

HALE & HEARTY

A Utah theatre company's DIY architecture project

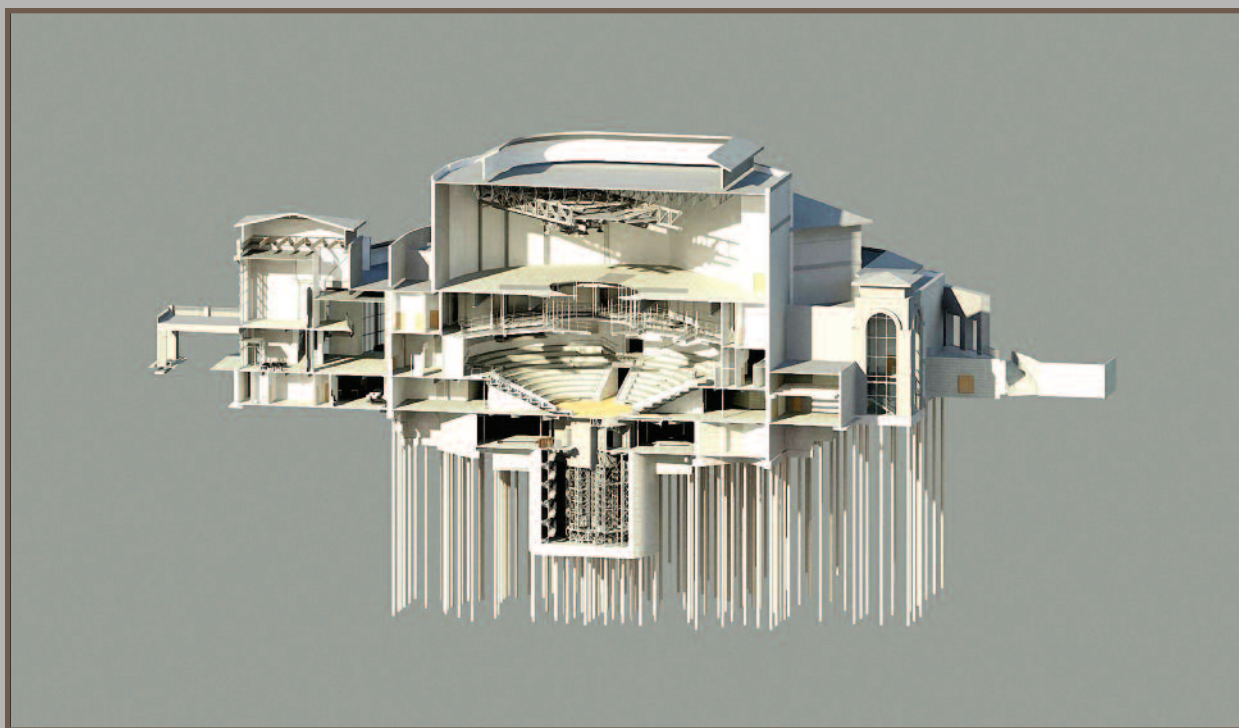
By: Mel Lambert





With a growing reputation as a high-tech resource center, Salt Lake City is attracting an increasing number of creative professionals for whom regular access to musical entertainment is becoming the norm. For more than 30 years, Hale Centre Theatre has enjoyed a reputation as a professional, non-Equity theatre company dedicated to providing high-level productions to its patrons. The company's new home, The Mountain America Performing Arts Centre, houses a custom-designed, two-space facility in Sandy, south of Salt Lake City. The new space provides additional flexibility for in-the-round productions—the company's staple offerings—as well as proscenium-style shows; it is also extending theatre-education programs for students of all ages in the Utah arts community.

