Sn 15 b



**BIMETALLIC CONNECTOR 200Amps**