

SOUTHCO UTILITY

CORPORATE OFFICE: COURTPETA, BERHAMPUR, PIN-760004

DIST: GANJAM (ODISHA)

Email: procurement.southco@southcoodisha.com ,Website: www.southcoodisha.com

E- TENDER NOTICE NO. SOUTHCO/DESI/DISTRIBUTION

TRANSFORMER/03/2016 – 17 Date: 13.07.2016

**TENDER SPECIFICATION FOR PROCUREMENT OF 11/0.25 KV, 16
KVA & 11/0.433 KV 63 KVA (3 Star) DISTRIBUTION TRANSFORMERS**

Issue of online tender documents (bid sheets):- From dt-13.07.2016 (10.01 Hrs) to dt-02.08.2016 (13.0Hrs)

Last date of submission of online tender: - Up to dt-02.08.2016 (17.00 Hrs)

Submission of Tender (Hard Copy) - Up to dt-03.08.2016 (13.00 Hrs)

Opening of Techno-commercial bid (Part-I): - 03.08.2016 (On or after 16.00 Hrs)

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E-TENDER NOTICE NO: SOUTHCO/DESI/DISTRIBUTION TRANSFORMER/03/2016 – 17 Date:

For and on behalf of SOUTHCO UTILITY, sealed e-tenders are invited in two part bidding system for supply of following items from reputed manufacturers under Deposit head.

Sl. No.	Item Description	Unit	Qty	EMD (Rs. in Lacs)	Cost of Tender Document	Last Date of submission of online Bid
1	11/0.25 KV, 16 KVA DTR (3 Star)	No	41	0.14	Rs. 15,000/- + VAT @ 5% = Rs. 15,750.00	02.08.2016 up to 17.00 Hrs.
3	11/0.433 KV, 63 KVA DTR (3 Star)	No	125	1.15		

The interested bidders would be required to enroll themselves on the tender portal www.tenderwizard.com/SOUTHCO. Complete set of bidding documents are available in www.tenderwizard.com/SOUTHCO portal from Dt.13.07.2016 /10.01 AM onwards (as per the e-tender schedule). Interested bidders may visit SOUTHCO's official web site www.southcoodisha.com or www.tenderwizard.com/SOUTHCO for detail specification.

Any addendum / corrigendum to this e-Tender Notice shall be uploaded in the website only.

GM (Material Mgt., Vig. & MRT)

The bidders can view the tender documents from www.southcoodisha.com website free of cost.

(i) The bidders who want to submit bid shall have to pay the Rs. 15,750.00 towards tender cost (non-refundable which is inclusive VAT @ 5%), in the form of Demand draft only, drawn in favour of "Administrator, SOUTHCO Utility", payable at Berhampur.

(ii) The bidders shall have to submit the non-refundable tender processing fee as detailed below which is inclusive of service tax @15.0 % in the form of e-payment mode.

Sl. No.	Name of Material	Tender Processing Fees inclusive of Service Tax @ 15.0 %
1	11/0.25 KV, 16 KVA Dist. Transformer (3 Star)	Rs. 1610.00
2	11/0.433 KV, 63 KVA Dist. Transformer (3 Star)	Rs. 5750.00

(NOTE: For tender processing fee to K.S.E.D.C. Ltd. Bangalore, the bidder can use various modes of e-payment facility available through Tender wizard Portal, i.e. by Credit Card, Debit Card, Net Banking).

(iii)The bidders shall scan the Demand Draft / Bank guarantee, towards EMD and Tender Cost against the tender and upload the same in the prescribed form in .pdf or .jpg format in addition to sending the original as stated above.

(iv) The prospective bidders are advised to register their user ID, Password, company ID from website www.tenderwizard.com/SOUTHCO by clicking on hyper link "Register Me".

(v) Any clarifications regarding the scope of work and technical features can be had from the undersigned during office hours.

NB: All subsequent addendum/Corrigendum to the tender shall be hoisted in SOUTHCO's official web site www.southcoodisha.com and www.tenderwizard.com/SOUTHCO only

GENERAL MANAGER (MM, Vig. & MRT.)

For detail procedure to be followed for submission of Bid, please refer Clause No. 8 & 9 of ITB (page no.13 to 15)

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VOLUME -I

E- TENDER NOTICE NO. SOUTHCO/DESI/DISTRIBUTION

TRANSFORMER/03/2016 – 17 Date: 13.07.2016

SECTION – I

INVITATION FOR BIDS (IFB)

INVITATION FOR BIDS (IFB)
FOR SUPPLY OF 11/0.25 KV 16 KVA & 11/0.433 KV 63 KVA (3 Star)
DISTRIBUTION TRANSFORMERS

E- TENDER NOTICE NO. SOUTHCO/DESI/DISTRIBUTION TRANSFORMER/03/2016 – 17 Date: 13.07.2016
SECTION –I

- 1.0 For and on behalf of the SOUTHCO, the undersigned invites bids under two part bidding system from the reputed manufacturers only for design, manufacture, supply, type testing, inspection, loading at factory, transportation to & unloading at site / stores including guaranteed obligation for supply of ISI Marked 11/0.25 KV 16 KVA & 11/0.433 KV 63 KVA (3 Star) Distribution Transformer.
- 2.0 The Bidders are required to submit a detailed and comprehensive bid, consisting of Technical and Commercial Proposal and conditions / schedule of non-compliance, if any. The submission of the Bids shall be in the manner specified in the instruction to Bidders.
- 3.0 SOUTHCO will not be responsible for any costs or expenses incurred by bidders in connection with the preparation and delivery of bids.
- 3.1 SOUTHCO reserves the right to cancel, postpone, withdraw the invitation for Bids without assigning any reason thereof and shall bear no liability whatsoever consequent upon such a decision if the situation so warrants.

4.0 E.M.D & TIME SCHEDULES:

SL. NO.	DESCRIPTION	SCHEDULE
1	Cost of Tender document	Rs 15750/- (Rupees Fifteen thousand Seven hundred Fifty) only. (To be paid in shape of DD, in favour of " Administrator, SOUTHCO Utility", payable at Berhampur) NB: Cost of Tender shall be fully exempt for the local SSI Units located in the State of Odisha having valid registration in D.I.C/NSIC on the date of submission of the tender. It is also applicable for Consortium of SSI Units.
2	Bid security (EMD)	As mentioned in Tender Notice at page -2 in shape of DD in favour of "Administrator, SOUTHCO Utility", payable at Berhampur or in shape of BG in favour of "Administrator, SOUTHCO Utility", encashable at Berhampur branch of BG issuing Bank. NOTE: Local SSI Units located in the state of Odisha having valid registration in D.I.C/NSIC on the date of submission the tender shall be allowed to deposit 25% of the EMD amount as prescribed above. It is also applicable for Consortium of SSI Units.
3	Tender processing fee	As mentioned in Tender Notice at page -3. (To be paid to K.S.E.D.C.Ltd, Bangalore on e-payment mode. NOTE: For tender processing fee the bidder can use various modes of e-payment facility available through Tender wizard Portal, i.e. by Credit Card, Debit Card, Net Banking).
5	Issue of bid document	FROM 13.07.2016 , 10.01AM onwards
6	Last date of submission of online tender	Up to 02.08.2016 (5.00 PM)
7	Last date and time of receipt of bid. (Hard Copy)	ON Dt . 03.08.2016 UP TO 01.00 PM

8	Opening of Techno-commercial bid (Part-I)	ON Dt. 03.08.2016 on or after 04.00 PM
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5.0 SCHEDULE OF REQUIREMENTS & DELIVERY:

Sl. No.	Description of material	Units	Quantity	Within 60 days of order	Within 90 days of order
1	11/0.25 KV, 16 KVA Dist. Transformer (3 Star)	No	41	41	-
2	11/0.433 KV, 63 KVA Dist. Transformer (3 Star)	No	125	60	65

Note: SOUTHCO may re-schedule the due date of delivery as per their requirement.

6.0 QUALIFICATION OF BIDDERS:

6.1 Criteria for qualification: The bidder must fulfill all of the following qualification criteria (except clause no. 6.1.1 (f)) and submit all relevant documents along with technical bid failing which bids shall be rejected out rightly.

6.1.1. Technical:

- a) The bidder should have at least Energy Efficiency Level -1 BIS License to manufacture ISI marked Distribution Transformers of the rating for which he submits his offer. The bidder has to submit valid self attested copy of BIS License & BEE Certificate (3 Star) for 11/0.433 KV, 63 KVA DTR and BIS License having at least Energy Efficiency Level -1 for 11/0.25 KV, 16 KVA DTR along with their technical Bid.
- b) The bidder is free to quote for any one or both ratings of distribution transformer. However, the bidder has to quote 100% of that rating of transformer for which they submit their bid. The bidder should have supplied distribution Transformers of same rating or higher rating minimum 50% of the quoted/offered quantity during any one of the financial year out of the immediate past three financial years. Bidders shall submit self attested copies of P.O.'s along with Tax Invoices executed successfully for the relevant years and abstract thereof to prove the quantity as supplied.
- c) The bid shall be accompanied by user's certificate (preferably issued within immediate last 5 years) from any Distribution Utility/ Reputed Private Organization/ State Govt. / Central Govt. or their undertaking(s) in support of satisfactory performance of their above materials supplied earlier to them which may be of non-BIS certification.
- d) The offered materials should have been type-tested as per clause no. 8.3 of technical specification for 16 KVA and as per clause no. 31.2.1 of technical specification (Section –IV) for 63 KVA at CPRI/ NABL accredited laboratory. The bid shall accompany with type-test reports conducted at Central Power Research Institute / NABL accredited laboratory for the offered materials conducted within five years along with the drawings duly approved by the Type Testing Agency before the date of opening of the tender. Bids not accompanying with valid type test report shall be rejected out rightly.
- e) The bidders who have earlier failed to execute the Purchase Order(s) of SOUTHCO within scheduled delivery period and or blacklisted by the SOUTHCO/any of the distribution Utility shall not be eligible to participate in this tender.
- f) SOUTHCO reserves the right to waive minor commercial/technical deviations, if they do not materially effect the performance of the material or the capacity of the bidder to perform the contract.

6.1.2 Financial:

The minimum average annual turnover of the intending bidder should not be less than two times of the estimated cost of the quantity offered by the bidder during best three financial years out of immediate past 5 financial years.

Sl. No.	Description of Materials	Minimum Average Annual Turnover requirement (Rs. in Cr.)
1	11/0.25 KV, 16 KVA Dist. Transformer (3 Star)	0.28
2	11/0.433 KV, 63 KVA Dist. Transformer (3 Star)	2.30

NB: Bidders offering multiple items must meet the sum of minimum turn over requirements of above items as indicated above. Accordingly bidders must furnish self attested audited Annual Accounts of past 3 best financial years out of immediate last 5 financial years to establish their Turnover requirement.

6.1.3 Participation of SSI Units by forming a CONSORTIUM:

Two or more SSI Units having been manufacturer of tender items as per this tender specification, may form a Consortium among themselves and apply against this specification, provided they fulfill the following eligible criteria;

- a) They should have legally valid consortium agreement as per the prescribed format for the purpose of participation in the bidding process. The total no of a consortium shall be limited to four members.
- b) All members of the Consortium should be the eligible manufacturer(s) of the materials / equipments tendered.
- c) Each member should have valid BIS License, BEE Certificate (3Star) & Type tested report from NABL accredited laboratory conducted within last five years for the tendered materials/equipments as applicable for the tender.
- d) Consortium as a whole shall meet the qualifying norms specified in the tender, they participate.
- e) The lead member of the Consortium should meet at least 50% of the qualifying norms in respect of the supply experience.
- f) Besides the lead member, other member (s) of the Consortium should meet at least 15% of the qualifying norms in respect of the supply experience.
- g) All the Consortium member(s) shall authorize the lead partner by submitting a power of Attorney as per the prescribed format duly signed by the authorized signatories. The lead partner shall be authorized to receive instructions for and on behalf of all partners of the Consortium and entire execution of the contract.
- h) The Consortium and its members shall be jointly and severally responsible and be held liable for the purpose of guaranteed obligation and any other matter as required under the contract.
- i) Any member of the Consortium member(s) shall not be eligible either in an individual capacity or part of any other consortium to participate in the tender, where the said consortium participates.

- j) Separate Purchase Orders will be placed to each members of the Consortium considering their offer quantity and ability to supply.
- k) The prescribed formats for Consortium Agreement (Annexure – III) and Power of Attorney (Annexure – IV) are provided in the tender specification as enclosures.

7.0 All correspondence with regard to the above shall be made to the following address:

GM (Material Mgt. , Vig. & MRT) , Corporate Office, Southco,
Courtpetta, Berhampur, Ganjam-760004.

Email: procurement.southco@southcoodisha.com

SECTION –II

INSTRUCTION TO BIDDERS (ITB)

SECTION –II

INSTRUCTION TO BIDDERS (ITB)

1. SOURCE OF FUNDS:

1.1 SOUTHCO hereinafter referred to as the “Purchaser” is desirous of procurement of materials for strengthening and improvement of distribution network under SOUTHCO Utility from the funds available under DESI Scheme of Govt. of Odisha.

2. SCOPE OF WORK:

2.1 The scope of work in brief shall include design, manufacture, type testing, inspection, supply, loading at factory, transportation to site / stores, unloading at site/stores including guaranteed obligation of complete supply of materials in conformity to the technical specification enclosed herewith in Section – IV.

3. DISCLAIMER:

3.1 This Document includes statements, which reflect various assumptions, which may or may not be correct. Each Bidder should conduct its own estimation and analysis and should check the accuracy, reliability and completeness of the information in this Document and obtain independent advice from appropriate sources in their own interest.

3.2 Neither Purchaser nor its employees will have any liability whatsoever to any Bidder or any other person under the law or contract, the principles of restitution or unjust enrichment or otherwise for any loss, expense or damage whatsoever which may arise from or be incurred or suffered in connection with anything contained in this Document, any matter deemed to form part of this Document, provision of Services and any other information supplied by or on behalf of Purchaser or its employees, or otherwise arising in any way from the selection process for the Supply / provision of Services for the Project.

3.3 Though adequate care has been taken while issuing the Bid document, the Bidder should satisfy himself that documents are complete in all respects. Intimation of any discrepancy/ doubt shall be sent to the Purchaser address for speedy response.

3.4 This document and the information contained herein are Strictly Confidential and are for use of only the person (s) to whom it is issued/ downloaded from the website. It may not be copied or distributed by the recipient to third parties (other than in confidence to the recipient's professional advisors).

4. COST OF BIDDING:

4.1 The Bidder shall bear all costs associated with the preparation and submission of its Bid and SOUTHCO will in no case be responsible or liable for those costs.

5. BIDDING DOCUMENTS:

5.1 The Scope of Work, Bidding Procedures and Contract Terms are described in the Bidding Documents. In addition to the covering Letter accompanying Bidding Documents, the Bidding documents include:

- (a) Invitation of Bids (IFB) - Section –I
- (b) Instruction to Bidders (ITB) - Section –II
- (c) General Terms and Conditions of Contract (GTCC) - Section –III

- (d) Technical Specification - Section –IV
- (e) List of Annexure - Section –V

5.2 The Bidder is expected to examine the Bidding Documents, including all Instructions, Forms, Terms and Specifications. Failure to furnish all information required in the Bidding documents or submission of a Bid not substantially responsive to the Bidding Documents in every respect will / may result in the rejection of the Bid.

6. AMENDMENT OF BIDDING DOCUMENTS:

6.1 At any time prior to the deadline for submission of Bids, the Purchaser may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify the Bidding Documents by way of issuing an corrigendum/addendum.

6.2 The corrigendum/ Addendum shall be part of the Bidding Documents, and it will be notified on the website only. Interested bidders may visit SOUTHCO's website www.southcoodisha.com or www.tenderwizard.com/SOUTHCO for detail enquiry.

6.3 In order to afford prospective Bidders reasonable time in which to take the amendment into account in preparing of their Bids, the Purchaser may, at its discretion, extend the deadline for the submission of Bids.

7. LANGUAGE OF BID:

The Bid, prepared by the Bidder, and all correspondence and documents relating to the Bid exchanged by the Bidder and the Purchaser, shall be written in the English Language. Any printed literature furnished by the Bidder may be written in another Language, provided that the literature is accompanied by an English translation, in which case, for purposes of interpretation of the Bid, the English translation shall govern.

8.0 SUBMISSION OF BID:

8.1 MODE OF SUBMISSION OF BID:-

The bidder shall submit the bid in Electronic Mode only i.e. in www.tenderwizard.com/SOUTHCO portal. The bidder must ensure that the bids are received in the specified website of the SOUTHCO by the date and time indicated in the Tender notice.

8.2 Bids submitted by telex/telegram will not be accepted.

8.3 The SOUTHCO reserves the right to reject any bid, which is not submitted in electronic mode and according to the instruction, stipulated above.

8.4 PARTICIPATION IN e-TENDER:-

8.4.1 ACQUISITION OF DIGITAL SIGNATURE CERTIFICATE

(i) For all the users it is mandatory to procure the Digital Signatures of Class III only.

(ii) Bidders / Suppliers are requested to follow the below steps for registration.

8.4.2 REGISTRATION IN TENDER WIZARD PORTAL

(i) Log in www.tenderwizard.com/SOUTHCO Click "Register", fill the online registration Form.

(ii) Payment for an amount of Rs. 2300/- shall be made to KSEDCL, Bangalore for vendor

registration in tender wizard portal in e-payment mode only.

The bidders/supplier who have already registered in e-tendering site of SOUTHCO, they need not to pay the registration amount KSEDCL again for this tender.

(iii) As soon as the verification is being done the e-tender user id will be enabled / provided.

8.4.3 ON LINE REQUEST FOR e-tender DOCUMENTS.

After viewing Tender Notification in www.tenderwizard.com/SOUTHCO if bidder intends to participate in tender, he has to use his e-tendering User Id and Password which has been received after registration and acquisition of DSCs (Digital signature certificate). If any Bidder wants to participate in the tender he has to follow the instructions given below.

(i) Insert the PKI (which consist of your Digital Signature Certificate) in your System. (Note: Make sure that necessary software of PKI be installed in your system).

(ii) Click / Double Click to open the Microsoft Internet Explorer (This icon will be located on the Desktop of the computer).

(iii) Go to Start > Programs > Internet Explorer. Type www.tenderwizard.com/SOUTHCO in the address bar, to access the Login Screen.

(iv) Enter e-tender User Id and Password, click on "Go". Click on "Click here to login" for selecting the Digital Signature Certificate. Select the Certificate and enter DSC Password. Re-enter the e-Procurement User Id Password

(v) Click "Un Applied" to view / apply for new tenders.

(vi) Click on Request icon for online request. After making the request, bidder has to pay the requisite tender processing fee (as indicated in tender notice page -3) through e-payment facility only available in the portal. Bidders will receive the Tender Documents which can be checked and downloaded by following the below steps.

(vi) Click to view the tender documents which are received by the user. Tender document screen appears.

(vii) Click "Click here to download" to download the documents.

NOTE: For vendor registration and payment of tender processing fee to KESDCL, the bidder can use various modes of e-payment facility available through Tender wizard Portal, i.e. by Credit Card, Debit Card, Net Banking.

9.0 ONLINE SUBMISSION OF BID

9.1 The bidder has to furnish the Tender cost, BID SECURITY (EMD) and a set of hard copy of supporting documents uploaded in this tender except bid sheets (.xls) prior to last date and time of receipt of bids as specified in tender Notice. Tender processing fees is mandatory & to be paid on e-payment mode as stated elsewhere in the document.

9.2 PROPER FILLING UP OF THE PRICE SCHEDULE:

The bidder should fill up the Techno commercial and price schedule properly and fill in the bid sheets provided in .xls format and up-load the same without changing the file name. The tender may be rejected if the schedule of price is submitted in incomplete form.

NB: The bid sheets (.xls file) shall be uploaded in www.tenderwizard.com/SOUTHCO portal, prior to online closing of the tender. By no other means (except online) price bid shall be accepted for evaluation of tender.

(i) After completing all the formalities Bidders will have to submit the tender as specified NIT and they must take care of all instructions. Prior to submission, verify whether all the required documents have been attached and uploaded to the particular tender or not.

Note down / take a print of bid control number once it displayed on the screen

(ii) Tender Opening event can be viewed online.

(iii) Competitors bid sheets are available in the website for all participated bidders.

NOTES:

For any e-tendering assistant contact help desk number,
080- 40482000(Bangalore). SOUTHCO HELP DESK- 09937140591

10.0 DEAD LINE FOR SUBMISSION OF BIDS

10.1 Soft copy of the bid shall be uploaded through the portal www.tenderwizard.com/SOUTHCO on or before the online submission time and date as stipulated in the bidding document. DD towards Tender cost, DD/BG towards Bid Security & a set of all required documents (except bid sheets in .xls format) must be received by SOUTHCO at the address specified not later than the time and date stated in the tender notification. In the event of the specified date for the submission of bids being declared a holiday for SOUTHCO, the bids will be received on the next working day as per the time indicated in tender notification.

10.2 SOUTHCO may, at its discretion, extend this deadline for submission of bids by amending the Bidding Documents in accordance with ITB for the reasons specified therein at any time prior to opening of, in which case all rights and obligations of Employer and bidders will thereafter be subject to the deadline as extended.

11.0 LATE BIDS

11.1 (i) Soft part of the bid will not be uploaded on the portal after expiry of submission time and the bidder shall not be permitted to submit the same by any other mode. In such case, even if the bidder has submitted the specific documents in hard copy in original (viz., bid security, tender cost & any other document) within the stipulated deadline, its bid shall be considered as late bid. The hard copy submitted [specific documents (viz., bid security, tender cost.)] shall be returned unopened to the bidder.

