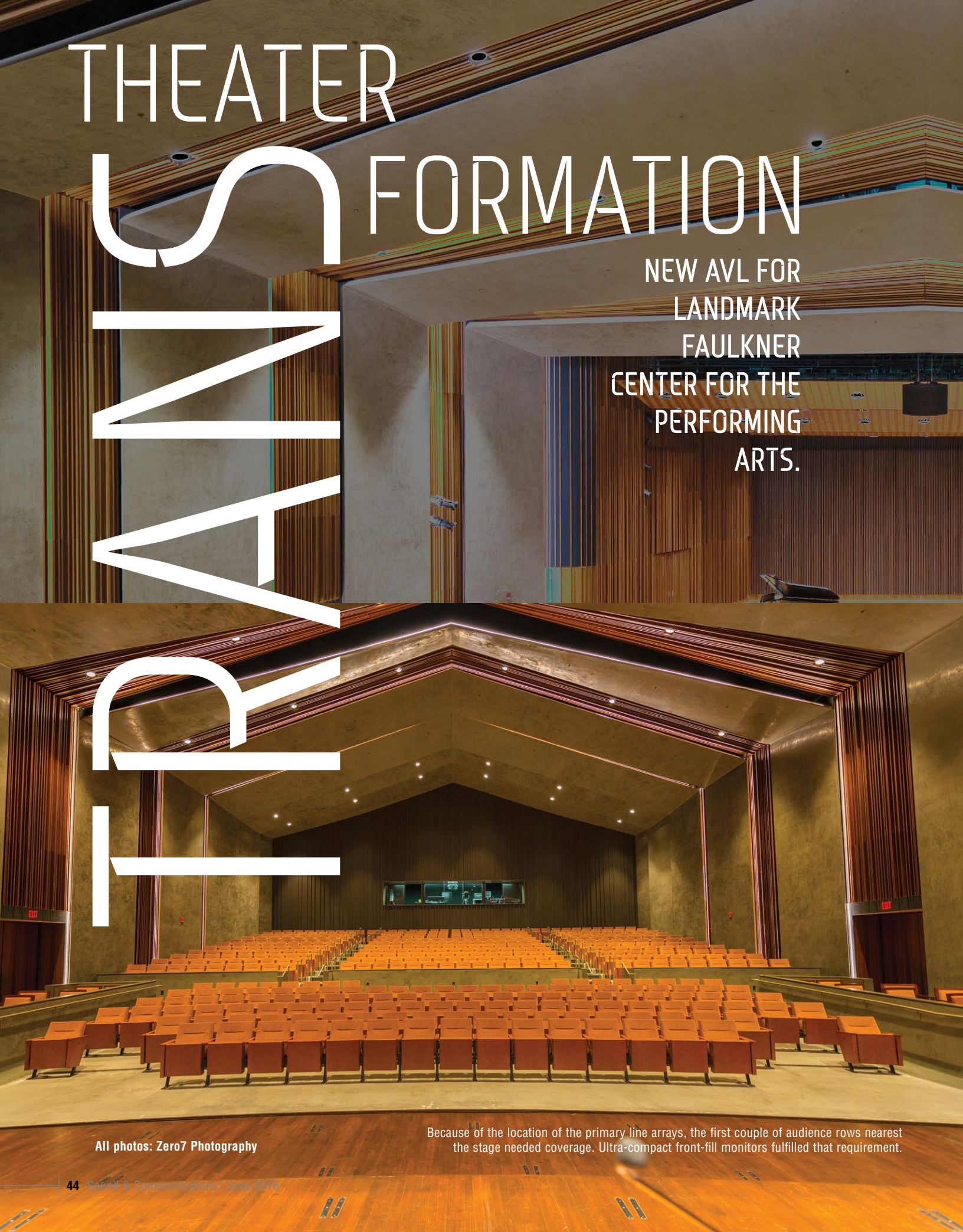
THEATER TRANSFORMATION

NEW AVL FOR LANDMARK FAULKNER CENTER FOR THE PERFORMING ARTS.



All photos: Zero7 Photography

Because of the location of the primary line arrays, the first couple of audience rows nearest the stage needed coverage. Ultra-compact front-fill monitors fulfilled that requirement.

The stage can accommodate as many as 250 performers.

BY JIM STOKES

The bittersweet song "Everybody's Got A Home But Me," from the musical *Pipe Dream*, ably applied to the great need for a full-blown performance space before the Faulkner Performing Arts Center opened its doors on the University of Arkansas (UARK) campus in Fayetteville AR. However, the recreation of a historic field house was not without rebirth pains.

Renovating and remodeling the original venue built in 1937 into a performance center presented not only construction, but also AVL design and installation challenges.

The total cost of the building renovation was $18 million, with contributions from a host of private donors. Named in honor of major donors Jim and Joyce Faulkner, the Center is 39,400 square feet, with maximum seating for 650 patrons, and the stage can accommodate as many as 250 performers. The Center is the main performing venue for UARK musical organizations, as well as guest musical activities for the University and Northwest Arkansas community.

