

DR. PHILLIPS CENTER FOR THE PERFORMING ARTS ORLANDO, FLORIDA

PROJECT PROFILE



"This project represents the best engineering, design and construction available in the world. To accommodate every style of performance on a world-class stage was no small task, and this team not only rose to the challenge but exceeded it. This is truly some of our best work to date.."

- Mike Murphy, Wenger Corporation Project Consultant



CHALLENGE

The latest edition to the two-block, 9-acre Dr. Phillips Center for the Performing Arts in Orlando is the \$240 million Steinmetz Hall. Because it hosts the Orlando Philharmonic Orchestra, Opera Orlando, the Orlando Ballet and many other world-class performances, the ability to transform the stage, seating and other elements of the Performing Arts Center to include outstanding acoustics was paramount.

WENGER SOLUTION

Wenger Corporation developed a custom solution, combining a unique cassette system at one end of the building. It houses a custom shell with superior acoustics, custom rigging components, an integrated lighting system, and it can be configured within a matter of hours for a variety of performances.

DR. PHILLIPS CENTER FOR THE PERFORMING ARTS

ORLANDO, FLORIDA

BENEFITS

- The ability to accommodate a variety of performances with a massive cassette system that moves safely along railroad tracks
- Outstanding sound quality for both musicians and audience
- Bright, dimmable, and multi-colored lighting for performances
- Custom rigging solutions which provide a control system for all of the motorized elements that move the cassette, the banners, and the speaker clusters
- A single multiuse performance hall to accommodate a variety of world class performances

HIGHLIGHTS

"Arts For Every Life®" is the vision statement at Dr. Phillips Center for the Performing Arts in Orlando, Florida.

Known locally as "Dr. Phillips Center," the Center hosts regional and world-class performances, both amplified and non-amplified, including the Orlando Philharmonic Orchestra, Opera Orlando, the Orlando Ballet and many others.

At Dr. Phillips Center, they believe in making the arts accessible to people from all walks of life, all over the world. The Center is a hub for the best local, national and international artists, as well as for community outreach and arts education. They believe that a performing arts center should be more than a beautifully designed building; it should be a place where experiences educate as much as entertain.

One of the latest editions to the two-block, 9-acre entertainment center in the heart of downtown is the \$240 million Steinmetz Hall.

Building the Team

The team responsible for creating the venue includes architect Barton Myers Associates, Inc., executive architect HKS Architects, Inc., Baker Barrios Architects, Whiting-Turner, The Projects Group, TCL Engineering Solutions and Arup of Los Angeles, Theatre Projects Consultants, Inc., Stages Consultants, Wilson Ihrig Associates, Ann Kale Associates and Wenger Corporation for the acoustical and rigging elements.

Together, they created one of the world's most acoustically ideal theatres to accommodate the variety of global artists and audiences Steinmetz Hall will serve.

One Performance Hall to Serve Many Needs

The architectural team tackled the challenge of making a single performance space adaptable for very different needs.

"Steinmetz Hall had to accommodate three things above all: it had to have world-class acoustics, with an opera and ballet house to support Opera Orlando and Orlando Ballet, and it needed to convert to a flat floor event space, too," said Millie Dixon, Theatre Projects Director and Project Manager.

In addition, a 12-person crew had to be able to change from one format to another in a four-hour period.

The team went to work and ultimately created a multiform theater that transforms in shape, seating and acoustics.

Cassette System

One of the many unique items in the building is a massive semi-circle "cassette", which completes the concert configuration at one end of the performance space in lieu of a proscenium. This cassette houses the full custom shell, ceiling rings, numerous custom rigging components and lighting.

The one-million-pound custom cassette is 78 feet wide and 62 feet tall. It sits on railroad tracks and can be moved upstage to downstage depending on the performance needs. It's moved by a pair of SERAPID rigid chain machines that push and pull the cassette slowly and safely into performance and storage positions. A custom J.R. Clancy hoist operates the tilting ceiling to allow the cassette to move from a proscenium position to downstage for concert and recital modes.