11.2 (ii) Hard copy of the bid security of the bid received by SOUTHCO after the deadline for submission of bid prescribed by the GTCC will be considered as late bid even if the bidder has uploaded the soft part of the bid within the stipulated deadline. In such a case, the soft part of the bid uploaded on the portal shall be sent unopened to "Archive" and shall not be considered at all any further.

12.0

12.1 MODIFICATION AND WITHDRAWAL OF BIDS:-

12.2 Bidder may modify or withdraw its bids through the relevant provisions on the portal www.tenderwizard.com/SOUTHCO up to due date and time of submission of bid indicated in tender notification.

12.3 The Bidder's modifications shall be done and submitted as follows:

12.4 Modified Electronic form of the bid as per the provision of portal therein.

Bidder may withdraw its bid through the relevant provisions of portal only.

No bid shall be modified/ withdrawn subsequent to the dead line for submission of bids. Withdrawal/modification of bid before the expiry of bid validity shall result forfeiture of Bidder's bid security.

13.0 SEALING AND MARKING OF BID:-

13.1 (A) Hard copy of the followings should be submitted with SOUTHCO:

(i) Tender Cost

(ii) Tender processing fee acknowledgement copy.

(iii) Bid Security (EMD) in shape of DD/BG as described.

(iv) Notarized copy of Power of Attorney for signing the bid document.

(v) DIC/NSIC/Factory license as a proof of manufacturer

(vi) Self attested copies of Purchase orders (All pages) & Tax Invoices

(vii) Self attested copy of performance certificate.

(viii) Self attested copy of Type Test Report.

ix) Self attested copy of valid BEE Certificate

x) Self attested copy of BIS License

(xi) PAN Card, CST registration certificate, Excise registration certificate

(xii) All uploaded file except price bid .The same shall be uploaded in www.Tenderwizard.com / SOUTHCO portal only.

NB: The bidder should present the original documents for verification as and when required by SOUTHCO Utility.

13.2 First Envelope

(i) The Electronic Form/Template of the bid for First Envelope (Techno –Commercial bid), as available on the portal, shall be duly filled.

(ii) Attachments –Scanned copy of documents in support of meeting the Minimum qualifying requirement of the tender (both technical and financial, files named as 1.pdf to 8.pdf).

13.3 Second Envelope:

The Electronic Form/Template of the Price bid (as available on the portal) shall be duly filled up in the xls. Format.

- 14.0 E.M.D:
- 14.1 The bidder shall submit E.M.D as a part of the bid in the prescribed manner for the amount mentioned in Clause No.4 of Section –I.
- 14.2 The E.M.D is required to protect the Purchaser against the risk of bidder’s conduct, which would warrant the security’s forfeiture.
- 14.3 The E.M.D shall be in the following form:

A/C payee demand draft in favour of “Administrator, SOUTHCO Utility” issued by a Schedule bank payable at Berhampur.

OR

Bank Guarantee in favour of “Administrator, SOUTHCO Utility” issued by a Schedule bank encashable at local branch at Berhampur only. The BG shall be strictly as per the format enclosed at Section – V, Annexure – VI (A).

NB: In case of any deficiency such as the ownership of the security bond (other than the issuing bank), deviation from the approved format, absence of signature of witness etc. found in the EMD Bank Guarantee, the same shall be liable for rejection upfront. The bidder will not be given any chance to rectify the same.

- 14.4 Unsuccessful bidder’s E.M.D shall be refunded back as promptly as possible, but not later than thirty (30) days after the expiry of the period of bid validity. The successful bidder’s E.M.D shall be discharged upon furnishing of the performance security.
- 14.5 The E.M.D may be forfeited due to following reasons:
- 1) If the bidder withdraws bid during the period of bid validity specified by the bidder in the bid form.
 - 2) In case the successful bidder fails to sign the contract in specified time and / or fails to submit the requisite performance Bank guarantee.
 - 3) In case of failure to supply the materials / equipment during the contractual delivery period.

15.0 BID PRICE:

- 15.1 Bidders have to quote for the entire quantity of materials/equipment covered under this specification strictly as per the enclosed .xls format. The total Bid Price shall also cover all the Supplier’s obligations mentioned in or reasonably to be inferred from the Bidding Documents in respect of Design, Supply, testing, inspection, Transportation to site/stores, all in accordance with the requirement of Tender Documents. The Bidder shall complete the appropriate Price Schedules enclosed in .xls format stating the Unit Price for each item, all other livable taxes & duties, freight & insurance separately and thereby arriving at the total amount.
- 15.2 In case there is any increase in the number of units as compared to those mentioned in the IFB, the Contract Price shall be subject to increase proportionately on pro-rata basis.
- 15.3 The Price offered shall be inclusive of all costs as well as Duties, Taxes and Levies paid or payable during implementation of the contract. If the Bidder is exempted from Excise duties, Concession in the Sales tax, levy of entry tax, same should be clearly mentioned supported with documentary evidence.

- 15.4 Prices quoted by the Bidder shall be "Firm" and not subject to any price adjustment during the performance of the Contract. A Bid submitted with variable Price or an adjustable price clause shall be treated as non-responsive and rejected out rightly.
- 16.0 CONTRACT PRICE:
- 16.1 The Ex-Works Prices quoted for the Contract shall remain FIRM as per the above Parameters and Purchaser shall not compensate Bidder for any variations. However any variation in the taxes & duties within the schedule date of delivery shall be borne by the Purchaser, else the same shall be borne by the bidder.
- 16.2 In case the Purchaser, revise the scope of works, bidders shall be compensated based on the Unit Rate (Ex-Works) agreed upon before Order placement or as per mutually acceptable rates.
- 17.0 BID CURRENCIES:
- 17.1 Prices shall be quoted in Indian Rupees Only.
- 18.0 PERIOD OF VALIDITY OF BIDS:
- 18.1 Bids shall remain valid for 180 days from the date of opening of commercial Bids.
- 18.2 Notwithstanding Clause 14.1 above, the Purchaser may solicit the Bidder's consent to an extension of the Period of Bid Validity. The request and the responses thereto shall be made in writing or by Fax.
- 19.0 ALTERNATIVE BIDS:
- 19.1 Bidders shall submit Bids, which comply with the Tender Documents. Alternative bids shall not be considered for evaluation.
- 20.0 ONE BID PER BIDDER:
- 20.1 Each Bidder shall submit only one Bid either by himself, or as a partner in a Joint Venture/Consortium. A Bidder who submits or participates in more than one Bid for the same item, either individually or jointly, will cause all those Bids to be rejected out rightly.
- 21.0 EVALUATION OF BID:
- 21.1 PROCESS TO BE CONFIDENTIAL:
- Information relating to the examination, clarification, evaluation and comparison of Bids and recommendations for the award of a contract shall not be disclosed to Bidders or any other persons not officially concerned with such process. Any effort by a Bidder to influence the Purchaser's processing of Bids or award decisions may result in the rejection of the Bidder's Bid.
22. CLARIFICATION OF BIDS:
- To assist in the examination, evaluation and comparison of Bids, the Purchaser may, at its discretion, ask the Bidder for a clarification of its Bid. All responses to requests for clarification shall be in writing and no change in the price or substance of the Bid shall be sought, offered or permitted.
23. PRELIMINARY EXAMINATION OF BIDS / RESPONSIVENESS:

- 23.1 Purchaser will examine the Bids to determine whether they are complete, whether any computational error have been made , whether required sureties have been furnished, whether the documents have been properly signed, and whether the Bids are generally in order.
- 23.2 Arithmetical errors will be rectified on the following basis. If there is a discrepancy between the unit price and the total price per item that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price per item will be corrected. If there is a discrepancy between the total amount and the sum of the total price per item, the sum of the total price per item shall prevail and the Total Amount will be corrected.
- 23.3 Prior to the detailed evaluation, pursuant to Clause 25, the Purchaser will determine the substantial responsiveness of each Bid to the Bidding Documents including production capability and acceptable quality of the materials offered, pursuant to Clause 13. Substantially responsive Bid is one, which conforms to all the terms and conditions of the Bidding Documents without material deviation.
- 23.4 A Bid determined as not substantially responsive will be rejected by the Purchaser and will not subsequently allowed to be made responsive by the Bidder by correction of the non – conformity.

24.0 EVALUATION AND COMPARISON OF BIDS:

- 24.1 The evaluation of Bids shall be done basing on the delivered cost competitiveness basis for each item separately.
- 24.2 The evaluation of the Bids shall be a stage-wise procedure. The following stages are identified for evaluation purposes:

In the first stage, the Bids would be subjected to a responsiveness check as detailed in the clause 24. The Technical Proposals and the Commercial terms & conditions of the Bidders would be evaluated and discussed as per clause 26 of this document.

Subsequently, the Financial Proposals along with Supplementary Financial Proposals, if any, of Bidders with Techno-commercially Acceptable Bids submitted prior to final evaluation shall be considered.

- 24.3 The Purchaser’s evaluation of a Bid will take into account, in addition to the Bid price, the following factors, in the manner and to the extent indicated in this Clause:

- a) Delivery Schedule:
- b) Deviations from Bidding Documents as mentioned in Non-Compliance Schedule.
- c) Past performance and capability to execute the contract.
- d) Type test reports from CPRI/ NABL Accredited Laboratories.
- e) Valid BEE Certificate (3 Star)
- f) Valid BIS License

Bidders shall base their Bid price on the terms and conditions specified in the Bidding Documents. The Cost of all quantifiable deviations and omissions from the specification, terms and conditions, specified in Bidding Documents shall be evaluated. The Purchaser will make his own assessment of the cost of any deviation for the purpose of ensuring fair comparison of Bids.

25.0 AWARD OF CONTRACT:

In normal circumstances the Purchaser will generally award the Contract to the successful Bidder whose Bid has been determined to be the lowest evaluated responsive Bid, provided further that the Bidder has been determined to be qualified to perform the Contract satisfactorily. If the lowest evaluated price (L1) of more than one responsive bidder(s) is same, then in such event the tender

quantity shall be awarded in equal proportion.

However, for timely completion of the project, the purchaser may distribute the order among the bidders (maximum three) at L1 rate. In case of distributing between two bidders, the ratio shall be 70% (L1): 30% (L2) or the quantity offered/quoted by the bidders whichever is less. Similarly in case of distributing among 3 bidders, the ratio shall be 50% (L1):30% (L2):20% (L3).

In case L2 & L3 bidders does not agree to match the L1 prices, negotiation can be held with other techno-commercially responsive L4, L5bidders in sequence to match L1 price (Landed cost).

26.0 CONTACTING THE PURCHASER:

26.1 From the time between Bid opening to award of contract, if any Bidder wishes to contact the Purchaser on any matter related to the Bid, he should do so in writing.

26.2 Any effort by a Bidder to influence the Purchaser and / or in the Purchaser's decisions in respect of Bid evaluation, Bid comparison or Contract of Award, will result in the rejection of the Bidder's Bid.

27.0 THE PURCHASER'S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS OR TO RELAX ANY TERMS AND CONDITIONS:

27.1 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 award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders regarding the grounds for the Purchaser's action.

27.2 In the interest of work, the Purchaser reserves the right to relax any terms and conditions without affecting the quality & price of the equipments.

27.3 The Purchaser will award the Contract to the successful Bidder whose Bid has been determined to be the lowest- evaluated responsive Bid, provided further that the Bidder has been determined to be qualified to perform the Contract satisfactorily. The Purchaser at its option/ discretion may split the total quantity to be supplied between two or more Techno- Commercially responsive Bidders in case of the bid prices are same and early delivery is required by the purchaser.

28.0 THE PURCHASER'S RIGHT TO VARY QUANTITIES:

The Purchaser reserves the right to vary the quantity i.e. increase or decrease the number of materials without any change in unit price, terms and conditions at the time of placing the orders or during the execution of the Contract.

29.0 LETTER OF INTENT / NOTIFICATION OF AWARD:

29.1 The letter of intent / Notification of Award shall be issued to the successful Bidder(s) whose bid(s) have been considered responsive, techno-commercially acceptable and evaluated to be the Lowest (L1). The successful Bidder shall be required to furnish a letter of acceptance to it within 7 days of issue of the letter of intent / Notification of Award by Purchaser.

30.0 PERFORMANCE SECURITY:

30.1 Within 10 days of the receipt of Notification of Award / Letter of Intent from the Purchaser, the successful Bidder shall furnish the Performance Security in the form of Bank Guarantee executed on non-judicial stamp paper worth Rs.100/- (Rupees One hundred only) issued by a scheduled Bank in favour of the Purchaser encashable at Berhampur only for an amount of 10% (ten percent) of the Contract Price in accordance with the General Conditions of Contract in the Performance Security Form provided in Section –V of Bidding Documents. The Bank Guarantee

shall be valid for a period not less than 90 days over and above the guarantee period.

31.0 CORRUPT OR FRAUDULENT PRACTICE:

31.1 The Purchaser requires that the Bidders observe the highest standard of ethics during the procurement and execution of the Project. In pursuance of this policy, the Purchaser:

- a) Defines, for the purposes of this provision, the terms set forth below as follows:
 - (i) "Corrupt practice" means behavior on the part of officials in the public or private sectors by which they improperly and unlawfully enrich themselves and/ or those close to them, or induce others to do so, by misusing the position in which they are placed, and it includes the offering, giving, receiving, or soliciting of anything of value to influence the action of any such 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 amount 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.
- b) Purchaser will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practice in competing for the contract in question.
- c) Purchaser will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded an contract if he at any time determines that the firm is engaged in corrupt or fraudulent practice in competing for, or in executing, the Contract.

31.2 Furthermore, Bidders shall be aware of the provision stated in the General Terms and Conditions of Contract.

32.0. LITIGATION HISTORY:

The Bidder should provide accurate information on any litigation or arbitration resulting on contracts completed or under execution by him over the last three (3) years. A consistent history of awards involving litigation against the Bidder or any Partner of the joint venture may result in disqualification of Bid.

SECTION –III

GENERAL TERMS AND CONDITIONS OF CONTRACT (GTCC)

SECTION – III
GENERAL TRMS AND CONDITIONS OF CONTRACT (GTCC)

1.0 GENERAL INSTRUCTIONS:

- 1.01 All the Bids shall be prepared and submitted in accordance with these instructions.
- 1.02 Bidder shall bear all costs associated with the preparation and delivery of its Bid, and the Purchaser will in no case shall be responsible or liable for these costs.
- 1.03 The Bid should be submitted by the Bidder in whose name the bid document has been issued and under no circumstances it shall be transferred / sold to the other party.
- 1.04 The Purchaser reserves the right to request for any additional information and also reserves the right to reject the proposal of any Bidder, if in the opinion of the Purchaser, the data in support of Tender requirement is incomplete.
- 1.05 The Bidder is expected to examine all instructions, forms, terms & conditions and specifications in the Bid Documents. Failure to furnish all information required in the Bid Documents or Submission of a Bid not substantially responsive to the Bid Documents in every respect may result in rejection of the Bid. However, the Purchaser's decision in regard to the responsiveness and rejection of bids shall be final and binding without any obligation, financial or otherwise, on the Purchaser.

2.0 DEFINITION OF TERMS:

- 2.01 SOUTHCO shall mean the "Purchaser" on whose behalf this bid enquiry is issued by its authorized representative / officers.
- 2.02 "Bidder" shall mean the firm who quotes against this bid document issued by the Purchaser. "Contractor / Seller" shall mean the successful Bidder(s) whose bid has been accepted by the Purchaser and shall include his heirs, legal representatives, successors and permitted assigns..
- 2.03 "Site" shall mean the Electricity Distribution Area of the Purchaser.
- 2.04 "Specification" shall mean collectively all the terms and stipulations contained in those portions of this bid document known as Instruction to Bidder, Bid form and other forms as per Section – V, General Conditions of Contract, Specifications and the Amendments, Revisions, Deletions or Additions, as may be made by the Purchaser from time to time.
- 2.05 "Letter of Intent" shall mean the official notice issued by the Purchaser notifying the Contractor that his proposal has been accepted and it shall include amendments thereto, if any, issued by the Purchaser. The "Letter of Intent" issued by the Purchaser shall be binding on the "Contractor". The date of detailed Purchase Order shall be taken as the effective date of the commencement of contract.
- 2.06 "Month" shall mean the calendar month and "Day" shall mean the calendar day.
- 2.07 "Codes and Standards" shall mean all the applicable codes and standards as indicated in the Technical Specification.
- 2.08 "Offer Sheet" shall mean Bidder's firm offer submitted to Purchaser in accordance with the specification.
- 2.09 "Contract" shall mean the "Detailed Purchase Order" issued by the Purchaser.
- 2.10 "Contract Price" shall mean the Price referred to in the "Detailed Purchase Order".

- 2.11 "Contract Period" shall mean the period during which the "Contract" shall be executed as agreed between the Contractor and the Purchaser in the Contract inclusive of extended contract period for reasons beyond the control of the Contractor and / or Purchaser due to force majeure.
- 2.12 "Goods/Materials" shall mean all items to be supplied under Purchase Order whether raw materials, processes materials, equipment, fabricated Materials, drawings or other documents etc. as applicable.
- 2.13 "Store" shall mean the Purchaser's Store as given in the tender document.
- 2.14 "Project / Unit" shall mean supply of Materials as per enclosed technical specification.
- 3.0 CONTRACT DOCUMENTS & PRIORITY:
- 3.01 Contract Documents: The Specification, terms and conditions of the contract shall consist solely of these Tender conditions and offer sheet.
- 3.02 Priority: Should there be any discrepancy between any terms hereto and any term of the offer sheet, the terms of this tender document shall prevail.
- 4.0 SCOPE OF WORK:
- 4.01 The "Scope of Work" shall be on the basis of Bidder's responsibility, completely covering the obligations, responsibility and workmanship, provided in this Bid Enquiry whether implicit or explicit.
- 4.02 The Purchaser reserves the right to vary the quantity i.e increase or decrease, at the time of placing order or during project execution.
- 4.03 All relevant drawings, data and instruction manuals and other necessary inputs shall be under the scope of contract.
- 5.0 GENERAL REQUIREMENTS:
- 5.01 The seller shall supply, deliver best quality Goods/Materials/Equipments & conduct the testing at their works of highest standards.
- 6.0 The seller shall be responsible & shall comply with the provisions of all statutory acts i.e Electricity Act 2003, Indian Electricity Rules 1956, Income Tax Act-1961 etc.
- 7.0 INSPECTION & TESTING:
- i) The Purchaser's representative shall be entitled at all reasonable times during manufacture to inspect examine and test on the Contractor's premises the materials and workman-ship of all equipment to be supplied under this contract and if part of the said equipment is being manufactured elsewhere in any Sub-Contractor's premises, the Contractor shall obtain for the Purchaser's representative, permission to inspect, examine and test as if the equipment were being manufactured on the Contractor's premises. Such inspection, examination and testing shall not release the Contractor from his obligations under the contract.
 - ii) The Contractor shall give to the Purchaser adequate time/ notice (minimum of two weeks time) in writing for inspection of materials indicating the place at which the equipment is ready for testing and inspection and shall also furnish the Routine Test Certificates and Packing List along with offer for inspection to the Purchaser indicating the quantity which can be delivered in full truck load / Mini truck load to facilitate issue of dispatch instruction.

- iii) Where the contract provides for test on the Premises of the Contractor or of any of his Sub-Contractors, the Contractor shall provide such assistance, labour, materials, electricity, fuel and instruments as may be required or as may be reasonably demanded by the Purchaser's representative to carryout such tests efficiently. The Contractor is required to produce Shop Routine Test Certificates before offering their materials for inspection.
- iv) After completion of the tests as indicated above, the Purchaser's representative shall forward the test results to the Purchaser. If the test results confirm to the specific standard, the Purchaser shall approve the test results and communicate the same to the Contractor in writing. The Contractor shall provide at least three copies of the test certificates to the Purchaser.
- v) The Purchaser has the right to have the test carried out at his own cost by an independent agency whenever there is a dispute regarding the quality of supply.
- vi) The Purchaser at its discretion may re-test the Materials/Equipment at its own laboratory or laboratory of his choice for reconfirmation of the test results, particularly no load losses, load losses and percentage impedance, etc.
- vii) Besides the above, the Third Party Independent Evaluation Agency (TPIEA) engaged by SOUTHCO shall have right to conduct the pre & post dispatch inspection (as explained above) of the equipment/material procured by the Purchaser jointly along with the representative of purchaser/independently by the TPIEA as the case may be.

8.0 TRAINING FACILITIES :

The Contractor shall provide all possible facilities for training of Purchaser's Technical personnel, when deputed by the Purchaser for acquiring firsthand knowledge in assembly of the equipment and for it's proper operation and maintenance in service.

9.0 REJECTION OF MATERIALS:

In the event, any of the materials / equipment supplied by the Contractor is found defective due to faulty design, bad workmanship, bad materials used or otherwise not in conformity with the requirements of the Specification, the Purchaser shall either reject the materials / equipment or ask the Contractor in writing to rectify the same. The Contractor on receipt of such notification shall either rectify or replace the defective materials/equipment free of cost to the Purchaser. If the Contractor fails to do so, the Purchaser may :-

- a) At its option replace or rectify such defective materials/equipment and recover the extra costs so involved from the Contractor plus (15%) fifteen percent and / or.
- b) Terminate the contract for balance work / supplies with enforcement of penalty Clause as per contract for the un-delivered materials and with forfeiture of Performance Guarantee/ Composite Bank Guarantee.
- c) Acquire the defective equipment / materials at reduced price considered equitable under the circumstances.

