

# Community Theatre



Bonita Center for the Arts serves the needs of its school district and touring professionals

By: Mel Lambert

When the Bonita Unified School District, located in San Dimas some 25 miles east of Los Angeles along the foothills of the San Gabriel Mountains, decided that a new art center would form a creative focus for the area, a team of seasoned professionals was assembled to realize that dream. The Bonita Center for the Arts, which opened in mid-October, 2014, is a ground-up, multi-use venue that houses a 700-seat proscenium theatre and 60-seat black-box theatre/staging-company room; in addition to serving as a facility for local schools and communities of La Verne and San Dimas, it also provides a venue for visiting theatre companies. Working closely with architects Rachlin Partners, Auerbach Pollock Friedlander/APF provided theatre and AV consulting from conceptual design to commissioning of both spaces, in addition to dressing rooms and a scene shop. (The scope of work also included plans for a future 200-seat amphitheatre on the site.)

“The theatre and support spaces were designed for ease of use by students, while providing a high level of sophistication for professional touring companies,” states Michael McMackin, APF’s project principal-in-charge. “In addition to the general theatre layout, we designed a computer-controlled theatrical lighting dimming system, fixture package, projection, sound, and backstage communication systems, stage extension platforms, theatrical seating, and a customized orchestra shell. Counterweight rigging and stage draperies complete the package, along with infrastructure provided to allow for TV broadcasts in the main hall.”

Auerbach Pollock Friedlander “designed the audience chamber seating of the main space for optimal sightlines from any of the 700 seats in the house, while maintaining an intimate feel to the room for the audience,” McMackin adds. “This space provides a flexibility that enhances a variety of performance types, including dance, orchestra, chorus, lecture, popular entertainment, drama, and musicals.”

Cost of the 29,250-sq.-ft. complex, construction of which started in September 2012, is estimated at \$22.5 million. The general contractor was Tilden-Coil Constructors, with Capital Program Management as program manager, R. M. Byrd and Associates as structural engineer, Glumac as electrical engineer, the facility’s current general manager Bill J. Cox as theatre advisor, and Newson Brown Acoustics as acoustical consultants. Primary AV equipment supplier was Sound Image.

“Our overall goal was to provide a flexible space that could serve the diverse needs of a school district that transverse two communities: La Verne and San Dimas,” Cox says. “To this end, the facility was designed with a state-of-the-art infrastructure to accommodate today’s AVL technology, as well as looking to the future, which