The enhanced facility reflects the legacy of Nathan and Ruth Hale, who were immersed in community theatre in the Salt Lake area during the 1930s and 1940s. Relocating to Southern California, in 1947 the couple opened the doors of the in-the-round Glendale Centre Theatre, located east of Los Angeles. The couple eventually returned to Utah and, in 1985, they—joined by their daughter Sally Hale Rice, grandson Mark Dietlein, and his wife Sally—transformed a former lingerie factory in South Salt Lake into the first Hale Centre Theatre; the first production, *I Came to Your Wedding*, reportedly attracted 25 patrons, but the company soon drew a community of actors and fans. In 1998, it relocated to larger premises in West Valley City where the Dietlein Family built a new 530-seat theatre that featured a high-tech center stage. In November 2017, the creative team opened its current 133,306-sq.-ft. iteration, with a multi-element revolve in the Centre Stage and a companion Sorenson Legacy Jewel Box Stage for smaller productions.



This cutaway view gives a sense of the entire complex.

“Our research showed that while 5% of the US population attends live theatre, here in Utah some 12% enjoy the art form,” says Mark Dietlein, the company’s president and CEO. “The greater Salt Lake City area is experiencing high economic growth, with high-tech companies moving into the area; it is often referred to as ‘Silicon Slopes.’ Our new performance center will offer contemporary musicals and plays targeting receptive patrons with a keen interest in dazzling, uplifting productions. We believe in combining traditional theatre with state-of-the-art technology for the performing arts. Our in-the-round stagings enhance the storytelling process, with a flying system that would rival any Cirque du Soleil stage. LED video walls, and flexible lighting adds to that fully immersive experience.”

Hale Centre Theatre currently employs a full-time staff of 52 benefited and 150 part-time employees, and annually hires more than 300 actors. The theatre complex is located near many restaurants, retailers, and hotels. The first production staged in the new Centre Stage was *Aida*, with music by Elton John and lyrics by Tim Rice. “The music, dance, and costumes came to life as never before on a stage with technology like no other theatre on the planet,” says Sally Dietlein, HCT’s executive producer. Productions scheduled for the 2018 season include *The Wizard of Oz*, *The Hunchback of Notre Dame*, and *The Music Man* in the Centre Stage plus, for the holiday season, *A Christmas Carol* in the Jewel Box Stage.

The Centre Stage seats 901 patrons, with a stage area that offers a total of 47 axes of motion powered by motors

for independently hoisting a center column lift, four quad lifts, two large crescent lifts, and two slip stages; overhead, two crane trolleys can lift or lower multiple performance pieces across the theatre’s span. The Sorenson Legacy Jewel Box accommodates 467 patrons and features a thrust configuration.

Of the total \$81-million cost for construction and outfitting, which began in September 2015, the City of Sandy secured a \$42.7-million bond to provide the major financing, which Hale Centre Theatre will pay back during the course of its lease; the remaining \$38 million was provided by donations from Mountain America Credit Union, Sorenson Legacy Foundation, and others. Principal creative participants in the project were architects Beecher Walker & Associates, working closely with Layton Construction and TAIT (based in Lititz, Pennsylvania), which developed the primary staging and flying systems.

Because of the tight schedule—six months for excavation and foundations and 18 months for construction—“we knew that we were facing a time crunch,” says Jared Adamson, project manager for Layton Construction. “Our biggest challenge was the 60’ hole that had to be dug into the ground [to accommodate the complex revolve in the larger theatre] on a site where the water table was 6’ below grade. Three high-capacity pumps were used during construction, and we installed two permanent pumps that will run for the life of the building. Anytime you build a high-profile project, the opening night is a nervous experience. But, despite the time frame, everybody was happy



The main lobby concession area.

with the results.” The building measures 164' from the pit of the stage to the roof and contains 1,800 tons of structural steel plus 9,800 cu. yds. of concrete.

As Dietlein points out, a total of 222 vertical pilings, buried up to 100', hold the building firmly in the ground. “After all, our foundations are, basically, a giant concrete bath tub that is trying to float on the water table. So, to prevent it bobbing up and down, the architect specified those 16” pilings. It is quite a construction!”

