SECTION 16012

**SEISMIC RESTRAINT FOR ELECTRICAL EQUIPMENT**

# GENERAL

## DESCRIPTION

### This section describes the requirements for furnishing and installing seismic restraint devices for electrical equipment.

## RELATED WORK SPECIFIED ELSEWHERE

### When it applies, this section is referenced in other sections of the specifications.

## SUBMITTALS

### Submit shop drawings in accordance with the General Conditions.

### Submit seismic anchoring calculations with equipment submittals. Calculations shall be performed by a licensed structural engineer and registered in the state of California.

### Submit equipment anchoring methods. Include anchoring locations, anchor types, and minimum anchor embedment depths. Anchors shall have ICC-approved anchorage values.

# MATERIALS

## SEISMIC DESIGN OF EQUIPMENT

### Prefabricated equipment shall be designed and constructed in such a manner that all portions, elements, subassemblies, and/or parts of said equipment and the equipment as a whole, including their attachments, shall resist a horizontal load equal to the operating weights of those parts multiplied times the following factors:

|  |  |
| --- | --- |
| **Type of Equipment** | **Factor Ip** |
| Rigidly supported equipment such as fuel tanks, transformers, and control panels | .50 |
| Flexible or flexibly supported equipment such as communication equipment and standby generators | 1.00 |

### Load is to be applied at the center of gravity of the part and to be in any direction horizontally. Design stresses shall be in accordance with the specifications for design of the American Institute of Steel equipment.

## SEISMIC ANCHORING AND RESTRAINTS

### **Equipment Anchors:** All electrical equipment shall be securely anchored. Anchoring shall have the capability of withstanding seismic forces per the per the latest California Code of Regulations, Title 24, Part 2, Section 2312, Seismic Zone 4, with Z = 0.4, Cp = 1.0, and Ip = 1.5. Cp may be two-thirds of the value specified for components mounted on foundations at grade or on floor slabs on earth grade. Engineer shall review current seismic requirement calculations according to current applicable codes.

### Raceway Supports:

#### Seismically support raceway (conduit, cable tray, busway, etc.) of 2.5-inch inside diameter and larger and suspend 12 inches or more from the top of the raceway to the bottom of the support for the hanger. Raceway supports shall have the capability of withstanding seismic forces per the CBC and ASCE 7-05.

#### Provide Kin-Line seismic bracing system, Midland Ross superstrut seismic restraint system, Cooper B Line Seismic Bracing System, or equal. Install per manufacturer's requirements.

# EXECUTION

## EQUIPMENT

### Install equipment anchors in accordance with the final shop drawing and manufacturer's recommendations. Properly torque all bolts to the required values.

END OF SECTION