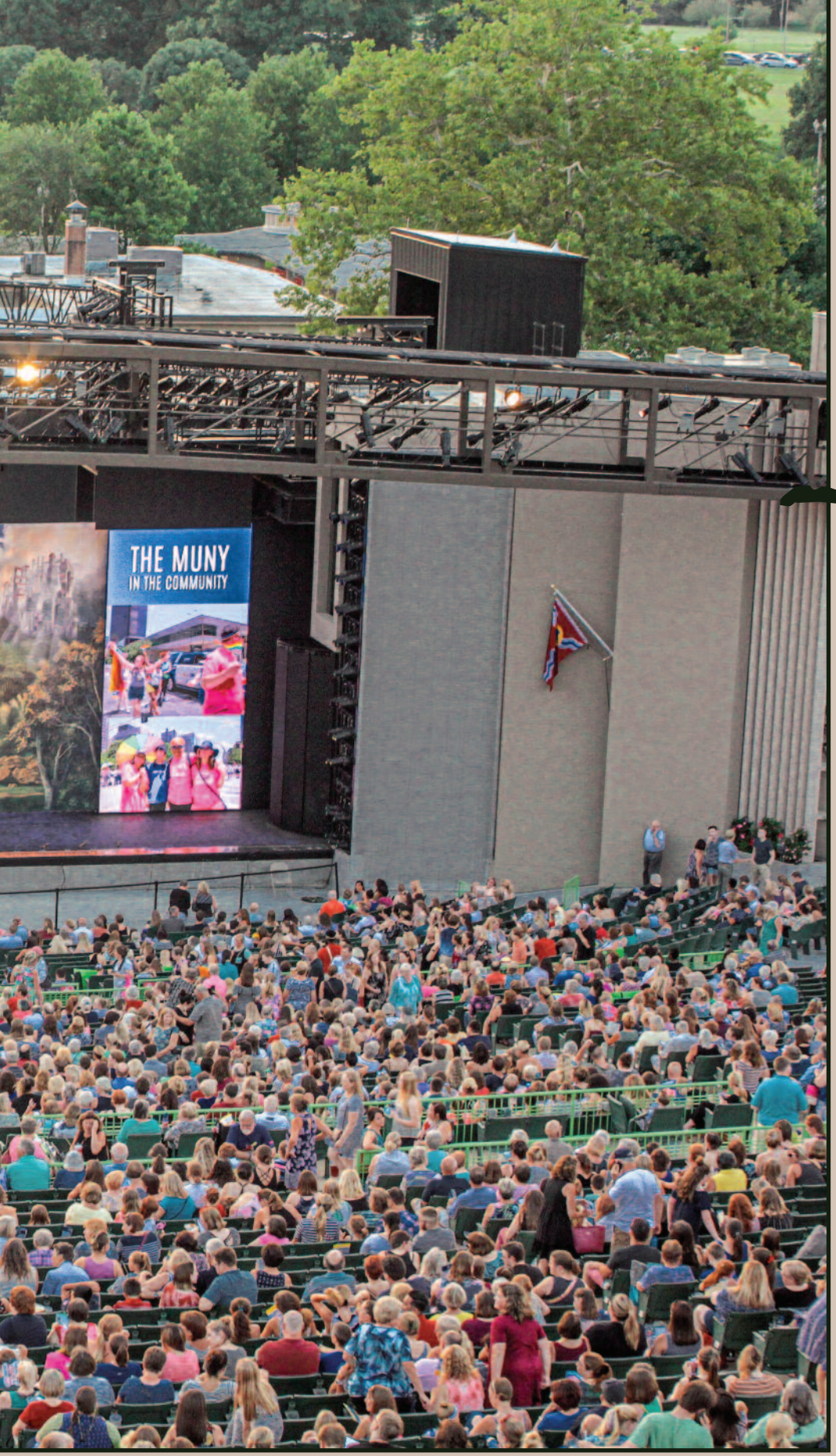


The Spirit of St. Louis



The Muny, the city's distinctive outdoor musical theatre venue, gets a forward-looking makeover

