

Architectural Fact Sheet
Experimental Media and Performing Arts Center (EMPAC)

Client	Rensselaer Polytechnic Institute Troy, NY
Project Description	<p>Creation of a building for Rensselaer's new Experimental Media and Performing Arts Center. EMPAC offers an ambitious, international artistic program, which provides opportunities for interaction and exchange between artists and researchers in science and technology.</p> <p>The building incorporates a wide variety of venues designed to the highest professional standards, which accommodate both the traditional performing arts and new, experimental media. Also provided are artist-in-residence studios; audiovisual production and postproduction suites; audience amenities; and student and support facilities.</p> <p>All program areas, including the atrium, are designed to exceptional performance standards. All venues throughout the building are wired to the production and postproduction suites, which can receive sounds and images from every part of the building and can transmit sounds and images in turn.</p> <p>Located on the edge of the Rensselaer campus overlooking the city of Troy, EMPAC serves the campus, audiences throughout New York State's Capital Region and the Berkshires, and the international arts community.</p>
Leadership	Dr. Shirley Ann Jackson, Ph.D. President, Rensselaer Polytechnic Institute Johannes Goebel Director, EMPAC
Design Architect	GRIMSHAW New York, NY
Architect of Record	Davis Brody Bond Aedas New York, NY
Building Size	221,200 gross sf
Construction Budget	Roughly \$200 million including construction, technology, and furnishings
Groundbreaking	September 26, 2003
Opening Festival	October 3 – 19, 2008

Principal Performance Venues

Concert Hall
11,500 sf (1,200 seats)
Theater
4,500 sf (400 seats)
Studio 1
3,500 sf (flexible seating for up to 240)
Studio 2
2,500 sf (flexible seating for up to 120)
Rehearsal Studio
1,500 sf
Artist-in-Residence Studios (4)
200 – 300 sf each

Principal Design Concepts

Tradition/Experimentation: The EMPAC program poses a question—how to combine, in one building, the permanence of the traditional performing arts with the transient character of experimental media. As one of their starting points, Grimshaw considered the resonant chambers of stringed instruments, in the belief that tradition and experimentation are linked by the unvarying physics of sound. So that the traditional and the experimental may be seen as yoked together yet distinct, Grimshaw arranged the concert hall and atrium axially with the main entrance in a linear sequence on the north side of the building, while the studios and theater form an adjacent sequence on the south. A conceptual dialogue was then initiated between these two sequences by seeing the concert hall manifested as the physical presence of an object in space, while the theater and studios represent the physical absence of discovered voids within a solid.

Concealment/Exhibition: By taking advantage of the slope of the hillside site, the design solves one of the persistent challenges of performing arts projects: concealing the windowless mass of a very large hall and fly tower. This use of the topography also creates vistas over Troy toward the Hudson River, as seen from the campus approach and from major visitor spaces within the building.

Found Space: Because the main entrance is at hilltop level, close to the roof, while the volume of the concert hall is fitted into the slope below, a large ‘found space’ opens up between the two. Upon entering the building, visitors find themselves at the top of the atrium and main circulation area, looking down at the exterior of the concert hall: a curved hull wrapped in solid cedar planks. Access to the concert hall is provided via elevated walkways that span the atrium like gangplanks. The entire hull of the concert hall is contained within the atrium, allowing public circulation all around it.

Transparency: The entire north facade of the building is a glass curtain wall, providing transparency between the EMPAC interior and the city of Troy. The glass wall allows daylight to flood the atrium, augmented by a halo skylight around the top of the concert hall that washes the cedar hull with the changing light of the day. By night, the wood hull is lit up from within the building and creates an iconic external identity that can be seen from distance.

Acoustic Isolation: As many as two dozen spaces in the building, all built to first-class acoustic standards, may be in use simultaneously. To allow this to happen without acoustic interference, the major venues are distributed in a cascading arrangement on the site to increase isolation and are constructed with separate foundations, complex independent superstructures and resilient isolation.

Concert Hall

Designed to be a first-class venue for symphonic music, yet equally capable of accommodating jazz, amplified music, presentations, film and dance with electronically generated sound and video projection, the concert hall is configured traditionally in a “shoe box” format: as a long, narrow room of wood and masonry construction. The floor and lower walls are all finished in maple, while the upper walls are clad in a combination of precast acoustic panels made of gypsum and precast stone. The room is slightly convex in form to maximize acoustic diffusion.

