

COMPLEXITIES IN CONSERVATION OF A TEMPORARY POST-WAR
STRUCTURE: THE CASE OF PHILIP JOHNSON'S NEW YORK STATE PAVILION
AT THE 1964-65 WORLD'S FAIR

Susan Singh

A THESIS

in

Historic Preservation

Presented to the Faculties of the University of Pennsylvania in
Partial Fulfillment of the Requirements for the Degree of

MASTER OF SCIENCE

2004

Advisor
Lindsay Falck
Lecturer in Historic Preservation

Reader
David G. De Long
Professor Emeritus of Architecture

Graduate Committee Chair
Frank G. Matero
Associate Professor of Architecture

“All are architects of Fate,
Working in these walls of Time;
Some with massive deeds and great,
Some with ornaments of rhyme.

Nothing useless is, or low;
Each thing in its place is best;
And what seems but idle show
Strengthens and supports the rest...”

- Henry Wordsworth Longfellow
From “The Builders”

I would like to thank my advisor, Lindsay Falck, for his recommendations and guidance, but above all, for being a constant source of positive encouragement throughout this learning experience. I would also like to thank my reader, David De Long, who contributed very insightful suggestions. I am likewise grateful to Frank Matero, who originally planted the seed, and continued to provide helpful guidance over the course of the past year. Donovan Rypkema also contributed to this work by graciously discussing and reviewing the Pavilion's unique economic circumstances and issues.

I am especially indebted to Don Friedman, who first introduced me to the Pavilion, Flushing Meadows Corona Park, and the Queens borough. I thank him for his continued mentorship as a preservation engineer, for explaining technical issues that face the Pavilion, and for helping to review early drafts.

I am thankful to the staff at the New York Public Library, Rare Book and Manuscript Division, the archive at the Queens Museum of Art, the Queens Borough Main Library in Jamaica, and the New York Landmarks Preservation Commission for their help and assistance with research. Special thanks to Preservation for Public Spaces, who mailed me a copy of the extensive report on Flushing Meadows-Corona Park they had conducted, which contained very insightful statistics and information.

I would like to thank the representatives from Flushing Meadows-Corona Park: Amy Freitag, Estelle Cooper and Bill Gotthelf. Each kindly took time out of their schedule to meet with me in person and explain the Park's role as owner and efforts they are taking to save the Pavilion. Similarly, I would like to acknowledge Jeffrey Rosenstock, Director of the Queens Theater in the Park, whose personal interview assisted greatly in understanding the theater's history, its role today, and future plans to contribute to the Pavilion's site as a whole.

I am grateful for the cooperation of the numerous people, who shared their personal experiences of working with Pavilion or the architect, Philip Johnson. I want to express my gratitude to all of the professionals, with whom I conducted telephone interviews including Charles Thornton of LZA Technology; Paul Gossen from Geiger Engineers; Richard Piacentini at John Ciardullo, Associates; Alfredo DeVido; Frankie Campione, Principal of CREATE Architecture, Planning and Design; Sara Caples; Hilary Lewis; and Bruce Keller, Vice-President of Kalwall Corporation.

I wish to express my heart felt gratitude to my immediate family, Mom, Dad Basha, and Jude, for their continued support and suggestions. I would also like to recognize the support of my new family in-law, Mama and Papa Singh, Pooja and Anil, who welcomed me into their family as their own daughter and sister and made me feel at home.

Finally, I am most grateful for the loving support, patience, and help of my husband, Akshay. I thank him for always having confidence in my abilities, for encouraging me to pursue my passion, and for teaching me how to reach for the stars.

ACKNOWLEDGEMENTS	iii
LIST OF ILLUSTRATIONS	viii
INTRODUCTION	1
1. DESIGN AND CONSTRUCTION HISTORY	4
BRIEF HISTORY OF THE SITE	
New York State Pavilion Design and Construction	
<i>Architect</i>	
<i>Design and Construction</i>	
<i>Tent of Tomorrow</i>	
Foundations	
Promenade	
Texaco Floor Map	
<i>Observation Towers</i>	
<i>Theaterama</i>	
<i>Googie Architecture</i>	
<i>Architectural Reviews</i>	
2. NEW YORK STATE PAVILION’S USE DURING AND AFTER THE FAIR	27
NEW YORK STATE PAVILION’S USE DURING THE 1964-65 WORLD’S FAIR	
Tent of Tomorrow	
Observation Towers	
Theaterama	
NEW YORK STATE PAVILION’S POST-FAIR USE	
3. CONDITION ASSESSMENT AND REPAIR RECOMMENDATIONS	42
TENT OF TOMORROW	
Foundation and Substructure	
Terrazzo Texaco Floor Map	
One Story Peripheral Structure and Promenade Level Above	
Concrete Columns	
Cable Roof Structure	
Escalators, Stairs and Access	
OBSERVATION TOWERS	
Foundation and Substructure	
Concrete Shafts	
Observation Platforms	
Elevators, Stairs, and Access	
THEATERAMA	

4. CONSERVATION COMPLEXITIES	62
RECENT PAST ARCHITECTURE	
Philosophical Issues	
Physical and Material Issues	
<i>Sustainability Versus Authenticity</i>	
<i>Primary Causes of Physical Failures</i>	
<i>Failure of the Building Material</i>	
<i>Detail Failure</i>	
<i>Reproduction of Mass-produced or Outdated Production,</i>	
<i>Maintenance Failure</i>	
<i>Patina of Age</i>	
<i>Design and Functionalism</i>	
<i>Life Span</i>	
<i>Special Cultural or Time Circumstances</i>	
PRESERVATION OF A TEMPORARY STRUCTURES	
Examples of Other Temporary Pavilions	
<i>Eiffel Tower</i>	
<i>Palace of the Fine Arts</i>	
<i>Seattle Space Needle</i>	
PRESERVATION OF AN ENGINEERING STRUCTURE	
Tensile Roof Technology Development	
Tent Roof Structure Erection	
5. INTERVENTION APPROACH OPTIONS	86
POSSIBLE APPROACHES TO INTERVENTION	
Abstention	
Preservation as a Ruin (minimal intervention)	
Restoration (partial or complete)	
Renovation (maximum intervention)	
Demolition	
Maintenance Program	

6. ENABLING ENVIRONMENT	95
HISTORIC DESIGNATION	
Nomination Process	
ECONOMIC ENVIRONMENT	
Economic Environment after the Close of the Fair	
Engineering Assessment and Projected Costs	
Use versus Stabilization Issue	
Owner's Objectives	
WAYS TO RAISE OR EARN MONEY TOWARD PRESERVATION EFFORTS	
Fundraising Events	
Space for Cellular Telephone Transmission Equipment	
Towers Reopened as Observation Decks	
NEW YORK BID TO HOST THE 2012 OLYMPICS	
7. FUTURE OF THE SITE	104
CONTEXT WITHIN FLUSHING MEADOWS-CORONA PARK TODAY	
Park Setting	
Park Users	
Events, Festivals and Cultural Activities	
Concessions, Food and Eating Facilities	
Restrooms	
Further Recommendations	
GUIDELINES FOR PRESERVATION AND RE-USE	
FUTURE ADDITION TO THE QUEENS THEATER IN THE PARK	
AIR AND SPACE MUSEUM PROPOSAL	
Description of Renovation and Re-Use Proposal	
CREATE Architecture, Planning and Design Arguments	
Flushing Meadows-Corona Park's Response	
Analysis and Critique of Proposal	
OTHER ADAPTIVE RE-USE POSSIBILITIES	
CONCLUSIONS	126
BIBLIOGRAPHY	130
INDEX	137

-
- Figure 1** Corona Dumps garbage mound (1933) prior to being transformed into Flushing Meadow Park. Courtesy of *Remembering the Future*, p.48.
- Figure 2** Map of New York City. Queens borough is highlighted. <http://www.wall-maps.com/wallmaps/US-cities/5-boro-over-f.htm>.
- Figure 3** Map of Queens borough of New York City, showing location of Flushing-Meadow Corona Park. Courtesy of the Queens borough Department of Planning and Development. http://www.queensbp.org/content_web/depts/planning/planning_development.html#.
- Figure 4** Map of 1964-65 World's Fair showing industrial, international, state and federal, transportation and amusement areas. Robert A. M. Stern, Thomas Mellins and David Fishman. *New York 1960: Architecture and Urbanism Between the Second World War and Bicentennial*. New York: Monacelli Press, 1995, p. 1029.
- Figure 5** The Unisphere and symbol of the 1964-65 World's Fair, now a designated New York City landmark. Photograph by author, October 5, 2003.
- Figure 6** Scaled model of the New York State Pavilion before construction including the Tent of Tomorrow, Observation Towers, and Theaterama. Courtesy of the 1964-65 New York World's Fair Corporation Archives found at the New York Public Library, Rare Books and Manuscripts Division.
- Figure 7** View of New York State Pavilion after construction as advertised on a postcard from the fair. Courtesy of the Queens Museum of Art 1964-65 World's Fair Archives.
- Figure 8** Plan sketch of Tent of Tomorrow, showing sixteen periphery columns, steel ring and bicycle wheel configuration. Courtesy of the 1964-65 New York World's Fair Corporation Archives found at the New York Public Library, Rare Books and Manuscripts Division.
- Figure 9** Translucent Kalwall fiberglass sandwich roofing panels at Tent of Tomorrow. Courtesy of www.nywf64.com.
- Figure 10** Wooden pilings, stacked and ready to be driven for Pavilion foundations. Courtesy of www.nywf64.com.
- Figure 11** Interior view of the Tent of Tomorrow as viewed from Promenade level, with terrazzo floor map. Henry-Russell Hitchcock, *Philip Johnson, Architecture 1949-1965*. New York: Holt Reinhardt and Winston, 1966, p. 108.

- Figure 12** Close-up view of terrazzo floor map of New York State sponsored by Texaco. Courtesy of www.nywf64.com.
- Figure 13** New York State Pavilion Observation Towers, displaying one of the two “Sky Streak” elevators at mid-tower position. Courtesy of the Queens Museum of Art 1964-65 World’s Fair Archives.
- Figure 14** Theaterama exterior, displaying artwork. The Observation Towers can be seen in background. Courtesy of the Queens Museum of Art 1964-65 World’s Fair Archives.
- Figure 15** Children’s choir performance at the Tent of Tomorrow interior during the fair. Courtesy of the Queens Museum of Art 1964-65 World’s Fair Archives.
- Figure 16** Kiddie ride at promenade level of the Tent of Tomorrow. Courtesy of www.nywf64.com.
- Figure 17** View from interior of tallest observation tower, looking northeast. Robert A. M. Stern, Thomas Mellins and David Fishman. *New York 1960: Architecture and Urbanism Between the Second World War and Bicentennial*. New York: Monacelli Press, 1995, p. 1030.
- Figure 18** Pop Art exhibit on exterior of Theaterama. Andy Warhol’s controversial silkscreen painting “13 Most Wanted Men” (left). Courtesy of the Queens Museum of Art 1964-65 World’s Fair Archives.
- Figure 19** Tent of Tomorrow interior while used as roller skating rink. Iwen Hsiao. “Skating Under the Stars? Closed Roller Rink May Go Roofless” *Long Island Post*. July 24, 1974.
- Figure 20** “Men In Black Alien Attack” amusement ride at Universal Studios Theme Park, Orlando, Florida. Courtesy of http://www.usoinfo.com/PhotoGallery/Universal1/UniversalStudiosPart1/IMG_0468.html.
- Figure 21** Queens Theater in the Park exterior renovation (formerly the Theaterama). Courtesy of Alfredo De Vido Architects.
- Figure 22** Queens Theater in the Park interior renovation (formerly the Theaterama). Courtesy of Alfredo De Vido Architects.
- Figure 23** Current condition of the New York State Pavilion. Photograph by author, October 5, 2003.
- Figure 24** Deteriorated condition of the New York State Pavilion from entrance gate, considered today to be a “modern ruin”. Photograph by author, November 5, 2003.

Figure 25 Terrazzo floor road map from a distance. Note the heavy vegetation growing which makes the map virtually unrecognizable. Photograph by author, November 5, 2003.

Figure 26 Close-up of the terrazzo floor road map condition. Photograph by author, November 5, 2003.

Figure 27 Typical severe step cracking at mortar joints of exterior CMU wall of one story perimeter structure. Photograph by author, October 5, 2003.

Figure 28 Condition at promenade level. Note uneven floor surface, ponding water and corroding steel railings. Photograph by author, November 5, 2003.

Figure 29 Typical Tent of Tomorrow column base, with CMU blocks filling opening to prevent entry. Photograph by author, October 5, 2003.

Figure 30 Bare bicycle wheel roof structural skeleton without panels, exposing two layers of steel roof cables as well as steel compression and tension rings. Photograph by author, November 5, 2003.

Figure 31 Close-up view of interior tension ring. Note missing steel segments and openings in the ring. Photograph by author, November 5, 2003.

Figure 32 Typical deteriorated condition of interior stairs leading to promenade level. Photograph by author, November 5, 2003.

Figure 33 View of interior of Tent column with stairwell. Note missing stair treads. Photograph by author, November 5, 2003.

Figure 34 Underside of Observation Tower platforms as viewed from ground level. Photograph by author, October 5, 2003.

Figure 35 “Sky Streak” elevator, vandalized and locked in mid-tower level position. Courtesy of www.nywf64.com.

Figure 36 Elevator pit with other Sky Streak elevator. Photograph by author, October 5, 2003.

Figure 37 The Eiffel Tower from the Paris Exposition Universelle (1889). Courtesy of Neil Harris, *Grand Illusions: Chicago’s World’s Fair of 1893*, p. 46.

Figure 38 Palace of Fine Arts from the World’s Columbian Exposition (1893), now the Museum of Science and Industry in Chicago. Courtesy of Neil Harris, *Grand Illusions: Chicago’s World’s Fair of 1893*, p. 18.

Figure 39 Exterior view of typical classical ornament in plaster of Machinery Hall from the World's Columbian Exposition (1893), later demolished. Courtesy of Neil Harris, *Grand Illusions: Chicago's World's Fair of 1893*, p. 69.

Figure 40 Interior view of Machinery Hall, showing exposed, internal structural steel frame (1893). Courtesy of Neil Harris, *Grand Illusions: Chicago's World's Fair of 1893*, p. 71.

Figure 41 The Space Needle, remnant from the 1962 World's Fair held in Seattle, Washington. Courtesy of http://www.saywhatclub.com/events/season/space_needle.jp.

Figure 42 Interior view of Edward Durell Stone's U.S. Pavilion from the Brussels' 1958 World's Fair while under construction. Note the overall lens shape of the bicycle wheel roof and the massive, central tension ring necessary for that cable configuration. Frei Otto. *Tensile Structures, Volume Two: Cable Structures*. Cambridge: The MIT Press. 1969, p. 81.

Figure 43 Interior view of Utica Auditorium roof during construction. Note the addition of tie spreaders between the two cable layers. The overall shape in cross section was the same as Stone's U.S. Pavilion. Frei Otto. *Tensile Structures, Volume Two: Cable Structures*. Cambridge: The MIT Press. 1969, p. 81.

Figure 44 **Above:** Cross-sectional sketch of Tent of Tomorrow. Note overall convex shape and the elimination of the deep, central tension ring. The design becomes inverted, whereby the outer compression ring becomes the deep element. Courtesy of the 1964-65 New York World's Fair Corporation Archives found at the New York Public Library, Rare Books and Manuscripts Division. **Below:** Sketch of cable roof construction, identifying major elements. Henry B. Comstock "They Built the Roof on the Ground." *Popular Science*. March 1964, p. 99.

Figure 45 Hydraulic jacks and the jacking sequence used to hoist outer girder in place. Henry B. Comstock "They Built the Roof on the Ground." *Popular Science*. March 1964, p.100.

Figure 46 Three-dimensional rendering showing exterior view of proposed Air and Space Museum (during day). Courtesy of CREATE Architecture, Planning, and Design.

Figure 47 Three-dimensional rendering showing exterior view of proposed Air and Space Museum (at night). Courtesy of CREATE Architecture, Planning, and Design.

Figure 48 Three-dimensional rendering showing interior view of proposed Air and Space Museum. Courtesy of CREATE Architecture, Planning, and Design.

Located in the Queens borough of New York City, Flushing Meadows-Corona Park was once the site location for two twentieth-century world's fairs. The New York State Pavilion (Pavilion) remains in the park today as one of the few physical remnants left over from the world's fair held there in 1964 and 1965. However, the current Pavilion is only a distant reflection of how it once looked and functioned.

Today, the Tent of Tomorrow (Tent) and the Observation Towers (Towers), and the enormous scale to which they were originally built, contrast greatly with their context within the vast, open park space. Both stand abandoned and functionless, and in some portions, deteriorated. The Tent and Towers both remain closed to visitors as they have for over thirty years. Only a bare skeleton of the Tent's roof remains, exposing the structure's interior, which now supports a variety of wild plant life. A typical park visitor can only gain a glimpse of the Tent's neglected interior by peering through locked chain link gates. Next to the Tent stands one of the most visually dominating features in the park: the slender concrete towers with corroding steel platform disks that project from above the park's tree tops. Conversely, the small Queens Theater in the Park next to the Tent and Towers has been continually modified and grown to be a successful cultural venue for the park over the past decade.

The intent of this thesis is to show that, despite its current dilapidated state, the New York State Pavilion embodies significance in twentieth century architectural, technological and social history. This thesis aims to identify the problems and issues facing the pavilion as well as the physical and financial constraints which have prevented its proper maintenance over the past four decades. A suitable intervention plan will be proposed to help preserve and sustain the site's integrity and useful life.

The methodology for conducting this study consisted primarily of site visits by

the author and background research. Historical archival research conducted was based on primary sources such as a partial set of the original architectural plans, photographs from the 1964-65 World's Fair and construction documents. The findings of several recent engineering and architectural surveys were also used to help assess some of the current conditions afflicting the building. Additionally, several telephone and personal interviews were conducted with professionals to understand the issues facing the Pavilion, either through their technical expertise or knowledge of and personal experience with the site.

This thesis will first introduce the reader to the site with a brief history and description of the New York State Pavilion. It will continue to explain the Pavilion's brief life during the fair, and why, although initially intended to be temporary, the structures were ultimately retained. The circumstances which led to the Pavilion's abandonment will be outlined as well as how the deferred maintenance ultimately led to its present day state as a "modern ruin".

A current assessment of the structure's condition has been included to shed light on the deterioration which has occurred, the physical integrity which remains, and the hazards posed by structural instability. Given the physical problems and limitations, all of the various options of intervention approaches will be presented, including the positive and negative consequences of taking different actions. If preservation work is chosen, especially with an eye to restore a function to the Pavilion, this project will show what guidelines should be established and followed. This thesis will question traditional preservation methodology and philosophy to form a new approach to preserving not only an artifact of the "recent past", but also one that was designed to be temporary. Additionally, tools from the economic, political and regulatory environments that could both support and save the Pavilion will be highlighted.

Finally, this thesis will turn to the future which lies ahead for the New York State Pavilion. One existing re-use proposal to convert the site into an Air and Space Museum

will be explored and critiqued as to its sensitivity to preserving the Pavilion's integrity. Several other re-use options and functions that the Pavilion could perform in the future will be presented by the author and explored.

It is my aim to show that the New York State is not only worthy of preservation, but can be transformed from an unmanageable "eyesore" into a functional and historical asset to the current day community of the Queens borough and to the future generations of park users.

BRIEF HISTORY OF THE SITE

“A valley of ashes – a fantastic farm where ashes grow like wheat into ridges and hills and grotesque gardens, where ashes take the forms of houses and chimneys and rising smoke, and finally, with a transcendent effort, of ash-gray men, who move dimly and already crumbling through the powdery air.”¹

-F. Scott Fitzgerald

Description of Flushing Meadows in *The Great Gatsby*

The Flushing Meadows region of the borough of Queens in New York City is situated on a salt marsh, more than 1,200 acres in size, adjacent to the Flushing Bay. Historically, this area had been used to harvest hay and had not been developed industrially or residentially as other areas of Queens had, primarily because of poor, swampy soil conditions². The land was valued little, given that it could not easily be built on, and in the early part of the twentieth century the site was chosen instead as the dumping ground for the Brooklyn Ash Removal Company. Enormous mounds of burnt garbage ash were piled up to 90 feet in height on the site, earning it the title of “Mount Corona”.³ It was this “valley of ashes”⁴ that both the 1939-40 and 1964-65 New York World’s Fairs would later call home.

This large, undeveloped tract of land caught the eye of Robert Moses, who was the New York City Park Commissioner and chief urban planner in the 1930s. He had dreamed of creating a grandiose park for New York that would rival Central Park in Manhattan. It was primarily the location of the dump site which made it very attractive to Moses, because Flushing Meadows stands at the approximate geographical center of all five boroughs of New York City⁵. As such, this park location would be accessible to all New Yorkers. His vision included not only landscaping and planned walkways, but

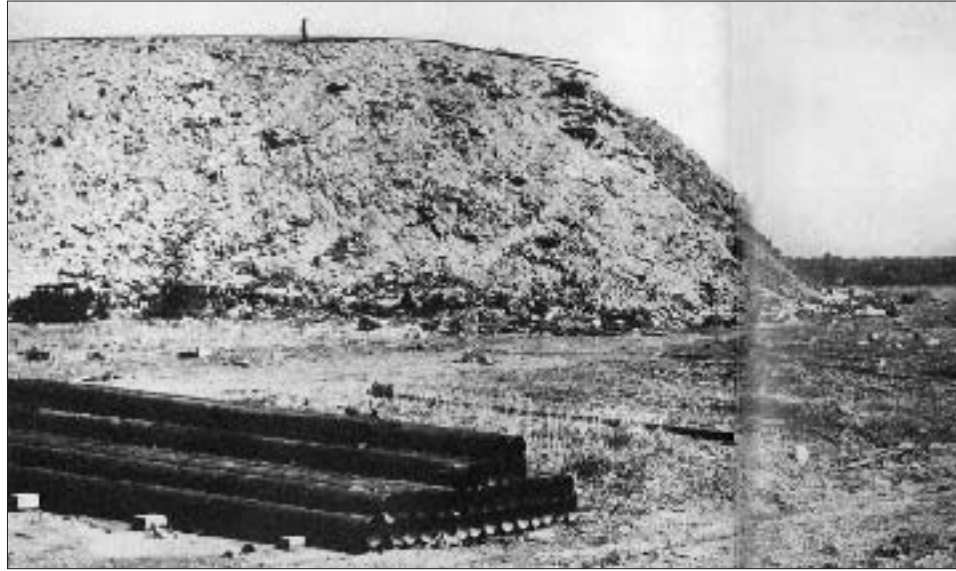


Figure 1 Corona Dumps garbage mound (1933) prior to being transformed into Flushing Meadows-Corona Park.



Figure 2 Map of New York City, with Flushing Meadows-Corona Park highlighted.

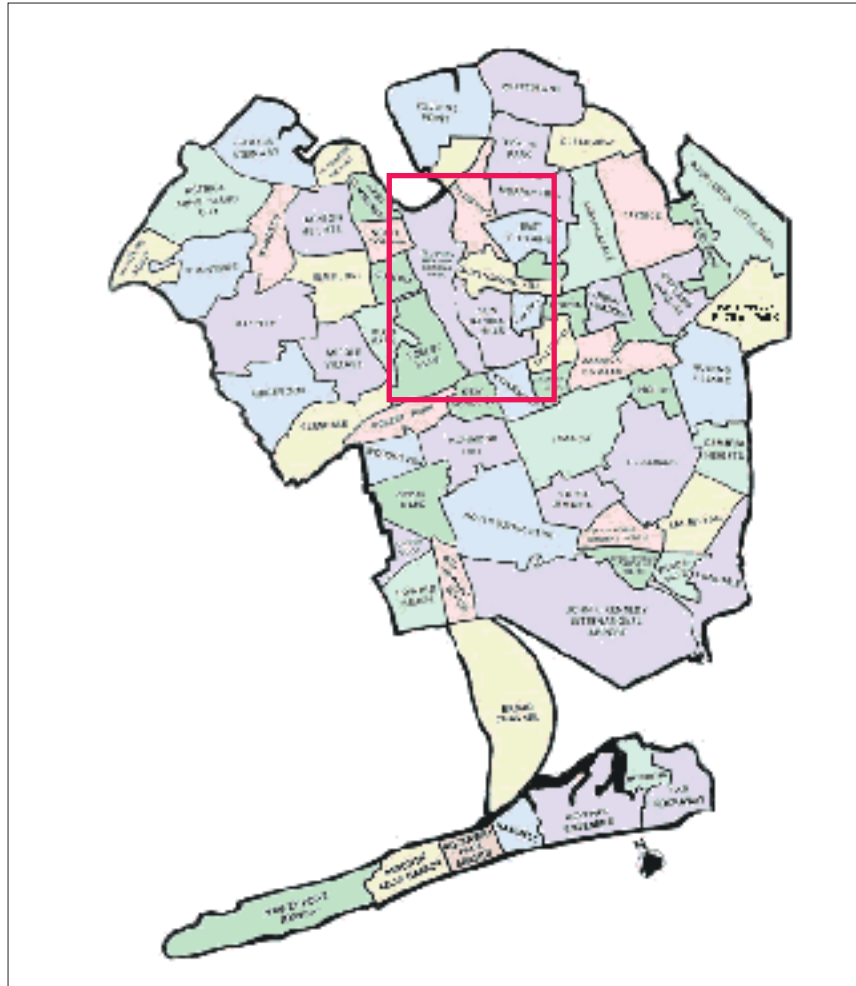


Figure 3 Map of Queens borough of New York City, showing location of Flushing Meadows-Corona Park.

the installation of small man-made lakes and modern infrastructure as well.

The New York City Department of Parks and Recreation, however, did not have the capital to fund such an ambitious project. During late 1930s, a proposal was generated for New York to host a World's Fair in 1939, though the city still needed an appropriate location for such a large scale event. Moses decided to capitalize on the proposal by developing a plan to hold a fair on the Flushing Meadows site, which would act as an economic vehicle to construct the future park. The city agreed to lease the land to the newly established World's Fair Corporation in exchange for establishing the infrastructure and necessary improvements for a future park. The Fair Corporation raised

funds in large part from the City of New York, state and federal governments as well as a public bond issue. It was agreed that the first \$4 million of profits from the Fair were to be directed toward the establishment of the Fair site as a permanent park.⁶

After the close of the 1939-40 fair, however, there were no profits. Attendance figures had fallen far below original expectations and the Fair quickly became a financial blunder. Original investors were repaid only 33 cents on every dollar.⁷ The close of the Fair in 1940 coincided with the onset of World War II, which ultimately froze any further funding for the park. Barely enough money even existed for demolition and clean-up of the fair exhibits.⁸

Despite the financial failure of the 1939-40 World's Fair, Moses was determined to fulfill his dream and complete the final design for the park, which he had begun. Moses proposed hosting another World's Fair to be held in 1964, primarily as an economic generator to help fund the park's completion. This fair would commemorate and coincide with the 300th anniversary of the British takeover from Dutch control and the subsequent renaming of New York from New Amsterdam.⁹ Despite his former failed fair attempt from the 1930s, he managed to convince skeptics that hosting another World's Fair would be more profitable because of two primary advantages. Firstly, he argued that the Corporation would be able to reuse the existing infrastructure and the structured, symmetric *Beaux Arts* layout, which remained from the former fair. Secondly, the Corporation would stipulate that each exhibitor would be expected to pay for the construction of their own pavilion and its demolition at the Fair's conclusion.¹⁰ Moses noted that the total savings from these construction and demolition costs would significantly reduce the corporation's overhead.

This was not the way traditional international fairs had been run and Moses' economic intentions faced severe opposition. As Moses' framework conflicted with the standards and guidelines established by the Paris-based Bureau of International

Expositions, they ultimately refused to sanction the event.¹¹ The Bureau stipulated that the first 5,000 square feet of exhibit rental were required to remain free of cost to participants and restricted the fair duration to only one season.¹² Conversely, Moses wanted the fair to last two seasons, where each participant would be responsible for renting their entire exhibit space. Despite the divergence from an official sanction, Moses continued with his plan, simply appealing directly to foreign governments and private corporations.¹³ Released from the auspices of the Bureau, the Fair did not have to abide by traditional fair architectural design and planning guidelines. Moses decided not to



Figure 4 Map of the 1964-65 World's Fair grounds showing five areas: industrial, international, state and federal, transportation and amusement.

implement unifying design regulations and once proclaimed that the fair would have “no predominating architectural concept.”¹⁴ Rather, he wished to encourage designers to introduce varied and creative architectural forms. Architectural critics slammed the fair in reviews as a failure for lack of coherency and for serving commercial interests before aesthetic considerations. Ada Louise Huxtable, former architectural critic for the New York Times, claimed the fair was “everything the critics predicted it would be – disconnected, grotesque, lacking any unity of concept or style.” She did note, however, that “it is just those accidental juxtapositions and cockeyed contrasts built into the fair that gave it its particular attraction and charm.”¹⁵



Figure 5 The Unisphere and symbol of the 1964-65 World's Fair, designated a New York City landmark in 1995.

