By E. Victor Brown

A Tale Of Two Facilities

How flexibility in theater space is guiding the audio installations at two world-class venues: an arts and science center and the future home of the Oscars telecast.

While some performance spaces are born of no budget and others with the exact opposite, the most successful seem to be those that maximize resources. Traditionally, in the theater, the audience comes first in the grand scheme of things, while audio falls somewhere near the bottom. While none of these points have changed, they are all quickly reaching a convergence.

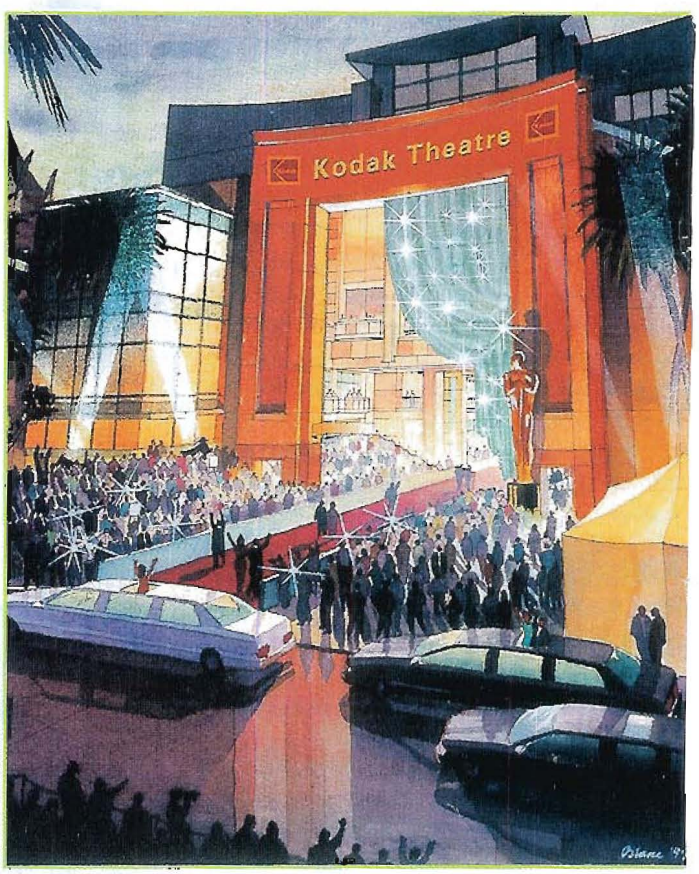
This convergence comes in the form of infrastructure. In the context of theatrical spaces in general, with audio being a specific concern, this means having the latitude to be as flexible as possible. Flexibility is the life's blood of any surviving or thriving multi-use space. Yet when it comes to audio, very often a facility may be hampered by harboring too few ideas rather than too many. At first glance, a project of just over a half million dollars—let alone one of over $70 million—might appear as a triumph of dollars over resources employed to their maximum potential. However, that is not always the case. Currently, two state-of-the-art, multipurpose facilities are leading the way with open dialogue among potential users, versatility-based planning and infrastructure, rather than excessive audio equipment purchases.

THE KODAK THEATRE

Los Angeles, California
Facility Cost: $567 million
Consultant: Theatre Projects Consultants
Architectural Designer: David Rockwell

Presently slated for a late 2001 completion date, the 3,500-seat Kodak Theatre will undoubtedly be widely hailed as a unique facility in the entertainment community. In addition to its splendor, versatility and scale (the stage is one of the country's largest at 120 feet wide by 75 feet deep, while seating can be configured for as few as 2,000), the Kodak is sure to derive a certain cachet from being the new home of the Academy Awards ceremony. Prestigious indeed, yet these elements pale in comparison to the unparalleled technical flexibility of the structure, coupled with the cooperation necessary to create such an outstanding, world-class venue.

