

JEFFERSON NATIONAL EXPANSION MEMORIAL
Jefferson National Expansion Memorial
11 North 4th Street
Saint Louis
Independent City
Missouri

HALS MO-6
HALS MO-6

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

REDUCED COPIES OF MEASURED DRAWINGS

FIELD RECORDS

HISTORIC AMERICAN LANDSCAPES SURVEY
MIDWEST REGIONAL OFFICE
National Park Service
U.S. Department of the Interior
601 Riverfront Drive
Omaha, NE 68102

HISTORIC AMERICAN LANDSCAPES SURVEY
JEFFERSON NATIONAL EXPANSION MEMORIAL

HALS NO. MO-6 (Page 1)

Location: Located on the west bank of the Mississippi River in St. Louis, Missouri, the Jefferson National Expansion Memorial is a 91-acre park that encompasses the iconic Gateway Arch. The park occupies forty city blocks between Washington Avenue and Poplar Street. Leonor K. Sullivan Boulevard bounds the park on the east, while Memorial Drive and the depressed Interstate Highway 70 delineate its western edge.¹ The Jefferson National Expansion Memorial also includes two blocks west of Memorial Drive: Luther Ely Smith Square and the site of the Old Courthouse.

Present

Owner: The Jefferson National Expansion Memorial is a federally owned park maintained by the United States National Park Service of the Department of the Interior.

Significance: The designed landscape of the Jefferson National Expansion Memorial is a significant example of landscape architecture from the postwar Modern period that commemorates Thomas Jefferson and others responsible for the nation's territorial expansion to the West. The designed landscape of the memorial resulted from the close collaboration between landscape architect Dan Kiley and architect Eero Saarinen, who produced the winning entry for the design competition held from 1947-48. The competition was significant because it was the first major one of its kind held in America following World War II.

By the early 1940s, the modern movement had saturated the architectural scene in the United States and Europe, but was difficult for landscape architects to sell in terms of site design. At the time of the competition, Kiley was one of only a few practitioners of modern landscape architecture in the United States, particularly on the East Coast and in the Midwest. For the Jefferson National Expansion Memorial landscape, Kiley integrated classical elements, such as symmetry, repetition, and uniform plantings, into a modern composition—a technique that became characteristic of his work.

Kiley's main role in the Jefferson National Expansion Memorial landscape was to develop a planting scheme integral to the overall conception of the memorial. Although the design changed from the early stages of the memorial competition to the final conceptual planting plan approved in 1966, Kiley's basic concept of creating a wooded, park-like setting for the Gateway Arch—a 630' tall stainless steel structure—remained the same.² Kiley later explained, "My basic interest in

¹ The interstate was renamed I-44 when the Stan Musial Veterans Memorial Bridge opened in February 2014.

² Dan Kiley, Landscape Architect, interview by Jefferson National Expansion Memorial (JNEM) Historian Robert J. Moore, Jr. on July 22, 1993, at the Kiley studio in Charlotte, Vermont. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 5, Folder 15)

the landscape was to develop a sense of movement of spatial continuity. This was done by arranging undulating lines of high tulip poplar trees spaced very close together so they started from either entrance wide and narrowed down to a neck, and then as one turned to the side elevation of the Gateway Arch, the trees would widen up to the base. This development would happen on both sides of the Gateway Arch. This was really the important aspect of the landscape design treatment; the rest of the planting was to provide color and interest with forest groves for sitting and picnicking and on the river side to clothe the banks with masses of flowering shrubs and trees; and finally at the levee included a boulevard of willow trees.”³

The Jefferson National Expansion Memorial was a turning point for both Kiley and Saarinen as it launched their respective careers. Subsequently, they collaborated on other major projects, such as the Detroit Civic Center, Dulles International Airport, and master planning projects for a number of colleges and major universities. Kiley explained that “although my site design [for the Jefferson National Expansion Memorial] was not installed in its entirety, the exposure pushed me into the national consciousness.”⁴ Kiley thus became a leader in postwar American landscape design, along with other notable landscape architects Thomas Church, Garrett Eckbo, James Rose, and Lawrence Halprin.

Historian: Stephanie N. Bryan, The Jaeger Company

³ Dan Kiley, “Jefferson National Expansion Memorial” in *Landscape Design: Works of Dan Kiley, Process Architecture, No. 3*, (October 1982), 109.

⁴ Dan Urban Kiley and Jane Amidon, *Dan Kiley: The Complete Works of America’s Master Landscape Architect*, (Bullfinch Press: 1999), 13.

PART I: HISTORICAL INFORMATION

Dates of establishment:

Movement to Establish a Memorial (1933-44)

Comprehensive city planning in St. Louis began in 1907 and included recommendations to improve its decaying riverfront.⁵ For many years, civic leaders discussed the possibility of a memorial plaza. It was not until 1933, however, when plans coalesced through the efforts of Luther Ely Smith, a prominent St. Louis attorney. Smith saw the project not only as a means to memorialize an event of national significance, but also as a way to revitalize the riverfront, promote economic development, and provide jobs during the Great Depression.⁶ Smith shared his proposal with St. Louis Mayor Bernard Dickmann, who, in turn, presented it to a group of community and business leaders. Smith, along with Mayor Dickmann and others from the group, formed a committee and obtained a state charter in 1934 known as the Jefferson National Expansion Memorial Association (JNEMA).

The JNEMA, a nonprofit organization, aimed to develop and adopt plans, generate public interest, build financial support, and ultimately improve a site for the memorial.⁷ The JNEMA stated in their decree that the site would serve as “a suitable and permanent public memorial to the men who made possible the western territorial expansion of the United States, particularly President Jefferson, his aides Livingston and Monroe, the great explorers, Lewis and Clark, and the hardy hunters, trappers, frontiersmen and pioneers who contributed to the territorial expansion and development of these United States, and thereby to bring before the public of this and future generations the history of our development and induce familiarity with the patriotic accomplishments of these great builders of our country.”⁸

In April 1934, the United States Territorial Expansion Memorial Commission gained authorization to design and construct a permanent memorial on approximately eighty-five acres adjoining the St. Louis levee south of Eads Bridge.⁹ By May 1935, with input from the JNEMA, the commission agreed on the memorial’s historical significance, site boundaries, and the concept of a national architectural competition.¹⁰ Soon the commission involved the National Park Service (NPS) as ultimately they would be responsible for maintaining the memorial. The NPS then initiated preliminary investigations and asked NPS engineer John Nagle to inspect the proposed plans and location. In the report, Nagle stated that the national significance of the

⁵ For lists of the numerous riverfront development proposals, see: *St. Louis Post-Dispatch*, July 7, 1968.

⁶ Sharon A. Brown, *Administrative History: Jefferson National Expansion Memorial National Historic Site* (Washington, D.C: National Park Service, June 1984), 5-6.

⁷ *St. Louis Post-Dispatch*, October 31, 1965; Terry Dickson, “The Story of the Arch - A Monument to Thirty Years of Patience, Perseverance, and Determination,” *Cherry Diamond Magazine of the Missouri Athletic Club*, 57, no. 9 (September 1964), 31.

⁸ *Pro Forma Decree of Incorporation of Jefferson National Expansion Memorial Association*, (June 11, 1934). (NPS, JNEM Archives, Jefferson National Expansion Memorial Association Records, Ca. 1930-1975, Record Unit 104, Box 24, Folder 9)

⁹ U.S. 73rd Congress, 2nd Session, House Joint Resolution 302 (1934); *ibid*, Senate R. Resolution 93 (1934); Brown, *Administrative History*, 11.

¹⁰ *Ibid*.

project warranted federal aid: “If administered by the National Park Service ... or by some other competent federal agency, no reasons are apparent why the project should not receive the support of the National Government.”¹¹

On December 21, 1935, President Franklin D. Roosevelt signed Executive Order 7253, which permitted the Secretary of the Interior to acquire and develop the Jefferson National Expansion Memorial (JNEM). The executive order declared the site of Old St. Louis as the location of the memorial, which became the country's first national historic site designated under the Historic Sites Act of 1935.¹² The President's action included the allocation of \$3.3 million in Works Progress Administration funds and \$3.45 million in Federal Public Works Administration funds.¹³ John Nagle continued to oversee the establishment of the memorial for the NPS and became superintendent in June 1936.

