



# Coffeen Fricke & Associates, Inc.

CONSULTANTS IN ACOUSTICS AND AUDIO VISUAL COMMUNICATIONS

February 25, 2003

**FlexaBoot™**

**Acoustical Return Air Boot**

Re: **Return Air Boot Acoustical Testing**  
CFA File A3003

As open office areas have gained popularity, concerns for speech privacy have also increased. Many of today's offices address this concern with the use of a masking noise system. These systems typically involve an array of loudspeakers broadcasting pink noise in the return air plenum above an acoustical tile ceiling. One of the problems associated with a masking system located in the return air plenum, is the presence of masking noise "hot spots" below open return air grills. These hot spots can be reduced or eliminated by the installation of a return air boot, which allows the passage of air, yet attenuates masking noise. The acoustical goal of these return air boots is to duplicate the attenuation provided by the surrounding acoustical tile.

In the past, a typical return air boot has consisted of constructing and installing a sheet metal right angle boot. This boot is usually lined with one-inch thick fiberglass duct lining. Due to construction and installation costs, quite often these boots are eliminated from the project resulting in the "hot spots" described earlier.

**An alternative to sheet metal boots has been proposed by FlexaBoot.** This return air boot system consists of a sixteen-inch diameter flexible acoustical duct (CPE inner core and reinforced metallized polyester jacket), and a flexible duct durable elbow support to maintain the 90-degree bend required. The assembly was mounted on a perforated face return air grille. Coffeen Fricke & Associates performed a series of field tests using two types of acoustical tile (mineral fiber and foil-backed fiberglass) and three different lengths of flex duct (5, 6, and 7-foot). A typical masking noise system was used as a noise source. Measurements were taken comparing the transmission of masking noise through these ceiling tiles and the three different lengths of "Flexaboot" return boots. Results of this testing indicate that the "Flexaboot" samples exhibit a noise transmission very similar to the two ceiling tiles tested. Considering the wide variety of ceiling tile types in use, it is expected that a "Flexaboot" return air boot (minimum of five-feet in length) would closely duplicate the transmission loss of most ceiling tiles in an open office environment. The five-foot "Flexaboot" **provides an excellent alternative to the old rectangular sheet metal boots of the past.**