Set to be the crown jewel of the massive project that's currently underway at the intersection of Hollywood Boulevard and Highland Avenue in L.A., the $567 million urban entertainment/retail project is designed not only to recapture the beauty



COURTESY OF BRAGMAN NYMAN CAFARELLI

An architectural rendering of the soon to be unveiled Kodak Theatre

and excitement of the world-famous Hollywood Boulevard district, but also create a stellar destination venue. The North American retail/entertainment development division of TrizecHahn Corporation, which boasts headquarters in both L.A. and San Diego, is developing the project.

Serving as the facility's architectural designer is theme building designer extraordinaire David Rockwell of the Rockwell Group. Also playing a key role in creating the technical design are Theatre Projects Consultants (TPC), an international consulting firm that has 600 projects in 50 countries to its credit. The sound, video and communications system were masterminded by Phil Giddings and Dave Clark of Engineering Harmonies, a TPC associate company. Leading the project management group is company shepherd, David Taylor, director at TPC.

When asked about the purpose and goals of the Kodak Theatre, Taylor, who heads the technical design team on the project, is a study in thoroughness:

"The Kodak Theatre is a large proscenium theater designed primarily as a flagship musical house. The term "musicals," in this context, refers to high sound pressure level/reinforced/produced musical dramas. The multi-use aspects of the theater encompass many other things. This includes the potential for ballet, concerts and opera, as well as other theatrical broadcast uses that can be televised or recorded."

The company has taken what it calls a baseline design brief from perform-

Getting Your Specs Out!

Navigate your way through the Kodak Theatre with this handy technical roadmap.

POINT TO POINT WIRING SYSTEM

The system includes three reinforcement elements and associated communications and control tie lines, primarily routed between the patch room and the bulkheads around the theater. The breakdown is:

Microphone – 308 circuits distributed across 13 locations, including 6-24 circuit panels in the stage and orchestra pit area and 72 circuits in the media cockpit.

Line Level – 142 circuits distributed across 14 locations such as downstage left and right walls and the orchestra pit.

Loudspeaker – 248 circuits distributed in two-channel A/B pairs in 105 locations surrounding the auditorium, in the stage front and under the balconies. Cinema surround sound, as well as delayed reinforcement, is supported.

Digital Audio – 32 lines of fiber optic cable and 32 lines of CAT5 data wiring between eight locations.

Production Intercom – 180 lines of CAT5 data wiring to 27 locations in the theater and backstage and 132 analog communications circuits to 46 locations.

Video – 87 circuits of production communications/monitor video to 62 locations, including two production monitoring camera positions.

All are tied to a patch room located on the northwest corner of the building one level below the stage.

CABLE PASS SYSTEM

A unique cable pass system has been designed to allow easily accessed cable runs through the backstage areas (even out and under Hollywood Boulevard). In some places, this comprises a tunnel and mezzanine platform dedicated to cables and able to accommodate the thousands of cable runs necessary for broadcast production. This addresses video and audio production cabling brought in by broadcast production companies. Every wall between the stage, backstage areas, the auditorium and the exterior has cable passes. Additionally, there is a cable hook system that enables 3 levels of cables to be hooked to the walls. A cable tray system augments both to allow passes across and down busy corridors. "There are also discrete means of getting camera, **Vari*Lite** or video projector signal to and from any location in the auditorium," Taylor reveals.

PATCH ROOM

The substantial room that spans nearly half the width of the 120-foot stage above, houses a highly organized number of patch panels for routing any audio input to any output in any configuration. Located on the west wall of the room, the racks begin four feet from floor level to allow racks of processing and routing gear to be rolled beneath for easy access. This centralized patch benefits remote audio recording and broadcast production truck patching but also touring, sound and theatrical production companies. The almost infinitely configurable infrastructure allows them all to coexist simultaneously. The video infrastructure to the patch room is for in-house use, such as the video feeds for stage manager and conductor positions, as well an infrared camera system. The latter allows the stage manager and the fly men to see what is happening onstage during theatrical or other blackouts.