The official symbol chosen for the fair was the Unisphere, a stainless steel scale model of a globe with orbiting satellites, which was fabricated and donated by U.S. Steel Corporation.¹⁶ Standing at over 140 feet, this 450 ton spherical fixture¹⁷ came to represent not only the world's fair, but also the age of space exploration, into which the country had recently entered. The Unisphere was retained after the Fair and today is popularly known as the "unofficial" symbol of the Queens Borough. In 1995, the New York Landmarks Preservation Commission designated the Unisphere as a local landmark.¹⁸

Although the architecture at the fair seemed to lack unity, two overarching themes were chosen for the Fair: "Peace Through Understanding" and "Man's Achievements on a Shrinking Globe in an Expanding Universe". The Fair's goal was to be "universal" and "have something to offer everyone."¹⁹ Before the fair opened, Moses elaborated on the choice of themes and his vision for the Fair, saying:

*"...the basic purpose of the fair is Peace Through Understanding, that is education of the peoples of the world as to the interdependence of nations to insure a lasting peace. ...and the completion of Flushing Meadow Park with the legacy of permanent recreational facilities after the fair."*²⁰

New York State Pavilion Design and Construction

The 1964-65 New York World's Fair was divided into five areas, each with its own pavilions: industrial, international, state and federal, transportation and amusement.²¹ In the state area, New York Governor Norman Rockefeller wanted to have a magnificent pavilion built for New York State to show off the state's status as fair host as well as a major center for progressive art and culture. Governor Rockefeller was working at the same time with the architect Philip Johnson on the design and the construction of the New York State Theater at Lincoln Center in Manhattan, which would later become the world's largest cultural complex.²² Familiar and pleased with Johnson's work, Governor Rockefeller commissioned Johnson to design the upcoming New York State Pavilion for

the fair. The design is credited to both Philip Johnson and his partner at that time, fellow architect, Richard Foster, though Philip Johnson appears to have been the architect of record for the Pavilion project.

Architect

Philip Johnson's entrance into the field of architecture first occurred after graduating from Harvard in 1930 with an undergraduate degree in philosophy.²³ Shortly thereafter, he teamed and traveled extensively through Europe with art and architectural historian Henry-Russell Hitchcock to document new architectural forms that they found were being developed, and what later came to be known as "modernism".²⁴ After returning to the United States, Johnson began working as a director in the Department of Architecture and Design at the Museum of Modern Art in New York. This museum program was the first of its kind in the nation which was dedicated to the study of architecture as an art. While there, he teamed with Hitchcock to produce the groundbreaking exhibition based on the emerging European architectural trend, which Johnson, Hitchcock and Alfred Barr coined "The International Style".²⁵ This revolutionary exhibit introduced American architects and audiences to an approach to design being practiced at the time in Europe by such master architects as Mies van der Rohe and Le Corbusier.

At the age of 34, Johnson returned to Harvard to study architecture under the guidance of Marcel Breuer.²⁶ Work from his early career as an architect includes one of Johnson's most famous buildings, his "Glass House", which is heavily influenced by his mentor Mies van der Rohe's "Farnsworth House", though it possesses unique elements which distinguish it from the modern landmark.²⁷ Johnson is also credited with the design of several other notable twentieth century structures, including the Roofless Church (1960), Kline Biology Tower (1962-66), and New York State Theater at Lincoln Center in New York (1963).²⁸ Later, working with his partner John Burgee, Johnson went on to expand the scope of his designs to include well-known structures such as the AT&T

Building in New York (1975-84), which came to be known as an example of architecture labeled “post-modernism”.²⁹

In 1979, Philip Johnson was honored with the first Pritzker Architecture Prize in recognition of “50 years of imagination and vitality embodied in a myriad of museums, theaters, libraries, houses, gardens and corporate structures.”³⁰ He also received the highest honor of the architectural profession when he was awarded the Gold Medal of the American Institute of Architects. Today, partnered with Alan Ritchie, Johnson continues to contribute to architectural design of the twenty-first century.

Design and Construction

It was during Johnson’s career, while he was partnered with Richard Foster, that he received the commission to design the New York State Pavilion. This came at a time when Johnson was breaking away from Miesian tradition and strict modernist design, and was beginning to incorporate some classical elements and ornamentation into his designs. He worked with structural engineer Lev Zetlin to design a state pavilion for the fair that would showcase architectural as well as technological innovation. Interestingly, several biographies written on Johnson make only a brief mention of Johnson’s involvement in the Pavilion’s design, if not completely overlooking the work. However, for the latest book written on his work by Hilary Lewis, a black and white photograph of the pavilion in its current condition was chosen for the cover.³¹

The final design for the New York State Pavilion consisted of three separate structures: the main tent structure, known as the “Tent of Tomorrow” (Tent), three interconnected observation towers with platforms, and a circular theater, known as the “Theaterama”. According to Johnson, when working on the design, his aim was to achieve “an unengaged free space as an example of the greatness of New York, rather than as a warehouse full of exhibit material.”³² He accomplished this by designing an open air structure that emphasized monumentality through technical innovation. Circular



Figure 6 Scaled model of the New York State Pavilion before construction including the Tent of Tomorrow, Observation Towers, and Theaterama.



Figure 7 View of the New York State Pavilion after construction as advertized on a postcard from the fair.

and oval shapes were a recurring theme in its form. Johnson cited his appreciation for the Italian baroque as the inspiration for constructing an ovoid tent supported by columns.³³

Tent of Tomorrow

The Tent of Tomorrow is elliptical in shape and is supported on its periphery by sixteen hollow, cylindrical slip-cast concrete columns, with a wall thickness of sixteen inches, measuring twelve feet eight inches in diameter and 100 feet in height.³⁴ The columns support a 2,000-ton steel tension-cable roof.³⁵ This type of roofing system is also referred to as a “bicycle wheel roof” because of its similarity in form and design to a bicycle wheel lying horizontally.³⁶ The roof measures 320 feet by 240 feet and consists of an outer steel compression ring, an inner steel tension ring, and two layers of 2.5 inch diameter pre-stressed steel cables connecting the rings.³⁷ The roof deck above the cables was composed of approximately 1,500 translucent, fiberglass Kalwall panels displaying an array of colors: red, orange, blue and violet. As light entered through the panels, it created a similar effect to that of stained glass. This was true both during the day from sunlight as well as at night from a series of artificial lights, which were installed along cables above the roof panels.

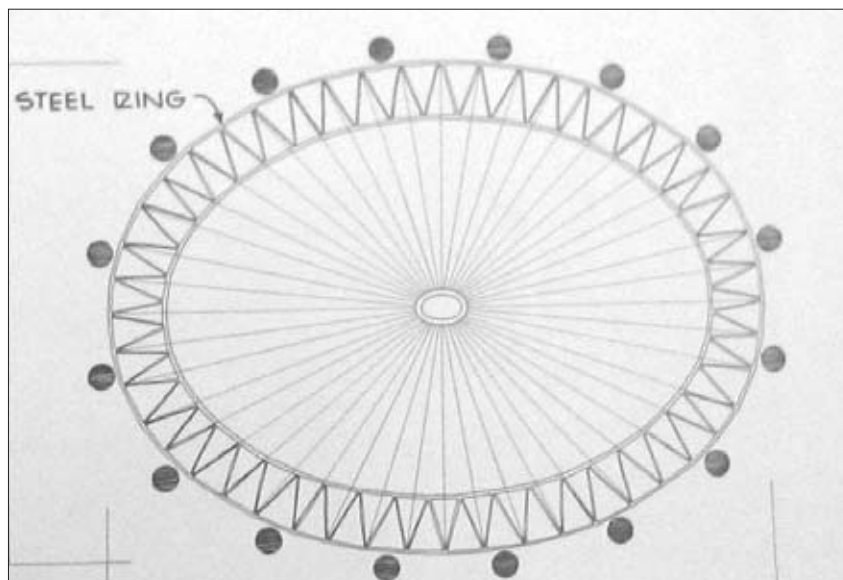


Figure 8 Plan sketch of Tent of Tomorrow by LZA, showing sixteen periphery columns, steel ring and bicycle wheel configuration.

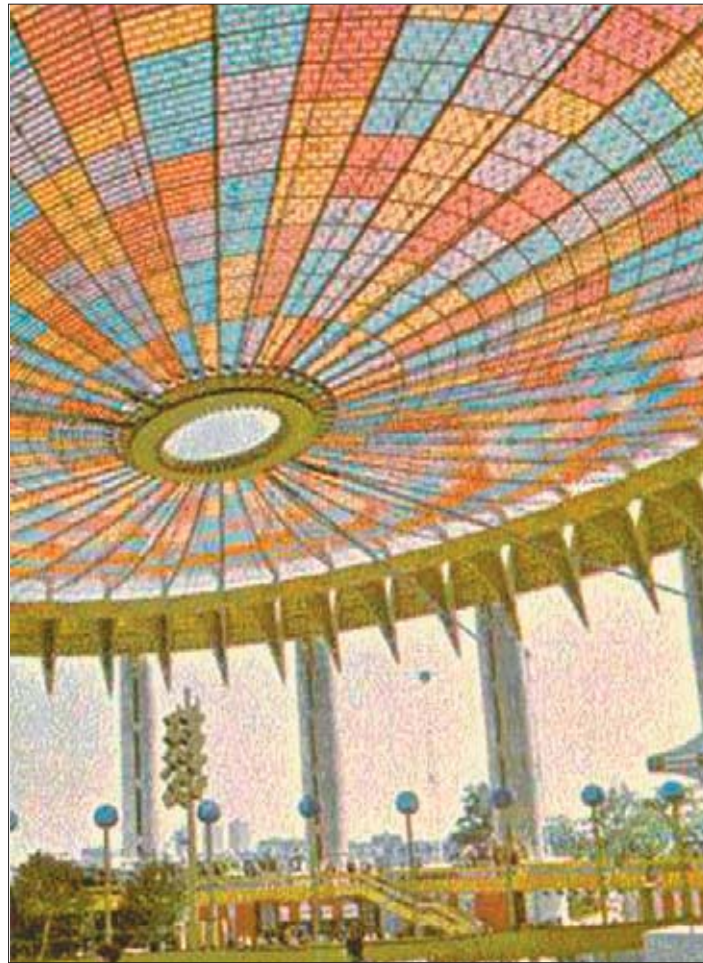


Figure 9 Translucent Kalwall fiberglass sandwich roofing panels at the Tent of Tomorrow.

Tent Foundations

As a cost saving measure for constructing most of the temporary pavilions, wooden piles were chosen over standard concrete or steel. About 20,000 untreated piles from 80 to 100 feet in length were shipped to the site by the Niedermeyer-Martin Company in Portland, Oregon and stockpiled to avoid a shortage during construction.³⁸ Normally, wooden pilings used in permanent applications are treated with creosote to prevent wood rot. As the foundations were only intended to be temporary and were exempt from standard building codes, many fair participants, including New York State,

chose not to treat the timber with creosote.

To resist rot, untreated piles must remain completely submerged beneath the water table. Original design plans show that from the very outset of the project, the designers knew that the water table would lie at least 7.5 feet and up to 10.5 feet below the bottom of the concrete pile cap and would result in exposing the top portions of the piles. When the Fair Corporation decided to retain the pavilion, the engineering firm Praeger recommended to offset potential pile damage by raising the water table above the top of the piles. The piles' resistance to deterioration was conditional upon the water table remaining above the top of the piles.



Figure 10 Wooden pilings, stacked and ready to be driven for Pavilion foundations.

For the foundations of each Tent of Tomorrow column, a minimum of 26 wooden piles were driven into the earth and then topped with a four foot thick concrete pile cap. In addition to the wooden piles, up to four steel H-piles were driven below each column

to extend the bearing capacity because some wood piles had failed to reach the expected bearing capacity, even when driven to full length. The locations and quantity of the steel piles are unknown as they were neither recorded nor indicated on the design drawings.

Promenade

A one-story enclosed, concrete masonry block structure encircles the interior space and contains several side rooms and restrooms. Entrance and egress at the ground level is possible from three separate gates. Three sets of stairs and one escalator were also constructed for access to the mezzanine level, where visitors would find a wide, open promenade lined on both sides with numerous large blue lightbulbs.

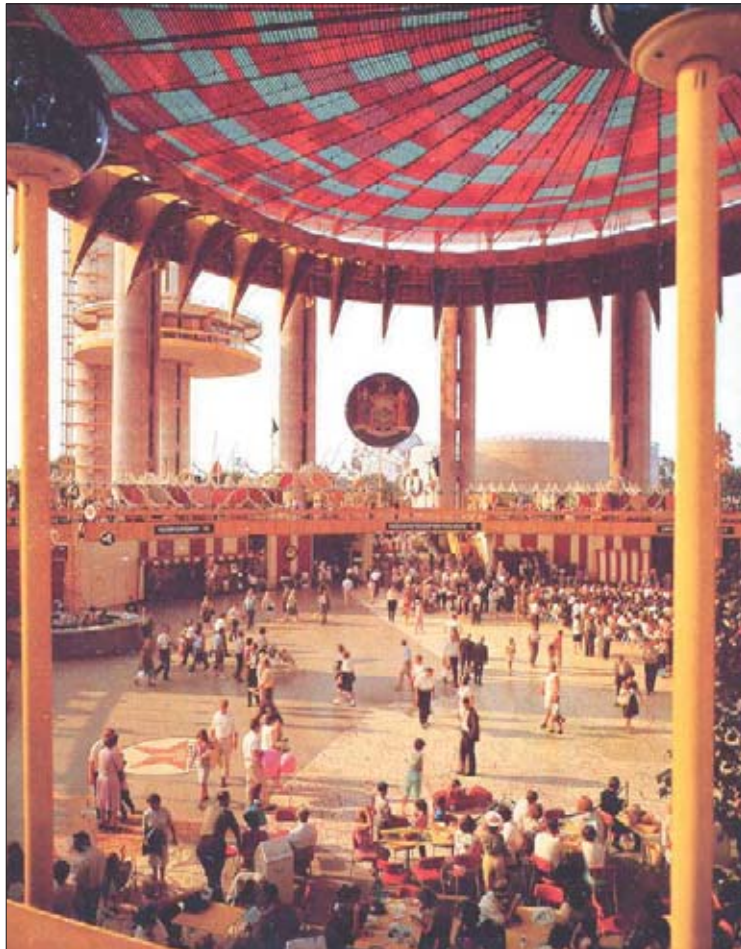


Figure 11 Interior view of the Tent of Tomorrow as viewed from Promenade level, with terrazzo floor map traversed by visitors.

Texaco Map

The largest attraction to the Pavilion's tent actually lay on the ground: an enormous terrazzo pavement depicting a road map of New York which was sponsored by Texaco Oil Company. At the time, it was the largest road map in the world, with 567 mosaic terrazzo panels, each weighing about 400 pounds and McNally furnished the topographic information, city markers, roads, rivers and park systems, while Texaco added the location of each of its gas stations in the state to the map.

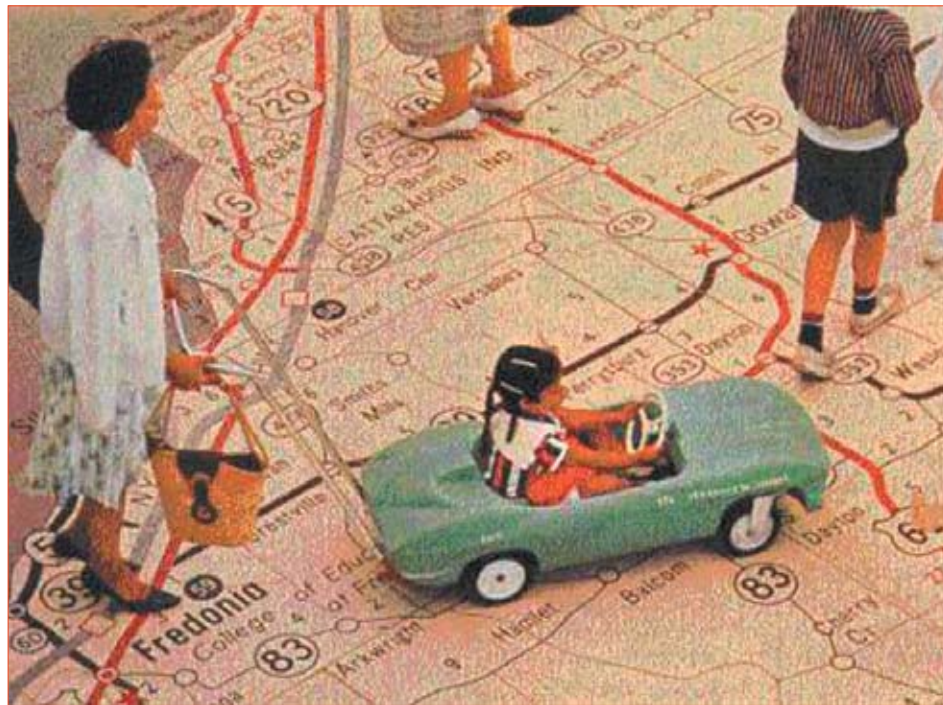


Figure 12 Close-up view of terrazzo floor map of New York State.

Observation Towers

According to Johnson, the observation towers were not part of his original design, but were added after Governor Rockefeller requested that the New York State Pavilion be designed as the tallest building at the fair.³⁹ Each tower was designed as a slender, slip-cast and pre-stressed concrete column. The 80 foot diameter circular platforms are not directly connected to the columns. Rather, they are suspended from cantilevered steel girder “arms” above by hanger rods at the exterior and interior platform edges.⁴⁰

The lowest platform is at 85 feet, the middle platform rises to 181 feet, and the tallest of the three stands at 226 feet, making the pavilion a visually dominating feature within its surroundings. The roof above each of the platforms was constructed of the same multicolored, translucent, plastic Kalwall sandwich panels that were used for the Tent's cable roof panels. Two rounded, glass-enclosed elevator cars, each called a "Sky Streak", were attached to the exterior of the tallest tower and serviced all three platforms. One car delivered visitors to the two lower platforms, while the second travelled non-stop to the tallest level.⁴¹ A snack bar was located at the lowest platform, while the upper two levels were reserved for observation and offered visitors coin-operated telescopes.⁴² Unlike the



Figure 13 New York State Pavilion
Observation Towers, displaying one
of the two "Sky Streak" elevators at
mid-tower position.

wooden pilings used for the Tent and Theaterama foundations, a series of steel H-piles were chosen for the towers' substructure to ensure the stability of the slender, soaring structures.

Theaterama

Of the three elements, the Theaterama constituted the only “real” building of the three Pavilion structures. It displays the simplest design, consisting of a single cylindrical, concrete drum that measures 44 feet in height and 100 feet in diameter.⁴³ This architectural element was designed to act more like a continuous rounded canvas for other artwork (externally) and film (internally) rather than being recognized as a particularly special architectural masterpiece in itself.



Figure 14 Theaterama exterior, displaying artwork. The Observation Towers can be seen in background.

Googie Architecture

A short-lived architectural style from the post-war 1950s through mid-1960s was also known as “Googie” architecture. The New York State Pavilion’s design was

one of many at the fair which represented Googie. Beginning in the mid-1950s, a nationwide focus on the space exploration program captivated the American public and optimism for the future was at an all time high.⁴⁴ Television series such as “The Jetsons” helped spur the craze for what could be possible in the future. This focus on the future was likewise reflected in some popular architectural elements and designs. Trademark features of Googie architecture include the use of starbursts, parabolic shapes and arches, boomerangs and flying saucer shapes to represent “space age” architecture.⁴⁵ Typically, one could find the Googie style reflected in the design of coffee shops and eateries, bowling alleys, and roadside architecture such as gas stations and motels. Rooted in southern California, the name “Googie” is derived from a famous West Hollywood café created in that style, which has since been demolished.⁴⁶ This manner of architecture has also been referred to by scholars and critics as “Populuxe”⁴⁷ and “Pop Architecture”.⁴⁸ The 1964-65 World’s Fair is said to represent the largest concentration of Googie in one place. However, by 1964, Populuxe had been around for a decade and the American public was accustomed to ideas of the future, which had not yet been realized. The fair also marked the end of the Googie era, after which the style quickly went out of fashion.⁴⁹

According to an official bulletin published by the fair corporation, the New York State Pavilion was originally “conceived as the ‘County Fair of the Future’”.⁵⁰ Published in the fall of 1962 before its construction, the bulletin touted that “the installation will combine the activity and the excitement of the traditional local fair with a dramatic and unique architectural treatment that envisions a world of tomorrow.”⁵¹ Certainly Johnson’s name for the central tent structure “Tent of Tomorrow” captures that spirit. Johnson’s experimentation and implementation of new building materials was likewise consistent with typical Googie architecture, which was known to for using materials such as formica, aluminum, stainless steel, flagstone or terrazzo with neon and plastic

signage. The New York State Pavilion is no exception, where some of these materials were cleverly incorporated into the decorative and roofing design. The Texaco floor map, for example, was constructed of terrazzo with in-laid plastic letters and markers. Likewise, for the tent's cable roof structure, Johnson chose translucent fiberglass panels reinforced with an aluminum grid. In both cases, these materials were meant to flaunt the tremendous scale at which they were being employed: at the largest suspended roof in the world and the largest scaled roadmap in the world.

Another element of Googie architecture lies in the design of the observation towers, whose circular, flattened platforms have been described as “flying saucers on sticks”.⁵² Flying Saucers as architectural forms gained popularity with the masses after being frequently featured in science fiction books, magazines and movies. An excellent example of this space aged architecture was a predecessor fair structure: the Space Needle, which was designed for the 1962 World's Fair in Seattle.

Architectural Reviews

Unlike the reviews of the architecture at the 1939-40 World's Fair, architectural critics did not use many pleasant words to describe the 1964-65 World's Fair. The commercialized atmosphere and lack of an overarching and unifying design theme was harshly criticized. Nonetheless, the general public and media welcomed and admired the obscure forms.⁵³ Johnson's New York State Pavilion proved continually to be one of the few exceptions at the fair, where praise was given for its innovative design. Many felt its whimsical spirit captured the essence of a world's fair and was aptly described as “great good fun.”⁵⁴

After the fair opened for its first season, Vincent J. Scully, Jr., a professor of art history at Yale, wrote an article for *Life* magazine, whose title “If This Is Architecture, God Help Us” best summarizes his negative reaction to the fair's architecture. He severely criticized the fair for lack of “any over-all architectural unity”, doubting

“whether any fair was ever so crassly, even brutally conceived as this one.”⁵⁵ However, he graciously found the Johnson’s New York State Pavilion to be the one “almost great” building.⁵⁶ He also highlighted that the pavilion’s cable roof was the largest constructed in the world and called it the only “significant technical achievement” to be found amongst the fair’s “hodgepodge”.⁵⁷

Architectural critic for the New York Times, Ada Louise Huxtable, praised the pavilion as “a runaway success, day or night.”⁵⁸ Stressing its underlying fun spirit and “sophisticated frivolity”, she enjoyed the “carnival with class” and described the tent as both “seriously and beautifully constructed”.⁵⁹ Likewise, the “great tent” portion was supported by Mildred Schmertz of Architectural Record as one of the most successful pavilions at the fair, which had “the gaiety of the circus and is in the best tradition of Fair design.”⁶⁰

While the fair was still under construction, a cartoon was featured in the magazine *The New Yorker*, which poked fun at the fair’s creative architectural forms and also captured the public’s anticipation of the unusual shaped creations to come.⁶¹ The sketch depicted a fair employee giving a man directions, with half-built structures and construction cranes pictured in the background. The completely erected observation towers of the New York State Pavilion stand proudly in the foreground. The caption read:

“Go down here until you come to a large, round concrete I-don’t-know-what, then turn right and go on past a sort of egg-shaped contraption, until you come to what looks like a huge clam. And then...”

Chapter 1 Endnotes

- ¹ F. Scott Fitzgerald, *The Great Gatsby*, New York : Charles Scribner's Sons, 1925: 23.
- ² Project for Public Spaces. "Flushing Meadows Corona Park: Use and Needs Analysis". Unpublished report prepared for the City of New York, Department of Parks and Recreation, 1986, p. 4.
- ³ Ibid.
- ⁴ F. Scott Fitzgerald. Ibid.
- ⁵ Rosemarie Haag Bletter, et al. *Remembering the Future – The New York World's Fair from 1939-64*. New York: Rizzoli International, 1989, p. 48.
- ⁶ Robert Caro. *The Power Broker*.
- ⁷ Project for Public Spaces. Ibid, p. 5.
- ⁸ Rosemarie Haag Bletter, et al. Ibid, p. 52.
- ⁹ Robert A. M. Stern. New York 1960: Architecture and Urbanism Between the Second World War and Bicentennial. New York: Monacelli Press, 1995, p. 1027.
- ¹⁰ Ellen Perry, et. al. "The Busy Architect's Guide to the Worlds Fair." *Progressive Architecture* (October 1964) p.160.
- ¹¹ Rosemarie Haag Bletter, et al. Ibid, p. 106.
- ¹² Rosemarie Haag Bletter, et al. Ibid, p. 106.
- ¹³ Robert A. M. Stern. Ibid, p. 1028.
- ¹⁴ Ibid.
- ¹⁵ Ada Louise Huxtable, "Architecture: Chaos of Good, Bad and Joyful," *New York Times* (April 22, 1964): 25.
- ¹⁶ Andrew S. Dolkart and Matthew A. Postal, *New York City Landmarks*, New Jersey: John Wiley and Sons, 2004, p. 284.
- ¹⁷ Robert A. M. Stern. Ibid, p. 1033.
- ¹⁸ Andrew S. Dolkart and Matthew A. Postal, *New York City Landmarks*, New Jersey: John Wiley and Sons, 2004, p. 284.
- ¹⁹ As quoted in Fair Corporation pamphlet "New York's World's Fair 1964-65", Issue One, January 16, 1961, p. 2.
- ²⁰ Ibid.
- ²¹ Site plan for 1964-65 New York World's Fair. New York World's Fair 1964-65 Corporation, 1960.
- ²² Hilary Lewis, *The Architecture of Philip Johnson*, Boston : Bulfinch Press, 2002: 110.
- ²³ Ibid, p.3.
- ²⁴ Hillary Lewis and John O'Connor, eds. *Philip Johnson: The Architect in His Own Words*. New York: Rizzoli International Publications, 1994, 11.
- ²⁵ Hilary Lewis, *The Architecture of Philip Johnson*, Boston : Bulfinch Press, 2002: 3.
- ²⁶ Ibid, p. 4.
- ²⁷ Ibid.
- ²⁸ Ibid, pp. 88, 110, and 122.
- ²⁹ Leland M. Roth. *American Architecture*. Boulder: Westview Press. 2001: 497.
- ³⁰ Citation from the Pritzker Jury as quoted at the Pritzker Prize website : <http://www.pritzkerprize.com/main.htm>
- ³¹ Hilary Lewis. *The Architecture of Philip Johnson*. Boston : Bulfinch Press, 2002.

Chapter 1 Endnotes (continued)

- ³² Mildred F. Schmertz "Architecture at the New York World's Fair." *Architectural Record* 136 (July 1964): 144.
- ³³ Hillary Lewis and John O'Connor, eds. *Philip Johnson: The Architect in His Own Words*. New York: Rizzoli International Publications, 1994, 13.
- ³⁴ "The Pavilions: With Structures Such as These, Who Needs Exhibits?" *Engineering News Record* 171 (October 31, 1963), p. 29.
- ³⁵ Ibid.
- ³⁶ "Bicycle Wheels." *Progressive Architecture* (February 1961), pp. 144-55.
- ³⁷ "32 Jacks Raise 2,000-Ton Roof." *Engineering News Record* 171 (October 31, 1963), p. 15.
- ³⁸ 1964-65 New York World's Fair Corporation Archives at the New York Public Library, Rare Books and Manuscripts Division: Box #166 "Construction of Piles / Foundations". Clipping from *Engineering News Record* (March 29, 1962).
- ³⁹ Hillary Lewis and John O'Connor, eds. *Philip Johnson: The Architect in His Own Words*. New York: Rizzoli International Publications, 1994, p. 83.
- ⁴⁰ Lev Zetlin Associates brochure, undated. Courtesy of the New York Public Library, Manuscripts and Archives Division, New York World's Fair 1964-65 Corporate Records.
- ⁴¹ "The Pavilions: With Structures Like These, Who Needs Exhibits?" *Engineering News Record* 171 (October 31, 1963), p. 29.
- ⁴² Rosemarie Haag Bletter, et. al. Ibid. p. 113.
- ⁴³ "The Pavilions: With Structures Like These, Who Needs Exhibits?" *Engineering News Record*. 171 October 31, 1963: 29.
- ⁴⁴ Ibid.
- ⁴⁵ Ibid.
- ⁴⁶ Shelby Grad. "'Googie' Style Goes From Warp Speed to Time Warp." *The Los Angeles Times*. September 18, 1995:3.
- ⁴⁷ Thomas Hine, *Populuxe*. New York: Random house, Inc. 1986: 167.
- ⁴⁸ Robert A. M. Stern, et al. *New York 1960: Architecture and Urbanism Between the Second World War and Bicentennial*. New York: Monacelli Press, 1995, p. 1036.
- ⁴⁹ Thomas Hine, Ibid, 167.
- ⁵⁰ FAIR NEWS Official Bulletin of the New York World's Fair 1964/1965 Source: Vol. 1, No. 5 – October 16, 1962.
- ⁵¹ Ibid.
- ⁵² Thomas Hine. Ibid, 167.
- ⁵³ Robert A. M. Stern, et al. *New York 1960: Architecture and Urbanism Between the Second World War and Bicentennial*. New York: Monacelli Press, 1995, 1031.
- ⁵⁴ Ellen Perry, et. al. "The Busy Architect's Guide to the Worlds Fair." *Progressive Architecture*. Volume XLV, No. 10 (October 1964) p.167.
- ⁵⁵ Vincent J. Scully, Jr., "If This Is Architecture, God Help Us." *Life*, July 31, 1964, p. 9.
- ⁵⁶ Ibid.
- ⁵⁷ Ibid.
- ⁵⁸ Ada Louise Huxtable, "Architecture: Chaos of Good, Bad and Joyful," *New York Times* (April 22, 1964): 25.
- ⁵⁹ Ibid.

