Eero Saarinen

Architect & furniture designer.
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Contents

1.Introduction

Eero Saarinen.

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One New Year's Day at 8 o'clock in the morning, Eero Saarinen arrived at his office, looked around and, seeing only his assistant Kevin Roche, said, "Where the hell is everybody?" Roche then had to remind Saarinen that it was a major holiday. But most people who worked or lived with Eero Saarinen would probably say that was par for the course, as he was a highly ambitious and extremely motivated architect - we might say today that his work gave him "tunnel vision".

Saarinen's passion for architecture and design, recognized from a very early age, led him to develop his personal, often sculptural, direction and an adventurous spirit. In a rather brief career, Saarinen's imaginative daring produced an extraordinary set of highly futuristic buildings of virtually every possible type, whose impressive stature and visionary designs mean that they still seem to be ahead of their time and have largely remained unaltered more than a half-century later.

Saarinen's works, like the St. Louis Gateway Arch and TWA Terminal, often are very sculptural - a quality likely derived from both his mother's influence and his own brief training in sculpture - and structurally adventurous, defying our expectations of how they must stand up. They also exploit the possibilities of modern materials - particularly concrete - and engineering know-how to the fullest extent.

Though ostensibly an architect of the International Style, whose mature period coincides with the heyday of the movement, Saarinen's genius lies in his focus on finding unique solutions for each individual commission. Occasionally, as with his GM Technical Center, he could employ the International Style perfectly, but Saarinen is often called a "second-generation" modernist for the way he moved beyond the rigid glass-box aesthetic pioneered by Ludwig Mies van der Rohe and Walter Gropius.

Saarinen's buildings, including the Ingalls Ice Rink and CBS Building, tend to resonate with familiar themes within human experience, evoking relationships with structures and environments that may at first be unexpected, but harmonize well with their purposes upon further exploration. Saarinen's keen grasp of history and culture helped him understand the context in which his buildings would be inserted, and the strong connections that they make with their surroundings points to why nearly all of his major buildings have survived nearly unchanged to the present day.

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2. Career

Childhood

Eero Saarinen was, along with Louis Kahn, one of the two great European emigres who would become titans of midcentury American architecture. Both were born in areas around the Baltic Sea that, at the time of their births, were technically part of Russia, though Saarinen's family was decidedly Finnish (Finland became independent of Russia during the 1917 Russian Revolution), and both immigrated to the United States as children.

Unlike Kahn, who was born into very modest circumstances, Eero Saarinen (whose first name translates to "Eric" in English) came from a very artistically-inclined and cultured family. His father Eliel Saarinen - with whom he shared his birthday, August 20 - was a highly accomplished Finnish architect, one of the masters of Art Nouveau in Finland, who had designed the central railway station in Helsinki and, along with two other architects, built a combination architects' house and studio complex called Hvittrask, in the woods east of Helsinki, in 1903.

Eliel's second wife Loja, Eero's mother and sister of Eliel's former partner, was herself an accomplished sculptor. The Saarinens were friends with many cultural luminaries of the period. Eliel was very close to the composer Jan Sibelius, and on at least one occasion the family welcomed the Marxist writer Maxim Gorky into their home to help him evade Russian authorities.

Eero grew up literally in his father's architectural office. Often as a very young child he would be sitting under his father's drafting table drawing while his father would be working on commissions right above his head. Reputedly, every day he would ask one of his father's draftsmen, named Otto, to draw him a horse. Later, when Eero interviewed potential employees in his own office, he would have them draw him a horse, claiming that he could tell how good a draftsmen anyone was from about two or three strokes of sketching the figure.

Education

The Saarinens immigrated to the United States in 1923, after Eliel's entry in the famed Chicago Tribune Tower competition won second place. (The same week, Eero won a matchstick design contest sponsored by a Swedish newspaper, which netted him 30 Swedish kroner, the equivalent of about $8 at the time.) Two years later, Eliel accepted an invitation to design the campus for the Cranbrook Academy of Art, just outside of Detroit, Michigan; in 1932 he would later become head of the institution. Eero, predictably, matriculated to Cranbrook, where he made friends with

Charles Eames, Ray Kaiser, and Florence Schust. (Kaiser would later marry Eames to form the famous design duo, and Schust would later marry Hans Knoll and become head of the Knoll furniture company, for which Saarinen would produce some of his most famous pieces.) In 1929, Eero entered the Academie de la Grande Chaumiere in Paris to study sculpture, his only real foray into anything besides architecture and interior design.

Between 1932-34, Eero studied at the Yale School of Architecture, where he won a small travel fellowship that allowed him to journey after finishing his studies to Europe and North Africa, where he became intimately acquainted with the architectural history of these various regions. He ended up in his native Finland, where he briefly got a job for a year in 1935 working in a local architecture firm.

Early Work

In 1936 Eero returned to the United States and began to teach at Cranbrook and work in his father's architecture firm in Bloomfield Hills, where he would remain until 1950. In 1939 he married the sculptor Lilian Swann, with whom he eventually had two children, Eric and Susan. Eric later went on to become a filmmaker, producing the 2016 documentary for PBS about his father, Eero Saarinen: The Architect Who Saw The Future. Lilian was, to be certain, a key influence on Eero, inspiring him to maintain a sculptural, plastic quality in his designs and sometimes contributing relief sculpture to Eliel and Eero's architectural projects. Their marriage, however, was not a particularly happy one. Eero's energies were completely focused on his work, and it was normal for him to spend virtually no time with his family, staying at the office until very late at night and leaving Lilian to look after the children and tend to domestic duties. Eric later recalled, "I always resented my father for literally abandoning my mother, my sister, and me. But I never saw it from his point of view." Eero and Lilian divorced in 1953.

1940 was a banner year for Saarinen. He officially became an American citizen, but even more importantly, he partnered with his friend Charles Eames in entering a competition at the Museum of Modern Art in New York for an upcoming exhibition, Organic Design in Home Furnishings. Saarinen and Eames' entries won in the categories for both chair design (for the famed "Organic Chair") and the living room, for which they were awarded contracts for manufacture and distribution with major department stores (the first day of sales coincided with the exhibition's opening in 1941). This gave Saarinen his first national exposure as a designer independent of his father. In the late 1940s, Eames and Saarinen would both briefly work with John Entenza, editor of Arts and Architecture magazine, on the design for Entenza's own house as part of the Case Study House Program sponsored by the periodical.

Saarinen's career in his father's firm was interrupted in 1942 during World War II, when he was recruited by his friend Donal McLaughlin, from his days at Yale, to join the newly-formed Office of Strategic Services (OSS), which would later morph into the Central Intelligence Agency. There Saarinen became "irreplaceable," according to his superiors, designing situation rooms and military schools as well as prototype models for weapons and other devices. He also drew illustrations for bomb disassembly manuals and developed presentation charts for showing work flows through different parts of the OSS's organization.

Mature Period

Eliel Saarinen died in 1950. But even before then Eero had shown signs that he would make a serious name for himself apart from his father. In 1948, both Saarinens had independently submitted competition designs for the Jefferson National Expansion Memorial in St. Louis - literally creating their separate submissions on opposite sides of a wall in the same office. The competition jury sent the announcement that Eero had been named one of the competition's five finalists to "E. Saarinen;" the Saarinen family interpreted this to mean Eliel, and broke out a bottle of champagne in celebration. Two hours later, they received a phone call from an embarrassed official who clarified that Eero Saarinen had advanced in the competition. The Saarinens immediately broke out a second bottle of champagne. Though the mood was celebratory, Eric Saarinen claims that privately it was difficult for Eliel to come to terms with the fact that his son had surpassed him. Eero, of course, would go on to win the competition and the $50,000 prize as the chief designer. His design, the now-famous Gateway Arch, would only be realized posthumously, however.

Eero launched his own architectural practice after his father's death, and in the ensuing decade produced a flood of important buildings and interior projects, establishing him on his own firmly within the canon of great modern architects. Nearly all of his important designs date from this relatively short 13-year period between 1948 and 1961. Saarinen loved models, especially large ones into which he could stick his own head in order to visualize the interior space, and numerous photographs exist showing him and his employees inspecting or constructing them.

Well before his divorce from Lilian, Saarinen had met Aline Bernstein Louchheim, an art critic at the New York Times, and they grew very close. In one of Eero's love letters to Aline, he quite bizarrely compared himself to root vegetables, declaring "You don't realize that I'm like a turnip or a potato, one of those plants that has stored up below ground a tremendous amount of lust for a full blooming life." Aline's promotion of Eero's career had begun even before the two of them married in 1954, and while they were certainly in love, practically their union formed a very potent team for the rest of Eero's life. Aline was instrumental in increasing Eero's profile among American designers, helping him to be featured on the cover of Time magazine in July 1956, an honor previously accorded to such names as Richard Neutra and Frank Lloyd Wright. She also, unlike Lilian, was capable of discussing Eero's work with him on a regular basis. After Saarinen's death, Aline became her late husband's greatest ambassador, frequently appearing on camera and giving interviews explaining the significance of his architecture. The year following Saarinen's passing, she published Eero Saarinen on His Work: A Selection of Buildings Dating from 1947 to 1964 with Statements by the Architect.

Saarinen supposedly also became more of a family man during his marriage to Aline, though his ambition did not shrink and he did not slow down the pace of his work. There were few days during the year when the firm's offices were closed. He expected his employees to follow his routine of working from morning until dinner time, return home for the evening meal and then reconvene to work late into the night. As he once simply quipped, "I would like a place in architectural history."

Death

In August 1961, Saarinen complained of headaches as he was preparing for his firm to move from Detroit to New Haven, Connecticut, and checked himself into a Michigan hospital to seek a quick remedy. Doctors discovered instead that he had a brain tumor, and Saarinen elected to undergo an operation that promised a very slim chance of survival. He died during surgery, having turned 51 just a week and half earlier.

Saarinen's death was shocking, as it was sudden and completely unexpected. His leadership at the firm passed to Kevin Roche, and under him, Cesar Pelli, and others, as Saarinen's numerous projects were brought to completion. Aline was instrumental in convincing CBS to stay with the firm to finish its new headquarters in midtown Manhattan, the commission for which Saarinen had received only the year before.

The Legacy of Eero Saarinen

Initially, Saarinen's fame suffered greatly due to his early death. He was not physically present at the completion and dedication of many of his most important buildings, and could not reap the benefits of sharing the spotlight or attracting new clients as a result. The brevity of his independent career meant that for some he would always be seen as a "flashing glory" whose brilliance was extinguished almost as soon as it began. Though Saarinen's buildings reveal his great sculptural imagination, their engineering challenges also suggest that the conception and realization of them required collaboration with many other brilliant minds, thus reducing the credit that he received.

Saarinen never developed a particular "style" for his architecture, insisting that every problem was different and thus required a unique solution. While during his lifetime he received much criticism for his versatility, notably from the great architectural historian Vincent Scully, this philosophy has come to be adopted by many contemporary architects. To some extent this has also affected his fame, as he did not launch or pioneer a singular style or movement, and there are no easy markers that indicate what makes a "signature" Saarinen building.

During his lifetime Saarinen received a number of honors, including being named a fellow of the American Institute of Architects in 1952, from whom he posthumously received the AIA Gold Medal in 1962. In 1954 he was elected a member of the National Institute of Arts and Letters. Saarinen's Gateway Arch is featured on the reverse of the Missouri state quarter, minted by the USA in 2003, and a commemorative 10-euro coin issued by Finland in 2010, which also features a silhouette of Saarinen's Tulip armchair.

Saarinen's reputation has nonetheless steadily grown over the past sixty years. His office attracted a number of talented employees, including Pritzker Prize winners Kevin Roche (whose firm Roche and Dinkeloo became the official successor to Saarinen's practice), Cesar Pelli, and Robert Venturi. The personal papers of Aline and Eero Saarinen were donated to the Archives of American Art by Aline's brother, while Roche and Dinkeloo donated their Saarinen archives to Yale University. Some diazotype copies of Saarinen drawings for the TWA Terminal at JFK Airport also reside at Columbia University in New York. The availability of these sources have prompted the flurry of interest in Saarinen's work in recent years, which includes the major exhibition Eero Saarinen: Shaping the Future which toured several locations between 2006-10.

3. Major Works

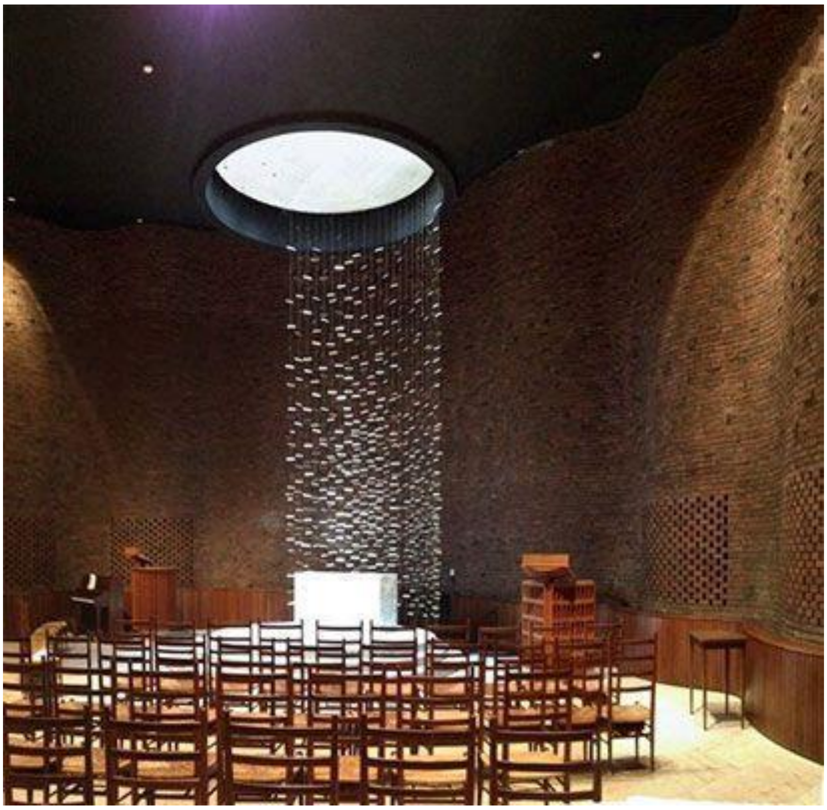
1949-56: General Motors Technical Center, Warren, Michigan.

Along with structures such as the Lever House and Seagram Building in New York, the General Motors Technical Center is one of the projects that best exemplifies the new identity of American corporate modernism in the 1950s. Unlike those two skyscrapers, the GM Technical Center consists of a sprawling horizontally-oriented 710-acre campus. Quite astutely, Architectural Forum proclaimed it an "Industrial Versailles" upon its completion in 1956, as the campus exudes the same sense of man's ability to order and partition the landscape to his will with modern technology, just as Versailles exuded the new mastery of landscape and natural space during the era of the Scientific Revolution in the late 1600s. (This sense of order is reflected in the repetitive bays and modular layout of the interiors of individual buildings on the campus.) It likewise signals the vast resources and strength of American corporations as the USA emerged as one of the world's two superpowers during this decade.

The aerial view here shows how the Technical Center's various buildings are neatly arranged on a grid-like layout, in harmony with the employee parking lots, which indicate the triumph of American car culture in the economic boom of the postwar era. The large expanses of water serve several purposes: not only do they beautify the landscape and provide breaks between the buildings, roadways, and open land, but they also practically serve as reservoirs to assist in the event of fire - something that GM was acutely aware of since the largest industrial fire in history occurred inone of its Michigan plants in 1953.

Saarinen took inspiration from the sleek precision of GM's vehicles, placing them literally at the center of the concept for the buildings' interiors, which include large foyers characterized by a minimalist geometric rigor that double as showroom for top-of-the-line new vehicles, whose acute angular and curvilinear forms of their fins, body shapes, and rooflines would have been accented in such spaces. On the exterior, this precision is mirrored by the crisp glass-and-steel boxes that use the same kinds of industrial materials needed for manufacturing cars. Saarinen would employ similar design strategies for his subsequent corporate commissions, thus reinforcing this aesthetic of American postwar modernism.

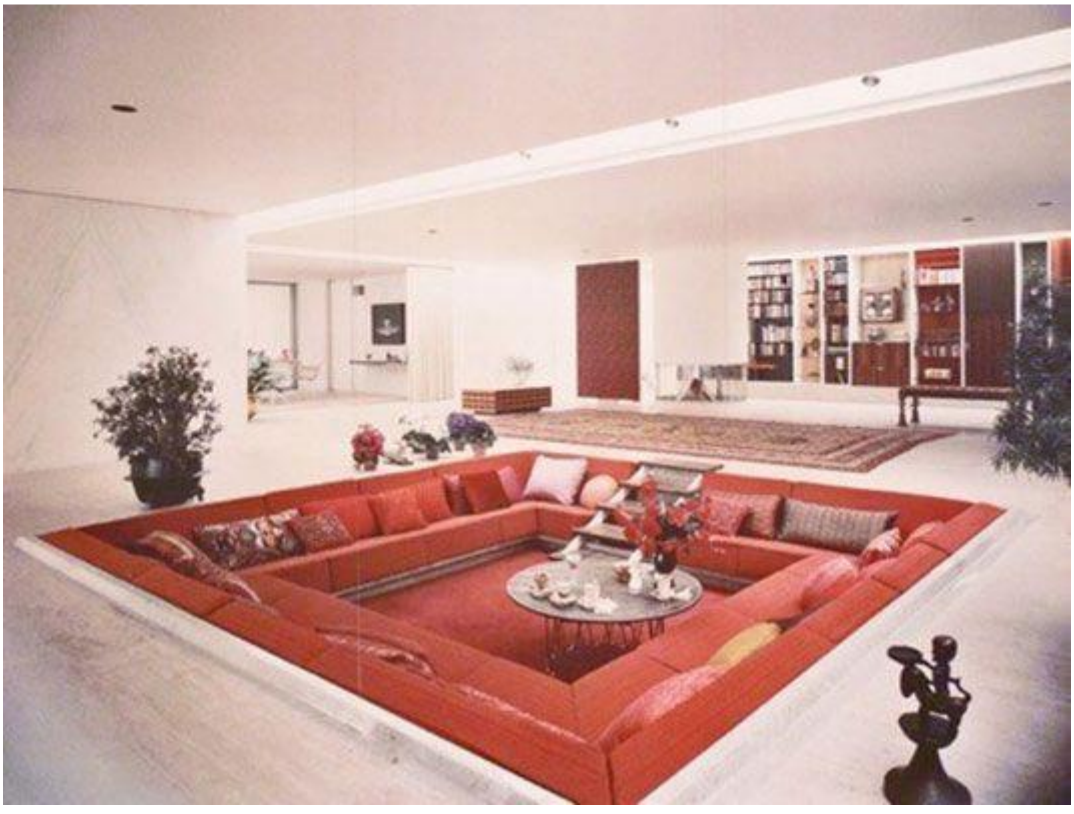
1950-55: Massachusetts Institute of Technology Chapel, Cambridge.



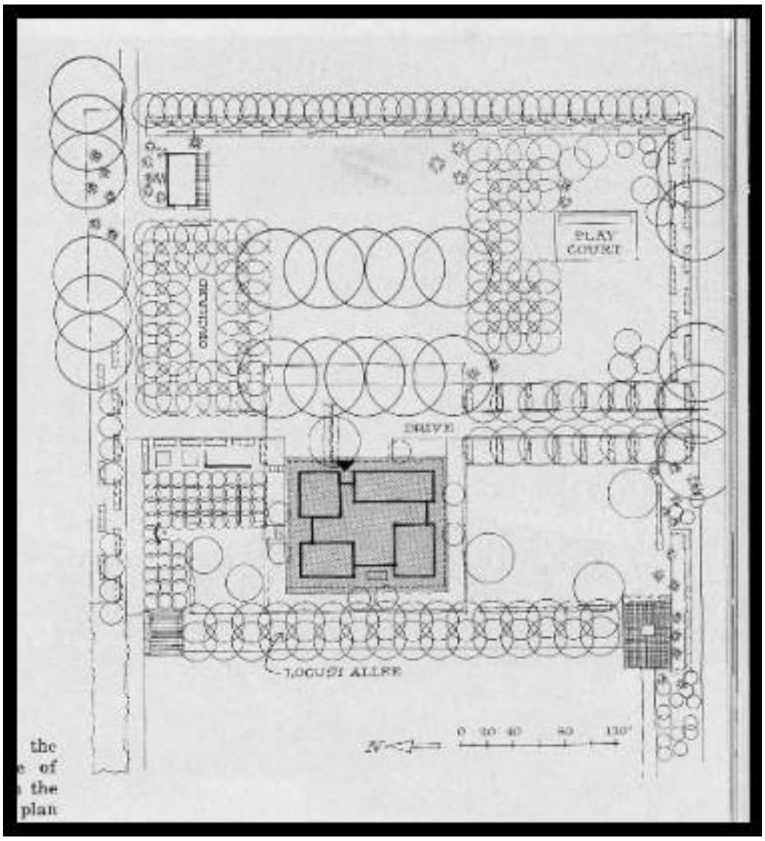
The MIT Chapel is part of a pair of structures (the other being the Kresge Auditorium) clustered together on the university's campus that Saarinen designed along with all of the landscaping. It consists of a small, cylindrical brick structure perched above a small surrounding moat. One can see the moat from the inside, where the chapel's only windows, located near the floor at the edges of the cylinder, overlook the water below. The chapel's sculptural, undulating rough brick interior walls, paneled in dark wood at the bottom, modulate the space and artificial light not unlike the irregular surfaces inside a cave, making them seem thicker than they actually are. The rather homely chairs are freely arranged facing an altar at the far end that is placed under a circular skylight, signifying the uplifting descent of heavenly spirits into the space. Saarinen's design finds its complement in the glimmering Harry Bertoia sculpture suspended from the back rim of the skylight (seen here). The overall spatial effect, layered by the moat, solid walls, and thick ceiling, is one of a calm, serene, enfolding sanctuary, a welcome shelter from the vicissitudes of human existence in a complicated modern world. On the exterior, a separate abstract curved metal spire rises above the skylight, thereby underscoring the building's modern sculptural character and its function as a spiritual bulwark.

Saarinen's design arguably also shows a particularly Scandinavian sensitivity that he brought to the commission, possibly prompted by the chapel's location in New England, which like his home state of Michigan is one of the coldest regions of the continental United States. The interior of the MIT Chapel echoes the kind of quiet, serene brick-enclosed modern assembly spaces created in Finland by Saarinen's compatriot Alvar Aalto at nearly the same time, which welcome warmth and comfort needed during the snowy Scandinavian winters, appropriate for promoting a reassuring sense of community. Thus Saarinen's chapel demonstrates his mastery of designing intimate spiritual spaces along with massive projects like the Gateway Arch and the GM Technical Center, and his great airport terminals at JFK and Dulles.

1953-57: J. Irwin Miller House, Columbus, Indiana, USA



Saarinen rarely designed residences during his mature career, yet the Miller House, built for a corporate scion in the architecturally prominent small town of Columbus, is the best example of these. It resembles the stark aesthetic of Ludwig Mies van der Rohe for some of his famous mid-century houses, including the walls of stone and large curtain-wall expanses of glass, and it uses the geometric clarity of the square for the overall form and organization.



Landscape plan for Miller house.

Unlike Mies' work, or the residences designed by other great modernists like Richard Neutra or R.M. Schindler, which tend to be asymmetrical, the Miller House's four wings of private spaces branch off of the open living room at the center, similar to a Greek-cross layout. This is unusual for modern houses, but comparable to Andrea Palladio's Villa Rotunda in Vicenza, Italy, from the 16th century and Thomas Jefferson's Monticello in Charlottesville, Virginia. In this way, Saarinen demonstrates his own keen understanding of history by linking the Miller House to a specific lineage of great residential designs. But whereas Jefferson and Palladio's buildings dominate the environment through their elevated placement and monumental domes, the Miller House uses a different strategy. Here Saarinen collaborated with landscape designer Dan Kiley to integrate the Miller House into its surroundings using rows of hedges and trees to provide extra privacy.

Yet there is tension in this geometric clarity between the private nature of the peripheral spaces of the house and its central gathering space, which also provides a counterpoint to the austerity of the modern design. With its large scale (some 50 feet on a side), the living room provides ample room for the Millers to socialize, but it also contains the famed conversation pit, an invention of Saarinen's interior designer Alexander Girard. The pit's enclosed shape promotes a sense of community and in some cases intimacy, heightened by the bright colors that both enliven the space and underscore its centrality in Saarinen's overall conception.

1953-58: Ingalls Ice Rink, Yale University, New Haven, Connecticut.

Saarinen completed several buildings for Yale, his alma mater, among which the Ingalls Ice Rink was the first. Oddly, despite the fact that Saarinen was Finnish, he had never designed any sporting venue before, let alone a hockey rink. Thus, when Saarinen received the commission in 1953, he sent some of his office staff to go around the United States to look at similar structures to find out what a well-designed hockey rink looked like. Upon their return, his staff delivered a unanimous report: they all looked horrible!

The solution that Saarinen produced consists of an oblong structure surmounted by a massive, wide, very strong concrete arch - in fact, the upper portion of a catenary - which stretches the entire length of the building's spine. From this are hung cables on each side that provide the contour of the wood-paneled ceiling, and roof above. The distinctive exterior humpback shape has given the building the affectionate nickname

"The Yale Whale," which is underscored by an elongated protruding spike above the entrances at each end of the building, which is surmounted by a set of four lights. It evokes the image of the end of a harpoon that pierces the body of the whale, appropriate for New Haven, a former port for the whaling industry in the 19th century. On the inside, however, this use of maritime themes is turned upside down, as many have compared the arched wooden ceiling to the overturned interior of the hull of a great Viking ship, thus also connecting the building to the cold climates and northerly regions associated with winter sports like hockey.

The Ingalls Rink therefore represents an ingenious marriage between modern engineering and organic form, a kind of forward-looking solution that nonetheless pays homage to historical, regional themes. It also noticeably closes its interior off almost completely from its surrounding environment.

These aspects constitute a quite unusual and distinctive achievement for the 1950s, disclosing Saarinen's ambition to avoid slavishly associating himself with a particular style or simply popular trends, but to carve out his own niche within the profession.

1955-56: Tulip chairs and tables.

Saarinen had trained at Cranbrook in the 1920s and taught there in the '30s, during a period when the school was becoming an epicenter of design talent and instruction. As a result, he had the chance to train, teach, and design alongside some of the brightest minds in the field. In the 1930s he even taught Florence Schust, who would later become the head of the furniture manufacturer Knoll, which had been founded by her husband. It was through his relationship with Florence Knoll that Saarinen was able to develop the designs for the Tulip series of furniture. Saarinen's concept for the chairs, which have variants both with and without arms, grew out of his design for the table, which has a seamless kind of unity wherein the stem flares into a single wide circular base and likewise expands into the thin flat expansive tabletop, as if to use a minimum of effort to achieve the full function of the piece.

The chairs are supposed to mirror this kind of unity, with Saarinen observing that "[t]he undercarriage of chairs and tables in a typical interior makes an ugly, confusing, unrestful world. I wanted to clear up the slum of legs. I wanted to make the chair all one thing again."

Indeed, the chairs and tables appear to be sprouting out of the floor, as if they not only display their own sense of unity, but a complete harmony with the larger interior space they occupy. Not surprisingly, the design has also commonly been called the "pedestal chair" for its similarity with display stands.