MEDIA COCKPIT

At the heart of the infrastructure within the Kodak Theatre, the media cockpit is a state-of-the-art environment within the auditorium seating for moving light operations, front-of-house mix position and audio sweetening and lead broadcast cameras. First and foremost, the area has been designed with optimal sight lines to and from the stage without affecting patron sightlines or aesthetics. Its size and technical infrastructure can accommodate a crane, two broadcast cameras with dollies, two large projection TVs (for teleprompt) four Vari*Lite consoles, the LD position and house mixing desk and processing gear. A portion of the cockpit can be lowered to a room below the auditorium floor level. The sub-auditorium room operates as a separate audio production area with a television production facility at the rear of the room.

RIGGING/SPEAKERS

Rather than purchase a front-of-house speaker system, an extensive and versatile rigging system, a forestage gridiron system, was put in place. Capable of supporting any left-center-right array, line array or cluster configuration, the gridiron is supplemented by an arena rigging beam system that extends over the orchestra seating and three remote controlled high speed winches that can be moved anywhere within the gridiron area.

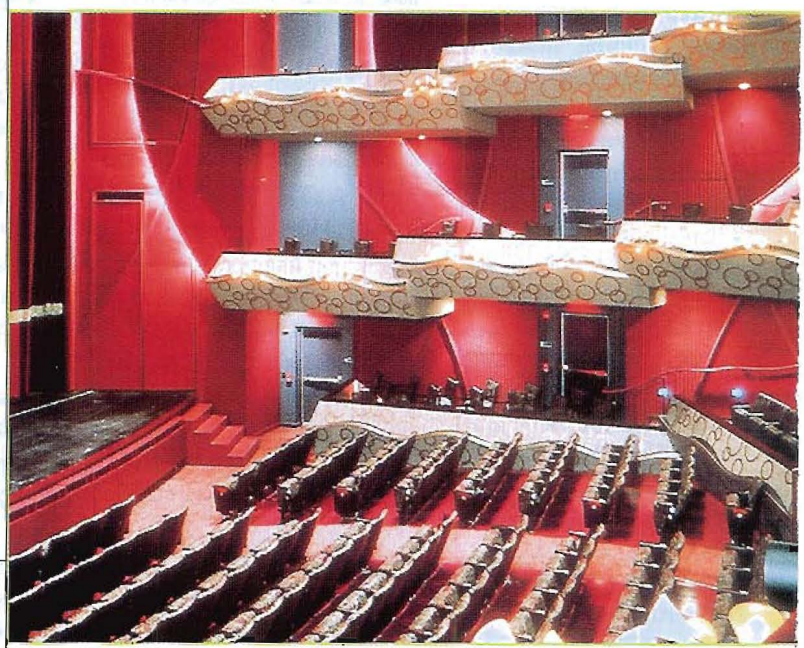
Nearly 80 **Renkus Heinz TRC-32** and **SR81/AB Mousetrap** dual channel speakers are recessed into the underside of each of the Kodak's three balconies. These serve the dual purpose of Broadway-style productions that benefit from sending separate program material to each device and providing delay speakers for concert performances. "In Broadway-style productions, putting one performer on one speaker and the other on the second one, eliminates the muddiness generated by cross-talk between wireless microphones," says Taylor. Along with the eight **JBL SP215-6** single channel speakers, this equipment can act as delay speakers or allow the substantial sound pressure levels necessary for a rock act.

The 16 **QSC CX amplifiers** that power the delay system are a combination of 900- and 1,100-watt-per-channel types. They can be remotely controlled through **Soundweb SW9088LL DSPs** (digital signal processors), which process and route the signals going to the amplifiers and **QSC QS Control software** on a high specification laptop computer included as part of the base design. The amplifiers and processing can be removed from the loudspeaker network by disconnecting multi-way connectors to provide exclusive access for any show's systems.

PAGING

The five levels of lobbies incorporate 270 60-watt loud speakers consisting of 216 **JBL Control 26** and 54 **JBL Control 19** series subwoofers. These operate at low level to give the highest quality music program throughout the building. The JBL Control 26 units are capable of the significant sound pressure levels sometimes necessary to prompt Oscar attendees back to their seats.

ing arts centers it has developed around the world and joined it with an understanding of technical riders of current productions. This includes audio production benchmarks that are in place for large-scale theater producing and receiving houses in the country. "We've taken this information, plus a key requirement from our client TrizecHahn, to make this a benchmark for the future," says Taylor. They have attempted to "future proof" the building as much as possible. To that end, they have designed a venue based on a strong infrastructure.