By: Mel Lambert

The Municipal Theatre Association of St. Louis—better known as The Muny—an 11,000-seat, open-air amphitheater located in the city's Forest Park area, this year celebrates its 101st year. Home to annual seasons of musical theatre, it recently received a $33-million upgrade that included a number of much-needed technical and creative enhancements. "The past 100 years have seen remarkable changes in the types of performances our audiences enjoy," says Sean Smith, director of operations, who joined the venue in 1997. "The outdoor theatre was beginning to show its age; the large lighting bridge over the stage was built in 1935 and needed to be upgraded. We were operating very old-school, with carts that had to be pushed on- and offstage. Because of these and a myriad of other reasons, we decided to revitalize and reimagine The Muny for coming generations. It was time!"

Fisher Dachs Associates was appointed lead consultant for the renovation, working closely with New York-based H3 Architects. General contractor was Tarlton Corporation, with TD4 providing electrical services and TSI coordinating AV services. Theatrical lighting came from ETC and Chauvet Professional—the latter provided by Bandit Lites—with TAIT providing the show deck, turntable, and wagons. As with previous sea-

All photos: Courtesy of the Muny

The theatre has a seating capacity of 11,000, making high-quality lighting and sound systems vitally important.

sons, Masque Sound provided a summer rental package of DiGiCo consoles and Meyer Sound loudspeakers.

"We were first approached back in the summer of 2015," recalls Joe Mobilia, who served as FDA's head of project planning, working closely with The Muny's in-house production team, including production manager Tracy Utzmyers and technical director Tim McDonald. "As we discovered, Phase One of the planned two-year project would comprise rebuilding the stage, orchestra pit, light bridge, and stage towers for the 2019 season." A new and enlarged lighting bridge, made of structural steel, features an integrated walkway that accommodates enhanced lighting configurations. Two shell-shaped support towers flank the stage area and contain improved electric and sound operations. Jeff McCrum, of FDA, oversaw selection and commissioning of the lighting systems, while Andy Smith, of Boyce Nemec Designs (working as a sub-consultant to FDA), advised on the infrastructure for A/V systems. McClure Engineering, the project's MEP engineers, handled incidental acoustical features, including sound-absorbing panels for the orchestra pit.

Phase One's scope of work, completed in late May 2019, included rebuilding and revamping The Muny's century-old stage to address structural needs and incorporate modern stage technologies. A new revolving platform, which moves sets and actors more efficiently, replaces an existing turntable installed in 1930; other upgrades include three tracks for moving scenery and five lifts. In addition, a new, expanded climate-controlled orchestra pit situated beneath the stage allows the musicians to remain visible to concertgoers but in an environment that protects musical instruments that are sensitive to humidity and temperature fluctuations.

LED screens have been positioned at stage left and stage right. A full basement, new electrical and mechanical systems, elevators, restrooms, locker rooms, and general storage spaces also have been added.

The Phase One construction schedule was daunting, with just 10 months from demolition in late summer 2018 to the June 2019 opening. "One of the saving graces was

that the contractor was able to bring a tower crane onto the site; without that, we almost certainly would have required two seasons to complete the upgrades," Mobilia says. With Tarlton as construction manager, and crews working double shifts, the project remained on schedule.

The 2019 season kicked off last June with *Guys and Dolls*, followed by *Kinky Boots*—reportedly, the first US regional theatre production of this award-winner—Rodgers + Hammerstein's *Cinderella*, *1776*, *Footloose*, and *Paint Your Wagon*; the season ended in mid-August with The Muny premiere of the Tony and Olivier Award-winning *Matilda*. "We produce seven musicals each year, which, normally, run for seven days, with a two-day turnaround," explains Utzmyers. "We now have five on-site locations for rehearsals, which normally run for 11 days, together with more space for scenery construction and wardrobe."

Phase Two, which includes reforesting of the stage—in essence, returning a canopy of trees that once enveloped the stage in the 1930s—and adding decorative shells, will be completed prior to the 2020 season.

