



Sound Control Manual – Sound Construction Inspection and Supervision

The final responsibility for proper installation of sound conditioning rests with the supervisor and the inspector. Conscientious workmen may make every effort to perform their part of the construction properly, but the supervisor must tie the work of the many trades together so that the finished assembly performs as anticipated.

No matter how much care has gone into designing, detailing and specifying a sound conditioning system, no sound control performance exists until it is built into the construction; and all too often, this never takes place. For example, the performance of a partition that tests over STC 50 in the laboratory can score as low as STC 35 if normal construction methods are used without attention to sound control procedures. And, the higher the rated performance, the more attention must be given to these procedures to obtain high actual performance. Sound control assemblies cost the owner extra money and he deserves to receive extra benefits.

United States Gypsum Research recommends that two steps be taken by supervisors and inspectors to protect the performance of the construction:

1. hold a half-day instruction session for all foremen and workmen in all related trades before the construction begins, to familiarize these men with the objectives of sound control and the necessary steps to its accomplishment;
2. erect a model of each sound control assembly on the job with the workmen present – these samples to be performance standards for the balance of construction.

In addition, the supervisor and inspector should become completely familiar with the systems and the manufacturer's installation recommendations. They should seriously question the slightest deviation from the instructions, details or specifications.

After inspecting all materials for damage and conformance to specifications, the inspector will find the following checklist helpful:

Framing

- Ceiling diaphragm decoupled at partition.
- Resilient channel independent at partition intersections.
- Sound attenuation blankets attached to diaphragm per manufacturer's recommendations (Figure 92).
- Control joints installed where specified.
- All perimeters sealed airtight.

Electrical

- Control-bend sections in conduit between adjacent occupancies.

- Outlet boxes in adjacent properties separated by one stud space.
- Walls and ceilings free of projecting conduit and bracing that might 'short circuit' resiliently mounted diaphragm.
- Penetrations in floors, partitions and ceilings sealed.
- Electrical boxes sealed with caulking on the back and sides.

Plumbing

- Flexible sections, control bends and air chambers in supply pipes.
- No rigid connections between adjacent occupancies (Figure 93).
- No projections from the framing.
- Waste stacks separated by at least one vacant stud space.
- Penetrations of floors, partitions and ceilings sealed.
- Sound barrier installed between back-to-back bathtubs.

Ductwork

- Supply ducts to adjacent occupancies taken off separate trunks in separate joist spaces.
- Attenuation liners or sound traps in ducts connecting more than one occupancy.
- Blower isolated from plenum and ducts.
- Ductwork resiliently attached to framing.
- No ductwork projections that might contact a diaphragm.
- Penetrations sealed.

Diaphragms

- Penetrations sealed.
- Correct fastener size, spacing and application.
- Face-layer joints staggered from base-layer joints.
- Perimeter sealed continuous and airtight.

Fixtures

- Water closets resiliently mounted.
- Supply and waste connections isolated from structure.
- Disposal units attached to sinks with resilient mounting and to waste line with flexible coupling.
- Back-to-back medicine cabinets separated by sheet lead.
- Recessed fixtures backed with sheet lead or other provision.
- Penetrations sealed.
- Telephone, intercom and television antenna penetrations sealed.
- Doors in high-performance sound walls tightly fitted and sealed.

[Insert Figure 92]

[Insert Figure 93]

In summary, the objective of all sound transmission is threefold:

1. to provide ceiling, floor and partitions systems that will effectively reduce

the transmission of sound, both airborne and structure–borne.

2. to seal all leaks that will permit the transmission of airborne sound from one occupancy to another.
3. to isolate all sound, airborne and impact, from the structure.