10.0 EXPERIENCE OF BIDDERS :

10.1 The bidder(s) should furnish information regarding experience particularly on the following points :

- i) Name of the manufacturer :
- ii) Standing of the firm for manufacture of equipment/material quoted :
- iii) Description of materials/equipment supplied during the last 3 (three) years with the name (s) of the party (s) to whom supplies were made.
- iv) Testing facilities at manufacturer's work with copies of calibrated certificates of the major testing equipment.
- v) If the manufacturer is having collaboration with other firm(s), details regarding the same:
- vi) A list of Purchase orders, executed during the last three years along with user's certificate and copies of Purchase orders.

10.2 Bids may not be considered if the past manufacturing experience is found to be un-satisfactory as mentioned under clause -6 of the IFB

11.0 LANGUAGE AND MEASURES :

All documents pertaining to the contract including Specifications, Schedule, Notice, Correspondence, Operating & Maintenance instructions, Drawings or any other writing shall be written in English language. The metric system of measurement shall be used exclusively in this contract.

12.0 DEVIATION FROM SPECIFICATION :

It is in the interest of the Bidders to study the Specification, drawing etc. specified in the tender document thoroughly before tendering so that, if any deviations are made by the Bidders, the same are prominently brought out on a separate sheet in the Technical & Commercial Deviation Formats enclosed at Annexure XII & XIII in this document. Deviation mentioned in any other format or any other part of the offer document shall not be considered as a deviation & in such case it will be presumed that the bidder has accepted all the conditions, stipulated in the tender Specification, notwithstanding any exemptions mentioned therein.

13.0 PRICE BASIS:

13.01 Bidder shall quote "FIRM" price.

The breakup of prices shall indicate all types of Taxes, Duties and other Levies of whatsoever nature indicated separately and clearly, Packing & forwarding, transportation to site/store including transit insurances and entry tax etc. Exemption from any duties/taxes, if any, shall be supported with relevant documentary evidence.

The above Prices shall also include loading at factory site & unloading at Purchaser's site/stores. Price evaluation will be based on total landing cost, taking into account all taxes and duties.

14.0 TERMS OF PAYMENT:

100 % value of each consignment will be paid within 30 days of receipt of materials in good conditions at stores/ desired destination and verification there of subject to approval of the Guarantee certificates & Test Certificates and submission & acceptance of Performance Bank Guarantee equivalent to 10 % of Total Contract Price on non-judicial stamp paper worth Rs.100 in the prescribed format from a scheduled Bank encashable at Berhampur only.

Or else an equivalent amount of 10 % of the Total Contract Price shall be deducted from the invoice of the first consignment & the same shall be refunded after submission and approval of the required Performance Bank Guarantee or expiry of Guarantee Period whichever is earlier.

15.0 PRICE VALIDITY:

15.01 All bids submitted shall remain valid, firm and subject to unconditional acceptance by Purchaser for 180 days post bid date. For award of Contract, the prices shall remain valid and firm till contract completion.

16.0 GUARANTEE:

16.01 The bidder shall guarantee for satisfactory performance of the equipments/materials for a minimum period of 24 months from the date of Commissioning or 30 months from the date of receipt of last consignment whichever is earlier. In the event of any defect in the equipment/materials arising out of faulty design, inferior quality of raw material used or bad workmanship within the guarantee period, the Seller shall guarantee to replace/ repair to the satisfaction of the Purchaser the defective equipments free of cost. Should however, the manufacturer fails to do so within a reasonable time, the Purchaser reserves the right to recover the amount from the seller either from the bills pending or may recover from the Performance Guarantee submitted by the firm. Seller shall give a Performance Bank Guarantee in favour of the Purchaser for 10% of the order value valid for 90 days over and above the guarantee obligation.

16.02 If during the defect liability period any services performed found to be defective, these shall be promptly rectified by seller at its own cost (including the cost of dismantling and reinstallation) on the instruction of Purchaser.

17.0 RELEASE:

The seller's Performance Bank Guarantees / Assignable Bank Guarantee will be released without interest within thirty (30) days from the last date up to which the Performance Bank Guarantee has to be kept valid (as defined in Clause 16.01).

18.0 TECHNICAL INFORMATION / DATA:

The Purchaser and the Contractor, to the extent of their respective rights permitting to do so, shall exchange such technical information and data as is reasonably required by each party to perform its obligations and responsibilities. The Purchaser and the Contractor agree to keep each other in confidence and to use the same degree of care as he uses with respect to his own proprietary data to prevent its disclosure to third parties of all technical and confidential information. The technical information, drawings, records and other document shall not be copied, transferred, traced or divulged and / or disclosed to third party in full / part nor misused in any other form. This technical information, drawing etc. shall be returned to the Purchaser with all approved copies and duplicates. In the event of any breach of this Contract, the Contractor shall indemnify the Purchaser against any loss, cost of damages of claim by any party in respect of such breach.

19.0 EFFECTIVE DATE OF COMMENCEMENT OF CONTRACT :

19.01 The date of the issue of the detailed Purchase Order shall be treated as the effective date of the commencement of Contract.

20.0 The bidder shall quote the basic price as well as all taxes & duties as per the enclosed format for bid prices.

21.0 PENALTY:

21.01 If supply of materials / equipments is delayed beyond the supply schedule as stipulated in Purchase order, then the seller shall be liable to pay to the Purchaser as penalty for delay, a sum

of 0.5% (half percent) of the contract price for every week delay or part thereof.

21.02 The total amount of penalty for delay under the contract will be subject to a maximum of five percent (5%) of the contract price.

21.03 The Purchaser may, without prejudice to any method of recovery, deduct the amount for such damages from any amount due or which may become due to the seller or from the Performance Bank Guarantee or file a claim against the seller.

22. VALIDITY OF THE ORDER:

The Order is valid for 10 weeks beyond the schedule date of delivery, unless otherwise extended by the Competent Authority. The Order shall stand cancelled automatically beyond the validity period without any correspondences and liabilities to the purchaser.

23. PACKING :

The materials / equipments shall be packed by the seller suitably as per the standard procedure for safe transport to the site / store. The cases shall be clearly marked showing distinctly the name and address of the consignee. In case of special instructions, such as "this end up", "fragile", "handles with care" etc., the same shall be clearly displayed on the cases.

24.0 COMMISSIONING SPARES:

The seller shall replace, free of cost, any spares which may be found defective by the buyer during commissioning.

25.0 DISPUTE RESOLUTION & JURISDICTION OF CONTRACT:

25.1 Any dispute arising out of this contract shall be referred to the AO, SOUTHCO/CMD, GRIDCO who shall decide the case as sole arbitrator

25.2 For the purpose of dispute resolution, this agreement shall be governed by the provision of Arbitration & Conciliation Act, 1996.

25.3 All disputes shall be subject to exclusive jurisdiction of the Court at Bhubaneswar and Writ jurisdiction of Hon'ble High Court of Odisha at Cuttack.

26.0 EVENTS OF DEFAULT:

26.1 Events of Default. Each of the following events or occurrences shall constitute an event of default ("Event of Default") under the Contract :

(a) Seller fails or refuses to pay any amount due under the Contracts.

(b) Seller fails or refuses to deliver Commodities conforming to his Bid document/ specifications, or fails to deliver Commodities and, or execute the works assigned to them within the period specified in P.O or any extension thereof.

(c) Seller becomes insolvent or unable to pay its debts when due, or commits any act of bankruptcy, such as filing any petition in any bankruptcy, winding-up or reorganization proceeding, or acknowledges in writing its insolvency or inability to pay its debts; or the Seller's creditors file any petition relating to bankruptcy of Seller;

(d) Seller otherwise fails or refuses to perform or observe any term or condition of the Contract

and such failure is not remediable or, if remediable, continues for a period of 30 days after receipt by the Seller of notice of such failure from Purchaser.

27.0 CONSEQUENCES OF DEFAULT:

- (a) If an Event of Default occurs and would be continuing, Purchaser may forthwith terminate the Contract by written notice.

In the Event of Default, Purchaser may, without prejudice to any other right granted to it by law, or the Contract, take any or all of the following actions;

- i) present for payment, to the relevant bank the Contract Performance Bank Guarantee; Recover any losses and / or additional expenses, Purchaser may incur as a result of
- ii) Seller's default.

28.0 FORCE MAJEURE:

28.01 The term "Force Majeure" as employed herein include, acts of God or force of nature, landslide, earthquake, flood, fire, lightning, explosion, major storm (hurricane, typhoon, cyclone etc.) or major storm warning, tidal wave, shipwreck and perils of navigation, act of war (declared or undeclared) or public enemy, strike (excluding employee strikes, lockouts or other industrial disputes or action solely among employee of Contractor or its subcontractors) act or omission of Sovereign States or those purporting to represent Sovereign States, blockade, embargo, quarantine, public disorder, sabotage, accident or similar events beyond the control of the parties or either of them.

Force Majeure shall not include occurrences as follows :

1. Late delivery of materials caused by congestion of Seller's facilities or elsewhere, and oversold condition of the market, inefficiencies, or similar occurrences.
2. Late performance by Seller and / or Sub-Seller caused by unavailability of raw materials, supervisors or labour, inefficiencies of similar occurrences.
3. Mechanical breakdown of any item of Seller's or its Sub-Seller's equipment, plant or machinery.
4. Delays due to ordinary storm or inclement weather or
5. Non-conformance by Sub-Seller.

Unless the delay arises out of a Force Majeure occurrence and is beyond both Seller's and Sub-Seller's or Seller's control and an alternate acceptable source of services, equipment or material is unavailable. Additionally, Force Majeure shall not include financial distress of Seller or any Sub-Seller.

28.02 In the event of either party being rendered unable by Force Majeure to perform any obligation required to be performed by them under the Contract, the relative obligation of the party affected by such Force Majeure shall be suspended for the period during which such cause lasts. Time for performance of the relative obligation suspended by Force Majeure shall then stand extended by the period for which the cause lasts.

- 28.03 Upon the occurrence of any Force Majeure event, the party so affected in the discharge of its obligation shall promptly, but no later than seven (7) days give written notice of such even to the other party. The affected party shall make every reasonable effort to remove or remedy the cause of such Force majeure or mitigate its effect as quickly as possible. If such occurrence results in the suspension of all or part of the work for a continuous period of more than 10(ten) days, the parties shall meet and determine the measures to be taken.
- 28.04 Any delay or failure in performance by either party hereto shall not give rise to any claims for damages or loss of anticipated profits if and to the extent, such delay or failure is caused by Force Majeure.
- 29 EMBOSSING / PUNCHING / CASTING
- 29.1 The all equipments and materials supplied shall bear distinct mark of "Name of the Purchaser, Name of Scheme, PO Order No. & Date, Guarantee Period" by a way of embossing / punching / casting etc. This should be clearly visible to naked eye.
- 30 INDEMNIFY
- 30.1 The Vendor, its successor and assignee shall indemnify the Purchaser, its successor and assignee from all current & future liabilities that may arise out of purchase contract(s) entered into between the vendor & the Purchaser.

SECTION –IV

TECHINICAL SPECIFICATIONS

FOR

11/0.25 KV 16 KVA(3 Star), 11/0.433 KV 63 KVA (3 Star)
Distribution Transformer

11 / .25 KV, 16 KVA (3-STAR RATED) ALUMINIUM WOUND DISTRIBUTION TRANSFORMER

1.0 SCOPE:-

1.1 This specification covers design, manufacturing, testing and delivery of 16 KVA, 11/0.25 single phase, oil immersed, Oil Natural (ON) distribution transformer (Sealed type) confirming to energy efficiency level-1 (3-Star rated) of IS 1180(Part-1): 2014 suitable for 11 KV and 50 Hz distribution system.

1.2 The equipment offered shall be complete with all parts necessary for their effective and trouble-free operation. Such parts will be deemed to be within the scope of the supply irrespective of whether they are specifically indicated in the commercial order or not.

1.3 It is not the intent to specify herein complete details of design and construction. The equipment offered shall conform to the relevant standards and be of high quality, sturdy, robust and of good design and workmanship complete in all respects and capable to perform continuous and satisfactory operations in the actual service conditions at site and shall have sufficiently long life in service as per statutory requirements.

1.4 The design and constructional aspects of materials shall not withstanding any anomalies, discrepancies, omissions, in-completeness, etc. in these specifications and will be subject to good engineering practice in conformity with the required quality of the product, and to such tolerances, allowances and requirements for clearances etc. as are necessary by virtue of various stipulations in that respect in the relevant Indian Standards, IEC standards, I.E. Rules, I.E. Act and other statutory provisions.

1.5 The Bidder / supplier shall bind himself to abide by these considerations to the entire satisfaction of the purchaser and will be required to adjust such details at no extra cost to the purchaser over and above the tendered rates and prices.

1.6 Tolerances:

The tolerance of guaranteed performance figures shall be as specified in the (Part-I) table 7 of latest issue of IS 2026 or relevant International Standard except wherever specified otherwise in this specification.

2.0 System Particulars:-

The transformers shall be suitable for outdoor installation with following system particulars and they should be suitable for service under fluctuations in supply voltage as permissible under Indian Electricity Rules.

Nominal System Voltage	:	11Kv
Corresponding Highest System Voltage	:	12Kv
Neutral earthing	:	Solidly earthed
Frequency	:	50Hz with \pm 5% tolerance
Number of phase	:	1

3.0 SERVICE CONDITIONS:

The service conditions shall be as follows:

maximum altitude above sea level	1,000m
maximum ambient air temperature	50° C
maximum daily average ambient air temperature	40° C
minimum ambient air temperature	-5° C
maximum temperature attainable by an object exposed to the sun	60° C
maximum yearly weighted average ambient temperature	32° C
maximum relative humidity	100%
average number of thunderstorm days per annum (isokeraunic level)	70
average number of rainy days per annum	120
average annual rainfall	1500 mm
maximum wind pressure	260Kg / m ²

Environmentally, the region where the equipment will be installed includes coastal areas, subject to high relative humidity, which can give rise to condensation. Onshore winds will frequently be salt laden. On occasions, the combination of salt and condensation may create pollution conditions for outdoor insulators.

Therefore, outdoor material and equipment shall be designed and protected for use in exposed, heavily polluted, salty, corrosive, tropical and humid coastal atmosphere.

4.0 APPLICABLE STANDARDS:-

The design, manufacture and performance of the equipment shall comply with all currently applicable statutes, regulations and safety codes.

The Oil immersed Distribution Transformers (Sealed type) shall conform to energy efficiency level-1 (3-Star rated) of IS 1180(Part-I) 2014.

Unless otherwise specified, the equipment offered shall conform to latest applicable Indian, IEC, British or U.S.A. Standards and in particular, to the following :-

a.	IS 2026(Part I,II,IV)/1997,(Part-III)/1981,(Part-V)/1994	Power & Distribution Transformer
b.	IS : 1180(Part-I) 2014	Single phase oil immersed distribution transformers 16 KVA, 11/0.25KV Sealed type
c.	IS : 335 / 1993	New insulating oil – Specification (fourth revision)
d.	IS:2099/ 1986, IS:7421 – 1988, IS:3347 (Part-I/Sec-2)-1979, IS:3347 (part-I/Sec-I) – 1982 Amended up to date	Bushing
e.	IS 5	Colours for ready mixed paints and enamels.
f.	IS 13730 (part – 27) 1996	Specification for particular types of winding wires.
g.	IS : 3073 / 1974, IS : 3070 (part – II)	Specifications for Lighting Arrestors
h.	CBIP Publication No. 295:2006	Manual on transformers

In case of conflict arising out due to variations between the applicable standard and the standards specified herein, the provisions of this specification should prevail.

5.0 Specific Technical requirement:

- a) Standard KVA Ratings: - The standard ratings for transformer shall be 16 KVA.
- b) Nominal voltage ratings: Primary voltage: 11KV, Secondary voltage: 0.250 KV.
- c) Winding connections:-
 - i. H.V. Winding : Series
 - ii. L.V. Winding : Series / Parallel
- d) Temperature Rise:
 - i. The temperature rise for top oil over an ambient temperature of 50⁰ C should be 35⁰ C maximum. i.e. Max. Temp. Of top oil shall not exceed 85⁰ C.
 - ii. Temperature rise for winding over an ambient temperature of 50⁰ C should be 40⁰ C maximum. i.e. Max. Temp. of winding shall not exceed 90⁰ C.
- e) No load voltage ratio: - The no load voltage ratio shall be 11000/250 Volts
- f) Tapping: - No tap switch to be provided.

6.0 Design & construction

6.1 Core

- i) The core shall be stacked type
 - a) For Stack core :- The core shall be of high prime grade cold rolled grain oriented (C.R.G.O) annealed steel lamination having low loss and good grain properties, coated with hot oil proof insulation, bolted together 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 or the transformers.
 - b) The construction of Top/Bottom yoke shall be one. No cut core shall be allowed by any case.
- ii) The grade of core laminations shall be CRGO, M3 Grade (0.23mm) or better. The grade of core laminations shall be required to submit the manufacturer's test report showing the watt Loss per kg and the thickness of the core lamination, to ascertain the quality of Core materials. The purchaser reserves the right to get sample of the core material tested at any Government recognized laboratory.
- iii) The transformer core shall not be saturated for any value of V/f ratio to the extent of 112.5% of the rated value of V/f ratio (i.e. 11000/50 or 22000/50) (due to combined effect of voltage and frequency) up to 12.5% without injurious heating at full load conditions and will not get saturated. The bidder shall furnish necessary design data in support of this situation.

iv) Core base and bottom yoke shall be supported with 40 x 5 mm MS plate of adequate size properly bolted together.

v) Flux Density:-

Flux density should not be more than 1.50 Tesla at the rated voltage and frequency. The value of the flux density allowed in the design shall be clearly stated in the offer along with graph.

vi) The No load current at rated voltage shall not exceed the percentage given in Table below.

Sr. No.	KVA Rating	At Rated Voltage	At 112.5% Rated Voltage
1	16	2.0% of the full load current in LT winding	4.0% of the full load current

vii) Number of steps of core shall be of minimum 5 for 16 KVA transformers.

Note: In case if it is found at any stage that the core used is defective/second used/scrap core or No load loss found to be more than stipulated limits, the supplier is liable for imposing penalty and even blacklisting the firm at the discretion of Purchaser.

6.2 Winding:-

- Materials: Double paper covered Aluminum conductor shall be used for HV and LV winding.
- Current Density: Current density for HV and LV winding or any part should not be more than 1.4 A/sq.mm.
- L.V. Neutral formation shall be at top.
- Vertical ducts & sufficient spacers should be provided between HV & LV windings.
- The current density of delta lead shall not exceed 0.8 A/mm²
- The no of LV coil and HV coil in one limb shall be 1 & 4 for 16 KVA transformers.

6.3 Losses:

The Losses shall not exceed the values given below

KVA	Max. Total losses at 50% load (W)	Max. Total losses at 100% load (W)
16	95	265

No tolerance for losses of 11/0.25 kV. Distribution transformers as per IS: 1180 (Part 1)2014. In case the actual loss values exceed the above guaranteed values, the transformers shall be rejected at the risk, cost and responsibility of the supplier.

The values guaranteed in G.T.P. for flux density, no load current at rated voltage, no load current at 112.5% of rated voltage and no load loss at rated voltage shall be individually met.

6.4 Insulation material & clearances:

- a) Materials – Makes of Electrical grade insulating craft paper, press Board, Parma wood/ Haldi wood insulation shall be declared in GTP by the bidder. The test reports for all properties as per relevant I.S. amended up to date shall be submitted during inspection.
- b) The electrical clearance between the winding and body of the tank (between inside surface of the tank and outside edge of the windings) should not be less than 25 mm for 11 KV class.

Minimum external clearances of bushing terminals

HV	Ph to PH	255mm
	Ph to E	140mm
LV	Ph -to-Ph	75mm.
	Ph to E	40mm

- c) The clearance between HV coil & Top/Bottom yoke shall be 21 mm (min).
- d) Inter coil insulation shall not be less than 6 mm.
- e) The insulation between core & LV shall be 2.5 mm (min).
- f) The insulation between HV coil & LV coil shall be 10 mm (min).
- g) Minimum 6 nos. of wedges to be provided.

6.6 Impedance Value –

The percentage impedance at 75⁰ C. shall be 4% for 16 KVA transformers with positive tolerance of 10%. No negative tolerance on % impedance is allowed.

6.7 Tank

- 6.7.1 The transformer tank shall be made up of prime quality, High grade, low carbon steel plate & suitable for welding. The transformer tank shall be of robust construction. All joints of tank and fittings should be oil tight and no bulging shall occur during service. The tank design shall be such that the core and windings can be lifted freely. The tank plates shall be of such strength that the complete transformer when filled with oil may be lifted bodily means of the lifting lugs provided. Tank inside shall be painted by hot oil resistant varnish or paint. Top cover plate shall be slightly sloping approximately 5 to 10 deg. Towards HV bushing and edges of cover plate should be bent downwards so as to avoid entry of water through the cover plate gasket. The width of bend plate shall be 25mm min. the top cover shall have no cut at point of lifting lug. The construction of Single phase sealed type transformer tank shall be as per Clause No.15 of IS 1180(Part-1)2014 and should conform the pressure and vacuum requirement as per said IS.

Wall thickness : 3.15 mm. (min)

Top and bottom plate thickness : 5 mm. (min.)

