the ASTC letter

The Newsletter of the AMERICAN SOCIETY OF THEATRE CONSULTANTS

TWO ON THE AISLE

Theatre Seating for Today's Audiences

Whether for dance, drama or music, the interaction between the performer and the audience is at the heart of all live performance. The willing suspension of disbelief is an integral factor in the success of any dramatic production, and well designed seating helps the audience focus on the production and make the "journey" suggested by the artists. There are many significant issues that arise when designing audience seating; primary among them are seating form, sightlines, and comfort.

Seating forms have evolved through the years and can take on many different configurations to vary the juxtaposition of audience and performer. Regardless of the seating form – proscenium, end-stage, thrust, arena, etc. – audience intimacy is always desired. In order to heighten the intimacy, precedence is placed on keeping the last row of seats the minimum distance possible from the stage.

By the latter part of the twentieth century, many building codes recognized two types of plans, usually referred to as Continental Seating and Longitudinal Aisle. Continental seating plans permitted long rows of seats, uninterrupted by aisles. In exchange, back-to-front row dimensions were increased, wider aisles were placed at the periphery of the seating area, and exit doors were mandated at least every five rows of chairs.

Aisled seating plans allowed narrower row dimensions and limited the number of seats per row to 14 (or 7 with an aisle at only one end). Presently, most building codes have been amended to erase the distinction between the two systems, allowing a baseline of 14 seats and then calling for an incremental increase in the back to front spacing for each seat added.

Theatre planning consultants use a variety of techniques to produce optimal sight lines. For vertical sight lines, it is generally understood that seating plans can be designed so that seats are staggered from one row to the next, resulting in a slope that allows any one audience member to view the stage over another audience member two rows in front. The primary variable is the determination of the sight point – the point on the stage that all audience members must be able to see unimpeded.

For cinema and video, this sight point is the bottom of the screen. For lecture halls and recital halls, the sight point may be just below the waistline or knees of the lecturer or conductor. For drama performance, the sight point may be a location near the front of the stage, at or near the floor line. For dance, the sight point is generally on the floor at the plaster line, to assure that everyone can view the performers' feet.

The seat staggering necessary for every-other-row sightlines is achieved by using a range of seat widths. In the early part of the twentieth century, most U.S. theatres were designed with seat widths between 18 inches and 20 inches. However, as the average American audience member has grown wider over the decades, seat widths have adjusted. Today, theatre consultants are recommending seat widths anywhere from 20 inches to 24 inches. This is a response to theatre operators' request for more and more patron comfort.

Theatres today are facing increasing competition for their audience's entertainment dollar. Cinemas are offering partially reclining seatbacks and "stadium seating", where the slope is increased to the point where audience members are almost completely unaware of anyone sitting in front of them. And potential patrons may choose a number of entertainment choices in their own living rooms in their comfortable easy chairs. Theatre planning consultants are responding by often recommending wider seats, increased legroom, and more comfortable seats.

However, this additional comfort comes with a price. Increased seat widths and row spacing are causing auditoriums

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I have the terrible feeling that, because I am wearing a white beard and am sitting in the back of the theatre, you expect me to tell you the truth about something. These are the cheap seats, not Mount Sinai.

-Orson Welles

I'd give you my seat, but I'm sitting in it.

-Chico Marx

THE MULTIPLIER IS TRULY GROSS!

Architects, clients, construction managers, and contractors have found themselves shocked, dismayed, perplexed, or in a state of disbelief when they first encounter the realities of the net-to-gross multiplier in performing arts building design projects. A net-to-gross multiplier of 1.55 to 1.75 is not uncommon in the design of a new performing arts building, regardless of its size. Exceptions of course exist, especially in some of the more simple projects such as some public school auditoriums.

The net-to-gross factor for performing arts buildings far exceeds that of a typical residential, office, or commercial building that might conventionally have a net-to-gross multiplier of 1.2 to 1.3. Reasons for this loss of building efficiency include a larger proportion of circulation within a performing arts building, fewer repetitive spaces, less opportunity for construction within a standard column grid, larger mechanical spaces, longer and larger mechanical duct runs, thicker walls for acoustical separation and acoustical adjustment devices, a greater amount of vertical circulation, and more inaccessible spaces.