Chapter 1 Endnotes (continued)

⁶⁰ Mildred F. Schmertz “Architecture at the New York World’s Fair.” *Architectural Record* Volume 136 No. 1 (July 1964): 144.

⁶¹ Alan Dunn. [Cartoon.] *The New Yorker*. February 15, 1964. p. 40

NEW YORK STATE PAVILION'S USE DURING AND AFTER THE FAIR

NEW YORK STATE PAVILION'S USE DURING THE FAIR

Utilizing the months of the year with the most favorable weather in New York, the fair was strictly a summertime event with a total two season duration of twelve months: from mid-April through mid-October of both 1964 and 1965. Similar to other pavilions with a temporary design, the New York State Pavilion was specifically designed to be open air with the fair's seasonal use in mind.

Governor Nelson Rockefeller wanted his pavilion to showcase all of the varied attractions that New York State had to offer, such as natural scenery and wildlife, and achievements, of which it could boast, from fine arts to the performing arts. Each portion of the Pavilion (the Theaterama, the Observation Towers, and the Tent of Tomorrow) housed their own specific exhibits or attractions. The Pavilion also acted as a focal point for the citizens of New York State, where one could voice their concerns to representative Congressmen or simply learn more about or take pride in their home state. Certainly the Pavilion's staggering attendance figures reflect a magnetism attracting both native New Yorker and non-native alike. At the close of the first season, the New York State Pavilion ranked third in popularity. By the close of the fair in 1965, an estimated 6,000,000 fairgoers had passed through the Pavilion's gates.¹

Tent of Tomorrow

The single largest attraction found within the tent structure was the polished terrazzo floor road map sponsored by Texaco. The Texaco map represented the largest road map in the world, measuring 130 feet by 166 feet, and depicted all of the features on a standard road map such as roads, towns, lakes, rivers, and forests, but at an enormous scale.² In contrast to standard exhibits, where the visitor is asked to refrain from

touching, the Texaco map invited guests to walk on its surface, locate sites within New York, and for native New Yorkers, even trace their home town. The enormous map could be viewed from above at the mezzanine level as well to view the map in its entirety.

In addition to the floor map display, the Tent of Tomorrow acted as a hub for activities and special events that catered to family members of all ages. Contrasting with the contemporary Pop Art lining the Theaterama's exterior, the tent housed a traditional art show with fifty works by New York artists dating from the seventeenth to nineteenth centuries.³ Fashion shows were a common attraction as well as free entertainment by thousands of non-professionals representing every county and every major ethnic group. A "kiddy ride" and a small zoo also catered to younger guests.⁴ The zoo featured animals indigenous to New York such as bears, otters, deer and chipmunks. For concessions, one could prepare a "Cook it Yourself" meal on the ground floor, where ovens were provided to bake dishes.⁵ On the mezzanine level, a visitor could receive guided tours of the Pavilion in five languages: French, Spanish, German, Russian, and English.⁶



Figure 15 Children's choir performance at the Tent of Tomorrow interior during the fair.

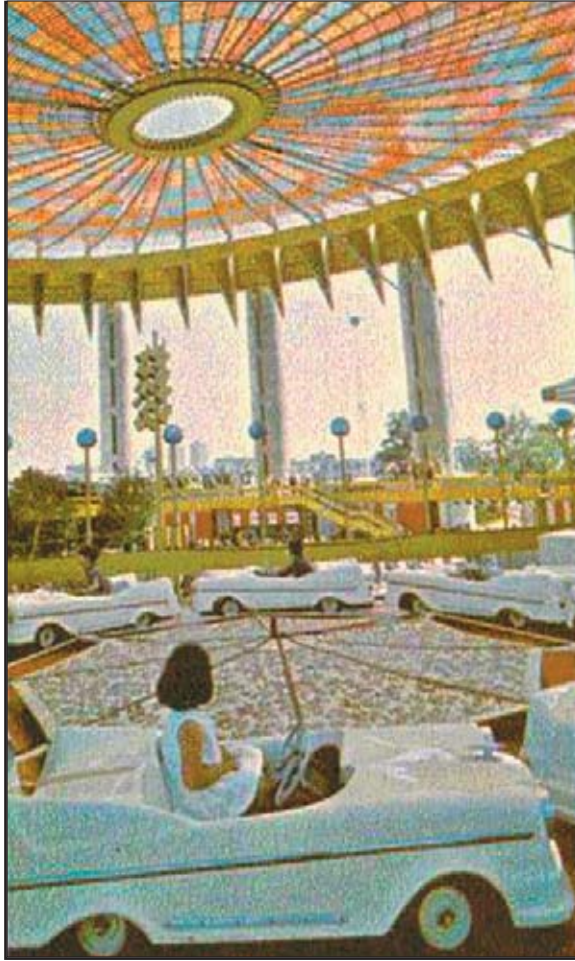


Figure 16 Kiddie ride at promenade level of the Tent of Tomorrow.

Observation Towers

At 226 feet, the tallest observation tower of the three was also the tallest structure at the fair and contained two observation platforms. These observation decks offered fairgoers an exciting view of the fair and surrounding areas. On clear day, visitors could see Manhattan and Long Island as well as parts of New Jersey and Connecticut. Coin-operated telescopes helped extend the range of visibility.

A visitor would travel to the top by taking a 20-second ride in the glass “Sky Streak” capsule. Admission was charged for each patron: 50 cents for adults and 25 cents for children.⁷ A second, lower platform also acted as an observation deck for viewers. The lowest tower was reserved for use as a snack bar.



Figure 17 View from interior of tallest observation tower, looking northeast.

Theaterama

The Theaterama featured a picture slide show projected 360 degrees on the interior rounded walls entitled “A’ Round New York”. The show displayed a panorama of natural scenery and attractions that could be found in the state, such as Niagara Falls. The interior was empty and the visitor would watch the show while standing. Commissioned by the architect Philip Johnson, the exterior of the Theaterama was dedicated to displaying ten pieces of contemporary American Pop Art⁸. In 1964, the new art form was just gaining recognition. Philip Johnson supported the promotion of Pop Art and wished to use the Theaterama to showcase the new art craze. He commissioned ten avant-garde artists to showcase their murals and sculpture on the rounded exterior of the Theaterama, including Roy Lichtenstein, Alexander Lieberman, Robert Indiana, James Rosenquist, John Chamberlain, Robert Mallery, Peter Agostini, Robert Rauschenberg, Ellsworth Kelly and Andy Warhol.⁹ Before the Fair even began, however, Warhol’s piece “13 Most Wanted Men” sparked significant controversy. The lithograph contained the mugshots of fugitives, most of whom had Italian names and were identified as “Mafiosi”,

and some of whom had been proven innocent.¹⁰ Due to the political controversy surrounding Warhol's work, the artwork was ordered to be whitewashed over. When it was realized that traces of the image beneath were still visible, the management ordered the entire lithograph to be removed.



Figure 18 Pop Art exhibit on exterior of Theaterama. Andy Warhol's controversial mural "13 Most Wanted Men" (left).

NEW YORK STATE PAVILION'S POST-FAIR USE

During the second season of the fair, a hot debate raged as to whether the New York State Pavilion should be included on the list of fair structures to be retained indefinitely and incorporated into the overall plan of the future post-fair park. The major advocates included the Fair Corporation, Robert Moses and Governor Nelson Rockefeller. The World's Fair Corporation had proposed possible post-fair uses including hosting concerts, athletic events, dances and other civic gatherings.¹¹ In addition, fair president Moses had envisioned the pavilion as a "natural tourist attraction"

in the post fair park.¹² In an effort to help retain and maintain the structure and to save state money, Governor Rockefeller wanted to transfer ownership of the structure to the City of New York. In mid-July 1965, Governor Rockefeller signed a bill authorizing the state to turn over its pavilion to New York City after the fair, thereby releasing the state from any obligation to cover demolition or maintenance costs.¹³

At the same time, Mayor Wagner had established a New York City Committee, headed by City Budget Director William Shea, to discuss which fair buildings the city wished to retain. The committee submitted a report recommending that both the U.S. and New York State Pavilions be razed, finding that “neither would provide for a definite need nor warrant the cost of reconstruction work to make them permanent buildings.”¹⁴ The committee further found that “the proposed uses did not warrant the cost of conforming the structures to the building code and the ensuing annual operation and maintenance.”¹⁵ The Committee’s recommendations met with stiff opposition from Robert Moses, Governor Rockefeller, Lt. Governor Malcolm Wilson, Queens Borough President Mario J. Cariello, political and civic leaders, as well as concerned local residents.

One of the major issues raised in favor of razing the pavilion was whether or not the wooden pilings would be able to continue supporting the plastic-domed Tent of Tomorrow as a permanent structure. According to city code, all pilings for permanent structures needed to be constructed of steel, concrete or wood treated with creosote (to prevent rotting).¹⁶ However, many of the structures at the fair, including the Tent and Theaterama at the New York State Pavilion, were constructed using untreated pilings. Many of the pavilions were able to be built using this less expensive, yet also presumably less durable, method because as “temporary structures” they did not have to conform to as strict building codes and construction specifications.¹⁷ Steel pilings were selected for the observation towers and were therefore less controversial.

Many professionals rose to the defense of the untreated wooden pilings. When

questioned about whether concrete pilings should have been used instead, Johnson replied, "...as far as I am concerned, the wooden ones will last forever."¹⁸ An engineer from the firm Lev Zetlin Associates, who worked directly on the structural design, agreed there's no reason to believe that the untreated pilings won't last forever.¹⁹ He verified that even though the wood was untreated, it was not necessarily inadequate for permanent use. However, he admitted that the pavilion was not meant to be permanent.²⁰ Col. John T. O'Neill, director of engineering at the Fair, also agreed, saying they were "safe and durable."²¹ As evidence of durability, an investigation and excavation was conducted of several untreated pilings, which remained from the 1939-40 World's Fair. After finding no evidence of rotting or deterioration after 25 years, engineers assessed that the New York State pilings, under similar soil and piling conditions, would continue to have a long future.²²

However, a spokesman for Shea and the Committee argued that because untreated wooden pilings are subject to oxidation and insects, "it's impossible to tell how long they will last."²³ He suggested that yearly inspections would need to be conducted to detect and decay and ensure their safety, but added that this would be a "costly proposition."²⁴ Other proposals to strengthen the foundation were offered including installing steel pilings surrounding the wooden ones, or drilling beneath the structures and pouring concrete pilings to replace the wooden originals.

Another controversy surrounding the structure was whether or not the pavilion was originally designed as a temporary or permanent structure. Johnson claimed, "We always build for immortality. And from the very beginning, we felt this building should be permanent."²⁵ Though the engineer from Lev Zetlin admitted it was not designed as permanent. He later stated that "if it were intended to be permanent all piles would have been treated with creosote."²⁶

Proponents of the Pavilion argued that regardless of whether it was designed to

be a temporary fair structure, the structure needed to be saved indefinitely. Governor Rockefeller and Lieutenant Governor Wilson both had argued that at a cost of \$12.3 million, it would be “shortsighted” and a great waste of tax payer money to see the building razed.²⁷ Even before the end of the fair in the fall of 1965, the pavilion’s historical significance and value as a tourist attraction was locally recognized.²⁸ Additionally, many supporters felt the pavilion could support several needs for the community as a venue for civic and veteran activities. Moses even pointed out that the need for a meeting facility was so great, that civic groups would be even willing to pay a fee for the use of the pavilion’s space.²⁹

In a local *Long Island Press* editorial titled “There’s a Need, Definitely!”, a reader wrote that the pavilion is “a distinctive break in our architectural monotony and commercial banality.” With surprising appreciation for the pavilion’s structural form, the local fan continued to describe the pavilion as a “rare structural flower.”³⁰

Supporters began to argue that there was not only a continued need for the pavilion in the park, but that it had become a symbol, not only of the Fair, but of Queens. As such a visually imposing structure, the pavilion was seen as a natural tourist destination. It was Johnson who first likened the pavilion structure (in particular the observation towers) to Paris’ well known icon and much visited Eiffel Tower, which was a product of the 1889 World’s Fair. He claimed they had “pictured it from the start as the ‘Eiffel Tower of Queens.’”³¹ Some argued that retaining the pavilion would be the economically wise choice, citing the Eiffel Tower’s success as an example. Borough President, Mario Cariello, highlighted that in 1963 more than 2 million people visited the Eiffel Tower and that the tower ran at a profit. In an effort to show how retention could be profitable, he suggested that a nominal fee could likewise be charged to ride up to the observation towers.³²

In the fall of 1965, the decision was made to retain the structure. From 1967-

69, the tent structure was used to sponsor various art shows. Some music concerts were held in the tent as well. In March 1970, the Tent of Tomorrow was transformed into the “Roller Round Skating Rink” when a couple from Ohio offered to lease the space from the Park. The duration of the lease was three years, whereby a percentage of the total admission money would return to the City of New York. To protect the terrazzo floor map and provide a smooth skating surface, the ground was covered with a transparent plastic cover before opening for business. The roller rink was operated as a seasonal facility from March to mid-November. Visitors were charged \$1 admission with an additional skate rental fee.³³ According to the rink operator, Robert Jelen, approximately 100,000 skaters used the rink each year.³⁴

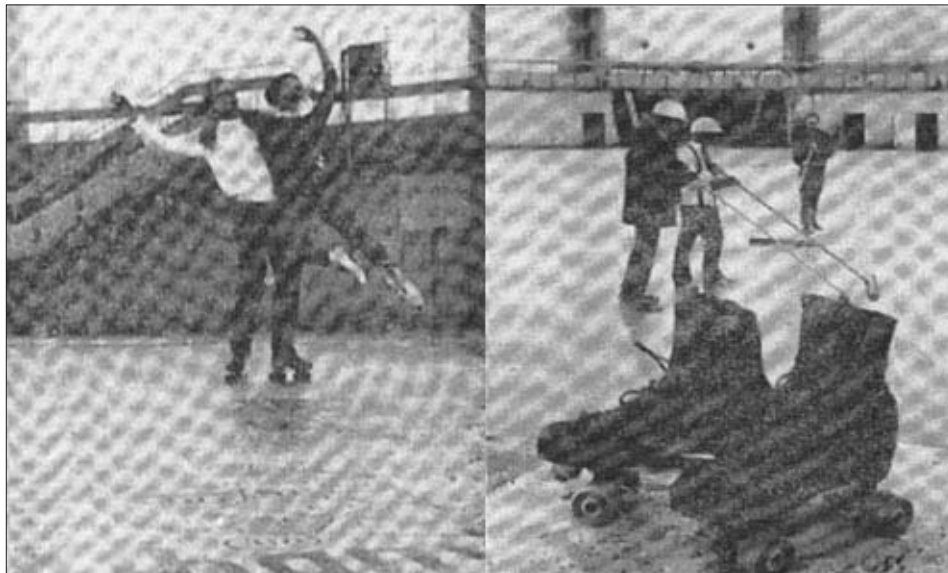


Figure 19 Tent of Tomorrow interior while used as roller skating rink.

By the summer of 1974, just ten years after its construction, the City ordered the closure of the tent structure. The Building Department found the multicolored translucent Kalwall panels attached to the suspended roof structure were in a “hazardous condition” and were deemed “unsafe”. A building inspection revealed that 90 of the 1,000 fiberglass panels were missing.³⁵ According to the present-day owner of Kalwall, Bruce Keller, the original panels had been engineered for a lifespan of 3-5 years, but in fact survived

nearly ten years.³⁶ After a dispute with the City over who would be responsible for the maintenance of the structure, the rink operator closed the rink indefinitely.³⁷ In 1976, the city ordered all of the panels to be removed and the tent went “roofless”.³⁸ The cable structure of the roof remained exposed and untreated.

The “roofless” tent and the map floor have remained abandoned since. Both have suffered from constant exposure to the elements and lack of maintenance. For example, today, tall weeds sprout from the cracks which have formed over the majority of the Texaco Road Map, making many of the locations on the map no longer recognizable. The observation towers and Sky Streak elevators were abandoned immediately at the close of the fair and were never reused. One of the elevators remains grounded at the service basement level for the elevator. In an attempt to avoid vandalism, the other elevator was placed near the top of one of the towers. Today it can be found locked in the same mid-air position, but despite the effort, it appears to have still been victimized by vandals over the years. Only the bare steel stair frames and railings remain within the towers and one of the tent columns, deeming them useless as a means of access. Most of the treads from the steel stairwells have corroded to such an extent that they have collapsed onto treads below. To prevent further vandalism and reduce liability, the entire site remains locked and fenced.

Although the Pavilion remained abandoned, the film industry saw its potential as a creative backdrop for movies and music videos. After some minor cosmetic improvements, the Pavilion was used to film several scenes in the 1978 film *The Wiz*.³⁹ With a coat of paint and fully lit, movie viewers were fooled about the pavilion’s true dilapidated condition. Most recently, the observation towers were filmed in the blockbuster alien movie *Men In Black*.⁴⁰ In the movie, the observation platforms are depicted as alien spaceships. In one of the final adventure scenes of the film, an alien attempts to climb the tower to reach the ship and return to outer space. In 2001,

Universal Studios theme park in Orlando, Florida opened an adventure ride called “Men In Black Alien Attack” based on the film. A replica of the observation tower “spaceships” was constructed at the entrance to promote the ride.



Figure 20 “Men In Black Alien Attack” amusement ride at Universal Studios Theme Park, Orlando, Florida. Note the life size replica of the NYSP Observation Towers.

Of the three Pavilion elements, the Theaterama experienced the most successful post-Fair use. The Theaterama continued its use as a theater following the close of the fair, received a minor makeover in the 1980s, but ultimately closed in 1985 awaiting further restoration. In 1993, the theater underwent a \$4 million restoration, funded in part by the Department of Cultural Affairs, the City Council, and private donors. The design contract was awarded to the firm Alfredo DeVido Architects. The architect added an entrance portal constructed of round concrete pilasters and glass block. The architect’s

intent was to be consistent with Johnson's original design for the rest of the Pavilion, much of which was represented through circular or oval forms. The front columns and discs above were meant to emulate the Tent of Tomorrow columns and observation platforms. According to DeVido's website, "the fiberglass discs on top of the towers echo the adjacent structure."⁴¹



Figure 21 Queens Theater in the Park exterior renovation.

In addition to the lobby, the refurbishment included an elevator and handicapped ramp access, infrastructure for modern theatrical rigging and lighting, as well as a new roof. Architect Alfred DeVido explained that one major aim was to preserve the original lamella dome roof, while upgrading the acoustic capability of the theater.⁴² To accomplish this, a new domed roof was installed above and acoustic material was used to fill the space in between.



Figure 22 Queens Theater in the Park interior renovation (formerly the Theaterama).

In March 2002, the Parks Department installed a sign on the chain-link fence surrounding the towers, indicating the pavilion's historical context, previous use and social significance. Additionally, an overall map of the park posted at the park's entrance indicates structures that were retained from previous fairs, including New York State. The Queens Museum of Art, held in the former New York City Pavilion building, also maintains a permanent exhibit on both the 1939-40 and 1964-65 World's Fairs.

Chapter 2 Endnotes

- ¹ “New York State Pavilion: Flushing Meadows-Corona Park.” City of New York Parks and Recreation, March 2002.
- ² Rosemarie Haag Bletter, et al. *Ibid.*, p. 70.
- ³ “New York State Pavilion: Flushing Meadows-Corona Park.” City of New York Parks and Recreation, March 2002.
- ⁴ *Ibid.*
- ⁵ *Ibid.*
- ⁶ *Ibid.*
- ⁷ “Lots to Do at State Pavilion” *NY World Telegram*. August 11, 1964:24.
- ⁸ Robert A. M. Stern, Thomas Mellins and David Fishman. *New York 1960: Architecture and Urbanism Between the Second World War and Bicentennial*. New York: Monacelli Press, 1995, 1036.
- ⁹ Robert A. M. Stern, et al. *New York 1960: Architecture and Urbanism Between the Second World War and Bicentennial*. New York: Monacelli Press, 1995, p. 1036.
- ¹⁰ Rosemarie Haag Bletter, et. al. *Remembering the Future – The New York World’s Fair from 1939-64*. New York: Rizolli International, 1989, 157.
- ¹¹ Edward Weiland, “LI Officials Condemn Plan To Raze NY State Pavilion” *L.I. Press* July 25, 1965.
- ¹² Robert Alden “City Asked to Raze State, U.S. Pavilions.” *New York Times*. July 24, 1965:1.
- ¹³ “City Can Keep State Pavion at Fair” *L.I. Press*, July 11, 1965:3.
- ¹⁴ “City Urged to Raze State and U.S. Pavilions at Fair.” *L.I. Press*. July 22, 1965:1.
- ¹⁵ *Ibid.*
- ¹⁶ “Pilings Root of Pavilion Battle.” *L.I. Star Journal*. August 5, 1965:2.
- ¹⁷ *Ibid.*
- ¹⁸ Edward Weiland. “City Council Eyes Bid to Save Pavilion.” *L.I. Press* p. 1 July 29, 1965.
- ¹⁹ “Pilings Root of Pavilion Battle.” *L.I. Star Journal*. August 5, 1965:2.
- ²⁰ Howard Reiser. “Old Pilings Aid Fight for Pavilion.” *L.I. Press*. August 12, 1965:1.
- ²¹ “Pilings Root of Pavilion Battle.” *L.I. Star Journal*. August 5, 1965:2.
- ²² *Ibid.*
- ²³ *Ibid.*
- ²⁴ *Ibid.*
- ²⁵ As quoted in Edward Weiland. “Long Island Officials Condemn Plan to Raze NY State Pavilion.” *L.I. Press* p. 1 July 25, 1965.
- ²⁶ Howard Reiser. “Old Pilings Aid Fight for Pavilion.” *L.I. Press*. August 12, 1965:1.
- ²⁷ *Ibid.*
- ²⁸ “Save Our State Pavilion Moses Urges.” *L.I. Press*. August 1, 1965:1.
- ²⁹ Edward Weiland. “Civic Leaders Rally Behind State Pavilion.” *L.I. Press*. August 2, 1965:1.
- ³⁰ “Save Our State Pavilion Moses Urges.” *L.I. Press*. August 1, 1965:1.
- ³¹ Edward Weiland. “Save N.Y. pavilion Rock, Wilson Urge.” *L.I. Press*. August 15, 1965:1.
- ³² Hal Shapiro. “N.Y. Pavilion Is Ours!” *L.I. Star Journal*. October 14, 1965:1.
- ³³ Sousa, Stan. “Roller Skaters Shut Out: City Closes Rink for Hazardous Roof” *Long Island Post*, July 20, 1974.
- ³⁴ *Ibid.*

Chapter 2 Endnotes (continued)

³⁵ Iwen Hsiao. “Skating Under the Stars? Closer Roller Rink May Go Roofless” *Long Island Post*, July 24, 1974.

³⁶ Correspondence with Bruce Keller, October 13, 2003.

³⁷ Iwen Hsiao. “Skating Under the Stars? Closer Roller Rink May Go Roofless” *Long Island Post*, July 24, 1974.

³⁸ Ibid.

³⁹ As filmed in the movie “The Wiz”. Universal Studios, 1978.

⁴⁰ As filmed in the movie “Men In Black”. Columbia/Tristar Studios, 1997.

⁴¹ As quoted on Devido Architect’s website: http://www.devido-architects.com/Theatres/Theater_In_Park.htm

⁴² Alfredo DeVido. Telephone interview. October 29, 2003.

CONDITION ASSESSMENT AND REPAIR RECOMMENDATIONS

During the past thirty years since the structure was initially abandoned and neglected, the Pavilion's exposure to the elements and lack of maintenance have accelerated its deterioration. Signs of the structure's deterioration include large areas of surface corrosion on steel members and cables, missing plastic roofing panels, peeling paint, portions of stairs destroyed by corrosion, ponding water, and large weeds growing from the cracks of the terrazzo roadmap floor. All of these conditions have contributed (and continue to contribute) to the Pavilion's sense of abandonment. Industrial archaeologists often refer to such a site as a ruin of modern day engineering.¹



Figure 23 Current condition of the New York State Pavilion. (October 5, 2003)



Figure 24 Deteriorated condition of the New York State Pavilion from entrance gate, considered today to be a “modern ruin”.

The deteriorated condition of the pavilion prompted the New York City Department of Parks and Recreation to contract two separate firms to conduct condition assessments on the Tent of Tomorrow and the Observation Towers: one by Geiger Engineers (Geiger) in 1992 and one by architecture firm John Ciardullo and Associates (Ciardullo) in 1996. The majority of the following condition assessment is based on the findings of these two reports. Additionally, a foundation assessment and soil report written by Underpinning and Foundation in August 1996 for the construction of the USTA tennis center and was used to better understand typical subsurface conditions at Flushing Meadows-Corona Park, including those beneath the Pavilion. The most current

condition of the Pavilion was additionally recorded through visual inspection from ground level by the author on October 10, 2003, November 10, 2003 and February 27, 2004. A partial set of design drawings was also available for review by the author. Although the report findings represent the latest professional study of the site's conditions through up-close inspection procedures, they *only* represent the conditions as encountered eight years ago and do not guarantee the validity of these results at the present day. Another professional, close-up inspection must be performed to verify or challenge the accuracy of those latest findings.

For simplicity, the condition assessment in this document has been divided by the larger individual structural elements of the entire pavilion (Tent of Tomorrow, Observation Towers, and the Theaterama) and their respective sub-components. For each entity, repair recommendations that were provided by the professional engineer or architect inspectors will be included. Recommendations by the author for conservation methodologies and approaches, from the least to the greatest amount of intervention, will be outlined in chapter four.

TENT OF TOMORROW

Foundations and Substructure

The largest concerns expressed by all inspection teams has been the condition of what lies beneath the ground surface. They question the stability of the wooden pile foundations, how severely they have deteriorated over time, and whether further deterioration may lead to eventually structural failure. The foundation elements beneath each of the concrete columns are comprised of a minimum of twenty-six wooden pilings, each topped with a concrete pile cap. As with other temporary pavilions at the fair that used wooden piles, the wood was not treated with Creosote, a chemical used to prevent rot in wooden pilings.² Normally, as long as wooden piles (even those which

are untreated) remain completely submerged below the water table, they should not be affected by rot.³ However, once the water table is lowered, thereby exposing the wood, the untreated pilings will experience ongoing decay. After the city acquired the pavilion and chose to retain it in 1965, the Parks Department hired the structural engineering firm, Praeger-Kavanagh-Waterbury to perform an inspection. This firm also recommended steps that the Park would need to take to convert the pavilion into a permanent structure. In order to protect the untreated wooden piles, engineers devised a mechanical system for the Park to install, which would raise the water table to the pile cap and maintain that level over time.⁴ An engineer performing a subsurface inspection in 1992 found that no such program was ever in fact implemented.⁵

According to Charles Thornton, a structural engineer who worked at LZA on the Pavilion's original design, additional steel H-piles were also driven in locations where the wooden piles did not reach their bearing capacity.⁶ The exact number and location of these steel piles was never recorded and, to remain conservative, are not factored into any of the calculations for the bearing capacity of the substructure.

During the 1992 Geiger investigation, subsurface conditions were inspected by excavating one pile to a depth eighteen inches below the bottom of the concrete pile cap. The water table was noted to lie below this level, whereby this top portion of the pilings was not submerged. By driving a screwdriver into the soft external wood, the depth of severe deterioration was measured to be two-and-one-half inches.⁷ As the original diameter of each pile measured twelve inches, and because the dead load from the roof panels had been removed, the deterioration reduced the effective foundation capacity by fourteen percent. Therefore, the deteriorated pile foundations were found to be sufficiently strong to further support the structure, but engineers found they would not be able to sustain further any deterioration.⁸ In both investigations, the concrete pile caps were found to be in good condition.

The results from a second subsurface investigation, performed by John Ciardullo Associates four years later, were consistent with the findings of Geiger, though it was determined that the pilings had continued to deteriorate since the former inspection.⁹ They found that the portion of rotted wood had reduced the effective diameter of each pile inspected to six inches, reduced from the original size of twelve inches.¹⁰ Portions of the wood which remained submerged just below the ground water level were tested and were described as “continuously firm” where the surface deterioration could only be probed to a depth of one-half inch.¹¹ Ciardullo determined that, given the state of deterioration exhibited by the exposed portions of the piles, “the threat of collapse exists” and recommended that “immediate action must be taken to secure the Tent of Tomorrow from further deterioration and collapse.”¹²

Since the Geiger investigation of 1992, surveyors have been contracted biannually to check established benchmarks on the Tent columns for settlement and displacement.¹³ According to a Park spokesperson, to date only a negligible settlement from the structure’s original benchmark elevation has been recorded.¹⁴ To determine the current subsurface condition and extent of rot to which the pilings have been subjected since the Ciardullo investigation, another excavation and in-depth investigation of the pilings will be necessary.

