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A night view during a performance at the Carlos Moseley Pavilion, seen in Central Park, New York City. The gantry-like tripod that holds the fabric shell in place is backlit by exploding fireworks.

BY Joanna Baymiller

PHOTOS BY FTL Design Engineering Studio

DURABLE

FIRE RESISTANT

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AFFORDABLE

SUSTAINABLE

# Showtime in the park

## The Carlos Moseley Pavilion revisited

For a temporary structure, the Carlos Moseley Pavilion had a long run. Named for the former president and chairman of the board for the New York Philharmonic whose idea it was to have free concerts in New York City's five boroughs, and conceived, in part, by impresario Peter Wexler, the Carlos Moseley Pavilion made the rounds of 16 parks in five New York boroughs between 1990 and 2005, the last year it was used.

In a 15 year period, hundreds of thousands of fans annually converged on the City's parks to listen to artists of the Metropolitan Opera and New York Philharmonic: Pavarotti performed in front of over a hundred thousand on Central Park's Great Lawn; picnicking families watched fireworks conclude the great 1812 Overture on many a 4th of July, and opera lovers who had never been to the Metropolitan Opera were initiated into the world's most popular operatic duets, all for free.

Not quite a building and something more than a portable stage, the Moseley Pavilion was more like a machine for music. Nothing like it had been seen before. The requirements presented to the wizards of tensile portable structure design at the New York City architecture firm of FTL Design Engineering Studio were very specific—accommodate a full orchestra, shelter the artists and technicians from wind and rain, and incorporate stage lighting and sound systems that would enable an outdoor audience to see and hear as if they were in a concert hall. Oh, and please design and build a portable structure that could be set up and taken down in under six hours, by 11 stagehands, trucked to its next location and set up in time to deliver another show the next evening.

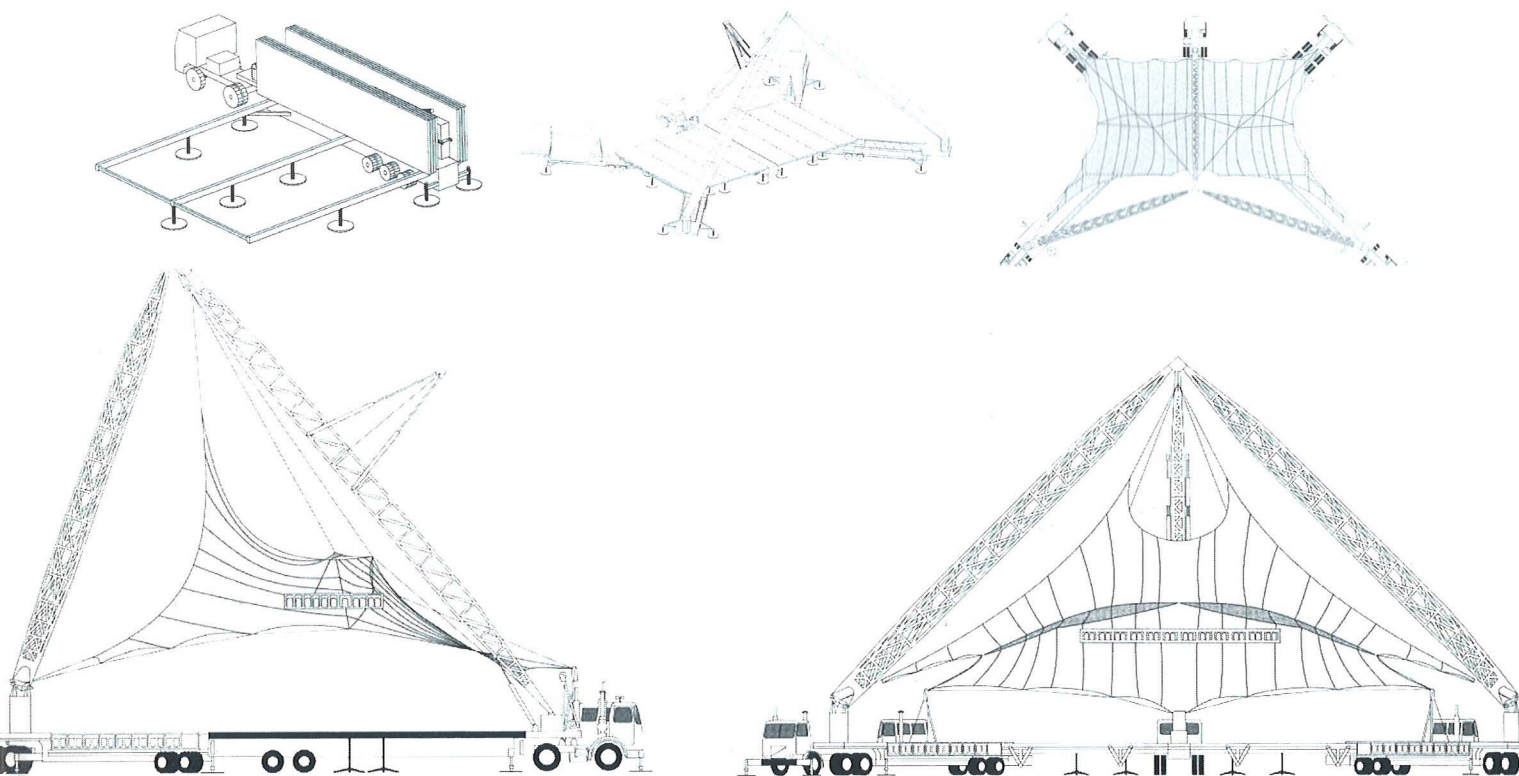
The Moseley Pavilion did all that spectacularly well. Mechanically, the Pavilion was designed as a fully mechanized tensile structure made of trusses, girders, and a fabric 'sail'. It rose to a maximum height of 20.7m, and unfolded to provide a hinged stage floor of marine plywood panels supported by six lightweight aluminum beams "folded like an accordion and opening automatically with the aid of hydraulic pistons" to a width and depth of 24m by 12m.