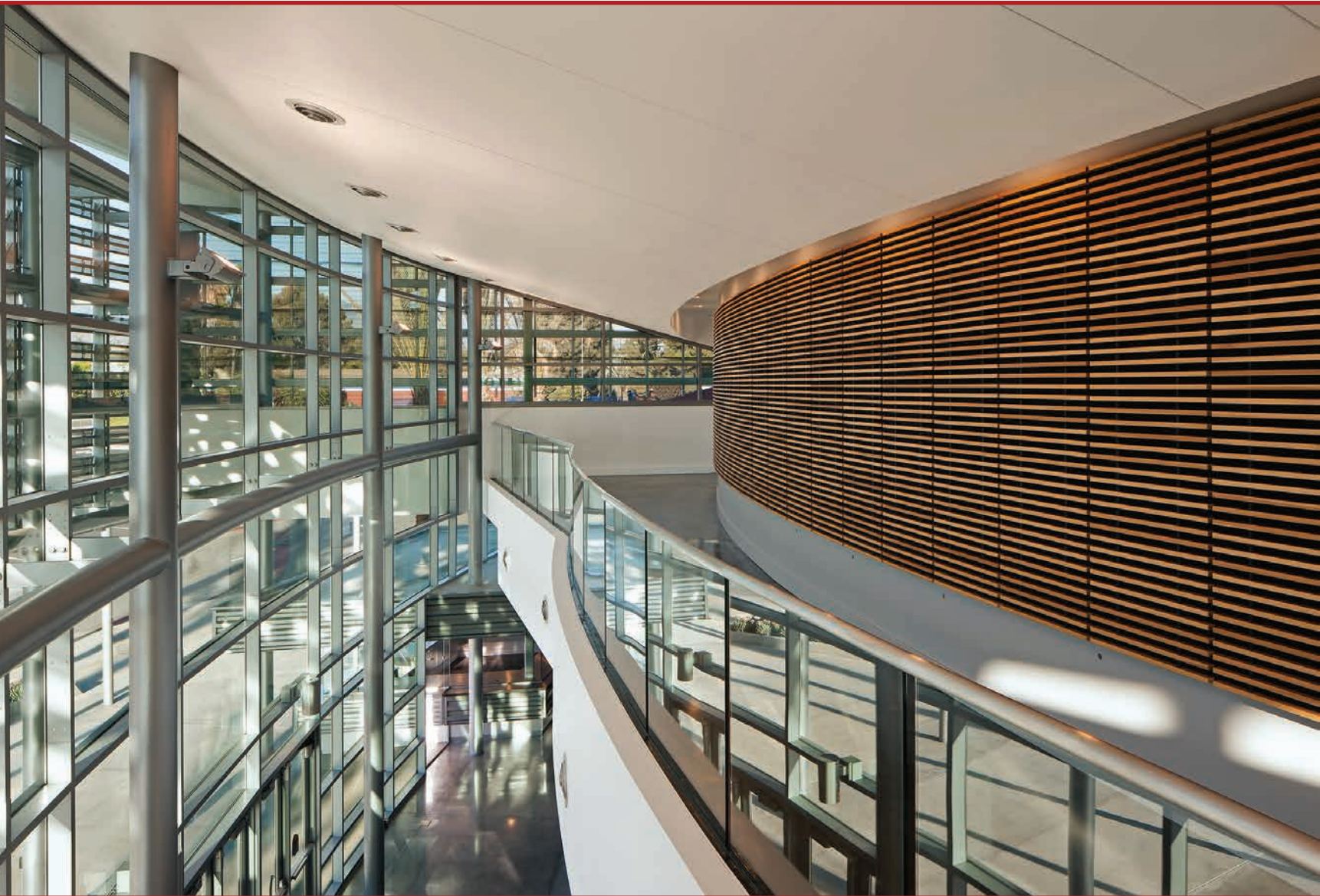
includes fiber optic. Based on educational programming, the center was first and foremost designed to be a first-class music hall. Rachlin and Newman Brown Acoustics did a great job of giving us a room that needs very little amplified sound reinforcement. During the facility’s inaugural season, we completed 80 public event days and will easily grow to 105-plus in year two. We have also done several musical theatre productions, such as *Shrek* and *The King and I*, along with a variety of instrumental and choral productions at all grade levels. We have staged several dance productions that span from classical and jazz to modern and hip-hop.”

“The theatre has conveniently located support spaces including a rehearsal room, scene shop, dressing rooms, and green room,” McMackin says. “Over the audience area are lighting catwalks, a followspot booth, a balcony rail, sidelighting, and torm positions integrated into the room’s architecture that provide a multitude of positions for lighting designers. All elevated work areas are provided with fall protection, together with hand and guard rails for belts and suspenders safety. A modular orchestra shell provides an acoustic enclosure for various-size musical ensembles. And we provided infrastructure that will accommodate a future variable-acoustics system.”

“When funds were secured to build a new center for the arts, the Bonita Unified School District called on our expertise in planning and design,” states Michael Rachlin, the architectural firm’s founder and principal. “We responded with a building that invites visitors to enter an airy, two-story lobby that accommodates more than 400 people and features an elegant, curved staircase rising to balcony level.” Richard Ingrassia served as lead architect on the project.