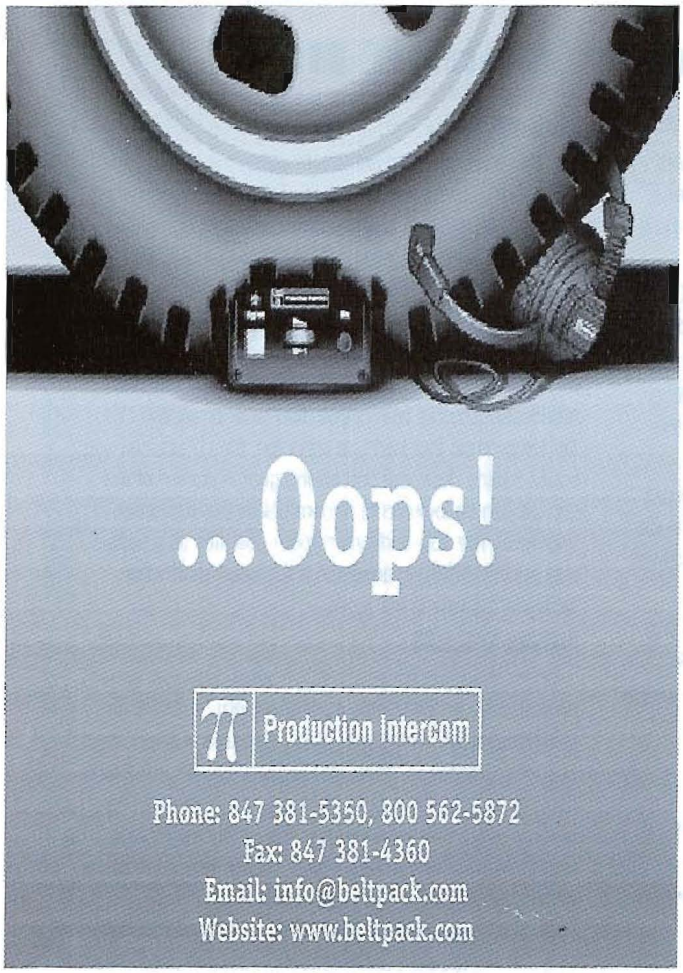


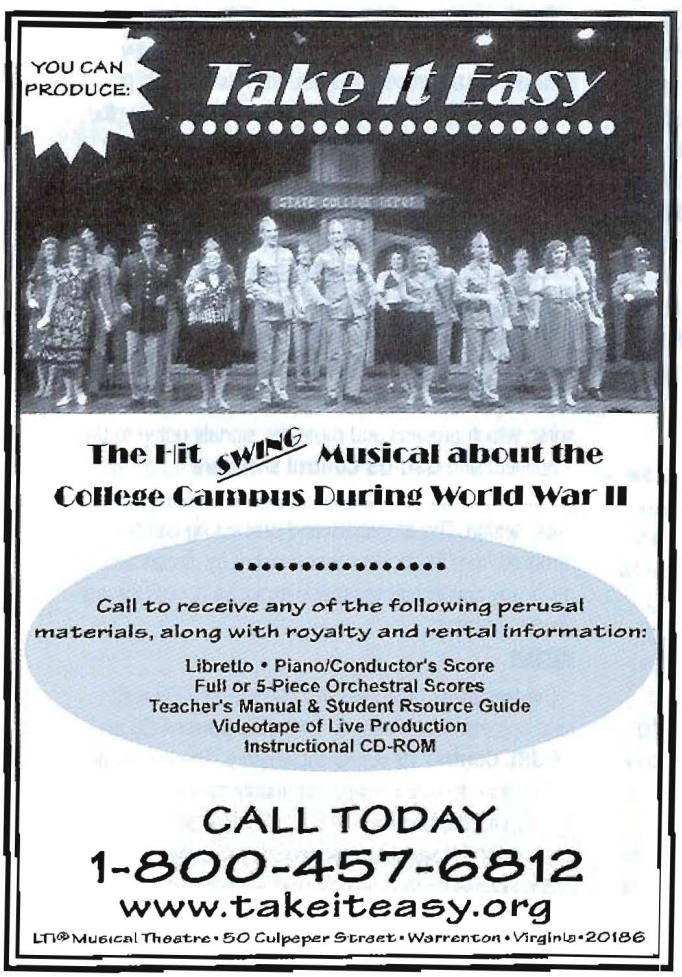
Inside the Sunoco Performance Theater at the Whitaker Center for Science and the Arts in Harrisburg, PA

