

**THE BRIHAN-MUMBAI ELECTRIC SUPPLY & TRANSPORT UNDERTAKING
(OF THE BRIHAN MUMBAI MAHANAGARPALIKA)**



TENDER DOCUMENT

TENDER NO.	:	DMM(S/B)/02/TCU/31283/2016-17/Advt.,		
BID END	:	DATE: 25.10.2016	TIME	: AT 09.00 HRS.
TECHNICAL BID	:	DATE: 26.10.2016	TIME	: AT 09.00 HRS.
PRICE BID	:	DATE: 24.11.2016	TIME	: AT 09.00 HRS.
DESCRIPTION	:	SUPPLY OF 11KV/415V, VPI RESIN IMPREGNATED, DRY TYPE (AN) DISTRIBUTION TRANSFORMERS OF VARIOUS RATINGS		
		ITEM	DESCRIPTION	QUANTITY (IN NOS.)
QUANTITY	:	1	SUPPLY OF 630 KVA, 11KV/415V, VPI RESIN IMPREGNATED, DRY TYPE (AN) DISTRIBUTION TRANSFORMER	65
		2	SUPPLY OF 995 KVA, 11KV/415V, VPI RESIN IMPREGNATED, DRY TYPE (AN) DISTRIBUTION TRANSFORMER	15
		3	SUPPLY OF 1600 KVA, 11KV/415V, VPI RESIN IMPREGNATED, DRY TYPE (AN) DISTRIBUTION TRANSFORMER	23
TENDER FEE	:	₹ 10,000/- (INCLUSIVE OF ALL TAXES)		
EMD	:	₹ 5.00 LAKHS		

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SCHEDULE-I

INSTRUCTIONS TO TENDERERS

1. The e-tender called herein on our website www.bestetender.com is for the supply of 11 kV/415V, Single Ratio, VPI Resin Impregnated Dry-type (AN) Distribution Transformers of various ratings to the entire satisfaction of the General Manager, the B.E.S.& T. Undertaking, Mumbai, in accordance with the Undertaking's Specification No.01420214 and requirements accompanying these instructions.
2. This Two Part Bid e-Tender shall be submitted as under:
 - 2.1 **Pre-qualification Criteria:**

The tenderers shall fill in the price bid as well as the questionnaire displayed on the website under the heading Pre-qualification criteria. Some fields in this questionnaire are mandatory and are shown in Schedule-II of Tender Document. The offers of the tenderers who do not fill in this questionnaire as per the tender requirements or do not upload the requisite documents wherever mandatory shall not be considered. Further, wherever required, the tenderers shall upload the necessary documents in pdf/jpeg format only.

All this exercise of answering and uploading the questionnaire of pre-qualification criteria and other related documents, price bids, etc. Shall be carried out by the tenderers well in time on or before the bid ending date. Tenderers are requested to go through the user guide & FAQs available on the e-tender website. Last minute requests for postponement of tender shall not be granted.
 - 2.2 **Evaluation of the offers:**

The Techno-commercial bids of all tenderers shall be opened on the next day of bid end date i.e. Bid Opening date at 9.00 a.m. The Techno-commercial suitability of the offers received shall be decided on the basis of answers/data/documents furnished by the tenderers against the Pre-Qualification Criteria Questionnaire. The price bids of only such tenderers shall be opened whose Techno-Commercial Bids have been found suitable.

 - 2.2.1 The price bids of all successful tenderers i.e. those tenderers whose Techno-Commercial bids have been found technically suitable shall be opened. The successful tenderers shall be able to view the Comparative Statement of rates along with taxes, other charges, etc. The price bids of unsuccessful tenderers shall not be opened. However, unsuccessful tenderers shall be able to view the reasons for their non-eligibility.
 - 2.2.2 The Bid Closing date, Bid-opening date, (i.e. Price bid opening date) etc. shall be as displayed on the e-tender website of this tender. The tenderers shall submit their offers only in 'e-mode' (i.e. soft mode) well in time, on or before the said displayed Bid Closing date. No correspondence connected with the tender, shall be accepted in hard copy format.
 - 2.2.3 Tenderers are also requested to refer the Mandatory Techno-commercial Eligibility Criteria for the tenderers as shown in Schedule-II and Evaluation of Offers and Matching of Evaluated Gross Rates applicable to this tender as shown in Schedule-V.

3. During the Bidding period, if any technical information/clarifications are required regarding the tender, the same may be obtained from the office of the Divisional Engineer Planning (Materials), B.E.S. & T. Undertaking, 3rd floor, Veej Bhavan, Gen. J. B. Marg, 149/150, Backbay Reclamation, Mumbai-400 021 on Tel. Nos.22811254/ 22844375, on any working day during office hours between 9.00 Hrs. to 17.00 Hrs.
4. Any technical literature/other information connected with the tender, which the tenderers submit along with the tender shall be uploaded in soft form only. In any case such literature/ information shall not be accepted in hard copy format. Sufficient memory space has been provided at various Pre-Qualification Criteria questionnaire wherein tenderers may upload the required information especially in respect of the following:

a)	List of past supplies (supplies to other utilities, etc.)
b)	List of machineries
c)	Details of testing equipments
d)	Quality control measures
e)	Detailed drawings, if any
f)	Details of local representative, if any
g)	Details of manufacturing unit
h)	Any other particulars/information/literature regarding the product offered which the tenderer may wish to furnish

5. **Annexure-I** in confirmation for **Matching of Evaluated Gross Rate** with the Lowest Acceptable Offer (LAO) will be opened after **3 working days** from the date of opening of Price-Bid. In order to match with the Lowest evaluated rate, the losses quoted by the tenderers whose price bids are opened, will be informed to all the eligible tenderers.
The tenderer shall submit their confirmation for acceptance of matching rate offer with the lowest acceptable evaluated rate by sending e-mail addressed to **tcusb@bestmmd.net** by uploading **Annexure-I**.
6. The tender evaluation will be done on the basis of evaluated gross rate quoted by them. However, offer of the tenderers will be considered for quantity allocation only if they match their evaluated gross rates with that of LAO, as mentioned at Sr. No.5 above. For detailed Tender Evaluation Criteria, please refer Schedule-VI.
7. The tender shall be uploaded complete in all respects and must be accompanied by descriptive and technical particulars and other data wherever required as per the Pre-qualification criteria.
8. Tenderers are requested to go through the important information available on our website 'User Guide' & 'FAQ', to enable them to fill and upload the tender documents properly.
9. The tenderers shall accept the Undertaking's 'Conditions of Tender & Conditions of Supply' in TOTO, failing which, they shall not be eligible for quoting against the tender. Tenderers are requested to go through the same carefully.
10. All the tenderers (except those having valid Registration with NSIC and those having Permanent Security Deposit Registration with the BEST Undertaking) shall have to deposit Earnest Money Deposit in e-Payment mode only.
- 10.1 For those tenderers who are having valid Registration with NSIC, they shall upload their valid NSIC Registration Certificate to render themselves eligible to participate in the tender.
- 10.2 For those tenderers who are registered with the Undertaking by paying ₹ 3.00 Lakhs as a Permanent Security Deposit, they shall upload their valid Permanent Security Deposit Registration Certificate issued by the BEST Undertaking.

11. The Earnest Money Deposit paid by the unsuccessful tenderers will be returned after finalization of the tender, by e-payment mode only to the same account, from which it is paid.
12. All documents connected with the tender shall be uploaded in e-mode only and will not be accepted in hard copy format e.g. Schedule of Guaranteed Performance & Other Technical Particulars (i.e. Annexure-A₁, A₂ & A₃), Delivery Schedule offered by the Tenderer (i.e. Annexure-B), Price Variation Clause (i.e. Annexure-C), Annual Sales Turnover Certificate (i.e. Annexure-D), Schedule of Performance (i.e. Annexure-E), Schedule of Departures from Technical Specifications (i.e. Annexure-F), Schedule of Credentials (i.e. Annexure-G), Capitalization of Losses (i.e. Annexure-H), etc. These Annexures shall preferably be scanned with 150 dpi (dots per inch) resolution in Grayscale (i.e. black & white) in pdf/jpeg format for uploading.
13. The tenderers, new to the Undertaking, must upload information about their manufacturing unit as per the proforma given in the Credential Form, displayed on site.
14. The Security Deposit-cum-Performance Guarantee of successful tenderer/s shall be obtained for the amount equivalent to security deposit as per Clause 6 of Conditions of Supply, in the form of Bank Guarantee as shown in the **Annexure-J** valid for a period of 96 months from the date of release of Purchase Order. The contractor will have to pay ₹2,000/- towards the Administration Charges.

If the firm fails to execute the contract as per the contractual terms, their equivalent amount shall be forfeited by encashing their Security Deposit-cum-Performance Guarantee and balance amount if any, will be returned to the firm. However, if the equivalent amount is higher than the Bank Guarantee amount, the full Bank Guarantee amount will be forfeited and the firm will be asked to pay the balance amount failing which, the firm will be debarred for a period of 5 years from participating in the Undertaking's tenders. The Performance Bank Guarantee shall be returned to the contractor without any interest after the contract ceases to be under any obligation under the contract.

15. In case any of Instructions to Tenderers appear to be in contradiction to Conditions of Tender & Conditions of Supply, then the Instructions to Tenderers shall be deemed to supersede such Conditions of Tender & Conditions of Supply incorporated in the tender.

SCHEDULE-II

MANDATORY TECHNO-COMMERCIAL ELIGIBILITY CRITERIA

1. The tenderers shall be reputed manufacturer of Dry-type (AN) Distribution Transformers and they should upload the documentary evidence in support of the same while submitting the technical bid.
2. The tenderers shall pay either Earnest Money Deposit or upload valid certification of registration with National Small Industries Corporation (NSIC). If the tenderers are permanent Security Deposit Holder of the BEST Undertaking, shall upload valid registration certificate issued by the Undertaking.
3. The tenderers shall accept all Commercial Tender Conditions in TOTO.
4. The tenderers shall upload Schedule of Guaranteed Performance and Other Technical Particulars as shown in the prescribed format i.e. **Annexure-A₁** for 630kVA, Dry-type (AN) Distribution Transformers incorporated in the tender.
5. The tenderers shall upload Schedule of Guaranteed Performance and Other Technical Particulars as shown in the prescribed format i.e. **Annexure-A₂** for 995kVA, Dry-type (AN) Distribution Transformers incorporated in the tender.
6. The tenderers shall upload Schedule of Guaranteed Performance and Other Technical Particulars as shown in the prescribed format i.e. **Annexure-A₃** for 1600kVA, Dry-type (AN) Distribution Transformers incorporated in the tender.
7. The tenderer shall upload their own delivery schedule in the prescribed format i.e. **Annexure-B** for Dry-type (AN) Distribution Transformers incorporated in the tender document.
8. The tenderers shall accept the Undertaking's Price Variation Clause prepared on similar lines with that of IEEMA Price Variation without ceiling as shown in **Annexure-C** incorporated in this tender document.
9. Only those tenderers whose Annual Turnover is more than ₹10.00 crores per year for the previous two Financial Years i.e. 2013-14 & 2014-15, should quote against the tender. As documentary evidence, they should upload the copy of Audited Balance Sheet and Profit & Loss Account Statement showing proof of their Annual Sales Turnover duly audited by the Chartered Accountants or certificate from Chartered Accountants in the prescribed format as shown in the **Annexure-D** incorporated in the tender document.
10. Tenderers shall have supplied Dry type (AN) Distribution Transformers of similar or higher ratings (11 kV/415V) to any other Consumer, Power Supply/Distribution Companies or Utilities or Electricity Boards, etc. or during the last 5 years. Please upload the Schedule of Performance in the Undertaking's prescribed format i.e. **Annexure-E** incorporated in the tender document.
11. The tenderers shall accept the technical conditions in TOTO. However, if due to any reason, tenderers find it necessary to depart from the provisions of certain Section/s of the Specifications; such departures shall be clearly stated and underlined giving full reasons. The tenderers shall upload the Schedule of Departures from the Specifications in the prescribed format shown in **Annexure-F**. If the tenderer fails to upload Schedule of Departures, it will be presumed that there are no technical deviations.

12. The tenderer shall have duly certified recent copies of Type Test Certificate (including dynamic ability to withstand short circuit test) from NABL accredited Lab such as CPRI, ERDA etc. for the type and design of transformer submitted [i.e. 11kV/415kV, Dry-type (AN) Distribution Transformer]. However, the Undertaking's regular suppliers who have supplied these transformers with satisfactory performance along with submission of Type Test Certificate are exempted from re-submission of Type Test Certificate.
13. The tenderers shall submit the detailed tender drawings as mentioned at Sr. No.5.19 in Section-5 incorporated in the tender.
14. The tenderer shall quote for 100% quantity but not less than 50% of the tender quantity. They should mention the tender quantity for which they have submitted their price bid, failing which it will be presumed that the tenderer has quoted for 100% tender quantity.
15. The tenderers shall upload/submit the list of suppliers from whom they purchase raw materials like copper, core, Transformer oil, insulating materials, etc. Besides, they should give details about quality control methods adopted for testing of raw/finished material.
16. The tenderers shall upload/submit the list of Plant, Machinery & Testing Equipments indicating their ratings and make for carrying out all routine/acceptance tests and certain type tests such as Heat Run Test at Full Load, Impulse Test, Noise Level Measurement, etc.
17. The tenderer shall upload ISO or any other clarification from organization of National/International reputed, if any.
18. The tenderers who are new suppliers of 'VPI Resin Impregnated Dry-type (AN) Distribution Transformers' shall submit their Credentials in the prescribed format i.e. **Annexure-G**, incorporated in this tender document.

SCHEDULE-III

CONDITIONS OF TENDER

1. **DEFINITIONS:**

1.1 **TENDER VALIDITY PERIOD:**

The Tender Validity Period is the period (from Technical Bid opening date) within which the Undertaking is required to enter into contract with the successful tenderer. On expiry of such period, the rates quoted in the tender are not binding upon the tenderer, if the tenderer did not agree to extend the same.

1.2 **CONTRACT VALIDITY PERIOD:**

The Contract Validity Period will be displayed in each and every contract and it will be binding on the supplier for the faithful execution of contract as per the contractual terms for the entire ordered quantity including $\pm 25\%$ quantity. This Contract Validity Period will commence from technical bid opening date and the specific Contract Validity Period will be declared in the tender document.

1.3 **FAMILY CONCEPT:**

Certain items procured by the Undertaking are similar in nature and require more or less the same capabilities for production. Such items which are similar in nature shall be considered to be of one family. Sometimes, items within a family though similar, require higher manufacturing/technical capabilities, especially when the items are of higher ratings. The family concept will be applied for classifying the category of vendors as 'Regular' & 'New' suppliers.

1.4 **REGULAR SUPPLIERS:**

1.4.1 The Regular Suppliers are those who have supplied the material against trial/bulk orders of the Undertaking with satisfactory performance. The classification as 'Regular' suppliers shall imply that such suppliers should have supplied trial/bulk quantity to the Undertaking against at least one Purchase Order in the last 5 years. The 'Regular' suppliers of items coming under one family shall be treated as 'Regular' suppliers for other items of the family, if they have supplied any one item in trial/bulk in the past. The 'Regular' suppliers for materials of higher rating shall be considered as 'Regular' suppliers for materials of lower rating under one family. Further, Original Equipment Manufacturer (OEM) or their suppliers i.e. Authorized Dealers/Distributors shall be treated as Regular suppliers though they have not supplied such materials to the Undertaking directly. The same concept shall also be made applicable for the items having standardized brands which are field tested and whose performance is found satisfactory.

1.4.2 However, in case of certain critical items, the 'New' suppliers who have supplied the material against trial/bulk orders of the Undertaking which are required to qualify with satisfactory performance in the Undertaking's Field Trial Performance tests (as per pre-declared performance parameters), shall be considered as a 'Regular' supplier only after completion of field trials with satisfactory performance.

1.5 **NEW SUPPLIERS:**

The 'New' suppliers are those who are having adequate technical capabilities for producing/manufacturing/servicing the goods/services as per the Undertaking's quality requirements and standards but have never supplied to the Undertaking in the past. A supplier shall also be treated as 'New' supplier, if the tendered item under consideration for procurement is not within the family of such item.

1.6 **SISTER CONCERN:**

The business entity substantially owned by a person having common interest in more than one business concern of similar nature as partners/share holders/proprietors.

A need is felt to define Sister Concern especially to curb any tendency of vendors to cheat/defraud the Undertaking in cases such as non-execution of contract by one firm and to avoid penal action, the defaulting firm stops dealing with the Undertaking and participate in future tenders of that particular item through their Sister Concerns.

2. **EXTENT OF TENDER:**

Time is the essence of the tender. This tender is for the supply to the Brihan-Mumbai Mahanagarpalika for the purpose of the Brihan-Mumbai Electric Supply and Transport Undertaking (hereinafter referred to as the "Undertaking") of the Stores/Services or any part or portion thereof tendered for by the tenderer (hereinafter referred to as the "Contractor") and accepted by the Assistant General Manager (Materials) or any other officer duly authorized in that behalf of the Undertaking at the rates and delivered to the places at and within the time specified and without any extra charges or expenses to the Undertaking other than those mentioned in the tender.

3. **QUOTATIONS:**

3.1 Tenderers should quote their rates in figures per unit specified in the e-tender by carefully punching in the appropriate field.