- 6.7.2 All welding operations to be carried out by MIG process.
- 6.7.3 Lifting lugs: 2 no's for 16 KVA of MS plate of 10 mm thickness suitably shall be reinforced.
- 6.7.4 Vertical clearance: - The height of the tank shall be such that minimum vertical clearance up to the top cover plate is achieved from the top of yoke for the sealed type transformers.
- 7.0 PUNCHINGS: Non-erasable Punching and embossing of Volume of oil in litres, name of the Purchaser-SOUTHCO Utility, Orissa, Name of the Supplier – M/s -----, Year of Manufacture, Guarantee Period and Sl. No. of each transformer is to be made on top core channel, top cover, side walls and name plates of transformers.
- 7.0.1 3 STAR LEVEL: In addition to above, the supplied Distribution Transformers must contain 3 Star Level with style and information provided by the Bureau of Energy Efficiency (B.E.E), Ministry of Power, Government of India.
- 8.0 Painting
- 8.1 All paints shall be applied in accordance with the paint manufacturer's recommendations. Particular attention shall be paid to the following:
- 8.2 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.
- 8.3 All paints, when applied in normal full coat, shall be free from runs, sags, wrinkles, patchiness, brush marks or other defects.
- 8.3.1 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 cleaning. The paint shall be applied by airless spray according to the manufacturer's recommendations. However, wherever airless spray is not possible, conventional spray be used with prior approval of purchaser.
- 8.3.2 The supplier shall, prior to painting protect nameplates, lettering gauges, sight glasses, light fittings and similar such items.
- 8.4 Cleaning and Surface Preparation
- 8.4.1 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.
- 8.4.2 Steel surfaces shall be prepared by Sand/Shot blast cleaning or Chemical cleaning by Seven tank process including Phosphating to the appropriate quality.
- 8.4.3 The pressure and Volume of the compressed air supply for the blast cleaning shall meet the work requirements and shall be sufficiently free from all water contamination prior to any painting.
- 8.4.4 Chipping, scraping and steel wire brushing using manual or power driven tools cannot remove firmly

adherent mill-scale and shall only be used where blast cleaning is impractical.

8.5 Protective Coating

8.5.1 As soon as all items have been cleaned and within four hours of the subsequent drying, they shall be given suitable anticorrosion protection.

8.6 Paint Material

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

- i) Heat resistant paint (Hot oil proof) for inside surface.
- ii) For external surfaces one coat of Thermo Setting Paint or 2 coats of Zinc chromate followed by 2 coats of P.U (Poly-urethane) paint. The color of the finishing coats shall be dark admiral gray.

8.7 Painting Procedure

8.7.1 All painting shall be carried out in conformity with both specifications and with the paint manufacturer's recommendations. All paints in any one particular system. Whether shop or site applied, shall originate from one paint manufacturer.

8.7.2 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 conditions. Minimum and maximum time intervals between coats shall be closely followed.

8.7.3 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 warm.

8.7.4 Where the quality of film is impaired by excess film thickness, (wrinkling, mud cracking or general softness) the supplier shall remove the unsatisfactory paint coatings and apply another. As a general rule, dry film thickness should not exceed the specified minimum dry film thickness by more than 25%. In all instances, where two or more coats of the same paints are specified, such coatings may or may not be of contrasting colors.

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

8.8 Damages to Paints Work

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

Any damaged paint work shall be made as follows:

a) The damaged area, together with an area extending 25mm around its boundary, shall be cleaned down to bare metal.

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

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

8.9 Dry Film Thickness

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

Each coat of paint shall be allowed to harden before the next is applied as per manufacture's recommendations. Particular attention must be paid to full film thickness at edges.

The requirement for the dry film thickness(DFT) of paint and the material to be used shall be as given below:

Sl. No	Paint Type	Area to be painted	No of Coats	Total Dry film thickness(Min)
1.	Liquid paint			
	a) Zinc Chromate (Primer)	Out side	01	30 micron
	b) P.U. Paint (Finish Coat)	Out side	02	45 each
	c) Hot Oil paint	inside	01	35/10 micron

The colour of the finishing coat shall be Sky Blue/Dark admiral Gray/Deep Green or any other colour as decided by the purchaser.

9.0 Heat Dissipation :

- a) Heat dissipation by tank walls excluding top and bottom should be 500W / sq. m.

10.0 Mounting Arrangement :

- a) The transformers shall be provided with two mounting lugs suitable for fixing the transformer to a single pole by means of 2 bolts of 20 mm dia. The transformer shall also be provided with base plates of 50x8 mm thickness for fixing the transformer on a platform.

10.1 Terminals :

Brass terminal stud of suitable size to carry 250 AMP for HT with necessary nuts, check-nuts and plain thick tinned washer. Each HT bushing shall be provided with a bi-metallic terminal connector to receive 25-100 sq mm AAAC. Brass terminal stud of suitable size to carry 250 A for LT with necessary nuts, check-nuts and plain thick tinned washer.

10.2 Bushings & Connections :

- 10.2.1 For 11 KV, class 12KV bushing, shall be used and for 250 volts, 1.0 KV bushing shall be used. Bushings of the same voltage class shall be interchangeable.
- 10.2.2 The minimum creep age distance for both HV & LV Bushings shall not be less than 25mm per KV.

10.3 Internal Connections:

10.3.1 H.V. Winding:

In case of HV winding all jumpers from winding to bushing shall have cross section larger than winding conductor.

Inter coil connection shall be by crimping and brazing. Lead from series joint shall be connected to bushing rod by brazing only. The current density in series lead shall be less than 1.4 A/mm^2

10.3.2 L.V. Winding:

- i.) L.T. Series/parallel point shall be formed of Aluminum/Copper flat of sufficient length & size.
Lead from winding shall be connected to the flat by crimping and brazing.
- ii) For Aluminum windings, L&T Alkapee aluminum brazing rods with suitable flux shall be used.

10.4 Terminal Marking Plates and Rating Plates :

Each transformer shall be provided with a rating plate of weatherproof material showing the following items indelibly marked which should conform to the rating plate and terminal marking plate for single phase transformers without taps as per IS:1180(Part-1)2014.

- ◆ type of transformer
- ◆ standard to which it is manufactured IS-1180(Part-1) 2014.
- ◆ manufacturer's name
- ◆ transformer serial number
- ◆ year of manufacture
- ◆ rated frequency in Hz (50)
- ◆ rated voltages in KV (11/0.25)
- ◆ number of phases
- ◆ rated power in KVA
- ◆ type of cooling (ONAN)
- ◆ rated currents in A
- ◆ 1.2/50 μ s wave impulse voltage withstand level in KVp
- ◆ power frequency withstand voltage in KV
- ◆ impedance voltage at rated current and frequency in percentage at 75⁰ C at normal tap
- ◆ Measured load loss in KW at rated current and at 75⁰ C at normal tap
- ◆ Measured no-load loss in KW at rated voltage and rated frequency
- ◆ Maximum total losses(in Watt) at 100% load
- ◆ Maximum total losses(in Watt) at 50% load
- ◆ continuous ambient temperature at which ratings apply in ⁰C

- ◆ top oil and winding temperature rise at rated load in °C
- ◆ winding connection diagram
- ◆ Total weight in kg with complete oil filled.
- ◆ total weight of the transformer without oil
- ◆ Volume of oil in litres and in Kg.
- ◆ weight of core and windings in kg; and
- ◆ name of the purchaser
- ◆ SOUTHCO Utility, DESI, RAYAGADA, GoO.

10.5 Fittings (As per clause no.20 of IS 1180(Part-1)2014) :

The standard fittings & accessories shall be provided as per clause no.20 of IS 1180(Part-1)2014) for oil immersed sealed type Single phase transformers.

HT & LT bushing & connectors: 2 HT & 2 LT bushings. Each bushing (HV & LV) should be provided with 3 nos. of brass nuts and 2 plain brass washers & with bimetallic connectors of suitable size.

10.6 Transformer Oil

The transformers shall be supplied complete with first filling of transformer oil upto maximum permissible level. The quantity of oil required for the first filling of the transformer and its full specification shall be stated in the bid. The complete first filling shall be of new oil free from inhibitors and additives up to maximum permissible level for the supplied Transformer. The bidder shall quote the price of transformer including the cost of Transformer Oil required for initial filling.

The insulating oil for the transformer shall be of EHV grade, generally conforming to IEC: 296/ BS: 148/ REC: 39/ 1993 or latest version of IS: 335/ 1983 whichever is more stringent. No inhibitors shall be used in the oil. The dielectric strength of the oil shall not be less than 60 KV at 2.5 mm. gap when tested in accordance with IS: 6792/ 1972. If an anti-oxidant inhibitor is recommended, its use shall be subject to the purchaser's approval.

The design and materials used in the construction of the transformer shall be such as to reduce the risk of the development of acidity in the oil.

The contractor shall warrant that oil furnished is in accordance with the following specifications.

Sl.No	Characteristic	Requirement	Method of Test
01	Appearance	The oil shall be clear & transparent & free from suspended matter or sediment	A representative sample of oil shall be examined in a 100 mm thick layer at ambient temp.
02	Density at 20 ⁰ C	0.89 g/cm ³ Max.	IS:1448
03	Kinematic Viscosity at 27 deg. C Max	27 CST	IS:1448
04	Interfacial tension at 27deg.C Min.	0.03 N/m	IS:6104
05	Flash Point	136 ⁰ C	IS:1448
06	Pour Point Max.	-6 ⁰ C	IS:1448
07	Naturalization Value (Total Acidity) Max.	0.03 mg KOH/gm	IS:335
08	Electric strength Breakdown (voltage) Min.	72.5 KV	IS:6792
09	Dielectric dissipation factor tan delta at 90 ⁰ C	0.03 Max	IS:6262
10	Min specific resistance (resistively) at 90 deg.C	35X10 ¹² ohm cm (min.)	IS:6103
11	Oxidation stability		
12	Neutralization value after oxidation	0.40mg KOH/g	
13	Total sludge after oxidation	0.10% by weight max.	
14	Presence of oxidation Inhibitor	The oil shall not contain anti-oxidant Additives.	IS:335
15	Water content Max:	Less than 25ppm	IS:2362

11.0 Test and Inspection:-

11.1 Testing facility

The bidder should have adequate testing facility for all routine and acceptance tests and also arrangement for measurement of losses, resistance, etc. details of which will be enumerated in the tender.

The inspector of the purchaser will witness routine, Acceptance & type tests. In order to facilitate this, the manufacturer shall give a 15 days notice that the material is ready for inspection & testing. The material shall be dispatched only after approval of such test reports and issue of Dispatch clearances by the purchaser. However the purchaser reserves the right to retest the transformers after delivery at any NABL Accredited Testing Laboratory in case of any disputes regarding guaranteed specifications of supplied transformers at a later date during guarantee period. The cost of such retesting shall be borne by the supplier.

11.2 Routine & Acceptance Tests:-

11.2.1 All transformers shall be subjected to the following tests at the manufacturer's works. The tests are to be carried out in accordance with the details specified in IS 1180 (Part -1) / 2014 or as agreed upon between the purchaser and the manufacturer.

A) Measurement of winding resistance (IS 2026 (Part -1))

B) Measurement of Voltage Ratio & check of phase displacement (IS 2026 (Part -1))

C) Measurement of short circuit Impedance (Principal taping, when applicable) & Load loss at 50% and 100 % Load ((IS 2026 (Part -1)).

D) No-load losses and No-load current. (IS 2026 (Part -1))

F) Insulation resistance. (IS 2026 (Part -1))

G) Induced over voltage withstand. (IS 2026 (Part -3))

H) Separate source voltage withstand test. (IS 2026 (Part -3))

I) Pressure test (IS 1180 (Part -1) / 2014)

J) Oil leakage test (IS 1180 (Part -1) / 2014)

K) Any other test confirming to IS 1180 (Part -1) /2014

11.2.2 All the routine tests shall be conducted in the suppliers' laboratory at their cost.

11.2.3 Heat run test shall be arranged free of cost on the unit selected from the 1st lot by Authorized Representative.

11.2.4 The calculations to confirm the thermal ability as per Clause no. 9.1 of latest IS: 2026 Part-I or equivalent International Standard shall be submitted to our representative.

11.3 Type Tests :

11.3.1 The type tests should have been carried out in accordance with the standard specified in each case as indicated in the following table at CPRI or any NABL accredited Laboratory on the transformers:

Transformer type tests as per IS: 1180 (Part -1): 2014

Type Test	Standard
Temperature Rise Test	IS 2026 (Part -2)
Lightning Impulse Test	IS 2026 (Part -3)
Short- Circuit withstand Test	IS 2026 (Part -5)
Pressure Test	As per IS: 1180(Part-1):2014

11.3.2 Even if the Type test report(s) confirm(s) the Purchaser's specification, the Purchaser at his discretion may ask the Supplier to repeat any or all specified type tests at CPRI/ NABL accredited laboratory on sample(s), selected at random by the purchaser's representative(s) out of the offered quantity (first

lot). The type test(s) are to be witnessed by the Purchaser's representative(s). For such type of repetition of type tests, the Bidder has to conduct the tests free of cost.

11.4 Submission Routine Test Certificate

The successful bidder shall submit the routine test certificate along with documentary evidence for having paid the Excise Duty for the following raw materials viz. Oil, Aluminum, copper for conductors, insulating materials, core materials, bushings at the time of routine testing of the fully assembled transformer.

11.5 Stage Inspection

11.5.1 Supplier shall give 15 days' advance intimation to the purchaser to organize stage inspection in which assembly of core, windings and other core materials etc. would be inspected. In respect of raw materials such as core stamping, winding conductor, oil etc. successful bidder shall use these materials manufactured/supplied by the standard manufacturers and furnish the manufacturer's test certificates, as well as, proof of purchase from those manufacturers documentary evidence for having paid the excise duty for the information of the department. Purchaser will depute his representative at the time of stage inspection.

11.5.2 All the transformers from the offered lot will be tested for acceptance tests at factory, in the presence of purchaser's representative before dispatch.

11.5.3 The inspection may be carried out by the purchaser at any stage of manufacture. The successful bidder shall grant free access to the purchaser's representatives at a reasonable time when the work is in progress. Inspection and acceptance of any equipment under this specification by the purchaser shall not relieve the supplier of his obligation of furnishing equipment in accordance with the specifications and shall not prevent subsequent rejection if the equipment is found to be defective.

11.5.4 The purchaser may at its option, open a transformer supplied to the Stores, in presence of supplier at site or at Stores. If any of the technical particulars are seen to be in variance than the guaranteed technical particulars, the whole lot of transformer will be rejected without any liability on purchaser.

11.5.5 Testing of all Distribution Transformers for no load and full load losses.

After inspection of new transformers at factory for acceptance of the lot, all distribution transformers from the lot will be tested for no load and full load losses at all stores. Bidder has the liberty to be present at the time of testing.

11.5.6 Inspection & testing of Transformer Oil :

The bidder shall make arrangements for testing of transformer oil to be used in the transformers testing will be done in presence of purchaser's representative.

To ascertain quality of transformer oil, original manufacturer's test report should be furnished to (Testing) at the time of factory inspection for acceptance of the lot.

11.6 Rejection:-

Apart from rejection due to failure of the transformer to meet the specified test requirements the transformer shall be liable for rejection on any one of the following reasons.

- (i). Losses exceed the specified values mentioned in specification.
- (ii). Impedance voltage value exceeds the guaranteed value plus tolerances as per specification.
- (iii). Type test are not carried out as per the specification.
- (iv). Drawings are not submitted as per the specification.
- (v). GTP not submitted as per the specification.
- (vi). Heat dissipation calculation sheet are not submitted as per the specification.

11.7 Quality Assurance

a) The bidder shall invariably furnish Test certificates and information as following along with the offer failing to which the offer will be rejected.

- (i). Aluminum and copper conductor.
 - (ii). Transformer oil.
 - (iii). Core
 - (iv). Insulating paper
 - (v). Porcelain Bushings
 - (vi). Steel Plate used for Tank.
 - (vii). List of testing & measuring equipments indicating the make, type, year of manufacture, Last date of Calibration, Name of the agency carried out the calibration etc. Purchaser reserves the right to visit the works of manufacturer to ensure the available testing facility prior to placement of order.
- b) Names of the supplier for the raw materials, list of standard accordingly to which the raw materials are tested, list of test normally carried out on raw materials in presence of bidder's representatives, copies of type test certificates.
- c) Information and copies of test certificate as in (i) above respect of bought out accessories including terminal connectors.
- d) List of manufacturing facilities available. In this list the bidder shall specifically mention whether lapping machine, vacuum drying plant, air conditioned dust free room with positive air pressure for provision of provision of insulation and winding etc. are available with him.
- e) Level of automation achieved and list of areas where manual processing still exists.
- f) List of areas in manufacturing process where stage inspection are normally carried out for quality control and details of such tests and inspections.
- g) Special features provided in the equipments to make it maintenance free.
- h) List of testing equipment available with the bidder for final testing of transformers and test plant limitation, if any, vis-à-vis the type, special acceptance and routine tests specified in the relevant standards and the present specification.

11.8 Drawings:-

A set of following drawings with all dimensions shall be submitted by the Bidder along with the offer :

- a) General Dimensional drawing.
- b) Core Assembly drawing.

- c) Internal Construction Drawing.
- d) Rating & Diagram Plate Drawing.
- e) HV/LV Bushings indicating measurement of creep age distances.
- f) Operation and Maintenance Manual.

The drawings shall be of A-3 (420x297mm) size only. The bidder should also supply along with his offer the pamphlet / literatures etc. for fittings/accessories.

The bidder should not change design once offered as per A/T, Approved drawings and Type Test Reports.

The successful Bidders shall submit complete set of Drawings of transformer in triplicate indicating dimensions for approval and get approved it before offering 1st stage inspection.

11.9 Performance Guarantee:

All transformers supplied against this specification shall be guaranteed for a period of 30 months from the date of receipt at the consignee's Stores Center or 24 months from the date of commissioning, whichever is earlier. However, any engineering error, omission, working provisions, etc. which do not have any effect on the time period, shall be attended to as and when observed / pointed out without any price implication.

12.0 COST DATA SHEET:-

The bidders shall submit the cost data sheets indicating the break up prices and quantity of each raw material and components along with the unit rates required for manufacture the offered transformers along with the offer. The cost data sheet format is enclosed herewith. If the rates quoted are not justified with the cost data sheets, the offer shall not be considered for evaluation and placement of the order.

13.0 NON COMPLIANCE SCHEDULE

On this schedule the bidder shall provide a list of non compliance with this specification, documenting the effects that such non compliance is likely to have on the equipment's life and operating characteristics. Each Non Compliance shall refer to the relevant clause of the specification.

Where there are no deviations from specifications, the bidder shall so indicate by stating "No deviations" in this schedule.

Clause No.	Non Compliance

14.0 Type Test Certificates Schedule

14.1 On this schedule a list of the test certificates included with the bid shall be provided. Each certificate listed shall be referred to the relevant specification clause and item of equipment to which the test applies.

Sl. No.	Particular of Test	Type Test Certificate Ref	Year of Test

14.2 In case of any doubt in the Type test reports submitted by the bidder, the Purchaser reserves the right to verify the original Type Test Reports, as well as to refer to the concerned laboratory directly without recourse to be bidder.

63 KVA, 11/0.433 KV, 3 STAR RATED DISTRIBUTION TRANSFORMERS

TECHNICAL SPECIFICATION

PART 1: GENERAL

1. SCOPE

1.1 The specification covers the design, engineering, manufacture, stage inspection, testing, pre-delivery inspection, supply, delivery, loading, unloading and performance requirements of 11/0.433 KV non-sealed type aluminum wound Distribution Transformers for outdoor use as per IS 1180(Part-1)2014 confirming to energy efficiency level-1 (3-Star rated) in the networks of SOUTHCO. The transformers shall be double wound, three phase, CRGO M3 Grade (0.23mm) or better, oil immersed with ONAN cooling with Oil filled up to maximum permissible level. The ratings required under this specification is 63 KVA with Aluminum windings.

1.2 The equipment offered should have been successfully type tested within five years from date of tender and the designs should have been in satisfactory operation for a period not less than Five years as on the date of bid opening. Compliance shall be demonstrated by submitting with the bid, (i) authenticated copies of the type test reports and (ii) performance certificates from the users, specifically from Central Govt./ State Govt. or their undertakings.

1.3 The scope of supply should also include the provision of type test. Purchaser reserves the right to waive type tests as indicated in the section on Quality Assurance, Inspection and Testing in this specification.

1.4 The transformer shall conform in all respects to highest standards of engineering, design, workmanship, this specification and the latest revisions of relevant standards at the time of offer and the Purchaser shall have the power to reject any work or material, which, in his judgment, is not in full accordance therewith.

2. CODES & STANDARDS

2.1 Except where modified by this specification, the transformers shall be designed, manufactured and tested in accordance with the latest editions of the following standards. The Bidder may propose alternative standards, provided it is demonstrated that they give a degree of quality and performance equivalent to or better than the referenced standards. Whether to accept or reject any alternative standard shall be adjudged by the Purchaser. The Bidder shall furnish a copy of the alternative standard proposed along with the bid. If the alternative standard is in a language other than English, an English translation shall be submitted with the standard. In the case of conflict the order of precedence shall be 1) IEC or ISO Standards, 2) Indian Standards, 3) other alternative standards.