Two mechanized, retractable towers on either side of the cassette were designed to fold down for storage. Wenger Corporation engineers developed a custom air pallet system to move these towers. Both towers were designed to appear as a part of the cassette shell and provide a fluid aesthetic.

There are four main levels of seating, including orchestra, grand tier, center tier and upper tier. The seating along the perimeter of the shell can also be configured to present performances in the round or allow for chorus. Both orchestra and upper-level seats are close to the stage and arranged on moderate inclines to provide an intimate viewing experience. At its maximum, the theater will seat approximately 1,650 people.

A Gala Venue system was the perfect choice for the various seating needs, which comes with a series of lifts that raise and lower the seats. The system can expand or contract to suit the stage or orchestra pit needs. The seats flip over when not in use, allowing for a flat or terraced floor to accommodate banquets, events and receptions.

"All of this is mechanized, so it's simply a matter of moving a few elements in and out of the room," Dixon said.

"The brilliance is that Wenger Corporation created this wall system with honeycomb composite panels. They worked with Celtic Engineering and TDK Engineering for the walls, ceiling, motor system and structure," said Michael Nishball, Theatre Projects Director.

Best in Class Acoustics

The main requirement for sound in Steinmetz Hall is that the space has appropriate acoustics for any performance. When it is a proscenium theater, it should perform well for opera, ballet, music theater and a variety of other amplified performance genres. When it's a concert hall it should provide natural acoustics on par with the world's best orchestra and recital rooms. There were two main challenges that were unique to this project: the range of acoustic settings to suit the broad programming and sound isolation from the adjacent South Street traffic.

"The change in form from theater to concert hall achieves much of the acoustic transformation that is far more difficult in traditional multipurpose theaters with lightweight orchestra shells," said Damian Doria, Partner at Stages Consultants and Lead Acoustician. "Beyond the change in form, the choice of adjustable acoustic banners is optimized to provide a useful range of acoustic adjustment. Isolation from South Street is achieved by 'floating' the entire Steinmetz Hall and all its moving bits and pieces on an array of rubber and steel pads."

Acoustically, all of these performance types benefit from a quiet space that's free from exterior noise. The optimal room acoustics for each performance type change as well. An orchestra performance will most often call for more reverberation than an opera or ballet. Also, the orchestra for opera/ballet will most often be in the pit and not on stage, so the location of the sound source is different. Opera works best with less reverberation than a concert hall provides. The lower reverberation time improves the intelligibility of spoken and sung word.

Part of the process of installation includes educating those who ultimately set up the various performance spaces.

"We educate them on the design intent and how it suits the programming, then ask them to join us in the measurements and test events," Doria explained. "We also leave them with follow-up reports that serve as reference manuals for the acoustic design and settings of the room."

Custom Lighting Solution

The cassette has a concert lighting system in the ceiling with three rings that match the architecture of the theater ceiling. The lighting fixtures fit into the rings, thanks to a custom, integrated solution created by the Wenger Corporation team.

"It was important to coordinate the structure with the lighting positions," explained Steven Rust, Theatre Projects Lighting Designer. "Our goal was to provide even, shadow-free lighting for the musicians. The ceiling arcs gave us an opportunity to design lighting fitting the architecture while fulfilling the lighting design objective."

The hanging ceiling also pivots, creating additional movement and greater stability when moving. The team designed a robust bracketing and yoke system for the Aquarii light fixtures to accommodate any movement from the cassette. The system steadies the lighting structure and retains the focus points through any vibrations or pivot of the ceiling.

Rust selected a mix of white and color mixing LED fixtures for the ceiling for a combination of bright light with the ability to dim or add a pop of color for headliner concerts.

"The Accelaron has great color temperature, which works well for dimming but also provides bright light, which the orchestra needs," Rust added. "Adding color is perfect for a Pops concert or a headliner concert. The headliner can be in a spotlight with the stage washed in blue."