3.2 The quoted rate should clearly indicate:

3.2.1 All charges for container and packing.

3.2.2 All charges necessary to effect delivery of the supplies, at the depot of the Undertaking or at specified sites i.e. freight, insurance, loading and unloading, clearing charges, taxes/statutory levies, duties such as Custom duty, Excise duty, Sales Tax/Value Added Tax, Service Tax, Octroi and other Local, State and Central Levies etc., the percentage/amount of which should be clearly indicated by tenderer. Unless specifically mentioned, it will be presumed that quoted rate is inclusive of taxes and duties and other charges stated above and no variation whatsoever will be allowed subsequently.

3.2.3 It will be the responsibility of the firm to pay Octroi Charges at Octroi Check Naka and deliver the material to the Undertaking's Stores. The payment of Octroi charges will be made on submission of invoice alongwith Octroi receipt and 'B' Form. It may be noted that the Undertaking will not pay any service charges on Octroi amount unless specifically quoted for.

3.2.4 If Excise Duty (ED) is stated to be applicable extra, the % of such Excise Duty should be specifically mentioned. If the Excise Duty is concessional the tenderer should specify whether Concessional Excise Duty shall remain firm or variable during contractual period by selecting the appropriate drop down menu i.e. Concessional ED firm or Concessional ED variable. In case of Concessional ED variable, their rates will be loaded with maximum ED applicable to the item, while evaluating their offers.

3.2.5 If Excise Duty (ED) is included in the basic quoted rate, then the tenderer should indicate the % of such ED by selecting the appropriate option (Excise Duty included in Rate) from drop down menu. If the tenderer does not indicate % of ED included in basic quoted rate, any claim for revision in price due to change in ED for whatsoever reason, will not be granted.

- 3.2.6 If applicability of Excise Duty is not mentioned clearly in the quotation i.e. if the tenderers do not select the option from drop down menu regarding Excise Duty or fill in the same with a 0 (zero), in such cases, Excise Duty will not be considered for evaluation and will have to be borne by the tenderer even if it becomes applicable to them during the currency of contract. However, if an item becomes excisable after opening of the tender and attracts Excise Duty, the same shall be considered and payment will be made on production of documentary evidence.
- 3.3 No subsequent variation in the rates will be allowed on grounds such as error, misunderstandings, etc.
- 3.4 In respect of stores concerned with the 'Generation and Distribution of Electricity', the Undertaking will avail of the concession against submission of the 'C' Form allowed under Maharashtra Government Notification, Finance Department No.STA-1065/1960-XIII, dtd.03-02-1966, STA-1095/37/Taxation-2 dtd.22-09-1995 and STA-1095/Taxation-2 dtd.06-03-1996 of the Sales Tax Act.
- 3.5 Tenderers are prohibited from making any additions, alterations in the description of articles mentioned in the tender or in the column for units. In case the specifications/descriptions mentioned by the tenderer are incomplete, the specifications/descriptions given in the tender, shall be binding for quality and specifications of supply.
- 3.6 Offers received with hedging conditions such as 'Offer subject to availability of stock', 'Offer subject to confirmation at the time of order'; 'Rate subject to market fluctuation', etc. shall be ignored.
- 3.7 **VALIDITY:**
- 3.7.1 The **Tender Validity Period** as mentioned in the tender is the period within which the Undertaking is required to enter into contract with the successful tenderer. On expiry of such period, the rates quoted in the tender are not binding upon the tenderer.
- 3.7.2 The **Contract Validity Period** shall also be mentioned in the tender and it will be binding on the supplier for the faithful execution of contract as per the contractual terms for the entire ordered quantity including $\pm 25\%$ quantity.
- 3.8 **PRICES:**
- 3.8.1 Tenderers shall quote '**Variable**' prices as per the Undertaking's Price Variation Formula as shown in Annexure-C prepared on similar lines with IEEMA price variation formula.
- 3.8.2 Variation in price due to change in statutory levies, Octroi etc. are considered only if the tenderer specifically mentions rates of these taxes applicable at the time of quotation and produces necessary documentary evidence of such variation at the time of claiming the payments.
- 3.9 All tenders shall be submitted through the e-tendering system and tenderers shall take utmost care while punching the rates/taxes, statutory levies as no subsequent revision will be allowed after the bid end date.
- 3.10 The tenderer shall upload/submit his tender documents by selecting the valid Digital Signature Certificate of Class III Company Type-B. Tenders uploaded without proper Digital Signature Certificate shall not be considered.
- 3.11 Tenderers are restricted in e-tender to modify their price bids once submitted. However, tenderers are allowed if they desired, to withdraw their existing submitted price bids and to re-submit their new price bids till the bid end date. The tenderers are advised to note the new quotation ID generated by the system as confirmation of successful submission of their new price bids. On exercising the re-submission of new price bid option, all earlier bids shall stand null and void.

3.12 If the offer is for stores to be imported specifically for the Undertaking, the tenderers shall quote the price for delivery at the Undertaking's Depot in ₹ indicating the Cost, Insurance, Freight (C.I.F.) Mumbai price in the relevant foreign currency and the rate of exchange applicable at the time of quoting. They should also indicate the item-wise landed cost price in Indian currency for delivery in Mumbai at Undertaking's Depot, clearly indicating thereon:

3.12.1 Any agency commission, if payable separately, with the rate thereof.

(The Undertaking would prefer to pay it in ₹).

3.12.2 The rate of import duty etc. and incidence thereof.

4. **TENDER SAMPLE:** This clause is not applicable to this particular tender.

5. **SUBMISSION/UPLOADING OF TENDERS:**

Tenders must be uploaded by logging into the Undertaking's website www.bestetender.com and using proper Digital Signature Certificate of Class-III Company Type-B for encrypting their bids. Tenderers must also keep printout in respect of the Quotation ID in acknowledgment of successful uploading of their bids.

6. **EARNEST MONEY DEPOSIT:**

6.1 All the suppliers will have to pay Earnest Money Deposit through Payment Gateway (e-payment) as shown in the respective e-tenders, before bid end date, without which, their price bid shall not be opened. No interest will be paid on such deposits.

6.1.1 The suppliers who are registered with the Undertaking by paying Permanent Security Deposit of ₹ 3.00 Lakhs, shall be exempted from payment of Earnest Money Deposit. They shall however upload the scanned copy of their valid Permanent Security Deposit Registration Certificate as mentioned in the Pre-Qualification Criteria.

6.1.2 Only those suppliers registered with National Small Industries Corporation Ltd. (NSIC) for the item/s mentioned in the tender are exempted from payment of Earnest Money Deposit.

They should, however, upload the scanned copy of their valid NSIC Registration Certificate as mentioned in the Pre-Qualification Criteria to get exemption from the payment of Earnest Money Deposit.

6.1.3 Earnest Money so deposited will be forfeited, if (i) the tenderer withdraws his offer before the expiry of Tender Validity Period or the date of validity of the offer, (ii) a successful tenderer fails to pay the Security Deposit within the stipulated period as mentioned in Clause 6 of the 'Conditions of Supply'.

In addition to above, the tenderers withdrawing their offers before expiry of tender validity period or the date of validity of the offer shall also be liable for penal action including levying of penalty, debarment from participation in the Undertaking's tender for a maximum period of 3 years.

6.2 **EARNEST MONEY OF UNSUCCESSFUL TENDERERS:**

Earnest money deposited by unsuccessful tenderers will be refunded through Payment Gateway (e-payment) as early as possible after the tender has been finalized.

7. **OPENING OF TENDERS:**

All tenders (quotations/bids) shall be submitted through the e-tendering system well in time before the bid end date. Only bids which are valid and fulfilling the eligibility criteria will be punctually opened by an Officer of the Undertaking on the Bid opening date and time indicated on the website. The tenderers who have successfully uploaded their bids shall be able to view the Comparative Statement of bids uploaded by all participating tenderers on the website on the Bid opening date and time. The tenderers can match their gross rates within stipulated time, with the Lowest Acceptable Offer.

8. **ACCEPTANCE OF TENDERS:**

The Undertaking neither binds itself to accept the lowest or any tender nor will it assign any reason for the rejection of any tender or part of a tender. The tenderer on his part binds himself to supply any stores/services selected from his offers in part or whole, at the option of the Undertaking.

9. **MATERIALS SUBJECT TO GUARANTEE:**

Whenever the tender specifies that the tenderer will have to supply the material on a 'guarantee basis', the tenderer shall ensure that any defects, manufacturing or otherwise during such period, would be rectified by the tenderer free of cost, failing which, he would indemnify the Undertaking against any loss or damage caused to the Undertaking due to such non-performance. The Undertaking shall not consider the offer of the tenderer, if the clause is not complied with.

10. **QUANTITY VARIATION CLAUSE:**

The tenderers may note that the quantity awarded to them is subject to $\pm 25\%$ variation, within the Contract Validity Period at the option of the Undertaking.

11. **POLICY OF TENDERS UNDER CONSIDERATION:**

Tenders shall be deemed to be under consideration from the opening of tenders, until an official announcement of the award is made. While tenders are under consideration, tenderer and their representatives shall refrain from contacting by any means, any personnel of the Undertaking on matters relating to tenders under scrutiny. If necessary, clarification will be called for by the Undertaking from any or all the tenderers in writing. Canvassing in any form will disqualify the tenderer.

12. **CORRUPT & FRAUDULENT PRACTICES:**

The tenderer and their respective officers, employees, agents and advisers shall observe the selected standard of ethics during the Tender process and subsequent to the issue of the Tender and during the subsistence of the Agreement. Not with standing anything to the contrary contained herein, or in the Tender, the Authority may reject a Bid, withdraw the Tender terminate the Agreement, as the case may be, without being liable in any manner whatsoever to the Tenderer or Contractor, as the case may be, if it determines that the Tenderer or Contractor, as the case may be, has, directly or indirectly or through an agent, engaged in corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice in the Tender Process. In such an event, the Authority shall be entitled to forfeit and appropriate the EMD or Bid Security, as the case may be, as Damages, without prejudice to any other right or remedy that may be available to the Authority under this Tender Document and/or the Agreement, or otherwise.

Without prejudice to the rights of the Authority under Clause hereinabove and the rights and remedies which the Authority may have under the Tender or the Agreement, or otherwise if a Tenderer or Contractor, as the case may be, is found by the Authority to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice during the Tender Process, or after the issue of the Tender or the execution of the Agreement, such Tenderer or Contractor shall not be eligible to participate in any tender during a period of 2 (two) years from the date such Tenderer or Contractor, as the case may be, is found by the Authority to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practices, as the case may be.

For the purposes of this clause, the following terms shall have the meaning hereinafter respectively assigned to them:

- i) "Corrupt practice" means (a) The offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the actions of any person connected with the Tender Process (for avoidance of doubt, offering of employment to or employing or engaging in any manner whatsoever, directly or indirectly, any official of the Authority who is or been associated in any manner, directly or indirectly, with the Tender Process or has dealt with matters concerning the Agreement or arising there from, before or after the execution thereof, at any time prior to the expiry of one year from the date such official resigns or retires from or otherwise ceases to be in the service of the Authority, shall be deemed to constitute influencing the actions of a person connected with the Tender Process). Or
- ii) Engaging in any manner whatsoever, whether during the Tender Process after the execution of the Agreement, as the case may be, any person in respect of any matter relating to the Project or the Tender of Agreement, who at any time has been or is a legal, financial or technical adviser of the Authority in relation to any matter concerning the Project.
- iii) "Fraudulent Practice" means a misrepresentation or omission of facts or suppression of facts or disclosure of incomplete facts, in order to influence the Tender Process.
- iv) "Coercive Practice" means impairing or harming or threatening to impair or harm, directly or indirectly, any person or properly to influence any person's participation or action in the Tender Process.
- v) "Undesirable practice" means (i) establishing contact with any person connected with or employed or engaged by the Authority with the objective of canvassing, lobbying or in any manner influencing or attempting to influence the Tender Process, or (ii) having a Conflict of Interest, and
- vi) "Restrictive practice" means forming a cartel or arriving at any understanding or arrangement among Tenderer with the objective of restricting or manipulating a full and fair competition in the Tender Process.

13. **JURISDICTION:**

This tender and the contract emanating there from are subject only to the jurisdiction of the Mumbai Court.

14. **DISREGARD FOR TENDER CONDITIONS:**

The Undertaking reserves to itself the right to disregard or reject any tenders not conforming to any of the above-mentioned conditions.

SCHEDULE-IV

CONDITIONS OF SUPPLY

1. **EXTENT OF CONTRACT:**

The Contractor shall, during the period of the contract supply the materials/services in respect of which his tender has been accepted at the depots or stores specified in the annexed Schedule, or alternatively at the contractor's godowns if so specified and agreed and shall supply the same at the accepted price thereof and in such quantities (subject as aforesaid) as may be required from time to time and subject to such conditions as are herein and in the said Schedule specified. Time is the essence of the contract.

2. **QUALITIES OF SUPPLIES:**

All material supplied/services rendered shall be in strict accordance with the specifications laid down or as per approved sample. In case of any material in respect of which there is no approved sample or drawing, the supplies shall be of the best description and quality obtainable, which description and quality shall be subject to the satisfaction of the Assistant General Manager (Materials) or his Authorized Representative. The Undertaking reserves the right to get the random samples out of the supplies, tested at the recognized/reputed laboratories, at its discretion, in order to assess quality. In such a case, the supplier will have to bear the testing charges, if the material does not meet the specified requirements.

3. **PACKING & DELIVERY OF MATERIALS:**

3.1 The Contractor shall be held responsible for the proper delivery of materials and in the event of any loss, damage, breakage and/or leakage due to insufficient/or improper packing, he shall be liable to replace the material or make good the loss. The decision of Assistant General Manager (Materials) or his Authorized Representative of the Undertaking as to whether the aforesaid loss, damage, breakage or leakage has been caused to the materials for the reason of it not having been sufficiently or properly packed, shall be final and binding upon the Contractor, provided also that the Assistant General Manager (Materials) or his Authorized Representative shall be at liberty, should he consider it fit and proper to do so, to purchase the said material from another, at the risk of the Contractor. Delivery of the material shall not be considered complete until it has been inspected, weighed, counted and passed by the Undertaking. No material shall be delivered at the depots or stores on Saturdays, Sundays, or Public Holidays, without the previous permission of the concerned Authority.

3.2 The Contractor shall execute the order strictly as per delivery schedule stipulated in Purchase Order. In order to avoid delay in acceptance of the material or in effecting payment by the Undertaking, the Contractor shall ensure that the description and/or specifications of the material and quantities thereof in the challans and the invoices are exactly as indicated in the Purchase Order and the rates and taxes are correctly mentioned. On the acceptance of material as satisfactory, the concerned officer at the Depot of the Materials Management Dept., will issue to the supplier a copy of the Stores Received Note (SRN), for his record regarding date of acceptance.

4. **FACTORY INSPECTION:**

New firms, who have not supplied the tendered item to the Undertaking and if found eligible for placing Trial/Bulk Purchase Orders against the tender, shall be liable to have their factories inspected by a team of two officers of the Undertaking for assessing their technical/commercial capacity for ensuring smooth and uninterrupted supplies to the Undertaking.

In case the new firm gets considered against the tender, subject to satisfactory factory inspection, the cost towards to and fro travelling, lodging and boarding for the two inspecting officers shall be borne by the firm. In addition, the firm shall have to pay ₹2,000/- towards Administrative charges in advance and if not paid in advance, the same shall be recovered from their first bill.

5. **INSPECTION:**

5.1 **PROTOTYPE INSPECTION:**

The Prototype inspection, is applicable for this tender wherein the Undertaking's officers are required to visit the firm's factory premises to inspect quality of Prototype and/or lots produced, the firm will bear the expenditure as mentioned in Clause 4 above except Administrative charges towards the Prototype and one lot inspection visit only. For subsequent visits, if any, the Undertaking will bear the expenditure.

5.2 **LOT INSPECTION:**

The Lot Inspection is applicable to this tender for one Lot preferably first for this particular tender for each item and the Undertaking's officers shall visit the firm's factory premises to inspect the quality of Lot produced and the firm will bear the expenditure of to and fro travelling, lodging and boarding of the Undertaking's two inspecting officers. For subsequent visits required, if any, the Undertaking will bear the expenditure.

6. **SECURITY DEPOSIT:**

The contractor, whose offer is accepted either in whole or in part, shall pay Security Deposit @ 10% of the total contractual value upto ₹ 2.5 Lakhs and 5% on amount exceeding ₹ 2.5 Lakhs by way of security, for the due and proper fulfillment of this contract, such sum through payment gateway (e-payment) or by way of Bank Guarantee. Interest shall not be paid on the amount so deposited.

The EMD of the contractor shall remain with the Undertaking till such time Security Deposit amount is not paid. Alternately, the same (amount towards Security Deposit) shall be retained from the payments due to the contractor.

6.1 **MODE OF PAYMENT:**

- i) Upto ₹20,000/- through payment gateway (e-payment) only.
- ii) Above ₹20,000/- through payment gateway (e-payment) or in the form of Bank Guarantee, as per the Undertaking's approved format. In case of such Bank Guarantee, ₹2,000/- will be charged as Administrative Charges.

6.2 In the event of the contractor failing to pay such Security Deposit or fails to execute the contract as per delivery schedule, the EMD shall be forfeited after due process of final notice, etc. The Undertaking shall in such an event, have full discretion to cancel the contract awarded to the said contractor. On payment of requisite Security Deposit, EMD will be refunded to the successful tenderer through payment gateway (e-payment).

6.3 This Security Deposit, either in whole or part thereof, shall be liable to be forfeited without giving any reasons thereof, if the contractor fails to observe and perform any of the terms and conditions of the contract.