The net-to-gross multiplier can move toward the lower end of the multiplier range when more spaces are identified as basic functional space, such as technical catwalks, the stagehouse gridiron, fly and loading galleries, the truck loading dock, custodial closets, sound-and-light locks to the auditorium, auditorium access circulation, and other spaces that might be considered in the net-to-gross upgrade. Cost consultants with experience in the design of performing arts projects often have developed their own preferred approach toward the assignment of technical spaces as net square footage or "included in gross". It is important to determine where spaces are accounted for early in the programming and costing process.

In some cases, the net-to-gross relationship is described as an efficiency factor rather than a net-to-gross multiplier. An efficiency factor is the inverse of the net-to-gross multiplier. For instance, a net-to-gross multiplier of 1.65 results in an efficiency factor of 60.6%. The higher the net-to-gross multiplier, the lower the efficiency percentage. A residential building with a net-to-gross multiplier of 1.3 is 77% efficient while a performing arts building with a net-to-gross multiplier of 1.75 is 57% efficient. The conversion to an efficiency factor is achieved by dividing the multiplier into 100.

While it is the goal of every design team to create an efficient and cost-effective building design, it is important to start the project with a realistic view of the square footage required to achieve the desired result. There is some flexibility within the range of the net-to-gross multiplier, but the use of an unrealistically low multiplier can set a project off on the wrong step and may have detrimental results as the project develops. The net-to-gross multiplier is a helpful tool in developing initial costs and conceptual designs for a performing arts project, but this tool should be used in conjunction with accurate architectural drawings that ultimately paint a more realistic picture of the building and its assignable costs.

Robert Long, ASTC

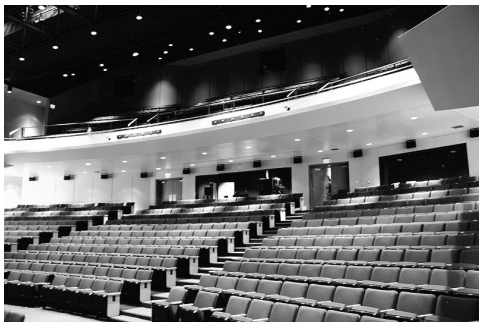
A Vital Link to the Community

Vital Express Center, Santa Clarita, CA

The Vital Express Center is located on the campus of College of the Canyons in Santa Clarita, California, and was financed using a unique combination of state, city, community, and private development funds and features a 950-seat main stage multi-function proscenium theater and a smaller, flexible black box space. The main stage hosts headliners such as The Capitol Steps, David Sanborn, The Three Irish Tenors, and Melissa Manchester, as well as community groups like the Santa Clarita Ballet, Master Chorale and Symphony Orchestra, in addition to college productions.

The main stage incorporates an electronic variable acoustic system that emulates the natural acoustical performance typical in a much larger hall. This system enabled the facility's designers to plan a smaller, less expensive facility of significantly smaller overall volume.

Innovative features include tension grids over the main stage audience area and the entirety of the black box. State of the art audio reinforcement systems have been included in both performance spaces, each featuring digital sound processing. The stage lighting system includes a total of over five hundred dimmers controlling front of house and backstage lighting throughout the facility. Ethernet control points have been distributed throughout the building. The main stage also includes a motorized orchestra pit lift and a fully rigged manual fly system.



Vital Express Center, Santa Clarita, CA

Architect
Spencer Hoskins Associates

Theatre Consultant
JK Design Group

Acoustics Consultant
Purcell+Noppe Associates

Completed
September 2005

The Las Vegas Backstage Tour

The annual ASTC Forum was held this year in Las Vegas on September 23 – 25 and was acclaimed by those attending as being one of the best ever. The theme of this Forum was "automated rigging," and we were afforded unusual opportunity to be backstage at four of Las Vegas' most interesting venues.

At Caesars Palace, the crew at The Colosseum (aka Celine Dion Theatre) set up their rigging control systems in the cross aisle of the audience chamber and demonstrated how they operated while we watched from the front of the house. Then they took us backstage to show us this theatre's unique machinery.