Terrazzo Texaco Floor Map

The terrazzo floor map was originally designed as an artistic element that would simultaneously function as a flooring unit, traversed by visitors. During the fair, the floor was primarily protected from weather damage by the plastic panel covered roof above. After the panels were removed in the mid-1970s, however, the terrazzo floor became exposed to the elements and appears to have deteriorated as a result ever since. After thirty years of exposure and vandalism, the floor is plagued with extensive cracking, as well as missing and broken components. Some portions of the map also appear to have

been painted over, removed or filled-in with concrete. The cracks in the floor expose damp, mortar bed, rotted plywood and soil beneath¹⁵, all of which provide an excellent habitat for vegetation. Tall plants and weeds indigenous to the park can be seen sprouting from the mosaic floor. As the plants find root beneath the map and proceed to grow, it appears the pressure induced by the growth exacerbates the cracking, furthering the plant growth and map deterioration cycle. The plant life covers such a great extent of the floor that from a distance, the map is barely distinguishable. According to park maintenance staff, the park periodically contracts workers to remove the overgrowth, but within one season, the plant life reappears.¹⁶



Figure 25 Heavy vegetation growing on the terrazzo map.

Investigators from Ciardullo felt that it would not be “economically feasible” to restore the map *in situ* and recommended that the sections of the map in the best condition be salvaged and displayed at a local venue such as the Queens Museum of Art, while the remaining unsalvageable portions be removed for permanent disposal.¹⁷ No discussion of possible ways to restore the terrazzo flooring was included in their report. It is the author’s opinion that, as part of the rehabilitation of the entire site, every effort should be made to include the conservation of the map in situ. Relocating the map to a second site, and certainly only portions thereof, should be considered only as a last resort.



Figure 26 Close-up of the current terrazzo floor road map condition where vegetation has been cleared. Note extensive cracking.

One Story Peripheral Structure and Promenade Level Above

The one story peripheral structure, comprised primarily of concrete masonry unit (CMU) walls, is in fair condition. The walls display long, diagonal sheer cracking at several mortar joint locations as well as overall buckling. To verify whether differential settlement of the foundations was to blame for the cracking, Ciardullo performed an eight foot deep excavation to confirm that the CMU walls are indeed supported by spread footing foundations as indicated on the design drawings. They concluded that spread footings were not an appropriate foundation for the peripheral structure, given the weak soil conditions; although, they were probably only chosen as a means to support the structure temporarily for the duration of the fair.¹⁸ Both Geiger and Ciardullo attributed the step cracking to differential settlement between the CMU walls and the concrete columns, each of which are supported by different foundation systems, spread footings and wood pilings, respectively.



Figure 27 Typical severe step cracking at mortar joints of exterior CMU wall of one story perimeter structure.

The condition of the promenade level above is fair, where the roofing membrane installed to protect the promenade level exhibits extensive cracking and peeling.¹⁹ The drainage system at the promenade level appears to no longer be serving the Pavilion properly, where clogged drains have resulted in ponding of water (up to five inches) in several locations.²⁰ The steel side railings, grills, and poles exhibit peeling paint and moderate corrosion. It appears that these surfaces have been painted recently, which may have contributed to the slowing of their deterioration. Similar to the ground level, plant life can also be found growing from extensive cracks in the roofing material, as well as vines growing along the outer side railings.



Figure 28 Condition at promenade level. Note uneven floor surface, ponding water and corroding steel railings.

Concrete Columns

The concrete columns appear from ground level to be in good condition, with only minor spalling. The majority of the spalled regions tend to be concentrated at the concrete tie beams, which act to connect the two semi-cylindrical components of each column. The spalled regions have exposed underlying steel reinforcing, which has corroded and exacerbated the condition of the deteriorating concrete. Geiger investigators also noted some honeycombing was evident at every three to four feet in height, where pour joints were visible.²¹ A portion of the openings at the base of each column has been filled in with concrete blocks and patched, apparently in an attempt to prevent visitors and vandals alike from entering.



Figure 29 Typical Tent of Tomorrow column base, with CMU blocks filling opening to prevent entry.

Cable Roof Structure

With the fiberglass roofing panels removed, the spider web of steel cables exposes the roof's bare structural skeleton. The steel cables, exterior compression ring girder, and interior tension ring remain exposed and show varying signs of corrosion. In 1996, during an extensive maintenance campaign sponsored by the Queens Theater in the Park and the Queens Borough Commissioner, both the compression and tension rings were coated with an anti-corrosive paint.²² Unfortunately, enough funding to coat the cables was not available at that time.²³ By the time the Ciardullo report was compiled, the inspectors found only minimal surface corrosion of the steel ring elements up-close



Figure 30 Bare bicycle wheel roof structural skeleton without original panels, exposing two layers of steel roof cables as well as steel compression and tension rings.

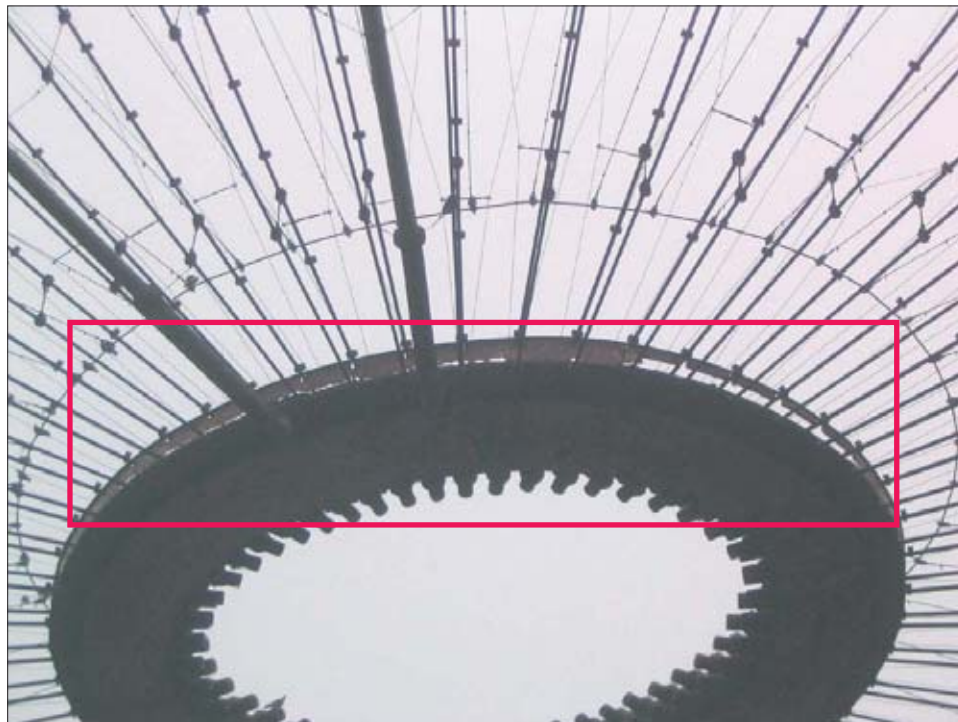


Figure 31 Close-up view of interior tension ring. Note missing steel segments and openings in the ring.

and described the roof in “fair” condition where corrosion was determined to be largely “superficial”.²⁴ During the visual inspection performed by the author on November 5, 2003, however, it appeared from ground level that the corrosion of the tension ring had begun to create sizable openings and separations of individual steel components, of which the tension ring is composed. These deteriorated and missing portions of the ring appear to have developed within the past eight years as it was not noted in the Ciardullo report of 1996. It remains unknown if repairing the ring would require dismantling the entire structure and rebuilding it on the ground, or if it would be feasible to reconstruct the ring in place.

One significant condition noted by Ciardullo was that the lower steel cables were in far worse condition than their upper cable counterparts, probably due to water run-off from the upper cables.²⁵ Although they found the upper cables would need only minor cleaning and surface coating, they recommended entirely removing and replacing the lower cables, using a cable stressing sequence that would maintain the stability and rigidity of the roof.²⁶

Roosting birds and pigeons are a secondary concern for the cables and upper portions of the Tent. If the Park wishes to reuse the Tent’s interior, they will need to install pigeon proofing, such as the device produced by Nixalite, for patrons’ health and safety. Even if the roofing panels were to be reinstated, the bird-proofing would still be required as birds would be able to enter through the open space between the columns. Similar bird-proofing measures would need to be implemented at other high ledges, such as at the tie beams and above the compression ring girder.

Escalators, Stairs and Access

The escalators have suffered severe deterioration and are no longer serviceable. The stairs, likewise, have corroded severely, where thinned sections and large holes can be found in the steel treads and risers. During the Geiger investigation, the stairways

were found to be in an “extreme state of deterioration”.²⁷ They recommended that the stairs be replaced to gain access to the promenade level. Chain link fences have been installed around the stairs and escalators to prevent access to the promenade level.



Figure 32 Typical deteriorated condition of interior stairs leading to promenade level.

A set of steel stairs is located within one of the tent columns, presumably for gaining access to the roof and for maintenance procedures. As the column is open at the top and through slits on the side, the steel stairs have been exposed to water and have deteriorated similarly to the other exposed stairs to the promenade level. The outer stair frame, landing platforms and railings appear to be intact, though they exhibit some corrosion. The majority of tread and riser connections to the frame appear to have completely deteriorated. As the connection deteriorated to the point of giving way, the uppermost treads appear to have begun to fall. The impact caused by the falling treads and risers, combined with a presumably already highly deteriorated frame connections, appears to have caused a domino effect on the lower stairs. Therefore the stairs no longer safely service the column and pose a liability to vandals, who may try to climb the “empty” stair frame.



Figure 33 View of interior of Tent column with stairwell. Note missing stair treads.

OBSERVATION TOWERS

In contrast to the Tent of Tomorrow, which experienced a brief but productive life after the fair, the Observation Towers were taken out of commission immediately after the close of the fair. Of the professional condition assessments performed, neither included an assessment of the platform levels. Visual inspection from ground level by the author proved to have serious limitations, especially where the highest platform is located over two hundred feet above the ground. To further complicate matters, access to the platforms by stairs was not possible. The stairs have completely deteriorated due to constant exposure to the elements and lack of proper maintenance, and therefore, access to the upper levels threatened personal safety.

Foundation and Substructure

To date no sub-structural investigation has been conducted on the towers.²⁸ Based on design drawings and conversations with a structural engineer on the original project, it is safe to assume that the structure was indeed constructed on steel driven H-piles with a concrete pile cap.²⁹ During the excavation and inspection of the neighboring Tent's substructure, some steel H- plies were discovered and their condition was recorded. Beyond minimal surface corrosion, the piles were found to be fully serviceable where they were described in either good to very good condition.³⁰ The inspection assumed that under similar soil and environmental conditions, if those piles were in good condition, steel pilings beneath the Towers would exhibit a similar condition. This assumption is, however minimally, speculative as the true condition of the piles beneath the towers has never been physically or visually verified. The park has expressed a desire to use money from fundraising efforts to conduct a study of the steel piles to confirm (or refute) the Towers' true stability.³¹

Concrete Tower Shafts

The slip-cast concrete shafts of the towers appear in overall good condition. Some spalling has occurred and consequently, embedded steel reinforcing has become exposed and begun corroding. The exposed concrete should be repaired by patching to inhibit further deterioration of the steel reinforcing beneath and surrounding concrete.

Observation Platforms

As previously mentioned, no up-close inspection has been professionally performed on the observation platforms. From the ground level, the paint on the steel elements appears to be peeling. The extent of corrosion of the steel elements could not be determined. As the platforms are suspended by steel rods from the projecting girders above, a full inspection of the hanger rod connections would be especially beneficial in verifying the platforms structural stability.



Figure 34 Underside of Observation Tower platforms as viewed from ground level.

Elevators, Stairs and Access

One elevator remains locked in position at mid-height of the tallest tower. Broken glass windows indicate that at some time it was possibly a victim of vandalism. The elevator is exhibiting surface corrosion and does not appear to have been maintained. The second elevator appears partially dismantled and locked in position within the elevator pit. The steel cables that once serviced the elevators appear to be coated with surface corrosion, which Ciardullo described as “extreme”³². With a minimal breeze or wind, the cables hit each other and create a sharp, ringing noise. Ciardullo’s investigation of the observation towers was limited to a visual inspection of the two tower elevators. As with the case of the terrazzo floor map, they recommended their removal, with consideration of their possible restoration and display as a historical artifact.³³ Similar to the condition of the access stairs within the Tent column, most of the steel plate

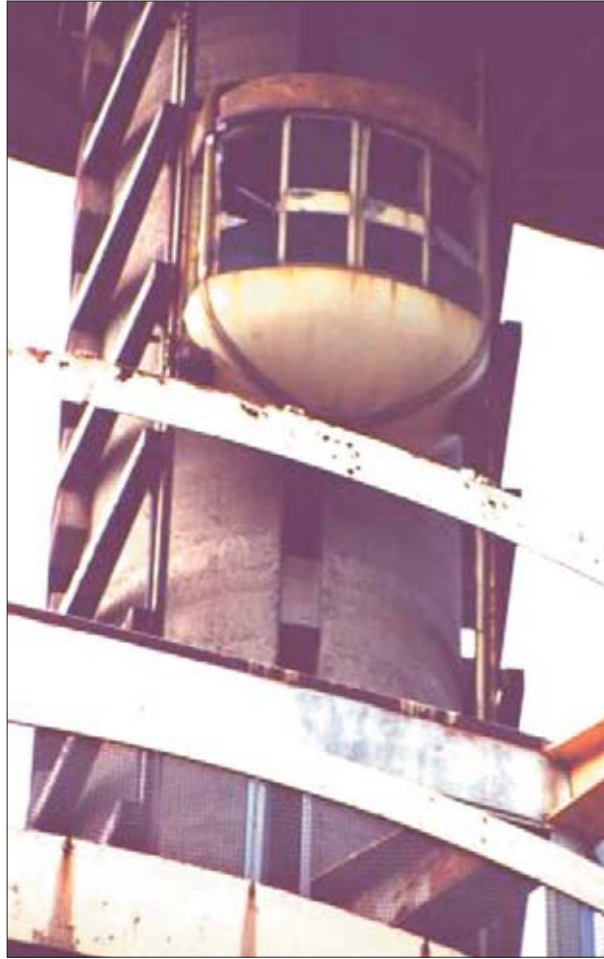


Figure 35 “Sky Streak” elevator, vandalized and locked in mid-tower level position.



Figure 36 Elevator pit with other Sky Streak elevator.

treads and risers have completely deteriorated at their connection to the stair frame and have collapsed on themselves. The frame and handrails appear intact, though an up-close inspection would be necessary to confirm the true state of deterioration.

THEATERAMA

Today the former Theaterama houses the active Queens Theater in the Park. An extensive restoration and rehabilitation project in 1993 by Alfredo Devido converted the space into a modern, fully functioning operating theater. The theater has been continually maintained and therefore has not been subjected to many of the conditions of the exposed, neglected Tent and Observation Towers. As the theater property falls under the auspices of the Department of Cultural Affairs, the theater was also not included in either of the condition assessments commissioned by the Department of Parks and Recreation. A foundation assessment, however, was conducted by Geiger Engineers, shortly before the 1993 renovation. The wooden piles were found to be severely rotted. To help support the structure, a new “bathtub” foundation was constructed, which enabled the structure to “float” on the soil.³⁴ Due to the theater’s circular, rigid shape, the engineers predicted that the structure should experience only minimal differential settlement.³⁵ Consequential inspections and elevation monitoring revealed that the theater experienced no further displacement after the restoration.³⁶

The theater’s original lamella dome roof is in very good condition. A second steel and glass dome roof was constructed over the original dome, and the space between was filled with acoustic material, to help drown out external noise from airplanes overhead. In doing so, the renovation team indirectly contributed to the preservation of the original roof. The interior renovation also included removing the original drop ceiling, which exposed the wooden roof and made it visible to patrons from the interior.³⁷

Chapter 3 Endnotes

- ¹ Manfred Hamm, et al. *Dead Tech*. Berlin:Nicolaische Verlagsbuchhandlung, 1982:8.
- ² “Pilings Root of Pavilion Battle.” *L.I. Star Journal*. August 5, 1965:2.
- ³ Paul Gossen. Structural engineer with Geiger Engineers, contracted to oversee stabilization of Theater during 1993 restoration. Telephone interview. February 4, 2004.
- ⁴ Praeger-Kavanagh-Waterbury Engineers and Architects. New York State Exhibit Proposed Conversion Project. Drawing numbers S-1 and S-2 “Details of Timber Pile Protection” (September 10, 1964).
- ⁵ Ibid.
- ⁶ Charles Thornton. Telephone Interview. February 3, 2004.
- ⁷ Geiger Engineers. “New York State Pavilion Inspection.” [Engineering inspection report], Bellingham, New York, November 17, 1992 (revised December 15, 1992).
- ⁸ Ibid.
- ⁹ John Ciardullo and Associates. “The Structural Stabilization of the New York State Pavilion Located in Flushing Meadow Corona Park, Borough of Queens.” [Inspection Report] October 2, 1996.
- ¹⁰ Ibid.
- ¹¹ Ibid.
- ¹² Ibid.
- ¹³ Bill Gotthelf. Personal Interview. February 27, 2004.
- ¹⁴ Ibid.
- ¹⁵ John Ciardullo and Associates. Ibid.
- ¹⁶ Willy Mosquera. Personal Interview. November 5, 2003.
- ¹⁷ John Ciardullo and Associates. Ibid.
- ¹⁸ Ibid.
- ¹⁹ Geiger Engineers. Ibid.
- ²⁰ John Ciardullo and Associates. Ibid.
- ²¹ Geiger Engineers. Ibid.
- ²² Jeffrey Rosenstock. Personal Interview. February 27, 2004.
- ²³ Ibid.
- ²⁴ John Ciardullo and Associates. Ibid.
- ²⁵ John Ciardullo and Associates. Ibid.
- ²⁶ Ibid.
- ²⁷ Geiger Engineers. Ibid.
- ²⁸ Bill Gotthelf. Personal Interview. February 27, 2004.
- ²⁹ Assumption based on piling layout as indicated on original design drawing. Charlie Thornton, structural engineer involved with the original design, indicated during telephone interview on February 3, 2004 that steel pilings were necessary to carry to direct loading imposed by the towers, where the untreated wooden pilings used beneath the tent would not have been sufficient.
- ³⁰ John Ciardullo and Associates. Ibid.
- ³¹ Bill Gotthelf. Personal Interview. February 27, 2004.
- ³² John Ciardullo and Associates. Ibid.
- ³³ Ibid.

Chapter 3 Endnotes (continued)

³⁴ Paul Gossen. Structural engineer with Geiger Engineers, contracted to oversee stabilization of theater during 1993 restoration. Telephone interview. February 4, 2004.

³⁵ Ibid.

³⁶ Ibid.

³⁷ Willy Mosquera. Personal Interview. February 27, 2004.

As a representative example of both an important mid-twentieth century historical event and postwar architecture, a sensitive approach is necessary for conservation. However, conservation of a structure such as the New York State Pavilion poses several unique challenges, where the same approach taken for much older historic structures may not necessarily apply. First, the Pavilion falls under a category of structures from the “recent past”, where its relatively young age may make it difficult to recognize its significance and contribution to overall patterns of history. Additionally, new building materials and methods were implemented in the structures’ construction and must be treated accordingly. Originally built to be temporary, we must struggle to defend what values it possesses to justify not only preserving extant original fabric, but also reconstructing elements in order to transform it into a permanent structure. Furthermore, the design and construction of the Tent’s roof made a significant contribution to the evolution of twentieth-century engineering technology and the structural form needs to be recognized in that light.

PRESERVING THE RECENT PAST

Buildings and structures, such as the New York State Pavilion, which have not yet reached the age of fifty years are considered to belong to the historical category informally known as the “recent past”. There exist particular circumstances that demand a new approach to tackle their preservation properly. Even the traditional age of fifty years has been challenged and continues to prove to be an inadequate timeframe to necessarily measure the significance of many modern structures. Unfortunately, only a modest quantity of published material has been written to discuss these types

of preservation issues. Organizations, such as Documentation and Conservation of the Modern Movement (DOCOMOMO) and the Recent Past Network, in addition to organized conferences such as “Preservation of the Recent Past” (1995) and “Preservation of the Recent Past 2” (2000), have been productive outlets for preservation and architectural professionals to exchange ideas and learn about progress being made.

The major dilemmas facing the conservation of recent past structures can be broken down into two types: philosophical and physical. The following is an attempt to analyze and highlight where traditional historic preservation methodology and philosophy might fall short of properly interpreting and conserving this special, although disproportionately large, portion of our built environment.

Philosophical Issues

With structures designed and constructed in the recent past era, we must first ask ourselves how to recognize important ones, and secondly, how the identified significance can be evaluated fairly. This step is a crucial one before undertaking any preservation or conservation intervention. In the case of recent past heritage, however, this very process of valuation is the most critical because it can be an extremely subjective one. Moreover, the overall number of buildings, from which one must choose is staggering; of the current, extant building stock in the United States, approximately 75 percent has been constructed since World War II.¹ With a shortened historical and aesthetic perspective, it can be difficult to establish recognition and appreciation of newer building forms.

The National Register of Historic Places, as well as the majority of locally based historic preservation commissions, considers a property eligible for listing only after it has turned fifty years old. Fifty years has generally been determined to be the minimum time necessary to gain enough historical perspective to determine a site’s significance.² This time frame has recently come into question as important modern buildings have been overlooked, not given protection and have been more vulnerable to demolition.

Whereas the pre-twentieth-century buildings may have been expected to outlive their builder, the pace of twentieth-century construction has proven to be much quicker. The turnaround time for many post-war buildings to be demolished and replaced is far shorter. As a result of this condition, much of the built environment of the twentieth century has been labeled “throw-away architecture”.³

A problem which specifically plagues postwar buildings is that many people cannot think of a “modern” building as historic.⁴ Likewise, aesthetic pre-judgments about modernist and post-modern design as cold, abstract and mechanistic further challenge preservation efforts to recognize architectural importance. A similar backlash occurred in the 1950s and 1960s against Victorian architecture and ultimately led to the demolition of countless “would be” landmarks.⁵ Preservationists should aim to save portions of the built environment which reflect the most diverse representation of time, place, and cultural forces. This may require broadening the scope of twentieth century importance, keeping in mind that “history is a continuum, the ancient past no more historical than the recent past.”⁶ This is especially true, where important post-war modernist buildings are being demolished, because their architectural importance, as well as their contribution to twentieth-century culture, was overlooked.

In determining significance, it would be unfair to compare recent past building types to more traditional ones from the three centuries pre-dating the turn of the twentieth century. This contemporary era was characterized by new institutions, mobility, and general sense of vitality and openness.⁷ Due to advances in technology, changes in social and economic patterns, and other environmental forces, several new building types were created within the twentieth century, but especially so after World War II.⁸ These new types include airplane hangars, gas stations, drive-in movie theaters, shopping malls, and suburban tract housing, to name just a few. These building types contribute as much to our understanding and interpretation of twentieth-century heritage as early steel forging

plants do for understanding the industrial revolution of the nineteenth century.

Buildings which are less than fifty years old may also be considered eligible for nomination, though only if they are declared to possess “exceptional significance”.⁹ This has normally meant that they must demonstrate a connection with an important historical person or event. The preservation community, however, has been criticized for this approach by practicing architects, because they often fail to understand that the process of architectural design transcends history and is the link for all building and landscape design over the course of millennia.¹⁰ Preservationists are seen as overly concerned about the site’s historicism without an understanding of the design forces, which generated the construction or landscape.¹¹

We need to decide how we wish to use interesting and significant architecture to help tell the story of the twentieth century. It may be necessary in the future to implement new methods, standards or guidelines to understand the most important cultural heritage of the century. That may mean relaxing the minimum fifty year stipulation, or broadening the scope of what constitutes “exceptional significance” to include recognizing more types of social, architectural and technical achievements. Ultimately, we need discuss what we wish to embrace from the built environment of the twentieth century before important physical remnants of the century disappear.

Physical and Material Issues

Sustainability Versus Authenticity

Special physical and material constraints of recent past conservation projects require us to reconcile two often conflicting aspects: aiming for sustainability of the site by extending its lifespan and utility, while compromising the authenticity of original form and material as little as possible. Stabilization, consolidation, restoration, reconstruction and replacement of original material may be required to protect the structure or achieve

desired operational requirements such as strength and load distribution. Beyond mere preservation of original physical fabric, an underlying principle of sustainability is the desire to act environmentally responsible by rehabilitating existing resources rather than replacing them.¹² For many modern materials and building systems, it may not be financially realistic to conserve the original or replace in-kind. They may have either outlived their useful life or were based on a technology which has now become obsolete.¹³ In those cases, it may be necessary to replace the material or system with a foreign, more modern one, for which the design was never intended.

With recent past structures, the line is blurred as to which interventions will infringe too greatly on the structure's authenticity, in other words, its ability to convey its significance.¹⁴ Elements which contribute to the integrity of a structure may include its material, design and form, as well as function and use. For many postwar structures, these elements were often originally designed with a limited lifespan in mind. In other cases where a building has completely outlived its original use, it has had to be adapted for new uses to remain viable, which in essence changes the original function.¹⁵ The very act of respecting the new technologies, social and economic circumstances, and political environment of the twentieth century may mean compromising "traditional" conservation values.

Causes of Physical Failures

The cause of physical, material and repair problems facing recent past architecture fall will fall into one or more of the following categories: failure of the building material, detail failure, reproduction of mass-produced materials, outdated material production, maintenance failure, patina of age, design and functionalism, life span, and/or special cultural or time circumstances.¹⁶ Although only some of these issues afflict the New York State Pavilion directly, all of the abovementioned common problems will be summarized.

Failure of the Building Material

Whereas traditional conservation is mainly concerned with building materials such as wood, stone, and brick; the next generation of conservation will need to focus on new sets of variables and conditions specific to modern materials such as concrete, steel and glass.¹⁷ Further, more complex building materials such as fiberglass and plastics have only recently begun to be studied for their unique deterioration mechanisms and response over time.¹⁸ Many modern building materials are mass produced at low cost (for greater efficiency), though with a much shorter lifespan.¹⁹ Designers may have been tempted to choose these materials because they felt the short-term advantages outweighed the disadvantage of the material's built-in obsolescence. For example, at the time of the Pavilion's construction, the fiberglass Kalwall roofing panels were relatively new and had unproven performance records. The manufacturer at least knew they would survive the short duration of the fair. Since the 1960s, however, significant advancements have been made in plastics industry, especially with respect to resistance to UV degradation, which have greatly extended the projected lifespan of such panels.

Detail Failure

In some cases, the original design may have included flaws in the detailing to ensure long-term success, primarily due to a lack of knowledge of new materials.²⁰ Likewise, designers may have tried to create a new aesthetic by using traditional building materials and adapting them to new detailing.²¹ Neither of these cases appears to be applicable to the Pavilion's case.

Reproduction of Mass-Produced or Outdated Materials

As mentioned earlier, the majority of modern building materials are mass-produced industrially, compared to traditional materials that were either hand-crafted, or at most mechanically produced.²² Simply replacing in-kind may not be possible where the original resource is no longer produced and cannot be found in salvaged material.²³

Some materials, such as Vitrolite and Carrara glass, are no longer in production but can still be retrieved by salvaging used pieces. How do these physical and industrial constraints challenge current preservation philosophy? The former President of American Preservation Technology International (APTI), Michael Lynch, notes that reproduction of materials can be challenging by limitations on both technology and scale.²⁴ For example, a single wood moulding could be much more easily produced than a single manufactured building element such as an extruded sheet of aluminum.²⁵ Similarly, for projects involving the replication of terra cotta units to match and replace the original pieces on a vintage high-rise façade, the production of thousands, if not tens of thousands of units may be needed. Therefore, replication may not be possible or it may simply not be financially reasonable, whereby other solutions must be sought.

Maintenance failure

The two major causes of maintenance failure in newer structures are “naivety regarding maintenance requirements for new materials and building systems,” and “failure to implement maintenance recommendations”.²⁶ The management of the New York State Pavilion appears to relate more to the second, where it was clear to the owner which maintenance steps were needed, but where funding was simply not available to implement those recommendations.

Patina of Age

Relative to architecture from previous centuries, the materials used in modern architecture often exhibit accelerated aging.²⁷ This “patina”, such as rusting steel girders, or spalling concrete, may not evoke the same romanticized notions of traditional patina, such as oxidized copper. The short term visual (if not also physical) performance of modern materials may simply require more frequent maintenance programs, though an excessive expense may not justify attempts to maintain the original appearance.

Design and Functionalism

In the postwar period, we find that many buildings were designed as “the ultimate solution to a fixed problem”, as opposed to earlier construction, which was often conceived with the possibility of some other future use in mind.²⁸ These specialized spaces, such as the Pavilion, often have trouble accommodating growth and change and finding new program requirements. Where the demand for the original use no longer exists, either significant money will need to be invested for adaptation to alter the original design or the space simply will remain vacant. Exceptions to this rule exist; however, in general, the more specialized the original use, the harder it will be to adapt to a feasible new use, without distorting the original design.

In addition to an increase in specialized use requirements, the built environment of the twentieth century often involved an oversized (and even colossal) scale that was virtually unknown in the preceding centuries.²⁹ Examples of such scale can be found from single buildings, such as modern glass and steel high-rise office towers measured in tens of stories, to expansive military bases measured in square miles.³⁰ The Pavilion represents no exception; in fact, it is the very inflated scale of the Tent’s open interior and the height of the Observation Towers, which the design intended to emphasize. Finding a new use for such vast, open interior spaces, including examples such as airplane hangars and armories, can be difficult because much of the space does not represent “rentable” floor space in the traditional sense. Conversely, for these large scale structures, demolition may not be an environmentally friendly option nor a financially feasible one either. The owner must bear in mind that the amount of demolition waste, and consequently demolition and hauling costs, will be proportional to the building’s scale.