6.4 On successful execution of the contract, the Security Deposit will be refunded through payment gateway (e-payment).

7. **WITNESS TESTING:**

The contractors shall be allowed to witness their supplies tested in the Undertaking's laboratories, if they wish to do so. Necessary charges towards such witness testing shall be informed to the contractors.

In case of disputed rejection cases, Third Party Inspection shall be allowed at laboratories decided by the Undertaking at the cost of the contractors. The Third Party Inspection report shall be binding on both the parties.

8. **FAILURE TO SUPPLY:**

8.1 On the contractor failing to supply the material as above, the Assistant General Manager (Materials) or his Authorized Representative shall be at liberty, without further reference to the Contractor, to recover from him Liquidated Damages at the rate of 1% per fortnight or part thereof, of the total cost of the goods/services delayed beyond the delivery period exclusive of taxes (if shown separately), subject to a maximum of 10% of the value of goods/services delayed of the contracted quantity.

- 8.2 In the alternative and at his complete discretion, he may purchase the same or any portion thereof on the account and at the risk and cost of the Contractor and claim from him the difference in the price and all expenses incurred in purchasing the same. If Risk Purchase amount is less than ₹ 100/-, minimum ₹ 100/- will be recovered.
- 8.3 The Undertaking shall have a lien for the said Liquidated Damages or the said difference in price and Administrative Charges or any money that may become payable to the Contractor under this contract and/or any other contract and paid either under this contract and/or any other contract or contracts, paid either by the Contractor alone or jointly with other Contractor or Contractors, as well as on any other debt or sum, that may become payable by the Undertaking to the Contractor and the Undertaking shall be entitled to deduct the said Liquidated Damages or said difference in cost out of such money, deposits, amounts, debts or sums. The contractor shall also be liable for debarment from participating in the Undertaking's tender for 5 years for all procurements and their bad performance shall be recorded, if the amount to be recovered against Risk Purchase action is not paid by them. However, if the defaulting contractor who is involved in Fraud/Malpractices incurring heavy losses to the BEST Undertaking, the contractor will be blacklisted permanently and in addition to this, legal action if required shall be initiated for recovery of the monetary losses to the Undertaking. The Risk Purchase action shall be to the extent of the cost difference for non-supplied quantity only. Besides, no procurement shall be made from the contractors debarred as well as from their sister concerns.
- 8.4 The above term shall be the essence of this tender and acceptance thereof.

9. **FORCE MAJEURE CONDITIONS:**

The Contractor shall not be liable for any Liquidated Damages for delay or failure to perform the contract for reasons of force majeure such as the acts of God, acts of public enemy, acts of Government, fires, floods, epidemics quarantine restrictions, strikes, freight embargoes and provided that the contractor shall within 15 days from the beginning of such delay notify the Assistant General Manager (Materials) or his Authorized Representative, in writing the cause of delay duly substantiated with documentary evidence. The Assistant General Manager (Materials) or his Authorized Representative shall verify the facts and grant such extension, as he may in his sole discretion decide.

10. **TERMINATION OF CONTRACT:**

In the event the Contractor commits any breach of any of the terms and conditions of contract, the General Manager or his Authorized Representative shall have the right to forfeit the Security Deposit referred to in Clause 6 and/or to claim from the Contractor any amount due and payable by him towards this contract. If during the period when contract remains in force, General Manager or his Authorized Representative has reasons to believe that the Contractor is not performing the contract in accordance with the terms of the contract, General Manager or his Authorized Representative may by a notice in writing, call upon the contractor to perform the contract in the way as indicated in the notice, within a specified period of 15 days and if the Contractor fails to perform the same within such specified period, then notwithstanding anything contained in the contract, General Manager or his Authorized Representative shall be at liberty at any time thereafter to terminate the contract by giving the Contractor 15 days notice in writing and the contract shall stand terminated on expiry of such notice period. The Security Deposit amount referred to the Clause 6 and amount due and payable by the Contractor towards this contract shall be forthwith due and be recoverable from them.

11. **ACCEPTANCE OF SUPPLIES:**

- 11.1 Any material supplied against this contract will be subject to the approval of the Undertaking. If the material supplied is not as per the approved specification, then the Undertaking shall reject the whole or part thereof without assigning any reason for rejection and the Undertaking's decision in respect of such rejection will be final.
- 11.2 Quantities expressed in unit of weight are for the weight exclusive of packing and containers. All supplies will be accepted on this basis only.
- 11.3 The Assistant General Manager (Materials) or his Authorized Representative may, at his sole discretion, decide to accept materials in part or whole that may not in his opinion correspond exactly with the approved and accepted samples or specifications within the limits of the accepted tender and determine the prices thereof and the Contractor shall have to accept such prices.

12. **SUBMISSION AND PAYMENT OF BILLS:**

- 12.1 All bills (in duplicate) shall be addressed to the Assistant General Manager (Materials), 4th Floor, Parivahan Bhavan, Mumbai-400 001 with the exact quantities of materials accepted by the Undertaking.
- 12.2 Normally, bills so submitted shall be payable either on 30th day from the date of acceptance of material or on 8th day from the date of submission of Tax Invoice, whichever is later.
- 12.3 While submitting the bills, the contractor shall give necessary documents such as PAN No., VAT/TIN No. etc. Otherwise, the statutory levies with penalty as prescribed by the Government Laws will be deducted from their bills payable.

13. **FACILITY CHARGES:**

Successful tenderers on whom the Purchase Orders/Contract Work Orders are placed shall have to pay facility charges towards the use of e-tendering facilities. The facility charges shall be debited @ 0.5 per cent of the Contract Value (excluding taxes), being limited to a maximum of ₹ 2,000/- and the same shall be deducted directly from the Contractors' first bill.

14. **EXTRA CHARGE:**

Extra charges such as Octroi, Transport, Freight, Insurance, Loading/Unloading, etc. will not be paid, unless stipulated in Purchase Order and supported by necessary documentary proof.

15. **LIFTING OF REJECTED MATERIALS:**

- i) The firm shall have to collect the rejected material within two months from the date of intimation of rejection of material. The two months time period will be from the date on which final decision is conveyed in respect of the rejected material.
- ii) If the firm fails to collect the material even at the end of second month from the date of rejection intimation, the Undertaking shall have right to dispose off the material as deemed fit without any further reference in the matter and thereafter, no claims, whatsoever from the suppliers shall be entertained by the Undertaking.

16. **DAMAGE TO THE UNDERTAKING'S PREMISES/PROPERTY:**

Any damages caused by the Contractor or any person acting for him, to the premises or property of the Undertaking in the performance of his contract, shall be made good by the Contractor. In the event of the Contractor failing to make good the damages within the time specified by the Assistant General Manager (Materials) or his Authorized Representative, the latter shall be at liberty to get the work done departmentally or through any other agency, and to recover the cost thereof together with such supervision/overhead charges as he may deem fit out of any money that may be due to the Contractor or by action in a Court of Law.

17. **DEATH OR INSOLVENCY OF CONTRACTOR:**

If the Contractor shall, during the period of the contract, die or be adjudicated as insolvent or being a limited company shall be placed in liquidation, whether voluntarily or compulsorily, the contract shall thereupon absolutely cease and the heir's executor, administrators or other legal representatives of the Contractor and in the case of a limited company the liquidator, shall have no interest whatsoever under the contract, except to receive any sum due for materials supplied but not paid for prior to the death or insolvency of the Contractor, in case of a company the date of the winding up thereof and the Security Deposit but subject to the provision herein contained in regard to such deposit. Nothing contained in this clause shall be deemed to prejudice or affect any claim, which the Undertaking may have against such heir's, executors, administrators or other legal representatives of the Contractor or in the case of a company, the liquidator thereof in respect of any antecedent breach of contract. Provided that where the Contractor is a firm, the death of a partner in the firm shall not operate to determine the contract unless by the term of the partnership agreements the partnership stands dissolved on the death of a partner.

18. **DECISION OF DISPUTES:**

In the event of any dispute arising under these conditions or in connection with the contract (except as to any matters, the decision of which is specially provided for in these conditions), the same shall be referred to the General Manager of the Undertaking for final decision by the Assistant General Manager (Materials) or by the Contractor. The decision of the General Manager or his Authorized Representative shall be final and binding on the parties to the dispute.

SCHEDULE-V

EVALUATION OF OFFERS & MATCHING OF EVALUATED GROSS RATES

The offers received against this tender shall be evaluated as follows:

1. **Evaluation of Offers:**

- 1.1 After opening the Techno Commercial bids, all uploaded documents in respect of Technical information, Pre Qualification Criteria, etc. will be thoroughly scrutinized and the technical suitability of each tenderer determined.
- 1.2 Price bids of only those tenderers, whose offers are found to be technically suitable, shall be opened on the bid opening date displayed on the tender website.
- 1.3 After opening of the price-bids, '**Evaluated Gross Rates**' for each successful tenderer will be calculated from their quoted basic rates, taxes, etc. and Capitalized Cost of Losses quoted by each technically suitable tenderer and as displayed on the e-tender site. The Capitalized Cost of losses shall be derived as per formula shown at **Annexure-H**.
- 1.4 Thus the Evaluated Gross Rate = Quoted Gross Rate + Capitalized Cost of Losses
- 1.5 A list of 'Evaluated Gross Rates, so calculated, shall be informed to all successful tenderers by email on the day subsequent to that of tender opening to enable them to compare and match their rates.

2. **Matching of Rates:**

- 2.1 After due diligence, a tenderer may decide to match his Evaluated Gross Rate with the Lowest Evaluated Gross Rate, [which is the Lowest Acceptable Offer (LAO)].
- 2.2 The tenderers who decide to match their Evaluated Gross Rates with that of LAO shall do so by giving their confirmation/acceptance through e-mail by sending a scanned copy of the **Annexure-I**, duly sealed and signed by the Authorized Signatory at tcusb@bestmmd.net between the period of Matching Start Date and Matching End Date.
- 2.3 For purpose of identification, the LAO, i.e. Lowest Acceptable Evaluated Gross Rate shall be highlighted in the List of 'Evaluated Gross Rates' which shall be emailed to the successful Tenderers.
- 2.4 The Gross Rate of tenderers who match their rate with LAO shall be revised downwards and their new Basic Rates will be calculated by taking into consideration the taxes, all charges, etc. as well as the losses quoted by them. If such tenderers become eligible for placement of Purchase Orders, the same shall be done at these revised Basic Prices.
- 2.5 Tenderers may please note that while matching of their Evaluated Gross Rate with that of Lowest Evaluated Gross Rate, the Capitalized cost (i.e. the cost derived from No Load Losses & Full Load Losses quoted by the tenderer) shall not be changed and the tenderer shall have to reduce their Gross Rate only.
- 2.6 If while matching, the tenderers offer rates lower than LAO, it will be presumed that they have matched the rates and no special consideration will be given. However, if they become eligible for the orders, the advantage of special rates offered by them will be taken.
- 2.7 If while matching, the tenderers offer rates which are lower than originally quoted rates, but higher than LAO, it will be presumed that they have not matched the rates and will not be considered for orders.
- 2.8 If while matching, the tenderers offer rates which are higher than their originally quoted rates, it will be presumed that they have backed out from the tender and Earnest Money Deposit paid by them will be forfeited.

SCHEDULE-VI
TENDER QUANTITY & TENDER EVALUATION CRITERIA

1. The **Distribution Transformers** of following description are required under this tender specification:

ITEM	L.F.	DESCRIPTION	QUANTITY (IN NOS.)
1	0033088	11kV/415V, 630 kVA, Single Ratio, VPI Resin Impregnated Dry type (AN) Distribution Transformers	65
2	0033090	11kV/415V, 995 kVA, Single Ratio, VPI Resin Impregnated Dry type (AN) Distribution Transformers	15
3	0033092	11kV/415V, 1600 kVA, Single Ratio, VPI Resin Impregnated Dry type (AN) Distribution Transformers	23

2. **QUANTITY VARIATION:**

The tenderers may note that the quantity awarded to them is subject to $\pm 25\%$ variation within contract validity period, at the option of the Undertaking.

2. **TENDER EVALUATION CRITERIA:**

The tender evaluation will be done on the basis of evaluated gross rate of individual item viz. Dry-type (AN) Distribution Transformers, calculated considering their quoted basic rates, taxes, etc. and Capitalized Cost of Losses quoted by them. The 'New' supplier will be recommended for trial quantity as per the Undertaking's procurement guidelines and balance quantity will be allocated to regular suppliers based on the price differential of quoted rate. However, offer of the tenderers will be considered for quantity allocation only if they match their gross rates with that of LAO.

The tenderer participating in the current tender who have already executed trial orders for the tendered item in the past with satisfactory performance will be considered as regular supplier in the current tender. Further, the new tenderer who will be considered for trial order in the current tender shall be considered as regular supplier only after completion of their trial order with satisfactory performance.

The tenderer who is new supplier of Dry-type (AN) Distribution Transformers to the Undertaking but regular supplier of higher rating than 11kV/415V, (AN) Transformers with satisfactory performance, then that new tenderer will be considered as regular supplier on the basis of Family Concept explained at para (1.3) of Conditions of Tender.

SCHEDULE-VII

TECHNICAL SPECIFICATIONS

SPECIFICATION NO. 01420214

11KV/415V, SINGLE RATIO, VPI RESIN IMPREGNATED DRY TYPE (AN) DISTRIBUTION TRANSFORMERS

ITEM	DESCRIPTION	QUANTITY (IN NOS.)
1	SUPPLY OF 630 KVA, 11KV/ 415V, VPI RESIN IMPREGNATED, DRY TYPE (AN) DISTRIBUTION TRANSFORMER	65
2	SUPPLY OF 995 KVA, 11KV/ 415V, VPI RESIN IMPREGNATED, DRY TYPE (AN) DISTRIBUTION TRANSFORMER	15
3	SUPPLY OF 1600 KVA, 11KV/ 415V, VPI RESIN IMPREGNATED, DRY TYPE (AN) DISTRIBUTION TRANSFORMER	23

SECTION-1: GENERAL

1.1 Tender Document:

- 1.1.1 This tender document shall be read and understood as a whole inclusive of all Annexures, Drawings etc. and every section or sub-section of this document shall be incorporated in proper context with other sections contained herein.
- 1.1.2 This specification covers the manufacturer, testing before dispatch and supply of 11KV/415V, single ratio, VPI Resin Impregnated Dry type (AN) distribution transformer.
- 1.1.3 All work covered by this specification shall be carried out in accordance with the 'General Conditions of Contract'.
- 1.1.4 Wherever the directions to the tenderers embodied herein conflict with those specified in the General Conditions of Contract, the former shall be binding in preference to the latter.

1.2 Standards:

- 1.2.1 Except as specified herein, all equipment shall comply with the requirements of the latest relevant Indian Standard Specifications (as amended to-date).
- 1.2.2 Where Indian Standard Specification does not exist, the relevant BS or IEC Standard Specification shall be taken as standard.
- 1.2.3 If the equipment offered is manufactured according to some other standard, it shall be clearly stated and a copy of the latest publication of the standard in English shall be submitted with the offer.

1.3 Legislation :

- 1.3.1 The whole of the equipment shall comply in every respect with the provisions of relevant Government Legislations and/or Rules and Regulations governing manufacture, installation, operation and maintenance of the equipment.
- 1.3.2 Tenderers shall ensure that all safety measures are provided in the equipment against hazards to life and property and that the proper installation and use of the equipment shall not contravene any enactments, rules and by-laws of the Government and the Local Authority.

1.4 Departure from Specification:

- 1.4.1 If due to any reason tenderers find it necessary to depart from the provisions of any section of the specification such departures shall be clearly stated and underlined giving full reasons.
- 1.4.2 If the departures from the provisions of any section of this specification are not notified in writing it will be presumed that tenderers will abide by this specification.
- 1.4.3 Any suggestion, comment or advice to include in this document additional provisions in respect of any special device or attachment/necessary but not already specified herein, may be put forward by the tenderers giving full details of the special/additional features of the equipment together with the justification for its inclusion.

1.5 Technical Data:

- 1.5.1 Tenderers shall give full specifications of the equipment/materials offered and shall supply technical literature and descriptive particulars together with drawing and illustrations to indicate the type and design of the equipment/material offered.
- 1.5.2 Tenderers shall supply such technical data, characteristics and statistical information as required to study the comparative merits and performance of different types and design of the equipments/materials.

1.6 Materials and Workmanship:

- 1.6.1 The equipment/materials shall conform to the best engineering practice in design, materials and construction so as to ensure reliability, economy and safe and convenient operation.
- 1.6.2 Tenderers shall supply all incidental items necessary or usual for such equipment for efficient working and for erection/installation purpose.
- 1.6.3 Manufacturers shall give details of the experience in the supply of similar equipment. A list of important customers who have been supplied with similar equipment with details of order executed shall be furnished. Details shall include rating of the equipment, quantity, purchase order reference etc.

1.6.4 Guarantee :

All the transformers supplied against this Specification shall be guaranteed for a period of 60 months from the date of installation but not later than 66 months from the date of acceptance for satisfactory operation of transformer. However, any engineering error, omission, wrong provisions etc. which do not have any effect on the time period, shall be attended/ rectified by tenderer as and when observed/pointed out without any price implication to the entire satisfaction of the Undertaking.