According to Faulkner Center Managing Director Nicole Cotton, it's also a multipurpose space. "It's mainly for music," she pointed out, "but we're also doing other things. Next year, we'll have a ballet with orchestra in here. In theater, we're doing some straight plays and one-man shows. There will be lectures and films. Our main lobby is also being used partly as a rotating art gallery because of the architecture there. So we do a lot of different things."

Cotton noted that UARK didn't have a full performance space prior to the Center opening. "They had a small

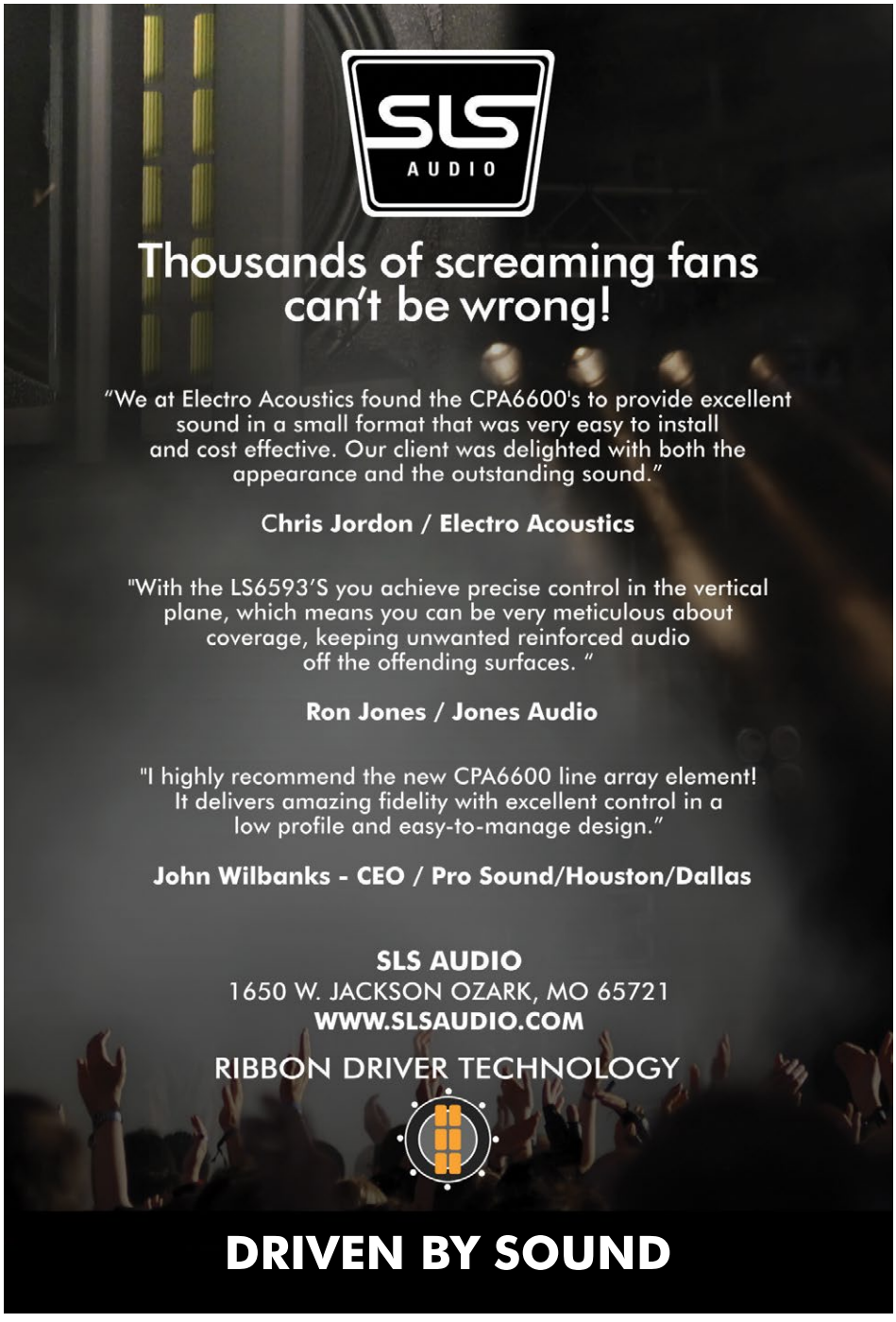
recital hall," she said, "but it would only fit 75 people or so on stage. So, the large ensembles on campus didn't have a home. They used the Walton Arts Center, which was a community house in Fayetteville."

Credits

Before we proceed with the design and install details, we'll present a goodly list of credits. Indeed, it took many talents to make the Faulkner Center a reality.

Our six interviewees were Daniel Horney, AV Consultant/Designer with Jaffe Holden Acoustics (www.jaffeholden.com); integrator Spencer Cox, President, Keystone Digital, Springfield MO (www.keystonedigital.com); Chip Ulich, Project Theater Consultant, American Society of Theater Consultants, with Schuler Shook (www.schulershook.com), a theatrical consulting and architectural design firm, Dallas TX; Nicole Cotton, Managing Director, along with Adam Putman, Technical Director, both from the Faulkner Center (www.fulbright.uark.edu); and David Rahn, North American Sales Manager, Alcons Audio, Felton CA.