Finally, current building code compliance, which may dictate new fire, health, safety, and accessibility requirements, may be required for adaptations of modern structures. This may require physically manipulating the design to meet those

requirements. Similarly, advances in building system technologies may enable the new design to incorporate more environmentally conscious elements to the rehabilitation, such as energy conserving windows.³¹

Life Span

Many structures, such as those of the New York State Pavilion, are considered “throwaway architecture”, where they were intentionally designed for a short lifespan,³² or in the case of temporary fair structures even specific one of one or two years. These structures may not necessarily follow the same building code restrictions, allowing them to intentionally be designed with “substandard” materials or workmanship. Some materials and systems often will perform poorly when extended beyond their intended life. The economic constraints that such designs may impose on a conversion to a viable longer-term use may not justify the action. In such cases, evaluating significance and justifying preservation becomes even more critical.

Insufficient Knowledge or Time Circumstances

As mentioned earlier, one of the largest problems facing modern buildings is the lack of recognition and appreciation, whether that may due to poor knowledge of architecture from the twentieth century or lack of experience working with such structures.³³ Predictions for newer material’s long term performance may be no better than an educated guess. Worse yet, even newer, more experimental materials are being specified to repair or replace those original failures, with no less uncertainty than the original material held. Further research and dissemination of information about these technical issues will be necessary to begin sort out some of these issues.

PRESERVING A TEMPORARY STRUCTURE

The case for preservation of the New York State Pavilion is further complicated by its original status as a “temporary structure”. There exists a long standing tradition of constructing temporary pavilions for World’s Fairs and other large scale Expositions.

Similarly, saving particular structures and pavilions appears to be a continuing tradition from several of those fairs, namely due to the public's nostalgic attachment coupled with a potential for future use and development. One may ask, how can preservation be justified to save a structure whose original design intent was, in fact, to be torn down after the fair's end? The following discussion will look at three well known examples of structures, each of which began as temporary fair structures, but were ultimately saved from the wrecking ball: the Eiffel Tower in Paris; the Palace of Fine Arts (now the Museum of Science and Industry) in Chicago; and finally the Space Needle in Seattle. To better approach the preservation of the NYS Pavilion, perhaps we can identify the elements of these other structures that allowed them to continue to be used viably and helped them take on an iconic image beyond that of their original association with the fair.

The Eiffel Tower

Paris, France

In 1889, the Exposition Universelle was held in Paris, France and was the largest held in Europe to that day.³⁴ Drawing nearly four times as many visitors than its predecessor Bicentennial Fair in Philadelphia in 1876, the Exposition was considered extremely successful.³⁵ One notable structure built for the fair was the Eiffel Tower. The naked steel structural skeleton stood at 986 feet, making it the tallest structure in the world.³⁶ Despite some misgivings from native Parisians, the Eiffel tower was the most popular structure at the fair and quickly became the fair's official symbol.³⁷ The tower was most notably admired as a major engineering achievement as well as for its elegant architectural form. Dual function as a radio transmission tower saved the tower from near demolition in 1909. Today, the tower has become more of an icon symbolizing Paris than the Exposition. Nearly 6 million guests visit the tower every year. In 1965, proponents of the New York State Pavilion's preservation cited the Eiffel Tower's success

as evidence that, if retained, the Pavilion could experience similar levels of visitation.

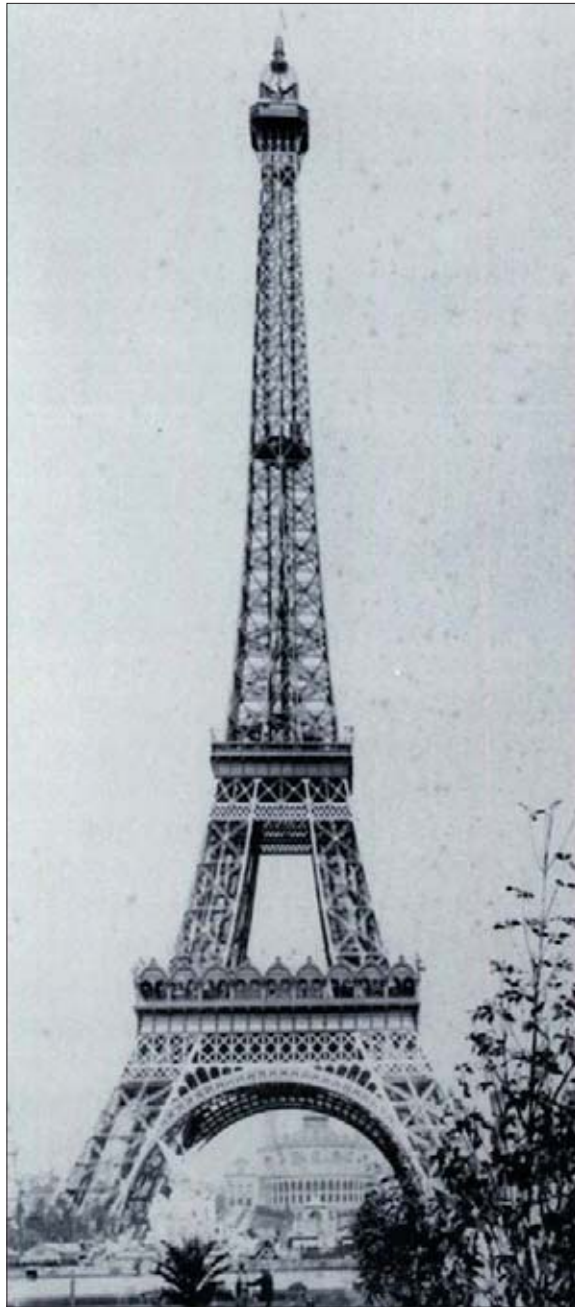


Figure 37 The Eiffel Tower from the Paris Exposition Universelle (1889).

The Palace of the Fine Arts (now the Museum of Science and Industry)

Chicago, Illinois

The Palace of Fine Arts from the Columbian Exposition, held in Chicago in 1893, represents another example preserving a temporary fair structure, yet in this case, a different approach was used to preserve the fair's legacy. Of the more than two hundred buildings which the fair boasted, today, only the Museum of Science and Industry exists as a tribute to the fair and as a partial reconstruction of the original Palace of Fine Arts.³⁸ The rest of the structures either burned down or were dismantled at the end of the fair.³⁹ The majority of fair edifices consisted of an internal structural frame, built of either wood or steel, and appeared similar to a train station or shed.⁴⁰ A structural steel frame supported the original Palace of the Fine Arts Building and was then coated with a decorative interior and exterior finish material made of Plaster of Paris and reinforced by hemp fibers, also known as "staff". This decorative plasterwork created an illusion of permanence through extensive, classical architectural detailing. The original structure stood in ruins after the fair, partially housing the Field collection of Natural

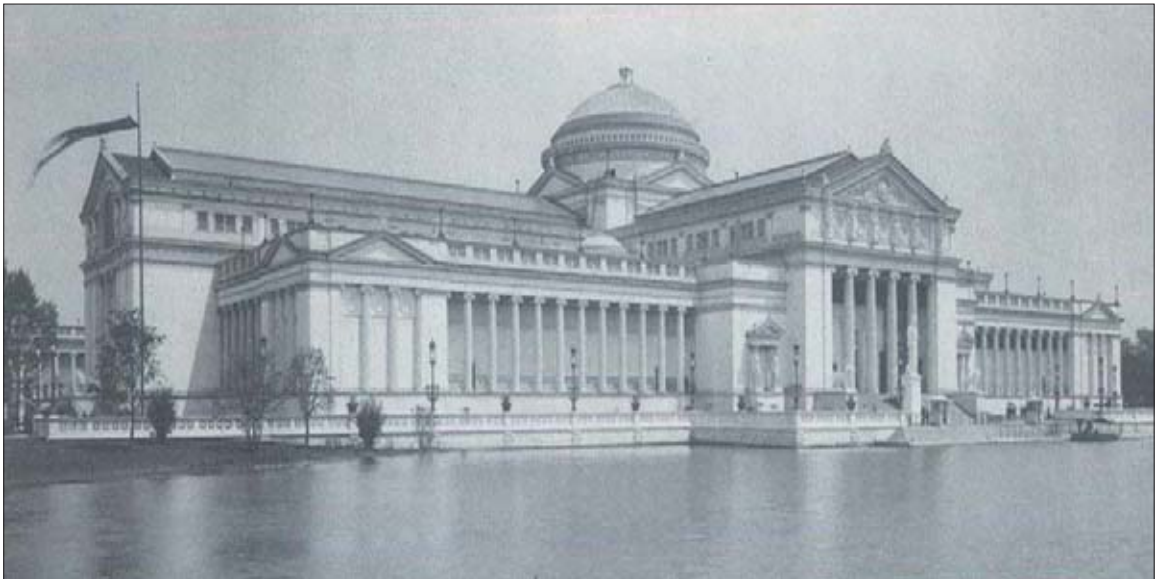


Figure 38 Palace of Fine Arts from the World's Columbian Exposition (1893), now the Museum of Science and Industry in Chicago.



Figure 39 Exterior view of typical classical ornament in plaster of Machinery Hall from the World's Columbian Exposition (1893), later demolished.



Figure 40 Interior view of Machinery Hall, showing exposed, internal structural steel frame (1893).

History until another museum was built to house the collection.⁴¹ In the late 1920s, nostalgic attachment to the last standing fair building led advocates to strip the plaster coated building to its bare steel skeleton and to completely rebuild the exterior facades, replicating the original design using more permanent building materials. The attachment was so strong that an artificial imitation was accepted in lieu of the original to evoke a more permanent the memory of the fair.

In a similar way, modifications will need to be made the original design of the New York State Pavilion if it is to be saved as a “permanent” structure. The details and building materials that were specifically designed for ephemeral use, for example the untreated wooden piles, will need to be modified in some fashion, substantially reinforced or possibly even reconstructed. Compromising the structure’s authenticity is acceptable to sustain the structure. Fortunately, in the Pavilion’s case, the original elements in greatest need of modification lie below grade and would never be visible to the visitors. The building elements above grade can either be repaired or easily replaced.

The Seattle Space Needle

Seattle, Washington

A more modern example of a very successful preservation attempt is the Space Needle, which was built for the 1962 World's Fair in Seattle, Washington. Today, the Space Needle is mainly used as a tourist attraction as an observation tower and restaurant. The Space Needle, similar to the Eiffel Tower in Paris, has become a physical icon of the city, where the city can easily be recognized by the unique addition to the skyline.



Figure 41 The Space Needle, remnant from the 1962 World's Fair held in Seattle, Washington.

In the case of the New York State Pavilion, its preservation does not appear to be hindered by a lack of nostalgic attachment on the part of the public, nor is there a shortage of viable re-use options. The problems namely lies in the technical constraints imposed by elements of the original design, such as the untreated wooden piles, whose upper portions remained above the water table level and were therefore vulnerable to rot. Coupled with deterioration caused by deferred maintenance over the past forty years, the costs to rehabilitate (or demolish) are too great for the New York City Parks Department

to bear alone. In this technical sense, the Pavilion's preservation most closely resembles the situation of the World's Columbian Exposition's Palace of Fine Arts, where preservation meant reconstructing and replacing elements of "temporary" design with more permanent materials.

The New York State Pavilion's largest connection with both the Eiffel Tower and the Space Needle exists in the Observation Towers. In all cases, the towers were used during the fair namely for visitors to observe the surrounding panorama from significant heights above. Although the tallest NYS tower measures only 226 feet in height (relatively short compared to the other two), a trip on the Sky Streak elevator to the look out platform was nonetheless a popular activity. In the case of both the Eiffel Tower and the Space Needle, the observation activities continue to be a driving force for visitation today. Both structures likewise house restaurants to cater to those who appeal to eating with a view. For the New York State Pavilion, the surrounding park draws millions of seasonal visitors who already coming to the park for other recreational reasons. Visiting the Observation Towers would probably not be as successful as the others as a tourist activity, namely because the majority of visitors to the park herald from the Queens borough itself or one of the other four remaining boroughs of New York City. However, with proper marketing, the use certainly could be a very successful recreational one, especially for local families who visit the park with children.

PRESERVING TWENTIETH CENTURY ENGINEERING TECHNOLOGY

As one attempts to preserve structures constructed in the twentieth century, one must be cognizant of design elements, which may also embody engineering and industrial significance and contribute to the overall evolution of building technology. The development of the Tent of Tomorrow's roof marks such a case, where the design played a direct role in the evolution of tensile roof technology during the twentieth century.

As such, its engineering significance should be considered an important reason for preserving the structure.

The Pavilion's roof design came at a time when engineers were looking for new ways to create larger open spaces, namely using post-tensioning technology borrowed from bridge designs and new, lighter materials such as plastics. Inspired by innovative engineers of the day, many American architects felt the way to best satisfy modern architectural design was through a dramatic expression of structure and transformation of the structure itself into sculpture.⁴² In addition to the roof's engineering form, the erection techniques developed to construct the enormous structure were notable as well. Although technical feats are often looked as second to architectural design significance, for twentieth-century historic structures in particular, engineering milestones often contribute substantially to their significance. As one of the founders of the Society for Industrial Archaeology, Theodore Anton Sande, once noted:

“...we measure each society today with an industrial yardstick, thus confirming how integral is the industrial concept to the culture of our times. To save a significant industrial or engineering site is, then, to retain a part of our heritage that is just as important as other major evidence of man's achievement...”⁴³

Tensile Roof Technology Development

The development of the tensile cable roof is one of many reflections of mid-century cultural history. The first prestressed tensile bicycle wheel roof appeared as part of the design by architect Edward Durrell Stone, working with engineer Blaton Aubert, for the U.S. Pavilion for the 1958 Brussels World's Fair.⁴⁴ The pavilion was circular in shape and measured 116 meters in diameter.⁴⁵ Two layers of cables positioned radially were separated by a large distance at the massive, central tension ring, then continued as spokes until they united at the same plane at the outer ring. Each set of cables was prestressed, each at a different level of stress, thereby self-dampening vibration without

the need for additional loading. Lightly stressed cables connected the two layers of cables vertically. In cross section, this configuration of cables produced a lens shape. Translucent plastic Kalwall roofing panels were attached to the upper layer of cables, forming an overall convex shape. One major advantage of this design was simple roof drainage: the roof pitch was angled toward the periphery of the roof and overall structure. Additionally, the translucence of the panels allowed significant amount of light to enter the open expansive space.

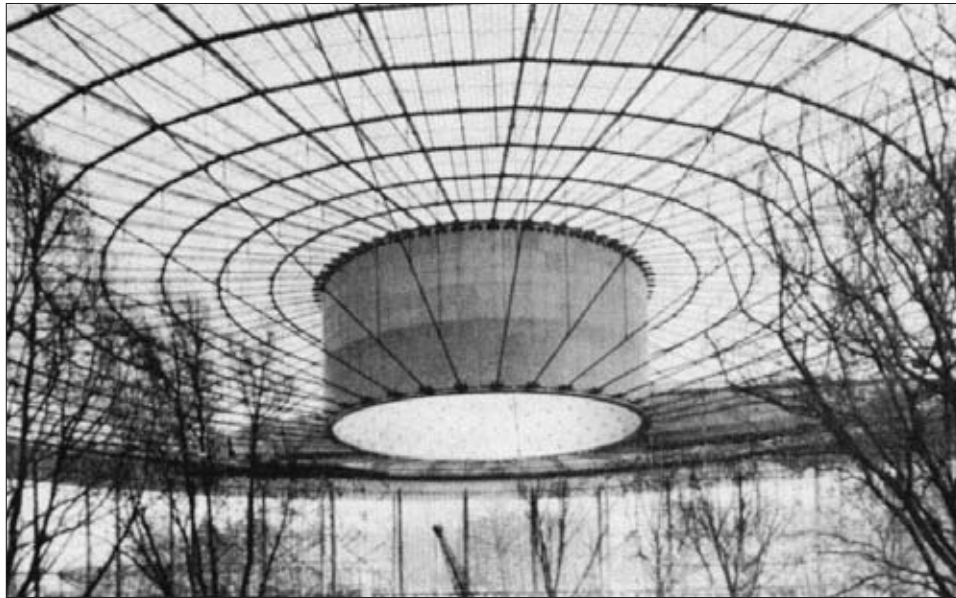


Figure 42 Interior view of Edward Durrell Stone's U.S. Pavilion from the Brussels' 1958 World's Fair while under construction. Note the overall lens shape of the bicycle wheel roof and the massive, central tension ring necessary for that cable configuration.

In that same year, structural engineer Lev Zetlin, with architects Gerhon and Seltzer, was awarded a patent for his breakthrough design of the Utica Auditorium in New York. The auditorium's roof was a bit smaller in scale with a diameter of 81 feet, but was similar in conceptual design to Stone's U.S. Pavilion. In this case, however, Zetlin replaced the cables between the two layers of cables with rigid vertical struts, also known as "tie spreaders", creating an improved roof "virtually immune to flutter".⁴⁶ The complete transfer of loading through the cables and the ring beam meant that no

horizontal forces or bending moments were transferred to the columns from the enormous roof, despite its size.⁴⁷ In the case of the Utica Auditorium, the design goal was to create the largest possible unobstructed interior space free of supporting columns. As the space, rather than the roof structure, was meant to be highlighted, the space between the cables was used functionally to house mechanical and air conditioning equipment and ductwork.

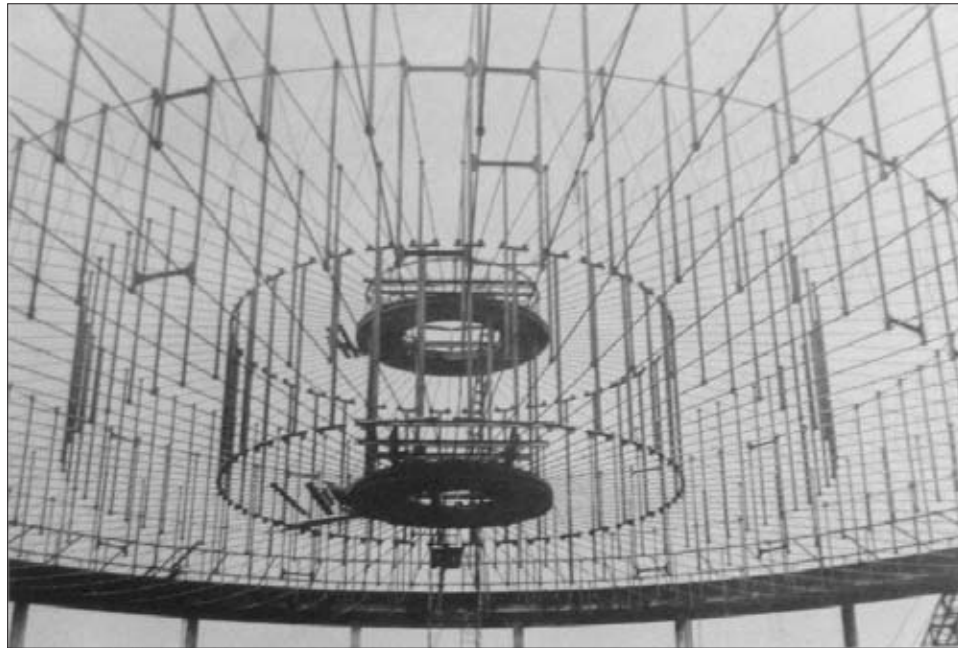


Figure 43 Interior view of Utica Auditorium roof during construction. Note the addition of tie spreaders between the two cable layers. The overall shape in cross section was the same as Stone's U.S. Pavilion.

Using the concepts developed for the Utica Auditorium, Zetlin developed a new configuration for the cable roof of the New York State Pavilion. In cross-section, the shape was inverted to be read as concave, rather than convex as was popular in preceding designs. As such, it represents the first of its type to be designed and constructed as a with concave form in the world. For the Tent of Tomorrow, the roof design was elliptical in plan, the only other shape besides circular that would be feasible to distribute stressed forces evenly. With the change in overall shape came a reversal of drainage direction toward the interior ring. Accounting for this situation, a drainage system was included

that consisted of four large conduits located within the interior of the tent that drained water away from the center of the roof to the structure's exterior. Additionally, a clear, plastic "bubble dome" was designed to fit over the opening at the middle ring to prevent water infiltration into the interior.

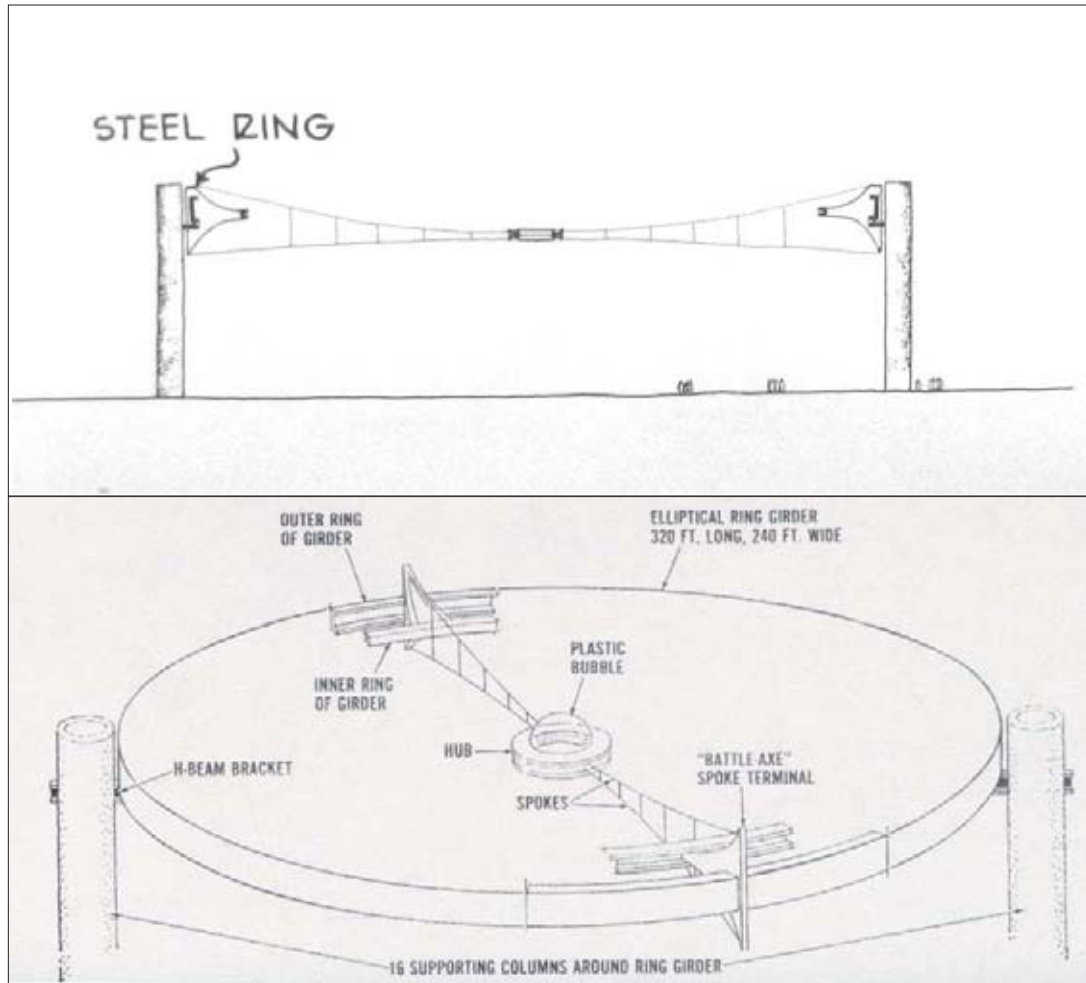


Figure 44 Above: Cross-sectional sketch of Tent of Tomorrow. Note overall concave shape and the elimination of the deep, central tension ring. The design becomes inverted, whereby the outer compression ring becomes the deep element.

Below: Sketch of cable roof construction, identifying major elements.

The Tent of Tomorrow roof was more similar in application to the US Pavilion than the Utica Auditorium in that both were showcased at World's Fairs and both meant to express the form, but more importantly, the "lightness" of the roof. In both cases,

plastic panels showered the interior space with light, and in the case of New York State, with magnificent tinted hues. In contrast to its predecessor bicycle wheel roofs, the New York State Pavilion with its concave shape avoided the need for a large, deep central ring which dominated the other two interiors. In contrast, the radial cables were separated nearly 30 feet at pointed elements on the outer ring, which contributed to a new overall architectural design.

Tent Roof Structure Erection

The tent's engineers were also seeking a safe and efficient way to erect the enormous roof. Fully assembled, the roof weighed in at 2,000 tons.⁴⁸ The upper and lower cables were strung through the elliptical compression and tension rings on the ground.⁴⁹ The entire assembly was then jacked 100 feet into place at 30 inch intervals per day.⁵⁰ Thirty-two 150-ton capacity hydraulic jacks were needed, configured at sixteen sets of two, each set in four legged towers.⁵¹ It was also important to maintain a constant horizontal position during jacking.⁵² To prevent the roof from slipping due to a hydraulic system failure, U-shaped stops were fitted around each piston.⁵³ At the time, the assembly and jacking process were themselves considered technological feats, because

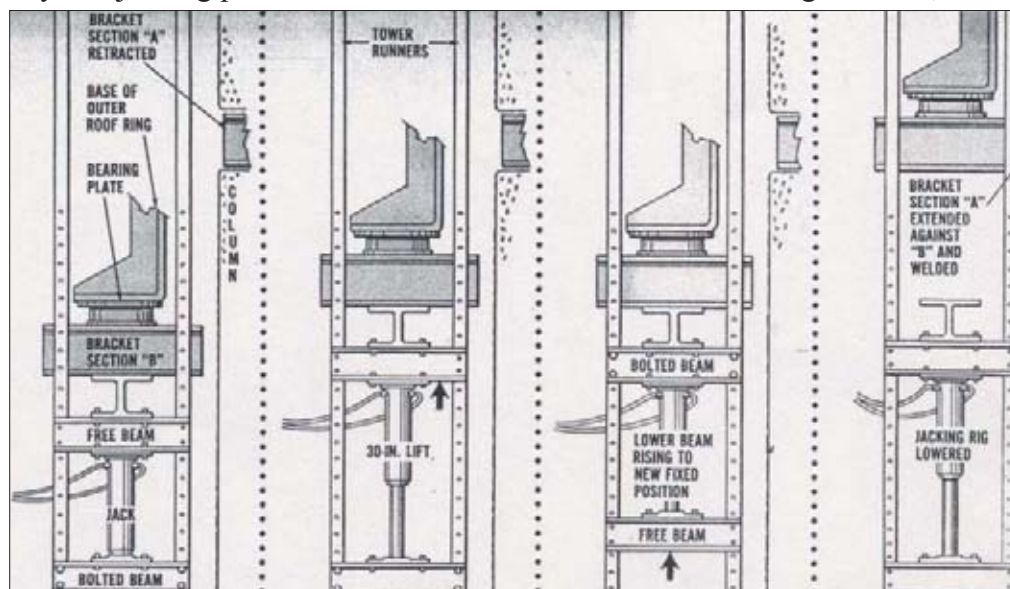


Figure 45 Hydraulic jacks and the jacking sequence used to hoist outer girder in place.

it was doubted that such a large structure could be jacked to such a height.⁵⁴ When the girder ring reached its final height, it was placed on oil impregnated bearing pads.⁵⁵ The girder ring was welded to supporting beams that extended from each concrete column.

Over 1,500 translucent red, orange, blue and purple roofing panels topped the bicycle wheel frame.⁵⁶ They were also known as “sandwich panels” because each was composed of two layers of fiberglass, reinforced in between by an aluminum grid core.⁵⁷ They were fabricated on an assembly line by the Kalwall Corporation in Manchester, New Hampshire.⁵⁸ Each measured 2.75 inches thick and weighed 1.5 pounds per square foot.⁵⁹ The majority of the sandwich panels were fitted on top of the cables while the crew assembled the frame on the ground. Groups of panels were bolted to an upper cable by a purlin clip.⁶⁰ Mastic weatherstripping was then used to seal and lap all joints between the panels, closely controlling conditions of expansion, contraction and flexure.⁶¹ Kalwall advertised that this flexible joint system allowed each panel to act as an independent unit, contracting and expanding within its own area and not distributing stresses throughout the entire segment or roof.⁶² They likewise touted that the simple installation procedure translated into speedy installation in the field.⁶³

An article in *Popular Science* magazine featured the jacking of the roof stating: “Architecturally, cable suspension roofs like this may be the biggest breakthrough since elevators spawned the skyscraper.”⁶⁴ This was seen as a breakthrough because the roof weighed just nine pounds per square foot, as opposed to a traditional roof which could weigh in at 80 pounds per square foot.⁶⁵ Additionally, the horizontally tensioned design no longer necessitated interior supports, which provided a large, unobstructed space.

