



North Eastern Electricity Supply Company of Odisha Limited

**TENDER SPECIFICATION FOR PROCUREMENT
OF DISTRIBUTION TRANSFORMERS (3 STAR
RATED) & LT XLPE AB CABLE
(FOR WORK UNDER INTEGRATED ACTION)
PLAN**

TENDER NOTICE NO- NESCO/IAP/ 01

Date: 18.01.2011

- 1. DATE OF OPENING OF TENDER: 18.02.2012**
- 2. TIME: 3.30 PM**
- 3. PLACE: Corporate Office, NESCO, Januganj, Balasore – 756019**

North Eastern Electricity Supply Company of Odisha Ltd.(NESCO)

Corporate Office:

Januganj, Balasore – 756019, Odisha

Ph. No. 06782-269864, Fax: 06782-263259,Email-purchase@nescoorissa.com

TENDER NOTICE NO: NESCO/IAP / 01 Date: 18.01.2012

Material Name: 11/0.4 KV 25, 63 &100 KVA Distribution Transformers (3 Star Rated) & LT XLPE AB Cable

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North Eastern Electricity Supply Company of Odisha Ltd.(NESCO)

Corporate Office:

Januganj, Balasore – 756019, Odisha

Ph. No. 06782-269864, Fax: 06782-263259, Email-purchase@nescoorissa.com

TENDER NOTICE

Tender Notice No- NESCO/IAP / 01 Date: 18.01.2012

For and on behalf of the North Eastern Electricity Supply Company of Odisha Ltd. (NESCO) the undersigned invites sealed tenders in duplicate on two part bidding system from the eligible bidders, who comply to the terms and conditions for the supply of following materials superscribing the Tender Specification No., Name of the material & date of opening (as mentioned in the specifications).

The tender papers can be had from the undersigned at the above address on payment of the cost of Tender Paper indicated below in shape of Account Payee bank Draft drawn on any Public Sector Bank in favour of the North Eastern Electricity Supply Company of Odisha Ltd. payable at Balasore. The cost of tender paper is non-refundable.

SCHEDULE OF MATERIALS TENDERED:

| Group | Name of Materials | Rating | Unit | Quantity | Cost of Tender Paper (Rs) | EMD (Rs) |
|-------|----------------------------|--------------------------------------|------|----------|-------------------------------|-----------------------------|
| A | Distribution Transformers(| 11/0.4 KV, 100KVA (3 Star rated) | No | 99 | 10,000.00+VAT 4%=10,400.00 | 1% of total quoted value |
| | Distribution Transformers(| 11/0.4 KV, 63 KVA (3 Star rated) | No | 72 | | |
| | Distribution Transformers(| 11/0.4 KV, 25 KVA (3 Star rated) | No | 84 | | |
| B | LT XLPE AB Cable | 3x50+1x55+1x16 mm2 | Km | 70 | 10,000.00+VAT 4%=10,400.00 | 1% of total quoted value |
| | LT XLPE AB Cable | 3x35+1x25+1x16 mm2 | Km | 05 | | |

TIME SCHEDULES:-

| | | |
|---|--|-----------------------------|
| 1 | Last Date & Time for selling of tender papers | 18.02.2012 up to 11.30AM |
| 2 | Last Date & Time for submission of Tender | 18.02.2012 up to 2.00 PM |
| 3 | Date & Time for Opening of Tender(Techno-Commercial Bid) | 18.02.2012 at 3.30 PM |
| 4 | Date & Time for Opening of Tender(Price Bid) | 22.02.2012 at 11.30AM |

The intending bidders can also download the tender document from our website www.nescoorissa.com. However the bidder has to furnish a Account Payee Bank Draft drawn on any Nationalized/Scheduled Bank in favour of the North Eastern Electricity Supply Company of Odisha Ltd. payable at Balasore for the cost of the Tender Paper indicated above, along with his bid, failing of which

the bid will be rejected outright. In the event of any specified date for the sale, submission or opening of bids being declared as holiday for NESCO, the bids will be sold / received / opened up at the appointed time on the next working day. NESCO also reserves the right to accept or reject any or all tenders without assigning any reason thereof, if the situation so warrants.

For detail Tender Specification & Terms and Conditions, please visit our website www.nescoorissa.com,

General Manager (O&M, Store, Purchase)
NESCO, Balasore, Odisha

SECTION – I

INVITATION FOR BIDS (IFB)

INVITATION FOR BIDS (IFB)

FOR SUPPLY OF

11/0.4 KV 100, 63, 25 KVA Distribution Transformers(3 Star Rated) & LT XLPE AB Cable

(COMPETITIVE BIDDING)

Tender Notice No- NESCO/IAP / 01 Date: 18.01.2012

SECTION –I

- 1.0 For and on behalf of the NESCO, the undersigned invites bids under two part bidding system in sealed cover in duplicate duly superscribed with tender Notice no- NESCO/IAP / 01 Date: 18.01.2012 and date of opening dt 18.02.12 & dt 22.02.12 from the reputed manufacturers/Suppliers only for **design, manufacture, supply, type testing, inspection, loading at factory, transportation to & unloading at site / stores including guaranteed obligation for supply of 11/0.4 KV 100,63,25 KVA Distribution Transformers(3 Star Rated) & LT XLPE AB Cable**
- 2.0 **Submission of the Bids:**
- 2.1 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. The due date of submission shall be **18.02.2012 up-to 2.00 PM.**
- 3.0 NESCO will not be responsible for any costs or expenses incurred by bidders in connection with the preparation and delivery of bids.
- 3.1 NESCO 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:

| Description | Date |
|--|--|
| Last date for sale of tender papers | 18.02.2012 up to 11.30AM |
| Submission of Tenders | 18.02.2012 up to 2PM |
| Opening of Tenders(Technical) | 18.02.2012 at 3.30PM |
| Completion of the delivery | 45 days from the date of issue of Purchase Order as per Delivery schedule. |
| Cost of Tender Paper (Non-Refundable) | Rs. 10,400.00 (Rupees ten thousand four hundred only) for each group in shape of Cash/ Account Payee demand draft issued in favour of the North Eastern Electricity Supply Company of Odisha Ltd payable at Balasore |

| | |
|-------------------------|---|
| Amount of E.M.D payable | In shape of account payee demand draft / Bank Guarantee in favour of the “North Eastern Electricity Supply Company of Odisha Ltd.”. For details, please refer clause no. 9.2 of ITB |
|-------------------------|---|

