‘ACOUSTICS’ is a word for Opportunity

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Unfortunately, the mention of "acoustics" in interior construction is enough to send many contractors into a tailspin. Sounds too technical. Too involved. And perhaps a bit intimidating. Life was a whole lot simpler when all one had to do was square up the board, slap on a little mud and sand it down.

Now, designers, specifiers and the trade media are talking about Noise Reduction Coefficient and Sound Transmission Class ratings. And commercial jobs are frequently being won or lost over a fraction of a point.

The “number’s game” in acoustics is serious business, yet the contractor need not be a technical engineer to know the basics or how to convert acoustical “numbers” into dollars and cents.
Why all the noise?
There are very definite reasons why acoustics are a growing concern—offices are simply too noisy. People talking and scurrying around. Typewriters and computers running constantly. Telephones ringing. All normal daily activity, yet all major contributors to noise, stress and losses in productivity.

The Buffalo Organization for Technological and Social Innovation (BOSTI) has determined that better acoustics mean improved productivity that can be calculated in terms of dollars.

Furthermore, Architecture Magazine in June revealed that the issue of lost productivity is dramatically influencing changes in the wall systems market. Many European firms are already leaving the open office system market “despite its proven flexibility and long-term economic advantages.” The magazine reiterates Europe’s concerns over the “psychological stress on people working in such an environment that has given rise to opposition.”

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In the United States, according to the Business and Institutional Furniture Manufacturers Association, 43 percent of American offices already have the open plan system in place. Yet, due to productivity and privacy issues, full-height movable wall systems are making inroads. As Architecture pointed out, even trends in open plan systems are toward the taller 65-inch partitions.

Whether the office environment is fixed wall, open office furniture, or movable full-height wall system, the concern over acoustics is simply a matter of controlling sound for a more productive work environment. Learning how noise performs in a room and how each wall construction type can either keep sound out or minimize sound from within is basically all the technical acoustical information the contractor needs to know to work with specifiers.

Being further aware of office design trends, acoustical objectives and products on the market also will help make a competitive difference.

The easiest way to become better informed about acoustical wall systems is first to contact a manufacturer’s area representative, who most likely is a trained specialist. This new breed of acoustical consultants can help contractors determine the sound control needs within an office space and the appropriate system solution. Contractors can also work with independent acoustical consultants, whose names are available through the American Council of Acoustical Consultants, or local architects and business interior designers.

Manufacturer’s representatives are, of course, the best sources for product and performance data and can provide detailed technical literature. Literature from most major manufacturers can also be found in Sweet’s catalog files, the reference “bible” for design specifiers. And contractors may want to consult design and architectural publications that provide excellent summaries of what’s happening in the industry. Recent articles on acoustical systems and performance have appeared in Construction Specifier, Building Design & Construction, Architecture, Interior Design, Interiors, Contract and The Office.
Acoustical ceilings cannot be expected to control sound rebounding off the walls. A Sound Transmission Class rating indicates the amount of sound that is blocked from traveling through the wall itself. This blocking process is successful to varying degrees depending upon the STC rating the material achieves—the higher the rating, the higher the blocking ability. Gypsum board, as mentioned, is a good blocker of sound going through the walls. Most heavy materials perform this way.

But, as a rule of thumb in acoustics, a material that is a good sound absorber is not a good sound barrier—the goal, nevertheless, is to attain both properties via the integration of various materials within the systems.

What should contractors know about NRC, STC?

In today’s offices, the objective is usually to achieve acceptable levels of Noise Reduction Coefficient (NRC) and Sound Transmission Class (STC) ratings. Each office will have its own requirements. Since no single acoustical wall panel offers both high levels of NRC and STC ratings, the combined use of various panels, insulation and other materials becomes important in obtaining the desired results.

Understanding NRC is not difficult. A Noise Reduction Coefficient rating simply means that sound within a space is absorbed, or reduced. All materials in a room to varying degrees absorb sound, rather than allowing it to bounce back into the room. The best sound-absorbing panels, which contain “softer” materials, are the new composites which incorporate either mineral or glass fiber and have a fabric covering—NRC ratings of 0.95 and higher (or an absorption of approximately 95 percent or more of the sound) are possible.

Most acoustical wall panels fall into two groups—the 0.60-0.70 NRC sound absorbers for quieter office environments and the 0.80-0.95 NRC achievers for noisier offices. Generally, a material that qualifies as “acoustical” will have at least an NRC level of 0.55 or greater.

It’s important to note that standard gypsum wallboard alone allows approximately 98 percent of the sound to rebound back into the room—it may be a good blocker of sound, but not a good absorber. Adding fabric to gypsum board will improve absorption, but only around 15-20 percent more. Even glass panels are not much better performers, bouncing back approximately 97 percent of the sound. And non-acoustical ceilings cannot be expected to control sound rebounding off the walls.

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Key to sound control: system integration

It’s important to note that acoustical wall panels—open office or full ceiling-height movable types—are important, but not the total answer to the ideal sound controlled office space.

Integration of floor, ceiling and sometimes special sound masking systems is essential to the solution, since sound travels fast (approximately 1,100 feet per second), in many directions, and can escape through unassuming spaces—such as areas where various
systems join, air conditioning ductwork, improperly caulked windows and door frames, to name a few. Additional remedies here might involve special seals, insulation, acoustical ceiling tiles, drapery, carpeting and special finishes to walls.

Since sound reflects off surfaces—off ceilings, walls, floors, equipment and most hard surfaces—absorptive materials help eliminate the problem which usually occurs as echoes or hollow, ringing sounds.

**Why get into the acoustical market?**

Why should a veteran drywall or ceiling contractor consider moving into the specialized wall systems market, particularly acoustical wall systems?

The answers are simple—(1) There are more opportunities for negotiated, rather than bid work; (2) Because systems and their components are higher price tag items than standard drywall materials, the markup is proportionately higher; (3) Installation and changes can be handled by the one trade group; (4) There’s a very definite growing market for acoustical wall systems in both new construction and renovation as opposed to fixed wall construction; (5) A contractor offering both fixed wall and movable wall construction could offer a turnkey service advantage; (9) Even profitable joint working relationships between open office system dealers and movable wall contractors can be established on projects requiring both systems.

All in all, the “number’s game” in the acoustical wall market may at times involve some heavy discussions about desired levels of NRC and STC ratings. Even performance data from manufacturers will vary according to product and testing procedures.

Fortunately, most of this discussion will occur at the specifier/end user level. And to some extent, regardless of the numbers desired, the total budget will in the end determine what system or components are specified. Generally, the higher the numbers, the higher the cost.

The contractor’s role will at that point be to assist in providing the necessary components to achieve the most affordable, optimum results for a quieter, more productive work environment. And, the numbers mean dollars and cents.