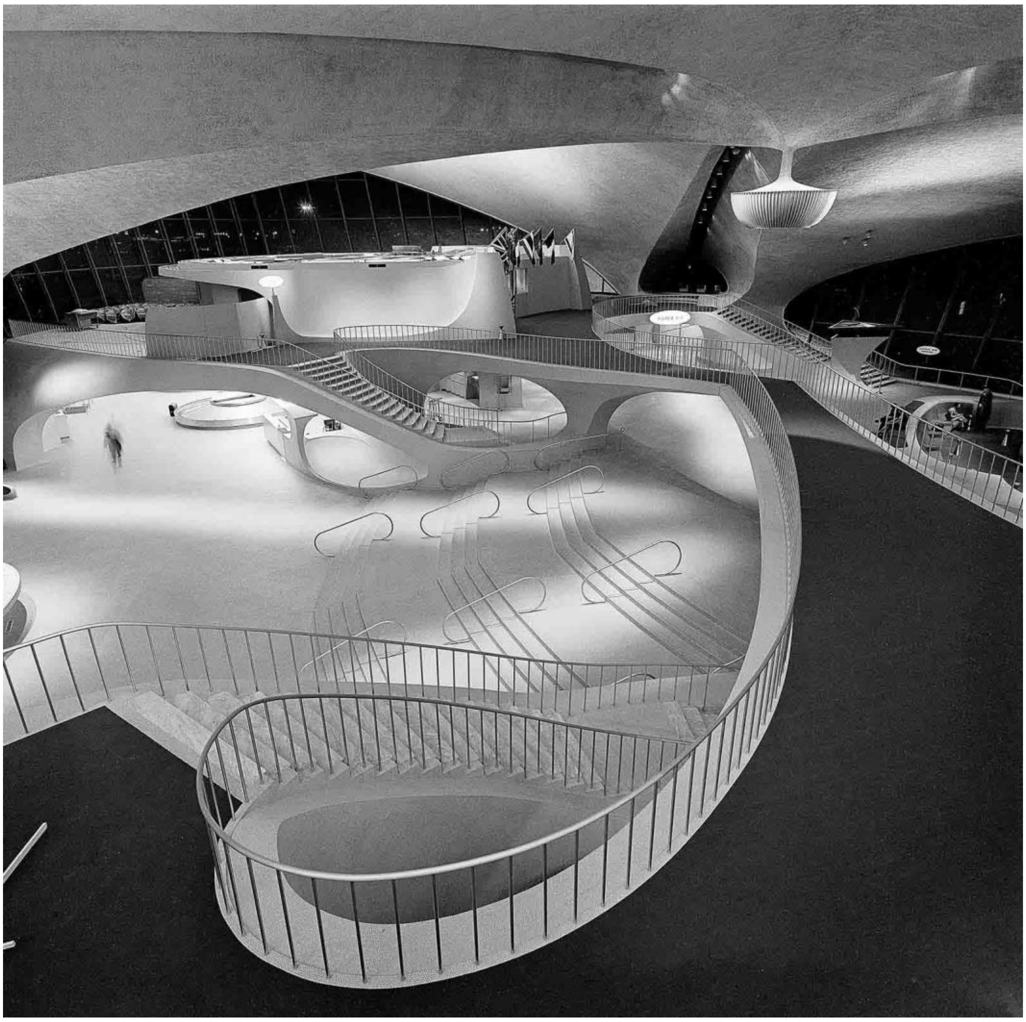
The ease of the aesthetic of the pedestal chair belies the difficulty in the engineering of the design. Saarinen had originally hoped each unit could be made completely out of a fiberglass structure, but the pedestal proved too fragile to support the weight of a human body. Instead, the pedestal is made out of cast aluminum - which keeps the structure light - covered with a plastic veneer, while the upper portion of the actual seat remains fiberglass. The separation of the two parts also fortuitously allows for the user to swivel 360 degrees, arguably increasing the utility of the chair from that of Saarinen's original design.

Production line of Tulip chairs at the Knoll factory.

1957-62: Trans World Airlines Terminal Idlewild (now John F. Kennedy) International Airport, Queens, New York.

The TWA Terminal (or Flight Center) is, along with the main terminal at Dulles International Airport in Virginia, one of Saarinen's two masterpieces of design for aviation; even sixty years later they remain - virtually unaltered - as some of the most iconic examples of the type. The terminals arguably represent the ultimate in space-age design and the sculptural possibilities of poured reinforced concrete.

In the TWA Terminal, now actually disused and slated for potential conversion into a airport hotel lobby, Saarinen evokes the idea of flight in several ways, most strikingly with the roof of curved shells that extend from either side of the central pavilion. From an angle the building appears like the body of a giant eagle about to take off, with its head extending over the driveway.



Inside, the sense of glamour and drama of the experience of air travel are made fully apparent with a huge open foyer whose elevation continues to rise as the passenger makes their way from the entrance towards the jets gathered at the rear, as if to physically express the idea of taking off from the airport. This is accented by the massive inclined curtain walls of windows that flood the space with sunlight during the day, as well as by the catwalk that spans the interior foyer, allowing the smartly-dressed passengers to be seen in all their finery before boarding. The effect of moving through the spaces - including its lounges, restaurants, and boutiques - is thus that of a modern promenade, an updated version of the experience of ascending the staircase in the first-class cabin of a great ocean liner.

Saarinen's terminal was constructed at the dawn of the jet age that promised sleeker aircraft with luxurious appointments for its patrons. Ironically, however, the terminal itself became obsolete before it was finished, as it could not accommodate the larger wingspans of Boeing 707 aircraft to connect directly to the terminal through jetbridges; passengers were thus forced to walk out onto the tarmac to board their planes. Nonetheless, the building continued to serve as TWA's major international Atlantic coast gateway until its acquisition by American Airlines in 2001. JFK's new Terminal 5 was eventually constructed around its rear, ensuring that the TWA Flight Center could never be used again for its original purpose, though it is possible to visit it on occasion during open house events.

1958-60: Hill College House, University of Pennsylvania, Philadelphia.

Saarinen's only work in the state of Pennsylvania, Hill College House is exemplary amongst his numerous designs for student housing on American university campuses. It was originally constructed as a women's dormitory, and several aspects of it speak to Saarinen's extraordinary sensitivity to the program for the commission. The building employs a skin of rough red brick that firmly ensconces it within the building traditions of both Penn's campus and Philadelphia more generally. It is encircled by a steel fence, crowned by another fence at the roofline, and is entered by a bridge over a ravine, all features that point to the picturesque medieval architecture normally associated with college campuses but also with castle-like fortifications, thereby adding an extra layer of security - theoretically an important feature for women's housing. Such a connotation is emphasized by the slit-like windows that alternate between vertical and horizontal orientations in order to break up a potentially monotonous facade.

The severe brick envelope, however, only underscores the way in which Hill College House brings its residents together on the inside; indeed, Saarinen's guiding theme when designing the complex was "a small village, self-sufficient, inward-focused and protected." The building consists of four separate multilevel wings of dormitory suites that each originally accommodated 16 to 24 students. These wings converge in a great five-story atrium flooded with light, with a cafeteria on the lowest level and projecting communal lounges overlooking it from the four wings, an effect that one original resident compared to living "in a Mediterranean town." Its centerpiece is a large 1926 N.C. Wyeth painting, moved to the atrium in 1978 from New York, entitled The Apotheosis of Franklin, an homage to one of Penn's founders, Benjamin Franklin.

Saarinen designed all the interior surfaces to be white, because, as he quipped when presenting the building to the press, "the walls in my house are white and I wouldn't want anything else" - though he also claimed, in perhaps his one concession to individuality in the structure, that white made them as neutral as possible in order that students might easily personalize their spaces.

1961-64: CBS Building, New York, New York.

The CBS Building in midtown Manhattan was the last major project that Saarinen took on before his death in 1961; it was finished by his senior designers, Kevin Roche and John Dinkeloo, whose firm succeeded Saarinen's practice. The 38-story CBS Building serves as the headquarters of CBS Corporation, but not the actual broadcast centers for any of its media. It is Saarinen's only true skyscraper, and it is rightly considered his answer to the International Style image of American corporate modernism that Ludwig Mies van der Rohe, Skidmore, Owings & Merrill, and other firms were establishing as a paradigm in the 1950s.

The constructive aspects of the skyscraper set it off from the traditional exposed steel-frame glass prisms pioneered by Mies. It consists of a reinforced concrete frame - the first such skyscraper in postwar New York - with triangular-plan spandrels that act as load-bearing piers set in between the exterior windows. The concrete exterior piers are clad in black Canadian granite and complement the dark-tinted windows set back between them. When one stands at an angle to the building, the triangular shape of the spandrels hide the windows as if turning a set of Venetian blinds. Meanwhile, the projection of the triangular spandrels from the plane of the windows extends for the full height of the building and produces a soaring effect by accenting the verticality of the form. The building thus appears almost like a polished stone monolith set apart from its neighbors in a larger plaza, which quickly earned it the sobriquet "Black Rock" upon its completion in 1964.

Saarinen's tower still aligns with the facades of its neighbors along the Avenue of the Americas in midtown Manhattan, but his use of the plaza was responsible for a change of New York zoning regulations for design of skyscrapers. Since 1916 these laws had encouraged progressive step-back designs to prevent towers from blocking light that otherwise filtered down into the streets; after 1961, the open-plaza model as seen with the CBS Building was encouraged instead.

The CBS Building should also be noted for its significant process of collaboration between the architects and their client, CBS chairman William S. Paley. Paley took an active role in various aspects of the design, specifically selecting Saarinen because he wanted a building that would break from the Miesian mold of the International Style, and courageously stuck with Saarinen even though he did not like the initial design. Paley took an active role in various stages, meeting with Roche and Dinkeloo at least thirty times to view some full models of the structure, adjusting the precise width of the window panels and the selection of the granite for the exterior - a color that Saarinen thought would echo the gray suits of executives. The building received much critical acclaim upon its completion, underscored by the fact that it helped establish the famed

Broadcast Row of radio and television media on Sixth Avenue, that includes the headquarters of NBC at Rockefeller Center as well as Fox further south, and previously included ABC and CNN.

1948-65: Gateway Arch, St. Louis, Missouri, USA.

Officially only a portion of the larger Jefferson National Expansion Memorial that commemorates a number of different events - including St. Louis' status as the oft-cited gateway to the West - the Gateway Arch is nonetheless justifiably often considered as a monument unto itself, due to the colossal singularity of its form. Saarinen and his design team actually titled their competition entry "Gateway to the West," and the name stuck.

The story of Saarinen winning the 1948 competition for this monument, instead of his father is well-known, but less so is the controversy Eero's winning design generated when it was first published. Saarinen was accused of having stolen the idea of the arch from the unrealized plans of Benito Mussolini for a grandiose world's fair to be held in Rome in 1942 celebrating twenty years of Italian Fascism. The competition jury quickly settled the matter with a statement that decreed the concept of an arch was not a Fascist invention, but this did not stop Time magazine from referring to the St. Louis arch as "Mussolini's wicket."

Saarinen based the arch on the reverse form of a catenary (the curve a chain forms when hung between two supports), which is the strongest form of an arch because of the way that it channels all of the weight of its structure into the ground as opposed to leaving lateral forces that need to be buttressed. Saarinen, however, used artistic license by making the arch slightly taller than a pure catenary and slimmer at the top rather the bottom, which produces a more soaring, dramatic effect. The arch's cross-sections consist of double-walled equilateral triangles of stainless steel connected to each other by a layer of concrete. This creates a self-supporting stressed-skin structure, very similar to the designs of the bodies of airplanes, another new technology that was coming into much more widespread use with the advent of the jet age at the end of the 1950s.

Delays prevented the arch from being constructed until 1963-65, and Saarinen's death in 1961 diminished in part the recognition he received for its design, conceived over fifteen years earlier. Despite his bold vision, the feasibility of successfully completing the arch was in doubt throughout the planning and construction process, even with the calculations of Saarinen's trusted engineers Fred Severud and Hannskarl Bandel. Anticipation heightened as the arch's twin legs rose from the ground, with local radio stations broadcasting when further sections would be installed on site by the custom-built creeper cranes. Justly hailed as a triumph of modern engineering on its completion, it remains both the tallest man-made monument in the United States and the tallest arch in the world.

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4. The Rebirth of the TWA Flight Center

This chapter was archived in 2024, with acknowledgement and thanks, from the NY Curbed website at www.ny.curbed.com. The article is by Sarah Firshein, and was published in July 2019.

Preserving an icon

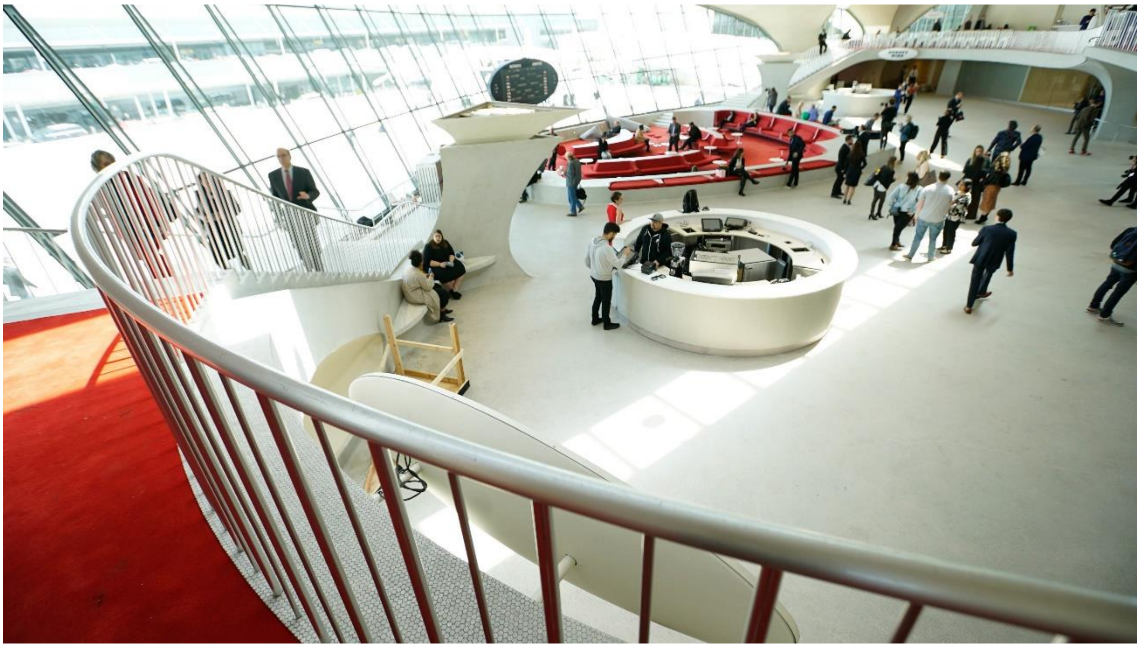
On a sunny afternoon in the middle of May, Eero Saarinen's soaring Jet Age terminal at JFK Airport is as bustling as it was when it first opened in 1962.

Models and dancers dressed in vintage TWA flight attendant uniforms glide around the terminal like ballerinas. A trio of former Ambassador's Club servers take selfies in a cocktail den; "we used to work here!" they squeal, puckering their lips and admiring the Knoll candy-stripe fabric that has been custom-designed to match the one from their youth. Decidedly 21st-century laptops pop open in the Sunken Lounge, the Instagram darling of the space. A Solari split-flap board clatters, displaying faux departure times for airlines (like the now-defunct Pan Am) as the Temptations' "My Girl" plays in the background. There are TV crews everywhere. Even the Beatles make an appearance in the form of a tribute band that has materialized, as if by magic, on the cantilevered bridge suspended (also as if by magic) across the soaring lobby of the just-opened TWA Hotel.

Rarely does a hotel launch drum up so much fanfare, but then again, the TWA Hotel isn't any old project. Aviation and design geeks and preservation advocacy groups—not to mention New York City, the Port Authority, and John F. Kennedy International Airport—have been waiting for decades to see Saarinen's winged creature, once the Trans World Airlines terminal, take flight again.

"There's a debate in the landmarks preservation world about embalming—about putting something on a pedestal and not giving it a life, but keeping it exactly the way it was," muses Adam Rolston of INC Architecture &

Design, the firm behind the hotel's meetings and event spaces, on a tour of the revamped property. "And the other side says you gotta breathe new life into these things and give them new functions. This is a beautiful example of that."



Nostalgia for the 1960s is no new thing; from the prevalence of mid-century furniture to tableside Caesars, contemporary culture loves a throwback. But when Saarinen's Flight Center was finished, it would still be another two years before the the Civil Rights Act of 1964 came into being. In taking inspiration from the culture of the era—as well as the design—are we willfully glossing over the more sordid details of a decade that began with Jim Crow laws still in place and ended, in 1969, with the National Organization for Women protesting the White House for "Rights, Not Roses"?

The rise, fall, and rebirth of the TWA Flight Center mirrors the timeline of the commercial aviation industry at large. In 1956, when TWA, under the ownership of Howard Hughes, commissioned a terminal from Saarinen, the Finnish-American architect behind the Gateway Arch in St. Louis, the era romanticized as the "Golden Age of Flying" was in full swing, as were Lockheed Constellations, propliners with a capacity of less than 100. The much larger Boeing 707 came onto the scene in 1958. In 1970—eight years after the Flight Center's completion, and nine years after Saarinen's death—Boeing launched its mammoth wide-body 747, effectively rendering its smaller predecessors, and Saarinen's creation, obsolete.

Enormous new planes brought with them passenger levels unforeseen in Saarinen's era, and the airport heaved under the added pressure. When TWA Flight Center opened in 1962, 11.5 million people passed through

New York International Airport (also known colloquially as "Idlewild" until it was renamed in 1963 after President John F. Kennedy's assassination). Thirty years later, in 1992, that number had ballooned to more than 25 million.

As the Port Authority considered ways to expand JFK in the '90s, there was talk of demolishing the Flight Center, but the agency was eventually dissuaded of that rather unpopular idea. The building's fate was cemented in 1994, when it became a New York City landmark. "This is perhaps the quintessential modern form, expressing movement and the whole concept of flight," a relieved Laurie Beckelman, the then-chairwoman of the Landmarks Preservation Commission, told the New York Times when the news was announced.

In a column later that year, the late Times architecture critic Herbert Muschamp praised the Flight Center as "the most dynamically modeled space of its era," yet trumpeted the "dire need of design modifications." In conclusion, he wrote, "T.W.A. sits aloof amid the architectural hodgepodge of J.F.K.'s Terminal City, like a bird that has lost its flock."

In the late 1990s, in order to keep Saarinen's newly landmarked building intact and solve its own urgent capacity needs, the Port Authority settled on a plan to position a new terminal—what eventually became jetBlue's T5—behind it. Various city agencies got involved, a Redevelopment Advisory Committee (RAC) was formed out of more than a dozen preservation advocacy groups, and a roadmap materialized about how to restore and redevelop the site. By 2001, when the Flight Center closed after TWA went bankrupt, it had been empty for more than two years.

"There's a debate in the landmarks preservation world about putting something on a pedestal Caor] breathe new life into these things and give them new functions. This is a beautiful example of that."

The man tasked with overseeing the restoration of a building he calls "the perfect symbol of post-war optimism, the magic of flight, and the elegance of mid-century modern architecture" was architect Richard Southwick, a partner and the director of historic preservation at Beyer Blinder Belle (BBB), whose efforts helped land the Flight Center on the National Register of Historic Places in 2005.

Commissioned by the Port Authority, Southwick and BBB spent nearly a decade developing a preservation plan and guiding the first phase of construction. They used Saarinen's original working drawings and specifications to rebuild the Sunken Lounge. They repaired and restored the tubes famously featured in the 2002 Leonardo DiCaprio flick Catch Me If You Can. Originally those groovy passageways ushered passengers into the

TWA departure halls; now, each leads to one of the two hotel additions and, beyond that, the jetBlue terminal. (An elevator near baggage claim offers only two buttons: “1960s TWA HOTEL” or “PRESENT DAY JETBLUE.”)

The idea for a hotel came about early on in the restoration process after other ideas—a museum or a conference center—were deemed impractical. Coincidentally, in 2009, as traffic swelled to nearly 46 million passengers, the Ramada Plaza JFK Hotel—the airport’s only connected hotel—closed. In 2011, as construction on the first phase of BBB’s restoration was coming to an end, the hotelier Andre Balazs won a Port Authority bid to turn the Flight Center into a hotel, but the deal fell through in 2014.

Enter Tyler Morse of MCR/Morse Development, which was awarded the redevelopment project in 2014. In addition to a fully restored Flight Center, there was to be retail and restaurants, 50,000 square feet of meetings and events space, and at least 500 hotel rooms (which can be sold as standard nightly bookings, plus four-, six-, or 12-hour chunks when a guest needs only a nap and a shower).

The flight tubes that connect the historic TWA Terminal to JFK Airport have been restored. Christopher Payne.

BBB, hired by MCR as the project architect for the second phase of the restoration as well as the new hotel structures and conference center, turned its attention to the Flight Center’s exterior curtain walls, replacing every single one of the 238 original window panels—no two are alike—as well as the neoprene zipper gaskets that hold them into place. Although much of the vaulted core of the lobby and flight tubes had already been restored by this point, the dual single-story wings on either side of the main entrance, which once housed ticket desks, had not. Today, hotel check-in is located to the north, and there's a food hall to the south, both with desks and lighting that replicate their 1962 predecessors. Even the lobby's public restrooms mirror Saarinen's original design, right down to the large, central paper towel dispenser.

One design element that was particularly challenging was the restoration of the Flight Terminal's ceramic penny tiles, used by Saarinen to clad the floors and swoopy walls. BBB sourced a total of 20 million half-inch-diameter mosaic tiles from China over the course of both phases of the restoration. "They had to match precisely the original Italian tiles in size, color, texture, and aggregate," Southwick says. "Oftentimes, one or two new tiles had to be placed within a large field of the original—any variation stood out like a sore thumb."

Meanwhile, Lubrano Ciavarra Architects, a Brooklyn firm, was tasked with designing the 512-room hotel addition. It had to meet the same preservation guidelines imposed on anything new on the site: that it be complementary to, but distinguishable from, Saarinen's original building.

Saarinen's TWA Terminal, center, is now flanked by new seven-story buildings on either side. Courtesy of MCR Development.

"That's a tall order; I consider this the sexiest building on the planet. How do you add to this gorgeous sculptural, figural building?" asked Anne Marie Lubrano, the firm's co-founder, on a site tour. "For a small firm to be given a commission like this, you want to do the most spectacular thing you could ever do in your life, but we needed to leave our ego at the door."

Casting the Saarinen masterpiece as a "figure in a field," Lubrano and her partner, Lea Ciavarra, conceived the an ultra-compact pair of seven-story buildings and positioned them as far back from the Saarinen building as possible, so as not to overwhelm it. They took pains to maintain the Flight Center's exact material palette, rendering concrete, glass, and metal in contemporary ways.

"In no way would you ever confuse that these buildings were built simultaneously," Lubrano says. "There are no straight lines in Saarinen's building. Our buildings—though they may read as curved—are actually faceted and they are all straight lines."

Floor-to-ceiling glass windows—seven layers of triple-glazed insulated glass weighing 1,740 pounds apiece—overlook either the flight terminal or Runway 4L/22R. Thanks to innovative soundproofing solutions, though, you won't be awoken by an Airbus A380. It's hard to believe until you're actually there, nose pressed against the window like a little kid, watching a meditative parade of airplanes while hearing not so much as a peep from them.

No matter where you stand in the 392,000-square-foot TWA Hotel today, Saarinen is right there with you. For starters, Chili Pepper Red—the fiery hue he developed for the Flight Center—is everywhere, from the upholstery in the Sunken Lounge to the hallway carpeting in the hotel buildings.

In the rooms themselves—426 doubles and kings and 86 suites divided among the two new buildings—the NYC-based interior design firm Stonehill Taylor swept in Saarinen Womb chairs and Tulip tables. Beds are comfortable; bathrooms are capacious. A martini station, a mini-bar with retro touches like a mini Etch A Sketch (born in 1960), and vintage rotary phones are additional mid-century touchpoints.

"We focused on two major sources of inspiration: the Saarinen building itself and the cultural climate in the year it originally opened: 1962," Stonehill Taylor's Sara Duffy tells Curbed over email. "We looked at the ethos and the meaning of the year 1962 in order to envision a contemporary guest experience: intuitive, refined, and in communication with Saarinen's work."

Saarinen's love of hardwoods, terrazzo flooring, and brass details, as well as his more orthogonal works, inspired much of the underground Conference Center, overseen by INC Architecture & Design. The lighting in the main ballroom, for instance, took cues from the General Motors Technical Center in Detroit and the Irwin Conference Center in Columbus, IN. Just outside massive double-height hangar doors—studded with a total of 12,304 hand-screwed rivets—a 207-foot-long pre-function space has interpretive exhibits showcasing info and artifacts from the architect’s life, vintage TWA ads designed by David Klein, retro flight attendant uniforms, and other archival materials curated with assistance from the New York Historical Society. The Paris Café, the Jean-Georges restaurant on the mezzanine, is a sea of custom Saarinen furniture from Knoll.

MCR has also leaned hard into TWA-as-a-selling point, all while dutifully avoiding sandtraps like the “Foreign Accent Flights” that the airline launched in 1968—which, per an ad, included “four styles of hostesses to match: Italian (see toga), French (see gold mini), Olde English (see wench). And Manhattan Penthouse (see hostess pajamas—after all, hostesses should look like hostesses, right?).”

The restored classic Constellation arrives to become a cocktail bar.

Instead, the hotel offers an excerpted version of history—fresh-and-cool this, fresh-and-cool that. The hotel’s logo—an adaptation of the airline’s, designed by Pentagram—adorns everything from the side of Connie, a restored Lockheed Constellation that’s been retrofitted as a cocktail bar, to the pencils and notepads in the guest rooms. A lobby shop stocks all manner of TWA-branded red-and-white merch, including cashmere sweaters ($249) and Gola sneakers ($65).

The graphic branding, combined with the photogenic nature of the Saarinen building, has been social media catnip. TWA Hotel is so flooded with requests from influencers that (word has it) its various publicity firms can’t keep up. Travel writers who count on complimentary stays will be disappointed to learn that the property hasn't extended anything of the sort to anyone. According to this writer's Inbox, it's easier to get a free trip to a 45,000-square-foot castle-turned-luxury hotel—including airfare, accommodations, food, and activities—in the Loire Valley than it is to get a free $250 hotel room at JFK Airport.

Inside the Connie cocktail lounge. Note the Saarinen single leg tables.

In that 1994 New York Times column, Muschamp, the former architecture critic, noted that "T.W.A. symbolized more than a flight from an airport." But the project also "represented a flight from history—or, at least, into another chapter of it. For in retrospect it is clear that T.W.A. stands at the threshold of an era when increasing numbers of architects would see themselves primarily as image makers, packagers of corporate identities."

On a recent Thursday evening, a stylish woman clad in a white-and-black maillot poses in the TWA-branded rooftop pool as her husband dutifully contorts himself to take her photo. Uniformed pilots stroll around the lobby. European tourists perch on the edge of the Sunken Lounge, sipping drinks from one of the mobile Intelligentsia carts that were custom designed for the hotel by Stonehill Taylor.

A few shoppers roam around the glass-fronted Shinola boutique. That Solari split-flap board is still doing its thing: a reflection, perhaps, of the constant, ceaseless motion of any hotel—and any airline terminal on earth.

“As a practicing architect, if I had a building that was unoccupied and unused for decades, I would be thrilled that it came back,” says Southwick. “It’s alive again.”

TWA in its 1960s heyday.

5. North Christian Church, Columbus, Indiana

This chapter was archived in 2024, with acknowledgement and thanks, from Wikipedia.

