RPG DIFFUSOR SYSTEMS, INC.

RPG encourages the use of Acoustic Consultants that can provide a full scope of services including Room Acoustics, Sound Isolation, Noise Control, A/V System Design & Specifications, etc. To find an Acoustic Consultant in your area or one that specializes in a particular type of project, contact the National Council of Acoustic Consultants (www.ncac.com).

BAND ROOM

Band Room Example Average Band Room with good acoustics. Economical RPG DiffusorBlox are used on the lower walls, below the acoustic shelf. Variable absorption is used on the upper walls. The ceiling is a variation of the concept model, a mixture of RPG Omniffusors, RPG Golden Pyramids and voids open to the acoustic metal deck above the ceiling.

There are often multiple music ensemble rehearsal rooms in a facility, especially in educational facilities. There can be separate rooms for the Band, Choir and Orchestra or only one multi-purpose room for all functions. The Band Room discussed here is thought of as room where large ensembles of 40 to 100 band members, typically brass and percussion, rehearse together. The Band Room discussed here would also serve a good multi-purpose music room where band rehearsal is a major part of the program. Rooms specifically for Orchestras or Choirs are dealt with in a different section.

The primary acoustic goals for a Band Room are control of excessive sound power (loudness) and prevention of flutter, harshness and excessive reverberance while permitting musicians to hear themselves (support), each other (ensemble) and instruction from the Music Director (speech intelligibility). Additionally, special attention needs to be paid to low frequency sound control so the room does not suffer from tonal imbalance or 'boominess'. These goals can be achieved by providing adequate room volume, making surfaces immediately over and to the sides of the musicians sound diffusive and making surfaces in the upper part of the room either absorptive or sound diffsorptive (absorptive in the mid frequencies and diffusive in the high frequencies).

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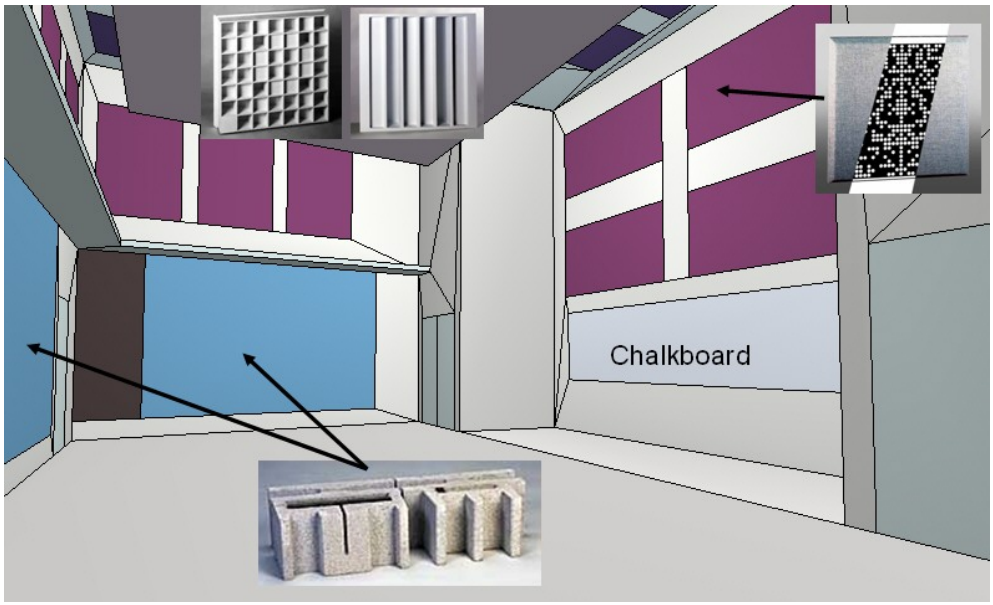

Band Room concept model showing economical sound diffusion on the lower walls, an 'acoustic' shelf' mid way up the walls, diffsorption on the upper walls, absorption on the roof deck and a diffusive canopy over the center part of the room where the ensemble sits.

Room Size A band room should be a double height space with the roof deck between 18' and 24' above the floor. It should be rectangular with the width being larger than the depth. Good overall proportioning is H(1.0):W(1.8):D(1.3). Room volume should be approximately 15,000 – 20,000 cubic feet.

Roof Deck The roof deck is typically a perforated ***Acoustic Metal Deck*** over the entire room with fiberglass inserts in the flutes. Alternately, a fibrous ***Spray-On*** material could be used, especially in retrofits or adaptive reuses when the existing deck is not already perforated.

Ceiling The ceiling is often a suspended 15/16" T-bar grid. Half of the ceiling area should be made sound diffusive by using RPG 2' x 2' modular diffusors such as ***Omniffusors*** (preferred), ***Formedffusors*** (acceptable) or ***Golden Pyramids*** (minimal). If it is known that the music ensemble will typically be positioned in the center of the room, the diffusors should be grouped together and located over them, approximately 15' above the floor. The perimeter would then be open to the volume above. If the room is a multi-purpose room with no particular configuration, then the diffusors can be arranged in a checkerboard pattern across the entire room, approximately 20' above the floor. However, in this case, the module of the checkerboard pattern should be 2-3 units (4' – 6') by 2-3 units (4' – 6'), not one unit (2') by 1 unit (2'). If the roof deck is not acoustically absorptive, then the remaining 50% of the ceiling should be acoustic ceiling tile with a high Noise Reduction Coefficient of NRC-0.75 or higher. If the roof deck is sound absorptive, then the remaining 50% of the ceiling can be left void or open to above (see band room examples 1-3).

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Upper Walls Approximately 50% of the total wall area above the acoustic shelf should be made sound diffsorptive by using RPG ***BAD Panels***. They should be 2" thick if the upper walls are gypsum board and 4" thick if the walls are concrete.

Shelf The acoustic shelf, which can also double as the trophy shelf, should be located approximately 10' above the floor and it should extend 24" – 30" out from the wall. The shelf needs to be heavy, solid construction, 1 ½" thick plywood for example.

Lower Walls The lower walls (below the acoustic shelf) should be primarily diffusive. This can be accomplished economically using RPG ***DiffsorBlox*** (partially slotted). If a higher grade wood finish is desired, RPG ***QRDs*** or ***Diffractals*** can be used. Generally, about 50% of the lower walls below the acoustic shelf need to be made diffusive. This treatment should occur between 2'-6" and 8'-0" above the floor. The remaining lower wall area can be split-faced or shot-blasted block (preferably) or painted, standard block or gypsum board (less preferred).

Band Room Example Economical Band Room using RPG DiffusorBlox for the lower walls and RPG BAD panels for the upper walls. The acoustic shelf and overhead diffusive ceiling canopy were omitted for cost reasons resulting in a minimally acceptable Band Room.

Band Room Example Upper end Band Room with excellent acoustics. Higher grade wooden finishes, RPG Diffractals, are used on the lower walls, below the acoustic shelf. RPG BAD Panels (diffsorption) are on the upper walls (exterior wall glass). The ceiling is a mixture of RPG wooden Diffractals and voids open to the reverberant volume above the ceiling.

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