The lighting package

"The main requirement was to revise The Muny's lighting system so that it offered the flexibility to support their productions for the next 50 years," says Fisher Dachs' McCrum. "Much of the past lighting had been industry-standard but designed for temporary use. DMX was rerun every year, for example, and all power was run from the dimmer racks around the stage in Socapex connectors. It worked, but at the expense of requiring a lot of time and labor. Ultimately, we decided that the majority of updates would focus on more permanent solutions for The Muny's lighting, including an intercept panel with dry lines for power throughout the space and the creation of an Ethernet-based data-distribution system. Since one of the venue's eventual goals is to tie in more of the architectural lighting, we designed an ETC Paradigm backbone for the staff to grow into over the next few seasons."

The lighting-system designer concedes that the onstage trusses were confirmed much later in the design process. "But the main bridge replacement was something we all knew needed to happen," McCrum says. "The previous catenary bridge was problematic for focusing, because electricians had to keep their weight centered to prevent the focus changing when they left the bridge. It was also slightly too steep for how The Muny's lighting designer, Rob Denton, wanted to light the space. We collaborated closely with Rob to provide a front-light position that moved slightly higher but mostly further away from the stage. And, in case the stage moved forward or upward due to scenery, we also provided multiple mounting-height options for lighting fixtures."

Most of the new side-building locations were designed to recreate existing lighting locations as best as possible, "given their great side-lighting angles that had worked well for years," continues McCrum. "Because Tim McDonald,

The theatre is located in the city's Forest Park area. Phase Two of the renovation will involve reforesting of the stage—in essence, returning a canopy of trees that once enveloped the stage in the 1930s.

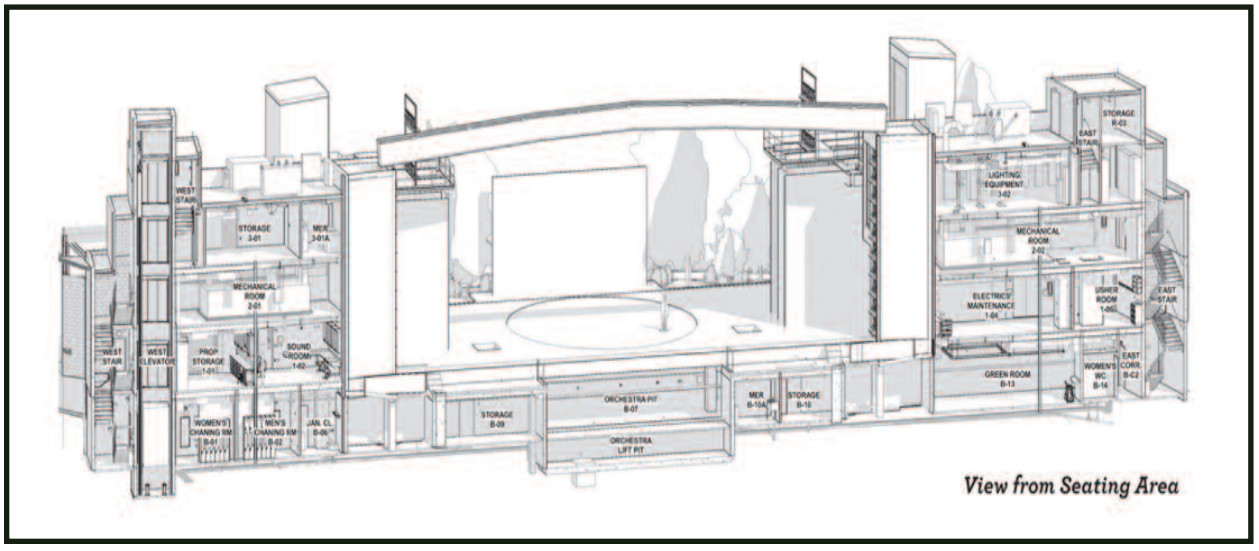
Much of the lighting rig is deployed in side positions.

The Muny's technical director, was very interested in finding a way to house the fixtures in the off-season, the upstage lighting positions were designed to be housed in garages into which the position could retract. But size was always a concern. As a result, we kept the upstage lighting position small enough to be retractable, while still allowing for the typical number of fixtures. The downstage side positions were fortunate enough to be housed on five sides by the building, so a roll-down door was found for the downstage location."

