



# GREEN ACRES BAPTIST CHURCH

*Tyler, Texas*

A new worship center equipped with state-of-the-art audio and video facilities from Thrasher Design Group features JBL Professional loudspeaker cabinets and components. **By Mel Lambert**

■ THE IDEA FOR GREEN ACRES BAPTIST CHURCH CAME IN 1952 from Brother W. V. Henson, a deacon at First Baptist Church, Tyler, Texas. During the following months and years, the idea grew into a mission church and, with 300 charter members, became a formally organized church on May 1, 1955. Since that time, GABC has grown in membership and local influence. With space at a premium in the late 1990s, the church leaders looked at expanding GABC's resources. A "Discover the Joy" capital stewardship program raised \$18.7 million to build a new 3400-seat worship center, located at the intersection of Barbara Street and Highway 110.

The new worship center, which opened for its first service in late April of this year, was designed by Hatfield Halcomb Architects. Founded in June 1971, HH Architects serves the architectural, interior design and master planning needs of various public and private organizations. C Construction served as Green Acres' general contractor for the new building project. Atlanta-based Thrasher Design Group (TDGI) oversaw specification, design and installation of the electrical systems, audio systems, video projection systems, and conduit and infrastructure for the video-production system. The old worship center will now serve as a chapel.

"TDGI has 30 years of experience in audio and acoustics design for large 1000- to 9000-seat arenas and related environments," says company president Bill Thrasher. "The challenges at Green Acres Baptist Church's new auditorium, which forms the heart of the worship center, were providing high-quality sound and video coverage for the wide audience area, plus a separate choir space and multipurpose room, in addition to designing the cabling infrastructure between the main production areas."

## DESIGN BRIEF

Thrasher's GABC design brief for the new worship center includ-

ed space planning and layout of the separate equipment rooms; electrical power for the various multimedia systems; acoustic treatment for the various spaces; design of audio and video interconnects; design of the pair of dual video screens and companion rear-projector chambers; and design of the flexible, high-power, cluster-based sound systems. "The fan-shaped auditorium presented its own challenges in terms of providing sufficient high-quality SPL coverage across the audience area and for the choir in back of the stage and pulpit," Thrasher said.

TDGI was brought in early during the planning process and was able to work directly with the architect to ensure that all of the church's requirements would be met. Initial plans began in 1997, with construction starting in early 1999.

Thrasher was able to offer comments on the shaping of the ceiling, for example, which meant less acoustic problems during the installation. He confirms, "We like to be brought in early, to head off problems. The ceiling is also very important in terms of lighting and video projection, so we like to work closely with the lighting consultant and designer. System integration is very important. We spent a lot of time determining the best structural positions for the [flown] loudspeaker clusters, taking into account the weight of the cabinets as well as the video-projection screens." The video screens are located on the walls of the auditorium above the choir seating.

According to GABC's director of audio, Mark Leonard, the aim was to design a "powerful system that was capable of extremely high fidelity. And we needed the system to be very flexible, so that we could provide good sound across the auditorium for a variety of productions, including our progressive music program, which will benefit from a concert-quality playback system. Each Sunday we have a blended service, with hymns and contemporary music, in addition to concerts with Christian artists. We have

excellent audio distribution so that we can provide audio playback virtually anywhere.” The church also provides regular televised services for a local cable company.

The drawing package developed by TDGI specified JBL components by brand and model. Thrasher explains: “Why JBL? The company has a great reputation for quality. And we can get unique solutions from the JBL Custom Shop.”

The main auditorium features a triple array of JBL cabinets and components, laid out as left, center and right clusters. All loudspeaker components are manufactured by JBL Professional, aside from Electro-Voice high-frequency horns that are mounted on JBL drivers.

After invited bids went out during the Summer of 2000 to a handful of qualified contractors, SPL Integrated Solutions, a Maryland-based JBL dealer and system integrator with a regional office in Dallas, just 90 miles from Tyler, won the contract to supply the sound-system hardware. The sound-system contract was reported at \$850,000. “SPL was the low bidder and preferred choice; and we had worked with them before.” Bill Thrasher recalls.

**SPEAKER SPECS**

The loudspeaker array is built into the ceiling and is comprised of three clusters of JBL cabinets and component drivers arrayed 40 feet above the downstage center, separated 20 feet from one another across a gentle arc. The configuration is designed to be run in a discreet, 3-channel, left-center-right configuration, if required. Normally, music will be routed to left and right clusters and vocals to the center. A fourth cluster is aimed backward from the front-center cluster towards the 300-member choir.

Each flown cluster is basically identical. In the center, there are four JBL CST21DQ Diamond Quad™ cabinets from the JBL Custom Shop. Each vented cabinet features four JBL 2206H 12-inch drivers. “These are derived from the firm’s Cinema Systems,” Thrasher explains. “We had the Custom Shop alter the cabinets to trapezoid, rather than square, boxes to build more physical space into the array. We also had them add rigging hardware for the flown suspension.” The Diamond Quad cabinets normally incorporate four

15-inch drivers. Thrasher considered that 12-inch units “would provide the best performance in a two-way system design by allowing a higher crossover frequency than using 15-inch drivers.”

Mid and high frequencies above a crossover of 630 Hz are handled by an array of six JBL Model 2446J compression drivers on E-V HP6040 large-format horns in the center, and five identical horn/driver combinations for left- and right-hand clusters. “We eliminated one horn and driver from the sides,” Thrasher explains, “simply to reduce the HF coverage provided by the left and right clusters.” While the center cluster provides coverage across the entire auditorium, the left- and right-hand clusters only cover about three-quarters of the area and require less HF coverage.”