The North Christian Church is a church in Columbus, Indiana. Founded in 1955, it is part of the Christian Church (Disciples of Christ). The church building of 1964 was designed by Finnish-American architect Eero Saarinen (1910–1961) and completed in 1964. Saarinen's father Eliel Saarinen had designed the First Christian Church in Columbus.

The building is hexagonal in shape, with a central metal spire that is 192 feet (59 m) high. Below the spire, there is an oculus that admits light into the main level. The sanctuary is located at the center of the building, with the Lord's Table located in the center of the sanctuary. Rows of pews surround the altar in a hexagon, reflecting the idea that worship should be a central aspect of the life of the congregation. The lower level contains classrooms, an auditorium, a kitchen, and an activities area.

History

In 1955, 43 members of the First Christian Church, designed by Eliel Saarinen, decided to found a new church affiliated with the Disciples of Christ. After some time of worshiping in each other's homes, in 1956 they purchased 5+1⁄2 acres (2.2 ha) of land with the help of Irwin Miller. Although Miller wanted to hire Eero Saarinen to design the new church, he believed it was important that the congregation choose the architect themselves:

I was on the building committee. We interviewed about six well-known architects. They all came in with their slides [and talked about their work]. Eero just brought a notebook. He looked at us and said, "What do you want? What do you want it to be? Don't tell me what you want it to look like, but what you want it to be like." They decided to hire him as soon as he left

—Irwin Miller, on hiring Eero Saarinen

Symbolism in design

Saarinen believed that modern churches had lost the monumentality of traditional cathedrals because expansions with Sunday schools, gymnasiums, and kitchens took away from the significance of the church itself. He wanted to design a building that returned to the model of a traditional church, while still using Modern architecture that served the needs of the congregation.

His compromise was to move the school, meeting rooms, auditorium, and kitchen to a hidden basement, so that the only visible part of the church above ground was the sanctuary. Space for the basement was carved out of the earth in a hexagonal shape, reflecting the sanctuary above it. This emphasized the importance of the church itself and isolated the sanctuary as the most important part of the building.

He was inspired by the steep steps at Angkor Wat and Borobudur, where the visitor has to interact with the architecture and work to reach the sanctuary. He thought that building an entire church on one level made religion "too easy", and took away from the spiritual experience of going to church. Therefore, he chose to elevate the sanctuary of the church so people had to climb up a set of stairs to reach it. This way the church also stood out from its residential neighborhood.

Interior of the sanctuary

The act of entering a church was important to Saarinen as well, so the environment changes to reflect the change of attitude one has when entering a sacred space. The grey slate floors, dark mahogany pews, and eerie natural lighting instill a sense of awe in the visitor. The primary light source into the sanctuary is the oculus at the base of the spire, directly above the Communion table. This focus of light draws attention to the center of the room, where the Communion takes place.

The room was designed as a space where people can gather in unity and harmony in an enclosed spiritual world. The Communion table, consisting of twelve pedestals symbolic of the twelve disciples, is placed on a tiered platform. The highest pedestal at the end of the table represents Christ, and hold a silver chalice and loaf of bread for the service. It is the central focus of the sanctuary because it is an important part of the Disciples of Christ service. The congregation sits around it facing each other as a community.

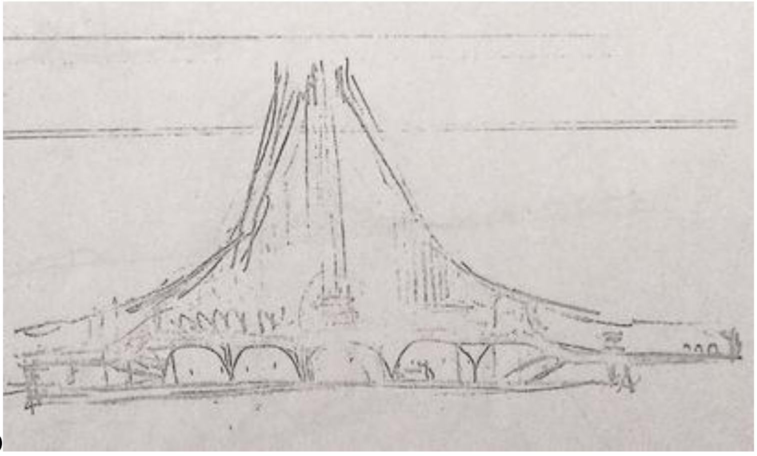
The pulpit, choir loft, and a Holtkamp organ is situated opposite the main entrance into the sanctuary. The organ is the last of its kind designed by Walter Holtkamp Sr.

Spire

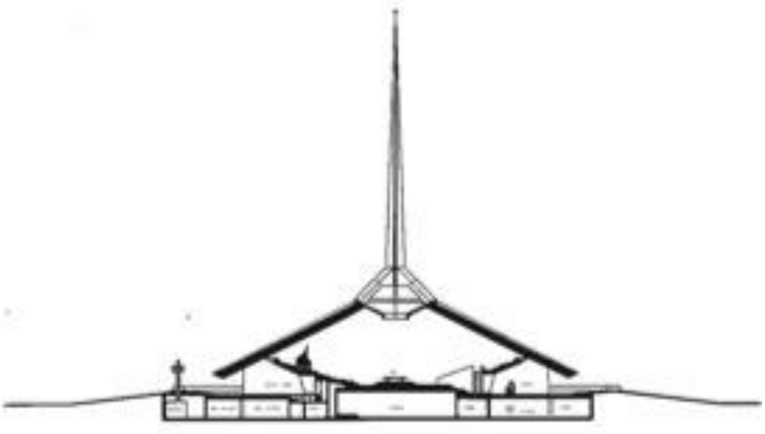
Saarinen designed the long, angular, symmetrical sanctuary and the 192-foot (59 m) tall spire in a single stroke:

On this site, with this kind of central plan, I think I would like to make the church really all one form: all the tower. There would be the gradual building up of the sheltering, hovering planes becoming the spire. The spire would not be put on a box or come up from the sides of the roof, as we did at Stephens College. The whole thing, all the planes, would grow up organically into the spire

—Eero Saarinen

O

Original sketch.



Final design.

From the outside of the building, the spire symbolized reaching upwards to God; on the inside, it created an enclosed soaring space for the congregation. The church was intended to remove man from the earthly world, so instead of being anchored to the ground with solid rectangles, Saarinen used pointed angular forms that hover and point to the heavens. At the top of the spire is a 5-foot (1.5 m) gold leaf cross, symbolizing Christ's sacrifice.

Baptistery

The baptistery is a small space, decorated with a sunburst design, symbolizing the Holy Trinity. It is separate from the main sanctuary, designed to give the ceremony more dignity. The separation between the baptistery and sanctuary also recalls the tradition of the Early Christian church, when only those who were baptized could attend Communion.

Influence

The North Christian Church was one of the most copied buildings from the mid-twentieth century. Although it did not generate much interest during Saarinen's life, the decades that followed produced copies of the building all across the America. It was the last building Saarinen designed before his death, and he thought it was one of his greatest achievements:

When I face St. Peter I am able to say that out of the buildings I did during my lifetime, one of the best was this little church, because it has in it a real spirit that speaks forth to all Christians as a witness to their faith

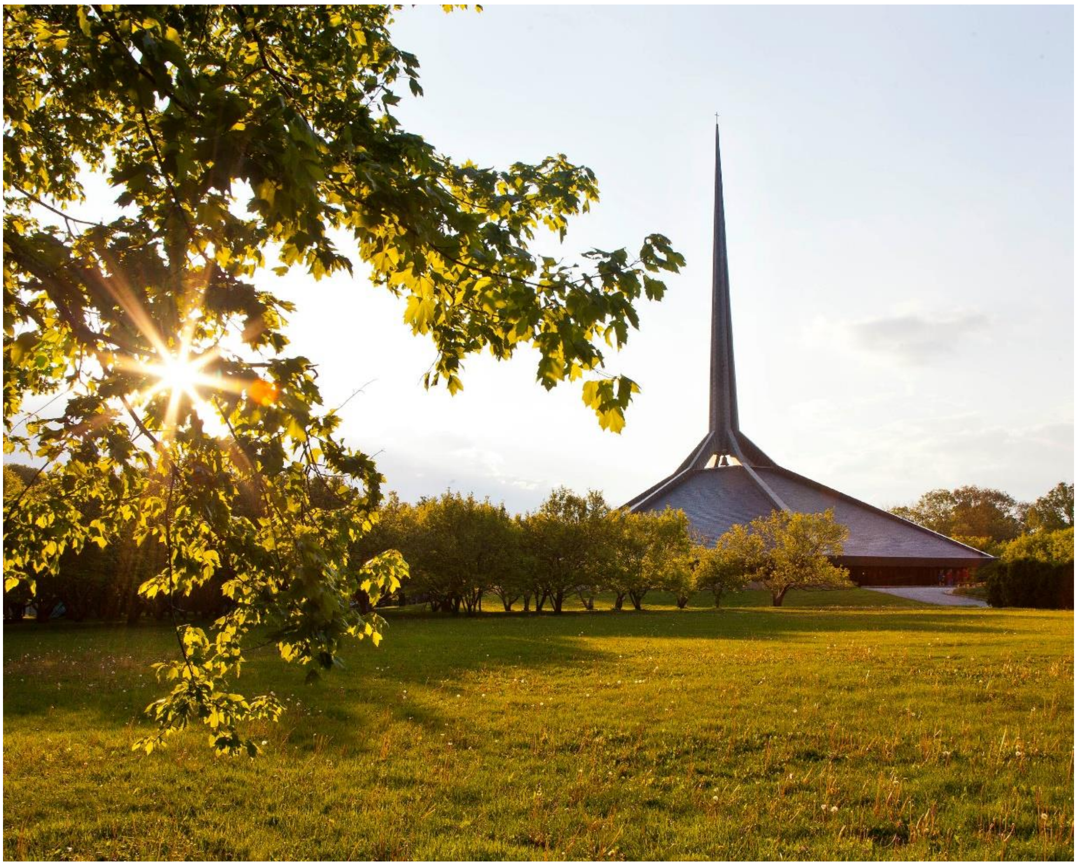
—Eero Saarinen

Recent history

As the membership has decreased and upkeep costs have increased, the congregation has begun to have difficulty raising the necessary funds for maintenance of the structure. In April 2018, the Indiana Landmarks historic preservation organization added the church to its list of 10 Most Endangered Indiana landmarks to raise awareness of the problem and find ways to save it.

In 2019, Landmark Columbus received a 2019 Keeping it Modern Architectural Conservation Grant from the Getty Foundation for the iconic church. With this grant, Landmark Columbus—together with Prudon & Partners, Reed-Hilderbrand, Bryony Roberts Studio, Enrique Ramirez, ICR-ICC and others—are developing a conservation management plan to provide the historical context and strategic guidance necessary for the church's long-term upkeep.

On July 16, 2022, the congregation held a "Celebration of Life" service for the building. The church is now permanently closed and no longer allowing tours of the building.



6. Building the St. Louis Gateway Arch

This chapter is extracted, with acknowledgement and thanks, from an Administrative History of the Jefferson National Expansion by Sharon A. Brown published on the National Parks Service website at www.nps.gov. It describes the monumental technical, administrative and financial problems that were overcome. These problems included planning disputes, cost overruns, and union strikes. Eero Saarinen played a key role in the process – an achievement as remarkable as his original design.

George Hartzog started work on February 1, 1959. For almost four years he readied the rough site to receive the Arch foundations. The elevated trestle would be torn down, the tracks relocated; but Hartzog would leave before a single section of the stainless steel Arch was in place, because he could not see sitting there "watching other guys having fun building it."

Hartzog, coming fresh into the project, strove to set schedules, prioritize items, expedite tasks needing completion, and prepare contract plans to meet completion schedules. Hartzog inherited several unfinished projects. On the site, remaining buildings and parking lots had to be removed so construction could begin in midsummer. The Old Rock House, which had been painstakingly restored, now stood in the way of the proposed railroad relocation and the grand levee staircase. As soon as the National Park Service announced it would tear the structure down, numerous protests arose which resulted in Eero Saarinen studying the possibility of relocating the building. But even if the Rock House could be moved, Hartzog would have to obtain Federal funds for moving and staffing.

Dismantling began in August 1959. The public protest served to save Manuel Lisa's warehouse from total destruction, for some original stones were saved. Each was numbered and stored on the grounds of the Old Cathedral. When several of the stones were stolen from that location, they were placed in the basement of the Old Courthouse for safe storage. Park Service plans were to reassemble the building and open it as a museum. The Old Courthouse was also destined to be a museum. Even though initial plans were for the building to be used for office space only, it served as a temporary museum until the new museum and visitor center were completed on the riverfront. Plans called for the new exhibits to consist of ten principal units, each containing twenty-five exhibits in wall panels or cases. Dioramas, photographic displays, and Indian and frontier artifacts were to be exhibited. All rooms in the Old Courthouse except the two courtrooms and Park Service offices were destined to be temporary exhibit rooms.

The Denchar Warehouse still stood south of the Old Cathedral, containing the iron and architectural fragments salvaged from the demolition of 1939 to 1942. For many years plans had called for an architectural museum to be built in the memorial with the fragments serving as the principal resource. Economic reality struck in 1957, however, resulting in Eero Saarinen dropping the Museum of American Architecture from memorial plans. During 1958, when hundreds of cubic yards of fill were spread on the site according to the grading plans, the warehouse had to be removed. Age and decay made the building difficult to maintain, so Julian Spotts requested that the fragments be given away because they could not be used at the memorial. National Park Service Director Conrad Wirth approved the request, form letters were prepared and sent to local universities and museums offering the fragments at cost, and the Park Service staff developed a plan for disposal by the spring of 1958.

The Smithsonian Institution selected one-third of the fragments before Walter Huber, chairman of the National Park Service Advisory Board, expressed concern to Director Wirth about the situation. Superintendent Spotts was told to stop further action until the Park Service could restudy the collection. Spotts noted, however, that every time a delegation studied the fragments, more material was marked for retention. Spotts wanted a final selection to be made. In August Wirth finally stated the Park Service policy governing the preservation of the fragments. He believed that every reasonable effort was made to use as much of the material as possible in the memorial and by donation to the Smithsonian Institution. The remainder of the fragments not taken by schools, museums, and historical societies would be disposed of when the Denchar Warehouse was razed. This served to allay Mr. Huber's fears that valuable historic objects were being destroyed needlessly.

By September 1958 the National Park Service decided which objects it wanted to keep. Within the next few months the Smithsonian Institution, the Missouri Historical Society, and other organizations hauled away selected items. In the winter of 1959, the Denchar Warehouse was torn down, ending all hopes of having a Museum of American Architecture on the memorial grounds.

The parking lot on the north end of the site continued to shrink as the fill was spread on the grounds. To save the parking space, distressed downtown merchants proposed stockpiling the dirt instead of spreading it, but Park Service officials believed this would entail unnecessary time and extra expense. By March 1959 all dirt immediately available was on the site. In December 1959 Mayor Raymond Tucker negotiated with the Park Service on plans to build a parking garage on the memorial grounds. He issued an order to a drilling company to make test borings for the garage construction. In the previous year the city had awarded an $8,000 contract to Eero Saarinen for a feasibility study for the proposed garage. Saarinen thought the proposal was feasible.

Mayor Tucker also worked with various city and state officials to solve another planning problem. The states of Missouri and Illinois planned to build a free bridge near Poplar Street at the south border of the memorial. Their plan calling for usage of twenty five acres of memorial land caused considerable controversy, so Mayor Tucker appointed a committee (composed of Eero Saarinen and the City Plan Commission) to work out a plan to the satisfaction of the city, state, and Saarinen. In June 1959 the committee agreed on a plan requiring only two and a half acres of memorial land on the southern end. Missouri was then ready to proceed, and submitted the plan to the Illinois Division of Highways for approval. The Bureau of Public Roads also had to approve the plan because the bridge was part of President Eisenhower's Federal interstate highway system.

Zoning Questions

Eero Saarinen worked with city officials on yet another aspect of planning and zoning buildings near the memorial. Saarinen believed to a large degree that the memorial's success depended upon the harmonious development of the adjacent areas, including the north, west and south sides, the bridges spanning the river, and the east river bank. The design of the new bridge was most important. Saarinen envisioned the redevelopment as a chance to impose desirable restrictions, saying "Here is a rare opportunity to develop these areas in a unified way with the highest standards of design creating high property values."

In the summer of 1959 Saarinen had to voice his views to exert some control over beginning neighboring development. Lewis Kitchen, a real estate developer from Kansas City, Missouri, announced plans in April to build two forty-story buildings on Third Street opposite the memorial. When critics charged that the tall structures would interfere with the 590-foot Saarinen Arch, Kitchen offered to lower the buildings' height. He met with city and park officials to solve the height problem in July. Even though the city controlled construction, the National Park Service and Eero Saarinen were consulted. One step already taken by the St. Louis Board of Aldermen was providing for a declaration of blight to be placed on a fifteen-block area west of the memorial. The aldermen thus possessed control over the area because all developers would have to submit their plans to the board for review. All redevelopment and rehabilitation would have to be in accordance with the city's general plan.

Months passed as consultations were held between city and Federal officials. As of October, Park Service officials did not know just how tall the Arch was going to be. Saarinen was considering a height anywhere from 590 to 630 feet. He had not yet designed the Arch foundations, considering this task unfeasible until a definite height was determined. The delay caused some concern among Park Service officials because of the tight construction schedule they faced. Saarinen's decision on the Arch's height depended in part on adjacent development heights. A decision had to be made soon on the Arch so that the foundations and visitor center could be designed. Director Conrad Wirth decided to meet with Mayor Raymond Tucker to try and solve the problem. Late in October Tucker and Wirth agreed to limit the total height of buildings facing the memorial to 275 feet or about twenty-seven stories. Lewis Kitchen cut down his height proposal for the Mansion House development and the city announced that any developers who wanted to build structures facing the memorial would have to have the city approve their plans. The National Park Service, along with Eero Saarinen, agreed to raise the height of the Arch.

With all these additional issues being solved and the way cleared for construction, St. Louis congressional leaders sought more money. Unfortunately, Department of the Interior officials believed that it would be well into the 1960 fiscal year before construction would proceed into the next phase of grading, landscaping, and paving. Since only the railroad relocation work had been funded, the next phases of construction needed additional appropriations. Considering the national budgetary and fiscal situation, Department of the Interior officials did not include a request for any extra funds in the 1960 fiscal year budget.

Despite the Interior Department's attitude, St. Louis congressional members submitted a request for $2,491,100 in extra funds to a Senate appropriations subcommittee on May 16, 1959. National Park Service Director Conrad Wirth thought the request could not be justified. Instead, he suggested that the supplemental appropriation could be sought in January 1960 if the construction were to the point where money could be spent on the project in fiscal 1960. The Senate Appropriations Committee, acting upon this opinion, omitted the money for the project in the Interior Department appropriation bill. Committee members approved only $133,000 for operations and maintenance. Now congressional members had to wait until January 1960 to seek the funds again.

Although memorial supporters obtained no additional funds, they still had final plans to finish and ground-breaking ceremonies to attend. In March 1959 the National Park Service announced new plans for a historical museum on the site. Because Saarinen had abandoned all plans for museums on the grounds for reasons of cost, he and George Hartzog decided to place the Museum of Westward Expansion underneath the Arch. The 1959 National Park Service Master Plan revealed that the memorial's visitor center, housing the museum, an auditorium, and an information center, would be located beneath the promenade at the foot of the Arch. Access was gained by ramps leading to the elevators for the "sky-ride" to the top of the Arch.

All development would follow the general pattern of Saarinen's revised plans, with the dominant physical and inspirational feature of the memorial remaining the stainless steel Arch. The only historic structures to be preserved within the memorial were the Old Courthouse, the Old Cathedral, and the Old Rock House, which was to be reconstructed near the south terrace overlook. The two river overlooks at the north and south ends of the memorial would contain exhibits concerning the river and railroad transportation aspects of westward expansion. The Old Courthouse was to serve as the administrative and operational headquarters for the area. Interpretive elements would include the structure's history and the St. Louis phase of westward expansion.

Two developments specified in the 1959 plan were later dropped. Plans then called for two planted areas containing trail systems with interpretive devices relating to the Oregon and Santa Fe Trails. Another provision stated that any sculpture added had to be related to the theme of westward expansion. Other 1959 policy decisions have remained in effect throughout the years. It was decided not to allow eating facilities within the area, and parking facilities above or below ground would be constructed and operated by the city of St. Louis at the north or south end of the memorial. Ample room existed on the grounds to assemble crowds for infrequent dedication, ceremonial, or patriotic events directly related to the proper functions of the park but there were to be no special facilities for large scale crowd events such as pageants, concerts, or other extravagant affairs. The National Park Service believed that the city of St. Louis possessed the facilities for such events. It was not intended that the memorial be viewed or used as another city park.

The memorial's development program was part of the National Park Service's Mission 66 program. Designed to preserve the park areas through adequate development and staffing, Mission 66 was the Park Service's long range improvement program. The name came from the original target set for completion of the program, 1966, which would be the fiftieth anniversary of the Park Service's establishment. Completion of the memorial's development was scheduled for 1964, the 200th anniversary of the founding of St. Louis.

The Master Plan was revealed to the press and city officials on March 10, 1959 in a meeting in the Old Courthouse's oval east courtroom. Park Service Regional Historian Merrill Mattes explained the plan's guidelines, which were well received by the city and association officials. The mayor of St. Louis delivered a check for $888,000 to Regional Director Howard Baker as the city's contribution to the first phase of the development.

By the end of April, plans and specifications were approved for the railroad relocation, the first phase of the memorial's development program. Earlier in the month Park Service engineers made an agreement with the Brotherhood of Railroad Trainmen to provide ventilation in the railroad tunnel. The union had gone to the Missouri Public Service Commission with their objections to the tunnel plans and an agreement was reached. On April 22 representatives from the various National Park Service offices, along with Eero Saarinen and his consulting engineers, Amman and Whitney, met in the Old Courthouse to discuss any questions concerning the tunnel plans. They wanted to solve all differences before the Public Service Commission's formal hearing on the tunnel plans and specifications. This was done, and on May 6 the commission ordered that the construction of the 960-foot tunnel be undertaken with a provision for artificial ventilation. The work included placing 3,000 feet of dual tracks into a tunnel 105 feet west of the elevated railroad, along with filling, grading, and trestle work.

On June 8 the National Park Service received eight bids for the railroad relocation project. Gathering in the east courtroom of the Old Courthouse, contractors, bidders, and Park Service personnel submitted and read bids respectively. Reading the bids took two hours, after which Park Service officials announced the low bidders to be MacDonald Construction Company, 1310 South Grand Boulevard, St. Louis, with a bid of $2,426,115. This was well below the Park Service's engineering estimate of $2,940,919. Ten days after George Hartzog submitted the bids to the Park Service's higher offices for approval, MacDonald Construction Company was awarded the contract for the memorial's first phase of construction.

Ground-Breaking

The long awaited ground-breaking ceremonies took place after the contract was awarded. At 10:30 a.m. on Tuesday, June 23, 1959, special ceremonies marked the opening of memorial construction as Mayor Raymond Tucker took a spade in hand to dig the first bit of dirt while local business and civic leaders watched. Director Conrad Wirth attended as former Mayor Bernard Dickmann presented remarks. The work began.

The $500,000 placed in escrow by the Terminal Railroad Association the previous year was now turned over to the National Park Service as the TRRA's contribution for relocating the tracks. Using these funds, the MacDonald Construction Company started work. By August the company finished demolition of Manuel Lisa's Old Rock House, started tunnel excavations, and poured concrete. During the autumn a national steel strike made it difficult to get steel, but adequate pipe for piling had been obtained, causing no delay in the project. In November, about two weeks after a final Master Plan for the memorial's development received Director Wirth's approval, MacDonald Construction Company began pouring the concrete tunnel walls. All the work connected with moving the railroad was done entirely on preliminary plans. All the different interests could not agree on a final plan, so the National Park Service advertised the project on unit prices and built the project on preliminary plans.

George Hartzog.

Under Superintendent George Hartzog, the construction moved like clockwork into the new year 1960. Tremendous amounts of work were done as the memorial development moved into gear for the first time in twenty-five years. In January contracts were issued to Eero Saarinen for design, working drawings, supervision, and preliminary designs for the visitor center and Arch. Core borings were under contract. The tunnel ventilation system was covered by a change order issued to MacDonald Construction Company. Plans were complete and ready for contracting in January for the embankment retaining walls north and south of the railroad tunnel at the steps. Ongoing research continued on the historical aspects of the memorial. Restoration, historical research, exhibit plans, installation of museum units, archeological investigations, and salvage occurred throughout 1960, 1961, and 1962.

The railroad tunnel construction went well during the spring months. By March it was 29 percent complete. Other work progressed at an equally fast pace. The National Park Service cooperated with Eero Saarinen in supplying data for a utility master plan. Planned pedestrian overpasses were lowered in priority. In April regional staffing teams reviewed the interpretive development program while work began on exhibit plans. In the Old Courthouse, the judge's chamber adjacent to the east courtroom was restored and partially refurnished with period furnishings.

Mayor Tucker met with Park Service officials to discuss the parking lot once more. They agreed in May to use $300,000 in funds from the temporary parking lot to develop permanent parking facilities. The city and the Park Service had an agreement whereby the city operated the lot with the revenue going for work on the Old Courthouse and other improvements. Now, at Tucker's request, the National Park Service agreed to use the funds instead to construct permanent parking facilities. The initial contribution was $250,000 with an additional $50,000 coming from future funds.

Museum Planning

A museum prospectus for the visitor center was completed and distributed for review to the Park Service and Saarinen offices in May 1959. The study represented a major revision of the previous museum plan included in the preliminary museum prospectus. More than a year earlier Eero Saarinen told Park Service staff that he needed basic data on administrative, interpretive, and maintenance requirements for the memorial. In April 1959 they supplied him with the narrative portions of the Master Plan, yet this document did not contain enough data for his purpose. Saarinen needed criteria for his architectural design. Only a museum prospectus could provide him with the information he needed; a prospectus covering all the memorial's features including the Arch, visitor center, overlooks, Old Rock House, and Old Courthouse. During this period, Saarinen and National Park Service staffers conducted a survey of outstanding museums in the United States, looking for qualities they wanted to incorporate into the memorial.

The Old Cathedral stood on the memorial grounds and it too needed decisions on its interpretive features. Church authorities wanted a cooperative agreement with the Park Service on matters such as what portion of the church would be open to general visitor use, a possible correlation of visiting hours with those of the memorial visitor center, and accommodations for parking. Director Wirth approved a scheme that allowed for a small surface parking lot south of the church.

As National Park Service officials planned the memorial's interpretive direction, their attention turned to the site itself as a historic resource. When the railroad relocation construction disturbed the site of old St. Louis, Park Service archaeologists commenced excavations on several promising locations. Archeologist Zorro Bradley test excavated the site of the 1835 American Fur Company warehouse and General William Clark's residence. No structural remnants were found, but fragmentary foundations were located for two other historic edifices: an 1802 stone bake house built by Joseph Robidoux III, and the 1840 Glasgow-Howard building. As construction accelerated, the Park Service expanded their efforts to locate and preserve historic remains.

Realistically, Jefferson National Expansion Memorial was established to commemorate events in American history that occurred in buildings which no longer existed. In St. Louis there were few remains to be found on which to base an interpretive program. National Park Service officials agreed that a museum should be built on the site. The museum, to be the largest in the park system, had to be effective and dramatic in interpreting the legacy of westward expansion as the Arch was in commemorating that event. George Hartzog's staff of historians, headed by William Everhart, had to plan the entire interpretive development program. Hartzog told his superiors that "It is entirely probable that we will be creating the outstanding memorial of the 20th century. If this is true the very finest creative effort in museum and interpretive planning should be employed." To design the finest museum the Park Service needed "superbly inventive imagination and vision." Fortunately, the provisions of the governing acts that permitted the Park Service to use outside services without normal administrative restrictions allowed them to hire experts in the field.