A year later, property acquisition for the memorial began and continued until 1942 with the demolition of numerous riverfront buildings regarded unworthy of preservation because they lacked association with national events.¹⁴ Under Superintendent Nagle's direction, the buildings that remained were the Old Cathedral, which was the earliest home of western religion on the western bank of the Mississippi, and the Old Courthouse, which was the site of the Dred Scott trial.¹⁵ When the NPS acquired the Old Courthouse in 1940, they aimed to integrate it into the design composition of the JNEM landscape because it stood as a symbol of the City of St. Louis.

The NPS planned for the Old Courthouse to contain their administrative offices, in addition to interpretive exhibits.¹⁶ By May 1942, the NPS had developed plans for the building's “rehabilitation,” as well as improvements to its landscape.¹⁷ Among the planned improvements were new brick sidewalks and granite curbing surrounding the square, stabilized gravel paths around the lawn areas, and new entrances into the building. The NPS also planned to replace the perimeter fence and wall, repair the sundial, and rehabilitate the turf panels and planting beds.

¹¹ John L. Nagle, Report on United States Territorial Expansion Memorial at St. Louis, Missouri, n.d., typed manuscript, 1. (NPS, JNEM Archives)

¹² The boundary of “Old St. Louis” is evident on the “Plan de la Ville de St. Louis des Illinois sur le Mississippi, avec les differents projets de la Fortifier” (Map), 1796, Georges de Maillard de Bois Saint Lys (French, 1766-?), 12 1/2” x 17”. (Missouri History Museum, Map Collection, LibAcc-2013-0885) Also refer to: U.S. Department of the Interior, NPS, “Area to be Acquired to Accompany Declaration of Taking for City Block No.” Ca. 1936. (NPS, JNEM Archives, Jefferson National Expansion Memorial Association Records Ca. 1930-1975, Record Unit 104, Box 12, Folder 11)”

¹³ U.S. Executive Order 7253, December 21, 1935; see Clifford L. Lord (ed.), *Presidential Executive Orders*, (New York: Books, Inc., 1944), 616.

¹⁴ Regina M. Bellavia, *Jefferson National Expansion Memorial Cultural Landscape Report* (Omaha, NE: National Park Service, 1996), 23.

¹⁵ John Nagle to Dr. Hermon Bumpus, March 3, 1938. (NPS, JNEM Archives, Jefferson National Expansion Memorial Association Records Ca. 1930-1975, Record Unit 104, Box 43, Folder 11) Dr. Bumpus served as Chairman of the Advisory Board on National Parks, Historic Sites, Buildings and Monuments, established as part of the Historic Sites Act of 1935.

¹⁶ John A. Bryan, *Preliminary Draft, JNEM Administrative History: Jefferson National Expansion Memorial, Its Origin, Development, and Administration* (St. Louis, National Park Service, Jefferson National Expansion Memorial, n.d. [Ca. 1960]). (NPS, JNEM Archives,)

¹⁷ See National Park Service Architectural Division, “Rehabilitation of Old Courthouse, Jefferson National Expansion Memorial,” Drawing No. 8118, Sheet 2 of 2, prepared by St. Louis Office, May 1942. (NPS, JNEM Archives)

When the NPS finished their plans for the Old Courthouse, World War II (WWII) was underway. Consequently, the NPS was unable to implement the plans until nearly a decade later because focus had shifted from the development of the memorial to war efforts.¹⁸

Despite WWII, Superintendent Nagle hoped that a design competition seeking the country's best talent could be held to utilize architecture in interpreting the fundamental ideas of the Jefferson National Expansion Memorial.¹⁹ As Superintendent Nagle recognized the importance of the river and landing in the development of both St. Louis and the nation, he believed the memorial site should connect with the Mississippi River. In addition, he felt the memorial's architectural elements should symbolize St. Louis's role in westward expansion as the "Gateway to the West" with the main structure centered on the east-west axis set by the Old Courthouse. Superintendent Nagle's goals finally were realized postwar when a new superintendent, Julian Spotts, oversaw a nationwide professional competition as first envisioned by the JNEMA.²⁰

Design Competition (1947-48)

Phase I

In 1945, Luther Ely Smith and the JNEMA announced their intention to hold a national architectural competition.²¹ Because they needed to raise necessary funds and to clarify their competition program, the announcement of the competition to the nationwide architectural community did not occur until 1947. At that time, the guidelines set forth two stages to the competition with entries remaining anonymous. The competition was open to all architects and practitioners of the allied arts, including sculptors, landscape architects, and painters who were U.S. citizens. The JNEMA drafted the Competition Program, which established the following design rules and programmatic requirements for submissions:

- (a) An architectural memorial or memorials to Jefferson; dealing
- (b) with preservation of the site of Old St. Louis—landscaping, provision of an open-air campfire theater, reerection or reproduction of a few typical old buildings, provision of a Museum interpreting the Westward movement;
- (c) a living memorial to Jefferson's 'vision of greater opportunities for men of all races and creeds;'
- (d) recreational facilities, both sides of the river; and
- (e) parking facilities, access, relocation of railroads, placement of an interstate highway.²²

¹⁸ It was not until April 1959 when the NPS awarded a contract to Prings Landscaping Company of St. Louis to begin reconstruction work on the Old Courthouse lawns. See Memorandum by Walter O. Bremer, Administrative Assistant, to Superintendent of the Jefferson National Expansion Memorial, "Monthly Report for March 1959," April 6, 1959. (NPS, JNEM Archives, Record Unit 106, Box 26, Folder 24)

¹⁹ Ibid.

²⁰ Bellavia, *Cultural Landscape Report*, 22.

²¹ *St. Louis Post-Dispatch*, January 29, 1945. (NPS, JNEM Archives, Newspaper Clipping Collection: The Superintendency of Julian C. Spotts November 16, 1940-January 31, 1959, Record Unit 119.02, Box 1, Folder 13)

²² "Jefferson Memorial Competition Winners," *Architectural Record*, v. 103 (April 1948). For the programmatic requirements of the competition see Jefferson National Expansion Memorial Association, "Architectural Competition for the National Expansion Memorial, Program" (St. Louis: 1947), 13-24.

The architectural competition immediately attracted many leading practitioners as it was the first major one held in the United States post-WWII. The \$225,000.00 prize allocated to the winning team made the competition one of the largest at that point in terms of prize money.²³ Entrants had three months to submit a design before the deadline of September 1, 1947. Ultimately, the JNEMA received 178 entries from across the country, and a jury began deliberations on September 23, 1947, to narrow the field to five finalists.²⁴ Among the five finalists chosen from the entries was “Design Number 144,” the submission from Eero Saarinen and his design team. Saarinen’s team consisted of the following individuals: J. Henderson Barr, associate architect at Eero Saarinen and Associates of Bloomfield Hills, Michigan; Dan Kiley, landscape architect; Alexander H. Girard, painter; and Lily Swann Saarinen, sculptor.²⁵

Saarinen and Kiley had collaborated closely to produce their first phase submission. Saarinen first traveled to Kiley's residence in Franconia, New Hampshire, to work on the submission for about a week. Subsequently, the two spent a month of intense work at Saarinen's office in Michigan and the other team members became involved at this time.²⁶ The rush to generate the competition entry caused Saarinen and Kiley to work on a single drawing at the same time, an episode which seems to have become a competition unto itself.²⁷ Kiley later recalled, “I'm left-handed and Eero started here and I started on this side, and he beat me to the middle, but my claim to fame was I could draw cobblestones like Eero...”²⁸

Saarinen and Kiley's first phase submission included a towering arch on a mall parallel to the river so that the structure’s centerline was slightly off-axis to the Old Courthouse.²⁹ The plan proposed a series of rectangular gardens along a terrace overlooking the mall.³⁰ A rectilinear fountain garden defined the southern end of the terrace gardens. Along the terrace, zigzag forms flowed from one rectilinear garden space to another thereby unifying the design. The terrace gardens were to be comprised of groundcover, grass, gravel, and hedges. The design of these terrace gardens recalled Kiley’s 1944 plan for the Air Transport Command Passenger Terminal

²³ Robert J. Moore, Jr., ed., *The Gateway Arch, An Architectural Dream: A Collection of Essays Commemorating Jefferson National Expansion Memorial* (St. Louis: Jefferson National Parks Association, 2010), 25.

