

SECTION 23 05 48

MECHANICAL SOUND AND VIBRATION

PART 1 GENERAL

1.01 QUALITY ASSURANCE

A. General acoustic 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: All spaces NC-35
 - a) Exceptions
 - i) Spaces within 15-foot radius of supply and return ducts from shafts: NC-40
 - ii) Lobbies, restrooms, common areas: NC-40
 - iii) Kitchens: NC-45-50
 - iv) Mechanical rooms: NC-50-60

B. Acoustic criteria

1. Elementary Schools

<u>Room Description</u>	<u>Maximum RC(N) & NC Rating</u>
a) General Music/Performance Room	30
b) Cafeteria/Multiuse Room	35
c) Instrumental Music/Conference Room	35
d) Private Offices	35
e) Classroom	35
f) Art Studio	35
g) Computer Lab	35
h) Conference Room	35
i) Teacher Work Room	35
j) Open Plan Office Administrative areas	40
k) Library Information Center (LIC)	40
l) Gymnasium	40
m) Corridor	50
n) Stairway	50

2. Middle Schools

<u>Room Description</u>	<u>Maximum RC (N) & NC Ratings</u>
a) Auditorium	30
b) Instrumental Music Room	30
c) Vocal Music Room	30
d) Music Practice Room (solo)	30
e) Private Offices	35
f) Classroom	35
g) Science Classroom	35
h) Art Studio	35
i) Computer Lab	35
j) Conference Room	35
k) Teacher Work Room	35

l) Open Plan Office Administrative areas	40
m) Library (LIC)	40
n) Fitness Room	40
o) Gymnasium	40
p) Corridor	50
q) Stairway	50

3. High Schools

<u>Room Description</u>	<u>Maximum RC(N) & NC Ratings</u>
a) Auditorium	25
b) Stage	25
c) Auditorium Control Room	30
d) Instrumental Room	30
e) Vocal Room	30
f) Multi-Purpose Music Room	30
g) Music Practice Room (solo)	30
h) Private Offices	35
i) Classroom	35
j) Science Classroom	35
k) Computer Lab	35
l) Conference Room	35
m) Teacher Work Room	35
n) Open Plan Office Administrative areas	40
o) Stagecraft Workroom	40
p) Library (LIC)	40
q) Wrestling Room	40
r) Fitness Room	40
s) Cafeteria (Commons)	45
t) Gymnasiums	40
u) Corridor	50
v) Stairway	50

PART 2 PRODUCTS

2.01 PIPING AND EQUIPMENT ISOLATION

- A. Acceptable manufacturers
 1. Amber/Booth Co.
 2. Korfund
 3. Mason Industries, Inc.
 4. Metraflex
 5. Vibration Mountings and Control Co.
 6. Vibrex
- B. Double-Deflection Neoprene Mountings (not required when the system is solid-mounted)
- C. Spring Isolator Mountings (not required when the system is solid-mounted)
- D. Restrained Spring Isolator Mountings (not required when the system is solid-mounted)
- E. Vibration Hangars (not required when the system is solid-mounted)
- F. Integral Structural Steel Bases (not required when the system is solid-mounted)
- G. Steel Cradle Bases (not required when the system is solid-mounted)

- H. Concrete Inertia Bases (not required when the system is solid-mounted)
- I. Flexible Butyl Hose Pipe Connectors.
- J. Flexible Neoprene Sphere Pipe Connectors.
- K. Braided Flexible Pipe Connectors.
- L. Acoustical Pipe Riser Anchors.

2.02 DUCT SOUND ATTENUATORS

- A. Acceptable Manufacturers:
 - 1. Acoustifoil Noise Control Products.
 - 2. Commercial Acoustics.
 - 3. Industrial Acoustics Company.
 - 4. Koppers.
 - 5. SEMCO Manufacturing.
 - 6. TranSonics.
- B. Tested and certified by an independent laboratory, such as ETL.

2.03 ACOUSTIC LOUVERS

- A. Acceptable Manufacturers:
 - 1. Arrow United.
 - 2. Commercial Acoustics.
 - 3. Industrial Acoustic Company.
 - 4. Keene Corporation.
 - 5. Louvers and Dampers.
- B. Acoustic ratings and pressure drop ratings shall be verified by copies of tests performed at an independent laboratory.

2.04 SOUND LININGS

- A. Acceptable Manufacturers:
 - 1. Certain-teed "Ultralite"
 - 2. Manville
 - 3. Owens Corning
- B. Product: Fibrous glass, neoprene-coated, stenciled NFPA.
- C. Minimum Thickness:
 - 1. In ductwork: ½"
 - 2. In plenums: 2"
- D. Minimum Density:
 - 1. In ductwork: 1.5 lb. per cu. ft.
 - 2. In plenums: 3 lb. per cu. ft.
- E. Suitable for duct velocity of 6,000 fpm.
- F. Lining shall meet erosion test method described in UL-181.

2.05 ADHESIVE AND SEALER

- A. Acceptable Manufacturers:

1. Adhesive: Benjamin Foster "81-99".
2. Sealer: Benjamin Foster "82-07".

B. In conformance with NFPA 90A.

2.06 NON-HARDENING CAULKING

A. Acceptable Manufacturers:

1. Tremco "Polybutene".
2. Manville "Duxeal".

B. Guaranteed to be permanently elastic.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install thrust limits at centerline of thrust, symmetrical on either side of equipment.
- B. Flexible connectors shall be installed to isolate vibration and shall not support piping or allow for correction for pipe misalignment.
- C. Install a spool in the place of each flexible connector during fabrication; insulation and final hangar adjustment. Final hangar adjustment shall be completed before installing the flexible connectors

END OF SECTION 23 05 48