Armed with the museum prospectus and findings of the museum tour, the National Park Service staff in St. Louis pursued a research development program governed by three factors. First, the large scope of the task; second, the lack of planning data; and third, the time limits on the program. Data was needed for Saarinen to complete the design of the museum structure in addition to researching, planning, designing, and constructing the museum and the overlooks. Planning data proved scarce; the March 1959 interpretive plan only established guidelines and the Master Plan had only been approved the previous October. No determination of the museum's content had been made, yet construction was slated to begin in less than eight months. The project completion date for all this work was 1964.

In June, work began on the second phase of the research studies for the visitor center museum to supplement the museum subject outline. Historians prepared individual research narratives along with exhibit layout plans for each unit topic. By August the team completed the memorial's interpretive prospectus, a document of 200 pages, which defined the objectives of all the memorial's interpretive features. The research team also started a study on the outline prospectus of the visitor center interim museum.

A research and interpretive development seminar was held from October 11 to 12 in St. Louis, where the entire research program was reviewed and approved. Park Service staff members from Washington, Omaha, and St. Louis attended. The interpretive and museum phases were reviewed as well as the research program, with emphasis placed upon completion of the working drawings for the visitor center. John Jenkins, chief of the Western Museum Laboratory, was detailed to the memorial for six months to aid in this project. A series of conferences held in Eero Saarinen's offices starting in December concerned the space arrangements in the proposed museum. His organization prepared the plans for the space and structural arrangements. Meanwhile, the Park Service staff finished the preliminary plan on the first museum unit entitled "Cattlemen Up From Texas." This method of preparing museum plans by units was used on all the remaining eleven interpretive topics. The historians had to work fast, because the opening of bids for excavation of the visitor center was scheduled for January 12, 1961.

Perpetuating the previously established tradition of working in conjunction with city officials, George Hartzog briefed Mayor Raymond Tucker on the continued memorial development. Together these men agreed on the importance of developing the museum and visitor center simultaneously with the Arch. They publicly announced that these features would be included in the memorial plan. Now that railroad relocation was underway, the National Park Service planned for the Arch development while attempting to cut costs. At the end of June, in conferences in Detroit between the Park Service's Eastern Office of Design and Construction (EODC) and Eero Saarinen, the decision was made by EODC not to include excavation of the museum simultaneously with the Arch and visitor center in the initial contract. This procedure would effectively remove the museum from those major features that the city and the National Park Service announced would be finished by 1964. If the Park Service did not build the museum there would be no interpretive program. In Superintendent George Hartzog's estimation, this decision proved that the Park Service was more interested in building the architectural features of the memorial (i.e. the Arch) than the museum, which interpreted the purpose for which the memorial was established.

Eero Saarinen agreed with Hartzog that the excavation of the entire visitor center, walls and roof of the museum should be included in the contracts. Mayor Tucker was also disappointed with the decision. George Hartzog, however, did not let the decision become a final verdict. He discussed the matter with Director Conrad Wirth, who agreed that the contracts should be changed to include the excavation and construction of the museum along with the Arch and visitor center. It was up to Hartzog to convince the EODC staff of the necessity for the change. The decision in Detroit to schedule construction in two parts was made for two reasons. Support for the Arch construction required bracing on solid ground, and Saarinen originally wished to avoid having the contractor work over the museum exhibit rooms during the Arch construction. Secondly, it was not possible to design the exhibit space until Saarinen reviewed the historical narrative being prepared by the Park Service historians and until he developed a concept for exhibit presentation. Exhibit design had to precede building design.

Superintendent Hartzog disagreed with these points. He did not understand how construction problems would be any greater in building the Arch over the completed museum than they would be in excavating and constructing the museum space simultaneously with the construction of the Arch during 1963. Hartzog also thought there might be merit in designing a museum that would be adaptable to different exhibit arrangements rather than in building a static space. He did not understand why the walls and roof of the museum could not be designed and constructed before the exhibit design. Just as important, Hartzog believed that a second, later excavation for the museum would add to the cost of the project. To ignore the museum space was not in accordance with the program developed and furnished to Mayor Tucker earlier in the year, and it was not in accordance with the understanding between EODC and Saarinen that the museum was an integral part of the overall development. Both must proceed simultaneously; they should not be divided. Hartzog urged the EODC staff to consult further with Saarinen.

The technical reasoning behind limiting the excavation during the Arch construction was explained once more to Hartzog. Edward Zimmer, chief, EODC, was assured that Hartzog knew why the intended use of a museum had to be known before the four walls were designed. Zimmer believed that the memorial would be completed by 1964. Further, he admonished Hartzog not to question the development:

‘Perhaps it is difficult for you to understand technology as you have indicated; however, difficult structures to construct such as the arch, which you must remember will be the only structure of its kind in the world, will take construction techniques never before attempted to complete. The best technical minds in structural design and erection, both here and in Europe have been employed to produce this marvel of modern technology.’

Such statements did not make George Hartzog give up, however. He asked Zimmer once again to discuss the issue with Director Wirth before plans were developed which did not carry out the program previously agreed upon. There was no doubt in Hartzog's mind that Director Wirth and Mayor Tucker agreed with him. Regional Director Howard Baker wanted to leave the question of plans and specifications up to EODC and Saarinen, believing the visitor center/museum construction to be secondary to the Arch. Despite this, he offered solace to Hartzog: "While the picture may look somewhat cloudy at the moment, I feel it will be all right. However, at any time you feel you should do so, you are right in bringing up the question of plans and timing and I want to keep informed of any problem at any time so that we can keep the project moving as it should." Director Wirth now stepped in. Reassuring Hartzog of his concurrence with the Superintendent's thinking on the matter, Wirth agreed to meet with Hartzog, Mayor Tucker, Regional Director Baker, a representative of EODC, and Eero Saarinen in the latter's office on September 2. "We should be able to get things squared away at that time," Wirth assured Hartzog.

At the September 2 meeting, the group made major decisions on the memorial's development. Director Wirth wanted the overall program to be confined to those items essential to completing the principal elements of Saarinen's plan. Rising costs dictated this policy, and meant that some items, such as complete rehabilitation of the Old Courthouse and construction of the grand east staircase, were dropped. Consideration of building the pedestrian bridges over Third Street was deferred, with the hope that the planned expressway would be constructed on a subterranean level through the area. Wirth stated that the museum development program should be kept firmly in the Park Service's control. During the course of planning the previous year, various elevator companies proposed schemes for a transportation system to carry visitors to the top of the Arch. Now Director Wirth was pleased with an "ingenious" proposal made by Richard Bowser who had been contacted through the Montgomery Elevator Company of Moline, Illinois, but took on the project as a private contractor. Wirth was also was impressed with consulting engineer Fred Severud's structural studies of the Arch. Hartzog recommended a program to obligate the remaining funds available for the fiscal year. Funds totaling $3,700,000 would be used for rehabilitation work on the Old Courthouse retaining walls and cornices, the main steps of the riverfront overlooks, portions of the overlook structures themselves, and the levee retaining walls. Concerning the question of constructing the museum simultaneously with the visitor center and Arch, Director Wirth wanted early contracting in the fiscal year on at least the subfootings for the Arch and visitor center. More important, he did not believe the National Park Service should allow the Arch to proceed without constructing the museum along with it. George Hartzog had won.

To keep control over the museum's content, Regional Director Baker believed Saarinen should serve as a consultant for the museum's interpretive development as well as the consulting architect for EODC. Because of the vastness of the interpretive theme and the minimal historic features within the area, Baker recommended that Eero Saarinen's contract be expanded to include the preparation of the preliminary museum plan. He wanted to defer preparing the detailed museum exhibit plan until Saarinen completed the preliminary. Despite these wishes, Saarinen later declined the project.

Surrounding Development

Instead, Saarinen stayed involved with the memorial's peripheral development. In 1960 the city of St. Louis was poised to begin a major redevelopment of its downtown and riverfront areas. Zoning changes, the Mansion House and proposed Laclede's Landing developments, and the construction of the interstate highways added to the memorial construction in providing impetus to St. Louis' facelift. Eero Saarinen stayed involved with those projects that affected the overall riverfront development, such as peripheral zoning. The proposed interstate highway bridge, to be located south of the memorial area, subsequently attracted Saarinen's attention. He approved of the bridge's construction, thinking that this bridge, along with the Eads Bridge bordering the memorial on the north, would help tie the entire complex together. When the bridge was first proposed in the late 1950s, Saarinen had pushed for a close visual relationship between the bridge and the memorial. It was important to him that the bridge be of a design sympathetic to the memorial. National Park Service officials wanted a single-level girder deck bridge with clean architectural lines, hoping this bridge would block out much of the adjacent MacArthur Bridge from the memorial visitor's view. Saarinen and Park Service engineers met with the Missouri and Illinois State Highway Departments, the Bureau of Public Roads, and Sverdrup and Parcel Engineering Company to discuss both the bridge and its approaches. They examined the possibility of depressing the expressway approaches on the Missouri side, and the Park Service had no objections. Their only concern was the lowered expressway's effect on the Old Cathedral.

Another concern of the Park Service was the railroad tracks remaining on the east side of the memorial. Superintendent Hartzog met with the Terminal Railroad Association, the Missouri Pacific Railroad and city officials concerning the removal of the city track and the relocation of the Missouri Pacific track. The Park Service had long prepared for the removal of these tracks. After the railroad relocation contract was awarded, the Park Service issued a change order in January 1960, involving the establishment of substandard clearances over the relocated railroad tracks at the north and south ends of the memorial. The Park Service had to obtain Missouri Public Service Commission approval of the substandard clearances. The work included in the change order required a relocation of the tracks on the levee to reduce the encroachment on the levee, which would provide the additional street width required by levee automobile traffic. Negotiations with the unions, railroads, and city officials were expected to last several months.

Work on the levee was accomplished by advertising a separate contract from the railroad relocation work. Most important, the work on the levee had to be finished before the MacDonald Construction Company could work on the north end of the memorial. The MacDonald Company's construction of a retaining wall could not begin until after the levee tracks were moved. Further, those tracks could not be moved until the Wharf Street redevelopment was finished. The National Park Service operated under extremely critical, tight time schedules to maintain coordination between the several ongoing developments and keep the program on schedule.

In 1960, three tracks remained on the levee. The 1958 track relocation agreement provided that the westernmost track, owned by the Missouri Pacific Railroad, was to be abandoned, and it had been by 1960. The Missouri Pacific owned the center track while the easternmost track was owned by the city and leased to the TRRA. Both railroads agreed to convert the two tracks into one, with switching arrangements placed north of the Eads Bridge and south of Poplar Street. They furnished the rails and ties for the new tracks while the Park Service assumed responsibility for constructing the new track. The Park Service also assumed the cost of the new track, provided that the Missouri Pacific conveyed to them its two existing tracks. Additionally, the railroad was to make a contribution of $3,150 to the Government for an estimated removal cost of the railroad's westernmost track. Time was important because the levee construction contract was to be advertised on November 15 and awarded by December 23. By the end of the year the railroad relocation contract was approximately 50 percent complete.

Appropriation Efforts

Congress had provided no additional funds for the memorial construction since the 1956 appropriation for the railroad relocation. President Eisenhower's 1958 authorization of $17,250,000 had yet to be appropriated at the beginning of 1960. The local congressional delegation sought financing as the Park Service staff at the site planned the remaining development. The delegation asked Maurice Stans, director of the Budget Bureau, for an appropriation of $2,503,125 to be included in a supplemental appropriation bill to finance the Department of the Interior operations for the rest of the fiscal year. The delegation believed the supplemental money necessary because of what they considered inadequate appropriations proposed in Eisenhower's budget. The President only proposed $1,650,000 for fiscal year 1961 while Mayor Tucker and other leaders believed that a total of $5,686,875 was needed to keep the development on schedule for completion by 1964.

In late January 1960 Mayor Tucker, along with Senator Hennings, Representatives Curtis and Karsten, and Morton May of the Jefferson National Expansion Memorial Association, appeared before the Interior subcommittee of the House Appropriations Committee seeking the additional funds. All of the available funds for the project were committed except for a $90,000 reserve for contingencies. The 1961 budget then before Congress included $1,650,000 that with city matching funds would make $2,200,000 available for the year. The change order already issued to MacDonald Construction Company for construction of the crossover bridges and retaining walls required $2,100,000 in financing. National Park Service officials believed that $10,920,000 of construction could be undertaken between January and the end of the next fiscal year, June 30, 1961. Financing these projects required a Federal appropriation of $8,190,000 with matching city funds of $2,730,000. Funds totaling $337,500 could be obligated during the remainder of the 1960 fiscal year. Tucker and the delegation sought a supplemental appropriation.

Their requests fell on deaf ears. On February 12, 1960, the House Appropriations Committee refused to grant more than $1,650,000 in funds, the amount specified by the administration. The House group believed that the serious fiscal situation then facing the nation dictated their action. The St. Louis delegation's attempts to acquire the supplemental appropriation also met with failure, for Maurice Stans said no. Mayor Tucker tried again, testifying before a Senate Appropriations subcommittee on February 18. He painted a bleak portrait of the memorial development, just barely creeping along without the additional funds. The one-man subcommittee, Senator Carl Hayden (Arizona) thought the situation difficult, but told Tucker to prepare a list of basic items needing completion and the least amount of money required to keep the project moving. Hayden might approve such an appropriation in between the administration's approved figure of $1,650,000 and the full requirement of $8,190,000. Meanwhile, other congressional members placed pressure on Secretary of the Interior Fred Seaton.

It was in this manner that the need evolved for keeping the memorial development to a minimum. Superintendent George Hartzog and Joseph Jensen of Eero Saarinen and Associates revised the schedule of operations to allow only a minimal development: the Arch, visitor center, and museum. The fund amount they used was the irreducible minimum, barely enough to keep the major features on schedule. Mayor Tucker wrote Senator Hayden stating that $4,603,125 was needed to continue construction throughout fiscal years 1960 and 1961. This amount, added to the city's matching funds of $1,534,375, would permit construction totaling $6,137,500.

The compromise worked only temporarily. On March 29 the Senate approved the $4,603,125 in their version of the Interior Department omnibus appropriation bill on a roll call vote of 47 to 37. The under secretary of the interior then approved the appropriation and sought approval from the Bureau of the Budget. This move was expected to help the bill when it came up before the Senate-House conference, but the conferees failed to retain this amount. They approved only the House recommended amount of $1,650,000. Senator Hennings subsequently asked the Bureau of the Budget to approve an additional appropriation of $2,953,125, or, the difference between $1,650,000 and $4,603,125. Hennings felt this procedure might succeed, because under normal procedures, supplemental measures providing additional funds for Government agencies would be considered by Congress before the end of the session.

The situation seemed crucial, with the Arch construction hanging in the balance. Senator Clinton Anderson, chairman of the United States Territorial Expansion Memorial Commission, called the first meeting of that group in two years to exhibit his concern over the potential postponement of the construction. Weeks passed before the supplemental funds bill came before Congress. On June 23 the House approved the supplemental appropriation of $2,953,000 for Jefferson National Expansion Memorial. The passage was by a voice vote after members struck an amendment offered by Representative H.R. Gross (Iowa) to cut the memorial funds from the bill. Representatives Thomas Curtis and Frank Karsten joined in the ensuing debate. The National Park Service was criticized for its failure to anticipate its monetary needs, but in actuality the mistake was the Budget Bureau's. It failed to ask for the necessary funds to keep the construction on schedule.

The Senate approved the bill on July 1, with President Eisenhower following suit on July 19 by signing the document. The supplemental provision for $2,953,000 added to the $1,650,000 approved earlier, made a total of $4,603,000 for continued work on the memorial. In November Mayor Raymond Tucker matched the Government contribution with local funds totaling $984,333. No sooner had the process been followed, the work done, and the funds obtained for fiscal year 1961 then the process began again. In December 1960 the Bureau of the Budget, determined not to get caught again, approved the full amount of $9,497,000 in Eisenhower's budget for fiscal year 1962.

The amount was subject to review by President-elect John F. Kennedy. He allowed the amount to stand and the House Appropriations Committee approved the expenditure on April 14, 1961. Four days later the full House approved; not a voice was raised in protest and from there the matter went before the Senate. Mayor Tucker and Missouri Senator Stuart Symington emphasized to the group that the memorial was going to be finished within the original authorization. No construction plans required expenditures over 1958's $17,250,000 authorization. The Senate went along with the request with no debate in June, and on August 3, 1961 President Kennedy signed the 1962 fiscal year Interior Department Appropriation Bill which included $9,497,000 for the construction of the Gateway Arch. Only $510,000 in Federal funds remained to be appropriated from the original Federal authorization of $17,250,000. During the months of attempts for large appropriations, Superintendent Hartzog kept busy on other projects. All through the years of its existence the memorial never enjoyed the benefits of an affiliation with a historical association or cooperating which would sell interpretive literature and other items. In late 1960 the Jefferson National Expansion Memorial Association sponsored the formation of the Jefferson National Expansion Historical Association. Articles of incorporation were filed in Jefferson City, Missouri, establishing the organization as a non-profit corporation. Operations started by April 1961. The association began by selling postcards and publications, with the profits poured back into the memorial's interpretive program.

The first items on the construction agenda for the new year, 1961, were the opening of several bids and the awarding of contracts. The Klaric Contracting Company of St. Louis was awarded a contract on December 30, 1960 for $98,504 for repairs and replacements of cornices, pediments, and chimneys on the Old Courthouse. Delayed since December, bids opened for the second stage of memorial construction on January 12. The apparent low bidder was MacDonald Construction Company with a bid of

$3,796,015. Their bid was the only one under the Park Service engineer's estimate of $3,888,000, with the contract specifying the construction of the Arch foundations, visitor center/museum excavations, and the levee redevelopment. The National Park Service assistant director approved the contract on February 9, and a notice to proceed was issued to MacDonald Construction Company the next day.

The completion of the north and south overlooks was not included in the revised basic element construction program. Only the steps, east wall, and south wall were to be completed on the south overlook, with financing provided under both the railroad relocation contract and the levee contract. The overlook would be incomplete, yet it would look completed from the levee. At the north end the steps, east wall, and north wall would be finished to enclose the bridge over the railroad trestle in its relocated position. The National Park Service would then pour a floor and roof, but the structure's completion would have to wait. Much of the available funds would be used for ramping and landscaping to permit access of the maintenance equipment from the maintenance area to the memorial.

Construction Decisions

The importance of keeping the construction on schedule manifested itself in view of the project's complexity. The strict time limits and intensified planning and programming demanded coordination between the various offices involved to solve some of the communication problems. Superintendent Hartzog suggested that EODC, the regional office, his office, and Saarinen's people meet at least every six weeks to review developments. Their efforts to maintain communication aided in keeping both major construction contracts on schedule throughout the first months of the year. By April the railroad relocation work was 70 percent complete while the just-started Arch and visitor center excavation work stood at 10 percent complete.

In addition to keeping the project on schedule, the National Park Service had to keep it within the budget of $23,000,000 Federal and city funds. Eero Saarinen deleted particular elements from the contracts to save money and to preserve the memorial's basic design. He removed all the stone curbs, liners, and paving from the levee road with the exception of the stone paving at the main stairs. He eliminated the squared stone facing from the levee walls and overlook structures. The square footage of finished exhibit space was cut back. These deletions amounted to a saving of $750,000, keeping the project within the budget and allowing it to continue with the least amount of interruption. Saarinen's principal concern was with the memorial's function and visitor circulation. He did not care for the idea of leaving the overlooks unfinished, for he considered the purpose and form of the structures to be a necessary part of the plan. Still undecided was the location of the maintenance yard. Saarinen believed it should be situated at the south end of the memorial.

Mayor Tucker and Director Wirth agreed with Eero Saarinen's deletions. They agreed that the major features of the memorial had to be built within the budget at the expense of other desirable but nonessential features. At a June 14 meeting between representatives of EODC, the Washington office, Eero Saarinen and Associates, and Mayor Tucker's office, the final decisions on deletions were made. The visitor center, Arch, and museum complex would contain the following elements: one elevator cab, one finished theater, one rough theater, 41,500 square feet of finished museum space, lobby, restrooms, and offices for the memorial staff. The location of the maintenance area depended upon access from Poplar Street following construction of the Poplar Street Bridge; if proper access existed, the maintenance area would be placed on the south side. Landscaping and utility items were greatly reduced, leaving Conrad Wirth hoping that the Jefferson National Expansion Memorial Association could solicit nonmatching donations for the landscaping program. Wirth, pleased with the cooperation of all involved, expected plans to be pushed so that commitments to have the major features completed by 1964 would be met. The National Park Service EODC moved quickly; six days after the conference, George Hartzog received a preliminary drawing of the visitor center for his scrutiny. On June 30, 1961, Hartzog, along with John Cabot, supervising architect EODC, and representatives of Saarinen's group, met in Detroit to decide whether to separate the visitor center/museum interior work from the shell and the Arch. They agreed reluctantly to do so, for the Arch construction would have been delayed for months if included in the same contract as the visitor center/museum interior. The arrangement gave the National Park Service planning staff more time for exhibit design.

By October 1961 most of the major decisions on Jefferson National Expansion Memorial's developments had been made. The National Park Service had $23,000,000 to plan and complete the construction by January 1964. The railroad relocation project moved toward completion and posed no interference in other phases of the development. The Arch and visitor center excavation, along with the levee development contract, was modified to reduce wall heights and to omit all stonework except at the levee retaining wall. The north and south overlooks were both reduced in size. A decision for completing the grand center staircase was withheld until bids were received for the Arch and visitor center/museum shell. Any leftover funds could then be used for the stairs. Saarinen's recommendations for the elements of the Arch and visitor center shell complex remained the same. The Arch and visitor center shell was covered by one contract with the interior covered by another. Design of the exhibit spaces and exhibits was to be done by the National Park Service. The maintenance building was to be placed at the south end of the memorial. The Park Service would also perform landscaping, but Director Wirth stated on several occasions that no dunes, mounds, or lagoons should be included in the landscaping despite their presence in Saarinen's design. At this time the National Park Service completed their planning, bidding, and work schedules.

MacDonald Construction Company had 95 percent of the railroad relocation complete in November. Operation of the trains over the new tracks started on November 17, and the Terminal Railroad Association notified the Missouri Public Service Commission of the fact. Total completion of this first phase of construction was expected by June 1962.

In view of the Federal appropriation and the need for a matching city appropriation, near the end of the year Superintendent Hartzog presented Mayor Tucker with a progress report on the memorial's planning schedule and financing. As of December 1, total authorization of funds stood at $23,003,150. Appropriations and contributions amounted to $19,657,483, leaving $3,345,667 to be appropriated or contributed. These funds were in addition to the $9,000,000 spent between 1935 and 1959. The National Park Service divided the memorial development into four phases in their attempt to coordinate the construction. Phase I, consisting of the track relocation, retaining walls, and cross-over bridges, was essentially complete. Phase II consisted of research, specimen acquisition and exhibit planning for the museum, redevelopment of the levee, and excavations for foundations of the Arch and visitor center/museum. Completion in November stood at 15 percent, with final completion of the excavation due in January 1962, the research October 1962, and the levee January 1963. Phase III covered the Arch construction and the structural portion of the visitor center/museum, interior finishes of the visitor center/museum, construction and installation of museum exhibits, and a portion of the final landscaping. The Park Service expected to receive bids on December 20, with construction scheduled to start in January 1962. Phase IV involved the final landscaping. With completion set for 1964, the program was on schedule. This condition did not last long. The date to receive bids was extended from December 20 to January 22, 1962, to issue an addendum to the plans and specifications for the Arch construction. The delay would be only the first of many. St. Louis would not see its dream finished by its 200th birthday.

Along with the decisions on development and the contractual procedures, the National Park Service staff made progress on their museum planning. At the year's start the staff launched a full scale museum planning program.

The St. Louis staff, aided by Washington exhibit planning experts and John Jenkins, chief, Western Museum Laboratory, completed exhibit plans for four units during the month of January. With the program on schedule, both the Washington and Western Museum Laboratory exhibit planning teams worked simultaneously with the local staff to produce two unit plans per week in February. A Museum Review Committee, consisting of members of the regional staff, during the month of March conducted the final review of the museum program. Regional Director Howard Baker approved the exhibit plan for the Museum of Westward Expansion on March 22. The museum planning program, started in November 1960, was completed on schedule with the exhibit plans for twelve separate museum units defined. The research staff began the detailed research planning phase of the museum development with a scheduled completion date of July 1961. The final preliminary exhibit plan, complete with sketches of the exhibits for each unit, was distributed to interested offices at the regional office for comment. The report was in two volumes.

Eero Saarinen had indicated that he could not assume the project of working on the museum design, but at the June 30, 1961, meeting he seemed to indicate that he was interested. Historian William Everhart hoped this was true, as did Hartzog. A systematic program was needed for both the museum design and an acquisition program while a final decision was also needed on the museum floor plan. Many more factors were involved. Whether Saarinen or EODC designed the museum, Hartzog still had to set up a schedule for completing the working drawings and the opening of bids. His estimated target date for completion of the visitor center interior was December 1, 1963. Hartzog wondered, however, how the interior finish deadlines could be coordinated with exhibit construction. This could only be accomplished through constant communication and coordination between Everhart, Jenkins and Hartzog.

Exhibit design continued throughout the last months of the year, with the acquisition program for illustrative material and documents for the museum demanding much attention. Regional Curator Newell Joyner and the St. Louis staff prepared a "want list" of objects to save as the first phase of the acquisition program. Several staff members traveled to Kansas City to confer with General Services Administration officials on the best procedures to follow in contracting for exhibit fabrication and production. By December 11 research historian Don Rickey, Jr., and other members of the St. Louis staff submitted their research schedule, which established target dates for the completion of all the research reports needed for museum planning. These reports were the basis for the design and construction of dioramas, for the commissioned art work, and for the exhibit's informational material. On December 18 and 19, Regional

Historian Merrill Mattes reviewed all phases of the research and museum planning program.

At the end of 1961 Jefferson National Expansion Memorial was in very good health. National Park Service staffers continued their research, planning, and construction while the financial outlook appeared adequate for the moment. Cost cutting measures stripped Saarinen's plan of its refined details, but failed to cast a pall over the brilliance of its basic features. The railroad tracks were finally moved, thereby fulfilling former Secretary of the Interior Harold Ickes' restricting condition. Now the memorial could be built. Ten years had passed since Luther Ely Smith's death and his dream now bordered on reality. But the year also brought tragedy, for Eero Saarinen died of a brain tumor on September 1, 1961, at Ann Arbor, Michigan. His partners Joseph Lacy, John Dinkeloo, and Kevin Roche supervised the completion of Saarinen's projects, of which the Arch was only one. The plans were set for the Arch, so Saarinen's death did not affect any major changes in them. George Hartzog firmly believed that Saarinen was just hitting his stride when he died, for he might have been the greatest architect the country ever produced. The work continued according to Saarinen's concept.

Award of the Arch Construction Contract

The east courtroom of the Old Courthouse provided the setting for a special ceremony for the opening of bids for the construction of the Gateway Arch and the visitor center. Representatives of the press and other interested spectators attended the bid opening on January 22, 1962, in which four bids were received. Superintendent Hartzog, presiding, opened the bids, only to find that all of them were above the engineers' estimate. Eero Saarinen's engineers believed the cost of building the Arch within 875 days and the visitor center shell within 300 days to be $8,067,000. The four bids ranged from $11,923,163 to $12,765,078. Because the bids exceeded the estimate, Director Wirth appointed a committee to study both the bids and estimates on the basis of the Government's requirements and to ascertain whether the bids were reasonable.

