First Church of Christ, Scientist
Greenwich, CT

LOCATION: 11 Park Place, Greenwich, CT 06830

SCOPE OF CONSULTING: Speech-reinforcement sound system design and general room acoustics

COMPLETION DATE: Designed 1999 / Installed 2000

REFERENCES: Albert Jensen-Moulton, church member & pipe organ builder (work: 917-903-8281)

DESCRIPTION: New speech-reinforcement sound system for a 1934 Christian Science auditorium (equivalent to a church sanctuary) in the Federal colonial style. Speech intelligibility was always difficult in this reverberant space, with significant acoustical anomalies caused by the deep elliptical ceiling dome—it was possible to clearly hear and understand speech in one seat but nothing in an adjacent seat in the same pew. There were many such striking differences in audibility and intelligibility throughout the auditorium which could have been largely addressed by addition of coffering and other diffusing elements to the dome. The dome, however, was an original architectural feature which the church did not wish to visually alter even though it was well understood to be a significant acoustic liability. Neither we nor the church wished to add absorption to the dome, as that approach to controlling reflections and focusing would also have spoiled the pleasant reverberance and responsiveness of the auditorium.

A new speech-reinforcement sound system, replacing several previous failed installations, was designed to provide a high level of intelligibility for every listener, while at the same time not further exaggerating the ceiling dome problems.

The sound system simultaneously serves two church readers who speak from a raised platform at the front of the auditorium, plus testifiers who use hand-held wireless microphones from their pew seats throughout the auditorium. Digitally-controlled, steerable line-array loudspeakers were recommended as the only realistic solution, and accepted by the church on that basis. Two 9'-tall medium-resolution line-array loudspeakers are surface-mounted on pilasters on the front auditorium wall, and left undecorated except for custom-matched paint. (The original design included architectural decoration of the line-arrays, but over our objections this treatment was deferred and ultimately deleted by the congregation.) Other sound system features include a “hands-free” mixing system for church services and testimonial meetings, supplementary loudspeaker system for the balcony, program monitor loudspeakers for ancillary & support areas, and assisted-listening system for the hearing impaired.

Acoustics advice included consideration of existing materials, finishes, carpet, exclusion of pew cushions, possible alteration of the ceiling dome to diffuse rather than focus sound, and anticipation of a future air conditioning system.
AUDITORIUM AND READERS’ PLATFORM – VIEW FROM REAR BALCONY