5.0 SCHEDULE OF REQUIREMENTS & DELIVERY:

| |
|--|
| 45 days from the date of issue of Purchase Order |
|--|

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

6.0 QUALIFICATION OF BIDDERS:

6.1 Criteria for qualification :

6.1.1. Technical:

- a) The bidder should be a manufacturer/supplier of **Distribution Transformers (3 Star Rated) & LT XLPE AB Cable of above ratings** for which he submits his offer.
- b) The bidder has to quote at least **50%** of the tendered quantity of the material covered under this notification. The bidder should have supplied Distribution Transformers(3 Star Rated) & LT XLPE AB Cable of same ratings or higher voltage ratings minimum **100 %** 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 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 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.
- d) The offered materials should have been type-tested 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 before the date of opening of the tender. **Bids not accompanied with type test reports conducted within five years & the drawings of the offered Materials duly approved by the Type Testing Agency shall not be considered for evaluation.**
- e) NESCO reserves the right to waive minor deviation, if they do not materially effect the capacity of the bidder to perform the contract.
- f) The bidders who have earlier failed to execute the Purchase Order(s) of NESCO/WESCO/SOUTHCO and or blacklisted by the NESCO, WESCO & SOUTHCO/any of the distribution Utility shall not be eligible to participate in this tender.

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

GM (O&M,Purchase)/DGM(Purchase)
Corporate Office,NESCO,Januganj,Balasore,Odisha

SECTION –II

INSTRUCTION TO BIDDERS (ITB)

SECTION –II

INSTRUCTION TO BIDDERS (ITB)

1. SOURCE OF FUNDS:

- 1.1 NESCO hereinafter referred to as the “**Purchaser**” is desirous of procurement of materials FOR WORK UNDER INTEGRATED ACTION PLAN under NESCO from the funds available from 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 him self 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 **Purchaser** 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(Transformer) | - | Section –IV |
| (e) List of Annexure | - | Section –V |
| (f) Technical Specification(AB Cable) | - | Section –VI |

- 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 addendum.

6.2 The Amendment/ Addendum shall be part of the Bidding Documents, pursuant to Clause 6.1, and it will be binding on the bidders.

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. **DOCUMENTS COMPRISING THE BID:**

8.1 **The Bid prepared and submitted by the Bidder shall comprise of two parts i.e. Part-I (Techno-Commercial Bid), & Part-II (Price Bid).**

(A) The Part-I (Techno-Commercial Bid) must contain the following documents:

(a) Bid Document signed by the bidder in every page, all other Schedules / Formats enclosed in the Bid-Document (i.e. Annexure-I, II, IV, V, VI (A), VI (B), VII) duly filled in & signed by the bidder with seal in a separate envelop superscribed as Techno Commercial Bid. **Bids containing information in formats other than our prescribed formats shall not be acceptable and may make the bid non-responsive.**

(b) Requisite Earnest Money Deposit (E.M.D) as per clause No. 4 of Section –I, IFB in a separate envelop superscribed as **“EMD” failing which the bid may be treated non-responsive.**

(i) Self attested copies of Purchase Orders executed in last 3 Years.

(ii) Self attested copies of Performance Certificates / Successful contract completion Certificates from the buyers preferably from Electricity Distribution Utilities / Government Organizations.

(iii) Type Test Reports from CPRI or NABL Accredited Testing Laboratory for the offered equipments along with the copies of drawings duly approved by the Type Testing Agency for the tests conducted not before 5 years from the date of opening of Bids.

(iv) Copies of Profit & Loss Accounts & Audited Balance sheet indicating Turnover for best 3 financial years out of last 5 financial years.

(c) Power of Attorney / Board resolution indicating that the person(s) signing the Bid have the authority to sign the Bid and as such the Bid is binding upon the Bidder during the full period of its validity, in accordance with clause 14.

(d) Requisite **Cost of Tender Document as per clause 4 of Section –I, IFB** in shape of account payee Bank draft from a Nationalized/Scheduled Bank in favour of “The North Eastern Electricity Supply Company of Odisha Ltd.” Payable at Balasore is to be

enclosed along with the Bid, if the document is downloaded from our web-site.

Or else, the Original Copy of Money Receipt for the payment made towards the cost of Tender Document is to be enclosed along with Bid, if the document is directly purchased from our Cash Counter at our Regd. Office.

(B) Part-II (Price Bid) :

The Price Bid shall contain the price schedules as per the prescribed format enclosed as (Annexure-V) duly filled in & signed by the bidder with seal.

(This shall be submitted in a **double sealed envelop separately duly superscribed as “Price Bid”**)

9. SUBMISSION OF BID :

9.1 The Bidder shall complete and submit the Bid Document in duplicate enclosing all documents at clause “8” above in two sealed envelopes for Original & Duplicate separately, superscribing the Tender Notice No....., Date ..., Date of Opening..... & Description of Material .

9.2 E.M.D:

9.2.1 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.

9.2.2 The E.M.D is required to protect the Purchaser against the risk of bidder’s conduct, which would warrant the security’s forfeiture.