That infrastructure breaks down to several innovative components: a point-to-point wiring system with both analog and digital audio transmission capabilities, an extensive cable pass system, a dedicated patch room and lastly, the innovative "media cockpit," which integrates front-of-house lighting, audio and primary broadcast control centers into a single area (see sidebar).

Though the Academy of Motion Picture Arts and Sciences (AMPAS) will make the Kodak Theatre home for the presentation of the Oscars one month out of each year, the venue will also be booked with a steady flow of touring companies, performers and events during the other 11. The idea is to create a building that will have the least compromises for future developments by providing a viable production environment for the next 10 years. "Obviously the venue is built with a 50- to 100-year base life, but audio has the shortest shelf life," explains Taylor.

Taylor sums up the most important aspect of the work with one word: integration. He elaborates by explaining that this means using the beauty of the building as a driving point, assessing how it's going to look and feel for patrons without compromising the technical infrastructure to do it. This is accomplished by making sure you can get into walls so that doors don't have to be left open (violating fire codes) to get wires in and out. "Make sure that you address with the best





possible technology of the time a means of getting from A to B, C to B and N to B so that you can join all of those things together at B," continues Taylor. Bringing things into a common patch point is an overriding theme for today's technical designers. Whether they have small or large budgets, decision makers must think about the maximum unmined potential of the resources available.


MICHAEL MORAN

THE SUNOCO THEATRE

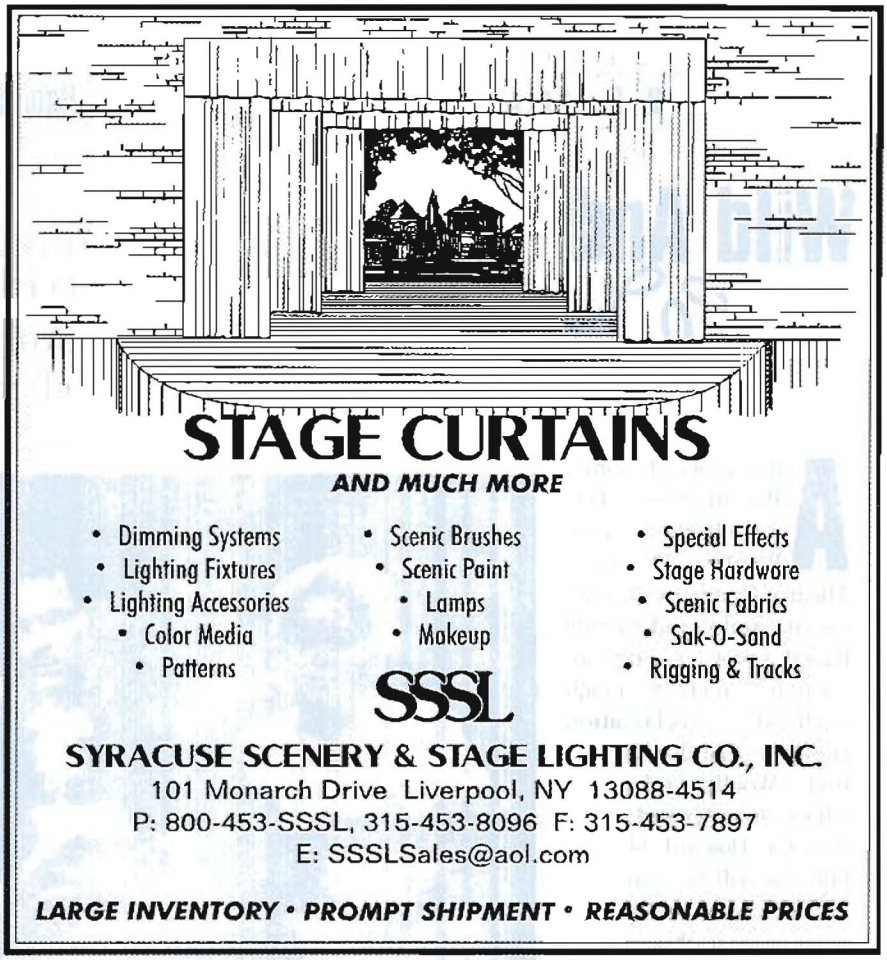
Harrisburg, Pennsylvania
Facility Cost: $35 million
Director of Operations: Steve Krempasky