Augmenting the low frequencies are eight CSP82 subwoofer cabinets from the JBL Custom Shop that each house a pair of model 2242H drivers loaded into minimal-frontal-area, optimized-internal-volume cabinets. The subwoofer and Diamond Quad cabinets are suspended using Mason Industries spring-isolators.

The choir cluster includes a pair of JBL Custom Shop CSP22 Dual-12 cabinets, working with three of the HF horn/driver combinations used in the front systems.

“The JBL Custom Shop was set up to provide a variety of non-proprietary designs for contractors and end users,” comments Andrew Rutkin, director of custom product engineering at the manufacturer’s corporate headquarters in Northridge, California. “All of our custom-developed cabinets are designed to provide solutions for specific applications. The Diamond Quad systems specified for Green Acres Baptist Church, for example, are derived from our popular model 5674 cinema systems and have a diamond-shaped arrangement of four drivers. Two center drivers are closely spaced horizontally for wide horizontal coverage, and two drivers with wide vertical spacing give a narrower vertical-coverage angle. This configuration makes a smoother transition at crossover into the 60 x 40° HF horns specified by Bill Thrasher.”

For coverage into the under-balcony areas, Thrasher specified 22 JBL model 2242H two-way cabinets fitted with coaxial 12-inch LF drivers with domed HF drivers. For over-balcony areas, a total of 11 JBL Marquis Series MS28 two-way cabinets feature dual 8-inch woofers and OASR horns.

**COMPLEMENTARY COMPONENTS**

Power for the main and choir clusters is

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provided by a collection of Crown amplifiers, including twenty MA1202, twenty-three MA2402 and four MA5002 dual-channel units, each fitted with an IQ-PIP-USP2 DSP card, plus three CE1000 and CE4000 models.

Signal processing is handled by five BSS Audio model 9088 Mk II SoundWeb DSP processors, which integrate and control the various power amplifiers and system components, including crossovers and equalizers. The BSS processors are housed within the main equipment room and can be monitored and controlled from the front-of-house mix position, as can the Crown IQ system. A pair of Klark-Teknik DN410B parametric equalizers have been provided for overall FOH console-insert processing, plus six White Model 4856 graphics for FOH monitor-mix sends. A variety of Aphex, Lexicon, IED, Symetrix and Yamaha signal processors are also available to the mix engineer.

Auditorium sound is controlled by a 56-channel Midas Heritage 1000 console, as well as two Yamaha 03D submixers. Multiple outputs can be derived from the Midas console, including 10 sub-groups, 10 auxiliary sends, 10 VCA-controlled masters, master LCR outputs and eight matrix master outputs. The choir cluster receives a dedicated feed from the console. Sets of stage monitor power amplifiers can be patched to a series of EAW SM122, SM155 and SM200 floor wedges. "We also specified individual mixing consoles for each of the rhythm section players," Thrasher continues, "so that they could set up their own headphone mix." The six Allen & Heath 16x2 Mix Wizard consoles receive submixes, groups and direct outputs from the main Midas console, as well as from the broadcast/recording console.

In addition to a collection of wired microphones, a total of 16 Shure UHF Series wireless models (expandable to 24) are also available. A total of 144 channels of Whirlwind custom, three-way, mic-level signal splitters with Jensen transformers were also specified, along with ClearCom and Aiphone communications units. Also in use are over 50 channels of line-level distribution amplifiers — expandable to over 80 channels — to distribute wireless microphone signals, as well as other line-level signals such as

playback from video tape machines, audio tape machines, etc.

SPL Integrated Solutions also supplied JBL loudspeaker systems for a choir rehearsal room and an auxiliary multipurpose room. The choir rehearsal room features four JBL SP-215 loudspeakers, while the multipurpose room has almost 100 JBL Control 26C and 19CS loudspeakers.

A separate digital recording room is equipped with five Yamaha 02R digital consoles, linked to Genelec control-room monitors and a Tascam MX-2424, 48-track hard-disk recording system. Church services and music performances will be videotaped and recorded for future use by the church. All video within the facility is serial digital format. An array of Hitachi cameras handle image capture, working with DLP-format projectors from Digital Projection, Ltd., and the pair of wall-mounted, 16:9-aspect-ratio screens.

#### MUTUAL ADMIRATION

"This was our first project with Thrasher Design Group," says Dan Grogan, SPL's sales engineer for the project. "Bill is very hands-on, as is the rest of his staff. He was very accessible during crucial [design] stages, and has a wide range of experience with system design and use."

All in all, design and installation of the new worship center at GABC is a case study on professional choices being implemented with professional hardware. Thrasher Design Group is to be congratulated for the elegant sound-system design.

"We are, perhaps, unique in this industry," Thrasher concludes, "since all of my people go out and mix live sound — as well as designing systems for large performance venues.

"We try to design systems for the *real* world," Thrasher emphasizes. "We all know what it means to work in less-than-optimal environments, and we attempt to produce solutions that make life a whole lot easier for our clients." **S&VC**

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*Mel Lambert founded Media&Marketing more than a dozen years ago to provide communications and consulting services for pro-audio films and facilities. More details are available at [www.mel-lambert.com](http://www.mel-lambert.com).*

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