

# Acoustics

*This update of a tired lecture hall shows that solving acoustical problems and adding sophisticated audio-visual capability need not break the bank of cost-driven academic clients.*

## Quieting a Lecture Hall

The litany of problems that beset Alumni Auditorium could describe any number of aging auditoria in academic settings. It was uncomfortably noisy, poorly lit, and its hvac system was gasping. Teachers increasingly sought sophisticated audio/visual capability that the hall couldn't handle. "Doctors and students shunned the space if they could," says Belmont Freeman, architect of the hall's renovation. What finally sparked the decision to proceed, says Freeman, is that the medical students' busy theatrical troupe, the Bard Players, raised funds so that the redone auditorium could also accommodate stage productions and musical performances.

To keep the project within its modest budget (\$1.5 million in high-cost Manhattan), Freeman carefully allocated architectural resources in taking the dingy, painted-plaster and pegboard interior to its inviting current state. Accommodating the Bard Players and the sophisticated audio-visual system proved the greatest challenges of the project (photos opposite). The shape of the hall is little changed; finishes were updated with an eye to correcting acoustical and technical flaws while meeting disabled needs and more-stringent life-safety requirements. The wood wall panels are slightly more reverberant than the original plaster surfaces, for example, which is better suited to performances.

Dennis Milsom, vice president at acoustical and audio-visual consultant Shen Milsom & Wilke, says the room had problems he commonly sees: "Generally, attacking noise sources in or outside a room gains the most benefit for the least dollars spent." A combination of inadequate vibration-reduction in the original installations within adjacent mechanical-rooms and the minimal maintenance an academic institution can typically afford meant that noise and vibration from these spaces contributed significantly to listeners' discomfort in the 720-seat medical-school lecture hall built in 1960. Corrections were coordinated with work of mechanical consultants.

The firm also found that the original pegboard that covered acoustically absorbent material on the back wall "wasn't transparent

enough," says Milsom, meaning that the size and spacing of the holes didn't allow enough sound to be absorbed. Freeman detailed a new acoustical assembly for the back wall (section right).

### A-V: Make it easy to use

The auditorium has been adapted to the numerous technologies medical faculty use to teach. Lecturers can lower a 35-ft-wide blackboard, mounted on a steel truss. Above, a retractable screen can display information from slides or overhead projectors, video tape, or an in-progress procedure elsewhere in the hospital through closed-circuit TV (2, opposite). In years past, the controls for such a variety of systems were too complex for all but the most dedicated technophiles. Now, "touch-screen systems are very simple and user friendly," says Milsom. "A menu screen comes up first, and the presenter only sees controls for a particular element come up on screen—the video projector, for example." When the lecturer lowers the lights, the device automatically chooses the programmed lighting "scene" for video, and sets light levels accordingly. "He or she isn't looking at an array of 30 or 50 buttons," explains Milsom. The video projector, which lowers from the ceiling, can also handle output from portable-computer presentation applications, an increasingly popular way of conveying charts, graphs, or other graphics.

Such systems can be expensive, but "we handled them here in the most straightforward way possible to keep costs down," says Milsom. Auditoriums can cost twice as much to equip, he says. It's a matter of what the client can afford. *J.S.R.*

### Credits

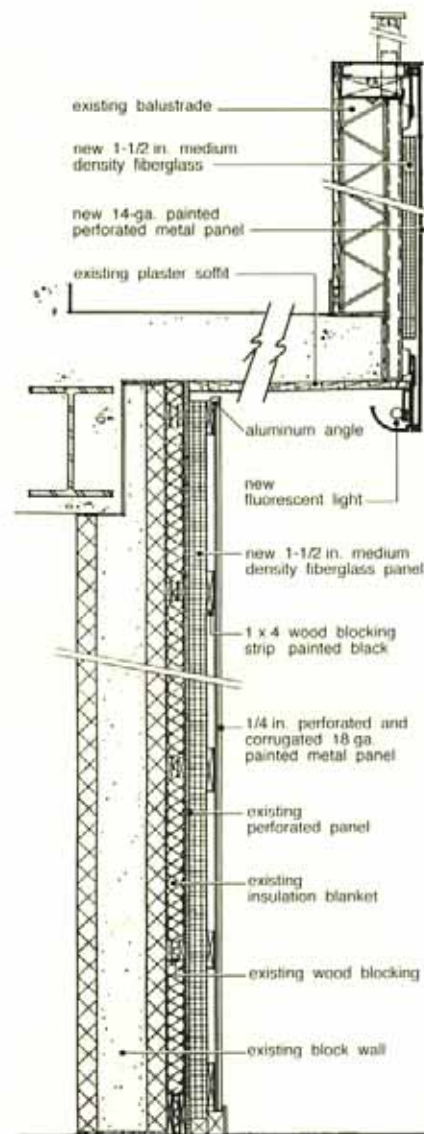
*Alumni Auditorium*  
New York City

**Owner:** Columbia University, College of Physicians and Surgeons

**Architect:** Belmont Freeman Architects

**Consultants:** Shen Milsom & Wilke (acoustical, audio-visual); Atkinson Koven Feinberg Engineers, LLP (mechanical, electrical); Ann Kale Associates (lighting)

**Construction Manager:** Herbert Construction



SECTION THROUGH AUDITORIUM REAR WALL

*The architect applied new acoustically absorbing material over old. The perforations of the metal facing were carefully calibrated to acoustical needs. The existing material still adds some sound absorption.*



Freeman extended the original stage—only 15 ft deep—with a 6-ft apron on lifts. In the raised position (1), the stage accommodates performances. Lowered, it puts lecturers close to students (3). The

upper walls, refinished in aluminum-splined oak-faced panels, wrap the stage, forming a proscenium (4). Over the stage, expanded-metal fabric conceals speakers and theater lights (2).