Technical Features − Sound Construction
Three Kinds Of Sound Control

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"Sound control" is a commonly used term for all types of acoustical design and construction. For example, if a library were located next to a room containing an auditorium, the designer would be concerned with three kinds of sound control. First, the designer would design the auditorium to conserve sound energy so that all of the frequencies of sounds would propagate and reach the listener's ear with the least loss of sound energy. This would enhance listening efficiency.

It would also be important to stop or reduce the energy of any sounds entering the auditorium from outside of it, and equally important to stop or reduce the energy of any sounds entering the library, especially from the auditorium.

Materials and systems used to resist the passage of sound provide sound attenuation. Sounds originating within the library may become a distraction to the library's inhabitants, so materials should be used to absorb sound as quickly as possible (sound absorption). Materials and systems that reflect sound and conserve the energy of sound are usually hard−surfaced, heavy, and dense. For sound attenuation, systems must have mass and thickness and contain materials with a variety of densities so that they are capable of preventing different kinds (or frequencies) of sound from passing through. Finally, soft or resilient materials are used for sound absorption because they are efficient in absorbing sound so that it doesn't reverberate within a room. United States Gypsum Company has plaster products and systems that are especially good in providing these three kinds of acoustical control.

For instance, Structo−Base Gypsum Plaster is one of the densest materials that can be used in construction. When applied in thicknesses as great as four inches as part of a plaster assembly, it reflects sounds of all frequencies with little loss in energy. On the other hand, veneer plaster assemblies with multiple layers of gypsum base, studs and resilient insulation in the stud cavities can be designed to provide very high levels of sound attenuation. Where sound absorption on ceilings is needed, USG Acoustical Plaster Finish provides high performance levels, with the level of absorption depending on how thick the material is spray−applied and what it is spray−applied over.

Contact USG at Dept. #147−4, 125 South Franklin Street, Chicago, IL 60606−4678, for more information about plaster assemblies for sound control. Obtain the services of a qualified acoustical engineer to assure that your design provides the acoustical performance you need.