Chapter 4 Endnotes

- ¹ William C. Miller, "I'm Not Ugly...I Have International Flair," *Forum Journal* 15 (Fall 2000), 42.
- ² Chester H. Liebs, "Remembering Our Not So Distant Past?" *Historic Preservation* (January-March 1978): 30.
- ³ Susan McDonald, "Authenticity Is More than Skin Deep: Conserving Britain's Postwar Concrete Architecture," *APT Bulletin* Vol. 28, no. 4, 1997: 37.
- ⁴ William C. Miller, "I'm Not Ugly...I Have International Flair," *Forum Journal* 15 (Fall 2000), 42.
- ⁵ Sandy Isenstadt, "Three Problems in Preserving the Postwar Landscape," *Forum Journal*, Spring 2001, 35.
- ⁶ Diane Wray, "Organizing to Preserve Modern Architecture: The Modern Architecture Preservation League", found in "Preserving the Recent Past" Washington D.C.: National Preservation Education Council (1995): III-3.
- ⁷ William C. Miller, "I'm Not Ugly...I Have International Flair," *Forum Journal* 15 (Fall 2000), 45.
- ⁸ William C. Miller, "I'm Not Ugly...I Have International Flair," *Forum Journal* 15 (Fall 2000), 42.
- ⁹ Richard Longstreth, "I Can't See It; I Don't Understand It; and It Doesn't Look Old To Me", found in "Preserving the Recent Past", Washington D.C.: National Preservation Education Council (1995): I-16.
- ¹⁰ William C. Miller, "I'm Not Ugly...I Have International Flair," *Forum Journal* 15 (Fall 2000), 45.
- ¹¹ Ibid.
- ¹² Susan D. Bronson and Thomas C. Jester, "Conserving the Built Heritage of the Modern Era: Recent Developments and Ongoing Challenges," *APT Bulletin* 28:4 (1997), p. 10.
- ¹³ Ibid, p. 10.
- ¹⁴ Ibid, p. 10.
- ¹⁵ Ibid, p.10.
- ¹⁶ Ibid, p. 38.
- ¹⁷ William C. Miller, Ibid, p.46.
- ¹⁸ H. Ward Jandl, "Introduction: Preserving the Recent Past," found in "Preserving the Recent Past" Washington D.C.: National Preservation Education Council (1995): I-3.
- ¹⁹ Sandy Isenstadt, Ibid, 35.
- ²⁰ Susan McDonald, Ibid, p. 38.
- ²¹ Ibid, p. 38.
- ²² Michael Lynch, "What Are We Going to Do with the Recent Past In The Not Too Distant Future?" *APT Bulletin* 23, no.2 (1991):6.
- ²³ Susan McDonald, Ibid, p. 38.
- ²⁴ Michael Lynch, Ibid.
- ²⁵ Ibid.
- ²⁶ Susan McDonald. Ibid, p. 38.
- ²⁷ Ibid.
- ²⁸ Bradford Perkins, "Preserving the Landmarks of the Modern Movement," *Architectural Record* 168 (July 1981), 110.
- ²⁹ H. Ward Jandl, "Introduction: Preserving the Recent Past," found in "Preserving the Recent Past" Washington D.C.: National Preservation Education Council (1995): I-3.
- ³⁰ Ibid.

Chapter 4 Endnotes (continued)

- ³¹ Susan McDonald, *Ibid*, p. 38.
- ³² *Ibid*.
- ³³ *Ibid*.
- ³⁴ Neil Harris, et. al. *Grand Illusions: Chicago's World Fair of 1893*. Chicago: Chicago Historical Society, 1993: 46.
- ³⁵ *Ibid*.
- ³⁶ *Ibid*.
- ³⁷ *Ibid*, p.3.
- ³⁸ *Ibid*, p.3.
- ³⁹ *Ibid*.
- ⁴⁰ *Ibid*, p.69.
- ⁴¹ *Ibid*, p.3.
- ⁴² Thomas Hine. *Populuxe*. New York: Alfred A. Knopf, 1986: 159.
- ⁴³ Emory L. Kemp and Theodore Anton Sande. *Historic Oreservation of Engineering Works*. New York: American Society of Civil Engineers, 1981: 127.
- ⁴⁴ Frei Otto, *Tensile Structures: Volume 2*, Cambridge: MIT Press, 1969: 81.
- ⁴⁵ *Ibid*.
- ⁴⁶ Drew Philip. *Tensile Architecture*. Boulder: West View Press 1979 p. 161.
- ⁴⁷ "32 Jacks Raise 2,000 Ton Roof." *Engineering News Record*. December 31, 1963. p. 29.
- ⁴⁸ "32 Jacks Raise 2,000 Ton Roof." *Ibid*. p. 15.
- ⁴⁹ "32 Jacks Raise 2,000 Ton Roof." *Ibid*. p. 29.
- ⁵⁰ Henry B. Comstock. "They Built the Roof on the Ground." *Popular Science*. March 1964: 100.
- ⁵¹ "32 Jacks Raise 2,000 Ton Roof." *Ibid*. p. 15.
- ⁵² Henry B. Comstock. "They Built the Roof on the Ground." *Popular Science*. March 1964: 100.
- ⁵³ *Ibid*.
- ⁵⁴ "32 Jacks Raise 2,000-Ton Roof." *Ibid*. p. 15.
- ⁵⁵ "32 Jacks Raise 2,000 Ton Roof." *Ibid*. p. 29.
- ⁵⁶ Henry B. Comstock. "They Built the Roof on the Ground." *Popular Science*. March 1964: 100.
- ⁵⁷ Anthony J. T. Walker, (Thomas C. Jester editor.) *Twentieth Century Building Materials: History and Conservation*. New York, New York: McGraw-Hill, 1995: 145.
- ⁵⁸ Edward Durrell Stone's U.S. Pavilion roof was constructed in 1958 using the same fiberglass sandwich panels as those later used for the New York State Pavilion. All technical information which was provided by Kalwall Corporation for the U.S. Pavilion roof panels applied to the similar design used for the New York State Pavilion.
- ⁵⁹ Kalwall Corporation. "Translucent Roof of the U.S. Pavilion." March 19, 1958.
- ⁶⁰ *Ibid*.
- ⁶¹ *Ibid*.
- ⁶² Kalwall Corporation. "Roof Construction, American Pavilion, Brussels World's Fair." March 19, 1958.
- ⁶³ *Ibid*.
- ⁶⁴ Henry B. Comstock. "They Built the Roof on the Ground." *Popular Science*. March 1964: 98.
- ⁶⁵ *Ibid*.

Given these special circumstances surrounding the Pavilion, I wish to offer possible intervention approaches available for the site's conservation. This section will outline the wide spectrum of possible approaches. The Park may choose to proceed with one approach, or a combination of several approaches, to further manage the Pavilion. Possibilities begin with the least invasive, where the Park would abstain from any work through replacing deteriorated original fabric with new materials. If the owner chooses to proceed with a rehabilitation scheme, the selected professional rehabilitation team should prioritize the interventions that will need to be undertaken. A proper approach to conservation of the pavilion should begin by focusing on a complete sub-structural stabilization to address safety concerns. Only then can Park focus its shift to choosing further intervention, including, but not limited to, how and what they want to retain, treat, preserve or modify from the original fabric.

When feasible, the replication of materials may be necessary, where the original has deteriorated too severely. Under two special circumstances, it may be necessary to substitute the original with a different material: where the original material has become obsolete or since improved, and where new tested materials prove to economically extend the structure's overall useful life. Additions to the original design should be accepted when they are required to meet "permanent" building code compliance or security and safety concerns. As with any proper rehabilitation, thorough maintenance guidelines should be outlined for future serviceability of the structure.

POSSIBLE APPROACHES TO INTERVENTION

Abstention from Intervention

Abstention from any intervention essentially means that the owner performs no work on the property, either to maintain or rehabilitate the structure in question, and is also known as the “do nothing” approach. It is often the most popular choice for an owner because abstention is the most economical choice. It involves no outlay of funds, not even for simple maintenance. The theory is that the structure will remain and continue to deteriorate (however slowly or rapidly), until funds become available to undertake work. Without a major impetus for intervention, either through public outcry or stability and safety issues, owners may choose to abstain for long periods of time. This is especially true for properties which are “white elephants” and are consequently more difficult to sell. Performing no action, unfortunately, does not inhibit further deterioration. In the case of the New York State Pavilion Tent portion, “deterioration” could be viewed as critical, when structural stability begins to become compromised as engineering inspectors have speculated. Performing no maintenance is still, of course, the preferred option to demolition because there is at least an extant object with which to work, when funding does become available in the future. Demolition necessarily precludes any further rehabilitation and can only demand total or at least partial reconstruction.

Abstention is the option that has been continually chosen for the past thirty years by the New York City Department of Parks and Recreation for the Pavilion, mainly due to a lack of funding allotted for such special projects. However, the Parks administration has expressed an interest considering other intervention possibilities and fund raising efforts are currently underway to support further studies and a possible undertaking.¹

Stabilization

The next level of intervention would include minimal efforts needed to stabilize

the Tent's foundation to ensure its continued survival and prevent subsidence or catastrophic collapse. Other critical elements in need of maintenance would include the tensile cable connections, both at the cable roof level, as well as those cables from which the observation platforms are suspended. Next to abstention, stabilization is the next most inexpensive approach. However, given the type and extent of work required to stabilize the foundations, it would result in an expensive undertaking nonetheless.

Repairing or installing pilings to structurally stabilize the Tent and extend its lifespan should be viewed as a priority activity. This intervention is a critical and essential step, regardless of the additional interventions that are undertaken to preserve or re-use the structure. In general, stabilization will mean the loss of some sub-structural authenticity, but should be accepted as inevitable in exchange for preserving the structure. Where the original design was insufficient to support a more permanent life, an attempt needs to be made to use current technology to extend the structure's life artificially. All modifications to the foundations would be completely confined below grade and therefore would not be visible or disrupt the structure's overall aesthetic.

Stabilization efforts could also be seen as stabilizing the site as a "modern ruin". This would include only the most basic maintenance necessary to halt further deterioration and meet all safety requirements, but to essentially maintain the pavilion's current state. With this scheme, as much original fabric as possible would need to be retained and conserved. This would require not only the sub-structural stabilization, but also regularly cleaning and painting the steel surfaces (cables, platforms, etc.) and repairing spalled concrete whose missing cover has exposed underlying rebar.

The idea of stabilizing the structure as a ruin appears to be an unlikely scenario. The cost associated with the stabilization represents a major portion of the money needed for a full rehabilitation. The Park could stabilize the structure and open it for public visitation, possibly as a didactic effort to display the fair structure itself. However, if the

Park were to invest such a significant amount of public monies into the project, it is likely that they would wish to retain a more useful life for the community's benefit, beyond simply sparing the structure its own physical demise.

Conservation and Retention of Original Fabric

If the park wishes to rehabilitate the site with an eye for opening the Pavilion to the public, they will need to aim to make repairs and restore the original design, while conserving and retaining as much of the original fabric as possible. They would need to begin by completing the measures, as mentioned above, needed to stabilize the site and ensure public safety. Repair programs would need to be established to stop current deterioration and delay or impede any further deterioration. Beyond simply maintenance efforts, the restoration would restore the aesthetic that the structure once possessed. Fortunately, the superstructure appears to be in good condition, particularly the concrete elements at the Pavilion, which would require only cosmetic improvements. Other more vulnerable materials may need a more aggressive approach to restoration.

The steel girders, rings, and cables, of which the roof structure is comprised, would need to be cleaned, sandblasted and coated in areas showing signs of corrosion. The most seriously corroded segments may need to be reconstructed. Similarly, corroded steel plates and railings at the promenade level may also need a more aggressive cleaning and repainting program. For the steel elements which appear in fair condition, a simple cleaning and coating with non-corrosive paint may be all that is necessary. As the observation decks were not able to be properly assessed, it is difficult to say which approach or treatment would be appropriate for its present condition.

Unfortunately, certain circumstances limit the extent to which one may conserve and repair existing material. Replacement, in-kind or otherwise, may be necessary to return a functional use and visual aesthetic to the site. The greatest irreversible damage appears to have been caused by deferring proper maintenance for the structure over

the course of several decades. Remaining exposed to the ravages of weather without protection has completely disintegrated many elements, but in particular steel elements by corrosion, such as the treads, risers and connections in the stairwells. Other elements have simply been vandalized or mutilated beyond repair. The remaining irreversibly damaged components have been stolen or removed all together, such as the original light bulbs or the original plastic roofing panels.

Replication and Substitution of Original Fabric

Beyond merely conserving the existing fabric, replication of original materials may be necessary, where the material has deteriorated beyond repair. Under two special circumstances, it may also be necessary to substitute the original with a different material: where the original material has become obsolete or since improved, and where new tested materials prove to economically extend the structure's overall useful life.

It would be possible to replicate any of the steel components (cables, plates, bolts, railings, platforms, stair treads and risers, etc...) which have deteriorated beyond the point of repair. The two "Sky Streak" elevators would need to be manufactured based on the original design. Steel elements demand continual coverage with a coat of anti-corrosive paint, and for critical connections, substituting stainless steel components for steel could reduce long term maintenance demands. Outdated infrastructure, such as plumbing, may need to be replaced and upgraded to meet new needs.

If the original roof design is to be resurrected, reproducing thousands of replacement panels would be necessary. A representative of the original manufacturer of the fiberglass reinforced roofing panels, Kalwall Corporation, was contacted to determine if the original panel material could be replicated.² According to Bruce Keller, Vice-President of Kalwall Corporation, reproducing the original fiberglass roofing panels with the structural grid system would be possible. He claims that if the Kalwall roof were to be reinstalled today, the appearance could be virtually the same, although with extended

durability. A color match to the original translucent panels would likewise be possible.

The original panels that were installed on the New York State Pavilion were expected to survive approximately three to five years³, which at the time was suitable given the Pavilion's planned lifespan of two years as a temporary fair structure. The Pavilion, however, acted as a test study, where the roof panels surprisingly lasted ten years before they needed to be removed. Today, technological advancements in the plastics industry have extended the lifespan of an average panel to over fifty years.⁴ The panels produced today exhibit greatly improved weathering, fire, and structural characteristics as well as longer term durability against ultra-violet degradation.⁵

Kalwall Corporation has performed other replacement projects of older roofing systems, where the new panels exhibited greater durability. Mr. Keller estimates the cost to replicate the panels and the accompanying installation system would be \$15-20 per square foot, which, accounting for inflation, would equal the projection of the cost for which they were originally sold in 1963.⁶

Modifications and Additions to Original Design

In undertaking a restoration of the pavilion to support a new use, the team should rely as much as possible on the original design and configuration of space. To respect the original design intent, additional new, irreversible elements should be incorporated as little as possible. This will help ensure a proper interpretation of the space, especially as it was experienced as a fair structure.

For many historic rehabilitations, however, this has been difficult to achieve if it is necessary to meet modern building codes. The pavilion represents an even more special case, where it was constructed with a variance as a "temporary structure", which released the design from the same requirements that would apply to an identical "permanent building". Two major changes to the design would be needed to meet both ADA accessibility codes and fire codes. For instance, the installation of a ramp or elevator to

the promenade level would be necessary to allow access to that level. A small elevator shaft may be the less visible alternative, where it could be more easily hidden and still accommodate accessibility issues.

Demolition

One of the ongoing questions asked about the fate of the Pavilion has been (nearly since its inception), “Should it be torn down?” We must note that the Pavilion was designed to be temporary with near immediate demolition in mind. All preservation attempts taken technically run counter to that original design intent. At the close of the Fair, the property was legally passed from New York State to New York City hands, in part, to avoid the burden of having to pay excessive demolition and hauling costs. Today, we find the public sector caught in the same conflict, trying to manage the structure without allocated funding. Fortunately, for advocates of the Pavilion’s retention, demolition costs nearly total the expense of rehabilitating the structure and therefore make it an option less attractive economically. Sometimes the decision to demolish is accelerated where life safety could be compromised or other dangers exist. Although demolition necessarily runs counter to a philosophy of preservation and should only be chosen prudently, it must nonetheless be included as one of several possible approach options.

Maintenance Program

Regardless of how much intervention is undertaken, a long term program for site management and sustainability through regular maintenance should be outlined. A maintenance program should be formulated to address sustainability issues that may arise in both the short and long term. Because of the unique, exposed, open-air configuration and deterioration mechanisms which uniquely affect the structure, the Tent of Tomorrow and the Observation Towers have been intentionally been referred to as “structures” rather than “buildings”. Standard maintenance guidelines for post-War reinforced

concrete buildings will not necessarily be applicable. We must turn to the pavilion's closest "structural relative", a cable suspension bridge, where exposed tensioned cables, steel reinforced concrete supports and projecting steel girders make up the majority of the structural material elements. In terms of maintenance required, one might seek out standard maintenance guidelines for cable suspended bridges for reference. Additionally, a monitoring program should be established to measure any physical subsidence of the structures before, during and after stabilization efforts are conducted.

Chapter 5 Endnotes

¹ Estelle Cooper and Bill Gotthelf. Personal Interview. February 27, 2004.

² Correspondence via e-mail with Bruce Keller, Vice-President of Kalwall Corporation, Manchester, New Hampshire. (October 13, 2003 and November 14, 2003).

³ Ibid.

⁴ Ibid.

⁵ Ibid.

⁶ Ibid.

The following chapter outlines the Pavilion’s enabling environment, which is to say, the political and economic environment which exist and can help (or in some cases hinder) efforts toward the site’s preservation. Attempts at nomination and suggestions for future public and political recognition and protection will be outlined. Further, the economic hurdles that the site faces may be challenged by new ways to generate necessary funds, either through fundraising efforts or income producing ones.

HISTORIC DESIGNATION**Nomination Process**

As the New York State Pavilion recently celebrated its fortieth birthday, it is still considered a “young” landmark in the field of preservation. For example, the National Register for Historic Places requires that a structure be a minimum of fifty years old before being considered eligible for nomination to the Register, with the caveat of those that prove to embody exceptional importance. The rationale is that historical perspective to properly judge the significance of the structure. The Pavilion finds itself in a precarious situation, because it is owned by a public government. As such, it would not benefit from the major advantage of being listed on the National Register: tax credit eligibility. However, a nomination may help spur recognition and help spur donated monies to supplement the Parks budget. If we turn to other historic designation options, we see that a more effective means for ensuring protection would be to apply for nomination at the local level. A local designation would further help protect the structure against irreversible modifications.

Fortunately for the Pavilion, the local governing body for is the New York City

Landmarks Preservation Commission (Commission). The Commission's law regarding eligibility for listing, recognizes important "younger" potential landmarks and requires a minimum age of thirty years. At the age of forty, the pavilion would be eligible without additional special considerations. On the Commission's website, they note that the nominated structure is required to meet the age prerequisite, but also that it possess "a special character or special historical or aesthetic interest or value as part of the development, heritage, or cultural characteristics of the city, state, or nation".¹

The Commission has recognized the historic significance of the 1964-65 World's Fair when they designated the Unisphere and reflecting pool with landmark status nearly a decade ago on July 19, 1994. Nomination of the Unisphere's neighboring New York State Pavilion has been started by local advocates, who recognize the need for its preservation as a local landmark. However, given the unstable status of the structure, the nomination process has not moved far. According to the Commission's Director of Research, Mary Beth Betts:

*"[The Pavilion] has never been heard, and has never been the subject of an intense campaign on the part of advocacy groups to be designated, but the Landmarks Preservation Commission has over the last three years received about a half dozen requests to designate, which we are studying very seriously. We are also working with the Department of Parks, which owns the building, to gain a full understanding of the building's condition in order to insure its future safety and accessibility."*²

ECONOMIC ENVIRONMENT

Economic Environment After the Close of the Fair

After the close of the fair, the tent was used briefly, during which time it underwent regular inspections and maintenance service. During the four years that the tent was leased as a roller rink, maintenance efforts and expenses were even supplied by the tenant. By the mid-1970s, the roof panels were removed and the pavilion was

shut down. At the same time, the city faced a financial crisis and discontinued nearly all funding for the park's upkeep. They suspended all inspections, maintenance, security and improvements until extra funding became available. The Pavilion remained neglected and even vandalized (despite attempts at locking and fencing in the structure) and continued to deteriorate. The Parks Department had even entertained the idea of demolishing the abandoned "eyesore", but the multi-million dollar price tag of demolition made them reconsider, simply deciding to leave the Pavilion in its state and place until the present day.

Engineering Assessment and Projected Costs

In 1992 and again in 1996, the Park hired both an engineering firm and an architectural firm to inspect the Tent and assess its condition. Both assessments included partial excavation of the substructure, whereby it was determined that the untreated pilings had deteriorated to such an extent that they were at the tipping point of no longer being able to support the columns above. The latest inspection team recommended that the Park take immediate action, either to stabilize the structure or to demolish it. The structural instability dictated that they could no longer simply rely on doing nothing, because the structure had begun subsiding and posed a serious liability.

A comparative analysis of the estimated costs for both options is necessary to help determine what action the city should take. In 1996, Ciardullo and Associates estimated the cost of demolition for the entire tent would be \$3,654,416. Projected today, using an inflation rate of 34% the costs would rise to approximately \$4,897,000. If one were to stabilize the structure using jack piles, they conservatively estimated an expense of \$3,788,000. However, this figure does not take into account the uncertain number of steel H-piles which were driven to reinforce the untreated wooden ones, which are most likely in good condition and able to share the loading distribution. If a small percentage of the steel piles is included, the substructure stabilization figure drops to \$2,538,496.

In today's dollars, stabilization according to the previous engineering recommendations would cost approximately between \$3,402,000 and \$5,076,000. The Park management has expressed their doubts about the accuracy of these figures, because they feel that today more affordable sub-structural underpinning options exist, which they wish to explore further.³

Use versus Stabilization Issue

Given that stabilization is the less expensive option, the park wishes to try raising funds to stabilize and extend the life of the structure, and then wait until further funding plans solidify for rehabilitation.⁴ However, from the viewpoint of the Parks Department, they have been hesitant to spend such large sums of money stabilizing a structure before they have determined how it will be adaptively reused. The park has made attempts at seeking a potential tenant, but until now, no investor has been ready to commit to a lease agreement until they can be assured that the structure has been stabilized. The issue at hand is that no one is willing to absorb the risk associated with an unstable structure. Ultimately, however, the burden must fall on the city, because they own the Pavilion, and as such, they are liable.

Owner's Objectives

Normally, a feasibility study requires first understanding what the owner's objectives are and then developing a plan to meet those goals. In the case of the Pavilion, however, those objectives are not typical. Given the unique nature of the project (size and scale, the limitation of only seasonal use, and public ownership), the Parks' objectives will be primarily non-economic. The park will need to focus on stabilizing and rehabilitating the structure in an effort to recognize its historicity, importance as an architectural and engineering structure and its future use in the park. This approach will ultimately reinforce their goal of public policy, and will not focus on making the project a profitable venture. Secondary economic concerns will certainly apply, but they will not

dictate the goals of the project. The park may and should very well seek ways to raise and earn money to offset some of the rehabilitation costs or to manage covering the holding costs over the lifetime of the structure.

WAYS TO RAISE OR EARN MONEY TOWARD PRESERVATION EFFORT

If the Park does not have the money to fund the Pavilion's rehabilitation, they will need to either raise money through public or private sponsorship, or determine a way to use the Pavilion itself to generate revenue. The Park has already begun organizing a major fundraising event to do just that: help secure funding necessary to further study the structure's current condition and begin stabilization. The methods available for the Pavilion to earn money may at first not appear as reliable or have as immediate a return as fundraising, but they should be considered as possibilities nonetheless.

Fundraising

Despite the lack of funding, the park still wishes to go through with stabilizing the landmark structure. The administration at Flushing Meadows-Corona Park has been proactively involved in seeking additional ways to raise funds to initiate the Pavilion's preservation. Most recently, for example, the park has planned to hold a World's Fair Anniversary Gala on April 15, 2004 at another of the 1964-65 Fair remnants, what used to be the Transportation Pavilion, but now is a catering facility known as "Terrace on the Park". The event will be a black-tie dinner, meant to commemorate both the 65th anniversary of the 1939-40 Fair and the 40th anniversary of the 1964-65 Fair. They will be featuring exhibits of memorabilia and films documenting events at both of the fairs. With hopes of reaching a broad public audience, local newspapers and television will be advertising the event. The Park is expecting to attract over 800 guests that, with tickets priced at \$275 per person, could raise at least \$220,000 dollars. More funds are expected to be raised through separate private donations. Proceeds from the event will be used to fund two projects in the park: to establish a children's program and to begin efforts

toward saving the Pavilion. Representatives from the Park want to use funds to initially conduct another current study of the structure and to begin the process of stabilization and rehabilitation of the failing structure.

Similarly, they could also seek funding from private donors. If the site were to become nominated as either a New York Landmark or listed on the National Register, the additional exposure and recognition could fuel further private donations and support. Organizations such as the Municipal Arts Society could be contacted to possibly donate or raise funds. Additionally, the park could apply to the National Trust for Historic Preservation's "11 Most Endangered Historic Places" list, that could generate further awareness of the Pavilion's condition.

Rental Space for Cellular Telephone Transmission Equipment

One innovative way to earn money for the pavilion would be to rent out space on either of the two taller towers to cellular telephone companies for their signal transmission equipment. Several churches with tall spires have been known to lease their elevated space to cellular phone companies to earn extra money for upkeep, where the going rental rate can run anywhere from \$1000 to \$3000 per month. The height of the two uppermost observation platforms at 226 and 180 feet, respectively, and the central location within the park and within Queens, make the towers an ideal spot for transmission. Each platform may even be able to accommodate equipment from more than one company, given the extent of potential space on each of the observation towers. The equipment could be placed either on any of the platforms or possibly above the platform roof. Although the additional equipment would technically change the aesthetic by changing the form and appearance of the towers, it is an entirely reversible addition. The transmission equipment solution could even be used temporarily, simply to earn money for its rehabilitation. Additionally, the equipment could be disguised or made to blend in with the surroundings as much as possible. This option has worked well in other

similar instances, such as in church spires, where equipment was completely embedded in the spire space, hidden from view.

Renting space to cellular phone companies may provide the towers with additional, albeit unintentional, financial support beyond the flat rental rate. As with any transmission tower, the phone companies would need a fully functioning means of access (i.e. a stairway) to provide routine maintenance operations. As the towers' current stairway system is nearly completely deteriorated, it would have to be reconstructed. The leasing contract could stipulate that the phone company may rent the space above under the condition that they cover the expense of reconstructing the stairwell. Any other items, such as the steel girders or other structural elements, could likewise be rehabilitated and properly maintained. In this way, if the park wished to reopen and service the towers to visitors for observation, at least a portion of their expected rehabilitation costs would already be covered.

Towers Reopened as Observation Decks

As the towers have been assessed as structurally stable, the only funds needed to rehabilitate the towers would equal the cost of refurbishing the stairwells, elevators, platforms and roofs. Aside from whatever state of stabilization or re-construction that the tent is experiencing, the park could concentrate some effort toward the towers alone and reopening the platforms for observation. During the fair, an admission price was charged: \$1 for adults and 50 cents for children. It is conceivable, therefore, that if the towers were reopened, that a nominal fee could be charged that could be used to repay what rehabilitation expenses were necessary and to help cover annual maintenance expenses. Likewise, the popularity of the observation towers could lead to reopening the original restaurant, or at least a smaller scale concession stand, both of which would act as the revenue generators that the pavilion's upkeep expenditure will demand.

NEW YORK BID TO HOST THE 2012 OLYMPICS

It should be noted that New York City is one of seven of cities who have entered a bid for the 2012 Olympics. The plan also incorporates Flushing Meadows-Corona Park, where the tennis events would take place at the USTA center and the canoeing and flatwater rafting events would be located at the ponds. Representatives from the Olympic Committee have expressed a concern about the dilapidated state of the Pavilion, stating that winning the bid would be conditional upon a major visible rehabilitation, beyond simply stabilizing the foundations. The park may be able to seek support from corporate sponsors who could to use the pavilion to advertise or sell products. The bid winner will not be announced until June 2005. Many question New York's chances for winning the bid, because in general, two host cities in the same country will not be chosen for the summer Olympics within a ten year timeframe. Nonetheless, the possibility should be considered in the overall equation for potentially reusing the pavilion in the future.

Chapter 6 Endnotes

¹ New York Landmarks Preservation Commission Website: <http://www.ci.nyc.ny.us/html/lpc/html/designation/faq1.html>

² Mary Beth Betts. E-mail Correspondence. November 19, 2003.

³ Estelle Cooper and Bill Gotthelf. Personal Interview. February 27, 2004.

⁴ Amy Freitag. Personal Interview. December 19, 2003.

Today, the New York State Pavilion site finds itself in a pivotal state of change. The Park has begun an initiative to raise money toward at least studying the Tent's condition and hopefully beginning stabilization. Meanwhile, plans to construct a five million dollar addition to the Queens Theater in the Park portion of the Pavilion site have been finalized and are set to begin in the fall of this year. A proposal to transform the Tent and Towers into an Air and Space Museum has also been set forth to the Parks administration to consider, though the plans have remained in abeyance for the past few years. Finally, there remains the possibility that, if New York City wins the 2012 Olympic bid, extra funding may be generated to accelerate the Pavilion's rehabilitation.

To help facilitate any future restoration action chosen, guidelines will be provided in the following section. These guidelines are meant to be a framework to ensure that as much historic fabric is retained as possible, to preserve and highlight the site's historical value, and to maximize the pavilion's present value for the community at large. For the analysis, the results of the latest park study were used to glean insight into the possible current park setting, users and users' needs. However, if the Parks Department ultimately chooses to re-use the Tent and Observation Towers, they will first need to conduct a thorough, more up-to-date study of the park to better understand the site's current context within Flushing-Meadows Corona Park. The Air and Space Museum proposal will be analyzed as to its appropriateness and viability, while other possibilities for reuse will be suggested that more closely follow the guidelines presented.