According to Rachlin, the architects have a 12-year history with the school district. “The overall design goal was to provide a sustainable building capable of serving students district-wide at all grade levels. With a design that is beyond what is typically used for K-12 school district, the Center for the Arts offers students unique opportunities to learn as much about back-of-house functions as they can about the performing arts. The center serves as both a performance venue and teaching facility for over 10,000 students in 14 schools, and supports three major programs: drama, choir, and music. The building was designed around the audience chamber and mirrors that of a professional theatre venue, a [configuration] that allows students to learn what it is like to function in this type of setting, as well as how to perform back-of-house duties, including lighting, sound, rigging, and set design.”

The heart of the building—the stage and audience chamber—informed the project’s design. “The chamber has a shell shape that is reflected in the façade of the two-story lobby,” Rachlin continues. “The design team wanted



The louver system on the building's exterior does double-duty as a design element and solar-shading device.

to create an exterior façade that would welcome users and guests, but needed a way to provide shading to the glass façade. The solution is a louver system on the building façade that performs double-duty as both a design element and solar shading. The louvers, or solar shading fins, track the angle of the sun, and open and close automatically to let more or less light into the facility; this is the first of its kind to be implemented on a California structure. In addition, a displaced-velocity air-conditioning system, with ducts placed beneath the audience seating, is a more efficient way of cooling the building.”

Auerbach Pollock Friedlander teamed with “Rachlin Partners based on prior successful theatre-design work,” McMackin says. “The theatrical systems and building infrastructure were designed to support both professional

entertainment and theatrical touring productions.”

“The decision to include a balcony was discussed at length,” McMackin states. “There was initial resistance to commit to the cost of a second level of seating and circulation. We strongly recommended a balcony for enhanced intimacy and audience/performer relationship. At 700 seats, a single level of audience seating would have resulted in a much wider, deeper, and less intimate audience chamber, locating more seats further from the performers. After reviewing case studies and touring other facilities, the team agreed and committed to balcony-level seating.”

A forestage platform system can be set at audience level for additional seating, or at stage level for a deeper apron. Side calipers provide direct circulation between the



The view from the booth, showing the ETC Eos Ti lighting console.



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Top photo: Tom Bonner; Bottom photo: Benny Chan

mid-house cross aisle and the stage. The seats are arranged in four areas, each flowing from one to the next: the orchestra pit, lower orchestra, parterre, and balcony. “Arranging the seating in smaller clusters,” McMackin considers, “contributes to a general sense that the room is smaller and more intimate than it would feel if the seating were arranged in one monolithic gesture. The rake and rise—slope and stepping—of the various seating areas increase in steepness from shallow at the lower orchestra, to steeper in the balcony. Tiered seating, in combination with seat stagger, provides the best possible vertical sightlines. The horizontal sightlines are carefully controlled for clear views from stage right to stage left.”

### Theatrical lighting system

The theatrical lighting was designed as a professional-level turnkey system, with major components being provided by PRG. Three Philips Strand Lighting C21 forty-eight-module racks house a total of one hundred twenty 20A dual SSR dimmer modules with 500ms response linked to a custom contact panel with 53 relays. A Strand ShowNet network with wireless access point connects to six portable network nodes, with a Vision.net rack-mount touch-screen interface and a portable interface. Lighting control is via an ETC Eos Ti console and a house-light panel; various distri-

bution devices were provided for dimmed and switched circuits.

Fixtures include 180 ETC Source Fours in various models and degree sizes, 16 Altman Lighting Spectra Cyc 100 LED cyc units, and a Lycian M2 medium-throw followspot. An ETC ELTS emergency lighting transfer system was also provided. Company switches provide power for temporary equipment. The theatre is equipped with two Lex Products 100A three-phase company switches, two Lex 200A three-phase company switches, and two Lex 400A three-phase company switches.

The lighting positions were established by APF during the early design phases, allowing them to be incorporated into the architecture, and thereby ensuring clear and safe technical circulation paths throughout the building. “It was important to us that the positions provide the flexibility and variety of angles for a lighting designer,” McMackin says. “We also wanted them to be easily accessible for hang focus and maintenance of the lighting plots by stage electricians.”