- 1.6.5 The successful tenderer shall make good at his own expense all necessary alterations replacement to prevent any recurrence of such defects on all the equipment/materials supplied by him.
- 1.6.6 All corresponding similar materials and removable parts shall be made to gauge and shall be interchangeable with each other.
- 1.6.7 The equipment/materials may be rejected at discretion of the General Manager if the test results are not satisfactory and the permissible tolerances are exceeded.

1.7 Instructions for Erection/Installation

Tenderers shall furnish the necessary instruction manual for erection/installation of the equipment/materials and shall also state precautions/provisions if any to be made for proper use afterwards.

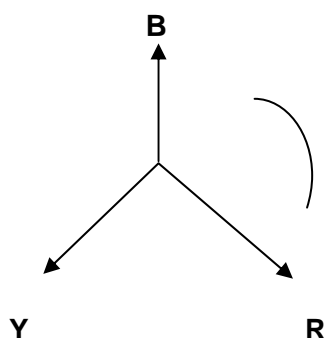
SECTION-2 : DESCRIPTION OF THE BEST SYSTEM

2.1 Grid :

- 2.1.1 The Tata Power Company Ltd. (TPCL) and the Maharashtra State Electricity Board have their generating stations located in different parts of Maharashtra State and form an interconnected transmission system in the Mumbai-Pune Region.
- 2.1.2 Power from this system is transmitted at 220/110kV through overhead conductors and underground cables amongst others to TPCL's five main receiving stations at Backbay, Carnac, Parel, Dharavi and Mahalaxmi situated in the island of Mumbai, where they have installed either delta/star or star/zigzag step down transformers with star point effectively earthed for making power available to their consumers at 110/33/22 kV.

2.2 Existing B.E.S.T. System :

- 2.2.1 The B.E.S. & T. Undertaking on behalf of Brihan Mumbai Mahanagarpalika (who are the licensees for the distribution of electric power within the City limits of Mumbai) receives power in bulk from the Tata Power Company Ltd. at 110/33/22 kV, 3 Phase, 50 Hz.
- 2.2.2 Bulk power at 110/33/22kV is transmitted from TPCL's five main receiving stations through effectively earthed underground cables to B.E.S.T.'s receiving substations situated at different localities in Mumbai where the B.E.S. & T. Undertaking has installed 110/33kV, 110/11kV, 33/11kV or 22/11kV, Star-z, star/star, delta/star power transformers of Vector group Yzn11, Ynyn0, 31 Dyn1 with neutral earthed with/without a resistance. Where the transformation is 110/11kV or 110/33kV, 22/11kV or 33/11kV, the star point of the transformers has been effectively earthed. The power transformers are provided with OLTC gear to regulate and maintain the 11kV voltage fairly constant.
- 2.2.3 Underground 11 kV (effectively earthed) feeder cables radiate from the B.E.S.T. receiving substations to supply power to a large number of distribution substations and to certain consumer's substations. These feeders form a radial network under which each feeder supplies on an average 4 to 5 substations in series.
- 2.2.4 Power at 11kV is stepped down to 415/240V at the distribution substations where the various sizes of 11kV/415-240Volt delta/star transformers of vector group 41 Dyn11 are installed. The star point of these transformer is solidly earthed and is also brought out to an insulated terminal for the 3 phase, 4 wire distribution system.
- 2.2.5 The 415/240V secondary distribution system comprises of a vast network of underground four core cables, suitably sectionalized by means of distribution pillars, to which service lines are teed off to supply power to medium and low voltage consumers.
- 2.2.6 The phase sequence of the 3 phases at the existing receiving substations is in accordance with the International Standards as indicated below :-



SECTION-3 : PREVAILING SERVICE CONDITIONS

3.1 Climatological Data

3.1.1 The information given hereunder is based on data supplied by the Regional Meteorological Centre, Colaba, Mumbai – 400 001.

3.1.2 The information is based on the data collected over the years 1881 to 2007.

3.1.3 The table below gives the climatological data for the city of Mumbai:

3.1.4 Air Temperature in Shade

	Highest temperature recorded	:	40.6 °C
	Lowest temperature recorded	:	11.7° C
	24 Hours daily average	:	26.0° C
b)	Mean highest temperature in Sun	:	62.2° C
	Highest temperature in Sun	:	64.0° C
c)	Relative Humidity		
	Lowest mean RH	:	62%
	Highest mean RH	:	85%
d)	Rainfall		
	Mean No. of rainy days in a year	:	75.9 days
	Mean rainfall in a year	:	2146.5 mm
	Max. rainfall recorded in a year	:	3481.6 mm
	Heaviest rainfall in a day recorded	:	575.6 mm
e)	Wind		
	Mean daily wind speed - min. in a year	:	9.8 Km/Hr.
	Mean daily wind speed – max. in a year	:	18.7 Km/Hr.
	Highest wind speed in gust	:	103 Km/Hr. on 17/06/2004

3.2 **Geographical Data :**

Mumbai city is situated on the western coast of India and is the second biggest city in the county. It has an excellent sea-port and is on the world's main routes by sea and air. It is well connected with the hinterland by road and railways.

Area	64 Sq.Km
Population	38,00,000
Longitude	72 40 E
Latitude	18 54 N
Height above M.S.L.	11 Metres

3.3 **Local Conditions & Existing Practice :**

3.3.1 Mumbai is a densely populated city with large industries such as cotton mills, chemical factories, engineering workshops and several varieties of large and small industries occupied in the manufacture of consumer goods and other commodities.

3.3.2 Although certain areas are still undeveloped, the city is divided into several zones such as residential, commercial, industrial etc. With a view to minimize nuisance and localize several mixed localities where such zoning has not been done and two or more types of activities are allowed to continue. By and large, the heavy industries are gradually shifting from the city.

3.3.3 The 110/33/22kV substations are completely Indoor equipped with power transformers, switchgears, control panels, reactors and capacitors, batteries and other auxiliary equipment.

3.3.4 The distribution substations are normally equipped with 11kV switchgear, distribution transformers and L.V. Distribution board or pillar. 56kVAr capacitor banks are connected on the L.V. side of transformers for power factor improvement.

3.3.5 Each distribution substation comprises of one or more incoming and outgoing feeders and one or more transformers of 1600 kVA, 630 kVA. The outgoing feeders and primary of the transformers are controlled and protected by 11kV oil circuit breakers in conjunction with their associated trip coils and current transformers.

3.3.6 The distribution substations in the city are of the following three types :

- a) Indoor Type: Where the switchgear and the transformers are located inside a building.
- b) Outdoor Type: Where the switchgear and the transformers are located in open land and directly subjected to outside atmosphere.
- c) Indoor/Outdoor Type: Where the switchgear is located inside a building and the transformers are located in an outdoor plot open to sky.

3.4 **Short Circuit Level :**

The maximum symmetrical short circuit level in 11kV system is 250 MVA at the substations. The maximum symmetrical short circuit current shall be 13.2 KA.

SECTION-4: DETAILED REQUIREMENTS

4.1 TYPE:

- 4.1.1 The transformer shall be VPI Resin Impregnated Dry type suitable for operation on primary voltage of 11000 V and shall be of the ratio 11000/415 Volts, three phase, 50 Hz, double wound, delta / star, core type, enclosed. AN cooled & suitable for indoor use.
- 4.1.2 The transformers shall be suitable for floor mounting and installation and operation inside the substation building or in the basement of a multi-storied building.

4.2 SIZES AND QUANTITIES:

The sizes and quantities of VPI Resin Impregnated Indoor Dry type transformers with class 'H' or superior insulation, complete with cable boxes and fittings are as follows:

Item	Capacity	Quantity (in Nos.)
1	630 kVA	65
2	995 kVA	15
2	1600 kVA	23

4.3 FITTINGS:

The transformers shall be provided with the following fittings as per IS-2026 (Part-I)/1977.

- i) Rating plate vide clause 15 of IS-2026(Part-I)/1977.
- ii) Terminal marking plate.
- iii) Two earthing terminals with copper or aluminium lugs of size 120 sq.mm. at the centre of the bottom channels supporting the transformers.
- iv) Lifting lugs to lift the transformer.
- v) Bidirectional rollers with locking arrangement.
- vi) HV dividing box.
- vii) LV dividing box.
- viii) Winding temperature indicator.
- ix) Winding temperature relay with interposing relay to give trip impulse to breaker controlling Distribution Transformer.
- x) Heater alongwith switch to be provided inside transformer tank.
- xi) Heater alongwith switch to be provided in marshaling box.
- xii) Simulating test facility shall be provided in marshaling box for testing alarm and trip commands.

4.4 QUANTITY VARIATION:

The tenderers may note that the quantity awarded to them is subject to $\pm 25\%$ variation within the Contract Validity Period, at the option of the Undertaking.

SECTION-5 : SPECIFICATIONS

5.1 General:

The dry type transformer shall be of VPI Resin Impregnated and in accordance with IS-11171/1985 and IEC-726/1982 for dry type transformer as applicable unless specified otherwise and also in accordance with the following supplementary specification.

- 5.1.1 The transformer shall be designed and suitably insulated for continuous operation at the rated kVA at the secondary terminals, under the prevailing service conditions at the rated voltage, frequency and temperature rise stipulated hereinafter.
- 5.1.2 The manufacturers' attention is drawn to clause 3.2.3 of IS-11171/1985 in regards to the restricted cooling/air circulations available and poor ventilation inside vaults/basement and enclosed rooms where the transformers are required to be installed. The maximum surrounding temperature at these locations is about 55°C.
- 5.1.3 The insulating materials shall be suitably processed such that in effect they act as Fire retardant.
- 5.1.4 The manufacturer alongwith offer has to submit type test certificate (including dynamic ability to withstand short circuit test) from NABL Accredited laboratory for the type and design of the transformer offered of same or higher kVA rating with 11kV voltage class, failing which offer may be overlooked.

5.2 Variation in Voltage & Frequency:

- 5.2.1 The rated no load voltage ratio shall be as under:

HV - 11000 Volts
LV - 415/240 Volts, 4 wire supply.

- 5.2.2 The rated frequency shall be 50 Hz.
- 5.2.3 The transformers shall be designed for satisfactory operation at any supply voltage within $\pm 10\%$ of the rated voltage of 11000 volts with the frequency varying by 3% above or below the normal value of 50 Hz.

5.3 Nature of Load:

The transformer will supply a pre-dominantly commercial load with an average load factor of 60% and a lagging power factor between 0.85 and 0.95.

- 5.4 The transformer shall have 4.75% impedance voltage.

5.5 Winding:

- 5.5.1 The HV and LV windings shall be of high conductivity electrolytic copper conductor of best quality and shall be insulated with class 'H' superior insulation. The arrangement of the windings shall be such that there is electrical and magnetic balance under all operating conditions.
- 5.5.2 The manufacturer shall give details of the process of manufacturing VPI resin impregnated transformer. Guaranteed performance details should be filled up completely.

5.5.3 The design treatment and construction of transformer and bracing of the winding should be such as to withstand the heavy mechanical and thermal stresses which may be experienced under condition of daily cycle of heating and cooling due to fluctuations in load or dead short circuit on either side of the transformer.

5.5.4 **Connections:** The windings shall be connected in delta on the primary and in star on the secondary with neutral brought out to an insulated terminal for direct earthing. The connections shall be made in accordance to the vector symbol Dyn11.

5.6 **Insulation:**

5.6.1 The primary winding of the transformer shall be suitable for highest system voltage of 12 kV and shall withstand power frequency test voltage as per table 5 of IS-11171/1985. The power frequency test voltage for the secondary winding shall be 3 kV RMS. The tenderer shall clearly state in this tender the value of the power frequency test voltage for which the primary and secondary windings of the transformers are designed.

5.6.2 The inter-turns and end-turns of the HV and LV windings shall be insulated for protection against surges and transients.

5.6.3 The insulation shall be of class 'H' or superior type insulating material conforming to IS-1271/1985 amended till date.

5.7 **Temperature Rise:**

The temperature rise of the transformer above the cooling air temperature when tested at rated current and rated voltage shall not exceed the limit indicated in Table-4 of IS-11171-1985. The test shall be conducted as per clause no. 17.2.3 of IS-11171-1985.

5.8 **Flux Density:**

The value of the flux density shall be so chosen that -

- a) The noise is reduced.
- b) The flux density shall not exceed 1.6 tesla.

5.9 **Core:**

5.9.1 The core shall have inter-leaved yokes which shall be well clamped to eliminate humming as far as possible when the transformer is in service (refer sub section 5.17).

5.9.2 The construction of core assembly shall be boltless in order to avoid generation of hot spots as well as to reduce noise level. The core shall be constructed from cold rolled, thin non-ageing low loss silicon steel laminations of CRGO sheets with M4/M-OH/laser scribed HI-B or better grade and using 45° mitered step-lap core joints for reducing the iron loss to the minimum possible extent and treated with insulating material on both sides of each lamination. The insulating material shall be non-hygroscopic so that there is no possibility of moisture being absorbed by it due to varying annual and daily temperature cycle resulting in breathing of the transformer in a humid atmosphere. The manufacturer shall ensure uniform quality of laminations free from any manufacturing defects they shall be clamped securely and provided with firm and enduring interlocking so as to minimize the possibility of loosening of laminations during service. All such fixtures shall be well insulated with good quality materials from the core and nearby parts of the windings/connections etc. and shall not affect the magnetic performance of the core adversely. The core limbs shall be provided with a semi-conducting taping to give clamping.

5.9.3 The core shall be provided with suitable lifting lugs to enable the complete core and coil assembly to be lifted for transportation. The lifting lugs shall be so positioned that there shall be no obstacles while lifting the core and coil assembly.

- 5.9.4 The core material shall be directly procured either from the manufacturer or through their associated marketing organization of repute and not through any agent. The manufacturer shall preferably have in-house core cutting facility. The core shall be preferably cut in manufacturers works.
- 5.9.5 The following documents pertaining to procurement and testing of core material to be submitted by the transformer manufacturer during prototype inspection:
 - i) Invoice of supplier.
 - ii) Mills test certificate.
 - iii) Packing list.
 - iv) Bill of Landing.
 - v) Bill of entry certificate by custom.
 - vi) Description of material, electrical analysis, physical inspection.
 - vii) Certificate for surface defects, thickness & width of material.

5.10 **Rollers:**

The bi-directional rollers of mild steel shall enable the transformer to roll in the plane at right angles to the vertical plane containing the centre lines of HV and LV cable boxes. The rollers shall be of 200 mm diameter and 85 mm in width. The centre to centre distance between the rollers along the length and width of transformer shall be 900 mm. Also, the clearance between the roller fixing channel and the top surface of the roller shall be minimum 60 mm.

5.11 **Terminals:**

- 5.11.1 The primary and secondary terminals as shown in clause no.5.11.5 shall be brought out on opposite sides of the transformer for connection to 3 core x 50 sq.mm. copper conductor XLPE cable and single core x 400 sq.mm. copper unarmoured XLPE cables respectively. An additional insulated neutral terminal, properly protected by a removable cover shall be provided for earthing the star point of the LV side.
- 5.11.2 The primary and secondary terminals shall be provided with suitable crimping lugs.
- 5.11.3 The minimum height of the cable gland from ground level shall be 500 mm.
- 5.11.4 The high and low voltage phase terminals shall be marked with colours red, yellow and blue, the neutral point material being indicated by letter `n`.
- 5.11.5 The following colours shall be assigned to the windings respectively from the left to the right facing the side carrying high voltage terminals.

1) HV VIEWED FROM HIGH VOLTAGE SIDE (for all types of ratings) :-

R	Y	B
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2) LV VIEWED FROM LOW VOLTAGE SIDE (for 630 & 995 kVA transformers) :-

n	n	b	y	r
L	0	0	0	0

3) LV VIEWED FROM LOW VOLTAGE SIDE (for 1600 kVA transformers) :-

n	n	b	y	r	n	b	y	r
L	0	0	0	0	0	0	0	0

MARKING AND RELATIVE POSITION OF TERMINALS

5.12 **Cable Boxes:**

5.12.1 On H.V. side of transformer a cable box made of Cast Iron / M.S. sheet shall be provided. The cable box shall be suitable for both Epoxy / Heat Shrinkable type termination, so as to terminate 3C x 50 sq.mm. copper conductor XLPE cable. The HV cable boxes shall be as per drawing no. ES/PL/A 470.

5.12.2 The LV cable box made of M.S. sheet shall be in 2 removable parts and shall be suitable for being detached from main body with suitable mounting arrangement. The LV cable boxes shall be as per drawing no. ES/PL/A-469 (for 630 kVA transformers), ES/PL/A-468 (for 995 kVA & 1600 kVA transformers) and. The L.V. cable box shall be suitable for terminating following number of cables which will approach the boxes vertically from the bottom:

Transformer Rating	L.V. Cables
1. 630 kVA	7 nos., 1C x 400 sq.mm. XLPE copper conductor cable (6 for phases and 1 for neutral)
2. 995 kVA	11 nos. 1C x 400 sq.mm. XLPE copper conductor cable in each box). (9 for phases and 2 for neutral)
3. 1600 kVA	22 nos., 1C x 400 sq.mm. XLPE copper conductor cable (in two dividing boxes with 11 nos. 1C x 400 sq.mm. copper conductor cable in each box). (9 for phases and 2 for neutral)

5.12.3 A suitable wooden clamping arrangement as per drawing no. ES/PL/A-468 (for 995 kVA & 1600 kVA transformers) and drawing no. ES/PL/A-469 (for 630 kVA transformer) for supporting the L.V. cables in vertical position shall be provided, so that, L.V. busbars will not be loaded. The bottom plate of L.V. dividing box shall be in 3 parts for 630 kVA and in 4 parts for 995 kVA & 1600 kVA with circular holes for entry of 1C x 400 sq.mm. copper conductor XLPE cables.

