DESIGN PHILOSOPHY – ORTHODOX SYNAGOGUES

Clayton Acoustics Group’s design philosophy and consulting practice are acoustics-centered and engineering-based—the natural room acoustics must fully be part of the architectural design, and selection of materials and equipment must serve this goal exclusively. We support the theory that *acoustics is architecture* and always look for simple, flexible and elegant solutions which meet our clients’ needs.

Many of our projects are houses-of-worship, with a clear emphasis on churches and synagogues having traditional liturgies and strong music programs. Orthodox synagogues have become a specialty focus of this work. Successful worship spaces share highly-valued qualities such as clarity for intelligible speech, reverberance for cantorial music, responsiveness for congregational participation, and low background noise for enhancement of all sounds. We most often serve those congregations which wish to retain or even enhance the natural worship-space acoustics yet also desire excellent speech intelligibility.

A reverberant synagogue is often a very complex acoustical space which must reconcile a distinct conflict of uses, needing to simultaneously be a music room and a lecture hall. Cantorial and choral music, as well as congregational singing and responses, are typically well supported by the natural acoustics of a responsive and reverberant worship space. Sermons, prayers and Torah readings, however, are best served by a space with little reverberance which favors clarity of the spoken word.

For many Orthodox congregations an electronic sound amplification system is simply not a consideration, regardless of the negative impact of their sanctuary’s natural acoustics on intelligibility of the spoken word. In these cases our design approach is to optimize the natural acoustics for the best possible speech intelligibility without unduly compromising the existing musical acoustics. In many cases we take as our motto “do no harm,” ensuring that neither the visual nor aural beauty of a fine old synagogue are jeopardized in pursuit of intelligible speech. In other cases we can help bring about a positive change in the acoustical environment, benefitting both speech and music. For new building projects we take a leading role in establishing room acoustics criteria in order to ensure success.

For those Modern Orthodox congregations willing to consider electronic sound amplification we recommend a “Zomet” Shabbat speech-reinforcement sound system. We have designed and supervised installation of two new Shabbat speech-reinforcement sound systems for Orthodox congregations in New York. For Congregation Shearith Israel (the Spanish and Portuguese Synagogue), in New York City, high-technology loudspeakers are sensitively integrated into the newly restored, historic 1897 Italianate-styled main sanctuary. At The Hampton Synagogue, in Westhampton Beach, Long Island, loudspeakers in the contemporary-styled sanctuary are discretely built into the walls, while a separate outdoor system brings every word of the Shabbat service to the overflow summer congregation. We recently designed a “Zomet-ready” speech sound system for future Shabbat implementation at Congregation Beth Sholom, in Lawrence NY.

We worked closely with the Zomet Institute, of Israel, to ensure full compliance of these systems with Halachic restrictions of Jewish Law. For all of these projects, microphones and loudspeakers are installed in a discrete manner, consistent with the architectural and liturgical fabric of each sanctuary, yet without compromising the goal of excellent speech reinforcement. Halacha and high quality speech amplification are not mutually exclusive!

Speech in a reverberant building is often successful only through use of a modern, high quality speech-reinforcement sound system—one which provides clarity of the spoken word, adequate loudness for all listeners, natural sound quality of the talker’s voice and a true sense of directional realism favoring the talker’s location over those of the loudspeakers. We design excellent sound systems for the most acoustically-difficult worship buildings. Along with the theory that *acoustics is architecture*, we also support the equally important corollary *audio is acoustics*. Our uncompromising
approach to sound system design for all houses of worship places primary emphasis on speech reinforcement and high intelligibility of the spoken word. Through the use of sophisticated computer modeling and digital-audio technology we have at our disposal the effective means to design and implement very high quality speech-reinforcement sound systems in reverberant spaces without the need to modify the natural acoustics of those spaces.

Noise in a worship space—even the background hum of traffic or whir of machinery—can be a real and potent enemy of speech and music. Any amount of background noise reduces speech intelligibility and music clarity, masking nuance of the spoken word and subtlety of a musical phrase. When the spaces between words and sentences, and pauses in musical passages, are not quiet—silent, even—but rather are filled with the drone of steady-state mechanical or environmental noise, the magic of spiritual communication in worship is irreparably lost. In all cases we advocate strongly for elimination of noise in the worship space, whether from environmental sources outside the building or mechanical systems inside.

Many worship buildings, old and new, can be challenging spaces in which to achieve the right acoustical balance between music and speech requirements. A practical and sensitive design based upon solid acoustics principles, with careful attention to detail and thoroughness of purpose, can achieve excellent results.