



## DESIGN REQUIREMENTS

### LOW-VOLTAGE TRANSFORMERS

#### GENERAL INFORMATION

- 1.1 This section applies to low voltage transformers.

#### DESIGN REQUIREMENTS

- 2.1 Arrange equipment to provide adequate spacing for cooling air circulation.
- 2.2 Use flexible conduit, 2 foot minimum and 4 foot maximum length, for connections to transformer case. Make conduit connections to side panel of enclosure.
- 2.3 Provide seismic restraints for the transformer.
- 2.4 All transformers greater than 45 kVA shall be floor mounted.
- 2.5 Provide concrete bases for all floor-mounted transformers.
- 2.6 Temperature Rise: 115 degrees Celsius maximum rise above 40 degrees Celsius.
- 2.7 Vibration isolators for Floor-mounted transformers: Provide vibration-isolating pads suitable for isolating the transformer noise from the building structure.
- 2.8 Secondary neutral shall be bonded to building ground as required by NEC.
- 2.9 Transformers shall comply with energy efficiency ratings listed in Table 4-2 of NEMA Standard TP-1-2002.
- 2.10 Transformer coils may be either copper or aluminum.

#### CONSTRUCTION REQUIREMENTS

- 3.1 Isolate core and coil from enclosure using vibration-absorbing mounts.
- 3.2 Required factory tests shall include:
  - a. No-load loss at rated voltage on the rated voltage connection.
  - b. Impedance and load loss at rated current on the rated voltage connection.



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- c. Efficiency at 25, 50, 75 and 100 percent rated load.
- d. Sound level.
- e. Temperature tests.

### 3.3 Required field tests shall include:

- a. Continuity tests.
- b. Recording as-left tap connections.
- c. Insulation-resistance tests, winding-to-winding and each winding-to-ground.
- d. Turns-ratio tests at all tap positions.
- e. Excitation-current test on each phase.
- f. Resistance test of each winding at each tap connection.
- g. Core insulation-resistance tests.
- h. Applied voltage test on all high and low-voltage windings-to-ground.
- i. Secondary voltage tests, phase-to-phase and phase-to-neutral after energizing and prior to loading

## REFERENCE

- 4.1 The applicable CSI Specification Section is 262200.