Finally, for the front of house system, the team used Wenger Corporation's lighting integration solutions and implemented Chauvet theatrical fixtures and a concert lighting package from Aquarii. The Wenger Lighting Team was instrumental in the integration and installation of the lighting package.

Two More Works of Wonder

To accommodate the Orlando Philharmonic Orchestra, Wenger Corporation developed a custom concert riser system. The multi-tiered, semi-circular system nestles tightly to the cassette and fits together with a three-foot-high wagon. The main wagon system is on casters, with custom air jacks to lift and lower it and move it from performance to storage position.

Another unique item to Steinmetz Hall is the number of Wenger Transform® Acoustical Banners and custom roll-up banners. These banners are controlled with a J.R. Clancy Motion Control System.

There are 70 motorized banner locations, with some locations having multiple fabric banners. Customized roll-up banners were created as well as flat panels on the walls in front of the booths. Sound blocks and floor-to-ceiling drapery dampens the sound and motorized controls manage it all.

The install was not only complicated but time-consuming. Installation partner InterAmerica Stage helped put the pieces together, including determining how to make everything fit into the fly tower in a four-hour timeframe.

Custom Rigging Solution

A massive, custom J.R. Clancy rigging system helps move the cassette, rests on a series of fixed pairs of wheels. A motorized SERAPID

chain pushes the cassette up and down stage as needed, and doors on the front of the cassette hide the motorized curtain track behind it. A single J.R. Clancy Motion Control System controls all motorized elements and moves the cassette, the acoustical banners, portal hoist and the speaker clusters.

The cassette ceiling is on a custom J.R. Clancy line shaft hoist with motors on each side. There is a hinge point where the ceiling pivots around, and the hoist can lift and lower it.

"We have our own control system for all of the motorized elements that move the cassette, the banners, and the speaker clusters," said Paul Zagajeski, Senior Design Engineer with Wenger Corporation.

On the telescoping portion of the two side towers, there are screw jacks that push the telescoping sections of the towers up, holding them in place to fill the space between the cassette and the auditorium. The cassette towers move two feet per minute on a compressed air system along the railroad tracks to ensure safety, and warning lights and alarms sound when the cassette is in motion.

Complementing the motorized rigging, Steinmetz Hall has a complete J.R. Clancy counterweight system consisting of 63 line sets. The project design team also incorporated space for an additional 30 line sets in the future.

Fine Tuning for Grand Opening

Just weeks before the grand opening, Doria and the Stages team held a series of test events to compare the expected settings to the subjective observations of musicians and audiences. This included small orchestra rehearsals and a variety of amplified rehearsals. Minor adjustments were made to banners, orchestra riser and shell settings throughout the Grand Celebration in January, working with the RPO and the various guest artists who took part in those performances. Steinmetz Hall was ready.

And finally, in January 2022, Steinmetz Hall opened, completing the original design of the performing arts center, a dream 20 years in the making. During the four years of construction following the groundbreaking, the team met every goal put in front of them to bring the world-class destination to Central Florida.

"This project represents the best engineering, design and construction available in the world," said Mike Murphy, Wenger Corporation Project Consultant. "To accommodate every style of performance on a world-class stage was no small task, and this team not only rose to the challenge but exceeded it. This is truly some of our best work to date."

PRODUCT LIST

- Custom 78-ft wide by 62-ft tall Acoustical Cassette
- Custom Cassette Ceiling
- Custom Speaker Cluster Hoists
- Motion Control System
- Transform Motorized Acoustical Banners
- Lighting Integration: Concert and Theatrical Lighting
- Custom Motorized, Retractable Acoustical Towers
- Custom Line Shaft Hoists
- Counterweight Rigging System
- Custom Roll-up Acoustical Banners
- Custom, Multi-Tiered Concert Riser System



ABOUT WENGER CORPORATION | J.R. CLANCY

Wenger Corporation provides the widest array of innovative, high-quality product and services for the performing arts industry. Their advanced Wenger and J.R. Clancy products provide the highest levels of safety, reliability and aesthetics, helping transform performance venues and engineer unforgettable experiences.



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