

# BUILDINGS

May 2001

Smarter Buildings  
Communications & Technology  
Energy & Engineered Systems  
The Building Envelope  
Safety & Security  
Interior Design & Space Planning  
Back to Buildings

Rethink. Rework. Resolve. Inside Industry  
Solutions. **SmarterBUILDINGS**  
Interior Design and **Space Planning**

## The Not-So-Private 'Private' Office

*'Systems' approach is key to confidentiality*

By Kenneth P. Roy

Speech privacy is a concern in a variety of buildings, ranging from healthcare facilities, where physician-patient confidentiality is critical, to owner-occupied and for-lease office buildings, where confidential privacy is needed in meeting rooms and boardrooms, as well as in private offices. In real spaces, however, the required level of privacy is not always achieved, even for closed-plan office spaces.

One way of measuring the degree of speech privacy within an office is by an indicator called the Privacy Index. It is derived from the Articulation Index, which is specified by the New York City-based American National Standards Institute (ANSI) and West Conshohocken, PA-based American Society for Testing and Materials (ASTM) as a test method for determining speech intelligibility and privacy. A Privacy Index rating of 95 percent or higher provides for confidential speech privacy, which means that words can be heard but not understood.

Ceiling and wall components are usually tested separately in an acoustical laboratory, and not as a complete system. As a result, the tests do not factor in the "as-built" details in ceilings, walls, and floors that can cause sound leaks, thus compromising the laboratory-rated performance.

Examples of typical sound leaks include

### **Acoustical Performance Indicators**

When dealing with closed-plan offices, the Privacy Index is an important acoustical performance indicator. Three more indicators are important when speech privacy is a concern:

- Noise Reduction Coefficient (NRC)

unbaffled return air grills, back-to-back electrical boxes, non-gasketed partitions at ceiling/floor intersections, ineffective door seals, and air leaks around light fixtures and at the ceiling tile/grid interface.

Tests have now been conducted, however, that include all of the components usually installed in a project. The tests were conducted at Armstrong Ceiling Systems' acoustical lab and involved construction of two adjoining 10-foot by 10-foot, closed-plan offices.

The test results show that confidential speech privacy in closed-office plans can indeed be achieved, even at raised voicelevels, using the following "system" solution:

- Use either fixed drywall ceiling height partitions or high STC-rated (35 or higher) relocatable wall systems. All components of the wall system, including doors and glazings, should be pre-engineered for STC performance, as well as the removal of problematic sound leaks from doors, wall system joints, and seals at the ceiling and floor interface.
- Use acoustical ceilings that are installed continuously across the ceiling plane, and that combine moderate NRC (.60-.70) with good ceiling attenuation (CAC 35 or higher). It may be necessary to supplement the ceiling system by providing closure/seal components to stop sound leaks around ceiling penetrations. It is especially important to control sound leaks through air return openings.

When required, use properly designed, installed, and tuned electronic sound masking to cover speech intelligibility between adjoining spaces. Coordinated performance between the sound masking and ceiling/wall systems is essential in achieving speech privacy. The result will provide the appropriate level of speech privacy with the minimum volume of sound masking.

Kenneth P. Roy, Ph.D., is a senior principal research scientist at [Armstrong Building Products](#), Lancaster, PA.

– Rates the ability of a ceiling to absorb sound over a frequency range of 250-2,000 Hz. It is a measure of sound absorption averaged over all angles of sound incidence.

- Ceiling Attenuation Class (CAC) – Rates a ceiling's efficiency as a barrier to airborne sound transmission between two closed rooms. It is especially significant in providing acoustic privacy between adjacent offices where sound penetrates the plenum and transmits to an adjacent office.
- Sound Transmission Class (STC) – Rates the ability of a wall to block the transmission of sound through a wall and into an adjacent space.