APF designed the counterweight rigging and stage draperies for the auditorium that were supplied and installed by Las Vegas-based Protech USA. A total of twenty-five 2,000lb capacity counterweight line sets with single pipe battens are augmented by five 2,000lb counter-



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weight sets with truss battens. Other elements comprise a pair of torm doors, house curtain, house teaser, three sets of legs, three borders, mid-stage traveler, upstage traveler, cyclorama, black scrim, and white scrim.

“The fall-protection system consists of long line fall arrest along all elevated work areas, including the lighting positions and rigging galleries,” McMackin says. “Technicians wear body harnesses and clip into the long lines when working overhead; this is in addition to railings at all overhead work areas.”

### **Sound-reinforcement system**

Auerbach Pollock Friedlander also handled projection, sound, and backstage communication systems, including a system designed to provide sound reinforcement for live speech, amplified voice/musical theatre, and popular music events. Supplied by Escondido, California-based Sound Image, the main left-center-right array comprises three JBL Professional VRX932LA 12" two-way Constant Curvature line-array cabinets and a single JBL VRX918 subwoofer per hang, augmented by four JBL PRX615 portable subwoofers. A total of 27 JBL Control 24CT

ceiling-mount, 13 Control 25T wall-mount, and five Control 47HC high-ceiling mount units are installed in other areas for program and paging. The line array and other loudspeaker systems are powered by various Crown CTs600, CTs3000, and CTs8200 multi-channel power amplifiers.

A Clear-Com Tempest900 Series wireless system handles stage communications between various back-of-house and front-of-house technical positions via portable belt packs, headsets, and loudspeaker “biscuit” stations. A program monitor/page/recall system provides audio monitoring of performances, page announcements to back-of-house and front-of-house areas, and audience recall chimes or messages to the front-of-house lobby. Back-of-house paging originations are provided from the stage manager’s control station, and integrated with the production intercom system.

“In addition to the live audio mix, the sound-reinforcement system accommodates playback of pre-recorded audio files, video projection, and archival AV recording,” McMackin says. “A wireless microphone system is provided for hands-free and inconspicuous

miking of performers.” The wireless rig includes four Shure ULXP14D body packs, two Shure ULX1 body packs, and a Shure ULXP24D handheld transmitter, while wired models include an Audio-Technica AT8035 audience microphone, 10 AT899CW-TH lavalier mics, an Audix DP5-A drum-microphone package, four Sennheiser MD421 mics, and various Shure SM57, SM58, and SM81 dynamic mics.

Technical control is accommodated via a series of suites located at the back of the orchestra level, including a large audio mix position open to the performance area for line-of-sight to the left-center-right loudspeaker arrays, and an enclosed lighting control/stage manager position for acoustic separation from the audience. A separate AV equipment room houses Middle Atlantic WRK-4432 racks fitted with processing gear, including a Symetrix ARC2E DSP controller and a pair of Symetrix Radius 12 x 8 audio DSP units with Dante I/O; Bittree 489 Series programmable audio patch bays; and Bittree B56T-1WTHD video patch bays handle signal routing.

The front-of-house mix position features a 34-fader Yamaha CL5 mixing surface with Audinate Dante connectivity via a trio of Yamaha Rio 3216-D 32-in/16-out racks; a Yamaha MBCL meter bridge also was supplied. A pair of 100' Whirlwind Medusa Series 16-send/four-return stage boxes enables patching of audio signals from the stage area to the mixing console and signal-processing equipment. “This is the audio system’s backbone,” adds McMackin. “It provides wiring infrastructure to accommodate in-house equipment, while permitting easy interface of touring, rental, or other portable equipment. A cable snake chase is provided from the loading dock to the stage and from the stage to the mid-house mix position and to the control booth. An empty conduit or raceway system was designed to support the future or additional cabling.”