²⁴ *St. Louis Globe-Democrat*, September 4, 1947. (NPS, JNEM Archives, Newspaper Clipping Collection: The Superintendency of Julian C. Spotts November 16, 1940-January 31, 1959, Record Unit 119.02, Box 1, Folder 30)

²⁵ Charles Nagel, Jr., “Minutes of Meetings of Jury of Award in the 2nd Stage of the Jefferson National Expansion Memorial Competition,” February 17-18, 1948. (NPS, JNEM Archives, Jefferson National Expansion Memorial Association Records Ca. 1930-1975, Record Unit 104, Box 28, Folder 16)

²⁶ Saarinen and Kiley continued to collaborate closely during their second stage submission for the Jefferson National Expansion Memorial competition and throughout the design development phase. In this document, plans are generally discussed in terms of the primary designer credited on a particular plan, which should not discount the collaboration involved in producing the plan.

²⁷ Bellavia, *Cultural Landscape Report*.

²⁸ Dan Kiley, interviewed by Mary Hughes at the Jefferson National Expansion Memorial on October 21, 1991. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 5, Folder 15)

²⁹ Aline B. Saarinen, ed., *Eero Saarinen on His Work*, 18.; Eero Saarinen, *A Tour Through the Jefferson National Expansion Memorial*, (extract from an address given at the Associated Retailers of St. Louis meeting, April 29, 1948), 1-4. Saarinen gave his first major speech unveiling the details of the design to this group of St. Louis retailers. For Saarinen's First Stage Submission, refer to JNEM Visual Image 104-252 (perspective and axonometric views) and Visual Image 104-251 (plan and section views). (NPS, JNEM Archives, Jefferson National Expansion Memorial Association Records Ca. 1930-1975, Record Unit 104, Box 28, Folder 51)

³⁰ Refer to Saarinen's First Stage Submission, JNEM Visual Image 104-251 (plan and section views).

and Operations Building in Washington D.C., which similarly placed irregular forms onto a rectilinear grid.

In addition to the mall and terrace gardens, Saarinen and Kiley also incorporated into their initial submission a park with curvilinear paths leading through a dense canopy of trees interspersed with small openings.³¹ Saarinen later commented: “We believed that what downtown needed was a tree-covered park. We wanted to have the most nature possible toward the City.”³² Kiley emphasized that the site should assume the character of a forested area one might pass through while traveling across the prairie landscape—a forest dominated by one or two tree species, such as cottonwoods.³³ Kiley and Saarinen envisioned the tall arch structure centered in a park setting to “symbolize the spirit of the whole Memorial.”³⁴

Phase II

After the jury selected and announced the five finalists from the first phase, George Howe, a professional advisor to the competition, drafted a second stage addendum that redefined the design problem.³⁵ He suggested that the five designers treat the railroad tracks along the riverfront as removed or placed underground. The addendum also required the designers to transform the site into a shaded park with an open view between the levee and the Old Courthouse. The designers were not required to consider a specific redesign of the levee. The design was now confined to the area between the levee and the city. The finalists also had to consider the architectural memorial as a notable structure visible from a distance. Most of the competitors thus had to rethink their initial schemes, although Saarinen and Kiley’s first phase submission already addressed many of the second phase requirements. February 10, 1948, marked the deadline for submittal of the final competition entries.³⁶

Upon reviewing the final entries, the jury unanimously selected Saarinen and Kiley’s “Design Number 144” as the competition winner.³⁷ The final report of the jury described some of the features of Saarinen and Kiley’s winning design, including an “arcade” with sculptures and

³¹ Ibid.

³² Aline B. Saarinen, ed., *Eero Saarinen on His Work*, 18. Saarinen also discussed the idea of a forest in “Saarinen Tells How ‘Gateway’ Was Conceived,” *St. Louis Post-Dispatch*, March 7, 1948. (NPS, JNEM Archives, Newspaper Clipping Collection: The Superintendency of Julian C. Spotts November 16, 1940-January 31, 1959, Record Unit 119.02, Box 2, Folder 3)

³³ Dan Kiley, interview by Robert J. Moore, Jr. on July 22, 1993.

³⁴ Saarinen, *Saarinen on His Work*, 18.

³⁵ George Howe, “Interim Progress Report on the Preparation of the Program for the National Competition to Select an Architect and a Tentative Design for the Jefferson National Expansion Memorial Competition January 19th to February 10th, 1947, 11 February 1947,” typed report, 1-3; “Minutes of the Meeting of the Executive Committee of the Jefferson National Expansion Memorial Association,” February 28, 1947, typed minutes. (NPS, JNEM Archives, Luther Ely Smith Papers, Jefferson Memorial River Front Competition file)

³⁶ George Howe, *Second Stage Addenda to the Program, Jefferson National Expansion Memorial Competition*, n.d., 1-3. (NPS, JNEM Archives, Jefferson National Expansion Memorial Records 1933-1973, Record Unit 104, Box 29, Folder 19)

³⁷ A copy of the winning competition entry (plan and section views) can be found at the NPS, JNEM Archives, Jefferson National Expansion Memorial Association Records Ca. 1930-1975, Record Unit 104, Drawer 36, JNEM Drawings D-104-315.

paintings that would narrate the story of westward expansion, a theater and pioneer village re-creation to augment the NPS interpretive goals, as well as two museums, one architectural and the other historical, in addition to restaurants.³⁸ A notable change in Saarinen and Kiley's winning entry was the absence of the fountain and terrace gardens along the mall. While the section drawing still showed the arch framing a distant view of the Old Courthouse, the placement of the arch shifted slightly south.³⁹ Despite these various changes, Saarinen and Kiley retained in their winning entry the initial concept of an arch set in a forested park.⁴⁰ J. Henderson Barr, the associate architect, produced a series of about 100 color sketches for the final stage study, which illustrated the design impact of the monumental "Gateway Arch" from different vantage points throughout the city at various time intervals.⁴¹

Design Development (1948-66)

In October 1948, Secretary of the Interior Julius Krug and NPS Director Newton B. Drury approved Saarinen and Kiley's winning design. President Harry S. Truman led a formal dedication ceremony for the land acquired for the Jefferson National Expansion Memorial on June 10, 1950. Following the competition, however, a ten-year period of negotiations among the City of St. Louis, the NPS, and the Terminal Railroad Association (TRRA) occurred regarding the relocation of the elevated railroad tracks on the levee.⁴² The ongoing railroad track negotiations hampered progress of the memorial. In addition, few improvements were completed on the physical site from 1950-53 as the nation's attention shifted toward the Korean War.

While the Korean War delayed federal expenditures for the permanent memorial, the federal government and the City of St. Louis signed an agreement in 1951 to "beautify" the grounds from fees collected from a city parking lot on the site.⁴³ The agreement called for "the planting of trees, establishment of recreational areas and other 'temporary improvements in keeping with the over-all plan for final development' of the riverfront." A plan from the Office of Emmet Layton revealed an expansive view of the memorial site and ways to utilize it during this interim period

³⁸ "Final Report Of The Jury Of Award to the Professional Adviser on the First and Second Stages of the Jefferson National Expansion Memorial Competition." (NPS, JNEM Archives, Jefferson National Expansion Memorial Association Records Ca. 1930-1975, Record Unit 104, Box 29, Folder 16)

³⁹ Comparison of Eero Saarinen's Stage One Submission (plan and section views) with his Winning Competition Entry (plan and section views) 1948.

⁴⁰ A perspective drawing by J. Henderson Barr from 1948 illustrates the retained concept of the Gateway Arch in forest-like setting. (NPS, JNEM Archives, Jefferson National Expansion Memorial Association Records, Ca. 1930-1975, Record Unit 104, Box 32, Folder 10, JNEM Visual Image 104-321)

⁴¹ "Competition: Jefferson National Expansion Memorial," *Progressive Architecture* (May 1948), 54-59.

