

SILENCER APPLICATION SOLUTIONS

See Project Solution Sheet (PS#)
Primary Ref.: 18-1, 18-2

PROBLEM:

Ultra-Critical Sound Criteria

- ◆ Projects such as performing arts centers, recording studios and religious facilities need to achieve ultra-quiet and quality HVAC background sound criteria.
- ◆ Projects such as specialty university buildings, libraries and premium office spaces require critical HVAC noise control including the need for high sound transmission loss structures and speech privacy designs.
- ◆ Very large outdoor HVAC equipment located near windows or neighbors require special consideration for noise control.

SOLUTION:

Retain Qualified Acoustical Consultant

- ◆ For such ultra-critical projects always consider retaining a qualified Acoustical Consulting Engineer having expertise in HVAC noise control. ASHRAE recommends using an Acoustical Consultant for acoustically critical spaces (below NC/RC-30) and for all performing arts spaces.
- ◆ Consult the Vibro-Acoustics website (www.vibro-acoustics.com) for an up-to-date listing of Acoustical Consultants having HVAC experience in your area.
- ◆ Silencing concerns for acoustically critical spaces include:
 - ◆ all noise sources and all potential noise paths must be carefully analyzed, including break-out and break-in noise (high transmission loss (HTL) silencers and ductwork may be required (see SAS 4 and SS 7))
 - ◆ evaluate generated noise of all duct fittings including the silencers
 - ◆ keep pressure drops low (0.10" or less) to minimize generated noise
 - ◆ longer silencers with a greater free area may be needed to attain the low pressure drops and generated noise requirements
 - ◆ although duct velocities are usually kept low for acoustically critical systems, the silencing solutions may be very similar to the silencing solutions for high velocity systems (see SAS 8)



Ultra-critical sound criteria for symphony hall required acoustical consultants' special designs for HVAC noise control.