IEC/ISO	Indian Standard	Subject
IEC 71		Insulation Coordination
IEC 76	IS 2026	Power Transformers.
	IS 1180(Part-1) 2014	Three Phase Distribution Transformers 63KVA,11/0.433KV(Non- Sealed Type)
IEC 137	IS 2099	Bushing for Alternating Voltages above 1000V.
IEC 156		Method of determining Electric Strength of Insulating Oils.
IEC 296	IS 335	Specification for Unused Mineral Insulating Oils for Transformers and Switchgear.

	IS 6792	Method of determination of electric strength of insulating oils.
IEC 354	IS 6600	Loading Guide for oil immersed Transformers
IEC 437		Radio Influence Voltage Measurement.
IEC 551		Determination of Transformer and Reactor Sound Levels.
IEC 616		Terminal and Tapping markings for power transformers.
IEC 722		Guide to the Lightning and Switching impulse testing of Power Transformers and Reactors.
ISO 1460/BS 729		Galvanizing

This list is not to be considered exhaustive and reference to a particular standard or recommendation in this specification does not relieve the Supplier of the necessity of providing the goods complying with other relevant standards or recommendations.

3. SERVICE CONDITIONS

The service conditions shall be as follows:

maximum altitude above sea level	1,000m
maximum ambient air temperature	50° C
maximum daily average ambient air temperature	40° C
minimum ambient air temperature	-5° C
maximum temperature attainable by an object exposed to the sun	60° C
maximum yearly weighted average ambient temperature	32° C
maximum relative humidity	100%
average number of thunderstorm days per annum (isokeraunic level)	70
average number of rainy days per annum	120
average annual rainfall	1500 mm
maximum wind pressure	260Kg / m ²

Environmentally, the region where the equipment will be installed includes coastal areas, subject to high relative humidity, which can give rise to condensation. Onshore winds will frequently be salt laden. On occasions, the combination of salt and condensation may create pollution conditions for outdoor insulators.

Therefore, outdoor material and equipment shall be designed and protected for use in exposed, heavily polluted, salty, corrosive, tropical and humid coastal atmosphere.

4. SYSTEM CONDITIONS:

The equipment shall be suitable for installation in supply systems of the following characteristics.

◆	Frequency		50 Hz ± 5%
◆	Nominal system voltages	11 KV System	11 KV
		LV System	433/250 V
◆	Maximum system voltages	11 KV System	12 KV
		LV System	476 V

◆	Minimum LV voltage	(NEC)	392 V
◆	Nominal short circuit apparent power of the system	11 KV System	500 MVA (IS: 2026)
◆	Insulation levels :		
	1.2/50 μ sec impulse withstand	11 KV System	95 KV peak (As Per BEE, Clause No.10)
◆	Power frequency one minute withstand (wet and dry)	11 KV System	28 KV (rms)
		LV System	3 KV (rms)
◆	Neutral earthing arrangements :	LV System	Solidly earthed

PART 2: TECHNICAL SPECIFIC TECHNICAL REQUIREMENTS

1	Rated KVA (ONAN rating)		63 KVA, 11/0.433 KV
2	No. of phases		3
3	Type of installation		Outdoor
4	Frequency		50 Hz (± 5%)
5	Cooling medium		Insulating Oil (ONAN)
6	Type of mounting		On Channels.
7	Rated voltage		
	a) High voltage winding		11 KV
	b) Low voltage winding		0.433 KV
8	Highest continuous system voltage		
	a) Maximum system voltage ratio (HV / LV)		12 KV / 0.476 KV
	b) Rated voltage ratio (HV / LV)		11 KV / 0.433 KV
9	No. of windings		Two winding Transformers
10	Type of cooling		ONAN (Oil natural / Air natural)
11	KVA Rating corresponding to ONAN cooling system		100%
12	Method of connection:		
	HV:		Delta
	LV:		Star
13	Connection symbol		Dyn 11
14	System earthing		Neutral of LV side to be solidly earthed.
15	Percentage impedance voltage on normal tap and KVA base at 75 ^o C corresponding to HV/ LV rating and applicable tolerances :		<u>% Impedance</u> + <u>Tolerance %</u> 4.5 + 10%
			(No negative tolerance will be allowed)
16	Intended regular cyclic overloading of windings		As per IEC –76-1, Clause 4.2
17	a) Anticipated unbalanced loading		Around 10%
	b) Anticipated continuous loading of windings (HV / LV)		110 % of rated current
18	a) Type of tap changer		NA
	b) Range of taping		No Tap

19	Neutral terminal to be brought out	On LV side only	
20	Over Voltage operating capability and duration	112.5 % of rated voltage (continuous)	
21	Maximum Flux Density in any part of the core and yoke at rated KVA, rated voltage i.e 11 KV / 0.433 KV and system frequency of 50 HZ	1.5 Tesla	
22	Insulation levels for windings :-		
	a) 1.2 / 50 microsecond wave shape Impulse withstand (KVP)	HV: 95	LV: N.A.
	b) Power frequency voltage withstand (KV-rms)	HV: 28	LV: 03
23	Type of winding insulation		
	a) HV winding	Uniform	
	b) LV winding	Uniform	
24	Withstand time for three phase short circuit	2 Seconds	
25	Noise level at rated voltage and frequency	As per NEMA Publication No. TR-1.	
26	Permissible Temperature Rise over ambient temperature of 50°C		
	a) Of top oil measured by thermometer.	35°C	
	b) Of winding measured by resistance.	40°C	
27	Minimum HV clearances in air (mm) :-		
	a) Phase to Phase	280	
	b) Phase to ground	140	
28	Bushings & Terminals		
	a) HV winding line end	12 KV oil filled porcelain communicating type of bushings (Antifog type)	
	b) LV winding	0.4 KV porcelain type of bushing (Antifog type)	
29	Insulation level of bushing	<u>HV</u>	<u>LV</u>
	a) Lightning Impulse withstand (KVP)	95	Not applicable
	b) 1 Minute Power Frequency withstand voltage (KV –rms)	28	3
	c) Creepage distance (mm) (minimum)	25 mm/ KV	
30	Material of HV & LV Conductor	EC grade Aluminum	
31	Maximum current density for HV and LV winding for rated current	1.6 Amp/ mm ² .	
32	Polarization index i.e. ratio of megger values at 600 sec. to 60 sec for HV to earth, L.V to earth and HV to LV.	Shall be greater than or equal to 1.5, but less than or equal to '5'.	
33	Core Assembly	Boltless type	
34	Transformer	Max. Total Losses at 50%	Max. Total Losses

	rating	load (Watts)	at 100% load (Watts)
a)	63 KVA	380	1250

6. TYPE OF TRANSFORMER

6.1 The transformers shall be of core type construction, double wound, three phase, oil immersed, 11/0.433KV, 50 Hz with natural oil and air cooling (ONAN) to be used as step down transformers for outdoor use. The design of the tank, fittings, bushings, etc shall be such that it will not be necessary to keep the transformer energized to prevent deterioration as the transformers may be held in reserve, outdoors, for many years.

7. PERFORMANCE , CAPACITY AND SHORT CIRCUIT RATINGS

7.1 The following ratings are covered under this specification

- 63 KVA, 11/0.433 KV, Aluminum wound

7.2 The transformer shall be capable of supplying a continuous load equal to its KVA rating, under the following conditions :

- ◆ continuous steady load;
- ◆ design at maximum ambient air temperature of 50⁰C;
- ◆ 40⁰ C average winding temperature rise and 35⁰C top oil temperature rise for conventional breathing transformers.

7.3 The transformer may be overloaded during emergency up to 150% of its continuous rating in accordance with IEC Publication 354 or IS: 6600. Bushings and other current-carrying parts shall also be designed for this condition.

7.4 The transformer shall be capable of withstanding for two seconds without damage to any external short circuit, with the short circuit MVA available at the terminals of either winding with rated voltage on the other winding. If short circuit tests have been carried out on the particular design of transformer offered, the test results shall be supplied with the bid.

7.5 The thermal ability to withstand short circuit shall be demonstrated by calculation.

7.6 The transformer shall be capable of withstanding the thermal and dynamic effects of short circuits, as specified in IEC 76-5 or IS: 2026: Ability to withstand short circuits.

7.7 The maximum flux density in any part of the core and yoke at rated KVA, Voltage and frequency shall not exceed 1.5 Tesla.

8. VOLTAGE RATIO & TAPPING RANGE

8.1 The transformers shall have the following ratio :-

- ◆ the nominal voltage ratio shall be 11,000/ 433 V for 63 KVA transformers;
- ◆ Tolerance on the voltage ratio shall be $\pm 0.5\%$.
- ◆ for transformers up to 100 KVA, 11/0.433 KV no tap changer is required.

8.2 The bidder shall state in the technical schedule, the percentage regulation at full load, power factor 1.0 and at full load, power factor 0.85 lagging.

Transformers shall be suitable for parallel operation with each other.

9. PERCENTAGE IMPEDANCE

9.1 The Percentage of Impedance at 75 ° C shall be 4.5 % for 63 KVA transformers. No negative tolerance on percentage Impedance is allowed.

10 LOSSES

The load losses shall not exceed the values given below:-

KVA Rating	Maximum total losses at 50% loading (Watts)	Maximum total losses at 100% loading (Watts)
63 KVA	380	1250

10.1 The above losses are maximum allowable and there should not be any positive tolerance.

10.2 The offered transformer(s) should have been type-tested at CPRI/ NABL Accredited laboratory. The bid shall be accompanied with type-test reports conducted at Central Power Research Institute / NABL Accredited laboratory for the offered transformers within five years from date of tender. The short circuit test report(s) must contain the measured no load loss and load loss, determined by CPRI/ NABL Accredited laboratory.

In case of any doubts, SOUTHCO reserves the right to verify the original type test reports of CPRI/ NABL Accredited laboratory or ask the supplier to conduct the type tests at CPRI/ NABL Accredited laboratory at his (supplier's) cost for re-confirmation of the test results particularly no load losses, load losses and percentage impedance.

10.3 If the bidder quotes lower values of losses than the CPRI's measured losses, he has to prove the same by conducting the Impulse & short Circuit tests at CPRI/ NABL Accredited laboratory along with measurement of no load losses and load losses at his own cost in presence of Purchaser's authorized representative without any financial liability to Purchaser.

10.4 However, if the loss figures will exceed the stipulated values as per specification, the transformer(s) shall be out rightly rejected.

11. VECTOR GROUP

11.1 The transformers shall be connected delta-star, in accordance with vector group reference Dyn11 of IEC - 76/ IS - 2026.

11.2 The LV neutral shall be brought out to a terminal bushing, which shall be identical to the phase bushings in all respects.

12. LOSSES

12.1 Transformers would be out rightly rejected if losses exceed the values indicated at clause-10 above.

13. FLUX DENSITY

The flux density at rated voltage & rated frequency shall not exceed. 1.5 Tesla. The transformer must be capable of operating at 12.5 % over voltage and at frequency of 47.5 Hz without saturation.

14. INSULATION LEVELS

The insulation levels as defined in IEC 76-C/ IS: 2026 Insulation levels and dielectric test shall apply as per Table 2:

Table 2 : Transformer insulation level

	HV Winding	LV Winding
Basic Impulse voltage Level (Kvp) (1.2/50 micro. sec. Wave)	95	Not Applicable
Power Frequency voltage withstand level, Wet and Dry (KV)	28	3

Bushings and terminals shall be adequate for the winding insulation tests and shall flash over externally before puncture or internal failure can occur.

15. NOISE LEVEL

The measurement shall be carried out in accordance with IS 2026 (Part -10) of the transformer.

16. RADIO INFLUENCE VOLTAGE

The maximum radio influence voltage shall be 250 μ V, measured as specified in IEC 437.

17. CORE AND WINDINGS

17.1 Core

17.1.1 Stage level inspection for core construction shall be carried out by the owner.

17.1.2 Each lamination shall be insulated such that it will not deteriorate due to mechanical pressure and the action of hot transformer oil.

17.1.3 The core shall be constructed from high grade, non-ageing, Cold Rolled Grain Oriented (CRGO) silicon steel of M3 Grade (0.23mm) or HIB grade laminations only. No other core materials shall be entertained. Bidders are requested to note that only PRIME CORE M3 Grade (0.23mm) materials HIB grade are to be used. In no case, second grade core material is to be used. The purchaser at his

discretion, may select samples from the core laminations and get the same tested in CPRI/ NABL Accredited laboratory to prove the quality of the core material.

- 17.1.4 For the above purpose, the supplier shall have to offer every batch of core laminations received from his Sub-Vendor along with Invoice of the sub-vendor, Mills test certificate, packing list, Bill of landing, Bill of entry certificate to customs etc. towards proof of prime core materials for verification by the Purchaser's representative without any cost to the Purchaser. Besides, the contractor must mention in his bid about the type of CRGO laminations to be utilized for the offered transformers along with a copy of the specific core loss curve at different flux densities.
- 17.1.5 Core materials should be directly procured either from the manufacturer or through their accredited marketing organization of repute, but not through any agent.
The core and winding shall be capable of withstanding shocks during transport, installation and service. Provision shall be made to prevent movement of the core and windings relative to the tank during these conditions and also during short circuits.
- 17.1.6 The design shall avoid the presence of pockets which would prevent the complete emptying of the tank through the drain valve. The core material offered in the tender to be checked for its correctness before core coil assembly. For this, the tendered must ask for core and coil inspection before its tanking.
- 17.1.7 The laminations shall be free of all burrs and sharp projections. Each sheet shall have an insulting coating resistant to the action of hot oil.
- 17.1.8 The insulation structure for the core to bolts and core to clamp plates shall be such as to withstand 2000 V DC voltage for one minute.
- 17.1.9 The completed core and coil shall be so assembled that the axis and the plane of the outer surface of the core assemble shall not deviate from the vertical plane by more than 25mm.
- 17.1.10 All steel sections used for supporting the core shall be thoroughly shot or sand blasted, after cutting, drilling and welding.
- 17.1.11 The finally assembled core with all the clamping structures shall be free from deformation and shall not vibrate during operation.
- 17.1.12 The core clamping structure shall be designed to minimize eddy current loss.
- 17.1.13 The framework and clamping arrangements shall be securely earthed.
- 17.1.14 The core shall be carefully assembled and rigidly clamped to ensure adequate mechanical strength.
- 17.1.15 Oil ducts shall be provided, where necessary, to ensure adequate cooling inside the core. The welding structure and major insulation shall not obstruct the free flow of oil through such ducts.

- 17.1.16 The design of magnetic circuit shall be such as to avoid static discharges, development of short circuit paths within itself or to the earth clamping structure and production of flux component at right angle to the plane of the lamination, which may cause local heating. The supporting framework of the cores shall be so designed as to avoid the presence of pockets, which would prevent complete emptying of the tank through the drain valve or cause trapping of air during filling.
- 17.1.17 The construction is to be of boltless core type. The core shall be provided with lugs suitable for lifting the complete core and coil assembly. The core and coil assembly shall be so fixed in the tank that shifting will not occur during transport or short circuits.
- 17.2 INTERNAL EARTHING
- 17.2.1 All internal metal parts of the transformer, with the exception of individual laminations and their individual clamping plates shall be earthed.
- 17.2.2 The top clamping structure shall be connected to the tank by a copper strap. The bottom clamping structure shall be earthed by one or more the following methods:
- a) By connection through vertical tie-rods to the top structure.
 - b) By direct metal to metal contact with the tank base.
 - c) By a connection to the structure on the same side of the core as the main earth connection to the tank.
- 17.2.3 The magnetic circuit shall be connected to the clamping structure at one point only and this shall be brought out of the top cover of the transformer tank through a suitably rated insulator. A disconnecting link shall be provided on transformer tank to facilitate disconnections from ground for IR measurement purpose.
- 17.2.4 Coil clamping rings of metal at earth potential shall be connected to the adjacent core clamping structure on the same side as the main earth connections.
- 17.3 Windings
- 17.3.1 Winding shall be subjected to a shrinking and seasoning process, so that no further shrinkage occurs during service. Adjustable devices shall be provided for taking up possible shrinkage in service.
- 17.3.2 All low voltage windings for use in the circular coil concentric winding shall be wound on a performed insulating cylinder for mechanical protection of the winding in handling and placing around the core.
- 17.3.3 Winding shall not contain sharp bends which might damage the insulation or produce high dielectric stresses. No strip conductor wound on edge shall have width exceeding six times the thickness.

- 17.3.4 The winding insulation shall be free from insulating compounds which are liable to soften, ooze out, shrink or collapse. It shall be non catalytic and chemically inert in hot transformer oil during normal service.
- 17.3.5 The stacks of windings are to receive adequate shrinkage treatment.
- 17.3.6 The windings and connections are to be braced to withstand shocks during transport, switching, short circuit or other transient conditions.
- 17.3.7 Permanent current carrying joints in the windings and leads shall be welded or brazed. Clamping bolts for current carrying parts inside oil shall be made of oil resistant material which shall not be affected by acidity in the oil steel bolts, if used, shall be suitably treated.
- 17.3.8
Terminals of all windings shall be brought out of the tank through bushings for external connections.
- 17.3.9 The windings shall be uniformly insulated and the L.V neutral points shall be insulated for full voltage.
- 17.3.10 The completed core and coil assemble shall be dried in vacuum at not more than 0.5mm of mercury absolute pressure and shall be immediately impregnated with oil after the drying process to ensure the elimination of air and moisture within the insulation. Vacuum may be applied in either vacuum over or in the transformer tank.
- 17.3.11 The winding shall be so designed that all coil assembles of identical voltage ratings shall be interchangeable and field repairs to the winding can be made readily without special equipment. The coils shall have high dielectric strength.
- 17.3.12 Coils shall be made of continuous smooth high grade electrolytic copper or aluminium conductor, shaped and braced to provide for expansion and contraction due to temperature changes.
- 17.3.13 Adequate barriers shall be provided between coils and core and between high and low voltage coil. End turn shall have additional protection against abnormal line disturbances.
- 17.3.14 The insulation of winding shall be designed to withstand voltage stress arising from surge in transmission lines due to atmospheric or transient conditions caused by switching etc
- 17.3.15 Tapping shall not be brought out from inside the coil or from intermediate turns and shall be so arranged as to preserve as far as possible magnetic balance of transformer at all voltage ratios.
- 17.3.16 Magnitude of impulse surges transferred from HV to LV windings by electromagnetic induction and capacitance coupling shall be limited to BIL of LV winding.
The winding conductor shall be of Aluminum. The current density shall not exceed 1.6 Amp/ mm² for aluminium at normal full load current.

18. BUSHINGS AND TERMINATIONS

18.1 Bushings

18.1.1 Bushings shall be of the outdoor type and easily replaceable. Cemented in types will not be accepted. They shall be sufficiently robust to withstand normal transport and erection hazards and shall conform to IEC 137 /IS 3347 and 2099.

18.1.2 All bushings shall have a minimum creepage distance of 25 mm /KV and shall have a continuous rating of 200% of the transformer rating. The protected creepage distance shall not be less than 50% of the total.

The following minimum 11 KV clearance shall be provided:

	External (Air) for 11 KV
Phase to phase	280 mm
Phase to earth	140 mm

18.1.3 The 11 KV bushings of transformers shall be provided with a bi-metallic terminal connector or suitable device to receive 35 –100 mm² AAAC or ACSR conductor directly without any bi-metallic action. The dia of HT bushing stud should not be less than 12 mm.

18.1.4 The secondary bushings of transformers shall be fitted with non ferrous threaded terminals of dia not less than 12 mm with the exception of brass the terminals shall be protected from atmospheric deterioration by suitable tinning or by some other approved coating.

18.1.5 The terminals are to be supplied with one 16mm bolt, one conic spring washer, one matching flat washer, one nut and one lock nut for each hole in the terminal plate.

18.2 Bushing Labels

18.2.1 The HV bushings shall be labeled U, V and W and the LV bushing u, v, w and n. Marking letters shall be at least 12 mm high. The means of marking shall be either,

- ◆ engraved metal plate; or
- ◆ etched anodized aluminum.

Phase identification by adhesive stickers shall not be acceptable.

18.2.2 If labeling is to be carried out on the tank, it is preferred that one plate be used rather than individual markings for each phase, in order to prevent incorrect phase markings.

Labels shall conform to the requirements of the section on labels in this specification.

18.3 Earthing Terminals

All transformers shall be provided with two earthing terminals conforming to relevant Standards and M12 ISO metric bolt and nut which shall be non ferrous steel. It shall include a spring washer and lock washer.

18.4 LIGHTNING ARRESTORS

9 KV, 5KA metal oxide lightning arresters of reputed make conforming to IS-3070 Part-III, one number per phase shall be provided.(Under the HV bushing with GI earth strip 25x4 mm connected to the body of the transformer with robust clamping arrangement). Lightning arrestors with polymer insulators in conformance with relevant IEC can also be used.

19 TANK FABRICATION

19.1 All transformer sizes, the tank shall be of bolted type construction and should conform the pressure and vacuum requirements as per Clause No:-15 of IS-1180(Part-1) 2014.

- Adequate space shall be provided at the bottom of the tank for collection of sediments.

19.2 Transformer tanks of all types shall be designed so that the completed transformer can be lifted and transported without permanent deformation or oil leakage. Stiffeners provided on all the four side walls for rigidity should be so designed that there is no accumulation of water.

19.3 The Tank shall be of rectangular shape with round edges fabricated from tested quality mild steel plates with minimum thickness of 3.15 mm. for the side walls while top cover and the bottom plate of the tank shall have a minimum thickness of 5 mm. The transformer tank and the top cover shall be designed in such a manner as to leave no external pockets in which water can log, or any internal pocket where air/ gas can accumulate.