⁴² Bellavia, *Cultural Landscape Report*, 3.

⁴³ "U.S. Signs Contract to Let City Beautify Riverfront Park Site," *St. Louis Globe-Democrat*, February 15, 1951. (NPS, JNEM Archives, Newspaper Clippings: Creation of the Memorial, Record Unit 119, Box 15) A copy of the agreement between the United States of America and City of St. Louis, March 1, 1951, can be found in the NPS, JNEM Archives, United States Territorial Expansion Memorial Commission Records 1933-1973, Record Unit 103, Box 7, Folder 3.

until funding became available to construct the Gateway Arch.⁴⁴ Layton's office also produced a design to improve the site of the Old Cathedral.⁴⁵ These plans were never fully implemented.⁴⁶

Among the executed site improvements in Layton's plans was the design for a "Riverfront Garden" on the block east of the Old Courthouse, bounded by Fourth, Chestnut, Third, and Market Streets. A memorandum by the acting superintendent documented the completion the Riverfront Garden by June 1951. The memorandum explained, "The work involved considerable grading, the planting of numerous trees and shrubs, sodding and seeding, concrete steps at Fourth Street, gravel walks, concrete benches, a water main, and a drinking fountain."⁴⁷ Around the time of the development of the Riverfront Garden, Luther Ely Smith, the St. Louis attorney greatly involved in the early planning of the Jefferson National Expansion Memorial, passed away in April 1951. Nearly two decades later, on June 11, 1970, the Riverfront Garden was dedicated in his name and became known as Luther Ely Smith Square.

About the same time as the temporary development of the Riverfront Garden, Saarinen focused on project planning and office work for the memorial project. By January 1951, Saarinen had completed much of the preliminary work including an extensive set of drawings that contained profile and structural drawings for the Gateway Arch, scale drawings of the museum and restaurants to be located onsite, and various layout and engineering studies for the proposed railroad tunnel.⁴⁸ It was not until 1957, however, when all parties reached consensus about the railroads and Eero Saarinen and Associates received a contract to design the memorial. Subsequently, Saarinen subcontracted Dan Kiley as landscape architect for the project.⁴⁹

Kiley's role in the development of the memorial had been limited from the end of the competition up to January 1956, when Saarinen anticipated renewed progress on the memorial project. At the time, President Eisenhower had announced the prospect of a balanced budget for 1957. Accordingly, on August 6, 1956, Saarinen wrote to Kiley: "...you and I should get together to reevaluate the design, placing of the Arch, the whole plan."⁵⁰ In an accompanying memo, Saarinen outlined the anticipated scope of work under a series of contracts with the NPS,

⁴⁴ Refer to plan by the Office of Emmet Layton, Landscape Architect, "Landscape Development for Jefferson Memorial Plaza," date illegible. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_9015_[40767-2])

⁴⁵ Refer to plan by the Office of Emmet Layton, Landscape Architect, "Landscape and Suggested Site Improvements for Old Cathedral," date illegible. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_9015_[40767-1])

⁴⁶ A photograph of the JNEM landscape from 1961 by Arteaga documents some of the site improvements shown in Layton's plans, including municipal parking spaces, partial landscaping around the Old Cathedral, and the development of the Riverfront Garden. (NPS, JNEM Archives, Jefferson National Expansion Memorial Visual Reference Collection, Visual Image #106-4200)

⁴⁷ Acting Superintendent, Jefferson National Expansion Memorial, to Director, "Monthly Narrative Report for June," July 18, 1951. For photo-documentation of the Riverfront Garden see: NPS, JNEM Archives, Jefferson National Expansion Memorial Visual Reference Collection, VPRI-003824.

⁴⁸ Refer to Eero Saarinen and Associates, "Hill Tunnel Plan," 1949. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)

⁴⁹ Bellavia, *Cultural Landscape Report*, 3.

⁵⁰ Eero Saarinen to Dan Kiley, August 6, 1956. (NPS, JNEM Archives)

citing Kiley's role in "finished site plan work and landscaping."⁵¹ Saarinen and Kiley spent the summer of 1957 reworking site plans for the memorial,⁵² which they completed by October that year.⁵³

The new scheme for the memorial presented an open cut and partial tunnel configuration for the railroad tracks that remained proximate to the existing elevated lines, but reduced the depth by which the tracks were to be lowered. In order to connect the Gateway Arch with the river, Saarinen designed a central grand staircase that would rise over and bridge the tracks from the river levee to the monument. Unfortunately, the original concept of a vista from the river through the Gateway Arch to the Old Courthouse was lost due to these alterations. While earlier plans positioned the Gateway Arch slightly off-axis with the Old Courthouse, the new design strengthened the axial relationship between the two structures.⁵⁴

In a presentation of a model of the revised plan on October 2, 1957, Saarinen explained additional changes that he and Kiley made to the plan: "The new curvilinear form of the plaza on which the Arch stands and of the roads which wind through the Park all belong to the same 'parabolic' family as does the Arch itself. ... The formal elements of the Plaza and the axial, tree lined mall leading to the Court House are contrasted with romantic forest areas on each side of the axis—areas in which we envision pools and rock outcroppings and pleasant, winding paths."⁵⁵

In subsequent years, site programming continued to shift, which caused further alterations to Saarinen and Kiley's plan.⁵⁶ On February 1, 1959, George Hartzog became the new superintendent of the memorial and initiated various tasks necessary to advancing the memorial project. Superintendent Hartzog's work resulted in the completion of a document entitled *Guidelines for the Master Plan, Jefferson National Expansion Memorial*, which NPS Director Conrad Wirth approved in October 1959.⁵⁷ A groundbreaking ceremony occurred at the site on June 23, 1959, and the anticipated completion date for the memorial was 1964, which would coincide with the 200th anniversary of the founding of St. Louis.⁵⁸

The master plan guidelines provided new ideas for a museum and other interpretive features on the site. For example, a "Museum of Westward Expansion" was to be housed in a subterranean visitor center beneath the promenade at the foot of the Gateway Arch.⁵⁹ Saarinen specified for

⁵¹ Memo accompanying a letter from Eero Saarinen to Dan Kiley, August 6, 1956. (NPS, JNEM Archives)

⁵² See Eero Saarinen and Associates, Site Plan Studies, 1957. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)

⁵³ See Eero Saarinen and Associates, Site Plan with 2-foot contour interval, Drawing 1 of 4, October, 1957. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)

⁵⁴ Bellavia, *Cultural Landscape Report*, 44.

⁵⁵ Saarinen's statement was published in "Revised Scheme, Revised Hope, For Saarinen's St. Louis Arch," *Architectural Record*, v. 122 (November 1957). (NPS, Newspaper Clipping Collection: The Superintendency of Julian C. Spotts November 16, 1940-January 31, 1959, Record Unit 119.02, Box 4, Folder 8)

⁵⁶ NPS, *Guidelines for the Master Plan, Jefferson National Expansion Memorial* (St. Louis: March 10, 1959), 2.

⁵⁷ Bellavia, *Cultural Landscape Report*, 50.

⁵⁸ *Ibid*, 56.

⁵⁹ NPS, *Guidelines*, 2-3. Guideline No. 4 states, "The principal facility for enlightenment of the visitor as to the historic theme of the Memorial will be a structure, to be designated a Visitor Center, containing exhibits telling the story of westward territorial expansion. The structure shall be incorporated in the arch below the promenade level."

the ramps at the base of the Gateway Arch to be constructed of terrazzo tiles and designed concrete steps along portions of the ramps, which he intended for visitors to use as seat walls.⁶⁰ Saarinen incorporated the subterranean visitor center and its entrance ramps into a site plan of April 1959.⁶¹ In addition, the site plan integrated curvilinear ponds into the meadow-forest areas of the northern and southern sections of the park. Parking lots were to flank the northern and southernmost edges of the memorial park. The site plan also showed sculptures placed on the north-south axis of the Gateway Arch. In addition, the plan proposed the planting of dense rows of trees along the northern and southern edges of the Riverfront Garden to frame the vista from the Old Courthouse toward the Gateway Arch.