Others vital to the project include Allison Architects (www.allisonarchitects.com), Fayetteville AR, along with HGA Architects (www.hga.com), Minneapolis MN, for the design renovation of the building. The structural engineer was Don Whitmire, PE, at the Lowell AR office of Engineering Consultants, Inc. (www.ecilr.com). The electrical contractor was Marrs Electric (www.marrselectric.com), Springdale AR. The general contractor was Manhattan Construction (www.manhattanconstructiongroup.com), Springdale AR.



AV/Lighting Overview

A major design and integration challenge on the AVL side of the construction project was fitting equipment into tight spaces. Thus, the conversion into a performance hall affected FOH speaker placement and created close quarters for the projection-screen mounting.

All equipment is Crestron accessed. Highlighted components include left/right arrays and a center cluster FOH speaker system. A power lift can raise the center cluster out of the way for full-stage viewing by the audience or lower it back into place for full FOH speaker-system use. A motorized variable acoustic rigging system improves onstage sound. There's also an impressive Gala Spiralift that uses motorized, movable stage sections to make fetching cumbersome musical instruments from storage below the stage easier. Alternately, the Spiralift can expand the front seating areas. Other new features include a main mixing console, projector with screen, stage microphones and a new lighting console with accompanying lighting components.

Moving on to the design, here's what Daniel Horney told us: "What's especially interesting is when you get onto the catwalk to see how the new construction works with the original architecture and some of the challenges they faced up there," he said. "In terms of the design of the space, there are specific volume requirements we have for acoustic needs of music. You set up baseline reverb time and then adjust with the drapes."

Thus, according to Horney, the ceiling was dropped low enough in new construction to get in a lot of drapery, resulting in a full-height drapery trap. "It's interest-

The lobby is used as a rotating art gallery, and the ticket window features a monitor with a white bezel trim that really blends into the lobby's white décor.

ing that it's a single-height space," he said. "It's just a single-volume space with no balcony. There aren't lots of delay zones. It made the system design more straightforward from a coverage aspect. It's a beautiful space."

Client Perspective

According to Nicole Cotton and Adam Putman, the Center's equipment is easy to use. "The install was completed before I was brought on," said Putman, "Nicole operated the facility for six months without a technical director. She wore many hats for a long time before I showed up. It's a testament to the user-friendliness of the install and the equipment onsite that one person can run the entire facility: lighting, audiovisual, scheduling and box office."

"We've been very happy with Keystone Digital," said Cotton. "They did a really good job. In the six months I was by myself, they were willing to work with me and help me out."

Putman mentioned other positive aspects of the install. "We're not constantly building from scratch," he said. "The permanently installed Digital Projection projector is hooked up to the Crestron system, so there's the ability to access it quickly; it turns on and off quickly. Having the digital console where we can recall performance audio [cues] from concert to concert is enormously beneficial. So the EQ and compression settings for all the instruments are done, saving an immense amount of time."

He noted similar recall benefits for lighting. "The digital environment gives us the ability to work quickly," he pointed out. "A digital lighting controller lets us add KC [HiLiTES] quickly. There's the motorization of the lighting fixtures where we can lower to change fixtures and change focusing position."

Integrator Challenges

According to Cox, the first integrator challenge was to implement the conduit requirements set for by designer Horney and fit the cabling and conduit required for the AV and lighting systems into the walls. "We had to work very closely with the design team, the electrical contractor and structural engineer to determine hang points, loads and rigging requirements.

"One of the biggest challenges was the tightness of the space. For example, we had four electric battens, three acoustic clouds and adjustable acoustic panels. We didn't provide those, but we had to work around them," said Cox. He also noted that fitting the Draper projection screen was a matter of close quarters on stage.

"The entire project was close quarters," he emphasized. "Because it was a historic 1937 building, we had low ceilings to deal with. For example, in the green room and dressing rooms in the basement at the back of the house, paging and background music systems were placed in the ceiling. It was difficult to work with because the old building had existing pipes and existing conduit that couldn't be changed because of low ceiling height."

FOH Speakers

Horney noted that the Alcons Audio FOH speakers were chosen for several reasons. "One was the form factor," he said. "The line array speakers fit in nicely in the little left and right architectural niches. It doesn't make sense to have big line arrays hanging out left and right because it gives the assumption of what the performance is supposed to sound like before you listen to it. You don't want weird expectations of nine boxes seen to reinforce a chamber quartet. Thus, a big engineering challenge was making those speakers

'go away'." Thus, the left/right arrays were to be heard and not seen.

Regarding that challenge, Alcons Audio's David Rahn added, "The left/right components are hidden behind an architectural element. We had to work very closely with the architects, Jaffe Holden and the general contractor to make some amendments to the architectural look because there were wood slats running vertically up and down in front. We had to make sure they were cut out on the side where the high-frequency driver was. When you look at the arrays from behind, you can see how tightly they are placed."

Conduits and pipes installed in 1937 when the building was originally constructed created tight working conditions. In addition to the new communications systems requirements, the integrator had to work around four electric battens, three acoustic clouds and adjustable acoustic panels.