Superintendent Hartzog headed the committee, which was composed of National Park Service Assistant Director A. Clark Stratton, Assistant Chief of Lands Harry Sanders, Supervisory Architect Robert Smith, and Joseph Jensen of Eero Saarinen and Associates. The group found the bids to be reasonable in view of the Government's requirements after meeting with the four bidders, MacDonald Construction Company, the low bidder; Millstone Construction Company; J.S. Alberici Construction Company and C. Rallo Construction Company, a joint venture; and Frazier-Davis Construction Company and Massman Construction Company, a joint venture. The committee's conclusion that the bids were reasonable meant that the National Park Service must either accept MacDonald Construction Company's low bid or reject all bids and re-advertise the work. Director Wirth wondered if the $12,332,667 of appropriated funds would be enough to finish the work, knowing that re-advertising for bids would cause delay.

Wirth accepted MacDonald's bid. On March 14, 1962, he traveled to St. Louis to sign the contract for construction of the Arch and visitor center shell, and to accept the city's matching fund contribution of $2,500,000 from Mayor Tucker. MacDonald Construction Company agreed to lower their bid by $500,000; the contract awarded to the company totaled $11,442,418. The Arch was to be a unique structure and its construction required the special attention and scrutiny that the National Park Service devoted to it. Nearly one hundred sets of specifications and invitations to bid had been distributed to approximately fifty construction firms which requested the plans in response to public notices. Director Wirth had ordered the four bids examined by the special committee in accordance with Federal Procurement Regulations and upon the advice of the General Accounting Office. At the contract signing Director Wirth announced that sufficient funds were not available to accept bids for the proposed elevator train system to transport visitors to the top of the Arch. The Bi-State Development Agency (established by the Missouri and Illinois state legislatures to promote the planning and development of transportation for the area in and around St. Louis) requested an agreement with the National Park Service, wherein Bi-State would issue revenue bonds to provide funds to install the transportation system in the Arch. When the bonds retired all proceeds would go to the Federal Government. On March 13 and 14 Superintendent Hartzog met with Colonel R.E. Smyser, Jr., executive director of the Bi-State Development Agency, to discuss the proposal. Other offers of financial aid came to Park Service officials. The Jefferson National Expansion Memorial Association offered to raise funds to complete the landscaping, while the Civil Defense Administration expressed interest in aiding the visitor center construction if it could utilize the structure as a fall-out shelter.

Director Wirth accepted Bi-State's financing offer, and on May 14 he held a brief ceremony in his Department of the Interior office to sign the cooperative agreement between the two agencies. The cost of $1,977,750 was to be borne by Bi-State. Members of the Missouri congressional delegation, who were in the midst of attempts to obtain more Government appropriations for the memorial, attended the ceremony. It was agreed that MacDonald Construction Company would build the transportation system.

The $510,000 funds remaining to be appropriated by Congress were slated for utilities and a limited amount of landscape and site work. The Missouri congressional delegation sought these funds, even though Director Wirth gave assurances that sufficient money remained to complete the project's basic features. He did not plan to ask for an increase in the congressional ceiling on the project. On March 16, 1962, the House Appropriations Committee approved the $510,000 appropriation in President John Kennedy's budget request. The House passed the measure on March 20 and the bill went to the Senate where an appropriations committee had already heard testimony on the project without raising any challenge. The Senate acted favorably and President Kennedy signed the 1963 fiscal year Department of the Interior Appropriation Act, including the $510,000, on August 9, 1962. More financial good news arrived a month earlier, when the Bi-State Development Agency's $3,300,000 Arch transportation bonds almost sold out the first day they were offered. On July 11 approximately 95 percent of the bonds were sold to insurance firms, banks, and individuals. The tax exempt bonds were due in thirty years and paid 5-1/2 percent interest. At yet another ceremony in the Old Courthouse, the construction contract was signed on July 31 for installation of the transportation system in the Arch.

Continuing simultaneously with the contract bidding and bond sales, the memorial's museum development thrived in the hands of St. Louis' National Park Service staff. The Smithsonian Institution cooperated in making surplus items available for the Museum of Westward Expansion. Superintendent Hartzog met with filmmaker Charles Guggenheim to discuss making an orientation film for the Museum of Westward Expansion. On July 12 Hartzog participated in a contract signing ceremony with Laclede Gas Company which donated $25,000 for Guggenheim's filming of "Time of the West." The museum research staff developed plans for an interim exhibit gallery in the visitor center. This gallery would provide temporary interpretation for memorial visitors until the Museum of Westward Expansion opened. The staff proposed a floor plan and text that included research originally done for the museum. The interim exhibit gallery was placed in the visitor center lobby in 1967, and remained until 1976.

The principal task of the National Park Service Planning Branch was the production of exhibit designs and construction drawings for the permanent museum. By the end of the year the exhibit designs for the last of the twelve major exhibit units was completed, with seventy-five percent of the construction drawings finished. Work progressed to the point where preliminary specifications for panel and case exhibits were prepared. Specimen and illustration acquisition progressed at the same time. The staff acquired artifacts that they catalogued and cleaned. Among the acquisitions were a chuck wagon and an original bronze casting of the "Bronco Buster" by Frederic Remington. Objects needed for the interim gallery exhibits were located and orders were placed for color photographs. A pilot draft was drawn up for negotiated contracts for commissioned art works, and procedures were established for reviewing the qualifications of candidates for these commissioned works. Material was supplied to Charles Guggenheim for textual and illustrative use in his movie production.

The museum research staff finished another document — a thematic synopsis of the contents of each of the planned twelve exhibit units. The document, a highly condensed explanation of the museum's interpretive focus, served to give direction to the curatorial acquisition. Planning for the museum focused on four major subject divisions: the land, its acquisition, the people who mastered it, and the significance and meaning of westward expansion to the nation and its people. The exhibits were researched and designed to convey the western drama to the visitor in terms of personal experiences; to tell what it was like to be involved in the westward expansion experience between 1803 and the 1890s. The research team planned for the Guggenheim documentary film to introduce and summarize westward expansion, thereby preparing visitors for the interpretive story in the museum itself. The National Park Service staff believed that the completion of the twelve-unit museum and film would be a fitting companion achievement to the Gateway Arch.

MacDonald Construction Company kept up the pace on the Arch construction, pouring the first concrete for the Arch foundations on June 27, 1962. Two months later the Park Service issued a stop order because of plan changes. Progress on the visitor center remained very good as several main lobby columns stood in place as well as 15 percent of the roof. Prefinal inspection of the railroad relocation project occurred in August. By December the levee development stood at 96 percent complete. MacDonald's subcontractor, Pittsburgh-Des Moines Steel Company, made extensive preparations during the month for the receipt, storage, fabrication, and erection of the Arch steel sections.

Superintendent George Hartzog did not wait to see the construction. On June 19, 1962, he announced his resignation from the National Park Service effective August 1. He left to accept the position of director of Downtown St. Louis, Incorporated. Twenty-six days later Jefferson National Expansion Memorial had a new superintendent, H. Raymond Gregg. Within a year and a half George Hartzog moved on to become director of the National Park Service.

The work continued through the change in leadership. Hartzog had worked to keep costs low, and to cut the development program down to the bare essentials to keep within the authorized funding. Funds contributed by outside groups helped provide extras; in October the American Iron and Steel Institute and Laclede Gas Company contributed $100,000 to make a film about the construction of the Arch. Despite this and other donations, signs of financial trouble burst forth near the end of the year. On November 1 Superintendent Gregg wrote Regional Director Howard Baker of the serious nature of the problem. Gregg believed the financial situation to be desperate. A review of the files persuaded him that the minimal features could not be finished with existing funds.

This left three courses of action in Gregg's view: 1) Raise the congressional fund ceiling and obtain 1963 deficiency funds. Gregg believed that the Park Service could go back to Congress for removal of the "unrealistic" ceiling, since the cost of the project had outrun the estimates upon which the ceiling was established by some 30 to 40 percent. 2) Limit the project's scope by either breaking faith with Bi-State Development Agency or limiting the power of Eero Saarinen and Associates. Gregg did not want to follow either course. He believed that the honor of the Park Service required that the Arch be built and Bi-State's contract be honored. Eero Saarinen and Associates held a contract with EODC, and would take the credit or the blame for the architectural integrity and completion of the Arch. Saarinen's group was meticulous in its demands to the point of disagreeing with the contractor, resulting in increasing change orders. They faced many unresolved details of construction and needed contingency money to solve the problems. The Park Service would have to decide what powers and prerogatives Saarinen's group could have. This raised the possibility that if the Associates felt they could not supervise the work with a degree of freedom in relation to their eminent standing, they would want no responsibility for association with the project. The Park Service had to decide if it could finance the Arch's completion to meet Eero Saarinen and Associates' needs. 3) The ultimate alternative was to stop the project. Gregg predicted with an air of surety that the Park Service would be disgraced if it had a partly completed Arch, useless catacombs, and a weed and rat-infested rubble field on the waterfront. As far as Gregg could see, finding answers to three simple questions could solve the complex matter. How much funding could be found within the authorized ceiling to do the work? How much money should be set aside to cover the contingencies on the Arch? How much money would be left and what part of the construction program should be completed?

Regional Director Howard Baker's first response was to tell Gregg not to obligate any additional funds until they both could discuss the funding situation with Director Wirth. He referred specifically to the museum contracts. In November 1962 funds needed to complete sufficient portions of the project to create the memorial totaled $1,407,779 with no provision for any contingencies. An additional $3,587,093 was required to complete the minimal features. The situation was critical; full consideration would be given to all possible means of financing the memorial, including a congressional request to increase the 1958 monetary ceiling.

Director Wirth met with Regional Director Baker, Superintendent Gregg, and other Park Service officials concerning the problem. They reexamined the status of funds, concluded that they had an unobligated balance of $469,031 in construction funds, and decided to make no further obligations against them unless required through adjustments in the contracts underway. The design office was to prepare an up-to-date program of the projects needed to complete the memorial, along with an estimated cost of each project. Whenever Park Service officials decided on the program objectives they would meet with Mayor Tucker and the Missouri congressional delegation to discuss seeking an increase in the project ceiling.

Superintendent Gregg and Director Wirth reviewed the new draft of estimates developed by EODC and Eero Saarinen and Associates, eliminating items to cut costs. The two men, along with Regional Director Baker and Assistant Park Service Director A. Clark Stratton, met with Mayor Raymond Tucker on January 28, 1963, to discuss the memorial's funding. Wirth presented a program for completing the memorial totaling approximately $8,000,000. Mayor Tucker accepted this as reasonable and agreed to try to raise city matching funds for any more Government appropriations. The National Park Service sought $6,000,000, with $2,000,000 in city funds, for the memorial's completion. Eero Saarinen and Associates re-estimated the completion costs, taking into account Wirth's revisions, his agreement with Mayor Tucker, and the work then under contract. The cost of completing the site development, landscaping, maintenance building, visitor center (including museum exhibits), and finishing the transportation system load zones and Arch structure stood at $7,954,414.

National Park Service officials did not publicly announce this estimate to the press until September. They considered making an attempt in Congress to authorize the entire $5,965,809 Federal contribution to construct features of the memorial postponed for lack of money, as they wanted to complete the entire design approved by the United States Territorial Expansion Memorial Commission in 1948. An appropriation, however, would not be sought during the current session. Mayor Tucker announced at the same time that two foundations established by the late Albert P. Greensfelder, a St. Louis businessman, had offered to contribute $775,000 toward completing the visitor center and Museum of Westward Expansion only if the Federal Government authorized $2,325,000 for the two features. The

Greensfelder offer later became a political issue as the National Park Service sought the additional funds from Congress. Threats of losing the offer accompanied the fight for the funds in several instances.

Now that the National Park Service had strengthened its financial standings regarding the St. Louis project, the local staff was assured that construction and planning would continue. Peripheral development remained in the staff's minds as being a crucial element in the project. During the summer of 1962 Park Service officials believed that the city of St. Louis should establish rigid regulations for development and operations on the riverfront for the length of the memorial. Without such regulation the riverfront would be cluttered with watercraft of all descriptions. The ideal situation was to have the riverfront devoid of boats and barges, but this being impractical the Park Service wanted a minimum distance of 1,000 feet in length in front of the Arch and steps to be free of watercraft and docking facilities. Under no circumstances could the craft moored north and south of this section have permanent anchorage. Only by establishing such regulations could the city assure that the quality of the riverfront would match that of the memorial.

The idea of controlling the riverfront appearance also applied to the Illinois side of the Mississippi River. East St. Louis Mayor Alvin Fields received a letter in February 1963 from Mayor Tucker telling him of the recent St. Louis City Plan Commission resolution covering the zoning proposals for the area in front of the memorial. The city adopted the Park Service recommendations and wanted to apply their restrictions to the east side. Eero Saarinen's original 1948 memorial concept included development of the east side. Mayor Fields was assured of the cooperation of the St. Louis Plan Commission as well as that of the National Park Service in developing compatible plans. National Park Service personnel met with Mayor Fields several times during the year to express their views on the east side development. On May 14 Superintendent Gregg conferred with East St. Louis City Planning Commission members, urging them to write an overall plan for development instead of allowing it to proceed piecemeal. In September George Hartzog, now associate director of the National Park Service, met with Mayor Fields' East St. Louis Riverfront Development Committee, which expressed interest in having the east side developments included in the memorial program. Hartzog explained that the authorization included only development of the west side and that additional legislation would be needed for National Park Service expenditures on the east side. He also suggested that Government standards for National Park Service development might be more restrictive than East St. Louis officials would want. The committee favored constructing a scenic road, but such a road's development, levee access, and railroad relocation would create many problems. Despite this, Superintendent Gregg considered the interest of the group commendable and hoped the results of their meeting would be profitable to the memorial.

Another project profitable to the memorial was the plan to depress the Third Street "Mark Twain" expressway. Superintendent Gregg conferred regularly with the Missouri State Highway Department about the expressway and the new Poplar Street Bridge. Gregg and Hartzog succeeded in May 1963 in forging a cooperative agreement between the National Park Service, the city of St. Louis, and the Missouri State Highway Commission on the questions of encroachment of the expressway connecting ramps on memorial property, the depression of the expressway in front of the memorial, and the relocation of Poplar Street. In August, Fruin-Colnon, contractors to the Missouri State Highway Commission, started work on the expressway by relocating utility lines in the right of way. Superintendent Gregg conferred with EODC and Eero Saarinen's group about a desirable color for painting the new free bridge (the Poplar Street Bridge) and recommended a gray-green color to Sverdrup and Parcel, the bridge's builders.

Beginning Arch Construction

All the new construction on the riverfront stirred much interest in the press and the surrounding community. Superintendent Gregg kicked off the start of construction on the Arch by presiding over a press conference in which information kits were distributed concerning the memorial's total development. National Park Service staff members and representatives of Eero Saarinen and Associates, MacDonald Construction Company, and Pittsburgh-Des Moines Steel Company (subcontractors for the Arch construction) were present to answer questions. Amidst the publicity, the first stainless steel section of the Gateway Arch was set in place on February 12, 1963. Members of the Jefferson National Expansion Memorial Association held an informal ceremony at the south base of the Arch on April 9 when concrete was poured into the first above-ground section. President William Crowdus and Secretary Minnette Forthmann poured water from the Columbia River in Oregon into the concrete, symbolizing the link between the Arch, marking the eastern gateway to the West, and Lewis and Clark's log Fort Clatsop, which marked their farthest exploration to the Pacific Ocean.

The work started in earnest with construction of the visitor center/museum shell, proceeding simultaneously with the Arch. In the spring MacDonald concentrated on building the concrete walls and roof for the north and south entrances to the visitor center. Work started on waterproofing and covering the roof. By May, one section of the north Arch leg and two sections of the south leg were filled with concrete. The construction worked like an assembly line; each section was assembled, hoisted into place, welded to the section beneath it, filled with concrete and post-tensioned. Things moved smoothly until May 1 when the Hoisting and Operation Engineers in St. Louis went on strike, halting all work on the project. Both the Arch and the levee redevelopment were at a standstill until May 27 when the strike ended. A few days passed while operations went back to normal, and at the end of the month the Arch was two weeks ahead of the revised progress schedule. The new completion date was set for February 1, 1965.

After each leg reached sixty feet in height, the crew worked to assemble the creeper cranes that were placed on each leg. These cranes, placed on moveable platforms, would carry and lift each section of the Arch into place. They were engineering feats in themselves. The interior framework and stair material arrived in June; their assembly started the next month. By the end of July the south creeper derrick was installed, tested, and ready for operation, ten days ahead of schedule. The north derrick was also expected to be finished ahead of schedule.

Progress surged on the other contracts as well. The National Park Service made final inspection on the levee and railroad relocation contracts, only to find items of exception. New invitations to bid on painting the exterior of the Old Courthouse and for cooling the offices were issued. Busch and Latta Painting Company was awarded the painting contract, with a bid of $27,868, while Albers Construction Company won the cooling contract with a bid of $27,667. Both firms started their work in July and made rapid progress. The National Park Service staff also took time during the month to prepare easements for the water mains and sewers and to meet with Union Electric to discuss electrical facilities and to send the utilities master plan to all interested parties for comment.

On August 1, 1963, Superintendent Gregg, Assistant Superintendent LeRoy Brown, and Park Engineer Woody Zenfell met with city officials to hear their comments about the levee redevelopment project prior to the National Park Service's final acceptance. By September the project was accepted after review by the Park Service, the city of St. Louis, the Metropolitan St. Louis Sewer District, and the Missouri Pacific Railroad Company, subject to correction of minor deficiencies. The contract included the north and south overlook structures and approaching stairways from Wharf Street. These structures were already in public use. By September another project was completed. The relocation of the railroad was approved and accepted by the Terminal Railroad Association, the city of St. Louis, and the National Park Service. The feat came more than twenty-five years after

Secretary of the Interior Harold Ickes declared the track removal to be a prerequisite to the memorial's development.

Eero Saarinen and Associates prepared plans and specifications for the interior finish and utilities for the visitor center as the shell and a portion of the subfloor neared completion. Within a month the structure was in the final construction stages and ready for pre-final inspection. Overhead, the Arch legs in October stood at 120 feet. The creeper crane on both legs moved upward for the first time; the operation proceeded smoothly. Inside the legs the interior framing and stairs were installed as soon as possible behind the outside construction. At this stage the Arch was a week behind schedule and its completion date was moved to mid-February 1965. The National Park Service expected to have the elevators and trains ready for operation 125 days after the Arch was completed. Officials scheduled June 20, 1965, as the tentative date for the first rides to the top of the Gateway Arch in the transportation system.

After the final inspection was made of the visitor center/museum shell on October 15, nineteen items of work still needed completion. Because the completion date for the visitor center portion of the contract was October 16, 1963, the contractor, MacDonald Construction Company, was assessed liquidated damages for each day of overage. After the National Park Service conducted a partial inspection of the levee redevelopment project, they discovered that many of the items that were excepted from the acceptance of the project had not yet been corrected.

Near the end of October work on the Arch's south leg was held up because of problems with some of the tendons inside the stainless steel sections not being brought up to required tensions with the approval of EODC. MacDonald had to cut five holes or "windows" in the Arch in sections fifty-nine and sixty to relieve the blockage and allow the bars to be properly pulled and tensioned. The problems persisted in November despite these corrective measures. On November 5 Superintendent Gregg, Assistant Superintendent Brown, Park Engineer Zenfell, and Eero Saarinen and Associates' Ted Rennison met with MacDonald Construction Company representatives to discuss the south leg's construction problems. As the south leg construction fell behind schedule at 120 feet, the north leg proceeded piece by piece up to 168 feet in height. The Park Service now decided to halt work on the north leg until the south leg difficulties were cleared up. On November 18 MacDonald delivered the plans for correcting the deficiencies. One month later, at a press conference, Superintendent Gregg signed a change order accepting MacDonald Construction Company's proposal

The company developed the plan after meeting several times with the Park Service and its consultants. It called for the abandonment of some of the inoperable bars, installation of new bars, realignment of others, and the installation of additional stiffeners above section forty-five. MacDonald faced a major problem in developing a satisfactory method for placing grout around the tension rods in sub-freezing weather. MacDonald faced another problem in that the National Park Service had yet to accept the visitor center. Corrective work had to be done on exceptions to that contract and also on the items of disagreement on the levee redevelopment project.

At the end of 1963 the Arch's north leg stood at 168 feet, the south at 120 feet. For the first time since the demolition of the old warehouses on the site in the late 1930s and the restoration of the Old Courthouse in the 1950s, memorial backers could see visible physical evidence of their years of work. Progress was not limited to the construction program, however, as the National Park Service staffers completed much of the preliminary museum exhibit planning.

In the beginning of 1963 they concentrated on awarding contracts for artistic museum pieces. They commissioned Rudolph Torrini to sculpt a bronze casting of a Fifth Infantry bugler, William Traher for four large western scenic paintings, J.K. Ralston for a painting of Lewis and Clark meeting the Shoshone Indians, and Hillis Arnold for a manifest destiny eagle wood carving. National Park Service Regional Curator Newell Joyner collaborated with the museum planning staff to prepare an accurate want list of specimens for the museum. They also prepared a list of surplus property available for exchange with other park areas or institutions.

Reviews of the designs and content of all units in the Museum of Westward Expansion were completed by April. On April 1 to 3 museum planners, designers, historians, and chief John Jenkins held conferences to resolve several important space design problems. Progress was made on the exhibit research program, while one staff draftsman took an extended trip in May through the Smithsonian Institution, the National Gallery of Art, and the Freer Gallery to seek their suggestions and theories of diorama design and construction. Memorial staffers hoped to have the museum exhibit plans and specifications ready for contract so that installation of the exhibits could occur before the end of St. Louis' bicentennial period.

Staffers also set time tables for the rest of the memorial's interpretive program. The earliest possible date for the completion of the Museum of Westward Expansion was May 1966. Plans for a monetary exhibit entitled "The West and Money," slated for the Old Courthouse, called for its completion by June 1965, with the remainder of the exhibits in that building to be completed by May 1966. Staffers hoped to have the overlook museums completed by September 1967. They submitted a request for a $25,000 allotment for Old Courthouse exhibits for fiscal year 1965. Proposals for the exhibits included a St. Louis architecture gallery featuring ironwork, small river and rail transportation galleries which would then be incorporated into the river overlook museums, and audiovisual installations for interpretation of the rotunda murals. As St. Louis' bicentennial year of 1964 began, the memorial's research team still had seventy-nine major and minor research projects remaining before final design and drafting of the exhibits for the museum could be accomplished. Additionally, the staff carried out such correlative activities as administrative photography, research for portions of the Guggenheim film, audiovisual repair, and research and writing for revision of some existing exhibits in the Old Courthouse.

The new year heralded St. Louis' anniversary, and attracted visitors to the memorial, most notably President Lyndon Baines Johnson on February 14. His visit kicked off the city's celebrations and former Mayor Bernard F. Dickmann was there to greet him. President Johnson viewed the rising Arch legs whose very existence stressed that construction continue despite the problems on the south leg. MacDonald still had difficulty grouting the malfunctioning bars. All was not bad news, however, for a month earlier, on January 13, the National Park Service accepted the visitor center portion of the contract.

Spring came to St. Louis and the construction began to move like clockwork. Section by section the cranes lifted the pieces. At the end of February the south leg stood at 168 feet, the north at 204 feet. By March's end the north leg stood at 228 feet and the south 192 feet. In April, when MacDonald's repairs to the cobblestones on the levee were inspected and accepted by the Park Service and the city, the north leg stood 264 feet high with the south leg not far behind at 216 feet.

By May three problems cropped up which brought the St. Louis staff many headaches and delays in construction. In the long run, one of these problems served to benefit the National Park Service and the nation's black community. The first problem centered on the Arch transportation system. Bi-State Development Agency's Colonel Smyser announced in April that the system could not possibly be completed by July 1965. Instead he pushed the date back to the fall of that year. The trouble encountered in the post-tensioning bars installed in the concrete core of the south leg caused the delay. The extra expense stemming from the delay would be met from a contingency fund of $500,000 set up when the project was financed, with revenue bonds.

The second controversy held far-reaching consequences. The St. Louis Congress of Racial Equality (CORE) charged that the Arch contractor and subcontractor carried out racially discriminatory practices. In response to the charges, the National Park Service held meetings on May 4, 1964 to discuss the allegations. Superintendent Gregg announced on May 15 that the conference, held with the contractor, subcontractors, and a representative of the Department of Labor, revealed no evidence of racial discrimination. Gregg insisted that further investigations would occur if the National Park Service received a formal complaint from CORE. That group's inspections of the memorial project showed that no blacks were then working on the project, that none of the project's subcontractors employed blacks, and that one of the unions had no black members and had never admitted any blacks into its apprenticeship training program. As a result of CORE's findings the Interior Department's Washington compliance officer visited the memorial in June to review the contractor's compliance with the Federal Equal Employment Opportunities program.

Once again the memorial's progress was affected by national and international events. World War II, the Korean Conflict, the national budget, and Washington politics all exerted pressure on what shape, form, and funding the memorial would assume and receive. During the early 1960s, when the Reverend Martin Luther King, Jr.'s method of passive resistance changed racial attitudes, the Federal Government embraced such policies as equal employment on all Federally funded construction projects. Such a massive Federal project as the Arch served to bring attention to the entire civil rights movement and its composite efforts in opening labor, housing, and public services for black Americans.

Throughout the year Federal compliance officers spent time at the memorial and in the city making compliance reviews of proposed contractors and subcontractors for the visitor center's utilities contract. Deputy Compliance Officer Paul Boyajian contacted many of the organizations and agencies involved in the situation, including contractors and subcontractors, union officials, training agencies, CORE, National Association for the Advancement of Colored People (NAACP), and city, state, and Federal agencies. The President's Committee on Equal Employment Opportunity had issued a restriction against the National Park Service's proceeding with the utilities contract, but since these steps were taken the restriction was lifted. Much more work in terms of minority hiring needed to be done, but a first step had been taken at Jefferson National Expansion Memorial.

The third problem reached almost crisis proportions when the Arch reached nearly 300 feet in height. The National Park Service's Washington office issued a stop order on June 23 for work to halt at the assembly plant in

Warren, Pennsylvania. The contractor was not to proceed with the fabrication or erection of an Arch section above the top of section forty-five, which was the top of the concrete core sections. This stop order was issued because two consultants to Pittsburgh-Des Moines Steel Company (PDM) questioned the Arch's basic design. They believed the steel plates would buckle and be out of configuration when the Arch was jacked apart to allow the final section to go in. The Bureau of Public Roads made seismographic measurements of the Arch to study its movement and sway, and the National Park Service also brought in the Bureau of Reclamation, which performed a structure design study. Their recommendations, dated June 11, 1964, supported the PDM consultants regarding the Arch's design inadequacy. Upon receiving the bureau's report, the Park Service decided to issue the "not to proceed" order above section forty-five. After consulting with Eero Saarinen and Associates and Fred Severud and Associates, National Park Service Assistant Director Joe Jensen declared that the Bureau of Reclamation's conclusions were based on faulty assumptions and inadequate information and should be withdrawn.

Jensen met with Bureau of Reclamation officials to clarify the Department of the Interior's position on the stability of the Arch. They agreed the work could proceed until further research was conducted and analyzed. Research was done on the structural properties of stainless steel, thermal flow characteristics between the inner and outer stainless steel skins, the testing of a prototype three-section panel, and final wind tunnel tests. The officials also reached a consensus that the structure as designed posed no danger to future visitors. Jensen, well aware of the criticism the Department of the Interior would receive if the buckling occurred, suggested to his superiors on July 2 that the contractor resume work. Fabrication started that day. The final tests and reports were not completed until mid-1965 with the Bureau of Reclamation continuing to question the Arch's stability and the Park Service and its consultants defending it.