9.2.3 The E.M.D shall be in the following form:

A/C payee demand draft in favour of North Eastern Electricity Supply Company of Odisha Ltd. issued by a Nationalized/Scheduled Bank payable at Balasore.

OR

Bank Guarantee in favour of “North Eastern Electricity Supply Company of Odisha Ltd.” issued by a Nationalized/Scheduled bank encashable at local branch at Balasore only. The BG shall be strictly as per the format enclosed at Section – V, Annexure – X. The BG should be valid for 30 days beyond the bid validity period & 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.

9.2.4 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.

9.2.5 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.

10.0 **BID PRICE:**

10.1 Bidders have to quote for the entire quantity of materials/equipment covered under this specification strictly as per the enclosed format in Section –V. 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 herein at Annexure – V, stating the Unit Price for each item, all other livable taxes & duties, freight & insurance separately and thereby arriving at the total amount.**

10.2 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.

10.3 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.

10.4 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.**

11. **CONTRACT PRICE:**

11.1 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.

11.2 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.

12. **BID CURRENCIES:**

12.1 Prices shall be quoted in Indian Rupees Only.

13. **DOCUMENTS ESTABLISHING CONFORMITY TO THE BIDDING DOCUMENTS:**

13.1 The bidder shall confirm by documentary evidence of the Good's conformity to the Bidding Documents by submitting materials/equipment data sheets.

14. **PERIOD OF VALIDITY OF BIDS:**

14.1 Bids shall remain valid for **180 days** from the date of opening of commercial Bids.

14.2 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.

15. **ALTERNATIVE BIDS:**

15.1 Bidders shall submit Bids, which comply with the Tender Documents. Alternative bids shall not be considered for evaluation.

16. **FORMAT AND SIGNING OF BID:**

- 16.1 The original Bid Form and accompanying documents (as specified in Clause 9), clearly marked “**Original Bid**”, plus one copy of the Techno-Commercial Proposal must be received by the **Purchaser** at the date, time and place specified pursuant to Clauses 17 and 18. The Price Bid in Original should be submitted in a separate sealed envelope marked as “**Price Bid**”. In the event of any discrepancy between the original and the copies, the original shall govern.
- 16.2 The original and the duplicate copy of the Bid shall be typed or written legibly and shall be signed by the Bidder or a person or persons duly authorized to sign on behalf of the Bidder. Such authorization shall be indicated by written Power-of-Authority/ Board Resolution accompanying the Bid.
- 16.3 The Bid shall contain no interlineations, erasures, overwriting except as necessary to correct errors, made by the Bidder, in which case such corrections shall be initialed by the person or persons signing the Bid.

17. **SEALING AND MARKING OF BIDS:**

- 17.1 Bid submission: One Original, One Copy of all the Bid Documents shall be sealed and submitted to the Purchaser before the last date & time for submission of the bid.
- 17.2 The Bid proposal should be divided into two parts and should be submitted in two separate sealed envelopes, addressed to Purchaser. All the envelopes should bear the Name and Address of the Bidder and marking is made for the Original and the duplicate copy. The envelopes should be superscribed with the title of its contents, as follows:
- i) **TECHNO-COMMERCIAL BID ENVELOPE:** Shall contain the Bid Security (EMD), Cost of Tender Document, all supporting documents for qualifying requirement of this tender, duly filled in formats Abstract of General Terms & Conditions, Declaration Form, Technical Data Schedule, Technical & Commercial Deviations formats, Un-quoted blank Price Schedule etc. enclosed at Annexure I, II, IV, V, VI (A), VI (B), VII, at Section-V of this document.
 - ii) **PRICE BID ENVELOPE:** Shall contain the Price schedule duly filled in & signed as per Annexure –V at Section-V of this document. (This shall be submitted in a double sealed envelope separately.)

17.3 **The inner and outer envelopes shall:**

- a) Be addressed to the **Purchaser** at the following address:

GM (O&M,Purchase), Corporate Office: Januganj, Balasore –756019,Odisha

Bear the Project name as: “**Design, Manufacture, Testing, Inspection and Supply of Distribution Transformers(3 Star Rated) & LT XLPE AB Cable** as per **Schedule of Requirement in Section-I**) – Tender Notice No. NESCO/IAP/01 Distribution Transformers(3 Star Rated) & LT XLPE AB Cable Dt. 18.1.2012

In addition to the information required in sub clause (a) and (b) above, the outer envelope shall indicate the name and address of the Bidder to enable the Bid to be returned unopened in case it is declared “Late” pursuant to Clause 20.

- 17.4 The Bidders have the option of sending the Bids by Post/ Courier services or in person. Bids submitted by Telex/Telegram/Fax will not be accepted. No request from any Bidder to the **Purchaser** to collect the proposals from Airlines/ Cargo/Courier Agents etc. shall be entertained by the Purchaser.

18. **DEADLINE FOR SUBMISSION OF BIDS:**

18.1 The original Bid together with required copies, must be received by the **Purchaser** at the address specified in Clause 17.3 not later than **14.00 Hrs. (IST)** on/before the due date as indicated in the invitation for bids.

18.2 The **Purchaser** may, at its discretion, extend the deadline for the submission of Bids by amending the Bidding Documents, in which case all rights and obligations of the Purchaser and Bidders previously subject to the deadline will thereafter be subject to the deadline as extended.

19. **ONE BID PER BIDDER:**

19.1 Each Bidder shall submit only one Bid by himself. A Bidder, who submits more than one Bid for the same item, will cause all those Bids to be rejected out rightly.

20. **LATE BIDS:**

20.1 Any Bid received by the Purchaser after the deadline for submission of Bids prescribed by the Purchaser, pursuant to Clause 18, will be declared “Late” and will be rejected out rightly and will be returned unopened to the Bidder.