5.12.4 Long barrel type copper lugs with two holes as per drawing no. ES/PL/A-445, shall be provided for terminating 1C x 400 sq.mm. Copper conductor, XLPE cables.

5.12.5 L.V. busbars shall be supported using epoxy insulators from the top side inside the L.V. dividing box.

5.12.6 Height of the centre line of HV/LV terminals from the surface of the foundation shall be 1.5 mtrs. \pm 5% tolerance.

5.13 **Terminal marking plate and rating plate:**

Each transformer shall be fitted with a terminal marking plate and rating plate. These shall be engraved metal plate giving clearly the connections for the transformer, the terminal markings, and all other information as specified in clause 15 of IS-2026(Part-I)/1977 alongwith guaranteed values of No Load and Full Load Losses and purchase order no.

5.14 **Enclosure (Housing):**

Enclosure for indoor type transformer shall be constructed using suitable weld mesh with robust support structure. The weld mesh panels shall be bolted to the frame. The enclosure shall be finished both internally and externally with weather resistant paint.

The paint colour shall be grey shade as per IS-5.

Suitable lifting lugs must be provided to enable the transformer to be lifted by means of cranes using slings.

5.15 **Overall Dimensions:**

Due to space constraints, the maximum overall length and width of 630 kVA and 995 kVA transformer shall be 1800 mm x 2000 mm and for 1600 kVA transformer the maximum length and width shall be 2000 mm x 2000 mm.

The transformers are intended for use in substations where the height from floor to roof is limited. The maximum overall height of the transformers shall not therefore exceed 1.8 meters, 2.0 meters & 2.5 meters for 630 kVA, 995 kVA and 1600 kVA transformers, respectively.

5.16 **Transport Dimensions:**

The transformers are intended to be installed in basement where carriage way to the substation is very narrow. Hence the transport dimensions of transformer which shall be measured from HV busbar tip to LV busbar tip after removing HV and LV cable boxes shall not exceed 1.2 mtrs. for 630 kVA & 995 kVA and 1.4 mtrs. for 1600 kVA transformer.

The offer shall be accompanied with a drawing illustrating how the transport dimensions are achieved. However, smaller dimensions will be preferred.

5.17 **Vibration & Noise:**

The transformer should operate with minimum vibration and humming noise.

5.18 In the Section-10 of specification, the manufacturer is required to submit the guaranteed technical particulars. The transformers shall be as per our requirement regarding the essential parameters listed below. If there is any deviation from our requirement or if the tenderers do not furnish following parameters, no further correspondence will be made after opening of the tender and the offer will be liable to be overlooked.

- 1) Vector Group and Symbol
(The vector group shall be Dyn11)
- 2) Maximum temperature rise at rated kVA
(Max. temp. rise shall be as per test procedure mentioned in clause no.5.7)
- 3) Maximum Full load losses at 75^oC (without IS tolerance): Please refer Annexure-H.
- 4) Maximum No load losses at rated voltage (without IS tolerance): Please refer Annexure-H.
- 5) Maximum Total losses (without IS tolerance): Please refer Annexure-H.
- 6) Impedance voltage at rated current at 11kV in percentage.
(Impedance voltage at the rated current shall be 4.75% with IS tolerance at 11kV)
- 7) Type of Core
(The core shall be constructed with low loss Silicon Steel laminations of CRGO type)
- 8) Particulars of insulation
(Insulation shall be of class 'H' or superior type insulating material conforming to IS-1271/1985 amended till date).
- 9) Overall dimensions

The overall length and width of 630 kVA & 995 kVA Transformers shall be less than or equal to 1.8 mtrs. x 2.0 mtrs. and for 1600 kVA Transformer shall be less than or equal to 2.0 mtrs. x 2.0 mtrs. Overall height of 630 kVA & 995 kVA shall be less than or equal to 1.8 mtrs., 2.0 mtrs. However, for 1600 kVA the overall height shall be 2.5 mtrs.

- 10) Transport dimensions i.e. the dimensions measured from HV bushing tip to LV bushing tip after removing HV and LV cable boxes.
(For 630 kVA & 995 kVA, the length and width shall be less than or equal to 1.8 mtrs. & 1.2, respectively and for 1600 kVA transformer the length and width shall be less than or equal to 2.0 mtrs. and 1.4 mtrs. respectively, after removing the detachable parts).
- 11) Height of the centre line of terminals from the foundation level
(This height shall be 1.5 mtrs. ($\pm 5\%$) for all the 3 ratings of transformers)
- 12) The general arrangement drawing showing all the dimensions clearly for each rating of transformer must be submitted. Also, how the transport dimensions are achieved, shall be shown in the GA drawing.

5.19 **Drawings:**

5.19.1 The tenderers shall submit in quadruplicate the following drawings alongwith the quotations on A3 size paper:

- a) Dimensional drawings of the transformers offered.
- b) Diagram of connections.
- c) Dimensional drawings showing the HV and LV cable boxes offered.
- d) Details drawings of HV/LV busbars / insulators.
- e) Drawing illustrating how transport dimensions are achieved.

5.19.2 The drawings shall be to scale and fully detailed. All important dimensions shall be given and materials of each component shall be indicated.

5.19.3 The successful tenderer shall submit the 3 sets of approved drawings on A-3 size paper and on 2 nos. of Compact Disc (CD) to Divisional Engineer, Planning (Materials).

5.19.4 The successful tenderer has to submit in quadruplicate, copies of drawings within 2 weeks from the date of receipt of Purchase Order and get the same approved from Divisional Engineer, Planning (Materials) Dept., B. E. S. & T. Undertaking, 3rd Floor, Backbay Veej Bhavan, Gen. Jagannath Bhosale Marg, 149/150, Backbay Reclamation, Mumbai - 400 021, within 4 weeks from the date of submission of drawings. The firm has to depute technical representative for discussion, if any, during the drawing approval stage, so as to avoid delay.

SECTION-6: TESTING AND INSPECTION

6.1 **Tests :**

6.1.1 The transformers shall be subjected to the following tests free of cost at the manufacturer's works as specified in Section 16.1.2 of IS-2026(Part-I)/1977, Section-5 of IS-11171/1985 and IEC-726/1982.

I) Routine Tests :

- a) Measurement of winding resistance.
- b) Ratio, Polarity and phase relationship.
- c) Measurement of impedance voltage.
- d) Load Losses (for measurement of the load losses of transformer testing leads shall be connected to the HV and LV end of the busbars). The frequency correction factor as given at 6.1.1.1 shall be applied to the stray losses component calculated.
- e) No-load losses and no-load current :- While carrying out the No load losses, the ratio V rated : f rated shall be maintained by adjusting V test according to f test. (V rated = Rated voltage, V test = Test voltage, f rated = Rated frequency, f test = Test frequency). (The frequency correction factor as given at 6.1.1.2 shall be applied to the measured No load losses).
- f) Insulation resistance.
- g) Induced over voltage withstand.
- h) Separate source voltage withstand.

6.1.1.1 **Stray losses at rated frequency**

$$= \text{Stray losses at test frequency} \times \left\{ \frac{\text{Rated Frequency}}{\text{Test Frequency}} \right\}^2$$

6.1.1.2 Actual No load losses at rated frequency

$$= \frac{\text{Measured No load losses}}{2} \times \left\{ \frac{\text{Rated Frequency}}{\text{Test Frequency}} \right\}^2$$

$$+ \frac{\text{Measured No load losses}}{2} \times \left\{ \frac{\text{Rated Frequency}}{\text{Test Frequency}} \right\}$$

While carrying out the tests for measuring no load losses the ratio of rated Voltage: rated frequency shall be maintained by adjusting the test voltage according to the test frequency.

- 6.1.2 The tolerance on the above performance test values shall be as specified in IS-2026/1977.
- 6.1.3 The tenderer shall supply three certified copies of the test certificates in respect of each test carried out on the transformers.
- 6.1.4 The test certificates shall give the actual measurements and also the derived values for -
 - 1) Losses
 - 2) Impedance Voltage
 - 3) Efficiency at 50%, 75% and full load at unity and 0.8 p.f. lagging at 75°C.
 - 4) Regulation at unity and 0.8 p.f. lagging.
- 6.1.5 In addition to the tests specified above, the Undertaking reserves the right to have any reasonable tests carried out at the manufacturer's works or at site.
- 6.2 The transformers alongwith the enclosure shall be offered for inspection and witnessing the test referred above by our representative at the manufacturer's works before dispatch.
- 6.3 Inspection and acceptance of Prototype and Lots :
 - 6.3.1 The prototype of each rating shall be offered for inspection and witnessing the tests by the Undertaking's personnel before the manufacture of lot.
 - 6.3.2 Lots shall be manufactured only after the acceptance of prototype at our testing laboratory and each lot shall be offered for inspection at the works.
 - 6.3.3 After the delivery of transformer to BEST Undertaking, each transformer will be tested at our laboratory. The transformers will be accepted only after getting the satisfactory test results.
 - 6.3.4 The prototype or any lot is liable for rejection during inspection by the Undertaking's officers at the works of the manufacturer, if test results are not satisfactory and the permissible tolerances are exceeded or if there are deviations from our specification or if the equipment offered is found to be incomplete. In such cases, the manufacturer has to offer fresh prototype/lot for re-inspection at their works. The re-inspection charges shall be borne by the manufacturer. The re-inspection charges shall include salary, allowances, lodging, boarding Lodging, Boarding and To & Fro air/first class AC, rail fare expenses etc. as per prevailing procedure of the Undertaking. The re-inspection charges shall be recovered from the outstanding payment to be made to the manufacturer.

SCHEDULE-VIII

PRICE, DELIVERY, TENDER VALIDITY & CONTRACT VALIDITY PERIOD

1. Prices:

- 1.1 Tenderers shall quote 'Variable' prices as per the Undertaking's Price Variation Formula shown in Annexure-B based on IEEMA price variation without ceiling and for free delivery of the transformer to our Kussara Stores, Mazgaon, Mumbai/Anik Depot, including arrangement for unloading and stocking of transformers at the proper place. The Freight, Insurance & Unloading Charges payable shall be quoted separately. The prices shall, however, be exclusive of Excise Duty, S.T./C.S.T. & Octroi wherever applicable, the percentage of which should be indicated clearly. The Ex-works prices shall be mentioned for the purpose of charging Excise Duty.
- 1.2 The tenderers are requested to note that Form 'C'/Concessional VAT shall be applicable for this particular item. The prices shall however, be exclusive of Excise Duty, VAT, CST and Octroi, wherever applicable, the percentage of which should be indicated clearly (please refer Clause-2 of Conditions of Tender, Schedule-III).
- 1.3 It will be the responsibility of the manufacture for safe transport of the materials including and keeping the same at proper place. The freight charges, insurance and unloading charges shall be clearly quoted in the Schedule of Prices and Delivery. The offers of tenderers, who quote only Ex-works prices will be overlooked.

2. Delivery:

- 2.1 The successful tenderer shall submit in quadruplicate, copies of drawings as specified in Clause No. 5.19 within 2 weeks from the date of receipt of Purchase Order and get the same approved from Divisional Engineer, Planning (Materials) Dept., B. E. S. & T. Undertaking, 3rd Floor, Backbay Veej Bhavan, Gen. Jagannath Bhosale Marg, 149/150, Backbay Reclamation, Mumbai - 400 021, maximum within 6 weeks from the date of submission of drawings. The firm has to depute technical representative for discussion, if required, during the drawing approval stage, so as to avoid delay.
- 2.2 The successful tenderer shall submit the 3 sets of approved drawings on A-3 size paper and on 2 nos. of Compact Disc (CD) to Divisional Engineer, Planning (Materials).
- 2.3 The prototype unit shall be offered for inspection, within 5 months from the date of release of P.O.
- 2.4 The successful tenderer shall have to deliver the Proto type and get it approved within 6 months from the date of release of Purchase Order, failing which, Liquidated Damages will be charged accordingly.
- 2.5 prototype at our end, the manufacturer shall attend/rectify, defect/shortfall within 10 days from the date of receipt of rejection memo.
- 2.6 After acceptance of prototype at our end, the 1st lot of 2 nos. of Transformers of each ratings shall be offered for inspection, so that, it will be delivered to our Kussara Stores within 2 months from the date of acceptance of prototype. The delivery of subsequent lots shall be intimated by the Materials Management Department. Further, in case of rejection of lot at our end, the manufacturer shall attend/rectify the defects within 15 days from the date of receipt of rejection memo.

- 2.7 Delivery schedule given will be suitably amended from time to time, depending on our requirement. However, minimum one month's advance intimation will be given while effecting the change.

Besides, due cognizance of the lead time required for manufacturing the transformer will be taken while changing the delivery schedule. The tenderer therefore shall upload their own delivery schedule in the prescribed format i.e. Annexure-B giving lead time details such as:

- i) The time required to manufacture the Transformer offered from the date of intimation.
- ii) The time required for inspection, testing & quality control.
- iii) The production capacity per month.
- iv) The time required for delivery of full tender quantity
- v) Time required for door delivery after receipt of dispatch clearance by the inspecting authority or Lot inspection waiver.

3. **Validity:**

Tender Validity : 6 months from the technical bid opening date. It is the period (from technical bid opening date) within which the Undertaking is required to enter into contract with the firm. On expiry of such period, the rates quoted in the tender are not binding upon the suppliers.

Contract Validity Period : 30 months from the technical bid opening date.
The Undertaking has newly introduced this concept of Contract Validity Period (in addition to Tender Validity) in order to ensure fairness and clarity to get competitive bids from the suppliers. This Contract Validity Period shall commence from tender bid opening date till a period of 30 months as mentioned above. During the Contract Validity Period, it will be binding upon the suppliers for faithful execution of the contract as per contractual terms for the entire ordered quantity including $\pm 25\%$ quantity.

The offer shall be valid for acceptance upto the tender/contract validity period mentioned on the tender site. The offers with lesser validity period may be considered as 'Non-Responsive' and their price bid shall not be opened.

SCHEDULE-IX

TERMS OF PAYMENT

The Terms of Payments will be as follows:

100% of payment shall be payable either, on the 30th day from the date of acceptance of material or on 8th day from the date of submission of Tax Invoice, whichever is later and to the Administrative Officer, Materials Management Department, Parivahan Bhavan, Mumbai- 400 001.

**SCHEDULE OF GUARANTEED PERFORMANCE & OTHER TECHNICAL PARTICULARS
(MUST BE FILLED IN BY THE TENDERER)**

Sr. No.	Description	630 kVA
1.	Manufacturer's Name and place of Manufacture.	
2.	Brand Name	
3.	Type – Indoor	
4.	Standard to which the transformers are manufactured.	
5.	Local Representative Details	
6.	a) Have you carried out Type Test on the Transformer?	Yes / No
	b) Have you uploaded the Type Test Certificate?	Yes / No
7.	Number of phases	
8.	Frequency	
9.	Rated kVA, Output (CMR) corresponding to average temperature rise of winding under service conditions stipulated in IS-2026 (Part-II)/1977 Clause 3.	
10.	Voltage between phases (H.V. side) volts	
11.	Voltage between phases (L.V. side) volts	
	a) At No load	
	b) Full load at Unity P.F.	
	c) At full load 0.8 P.F. (lagging)	
12.	Section of busbars in mm x mm	
	a) H.V. side	
	b) L.V. side	
13.	Connections --	
	a) On H.V. side	
	b) On L.V. side	
14.	Vector group and symbol	
15.	Insulation test voltage (power frequency)	
	a) H.V. winding – KV r.m.s	
	b) L.V. winding – KV r.m.s	
16.	Class and impregnation of insulation	
17.	Method of cooling	
18.	Maximum temperature rise at rated kVA output as per the test procedure mentioned in Section-5, Clause 5.7 of the Specification	
19.	Maximum temperature rise at rated voltage and rated current continuously for 8 hours.	
20.	Resistance voltage drop at 75° C - %	
	Regulation -	
21.	a) At Unity P.F. at 75° C - %	
	b) At 0.8 P.F. at 75° C - %	
22.	Reactance drop - %	
	Exciting current (HV) and Power factor -	
23.	a) At rated voltage and frequency – Amps	
	b) At 110% rated voltage and frequency – Amps	
24.	Impedance voltage at rated load and normal tap at 75 ° C - %	

Sr. No.	Description	630 kVA
25.	Maximum induction in c.g.s lines per sq.mm. for cold rolled steel lamination a) At rated voltage and frequency (i) Core (ii) Yoke b) At 110% rated voltage and frequency (i) Core (ii) Yoke	
26.	Type of core material	
27.	Core Grade	
28.	Type of windings – a) H.V. side b) L.V. side	
29.	Shape (round or rectangular) and section of copper used in – a) H.V. winding sq.mm. b) L.V. winding sq.mm.	
30.	Maximum working current density in windings at rated output – a) H.V. winding amps per sq.mm. b) L.V. winding amps per sq.mm.	
31.	Particulars of insulation for – a) Coil b) Inter-turns c) End turns	
32.	Minimum clearance to earth – a) Of primary windings – mm b) Of secondary windings – mm	
33.	Guaranteed efficiency at standard reference temperature of 75°C - a) On 100% load at U.P.F. - % b) On 75% load at U.P.F. - % c) On 50% load at U.P.F. - % d) On 100% load at 0.8 P.F. (Lagging) - % e) On 75% load at 0.8 P.F. (Lagging) - % f) On 50% load at 0.8 P.F. (Lagging) - %	
34.	Weights – Kg. a) Core – Kg. b) Windings – Kg. c) Core, coils insulation (weight to lift for inspection) – Kg.	
35.	Head room necessary to lift – Mtrs. (Untanking height)	
36.	Height of the centre line of terminals from the surface of the foundation – Mtrs. (Section 5.12.6)	
37.	Cable boxes for HV & LV side shall be given as per clause no. 5.12.1 (Drg. No. ES/PL/A-470) and 5.12.2 (Drg. No. ES/PL/A-468 & ES/PL/A-469) respectively	
38.	Clearance between additional Neutral bushing and dividing box.	
39.	Inspection cover on top plate of L.V. side shall be provided.	Yes / No
40.	The shade of paint colour for Enclosure shall be given as per Clause no. 5.14	Yes / No

Sr. No.	Description	630 kVA
41.	Rollers	
	a) Material	
	b) Diameter	
	c) Width	
	d) C/C distance between the rollers	
	e) Clearance between the roller fixing channel and top surface of roller	
42.	Wooden cleating arrangement shall be given as per Drg. No. ES/PL/A-468, 469 & 470	Yes / No
43.	Marking and relative position of HV / LV busbars shall be given as per clause no. 5.11.5	Yes / No
44.	Terminal marking plate and rating plate shall be engraved metal plate	Yes / No

- N.B.:**
1. All particulars in the above table are mandatory & must be compulsorily filled. Incomplete document shall be liable for rejection.
 2. After filling up details in the above table, it shall be uploaded in the respective window of the Pre-Qualification Criteria.