Several months later the contract architects and contracting officer rejected the north leg's section forty-five because of its failure to meet tolerances and aesthetic standards of the contract. In short, it wrinkled. The section was removed from the top of the Arch and placed on the assembly pod for reworking. The forty-fifth section of the south leg met the same fate. While still on the ground it was reworked to remove wrinkles before being placed. These sections did not wrinkle under compression. Rather, the contractor did not allow for enough distortion in the stainless steel to the welding. Whenever heat was applied to a weld it caused an expansion which did not shrink uniformly. This and the fact that a stainless steel plate could not be rolled completely flat caused the wrinkles to occur in the Arch's skin. At the end of the year the north leg stood at 335 feet, eleven inches, with the south at 347 feet, three inches.

The historical research team also made progress in 1964. The manifest destiny eagle, the Ralston painting, and bronze Fifth Infantry bugler were finished and delivered, as well as Sigfried Reinhardt's triptych. The team now had two historic wagons for the museum; the chuck wagon and an overland wagon. The staff completed their research reports and began work on text and graphic materials. By September 25 a Park Service designer completed the gallery designs, including colors for maps, walls, ceilings, and floors. He made recommendations on the museum's lights and reviewed museum copy. The research team hoped to complete all drawings and exhibit requests quickly, in order to phase out the museum planning branch. On October 26 the National Park Service opened a new exhibit room in the north wing of the Old Courthouse, featuring several of the past year's acquisitions including the 1860 overland wagon, chuck wagon, and Reinhardt's triptych. At the end of the year, the staff began work on the interpretive prospectus for the Old Courthouse.

Public interest in the memorial remained high. The presence of the Arch's rising legs cast a shadow over the rest of downtown St. Louis. The Arch also issued a challenge for both public and private redevelopment. The area's interested governmental agencies, redevelopment corporations, and civic organizations met with Superintendent Gregg regularly to discuss and resolve mutual problems. Their interest stayed with the Arch transportation system project, for it was, in the minds of many, the key to the financial benefits St. Louis would receive from the project. The system's designer, Richard Bowser, kept in contact with both Bi-State and Bruce Detmers, the project architect for Saarinen's office. The high interest in the city's bicentennial year brought additional pressure upon the National Park Service to get the project finished and dedicated within a year of the city's observance. Assistant Superintendent LeRoy Brown, however, could give no guarantee for the completion of the Arch.

The United States Territorial Expansion Memorial Commission met on November 24 to review the memorial's progress. Confident that the National Park Service was diligent and that construction costs had been kept within reasonable bounds, the commission passed a resolution soliciting Congress for authorization to provide $7,955,000 in funds to complete the project. The Federal Government's appropriated share would be $6,000,000. Their measure passed unanimously. The remaining work, which needed funding, consisted of visitor center interior work such as flooring, interior furnishings, utilities, ventilation, heating, lighting, sewage, and plumbing. The preparation of exhibits for the Museum of

Westward Expansion, landscaping, and completion of the grand center stairs was also needed.

In December the National Park Service, now under Director George B. Hartzog, Jr.'s authority, drafted a bill amending the 1954 authorization, enabling it to raise the Federal ceiling from $17,250,000 to $23,250,000. Following a twenty-year old tradition, Hartzog contacted the St. Louis mayor and civic leaders. Mayor Tucker was especially interested in the grand center staircase. He wanted to see it finished in granite as planned and not in another cost-saving material. The city still had $500,000 remaining from its present bond authorization and now Tucker talked of adding another $1,500,000 to the memorial fund. This, added to Greensfelder's proposed donation of $775,000, brought the available funds to $2,775,000. Since the Park Service sought an increase of $6,000,000 in their authorization, memorial staffers believed they would be in excellent financial shape to finish the project.

The effort to authorize more funds was spearheaded in Congress by Senators Stuart Symington (Missouri), Edward Long (Missouri), Clinton Anderson (Arizona), Wayne Morse (Oregon), Roman Hruska (Nebraska), and Representatives Karsten, Curtis, and Sullivan (Missouri), Price (Illinois), and Glenn Cunningham (Nebraska). On March 18, 1965, they introduced bills authorizing $6,000,000 in Federal funds to complete the memorial. The first action on the request came on April 8 from a House administration subcommittee, which lent a sympathetic ear to the witnesses' testimony that the rise in construction costs over the ten years of the project precipitated the need for the increase in funds. A Senate parks and recreation subcommittee on April 9 gave the bill a favorable hearing.

The Budget Bureau protested the amount, insisting it would pay for nothing more than the project's basic features. Since 1961 it had granted the executive branch's requests for continued appropriation for the project as long as the $17,250,000 ceiling was heeded. Now the Budget Bureau thought the only justifiable increase in the ceiling should be for higher construction costs and not to restore any features eliminated in 1961. Director George Hartzog fought for his favored park by explaining how the project had been cut back several times since 1954. The National Park Service could have lived with the curtailed plans until the cost of the Arch construction soared $4,000,000 higher than estimated. Thus the plans had to be changed, leaving the Museum of Westward Expansion an unfinished shell. Hartzog believed the museum should be finished, noting that the museum was "the heart of the memorial. . . ." Hartzog's arguments worked, for Congress moved the bills through the legislative process. The Senate passed the bill on June 17 with no debate. Three months later the House Rules Committee endorsed the additional funds and on October 1 the full

House approved the bill by a roll call vote of 250 to 12. Their action sent the bill to President Lyndon Johnson, who signed it into law on October 19, 1965.

As the Arch crept upwards and civic interest in the memorial climbed with it, National Park Service officials prepared for the final stages of construction and its aftermath. The associate regional director attended meetings in St. Louis concerning dedicating the Arch. He met not only with the Park Service staff but also with Jefferson National Expansion Memorial Association representatives William Crowdus, Luther Ely Smith, Jr., and Morton May. The group's major goal was to invite President Johnson to the dedication.

Construction continued, oblivious to the talk of fanfare. Four stainless steel sections were set during the first month of January 1965. Interior installation kept on schedule. A $100,000 contract was awarded in March to General Steel Industries, Inc. of St. Louis to build the sixteen five-passenger capsules for the Arch transportation system. The company was to manufacture the capsules under contract to Planet Corporation of Lansing, Michigan, which was the prime contractor on the Arch train installation. By the end of the month work started on the elevator system as the north leg reached 436 feet four inches and the south leg touched 447 feet one inch.

The delay in the Arch construction caused problems for Bi-State. The agency, which had issued $3,300,000 in bonds to finance construction of the train and elevators, was paying interest of $500 a day on those bonds. MacDonald Construction Company and Pittsburgh-Des Moines Steel Company met with Park Service officials during March and April to discuss revising the Arch construction program. MacDonald asked for a 30-day extension, which the National Park Service had yet to grant. Several other extensions had been granted to MacDonald; the latest date for completion was May 15, but MacDonald could not meet that date. Bi-State protested against the issuance of any further extensions of time, because the transportation system was to be completed 95 days after the Arch shell was finished; thus Bi-State would have received revenues from the system on August 15, 1965. Since this date could not be met, Bi-State was entitled to start collecting a penalty of $250 a day from MacDonald until the system was finished. Even if Bi-State collected the penalty, it amounted to only half of the agency's interest payment. If the National Park Service granted MacDonald another extension, Bi-State could collect no penalties until the extension expired. MacDonald did not get its extension, but as construction slowly continued other projects were delayed. Acting Superintendent LeRoy Brown met with several civic groups to inform them of his and Director Hartzog's decision to delay dedication of the Arch until a later date. Both men wanted the Arch to be completed and the grounds maintained to National Park Service standards before visitors attended any type of a ceremony.

Even though construction stayed behind schedule, LeRoy Brown completed several other projects. The Travelers Indemnity Company, bonding company for MacDonald, offered to conduct a safety inspection of the Arch construction project at no cost to the Government. They did so on May 13, and all the items listed in their report were corrected immediately by the contractors. Brown then attended ceremonies on May 24 officially opening the reconstructed Third Street expressway. The memorial's peripheral development was beginning to take shape as the Arch legs topped the 500-foot mark by the end of May, while installation of the elevators, trains, stairs, interior steel, and electrical equipment proceeded normally.

As the visitor center shell took shape the National Park Service made plans to issue an invitation to bid on June 24, 1965, for partial completion of the interior of the Arch and visitor center. The work included partitioning, flooring, suspended ceilings, doors, painting, heating, air conditioning, plumbing, and electrical work. In the next month when the bids were opened the only qualified bid received was more than 50 percent above National Park Service estimates. This would add another two or three months delay in completing the Arch and the transportation system if the unexpected bid of $1,126,391, by Hoel-Steffen Construction Company of St. Louis, was too high. It took the National Park Service several months to make a decision and award a contract.

The month of June saw yet another goal reached when, the Arch legs reached the height where a stabilizing strut was necessary. The strut, measuring 225 feet long, 40 feet wide, and 14-1/2 feet high, was hoisted into place between the two legs at 9 a.m. on June 17, 1965. The operation went without incident with only 5/8 inch deflection of the Arch during the lift. Pittsburgh-Des Moines Steel Company received some free if not controversial publicity when the strut was situated in place high in the sky between the Arch legs, for the company placed 12-foot high letters bearing the initials "PDM" on the structure. National Park Service officials immediately ordered that the letters come down. They also ordered the removal of "PDM" signs on both the creeper crane platforms, because the letters violated a contractual restriction on advertising.

Pittsburgh-Des Moines responded slowly, for almost a month later the letters still remained. The company arranged for the three letters facing east to be removed by mid-July because they could be reached. The three letters facing west over the city were very difficult to reach, the company asserted, and the letters seemed destined to remain indefinitely. LeRoy Brown did not agree. He stated that Pittsburgh-Des Moines would be charged a very large sum for advertising space seen by half a million people every day. Its subcontractors would deduct the sum from MacDonald Construction Company's payment for the continued wrongful use of Federal property.

Brown's action succeeded where his threats did not. When he deducted $225,000 from MacDonald's payment, Pittsburgh-Des Moines promptly removed the "PDM" letters on August 24. If the letters had not been removed, Brown would have charged $42,000 a month for as long as the letters remained. The smaller "PDM" signs remained on the two creeper crane platforms.

LeRoy Brown began serving as acting Superintendent on June 19, 1965, when H. Raymond Gregg retired from the National Park Service. Brown actually assumed the duties of Superintendent in December 1964 as Gregg worked on other projects for the Park Service. On August 1, 1965, Brown was appointed Superintendent, thereby assuming the full title for his responsibilities.

July was a busy month for Brown as he handled various projects accompanying the construction. He held further meetings with civic groups concerning ceremonies honoring the Arch's completion. On July 13th he and Director Hartzog met with Bi-State's Colonel Smyser over their cooperative agreement and related problems. The next day Brown met with representatives of Union Electric Company to discuss the possibility of floodlighting the Arch. Several days later he inspected searchlights and floodlights at the army depot in Granite City, Illinois. The army offered to move the lights to the memorial if Brown wanted them. On July 26 an official of the Federal Aviation Administration conferred with Brown to form a policy regarding preventing flights through the legs of the Gateway Arch. During July, Superintendent Brown watched the creeper cranes hoist eleven stainless steel sections into the sky. The north leg stood at 597 feet, one inch with the south at 592 feet, two inches. Installation of the interior steel work fell behind in July, while the train installation did not measure up to the expectations of the consultants.

A decision on awarding the visitor center interior contract, pending since July, came in August when Hoel-Steffen revised its bid downward to $849,629. Their previous bid was too high and the National Park Service also revised its specifications to keep the costs down. Two weeks were now required to check the bid figures and determine whether Hoel-Steffen was in compliance with the Federal Equal Employment Opportunity law. Although Superintendent Brown was the contracting officer for the work, pressure came from the Washington, D.C. level for compliance with the law. The authority to approve the visitor center contract was thus located in Washington, and not St. Louis.

Nine weeks passed while Hoel-Steffen's contract, revised once again to $1,071,027, underwent scrutiny for its provisions for equal employment. Paul Boyajian, deputy compliance officer for the Department of the Interior, did not define what steps St. Louis contractors should take to promote affirmative action. Thus, there were no guidelines. The National Park Service was convinced, however, that Hoel-Steffen provided equal job opportunities. The point was important because of the significance of the Arch as a Federally funded project. The Government desired that black workers have a role in building the memorial, but the weeks passed, delaying public use of the Arch until possibly August 1966 and costing Bi-State $500 a day. Hoel-Steffen was awarded the contract in mid-November only after the company held two days of meetings with Government representatives, where it pledged to take steps to encourage more minority workers to enter the construction field. National Park Service officials expected work on the visitor center interior to be completed before July 1, 1966.

The construction of the Arch moved ever upward, and completion was only a matter of weeks away. By the end of August both Arch legs stood at 617 feet, but the installation of the trains and stairs were still not to the expectation of the consultants. The Arch transportation system lagged almost three months behind work on the Arch and was $318,000 in debt. Because the National Park Service denied MacDonald's request for a 322-day extension in June, Bi-State hoped to collect penalties. MacDonald said it would appeal the decision.

The shortage of money caused yet another problem. Workmen inside the Arch reported that the sun bearing down on the stainless steel created interior temperatures of 115 degrees. Unfortunately, the National Park Service could not consider installing air conditioning due to a lack of funds. Every effort was made to cut down the cost of the visitor center's interior contract, and the cutbacks affected ceiling finishes, lighting fixtures and other work. No money remained to provide air conditioning. Bi-State thought the cooling system desirable but obviously could not finance such a venture because of its own financial deficit involving the trains. The best Superintendent Brown could hope for was to obtain some funds for air conditioning out of the city and Federal Government's authorization of $8,000,000. Less than two weeks later the National Park Service and Bi-State found a method by which to finance the air conditioning, when Bi-State decided to guarantee any money the Park Service needed to pay for the installation. Bi-State would be reimbursed later from riverfront parking lot revenues at a rate of $5,000 a month. The cost of the air conditioning was $167,000. By October 1965 the Arch legs stood a mere 60 feet apart. LeRoy Brown wanted to set a firm date for the installation of the last stainless-steel section, for he believed the occasion would be a "major event in the history and accomplishments of a great city and a great nation." He sought MacDonald Construction Company's and Pittsburgh-Des Moines Steel Company's cooperation in establishing a firm date in October, preferably Sunday, October 17, or Sunday, October 24. The two companies' reward would be generated through publicity and the goodwill generated by the effort.

They chose the week of October 24 and final preparations began. Civic leaders had set May 30, 1966 as the date for the formal dedication in hopes of having President Johnson attend. The St. Louis Ambassadors sponsored ceremonies at the Old Courthouse, where newly-elected Mayor Alfonso Cervantes was the first to sign the sheets to be placed in a time capsule in the final section of the Arch at the "topping out" ceremonies. The sheets circulated throughout the St. Louis area, particularly in schools, for signatures. At the Arch itself installation of the interior work was back to normal and MacDonald placed temporary electrical service in the visitor center. The electricity was used to check and run the elevators and trains.

On October 4 the first windowed section was set on the south leg to raise it to 628 feet. By October 17 workmen on the north and south legs threw a gangplank across the 10-1/2 foot gap at the 630-foot level. Only two eight-foot sections remained to be placed into the Arch. The final section on the south leg, called one south, had to be installed before the Arch was topped out with the last piece, designated one north. Now the scheduled date was Thursday, October 28, susceptible to change because of foul weather. The workmen's final task was to use hydraulic jacks, each with a capacity of 300 tons pressure, to spread the distance between the legs from 2-1/2 feet to 8-1/2 feet to insert section one north.

A mild uproar occurred over the uncertainty of the topping out date. Civic leaders could make no detailed arrangements because of uncertainty, but they wanted to delay the date by two days to Saturday, October 30 to attract larger crowds for the ceremony. Superintendent Brown said no. It was left up to Pittsburgh-Des Moines to make the final decision and schedule the work accordingly, but the National Park Service did not want to approve a delay. The Federal Government consultants, including Eero Saarinen and Associates, felt concern over the excessive weight at the top. They worried that the 100-ton creeper cranes might cause sag or strain on the welded joints above the stabilizing strut.

The St. Louis Ambassadors and the Gateway Arch Topping Out Committee bowed to the National Park Service's wishes and the topping out date remained set for 10 a.m. on Thursday, October 28. On October 26 work halted once more when members of the topping out crew refused to return to their jobs on orders from Iron Workers Union Local 396. The union wanted a safety check made, although the workers believed the structure safer than ever because of the jacking equipment. MacDonald Construction Company's project manager asserted that there was no justification for the refusal to work. It was true that the project stood at a critical stage, but Superintendent Brown explained that this meant the Arch was vulnerable to high winds or earthquakes; the project was not in itself dangerous. After conferences between National Park Service and construction company officials the Arch was inspected jointly by The Travelers Indemnity Company, insurer for MacDonald, Saarinen and Associates, and Severud-Elstad-Krueger Associates. The workers declared that the Arch was the safest job they had ever worked on. More meetings were held on Wednesday, October 27, to decide when to perform the deed. The main question concerned the time of day; whether to top it in the night's cool, the early morning hours, or at 10 a.m. as planned. The contractors finally decided to start just a little earlier than 10 a.m.

Arch Topping Out

The big day came, October 28, 1965, and Luther Ely Smith and Eero Saarinen were there in spirit. The workers started at 9:25 a.m. to hoist the last section. The lift took thirteen minutes. To counteract the south leg's five-inch expansion from the sun's heat, the contractors and engineers had members of the St. Louis Fire Department come in. They used 700 feet of hose to reach 550 feet up the south leg, spraying water from 9:30 a.m. until the end of the operation. As one north rose 630 feet the crowds cheered, whistles blew, and the city rejoiced. The ceremonies celebrated the site's history. Undersecretary of the Interior John A. Carver, Jr., spoke and Superintendent Brown served as master of ceremonies, while Vice President Hubert Humphrey viewed the proceedings from an overhead airplane. After the last piece was jockeyed into position at 11 a.m. the delicate job was almost over. In the afternoon, at 2 p.m., workers released the twelve-ton bottle jacks and the full weight of the two legs secured the final section. The stainless steel did not buckle. Welding remained the final chore. Superintendent Brown exclaimed to his co-workers, "No other comparable event is likely to occur in our lifetime."

The work was not yet over. Even though all the attention focused on the Arch completion, other matters demanded Superintendent Brown's attention. Installation of the trains, stairs, elevators, and interior steel and electrical equipment continued, while work in the visitor center was essentially complete. Brown held a press conference to unveil the first capsule for the trains in the Arch legs as well as to authorize site surveys for the memorial's grading plan.

Another of Brown's projects was promoting the interest in developing the east side river bank. The East St. Louis, Illinois, City Planning Commission had worked since the first discussions to provide zoning control guidelines for the levee and to prepare an attractive development plan. Their efforts were enhanced in January 1964 when one St. Louis corporation proposed building a hotel, restaurant, and marina south of the Eads Bridge. The proposal provided an impetus for the city's planning efforts. Then in 1965 Acting Superintendent Brown conferred with Mayor Alvin Fields to tell him of the National Park Service recommendation that a master plan be developed for the east side of the river to complement the west bank. Brown offered the Park Service's assistance in this effort. The Jefferson National Expansion Memorial Association announced its support by authorizing its officers to notify two railroads with substantial tracks on the east side riverfront of the group's interest in the area's redevelopment. The association sought the release of the railroad's property for development. These discussions continued for several years, as East St. Louis struggled to share in downtown St. Louis' rebirth.

In the month after the Arch's completion, workers lowered the two creeper cranes and their platforms that had hauled up the stainless steel sections. The stabilizing strut was lowered on November 16 after electricians installed lightning rods and a two-foot high red blinking aircraft warning light on the top of the Arch. As the cranes descended, the Arch's steel skin was cleaned, the holes from the crane tracks filled, and the skin polished

All work inside of the Arch kept up the normal pace; installation of the trains, stairs, elevators, interior steel, and electrical equipment all progressed. In the visitor center the work was complete except for door painting and installation of hardware. During December Superintendent Brown met with MacDonald and Hoel-Steffen concerning contractual responsibilities. For Hoel-Steffen, who had just received the contract for the visitor center interior, talks concerned future work, while for MacDonald the meetings centered on completing the contract, releasing claims, and processing the final payment estimate. The visitor center construction was about to move from the outside to the inside.

Such an obvious accomplishment as the Arch's completion tended to overshadow the work of the research staff. Planning for the Old Courthouse exhibit rooms and Museum of Westward Expansion continued on unobtrusively. Planning for the Old Courthouse was accelerated because $4,000 was made available to the staff for exhibit construction during fiscal year 1965. Research started in April on three new exhibits: interpreting the rotunda, dome murals, and the Dred Scott case. The design of these exhibits was complete and the materials and services ready to be contracted for by May. Research for the museum continued on an accelerated schedule; the staff wanted to be finished by the end of the summer. Their work would be used not only for the museum, but also as a basis for the interim exhibit plan for the visitor center. Exhibits from Museum of Westward Expansion planning documents were to be utilized in the visitor center temporarily until the museum opened. These plans were completed and prepared for submission to the regional office for review by the end of the year. Also completed at year's end were several museum gallery plans, along with color mock-ups.

National Park Service personnel made two decisions during the year that affected both the future uses of the memorial and its interpretive program. It had been a practice of city residents to use the Old Courthouse for amateur theatricals, champagne parties, debutante balls, and other similar activities. Such use resulted in extensive damage to the building. Superintendent Brown inherited the situation, but halted it after more than $2,000 damage was done to a model of the Arch during a gathering. The Old Courthouse regained some of its dignity when these activities stopped.

The Old Rock House on the riverfront, which had been restored in 1941 and dismantled in 1959, was supposed to be reassembled by the Park Service. Only 119 stones, along with some timbers were left, however, and controversy raged around them. Historian John Bryan and Architect Charles Peterson now stated that the National Park Service proposal to build a model of the warehouse was without value. The structure's historical and architectural significance rested on its standing at its original site. Director Hartzog, Superintendent Brown, Bryan, and Peterson disagreed on the significance of the salvaged stones. Hartzog claimed that the only fragments saved were those that Bryan determined were original, since much of the building had originally been constructed of uncut rubble masonry. Brown asserted that none of the timbers were original. Bryan reminded everyone that the timbers and stones had been salvaged and reused during the 1941 restoration. He did not think the salvaged stones to be more authentic than those that had been thrown away. George Kassabaum, president of the St. Louis chapter of the American Institute of Architects, agreed that the reconstructed building would hold no significance on another site. The Park Service decided not to rebuild the structure and the stones remained stored in the Old Courthouse's basement. The necessity of moving the railroad had destroyed the integrity of one of St. Louis' most historic sites.

Local citizens, satiated with the glow of their achievement in completing the Arch, were asked to contribute still more funds to finish the memorial in 1966. Because the city's initial 1935 contribution was now totally committed, its citizens had to contribute further to match any more Federal Government appropriations. Unfortunately, the new year did not bring favorable administration action. President Lyndon Johnson's "Great Society" faced competition from overseas in the battle of the budget. Increased spending in Vietnam threatened domestic expenditures, and no funds for the memorial were included in the budget Johnson sent to Congress. Missouri's congressional delegation worked to get the item included. Representative Leonor Sullivan sought the previously authorized $6,000,000 needed to complete the memorial in a supplemental appropriation request, which was denied. The executive assistant director of the Bureau of the Budget notified Missouri Senators Edward Long and Stuart Symington that Johnson could not provide the funds either in a 1966 supplemental request or in the 1967 budget.

National Park Service officials saw trouble ahead. They had entered into a contract for the interior finish of the Arch and the visitor center and now they had no funds. Additionally, the offer of $775,000 for the museum still stood from the trustees of the Albert Greensfelder Trust, an offer still contingent upon a matching Federal contribution of three to one. The donation, matched by Federal funds, would provide $3,100,000 for the museum. The National Park Service did not want to lose this offer, and despite the fact that they currently had a balance of $114,000 for the memorial, earmarked for contractors, the acting director of the Park Service appealed to the secretary of the interior to make a renewed request to the Budget Bureau to reconsider the supplemental appropriation.

Even this request did not meet with success. In March 1966 the House Appropriations Committee failed to include the funds in the Interior Department's regular budget bill or in the supplemental for the fiscal year ending June 30. One chance remained to obtain the funds; another supplemental bill was expected to be introduced in Congress during the summer. The reason behind the cut clearly stood out: Vietnam. Just as World War II and the Korean Conflict disrupted the memorial's progress, Vietnam threatened to do the same.

St. Louis proceeded with its plan to raise $2,000,000 as its share for finishing the memorial. The city knew that its benefits from the memorial hinged upon the completion of the visitor center and museum. A bond issue election was scheduled for November 8, 1966, offering sixteen separate propositions needing a two-thirds majority for passage. On election day 56% of the voters favored the memorial position; this was a majority, but not a two-thirds majority, and the measure failed. Less than a week later Representative Thomas Curtis and Senator Stuart Symington learned that the Budget Bureau had provided for an appropriation of $2,300,000 in their preliminary 1967 budget. The two men hoped this amount would remain in the budget so as not to lose the private matching funds. St. Louis' Mayor Cervantes then announced plans to resubmit the memorial completion proposal to the city's voters. The aldermen unanimously agreed. St. Louisans would get another chance in 1967.

Union Walkout

Hoel-Steffen Construction Company received the contract for the visitor center interior finish because of its bid and its compliance with equal opportunity requirements. Representatives of local building trade unions presumably were parties to Hoel-Steffen's agreement to provide more construction jobs for blacks. As soon as Hoel-Steffen began work, however, the Building and Construction Trades Council of St. Louis notified the company and the National Park Service that its members voted unanimously not to work on the project. This action came after Hoel-Steffen brought non-union black plumbers in on the project. The Construction Trades Council's justification rested on the fact that building trade members only worked on projects where all workers were AFL-CIO. They insisted their decision had nothing to do with race, creed, or color. Hoel-Steffen found itself caught between the Government's push for equal employment and the all-white AFL-CIO building trades unions. Hoel-Steffen received editorial support from the Globe-Democrat, which believed the public to be the loser in the quarrel.

Department of Labor officials stepped in on January 21, asking the Justice Department to take action to prevent the AFL-CIO and the St. Louis Construction Building Trades Council from interfering with Hoel-Steffen's efforts to comply with equal opportunity clauses in its contract. National repercussions resulted from the two-week work stoppage. The Labor Department's action was the first taken against a labor union under President Johnson's 1965 executive order on equal opportunity. On January 7, the day the unions walked off the job, the Government notified four of its agencies pursuing construction in the St. Louis area that builders must show affirmative action before any future contracts would be awarded. Robert Hoel had applied affirmative action when he hired the independent E. Smith Plumbing Company, which belonged to the Congress of Independent Unions, because he could not obtain a black plumber or apprentice from the AFL-CIO plumbers union in St. Louis. His action resulted in the AFL-CIO boycott, but removing the black plumbing contractor might bring court action by the Congress of Independent Unions and the NAACP.

On February 5, 1966, the Justice Department filed suit in U.S. district court against the AFL-CIO Building and Construction Trades Council and five of its member unions for discrimination. It was the first suit filed by the Federal Government to enforce the nondiscrimination clause required in Federal contracts. The suit alleged that the defendants limited employment opportunities for blacks in the construction trades and that the trade council interfered with the visitor center completion by ordering its member unions not to work with the Congress of Independent Unions. The National Labor Relations Board, in a separate move, sought a court injunction to force the unions back to work on the visitor center. On February 6, a U.S. district court judge ruled that the St. Louis Building and Construction Trades Council and its four member unions were engaging in a secondary boycott at the project. He issued a temporary injunction against them and ordered them to stop trying to force the E. Smith Plumbing Company off the job. The order was effective until the National Labor Relations Board disposed of the case.

