CLEVELAND UTILITIES

SPECIFICATIONS FOR INSTALLATION OF PADMOUNTED TRANSFORMERS

COMMERCIAL INDUSTRIAL CUSTOMERS - REVISION VI

1/10/96

GENERAL REQUIREMENTS: Contractor is to pour a concrete pad per Cleveland Utilities' specifications and install contractor furnished three 2" schedule 40 electrical 90 degree elbows (three 2" in primary side), one if single phase. Contractor to install secondary conduits and secondary conductor. Cleveland Utilities will furnish the padmounted transformer, the primary feed to transformer, the terminations for the primary cable, and secondary connectors. Cleveland Utilities will furnish the grounding mat. Note: Only one 2" schedule 40 electrical 90 degree elbow required for single phase pads unless set up for feed through.

1. **PRIMARY ELBOWS** - Contractor to install three 2" PVC Schedule 40 U.L. approved 90 degree elbows for all three phase pads. These elbows are to be installed in the primary side as shown on the furnished concrete pad plan. One 2" PVC sch. 40 U.L. 90 degree elbows for all single phase pads. Conduit to be installed in the primary side as shown on the furnished concrete pad plan. Elbow shall have a radius of 36" and length of elbow shall be 60" and shall be buried a minimum of 40 inches deep. PVC bell end bushings are to be furnished and installed by the contractor on the elbows and are to be located 2 inches below the top edge of the concrete pad within the open well as shown on the concrete pad plan. Elbows and conduit is to be installed to extend beyond the concrete pad a minimum of 24" as directed by Cleveland Utilities. Cleveland Utilities will connect to these elbows for the primary feed.

2. **SECONDARY CONDUITS** - Secondary conduits are to be stubbed up within 2" of the top of the transformer pad. Bell end bushings shall be installed on each conduit. Conduits are to be stubbed up in the area shown on the pad detail. Metal conduits should have grounding bushing.

3. **TRANSFORMER PAD** - Contractor is to form and pour a concrete pad to Cleveland Utilities' specifications (a pad detail will be furnished after load report is received).
NOTE THAT A FINAL INSPECTION IS REQUIRED FOR THE TRANSFORMER PAD BEFORE THE TRANSFORMER IS INSTALLED.

A. **LOCATION**:

Transformers located closer than 30 feet to a building should meet the following conditions:

a. The exposed wall construction is fire re-sisting in nature.

b. There is not exposure to combustible eaves, trim, or doors. No windows within 30 feet.

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c. Any openings in the exposed wall at the same level as the transformer within 10 feet of the transformer shall be protected with approved fire doors. The cabinet door should open away from any wall or obstruction, so that a clear working area of at least 10 feet is available in front of the transformer. The pad should be located to prevent exposure to traffic. In the event the transformer is in a vulnerable position, it will be necessary for the contractor to install curbing or other suitable barriers to protect the transformer as directed by Cleveland Utilities.

d. The pad shall be located such that the surface of the pad shall be higher than the surrounding landscape in all directions. Under no circumstances should a pad be located and subject to any down spouts, rising water, or mud.

B. **CONCRETE PAD SURFACE AND DIMENSIONS**:

a. The top surface of the concrete pad shall be **LEVEL THROUGHOUT** with absolutely no high or low spots. **Cleveland Utilities' transformer must have a perfectly level surface to sit to prevent any outside interference to the primary or secondary of transformer (critical)**. A smooth trowel finish is required. A broomed surface will not be accepted. Grouting will not be accepted. The beveled edge shown on the concrete pad detail is required and shall be formed. A troweled bevel will not be accepted. **Concrete pads which do not meet these requirements will not be accepted.**

b. Pad dimensions shall be in accordance with Cleveland Utilities furnished prints. No exceptions to these dimensions shall be permitted unless approved by Cleveland Utilities in writing. Any unauthorized deviation shall result in a rejection being issued during the final inspection of the concrete pad. (See below)

c. A CLEVELAND UTILITIES' REPRESENTATIVE IS TO INSPECT THE CONCRETE PAD AND GROUND MAT.

This inspection should be requested only after all work is completed, forms removed, grounding mat installed, and final grading has been performed. Only after passed pad inspedtion will the transformer be installed.

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4. **SECONDARY CONDUCTOR** - Contractor is responsible for furnishing all secondary conductors. All secondary conductors shall extend no less than 6' above the concrete pad surface.

A. Due to Cleveland Utilities' stock of secondary terminals the following wire sizes will only be accepted for all three phase secondary:

#250 KMCM CU.	#336 KMCM AL.	#750 KMCM AL.
#350 KMCM CU.	#350 KMCM AL.	#795 KMCM AL.
#500 KMCM CU.	#500 KMCM AL.	
#750 KMCM CU.	#556 KMCM AL.	

The number of wires per phase to be determined by the National Electrical Code.

Permission must be given by the Engineering Dept. of Cleveland Utilities if more than eight runs per phase are needed.

B. Due to Cleveland Utilities' stock of secondary terminals the following wire sizes will only be accepted for all single phase secondary:

#4 AL.	#350 KMCM CU.
#2/0 AL.	#500 KMCM CU.
#4/O AL.	
#350 AL.	

C. Contractor is responsible for any transformer damage caused by improper phasing or by damaged secondary conductors. This damage includes replacing any current limiting fuses which are blown due to contractor's error.

5. **GROUNDING MAT** -The Contractor is to install the grounding mat as shown on the attached concrete pad detail. The copper rods are to be eight feet long and 5/8" in diameter. Grounding conductor is to be a minimum of #2/0 stranded soft-drawn copper. Cleveland Utilities will furnish to the contractor, the ground rods, ground rod clamps, and the ground wire. **Contractor responsible for picking up grounding mat materials at Cleveland Utilities Power Service Center at 2450 Guthrie Dr. N.W.**