

## TOPIC 11. NOISE TRANSMISSION CONTROL

**1. GENERAL:** Where rooms do not contribute to or are not affected by sound transmission from an adjacent space, conventional construction is satisfactory.

### 2. PARTITION-CEILING-DOOR-DUCT SYSTEM ACOUSTIC DESIGN

a. **Acoustical Isolation.** Design the sound resistant enclosures of the following spaces to suppress generated noise and provide a satisfactory degree of acoustical isolation for adjacent occupied spaces. Achieve a minimum Sound Transmission Class (STC) rating of 45.

***NOTE:** When the VA Hospital Building System (VAHBS) is used, achieve the required rating using construction such as a double layer of 16 mm (5/8 in.) gypsum board (GB) on both sides of 100 mm (4 in.) nominal metal studs and 64 mm (2 1/2 in.) sound attenuation blankets between the studs. These should extend above conventional lay-in ceilings to the underside of walk-on deck/platforms.*

- (1) A/C and other mechanical equipment rooms.
- (2) Manual arts therapy shops.
- (3) Auditoriums.
- (4) Multipurpose rooms.
- (5) Mental Health and Behavioral Sciences Service i.e. group therapy rooms.
- (6) Emergency generator rooms.
- (7) Kitchen & Dishwashing spaces.

***NOTE:** Alternatively, provide a gypsum board ceiling or gypsum board lay-in panels both with a 65 mm (2 1/2 in.) sound attenuation blanket for non-VAHBS type of construction where ducts, pipes, etc., make it impractical to extend sound partitions to slabs or deck above. Where gypsum board ceilings with attenuation blankets are used, the double GB partitions and sound attenuation blanket should extend 100 mm (4 in.) above the ceiling. Studs should continue to the floor above. Give special attention to details shown on the construction documents to prevent possible flanking paths for noise transmission.*

b. **Speech Privacy.** Design the sound resistant enclosures of the following spaces to assure speech privacy and achieve an STC rating of 40 (45 for space marked with an asterisk).

- (1) Conference rooms.

- (2) Consultation offices.
- (3) Examination and Treatment Rooms.
- (4) Individual Offices in Mental Health and Behavioral Sciences Service.
- (5) Audiology and Speech Pathology Areas.
- (6) Medical Media Production Services\* (Recording Areas).

**NOTE:** Partition and ceiling construction should be similar to Paragraph 1.a., except that for spaces requiring an STC value of 40, use only a single layer of gypsum board on both sides.

c. **Sound Dampening.** Provide sound damping in libraries, chapels, quiet rooms, telephone operator's room, and similar areas by finish materials shown for these areas in Program Guide PG-18-14, "Room Finishes, Door, & Hardware Schedule".

**NOTE:** Where an area generating unusual noise or vibration is located adjacent to occupied spaces, the A/E should obtain the services of a professional acoustical consultant to design the sound suppression measures required to produce a comfortable working environment in the adjacent spaces.

d. **Door Types.** Use door types 19 and 20 with mechanical seal at entrances to spaces where noise suppression or speech privacy is a requirement. See VA Standard Detail Nos. 08100-1.DWG and 08100-2.DWG.

**NOTE:** Duct system sound attenuation and room noise criteria are shown in the heating, ventilating, and air-conditioning (HVAC) design manual.

**3. MECHANICAL AND ELECTRICAL ITEMS:** Properly locate, detail, and caulk or insulate penetrations of the sound resistant enclosure by electrical boxes, light fixtures, air conditioning or ventilating ducts and grills, and other mechanical and electrical components to suppress generated noise or provide speech privacy for the spaces listed in paragraph 2.a. and 2.b. Evaluate equipment and mechanical rooms for noise problems and provide recommendations during the design phase as to additional sound attenuation required. In the analysis, list the possible flanking paths for noise transmission and the methods recommended to prevent this leakage through the enclosure.

**4. EXTERIOR ENCLOSURES:** In the design of exterior building walls and fenestrations at sites near airports, freeways, or heavy city traffic, give consideration for the control of noise transmission from external sources.