Shortly after Saarinen revised his site plan, the relocation of the two elevated railroad tracks began. The NPS awarded MacDonald Construction Company the first of three contracts in June 1959. At that time, they began to construct the 960' long tunnel on the east side of the site. By August, the company was excavating and pouring the concrete walls.⁶² With the railroad relocation underway, Saarinen made further alterations and revisions to the site design as was evident in a plan approved in October 1959 by Director Wirth.⁶³ The most notable change in this site plan compared with the one from April 1959 was the development of the Oregon and Santa Fe Trails surrounding the curvilinear north and south ponds.⁶⁴ Among the subtle changes was the addition of two triangular fountains surrounding the sculptures to be located on the north-south axis of the Gateway Arch. This plan also showed the addition of pedestrian overpasses at Memorial Drive to facilitate visitor access from downtown to the JNEM landscape.

By January 1960, Saarinen signed contracts with the NPS for a design, working drawings, supervision and preliminary drawings for the visitor center and the Gateway Arch. At this point, Kiley officially became the Site and Landscape Consultant for the project.⁶⁵ Meanwhile, on January 12, contracting for the open cut retaining walls began, which the NPS again awarded to MacDonald Construction Company. They built two open cuts: a 720' long cut on the north and 840' long cut on the south. The 960' tunnel beneath the central grand staircase connected the two open cuts.⁶⁶ Per Saarinen's design, the retaining walls gradually increased in height from the middle toward the end of each cut and gently curved to reflect the form of the Gateway Arch.

⁶⁰ For plans of the entrance ramps at the Visitor Center see: NPS, JNEM Archives, Gateway Arch Drawings 1938-1987, Record Unit 120, Drawer 8, Folders 4 and 5.

⁶¹ See Eero Saarinen and Associates, Site Plan, April 1959. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)

⁶² Hartzog to Thomas C. Hennings, Jr., June 8, 1959, Thomas C. Hennings, Jr. Papers, file No. 4932, WHMC; *St. Louis Globe-Democrat*, June 9, 1959.

⁶³ See Eero Saarinen and Associates, Site Plan – Part 1 of 2, October 1959. (NPS, JNEM Archives, Collection Name, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)

⁶⁴ NPS, *Guidelines for the Master Plan, Jefferson National Expansion Memorial* (St. Louis: March 10, 1959), 2-3. Guideline No. 10 states, "In the two planted areas, readily accessible to the visitor center, there will be trail systems with interpretive devices relating to the Oregon and Santa Fe Trail."

⁶⁵ This is shown in the Office of Eero Saarinen and Associates "Conference Notes" for meetings related to Jefferson National Expansion Memorial. The NPS JNEM Archives has copies of the "Conference Notes" for meetings held on March 21, 22, and 23, 1960. Also on file at NPS JNEM Archives is a copy of the agenda for a meeting on September 2, 1960, involving Kiley and a discussion on the landscaping.

⁶⁶ *St. Louis Post-Dispatch*, July 17, 1959; Walter Morehead, "Narrative Report for the Month of August 1959."

With the railroad track relocation underway, Saarinen and Kiley continued to rework the planting plan and produced another scheme by February 1960.⁶⁷ Saarinen and Kiley revised this plan during the summer.⁶⁸ Per the 1959 master plan, Kiley also prepared a schematic plan and section drawings of the Oregon and Santa Fe Trails which featured grade changes up to 40' high.⁶⁹ About the same time, Kiley produced detailed plans for the areas immediately surrounding the railroad cuts.⁷⁰ Kiley's plan specified a dense screen of plants to obscure the railroad cuts from view. Kiley incorporated the following plant species, ranging from trees to groundcovers, into this particular area: London plane tree (*Platanus acerifolia*); Babylon weeping willow (*Salix babylonica*); American holly (*Ilex opaca*); glossy abelia (*Abelia grandiflora*); spreading Japanese holly (*Ilex crenata convexa*); Kurume azalea (*Rhododendron obtusum*); Oregon holly grape (*Mahonia aquifolium*); dwarf European cranberry bush (*Viburnum opulus nanum*); memorial rose (*Rosa wichuraiana*); and English ivy (*hedera helix baltica*). Kiley selected and arranged these plants in his plan based on their seasonal interest, in addition to their size ranges.

By September 1960, Kiley's office presented the planting plans for the rail cuts and revised conceptual landscape plan to the NPS at a meeting. Director Wirth, who attended the meeting, was displeased with the result, largely due to looming budget problems.⁷¹ Director Wirth not only requested that the landscape and utility programs be greatly reduced, but also that the NPS undertake the landscape program.⁷² Although Saarinen advocated for the importance of the planting plan, he suggested that Kiley revise his landscaping plans to accommodate Director Wirth's requested changes.

As Kiley continued revising planting plans for the area around the railroad cuts, Saarinen focused on designing the grand staircase that would connect visitors from the river to the Gateway Arch. He intended for the structure to symbolize "the movement of peoples through St. Louis, the gateway."⁷³ Saarinen's design for the grand staircase consisted of three parts: staircases that provided access from Wharf Street to the north and south overlooks and another staircase above the relocated railroad tunnel that gave direct access to the Gateway Arch. Saarinen designed each part of the grand staircase to be wider at the top than at the bottom to create a curvature along the sides that would reflect the form of the Gateway Arch. He also specified the treads to decrease in depth toward the top of the staircase to "dramatize the upward sweep of the approach to the arch."⁷⁴ Saarinen completed a detailed plan and sections of the staircases leading to the north and south overlooks by November 1960.⁷⁵

⁶⁷ See Eero Saarinen and Associates, Schematic Planting Plan, February 1960. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)

⁶⁸ See Eero Saarinen and Associates, Site Plan, August 1960. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)

⁶⁹ See Office of Dan Kiley, Sectional Studies, February 1960. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)

⁷⁰ See Office of Dan Kiley, Planting Plan Adjacent Railroad Cuts, August 1960. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)

⁷¹ Kiley, "Jefferson National Expansion Memorial," 109.

⁷² Bellavia, *Cultural Landscape Report*, 68.

⁷³ Saarinen, *Saarinen on His Work*, 18.

⁷⁴ *Ibid.*

⁷⁵ Eero Saarinen and Associates, Section Detail through proposed design for grand staircase, November 1960. (NPS, JNEM Archives, Gateway Arch Drawings 1938-1987, Record Unit 120, Drawer 22, Folder 12) For plans,

During the 1960s, Saarinen also produced several details for features to be located throughout the JNEM landscape. He created a large lighting standard detail that consisted of a 27' tall single pole and shaded 6' wide luminaire.⁷⁶ Saarinen also proposed benches that were 10' long, 2' to 3' wide, and 1'-4" high. He specified for the benches to have a limestone top set on a limestone block and a concrete base.⁷⁷ A steel dowel threaded through the base, block, and bench top would anchor the feature. Saarinen did not indicate locations for these benches or the lighting on his plans. In addition to the lighting and bench details, Saarinen also produced studies during the 1960s for pedestrian overpasses.⁷⁸ These were a significant part of the circulation design as he intended for them to facilitate visitor access from downtown across Memorial Drive to the JNEM landscape.

With Saarinen completing details for various landscape features and circulation studies, site construction continued to progress when the NPS awarded the third construction contract to MacDonald Construction Company on February 9, 1961. The contract included the following: excavation of the Gateway Arch foundations; excavation of the visitor center and its subterranean museum; and redevelopment of the levee. The contract also called for the partial completion of the north and south overlooks. For the south overlook, only the steps, east wall, and south wall would be constructed; however, the structure would appear 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 NPS planned to pour the floors and roofs, but aimed to complete the remainder of the structures at a later date. The NPS later modified the third construction contract with MacDonald Construction Company to reduce wall heights and to omit all stonework except at the levee retaining wall.⁷⁹

Construction of the north and south overlooks followed specifications by Eero Saarinen and Associates. Prior to construction, Saarinen's office spent a considerable amount of time testing the safety of the stairway design by constructing a full-scale mock-up of the steps in plywood. Unfortunately, the overlook steps were one of the few features of Saarinen's site design that he would see constructed. On September 1, 1961, Saarinen died suddenly and unexpectedly of a brain tumor at Ann Arbor, Michigan. His partners, Joseph Lacy, John Dinkeloo, and Kevin Roche oversaw the completion of the Gateway Arch, in addition to Saarinen's other projects.⁸⁰ As construction plans were set in place for the Gateway Arch, Saarinen's death did not bring about any major changes to its design.

elevations, and details of the overlook steps, refer to: NPS, JNEM Archives, Gateway Arch Drawings 1938-1987, Record Unit 120, Drawer 10, Folders 5 and 6.

