

SECTION 21 0548

VIBRATION AND SEISMIC CONTROLS FOR FIRE SUPPRESSION PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Equipment support bases.
- B. Vibration isolators.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete.

1.03 REFERENCE STANDARDS

- A. ASCE 7 - Minimum Design Loads for Buildings and Other Structures; 2010, with 2013 Supplements and Errata.
- B. NFPA 13 - Standard for the Installation of Sprinkler Systems; 2016.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data:
 - 1. Provide manufacturer's product literature documenting compliance with specified requirements.
- C. Shop Drawings:
 - 1. Provide schedule of vibration isolator type with location and load on each.
 - 2. Fully dimensioned fabrication drawings and installation details for housekeeping pads, bases, member sizes, attachments, and supported equipment.
 - 3. Include auxiliary motor slide bases and rails, base weights, concrete weights, equipment static loads, and support points.
- D. Manufacturer's Instructions: Indicate installation instructions with special procedures and setting dimensions.

1.05 QUALITY ASSURANCE

- A. Perform design and installation in accordance with applicable codes.
- B. Designer Qualifications: Perform design under direct supervision of a Professional Engineer experienced in design of this type of work and registered and licensed in Michigan.
- C. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- D. Installer Qualifications: Company specializing in performing the work of this section with minimum 3 years of experience.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. General:
 - 1. All vibration isolators, base frames and inertia bases to conform to all uniform deflection and stability requirements under all operating loads.
 - 2. Steel springs to function without undue stress or overloading.
 - 3. All equipment mounted on vibration isolated bases to have minimum operating clearance of 2 inches between the base and floor or support beneath unless noted otherwise.

2.02 EQUIPMENT SUPPORT BASES

- A. Structural Bases:
 - 1. Construction: Engineered, structural steel frames with welded brackets for side mounting of the isolators.
 - 2. Frames: Square, rectangular or T-shaped.

3. Design: Sufficiently rigid to prevent misalignment or undue stress on machine, and to transmit design loads to isolators and snubbers.
- B. Concrete Inertia Bases:
1. Construction: Engineered, steel forms, with integrated isolator brackets and anchor bolts, welded or tied reinforcing bars running in both directions in a single layer.
 2. Size: 6 inches minimum depth and sized to accommodate elbow supports.
 3. Mass: Minimum of 1.5 times weight of isolated equipment.
 4. Connecting Point: Reinforced to connect isolators and snubbers to base including template and fastening devices for equipment.
 5. Concrete: Filled on site with minimum 3000 psi concrete. See Section 03 3000 for additional requirements.

2.03 VIBRATION ISOLATORS

- A. Non-Seismic Type:
1. Restrained Steel Springs:
 - a. Housing: Rigid blocking during rigging prevents equipment installed and operating height from changing during temporary weight reduction.

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

- A. Install in accordance with manufacturer's instructions.
- B. Comply with the requirements of NFPA 13.
- C. Bases:
1. Set concrete inertia bases for 2 inches clearance between housekeeping pad and base.
 2. Adjust equipment level.
- D. Prior to making piping connections to equipment with operating weights substantially different from installed weights, block up equipment with temporary shims to final height. When full load is applied, adjust isolators to load to allow shim removal.
- E. Support piping connections to equipment mounted on isolators using isolators or resilient hangers for scheduled distance.
1. Up to 4 Inches Pipe Size: First three points of support.
 2. 5 to 8 Inches Pipe Size: First four points of support.
 3. 10 inches Pipe Size and Over: First six points of support.

3.02 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Inspect isolated equipment after installation and submit report. Include static deflections.

3.03 SCHEDULES

- A. Equipment Isolation Schedule:
1. Fire Pumps:
 - a. Base Type: _____.
 - b. Base Thickness: _____ inches.
 - c. Isolator Type: _____.
 - d. Isolator Deflection: _____ inches.
 2. Electric Motor Drives:
 - a. Base Type: _____.
 - b. Base Thickness: _____ inches.
 - c. Isolator Type: _____.
 - d. Isolator Deflection: _____ inches.
 3. Pressure Booster (Jockey) Pumps:
 - a. Base Type: _____.
 - b. Base Thickness: _____ inches.

- c. Isolator Type: _____.
 - d. Isolator Deflection: _____ inches.
4. Air Compressors:
- a. Base Type: _____.
 - b. Base Thickness: _____ inches.
 - c. Isolator Type: _____.
 - d. Isolator Deflection: _____ inches.

END OF SECTION 21 0548

