

**SECTION 26 05 48
VIBRATION ISOLATION AND SEISMIC RESTRAINTS**

PART 1 -GENERAL

1.01 DESCRIPTION

- A. Provide vibration isolation and seismic restraints in accordance with the Contract Documents.
- B. Provide isolation for engine generator set, dry type transformers, and at electrical connections to rotating or vibrating equipment.
- C. Provide seismic restraints for all electrical equipment.
- D. Provide seismic bracing systems in conformance with the special inspections criteria in IBC Chapter 17.

1.02 QUALITY ASSURANCE

- A. Vibration isolators and seismic restraints shall be of the same manufacturer.

1.03 REFERENCE STANDARDS

- A. Published specifications standards, tests or recommended methods of trade, industry or governmental organizations apply to work in this Section where cited below:
 - 1. SMACNA – Sheet Metal and Air Conditioning Contractors National Association
 - a. Seismic Restraint Manual: Guidelines for Mechanical Systems
 - 2. Requirements for IBC seismic zone for this project.
 - 3. Seismic bracing requirements in accordance with IBC Chapter 17, Seismic Design Category D.
 - 4. American Society of Civil Engineers (ASCE) 7-10, Minimum Design Loads for Buildings and Other Structures, Chapter 13.

1.04 SUBMITTALS

- A. Manufacturer's product data sheets and installation instructions for each vibration isolator and seismic restraint.
- B. Plan and elevation diagrams showing equipment, points of attachment, vibration isolators, seismic restraints, mounting methods, and hardware types and sizes.
- C. Seismic restraint calculations certified by a Professional Structural or Civil Engineer registered in Utah.
- D. Field inspection report.
- E. Written statement of responsibility to the Owner conforming to IBC Section 1706 prior to commencement of work on the seismic bracing systems.
- F. Certificate of compliance from each seismic bracing system manufacturer in conformance with IBC Section 1708.

1.05 FIELD INSPECTION

- A. Upon completion of the installation, the manufacturer's local representative shall field inspect the installation and submit a report verifying the completeness and performance of the installation.

1.06 SPECIAL INSPECTIONS

- A. Owner's special inspections agent shall periodically inspect seismic bracing system installation and furnish reports noting discrepancies to the Contractor and Owner. The Contractor shall review reports and make corrections as required in accordance with IBC Section 1704.

PART 2 -PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Amber-Booth, Mason Industries, Vibration Eliminator Co., Vibration Mounting & Controls Inc., or Vibrex Vibration Control Systems.

2.02 VIBRATION ISOLATION AND SEISMIC RESTRAINTS

- A. General:
 - 1. Devices installed outdoors shall be weatherproof; steel components shall be hot-dipped galvanized, hardware shall be cadmium plated, and springs shall be neoprene coated.
 - 2. Spring diameters shall be no less than 0.8 of the compressed height of the spring at rated load.
 - 3. Springs shall have an additional minimum travel to solid equal to 50 percent of the rated deflection.
- B. Mounting Method Type A:
 - 1. Floor-mounted spring isolators for seismic and restrained service
 - 2. Built-in resilient limit stops shall limit upward, downward, and horizontal travel to a maximum of ¼ inch
 - 3. Trapped holes in top plate for bolting to equipment
 - 4. Mounting holes in bottom plate for bolting to concrete housekeeping pad
 - 5. Neoprene pad between bottom plate of isolator housing and bottom of spring isolator
 - 6. Mason Industries type SLR
- C. Mounting Method Type B:
 - 1. Hanger rod neoprene isolators
 - 2. 45 degrees slack seismic restraint cables
 - 3. Neoprene element with a projecting bushing to prevent steel-to-steel contact
 - 4. Steel retainer box encasing the neoprene element
 - 5. Rod shall be able to swing 15 degrees before contacting resilient bushing
 - 6. Mason Industries type HD [neoprene hanger and type SCB seismic cable brace]
- D. Mounting Method Type C:
 - 1. Floor-mounted bridge bearing neoprene mounts with all directional seismic

- capability
- 2. Two separated and opposing molded bridge-bearing neoprene elements contained in a ductile iron casting
- 3. Mounting holes in bottom plate for bolting to concrete housekeeping pad
- 4. Mason Industries type BR

PART 3 -EXECUTION

3.01 GENERAL

- A. Installation shall be in accordance with seismic restraint calculations and manufacturer's installation instructions.
- B. Verify that mounting methods provide the required vibration isolation and seismic restraint, and that there are no vibration short circuits.
- C. Conduit connected to rotating or vibrating equipment shall be flexible metal conduit or liquid-tight flexible conduit.

3.02 MOUNTING SCHEDULE

Equipment	Mounting Method	Static Deflection
Engine Generator Set	A	1.0 inch
Dry Type Transformers – Suspended	B	0.2 inch
Dry Type Transformers – Floor Mounted	C	0.2 inch

END OF SECTION 26 05 48