⁷⁶ See Eero Saarinen and Associates, Drawing No. NHS-JNEM 3077 E-4, Construction Detail of Walk Lighting, December 9, 1960. (NPS, JNEM Archives, Gateway Arch Drawings 1938-1987, Record Unit 120, Drawer 22, Folder 2)

⁷⁷ See Saarinen and Associates, Drawing SD-13, Bench Detail and Plan, 1960. (NPS, JNEM Archives, Gateway Arch Drawings 1938-1987, Record Unit 120, Drawer 23, Folder 7, File No. D-120-906)

⁷⁸ See Eero Saarinen and Associates, Study of the Proposed Pedestrian Overpasses, Ca.1960. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)

⁷⁹ *St. Louis Post-Dispatch*, February 13, 1961; memorandum, Superintendent of the Jefferson National Expansion Memorial to Director of the National Park Service, February 10, 1961; memorandum, Acting Superintendent of the Jefferson National Expansion Memorial to Director of the National Park Service, March 13, 1961.

⁸⁰ Saarinen, *Saarinen on His Work*, 104; interview, George B. Hartzog, Jr., November 19, 1979.

Following Saarinen's death, the design team regrouped when Kevin Roche met with Kiley during late 1961 and early 1962 to discuss the landscape design. Kiley reassessed the original concept of forest and meadow as the limited budget restricted the possibilities of an extensive, tall tree forest.⁸¹ A master plan from December 1961 shows Kiley's solution to retain the concept of a forest by emphasizing dense rows of tulip poplars (*Liriodendron tulipifera*) along the curving walks rather than throughout the entire site.⁸² The budget restraints brought about other changes in the landscape design as the curvilinear ponds and the Santa Fe and Oregon trails remained absent from the 1961 master plan, a site plan dated December 1962,⁸³ and a conceptual planting plan from March 1963.⁸⁴

As the NPS had previously decided that the landscape program would be a subordinate phase of development, construction of the Jefferson National Expansion Memorial continued to proceed apart from a finished planting plan. On January 22, 1962, bid opening for construction of the Gateway Arch and visitor center occurred in the Old Courthouse. The NPS awarded MacDonald Construction Company the contract on March 14, 1962.⁸⁵

Shortly before MacDonald Construction Company began pouring concrete for the foundations of the Gateway Arch, Superintendent Hartzog announced his resignation from the NPS on June 19, 1962. Hartzog's leave from the service was brief, however, as he returned as associate director of the NPS in 1963 and a year later succeeded Conrad Wirth as director. Following Hartzog's resignation as superintendent, H. Raymond Gregg then became the new superintendent of the Jefferson National Expansion Memorial and oversaw construction of the Gateway Arch. On February 12, 1963, contractors placed the first sections of the Gateway Arch on the south foundation.⁸⁶

Anticipating that the landscaping program would commence following construction of the Gateway Arch, Kiley's office remained active as they prepared planting plans and numerous illustrative studies. By December 1962, Peter Ker Walker of Kiley's office had prepared a series of drawings and watercolor renderings.⁸⁷ These studies communicated how Kiley intended for his selection and placement of plant materials to create visual interest at different vantage points

⁸¹ Bellavia, *Cultural Landscape Report*, 70.

⁸² See Office of Dan Kiley and Eero Saarinen and Associates, Master Plan, December 1961. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)

⁸³ See Office of Dan Kiley, Design Development Plan (watercolor), December 1962. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)

⁸⁴ See Office of Dan Kiley, Conceptual Planting Plan, March 1963. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)

⁸⁵ *St. Louis Globe-Democrat*, March 3-4, 1962.

⁸⁶ Memorandum, Superintendent of the Jefferson National Expansion Memorial to Director of the National Park Service, February 11, 1963. (NPS, JNEM Archives)

⁸⁷ See Eero Saarinen and Associates and Office of Dan Kiley, "Approach to the Gateway Arch from the Southwest, Summer," "Approach to the Gateway Arch from the South, Winter," "Wharf Street Looking North, Autumn," "View Towards Arch from C-C," renderings by Peter Ker Walker and Joe Karr, December 1962. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)

in the JNEM landscape throughout the seasons.⁸⁸ However, the NPS was dissatisfied with Kiley's planting plan as they felt the heavy plantings of trees along the walkways might obscure views of the Gateway Arch.⁸⁹

By March 1963, Kiley produced a drawing with sections and plans that detailed the tight spacing of the tulip poplars along the main pedestrian paths.⁹⁰ The detail specified cobblestone ("levee block") pavers surrounding the tree pits within the sidewalks and in a 2' strip along the edge of the walks. Kiley's office sought input on their proposed plant species, such as the tulip poplars, and so they contacted the following authorities: the Missouri Botanical Garden; the City of St. Louis; Department of Parks, Recreation and Forestry; and Harland Bartholomew and Associates (HB&A), a planning and landscape architecture office located in St. Louis.⁹¹ Overall, the responses to Kiley's selection and placement of the tulip poplar were favorable with the exception of HB&A, who discouraged its use for aesthetic reasons. Still, Kiley retained the tulip poplar for his design because of its other valuable qualities, such as its scale, stature, and fast growth, which Kiley deemed essential to the design.

Kiley's office prepared additional drawings for a meeting with the NPS on March 18, 1963, including a conceptual planting plan.⁹² While this plan reflected some minor variations from the one in 1961, it retained the major elements of dense rows of tulip poplars lining the paths, plantings to screen the railroad cuts, and clusters of trees contrasted by open meadows. At this time, the NPS agreed with Kiley that the tree massing should reinforce the circulation patterns and that the plan should retain the concept of contrasting closed and open spaces. During the following months, Kiley continued to alter the plans to incorporate new alignments to the Third Street Expressway as plans were underway to depress a portion of it in front of the memorial.

By the end of 1963, a substantial portion of the memorial's construction was completed, including the track relocation, redevelopment of the levee, and excavations for the Gateway Arch foundations and subterranean visitor center. Around the same time, Kiley's office finished a new set of presentation drawings, including a sequence of study sketches that revealed views throughout the memorial site.⁹³ Robert G. Hall, chief of the NPS's Eastern Office of Design and Construction (EODC), generally favored the plans and only requested minor modifications to the pedestrian bridges over the expressway. The Office of Dan Kiley shipped the final landscape

⁸⁸ These drawings were part of a promotional package requested by the NPS. Phillip Shipman to Bruce Detmers, October 2, 1963. (NPS, JNEM Archives) Shipman, an associate in the Kiley office, discussed the promotional package and listed the drawings initially prepared for that package.

⁸⁹ Robert Hall, Chief EODC, to the Office of Eero Saarinen and Associates, February 7, 1963. The letter points out the NPS concerns with the landscape plans and drawings prepared to date. (NPS, JNEM Archives)

⁹⁰ See Office of Dan Kiley, Section and Plan Details of Tulip Poplar Plantings, March 1963. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)

⁹¹ Joseph P. Karr to the Missouri Botanical Garden; the City of St. Louis Department of Parks, Recreation and Forestry; Mr. Eldridge Lovelace, Harland Bartholomew and Associates; and the Morton Arboretum, Lisle, Illinois; May 17, 1963. (NPS, JNEM Archives)

⁹² See Office of Dan Kiley, Conceptual Planting Plan, March 1963. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)

⁹³ See Eero Saarinen and Associates and Office of Dan Kiley, "View from Pedestrian Overpass toward River," Joseph Karr, December 1962. Also, Office of Dan Kiley, Study Sketches of Proposed Views within the Jefferson National Expansion Memorial, September 1963. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)

drawings to the NPS for approval on November 4, 1964.⁹⁴ While they awaited approval for the final planting plan, construction of the Gateway Arch neared completion. The last section was placed during a public ceremony marking the occasion on October 28, 1965. A few months later, on February 2, 1966, NPS Director George Hartzog approved and signed Kiley's final planting plan.⁹⁵

Periods of development:

a. Original plans

*Kiley's Final Conceptual Planting Plan, 1964 (approved in 1966)*⁹⁶

Kiley's approved conceptual planting plan reinforced the site planning strategy largely devised by Saarinen. The plan had a clear form that was roughly bilateral. The sweeping curves of the walkways reflected the form of the Gateway Arch. Kiley's proposed plantings of tulip poplars typically occurring in three parallel rows, lined the major walks and visually connected the Old Courthouse to the Gateway Arch.