21. **MODIFICATION AND WITHDRAWAL OF BIDS:**

21.1 The Bidder may modify or withdraw his Bid after the Bid’s submission, provided that written notice of the modification or withdrawal is received by the **Purchaser** prior to the deadline prescribed for submission of Bids.

21.2 The Bidder’s modification or withdrawal notice shall be prepared, sealed, marked and dispatched in accordance with the provisions of Clause 17 & 18. A withdrawal notice may be sent by fax but must be followed by an original signed confirmation copy.

21.3 No Bid can be modified subsequent to the deadline for submission of Bids.

21.4 No Bid can be withdrawn in the interval between the deadline for submission of Bids and the expiry of the period of Bid validity specified by the Bidder on the Bid form as per clause 14.

22.0 **EVALUATION OF BID:**

22.1 **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.

23. **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.

24. **PRELIMINARY EXAMINATION OF BIDS / RESPONSIVENESS:**

- 24.1 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.
- 24.2 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.
- 24.3 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.
- 24.4 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.

25 **EVALUATION AND COMPARISON OF BIDS:**

- 25.1 The evaluation of Bids shall be done basing on the delivered cost competitiveness basis for each item separately.
- 25.2 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.

- 25.3 **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.**

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.

AWARD OF CONTRACT:

- 26.0 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. The purchaser reserves the right to distribute the tender quantity among the qualified bidders at the lowest price.

26.1 CONTACTING THE PURCHASER:

- 26.1.1 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.
- 26.1.2 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.

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

- 26.2.1 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.
- 26.2.2 In the interest of work, the Purchaser reserves the right to relax any terms and conditions without affecting the quality & price of the equipments.
- 26.3 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.

26.4 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 terms and conditions at the time of placing the orders or during the execution of the Contract.

26.5 LETTER OF INTENT / NOTIFICATION OF AWARD:

- 26.5.1 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 3 days** of issue of the letter of intent / Notification of Award by Purchaser.

27.0 PERFORMANCE SECURITY:

- 27.1 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 Public Sector Bank in favour of the Purchaser encashable at Balasore 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.

28. **CORRUPT OR FRAUDULENT PRACTICE:**

28.1 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.

28.2 Further more, Bidders shall be aware of the provision stated in the General Terms and Conditions of Contract.

29.0. **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/Consortium 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 NESCO 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 else where 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 atleast 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.

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 first hand knowledge in assembly of the equipment and for its 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.

Acquire the defective equipment / materials at reduced price considered equitable under the circumstances.
- c)

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 VI (A) & VI (B) 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(a) 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.
- (b) 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.
- (c) CST / VAT clearance certificate, Copy of PAN card.

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.100in the prescribed format from a Public Sector Bank encashable at Balasore 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 As time is the essence of contract, the materials should be supplied strictly as per supply schedule as stipulated in Purchase order failing to which order to be treated as cancelled & contract performance Bank Guarantee will be invoked.

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 up to 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 **MD, NESCO** 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 Balasore 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, PO Order No. & Date” by a way of embossing / punching / casting etc. This should be clearly visible to naked eye.
- 29.2 Separate thoroughly welded 3 mm plate to be provided with punching mark of ‘Quantity of oil’ & ‘Date of Supply’ with enamel paint.
- 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 25 KVA, 63 KVA, 100 KVA (11/0.433) KV
DISTRIBUTION TRANSFORMERS (3 STAR RATED)
& LT XLPE AB CABLE**

**TECHNICAL SPECIFICATION
(DISTRIBUTION TRANSFORMER)**

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 BEE specified 3 Star Distribution Transformers(3 Star Rated) & LT XLPE AB Cable for outdoor use in the networks of NESCO.The Transformers(3 Star Rated) 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 are **25 KVA, 63 KVA & 100 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 three 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 1.2 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(3 Star Rated) 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 (3 Star Rated). |
| | IS 1180 | Outdoor Three Phase Distribution Transformers (3 Star Rated) up to 500KVA, 11/ 0.4 KV, Non- Sealed Type. |
| IEC 137 | IS 2099 | Bushing for Alternating Voltages above 1000Volt. |
| IEC 156 | | Method of determining Electric Strength of Insulating Oils. |

| | | |
|-----------------|---------|---|
| IEC 296 | IS 335 | Specification for Unused Mineral Insulating Oils for Transformers (3 Star Rated) and Switchgear. |
| | IS 6792 | Method of determination of electric strength of insulating oils. |
| IEC 354 | IS 6600 | Loading Guide for oil immersed Transformers(3 Star Rated) |
| IEC 437 | | Radio Influence Voltage Measurement. |
| IEC 551 | | Determination of Transformer and Reactor Sound Levels. |
| IEC 616 | | Terminal and Tapping markings for power Transformers (3 Star Rated). |
| IEC 722 | | Guide to the Lightning and Switching impulse testing of Power Transformers (3 Star Rated) 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 | 100,63,25 |
| 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) | 25KVA, 63 KVA, 100KVA 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 (3 Star |
| Rated) & | LT XLPE AB Cable | |
| 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 ⁰ 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 tapping | 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 ⁰ C | | |
| a) | Of top oil measured by thermometer. | 35 ⁰ C | |
| b) | Of winding measured by resistance. | 40 ⁰ 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 | Polarisation 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 rating | Max. Losses at 50% load (Watts). | Max. Losses at 100% load (Watts). |
| a) | 25 KVA | 210 | 695 |
| b) | 63 KVA | 380 | 1250 |
| c) | 100 KVA | 520 | 1800 |

6. TYPE OF TRANSFORMER

6.1 The Transformers(3 Star Rated) 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(3 Star Rated) for out door use. The design of the tank, fittings, bushings, etc shall be such that it will not be necessary to keep the transformer energised to prevent deterioration as the Transformers(3 Star Rated) 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

- 25 KVA, 11/0.433 KV, Aluminum wound
- 63 KVA, 11/0.433 KV, Aluminum wound
- 100KVA, 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(3 Star Rated)

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

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

7.7 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.

