**DETAILED TENDER SPECIFICATION AND INSTRUCTION TO TENDERERS**

1. **PRICES** : Prices should be quoted as per the format given in annexure A, B, C, D only. Prices should be quoted FOT Aizawl/Lunglei, inclusive of all duties, taxes and any other charges. The transportation charge for lifting of damaged transformer from Aizawl/Lunglei to the work site of the contractor and delivery of the repaired transformer to Aizawl/Lunglei should be borne by the contractor.
2. **VALIDITY :** Validity should be 36 months i.e. 3 years from the date of acceptance of the contract.
3. **EARNEST MONEY** : Earnest money amounting to Rs. 30,000.00 (Rupees thirty thousand) only should be submitted along with the tender in the form of Deposit at Call pledged in favour of the undersigned. Earnest money will be half in case of tribal tenderers, however, they will have to enclosure House Tax Payee Certificate.
4. **SECURITY DEPOSIT** : An amount of 5% value of each bill shall be retained by the department as a part of the security deposit and the same will be released after the expiry of the guarantee period provided no problem arises during the guaranteed period.
5. **DELIVERY** : The repaired transformer shall be delivered within 90 days from the date of receipt of work order. If the contractor fails to deliver within the specified period, the Department shall recover from the contractor as liquidated damages a sum of 0.5% of the work order amount for each calendar week of delay. The liquidated damages shall not exceed 5% of the work order.
6. **EXTENSION OF TIME** : If the completion of repair of the transformer is delayed due to any reason beyond the control of the contractor, the contractor, shall give notice in writing to the Department within 10 days before the specified completion date. In such case, the completion date may be extended without liquidated damages if agreed by the department.
7. **INSPECTION &TESTING** : The repaired transformer shall be inspected and tested at the work site of the Contractor if so desired by the Department before dispatch for which the Contractor shall provide all necessary facilities and rendered necessary help. The Contractor should have testing facilities at work site.
8. **TESTING EQUIPMENTS** : Tenderers have to enclose a list of transformer testing equipments available with them along with the tender. Authenticity of conducting Testing from appropriate authority may also be furnished if available and photo of Workshop/Factory.
9. **VISIT TO FACTORY/PREMISES** : Tender evaluation would include inspection report after visit by Department’s representative to the factory premises of the tenderer where transformer repair shall be carried out.
10. **TRANSFORMER QUANTITY** : About 25 transformers of different capacities shall be repaired quarterly.
11. **TEST CERTIFICATE** : 3 copies of Test Certificates should be sent to the consignee before dispatch of the repaired transformer with a copy to Superintending Engineer (Planning), O/o E-in-C (P&E). The following tests have to be done :-
12. **Insulation Resistance (IR) Test** : Minimum IR values in MΩ (Mega-Ohm) at difference temperature should be as below :-
13. For 33/11kV Power transformer 1700 MΩ (at 10°C), 1500MΩ (at 20°C) 1000MΩ (at 30°C)
14. For 11/0.433kV Distribution transformer 1200MΩ (at 10°C), 800MΩ (at 20°C), 400MΩ (at 30°C)
15. **Polarization Index (PI)** : value (R600/R60) greater than 1.3 or Absorption Factor (A.F) value (R60/R15) greater than 1.3 (at temperature of 10°C to 30°C) is acceptable.
16. **Dielectrict strength** (Break Down Voltage) of transformer oil at the bottom should be 40kV for one minute at 2.5mm gap for Distribution transformer and 50kV for one minute at 2.5mm gap for Power transformer.
17. **Voltage ratio test** has to performed at each tapping position of power transformer, Ratio error at no load on the principal tapping should be within ± 0.5% of designed voltage ratio. Design voltage ratio of distribution transformer is 11/0.433kV where as that of power transformer is 33/11kV. (Note: Ratio error = (measured ratio-Designed ratio) x 100%/Designed ratio)
18. **Open circuit test** for measurement of magnetizing current/core loss. Magnetizing current or no load current should be within 4% of full load current.
19. **Short circuit test** for determination of copper loss. Compare actual test value with calculated value. Short Ckt Current ± (Applied voltage on HV side (kV) x Rated HV current) x 100/(Percentage Impedance x rated voltage on HV side kV)

In addition to the above, measurement of winding resistance, Magnetic core balance test and Vector group test should be performed and the test result should be shown in the Test Report.

1. **PAYMENT** : Payment will be made after completion of the job only if fund available.

1. **GUARANTEE** : Guarantee should be valid for six (6) months from the date of installation and commissioning of the transformer or twelve (12) months from the date of receipt of the transformer whichever is earlier against any bad workmanship, poor quality of raw material used. During guarantee period, the contractor is responsible to repair the defects at free of cost.
2. **EXPERIENCE** : The tenderer should submit past experience letter/certificate if any in executing this type of works. List of works of same nature executed earlier should be enclosed.
3. **RESERVATION** : The Department reserves the right to reject the lowest or any tender without assigning any reason thereof.
4. **JOINT SURVEY** : A joint survey shall be conducted by P&E Department and the contractor to evaluate the condition of each damaged transformer before repair work is carried out at the Consignee premises at Aizawl/Lunglei. The extent of damages and the extent of repair work will be evaluated from this joint survey report.

During inspection the undamaged serviceable parts should be identified and the replaced serviceable parts should be returned to Power & Electricity Department, Mizoram for proper custody at Meter Relay & Testing Division, Aizawl for future use.

1. **PAYING AUTHORITY** : The Executive Engineer, Meter Relay & Testing Division, Zuangtui, Aizawl
2. **CONSIGNEE** : 1) The Sub-Disional Officer, Meter Relay & Testing Sub-Division, Zuantui, Aizawl 2) The Sub-Divisional Officer, Meter Relay & Testing Sub-Division, Lunglei.