

# VICTORY CHRISTIAN CENTER CHARLOTTE, NORTH CAROLINA

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ACOUSTICAL CONSULTANT:	Lee Sound Design, Inc.
ARCHITECT:	The Omni Associates - Architects, Inc.
OWNER:	Victory Christian Center
LIGHTING CONSULTANT:	The Light Source, Inc.
SOUND & AV CONSULTANT:	Audio Ethics, Inc. and Lee Sound Design, Inc.
CONSTRUCTION COST:	25 Million USD
COMPLETION DATE:	2002

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Victory Christian Center is a contemporary worship center which includes a 4700 seat sanctuary, TV studio and various edit and control suites. Unique architecture includes a 236 foot diameter circular layout with a free span geodesic domed roof structure over the sanctuary. Several acoustical systems were designed and employed to reduce the effects of the circular room and domed ceiling.

An electro-acoustic computer model was generated for statistical analysis and ray tracing analysis. Mid band reverberation times of under 1.5 seconds were targeted and achieved. Sanctuary walls were continuous coverage of standard 2" thick semi-rigid fiberglass board with the middle 1/3 consisting of a layer of very accurate Binary Amplitude Diffusor templates continuous around the sanctuary. This provided high frequency diffusion instead of excessive absorption.

Various size acoustically diffusive clouds were suspended overhead to enhance singing by scattering sound back down onto the congregation. Clouds were provided in sizes of 8'x8' and 16'x16' suspended at various heights and locations overhead. Over 950 formed 1-Dimensional Quadratic Residue Diffusor panels were arranged in different orientations in grid systems.

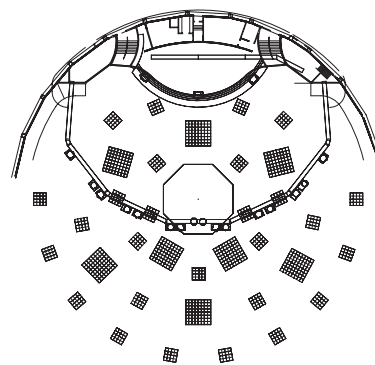
## CRITICAL DATA

Total Facility Size:	85,000 square feet
Sanctuary Volume:	1,770,000 cubic feet
Seating Capacity:	4700 Seats
Measured Reverberation Time (Mid-Band, Unoccupied)	1.3 seconds
Measured Speech Intelligibility (Unoccupied)	7% to 9% ALCons 0.59 to 0.54 STI
Measured Noise Level:	NC-35

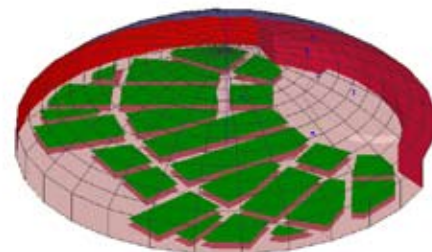
The stage walls are absorptive with standard 2" thick fiberglass panels, down to 4' AFF. Below that is a row of 1-Dimensional Quadratic Residue Absorber-Diffusor panels continuous around the stage wall. The center apex of the dome is treated with suspended fiberglass filled, vinyl rip stock banner systems, arranged in a criss-crossed manner, 50 feet in diameter, to reduce focusing. Frictional broadband low frequency absorbers or bass traps were installed under the concrete risers for absorption down to 50 Hz and in a large rear wall chambers absorbing down to near 20 Hz.

Reverberation times, ITDG, and speech intelligibility were predicted and calculated prior to construction. After construction these parameters were measured and verified using primarily Time Delay Spectrometry and the TEF Analyzer.

## DIFFUSIVE CLOUD PLACEMENT

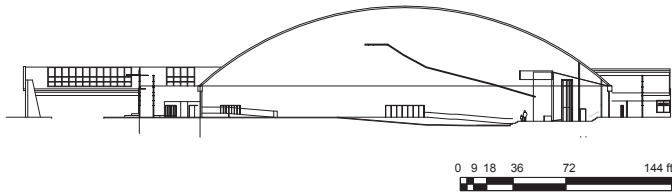


## COMPUTER MODEL

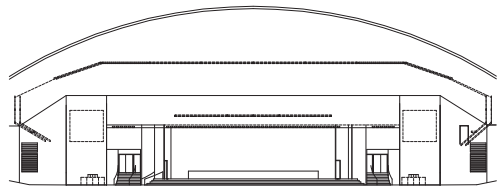
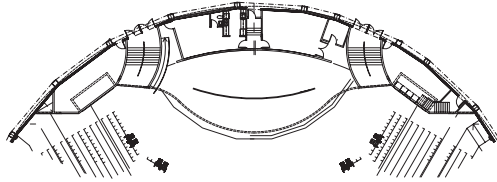


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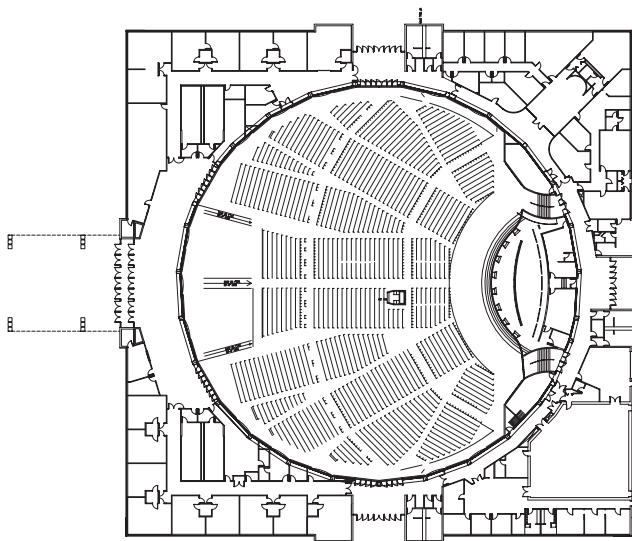
LEE SOUND DESIGN



LONGITUDINAL SECTION



STAGE VIEWS



FLOOR PLAN



LOUDSPEAKER COVERAGE - 1000 HZ DIRECT SPL