"For a venue that is reasonably small like this one, the Alcons make a large-format PA sound intimate," said consultant Horney. "The Faulkner's medium-size hall [650 patrons] has as many characteristics of a nice home hi-fi system as it does a PA, in terms of sonic signatures. Another reason was that we needed a system that was capable of providing sound reinforcement for anything from a jazz combo up through electronic music. A large portion of what they do, programmatically, is going to be acoustic music, including chamber ensembles or opera. In those kinds of settings, the conductor would have a mic to speak between numbers or introduce a soloist."

Speaker Arrangement

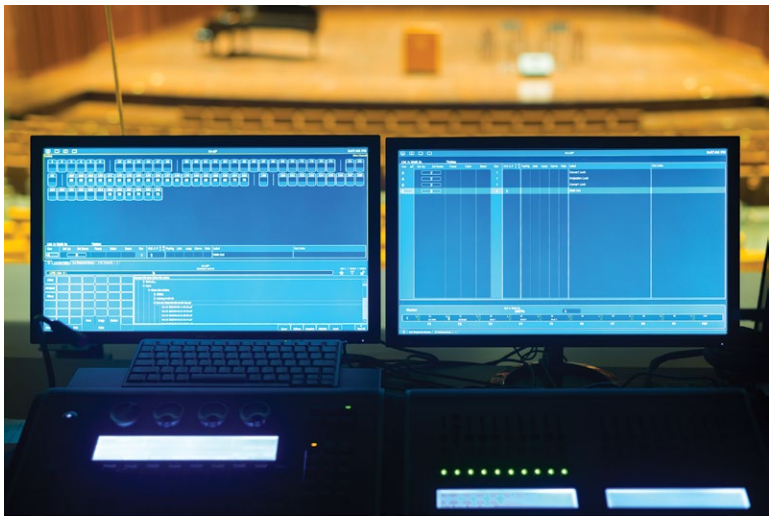
With those concerns and criteria in mind, we'll next explore how the FOH speakers are arranged. The Alcons are configured as left/right line arrays, a movable center cluster, subwoofers and front fills. Here's how the elements are formed: In the left and right arrays, there are two LR14B low-frequency extensions, four LR14/90 and five LR14/120 components. The center cluster is comprised of four RR12 point-source array modules. We'll detail the movable rigging later on. Right now, let's continue the Alcons configuration. Two BQ211i subwoofers are paired and centrally located together, underneath the stage pit area.

According to Horney, the first couple of audience rows nearest the stage needed coverage because the line arrays were sitting more forward in the house. Five Alcons SR9 ultra-compact front-fill monitors provide that coverage. "They're a little bit beefier," explained Horney. "They're more of a concert style

than a musical theater approach to front fill. They push a lot more full-frequency content than front fills typically would. They can be placed at two locations, either at the edge of the stage or the edge of the pit lift."

Regarding the center cluster lift, Horney pointed out, "The center cluster can be deployed for vocal music and for announcements as needed. It's on a motor, so the assembly can deploy and retract through one of the gaps between the four stage reflectors.

"The speaker hoist, along with all the motorized rigging and motorized variable acoustic rigging, was all integrated by the PDO Group [Pook, Diemont & Ohl], Bronx NY," said Ulich. He also noted that the motor track and hardware were provided by H & H Specialties (City of Industry CA). The control system for the motorized rigging is the acousStaCorp symphony controller (see sidebar for details).



The lighting console allows for additional control.

The FOH speakers are powered by the Alcons Sentinel 10 husky amplifier/controller. DSP is via Symetrix Dante.

Other Speakers

Regarding other speakers and amplifiers in the theater, several patchable Lab.gruppen utility amplifiers can be used for a variety of tasks, including feeds to stage band monitors and feeds for overhead sound effects emanating from the catwalk. An Extron 70-volt line amplifier feeds all lobby and backstage ceiling speaker zones. Thus, Atlas and JBL ceiling speakers are powered combinations of the aforementioned amplifiers. EAW compact loudspeakers provide additional booth monitoring so the operator can get a more accurate sense of what's being sent to the FOH speakers. The technical crew members keep in touch via a Clear-Com intercom system. Otherwise, there's a

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The Faulkner Performing Arts Center on the University of Arkansas campus in Fayetteville AR.

Tight Spacing & Variable Acoustic Rigging

Theater Planning Consultant Chip Ulich of Schuler Shook affirmed that a huge challenge was providing the right acoustic environment for all the forms of music that would be performed in the room despite its confined space. "Because budget would not allow us to raise the roof, we would have to live with the existing envelope of the building," he said. He stressed that an objective was to be as close to the roofline as possible to preserve enough volume within the room for acoustic consideration. Concerns also included having enough space to put in lighting and rigging equipment, catwalks, HVAC, sprinklers, and all other essentials within the tight space between the ceiling and the pitched roof line. This resulted in a "coordination nightmare."

"We spent many meetings looking at how to fit it all into a space," Ulich continued. "We pretty much got everything we needed to get in and met the requirements for the owner."