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(3 Star Rated) shall have the following ratio :-

- ◆ the nominal voltage ratio shall be 11,000/ 433 V for 25 KVA, 63 KVA, 100 KVA 11/0.4KV Transformers(3 Star Rated)
- ◆ Tolerance on the voltage ratio shall be $\pm 0.5\%$.
- ◆ for Transformers(3 Star Rated) & up to 100,63,25 KVA, 11/0.4 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(3 Star Rated) 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 25 KVA,63 KVA & 100KVA Transformers (3 Star Rated). No negative tolerance on percentage Impedance is allowed.

10 LOSSES

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

| KVA Rating | Maximum losses at 50% loading (Watts) | Maximum losses at 100% loading (Watts) |
|------------|---------------------------------------|--|
| 25 KVA | 210 | 695 |
| 63 KVA | 380 | 1250 |
| 100KVA | 520 | 1800 |

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 (short circuit test and Impulse test) conducted at Central Power Research

Institute / NABL Accredited laboratory for the offered Transformers(3 Star Rated) 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, NESCO 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(3 Star Rated) 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(3 Star Rated) 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 10% over voltage and at frequency of 48.5 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 average noise level of the Transformers (3 Star Rated) shall not exceed 51db. The measurement shall be carried out in accordance with IEC 551 at a distance of 300mm from the envelope 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 / Amorphous laminations to be utilized for the offered Transformers(3 Star Rated) 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 insulating 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.
- 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.

INTERNAL EARTHING

- 17.2** All internal metal parts of the transformer, with the exception of individual laminations and their individual clamping plates shall be earthed.

- 17.2.1
- 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:

- 17.2.2
- 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 assemblies 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 electro magnetic induction and capacitance coupling shall be limited to BIL of LV winding.

17.3.17 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 confirm 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 | 255 mm |
| Phase to earth | 140 mm |

18.1.3 The 11 KV bushings of Transformers(3 Star Rated) shall be provided with a bi-metallic terminal connector or suitable device to receive 35 –100,63,25 mm² AAAC or ACSR conductor directly without any bi-metallic action. The dia of HT bushing stud should not be less than 12.5 mm.

18.1.4 The secondary bushings of Transformers(3 Star Rated) shall be fitted with non ferrous threaded terminals of dia not less than 20 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(3 Star Rated) shall be provided with two earthing terminals conforming to relevant Standards and M12 ISO metric bolt and nut which shall be non ferrous. 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 in accordance with IS 1180 (Part 2).

- The tank shall be at atmospheric pressure at an internal temperature of 10⁰C.
- The tank shall be designed for an internal pressure of 100Kg/ m² at 50⁰ C ambient conditions. It shall be capable of withstanding an unlimited number of 24 hours cyclic variations of internal pressure from atmospheric to this value.
- The tendered shall state the top oil temperature at which the tank internal pressure shall reach the value of 100 kN/ m² and the value of steady load which will result in this top oil temperature with an ambient temperature of 45⁰ C.

- 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.

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 (3 Star Rated) 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 (Normal Oil Level Gauge Indicator) shall be fitted on the Transformers(3 Star Rated) and so located that it can be easily read from ground level. The gauge fitted with the conservator shall be graduated for temperatures of 5⁰ C, 30⁰ C and +98⁰ C.

22 CONSERVATORS AND BREATHERS

All the Transformers(3 Star Rated) 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 5⁰ C shall be well above the sump level.

22.2 All Transformers(3 Star Rated) 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/ platform lugs.
- ◆ Pressure relief device or explosion vent.
- ◆ Silica gel breather.
- ◆ Normal Oil Level Gauge Indicator for all Transformers indicating three position(3) of oil - minimum. 5⁰ C, 30⁰ C and 98⁰ C.
- ◆ Top filter valve with locking arrangement.
- ◆ Bottom filter valve with locking arrangement duly welded with a separate plug
- ◆ Air release plugs at transformer top cover, bushing turrets etc.
- ◆ Set of Radiators.
- ◆ Conservator Tank

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(3 Star Rated) 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.

| S.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 100,63,25 mm thick layer at |
| 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 |

26 RATING AND CONNECTION PLATE

Each transformer shall be provided with a rating plate of weatherproof material showing the following items indelibly marked :

- ◆ Type of transformer
- ◆ Standard to which it is manufactured (preferably IEC 76)
- ◆ 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 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
- ◆ 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.
- ◆ Weight of core and windings in kg; and
- ◆ Name of the purchaser
- ◆ NESCO,IAP

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(3 Star Rated) up to 100KVA 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 420 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- NESCO, Odisha, Name of the Supplier – M/s - -----, Year of Manufacture, Guarantee Period (i.e. 2 years from the date of installation)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. 'DESI' to be written on the body of the conservator tank with white paint having total letter size 2"x8".

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 manufacture'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 | | | |
| | 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 Dark Admiral Gray .

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 SUPRESSION 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(3 Star Rated) and the tests shall be conducted in accordance with relevant National/ International Standards. No sampling is allowed. In addition, tank tests in accordance with IS: 1180 shall be carried out.