SCHEDULE OF GUARANTEED PERFORMANCE & OTHER TECHNICAL PARTICULARS**(MUST BE FILLED IN BY THE TENDERER)**

Sr. No.	Description	995 kVA
1.	Manufacturer's Name and place of Manufacture.	
2.	Brand Name	
3.	Type – Indoor	
4.	Standard to which the transformers are manufactured.	
5.	Local Representative Details	
6.	a) Have you carried out Type Test on the Transformer?	Yes / No
	b) Have you uploaded the Type Test Certificate?	Yes / No
7.	Number of phases	
8.	Frequency	
9.	Rated kVA, Output (CMR) corresponding to average temperature rise of winding under service conditions stipulated in IS-2026 (Part-II)/1977 Clause 3.	
10.	Voltage between phases (H.V. side) volts	
11.	Voltage between phases (L.V. side) volts	
	a) At No load	
	b) Full load at Unity P.F.	
	c) At full load 0.8 P.F. (lagging)	
12.	Section of busbars in mm x mm	
	a) H.V. side	
	b) L.V. side	
13.	Connections --	
	a) On H.V. side	
	b) On L.V. side	
14.	Vector group and symbol	
15.	Insulation test voltage (power frequency)	
	a) H.V. winding – KV r.m.s	
	b) L.V. winding – KV r.m.s	
16.	Class and impregnation of insulation	
17.	Method of cooling	
18.	Maximum temperature rise at rated kVA output as per the test procedure mentioned in Section-5, Clause 5.7 of the Specification	
19.	Maximum temperature rise at rated voltage and rated current continuously for 8 hours.	
20.	Resistance voltage drop at 75° C - %	
	Regulation -	
21.	a) At Unity P.F. at 75° C - %	
	b) At 0.8 P.F. at 75° C - %	
22.	Reactance drop - %	
	Exciting current (HV) and Power factor -	
23.	a) At rated voltage and frequency – Amps	
	b) At 110% rated voltage and frequency – Amps	

Sr. No.	Description	995 kVA
24.	Impedance voltage at rated load and normal tap at 75 ° C - %	
25.	Maximum induction in c.g.s lines per sq.mm. for cold rolled steel lamination	
	a) At rated voltage and frequency (i) Core (ii) Yoke	
	b) At 110% rated voltage and frequency (i) Core (ii) Yoke	
26.	Type of core material	
27.	Core Grade	
28.	Type of windings –	
	a) H.V. side b) L.V. side	
29.	Shape (round or rectangular) and section of copper used in –	
	a) H.V. winding sq.mm. b) L.V. winding sq.mm.	
30.	Maximum working current density in windings at rated output –	
	a) H.V. winding amps per sq.mm. b) L.V. winding amps per sq.mm.	
31.	Particulars of insulation for –	
	a) Coil	
	b) Inter-turns c) End turns	
32.	Minimum clearance to earth –	
	a) Of primary windings – mm b) Of secondary windings – mm	
33.	Guaranteed efficiency at standard reference temperature of 75°C -	
	a) On 100% load at U.P.F. - %	
	b) On 75% load at U.P.F. - %	
	c) On 50% load at U.P.F. - %	
	d) On 100% load at 0.8 P.F. (Lagging) - %	
	e) On 75% load at 0.8 P.F. (Lagging) - % f) On 50% load at 0.8 P.F. (Lagging) - %	
34.	Weights – Kg.	
	a) Core – Kg.	
	b) Windings – Kg. c) Core, coils insulation (weight to lift for inspection) – Kg.	
35.	Head room necessary to lift – Mtrs. (Untanking height)	
36.	Height of the centre line of terminals from the surface of the foundation – Mtrs. (Section 5.12.6)	
37.	Cable boxes for HV & LV side shall be given as per clause no. 5.12.1 (Drg. No. ES/PL/A-470) and 5.12.2 (Drg. No. ES/PL/A-468 & ES/PL/A-469) respectively	
38.	Clearance between additional Neutral bushing and dividing box.	
39.	Inspection cover on top plate of L.V. side shall be provided.	Yes / No
40.	The shade of paint colour for Enclosure shall be given as per Clause no. 5.14	Yes / No

Sr. No.	Description	995 kVA
41.	Rollers	
	a) Material	
	b) Diameter	
	c) Width	
	d) C/C distance between the rollers	
	e) Clearance between the roller fixing channel and top surface of roller	
42.	Wooden cleating arrangement shall be given as per Drg. No. ES/PL/A-468, 469 & 470	Yes / No
43.	Marking and relative position of HV / LV busbars shall be given as per clause no. 5.11.5	Yes / No
44.	Terminal marking plate and rating plate shall be engraved metal plate	Yes / No

- N.B.:**
1. All particulars in the above table are mandatory & must be compulsorily filled. Incomplete document shall be liable for rejection.
 2. After filling up details in the above table, it shall be uploaded in the respective window of the Pre-Qualification Criteria.

SCHEDULE OF GUARANTEED PERFORMANCE & OTHER TECHNICAL PARTICULARS**(MUST BE FILLED IN BY THE TENDERER)**

Sr. No.	Description	1600 kVA
1.	Manufacturer's Name and place of Manufacture.	
2.	Brand Name	
3.	Type – Indoor	
4.	Standard to which the transformers are manufactured.	
5.	Local Representative Details	
6.	a) Have you carried out Type Test on the Transformer?	Yes / No
	b) Have you uploaded the Type Test Certificate?	Yes / No
7.	Number of phases	
8.	Frequency	
9.	Rated kVA, Output (CMR) corresponding to average temperature rise of winding under service conditions stipulated in IS-2026 (Part-II)/1977 Clause 3.	
10.	Voltage between phases (H.V. side) volts	
11.	Voltage between phases (L.V. side) volts	
	a) At No load	
	b) Full load at Unity P.F.	
	c) At full load 0.8 P.F. (lagging)	
12.	Section of busbars in mm x mm	
	a) H.V. side	
	b) L.V. side	
13.	Connections --	
	a) On H.V. side	
	b) On L.V. side	
14.	Vector group and symbol	
15.	Insulation test voltage (power frequency)	
	a) H.V. winding – KV r.m.s	
	b) L.V. winding – KV r.m.s	
16.	Class and impregnation of insulation	
17.	Method of cooling	
18.	Maximum temperature rise at rated kVA output as per the test procedure mentioned in Section-5, Clause 5.7 of the Specification	
19.	Maximum temperature rise at rated voltage and rated current continuously for 8 hours.	
20.	Resistance voltage drop at 75° C - %	
	Regulation -	
21.	a) At Unity P.F. at 75° C - %	
	b) At 0.8 P.F. at 75° C - %	
22.	Reactance drop - %	

Sr. No.	Description	1600 kVA
	Exciting current (HV) and Power factor -	
23.	a) At rated voltage and frequency – Amps	
	b) At 110% rated voltage and frequency – Amps	
24.	Impedance voltage at rated load and normal tap at 75 ° C - %	
25.	Maximum induction in c.g.s lines per sq.mm. for cold rolled steel lamination	
	a) At rated voltage and frequency	
	(i) Core	
	(ii) Yoke	
	b) At 110% rated voltage and frequency	
	(i) Core	
	(ii) Yoke	
26.	Type of core material	
27.	Core Grade	
	Type of windings –	
28.	a) H.V. side	
	b) L.V. side	
	Shape (round or rectangular) and section of copper used in –	
29.	a) H.V. winding sq.mm.	
	b) L.V. winding sq.mm.	
	Maximum working current density in windings at rated output –	
30.	a) H.V. winding amps per sq.mm.	
	b) L.V. winding amps per sq.mm.	
31.	Particulars of insulation for –	
	a) Coil	
	b) Inter-turns	
	c) End turns	
32.	Minimum clearance to earth –	
	a) Of primary windings – mm	
	b) Of secondary windings – mm	
33.	Guaranteed efficiency at standard reference temperature of 75°C -	
	a) On 100% load at U.P.F. - %	
	b) On 75% load at U.P.F. - %	
	c) On 50% load at U.P.F. - %	
	d) On 100% load at 0.8 P.F. (Lagging) - %	
	e) On 75% load at 0.8 P.F. (Lagging) - %	
	f) On 50% load at 0.8 P.F. (Lagging) - %	
34.	Weights – Kg.	
	a) Core – Kg.	
	b) Windings – Kg.	
	c) Core, coils insulation (weight to lift for inspection) – Kg.	
35.	Head room necessary to lift – Mtrs. (Untanking height)	
36.	Height of the centre line of terminals from the surface of the foundation – Mtrs.	
	(Section 5.12.6)	
37.	Cable boxes for HV & LV side shall be given as per clause no. 5.12.1 (Drg. No. ES/PL/A-470) and 5.12.2 (Drg. No. ES/PL/A-468 & ES/PL/A-469) respectively	

Sr. No.	Description	1600 kVA
38.	Clearance between additional Neutral bushing and dividing box.	
39.	Inspection cover on top plate of L.V. side shall be provided.	Yes / No
40.	The shade of paint colour for Enclosure shall be given as per Clause no. 5.14	Yes / No
41.	Rollers	
	a) Material	
	b) Diameter	
	c) Width	
	d) C/C distance between the rollers	
	e) Clearance between the roller fixing channel and top surface of roller	
42.	Wooden cleating arrangement shall be given as per Drg. No. ES/PL/A-468, 469 & 470	Yes / No
43.	Marking and relative position of HV / LV busbars shall be given as per clause no. 5.11.5	Yes / No
44.	Terminal marking plate and rating plate shall be engraved metal plate	Yes / No

- N.B.:**
1. All particulars in the above table are mandatory & must be compulsorily filled. Incomplete document shall be liable for rejection.
 2. After filling up details in the above table, it shall be uploaded in the respective window of the Pre-Qualification Criteria.

DELIVERY SCHEDULE OFFERED BY THE TENDERER

(FOR SUPPLY OF 11KV/415V, DRY TYPE (AN) TRANSFORMERS OF VARIOUS RATINGS

The tenderer shall give detailed delivery schedule for delivery of 11kv/415V, Dry type (AN) Transformers of various ratings, from the date of release of Purchase Order. The tenderer shall mention all information as detailed below:

Sr. No.	Particulars	Description of Item		
		11kv/415V, Dry Type (AN) Transformer		
		630 kVA	995 kVA	1600 kVA
1.	Lead Time:			
	a) The time required to manufacture the Transformer offered from the date of intimation.			
	b) The time required for inspection, testing & quality control.			
2.	The production capacity per month.			
3.	The time required for delivery of full tender quantity			
4.	Time required for door delivery after receipt of dispatch clearance by the inspecting authority or Lot inspection waiver.			

ANNEXURE-C

PRICE VARIATION CLAUSE FOR DRY TYPE DISTRIBUTION TRANSFORMERS COMPLETE WITH ALL ACCESSORIES AND COMPONENTS (NON-BEE & ENERGY EFFICIENCY LEVEL NOT AS PER IS1180[PART-I]:2014) (FOR SINGLE & THREE PHASE OF RATINGS UPTO 2500KVA & VOLTAGE UPTO 33KV SUPPLIED AGAINST DOMESTIC CONTRACT)

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

$$P = \frac{P_0}{100} \left[13+25 \frac{C}{C_0} + 20 \frac{ES}{ES_0} + 6 \frac{IS}{IS_0} + 14 \frac{IM}{IM_0} + 10 \frac{ER}{ER_0} + 12 \frac{W}{W_0} \right]$$

Wherein,

- P = Price payable as adjusted in accordance with the above formula.
- P₀ = Price quoted / confirmed.
- C₀ = Average LME settlement price of copper wire bars. This price is as applicable for the month, **one month** prior to the date of tendering.
- ES₀ = Price of CRGO Electrical Steel Lamination. This price is as applicable on the 1st working date of the month. One month prior to the date of tendering.
- IS₀ = Price of HR Coil of 3.15 mm thickness. This price is applicable on the 1st working day of the month, **one month** prior to the date of tendering.
- IM₀ = Price of Insulating Materials. This price is as applicable on the 1st working day of the month, **one month** prior to the date of tendering.
- ER₀ = Price of Epoxy Resin. This price is as applicable on the 1st working day of the month, **one month** prior to the date of tendering.
- W₀ = All India average consumer price index number of industrial workers, as published by the Labour Bureau, Ministry of Labour, Govt. of India (Base 2001 = 100)
This index number is as applicable on the 1st working day of the month, **three months** prior to the date of tendering.
- The above prices and indices are as published by IEEMA vide circular reference number IEEMA (PVC)/Dist_PWR_TRF/-/11 one month prior to the date of tendering.

- C = Average LME settlement price of copper wire bars. This price is as applicable for the month, **one month** prior to the date of delivery.
- ES = Price of CRGO Electrical Steel Lamination. This price is as applicable on the 1st working day for the month, **one month** prior to the date of delivery.
- IS = Price of HR Coil of 3.15 mm thickness. This price is applicable on the 1st working day of the month, **one month** prior to the date of tendering.
- IM = Price of Insulating Materials. This price is as applicable on the 1st working day of the month, **one month** prior to the date of delivery.
- ER = Price of Epoxy Resin. This price is as applicable on the 1st working day of the month, one **month** prior to the date of delivery.
- W = All India average consumer price index number for industrial workers, as published by the Labour Bureau, Ministry of Labour, Govt. of India (Base 2001 = 100)
This index number is as applicable on the 1st working day of the month, **three months** prior to the date of delivery.
The above prices and indices are as published by IEEMA vide circular reference number IEEMA (PVC)/Dist_PWR_TRF/-/11 one month prior to the date of tendering.

CONDITIONS FOR OPERATION OF PRICE VARIATION CLAUSE

1. The amount of price variation to be reimbursed or claimed as a refund on account of variation in prices of raw materials and All India Average Consumer Price Index No. for Industrial Workers, shall be worked out on the basis of aforesaid Price Variation Clause and that too for the quantity of **Distribution Transformers** supplied as per the contractual delivery period.
2. The date of delivery is the date on which the Transformer is notified as being ready for inspection/dispatch (in the absence of such notification, the date of manufacturer's Dispatch Note is to be considered as the date of delivery) or the contracted delivery date (including any agreed extension thereto), whichever is earlier.
3. The Price Variation Clause is operative both ways i.e. if the actual price variation admissible is upward, the payment on account of price variation shall be released to the supplier and if it is downward, the Undertaking shall be entitled to recover the same from any amount due to the supplier.
4. The payment shall be released for **Distribution Transformers** supplied as per the delivery schedule based on the quoted price as per the Undertaking's Payment Terms as shown in **Schedule-IX** attached to the Tender Documents.
5. The amount of price variation to be reimbursed or claimed on account of upward/downward price variation, shall be worked out and the necessary price amendments will be released after regular interval of 3 months from the date of release of Purchase Order for the quantity supplied and accepted.
6. Variation in prices of finished product due to change in Statutory Levies, etc. are considered only if the tenderer specifically mentions 'Taxes & Statutory Levies as applicable' in their quotation and mention specific rates/percentage of these taxes applicable at the time of submitting quotation and produces necessary documentary evidence of such variation at the time of claiming the payments.

Variation in price due to Statutory Levies, etc. on the revised basic price of finished product on the basis of Price Variation formula stipulated above, will be worked out and necessary Amendment Form will be issued. If the variation in price is upward, the supplier shall have to submit the Tax invoice (supplementary) for the difference in rate due to price variation, based on which payment will be released.

However, if the variation in price is downward, the Undertaking shall recover the same amount inclusive of statutory component, etc. as per Amendment Form issued to the supplier from any amount due to the supplier. The supplier shall have to follow up with the concerned Government/Municipal authorities for claim settlement of statutory components such as Excise Duty, VAT, Octroi, etc.
7. If the delivery is delayed by the supplier, then the amount of price variation will be worked out on the basis of contractual delivery schedule (and not as per the actual delivery schedule), irrespective of upward/downward price variation.
8. The tenderers, who fail to accept the aforesaid Price Variation Clause shall be considered as Non-responsive and their price bids shall not be opened.