Edge of Top cover should be bend downwards so as to avoid water through cover plate gasket. The width of the bend plate shall be 25mm minimum.

19.4 All sealing washers / gaskets shall be made of oil and heat resistant neoprene rubber or neoprene bonded cork seals suitable for temperature as stipulated in this specification. Surfaces at gasketed joints shall be such that an even face is presented to gasket, thereby eliminating the necessity for the gasket to take up surface irregularities.

19.5 All pipes, radiators, stiffeners or corrugations which are welded to the tank wall shall be welded externally and shall be double welded wherever possible. All welds shall be stress relieved.

19.6 The transformer tank shall be complete with all accessories, lifting lugs etc. and shall be designed to allow

the complete transformer filled with oil to be lifted by crane or jacks without risk of any damage and can be transported by Rail/ Road without straining any joints and without causing any leakage of oil.

Provision of Cable End Box with suitable gland.

- 19.7 The height of the tank shall be such that minimum vertical clearance up to the top cover plate of 80mm is achieved from the top of the yoke.

20 PRESSURE RELIEF DEVICE

Transformers shall be fitted with a pressure relief device in the form of explosion vent. The tendered shall state the pressure at which it is designed to operate.

21 OIL LEVEL GAUGE

A suitable oil level gauge (Magnetic type of dia 100 mm) shall be fitted on the transformers and so located that it can be easily read from ground level. The gauge fitted with the conservator shall be graduated for temperatures of -5°C , 30°C and 90°C .

22 CONSERVATORS AND BREATHERS

All the transformers shall be provided with a conservator tank.

- 22.1 The conservator tank shall be so designed and located as to eliminate any trapping of air in the transformer or pipe work. It shall be inclined at an angle of about 5 degrees to the horizontal towards the drain plug and the pipe connecting the main tank to the conservator should project about 20 mm above the bottom of the conservator so as to create a sump for the collection of impurities. Minimum oil level corresponding to -5°C shall be well above the sump level.

- 22.2 All transformers shall be fitted with a silica gel breather of weatherproof design at a convenient height with oil seal at the bottom, draw in plug and filling holes with covers to isolate the silica gel from the atmosphere. The breather pipe should be connected at top of the conservator tank with two bends at right angles. The cover of the main tank and bushings turrets shall be provided with air release plug to enable the trapped air to be released.

23 FITTINGS AND ACCESSORIES

- 23.1 The following standard fittings and accessories shall be provided :

- ◆ Rating, diagram and terminal marking plate.
- ◆ Two earthing terminals.
- ◆ Lifting lugs for transformer as well as for core & winding assembly.
- ◆ Dehydrating breather for non-sealed type transformers which would not permit ingress of rain water & insects.
- ◆ A magnetic oil level gauge 100 mm dia indicating three position (3) of oil : minimum -5°C , 30°C and

90 °C

- ◆ Top filter valve (1 ¼" nominal size thread) with locking arrangement.
- ◆ Drain cum sampling valve (3/4" nominal size thread, IS 554) preferably steel with plug for three phase transformer.
- ◆ Air release device (for non sealed type transformer)
- ◆ Pressure relief device or explosion vent
- ◆ Set of Radiators
- ◆ Conservator Tank
- ◆ Thermometer pocket with cap
- ◆ Arching Horns for HV Bushing (as required)
- ◆ Any other required fittings as per IS for non-sealed type 11KV,3-Phase DTR

Bi-metallic terminals on the bushings for connection with over head ACSR/ AAAC conductor. The Specification and brief details of the salient features of these terminals should be stated.

25 TRANSFORMER OIL

The transformers shall be supplied complete with first filling of transformer oil upto maximum permissible level. The quantity of oil required for the first filling of the transformer and its full specification shall be stated in the bid. The complete first filling shall be of new oil free from inhibitors and additives up to maximum permissible level for the supplied Transformer. The bidder shall quote the price of transformer including the cost of Transformer Oil required for initial filling.

The insulating oil for the transformer shall be of EHV grade, generally conforming to IEC: 296/ BS: 148/ REC: 39/ 1993 or latest version of IS: 335/ 1983 whichever is more stringent. No inhibitors shall be used in the oil. The dielectric strength of the oil shall not be less than 60 KV at 2.5 mm. gap when tested in accordance with IS: 6792/ 1972. If an anti-oxidant inhibitor is recommended, its use shall be subject to the purchaser's approval.

The design and materials used in the construction of the transformer shall be such as to reduce the risk of the development of acidity in the oil.

The contractor shall warrant that oil furnished is in accordance with the following specifications.

Sl.No	Characteristic	Requirement	Method of Test
01	Appearance	The oil shall be clear & transparent & free from suspended matter or sediment	A representative sample of oil shall be examined in a 100 mm thick layer at ambient temp.
02	Density at 20°C	0.89 g/cm ³ Max.	IS:1448
03	Kinematic Viscosity at 27 deg. C Max	27 CST	IS:1448
04	Interfacial tension at 27deg.C Min.	0.03 N/m	IS:6104
05	Flash Point	136 °C	IS:1448
06	Pour Point Max.	-6 °C	IS:1448
07	Naturalization Value (Total	0.03 mg KOH/gm	IS:335

	Acidity) Max.		
08	Electric strength Breakdown (voltage) Min.	72.5 KV	IS:6792
09	Dielectric dissipation factor tan delta at 90° C	0.03 Max	IS:6262
10	Min specific resistance (resistivity) at 90 deg.C	35X10 ¹² ohm cm (min.)	IS:6103
11	Oxidation stability		
12	Neutralization value after oxidation	0.40mg KOH/g	
13	Total sludge after oxidation	0.10% by weight max.	
14	Presence of oxidation Inhibitor	The oil shall not contain anti-oxidant Additives.	IS:335
15	Water content Max:	Less than 25ppm	IS:2362

26 RATING AND TERMINAL MARKING PLATE

Each transformer shall be provided with a rating plate of weatherproof material showing the following items indelibly marked which should conform to the rating plate and terminal marking plate for 3-phase transformers without taps as per IS:1180(Part-1)2014.

- ◆ type of transformer
- ◆ standard to which it is manufactured IS-1180(Part-1) 2014.
- ◆ manufacturer's name
- ◆ transformer serial number
- ◆ year of manufacture
- ◆ rated frequency in Hz (50)
- ◆ rated voltages in KV (11/0.433)
- ◆ number of phases (3)
- ◆ rated power in KVA
- ◆ type of cooling (ONAN)
- ◆ rated currents in A
- ◆ vector group symbol (Dyn11)
- ◆ 1.2/50µs wave impulse voltage withstand level in KVp
- ◆ power frequency withstand voltage in KV
- ◆ impedance voltage at rated current and frequency in percentage at 75 °C at normal tap
- ◆ Measured load loss in KW at rated current and at 75 °C at normal tap
- ◆ Measured no-load loss in KW at rated voltage and rated frequency
- ◆ Maximum total losses(in Watt) at 100% load
- ◆ Maximum total losses(in Watt) at 50% load
- ◆ continuous ambient temperature at which ratings apply in °C
- ◆ top oil and winding temperature rise at rated load in °C

- ◆ winding connection diagram
- ◆ Total weight in kg with complete oil filled.
- ◆ total weight of the transformer without oil
- ◆ Volume of oil in litres.
- ◆ weight of core and windings in kg; and
- ◆ name of the purchaser
- ◆ SOUTHCO Utility, DESI, RAYAGADA, GoO.

The rating plate shall conform to the requirements of the section of Labels in this specification.

27. BASE MOUNTING ARRANGEMENT

The under base of all transformers up to 100 KVA capacity shall be provided with two 75x40 mm channels, 460 mm long with holes of 14 mm dia at a centre to centre distance of 415 mm to make them suitable for fixing on a platform or plinth.

27 (a) PUNCHINGS: Non-erasable Punching and embossing of Volume of oil in litres, name of the Purchaser – SOUTHCO Utility, Orissa, Name of the Supplier – M/s -----, Year of Manufacture, Guarantee Period and Sl. No. of each transformer is to be made on top core channel, top cover, side walls and name plates of transformers.

27 (b) 3 STAR LEVEL: In addition to above, the supplied Distribution Transformers must contain 3 Star Level with style and information provided by the Bureau of Energy Efficiency (B.E.E), Ministry of Power, Government of India.

28. PAINTING

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

- 28.2
- 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.

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

28.3.1 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 cleaning. The paint shall be applied by airless spray according to the manufacturer's recommendations. However, wherever airless spray is not possible, conventional spray be used with prior approval of purchaser.

28.3.2 The supplier shall, prior to painting protect nameplates, lettering gauges, sight glasses, light fittings and similar such items.

28.4 Cleaning and Surface Preparation

- 28.4.1 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.
- 28.4.2 Steel surfaces shall be prepared by Sand/Shot blast cleaning or Chemical cleaning by Seven tank process including Phosphating to the appropriate quality.
- 28.4.3 The pressure and Volume of the compressed air supply for the blast cleaning shall meet the work requirements and shall be sufficiently free from all water contamination prior to any painting.
- 28.4.4 Chipping, scraping and steel wire brushing using manual or power driven tools cannot remove firmly adherent mill-scale and shall only be used where blast cleaning is impractical.

28.5 Protective Coating

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

28.6 Paint Material

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

- i) Heat resistant paint (Hot oil proof) for inside surface.
- ii) For external surfaces one coat of Thermo Setting Paint or 2 coats of Zinc chromate followed by 2 coats of P.U (Poly-urethane) paint. The color of the finishing coats shall be dark admiral gray.

28.7 Painting Procedure

- 28.7.1 All painting shall be carried out in conformity with both specifications and with the paint manufacture's recommendations. All paints in any one particular system. Whether shop or site applied, shall originate from one paint manufacturer.
- 28.7.2 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 conditions. Minimum and maximum time intervals between coats shall be closely followed.
- 28.7.3 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 warm.
- 28.7.4 Where the quality of film is impaired by excess film thickness, (wrinkling, mud cracking or general softness) the supplier shall remove the unsatisfactory paint coatings and apply another. As a general rule, dry film thickness should not exceed the specified minimum dry film thickness by more than 25%. In all instances, where two or more coats of the same paints are specified, such coatings may or may not be of contrasting colors.
- 28.7.5 Paint applied to items that are not be painted, shall be removed at supplier's expense, leaving the surface clean, un-stained and undamaged.

28.8 Damages to Paints Work

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

Any damaged paint work shall be made as follows:

a) The damaged area, together with an area extending 25mm around its boundary, shall be cleaned down to bare metal.

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

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

28.9 Dry Film Thickness

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

Each coat of paint shall be allowed to harden before the next is applied as per manufacture's recommendations. Particular attention must be paid to full film thickness at edges.

The requirement for the dry film thickness(DFT) of paint and the material to be used shall be as given below:

Sl. No	Paint Type	Area to be painted	No of Coats	Total Dry film thickness(Min)
1.	Liquid paint			
	d) Zinc Chromate (Primer)	Out side	01	30 micron
	e) P.U. Paint (Finish Coat)	Out side	02	45 each
	f) Hot Oil paint	inside	01	35/10 micron

The colour of the finishing coat shall be Sky Blue/Dark admiral Gray/Deep Green or any other colour as decided by the purchaser.

29 SEALING GASKETS

All sealing washers / gaskets shall be made of oil and heat-resistant Nitrile/ Neoprene rubber/ synthetic rubber bonded cork type RC-70C gaskets. Gaskets made of natural rubber or cork sheet are not permissible.

30 SUPPRESSION OF HARMONICS

The transformer shall be designed with attention to the suppression of harmonic voltage, especially the third and fifth.

31 TESTS

31.1 Routine Tests

Routine tests shall be carried out on all transformers and the tests shall be conducted in accordance with IS 1180 (Part -1)/2014. No sampling is allowed except pressure & oil leakage test which shall be carried out on only one sample in each lot.

The following routine measurements and tests shall be carried out in presence of Purchaser's authorized representative(s):

- A) Measurement of winding resistance (IS 2026 (Part -1))
- B) Measurement of Voltage Ratio & check of phase displacement (IS 2026 (Part -1))
- C) Measurement of short circuit Impedance (Principal taping, when applicable) & Load loss at 50% and 100 % Load ((IS 2026 (Part -1)).
- D) No-load losses and No-load current. (IS 2026 (Part -1))
- F) Insulation resistance. (IS 2026 (Part -1))
- G) Induced over voltage withstand. (IS 2026 (Part -3))
- H) Separate source voltage withstand test. (IS 2026 (Part -3))
- I) Pressure test (IS 1180 (Part -1) / 2014)
- J) Oil leakage test (IS 1180 (Part -1) / 2014)
- K) Any other test confirming to IS 1180 (Part – 1) /2014

Bushings and oil shall be subject to the following routine tests.

- a) bushing routine test: in accordance with IEC 137/IS 3347.
- b) Oil dielectric and moisture content test: conforming to IEC 156 or IS 335.

Routine test certificates shall include in addition to the test results, the purchaser's order number, the transformer serial number, outline drawing number and transformer KVA rating.

Any other applicable tests shall be conducted at the discretion of the Purchaser without any extra cost to Purchaser.

31.2 Type Tests

31.2.1 The type tests should have been carried out in accordance with the standard specified in each case as indicated in the following table at CPRI or any NABL accredited Laboratory on the transformers:

Transformer type tests as per IS: 1180 (Part -1): 2014

Type Test	Standard
Temperature Rise Test	IS 2026 (Part -2)
Lightning Impulse Test	IS 2026 (Part -3)
Short- Circuit withstand Test	IS 2026 (Part -5)
Pressure Test	As per IS: 1180(Part-1):2014

31.2.2 Even if the Type test report(s) confirm(s) the Purchaser's specification, the Purchaser at his discretion may ask the Supplier to repeat any or all specified type tests at CPRI/ NABL accredited laboratory on sample(s), selected at random by the purchaser's representative(s) out of the offered quantity (first lot). The type test(s) are to be witnessed by the Purchaser's representative(s). For such type of repetition of type tests, the Bidder has to conduct the tests free of cost.

31.2.3 The supplier shall furnish calculations in accordance with IS: 2026 to demonstrate the Thermal ability of the transformers to withstand Short Circuit forces.

31.3 CHALLENGE TESTING:

The manufacturer can also request challenge testing for any test based on the specification and measurement of no load losses, load losses & impedance at 75°C. The challenger would request for testing with testing fees. The challenge test fees are proposed to be 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, challenger and the utility could witness the challenge testing.

The challenge testing would cover the following tests:

1. Measurement of magnetizing current & No Load losses at rated voltage & frequency.
2. Load Losses at more than 50% loading to determine the Full Load losses & percentage impedance at 75°C and neutral unbalance current.
3. Temperature Rise Test.

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

If any one of the above two samples does not confirm the test, then the product is said to have failed the test. In such cases the manufacturer will be declared as unsuccessful manufacturer for the said product with wide publicity and would not be allowed to compete in tenders of the purchaser for a period of at least three years and heavy penalty would be imposed.

31.4 TEST VOLTAGE

Transformers shall be capable of withstanding the Power frequency and Impulse test voltage as described below:

Nominal system voltage	Highest System voltage	Impulse Test voltage	Power frequency test voltage
433 V (rms)			3 KV (rms)
11 KV (rms)	12 KV (rms)	95 KV (Peak)	28 KV (rms)

32 COMPLIANCE WITH SPECIFICATION

The transformers shall comply in all respects with the requirements of this specification. However, any minor departure from the provisions of the specification shall be disclosed at the time of tendering in the Non Compliance Schedule i.e Technical deviation format given in xls. Format of this document.

33 COMPLIANCE WITH REGULATIONS

All the equipment shall comply in all respects with the Indian Regulations and acts in force.

The equipment and connections shall be designed and arranged to minimize the risk of fire and any damage which might be caused in the event of fire.

34 INSPECTION AND TESTING

34.1 The Purchaser shall have free entry at all times, while work on the contract is being performed, to all parts of the manufacturer's works which concern the processing of the equipment ordered. The manufacturer shall afford the Purchaser without charge, all reasonable facilities to assure that the equipment being furnished is in accordance with this specification. After approval of Drawings by the Purchaser, the manufacture shall manufacture a Prototype Model as per the Approved Drawing and offer the same for inspection. The Inspection of the Prototype Model shall be carried out as per the Format prescribed at Clause 41, Section-IV of our Tender Specification. The Supplier shall offer the core, windings and tanks of each transformer for inspection by the Purchaser's representative(s). During stage inspection of the Prototype Model, all the measurements like diameter, window, height, leg centre, stack width, stack thickness, thickness of laminations etc for core assembly, conductor size, insulation thickness, I.D., O.D., Winding height, major and minor insulations for both HV and LV windings, length, breadth, height and thickness of plates of transformer tanks, the quality of fittings and accessories will be taken/ determined.

The Inspection Report for the Tests conducted by our Authorized Inspectors in presence of the manufacturer's representative, for the Prototype Model offered for inspection with suggested modifications, if any shall be submitted to the undersigned for approval.

After Inspection, the Prototype Model shall be kept sealed, in the premises of the manufacturer till the completion of delivery of final consignment, for future reference during subsequent Inspections.

The Supplier can offer for final inspection of the transformers subject to clearance of the stage inspection report by the Purchaser.

34.2 The equipment shall successfully pass all the type tests and routine tests mentioned in the above Clauses and those listed in the most recent edition of the standards given in Clause 2, of this specification.

34.3 The Purchaser reserves the right to reject an item of equipment if the test results do not comply with the values specified or with the data given in the technical data schedule.

34.4 Routine tests shall be carried out by the Supplier at no extra charge at their works.

Adequate facility with calibrated testing equipment must be provided by the manufacturer free of cost to carry out the tests. Type test certificates must be furnished along with the tender for reference of the Purchaser.

34.5 The Purchaser will witness all required tests. In order to facilitate this, the Supplier shall give the Purchaser a minimum of two weeks notice as mentioned in clause-7(ii) of General Terms and Condition of Contract (GTCC) that the materials are ready for testing. If the Purchaser does not indicate his intention to participate in the testing, the manufacturer may proceed with the tests only after receipt of written confirmation to

this effect from the Purchaser and shall furnish the results thereof to the Purchaser consequent upon such testing.

- 34.6 Full details of the proposed methods of testing, including connection diagrams, shall be submitted to the Purchaser by the Supplier for approval, at least one month before testing.

All costs in connection with the testing, including any necessary re-testing, shall be borne by the Supplier who shall provide the Purchaser with all the test facilities which the latter may require, free of charge. The Purchaser shall have the right to select the samples for test and shall also have the right to assure that the testing apparatus is duly calibrated and correct. Measuring apparatus for routine tests shall be calibrated at the expense of the Supplier at an approved laboratory and shall be approved by the Purchaser.

- 34.7 The supplier shall submit to the Purchaser five signed copies of the test certificates, giving the results of the tests as required. No materials shall be dispatched until the test certificates have been received by the Purchaser and the Supplier has been informed that they are acceptable.

The test certificates must show the actual values obtained from the tests, in the units used in this specification, and not merely confirm that the requirements have been met.

In the case of components for which specific type tests or routine tests are not given in this specification or in the quoted standards in Clause 2, of this specification, The Supplier shall include a list of the tests normally required for these components. All materials used in the Contract shall withstand and shall be certified to have satisfactorily passed such tests.

- 34.8 The Purchaser at his discretion may re-confirm the Routine Test Results, particularly no load losses, load losses and percentage impedance in his own laboratory or laboratory of his choice.

No inspection or lack of inspection or passing by the Purchaser's Representative of equipment or materials whether supplied by the Supplier or sub-supplier, shall relieve the Supplier from his liability to complete the contract works in accordance with the contract or exonerate him from any of his guarantees.

However in case of future discrepancy, if any, after acceptance of equipments, observed at any stage during guarantee period, the matter may be referred to Bureau of Energy Efficiency (B.E.E) for random testing of equipments supplied. In such cases the observation of B.E.E shall be binding to both parties.

35 GUARANTEE

The supplier shall guarantee the following:

- ◆ Quality and strength of materials used;
- ◆ Satisfactory operation during the guarantee period of two years (24 months) from the date of commissioning, or 30 months from the date of acceptance of the equipment by the Purchaser following delivery, whichever is earlier;
- ◆ Performance figures as supplied by the tendered in the schedule of guaranteed particulars;
- ◆ The offered surface treatment shall protect the treated metal from corrosion for a period of not less than five years from the date of delivery.

36 PACKING AND SHIPPING

36.1 Packing

The equipment and any supporting structures are to be transported adequately sealed against water ingress. All accessories and spares shall be packed and securely clamped against movement in robust, wooden, non returnable packing cases to ensure safe transit in rough terrain, cross country road conditions and in heavy rains from the manufacturer's works to the work sites/ earmarked destinations.

36.1.1 All accessories shall be carefully packed so that they are fully protected during transport and handling operations and in storage. Internal surfaces of loose accessories shall be sealed by means of gaskets and blanking off plates. All parts liable to rust shall receive an anti-rusting coat and shall be suitably protected. It shall be the responsibility of the Supplier to make good any damage caused through insufficient packing. Each packing case shall be indelibly marked, on two adjacent sides and on the top, with the following:

- ◆ Individual serial number;
- ◆ Purchaser's name;
- ◆ Contract number;
- ◆ Destination;
- ◆ A colour coded marking to indicate destination;
- ◆ Supplier's name;
- ◆ Name and address of supplier's agent in Orissa;
- ◆ Description and numbers of contents;
- ◆ Manufacturer's name;
- ◆ Country of origin;
- ◆ Case measurements;
- ◆ Gross and net weight in kilograms: and
- ◆ All necessary slinging and stacking instructions.