CONTEXT WITHIN FLUSHING MEADOWS-CORONA PARK TODAY

To understand the structure, we must understand the entire continuum of its

history, including its role in its present day environment. Specifically, we must look at the context in which the pavilion is situated today: how is the park used, by whom, how often, and for what purpose. Normally, this undertaking would be considered a formidable task and would require extensive demographic studies, analysis of park spaces, and physical monitoring of the park at different times of the day and year. Fortunately, in 1986 the New York Department of Parks and Recreation contracted the non-profit urban planning, design and management firm Project For Public Spaces (PPS), Inc. to conduct such a study of Flushing Meadows-Corona Park. According to PPS, the purpose of the project was to “conduct an analysis of current use patterns and to identify the implications of users’ needs for the future management of the park.”¹ Although the project addressed issues concerning the park as a whole, their findings also shed tremendous light on the context in which the NYS Pavilion is located and the potential visitors to the pavilion if it is to be rehabilitated. While somewhat dated, this report represents the latest official study of the park.² The types of users and many of their expressed needs and concerns are still valid today, nearly two decades later.³ This analysis will be used to help construct suitable proposals for future uses of the pavilion, which specifically cater to the current users of the park.

Park Setting

With a total area of 1,257 acres, Flushing Meadows-Corona Park is the second largest park in New York City.⁴ Users of the park visit for both recreational and cultural activities. With landscaped meadows, tree lined walkways and two man-made lakes, the park is considered an urban oasis, where many residents who live nearby come to picnic, play sports, relax and sunbathe. The park contains baseball, soccer, handball and cricket fields, as well as two dinosaur-themed playgrounds for younger visitors. The park is just as well known and visited for its two major athletic facilities: Shea Stadium, home of the New York Mets baseball team, and the National Tennis Center, where the U.S. Open

is held each summer. Within the park, visitors interested in nature can visit the Queens Zoo, Botanical Center, or Wildlife Conservation Center. For those interested in cultural activities, the park also contains the Queens Museum of Art, the Queens Theater in the Park, and the Hall of Science, which is the area's only hands-on science museum.

Park Users

PPS conducted interviews and surveys to determine how many and what types of people use the park. The survey results gleaned specific demographic statistics including age, sex, household income, and from where they are visiting the park.⁵ They also helped determine at what times the park is most used, and how long the average visitor stays.

It was estimated that six million visitors use the park annually for various activities: approximately two million visit the park itself, one million come to attend special events and ethnic festivals, and the remaining three million represent those who come to attend major sports events at Shea Stadium and the USTA Center.⁶ Of the visitors surveyed who come to use the park in particular, 81% were from Queens, 7% from Brooklyn, 5% from Manhattan, 3.6% from the Bronx and 2% were from out-of-state.⁷

As the majority of visitors are drawn from nearby areas within Queens, it is fair to assume that both groups within the park and within Queens would reflect similar ethnic backgrounds. This is important because Queens is often considered the most ethnically diverse county in the United States today, where many new immigrants or first generation Americans call the borough home.⁸ According to the year 2000 census results published on the U.S. Census website, 46% are foreign born, and 51% speak a language other than English at home.⁹ Not only do these numbers reflect newcomers to the country, but they also show that nearly all racial and ethnic groups are represented and furthermore fairly proportionately. The census confirms this diversity, where 20% of the respondents identified themselves as African American, 17.6% as Asian, 25% as Latino, 12% named

Other, and 6% claimed either two or more races.¹⁰

In addition to foreign visitors, Flushing-Meadows Corona Park is known for attracting families, where 54% of the visitors noted that they came with their spouse or family.¹¹ On Sundays in particular, that percentage rises to 74%.¹² Whether or not visitors come to the park with their family, the majority come in groups of two to ten people. On the weekends, visitors tend to stay in the park the longest, where the majority of users leave only after three to six hours.¹³

Events, Festivals and Cultural Activities

Flushing Meadows Corona Park has unofficially become known as a center for major ethnic festivals and other large scale events. However, despite the tremendous size of the park, PPS found that the park had neither the facilities nor the adequate management to house or cope with these events.¹⁴ In proposing possible locations to hold and manage events and festivals, PPS proposed an “Events Location” plan targeting the New York State Pavilion as a possible “center stage”, namely because of its scale, location, access, and availability of nearby parking.¹⁵

Unlike the large ethnic festivals that are held each summer, the majority of the educational programs that the park hosted were geared and advertised toward people who generally would not visit the park for other reasons.¹⁶ This inherently limits the diversity of users. Not only would “regular” park users be unaware of many of the programs being carried out, but PPS also found that few of the visitors to these facilities would ever “spill over” into the park.¹⁷ An insufficient number of activities involve the interests of the people that already use the park, especially those of multiple ethnicities. Essentially, the activities neither mirror the observable diversity which exists in the park nor in the surrounding Queens Borough as a whole.

Concessions, Food and Eating Facilities

Presently, few permanent facilities exist in the park for food concession. As a

supplement, mobile vending carts offer the sale of some food and beverages. Survey respondents, however, noted that vending carts and trucks often do not accommodate ethnic food popular with visitors of multiple ethnic backgrounds.¹⁸ Nearly one-third of the park visitors rated the type, variety and quality of the food as “poor”.¹⁹ In order to strengthen multiple programs at once, PPS recommended that the park should consider “developing new concessions in conjunction with existing art and cultural facilities...”²⁰ In this way, an eating facility could serve multiple roles by not only generating revenue, but also catering to a broader clientele. Conversely, the proximity of food concessions to a facility will draw attention to the art, cultural, and ethnic events as well. Additionally, many complained that the park could not accommodate all of those visitors who wanted to bring and/or make food for a picnic at the park, claiming the park lacked enough shaded areas, picnic tables and waste receptacles.²¹

Restrooms

The strongest concern expressed by park users was the need for more restrooms in the park. Currently, the park houses many more restroom facilities than at the time the survey was taken and continually aims to create more to ease the pressure on the park.²² Despite the new restroom construction and supplemental portable toilets, the tremendous crowds that the park attracts in the summertime still burden the system. At the time of the PPS study, there were no restrooms identified near the area of the Unisphere, directly next to where the NYSP is located. The lack of sufficient and convenient restroom locations was rated by 17% of those surveyed as the worst thing about the park.²³ Given the sheer number of visitors, (especially on the weekends in the summer), the size of the park, and the length of time spent by the average visitor, insufficient access to restrooms still represents an issue for the park, which the Pavilion could help ease.

More Current Study

Another similar demographic, use and market study should be conducted to obtain

more current trends. Market analysis and strategic planning services, such as Claritas, can be a useful resource to understand the dynamics of the market being targeted.

Additions, modifications and improvements to the park since the previous study likewise need to be recorded. The more current the information available, the more prepared the owner will be in meeting the needs of the future users of the Pavilion. The information would be a valuable contribution to the park's records as well as a critical resource for management of other park resources.

GUIDELINES FOR PRESERVATION AND RE-USE

The following guidelines outline a "preservation" friendly approach to rehabilitating the pavilion, where both appropriate physical intervention as well as viable uses will be noted. No matter which approach to rehabilitation or stabilization is chosen, the project should first and foremost respect the original Pavilion's integrity and original design intent. This includes, but is not limited to, architectural design elements such as material, scale, space and use.

The twentieth century "Tent of Tomorrow" should be read as a "tent", and as such, the structure should not be enclosed to create an all-weather "building". The concrete supporting columns, and the air passing through the enormous space between, should be accentuated, if possible. If one absolutely wished to enclose the open space between the columns, one creative, non-destructive possibility would be to hang fabric between the columns. The transparency of the fabric could be chosen to maintain a more open feeling interior and they could be just as easily hung as removed, without permanently altering the tent. Maintaining the open-air design elements presupposes that the pavilion will only be used as a seasonal structure, during the months of pleasant weather. In the case of Flushing Meadows-Corona Park, however, this limited duration of use is not necessarily a drawback. The park is most frequently visited during those same very months, and hardly visited during the winter months of cold and inclement

weather. The tent and towers should simply remain closed and “winterized” during the months of cold weather.

The open interior space likewise should remain free of any permanent alterations. The Tent’s monumentality is directly created by the roof spanning a great distance, at a height of 100 feet, without any interior supports. In other words, a large part of what makes the tent such a significance structure is its scale and open space. Therefore, it is important that the roof be highlighted in any rehabilitation scheme to show the technical achievement which it represented at the fair as well as today. Any rehabilitation scheme should not feel obligated to find a use for the cubic space and create a physical addition within the tent, because it would directly contradict the design intent of experiencing massive “openness”. When one enters the Tent, looks up and grasps the open space, it represents a unique experience where one can feel protected, even while still technically “outdoors”.

Another key component in the successful re-use of the tent will lie in its flexibility to accommodate *several* different uses. Any permanent adaptation that would make the space unsuitable for any other use should be avoided, as it would limit the space’s possibilities. Any furniture, such as chairs, tables, stands or stages, should not be installed permanently. Rather, all objects should be made to be stored and assembled or disassembled as needed. At least a portion of the expansive space within the rooms along the perimeter of the pavilion’s main floor would be suitable for storage of non-permanent furniture or fixtures.

Finally, any re-use scheme will need to determine who the potential users would be before committing to using the space. A current, updated study of the park must be conducted to properly reevaluate the park users and their needs. Using the results of the study, the park could best determine to which groups it should market. A comparison with the study conducted nearly twenty years ago may also shed light on possible patterns

of future demographic changes facing the park. Using the results of the last study, the park should try to choose new uses for the pavilion, which would accommodate as many users' needs as possible. In the earlier study, the respondents noted the following concerns, all of which the Pavilion could help resolve:

- An insufficient number of bathrooms exist in the park
- Dissatisfaction with park food, concessions and eating facilities
- Need for a venue for ethnic festival events
- Insufficient shade in hot summer weather

As the Pavilion stands in a semi-ruinous state today, it represents an enormous liability for the park. Not only is the tent structurally unstable, but both the tent and the towers have been subjected to numerous cases of vandalism. With a revitalized use and increased security efforts, the park would significantly reduce the liability of unwanted injury or death.

Finally, should be seen as a public park structure that caters to as many users as possible, attracting everyday users of the park of multiple ethnicities, not simply attracting outside users into the park. This is the case with most of the cultural and educational facilities, of which the park does not wish to add another. As much as possible, the new use would need to also cater to a family oriented use, as families represent a great majority of the user groups who visit the park. New, creative ideas must be sought to enhance the image and vitality of the park.

An effort should be made through some signage or exhibit to educate the public about the 1964-65 World's Fair, the Pavilion's specific role during the Fair, its significance and history to date, and the latest rehabilitation efforts. The pavilion itself must be advertised throughout the park so that visitors are aware of its location and how it is used. Simple ways to accomplish this include highlighted location on park maps, advertisement banners, even possibly advertisement banners on the Pavilion's Towers

themselves, which are a visually dominant element from within the Park.

FUTURE ADDITION TO THE QUEENS THEATER IN THE PARK

While no concrete solutions have been determined to date for re-using the Tent of Tomorrow and Observation Towers, solid plans are already underway for modifying and adding to the Queen Theater in the Park's design. As the Queens Theater in the Park began to grow, the theater management found that the existing entrance lobby did not offer sufficient space to welcome guests and to host pre- and post-show receptions.²⁴ In conjunction with the Department of Cultural Affairs, the theater raised approximately \$5 million for the construction of a lobby addition and a small café and cabaret to the theater structure to support those needs.²⁵ The architecture firm Caples Jefferson of New York was selected to complete a study of the site and design an addition that would be integrated into the entire site. The final design selected is comprised of two glass structures: a 3,000 square foot lobby and reception area and a seventy-five seat café and cabaret addition to the side of the theater.²⁶ At the present time, funding for the project is complete, final plans have been confirmed, and construction is set to begin as early as September, 2004.²⁷

Caples Jefferson began research by consulting original construction photographs of the Theaterama and pavilion. Their aim was to integrate the new addition with not only the original design, but also the 1993 renovation and lobby addition by Alfredo DeVido Architects. They found the 1993 addition had changed the original geometry and symmetry in plan by locating the entrance off-axis.²⁸ However, the city stipulates a minimum fifteen year life for construction paid for by public monies, and therefore demolition of the current entrance lobby was not an option.²⁹ The round geometry and circular shape in plan was chosen to be consistent with the original design, while the spiral approach helped meet the demands for ADA accessibility.³⁰ The extension of the glass lobby addition forward from the Theater necessarily will partially visually obstruct

one of the three entrance gates to the Tent. Although access will still be possible by entering from behind the addition, it appears that the gate would become a secondary means of entrance. The two remaining gates would act then as the primary entrances.

AIR AND SPACE MUSEUM RE-USE PROPOSAL

Description of Renovation and Re-Use Proposal

Charles Aybar, an aviation professional and former Queens native who worked on the pavilion as a teenager, has teamed with the New York based firm CREATE Architecture, Planning, and Design (CREATE) to develop a re-use proposal for the pavilion tent and towers. Their plan would convert the abandoned and deteriorated portions into an Air and Space Museum. With the aid of the visual graphics firm FYZ Powermedia, CREATE was able to generate powerful 3-D renderings of the proposed museum, both views during the day and also lit at night. A third rendering displays an interior view of the museum's exhibits and attractions from an aerial perspective.



Figure 46 Exterior rendering of proposed Air and Space Museum.

The new design would involve enclosing the tent structure with a glass curtain wall, thereby transforming it from an open-air structure into one which would be

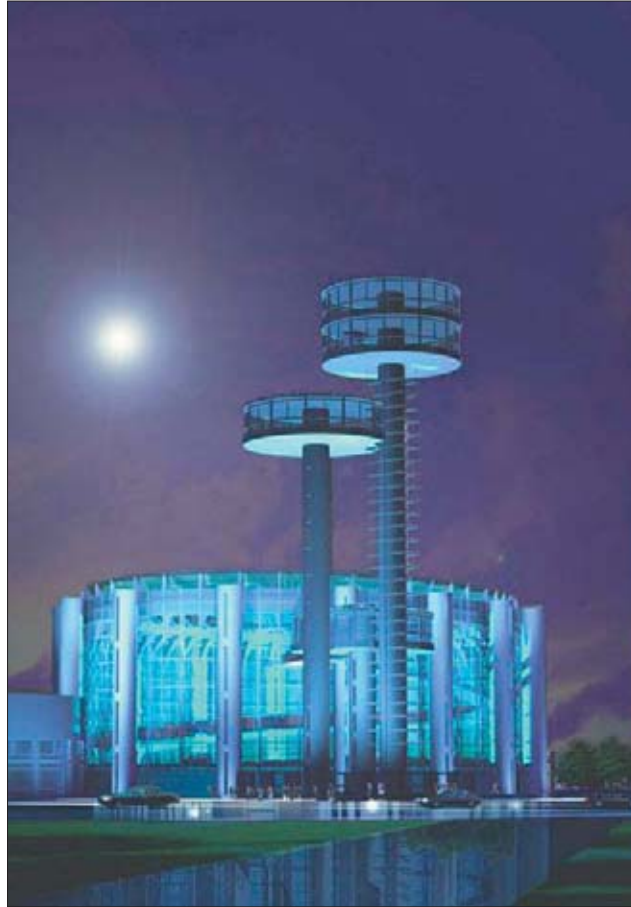


Figure 47 Exterior rendering of proposed Air and Space Museum.

protected from the elements and could be used year round, as opposed to only seasonally. The visitor would enter the Pavilion by first riding an elevator to the lowest tower platform. They would then be led to an enclosed glass “Sky-Bridge”, which would serve as a portal and link, connecting the tower to the main tent structure. Once inside the “tent”, the “Sky-Bridge” would connect to a “Sky-Walk” that would likewise be constructed of glass and would be used as an extensive, spiraling ramp at the tent’s periphery leading to the mezzanine floor. The existing Texaco terrazzo floor map of New York State was described by CREATE as being in “irreparable shambles” and would therefore be replaced with a similar terrazzo diagram of the Constellations and Solar System. The tensioned roof structure would be reinstated, but covered entirely with light blue translucent roof panels.

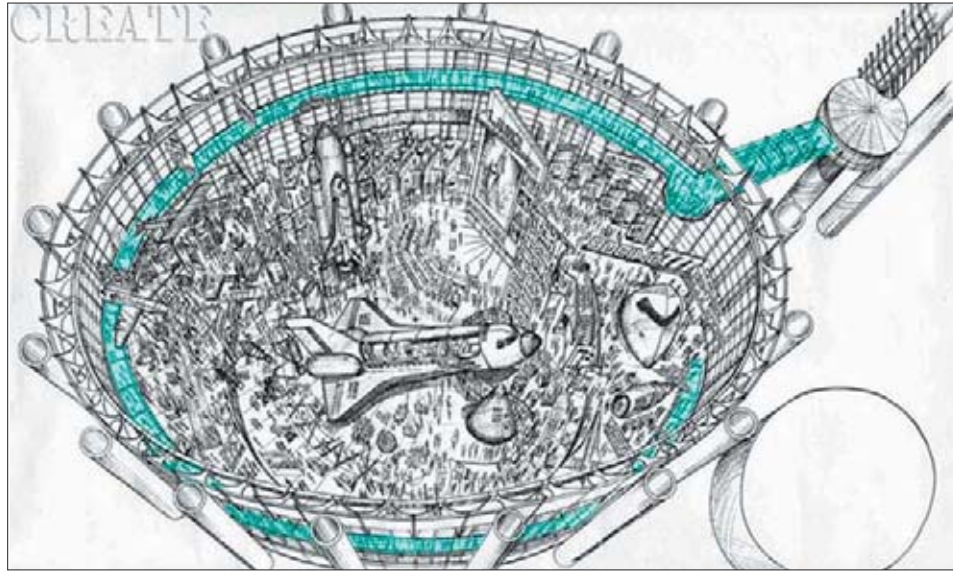


Figure 48 Interior rendering of proposed Air and Space Museum.

The interior space above would support exhibits that would be suspended from the roof, such as small historic aircraft, space capsules and a space shuttle. Several “hands-on” exhibits would be located on the mezzanine and ground levels. Here visitors would learn about the history of air travel, space shuttle launches, and principles of aerodynamic flight. The second highest tower would be renovated to simulate an air traffic control tower. At the highest tower, a small “space-age” restaurant would be constructed and would also act as an observation “look out” point. Designers claim the proposed use could be easily integrated with the neighboring and renovated Queens Theater in the Park (Q-TIP), where the space could be leased out occasionally to hold lecture series or other educational events.

CREATE Architecture, Planning and Design Arguments

The designers of the proposal have gone to great lengths to rally public support for their museum. Not only have they established internet sites outlining the pavilion’s history and their proposal in detail, they have hired lawyers to try working with Parks Department representatives and have attempted reaching out to political entities such as past and current Queens Borough Presidents. CREATE asserts that their proposal is “the most innovative and realistic use for the pavilion”. Previous proposals have not gained

momentum, they claim, partly because the expanse of open air within the tent has been seen as “useless space” and has been one of the greatest deterrents for development. Comparing the success and popularity of the Air and Space Museum in Washington D.C., they feel that the museum proposal is a viable one because it would be capable of attracting millions of visitors, and consequently generating significant monetary returns. The location, directly between New York City’s two major airports, is also said to perfectly tie in with the museum’s aeronautical theme.

According to Frankie Campione, principal of CREATE, one of the greatest obstacles the design firm has faced in the proposal is the pavilion’s structural instability. According to several engineering assessments, the deteriorated foundations demand stabilization to ensure continued safety. Until the foundations have been stabilized, the Air and Space Museum sponsors will not commit to endorsing the proposal, future funding or leasing options for the space. The Parks Department, however, has been hesitant about going forward with structural stabilization, not only because of the lack of funding, but also the fact that no sponsor has committed to helping fund and promote a re-use option. The cost estimate of the museum proposal stands at \$100 million, of which CREATE estimates \$6-\$10 million would be needed to stabilize of the foundations. The proposal has been divided into several phases, the first of which the Park has focused on considering, which would only encompass the stabilization of the structure’s foundations.

Parks Response

The Parks Department has expressed their interest in raising funds to complete first and foremost the stabilization of the structure, before consideration of exactly how the space will be re-used in the future. Representatives from the Park have also expressed an interest in entertaining other proposals beyond reusing the pavilion as an Air and Space Museum. Beyond the exorbitant projected rehabilitation costs, they claim the museum might not represent the most suitable re-use for the space or fit in with the

overall plan for the park. Estelle Cooper, assistant commissioner at Flushing Meadows-Corona Park, additionally made a public statement noting that the park already contained enough museums.³¹ The lack of sufficient nearby parking in the park is another concern which the Parks Department has expressed. A plan for converting the pavilion into a museum that potentially could draw millions of visitors, would need to plan for extra parking locations, especially if a large number of visitors would be traveling from greater distances.

Analysis and Critique of Air and Space Museum Proposal

From an historic preservation standpoint, any rehabilitation approach chosen for the Pavilion should aim first to preserve the site's integrity through as much physical fabric as possible; and secondly, to interpret and highlight the architectural, engineering, and historical significance of the site. At the same time, the rehabilitation team must juggle with understanding the site's context within the park and provide a viable and sustainable use for the existing community today. The following argument will show that aspects of CREATE's Air and Space Museum proposal fall short of meeting those requirements.

The proposal stands in the face of major opposition since a significant portion of the original fabric and form would need to be altered. Of the more significant alterations, CREATE has proposed to entirely enclose the Tent structure with a glass curtain wall, and similarly cover the openings at the observation tower platforms in glass. The original design intent of both was arguably to act as seasonal, quasi-outdoor structures. Certainly they would have only been used during the fair seasons, held both years between the months of April and October. By enclosing the Tent structure, a visitor would completely lose the sensation of entering the enormous covered space, though still feeling the connection to the outdoors. It is true that an "quasi-airy" feeling would still be attained by the transparency of the glass. However, the Tent would deceptively be read as a

building, rather than as a tent structure as originally intended.

Examining the use patterns in the park, the colder months between October and April are rarely visited by guests. As any re-use for the Pavilion will be met with less patronage in the winter months, rehabilitation does *not* necessitate its conversion to a year-round structure. Additionally, the physical alterations and additions to the structure are significant enough to be considered inflexible for other uses. As a public structure in the park, the pavilion should remain flexible enough to accommodate changes in how the pavilion is used and by whom.

The CREATE plan also calls for a spiraling glass ramp structure, the “Sky Walk”, which would allow patrons to enter from a glass tunnel connection, the “Sky Bridge”, at the lowest observation platform. The winding ramp could be viewed as too intrusive an element to the original design, namely because it would obstruct the open interior space. Conversely, the open space and roof structure should in fact be highlighted and accentuated, if at all possible. The experience of open, interior space discreetly demonstrates the power of the technical innovation, which went into the roof’s development, and pushed the bounds of architectural space without interior supports. Even though the roof design techniques of the 1960s has been surpassed by more innovative approaches, the patented virtually flutter-proof, economical, lightweight system nonetheless represents a milestone in the evolution of twentieth century roof structure technology. It remains unclear how the roof would be reinstated: whether the original tension cable structure would be restored and topped with replicate, colored plastic panels; whether the structural form would remain, though covered with a new type of enclosure system, such as fabric; or whether a completely new roof form would replace the existing one. Reinstating the roof with colorful panels would remain the most true to the original design, but appears inconsistent with the overall scheme for the museum.

The CREATE design team appears to view the pavilion as an open, abandoned shell, into which their museum could find an “ideal” home. With this scheme, the display and interpretation of the museum collection would be of foremost importance, with preservation of the structure only as a secondary consideration. However, this approach conflicts with good practice in conservation, especially when considering the site’s long-term sustainability. A conservation plan and policy should first be established for the site, which ultimately would dictate compatible uses; not the reverse.³² The CREATE plan begins with a potential tenant and tries to determine how the structure can be physically altered or adapted to meet the needs of the specific museum tenant and its collection. If the proposal was accepted, yet ultimately failed, the structures would not only be irreversibly physically altered, but finding a viable, specific “post-museum” use would be improbable.

According to representatives from the Park, the museum idea is also incompatible with the Park’s needs, which do not include the addition of another cultural institution.³³ Furthermore, they noted that the hands-on Science Museum and Space Park, with restored NASA shuttles that already exist in the park, fulfill the need for a science museum. Within the Park’s current context, the Air and Space Museum would only be redundant.³⁴ The PPS study of the park users found that the visitors to the cultural institutions usually were not the same group of users who came to visit the park. The Air and Space Museum would be targeting mainly visitors who would not necessarily go to the park otherwise. Therefore, it would be a poor asset to the park community that could be used by the broadest spectrum of users and bring the community together.

OTHER ADAPTIVE RE-USE POSSIBILITIES

The following possible adaptations aim to demonstrate that the pavilion can be viably reused, while respecting the original design and preserving the technical accomplishments and social history, which it represents. Given the pressures from

structural instability, lack of viable re-use proposals, and economic crisis, there is a need to safeguard the structure against insensitive rehabilitation or needless demolition. In general, the more specialized the use for which the structure was originally designed, the more difficult it will be to adaptively reuse.³⁵ In the case of the New York State Pavilion, the structure was overtly designed to showcase the state's achievements. More discreetly, however, the structure aimed to awe the general audience with the architectural possibilities of transforming and expanding open interior space. Such large buildings with multi-story open expanses can be the most challenging type for which to find new uses, because the majority of "space" does not necessarily represent rentable space. Finding a re-use can also be difficult for facilities when the context of the building has completely changed, where reuse schemes need to incorporate means to draw people to the site. Fortunately, Flushing Meadows-Corona Park is heavily used by over six million visitors during the summer months each year. Using this natural advantage, the pavilion needs to adopt multiple uses, which both attract diverse patrons and satisfy the everyday park user's needs. The following proposed uses all meet the requirements and goals previously outlined. They are not meant to represent an exhaustive list of possibilities, but should also further inspire other creative ideas.

Observation Towers

The original use of the observation towers was so specialized that it would be wisest to reinstate the original design intent. Each of the observation decks could be fully accessed by two elevators, just as they had been during the fair. The platforms would be used as "look out" spots, possibly with telescopes. With minor modifications, a small eating facility could be reinstated at the platform level that supported a snack bar originally. The towers would be the only such public observation possibility for the Queens Borough. Given that many of the park users come with their families, reopening the towers could be an especially attractive family activity.

Restaurant and Indoor Picnic Area

The interior of the tent could provide ideal space for a much needed public eating facility. Located centrally within the park near the Unisphere and the Queens Museum of Art, the Pavilion would be easily accessible to the numerous park users who congregate there in the summer. Similarly, the oversized space of the interior would be sufficient to accommodate large numbers of guests. Within the interior space, and possibly on the promenade above, impermanent tables, chairs and benches could be set up where guests would eat. This would be a similar arrangement to the original use of the ground floor during the fair. If the space is needed to be transformed into a performance venue, the public furniture could simply be moved to storage space located within the one story perimeter structure.

Within the one-story perimeter space, the park could establish a single restaurant, or possibly more appropriately, multiple restaurants, creating a “food court”. In the PPS survey conducted in 1986, park users expressed their dissatisfaction with food venues and concession carts. Many complained that the quality of the food was poor and that the types of food offered were not popular amongst the various ethnic groups. Establishing an “international” food court, featuring food representing multiple ethnicities, would creatively recognize and honor the multi-diversity which already exists within the park and the Queens borough as a whole. The perimeter space contains sufficient room to accommodate kitchen(s), storage and bathroom facilities. The bathroom facilities could be seen as public washrooms to be used by any of the park users. When approached with the proposal to use the space as an eating establishment, representatives from the Park expressed their concern about the fluctuation in the number of visitors on any one single day, where the number of weekend visitors is several times that of those on any given weekday.³⁶ To resolve this issue, an arrangement could be made to limit the hours or days that the facility would be in operation, at least as a food court. Additionally,

rents received from leasing the space could help financially support the maintenance and holding costs associated with the pavilion.

Used as a public space sponsored by the park, the tent could invite the public to bring their own food as well, creating a quasi-indoor picnic area. One of the most popular summertime activities identified within the park is picnicking, where it is common for guests to bring food with them from home.³⁷ When the park is at peak use, many users found, however, that there was insufficient shade to comfortably accommodate everyone wishing to picnic. With the roof re-established, the “indoor” space would provide shade from the hot summer, mid-day sun as well as refuge from wind and rain.

Venue for Ethnic Festivals and the Performing Arts

Similar to the design for the eating facilities, if the tent were to be used as an event center for ethnic festivities, the design would need to remain flexible and temporary. Similar to the concept of using impermanent public furniture for an eating facility, a main stage would need to be constructed only for the duration of the performance. Seating could be provided by collapsible temporary stands, similar to those manufactured for a typical high school gymnasium.³⁸ The stands would be brought out of storage and erected only for the duration of the performance, after which they could be collapsed and returned to storage. The seating could be set up on the ground floor interior as well as above from the promenade level, where one would receive a somewhat elevated view of the stage and performance.

As with ethnic festival activities, the tent could be used as a venue for other performing art programs such as music concerts and dance performances. One disadvantage of using the Pavilion as a musical venue is its proximity to LaGuardia Airport. Given the open-air configuration of the tent, there would be no way to regulate the acoustics and cover the noise from airplanes passing overhead.

Big Top Circus

Designed as the “Tent of Tomorrow”, one literal interpretation would be as a big top circus tent. Circus troupes have traditionally used the “big top tent” to house performances, even as short term venues. The scale and the “fun spirit” make the tent appropriate for such a performance. The same temporary seating configuration used for other music and dance performances could be used for the circus. Most significantly, leasing the space temporarily to a circus such as Barnum and Bailey would not only be revenue generating, but would also cater to families who visit the park with children.