(To be uploaded alongwith Technical Criteria only)

CERTIFICATION OF ANNUAL SALES TURNOVER BY THE CHARTERED ACCOUNTANT

This is to certify that the Annual Turnover furnished by M/s. _____ for the last two financial years (i.e. 2013-14 & 2014-15) from the sale of _____ as detailed below and as furnished in the enclosed statement of accounts, is verified by us and found correct.

Financial Year	Turnover
2013-14	_____ Crores
2014-15	_____ Crores

CHARTERED ACCOUNTANT:

(Signature with Seal)

My Membership No. _____

Address:

SCHEDULE OF PERFORMANCE
(For a period of last 5 consecutive years)

Order placed by - (Full address of Organization/ Utility)	Order No. & Date	Description and quantity of ordered 11kV/ 415V, 630/995/1600 kVA or of higher rating, Single Ratio Dry type (AN) Distribution Transformers	Value of Order	Have the material been satisfactorily functioning? (Attach satisfactory performance certificate, if any from the Organization/Utility)

N. B.: The tenderers are requested to upload the list of Purchase Orders giving details of description of items, ordered quantity, equipment rating, rates, etc.

SCHEDULE OF DEPARTURES FROM TECHNICAL SPECIFICATIONS

Tenderers shall mention in this schedule all departures from the various clauses of the Specifications of the item with proper justification/reasons. In the absence of any mention in this schedule, the clauses of these Specifications shall be binding on the tenderers. If the departure specified herein, is found to be in contradiction to the Undertaking's requirements/specifications then such offers will be treated as non-responsive.

[Must be filled by the Tenderers separately, if there is departure & then upload along with in the techno-commercial bid]

Sr. No.	Ref. to Section No. & Clause No. of specification No. 01420214	Departures	Justification/Reasons

We here carefully gone through the specifications and we undertake to meet clauses in the specifications in all respects etc. for the deviations mention above.

N.B.: Please note that if the tenderer fails to upload Schedule of Departure, it will be presumed that there is no technical deviation.

SCHEDULE OF CREDENTIALS

<u>THE BRIHANMUMBAI ELECTRIC SUPPLY & TRANSPORT UNDERTAKING</u> (Materials Management Department - Kussara)		
PROFORMA FOR FURNISHING INFORMATION BY MANUFACTURING UNIT		
1)	Name of the Firm & Address	
2)	Address for correspondence	
	Telephone No.:	Office :
		Godown :
		Factory :
	Telephonic Address:	
		Telex No.:
		Fax:
3)	Constitution of the Firm:	Govt./ Semi-Govt./ Public Ltd./ Pvt. Ltd./ Proprietary / Partnership
4)	Name & Office / Residential	
	Address of Directors	
	Partners/ Proprietors	
	Tel. No.	
5)	Directorship/Partnership in other firms.	
6)	Name of Bankers & their Full address & Tel. No.	
7)	Details of registration with SSI/NSIC/ Central & State Govt. Authorities/ Electricity Boards/Reputed Public Ltd. & Pvt. Cos.	Please attach Xerox copies of the registration certificates
8)	Details of registration with various tax/Govt. duties authorities such as	Please attach Xerox copies of the registration certificate.
	a) MST/CST Registration No.	
	b) Excise Registration No.	
9)	Details as regards collaboration, if any.	

10)	Area of the	
	a) Factory Premises	Sq.mtr./Sq.ft.
	b) Godown/Store	Sq.mtr./Sq.ft.
	c) Office	Sq.mtr./Sq.ft.
11)	The details of Machinery Equipments installed in the factory	Please furnish a separate list with all details indicating their sizes, capacity etc
12)	a) Authorised capacity (Electric Load)	
	b) Capacity Allowed (Electric Load)	
13)	Persons on Roll	
	a) Engineering/Science Graduates/ Post Graduates	
	b) Diploma holders	
	c) ITI Qualified	
	d) Skilled	
	e) Semi-Skilled	
	f) Unskilled	
	g) Others	
14)	No. of Shifts	
15)	Items manufactured	Separate list may be attached.
16)	Do you have any expansion /diversion plans, if yes, furnish details.	
17)	Please furnish a list of source of raw materials/ sub-components And Quality assurance thereof	Separate list may be attached indicating particulars of raw materials / components source of purchase etc.
18)	Inspection of facilities/testing	List may be attached
	a) Equipments available	
	b) Do you have your own laboratory for testing raw materials/finalized Products.	
19)	Any R & D facilities available? If yes, please furnish details.	
20)	Names of the reputed customers such as O.E Manufacturers/Govt. & Semi-Govt. Organizations /State address of organization, Material Transport Undertakings/reputed Public & Pvt. Cos./Corpns.	List of orders executed during last3 years with full details viz. Name, quantity supplied & value of order must be attached.
21)	Whether the products have been tested at Central Institute of Road Transport, Pune/Central Power Research Institute, Bangalore /Electronic Research Development Association Baroda OR at any other recognized institute/Lab.	Xerox copies of various recent certificates to be attached.
22)	In case of out-station firms, please furnish the name of the authorized distributors /agent available in Mumbai alongwith their address, telephone no. and their terms/conditions etc.	

23)	Other information -	
	a) Approx. Annual Turnover (Last two Financial years)	Certified copies of the same by Chartered Accountant must be attached.
	b) Delivery Facilities available	
	c) Please furnish latest Xerox copies of-	
	i) Rent Receipt/monthly compensation receipt.	
	ii) Electricity Bill	
	iii) Telephone Bill	
	iv) Income Tax Clearance Certificate/Advance Tax paid receipt.	
	v) Balance sheet/Annual report for last 2 Financial Years	
24)	Any additional information not covered above.	

Capitalization of Losses

- i) The following formula shall be used to calculate the Capitalized Cost in Rupees of the Transformer Losses.

$$b = I (0.7640 u) + C (0.3323 u)$$

Where,

- b = Capitalized Cost of losses in Rupees
I = Absolute value of No Load Loss quoted by manufacturer (in watts)
C = Absolute value of Full Load Loss quoted by manufacturer (in watts)
u = Average Power Purchase cost in paise/unit, 500 paise for the financial year 2015-16

- ii) The evaluated rate of the transformer for the purpose of ranking shall be the sum of gross rate quoted by tenderer and capitalized cost (as calculated above) due to losses.
- iii) The Maximum upper limit of losses for different ratings of AN type distribution transformers are as follows:-

Rating (in kVA)	Maximum No Load Loss (in Watts)	Maximum Total Loss (in Watts) =(No Load Losses+ Full Load Losses)
630	1350	5550
995	1750	8050
1600	2425	12425

The offers of tenderers quoting losses higher than the maximum limit given above will be considered as technically not responsive and their price bids will not be opened.

MATCHING OF EVALUATED GROSS RATES

(Please note that this confirmation/acceptance should be sent through e-mail by sending a scanned copy of this annexure duly filled in by the tenderer as per Clause 2.2 of Schedule-V)

We hereby volunteer & confirm that we are agreeable to accept order at the lowest acceptable evaluated gross rate received against the tender for the following item. We also confirm that for this item, all other terms & conditions of our offer against above tender shall remain unchanged. After matching of rates, the breakup of our revised gross rates is as follows:

Item	Description	Revised Basic Rate	Taxes in %	Revised Gross Rate	Originally quoted capitalized cost	Evaluated Gross Rate of LAO informed by the Undertaking for matching purpose
		(₹)	(₹)	(₹)	(₹)	(₹)
1	11kV/ 415V, 630 kVA, Single Ratio Dry type (AN) Distribution Transformers					
2	11kV/ 415V, 995 kVA, Single Ratio Dry type (AN) Distribution Transformers					
3	11kV/ 415V, 1600 kVA, Single Ratio Dry type (AN) Distribution Transformers					

- N.B.:** i) The tenderers may please note that their revised Gross Rate plus Originally quoted Capitalized Cost shall not exceed the Lowest Evaluated Gross Rate informed by the Undertaking to you by e-mail as mentioned in the Clause 2.5 of Schedule-V.
- ii) The gross rate of tenderers who match their rates with LAO shall be worked out by revising the same downwards keeping their quoted losses same and their new basic rates will be calculated by keeping the taxes and all other charges in % or value same as per their original quoted rate.

SEAL & SIGNATURE OF THE TENDERER

BANK DETAILS OF THE UNDERTAKING:

Bank Name : Canara Bank
Branch Name with address: Colaba Branch, Colaba, Mumbai.
IFSC Code: CNRB0000106
BEST PAN No.: AAA LM 0042 L
M VAT TIN No.: 27430247983 V Dated: 01-04-2006
CST TIN No.: 27430247983 C Dated: 01-04-2006

ANNEXURE-J

SECURITY DEPOSIT-CUM-PERFORMANCE GUARANTEE FORM

INSTRUCTIONS:

- 1) The Bank Guarantee should be executed exactly as per this Draft on a stamp paper of ₹100/- alongwith a Confirmatory Letter from the regional office of the Bank concerned in an enclosed format.
- 2) A certified copy of the Power of Attorney under which the person is authorized to sign this guarantee bond may please be sent to the Undertaking alongwith the guarantee. This copy should be certified by the Agent of the Bank under his seal.
- 3) The Security Deposit cum Performance Bank Guarantee shall be valid for a period of **96 months** from the date of release of Purchase Order.

To,

The General Manager,
The Brihanmumbai Electric Supply & Transport Undertaking,
BEST Bhavan, Best Marg,
Post Box No. 192,
Mumbai- 400 001.

(1) Against Contract No. _____ dtd. _____ Two Thousand and _____ covering _____ (hereinafter called the said "Contract") entered into between _____

(Name/s of the persons authorized to sign on behalf of Contractor)

inhabitants of _____ carrying on business at:

(Full address of the firm)

(Nature of Business)

under the style and name of M/s. _____
(Name of the firm)

(hereinafter called "The Contractor") of the one part and the General Manager, The Brihanmumbai Electric Supply & Transport Undertaking (hereinafter called "The Undertaking") for and on behalf of the Mumbai Municipal Corporation for the purpose of the Undertaking (in which expression are included, unless the inclusion is inconsistent with the context or meaning thereof his successor or successors for the time being holding the office of the "General Manager and Acting General Manager") of the second part and WHEREAS at the request of the Contractor we _____ (Full name and address of the Bank) Bank are holding in trust in favour of the Undertaking the amount of _____ (Rupees _____ in words) to indemnify and keep indemnified the Undertaking against all losses, damages, expenses or otherwise that may be caused to or suffered by the Undertaking by reason of any breach by the Contractor of any of the terms and conditions of the said Contract and/or the performance thereof. We agree that the decision of the General Manager, whether any breach of the terms and conditions of the said Contract and/or any failure in the performance thereof has been committed by the Contractor and the amount of loss, damage, costs, expenses or otherwise that has been caused or suffered by the Undertaking shall be final and binding on us and the amount of the said loss, damage, costs and expenses or otherwise shall be paid by us forthwith on demand to the Undertaking.

(2) We _____
(Name of the firm and Bank)

further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for satisfactory performance and fulfillment in all respects of the said Contract including the minimum guarantee of **66 months** from the date of final acceptance as per the clauses included in the tender and including Contractor's obligation to remedy all defects in design, materials and workmanship that may develop under normal use of "11kV/415V, 630 kVA/995 kVA/1600 kVA Single Ratio VPI Resin Impregnated Dry Type (AN) Distribution Transformers of various ratings" provided always that before the expiry of the date of the validity of the guarantee herein contained, we shall, from time to time on being called upon by the General Manager, extend the date of validity thereof for the period of **6 months** on each occasion and that if any claim accrues or arises against us - _____ (Name of the Bank)

by virtue of this guarantee before the said date as extended from time to time, the same shall be on forcible against us _____

(Name of the Bank)

notwithstanding the fact same is enforced after the said date and extended from time to time, provided that notice of any such claim has been given by the General Manager before the expiry of **6 months** from the said extended date, payments under this "Letter of Guarantee" shall be made promptly upon our receipt of notice to that effect from the General Manager.

(3) It is fully understood that this guarantee is effective from the date of the said Contract and that we _____

(Name of the Bank)

undertake not to revoke this guarantee during its currency including the extended period without the consent in writing of the General Manager.

(4) We

(Name of the Bank)

further agree that the General Manager shall have the fullest liberty, without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contractor to extend the time of performance by the Contractor from time to time or to postpone for any time or from time to time any of the power exercisable by the General Manager against the said Contractor and to forbear or enforce any of the terms and conditions relating to the said Contract and we _____

(Name of the Bank)

shall not be released from our liability under this guarantee by reason of any such variation or extension being granted to the said Contractor or for any forbearance and/or on the part of the General Manager or any indulgence by the General Manager or by any other matter or thing whatsoever which under the law relating to sureties would, but for this provision have the effect of so releasing us from our liability under this guarantee.

(5) We _____

(Name of the Bank)

further agree that the guarantee herein contained shall not be affected by any change in the constitution of the said Contractor or the Bank.

(6) Notwithstanding anything contained herein:

1. Our liability under this Bank Guarantee shall not exceed ₹_____ (Rupees _____).
2. The Bank Guarantee shall be valid upto _____ and the same can be further extended, if so requested by the applicant/Contractor.
3. We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only if you serve upon us a written claim or demand on or before _____.

(7) The guarantee herein contained is subject to Mumbai Jurisdiction.

This _____ day of _____ Two Thousand and _____ In witness whereof-

Witness:

(1) _____

(Signature)

(Name of the witness)

(Address of the witness)

The Duly Constituted Attorney

(Signature)

(Name & Designation of the person)

For _____

(Name of the Bank)

(2) _____

(Signature)

(Name of the witness)

(Address of the witness)

(Name of the Contractor)

The Bank and the said Messrs.

Witness: _____

(Signature)

(Name of the witness)

(Address of the witness)

NAME OF THE BANK (ON THE BANK'S LETTER HEAD)

The General Manager,
The Brihanmumbai Electric Supply &
Transport Undertaking,
BEST Bhavan, Best Marg,
Post Box No. 192,
Mumbai - 400 001

Ref.: Guarantee No. _____ dated _____

For _____ issued on behalf of

M/s. _____

Dear Sir,

We refer to the captioned Bank Guarantee issued on behalf of our clients M/s.
_____, which is drawn at our _____ Bank.

The above Bank Guarantee has been given by our clients towards Security
Deposit/Performance Guarantee for the execution of the contract with the B. E. S. & T.
Undertaking.

In this regard, we assure and undertaking that in the event of any demand is made by you
for invoking the said Bank Guarantee, the Bank will honour the commitment made by them and the
payment will be made to you without any demur forthwith upon receipt of demand from your office
as per the terms of the guarantee. We, once again, assure you that the interest of your
organization under any circumstances will be fully protected by us.

Yours faithfully,

GENERAL MANAGER OF THE BANK

NAME OF THE BANK (ON THE BANK'S LETTER HEAD)

The General Manager,
The Brihanmumbai Electric Supply &
Transport Undertaking,
BEST Bhavan, Best Marg,
Post Box No. 192,
Mumbai - 400 001

Dear Sirs,

Ref: Bank Guarantee No. _____, dated _____
for _____ issued on behalf of _____

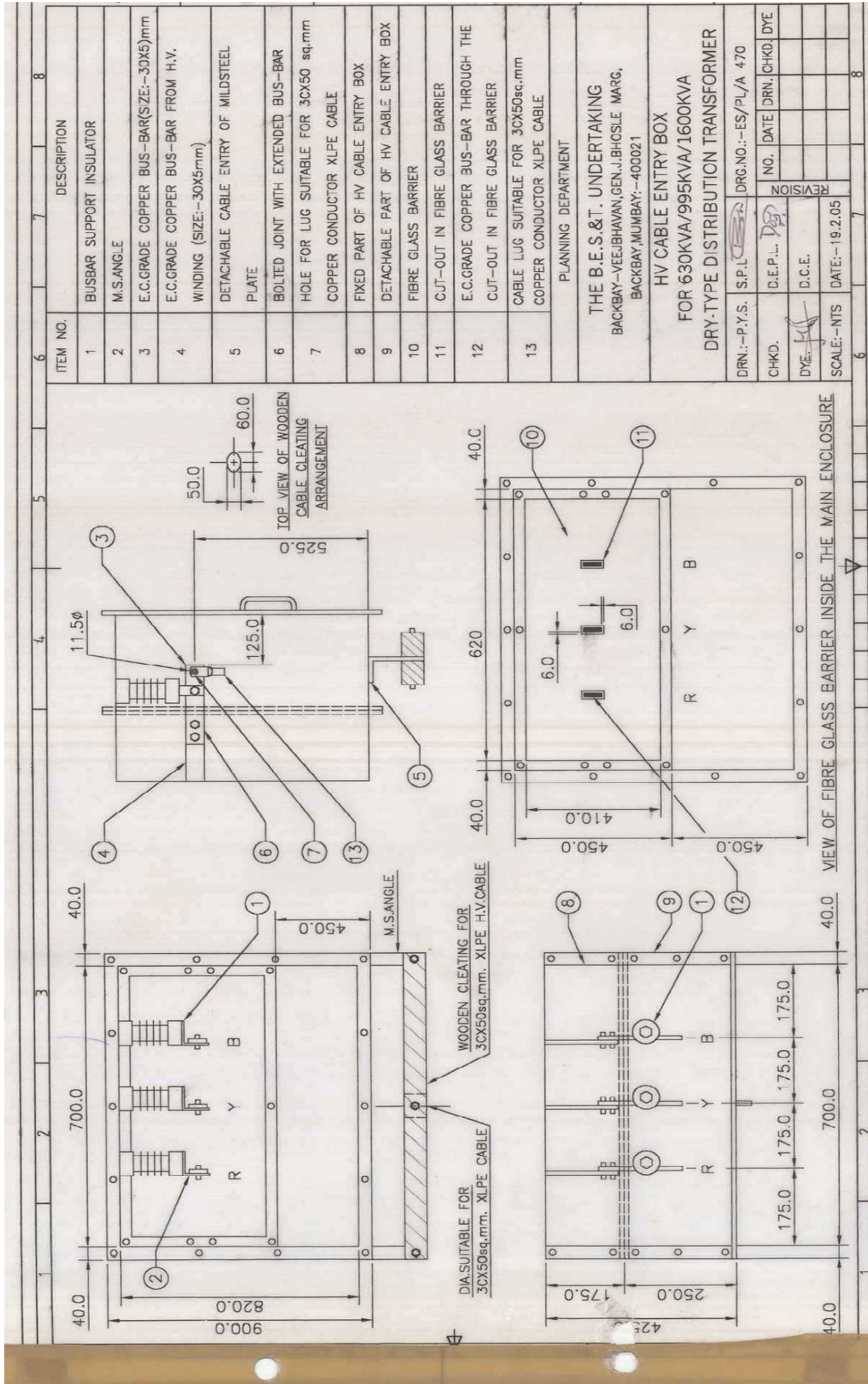
We confirm having executed the above guarantee bond in your favour on behalf of

(Designation/s) _____ who has/have signed the guarantee bond is/are
empowered to execute the guarantee bond on behalf of Bank and his/their signature/s is/are
binding on us.