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

- a) Measurement of winding resistance.
- b) Voltage ratio measurement and check of polarity and vector group. Bushing positions shall have permanent markings at this stage of production;
- c) measurement of impedance voltages/ short circuit impedance at rated current and frequency
- d) measurement of load loss at full load and 75⁰C;
- e) measurement of neutral unbalance current;
- f) Temperature rise test on one transformer of each rating and measurement of hot resistance.
- g) measurement of no-load loss and no-load currents at full, 50%, 75%, 90%, 110%, 112.5% and 120% of rated voltages;
- h) induced over voltage withstand test at 22KV for 60 sec on the HV windings;
- i) power frequency voltage withstand tests on HV and LV windings;
- j) magnetic balance test
- k) Polarization Index test P.I. value shall be not less than 1.5. P.I. = IR at 600 sec / IR at 60 sec.
- l) oil leakage test : The criterion of leakage shall be discoloration by oil of whitewash applied externally to suspected parts at an oil temperature of 90⁰C or other method, as approved by the Purchaser;
- m) Pressure test on transformer tank on one unit for each rating.
Bushings and oil shall be subject to the following routine tests.
- n) bushing routine test: in accordance with IEC 137/IS 3347;
- o) 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 measurements and tests should be carried out in accordance with the standard specified in each case as indicated in the following table if the same tests were not conducted earlier at CPRI or any NABL accredited Laboratory on the Transformers(3 Star Rated) of the offered design.

Table 6: Transformer type tests

| Type Test | Standard |
|--|-----------------------|
| Temperature Rise Test | IEC 76/IS 2026/IS6600 |
| Impulse Voltage Withstand Test, including Full Waves and Chopped Waves as listed below | IEC 76/IS 2026 |
| Noise Level Measurement | IEC 551 |
| Short Circuit Test | IEC 76 / IS 2026 |

In accordance with IEC 76-3 the following sequence of impulses should have been/ should be applied;

- one full wave at 50% BIL;
- one full wave at 100% BIL;
- one chopped wave at 50% BIL
- two chopped waves at 100% BIL and
- two full waves at 100% BIL.

31.2.2 If the type test report(s) submitted by the bidder do not fulfill the criteria, as stipulated in this technical specification/ Bidder's offer, the relevant type test(s) has/ have to be conducted by the Bidder at his own cost in CPRI/ NABL accredited laboratory in the presence of purchasers representative(s) without any financial liability to purchaser in the event of order placed on him.

31.2.3 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. The type test(s) are to be test-witnessed by the Purchaser's representative(s). For such type of repetition of type tests. the Bidder may quote Type

Test Charges in the enclosed Price Schedule or conduct the tests free of cost.

- 31.2.4 The supplier shall furnish calculations in accordance with IS: 2026 to demonstrate the Thermal ability of the Transformers(3 Star Rated) 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 75⁰C. 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 75⁰C 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(3 Star Rated) 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(3 Star Rated) 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 as in Annexure-3, Section- V 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(3 Star Rated) 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 Odisha;
- ◆ 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 :

- Completed technical data schedule;
- Descriptive literature giving full technical details of equipment offered;
- Outline dimensions drawing for each major component, general arrangement drawing showing component layout and general schematic diagram;
- Type test certificates (short circuit withstand test and impulse test) of the offered Transformers(3 Star Rated) conducted at CPRI/ or any NABL Accredited laboratory without which tender will be out rightly rejected.
- 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 trouble shooting 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(3 Star Rated) 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. 33.2.2 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(3 Star Rated) showing the nature and arrangements of insulation and terminal connection.
 - h. Name plate drawing showing details as per Cl. 23 of Part-2 of Technical Specification.

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 place 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(3 STAR RATED)

(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) A quantity if more than 100,63,25 no's shall not be entertained for stage inspection
- (ii) 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.
- (iii) 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 uised 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 100,63,25 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 plate (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 HV 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 reinforcing 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) Vacuum of (-) 0.7 Kg/sq cm for 30 minutes | | | |
| | b) Pressure of 0.8 Kg/sq cm for 30 minutes | | | |
| (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 die cast metal oil level gauge indicator having three positions at (-5° C, 30° C and 98° 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 100KVA 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 | | | |
| | 1. Tank body with light blue colour | | | |
| | 2. Conservator with white colour | | | |
| (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 | | | |

*Slope of tank top with standard rain guard provision at all four sides

COMPANY INSPECTING OFFICER

FIRMS
REPRESENTATIVE

DATE OF INSPECTION

42. Loss Capitalization:

As loss level is fixed in case of Star Rating Transformers(3 Star Rated), i.e, 25 KVA, 63 KVA & 100KVA, there is no requirement of application of loss capitalization.

SECTION –V

LIST OF ANNEXURES

(SCHEDULES AND FORMATS)

ABSTRACT OF GENERAL TERMS AND CONDITIONS

For supply of Distribution Transformers (3 Star Rated)

1. Whether the bidder is a Manufacturer or Supplier & furnished relevant documents: Yes / No
2. Required Cost of Tender Furnished Yes / No
3. Required Earnest Money Furnished in Demand Draft Yes / No
4. Whether Type test certificates enclosed with the bid: Yes / No
5. Manufacturer's past supply experience including user's certificate furnished or not: - Yes / No
6. Audited annual reports for the last 3 years furnished or not: Yes / No
7. Deviation to the specification , if any (List enclosed or not):- Yes / No
8. Whether agreed to Purchaser's Delivery schedule: Yes / No
If agreed,
 - a) Date of commencement :
 - b) Rate of delivery per month :
9. Whether agreed to Purchaser's Guarantee clause:- Yes / No
10. Whether agreed for 180 days' validity period of Prices Yes / No
11. Whether the Prices are **FIRM**? Yes / No
12. Whether agreed to furnish security deposit in shape of B.G. encashable at Balasore in case his tender is successful: - Yes / No
13. Whether agreed to penalty for delayed delivery: - Yes / No
14. Whether agreed to Purchaser's standard terms of payment or not: Yes / No
15. Valid ITCC & STCC furnished or not: Yes / No

Signature of the bidder
With seal of the Bidder

This form is to be duly filled up & signed by the Bidder along with seal & submitted along with the Part-I of tender.