36.1.2 Each crate or container shall be marked clearly on the outside of the case to show TOP and BOTTOM positions with appropriate signs to indicate where the mass is bearing and the correct positions for slings. All component parts which are separately transported shall have permanent identification marks to facilitate correct matching and assembly at site. Welded parts shall be marked before welding. Six copies of each packing list shall be sent to the Purchaser prior to dispatching the equipment.

36.2 Transportation

The Supplier shall be responsible for the transport of all plant and equipment supplied by them and for the transport of all goods to the various specified destinations including all road clearance, offloading, warehousing and insurance.

The Supplier shall inform himself fully as to all relevant transport facilities and requirements and loading gauges and ensure that the equipment as packed for transport conform to these limitations. The Supplier shall also be responsible for verifying the access facilities specified.

The Supplier shall be responsible for the transportation of all loads associated with the contract works and

shall take all reasonable steps to prevent any highways or bridges from being damaged by his traffic and shall select routes, choose and use vehicles and restrict and distribute loads so that the risk of damage shall be avoided. The Supplier shall immediately report to the Purchaser any claims made against the Supplier arising out of alleged damage to a highway or bridge.

All transport accessories, such as riding lugs, jacking pads or blanking off plates shall become the property of the Purchaser.

All items of equipment shall be securely clamped against movement to ensure safe transit from the manufacturer's facilities to the specified destinations.

The Supplier shall advise the storage requirements for any plant and equipment that may be delivered to the Purchaser's stores. The Supplier shall be required to accept responsibility for the advice given in so far as these arrangements may have a bearing on the behavior of the equipment in subsequent service.

37 Hazardous substances

The Supplier shall submit safety data sheets for all hazardous substances used with the equipment. The Supplier shall give an assurance that there are no other substances classified as hazardous in the equipment supplied. No oil shall be supplied or used at any stage of manufacture or test without a certificate acceptable to the Purchaser that it has a PCB content of less than 2 mg/ kg. The Supplier shall accept responsibility for the disposal of such hazardous substances, should any be found.

The Supplier shall also be responsible for any injuries resulting from hazardous substances due to non compliance with these requirements.

38 SUBMITTALS

38.1 Submittals required with the bid

The following shall be required with each copy of the bid :

- o Completed technical data schedule;
- o Descriptive literature giving full technical details of equipment offered;
- o Outline dimensions drawing for each major component, general arrangement drawing showing component layout and general schematic diagram;
- o Type test certificates (short circuit withstand test and impulse test) of the offered transformers conducted at CPRI/ or any NABL Accredited laboratory without which tender will be out rightly rejected.
- o Sample routine test reports;

Detailed reference list of customers already using equipment offered along with performance certificates of such equipment, during the last 3 (three) years with particular emphasis on units of

similar design and rating;

- Details of manufacturer's quality assurance standards and programme and ISO 9000 series or equivalent national certification;
- Deviations from this specification. Only deviations approved in writing before award of contract shall be accepted;
- List of recommended spare parts and consumable items for five year of operation with prices and spare parts catalogue with price list for future requirements.

38.2 Submittals required after contract award

38.2.1 Programme

Five copies of the programme for production and testing

38.2.2 Technical Particulars

Within 30 days of contract award five bound folders with records of the technical particulars relating to the equipment. Each folder shall contain the following information:

- ◆ General description of the equipment and all components, including brochures;
- ◆ Technical data schedule, with approved revision;
- ◆ Calculations to substantiate choice of electrical, structural, mechanical component size/ ratings;
- ◆ Detailed dimension drawing for all components, general arrangement drawing showing detailed component layout and detailed schematic and wiring drawings for all components; along with core-coil assembly drawings, showing details of core such as grade, thickness, window height, leg centre, diameter, step width, step thickness and details of windings such as I.D., O.D , thickness , Conductor size, No. of turns, major and minor insulations, winding height etc.
- ◆ Detailed loading drawing to enable the Purchaser to design and construct foundations for the transformer;
- ◆ Statement drawing attention to all exposed points in the equipment at which copper / aluminum or aluminum alloy parts are in contact with or in close proximity to other metals and stating clearly what protection is employed to prevent corrosion at each point;
- ◆ Detailed installation and commissioning instructions;

At the final hold point for Purchaser approval prior to delivery of the equipment the following shall be submitted ;

- ◆ Inspection and test reports carried out in the manufacturer's works;
- ◆ Operation and maintenance instructions as well as trouble shooting charts.

38.2.3 Operation and Maintenance Instructions

A copy of installation and commissioning instructions and of the operation and maintenance instructions and troubleshooting charts shall be supplied with each transformer.

38.3 Drawings

- 38.3.1 Within 15 days of award of contract, the Supplier shall submit 4 complete sets of drawings as detailed below describing equipment in details. These drawings would be duly approved by the Purchaser after due securitization and approval will be communicated within 15 days of receipt of these drawings. After the drawings are approved and communicated to the supplier, he would supply ten complete sets of final drawings.
- 38.3.2 All detail drawings submitted for approval shall be to scale not less than 1:20. All important dimensions shall be given and the material of which each part is to be constructed shall be indicated on the drawings. All documents and drawings shall be submitted in accordance with the provisions of this specification and shall become the property of the Purchaser.
- 38.3.3 All drawings and calculations, submitted to the Purchaser, shall be on international standard size paper, either A0, A1, A2, A3 or A4. All such drawings and calculations shall be provided with a contract title block, which shall include the name of the Purchaser and shall be assigned an unique project drawing number; the contract title block and project numbering system shall be agreed with the Purchaser.
- 38.3.4 Script sizes and thickness of scripts and lines be selected so that if reduced by two stages the alphanumeric characters and lines are still perfectly legible so as to facilitate microfilming.
- 38.3.5 For presentation of design drawings and circuit documents IEC Publication 617 or equivalent standards for graphical symbols are to be followed. The drawing approval will be communicated within 15 days from the receipt of drawings from the Bidder and for any delay in furnishing the drawings, if delivery period will be delayed, no extension of delivery time will be granted due to this.
- 38.3.6 The following drawings for each item are to be submitted as part of this Contract.
- a. Out line dimensional drawings of transformers and accessories
 - b. Assembly drawings and weights of main component parts.
 - c. Transportation drawings showing dimensions and weights of each package.
 - d. Drawings giving the weights for foundations each .
 - e. Drawing showing details such as clamping arrangements of core, core assembly showing oil duct section of HT and LT coils with conductor size showing insulation arrangements of windings and their reinforcement to withstand short circuit stresses, in side tank dimensions showing core assembly. Details of core and windings, as enumerated at Cl. No. 38.2.2 of this part of Specification shall be indicated in the above drawings.
 - f. Schematic diagram showing the flow of oil in the cooling system as well as each limb and winding. Longitudinal and cross- sectional views showing the duct sizes, cooling pipe etc. for transformer/ heat exchanger, drawn to scale shall be furnished.
 - g. Large Scale drawings of high and low tension winding of the transformers showing the nature and arrangements of insulation and terminal connection.
 - h. Name plate drawing showing details as per Cl. 26 of Technical Specification.
 - i. Test Reports

39 FASTENERS

- 39.1 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.

- 39.2 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.
- 39.3 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.
- 39.4 All ferrous bolts, nuts and washers placed in outdoor positions shall be of anti-corrosive materials except high tensile steel bolts and spring washers which shall be electro-galvanized to service condition stated elsewhere in the Specification. Appropriate precautions shall be taken to prevent electrolytic action between dissimilar metals where bolts are used on external horizontal surfaces and where water can collect, methods of preventing the ingress of moisture to the threads shall be provided. 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. Protective washers of suitable material shall be provided front and back on the securing screws.

40. LABELS

40.1 All apparatus shall be clearly labelled indicating, where necessary, its purpose and service positions. The material of all labels and plates, their dimensions, legend and the method of printing shall be subject to approval of the Purchaser. The surfaces of all labels and plates shall have a mat or satin finish to avoid dazzle from reflected light. Colours shall be permanent and free from fading. Labels mounted on black surfaces shall have white lettering. Danger plates shall have white lettering on a red background. All labels and plates for outdoor use shall be of in-corrodible material. Where the use of enameled iron plates is approved, the whole surface including the back and edges, shall be properly covered and resistant to corrosion. They shall be engraved in English. Name plates shall be white with black engraved lettering and shall carry all the applicable information specified in the applicable items of the Standards. No scratching, corrections or changes will be allowed on name plates.

40.2 Name plates shall be provided of white background with black engraved lettering carrying all the applicable information specified in the standards and other details as required by the Purchaser. The name plate inscription and the size and lettering shall be submitted to the Purchaser for approval.

41. PROFORMA FOR STAGE INSPECTION OF DISTRIBUTION TRANSFORMERS

(A) GENERAL INFORMATION:

- 1. Name of Firm :
- 2. Order No and Date :
- 3. Rating –wise quantity offered :

4. Details of offer

- (a) Rating
- (b) Quantity
- (c) Serial Numbers

5. Details of last stage inspected lot :

- (a) Total quantity inspected
- (b) Serial Numbers
- (c) Date of stage inspection
- (d) Quantity offered for final inspection of

6.

(A) Inspection of BEE 3 Star Level/ Embossing / Punching requirement: whether satisfies the Specification: deviation if any to be mentioned:

(B) AVAILABILITY OF MATERIAL FOR OFFERED QUANTITY:

Details to be filled in

(C) POSITION OF MANUFACTURING STAGE OF THE OFFERED

QUANTITY :

- (a) Complete tanked assembly
- (b) Core and coil assembly ready
- (c) Core assembled
- (d) Coils ready for assembly
 - (i) HV Coils
 - (ii) LV Coils

NOTE:

- (i) The stage inspection shall be carried out in case:-
 - (a) At Least 25% quantity offered has been tanked and
 - (b) Core coil assembly of further at least 30% of the quantity offered has been completed.
- (ii) Quantity offered for stage inspection should be offered for final inspection within 15 days from the date of issuance of clearance for stage inspection, otherwise stage inspection already cleared shall be liable for cancellation.

SI.No	Particulars	As Offered	As observed	Deviation and Remarks
D	INSPECTION OF CORE			
(i)	Core material			
1	Manufacturer's Characteristic Certificate in respect of grade of lamination used. (Please furnish test certificate)			
2	Remarks regarding Rusting and smoothness of core			
3	Whether laminations used for top and bottom yoke are in one piece.			

(ii)	Core Construction:												
1	No of steps												
2	Dimension of Steps												
	Step No. 1	2	3	4	5	6	7	8	9	10	11	12	
	As Offered												
	W mm												
	T mm												
	As found												
	W mm												
	T mm												
3	Core Dia (mm)												
4	Total Cross Section area of core												
5	Effective cross Sectional area of core												
6	Clamping arrangement												
(i)	Channel Size												
(ii)	Bolt size and No												
(iii)	Tie Rods												
(iv)	Painting												
(a)	Channels												
(b)	Tie Rods												
(c)	Bolts												
7	Whether top yoke is cut for LV connection												
8	If yes, at 7 above, whether Reinforcement is done												
9	Size of support Channels provided for Core base and bottom yoke (Single Piece of channels are only acceptable)												
10	Thickness of insulation provided between core base and support channel												
11	Core length (leg center to leg centre)												
12	Window height												
13	Core height												
14	Core weight only (without channel etc.)												
(E)	INSPECTION OF WINDING												
(I)	Winding material												
1	Material used for												
	(a) HV Winding												
	(b) LV Winding												
2	Grade of material for												
	(a) HV Winding												
	(b) LV Winding												
3	Test certificate of manufacturer (enclosed copy) for winding material of :												
	(a) HV												
	(b) LV												

(II)	CONSTRUCTIONAL DETAILS			
1	Size of Cross Sectional area of conductor for:			
	(a) HV Winding			
	(b) LV Winding			
2	Type of insulation for conductor			
	(a) HV Winding			
	(b) LV Winding			
3	Diameter of wire used for delta formation (mm)			
4	Diameter of coils in:			
a	LV Winding			
(i)	Internal dia (mm)			
(ii)	Outer dia (mm)			
b	HV Winding			
	Internal dia (mm)			
	Outer dia (mm)			
5	Current Density of winding material used for			
	(a) HV			
	(b) LV			
6	Whether neutral formation on top			
7	HV Coils/ Phase			
a)	Number			
b)	Turns/ coil			
c)	Total turns			
8	LV Coils/ Phase			
a)	Number			
b)	Turns/coil			
c)	Total turns			
9	Method of HV Coil Joints			
10	Total weight of coils of			
	(a) HV Winding (Kg)			
	(b) LV Winding (Kg)			
F	INSULATION MATERIALS:			
(I)	MATERIAL			
1	Craft paper			
a)	Make			
b)	Thickness (mm)			
c)	Test certificate of manufacturer (enclosed copy)			
2	Press Board			
a)	Make			
	Thickness (mm)			
	Test certificate of manufacturer (enclosed copy)			
3	Material used for top and bottom yoke and insulation			

II	Type and thickness of material used: (mm)			
a)	Between core and LV			
b)	Spacers			
c)	Interlayer			
d)	Between HV & LV winding			
e)	Between phases			
f)	End insulation			
G	CLEARANCES			
(I)	Related to core and winding			
1	LV to Core (Radial)			
2	Between HV and LV (Radial)			
3	(i) Phase to phase between HV Conductor			
	(ii) Whether two Nos Press Board each of minimum 1 mm ;thick provided to cover the tie rods			
4	Thickness of locking spacers between LV coils (mm)			
5	Axial wedges between HV and LV coils / phase (Nos)			
6	No. of radial spacers per phase between HV coils			
7	Size of duct between LV and HV winding (mm)			
(II)	Between core-coil assembly and tank: (mm)			
1	Between winding and body			
	a) Tank lengthwise			
	b) Tank breadth wise			
2	Clearance between top cover and top yoke upto 100 KVA and between top cover and top most live part of tap changing switch for 200 KVA and above.			
H	TANK			
1	Constructional details:			
	1) Rectangular shape			
	2) Thickness of side wall (mm)			
	3) Thickness of top and bottom place (mm)			
	4) Provision of slopping top cover towards HV bushing			
	5) Tank internal dimensions(mm)			
	(a) Length			
	(b) Breadth			
	(c) Height			
	(i) On LV side			
	(ii) On LV side			
(II)	General Details			

	1) Inside painted by varnish/ oil corrosion resistant paint (please specify which type of coating done)			
	2) Gasket between top cover and tank			
	(i) Material			
	(ii) Thickness(mm)			
	(iii) Joint over laps (mm)			
	3) Reinforcement of welded angle (Specify size and No. of angle provided) on side walls of tank			
	4) Provision of lifting lugs:			
	a) Numbers			
	b) Whether lugs of 8 mm thick MS plate provided			
	c) Whether reinforced by welded plates edge wise below the lug up to re-enforcing angle of the tank done			
	5) Pulling lug of MS Plate			
	a) Nos			
	b) Thickness (mm).			
	c) Whether provided on breadth side or length side			
	6) Provision of air release plug			
	7) Provision of galvanized GI Nuts Bolts with 1 No Plain and 1 No spring washer			
	8) Deformation of length wise side wall of tank when subject to:			
	a) Vaccume test			
	b) Pressure test			
(I)	RADIATORS			
	1. Fin radiators of 1.25 mm thick sheet			
	a) Dimension of each fin (L x B x T)			
	b) Fins per radiators			
	c) Total No. of radiators			
	2. Verification of manufacturer's test certificate regarding Heat dissipation (excluding Top and Bottom) in w/sq m			
	3. Verification of position of radiator with respect to bushing			
(J)	CONSERVATOR			
	1. Dimensions (L x D) (in mm)			
	2. Volume (m3)			
	3. Inside dia of Conservator tank			
	4. Whether conservator outlet pipe is projected approx.20 mm inside the conservator tank			
	5. Whether arrangement made so that oil does not fall on the active parts			
	6. Whether Magnetic oil level gauge indicator having three positions at (-5° C, 30° C and 90° C is provided.			
	7. Whether drain plug and filling hole with cover is provided			

	8. Inner side of the conservator tank painted with.			
(K)	BREATHER			
	1. Whether Die cast Aluminum body breather for silica gel provided			
	2. Make			
	3. Capacity			
(L)	TERMINALS			
1	Material whether of Brass Rods/ Tinned Copper			
	a) HV			
	b) LV			
2	Size (dia in mm)			
	a) HV			
	b) LV			
3	Method of Star connection formed on LV side of 6mm thick (Should use Al./ Cu. Flat bolted/ brazed with crimped lugs on winding alternatively for 63 and 100 KVA rating brazed is done covered with tubular sleeve duly crimped) Please state dimensions of Al/Cu flat or tubular sleeve used (mm)			
4	Method of Connection of LV of winding to LV bushing (end od winding should be crimped with lugs(Al/Cu) and bolted with bushing stud)			
5	Method of Connection of HV winding to HV bushing (Copper joint should be done by using silver brazing alloy and for Aluminum, brazing rod or with tubular connector crimped at three spots).			
6	Whether SRB P tube/ insulated paper used for formation of Delta on HV			
7	Whether Empire sleeves used on the portion of HV winding joining to HV bushing			
8	Whether neutral formation is covered with cotton tape			
(M)	BUSHING			
1	Whether HV bushing mounted on side walls.			
2	Whether sheet metal pocket used for mounting bushing (pipe are not acceptable)			
	a) HV			
	b) LV			
3	Whether arrangement for studs for fitting of HV bushing are in diamond shape (so that Arcing Horns are placed vertically)			
	4. Position of mounting of LV bushing			
	5. Bushing Clearance: (mm)			
	a) LV to Earth			
	b) HV to Earth			
	c) Between LV Bushings			
	d) Between HV Bushings			
(N)	TANK BASE CHANNEL/ROLLERS:			
1	Size of channels(mm)			

2	Whether channels welded across the length of the tank			
3	Size and type of roller (mm)			
(O)	OIL			
1	Name of Supplier			
2	Break down voltage of oil:(KV)			
	i) Filled in tanked Transformers			
	In storage tank (to be tested by Inspecting Officer).			
	3. Supplier's test certificate (Enclosed)			
(P)	ENGRAVING / PUNCHINGS			
	1. Engraving of Sl. No and name of firm			
	i) On bottom of clamping channel of core-coil assembly			
	ii) On side wall and top cover of tank along with date of dispatch. / Guarantee Period			
	iii) 3 Star Level: Whether contains 3 Star Level with style prescribed by the B.E.E.			
(Q)	i) MS plate of size 125 x 125 mm welded on width side of stiffener			
	ii) Following details engraved (as per approved GTP)			
	(a) Serial Number			
	(b) Name of Firm			
	(c) Order No. and Date			
	(d) Rating			
	(e) Name of Inspecting Officer			
	(f) Designation			
	(g) Date of dispatch			
(R)	NAME PLATE DETAILS			
	Whether Name Plate is as per approved drawing			
(S)	Colour of Transformer			
(T)	CHECKING OF TESTING FACILITIES			
	(Calibration certificate also to be checked for its validity)			
	TESTS			
	1. No Load Current			
	2. No Load Loss			
	3. % Impedance			
	4. Load Losses			
	5. Insulation Resistance Test			
	6. Vector Group Test (phase relationship)			
	7. Ratio and Polarity test relationship			
	8. Transformer oil Test (Break down Voltage)			
	9. Magnetic Balance			
	10. Measurement of winding resistance (HV and LV both)			
	11. Induced over voltage withstand test (Double voltage and Double frequency)			

	12. Separate source power frequency withstand test at 28 KV for HV and 3 KV for LV (one minute)			
	13. Air Pressure/ Oil leakage Test			
	14. Vacuum Test			
	15. Unbalanced current test			
	16. Temperature rise(Heat Run) test			
(U)	We have specifically checked the following and found the same as per G.T.P./ deviations observed as mentioned against each.			
	i) Rustlessness of CRGO laminations used			
	ii) Core Steps			
	iii) Core Area			
	iv) Core Weight			
	v) Winding cross section area			
	a) LV			
	b) HV			
	vi) Weight of windings			
	vii) Clearance between winding and wall of tank (mm)			
	a) Length-wise			
	b) Breadth- wise			
	viii) Clearance between top of yoke top most live part of tap changer to tank cover			
	ix) Details of Neutral formation			
	x) Connections to bushings			
	a) LV			
	b) HV			
	xi) Slope of tank top			
	xii) Position of mounting of bushings			

COMPANY INSPECTING OFFICER

FIRMS
REPRESENTATIVE

DATE OF INSPECTION

SECTION –V

LIST OF ANNEXURES

(SCHEDULES AND FORMATS)

DECLARATION FORM

To
GM (MM, Vig. & MRT)
SOUTHCO, Berhampur

Sir,

Having examined the above specifications together with the Tender terms and conditions referred to therein.

- 1- I / we the undersigned do hereby offer to supply the materials covered thereon in complete shape in all respects as per the rules entered in the attached contract schedule of prices in the tender.
- 2- I / we do hereby undertake to have the materials delivered within the time specified in the tender.
- 3- I / we do hereby guarantee the technical particulars given in the tender supported with necessary reports from concerned authorities.
- 4- I / we do hereby certify to have furnished a copy of the tender specifications by remitting Cash/ Demand draft & this has been duly acknowledged by you in your letter No.....Dt.....
- 5- I / we do hereby agree to furnish the composite Bank Guarantee in the manner specified / acceptable by SOUTHCO & for the sum as applicable to me / us within Ten days of issue of Letter of intent / Purchase Order, in the event of Purchase order being decided in my / us favour , failing which I / we clearly understand that the said LOI / P.O. shall be liable to be withdrawn by the Purchaser

Signed this.....Day of.....20....