APF also designed a semi-custom orchestra shell based on acoustic criteria established by Newsom Brown Acoustics, and provided by StageRight. “Shell components include three ceiling units with built-in orchestra lighting flown on three, 2,500lb capacity linesets, eight modular orchestra towers, and a rear wall assembly mounted to the upstage wall of the theatre,” McMackin explains. “The functional criterion from the owner was to accommodate various ensemble sizes, from a soloist to 112 performers; the modular design allows for easy conversion to various-size enclosures. The fixed upstage wall provides maximum usable stage area by eliminating the dead zone usually imposed by the depth of the upstage tower bases. The nesting design of the towers reduces storage footprint to a minimum.”

Future plans call for a variable-acoustics system, with APF providing mechanical designs for the possible installation of a system designed by Newsom Brown Acoustics. “The planned system consists of a motorized drapery

track that will mount in the catwalks,” says McMackin. “Draperies can be deployed into the volume of the room above the overhead reflectors located over the audience chamber, or retracted into storage pockets. The addition of the draperies would enhance video presentations and speech-based uses, such as drama and lectures, by reducing reverberation time of the room. But, even without the variable acoustics, the room works well acoustically for all types of productions.”

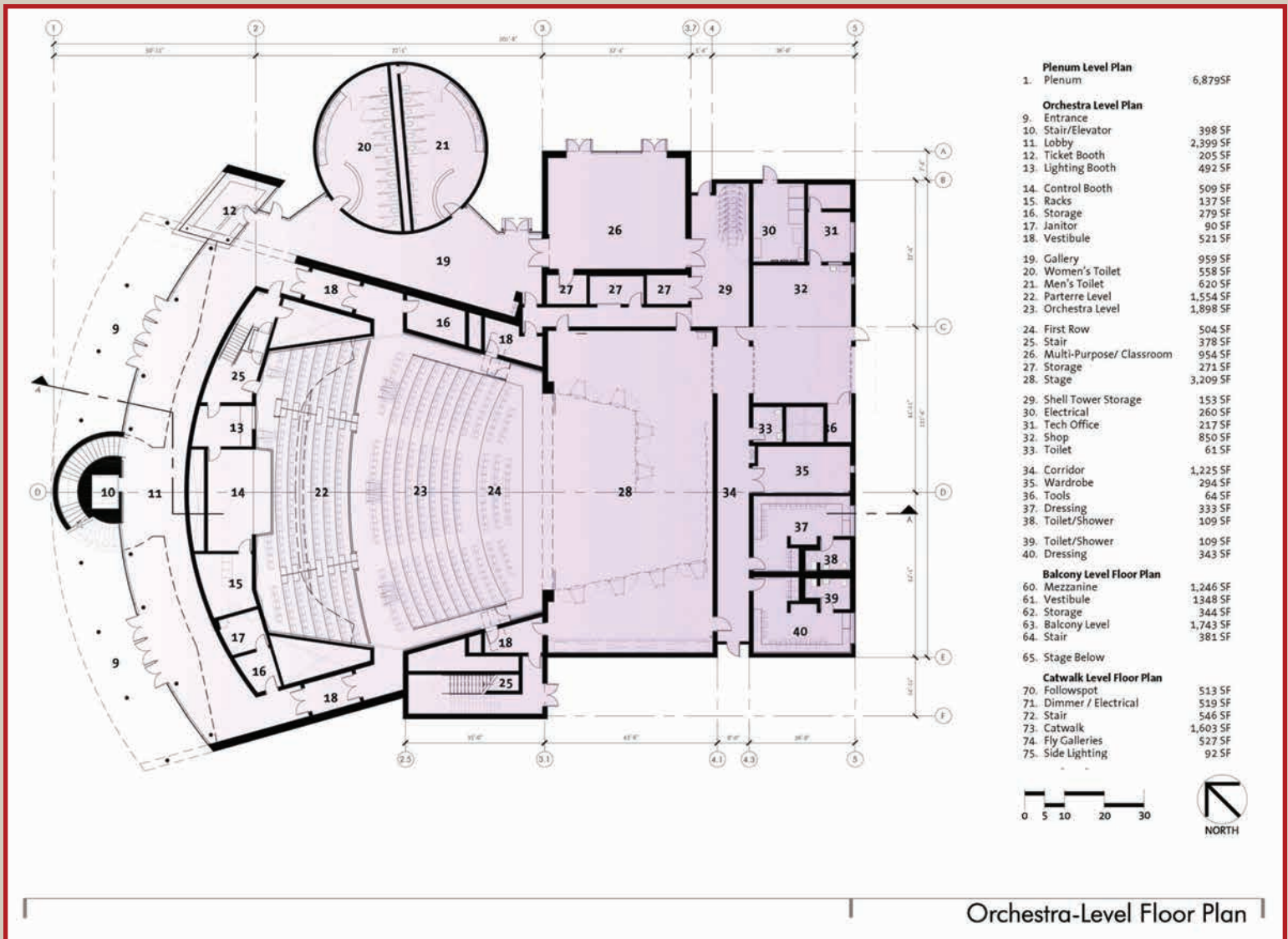
A front-projection screen is sized to accommodate multiple projection formats, including wide-screen (16:9), computer wide-screen (16:10), and standard video (4:3) aspect ratios. “A simple control system with touch panel controls is installed in the booth rack,” McMackin explains. “It allows control over different elements of the audio and video systems, including projection screen, projector, video switcher, and audio DSP.” Sound Image provided all of the AV systems, including a Panasonic DMR-EH59GA-K DVR, Panasonic PT-DX8300U projector, Samsung 320MP-2 32" video monitor, and four Sharp LC-42SB48 42" video displays.