Ulich provided more details about the variable acoustics rigging components. "PDO (Pook, Diemont & Ohl) supplied the equipment for the rigging of the electric battens and the ceiling reflectors over the stage, as well as all the variable acoustics that are located around the perimeter of the room," he explained. Components include three customized motorized hoists for the ceiling reflectors and four motorized drum hoists for the electric battens, which fall between the reflectors.

"All hardware, custom head blocks and loft blocks were fabricated specifically to fit structurally with regard to the slopped roof condition," he continued. There are eight motorized variable acoustic curtains: Four surround the performance area and four more are located at the rear of the audience. The curtains are either reflecting or observing sound depending on the requirements of the event taking place on stage.

Listen Technologies assistive listening system for patrons who have hearing loss.

"The primary mixer is a DiGiCo SD9," said Horney. "We picked it because it's really flexible and sounds great. We like its ability to easily feed to multitrack recording. You can go directly out to MADI or go through the MADI interface directly to an Avid Pro Tools 12 [also installed]. It saves a boatload on redundancy. You don't have to deal with the old-school analog split snake. It's just super simple to use." The operator has access to a separate TASCAM CD player and a TASCAM CD recorder.

Keystone Digital's Cox pointed out that AV control is at the back of the auditorium. There's a fixed glass enclosed booth for combined AV and lighting. There's also a house mix connection for events that require an intensive mix or having an operator at the helm of the SD9. For that function, the last three rows of seats off the aisle can be removed and a mobile platform can be set up for the SD9. There are a couple of floor boxes with audio connections located there for easy access. In addition, there's an Ashly LX-308B line mixer for the stage manager to run a rehearsal, either from the stage or from the house mixer position.

Projector And Screen

Images emanate from a Digital Projection Titan Quad 2000 series 20,000 lumen WUXGA projector located in the AV control booth at the rear of the auditorium. An Apple Mac Pro is used for audio playback and recording. The primary video inputs are Blu-ray player and user-provided laptop, as well as lectern sources.

The main rack.

The amp rack.

Equipment

1 AAI 32MV2/MVJ-3T 2x32 video patch bay
5 AAI WEP-EO-C-26-N-2-D audio patch bays, 1/4 Maxi to 3-pin 2x26
4 AAI PCH-X patch cable holders
5 Ace Backstage 025BK mini stage pockets
1 AKG C414 XLII Stereoset stereo pair mic
4 Alcons RR12 full-range, point-source array modules
5 Alcons SR9 ultra-compact in-fill monitors
8 Alcons LR14/90 ultra-compact line array modules
10 Alcons LR14/120 ultra-compact line array modules
4 Alcons LR14 Bass ultra-compact line array bass modules
2 Alcons BQ211i 21" all-carbon cone high-output subwoofers
2 Alcons STGD14 stepless tilt adjusters, single pick-point
2 Alcons GRDRR12 fly grids for 2 RR12
4 Alcons Sentinel 10 10,000W amplified speaker controllers
1 Apple Mac Pro computer
1 Ashly LX-308B 8-input stereo line mixer, 1RU
1 ASUS VW199T-P 19" LED monitor, speakers
61 Atlas SD72W-KIT ceiling speaker kits
10 Atlas AT35-PA 35w volume controls
1 Avid Pro Tools 12
6 AVP WK-U216E2-Z 2U patch panels
2 beyerdynamic M88-TG dynamic mics
4 beyerdynamic M160 double ribbon mics, hyper cardioid
1 Chief MSMVPU medium fusion micro adjustable mount
8 Chief MTMU medium fusion micro adjustable tilt wall mounts
1 Chief VCMU large-format projector mount
6 Clear-Com RS-701 single-channel beltpacks
6 Clear-Com CC-300-X-4 single-ear headsets
2 Clear-Com HS-6 telephone handsets, XLR-4F
1 Clear-Com RM-704 4-channel remote station rack mount
2 Crestron DM-RMC-SCALER-C DigitalMedia 8G+ receiver, room controllers
2 Crestron DM-TX-401-C DigitalMedia 8G+ transmitters
1 Crestron DMPS3-300-C DigitalMedia presentation system
1 Crestron TSW-752-B 7" touchpanel
1 DiGiCo X-SD9-2P-D2-RP SD9 mixing surface w/1 D2-rack dual PSU
4 DiGiCo MOD-D2R-AES-O D2 series AES/EBU output cards
1 DiGiCo UB-MADI-P package, 48 MADI to USB
1 Digital Projection Titan WUXGA Quad 2000-3D 20,000 lumen WUXGA projector
1 Digital Projection 105-613 4.16-6.96:1 lens
1 Draper Paragon V Custom TecVision XT1600 300" screen
1 Earthworks FMR600 23.5" cardioid podium mic
1 Earthworks PMM1 podium mount for FlexMics
1 Earthworks PM40 piano condenser mic
2 EAW UB12Si full-range compact speakers
2 Electro-Voice RE20 dynamic cardioid mics
1 Extron MDA 3V composite video DA
1 Extron XPA 2003C-70V 3-channel 70V amp
3 Fostex RM-2 rackmount audio monitor, 1U
4 FSR FL-600P 4" floor boxes w/solid cover
6 FSR PWB-100 flatpanel wall boxes
1 Gator GR-6S 6U rack case
4 HP 1810-8G-V2 8-port 10/100/1000 managed switches
3 HP 1810-24G-V2 24-port 10/100/1000 managed switches
6 Hubbell P6E24U 24-port Cat6 patch panels
12 JBL Professional Control 47HC 6.5" premium high-ceiling speakers
3 JBL Professional Control 24CT 4" ceiling speakers
4 Jensen DIN-PB isolation transformers
10 K&M 25910-577-55 mic stands,11", boom 21"

(continued on page 56)

The projector fires on a Draper Paragon V custom 300-inch screen that is on the stage 100 feet away. Projector management is via a Creston DMPS 300.