Like most of Fisher Dachs' systems designs, The Muny was also fixture-agnostic. Because no weatherproof LED units existed at the start of the planning stage, McCrum recalls, and the overall budget may not have been large enough for any newly developed technologies, "we did circuit distribution based on the venue's existing tungsten fixtures with dimmers. I was very happy to see that weatherproof LEDs came to market in time for this project, since it saved a lot of space on the hangs and gives the designers flexibility for color choices." The choice of lighting consoles and fixtures was left up to The Muny's technical representatives.

The venue's new lighting system features more than 700 Chauvet Professional LED fixtures, supplied and installed by Bandit Lites. According to Denton, "The main goal was to create an LED rig that would be more flexible and energy-efficient. The new rig allows us to have a wider breadth of looks than before, plus the ability to unify our lighting with the vibrancy and feel of the [Chauvet] F4IP LED video walls. It also gives me—as well as any visiting designers—a greater ability to focus the audience's collective eye. This is true whether we're lighting a modern musical—here we want vibrant light—or a classic show that requires the traditional warmth of the tungsten lamp. In each case, we can evoke the sought-after mood."

The new 100% LED rig includes, from Chauvet Professional, 130 Ovation E-260WW IPs, 310 Ovation E-910FC IPs, 205 COLORado 3 Solo LED PARs (RGBW), 30 COLORado 1 Solo LED PARs (RGBW), 40 COLORado Solo Batten LED strip lights (RGBWA), and 16 COLORdash LED PARs—the latter used as backstage work lights. Many fixtures are hung on a 183' span that runs over the downstage audience. "From this position they provide front light, texture across the stage, and scenic element lighting," Denton adds. Together with the COLORado 3 units, the multiple Ovation fixtures are positioned in a variety of side positions for cross lighting and template coverage. Additional Ovation E-260WW and



This cutaway view shows how various support spaces—prop rooms, mechanical rooms, changing rooms, and the orchestra pit, among others, are distributed around the stage.

A new and enlarged lighting bridge, made of structural steel, features an integrated walkway that accommodates enhanced lighting configurations.

COLORado 3 Solo units have been flown on a truss over the video wall and are used for downstage and full-stage back lighting. Chauvet's Ben Dickman helped design the required fixtures as product manager for the Ovation and COLORado product lines. The new stage's back-wall structure is uplit with 22 Chauvet COLORado Solo Batten fixtures, while COLORado 3 Solo units provide downlighting. Followspots comprise eight Elation Professional Proteus Maximus fixtures—units that can produce 50,000 lumens of output—and a Follow-Me remote followspot control system (distributed by AC Lighting).

"A large back video wall and two side screens made with 252 Chauvet F4IP LED panels add another new dimension to stage," says the lighting designer, who used the screens to great effect during staging of Guys and Dolls. Two NovaStar NovaPro UHD Jr processors provide outputs to the video wall, using data stored and replayed from a media server system that comprises two disguise gx 1 and a disguise Solo with control software. (The company known as disguise was previously named d3 Technologies.)

"The biggest thing I've noticed is the quality of light from all the Chauvet fixtures, especially the E-910FC IP and E-260WW IP," Denton says. "They have an amazing color and quality, so it that feels like you're using a traditional tungsten lamp but, of course, they're LED units with all of the advantages that brings. Plus, like the rest of the rig, they're outdoor-rated."

Control is provided by ETC Eos Ti, Gio 5, and Gio @5 lighting consoles with a Net3 Conductor as network services gateway, together with an Eos Remote Processor 3 and ETCnomad base. An ETC Sensor3 twenty-four-module rack also is featured, with a Paradigm Architectural Control Processor and Paradigm 7" touch screen. An ETC Mosaic Atlas 50-universe unit provides DMX-based control of various LED fixtures as well as the LED screens, using either DMX512 or DMX-over-Ethernet protocols. Cueing for stage managers and show callers is coordinated via a pair of ETC CueSystem control desks—comprising a 12-channel desktop and a 12-channel rack-mount version—linked to a CueSystem playback unit and various CueSpider outstations for relaying Standby and Go com-

The renovation in progress.

mands to performers and operators.