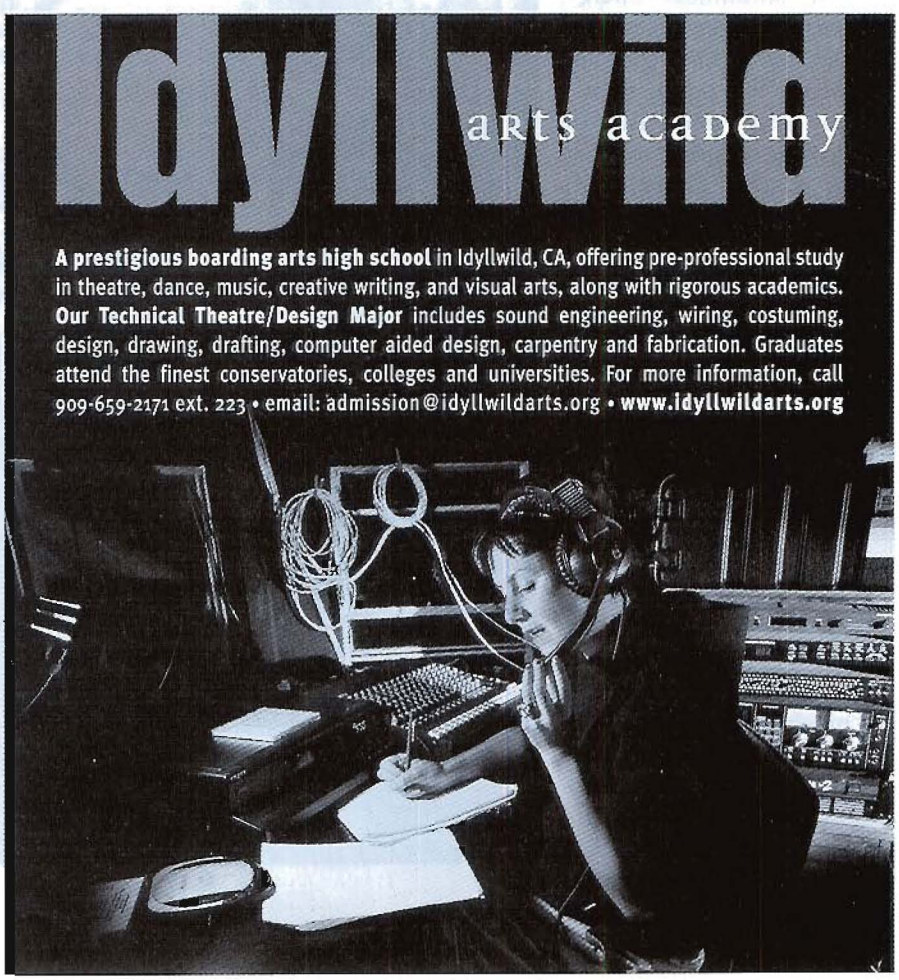
The Whitaker Center for Science and the Arts in downtown Harrisburg, Pennsylvania, is billed as the first center of its kind to explore the relationship between arts and science. The $35 million center houses a world-class science center with 250 interactive exhibits, the Grass/Rite Aid IMAX Theatre and the 698-seat Sunoco Theatre. While the Sunoco is physically and acoustically separate from the science complex and IMAX, all were designed and built just a year ago for easy access and interconnected activities.