### **Dual-coverage approach for facility connectivity infrastructure**

For broadcast support, APF took a dual-coverage approach to the facility’s infrastructure. “Abundant connectivity is provided via single- and multi-mode multi-strand fiber optic and Belden 1694A HD/SDI video tie lines throughout the facility,” McMackin says. “This topology will accommodate most needs for routing broadcast video signals. In addition, large empty-pull conduits are provided between the loading dock and the stage, and the stage and the control booth.”

“We have a generous scene yard that can accommodate broadcast trucks, artists’ trailers, buses, and the like,” states facility general manger Cox. “We also have significant shore power available at key locations to drive this equipment. We have a booth that is glassed off for a video director or production stage manager to call a show without disturbing the audience. There are five camera locations in the audience chamber equipped to handle a variety of network applications. We spent our dollars on infrastructure, knowing well that down the road we could take advantage of emerging technologies.”

APF and Rachlin Partners conceived and collaborated on the design for a backstage spine crossover corridor running from stage right to stage left on the upstage side of the upside wall. “This layout provides backstage crossover plus direct access to the dressing rooms to one side of the corridor and the stage on the other side of the corridor,” McMackin says. “The scene shop connects the loading area to the stage through two loading doors on either side of the crossover corridor for acoustic separation. The crossover corridor connects directly to the



Orchestra-Level Floor Plan

"The chamber has a shell shape that is reflected in the facade of the two-story lobby," Rachlin says.

green room/rehearsal room and to the lobby front of house."

"APF was both excellent at listening to the client's needs and understanding the workings of a performing arts facility," acknowledges Cox. "There is truly not a bad seat in the house; even the balcony seating gives you an intimate and clear view of a production without obstructions. A unique feature of the audience chamber is that it is air-conditioned and heat is supplied from under the seats—the pedestal serves as the supply for the system.

"We had several pass-throughs on AVL with slight modifications based on programming. Again, we always kept an eye on industry standards and vocational training objectives. Currently, the center has a part-time staff of approximately 20 college-level technicians, and we are developing a production intern program to train high-

school students in the areas of stage lighting, live sound reinforcement, video, and stage management."

"The general first impression from the community is that their tax dollars were well spent," Cox concludes. "Both the communities of San Dimas and La Verne pack the house most evenings for a variety of programs. We will continue to see a trend where school districts pool their resources to build a quality venue that serves the widest population both in terms of demographics and student ages." 📶