In-house design

According to Kacey Udy, who served as technical director during the construction and outfitting phases, the staff has so much experience with staging in-the-round productions that it decided to design the new facility in-house, bringing in technical experts when necessary and outside consultants to advise on key equipment options. “We are so familiar with our specific needs that we used in-house talent to define what we needed for [both theatres]. Initially, we were only considering a single performance space on the 122,300-sq.-ft. site at Sandy’s new 1,000-acre Cairns City

Center. But, pretty much at the last minute, I drew up plans for a second proscenium thrust space at the edge of the property, for added flexibility.”

In addition to a flexible revolve and flying rig that can accommodate multiple scene transitions, the Centre Stage also features six large-format LED screens around the perimeter “to enhance the immersive experience,” adds Udy, who also serves as the facility’s resident set designer. Other staff members involved in the design project included Rob Kinmont, technical engineering manager; Danna Barney, head of lighting; Michael Gray, lighting board programmer and associate designer; Joshua Roberts, media/projection specialist and lighting designer; and Dan Morgan, resident sound designer.

Lighting systems

According to Barney, “Our big problem at West Valley was that the theatre was just too small, with narrow and low catwalks. Our sightlines and hang positions were becoming nil as we added bigger fixtures, sets, and speakers. The spotlights were retrofitted into the ceiling in an ingenious

way, but there was a major disconnect between the operators and the show. For Sandy, we wanted to have a catwalk that two people could walk through and work on at the same time. We laid out bars that our moving fixtures could hang from and never hit set pieces. The width of our catwalks went from 2' 6" —at the widest—to 3' 6". And we wanted a place for our spot operators to stand and have a great shot of the stage they were lighting.

"Without the risk of oversimplifying, we wanted the lights to be pretty," Barney says, talking about the Centre Stage. "Not just the lighting design, but the fixtures themselves; we wanted to engross the audience in the show, with nothing to distract them from the feeling that they are

about to experience something great; we didn't want them to see an awesome stage and then look up to see...chaos. Symmetry was key; fixtures were spaced out to the inch from each other, and that stays consistent 360° around our catwalk."

With its proscenium arch layout, the Jewel Box was the bigger challenge, Barney recalls. "Most of the crew had been working in-the-round for so long that we had to remind ourselves of things like electrics, side ladders, and tabs—even getting used to having stage right and stage left again," she says. "Because we knew that we were going to have a relearning curve, we hung fixtures that could work in any type of show. Our rep plot covers each



The Hunchback of Notre Dame. The lighting rig combines ETC conventional and LED units with High End Systems SolaFrame Series automated units and Robert Juliat followspots.

Left photo: Douglas Carter; Right photo: Beecher Walker & Associates - Corey Middleton

playing area from each angle, and we used LED fixtures for versatility. It's given us a chance to rediscover the beauty of back- and sidelight."

According to Peter Maurelli, from Barbizon Lighting, which supplied and installed the hardware, the Jewel Box features an ETC Gio console, while the Centre Theatre's lighting inventory centers around an Eos Ti console with an Eos RPU3 remote processor unit as backup, linking to 16 Net3 Gateway two-port nodes and a pair of Net3 four-port DMX ports to provide DMX control at 60 locations. A quartet of City Theatrical SHoW DMX Neo transceivers and receivers provide wireless control links and control of costume lights. Five ETC Sensor Racks provide 480 dimmable

circuits. Three Sensor IQ-48 panels accommodate 144 three-phase 120V relays, while a second trio of Sensor IQ-48 panels offers sixty 208V relays. An ELTS2 emergency lighting system provides a transfer switch for a dozen 20A circuits linked primarily to LED fixtures in the theatres and hallways. Architectural lighting is coordinated through a bank of four ETC Paradigm ERn4-RM rackmount control processors.

The lighting inventory include ETC Source Four Ellipsoidals, Source Four Fresnels, LED Series 2 Lustrs, and Desire D60 units, "which are used as wash fixtures and downfills to place a pool of color on the stage," Maurelli says. "The Source Four LED fixtures provide flexi-



Absen video walls are featured in the Centre Stage; content is delivered by a disguise gx 2 graphics workstation/media server.