The remainder of the site conveyed the initial concept of forest and meadow. For the wooded areas, Kiley incorporated several canopy trees, including white oak (*Quercus alba*), red oak (*Quercus borealis maxima*), hackberry (*Celtis occidentalis*), and ginkgo (*Ginkgo biloba*) trees. Kiley's plan also called for some specimen trees, such as Japanese pagoda (*Sephora japonica*), saucer magnolia (*Magnolia soulangeana*), and star magnolia (*Magnolia stellata*) throughout the landscape. To create seasonal bursts of color along the forest edge and leading into the meadows, Kiley grouped a variety of flowering understory trees, which included the following species: eastern redbud (*Cercis canadensis*); dogwood (*Cornus florida*); Washington Hawthorn (*Crataegus phaenopyrum*) Japanese cherry (*Prunus serrulata*); Cornelian cherry (*Cornus mas*); Arnold crabapple hybrid (*Malus x arnoldiana*); and Sargent crabapple (*Malus sargentii*).

Kiley strategically placed the open meadows along present-day Memorial Drive to allow motorists glimpses into the park. Alternately, Kiley screened areas around the railroad cuts and service buildings with species such as sweet flowering quince (*Chaenomeles lagenaria mara*), Mugo pine (*Pinus mugo mughus*), Bulgarian ivy (*Hedera helix Bulgaria*), and fragrant sumac (*Rhus aromatica*). East of the railroad cuts, Kiley called for Canada hemlock (*Tsuga canadensis*) to line the pedestrian path along Leonor K. Sullivan Boulevard.

While the north and south ponds had disappeared from plans of the JNEM landscape following Director Wirth's landscape cutbacks in 1961, the feature reemerged on Kiley's final conceptual planting plan. According to the final plan, Kiley intended for bridges to provide pedestrian

⁹⁴ Transmittal for final landscape drawings, November 4, 1964 (NPS, JNM Archives); Bellavia, *Cultural Landscape Report*, 77.

⁹⁵ The NPS JNEM Archives only retains a photocopy of the original plan. Joe Karr, who previously worked in the Office of Dan Kiley, suggests the original drawing probably is no longer intact due to the amount of revisions it underwent.

⁹⁶ See Office of Dan Kiley, Final Conceptual planting Plan, 1964; approved by the NPS in February 1966. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)

access across narrow areas of the north and south ponds or to small islands in the center. Kiley also designed densely planted circles of bald cypress (*Taxodium distichum*) trees near the north and south ponds to create intimate spaces that would contrast the open feeling of the large expanse of lawn planned around the base of the Gateway Arch.

As the City of St. Louis did not intend for the 1951 improvements to the Riverfront Garden to be permanent, Kiley's plan also included a new planting design for this space. He intended for the *allées* lined with triple rows of tulip poplars to extend into the Riverfront Garden and line its northern and southern edges. In addition, the plan incorporated a single row of canopy trees along the northeastern and southeastern corners of the Old Courthouse block. In accordance with studies Saarinen produced in the 1960s, Kiley's final conceptual planting plan proposed for the construction of pedestrian overpasses at Memorial Drive in order to facilitate visitor access from the Riverfront Garden to the JNEM landscape.

b. Construction and Modifications

Following NPS Director Hartzog's approval, Kiley's office forwarded his final conceptual planting plan to the NPS EODC in Philadelphia. At this time, Kiley's role in the Jefferson National Expansion Memorial ended. Subsequently, for reasons ranging from budget constraints to concerns about selected plant species, the NPS modified Kiley's final conceptual planting plan prior to its implementation. This section thus describes various modifications and additions that the NPS design and construction offices and the firm of Harland Bartholomew and Associates (HB&A) made as they developed construction documents and specifications based on Kiley's approved planting plan. The section also outlines the implementation of the landscape plan, in addition to modifications and additions that occurred after its construction.

NPS Development of Plans and Specifications, Initial Modifications to Kiley's Approved Planting Plan, and Construction of the Jefferson National Expansion Memorial Landscape

The NPS tasked John Ronscavage, landscape architect at the NPS San Francisco Planning and Service Center,⁹⁷ and his design team to prepare the initial package of construction documents for bidding purposes. This package, which Ronscavage and his team completed in August 1969, included grading, drainage, and planting of the north-south axis of the Gateway Arch.⁹⁸ The documents contained several noticeable differences from the approved 1966 Kiley planting plan. For example, Ronscavage and his team removed the ponds and fountains from the plan because limited funding at the time prevented their construction. However, they later reintroduced the north and south ponds to the scheme, with a simplified form that had less intricate and irregular geometry. In addition, they removed the islands and footbridges. As for the plant list, they

⁹⁷ The NPS San Francisco Planning and Service Center predated the Denver Service Center, which was created in 1971. See Richard West Sellars, *Preserving Nature in the National Parks: A History*, (Yale University Press, 1997), 240.

⁹⁸ See NPS, San Francisco Planning and Service Center, Drawing No. 366/41001, "Site Development, Arch, Jefferson National Expansion Memorial," August 1969. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_41001_[21820])

substituted the Canadian hemlock (*Tsuga Canadensis*) with white pine (*Pinus strobus*) and Austrian pine (*Pinus nigra*) after consultations with the City Forestry Department revealed that hemlock was not suited to the site.⁹⁹

In January 1970, the NPS made another significant revision to the Kiley plan by removing the maidenhair tree (*Ginkgo biloba*) from the plant list.¹⁰⁰ The NPS compiled the bidding package with revised drawings and “Site Development Phase I” and scheduled bids to open on March 19, 1970. Surprisingly, all bids received for the work exceeded the government estimate and therefore were discarded. The NPS design team then repackaged the proposal and changed the scope of work to eliminate tree plantings.¹⁰¹

The repackaging resulted in three new sets of construction documents, two new phases of site development and one phase of planting. The revised “Site Development Phase I” consisted of grading the north-south axis of the Gateway Arch, waterproofing the visitor center roof, installing temporary crushed stone walks, drainage, and seeding.¹⁰² The second set of drawings, entitled “Site Development Phase II,” consisted of water mains, storm drainage, electrical distribution, paving roads and walkways, spreading topsoil, seeding lawns, and planting wells for the trees, all along the north-south axis of the Gateway Arch.¹⁰³ Because Kiley’s approved plan did not identify paving materials for the walks, the NPS specified exposed aggregate in their drawings.¹⁰⁴

Two months after their revision, the NPS awarded the construction contract for “Site Development Phase I” to the low bidder, Kozeny-Wagner, Inc. on June 19, 1970.¹⁰⁵ Their work began on the south end of the site on July 27, 1970, and progressed to the north end by late August.¹⁰⁶ The firm was responsible for installing a portion of the underground drainage system, scraping the soil off the visitor center roof to waterproof it, grading the visitor center roof and reseeding it, and basic grading to establish the subgrade of the approved plan.¹⁰⁷

⁹⁹ See NPS, San Francisco Planning and Service Center, drawing number 366/41001-B, *Site Development, Arch, Phase I, Jefferson National Expansion Memorial*, Sheets 1-11, drawn by Patten and checked by Ronscavage, August 1969, revised January 1970. (NPS, JNEM Archives, NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_41001B_[111690])

¹⁰⁰ Rich Huber to Ray Freeman, March 20, 1970. (NPS, JNEM Archives, Record Unit 106, Box 36, Folder 23)

¹⁰¹ NPS, Drawing No. 366/41001B.