Film Industry

The film industry has already been involved with the Pavilion during the filming of the movie “The Wiz” and more recently the blockbuster “Men In Black”. The Pavilion could continue its relationship with the film industry and benefit not only as a backdrop, but possibly in another capacity as a filming set.³⁹ Large, multi-story, covered space is often considered ideal for shooting scenes with special effects. In the past, similarly scaled structures such as armories have chosen this option and been very successful.

Chapter 7 Endnotes

- ¹ Project for Public Spaces. "Flushing Meadows Corona Park: Use and Needs Analysis." April 18, 1986, p. 3.
- ² Bill Gotthelf and Estelle Cooper. Personal Interview. February 27, 2004.
- ³ Ibid.
- ⁴ Project for Public Spaces. "Flushing Meadows Corona Park: Use and Needs Analysis." April 18, 1986, p. 2.
- ⁵ Ibid, p. 15.
- ⁶ Ibid, p. 16.
- ⁷ Ibid, pp. 18-19.
- ⁸ According to compiled 2000 census records as published on website:
<http://www.census.gov/ronyc/www/04%20Census%20Test/04%20Questions.htm>
- ⁹ Census statistics as published on U.S Census website:
<http://quickfacts.census.gov/qfd/states/36/36081.html>
- ¹⁰ Census statistics as published on U.S. Census website:
<http://quickfacts.census.gov/qfd/states/36/36081.html>
- ¹¹ Project for Public Spaces. "Flushing Meadows Corona Park: Use and Needs Analysis." April 18, 1986, p. 19.
- ¹² Ibid.
- ¹³ Ibid, p. 20.
- ¹⁴ Ibid, p. 13.
- ¹⁵ [Figure II-VI-1a: Events Location Alternative 'A'] Ibid, p. 110.
- ¹⁶ Ibid, p. 107.
- ¹⁷ Ibid, p. 70.
- ¹⁸ Ibid, p. 22.
- ¹⁹ Ibid, p. 99.
- ²⁰ Ibid, p. 100.
- ²¹ Ibid, p. 81.
- ²² Bill Gotthelf and Estelle Cooper. Personal Interview. February 27, 2004.
- ²³ Project for Public Spaces. Ibid, p. 25.
- ²⁴ Jeffrey Rosenstock. Personal Interview. February 27, 2004.
- ²⁵ Ibid.
- ²⁶ Ibid.
- ²⁷ Ibid.
- ²⁸ Sara Caples. Telephone Interview. March 2, 2004.
- ²⁹ Ibid.
- ³⁰ Ibid.
- ³¹ Stephen McGuire, "Museum Plans or Flight of Fantasy: A New Dream For A World's Fair Derelict" Queens Tribune September 6, 2001 as featured on the internet website http://www.queenstribune.com/archives/featurearchive/feature2001/0906/feature_story.html
- ³² Frank Matero, "The Conservation of Immovable Cultural Property: Ethical and Practical Dilemmas", Journal of the American Institute for Conservation, 32 (1993):17.

Chapter 7 Endnotes (continued)

³³ Bill Gotthelf and Estelle Cooper. Personal Interview. February 27, 2004.

³⁴ Ibid.

³⁵ Mike Jackson. Telephone Interview. February 2, 2004.

³⁶ Bill Gotthelf and Estelle Cooper. Personal Interview. February 27, 2004.

³⁷ Project for Public Spaces. Ibid, p. 21.

³⁸ Sunset Productions, Inc., Fairfield, Pennsylvania.

³⁹ Mike Jackson. Telephone Interview. February 2, 2004.

Although originally designed to be temporary, the New York State Pavilion has made significant contributions to twentieth-century social, architectural and technological history, all of which merit its preservation. One of the few remaining remnants from the 1964-65 World's Fair, the Pavilion acts to remind visitors of the optimism and post-war progress that the fair aimed to flaunt. Philip Johnson, the well-known twentieth century architect, is credited with the design, which earned significant praise from architectural critics and was popular with visitors at the fair. The scale and construction of the Pavilion were also record breaking at the time. The bicycle wheel roof represented a structural engineering feat, whose design went on to influence other designs for record-breaking, unobstructed interior space.

Despite these contributions, over the nearly forty years since the property was passed from the hands of New York State to the City of New York, the Pavilion has acted essentially as a white elephant structure. The state appears to have passed and partly to avoid having to finance the structure's intended, yet extremely costly, demolition. The upkeep expense over the years represented a tremendous financial burden on the New York City Department of Parks and Recreation, which could not be combated with the minimal public intervention funds available. The decision to delay action until a later date, even minimal maintenance in some cases, only created a more serious and expensive situation. Based on the findings of all of the sub-structural investigations conducted to date, the foundation's deterioration demands immediate stabilization efforts. It will be important to raise awareness of the structure's significance and its immediate need for both emergency stabilization and regular maintenance, lest the site fall into demolition by neglect.

The Pavilion's architect, Philip Johnson, was once asked how he felt when he

would pass the old fairgrounds as drove on the Grand Central Parkway and whether it disturbed him that it was no longer in use. He replied:

“I feel very funny. Nothing disturbs me about it – it’s a ruin. I like ruins. It just has those cables – no roof. It’s a folly now. It’s rather nice.”¹

One possible approach to preserving the structure’s integrity certainly would be to focus on preserving its current dilapidated state, which its original designer claims to enjoy, by only stabilizing and minimally maintaining the site as an evocative modern day ruin. However, given the multi-million dollar expense of tax payer dollars that the Tent’s stabilization would require, it seems the city would be wiser to invest in the property as a long-term useable asset for the existing and future community.

The key to successfully breathing life into the Tent and Towers will be to generate funding that can supplement the city’s ability to finance the project. Fortunately, the Park administration has already begun to take such steps by holding a gala event fundraiser. Even more public awareness will need to be drawn to the immediacy of the situation and the danger that the sub-structural instability poses. As mentioned earlier, if New York City wins the 2012 Olympic bid, however uncertain, the private sponsorship which may follow may be the greatest and swiftest force to finance Pavilion’s rehabilitation. In the meantime, steps may be taken such as applying for listing on the National Trust’s nationwide 11 Most Endangered List, which may encourage additional, outside sponsorship.

Given the tremendous expense that a full restoration would entail, work may need to be divided into stages over the course of several years. The Park’s priority should be to first stabilize the columns supporting the tent and the foundations beneath the one-story perimeter structure. Another possible early work could include the relatively less costly rehabilitation of the towers. Not only would opening the observation towers lead to the increased exposure that the site needs, but the possibility remains for the Towers to generate funds, through visitation and also possibly by renting space to cellular telephone

service providers. As the roof structure is one of the most significant design and historical elements of the Pavilion, a longer-term goal for the Park should be to reinstate the roof with replica sandwich panels. Covering the bicycle wheel frame will fully capture the scale of the Tent, and will also provide shelter for interior use.

Within the overall context of Flushing Meadows-Corona Park, the Pavilion possesses tremendous potential to thrive as a hub for activity, given both its visual dominance over the park as well as its exposure to great numbers of visitors in the summer months. The Pavilion could be suitably transformed to fulfill many of those Park users' expressed concerns, including the need for a facility to house festivals and events as well as more abundant and better eating facilities and bathrooms in the park. Re-use options, which preserve the structure's integrity and satisfy park users, are abundant. The pavilion could work well if transformed into an indoor eating and picnic facility, a venue for performances and possibly a circus, and could even double as a covered ice skating rink in the winter months as the weather begins to get colder. The key to the success of reusing the Pavilion will lie in further market studies and the Parks Departments ability to market those uses well and to coordinate with cultural events at the already established, successful and growing Theater in the Park operation, and even possibly the nearby Queens Museum of Art.

Regardless of the use chosen, it will be important to highlight one of the Tent's greatest asset: its scale and quasi-indoor massive covered space. The genius behind the Tent's design is that it provides shelter, while acting as a shell of a building with space great enough to accommodate a variety of activities. The flexibility that the interior of the Tent of Tomorrow affords should be respected. The original form need not be compromised by designing additions or modifications, which permanently alter the overall form, material and scale. This can easily be accomplished by using the interior space to accommodate a variety of uses. As a periodic performance venue, the park can

rely on portable staging and seating to meet the seasonal needs as they arise.

Hopefully the Pavilion's state of emergency will draw the more wide spread attention it deserves and needs to prosper. Further action should be taken to save and protect the structure by being recognized as a significant, local "recent past" New York Landmark. By rehabilitating the Pavilion, the Park will put one of their most extraordinary existing assets to use and give back to the community, instead of simply accepting the structure as a financial and visual burden. The Pavilion's preservation will also pay tribute to and preserve the borough's connection to the 1964-65 World's Fair, one of the most important twentieth-century historical events associated with Queens, New York.

Endnote

¹ Philip Johnson as quoted in: Hilary Lewis and John O'Connor, eds. *Philip Johnson: The Architect in His Own Words*. New York: Rizzoli International Publications, 1994: 83.

- Alden, Robert. "City Asked to Raze State, U.S. Pavilions" *The New York Times*. July 24, 1965:1.
- Benjamin, Susan. "Underage Landmarks." *Inland Architect* Jan/Feb 1988: 4-6.
- "Bill Gives NY Pavilion To the City." *L.I. Press*. June 11, 1965:12.
- Blake, Peter. *Philip Johnson*, Basel, Berlin, Boston: Birkhaeuser, 1997, 101-02.
- Bletter, Rosemarie Haag, et. al. *Remembering the Future – The New York World's Fair from 1939-64*. New York: Rizzoli International, 1989.
- Bronson, Susan D., and Thomas C. Jester, "Conserving the Built Heritage of the Modern Era: Recent Developments and Ongoing Challenges," *APT Bulletin* 28:4 (1997), 4-12.
- "Bicycle Wheels." *Progressive Architecture* (February 1961): 144-55.
- Campione, Frankie. Telephone interview. November 4, 2003.
- "City Can Keep State Pavilion at Fair." *L.I. Press*. July 11, 1965:3.
- "City Council Urged to Act To Save Our State Pavilion." *L.I. Press*. July 27, 1965:1.
- "City, Fair Differ On State Pavilion." *N.Y. World Telegram*. July 23, 1965.
- "City Urged to Raze State And U.S. Pavilions at Fair." *L.I. Star Journal*. July 22, 1965: 1.
- Clarity, James F. "Lindsay: Keep Pavilions" *New York Herald Tribune*. September 2, 1965:2.
- Comstock, Henry B. "They Built the Roof on the Ground." *Popular Science*. March 1964: 98-101.
- Cooper, Estelle. Personal Interview. February 27, 2004.
- DeVido, Alfredo. Telephone interview. October 29, 2003.
- Dolkart, Andrew S. and Matthew A. Postal. *New York City Landmarks*. New Jersey: John Wiley and Sons, 2004.
- Dunn, Alan. [Cartoon] *The New Yorker*. February 15, 1964. p. 40.
- Dunlap, David W. "A Queens Park's Past Shapes Its Future" *The New York Times*. August 26, 2001:11:1.

- Dyer, Michael. "'Roller Round for LI' Skaters Will Take Over State Pavillion" *Long Island Post*. March 1970.
- "Fair News" Official Bulletin of the New York World's Fair. 1964/1965 Vol. 1, No. 5 - October 16, 1962.
- "The Fair Reopens" *National Geographic*. April 1965: 503-529.
- Fitzgerald, F. Scott. *The Great Gatsby*. New York : Charles Scribner's Sons, 1925: 23.
- Freeman, Allen, "Unwelcome Centers," *Preservation*. 49 (July-August 1997), 16-17
- _____, and Kristin Palm, "Old Before Their Time," *Preservation*. 53 (July-August 2001), 12, 14.
- Freitag, Amy. Personal interview. December 19, 2003.
- Geiger Engineers. "New York State Pavilion Inspection" [Unpublished engineering inspection report], Bellingham New York, November 17, 1992 (revised December 15, 1992).
- Gossen, Paul. Telephone interview. February 4, 2004.
- Gotthelf, Bill. Personal Interview. February 27, 2004.
- Grad, Shelby. "'Googie Style Goes From Warp Speed to Time Warp.'" *The Los Angeles Times*. September 18, 1995:3.
- Grattan, David W., editor. *Saving the Twentieth Century: The Conservation of Modern Materials*. Proceedings of Conference Symposium 1991, "Saving the Twentieth Century," Ottawa, Ontario, Canada. Ottawa, Ontario, Canada: Canadian Conservation Institute, (1993).
- Hamm, Manfred et al. *Dead Tech*. Berlin:Nicolaische Verlagsbuchhandlung, 1982:8.
- Harris, Neil, et. al. *Grand Illusions: Chicago's World Fair of 1893*. Chicago: Chicago Historical Society, 1993.
- Hine, Thomas. *Populuxe*. New York:Alfred A. Knopf, 1986: 159, 167-168.
- Hitchcock, Henry-Russell, *Philip Johnson, Architecture 1949-1965*. New York: Holt Reinhardt and Winston, 1966, 106-09.
- Hsiao, Iwen. "Skating Under the Stars? Closed Roller Rink May Go Roofless" *Long Island Post*. July 24, 1974.

- Huxtable, Ada Louise. "Architecture: Chaos of Good, Bad and Joyful." *New York Times* (April 22, 1964): 25.
- Iovine, Julie V. "In Olympian Dreams, Designs for the City; An Architectural Exhibition Showcases New York's Bid for the 2012 Games" *New York Times* January 14, 2004. Section E , Page 1.
- Isenstadt, Sandy, "Three Problems in Preserving the Postwar Landscape," *Forum Journal*. 15 (Spring 2001), 35-42.
- Jackson, John Brinkerhoff. *The Necessity for Ruins*. Amherst: University of Massachussetts, 1980.
- Jackson, Mike. "Preserving What's New." *APT Bulletin* 23, no. 2 (1991):7-11.
- Jackson, Mike. Telephone interview. February 2, 2004.
- Jencks, Charles. *Post-Modernism: The New Classicism in Art and Architecture*. New York: Rizzoli, 1987.
- Jester, Thomas C., editor. *Twentieth Century Building Materials: History and Conservation*. New York, New York: McGraw-Hill, 1995.
- Johnson, Philip. "Young Artists at the Fair and at Lincoln Center." *Art in America* 52, no. 4 (1964): 112-21.
- Kalwall Corporation. "Translucent Roof of the U.S. Pavilion." and "Roof Construction, American Pavilion, Brussels World's Fair." Marketing material dated March 19, 1958.
- Kelley, Stephen J. "Preserving our Past for the Future." *ASTM Standardization News* (December, 1990):28-30.
- Kemp, Emory L. and Theodore Anton Sande. *Historic Oreservation of Engineering Works*. New York: American Society of Civil Engineers, 1981.
- Lee, Yvonne S. "The Dilemma of 'Listing' Modern Buildings." *Context: The Journal of Association of Conservation Officers* 44, (Letchworth, England: published for the Association of Conservation Officers by Hall-McCartney, December 1994). *Reprinted courtesy of the Association of Conservation Officers*.
- Lewis, Hillary and John O'Connor, eds. *Philip Johnson: The Architect in His Own Words*. New York: Rizolli International Publications, 1994.
- Lewis, Hillary. *The Architecture of Philip Johnson*. Boston : Bulfinch Press, 2002.

Liebs, Chester H. "Remembering Our Not-So-Distant Past?" *Historic Preservation* (January-March 1978): 30-34.

Longstreth, Richard. "The Significance of the Recent Past." *APT Bulletin* 23, no.2 (1991): 12-24.

_____, "I Can't See It; I Don't Understand It; and It Doesn't Look Old to Me," *Historic Preservation Forum* 10 (Fall 1995), 6-15.

_____, "When the Present Becomes the Past," in Antoinette J. Lee, ed. *Past Meets Future: Saving America's Historic Environments*, Washington: Preservation Press, 1992, 213-225.

"Lots to Do at State Pavilion." *N.Y. World Telegram*. August 11, 1964:24.

Lynch, Michael F. "What Are We Going to Do with the Recent Past In The Not Too Distant Future?" *APT Bulletin* 23, no.2 (1991):6.

Lyon, Peter. "A Glorious Nightmare," *Holiday* (July 1964) p. 50.

Matero, Frank. "The Conservation of Immovable Cultural Property: Ethical and Practical Dilemmas." *Journal of the American Institute for Conservation*, 32 (1993):17.

"McDougal Joins Fight for Pavilion." *L.I. Press*. August 13, 1965:4.

McGrath, Heather Lynn. *Sea View Hospital: The Identification of Potential Models for the Rehabilitation and Reuse of Abandoned Large Scale Hospital Complexes in New York*. Theses (M.S. Historic Preservation) – University of Pennsylvania, 2001.

McGuire, Steven. "Museum Plans or Flight of Fantasy: A New Dream For A World's Fair Derelict," *Queens Tribune* (September 6, 2001).

Melrod, George. "Technology as Themepark: A Nutshell History of the World's Fairs," *New Observations* (June 1988) p.4.

Miller, William C., "I'm Not Ugly...I Have International Flair," *Forum Journal* 15 (Fall 2000), 42-47.

Mosquera, Willy. Personal interview. November 5, 2003.

New York State Education Magazine, June 1964.

Noble, Charles. *Philip Johnson*. London: Thames and Hudson, 1972.

Otto, Frei. *Tensile Structures, Volume Two: Cable Structures*. Cambridge: The MIT Press. 1969, p. 81.

- Perkins, Bradford, "Preserving the Landmarks of the Modern Movement," *Architectural Record* 168 (July 1981), 108-113.
- Perry, Ellen et. al. "The Busy Architect's Guide to the Worlds Fair." *Progressive Architecture*. Volume XLV, No. 10 (October 1964) pp.160-167.
- Philip, Drew. *Tensile Architecture*. Boulder: West View Press. 1979, p. 161.
- "Pilings Root of Pavilion Battle." *L.I. Star Journal*. August 5, 1965:2.
- "Pilings Hit as Alibi To Dump Pavilion." *L.I. Press*. August 10, 1965:3.
- "Preserving the Recent Past" Washington DC: National Preservation Education Council, (1995).
- "Press Fight To Save Pavilion." *L.I. Press*. September 4, 1965:2.
- Project for Public Spaces, Inc. "Flushing Meadows-Corona Park: Use and Needs Analysis" Final report submitted to the City of New York, Department of Parks and Recreation, 1986.
- Rappaport, Nina. "Preserving Modern Architecture in the USA," *DOCOMOMO Journal* 11 (June 1994):39-42.
- Rappaport, Nina, "Preserving the Monuments of Modernism," *Historic Preservation News*, December 1992, 20-21.
- Reiser, Howard. "Old Pilings Aid Fight for Pavilion" *L.I. Press* p. 1 August 12, 1965.
- Rosenstock, Jeffrey. Telephone interview. February 24, 2004.
- "Save State, U.S. Pavilions, Mayor Urged." *L.I. Press*. September 3, 1965: 3.
- Sherfy, Marcella and W. Ray Luce. *Guidelines For Evaluating and Nominating Properties That Have Achieved Significance Within The Past Fifty Years*. Washington D.C.: National Park Service. 1979; revised 1990, 1996, 1998.
- Schlereth, Thomas J. "Collecting Today For Tomorrow." *Cultural Resource Management* 16, no. 6 (1993):8-11.
- Schmertz, Mildred F. "Architecture at the New York World's Fair." *Architectural Record* Volume 136, No. 1 (July 1964): 143-150.
- Schull, Carol D., and Beth L. Savage, "Trends in Recognizing Places for Significance in the Recent Past," *Historic Preservation Forum* 10 (Fall 1995), 44-53.
- Schulze, Frank. *Philip Johnson: Life and Work*. New York: Alfred A. Knopf Inc., 1994.

- Shiffer, Rebecca A., "The Recent Past," *CRM* 18:8 (1995), 3-4.
- Scully, Vincent J., Jr., "If This Is Architecture, God Help Us." *Life*, July 31, 1964, p. 9.
- Shapiro, Hal. "Visitors to Fair All Agree: Keep State Pavilion." *L.I. Press* July 28, 1965: 1.
- _____. "N.Y. Pavilion Is Ours!" *L.I. Star Journal* p. 1 October 14, 1965.
- Sherfy, Marcella and W. Ray Luce. *National Register Bulletin 22: Guidelines for Evaluating and Nominating Properties that have achieved Significance Within the Last Fifty Years*, revised edition. Washington DC: US Department of the Interior, National Park Service, Interagency Resources Division (1989).
- Shiffer, Rebecca A. "Cultural Resources from the Recent Past." *Cultural Resource Management* 16, no.6 (1993): 1-11.
- Slaton, Deborah and Rebecca A. Shiffer, eds., *Preserving the Recent Past*, Washington: Historic Preservation Education Foundation, 1995.
- _____, and William G. Foulks, eds. *Preserving the Recent Past 2*, Washington: Historic Preservation Education Foundation, National Park Service, and Association for Preservation Technology International, 2000.
- Sousa, Stan. "Roller Skaters Shut Out: City Closes Rink for Hazardous Roof" *Long Island Post*, July 20, 1974.
- Stern, Robert A. M., Thomas Mellins and David Fishman. *New York 1960: Architecture and Urbanism Between the Second World War and Bicentennial*. New York: Monacelli Press, 1995, 1027-39.
- Striner, Richard. "Preservation and the Recent Past." *National Trust for Historic Preservation Information Booklet No. 69* (1993): 1-23.
- John Ciardullo Associates. "The Structural Stabilization of the New York State Pavilion" [Report prepared for the New York City Department of Parks and Recreation] New York, New York. October 2, 1996.
- "TBTA May Save State Pavilion." *L.I. Star Journal*. August 19, 1965:1.
- "There's a Need, Definitely!" *L.I. Press*. July 25, 1965:22.
- "32 Jacks Raise 2,000 Ton Roof" and "The Pavilions: With Structures Like These, Who Needs Exhibits?" *Engineering News Record*. October 31, 1963: 15, 22-29.
- Thornton, Charles. Telephone interview. February 4, 2004.

Wallock, Leonard. *New York: Culture Capital of the World 1940-1965*. New York: Rizolli International, 1988.

Weiland, Edward. "LI Officials Condemn Plan To Raze NY State Pavilion" *L.I. Press* p. 1 July 25, 1965.

_____. "Save Our Eiffel Tower! State Pavilion at Fair Is A Symbol" *L.I. Star Journal* p. 1 July 26, 1965.

_____. "City Council Eyes Bid to Save Pavilion" *L.I. Press* p. 1 July 29, 1965.

_____. "State Pavilion Foes Waver: 2 City Commissioners May Drop Opposition" *L.I. Press* p. 1 July 30, 1965.

_____. "Save Our State Pavilion Moses Urges" *L.I. Press* p. 1 August 1, 1965.

_____. "Civic Leaders Rally Behind State Pavilion" *L.I. Press* p. 1 August 2, 1965.

_____. "Save N.Y. Pavilion, Rock, Wilson Urge" *L.I. Press* p. 1 August 15, 1965.

A

Peter Agostini 30
 Air and Space Museum 2, 104, 113, 115,
 116, 117, 119
 Alfredo DeVido 37, 41
 Alfredo DeVido Architects 37
 authenticity 65, 84

B

bicycle wheel roof 14, 52, 78, 79, 80, 82,
 126
 big top circus 123
 Brooklyn Ash Removal Company 4
 building code 16, 32, 69, 70, 86, 91
 Bureau of International Expositions 7

C

Caples Jefferson 112
 Cellular telephone transmission equipment
 100
 John Chamberlain 30
 CMU walls 48
 concrete 1, 14, 15, 16, 17, 18, 20, 23, 32,
 33, 37, 44, 45, 46, 48, 50, 56, 67, 68,
 83, 88, 89, 93, 109, 112
 concrete masonry block 17
 consolidation 65
 corrosion 42, 49, 51, 53, 54, 56, 57, 89, 90
 cracking 46, 47, 48, 49
 CREATE Architecture, Planning, and
 Design 13, 114, 115, 116, 117, 118,
 119

D

deferred maintenance 2, 76
 demolition 7, 32, 63, 64, 69, 71, 87, 92,
 97, 112, 120, 126
 Department of Cultural Affairs 37, 59, 112
 design and functionalism 66
 detail failure 66

E

Edward Durell Stone 78, 79
 Eiffel Tower 34, 71, 72, 76, 77, 136
 escalator 17
 ethnic festivals 106, 107
 Exposition Universelle 71, 72

F

failure of the building material 66
 Fair Corporation 6, 16, 24, 25, 31
 film industry 36, 123
 Flushing Meadows-Corona Park 1, 5, 6,
 40, 43, 99, 102, 104, 105, 109, 117,
 120, 128, 134
 food concession 107, 108
 Richard Foster 11
 fundraising 56, 95, 99

G

Geiger Engineers 43, 59, 60, 61, 131
 Googie architecture 20, 21

H

Ada Louise Huxtable 9, 23, 24, 25

I

Robert Indiana 30
 intervention 1, 2, 44, 63, 86, 87, 88, 92,
 109, 126

J

Philip Johnson 10
 John Ciardullo and Associates 43, 60

K

Kalwall 14, 15, 19, 35, 67, 79, 83, 85, 90,
 91, 94, 132
 Ellsworth Kelly 30
 kiddy ride 28

L

landmark 9, 10, 11, 95, 96, 99
Roy Lichtenstein 30
Alexander Lieberman 30
life span 66

M

maintenance 1, 2, 32, 36, 42, 47, 51, 54,
55, 66, 68, 76, 86, 87, 88, 89, 90, 92,
93, 96, 97, 101, 122, 126
maintenance failure 66, 68
Robert Mallary 30
Men In Black 36, 37, 41, 123
modern ruin 2, 43, 88
Robert Moses 4, 31, 32
Museum of Science and Industry 71, 73

N

New York City Department of Parks and
Recreation 6, 43, 87, 126, 135
New York Landmarks Preservation Com-
mission 10, 103
New York Times 9, 23, 24, 25, 40, 130,
132
Niedermeyer-Martin Company 15
1964-65 World's Fair 2, 8, 21, 22, 96, 111,
126, 129

O

Observation Towers 1, 18, 19, 27, 29, 37,
43, 44, 55, 59, 69, 77, 92, 104, 112,
120
original physical fabric 66
owner's objectives 98

P

Palace of Fine Arts 71, 73, 77
patina of age 66
pigeons 53
platforms 12, 18, 19, 22, 29, 36, 38, 54,
55, 56, 57, 88, 90, 100, 101, 117, 120
Pop Art 28, 30, 31
postwar 62, 64, 66, 69
promenade 17, 29, 49, 50, 54, 89, 92, 121,
122

Q

quasi-indoor picnic area 122
Queens 1, 3, 4, 6, 10, 32, 34, 38, 39, 47,
51, 59, 60, 77, 100, 104, 106, 107,
112, 113, 115, 120, 121, 124, 128,
129, 130, 133
Queens Museum of Art 39, 47, 106, 121,
128
Queens Theater in the Park 1, 38, 39, 51,
59, 104, 106, 112, 115

R

Robert Rauschenberg 30
recent past 2, 62, 63, 64, 65, 66, 129
reconstruction 32, 65, 73, 87
replacement 65, 90, 91
restoration 37, 57, 59, 60, 61, 65, 89, 91,
104, 127
restrooms 17, 108
Rockefeller 10, 18, 27, 31, 32, 34
roof 1, 14, 15, 19, 22, 23, 35, 36, 38, 45,
46, 52, 53, 54, 59, 62, 77, 78, 79,
80, 81, 82, 83, 85, 88, 89, 90, 91, 96,
100, 110, 114, 115, 118, 122, 126,
127, 128
James Rosenquist 30

S

William Shea 32
Shea Stadium 105, 106
Skating Rink 35
Sky Streak 19, 29, 36, 58, 77, 90
slip-cast concrete columns 14
Seattle Space Needle 22, 71, 76, 77
spread footings 48
stabilization 60, 61, 86, 88, 93, 97, 98, 99,
100, 101, 104, 109, 116, 126, 127
stairs 17, 42, 53, 54, 55, 57
steel cables 14, 51, 53, 57
steel H-piles 16, 20, 45, 97
step cracking 48, 49
Edward Durell Stone 78
sustainability 65
sustainability 65, 66, 92, 119

T

temporary 2, 15, 27, 32, 33, 34, 44, 62, 70,
71, 73, 77, 91, 92, 122, 123, 126
tension ring 14, 51, 52, 53, 78, 79, 81, 82
Tent of Tomorrow 1, 12, 13, 14, 15, 16, 17,
20, 21, 27, 28, 29, 32, 35, 38, 43, 44,
46, 51, 53, 55, 57, 59, 77, 80, 81, 82,
87, 88, 92, 97, 104, 109, 110, 112,
113, 117, 123, 127, 128
terrazzo 17, 18, 21, 22, 27, 35, 42, 46, 47,
48, 57, 114
Texaco Map 18
Theaterama 12, 13, 20, 27, 30, 31, 32, 37,
38, 39, 44, 59, 112
13 Most Wanted Men lithograph 30
throw-away architecture 64
2012 Olympics 102

U

U.S. Steel Corporation 10
Unisphere 9, 10, 96, 108, 121
USTA tennis center 43
Utica Auditorium 79, 80, 81

V

vegetation 47, 48

W

Andy Warhol 30
white elephant 87, 126
Lt. Governor Malcolm Wilson 32
The Wiz 36
wooden piles 15, 16, 44, 45, 59, 75, 76
World's Columbian Exposition 73, 74, 77,
World's Fair Anniversary Gala 99

Z

Lev Zetlin 12, 25, 33, 79, 80
zoo 28