After extensive planning and studies by numerous groups and individuals, the Sunoco would serve two broad purposes. The primary use would be to provide a legitimate home base for numerous local and regional arts groups, as well as 10 resident companies. The second priority was to create a hall that could support national and international touring artists, including those from the mid-Atlantic states. "The idea was to create a theater house capable of supporting audience capacities expected with an artist in demand, while retaining the intimacy necessary for local and regional performances," says Stephen Krempasky, vice president of theater operations. This made versatile audio infrastructure a necessity instead of a luxury.

There are 56 input locations throughout the auditorium, including stage left and right at the plaster line, the lock rail, both near and far catwalks, the loading gallery near the gridiron, the orchestra pit and on the stage. These lead to a patch bay, which allows microphone or line level use and contains 25

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Special Section/Sound: Case Studies

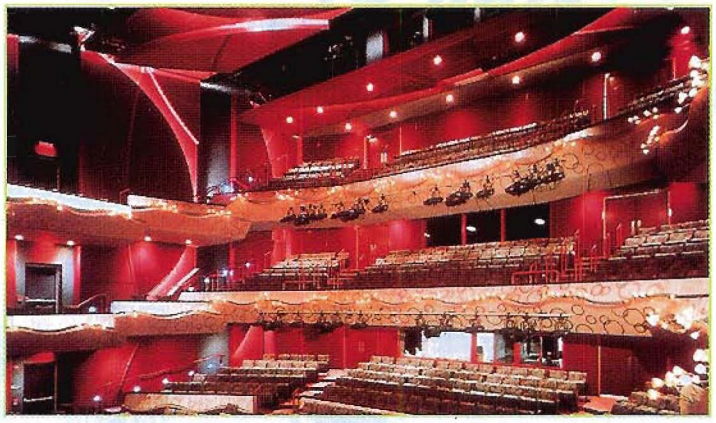
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of the input locations, including speaker outputs for effects and localized sound around the theater.

Cable conduit accessible from a basement below the stage floor runs from the booth at the back of the auditorium to the stage. This allows outside production audio snakes to be run without going through the house. The theater has a 400-amp service on the dock, a 200-amp box stage left and 100-amp stage right. These are available for visiting sound and video production companies who bring their own systems with them.

The EAW house speaker system is in a left center right configuration: stage left and right proscenium arrays are mirror images including a JF 260 and a JF 200 directly below. The center cluster consists of two JF 260s with two JF 100s below. All speakers are full range and need no crossover. The left and right proscenium speakers can be recessed into a specially designed area with doors, while the center cluster is winch operated and can be raised or lowered. Specially cut holes in the cloud allow chain motors to be hung from the building's reinforced steel grid system for visiting and rental systems.

Giving power to the house system are seven Crest CA series amps in a soundproof closet in the booth. Also, two racks house patch bays and signal processing with all equalizer effects and compressors for the system. The soundproof booth combines LD and audio mix positions into the same space for single operator events. The booth glass is removable for barrier-free mixing. The Sunoco also has an extensive four-channel ClearCom system, which routes to every conceivable useful location. The theater's fiber-optic system runs throughout the building, providing the computer network its backbone. Hearing assistance is via infrared sensor.



MICHAEL MORAN

Another interior perspective of the Sunoco Performance Theatre

Krempasky, who was hired even before the fundraising stage, is a staunch believer in forward thinking, the budget notwithstanding: "My advice to those building or remodeling a performance space is to invest in the future through infrastructure primarily, and when purchasing any audio equipment, be sure it's versatile, high quality and fills your primary needs." SD

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