SECTION: 2.12

NOISE & VIBRATION

1.0 Scope

1.1 The scope of work cover :

i) Selection of equipment for optimized noise levels.
ii) Selection of vibration elimination systems

as specified in the various equipment data sheets.

2.0 Equipment

2.1 All equipment shall be selected for low noise and minimum vibration levels. Selection of bearings, operating speeds and enclosures shall be such as to meet the above objections. Bearings shall be selected for an average life of 100,000 hours. Maximum operating speed should not exceed 75% of the first critical speed. Equipment submittals shall clearly show the critical speed and the operating speed. Fans and AH Units shall be selected for highest efficiency at the operating point.

2.2 Upon installation, all equipment shall be checked for misalignment which shall be less than $2^{o.}$ All readings shall be recorded. Also the belt-tightness and bearing fixture and lubrication are to be ensured and confirmed. Every equipment shall be tested for vibration and following acceptable limits are ensured and recorded:

RPM	Maximum vibration verticals, horizontal, axial (mm)
0-300	0.13
301-500	0.10
501-1000	0.08
1001 and up	0.05

3.0 Noise Ratings

3.1 Certified noise power levels of each equipment on an octave band spectrum shall be furnished together with values for the discharge and suction sides. Equipment with low noise power levels would have added weightage in the assessment of equipment.

4.0 **Vibration Isolation**

4.1 All rotating equipment shall be totally balanced for smooth dynamic performance and at any rate should not exceed maximum limits set above. In addition, each equipment shall be mounted on suitable vibration isolation mounts specially selected for the equipment and its drive assembly. For all equipment installed on concrete slabs or structural steel lofts, the vibration isolation shall take into account the natural frequency of the slab or loft as the case may be. At any rate, a minimum static deflection of 25mm shall be achieved in all such cases. Isolators for higher deflection shall have suitable snubbers. Metallic vibration mounts shall have neoprene isolators.

5.0 The contractor shall get approval from the acoustic consultant for the material and method before execution.

6.0 **Piping & Ducting**

6.1 All rigid piping and ducting connected to any equipment mounted on vibration mounts shall have flexible connectors of approved type. The flexible shall absorb the equipment movement without causing vibrations in the rigid sections. **Piping and Ducting shall be supported as shown in the construction details.**

7.0 **Mode of measurements**

7.1 All vibration isolators, flexible etc. shall form part of the equipment and shall not be paid separately.