The action effectively forced the Trades Council back to work on February 9 when they declared they would comply with the court order. AFL-CIO electricians, however, disagreed with their employer and their union and refused to go back to work. Hoel-Steffen's electrical subcontractor, Louis Sachs of Sachs Electrical Company, requested that temporary lights be placed in the visitor center area, but the electricians refused to do the work. Their walkout lasted only a few days, for their local's business manager stepped in to install the electric lights. When the electricians returned, the other AFL-CIO laborers and carpenters followed suit. The electricians' union vowed to continue fighting against what it considered "improper and illegal tactics" used by the Federal Government in hiring a nonunion subcontractor.

All the disruption in the visitor center did not affect progress on the Arch's interior work. At the end of February the interior steel and general electrical equipment was essentially installed. The cabs and control panels had yet to be placed on the elevators, but installation of the capsules for the transportation system had started as well as the system's electrical work. Installation of the tracks and machinery for the transportation system was almost complete. On the outside of the Arch inclement weather affected the process of cleaning the exterior stainless steel; nevertheless, the creeper cranes were halfway down the legs.

Superintendent Brown now concentrated on planning the structure's dedication with civic leaders. Director Hartzog made the decision in March to postpone the formal dedication once again after meeting with Brown and Mayor Cervantes. The city had hoped for May 30, 1966, but this date was premature. The area around the Arch remained unsightly and the visitor center remained unfinished. Hartzog postponed the dedication for at least a year, but he stressed that the long delays in the project's completion were caused by construction problems. Labor disputes had added fifty-one days to that delay. Mayor Cervantes wanted the transportation system to be opened by summer, but contractor Robert Hoel knew this was impossible. Bi-State stood to lose thousands of dollars if the transportation system was not in operation by July, while Director Hartzog promised to try and have at least one leg of the transportation system ready for the summer crowds.

George Hartzog remained deeply interested in the memorial's progress. On behalf of the National Park Service he accepted a donation of $25,000 given by the St. Louis Rabbinical Association to be used for a fountain in the visitor center lobby. He worked with Superintendent Brown on the dedication question and the delays in the transportation system, and he kept a sympathetic eye on developments. Brown, meanwhile, kept busy. He reviewed still more proposals for lighting the Arch, participated in civic panel discussions to evaluate the memorial's role in stimulating the city's downtown redevelopment, agreed with the City Park Department's plans to beautify the plaza opposite the Old Courthouse, and attended a news conference in New York for 150 New York-based editors, writers, and media personalities, sponsored by Downtown St. Louis Incorporated. Brown and Mayor Cervantes presented St. Louis' redevelopment story and stressed the city's resulting economic benefits. Brown also had to meet again with the St. Louis Bicentennial Committee to explain why he and Hartzog had decided to postpone the dedication.

The biggest problem remained the visitor center interior contract. Brown held more meetings with Robert Hoel and Bi-State's Colonel Smyser over finishing the project so that Bi-State could get some income from the operational system to defray the expense of their investment. In April 1966, proposals were made to Hoel-Steffen to accelerate the work. The National Park Service made a contract with the company providing for the completion of the transportation system in the Arch's north leg ninety-one days after the contract was signed. If the work were finished, Hoel-Steffen would be paid an additional $97,500. If the north leg system was not completed in time the company would be fined $750 a day for each day in excess of ninety-one. Hoel-Steffen originally had to complete the partial finishing of the visitor center and installation of the air-conditioning by October 17, 1966. The new agreement meant a completion date of July 15, 1967. Inside the Arch itself all sixteen transportation capsules were assembled and pulled to the top of the Arch by a temporary hoist. Work continued on the electrical installation, tracks, and machinery. The system's doors and hardware for the walls in the upper load zones were placed in April.

Outside the Arch a new problem developed in the stainless steel skin. Wrinkles appeared in the skin in March 1966, and for the next two months

Superintendent Brown met with Federal and construction officials to discuss repair and responsibility for them. Several of the Arch sections had been damaged during shipment from Pittsburgh and the Pittsburgh-Des Moines Steel Company worked to correct the marks. By May, however, Brown learned that MacDonald Construction Company and Pittsburgh-Des Moines Steel experts could not, by any known method, correct the damage. The National Park Service did not let the matter of the wrinkled stainless steel sections drop, however. Eero Saarinen and Associates supplied a figure on the value of the damaged exterior surfacing, estimating $367,631.20 for the damage, which MacDonald could not satisfactorily repair.

The fast construction pace continued. Installation of the work elevator cab was completed in May, while the sixteen transportation system capsules stood in place. Even though the glass had yet to be installed in the windows on the Arch observation deck, the interior finish panels were complete except for painting. Superintendent Brown met with Planet Corporation representatives to plan the maintenance program for the transportation system. At the end of June workers started roping the cables for the capsules.

Federal officials feared that the completed Arch would soon become too tempting a target for pilots, and their worst fears were realized in June, when a private plane flew between the Arch legs. The Federal Aviation Administration could charge any pilot with three violations of FAA regulations if the pilot was caught. This was the first such stunt; it would not be the last.

The pace continued in June and July while Superintendent LeRoy Brown attended to several matters. The Park Service staff in St. Louis established an Equal Employment Opportunity Committee in June to discuss different methods by which to promote equal employment at the memorial. They placed their main emphasis on youth employment programs. Meanwhile, MacDonald Construction Company neared completion of their contract for building the Gateway Arch. The company began final cleanup of a section of the structure's interior, and upon National Park Service inspection, the section was found to meet contract requirements with a few exceptions. MacDonald proceeded with the interior cleaning. Around the bases of the Arch legs MacDonald poured 50 percent of the needed concrete. When this chore was complete the creeper cranes on the legs continued to move down, allowing cleaning of the exterior stainless steel as they went.

Despite a sheet metal worker's strike then in effect, which held up Hoel-Steffen's progress on the visitor center, Bi-State decided to wait it out and not cancel the accelerated program now threatened with more delay. Bi-

State looked forward to opening the passenger transportation system and planned for a reopening inspection tour and first rides for public officials and guests.

When autumn 1966 arrived, marking the first anniversary of the Arch's completion, MacDonald Construction Company still had not finished its contract. The Traveler's Indemnity Company inspected the company's work and met its representatives to discuss contract requirements. MacDonald still had to finish the work on the ramps and load zones and around the Arch legs, which held up Hoel-Steffen's progress. MacDonald sustained an exemplary achievement when it raised and lowered the north train by push button manual operation at slow speed. By September this feat had been accomplished with both trains.

In October 1966, when attention focused on the unfinished project because of the upcoming bond issue election, the Park Service staff worked to clear MacDonald's contract. Contract inspector Ted Rennison completed a prefinal inspection on the main Arch portion of the contract. He noted 125 items that were not yet completed and should be considered exceptions to the work's acceptance. Rennison also prepared punch lists devoted to the interior steel stair and electrical work that he would give to MacDonald when completed. Hoel-Steffen was to have the north leg ready whenever MacDonald completed the trains, now set for December 1966. Both construction firms ran into frequent conflicts over the use of work areas, specifically the hatchways when the trains were in operation. Hoel-Steffen could not work because of the high voltage dangers, but MacDonald needed to get the trains into operation. Both contractors met with the National Park Service as mediator to determine a work schedule.

Inside the visitor center the fountain construction was 90 percent complete in November. Work progressed on the lobby, the north and south ramps, and the restrooms. On November 29, 1966 memorial officials conducted a final inspection of the Arch. Seventy-six items remained to be completed and they were listed as exceptions in the Park Service's acceptance letter. The final acceptance date was set for June 28, 1967. Hoel-Steffen kept shooting for completion of the north leg by December, and mid-month saw a flurry of meetings between Richard Bowser, Superintendent Brown, John Dinkeloo, and Bruce Detmers of Roche-Dinkeloo and Associates, successors to Eero Saarinen and Associates. The contractors could not meet their deadline once again. They had hoped to test the trains in mid-December, but the date was now pushed back to February 1, 1967. The major problem now was humidity in the Arch leg. Moisture was so high that it affected electrical parts of the transportation system, making them inoperable. The feuds between MacDonald and Hoel-Steffen continued. MacDonald did not protect its equipment from the moisture, so the

National Park Service ordered Hoel-Steffen to use the heating system (which was partially completed and under construction by Hoel-Steffen) to force heat into the north leg. This would dry up the moisture and protect the equipment. These continued squabbles and problems tested everyone's nerves. Deadlines passed unmet, Bi-State lost money, and Park Service officials feared to answer their telephones knowing it was another problem. Meanwhile, the public waited for that first ride to the top of the Arch.

In the meantime, Superintendent Brown kept several proposals to illuminate the Arch under consideration. During November and December no less than four different companies demonstrated their plans to light the Arch. No plan was ever put into effect, even though much time was spent in review and consideration. The rising emphasis on energy conservation, the lack of a feasible plan, and the mirror-like reflective qualities of the stainless steel killed any consideration of lighting the Arch.

The memorial's research staff met many of their museum planning deadlines in 1966. At the year's beginning the staff finished their plan for the interim exhibit gallery in the visitor center, with the exception of choosing colors and choice of materials. After revisions were made in the museum documents and reports, the staff historian worked on compiling a list of objects needed for the museum. By June the staff had the museum floor plan 9% complete. At the end of the year, when Hoel-Steffen finished work in the visitor center, the museum staff moved in behind them to install the interim gallery.

Still further planning for redeveloping the east riverbank occurred at the end of 1966. A group of business and civic leaders proposed a massive project to rebuild much of East St. Louis. The plans included levee developments and an expansion of Jefferson National Expansion Memorial to include forty-five acres on the Illinois side. Reaction to the plan was favorable, but many people expressed doubts about financing. Monetary problems would continue to plague East St. Louis planning efforts throughout the coming years.

The memorial itself faced monetary shortages with the coming of 1967. The national budget included a request of $2,325,000 for the memorial in the fiscal 1968 Interior appropriation bill. If the submitted bond issue passed in St. Louis, the combined amounts would sufficiently complete the visitor center. A total of $6,000,000 was needed to complete all the memorial's features, but the memorial's supporters feared that the Vietnam budget would cut domestic spending. The funds immediately ran into trouble in April when the House Appropriations Committee slashed the money from the budget. No further effort came on the House floor to restore the funds. The St. Louis delegation made no attempt to reinsert the money for fear they would annoy the committee members whose support could be vital in the future. Representative Julia Butler Hansen (Washington), who chaired the appropriations subcommittee, promised to review the request when the budget situation improved.

The Senate held a different attitude toward the funds. On May 16 that body approved $500,000 for museum architectural and engineering planning, $54,400 for the memorial's management and protection, and $50,000 for maintenance and rehabilitation costs. The action came after a favorable recommendation by the Senate Appropriations Committee. The appropriations now had to be cleared in a conference committee where the $500,000 stood in danger of being slashed. All the hopes for retaining the token amount were dashed on June 8, 1967, however, when the House-Senate Conference Committee cut the allocation. The House's will prevailed; none of the $6,000,000 authorization would be provided in 1968. The Vietnam War's high cost hit home.

Bond Issue Election

The city had a second chance to show its support for the memorial, and the project's backers went to great lengths to inform the voting populace of its merits. The city's contribution of $2,000,000, when added to the hoped-for Federal appropriation, would finance the Museum of Westward Expansion, the visitor center with two theaters, the grand staircase, landscaping, and pedestrian overpasses. Jefferson National Expansion Memorial Association members worked alongside the Committee to Complete the Riverfront Arch Memorial to advertise the election's importance. The St. Louis newspapers supported their efforts and the United States Territorial Expansion Memorial Commission met on February 3 to review and endorse the pending election. To publicize the election and give citizens a first hand glimpse at the work needing completion, the National Park Service held an open house for several hours at the site on February 26. Visitors saw the need for walkways, bridges, and steps because they walked through ninety acres of mud.

Several black Democratic leaders opposed the proposition on the grounds that funds going for the Arch would be better spent in the city's poorer residential area. They viewed the Arch as a "white man's memorial," and refused to help a city which provided no jobs for blacks. The argument that the black community would not benefit from the issue's passage was challenged by the city's director of public welfare, who asserted that the Arch should be a symbol for blacks in the sense that it provided a breakthrough in job opportunities in the AFL-CIO construction unions.

As the bond issue election date drew near voters learned that as the Museum of Westward Expansion was completed the western displays in the Old Courthouse would be moved into the new space. The Old Courthouse displays on the Dred Scott decision, St. Louis ironwork, and the Louisiana Purchase would remain, while new displays would pertain to St. Louis' geography, history, architecture, and achievement. Citizens had the chance to glorify their own city's contribution to westward expansion through interpretive displays in the Old Courthouse.

The populace listened and voted on March 7, 1967. The bonds passed by 69.5%. Former Mayor Bernard Dickmann, still playing an active role by heading the bond issue drive, celebrated along with four other previous St. Louis mayors. Representative Leonor Sullivan promised her total cooperation in obtaining the Federal funds. Her efforts were proved to be in vain in June, but at the end of the year Sullivan urged the Budget Bureau to include the $6,000,000 in the next Federal budget. The local money could not be spent independently without being considered a donation. Additionally, the Greensfelder offer could fall through.

Peripheral Building Height

During 1967, the question of peripheral building height emerged again, causing several memorial supporters to worry that the uncertainty over height limits could adversely affect the possibility of receiving Government appropriations. The problem began in January when redevelopment plans were unveiled for the area immediately north of the memorial between the Eads and Veterans Bridges. The River Center Redevelopment Corporation proposed high rise apartment and office buildings costing $101 million. Developers would be eligible for full tax relief under urban renewal programs. The alternative plan, stressing rehabilitation and preservation of historic structures in the area, was called Laclede's Landing and was sponsored by the Levee Redevelopment Corporation. Mayor Alfonso Cervantes favored the high-rise proposal, but indicated he would take the advice of the City Plan Commission.

The commission, most of whose members were appointed by Cervantes, voted on January 19, 1967, to approve the high-rise proposal and recommend a height limit of 500 feet from the base line of the Arch. National Park Service Director George Hartzog saw the potential danger. Although he favored development in the area, he objected to any height over 275 feet. Years before, the Mansion House controversy had effectively set the height limit at 275 feet when the Arch height was raised to 630 feet. Hartzog asserted that "Had that agreement not been reached, it is doubtful if the Arch would have been built at all." He believed that any plan providing for a building height to exceed 275 feet could adversely affect the chances of obtaining additional funds. The United States

Territorial Expansion Memorial Commission, meeting in Washington, D.C. on February 3, adopted a resolution supporting the height limitation.

Former Mayor Raymond Tucker jumped into the controversy in March by informing Cervantes of his years-old agreement with the National Park Service that peripheral development height would not exceed 275 feet. The depth of the peripheral area had never been defined, but Tucker considered it to include the area north of Eads Bridge and east of Third Street. Cervantes felt committed to the principle but he wanted legal advice from the city counselor's office on two issues: how to legalize the peripheral area's height limitations and how to prescribe the boundaries of the limitations.

Mayor Cervantes concurred with the commission's decision favoring the River Center plan over the Laclede's Landing plan based on the developers' detailed presentations, but by May the Levee Redevelopment Corporation submitted a more specific proposal which Cervantes believed to have merit. In view of this fact, the building height controversy, and the threat of a cutoff in Government funds, Mayor Cervantes requested the City Plan Commission to reopen its study of the two plans.

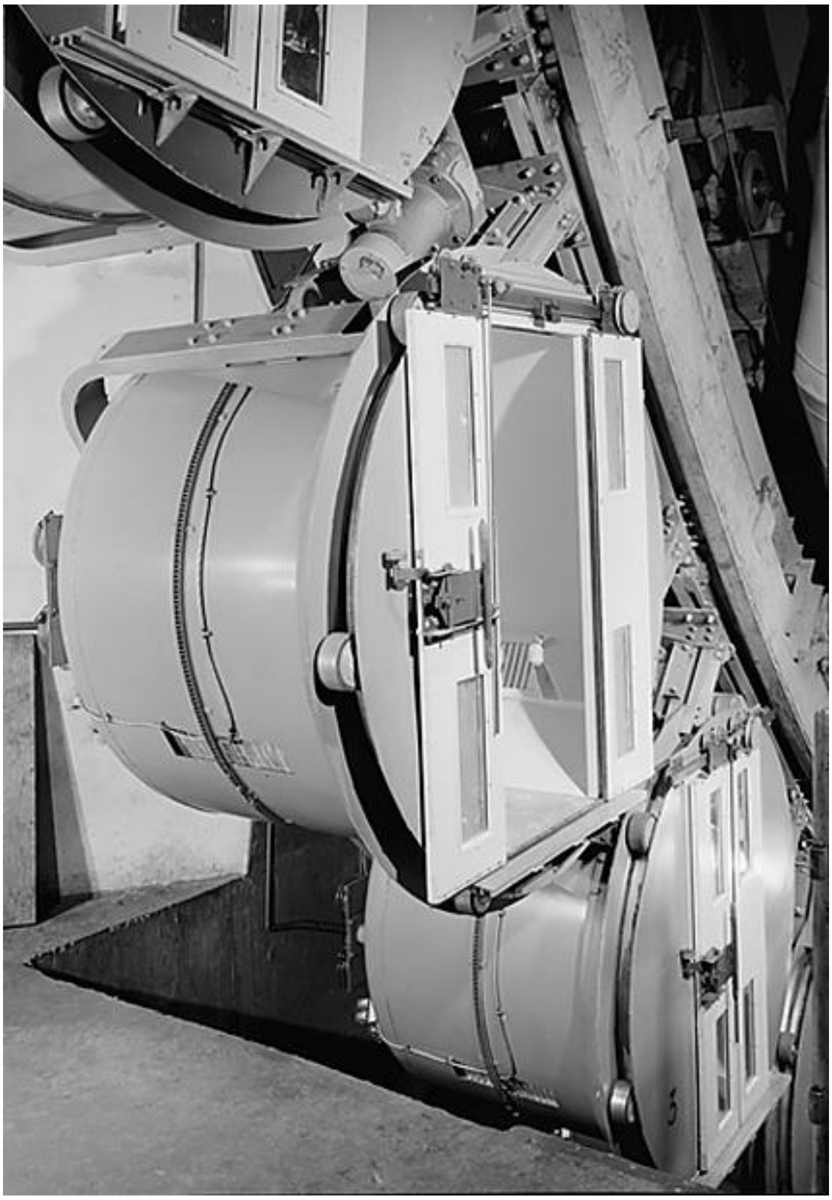
After Congress failed to appropriate memorial funds in June the mayor had second thoughts about the height agreement. The Federal Government had not provided the funds to match local money and Cervantes did not see why they should have any say concerning building height. He intended to abide by the Tucker-National Park Service oral agreement but nothing existed in writing to define the periphery. He did not believe that the agreement applied to "buildings facing in the other direction on the blocks on the edge."

In September 1967 a St. Louis alderman introduced an ordinance before that body to limit the height of buildings to 275 feet in the area bounded by Franklin Avenue on the north, Chouteau on the south, and Broadway on the west. The action was taken to force the city and National Park Service to resolve their problem. National Park Service officials wanted the bill worded so that the height limitation would include the buildings and superstructure. The Mansion House plans had shown just the parapet height of 275 feet, but when the penthouses were added on top the height reached 306 feet. The Mansion House height was thus officially 306 feet or 751 feet above mean sea level. Superintendent LeRoy Brown told Director Hartzog, "This is where Mansion House beat us ... John Dinkeloo tells me it was a deliberate act."

On December 5, 1967, the Aldermanic Zoning Committee unanimously endorsed a bill setting the height limit of buildings in the peripheral area at the same height as Mansion House — 306 feet. The group believed that failure to establish the definite limitations would jeopardize further congressional appropriations. Ordinance 54846 defined the peripheral area as that bounded by Franklin, Chouteau, Broadway, and the river in addition to creating a new zoning district known as the Jefferson Memorial District. Mayor Cervantes signed the ordinance into law on December 28, 1967.

Arch Transportation System

The same problems which haunted the memorial in 1966 continued on into 1967: the transportation system remained unfinished, MacDonald had not finished its contract, unique construction problems continued, and the Arch dedication was postponed once again. The National Park Service and its contractors set deadline after deadline for getting the transportation system into operation, but months passed before one was finally met.



The pods of the tram transportation system, which visitors can use to reach the viewing space at the top of the arch.

Formal testing of the transportation system occurred on January 30, 1967. The first trip to the top proceeded smoothly, but a hitch occurred when the second train jammed. At this point Superintendent Brown hoped the trains would open to the public by March 1. Brown and Hartzog both met with Bi-State numerous times during the first months of the year to discuss opening the north leg and completing the accelerated work program on the interior finishes. Richard Bowser came to St. Louis to inspect the transportation work and to discuss his findings with Brown, while the Planet Corporation supplied the memorial staff with a list of spare parts they believed should be on hand at all times for the train operation. At the end of February the memorial staff planned and commenced temporary landscaping in hopes of opening the transportation system within a few weeks, but delays set the date further back. Hoel-Steffen had turned on the steam for heat and was running the north leg air handling unit to keep down the humidity.

The north train could be run only under these conditions. The National Park Service then had to issue a stop order to the company on January 20 to halt all work in the Arch south leg until after the train testing. This was a necessary safety precaution because of the open electrical equipment. The Government expected the mechanical work in the visitor center and north mechanical rooms to be completed before Bi-State took over the north train. The testing, witnessed by the Detroit Testing Laboratory, lasted throughout the first two weeks of March.

On March 6, 1967, Superintendent Brown and several staff members held a conference with representatives of the various AFL-CIO unions on the job to discuss opening the Arch transporters to the public. Several solutions were presented to solve the jurisdictional questions involved. The most practical solution for the National Park Service was to have the contractor complete all remaining work in the north leg after the train was accepted. Hoel-Steffen indicated that barring any unforeseen difficulties, all work could be finished six weeks from the time they were given full-time use of the north leg. Once that portion of the facility was completed, the unions could not object to its being operated and maintained by non-union employees. The second alternative involved commencing operations in the north leg before the heating, ventilating, and electrical work was complete. This required extra costs. The third alternative also required Bi-State to start operations before the north leg was complete. The plan called for operating the ventilating system during periods that Bi-State carried passengers, involving even more costs. It was in the Government's interest financially to have the north leg completed before allowing Bi-State to operate the transportation system. The recurring factor in these alternative actions remained the ventilation/condensation problems. In case both legs of the transportation system were completed simultaneously, the unfinished north leg ventilation system could no longer be used to reduce condensation in the south leg. The absence of the ventilation would lead to considerable rusting of the south leg transporter. LeRoy Brown had to take notice of this fact when planning for the system's completion.

Other construction projects continued. At the end of January plumbing and lobby lighting in the visitor center was completed. In February the Federal Government accepted the architectural and plumbing work in the lobby, the restrooms, and the fountain in anticipation of the open house event publicizing the bond issue election. MacDonald Construction Company still worked on its list of seventy-six items of exceptions. At the end of February they had completed 80%.

The National Park Service and St. Louis city officials continued their tentative dedication planning. The city's police and civil defense officials met at the Old Courthouse to discuss the physical preparations necessary for the ceremony, such as the presidential stand, chairs, fences, police protection, and other items. Director Hartzog told Mayor Cervantes that the memorial would be ready for dedication about July 1, 1967. Both men desired President Lyndon Johnson's participation, but realized that the dedication also had to be coordinated with the mayor, the congressional delegation, the secretary of the interior, and the United States Territorial Expansion Memorial Commission. President Johnson sent word late in February that his schedule would not allow him to come to St. Louis any time in the months ahead. The dedication was postponed once again.

In an attempt to get the two theaters built in the visitor center, Superintendent Brown proposed a plan in early March 1968 to let a private concessionaire build and run them. When Representative Leonor Sullivan heard this meant charging admission to the films, she vehemently opposed the plan. Brown and other Park Service officials believed that having the concessionaire build the theaters would be a way to provide the facility for the public faster than waiting for the money to be appropriated by Congress, but Sullivan thought the Federal Government had made the commitment to fund the memorial and the funds should come from that source. On March 14 Director Hartzog rescinded his order calling for bids on $750,000 in construction work in the theaters, and told Sullivan he would look for another way to finance the work. The local funds could not be spent until the Federal matching money was appropriated, so the project's supporters would try again before a House appropriation subcommittee late in March. Local politics once again determined the course of the memorial's development.

MacDonald Construction Company suffered a postponement in the acceptance of its work by the Government in mid-March. The company told National Park Service officials on March 14 that their work on the trains, elevators, and stairs would be ready for inspection on March 20. Superintendent Brown and other officials started the inspection but they discovered so much incorrect and unfinished work, and workmen interfering with the inspection while performing their jobs that Brown decided to postpone the operation until the job was ready. He furnished MacDonald with a list of items needing correction.

The construction company faced another problem when the visitor center's roof started leaking. This condition produced ceiling and wall stains and damaged the plaster. Superintendent Brown inspected a portion of the uncovered roof only to find defects suffered in the original roof installation. MacDonald attempted to repair the damage in March but progress was slow.

Hoel-Steffen's January 20 stop order remained in effect in March. They did not work in either Arch leg through February and March so that MacDonald could finish their work. The National Park Service, however, decided on March 22 to have Hoel-Steffen start work again in the north leg because the Park Service's final inspection of MacDonald's contract would not interfere with Hoel-Steffen's work in the area.

The Bi-State Development Agency kept losing money throughout all the delays. They wanted at least one leg's transportation system to be operational to obtain some relief from the financial losses they were suffering. The agency to date had paid $800,000 in interest on the bonds without any sort of return. They borrowed to meet their January 1 interest payment, and had another $90,000 due on July 1. In March 1966 they had provided the $97,500 additional funds for the accelerated interior finishes program, which was supposed to insure the system's opening by July 15, 1966. Now nine months later the trains still were not finished. The agency had been deducting $250 daily from MacDonald's payment since August 15, 1965, and continued to do so. MacDonald however, filed appeals saying it was not responsible. Bi-State had been initially promised a completion date of December 2, 1964. Three years later it continued to wait.

Hoel-Steffen found it impossible to get air-conditioning and heating work finished in the south leg because of the constant testing of the trains in both legs. The company concentrated on getting the north leg done and probably would have finished earlier if the ducts in the Arch had not leaked in tests. The duct repairs added a month to the anticipated completion date of the north leg.

MacDonald Construction Company worked in April to complete eleven remaining punch list items in hopes of having a final inspection in May. The company stopped repairing the roof in April and the roof's condition worsened. The National Park Service held them responsible for the damage. During the month Superintendent Brown directed most of his attention toward getting the memorial open to the public. He came one step closer to that goal in May when he and other staff members inspected MacDonald's work on the transportation system. MacDonald received a punch list of the deficiencies which needed correcting, while Superintendent Brown met with Robert Hoel on the same day to discuss the early completion of certain portions of the interior finishes contract to allow the visitor center's to open shortly after June 1.