We also got a chance to see the backstage operations for three Cirque du Soleil theatres - "O" (Bellagio), "Zoomanity" (New York New York), and "KA" (MGM Grand). In each of these venues, we had the opportunity to talk with the personnel who operate these advanced control systems. Touch-up rehearsals were being held at the "Zoomanity" and "KA" theatres, so we had the opportunity to watch some of the machinery operate under rehearsal conditions.

Next day, we met with an expert panel that included Don MacLean from Cirque du Soleil, Mark Ager and Kevin Taylor of Stage Technologies, Scott Fisher of Fisher Technical Services, and programmers Jem Hodgson and Keone Kim. The discussions on machinery and controls were lively, engaging, and informative.

Perhaps the most striking thing, overall, was the emphasis on safety. As innovative as most of the systems were, the emphasis in each theatre was always first on safe operation and secondly on creating the effect. It became very clear that automated systems require "smart" interfaces in their systems to stop them if something goes haywire. Because these systems are operated from control booths at the rear of the audience chamber, backstage "watchers" are an important component of safe operation as well. In some areas, equipment is also monitored by video cameras.

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to become larger and, as a result, more expensive. But perhaps of equal importance, by providing each audience member with more comfort, we are also creating theatres that are less intimate and less dense. Theatre planning consultants are keenly aware that density – often referred to as crowding – is a critical factor in auditorium design. When individual audience members are kept in close proximity to each other, there is a heightened sense of the shared experience. Density and comfort are somewhat mutually exclusive, so a balance must be struck, and often it is the theatre planning consultant's role to help the owner find the right balance point.

These are particularly sensitive issues in theatre renovations. In order to respond to modern expectations for audience comfort – as well as conformance with disabled accessibility requirements – it is often virtually impossible to renovate an old auditorium without reducing the overall seat count.

No matter what the seat width and legroom, it is possible to provide a high level of comfort by selecting well designed and well constructed seats. There are many design factors to take into account when assessing the comfort of a particular seat, including the thickness and composition of the padding materials and the ability of the seat bottom to support the thighs. Other factors include the chair back contour and profile – particularly its lumbar support – and the materials of the upholstery fabric. Another criterion, although not related to comfort, is noise. Many inferior seats make noticeable noise at the top and bottom limits of the seat rise, and some seats that use springs to retract the seat develop noise in these springs as the chairs age.

Audience seating issues – particularly sight lines and comfort – are often key criteria that ticket buyers use when determining which theatres to attend and which to avoid. Theatre planning consultants are assisting theatre operators in setting criteria for audience sight lines and comfort that is informed and responsible.

Edward Kaye, ASTC
Robert Shook, ASTC

ASTC MEMBER NEWS

The ASTC welcomed seven new members in the past year – a record for one year! The new members are Brian Arnott, ASTC; Michael Burgoyne, ASTC; Jeffrey Childs, ASTC; Christopher Darland, ASTC; Joshua Grossman, ASTC; Edward Kaye, ASTC; and Heather McAvoy, ASTC.

The ASTC Annual Meeting was held in Chicago in February. Members toured the 11,000-seat Pritzker Pavilion, designed by Frank O. Gehry, and the Harris Theater for Music and Dance, designed by Thomas Beeby. Both of these theatres are in Millennium Park.

The ASTC has indicated its strong support of the upcoming Theatre Engineering and Architecture (TEA) conference in London, England on June 11-13, 2006. This important international event is held every four years. Information can be found at www.theatre-event.com.

Several ASTC members attended Auditoria Expo in Vienna, Austria in April. The ASTC sponsored a seminar, titled "Trends in U.S. Performing Arts Design", which was presented by Leonard Auerbach, ASTC; Joshua Dachs, ASTC; Van Phillips, ASTC; and Robert Shook, ASTC. Also attending this conference was Michael DiBlasi, ASTC.

Bill Conner, ASTC, presented a session titled, "Best Auditorium Design: Planning Principles to Please Presenters and Audience" at the Worship Facilities Conference in Nashville on October 19.

Theatre Design Inc. recently opened the Axelrod Performing Arts Center. Michael Mell, ASTC, is teaching an "Intro to Theater" and "Intro to Tech Theater" class at the Randolph School in Wappingers Falls, NY.