This scene from *The Hunchback of Notre Dame* shows the TAIT lift system at work.

ble color changes and offer warm flesh tones while lighting people. They also allow night scenes to be lit with a deep blue.” LED house/work lights include 24 Osram KREIOS FLx fixtures. “They offer a 3,200K color that matches the Source Four instruments,” he adds.

Moving lights in the two theatres include 80 High End Systems SolaFrame Theatre units and plus 44 SolaFrame 750 luminaires. “These High End fixtures were launched last August,” Maurelli explains. “The Hale Centre bought them sight unseen; they have worked out very well.” Followspots include 10 Robert Juliat Super Korrigan units with 1,200W/DXS HMI lamps, mounted on Robert Juliat GT1000 tripod stands with push-pull color changers. “The 1,200W HMIs enable a small form factor on the outer ring,” says Maurelli. Also available are MDG Atmosphere haze generators with onboard DMX control, plus MDG Me2 and Me4 foggers.

House lights in the Centre Stage include 24 Desire D60 units that “accurately match those within the theatrical lights,” Maurelli explains, “and provide multiple colors as actors move on and off the stage area, extending the on-

stage palette; they show white when mixed.”

After years of hanging fixed specials or gobo washes that might only be used in a single scene, Barney now values the High End SolaFrame Theatres. “However, it seemed a waste to tie up a moving fixture for constant face light or general washes,” she says. “That is where our fixed instruments come into play. We set the mood or focus with the movers and fill in with our fixed wash units. We are fortunate to have many movers and can add movement or effects if something is still missing from the scene.”

In the facility’s previous locations, lighting staff specified ETC and Robert Juliat fixtures. “Over the years, we would try off-brands to save money,” Barney says. “But the quality wasn’t there, and such fixtures would simply be outperformed. ETC offers amazing quality and was always great to work with if we had to call and troubleshoot anything. Robert Juliat is the first name I think of when it comes to spotlights; they’re the ones I used in college. For 14 years we had [Robert Juliat] Lucy spots in West Valley; we only had 10 instances when something went wrong, and which

was non-user error or basic wear and tear. Our biggest change was going with High End for our movers; that choice was mainly due to the fact that these fixtures are LED. The thought of changing some 70-odd lamps did not excite me! The biggest seller was the fact that the SolaFrame Theatres don't have fans and are silent in use. We can turn on all of our movers in each theatre and it is eerily quiet."

During production of *The Hunchback of Notre Dame* in the Centre Stage, lighting designer Roberts needed to create 13 different locations during the opening number, including a wood, a bridge over the River Seine, a cathedral, and a gypsy camp. "I find that with wash lights you lose the performers," he says. "Instead, I prefer to use moving lights to isolate the actors and direct the audience's view so that they do not miss the action. It's like a dance of light that guides the audience to follow the story; it also distracts their attention as scenery is coming off and on."

Sound systems

Because the Hale Centre Theatre team was already familiar with the brand, and enjoyed good results at the West Valley site, it selected L-Acoustics ARCS Constant Curvature line-array cabinets in eight hangs of three arrayed along the faces of an octagon, with four L-Acoustics SB18 subwoofers flown in pairs along the room's long axis, "as recommended by computer modeling," recalls Deward Timothy, of Salt Lake City-based Poll Sound, the theatre's audio gear supplier. "The ARCS come in two versions—15° vertical and 30° vertical—with the sensitivity and projection advantage going to the narrower device. Therefore, the arrays were built with the 15° versions covering the longest throw."

"We also supplied 20 L-Acoustics 5XT cabinets as front fills," Timothy continues, "with 12 L-Acoustics 5XT and four X12 cabinets as stage fills, together with 32 Bose RMU boxes for surround loudspeakers. The audience receives stereo mixes across each quadrant of the audience area." An array of LA4X and LA8 amplifier controllers,



The theatre's production of *Tuck Everlasting*.