Superintendent Brown accomplished another goal in May when his staff installed exhibits in the visitor center's interim gallery. Brown attended the premier showing of the two films to be shown in the visitor center: "Time of the West" and "Monument to the Dream," and these films, added to the interim exhibit gallery, served to present the public with a visual and physical preview of the future Museum of Westward Expansion's glories. The gallery officially opened on June 9, 1967, with the displays composed of farming implements, pans, picks, shovels, an overland wagon, Torrini's bugler statue, and Reinhardt's mosaic. The visitor center was now open but it continued to leak. MacDonald worked to remove eighteen inches of dirt over the entire visitor center complex and LeRoy Brown estimated the cost at $100,000. He blamed initial faulty installation for the leakage, but John P. Reuter, Jr., president of Missouri Roofing Company of St. Louis, who had done the work for MacDonald, disagreed with that assessment. A board of contract appeals would have to decide who was responsible for the repair bills.

The National Park Service finally allowed Hoel-Steffen to start work again in the south leg on June 14, 1967. The stop order on the leg had been in effect since the previous January 20. Park Service officials proceeded further in the process required to open the north leg by having Sverdrup and Parcel Engineering Company inspect the system. The company presented their report on June 27 and made a series of minor recommendations. Due to the desire to have everything working perfectly on the trains, both Bi-State and the Park Service wanted to wait until everything was ready before announcing another opening date. The problems remained many and the procedures complex. Sverdrup and Parcel's report listed thirty-five items, seventeen of which were critical and had to be corrected before the system opened to the public.

Hoel-Steffen Construction Company had severe problems. In July 1967 it was on the edge of default because of the endless delays, unique construction problems, and the labor disputes involving the third party contractors. The firm told the Park Service on July 6 that it might not be able to complete the work provided in the contract for heating and ventilating the Arch and visitor center. Robert Hoel filed a claim for Federal payments for the third party delays, but the National Park Service did not have liability under the contract. The Federal Government promised, however, to cooperate in every proper way to keep Hoel from defaulting on his contract.

Despite this threat to the memorial's completion, the long-awaited opening of the transportation system took place on July 24, 1967. MacDonald completed the critical items, the National Park Service held a ribbon cutting ceremony, Director George Hartzog came in from Washington, D.C., and thirty dignitaries took the first ride up. The system opened to the public at noon. Eight months passed before the south train opened for public use. It too suffered delays before it finally opened at 10 a.m. on March 19, 1968. The north leg was then closed for the installation of automatic passenger-handling equipment. Simultaneous operations did not occur in both legs' transportation systems until May 18, 1968.

By the time the Arch's transportation system opened, contractors working on the Arch/visitor center complex had filed seventeen appeals before the Department of the Interior Board of Contract Appeals, totaling $972,000. The contractors also filed suits and counterclaims in the United States district court totaling $1,408,633. Superintendent LeRoy Brown was not troubled by the amount of money involved in the appealed disputes. He thought the amount small in comparison with the total amount of the contracts comprising $13,500,000.

Most of the problems between the contractors and the National Park Service occurred because of the difficulties encountered when MacDonald and Hoel-Steffen both had to work in the restricted space of the Arch legs. Work crews of other firms could not get into areas already occupied. Even though MacDonald, Hoel-Steffen, and subcontractors had completion dates and penalty clauses in their contracts to consider, their work was often delayed through the imposition of make-shift work arrangements in the legs. MacDonald and one of its subcontractors, St. Louis Sheet Metal Company, made an agreement to work in four-hour shifts in one area, but set up and tear down of equipment every day consumed much of this time. The high humidity in the Arch legs continued to add to the deterioration of equipment. The contractors ran fans during the day, but on weekends and nights an electrician was needed to operate the electrical panel. Everything became dripping wet on the weekends, and the repairs cost more than overtime would have to pay an electrician. The internal squabbling and humidity helped ruin a lot of equipment. Relationships between some of the firms deteriorated over the crowded working conditions, and several filed suits against other firms for third party contractor delays. Robert Hoel blamed the National Park Service for his company's precarious financial situation. He thought the Park Service's premature letting of the project created the crowded working conditions. Hoel would have been assessed damages if he delayed moving workers and equipment into the work area, even though MacDonald workers were already present. Hoel believed that the tempers flared and the job dragged on because too many people were involved. Richard Bowser estimated that the continual bickering, blaming, negotiations, and delays added one year to the construction of the Arch. In fact, the National Park Service had to go in with salaried staff to finish the little details to get the Arch trains running.

Another essential reason for the delays was the perfection demanded by the National Park Service in the contracted work. All equipment had to be in first class condition upon acceptance, but as delays occurred the contractors had to maintain the equipment over a period of years with no pay for the service. The National Park Service also adopted the view that the guarantee period began after acceptance and not installation. Normal one year guarantees were extended to two or three years. Contractors disagreed with the National Park Service's demanding corrections of latent defects in the work. Park Service officials insisted that the contractors knew of these defects, and ordered them corrected at the contractors' expense. This served as justification for the leaking visitor center's roof repairs. The National Park Service's demand for special procedures and tests were thought to be unreasonable by some contractors. Superintendent Brown sympathized with the companies but he had an obligation to seek perfection. The contractors had a recourse for their legitimate claims through the contract appeals board.

The Bi-State Development Agency continued throughout this period to have its differences with the National Park Service. The pressure on the memorial staff was tremendous to get the trains running. Every day of delay meant money to Bi-State, and its officials did not agree with the Park Service's grant of time extensions and payment of additional costs to Hoel-Steffen. When the contractor requested a fifty-one day extension to its contract because of the AFL-CIO walkout (which lasted 34 days), the National Park Service granted them 45 days. Bi-State thought this extension and the other twelve change orders issued to Hoel-Steffen were overly generous. But despite the two-year delay in opening the Arch transportation system, Bi-State enjoyed heavy visitation, which exceeded its expectations. By January 1968, 250,000 visitors had traveled to the top of the Arch.

After all the appeals and suits had run their course by 1972, Hoel-Steffen received some payment for its claims, while the Government and Bi-State were released from any claims by MacDonald. Both Superintendent Brown and National Park Service project supervisor Kramer Chapman believed that Hoel-Steffen should have been awarded more payment than it finally received because of the company's involvement with the AFL-CIO union walkout. One of Hoel-Steffen's subcontractors (St. Louis Sheet Metal) defaulted on the job, but Hoel-Steffen itself remained solvent. MacDonald corrected all items on its punch list and Chapman believed that none of the contractors or subcontractors ever short-cut any work or tried to cheat the National Park Service.

Coping with the AFL-CIO walkout at the time it happened was "pretty miserable" for Superintendent Brown, but the ramifications of the action spread far. By 1968 most major American cities began the first steps to implement equal employment programs in their Federal construction projects. St. Louis' program began in 1964, when the President's Committee on Equal Employment Opportunity began talks with the National Park Service geared toward convincing contractors and labor unions to hire blacks on the project. What ensued was the granting of a contract to Hoel-Steffen, the hiring of the independent black plumbers, the AFL-CIO walkout, and the Department of Justice suit against the Building and Construction Trades Council. All the Justice Department suits were eventually dismissed, but the department appealed cases against two of the unions in which lower courts ruled that the unions had not discriminated against blacks. Following the St. Louis project lead, affirmative action and pre-award conferences to assure equal employment from contractors became standard government procedure by 1968. St. Louis contractors by then were pushing programs to hire hard-core unemployables on summer construction programs. Additionally, most St. Louis AFL-CIO unions had training programs of their own for black workers. The Gateway Arch project served to show area businesses and unions that future Government construction expenditures in the community depended in part upon their drive for minority hiring.

Arch Dedication

Solving all the problems connected with the construction of the Arch only made the official dedication sweeter. The energy and devotion geared toward completing the project now turned to planning a massive dedication ceremony. Original plans had scheduled the dedication for October 1965. Now, almost two and a half years later, Secretary of the Interior Stewart Udall and Mayor Alfonso Cervantes announced the date for May 25, 1968. Sponsors still hoped for President Lyndon Johnson to make an address, but no commitment came from Washington, D.C.. The mayor appointed all the former living mayors, including Bernard Dickmann, to serve as honorary chairmen of the Arch Dedication Committee.

As the day drew near, plans evolved into a two-day celebration complete with parade, ball, and a regatta of boats on the Mississippi River. Dignitaries from the Louisiana Purchase states were expected to attend, along with the secretary of the interior, the chairman of the United States Territorial Expansion Memorial Commission, and hundreds of representatives from patriotic and fraternal organizations. Hopes that President Johnson would honor the occasion with his presence were never realized. Vice President Hubert H. Humphrey represented the Federal Government instead. The date, May 25, was significant: it was twenty years to the day when the United States Territorial Expansion Memorial Commission accepted Eero Saarinen's design for the triumphant Arch.

The day dawned but the sun did not come out. Unusually heavy downpours began that morning which washed out the proceedings. The Arch grounds turned into channels of running water that flooded everything. Water ran down the walkways into the visitor center and stood several inches deep on the floor. It followed the visitors into the complex as they scrambled to seek shelter from the deluge. The National Park Service had prepared no alternative rain plan. Assistant Superintendent Harry Pfanz remembered it as being "just like the Red Sea closing on the Egyptians." Inside the visitor center the ceremonies proceeded with a certain sense of decorum, despite the wet. Vice President Humphrey gave the address and went out smiling. The rain could not wash away the accomplishment. The controversy, delay, and pending suits did not dampen the celebration. Now thoughts could turn to developing an interpretive program suitable for the memorial, including completing the museum.

The new Arch signified a beginning for the city of St. Louis. It prompted rebirth, and provided impetus for investment and growth. Its contribution and value to the city was immediately obvious. It was time now for the memorial's role as a national historic site to begin.

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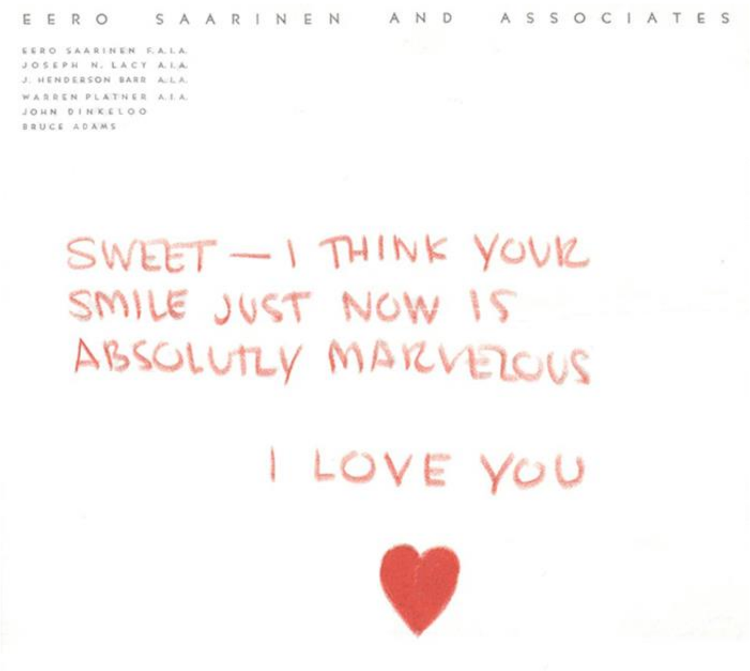
7. Love letters to Aline

In anticipation of Valentine’s Day, the Knoll website decided to revisit, under the title Love and Architecture, the love letters between Eero Saarinen and his second wife, Aline Saarinen. Made available to the public through the Archives of American Art, the letters, dated from 1953 to 1958, they represent a sampling of their overtly affectionate correspondence. In the words of the architectural critic, Alexandra Lange, "Their letters provide a sometimes shockingly intimate look at an apparent coup de foudre of two equals, both stars in their respective firmaments." The article is archived below, with acknowledgement and thanks.


EERO SAARINEN AND ASSOCIATES

EERO SAARINEN F.A.I.A.
JOSEPH N. LACY A.I.A.
J. HENDERSON BARR A.I.A.
WARREN PLATNER A.I.A.
JOHN DINKELOO
BRUCE ADAMS

SWEET — I THINK YOUR SMILE JUST NOW IS ABSOLUTLY MARVELOUS

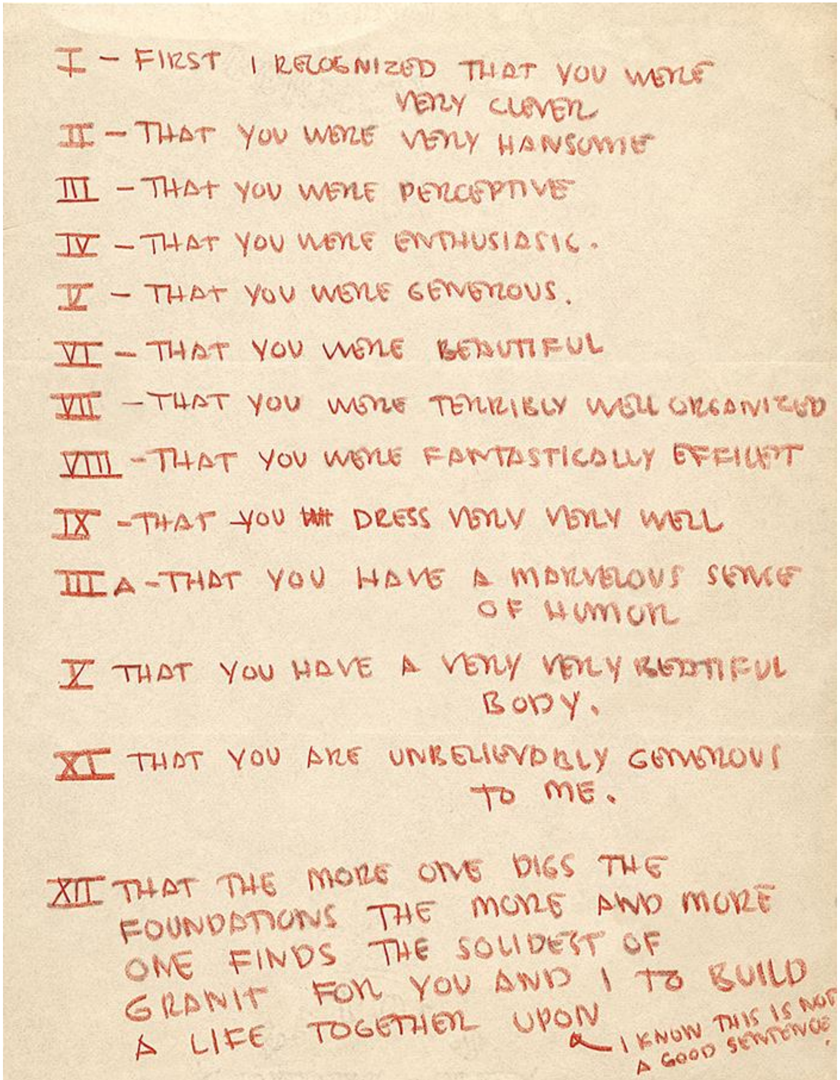
I LOVE YOU

Replete with pet names—including, “the most marvelous thing I know” and “the finest thing there is”—the couple's handwritten letters include cut-out paper hearts and playfully illustrated letterheads. In one particularly compelling letter, Eero iterates in twelve bullet points each one of Aline’s most fetching qualities. (Would-be paramours, take note.) Over the course of their relationship, Eero and Aline came up with more inventive ways to express their mutual adoration of one another. After their marriage, the two adopted a joint signature "AE." Eero signed his letters as "E of AE" and Aline, "A of AE," implying one was always incomplete without the other.

Before Aline met Eero in 1953, she was an accomplished art critic and editor at The New York Times. On account of the acclaim surrounding Saarinen’s recently completed General Motors Technical Center, Aline was dispatched to Detroit on assignment to interview the Finnish-born architect.

As a recent divorceé, Aline became enamored with Eero before she ever saw him; after arriving at the center, Aline described falling in love with the twenty five buildings that made up the architectural compound: “The General Motors job was all and more than anyone had written about it: really a twentieth century monument, yes; ‘itself like a well-engineered industrial product,’ yes; a beautiful expression of our technology, yes; imaginative and big and wonderful in its changing relationships, yes; splendid in the carrying out of the concept down to the careful and pleasing detail, yes; a group of buildings that recognized man’s dignity vis-à-vis the machine, yes. Very human.”

When it finally came time for the two to talk—over the course of two days of interviews and a one-on-one tour of his latest project—Eero and Aline’s romantic fate was sealed. When The New York Times published Aline's profile "Now Saarinen the Son" on April 23, 1953, it was a harbinger of wedding bells to come. They were married within the year.at The New York Times.


I - FIRST I RECOGNIZED THAT YOU WERE VERY CLEVER

II - THAT YOU WERE VERY HANSOME

III - THAT YOU WERE PERCEPTIVE

IV - THAT YOU WERE ENTHUSIASIC.

V - THAT YOU WERE GENEROUS.

VI - THAT YOU WERE BEAUTIFUL

VII - THAT YOU WERE TERRIBLY WELL ORGANIZED

VIII - THAT YOU WERE FANTASTICALLY EFFICIENT

IX - THAT YOU ~~W~~ DRESS VERY VERY WELL

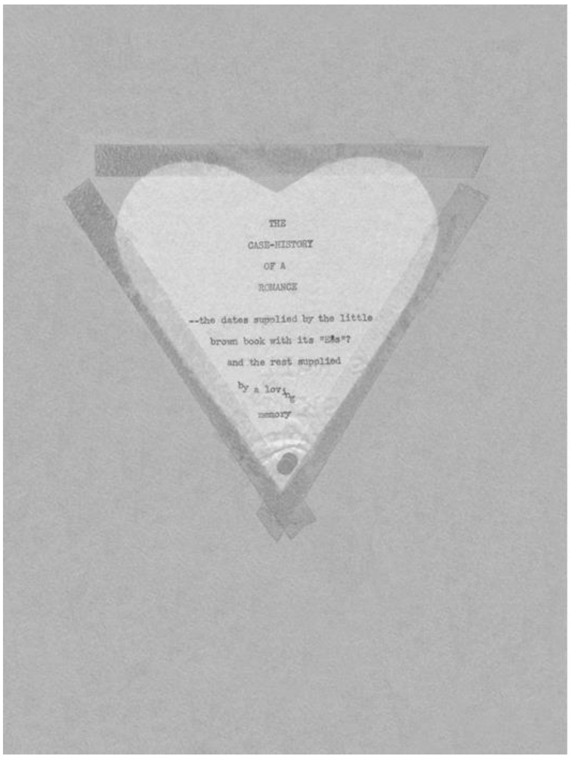
IIIA - THAT YOU HAVE A MARVELOUS SENCE OF HUMOR

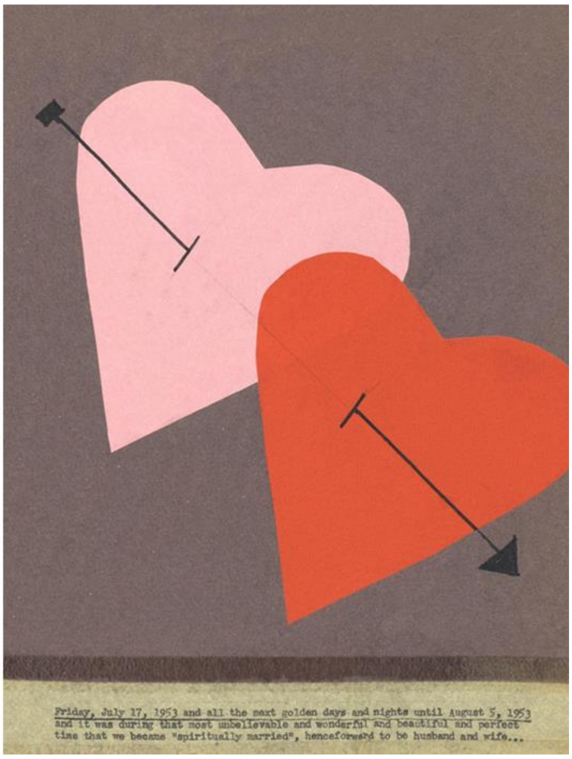
X THAT YOU HAVE A VERY VERY BEAUTIFUL BODY.

XI THAT YOU ARE UNBELIEVABLY GENEROUS TO ME.

XII THAT THE MORE ONE DIGS THE FOUNDATIONS THE MORE AND MORE ONE FINDS THE SOLIDEST OF GRANIT FOR YOU AND I TO BUILD A LIFE TOGETHER UPON

I KNOW THIS IS NOT A GOOD SENTENCE.





Aline, Eames and Eero enjoy dinner at home in Bloomfield HIlls, 1959. PC: Manuscript Archives, Yale University Press | Knoll Inspiration.

8. Looking back after 50 years

The following chapter was archived in 2024, with acknowledgement and thanks, from the MPR News website at www.mprnews.org.

How architect Eero Saarinen shaped America

By Chris Roberts, September 12, 2008.

Eero Saarinen United States Jefferson National Expansion Memorial, St. Louis, Missouri, under construction, 1965 From the Collections of Arteaga Photos Ltd.Image courtesy of the Walker Art Center

At Christ Church Lutheran in south Minneapolis, a genteel courtyard and a sculpted water fountain separate the work of two architectural giants.

Eliel Saarinen's chapel sits on one side, a deceptively simple sharply rectangular brick sanctuary built in the late 40s. An adjoining bell tower rises like a huge brick pillar into the sky.

The interior of Christ Church Lutheran in Minneapolis designed by Eero Saarinen. MPR photo/Chris Roberts.

On the other side is the church's 1962 addition, with floor-to-ceiling windows separated by brick columns which provide a view of the chapel. The addition was designed by Saarinen's son Eero, who is the subject of a new exhibition at the Walker and the MIA. The MIA's design curator Jennifer Komar Olivarez said with Christ Lutheran, the father/son team re-envisioned church design.

"It was seen as a landmark," Oiivarez said. "The simplicity, and the manipulation of space and light and acoustics really resonated. And then this form becomes influential. You start to see these rectangular vertical towers in other architects' work in the decades to come."

Eero Saarinen built on his father's legacy and eventually surpassed him in fame. But, he was also a somewhat controversial figure who emphasized the importance of being timely in architecture, as opposed to timeless.

Eero Saarinen with A Combined Living-Dining-Room-Study project model, created for Architectural Forum magazine, circa 1937 Photographer unknown Courtesy Eero Saarinen Collection. Manuscripts and Archives, Yale UniversityImage courtesy of the Walker Art Center.

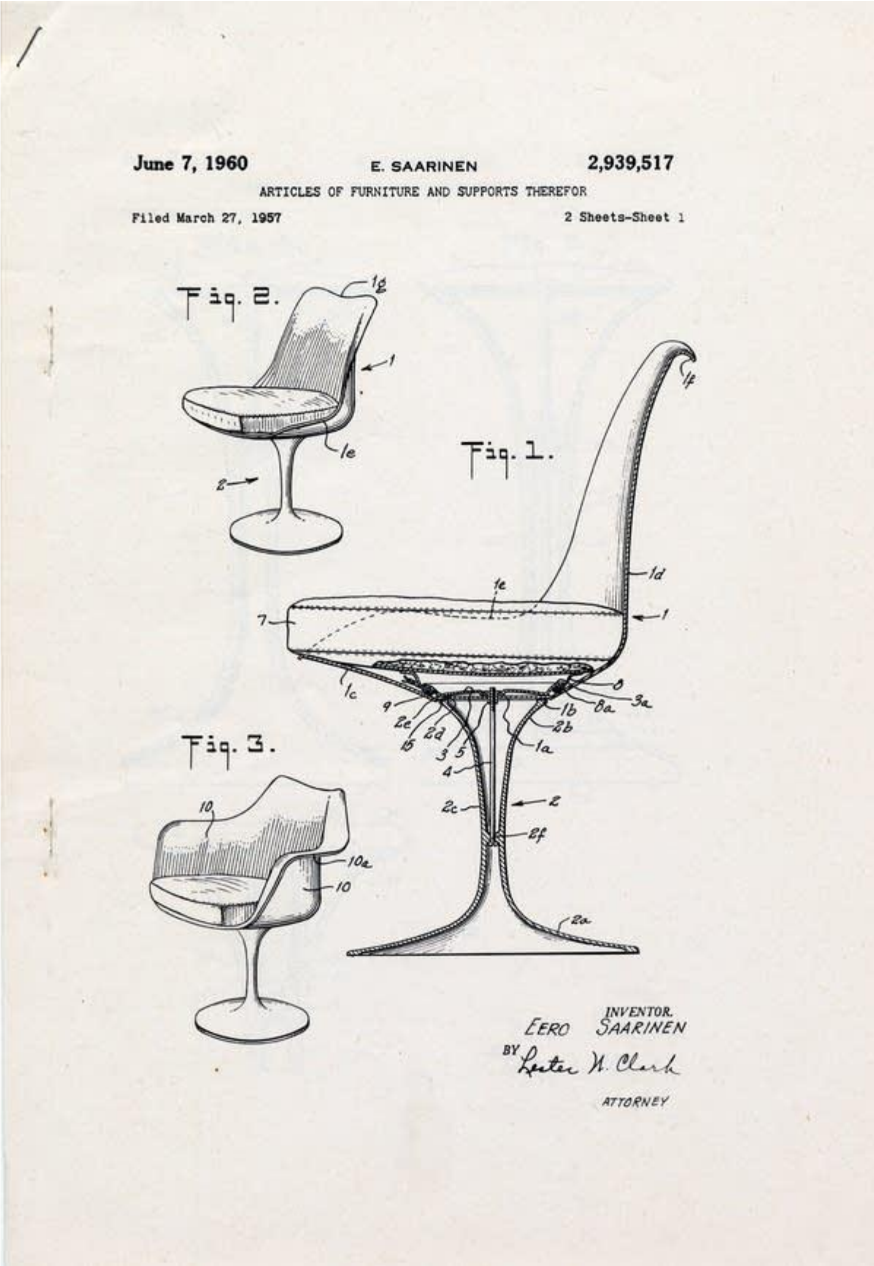
Some critics dismissed his structures and designs for veering too far outside traditional modernist dogma. Saarinen died young, at 51, and was unable to defend himself.

"Now, 50 years after, we're able to kind of go back and look at Eero and really appreciate all the ways that he pushed architecture in new directions," Oiivarez said. And they were many.

Eero Saarinen TWA Terminal, New York International (now John F. Kennedy International) Airport, New York, circa 1962 Photographer Balthazar Korab © Balthazar Korab Ltd.Image courtesy of the Walker Art Center.

Saarinen was the first architect to use self-rusting steel in his buildings, a material still in vogue today. He was the first to use mirrored glass, and he pioneered the use of large scale, but very thin, concrete and steel shells in construction. Walker curator Andrew Blauvelt said the shells gave such landmark Saarinen designs as the TWA Terminal at JFK airport their dramatic curvature and futuristic look. "That kind of language you see today in architecture, especially the younger architects, have come to this formal vocabulary through the computer," he said. "Eero was doing this in the 1950s, coming at it from a sculptural sensibility."

Don't forget Saarinen's pedestal furniture, the one-legged chairs and tables that became symbols of '50s modernism. Saarinen invented them to "clear up the slum of legs" in traditional chair design.



Eero Saarinen Patent drawing for pedestal chairs, June 7, 1960 Courtesy Eero Saarinen Collection. Manuscripts and Archives, Yale UniversityImage courtesy of the Walker Art Center.

"He also innovated the sunken living room, the conversation pit, which becomes a kind of lifestyle cliche in the '70s, but he did this in the '50s," Blauvelt said.

And then, asks Komar Olivarez, what about one of the most iconic structures on the American landscape? "What American doesn't know about The Arch?" she said.

The Gateway Arch in St. Louis is easily Saarinen's crowning achievement. When he submitted his design in a 1947 competition, Saarinen beat out several other prominent architects, including his father Eliel, and his friend Ralph Rapson.

Komar Olivarez said The Arch typifies Saarinen's experimental sensibility and fearlessness. "He was looking for his own solution," she said. "And it just goes to show how individual he was with that particular type of structure, this monument."