The PVC-coated polyester fabric (Ferrari T1025) was given a dirt-repellent PVDF-topcoat and high frequency welded seams. Six individual panels were sewn together to make up the huge, sail-like shape, which rose at the back of the pavilion to a surface area of 339m<sup>2</sup>. Stage lighting made the sail glow from afar, while built-in concert lighting allowed singers and musicians to read their music as night fell in the parks.

To protect the performers and their instruments from sudden downpours, the structure was fitted at its sides and rear with multiple cable scallops that could be adjusted to pull the roof membrane and its corners as close to the stage edges as possible by attached Kevlar ropes. Think of a circus tent anchored by trusses and sitting on trucks.

The triangular structure was wholly unique, and much of the magic of this machine lay in its mechanization. It was designed to





Unfolding methodically, each part of the structure is custom designed to be carried by a different semi-trailer, the ensemble of seven trailers coming together like clockwork to create the Pavilion structure.

be carried by and erected from, fully customized semi-trailers, each of which was designed and built to hold and become a different part of the structure. One transported the fabric sail and lighting; a second held the electrical distribution systems and stage equipment. A third carried the stage and rear truss girder, and two others carried two front girders. The speaker towers folded into a fourth truck and a fifth held folding beams that opened to provide the hinged panels that became the Pavilion's stage.

Designer Nicholas Goldsmith of FTL, who was largely responsible for this successful design solution, recalls that the pavilion was an unusual challenge, but the fabric was the least of them.

"The hard part was the seven semi trailers, each of which was totally customized and rewelded" for this structure. The lighting trusses rose up from the belly of one trailer; another had all the staging built into it and folded out hydraulically; rails swung out from the sides. All of this had to fit within a 12m trailer with a gross weight of under 36,000kg to avoid having to obtain special permits for moving the pavilion on the City's streets."

The vital electronic and audio qualities of the Pavilion were the responsibility of the acoustical designers of Jaffe Holden Acoustics, based in South Norwalk, Conn. International experts in concert and performance hall acoustic design, the firm dispensed with the rock and roll approach of large clusters of speakers and instead invented a system that incorporated a series of 24 free standing speaker pods deployed across the Great Lawn.

"The audio aspects by far were the most successful part of these events, said David Robb, who heads the firm's audio and video systems design group and who worked with the firm's founder, Chris Jaffe, on the project. "The structure can only do so much in terms of protecting the musicians from the elements. It has certain sonic characteristics. But essentially it's all about the audio systems, which had to deliver to tens of thousands of people."

The speaker pods were laid out very precisely, Robb recalls, "with specifically calculated positions that would assure great sound quality would reach everyone on the Great Lawn." Each of the two dozen devices, which resembled miniature lunar landing modules, was a self contained sound system carrying batteries and speaker cabinets. They weighed well over a thousand pounds, and were moved into position by forklifts after stage hands staked out the locations. Radio frequencies delivered audio signals from a transmitter to each of them to assure sound carried across the open spaces of the parks.

Anyone who attended these concerts remembers them with great fondness. Families with children, opera devotees, classical music fans, all shared a space that seemed transformed by the brightly lit pavilion. While the concerts continue, the Pavilion itself is no longer in use. Both Nicholas Goldsmith and David Robb tell a similar, intriguing, and unconfirmable story. They recall that when maintenance and repairs on the pavilion were finally required, it was shipped to a North Carolina firm that had won the bid for the work. Subsequently, the firm went bankrupt, and its creditors seized its assets, among them the Moseley Pavilion, and sold them. One can only wonder where it is, and whether it will ever be seen again. *JA*

Joanna Baymiller is a contributing editor for Fabric Architecture. Her praises for a Connecticut pan-Asian restaurant appeared in the Sept./Oct., 2006 issue.

## PROJECT DATA

Client: New York Philharmonic

Architect: FTL Design Engineering Studio, Nicholas Goldsmith, senior principal in charge

Structural engineer: FTL

Acoustical consultant: Jaffe Holden Acoustics

Fabric: Précontraint T1025 with PVDF topcoat by Ferrari Textiles