During construction, the seating arrives from Irwin.

loaded with custom DSP settings, drives the L-Acoustics cabinets, while the surround cabinets are powered by Bose PowerMatch PM8500 amplifiers. No IEMs were supplied: “Performers prefer playback from front-fill and overhead stage monitors,” Timothy explains.

A 128-channel Yamaha RIVAGE PM10 digital console handles multi-quadrant front-of-house and side-fill mixing duties, with 36 channels of Shure Axient digital wireless microphones for onstage talent. A Biamp Tesira networked processing and distribution platform handles signal routing to dressing rooms and backstage, lobby, and staff areas, with Listen Technologies hearing-loop and RF assistive listening systems. An 18-channel Radio Active Designs system handles wireless intercom, together with a Clear-Com wired system. Audio playback is from a multichannel Figure 53 QLab unit.

For the Jewel Box’s PA system, “We repurposed six L-Acoustics X12 coaxial cabinets from the West Valley site and hung them as three pairs to cover discrete audience sections,” Timothy continues, “together with seven X8 delay cabinets, four SB18 subwoofers in two stacks of two, 12 5XT front fills, two X8 stage fills, and 15 QSC K8 self-powered surround loudspeakers. We may add an [L-Acoustics] ARCS system if more horsepower is needed.” Like the larger space, all L-Acoustics speakers are powered by LA Series amplified controllers; a Biamp Tesira provides routing to backstage areas. “The 64-channel

Yamaha CL5 digital console from West Valley handles LCR mixes for front of house,” the consultant adds. A 34-channel Shure Axient digital wireless mic system also is available, plus a Listen Technologies system, Radio Active Designs wireless, and Clear-Com wired intercoms.

“We knew that wireless coordination for microphones and intercoms in the two theatres was going to be a major challenge,” Timothy explains, “and so we specified an RF barrier that took the form of a mesh buried in the concrete. Because the Axient mics offer sharper tuning than other systems, for now we were able to set them up with no overlapping frequencies. But the Centre Stage already needs more RF slots, so the RF barrier was a good investment.”

ABD Engineering & Design offered advice on acoustic treatment and sound isolation. Principal engineer Melinda Miller recalls that retaining sound within each theatre and keeping out noise from the nearby Interstate 15 freeway were major challenges. “The architect placed offices and support spaces, as well as the parking structure, between the theatres and freeway,” she recalls. “They also specified an 18" wall between the two performance spaces. We worked with the architect and mechanical engineer to reduce sound transfer between the theatres, specifically where ductwork for the HVAC system crossed over. We also upgraded the doors to prevent sound transfer between theatres. To reduce the noise of helicopter fly-



Installation of the center lift.

overs, we added mass to the roof to provide extra sound isolation.”

Because Centre Stage features a multi-component sound system, the acoustician targeted an RT60 of less than one second. “We specified acoustic curtains at the catwalk levels to dampen the sound and make sure any sound that went up to the catwalk level did not reflect back down,” Miller continues. “The seating, carpeting on the walls, and acoustical panels under the catwalk also helped control the sound within the theatre. For the smaller theatre, we concentrated absorption on the rear and side walls to minimize reflections, plus curtains around the catwalks.”

Video systems

According to Roberts, the Centre Stage’s media and lighting designer, the facility selected a disguise gx 2 graphics workstation/server for the Centre Stage and a gx 1 for scenic elements and corporate events within the Jewel Box. “We considered systems from three vendors,” he recalls, “and settled on disguise because it was a stable supplier in the marketplace with an established user base; we knew we could rely on good after-sales support with a community of programmers. In the large theatre, we installed a pair of Absen 3,528-by-576-pixel and four 1,656-by-576-pixel LED video walls [used as backgrounds for flying objects]. We also have an Absen LED Jumbotron

configured as a four-screen cube flown above the stage.”