Yours faithfully,

(Signature of the Bidder with Seal)

(This form should be duly filled up & signed by the bidder & submitted along with the original copy of the bid)

PROFORMA FOR COMPOSITE BANK GUARANTEE FOR SECURITY DEPOSIT, PAYMENT AND PERFORMANCE

This Guarantee Bond is executed this ____ day of _____ by us the _____ Bank at _____ P.O. _____
P.S. _____ Dist _____ State _____ (indicate designation of Purchaser)

Whereas SOUTHCO Utility, Corporate Office: Courtpeta, Berhampur, Ganjam - 760004 (here in after called "the Purchaser") has placed Purchase Order No. _____ Dt. _____ (hereinafter called "the Agreement") with M/s _____ (hereinafter called "the Contractor") for supply of _____ (name of the material) and whereas SOUTHCO Utility has agreed (1) to exempt the Contractor from making payment of security deposit, (2) to release 100% payment of the cost of materials as per the said agreement and (3) to exempt from performance guarantee on furnishing by the Contractor to the SOUTHCO Utility a composite Bank Guarantee of the value of 10% (ten percent) of the Contract price of the said Agreement.

1. Now, therefore, in consideration of SOUTHCO Utility having agreed (1) to exempt the Contractor for making payment of security deposit, (2) to release 100% payment to the Contractor and (3) to exempt from furnishing performance guarantee in terms of the said Agreement as aforesaid, we the _____ Bank, Address _____ (code No. _____) (hereinafter referred to as "the Bank") do hereby undertake to pay to the SOUTHCO Utility an amount not exceeding Rs. _____ (Rupees _____) only against any loss or damage caused to or suffered by SOUTHCO Utility by reason of any breach by the said Contractor(s) of any of the terms or conditions contained in the said Agreement.

2. We, the _____ Bank do hereby undertake to pay the amounts due and payable under the guarantee without any demur, merely on a demand SOUTHCO Utility stating that the amount claimed is due by way of loss or damage caused to or suffered by SOUTHCO Utility by reason of any breach by the said Contractor(s) of any of the terms or conditions contained in the said Agreement or by the reason of any breach by the said Contractor's failure to perform the said Agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____ (Rupees _____) only.

3. We, the _____ Bank also undertake to pay to SOUTHCO Utility any money so demanded notwithstanding any dispute or dispute raised by the Contractor(s) in any suit or proceeding instituted/ pending before any court or Tribunal relating thereto our liability under this Agreement being absolute and unrevocable.

The payment so made by us under this bond shall be valid discharge of our liability for payment there under and the Contractor(s) shall have no claim against us for making such payment.

4. We, the _____ Bank further agree that the guarantee herein contain shall remain in full force and affect during the period that would be taken for the performance of the said Agreement and it shall continue to remain in force endorsable till all the dues of SOUTHCO Utility under by virtue of the said Agreement have been fully paid and its claim satisfied or discharged or till SOUTHCO Utility certifies that the terms and conditions of the said Agreement have been fully and properly carried out by the said Contractor(s) and accordingly discharge this guarantee and will not be revoked by us during the validity of the guarantee period.

Unless a demand or claim under this guarantee is made on us or with _____
_____ (Local Bank Name, address and code No.)
_____, Berhampur in writing on or before
_____ (date) we shall be discharged from all liability under this guarantee thereafter.

5. We, the _____ Bank further agree that SOUTHCO Utility shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Agreement or to extend time of performance by the said Contractor(s) and we shall not be relieved from our liability by reason of any such variation or extension being granted to the said Contractor(s) or for any forbearance act or omission on part of SOUTHCO Utility or any indulgence by SOUTHCO Utility to the said Contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would but for this provisions have effect of so relieving us.

6. The Guarantee will not be discharged due to change in the name, style and constitution of the Bank and or Contractor(s).

7. We, the _____ Bank lastly undertake not to revoke this Guarantee during its currency except with the previous consent of SOUTHCO Utility in writing.

Dated _____ the _____ day of Two thousand _____ .

Notwithstanding anything contained herein above.

Our liability under this Bank Guarantee shall not exceed Rs. _____ (Rupees _____) only.

The Bank Guarantee shall be valid up to _____ only.

We or our Bank at Berhampur (Name & Address of the Local Bank) are liable to pay the guaranteed amount depending on the filing of claim and any part thereof under this Bank Guarantee only and only if you serve upon us or our local Bank at Berhampur a written claim or demand and received by us or by Local Branch at Berhampur on or before Dt. _____ otherwise bank shall be discharged of all liabilities under this guarantee thereafter.

For _____
(indicate the name of the Bank)

N.B.:

(1) Name of the Contractor:

(2) No. & date of the Purchase order / agreement:

(3) Amount of P.O. :

(4) Name of Materials:

(5) Name of the Bank:

(6) Amount of the Bank Guarantee:

(7) Name, Address and Code No. of the Local Branch:

(8) Validity period or date up to which the agreement is valid:

(9) Signature of the Constituent Authority of the Bank with seal:

(10) Name & addresses of the Witnesses with signature:

(11) The Bank Guarantee shall be accepted only after getting confirmation from the respective Banks.

(9) Signature of the Constituent Authority of the Bank with seal:

(10) Name & addresses of the Witnesses with signature:

(11) The Bank Guarantee shall be accepted only after getting confirmation from the respective Banks.

Format for Consortium Agreement

(On non-judicial stamp paper of appropriate value to be purchased in the name of executants companies or as required by the jurisdiction in which executed)

This Consortium Agreement executed on this, day ofTwo Thousand.....By:

M/sa Company (SSI Unit) incorporated under the companies Act – 1956and having its registered office at(hereinafter called the “Lead Member/First member” which expression shall include its successors); and

M/sa company (SSI Unit) incorporated under the Companies Act – 1956and having its registered office at(hereinafter called the “Second Member” which expression shall include its successors)and

M/s.a company (SSI Unit) incorporated under the companies Act-1956.....and having its registered office at (hereinafter called the “Fourth Member” which expression shall include its successors)

The Lead Member/First Member, the Second Member, the Third Member and the Forth Member shall collectively hereinafter be called as the “Consortium Members” for the purpose of submitting a bid proposal to SOUTHCO Utility having its Head office at Courtpeta, Berhampur, Ganjam - 760004,India (hereinafter called the “Purchaser”)in response to the invitation of bids (hereinafter called as “Tender Notice No.....” Document) Dated for supply of Materials/Equipments (hereinafter called as “the Transaction”).

WHEREAS Clause-6.1.2 of the Invitation for Bids (IFB),stipulates that Two or more Local SSI Units having been manufacturers of tender item(s) as per this tender specification, provided they fulfill the following eligible criteria;

- a) They should have legally valid consortium agreement as per the prescribed format for the purpose of participation in the bidding process. The total no of a consortium shall be limited to four members.
- b) All members of the Consortium should be the eligible manufacturer(s) of the materials / equipments tendered.
- c) Each member should have valid statutory BIS license to use ISI Mark, BEE three star or more level Certification, Type tested report for the tendered materials/equipments conducted within last five years as applicable for the tender.
- d) Consortium as a whole shall meet the qualifying norms specified in the tender, they participate.
- e) The lead member of the Consortium should meet at least 50% of the qualifying norms in respect of the supply experience.
- f) Besides the lead member, other member (s) of the Consortium should meet at least 15% of the qualifying norms in respect of the supply experience.
- g) All the Consortium member(s) shall authorize the lead partner by submitting a power of Attorney as per the prescribed format duly signed by the authorized signatories. The lead partner shall be authorized to receive instructions for and on behalf of all partners of the Consortium and entire execution of the contract including receipt of payment exclusively done through the lead partner.
- h) The Consortium and its members shall be jointly and severally responsible and be held liable for the purpose of guaranteed obligation and any other matter as required under the contract.
- i) Any member of the Consortium member(s) shall not be eligible either in an individual capacity or part of any other consortium to participate in the tender, where the said consortium participates.
- j) The prescribed formats for Consortium Agreement (Annexure – VII) and Power of Attorney (Annexure – VIII) are provided in the tender specification as enclosures.

AND WHEREAS the members of the Consortium strictly comply the eligible criteria of the CLAUSE -6.1.2 of the Invitation for Bids (IFB) as stipulated above,

AND WHEREAS bid has been proposed to be submitted to the purchaser vide bid by Lead Member based on this CONSORTIUM agreement between all the members, signed by all the members.

NOW THIS INDENTURE WITNESSETH AS UNDER:

In consideration of the above premises, in the event of the selection of Consortium as successful bidder, all the Parties to this Consortium Agreement do hereby agree abide themselves as follows:

1. M/sshall act as Lead Member for and on behalf of Consortium Members. The said Consortium members further declare and confirm that they shall jointly and severally be bound and shall be fully responsible to the Purchaser for the design, manufacture, supply, and successful performance of the materials /equipment, obligations under the supply contract under Agreement(s) submitted/executed by the Lead Member.
2. Despite any breach by the Lead Member or other member(s) of the CONSORTIUM agreement, the Member(s) do hereby agree and undertake to ensure full and effectual an successful performance of the contract with Purchaser and to carry out all the obligations and responsibilities under the said Contract in accordance with the requirements of the Contract.
3. If the Purchaser suffers any loss or damage on account of any breach of the Contract or any shortfall in the performance in meeting the performance guaranteed as per the specification in terms of the Contract, the Member(s)of these presents undertake to promptly make such loss or damage caused to the purchaser, on its demand without any demur. It shall not be necessary or obligatory for the purchaser to proceed against Lead member to these presents before proceeding against or dealing with the other members. The obligation of each of the member is absolute and not independent of the consortium or any member.
4. The financial liability of the members of this CONSORTIUM agreement to the Purchaser, with respect to any of the claims arising out of the performance or non- performance of the obligations set forth in the said CONSORTIUM agreement, read in conjunction with relevant conditions of the contract shall, however, not be limited in anyway so as to restrict or limit the liabilities of any of the members of the CONSORTIUM agreement. The liability of each member is absolute and not severable.
5. It is expressly understood and agreed between the members to this CONSORTIUM agreement that the responsibilities inter se amongst the members shall not in any way be a limitation of joint and several responsibilities and liabilities of the Members to the Purchaser. It is clearly understood that the lead member shall ensure performance under the agreement(s) and if one or more Consortium members fail to perform its/their respective obligations under the agreements, the same shall be deemed to be a default by all the Consortium Members. It will be open for the purchaser to take any steps, punitive and corrective action including the termination of contract in case of such default also.
6. This CONSORTIUM agreement shall be construed and interpreted in accordance with the laws of India and shall be subjected to exclusive jurisdiction within Bhubaneswar in all matters arising there under.
7. In case of an award of a Contract, all the members to the CONSORTIUM agreement do hereby agree that they shall be jointly and severally responsible for furnishing a contract performance security from a bank in favour of the purchaser in the forms acceptable to purchaser for value of 10% of the Contract price. It is also hereby agreed that the lead member shall, on behalf of the CONSORTIUM submit the contract performance security in the form of an unconditional irrevocable Bank guarantee in the prescribed format and as per terms of the contract.
8. It is further agreed that the CONSORTIUM agreement shall be irrevocable and shall form an integral part of the Contract, and shall continue to be enforceable till the Purchaser discharges the same. It shall be effective from the date first mentioned above for all purposes and intents.
9. Capitalized terms used but not defined herein shall have the meaning as assigned to them to the Tender Documents and/or the agreements.
10. In case of any dispute amongst the members of the Consortium, purchaser shall not be in any way liable and also the consortium members shall not be absolved from the contractual obligation in any manner.

IN WITNESS WHEREOF the Members to the CONSORTIUM agreement have through their authorized representatives executed these presents and affixed Common Seals of their companies, on the day, month and year first mentioned above.

- | | |
|--|---|
| <p>1. Common Seal of <.....>
 Has been affixed in my/our presence
 Pursuant to the Board of Director's
 resolution dated.....</p> <p>Signature.....
 </p> <p>Name.....
 Designation.....
 </p> | <p>For Lead/First Member</p> <p>(Signature of authorized
 representative)
 Name</p> <p>Designation</p> <p>Common Seal of the company</p> |
| <p>2. Common Seal of <.....>
 Has been affixed in my/our presence
 Pursuant to the Board of Director's
 resolution dated.....</p> <p>Signature.....
 </p> <p>Name.....
 Designation.....
 </p> | <p>For Second Member</p> <p>(Signature of authorized
 Representative)
 Name</p> <p>Designation</p> <p>Common Seal of the company
 </p> |
| <p>3. Common Seal of <.....>
 Has been affixed in my/our presence
 Pursuant to the Board of Director's
 resolution dated.....</p> <p>Signature.....
 </p> <p>Name.....
 Designation.....
 </p> | <p>For Third Member</p> <p>(Signature of authorized
 representative)
 Name</p> <p>Designation</p> <p>Common Seal of the company
 </p> |
| <p>4. Common Seal of <.....>
 Has been affixed in my/our presence
 Pursuant to the Board of Director's
 resolution dated.....</p> <p>Signature.....
 </p> <p>Name.....
 Designation.....
 </p> | <p>For Fourth Member</p> <p>(Signature of authorized
 representative)
 Name</p> <p>Designation</p> <p>Common Seal of the company
 </p> |

WITNESSES

- | | |
|--|--|
| <p>1.....
 (Signature)
 Name</p> | <p>2.....
 (Signature)
 Name</p> |
| <p>(Official address)</p> | <p>(Official address)</p> |

FORM OF POWER OF ATTORNEY FOR CONSORTIUM

(On Non-Judicial Stamp Paper of Appropriate value to be purchased in the Name of CONSORTIUM)

KNOW ALL MEN BY THESE PRESENTS THAT WE, the Members whose details are given hereunder.....have formed a CONSORTIUM and having our Registered Office (s)/Head Office (s) at (hereinafter called the 'Consortium' which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators and assigns) do hereby constitute, nominate and appoint M/s A company incorporated under the laws of and having its Registered/Head office atas our duly constituted lawful Attorney (hereinafter called "Lead Member") to exercise all or any of the powers for supplyfor which bids have been invited by the Purchaser namely SOUTHCO Utility, to undertake the following acts:

- (i) To submit proposal, participate and negotiate in respect of the aforesaid Bid – Specification of the Purchaser on behalf of the "Consortium"
- (ii) To negotiate with Purchaser the terms and conditions for award of the contract pursuant to the aforesaid Bid and to sign the contract with the Purchaser for and on behalf of the "Consortium"
- (iii) To do any other act or submit any document related to the above.
- (iv) To receive, accept and execute the contract for and on behalf of the "Consortium".
- (v) To submit the contract performance security in the form of an unconditional irrecoverable Bank guarantee in the prescribed format and as per terms of the contract.

It is clearly understood that the Lead Member shall ensure performance of the contracts(s) and if one or more Member fail to perform their respective portion of the contracts (s), the same shall be deemed to be a default by all the members.

It is expressly understood that this power of Attorney shall remain valid binding and irrevocable till completion of the defect or liability period in terms of the contract.

The CONSORTIUM hereby agrees and undertakes to ratify and confirm all the whatsoever the said Lead Member quotes in the bid, negotiates and signs the contract with the Purchaser and / or proposes to act on behalf of the CONSORTIUM by virtue of this Power of Attorney and the same shall bind the CONSORTIUM as if done by itself.

IN WITNESS THEREOF the members Constituting the CONSORTIUM as aforesaid have executed these presents on thisday ofunder the Common Seal (s) of their Companies.

For and on behalf of
the Members of CONSORTIUM

- 1. -----
- 2. -----
- 3. -----
- 4. -----

The Common Seal of the above Members of the CONSORTIUM:

The Common Seal has been affixed there unto in the presence of:

WITNESS

- 1. Signature.....

Name.....

Designation.....

Occupation.....

2. Signature.....

Name.....

Designation.....

Occupation.....

SELF DECLARATION FORM

Name of the Purchaser: -----

Tender Notice No: -----

Sir,

1. I / we, the undersigned do hereby declare that, I / we have never ever been blacklisted and / or there were no debaring actions against us for any default in supply of material / equipments or in the performance of the contract entrusted to us in any of the Electricity Utilities of India.
2. In the event of any such information pertaining to the aforesaid matter found at any given point of time either during the course of the contract or at the bidding stage, my bid/contract shall be liable for truncation / cancellation / termination without any notice at the sole discretion of the purchaser.

Yours faithfully,

Place-

Date-

Signature of Bidder with seal

(This form shall be duly filled-up and signed by the bidder & submitted along with the original copy of the Bid.)

PROFORMA FOR BANK GUARANTEE FOR EARNEST MONEY DEPOSIT

(ON NON-JUDICIAL STAMP PAPER OF Rs.100/-)

Ref Date Bank Guarantee No:

In accordance with invitation to Tender Notice No.----- Dated ----- of SOUTHCO Utility for the purchase of _____
(name of Material)M/s _____ Address _____
_____ wish/wished to participate in the said tender and as the Bank
Guarantee for the sum of Rs. _____ [Rupees _____ Valid for a
period of days (in words) is required to be submitted by the Bidder.

1. We the _____ [Indicate the Name of the Bank] [Hereinafter referred to as 'the Bank'] at the request of M/S _____ [Herein after referred to as supplier (s)] do hereby unequivocally and unconditionally guarantee and undertake to pay during the above said period, on written request by SOUTHCO Utility an amount not exceeding Rs. _____ to the SOUTHCO Utility, without any reservation. The guarantee would remain valid up to 4.00 PM of _____ [date] and if any further extension to this is required, the same will be extended on receiving instructions from M/s _____ on whose behalf this guarantee has been issued.

2. We the _____ [Indicate the name of the bank] do hereby further undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from the SOUTHCO Utility stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the SOUTHCO Utility by reason of any breach by the said supplier [s] of any of the terms or conditions or failure to perform the said Bid. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____ (in words)

3. We, the _____ Bank undertake to pay the SOUTHCO Utility any money so demanded notwithstanding any dispute or disputes so raised by the supplier [s] in any suit or proceeding instituted/pending before any Court or Tribunal relating thereto, our liability under this agreement being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the supplier(s) shall have no claim against us for making such payment.

4. We, the _____ Bank [Indicate the name of the bank] or our local branch at Berhampur further agree that the guarantee herein contain shall remain in full force and effect during the aforesaid period of ----- days and it shall continue to be so enforceable till all the dues of the SOUTHCO Utility under by virtue of the said Bid have been fully paid and its claims satisfied or discharged or till SOUTHCO Utility certifies that the terms and conditions of the said Bid have been fully and properly carried out by the said Supplier [s] and accordingly

discharges this guarantee. Unless a demand or claim under this guarantee is made on us in writing on or before the _____ (date) we shall be discharged from all liability under this guarantee thereafter.

5. We, the _____ Bank [Indicate the name of the bank] or our local branch at Berhampur further agree that the SOUTHCO Utility shall have the fullest liberty without our consent and without affecting in any manner our obligations here under to vary any of the terms and conditions of the said Bid or to extend time of performance by the said Supplier [s] from time to time or to postpone for any time or from time to time any of the powers exercisable by the SOUTHCO Utility against the said supplier [s] and to forbear or enforce any of the terms and conditions relating to the said bid and we shall not be relieved from our liability by reason of any such variation, postponement or extension being granted to the said Supplier [s] or for any forbearance act or omission on the part of the SOUTHCO Utility or any indulgence by the SOUTHCO Utility to the said Supplier[s] or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision, have effect of so relieving us.

6. This guarantee will not be discharged due to the change in the name, style and constitution of the Bank or the supplier [s].

7. We, the _____ Bank or our local branch at Berhampur lastly undertake not revoke this Guarantee during its currency except with the previous consent of the SOUTHCO Utility in writing.

8. We, the _____ Bank further agree that this guarantee shall also be invocable at our place of business at Berhampur (detail address of local branch with code no.) in the State of Odisha.

Dated _____ Day of 2016.

Witness ((Signature, names & address)

- 1.
- 2

For _____ [Indicate the name of Bank]

Power of Attorney No. _____

Date: _____

SEAL OF BANK

Note: The non-judicial stamp paper of worth Rs.100/- shall be purchased in the name of the bank, which has issued the bank guarantee.

FORM OF EXTENSION OF BANK GUARANTEE
(ON NON-JUDICIAL STAMP PAPER OF Rs.100/-)

Ref. No. _____

Dated: _____

SOUTHCO Utility,
Head Office: Courtpetta, Berhampur
Ganjam-760004

Dear Sirs,

Sub: Extension of Bank Guarantee No. _____ for Rs. _____ favouring yourselves expiring _____ on account of M/s. _____ in respect of contract No. _____ dated _____ (hereinafter called original bank guarantee).

At the request of M/s. _____ we _____ bank Branch office at _____ having its head office at _____ do hereby extend our liability under the above mentioned guarantee No. _____ Dated _____ for a further period of _____ Years/months from _____ to expire on _____ except as provided above, all other terms and conditions of the original bank guarantee No. _____ dated _____ shall remain unaltered and binding.

Please treat this as an integral part of the original guarantee to which it would be attached.

Yours faithfully,

For _____

Manager/Agent/Accountant

Power of Attorney No. _____

Date: _____

SEAL OF BANK

Note: The non-judicial stamp paper of worth Rs.100/- shall be purchased in the name of the bank, which has issued the bank guarantee.