

Vibro-Acoustics fan silencers and high transmission loss duct control breakout noise from a conference room ceiling.

PROBLEM: Duct breakout noise

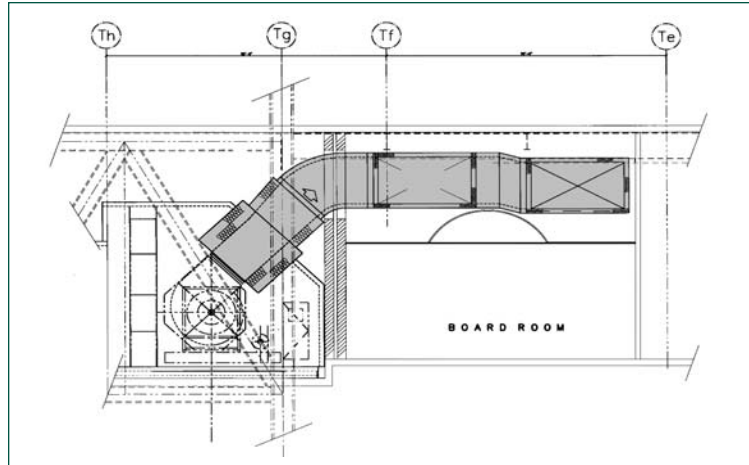
A very large rectangular duct connects two fans in a mechanical room located on one side of a conference room to a duct shaft on the other side of the room. This duct, conveying 100,000 CFM, can only be located in the ceiling space of the conference room. Since this is contrary to recommended practice and it was impossible to relocate the fans, duct shaft or conference room, a noise control solution was needed.

SOLUTION: Low frequency silencing and high transmission loss (HTL) construction

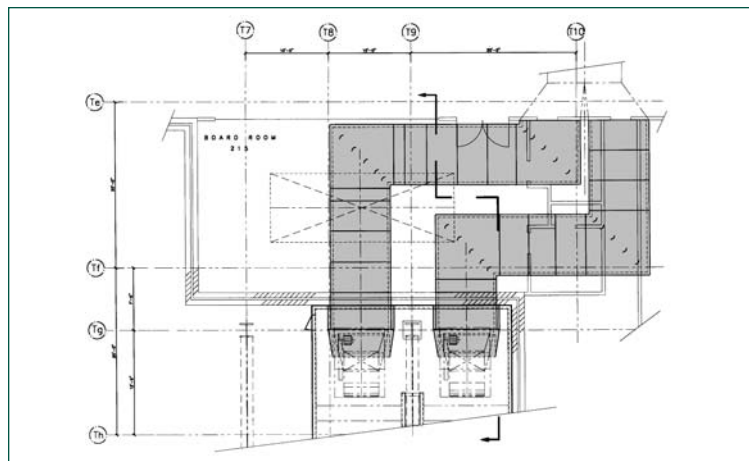
Maximum low frequency silencing was installed in the limited space between the fans and conference room. Ductwork was designed for the lowest possible duct velocity, while allowing thick high transmission loss (HTL) walls. The original design of a huge duct* connected to the two fans with a pair-of-pants fitting, was replaced with a two duct design. This improved airflow, acoustics and ease of installation. The ceiling was also HTL construction.

This was a very challenging installation. The objective was to obtain the best possible acoustical environment in the space. Therefore, in addition to the investment in noise control materials, the total composite construction was very carefully detailed and the installation supervised with care. Noise in the conference room was lowered to below NC-35.

**Note: The original duct design covered most of the ceiling width and two thirds of the ceiling length!*



Elevation: Fan low frequency and RLP silencing with HTL walls over boardroom.



Plan view: Large RLP silencers with HTL walls over boardroom.

