

SECTION 15240

MECHANICAL SOUND AND VIBRATION CONTROL

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. Piping and Equipment Isolation.
2. Duct Sound Attenuators.
3. Return Air Silencer Transfer Ducts.
4. Acoustical Louvers.
5. Sound Linings.
6. Adhesive and Sealer.
7. Non-Hardening Caulking.
8. Vibration Dampering Compound.
9. External Sound Barrier Insulation.

B. Related Sections:

1. Section 15010 - Basic Mechanical Requirements.
2. Section 15900 - Ductwork and Accessories: Flexible ductwork connections.

1.02 REFERENCES

- A. Underwriters Laboratories, Inc. (UL).
- B. National Fire Protection Association (NFPA).

1.03 SYSTEM DESCRIPTION

A. Design Requirements:

1. Piping and Equipment Isolation:

- a. Engineer may specify mechanical equipment mounted on vibration isolators to prevent the transmission of vibration and mechanically transmitted sound to the building structure.

New buildings may have equipment directly anchored to floors only if approved by

vibration consultant. Building structure and equipment shall be approved by UCB vibration consultant.

Inertia bases are not required or desired unless proof is submitted that they are Needed, however this does not preclude housekeeping bases.

- b. Pump bases for split-case pumps to include support for suction and discharge base
ells.
- c. Specify flexible connectors for all rotating and reciprocating equipment unless
approved otherwise. Not required for fan-coil units with internal isolation of fans.
- d. Specify flexible hoses and spheres to:
 1. Compensate for misalignment.
 2. Relieve pump flanges of strain.
 3. Provide comparative freedom for floating equipment.
 4. If installed horizontally, relieve the equipment of piping weight.
 5. If needed, specify travel limiters for interconnected equipment.
- e. Non-Metallic Flexible hoses are preferable in general because they are more
effective vibration isolators but should be limited to equipment rooms, and careful
attention paid to the pressure and temperature limitations.
- f. Specify flexible stainless steel braided hoses for heating and ventilating unit
connections that may be located away from the equipment room area.
- g. Specify hoses installed on the equipment side of the shut-off valves and
horizontally whenever possible.
- h. Consider acoustical pipe riser anchors where interruptible water flows may cause
vibrations in piping such as variable condenser water flows to remote cooling
tower sumps or cycled pumping.

1.04 QUALITY ASSURANCE

A. Acoustical Criteria:

1. Noise levels due to equipment and ductwork to permit attaining sound pressure levels
in all 8 octave bands in occupied spaces conforming to NC Curves:
 - a. All spaces NC-35.
2. Exceptions:
 - a. Spaces within 15 foot radius from supply
and return ducts from shafts NC-40.
 - b. Lobbies, Toilets, Commercial Areas NC-40.
 - c. Kitchens NC-45-50.

d. Mechanical Rooms NC-50-60.

e. Classroom, conference, seminar rooms NC-25

PART 2 - PRODUCTS

2.01 PIPING AND EQUIPMENT ISOLATION

A. Manufacturers:

Amber/Booth Co.
Korfund
Mason Industries, Inc.
Metraflex
Vibration Mountings and Control Co.
Vibrex

B. Double Deflection Neoprene Mountings.

C. Spring Isolator Mountings.

D. Restrained Spring Isolator Mountings.

E. Vibration Hangers.

F. Integral Structural Steel Bases.

G. Steel Cradle Bases.

H. Concrete Inertia Bases.

I. Flexible Butyl Hose Pipe Connectors.

J. Flexible Neoprene Sphere Pipe Connectors.

K. Braided Flexible Pipe Connectors.

L. Acoustical Pipe Riser Anchors.

These are not required when equipment is solid-mounted.

2.02 DUCT SOUND ATTENUATORS

A. Manufacturers:

No preference

B. Tested and certified by an independent laboratory, such as ETL.

2.03 RETURN AIR SILENCER TRANSFER DUCTS

A. Manufacturers:

No preference

2.04 ACOUSTICAL LOUVERS

A. Manufacturers:

No preference

B. Acoustical ratings and pressure drop ratings verified by copies of tests performed at an independent laboratory.

2.05 SOUND LININGS

A. Manufacturers:

Certain-teed "Ultralite"
Manville
Owens Corning

B. Product: Fibrous glass, neoprene coated, stenciled NFPA.

C. Minimum thickness:

1. In ductwork: 1/2 inch.
2. In plenums: 2 inch.

D. Minimum density:

1. In ductwork: 1-1/2 lb. per cu. ft.
2. In plenums: 3 lb. per cu. ft.

E. Suitable for duct velocity of 6000 fpm. Lining shall meet erosion test method described in UL Publication No. 181.

F. All ends, including field cut ends must be sealed.

2.06 ADHESIVE AND SEALER

A. Manufacturers:

No preference

B. In conformance with NFPA 90A.

LEED EQc4: Low-Emitting Materials:

All interior adhesives and sealant must meet or exceed the VOC and chemical component limit requirements of South coast Air Quality Management District Rule #1168 and sealants used as fillers must meet the requirements of the Bay Area Air Quality Management District Regulation 8, Rule 51. (Low VOC is considered acceptable by UCB.)

2.07 NON-HARDENING CAULKING

A. Manufacturers:

No preference.

B. Guaranteed to be permanently elastic.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. In general, for project specifications, remove "Design Requirements" in Part 1, subparagraph A, paragraph 1.03 "Systems Description" of this Design Guide and use list to expand on specific requirements of installation for each product specified.

END OF SECTION