The fixed audience seats in EMPAC are custom-designed by Grimshaw and optimized for ergonomics and acoustics. A folding maple “clamshell” forms the seat and seat back, with leather upholstered cushions.

The ceiling, which is the most innovative feature of the concert hall, is made of panels of fabric less than one millimeter thick, supported on a delicate web of stainless steel cables. The fabric was specially selected and woven for EMPAC and is optimized for gentle reflectivity to high-frequency sound and increasing transparency to mid- and low-frequency sound, providing acoustic support to the musicians and audience while allowing the volume above the ceiling to generate reverberance. The ceiling panels form a convex shape overall and exhibit a gently glowing surface when illuminated.

Theater

With a 40' x 80' stage and a 70' fly tower complete with computer-controlled rigging, the theater is equipped to the highest standards available to professional theater

companies and offers an extraordinary resource for Rensselaer's experimental artists and student performers. The theater can be used with or without its orchestra pit. Movable seating at the parterre level, along the sides, allows artists to configure the theater as a proscenium space or to extend the playing area along the sides of the audience. The framing of the side galleries accommodates the attachment of projection screens and loudspeakers, allowing the audience to be immersed in virtual environments. Finished with maple floors and high-quality plaster walls, the theater has a slightly less formal treatment than the concert hall, so that its architectural presence can recede when the stage lights come up.

Studio 1

A true "black box" venue with minimal architectural finish, Studio 1 is well suited for audio and music but is optimized for scientific visualization, multi-screen and immersive performances, and dance. The immediate physical space can all but disappear; video projection can take place on all sides beneath a 40' ceiling that features a walkable theatrical grid over the entire surface of the room. The floors are finished in resilient wood and painted matte black. The walls are composed of adjustable acoustic wall diffusion panels and are also painted matte black.

Studio 2

Studio 2 is a smaller sibling of Studio 1, and while being well suited for dance and visual presentations, it is optimized for music recitals and recording therefore has a "lights on" architectural character rather than being a black box. In addition to its tension wire grid ceiling, Studio 2 is finished with a resilient maple floor and ivory colored adjustable acoustic wall diffusion panels.

Design Architect

Grimshaw

Project Partners: Vincent Chang
Sir Nicholas Grimshaw
Mark Husser
Andrew Whalley

Project Team: Simon Beames, Shane Burger, David Burke, Demetrios Comodromos, Chris Crombie, Nikolas Dando-Haenisch, Chris Duisberg, Matt Eastwood, Paulo Faria, William Horgan, Kirsten Lees, Melissa Lim, Theo Lorenz, Junko Nakagawa, Michael Pawlyn, Juan Porral

Architect of Record

Davis Brody Bond Aedas (New York, NY)
Partners-in-Charge: J. Max Bond, Jr., FAIA / William Paxson, AIA
Project Manager: Ernesto Bachiller, AIA
Project Team: Bruce Dole, Jon Edelbaum, Dean Ficek, Steven J. Fischer, AIA, Robert Halverson, Fernando

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Structural Engineer, Mechanical Engineer, Plumbing Engineer, Sustainability Consultant, and Simulation Analysis Consultant

Buro Happold, New York, NY
Craig Schwitter, Partner-in-Charge of Structural Engineering
Denzil Gallagher, Partner-in-Charge of MEP Engineering

Electrical Engineer

Buro Happold, New York, NY, and Laszlo Bodak Engineering, New York, NY

LEED Consultant

Buro Happold, New York, NY, and Turner Construction Company, New York, NY

Acoustician

Kirkegaard Associates (Chicago, IL)
Larry Kirkegaard, FASA, Hon. AIA, President and Principal-in-Charge
Louie Sunga, AIA, Architectural Integration
Terry Tyson, P.E., Mechanical Noise and Vibration Control
Project Team: Tim Gulsrud, Zackery Belanger, Anthony Shou, Ben Willt

Audio and Video Systems

Kirkegaard Associates (Chicago, IL)
Project Team: Richard Laidman, Jonathan Darling, Joanne Chang, Dennis Hoernig

Theatre Consultant

Fisher Dachs Associates (New York, NY)
Joshua Dachs, Principal
Peter Rosenbaum, Project Manager

Quantity Surveyor

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Construction Manager

Turner Construction Company

Landscape Architect

The Saratoga Associates (Saratoga Springs, NY)

Civil Engineer

Clough, Harbour & Associates LLP

Architectural Lighting

Office for Visual Interaction (New York, NY)

Fire Engineering

Arup Fire (New York, NY)

IT Consultant

Shen, Milsom & Wilke (New York, NY)