City Theatrical supplied a number of SHoW DMX Vero wireless DMX transceivers, QolorFLEX SHoW DMX Neo 4x2.5A dimmers, DMXcat, safer sidearms, top hats, color extenders, and egg crate louvers. “We needed a reliable and powerful wireless DMX system that could hit the whole stage from a new light bridge without interfering with other wireless feeds,” Denton says. “I have used [City Theatrical’s] wireless DMX for years on Broadway and tours, and knew it was reliable.”

The new LED lighting and control configuration will result in significant power savings and faster show changeovers. “Now that we have fiber data distribution along with DMX, we’re able to break away from traditional dimmers and use a fraction of the power,” Denton says. With crews having just four-and-a-half hours to tech the new show—and only four hours to rewrite lighting cues if needed, “it was important to find solutions that could support, and improve, our day-to-day operations,” the lighting designer adds. “The way that ETC consoles are laid out, how they communicate with other departments—plus the flexibility they offer with magic sheets—allows us to tech a show in the limited time we have…and to do it well.”

In addition to the new light bridge, dramatically enhanced trussing comprises a downstage clear-span truss structure and an upstage ground-supported structure. Components were specified by TAIT, working closely with The Muny’s production crew, and supplied by Tomcat, which also handled installation; project manager Dayne Cook and Tomcat COO Will Todd provided company liaison. “Tomcat was a member of the initial project design meeting at which we outlined the project requirements these structures had to accommodate,” Cook says.

The downstage system spans the entire crossstage length of some 112' and is supported by custom Tomcat steel end-support towers mounted to the theatre’s rooftops. The upstage system comprises two 42' towers, constructed from custom-designed, 30' x 28' spigoted truss that supports an approximate cross-stage system span of 82'. Both downstage and upstage spans utilize Tomcat’s custom 40' x 30', extra heavy-duty spigoted truss profile with diagonals on all faces.

The sound package

Having supplied rental sound systems to The Muny since 2005, Masque Sound was asked to do the honors for the 101st season. The current package includes a DiGiCo SD7T console with EX-007 extension for front-of-house—

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and a second, backup SD7T—plus a Yamaha CL1 console with a Rio3224-D I/O rack and R08-D Rio output rack for stage monitors. Four Meyer Sound Galaxy 816 processors are available for signal conditioning to the main, delay, and fill loudspeakers, which includes 18 d&b audiotechnik E0 cabinets powered by d&b D6 amplifiers, two KV2 audio cabinets, and four L-Acoustics 108P cabinets. From Meyer, four 700-HPs, two 1100-LFCs, 12 LEOPARDs, 12 LYON-Ms, and four Lyon-Ws make up the main line-array systems, with ten UPJ-1P, twelve UPM-1P, five UPQ-1P, and four UPQ-2P loudspeakers for delays and fills.

The main arrays comprise eight Lyon series and six Leopard cabinets per side, positioned at left and right immediately offstage at the proscenium. Below them, stacked at deck level, is a pair of 700-HP subs per side, along with a single UPQ-1P fill speaker per side. "New rigging positions and the associated height of the new buildings allowed us to fly the rig higher and to really improve the evenness of coverage from front to back," explains David Patridge who, with John Shivers, serves as one of The Muny's sound designers. "From the new apron truss position, we are able to hang a single Meyer UPQ-1P at center to help us with imaging, along with some overhead foldback UPJ-1P speakers, since we lost our typical wedges that we used to have on the deck across the front.

"From the new bridge structure," the sound designer continues, "we have hung another center UPQ-1P speaker as a delay to the first one, along with two UPQ-2P speakers that act as out-fills for the wide part of the seating area close to the stage." Also located at the center of the bridge are a pair of 1100-LFCs, which provide additional low-frequency coverage throughout the venue. "We lean heavily on these subs and use the 700-HP boxes at the sides to fill it out," Patridge states. "We also have re-used 18 d&b E0 front-fill speakers across the railing that separates the audience from the stage.