Keystone Digital's big AVL integration solution prevailed for the screening system. "We had the Draper 300-inch, which was the largest screen they make in the new TecVision fabric that came out last year," said Spencer Cox. "The screen surface reduces reflections. In fitting the screen above the stage, we were dealing with tolerances of only two to three inches between the other components that were hung about the stage." Regarding the projector image throw, he pointed out that it "lined up just right. We drew many iterations of projector sightlines in studies on paper to ensure that we were getting our screen to the right height and our projection distance was correct. Nothing interfered with the image."

While we're on the stage, a unique feature is the Gala Spiralift system, which was installed by manufacturer Gala Systems, Saint-Hubert, Quebec, Canada. "In addition to the fixed part of the stage," explained Cox, "there are two motorized sections that can be raised and lowered independently. For example, the two front portions of the stage can be lowered for additional audience seating. Likewise, the sections can be lowered all the way to the basement to line up with the instrument storage room for loading large items." Thus, large items such as pianos, percussion, choral risers, chairs and music stands can be transported quickly and easily from storage to the stage.

Horney pointed out that various 32- and 42-inch NEC LED TVs were installed in several areas to keep people abreast of what's happening onstage. Action is captured via a Vaddio RoboSHOT high-definition PTZ camera. There are several TVs above the entrance on the left and right for latecomer seating. "So, if you're standing outside because you're waiting to be let in between numbers because you have a crying baby or for whatever reason, you can still get an AV feed of what's going on in the hall," he said. "The NECs also deliver stage content downstairs to the dressing rooms, the conductor suite and the green room.

"Later on in the project, the architect and the university wanted the ability to display

All of the signals from the stage collect at the stage rack. Then lines are distributed between the stage rack and the control booth rack for patching.

15 K&M 25900-577-55 mic stands, 17-25" w/boom
1 Kramer PT-571HDCP DVI over twisted pair transmitter
1 Kramer PT-572HDCP+ DVI over twisted pair receiver
1 Kramer VS-88DTP 8x8 DVI matrix switcher w/twisted pair out
8 Kramer PT-572+ HDMI over twisted pair receivers
2 Lab.gruppen E 4:2 2-channel amps
2 Lab.gruppen C 28:4 4-channel amps
1 Lab.gruppen E 12:2 2-channel amp
1 Lenovo M72e Thinkcentre core i3, 2.8GHz, 4GB, 500GB desktop
24 Listen LR-400-072 portable display RF receivers (72MHz)
24 Listen LA-170 behind-head stereo headphones
1 Listen LT-800-216-01 stationary RF transmitter (216MHz)
2 Listen LA-321-01 8-unit portable RF product-charging carrying cases
2 Littlite RL-10-D dual rackmount work lights
2 LynTec SS-2LRP low-voltage power switches on 1RU plate
1 LynTec MSP-341-36 master sequencing panel
25 LynTec BMB-20 20A motorized circuit breakers
4 LynTec BMB-30 30A motorized circuit breakers
11 LynTec BUMB-20 un-motorized circuit breakers
1 LynTec BUMB-230 un-motorized circuit breaker
2 Middle Atlantic DWR-24-32 24SP/32D wall racks w/accessories
3 Middle Atlantic WR-44-32 44SP/32D rollout racks w/accessories
4 NEC E424 42" LED displays, 1920x1080, speakers
4 NEC E324 32" LED displays, 1920x1080, speakers
1 Quiklok WS-550 console stand
8 Radial J48 direct boxes w/phantom power
1 Samsung DH48D 48" SMART Slim direct-lit LED display, 1920x1080, w/white bezel trim
1 Samsung DB10D 10" LED monitor
2 Sennheiser MZH3015 6" gooseneck paging mics
4 Sennheiser E604 cardioid dynamic mics
4 Sennheiser MD421 II cardioid dynamic mics w/5-position bass roll offs
1 Shure ULXD24D/B58 dual-receiver wireless system
1 Shure UA440 front-mount antenna kit
2 Shure ULXD1 digital wireless bodypack transmitters
2 Shure MX150B/C cardioid 5mm subminiature lavalier mics
1 Shure VP88 M-S stereo mic w/internal matrix
6 Shure SM57-LC cardioid dynamic mics
6 Shure SM58-LC cardioid dynamic mics
4 Shure KSM32/CG cardioid studio condenser stage microphone
2 Shure SM81-LC cardioid condenser mic w/10dB attenuator
2 SKB 3I-2015-MC24 mic cases
1 Sonnet RackMac Pro rackmount enclosure for Apple Mac Pro
1 Sony MDR-7506 pro large-diaphragm headphones
1 Staging Concepts SC90 custom house mix platform
2 Symetrix EDGE Frame DSP frames w/Dante
4 Symetrix 4-channel digital input cards
2 Symetrix RADIUS 12x8 EX fixed DSP building blocks
1 Symetrix xIn12 12-input expansion module
1 Symetrix xOut12 12-channel DSP expansion module
4 Symetrix 4-channel analog output cards
2 Symetrix ARC-EX4e adaptive remote controls
2 Symetrix ARC-K1e modular remote controls
1 TASCAM CD-500B 1RU CD player
1 TASCAM SS-CDR200 1RU CD recorder
1 Union Connector CSC-1010-SCSP-RN-RG 100A company switch
1 Union Connector CSC-2010-SCSP-DN-RG-IG 200A company switch
1 Vaddio RoboSHOT 30 QCCU PTZ camera 30x zoom w/CCU
1 Whirlwind JHA-OPC-16P-20F console analog cable
1 Whirlwind JHA-LCR-20F-50 mic cable
1 Whirlwind JHA-LCR-50F-20 mic cable
2 Whirlwind MS-12-0-NR-050-SS mic sub snakes
8 Whirlwind L06 6' cables
1 Whirlwind PCDI direct box