CDAI Integrated Technical Solutions has a new mailing address:

Two Securities Centre, Suite 750
3500 Piedmont Road
Atlanta, GA 30305

All other contact information remains the same.

THEATRE PROJECTS IN PROGRESS

The following theatre and assembly projects are in various stages of design and construction in ASTC members' offices:

ARTEC
The Icelandic National Concert & Conference Center, Reykjavik, Iceland
Segerstrom Concert Hall, Orange County Performing Arts Center, Costa Mesa, CA
Accolade Fine Arts Buildings, York University, Toronto, ON, Canada

CDAI
Nova University Visual and Performing Arts Complex - Ft. Lauderdale, FL
New Birth Church, Atlanta, GA
Salvation Army Worship Center, Atlanta, GA

BILL CONNER ASSOCIATES
School for the Creative and Performing Arts, Cincinnati, OH
Henry Ford High School, Detroit, MI
John Cooper School, Houston, TX

DAVIS CROSSFIELD ASSOCIATES
Towson University Center for the Arts, Towson, MD
Community Performing Arts Center - Manassas, VA
Contemporary American Theater Festival - Shepherdstown, WV

FISHER DACHS ASSOCIATES
Four Seasons Center for the Performing Arts, Toronto, ON, Canada
RPI Experimental Media and Performing Arts Center, Troy, NY
New theatre at Renaissance Square, Rochester, NY

JK DESIGN GROUP
Compton City College Performing Arts Center, Compton, CA
Santa Susana High School Theater, City of Simi Valley, CA
Los Angeles Magnet High School for the Performing Arts, Los Angeles, CA

J&M ASSOCIATES
Richmond Middle School, Hanover, NH
Hanover High School Theatre, Hanover, NH
Champlain Union Valley High School Auditorium, Hinesburg, VT

JONES & PHILLIPS
Kellogg Auditorium, Battle Creek, MI
The Virgil Carr Center, Detroit, MI
Bartle Hall Convention Center Expansion, Kansas City, KA

KNUDSON & WARD
South Puget Sound Community College Theatre, Olympia, WA
Bothell High School Theatre, Bothell, WA
Roosevelt High School Theatre, Seattle, WA

LANDRY & BOGAN
Amory Building, Portland Center Stage, Portland, OR
East Los Angeles College Performing and Fine Arts Complex, Los Angeles, CA
Livermore Valley Center for the Performing Arts, Livermore, CA

ROBERT LORELLI ASSOCIATES
School of Music/Performing Arts Center, West Chester University, West Chester, PA
New Concert Hall, Centro De Bellas Artes, Santurce, Puerto Rico
Fine Arts Center, St. John's Community College, Palatka, FL

NOVITA
Brampton Performing Arts Centre, Brampton, ON, Canada
Jewish Centres for Excellence, Toronto, ON, Canada
Chinese Cultural Centre of Greater Toronto, Toronto, ON, Canada

SCHULER SHOOK
Plaza Theatre, El Paso, TX
Dallas City Performance Hall, Dallas, TX
New Frontier Hotel and Casino, Las Vegas, NV

THEATRE CONSULTANTS COLLABORATIVE
The Geffen Playhouse Renovation, Los Angeles, CA
University Center for the Arts, Colorado State University, Ft. Collins, CO
Conservatorio de Musica de Puerto Rico, San Juan, Puerto Rico

THEATRE DESIGN INC.
East Orange Model School, East Orange, NJ
La Guardia High School for the Performing Arts, NY
Teatro Municipal, SP, Brazil

THEATRE PROJECTS CONSULTANTS
Cobb Energy Centre for the Performing Arts, Cobb County, GA
Winspear Opera House and Wyly Theatre, Dallas, TX
University of Delaware Center for the Arts, Newark, DE

WRIGHTSON, JOHNSON, HADDON & WILLIAMS
Broken Arrow Performing Arts Center, Broken Arrow, OK
Trinity University Art and Music Building Renovation, San Antonio, TX
Riverwind Casino, Goldsby, OK

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To learn more about the ASTC, visit our website:
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