PADMOUNTED TRANSFORMER (225kVA)

A. DESCRIPTION

1. 65 Degrees C rise Pad-mounted Transformer, three-phase, OISC, compartmental, type, 60 hz, HV loop-feed, dead-front type conforming with ANSI C57.12.26-1987.

B. ELECTRICAL

1. High Voltage: 12,470 Grd Y-7200 volts (95kv BIL)

2. Low Voltage: As specified, 208 Grd Y/120 volt 3-phase, 4 w Y

3. Impedance: Per latest ANSI standard (must be stated in bidder's quotation)

4. Taps: HV – Std. 2-2 ½% above and 2-2 ½% below externally operable, non-loadbreak

5. Connections: HV loop feed (loop-in loop-out)

6. Core/Coil Configuration: The core and coil assembly shall be wound core type with copper or aluminum windings. The assembly shall be designed to reduce losses and noise and provide adequate short-circuit strength and heat dissipation. Manufacturer shall design transformers such that tank heating problems sometimes associated with wye-wye connections are eliminated. Internal leads shall be insulated, carefully trained and anchored to prevent phase-to-phase flashover. A tap changing mechanism shall be provided for accurate voltage adjustment without opening the transformer tank. The tap changing mechanism shall be externally operated and shall be for de-energized operation only. The high and low voltage compartments shall be located side-by-side separated by a steel barrier. When facing the transformer, the low voltage compartment shall be on the right. Terminal compartments shall be full height, air filled with individual doors. The high voltage door fastenings shall not be accessible until the low voltage door has been opened. The low voltage door shall have a 3-point latching mechanism with vault type handle having provisions for a single padlock. The doors shall be equipped with lift-off type stainless steel hinges and door stops to hold the doors open when working in the compartments.

7. Fusing: HV Bay-O-Net Fuse (Current-Sensing Fuse) in series with internal ELSP current back-up fuse; one per phase (coordinated to provide full range protection up to 50,000A)

C. MECHANICAL

1. HV Bushing: 2 loadbreak 200 AMP epoxy bushings per phase, per ANSI C57.12.26, interfaces with 200A Load-break, 15 kV, Elbows. Total of (6) bushing wells, (6) bushing inserts, (6) parking stands. Elbows furnished by others.

2. LV Bushing: 4 epoxy bushings with **minimum 12-**hole NEMA tin-plated CU spades; externally removable tank ground strap to Xo bushing, per ANSI C57.12.26. Figs. 7 & 8 (a**). Provide additional insulated supports for each secondary spade.**

3. Enclosure: Steel sealed-tank construction (+7.0 psig withstand strength), tamper resistant, lift-off doors with stainless steel hardware and captive locking provisions, steel barrier between HV & LV compartment, removable sill, lifting eyes and jacking pads will be provided, undercoated and painted. Primary compartment shall be a minimum of 36" width X 24" depth, secondary compartment shall be a minimum of 23" width X 24" depth. Maximum width of 66" X maximum depth of 51" (including radiators). Top of primary and secondary compartment is allowed to have a hinged top, but it is not required.

   Minimum height to centerline of lowest primary bushing 26" and secondary bushing 31" minimum.

   Enclosure Finish Performance requirements for the padmounted gear coating shall meet all requirements in IEEE Std. C57.12.28 - 2014 Standard to include the following testing:

   Salt Spray
   Crosshatch adhesion
   Humidity
   Impact
   Oil resistant
   Ultraviolet accelerated weathering
   Abrasion resistance – tabar abraser

   Paint shall be 3 mills thick minimum, "Auburn Bronze" by Matthews Paint (MAP 37092 Deep Bronze). Paint color formula can be provided on request. Bidder shall submit test results and three 4" x 6" metal color samples with shop drawing submittal prior to fabrication.

4. Accessories:

   a. 1" Oil drain valve with sampling device (**installed in HV Primary compartment, not LV secondary side)**

   b. 1" Upper filter press and filling plug

   c. Liquid level gauge

   d. Dial type thermometer

   e. Pressure/vacuum gauge and pressure relief valve

   f. Nameplate in low-voltage compartment and additional Nameplate on backside of secondary cabinet (outside).

5. Lightning Arresters: Furnish (3) external 9 KV M.O.V. with interface to loadbreak epoxy bushings, and stranded ground wire.

6. Grounding Pads: Provide two-hole grounded pads in both high and low voltage compartments. Two ½" dia. threaded holes in each, stainless steel.

7. Transformers shall be furnished with:

   a. Impedance in percent

   b. Guaranteed no-load and load losses, expressed Watts at rated voltage and full load at 60 Hertz, corrected to 85 degrees C, per the latest revision of ANSI C57.12.00 par 8.1.1.

   c. Dimensional data including the high and low voltage compartment dimensions (width, height, and depth) and the total weight of the shipped unit.

   d. Insulating Oil shall be FR3 Fluid, as manufactured by Cooper and shall be tested and certified in writing and a letter accompanying the unit as written below:

      The dielectric fluid in this unit, serial number _____ has been tested to determine the amount of polychlorinated bipheny(s) PCB content. Manufacturer certifies that based on the test sample, the fluid contains less than 5 ppm PCB and is therefore classified a non-PCB as defined in the August 25, 1982, Vol. 47 No. 165 of the Federal Register.

   e. Unit shall be labeled with a non-PCB sticker, conspicuously located to facilitate the inspection by the regulatory compliance officer or any other individual desiring to inspect such equipment.

8. Manufacturer shall provide complete submittal drawings for this equipment, along with color samples as required in this specification, for Owner's review and approval, prior to manufacturing this equipment.

   Manufacturer to provide Operating and Maintenance Manual (with each transformer), which shall include diagrams, part listing, operating instructions, and preventative maintenance recommendations.

   Approved manufacturers are: Square "D", Howard Industries, A.B.B., Cooper (RTE), and CG Power.

A. LOSS EVALUATION

1. The following information shall be furnished with the bid: Percent impedance at 85 degrees C, No-load losses expressed in watts at rated voltage at 60 Hz, and Full load losses expressed in watts at rated voltage at 60 Hz.

   The losses quoted shall be average losses experienced on the production line.

A computer generated certified test report listing impedance and actual losses for each unit by serial number shall be supplied in triplicate.

Invoice will not be approved for payment until the certified test reports are received and approved.

All losses shall be determined in accordance with the latest revision of ANSI C57.12.00 - 1973 paragraph 8.1.1 corrected to 85 degrees C.

NOTE: Failure of the bidder to supply the above information may result in rejection of bid.

2. Loss evaluation will be a factor in determining the low bidder. The following actors will be used to perform loss evaluation on the transformers:

   a. No load losses will be evaluated at $6.00 Per watt.

   b. Load losses will be evaluated at $2.00 Per watt.

   Total owning cost will be the sum of the bid price and the evaluated cost.

3. If the average losses of the order of transformers exceeds the guaranteed losses, a penalty will be assessed as determined by the following:

   Penalty = 1.1 [($6.00/watt) (excess no load losses)+
   ($2.00/watt) (excess load losses)]

4. Bonuses for losses less than guaranteed will not be provided.