LIGHTING

2 ETC SR3-48
2 ETC CEM3
96 ETC D20E
1 ETC SS-481P
1 ETC SS-241P
1 ETC ELTS2
1 ETC EBDK
2 ETC DEBC
1 ETC ERn2-RM-120
1 ETC P-ACP
1 ETC P-SPM
1 ETC P-CCS
1 ETC N34G-4TERM
1 ETC MAP-1000R
2 ETC P-TS12
1 ETC P-TSI
1 ETC ION 1500
1 ETC FADW 2x20
13 ETC ECPB NET
4 ETC Source IV 15-30
5 ETC Source IV 410
15 ETC Source IV 414
25 ETC Source IV 419
30 ETC Source IV 426
28 ETC Source IV 436
30 ETC Source IV PAR
10 ETC Vivid R Integral LED Downlights
2 Juliat Topaze III 9C

List is edited from information supplied by Keystone Digital.

digital signage at the ticket window," said Cox. "A Samsung DH48D 48-inch digital signage screen was installed. It's a very nice monitor with a white bezel trim that really blends into the white décor in the lobby. It appears to make the monitor part of the wall."

Two Modes

Horney explained that AV in the room can operate in two modes. In the standard production mode, everything routes through the control booth. The operator rides mixer gain to ensure even sound coverage. There's also a lectern lecture mode, which relies a lot more on the DSP. "The idea is to give people enough AV control where they have some flexibility," he said.

Therefore, there's a place to plug in a cable at the lectern for Cat6 connectivity. If desired, a Crestron touchpanel can be used to access and control such basic functions as turning on the projector, dropping the screen and switching inputs between a laptop computer and other devices, such as a digital player. The lectern is equipped with an Earthworks gooseneck cardioid mic. For the presenter, a Samsung DB10D 10-inch LED confidence monitor is built into the lectern under glass. It shows a mirror image of what's on the large screen behind the presenter.

Horney further described the venue's mic choices, based on his experience as a musical theater sound designer/engineer. "The goal was to give them a microphone cabinet that can do anything pretty well," he declared. "Based on their programming, the choices are varied." In good humor, he noted the hardy, ubiquitous Shure SM57s and SM58s "because you ought to have those to hand to people who don't know how to use a microphone. For the most part, we've picked microphones to get a wide variety of condensers and dynamics to give users options."

WE HAD TO WORK VERY CLOSELY WITH THE DESIGN TEAM, THE ELECTRICAL CONTRACTOR AND STRUCTURAL ENGINEER TO DETERMINE HANG POINTS, LOADS AND RIGGING REQUIREMENTS.

Dynamic Side

On the dynamic side, he offered, "For example, the Electro-Voice RE20 is known as a great vocal mic, but it also really sounds good on a kick drum. The Sennheiser E604 dynamic is another good drum mic. Beyond that, the Sennheiser MD421s are so clear at really high SPL that you have to push them really hard before they distort. You can set one of them in front of a trombone. The AKG C414 stereo pairs are just super versatile. You can put those on just about anything.

"We're trying to run the gamut from miking orchestral instruments to vocalists. The beyerdynamic M88 is a great vocal mic. The Shure SM81 cardioid works great for drum overheads and strings."