"The DiGiCo platform is a go-to for many of our musical theatre shows," Patridge says. "A real advantage is the ease of workflow, along with specific theatre software auto-update features. We often have as little as 25 minutes for a sound check before we need to do a run-through for a new production with the full orchestra. The platform also has coped with heat and humidity—and sometimes rain—that can happen while doing these open-air shows."

The new building offered other infrastructure advantages. "We could hang the main PA components in a much more optimal position to improve coverage and impact throughout the venue," Patridge says. "The new bridge

The photos on this spread give a sense of the theatre's expansive approach to design. Above: *Footloose*.

and a truss over the apron let us hang proper imaging speakers for a solid center to the vocals, and also place subwoofers in the air at the center, which evens out low-frequency response through the seating area. And locating the orchestra in an air-conditioned location beneath the stage eliminates the wear and tear and daily setup/teardown. We have also started to improve the orchestra's monitoring systems; happy musicians are the most important factor in being able to achieve excellent results from an orchestra!"

Finally, a large number of fiber, CAT6, and SDI video lines have been run throughout the playing area and backstage buildings, terminating in the sound room on stage-right at deck level. "We took full advantage of this and replaced many of the very long runs of copper audio lines we have previously needed to install with audio over IP," Patridge says.

The microphone package includes 48 Sennheiser SK 5212 transmitters, 24 EM 3532 dual receivers, four SKM 5200/5000 and three SR 300 IEM G3 transmitters, and Masque Sound antenna and remote monitoring systems. Other mics include, from DPA, five DPA d:screet 4061s, three DPA d:vote 4099Bs, and two DPA d:vote 4099Gs from Neumann, six KM 84s, twenty-one KM 140s, two KM 184s, six Neumann U 87s, and fifteen U 89s; and, from Shure, seven SM567s, ten SM58s, five SM58s units, two SM81s, two Beta 91As, nine Beta 98 AMPs, and three Beta 98ADs. Others in the inventory include four AKG C414 XLIIs, six Crown PCC-160s, two Sennheiser MKH30-P48s, and a number of Radial Engineering DI boxes.

Also available as part of the rental package are Genelec 1029A active monitor loudspeakers, Aviom A-16II personal mixers with A-16D Pro A-Net distribution, plus Sony MDR-7506 and Sennheiser HD 25 headphones. Wireless communications comprise Clear-Com FSII-Base base stations

Guys and Dolls.

Kinky Boots.

and FSII-BP19-X4-US belt packs, while a series of Clear-Com HXII-BP belt packs and HKB-2X speaker stations provide wired intercoms.

Conclusion

"It was a very fast, impossible schedule," concedes FDA's Mobilia. "But everything came together, and it was well worth it; the quality and high caliber of the shows is outstanding."

"Yes, we have enjoyed a phenomenal response from audiences," says Smith. "Our guiding philosophy was: Do not change The Muny. With Fisher Dachs' help we were able to preserve the experience, and offer our patrons and supporters an evening to remember."

"My first response was how amazing it was that the contractors and The Muny staff had worked in adjacent spaces for weeks without severely impacting one other," says McCrum. "I was pleasantly surprised to see how well everything had come together, since fixtures were already hung when I arrived to review the system installation. It's a massive venue; finally seeing everything land where it needed to be, or fit perfectly into a concrete volume poured six months ago, is always amazing."

To date, audience reactions have been positive, the lighting systems designer reports. "It's difficult to separate out what people think of the lighting system from what they think of all of the changes, because everything has changed so significantly. But seeing people able to use these technologies while knowing that we've helped them prepare for the next few decades is incredibly satisfying," McCrum concludes.

Mel Lambert has been intimately involved with production industries on both sides of the Atlantic for more years than he cares to remember. He is now principal of Media&Marketing, a Los Angeles-based consulting service for the professional audio industry and can be reached at mel.lambert@MEDIAandMARKETING.com; +1/818.558-3924.

Matilda.