DECLARATION FORM

To

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 THE <PURCHASER>& for the sum as applicable to me / us as per clause No.23 in Annexure-III(A) of this specification within fifteen 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.....200....

Yours faithfully,

(Signature of 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 North Eastern Electricity Company of Odisha Ltd. (NESCO) ,Corporate Office,Januganj,Balasore – 756019,Odisha registered under the Company Act 1956 (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 NESCO has agreed (1) to exempt the Contractor from making payment of security deposit, (2) to release 100,63,25% 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 NESCO 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 NESCO 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 NESCO an amount not exceeding Rs. _____(Rupees _____) only against any loss or damage caused to or suffered by NESCO 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 NESCO stating that the amount claimed is due by way of loss or damage caused to or suffered by NESCO 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 NESCO 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 irrevocable.

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 NESCO under by virtue of the said Agreement have been fully paid and its claim satisfied or discharged or till NESCO 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.)
_____, Balasore in writing on or before
_____(date) we shall be discharged from all liability under this guarantee thereafter.

5. We, the _____ Bank further agree that NESCO 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 NESCO or any indulgence by NESCO 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 NESCO 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 Balasore (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 Balasore a written claim or demand and received by us or by Local Branch at Balasore 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.

Tender Notice NO. NESCO/IAP/ 01 Date: 18.1.2012

ANNEXURE-IV

GUARANTEED TECHNICAL PARTICULARS FOR 100, 63, 25KVA, 11/0.4KV, 3-PHASE STAR RATED DISTRIBUTION TRANSFORMERS

(To be furnished by the Manufacturer)

| Sl. No | Description | As Specified | Bidder's Offer |
|--------|--|--|----------------|
| 1 | Make | | |
| 2 | Name of the Manufacturer | | |
| 3 | Place of Manufacture | | |
| 3 (a) | Type of B.E.E Specified Star Level to be fixed near Name Plate. | Three Star | |
| 4 | Voltage Ratio | 1100,63,250/433V | |
| 5 | Rating in KVA | 100, | |
| 6 | Core Material used and Grade: | CRGO and M3 or Better | |
| | a) Flux density | 1.5 Tesla (Max.) | |
| | b) Over fluxing without saturation (Curve to be furnished by the Manufacturer in support of his claim) | | |
| 7 | Maximum temperature rise of: | | |
| | a) windings by resistance method | 40 ⁰ C over an ambient of 50 ⁰ C | |
| | b) Oil by thermometer | 35 ⁰ C over an ambient of 50 ⁰ C | |
| 8 | Magnetizing (no-load) current at: | | |
| | a) 90% Voltage | | |
| | b) 100,63,25% Voltage | 3% (Max.) | |
| | c) 112.5% Voltage | 6% (Max.) | |
| 9 | Core loss in watts: | | |
| | a) Normal voltage | | |
| | b) Maximum voltage | | |
| 10 | Resistance of windings at 20 ⁰ C (with 5% tolerance) | | |
| | a) HV Winding (ohms) | | |
| | b) LV Winding (ohms) | | |
| 11 | Full load losses (watts) at 75 ⁰ C | | |
| 12 | Total losses at 100,63,25% load at 75 ⁰ C | 1800Watts (Max.) | |
| 13 | Total losses at 50% load at 75 ⁰ C | 520Watts (Max.) | |
| 14 | Current density used for : (Ampere/ Sq mm) | | |
| | a) HV Winding | 1.6(Max.) | |
| | b) LV Winding | 1.6(Max.) | |
| 15 | Clearances : (mm) | | |
| | a) Core and LV | | |
| | b) LV and HV | | |
| | c) HV Phase to Phase | | |

| | | | |
|----|--|--|--|
| | d) End insulation clearance to earth | | |
| | e) Any point of winding to tank | | |
| 16 | Efficiency at 75°C: | | |
| | a) Unity P. F. and | | |
| | b) 0.8 P.F | | |
| | 1) 125% load | | |
| | 2) 100,63,25% load | | |
| | 3) 75% load | | |
| | 4) 50% load | | |
| | 5) 25% load | | |
| 17 | Regulation at: | | |
| | a) Unity P.F. | | |
| | b) 0.8 P.F. at 75°C | | |
| 18 | % Impedance at 75°C | 4.5+10%(No negative tolerance) | |
| 19 | Separate Source Voltage withstand Test: | | |
| | (I) HV 28kV/50 HZ for 1 minute | Yes | |
| | (ii) LV 3kV/50 HZ for 1 minute | Yes | |
| 20 | Induced Over Voltage withstand Test (Double Voltage and Double frequency for 1 minute) | 22KV for HV winding by applying 0.866 KV on LV at 100 Hz for the duration of 1 minute. | |
| 21 | Impulse test | HV-95KV peak, LV- NA | |
| 22 | Mass of : (kg) | | |
| | a) Core lamination (minimum) | | |
| | b) Windings (minimum) | | |
| | c) Tank and fittings | | |
| | d) Oil | | |
| | e) Oil quantity (minimum) (litre) | | |
| | f) Total weight | | |
| 23 | Oil Data: | | |
| | 1. Quantity for first filling (minimum) (litre) | | |
| | 2. Grade of oil used | | |
| | 3. Maker's name | | |
| | 4. BDV at the time of filling (kV) | | |
| 24 | Transformer: | | |
| | 1) Overall length x breadth x height (mmx mmx mm) | | |
| | 2) Tank length x breadth x height | | |
| | 3) Thickness of plates for | | |
| | a) Side plate (min) | 3.15mm | |

