

# Element D Services

Heating, Ventilating, and Air  
Conditioning

## D3002 Sound Criteria

### PART 1 - GENERAL

#### 1.1 OVERVIEW

- A. Acoustical design practices to minimize noise transmission from HVAC systems, is addressed in this section. Refer to the "Noise and Vibration Control" chapter in the ASHRAE Applications Handbook and the "Sound and Vibration" chapter in the ASHRAE Fundamentals Handbook.

### PART 2 - DESIGN CRITERIA

#### 2.1 GENERAL

- A. The design shall comply with the following Noise Criteria (NC) levels regarding HVAC related background sound in rooms.
- B. A/E shall confirm specific requirements for applications not included in the following Table.

Room Type	Minimum – Maximum Noise Criteria (NC)
Private Offices	25-35
Open-Plan Offices	30-40
Office Corridors and Lobbies	35-45
Conference Rooms	25-35
Teleconferencing Rooms	25 (max)
Training Rooms	25-30
Large Meeting/Banquet Rooms with Amplified Speech	24-35
Libraries	25-35
Dining Rooms and Serveries	35-45
Inpatient Rooms	25-35
Shared Patient Rooms	30-40
Exam Rooms	30-40
Procedure/Treatment Rooms	30-40
Operating Rooms	35-45
Patient Corridors and Public Spaces	30-40
Shared Work Rooms	30-40
Normally Unoccupied Support Rooms	35-45
Laboratories	45-50
Laboratories with Extensive Speech and Telephone Conversation	40-50
Animal Holding Rooms	35-45

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### PART 3 - SPECIAL CONTRACT DOCUMENT REQUIREMENTS

#### 3.1 GENERAL

- A. The A/E must engage services of an acoustics consultant during the Design Development Phase to ensure the room sound criteria are met prior to final selection of equipment.
- B. The acoustics consultant shall be provided with manufacturer's data for air handling units representative of the Project and a ductwork drawing with sheetmetal sizes. The acoustics consultant will be responsible for determining the necessary means for achieving design NC levels prior to the issuance of 95 percent complete Construction Documents.
- C. If sound attenuation is necessary based on the acoustics consultant's recommendation or the project/design conditions, apply attenuation measures with consideration of effectiveness, installation, maintenance, and economy. Include such measures as: selection of components for low noise performance (e.g. fans, terminal boxes, air valves, steam pressure reducing valves); attenuation at the sound generated source (e.g., the air handling unit fan, prior to unit final filter); and low air pressure drop sound reduction measures (e.g. acoustical double wall ductwork, acoustical flexible ductwork, sheet metal duct elbows with acoustical turning vanes, and efficient fan discharge condition).
- D. Reliance on sound path attenuation such as duct silencers or acoustically lined duct in the supply duct air stream is not acceptable unless specifically accepted by the Owner.
- E. Select grilles, registers, and diffusers with a noise criteria (NC) rating that is 10 points below the NC levels published in ASHRAE for the type of space being served.
- F. Noise and vibration generating devices should be located as far away as possible from sound sensitive rooms (conference room, VC rooms, training rooms, etc.).

### PART 4 - PRODUCTS

#### 4.1 GENERAL

- A. Refer to Owner's Master Construction Specification sections for specific product sound power level requirements appropriate to the Project. These are available on the Owner's Design Guidelines website:  
<http://www2.mdanderson.org/depts/cpm/standards/specs.html>

### PART 5 - DOCUMENT REVISION HISTORY

Issue	Date	Revision Description	Reviser
	20190301	Original Issuance	
Rev. 1			

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END OF ELEMENT D3002