Other microphones specified in the install include

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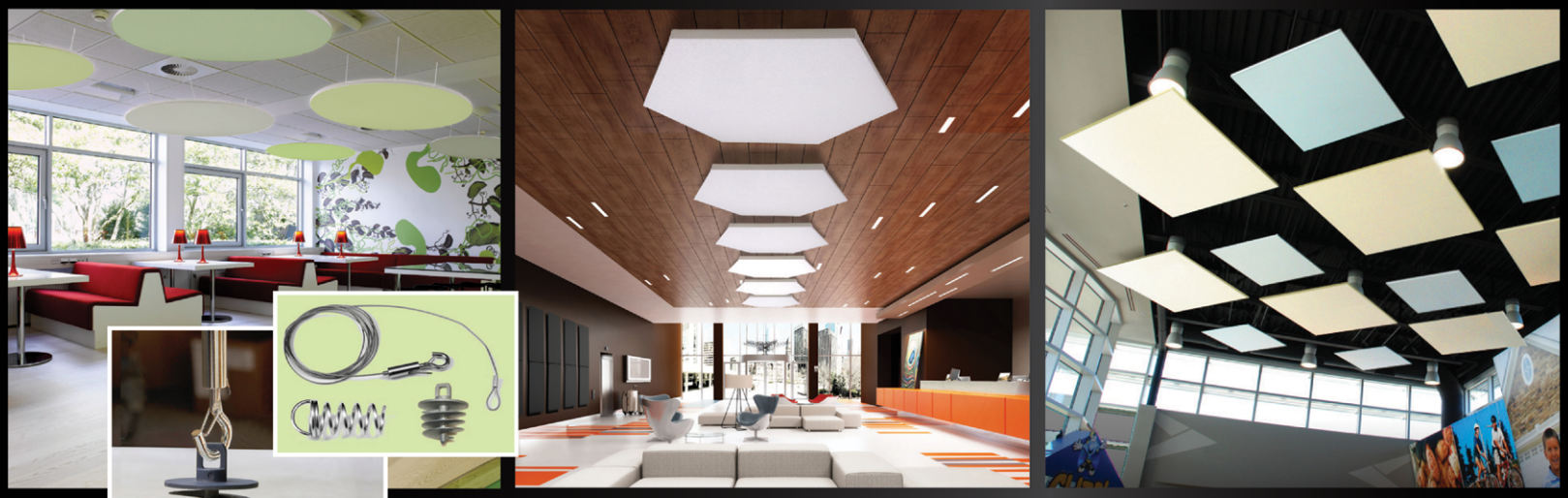

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beyerdynamic M160 double ribbons, Shure wireless, MX150 subminiature lavaliers and a KSM32 studio condenser stage microphone.

There are several Middle Atlantic rack locations. One is stage left in the wings, where all the patch points from around the stage collect. There's a rack in a room near the control booth where most of that dedicated gear is easily accessed and monitored, such as assistive listening and some DSP.

Taking a wide view of how signals are routed, all of the signals from the stage collect at the stage rack, then lines are distributed between the stage rack and the control booth rack for patching. Finally, backstage on the third level, there's an amplifier rack that has some DSP co-located.

Kramer rack equipment includes a DVI twisted pair transmitter/receiver, an 8x8 DVI matrix switcher with twisted pair out and eight HDMI-over-twisted-pair receivers. There are six Hubbell 24-port Cat6 patch panels.

Lighting

"The concept of the building is that, first and foremost, it has to be a concert hall for the music school," Ulich said, "but they also wanted to have some flexibility to do non-music events, which is why we added the catwalks for lighting, additional lighting and electric battens over the stage."

THE CONCEPT OF THE BUILDING IS THAT, FIRST AND FOREMOST, IT HAS TO BE A CONCERT HALL FOR THE MUSIC SCHOOL, BUT THEY ALSO WANTED TO HAVE SOME FLEXIBILITY TO DO NON-MUSIC EVENTS.

The new lighting system features an ETC dimming and switched power system with an Ethernet backbone. The circuit distribution is done with drop boxes throughout for flexibility, which includes drop boxes for the catwalks and four over-stage electric battens. An ETC Paradigm architectural control processor controls the lights and the motorized reflectors, as well as all the house lights and audience chamber. Working in conjunction with the processor is an ETC Ion control console, which has a 2x20 fader wing plus a radio remote focus unit. There's also a portable LCD touchscreen for the control booth, which can also plug in data at the house.

A permanently mounted touchscreen at the stage manager's console allows users to activate presets for house lights, as well as reflector ceiling lights. There are ceiling reflectors over the performance area for acoustic control; they are on motorized drum hoists for vertical movement. They have about 12 degrees of tilt adjustment. There are Integral LED Downlights within the reflectors, which are ETC ParEA fixtures. Thus, the reflectors reflect the sound from the musicians to the audience chamber (see more details in the sidebar).

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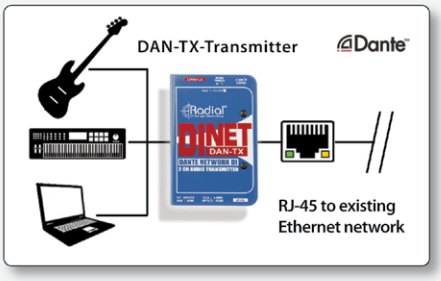

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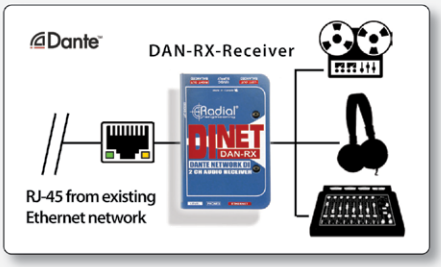

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