SECTION 15070

MECHANICAL SOUND, VIBRATION AND SEISMIC CONTROL

PART 1 GENERAL

1.1 SUMMARY

A. This Section describes requirements, products, and methods of execution that relate to seismic restraint, flexible connection, and vibration isolation of all mechanical systems to meet seismic criteria and for limitation of transmission of vibration and sound to acceptable levels.

B. Sound and vibration control is not required for:

1. Branch piping and ductwork serving terminal devices

2. Heating and Air terminal devices that do not contain fans.

1.2 SYSTEM DESCRIPTION

A. All rotating or reciprocating equipment installed by the Tenant shall be controlled for sound and vibration transmission according to this section.

B. Manufacturers and Additional Engineering Required:

1. Design of vibration and seismic restraint systems external to equipment shall be by the vibration and seismic manufacturer, or by a civil engineer registered in the State of Alaska. The Tenant's engineer shall review shop drawing and calculations for compliance with the vibration isolation and seismic restraint requirements.

2. Equipment furnished with internal vibration and seismic control furnished by the equipment manufacturer shall meet the requirements of this section. Design of the vibration and seismic restraint system shall be by the equipment manufacturer. Shop drawings shall be required. The Tenant's engineer shall review shop drawing and calculations for compliance with the vibration isolation and seismic restraint requirements.

C. Sound and Vibration Performance:

1. Isolation of mechanical systems noise and vibration from occupied spaces is recognized as an important part of the mechanical and acoustical design. Material and equipment selection and location must be carefully considered to keep transmission and radiation of noise within acceptable limits.

2. Limit mechanical noise levels in the building to conform to noise criteria recommendations as set forth in the ASHRAE Applications Handbook, latest edition chapter on Noise and vibration Control at or below the design levels as indicated below:

Public Areas	NC 35-40
Conference rooms	NC 25-30
Private offices	NC 30-35
Baggage Handling, Service areas	NC 40-50

3. Mechanical Vibration:

   a. Require vibration isolation supports for equipment, piping, and ductwork to prevent noticeable transmission of vibration to the building structure.

   b. Do not exceed the following vibration levels for rotating equipment as measured on the bearing caps when the equipment is installed and running at its operating speed.

      1) Fans except as noted: 0.075 inch per second RMS.

      2) Other equipment: 0.15 inch per second RMS.

   c. Vibration levels of fans with RPM less than 700 which are installed above spaces designated NC 30 and lower, shall not exceed 0.04 inch per second RMS.

D. Seismic Performance Criteria:

   1. Restrain equipment, piping, and ductwork to resist seismic forces. Design and select restraint devices to resist loads per Section 1621 of the IBC. Minimum Importance factor = 1.0 shall be used in all seismic restraint calculations.

PART 2 PRODUCTS

2.1 VIBRATION ISOLATORS

A. Elastomeric Flexible Connectors: Not allowed.

PART 3 EXECUTION

3.1 MISCELLANEOUS HYDRONIC EQUIPMENT

A. Unit Heaters: Provide hanger isolators and flexible connections for units over 1/2 hp.

3.2 ANCHOR BOLTS

A. Use cast-in-place or epoxy grouted anchor bolts for floor or pad mounted equipment required by any section of these specifications. Do not use expansion anchors to resist seismic or vibratory loads, unless test data is provided to verify the adequacy of the specific anchor and application.

3.3 RUST PROOFING

A. Treat vibration isolation hardware for resistance to corrosion.

B. Provide zinc electro-plated nuts, bolts and washers.

C. Provide steel components PVC coated or primed with zinc chromate primer and painted with industrial grade enamel.

END OF SECTION