

John Mandel  
(312) 606-4523  
jmandel@usg.com

## **SOUND MASKING IN OPEN OFFICE ENVIRONMENTS: A GUIDE FOR CONTRACTORS**

Most architects, facility managers and building owners agree: open office environments are here to stay.

According to a recent report from the International Facility Management Association (IFMA), more than 80 percent of respondents say they plan to use open office designs in their upcoming projects.

That's good news for building owners who can realize lower build-out costs in open plan offices. But for tenants, as well as the architects and contractors who design and build these spaces, the news is mixed.

Commercial tenants may realize more affordable rents in open plans, but the noise and distractions inherent in open offices can hinder worker productivity. Cell phones, computers, speakerphones, faxes, and meetings and conversations in nearby cubicles disturb employee concentration throughout the day.

Studies have shown that it takes 15 to 20 minutes for workers to regain concentration following a noise distraction. In non-distracting spaces, productivity levels will rise from 3 to 20 percent. Obviously, open office distractions can have a significant – and costly – impact for business managers. In turn, building owners must cope with potentially higher tenant turnover and even reduced property values resulting from acoustically inferior office spaces.

These issues create a dilemma for architects, designers and contractors, who are being asked to deliver acoustical solutions where there are no doors and few, if any, floor-to-ceiling partition walls.

And while sound-absorbing ceiling panels, carpeting and relocatable cubicle walls provide varying levels of sound control, they can't completely solve open office acoustical issues.

That's why architects, designers and contractors are turning increasingly to sound masking technology, where recent advancements have made these systems highly effective in both open and private office environments.

### **What is Sound Masking?**

Sound masking introduces an unobtrusive, ambient background sound into open spaces and other areas using low-voltage, UL-listed speakers installed in the plenum above a suspended ceiling. The technology has advanced tremendously since the days of simple white noise machines. State-of-the-art systems are soothing, producing a gentle sound spectrum that masks noise and speech.

The masking level is non-directional, harmoniously uniform, and can be easily adjusted to meet a variety of conditions and privacy needs. Usually, the masking level needs to be one to two decibels louder than incoming speech from adjacent workstations.

"State-of-the-art sound masking systems produce a soothing sound spectrum similar to that of blowing air," explained Jonathan Leonard, president of Lencore Acoustics Corporation, a leading sound masking provider. "The sound is amplified through individual speakers set every 15 feet or so above a dropped ceiling. The sound then filters down through ceiling panels and into the office space, providing a constant level of background sound that covers up office noise and renders speech unintelligible."

According to Leonard, there are two basic types of sound masking systems.

"One type uses speakers that point directly down onto the workspace. However, this set-up can create 'hot' and 'cold' spots throughout the office area, meaning that the system can be effective in certain areas and not effective in other areas."

Most acoustical consultants agree that a better approach is to direct sound upwards, into the ceiling plenum.

"This allows the masking noise to bounce off the floor/ceiling slab and re-enter the office space after being filtered by the ceiling tile in a reverse 'cone of sound,'" said

Leonard. “This allows each unit to overlap nearby units, creating an even source of sound throughout the space.”

### **Quoting and Installation**

Contractors who want to offer sound masking to clients need to do the following: First, identify the client’s need for better acoustics. Do employees need speech privacy and confidentiality? Is the work environment as productive and pleasant as possible? Have private offices been eliminated? Would productivity, efficiency and morale be lifted if there were fewer distractions in the office? In fact, experts say, more than 99 percent of all corporate offices can benefit from masking.

Once the need has been identified, secure a copy of the furniture and ceiling plan for the space. You’ll need to determine the following:

- What type of ceiling does the client have? (acoustical ceiling panels, gypsum board, open/exposed)
- What is approximate ceiling height? (8 to 10 feet, 12 feet, 16 feet, other)
- Approximately what height is the plenum area? (less than 6 inches, 6 to 12 inches, approximately 3 feet, approximately 6 feet, other)
- Are there other acoustical properties in the space? (carpet, partitions, acoustical wall panels)
- Is the client interested in a paging/music system in addition to the masking?

Once these questions are answered, a sound masking plan can be designed for the space.

An average sound masking project can be budgeted at \$1 to \$1.50 per square foot, furnished, delivered and installed, depending on size, scope and location. Productivity increases in workers may offset the client’s initial costs. It’s important to follow local electrical codes and requirements when quoting installation.

Once installed, several return trips may be necessary for fine-tuning. Some sound masking systems are quite convenient and can be easily modified when floor plans change. If a client moves to another facility, these same systems can be moved to the new location.

## **Dynamic Duo: Sound Masking and Acoustical Ceiling Tiles**

For best acoustical performance in open office environments, sound masking systems should be installed with acoustical ceiling panels that deliver high NRC (Noise Reduction Coefficient). This makes cast ceiling panels, such as FROST™ Acoustical Panels, from USG Interiors, an ideal choice. Not only do cast panels deliver excellent NRC performance but they also provide high CAC (Ceiling Attenuation Class) performance, which is desirable for closed or private office spaces.

“For NRC *and* CAC, cast panels are the best option,” said Bill Hogan, marketing manager with USG Interiors, a leading ceiling panel manufacturer. “Because many open office environments do include private office spaces as well, cast ceilings provide a great single-source solution.

“Cast ceilings are also exceptionally durable,” said Hogan. “They have the ability to withstand use and abuse resulting from plenum access without scratches or nicks. So, should the need arise to reconfigure sound masking within the plenum, there’s no need to worry about panel damage.”

USG Interiors has partnered with Lencore Acoustics to offer contractors a variety of integrated sound masking/acoustical panel options. For more information ...

### **Sidebar:**

#### **Sound masking and HIPAA**

Other sound masking opportunities for contractors lie in health care settings where confidential patient information is discussed.

The Health Insurance Portability & Accountability Act of 1996 (HIPAA), was established to provide healthcare coverage continuity and accountability. HIPAA has mandated new privacy standards for transmitting health information in electronic, paper and oral forms.

The new rules require that work spaces be reasonably safeguarded to protect personal health information (PHI). Pharmacies, doctors’ offices, public health authorities, life insurers, universities, hospitals, military medical bases and any other setting where PHI is discussed are affected.

To meet the new HIPAA standards, contractors and their clients may need to take two steps. One, upgrade ceiling tiles from general-purpose to tiles with higher NRC and CAC ratings. Second, even the most acoustically effective ceiling tiles will most likely need enhancement. This can be done with the addition of sound masking, which introduces an ambient background sound into open spaces using low-voltage, UL-listed speakers installed in the plenum above a suspended ceiling. Set several decibels above conversational speech, PHI will be rendered unintelligible to those nearby.

Standards must be met by April 14, 2003. Facility restructuring isn't required, and sound masking may be evidence enough that reasonable efforts were undertaken to protect patient privacy.