

**SECTION 23 05 48
HVAC VIBRATION CONTROL**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The other Contract Documents complement the requirements of this Section.
- B. The General Requirements apply to the work of this Section.

1.2 SCOPE

- A. Provide vibration isolation supports for all rotating and reciprocating mechanical equipment, piping, and ductwork as required to prevent transmission of vibration to building structure.
- B. Various parts of the building shall generally conform to the Design Guidelines for HVAC, Related Background Sound in Rooms as set forth in ASHRAE HVAC Applications Handbook.
- C. Mid-point of range of NC criteria curves applies.
- D. Contractor shall be responsible for selecting and installing vibration isolators as specified, or indicated or otherwise required to prevent transmission of vibration, which would cause noise levels in excess of those specified in above referenced Design Guidelines.
- E. Provide concrete bases as required for equipment.

1.3 QUALITY ASSURANCE

- A. A single source manufacturer or supplier shall design and furnish all vibration isolation devices, including auxiliary steel bases and placing forms with steel reinforcing.
 - 1. The manufacturer or supplier is responsible for adequate coordination of all phases of work.
 - 2. Equipment base types, vibration isolator types, and minimum deflections shall conform to Selection Guide for Vibration Isolation Table in ASHRAE HVAC Applications.
 - 3. Concrete material shall be as specified in Section 03 30 00.
- B. Air handling units with factory installed spring isolators for blower chassis are acceptable, provided such isolators meet all requirements of this Section, including submittal requirements for vibration isolators, minimum deflections, and requirement for technical supervision and certification letter.
 - 1. Where internal isolators are used coordinate housekeeping pad height as required to ensure adequate condensate trap depth and positive drainage.
 - 2. Provide rubber isolation rated pads at MFG defined support locations between air handler and concrete housekeeping pad when internal vibration isolation is acceptable.
- C. Vibrator isolation manufacturer responsible for providing such supervision as may be necessary to assure correct installation and adjustment of isolators.
 - 1. Upon completion of installation and after system is put into operation, manufacturers shall make final inspection and submit his report to the Architect in writing certifying correctness of installation and compliance with approved submittal data.
- D. Mason Industries used a basis of design.
 - 1. Similar and equal equipment and installation complying with this Section by:
 - a. Amber Booth
 - b. Vibration Eliminator Co
 - c. Vibration Mountings and Controls
 - d. Kinetics Noise Control acceptable as equal

1.4 SUBMITTALS

- A. In submittal data show type, size dimensions, rated capacity, rated deflection, compressed spring height, solid spring height, identity color coding and labeling details, and location diagrams for each color coding and labeling details, and location diagrams for each isolator proposed and any other information required for Architect to check isolator selections for compliance with these Specifications.
- B. All steel bases and concrete inertia bases completely detailed.
- C. Submittal documentation, include a clearly outlined procedure for installing and adjusting isolators.

PART 2 PRODUCTS

2.1 EQUIPMENT

- A. Unless otherwise noted, mount all mechanical equipment on vibration isolators to prevent transmission of vibration and mechanically transmitted sound to building structure.
 - 1. Select the vibration isolators to provide uniform weight distribution and to produce reasonable uniform deflection.
 - 2. Deflections shall be as indicated or specified.
- B. All isolators exposed to outdoor weather with galvanized finish of all ferrous parts and bolts and nuts cadmium-plated, or electro-zinc plated.
- C. Selection of Vibration Isolators and Mountings shall conform to Notes for Vibration Isolator Selection Guide (Table), in ASHRAE HVAC Applications Handbook.
- D. All final electrical connections to vibrating equipment shall be flexible conduit (Greenfield Type).

2.2 PIPING AND DUCTWORK CONNECTED TO VIBRATING EQUIPMENT

- A. For piping connected to vibrating equipment (pumps, air compressors, etc) provide flexible hose connectors, to be stainless steel, woven wire braid – S.E. Hose #SECF or approved equal. Three flexible pipe couplings in series may be used in lieu of a stainless steel flexible connection at equipment connections in applicable piping systems. The couplings shall be placed in close proximity to the vibration source and in accordance with the manufacturer's installation instructions for vibration attenuation.
 - 1. Provide flexible insulation where required; refer to section 23 07 19.
- B. For ductwork connected to vibrating equipment (fans, air handler units, etc) provide flexible duct connections – Duro-Dyne, "Metal-Fab" heavy duty Excelon or approved equal.
 - 1. Provide flexible duct wrap insulation where required; refer to section 23 07 13.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Perform the installation and adjustment in accordance with manufacturer's instructions.
- B. Vibration isolators shall provide required deflection under imposed loads and shall produce uniform loading and deflection even when equipment weight is not evenly distributed.
 - 1. Do not use leveling bolts as jacking devices.
- C. Provide vibration isolation types and deflections as specified, indicated, or scheduled.
- D. Contractor and vibration isolation manufacturer or factory-authorized representative shall perform following tasks in addition to supply and installation of isolation equipment.

The School District of Palm Beach County

Project Name:

SDPBC Project No.:

1. Obtain from Architect approved manufacturers name, model number and other necessary identifying data for each item of mechanical equipment to be resiliently mounted.
 - a. Coordinate resilient mounting systems with exact equipment furnished concerning physical size, isolator locations, weight, rotating speed, etc.
 - b. Direct contact and cooperation between vibration-isolation device fabricator and equipment manufacturer required.
 2. Select piping systems isolators for proper coordination with physical arrangement of pipelines and with physical characteristics of building.
 3. To assure that vibration isolator installation is in strict accordance with normally accepted practices for critical environments, provide on-the-job supervision as required during installation of resiliently mounted equipment and piping.
 4. Replace at no extra cost to Owner, isolators not producing the required deflection, are improperly loaded above or below their correct operating height or which do not produce-required isolation.
 5. Cooperation with other Contractors engaged in project so that installation of vibration isolation devices will proceed in manner that is in best interests of Owner.
 6. Notify Architect of project conditions affecting vibration-isolation system installation or performance and are found to be different from conditions indicated or specified.
 - a. Should vibration-isolation system installation proceed without such notification, remedial Contractor shall accomplish work required to achieve proper isolator performance at no additional cost to Owner.
 7. Be alert for possible "short-circuiting" of vibration isolation systems by piping supports, electrical connections, temperature control connections, drain lines, and building construction, etc., and notify involved contractor as to these problems or potential problems.
 - a. Where such situations cannot be easily resolved, notify Architect so that preventive or remedial action can take place on timely basis.
 - b. Responsible Contractor at no additional cost to Owner shall undertake remedial measures required.
- E. Air handling units to be internally isolated under other specification sections.
- F. All other equipment including chillers, compressors, pumps, cooling towers, fans, condensing units, packaged units, rooftop equipment, engine driven generators, etc. shall have vibration isolators in conformance with Selection Guide for Vibration Isolation Table in ASHRAE HVAC Applications Handbook.

END OF SECTION