Seal of the Bank

Yours faithfully,

(Name and Designation)



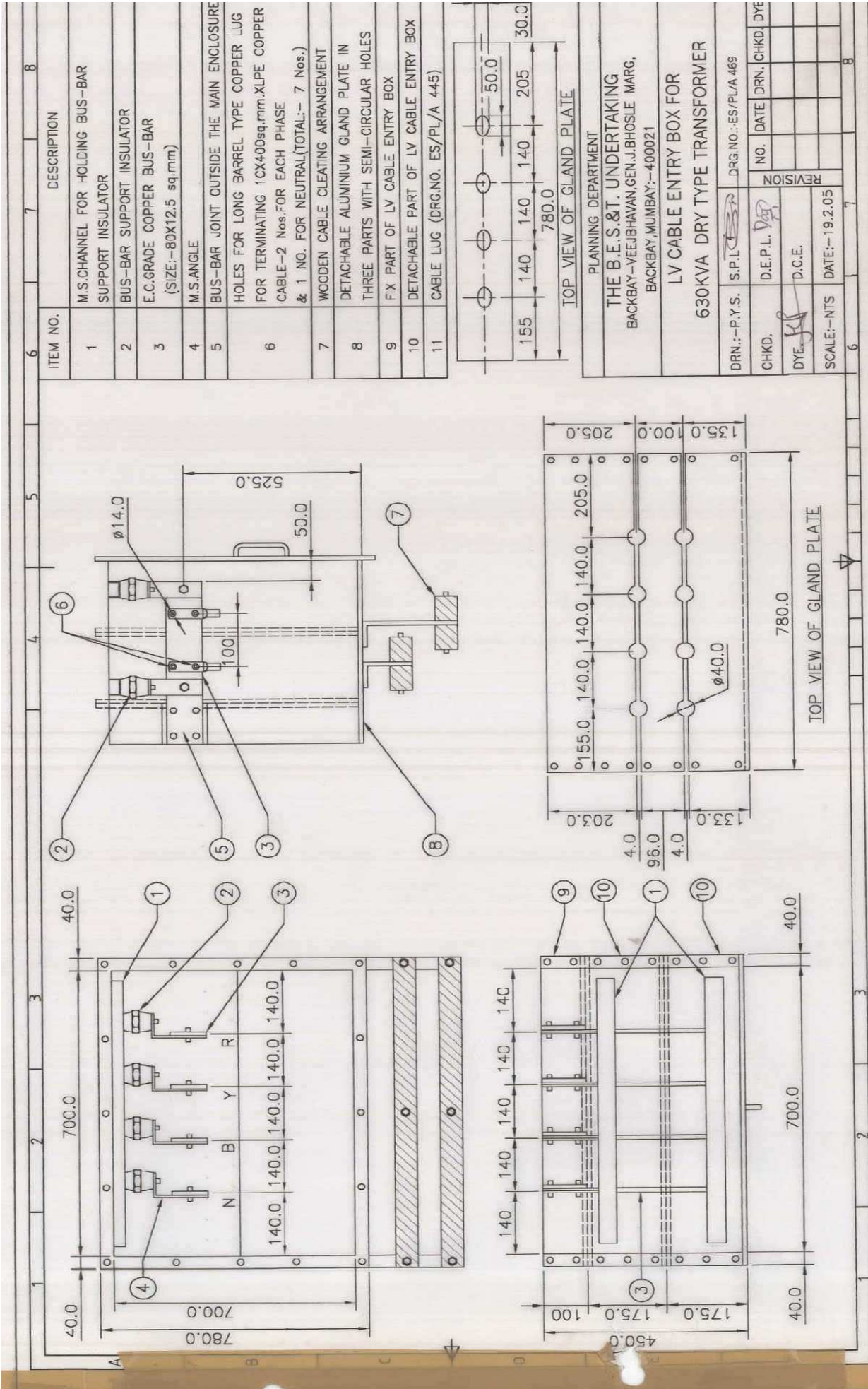
ITEM NO.	DESCRIPTION
1	BUSBAR SUPPORT INSULATOR
2	M.S.ANGLE
3	E.C.GRADE COPPER BUS-BAR(SIZE:-30X5)mm
4	E.C.GRADE COPPER BUS-BAR FROM H.V.
5	WINDING (SIZE:-30X5mm)
6	DETACHABLE CABLE ENTRY OF MILDSTEEL PLATE
7	BOLTED JOINT WITH EXTENDED BUS-BAR
8	HOLE FOR LUG SUITABLE FOR 3CX50 sq.mm COPPER CONDUCTOR XLPE CABLE
9	FIXED PART OF HV CABLE ENTRY BOX
10	DETACHABLE PART OF HV CABLE ENTRY BOX
11	FIBRE GLASS BARRIER
12	CUT-OUT IN FIBRE GLASS BARRIER
13	E.C.GRADE COPPER BUS-BAR THROUGH THE CUT-OUT IN FIBRE GLASS BARRIER

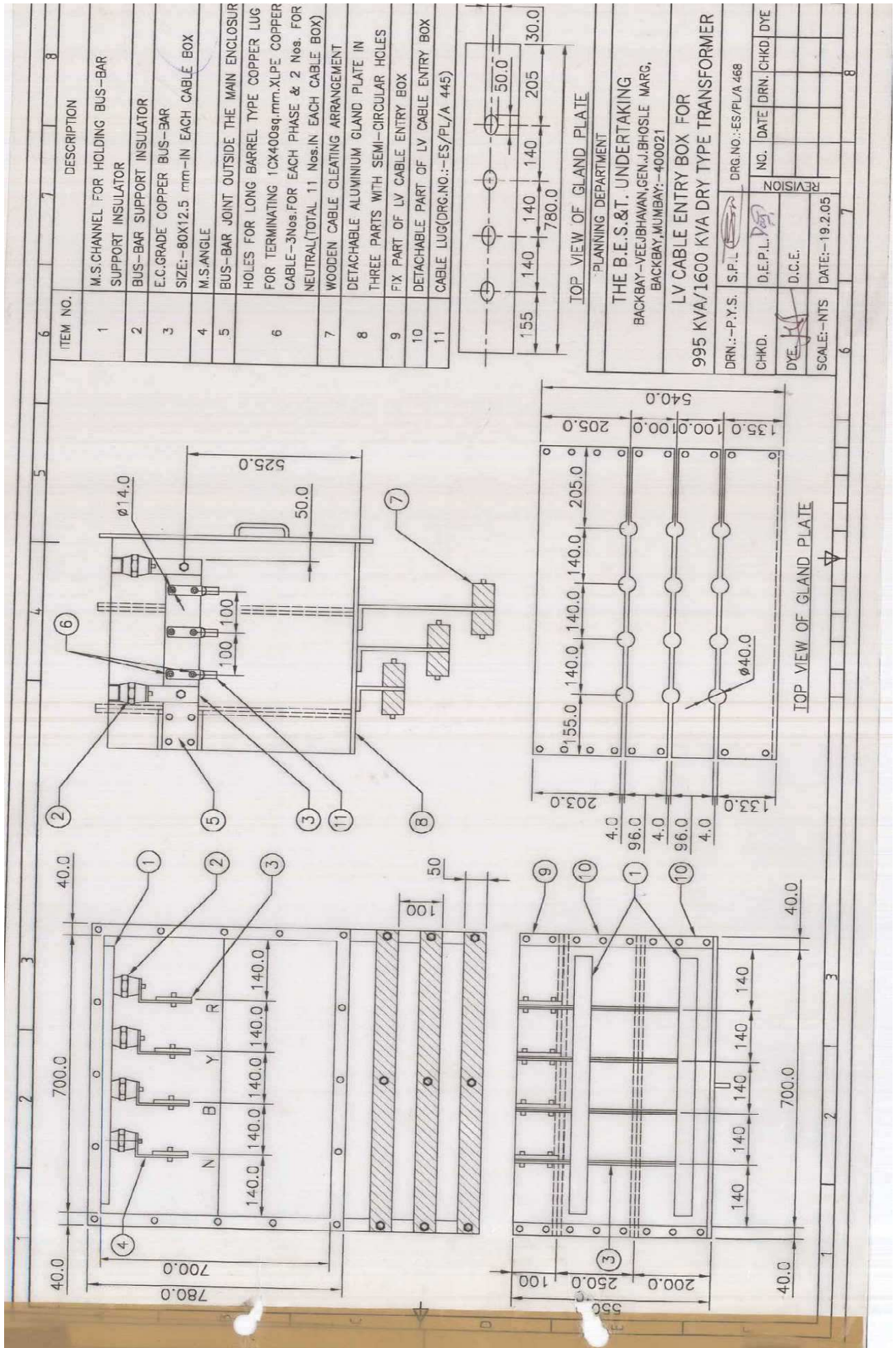
PLANNING DEPARTMENT

THE B.E.S.&T. UNDERTAKING
 BACKBAY-VEEJBHAVAN, GEN.J.BHCSLE MARG,
 BACKBAY, MUMBAI:-400021

HV CABLE ENTRY BOX
 FOR 630KVA/995KVA/1600KVA
 DRY-TYPE DISTRIBUTION TRANSFORMER

DRN.:-P.Y.S.	S.P.L.	DRG.NO.:-ES/PL/A 470
CHKD.	D.E.P.L. <i>Deo</i>	NO. DATE DRN. CHKD. DYE
DYE. <i>Deo</i>	D.C.E.	REVISION
SCALE:-NTS	DATE:-19.2.05	





ITEM NO.	DESCRIPTION
1	M.S.CHANNEL FOR HOLDING BUS-BAR SUPPORT INSULATOR
2	BUS-BAR SUPPORT INSULATOR
3	E.C.GRADE COPPER BUS-BAR SIZE:-80X12.5 mm-IN EACH CABLE BOX
4	M.S.ANGLE
5	BUS-BAR JOINT OUTSIDE THE MAIN ENCLOSURE
6	HOLES FOR LONG BARREL TYPE COPPER LUG FOR TERMINATING 1CX400sq.mm.XLPE COPPER CABLE-3nos.FOR EACH PHASE & 2 Nos. FOR NEUTRAL(TOTAL 11 Nos.IN EACH CABLE BOX)
7	WOODEN CABLE CLEATING ARRANGEMENT
8	DETACHABLE ALUMINIUM GLAND PLATE IN THREE PARTS WITH SEMI-CIRCULAR HOLES
9	FIX PART OF LV CABLE ENTRY BOX
10	DETACHABLE PART OF LV CABLE ENTRY BOX
11	CABLE LUG(DRG.NO.:-ES/PL/A 445)

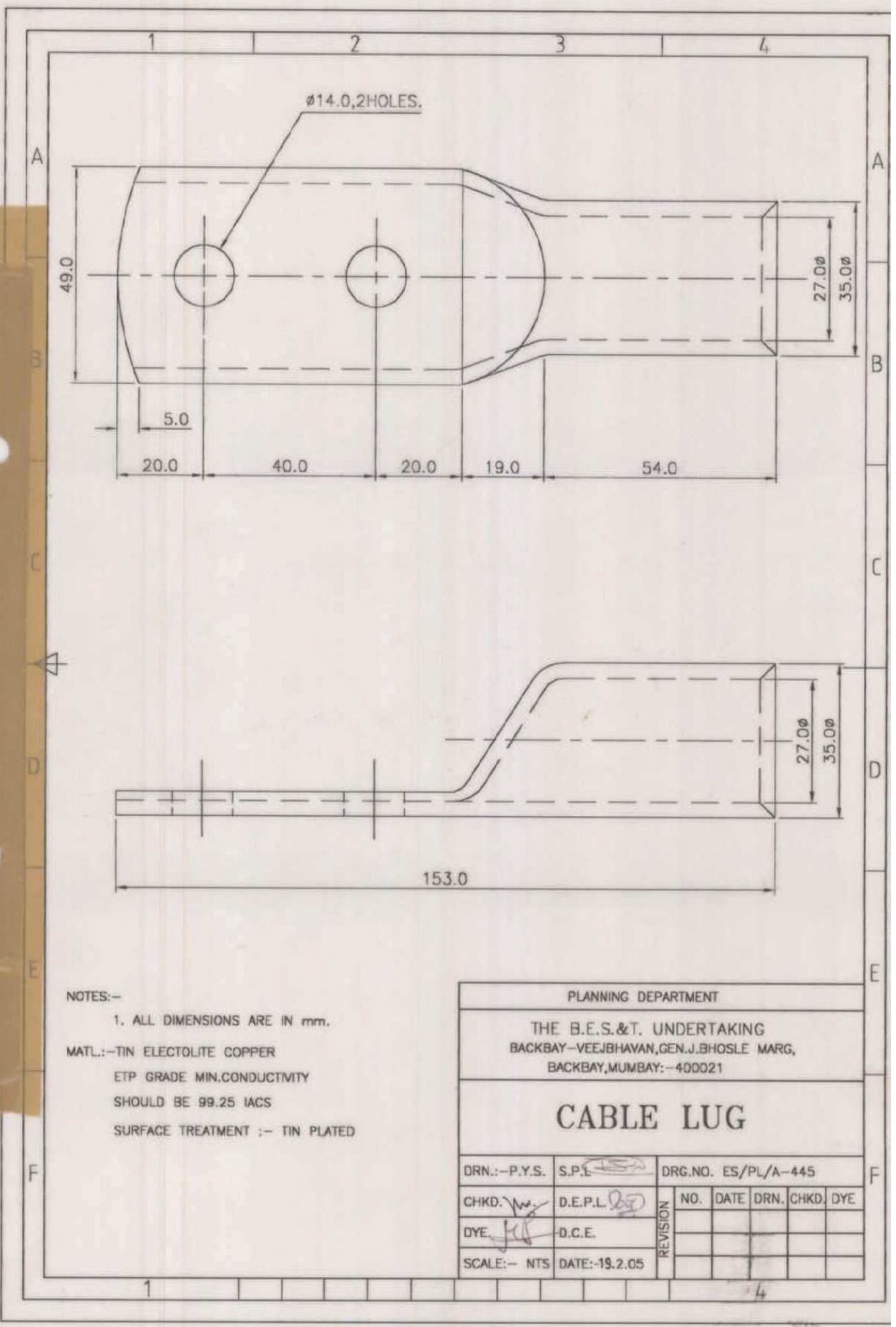
TOP VIEW OF GLAND PLATE

PLANNING DEPARTMENT

THE B.E.S.&T. UNDERTAKING
 BACKBAY-VEEJBHAVAN,GEN.J.BHOSLE MARG,
 BACKBAY,MUMBAI:-400021

LV CABLE ENTRY BOX FOR
 995 KVA/1600 KVA DRY TYPE TRANSFORMER

DRN.:-P.Y.S.	S.P.L.	DRG.NO.:-ES/PL/A 468
CHKD.	D.E.P.L. <i>P. Patil</i>	NO. DATE DRN. CHKD DYE
DYE <i>H.S.</i>	D.C.E.	REVISION
SCALE:-NTS	DATE:-19.2.05	



NOTES:-

1. ALL DIMENSIONS ARE IN mm.

MATL:-TIN ELECTOLITE COPPER

ETP GRADE MIN.CONDUCTIVITY

SHOULD BE 99.25 IACS

SURFACE TREATMENT :- TIN PLATED

PLANNING DEPARTMENT					
THE B.E.S.&T. UNDERTAKING BACKBAY-VEEJBHAVAN,GEN.J.BHOSLE MARG, BACKBAY,MUMBAI:-400021					
CABLE LUG					
DRN.:-P.Y.S.	S.P.L.	DRG.NO.	ES/PL/A-445		
CHKD. W.	D.E.P.L.	REVISION	NO.	DATE	DRN. CHKD. DYE
DYE J.C.	D.C.E.				
SCALE:- NTS	DATE:-19.2.05				