| | | | |
|-------|---|--------------------------|--|
| | b) Top and bottom plate (min) | 5mm | |
| | 4) Conservator Dimensions. | | |
| 25 | Radiation | | |
| | 1) Heat dissipation by tank walls excluding top and bottom | | |
| | 2) Heat dissipation by cooling tube. | | |
| | 3) Diameter and thickness of cooling tube. | | |
| | 4) Whether calculation sheet for selecting cooling area to ensure that the transformer is capable of giving continuous rated output without exceeding temperature rise is enclosed. | | |
| 26 | Inter layer insulation provided in design for: | | |
| | 1) Top and bottom layer | Epoxy Dotted Kraft Paper | |
| | 2) In between all layer | Epoxy Dotted Kraft Paper | |
| | 3) Details of end insulation. | Press Board | |
| | 4) Whether wedges are provided at 50% turns of the HV coil | | |
| 27 | Insulation materials provided | | |
| | a) For conductors | | |
| | (1) HV | DPC | |
| | (2) LV | DPC | |
| | b) For Core | Carlite | |
| 28 | Material and Size of the wire used. | | |
| | 1) HV Dia (mm) (SWG) | | |
| | 2) LV | | |
| | a) Strip size | | |
| | b) No. of Conductors in parallel | | |
| | c) Total area of cross section (sq mm) | | |
| 29 | Whether the name plate gives all particulars as required in Tender | Yes | |
| 30 | Particulars of bushings HV/LV | | |
| | 1) Maker's name | | |
| | 2) Type IS-3347/ IS-2099/ IS- 7421 | | |
| | 3) Rating as per IS | | |
| | 4) Dry power frequency voltage withstand test | HV-28KV, LV-3KV | |
| | 5) Wet power frequency voltage withstand test | HV-28KV, LV-3KV | |
| Note: | | | |
| | The following shall be specifically confirmed: | | |
| 1) | Whether the offer conforms to the limits of impedance mentioned in the specification. | | |
| 2) | Whether the offer conforms to the limits of temperature rise mentioned in the specification. | | |
| 3) | Whether the losses of the Transformers(3 Star Rated) offered are within the limits specified. | | |

Annexure- V

TENDER NOTICE NO: NESCO/IAP/ 01 Date: 18.1.2012

Price Schedule for Materials/ Equipments Offered as per Tender Notice No NESCO /IAP/ 01 Date: 18.1.2012

NESCO

Name of Bidder _____

| SL. NO | Item Description | Unit | Quantity | Price for each unit | | | | | | | |
|--------|------------------|------|----------|--------------------------|---|--|---------------------------|---|------------------------------|--|---|
| | | | | Unit Ex-Work Price (Rs.) | Unit Packing & Forwarding Charges (Rs.) | Unit Excise Duty with education cess (Rs.) | Unit Sales Tax/ VAT (Rs.) | Unit freight & insurance and other local costs incidental to delivery (Rs.) | Unit Entry Tax, if any (Rs.) | Total Unit Price inclusive of taxes & duties (Rs.) | Total Landing Price inclusive of taxes & duties (Rs.) |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 = (5+6+7+8+9+10) | 12 = 4 x 11 |
| | | | | | | | | | | | |

Total amount in Words
Rupees.....only

Signature of Bidder along with Seal & date

- Note:
- 1) Any column left blank shall be treated as NIL / Inclusive of .
 - 1) Unit price under Column-11 is inclusive of all.
 - 3) In case of discrepancy between unit price and total price, the unit price shall prevail over the total price.

ANNEXURE VI (A)

(TECHNICAL DEVIATION FORMAT)

| Clause No | Prescribed as per Tender Specification | Deviation in the bidder's Offer |
|------------------|---|--|
| | | |

Bidder's Signature with Seal.

N.B :

The bidder has to mention all technical deviations in his offer which differs from the Technical Requirement of this Tender in above format. Deviations not mentioned in above format but mentioned in any other format or in any other part of the offer document shall not be considered as deviation and the bidder shall be deemed to have accepted our technical requirement without deviation.

(COMMERCIAL DEVIATION FORMAT)

| Clause No | Prescribed as per Tender Specification | Provided in the bidder's Offer |
|-----------|--|--------------------------------|
| | | |

Bidder's Signature with Seal.

N.B :

The bidder has to mention all commercial deviations in his offer which differs from the Commercial Requirement of this Tender in above format. Deviations not mentioned in this format but mentioned in any other format or in any other part of the offer document shall not be considered as deviation and the bidder shall be deemed to have accepted our commercial requirement without deviation.

ANNEXURE-VII

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 debarring 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.

Place-
Date-

Yours faithfully,

Signature of the bidder
With seal

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

ANNEXURE – VIII (A)

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 North Eastern Electricity Supply Company of Odisha Ltd. [herein after referred to as the NESCO] 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 NESCO an amount not exceeding Rs. _____ to the NESCO,
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 NESCO stating that the amount claimed is due by way of loss or damage caused to or would be
caused to or suffered by the NESCO 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 wards)

3. We, the _____ Bank undertake to pay the NESCO 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 Balasore 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 NESCO under by virtue of the said Bid have been fully paid and its claims satisfied or discharged or till NESCO 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 Balasore further agree that the NESCO 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 NESCO 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 NESCO or any indulgence by the NESCO 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 Balasore lastly undertake not revoke this Guarantee during its currency except with the previous consent of the NESCO in writing.

8. We, the _____ Bank further agree that this guarantee shall also be invokable at our place of business at Balasore in the State of Odisha.

Dated _____ Day of 2011.

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.100,63,25/- shall be purchased in the name of the bank, which has issued the bank guarantee.

ANNEXURE- VIII (B)

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

Ref. No. _____

Dated: _____

NESCO Ltd.,

Corporate Office, Januganj
Balasore - 756019

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.

