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).

AUDITERIA/CAFETORIUM

Acoustic clouds that are reflective (flat) and diffusive (curved and pyramidal), especially those in front of the stage, carry sound from the stage out into the seating area, promoting loudness, intelligibility and acoustic intimacy. Open areas between the acoustic clouds permit excess sound energy to be attenuated by sound absorbing materials above them.

The acoustic goals for an Auditeria (or Cafetorium) are two-fold, resulting from the dining cafeteria and performance auditorium being combined into one space. Typically, the cafeteria function dominates the planning and layout of the room (*e.g.*, a flat floor with moveable seating is used as opposed to a sloped floor with fixed seating) and the acoustic wall and ceiling treatments are added to make the space also acceptable for meetings, plays, concerts, *etc*.

The acoustic requirements for the cafeteria function are less critical than those for the auditorium function. Fortunately, the two are not opposed. During performances in the Auditeria, sound must be projected from the stage out into the seating area. There needs to be freedom from echoes and flutter, and the reverberation time needs to be an appropriate compromise between that which is needed for speech intelligibility (amplified and unamplified) and that which is needed for full, blended instrumental and choral music that is not excessively loud. The amount of absorption required for the auditorium function is typically also adequate to keep general chatter sufficiently attenuated during dining.

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All of this can be achieved by essentially having a sound reflective/diffusive lower ceiling area (or suspended acoustic clouds) in front of and over the stage, highly sound absorptive material for the rear and sides of the ceiling, reflective/diffusive lower walls and diffsorptive upper walls *(i.e.,* absorptive in mid/low frequencies and diffusive in high frequencies).

Upper wall areas are partially (50%) treated with sound diffsorptive materials that absorb mid and low frequencies while diffusing high frequencies. This allows mid and low frequency reverberation time to be controlled without sacrificing the high frequencies that are crucial for speech intelligibility and music clarity.

Ceiling

Main Ceiling – Two options are possible; a suspended T-bar grid ceiling or suspended 'clouds' with openings around them to above.

Option 1: Suspended T-Bar Grid Ceiling – Approximately 25% of the total ceiling area centered in front of the stage should be sound diffusive. Consider RPG ***Omniffusors*** (preferred), RPG ***Formedffusors*** (acceptable) or RPG ***Golden Pyramids*** (minimally acceptable). The rest of the ceiling area can be ACT with a high Noise Reduction Coefficient of NRC-0.75 or higher).

Option 2: Suspended Clouds – The roof deck should be sound absorptive using ***Acoustic Metal Deck***, ***Spray-on*** or mechanically fastened ***Duct Liner***. Acoustic clouds that are diffusive/reflective should be suspended in front of the stage (5 - 10 degree tilt) and throughout the main central ceiling area. Cloud area should equal approximately 50% of the total floor area. Clouds can be suspended RPG ***Waveform*** diffusors or small pods (8' x 8') of suspended T-bar ceiling grid with RPG ***Omniffusors***.

Ancillary Ceilings – Any lower, adjacent ceiling areas should be highly sound absorptive. Standard high NRC (0.80+) ***ACT*** could be used for cost savings. (Avoid painted GWB.)

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Walls

The lower walls areas are often almost entirely occupied with doors, windows, vending machines, *etc*. and therefore are not typically available for acoustic treatment. Therefore, the treatment will need to be placed on the upper wall surfaces (above 10').

Sides Walls – Approximately 50% of the upper side walls (above 10') should be treated with RPG ***BAD Panels***. Use 2" thick panels on GWB walls and 4" thick panels on concrete walls.

Rear Wall – Approximately 75% of the upper rear walls (opposite the stage) (above 8') should be treated with RPG ***BAD Panels***. Use 2" thick panels on GWB walls and 4" thick panels on concrete walls.

Stage

Upstage Wall (Lower) – The upstage wall from stage floor to 10'-0" should be RPG ***DiffusorBlox*** (painted and nonslotted).

Upper Walls & Roof Deck – The area above the stage needs to be moderately sound absorptive. This can be achieved with ***Acoustic Metal Deck*** and/or ***Spray-on*** overhead and ***Plenum Liner*** on the upper wall surfaces.

Reflectors – Consider dead hanging acoustic reflectors/diffusors over the stage to project sound out. Consider RPG ***Waveform Monoradials*** or ***Splines***.

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