Also available is a Panasonic PT-RZ21K 360° laser projector for the Jewel Box Theatre—“We specified that low-noise unit to try it out; we may also add some to the Centre Stage,” Roberts says—while the lobbies feature various Absen arcade-style signs, a five-screen Absen art-deco array, Samsung TV video walls, and a Samsung concessions-menu TV. “We also have a number of Revel players and NovaStar MCTRL660 video scalers for the video walls and concessions screens,” Roberts adds. Video systems were supplied by Barbizon Lighting and Revel Connect.

Staging systems

To supply the Centre Stage’s complex staging system, the company turned to Tait, installer of its previous in-the-round systems. “We consulted closely with the in-house designers to ensure that we could deliver what they needed,” says Jim Love, Tait’s VP of engineering and head of R&D. “The West Valley facility used a dual-level lift that was slow and produced high noise levels; for the new stage, we developed a system with more than 80 powerful motors and additional axes of motion.”

The new rig comprises a center lift that can revolve independently, surrounded by four quad lifts, four vom lifts, and two crescent lifts. “We also installed two slip stages that cover the area while new scenery or performers are

positioned onto the revolves at the [below-ground] load-in areas,” Love continues. “The entire multi-element revolve system is approximately 24’ in diameter and can move up and down some 20’ in 20 seconds; the vom lifts are 15’ in length. The center stage can move 4’ above the other elements and revolve at up to 4rpm, while the quad segments can revolve at 3rpm.”

Overhead is a pair of crane trolleys with eight spinner revolves that can move across the stage at 6’ per second to lower and raise individual set pieces or performers using eight 1,000lb and eight 500lb winches, plus two ACP winches. “The staging system is controlled from two Tait NAV:Polaris fixed consoles and two NAV:Compass handheld consoles [located in the grid and AV booth], with six Leuze Electronics laser scanners and 18 Tapeswitch Astragal [sensing mats] for talent and operator safety,” Love states. The Jewel Box features a pair of stage revolves, six Tait counterweight-assisted automated winches on JR Clancy rigging, and several legacy winches from the West Valley facility; control is via a NAV:Polaris console.

Commenting that the Hale Theatre system is “the most complex we have ever designed in a theatre,” Love says that “patrons now have access to a theatre in Utah with so much technology capable of doing so many exciting things. It is an impressive development for a community theatre.”

While four Rose Brand 400 Series drapery tracks were specified for the Jewel Box, the Centre Stage received a main drape/traveler sewn from two 30’ pieces of black 25oz IFR Prestige Velour, a masking valance sewn from 25oz IFR Prestige Velour, six leg sets sewn from a piece of black 25oz IFR Crescent Velour, two borders sewn from black 21oz IFR Crescent Velour, and an upstage traveler sewn from black 21oz IFR Crescent Velour. A black seamless sharkstooth scrim measures 34’ by 45’ and a seamless gray muslin cyc also were supplied by Barbizon.

“Our biggest challenge,” says Kevin Twomey, Rose Brand’s west coast director of technical sales, “was to develop conventional theatrical drapery solutions within a non-traditional, in-the-round space. We specified smaller main curtains at the grid and pit levels, together with

entryway drapes at the four corners for the vom entries, with two sets to provide light and sound traps.”

Conclusion

“The new Mountain American Performing Arts Centre will be the crown jewel of Sandy’s new 1,000-acre Cairns City Center,” said former Mayor Tom Dolan during opening ceremonies. “It adds a family-friendly vibrancy to our ‘Mountain Meets Urban’ community, and a unique offering found nowhere else in the world.”

“Hale Centre Theatre’s beautiful, yet cutting-edge, design reinforces their vision of being a world class the-



Forever Plaid was the inaugural production in the Jewel Box Theatre.

atre,” says Gemma Guy, senior director of business development with Tait. “It is brilliant to see their vision come to life.”

“Our theatre in Sandy signifies a new era for Hale Centre Theatre,” concludes Sally Dietlein, “by creating wonderful opportunities for innovative storytelling in a way that has never been done before.”

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