¹⁰² NPS, San Francisco Planning and Service Center, drawing number 366/41001-C, *Site Development, Phase I (por), Arch, Jefferson National Expansion Memorial*, Sheets 1-9, drawn by Patten and checked by Ronscavage, August 1969, revised January 1970 and April 1970. (NPS, JNEM Archives NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_41001C_[39036])

¹⁰³ NPS, Western Service Center, drawing number 366/41009, *Site Development, Phase II, Arch, Jefferson National Expansion Memorial*, Sheets 1-18, May 1971. (NPS, JNEM Archives NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_41009_[25977])

¹⁰⁴ John Ronscavage and Jim Holland, Landscape Architects who worked on the JNEM landscape. Interviewed by JNEM Historical Landscape Architect Gina Bellavia on November 15, 1994. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 7, Folder 7)

¹⁰⁵ The contract number for this work was 14-10-7-971-267. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 6, Folder 11) The project number was JEF S363. The contract lasted from June 1970 to July 1972. Kozeny-Wagner, Inc. based their construction on plans and specifications developed by the NPS Western Service Center. Refer to NPS Drawing No. 41001-C.

¹⁰⁶ “Arch Landscaping Contract Let,” *St. Louis Post-Dispatch*. June 20, 1970.

¹⁰⁷ See NPS Drawing No. 41001-C.

By September 1970, Kozeny-Wagner re-graded the land to create high points on the north and south axis of the Gateway Arch where the sidewalks would ultimately converge. The high points would protect the tall structure from potentially detrimental north-south winds.¹⁰⁸ Kozeny-Wagner also sculpted land in the northwest and southwest sections of the JNEM landscape to prepare for pond construction, which would occur at a later time.¹⁰⁹ While Kozeny-Wagner worked on “Site Development Phase I,” the NPS awarded them another contract for the Jefferson National Expansion Memorial in March 1971. This new project consisted of an addition to the visitor center lobby, construction of a theatre, and the installation of air conditioning and other mechanical work.¹¹⁰

With construction of the landscape underway, John Ronscavage of the NPS Western Service Center produced details and specifications for some of the landscape's small-scale features, such as lighting and benches. While Eero Saarinen and Associates had recommended a standard lighting detail nearly a decade earlier, they did not identify locations.¹¹¹ For unknown reasons, the NPS Denver Service Center (DSC) designers prepared standard and luminaire details different than those originally developed by Eero Saarinen and Associates.¹¹² The new lighting standards were modern in style and had 12' tall single poles of brown-painted aluminum with a single 21" diameter globe. The NPS designers located the standards between the trees, 1' from the edge of the sidewalks and approximately 90' apart. As for the benches, Ronscavage referenced the size and construction specifications proposed earlier by Eero Saarinen and Associates but changed the material from limestone to concrete.¹¹³ The benches would soon be implemented during “Site Development Phase II.”

In August 1971, a month before Kozeny-Wagner completed the first portion of “Site Development Phase I,” the “Site Development Phase II” began. The NPS divided it into two contracts and four schedules. The NPS awarded both contracts to Millstone Associates, Inc.¹¹⁴ Schedules I and II included the following elements: construction of portions of the aggregate sidewalk system; paving of the service roads; implementation of 280 tree wells; spreading topsoil; construction of a concrete base for the visitor information kiosk; and construction of fourteen concrete benches. This work was based on plans and specifications developed by Ronscavage and other designers of the DSC.¹¹⁵ Schedules III and IV included partial installation of irrigation and storm drainage systems, repair of the sump pumps, and electrical distribution.

¹⁰⁸ Bellavia, *Cultural Landscape Report*, 106

¹⁰⁹ *Ibid.*

¹¹⁰ “Bids opened on new Arch project,” *St. Louis Post-Dispatch*, March 26, 1971. The contract number for this work was 4970B10045.

¹¹¹ See Saarinen and Associates Drawing No. NHS-JNEM 3077 E-4. (NPS, JNEM Archives, Gateway Arch Drawings 1938-1987, Record Unit 120, Drawer 22, Folder 2)

¹¹² Gargar Chan, Comparison Sketch of Saarinen's and NPS's lighting details, Drawing Nos. D-120-909 and D-120807. (NPS, JNEM Archives, Gateway Arch Drawings 1938-1987, Record Unit 120, Drawer 15, Folder 4)

¹¹³ See NPS, Detail of Sheet 4 from Drawing No. 366/41009A showing Concrete Bench Detail and Plan, drawn by John Ronscavage, May 1971. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_41009A_[169963])

¹¹⁴ Contract No. 4970B10107 covered Schedules I and II while Contract No. 4970B20053 included Schedules III and IV.

¹¹⁵ See NPS Drawing No. 366/41009.

Further Changes to Kiley's Approved Planting Plan

After the NPS first opened bids for "Site Development Phase I" on March 19, 1970, they discarded all bids because they exceeded the government estimate. As previously mentioned, the NPS changed the scope of work to eliminate tree plantings.¹¹⁶ At the time, contractors raised objections to the use of tulip poplars, in part because the specifications restricted the range from where they could acquire plant materials. NPS Superintendent Harry Pfanz wrote to the Midwest Regional Director: "It is my opinion that the Service should review the present plan and give due consideration to the criticism it has received. In the course of this review it should secure further advice from Mr. Biemann [of the Missouri Botanical Garden] and other persons recognized as local experts. If at all possible whatever plan is utilized should have the open support of these men."¹¹⁷

Following Pfanz's recommendation, the NPS design team contacted the following local groups in St. Louis for further advice: the Missouri Botanical Garden; Missouri Department of Conservation; University of Missouri Extension; St. Louis Department of Parks; Recreation and Forestry; City of St. Louis; and several prominent nurserymen.¹¹⁸ The NPS design team again analyzed and revised the planting plan based on the various recommendations to substitute the pin oak (*Quercus palustris*) for the tulip poplar.

Local nurserymen also suggested that other species be intermixed with the pin oak to avoid the use of a monoculture and minimize the risks involved with potential pests and diseases. The design team and Glenn O. Hendrix, the Chief of Planning and Design in San Francisco, opposed this recommendation. Hendrix explained, "It was suggested by many of the experts to include another species with the dominant tree, rather than risk 1,200 trees of a single species to future insect or disease damage. However, in view of the effect that is to be achieved by the proposed plan, it would be difficult to substitute another species, even in the outer rows of trees surrounding the walkway ... We request that particular attention be given to the dominant tree [tulip poplar] controversy and our proposal to go all the way with one species, the Pin Oak. We believe that the plan would be weakened if the three rows of trees at each walkway were mixed with two or three species."¹¹⁹ The NPS Midwest Region Associate Director J.E.N. Jensen, responded, "While the proposed plant substitutions are agreeable with this Office, we do wish to retain the site development concept which the Director approved in 1966."¹²⁰

The design team then agreed on various substitutions based on the recommendations they had received. These substitutions included the following: the pin oak (*Quercus palustris*) to replace the tulip poplar; the little leaf linden (*Tilia cordata*) and the basswood (*Tilia americana*) to replace the oaks, which had transplanting difficulties; and the golden rain tree (*Koelreuteria paniculata*) or the Bradford pear (*Pyrus calleryana*) to replace the oriental cherry (*Prunus*

¹¹⁶ See NPS Drawing No. 366/41001B.

¹¹⁷ Harry W. Pfanz, Superintendent, Jefferson National Expansion Memorial to Director, Midwest Region, April 27, 1970. (NPS, JNEM Archives, Record Unit 106, Box 36, Folder 26)

¹¹⁸ Glenn O. Hendrix, Chief, Environmental Planning and Design, Western Service Center to J.E.N. Jensen, Associate Director, Professional Services. June 25, 1970. (NPS, JNEM Archives, Unit 106, Box 36, Folder 27)

¹¹⁹ Ibid.

¹²⁰ J.E.N. Jensen, Associate Director to Director, Midwest Region. July 23, 1970. (NPS, JNEM Archives, Record Unit 106, Box 36, Folder 27)

serrulata) because of its borer problems. NPS Associate Director Jensen granted approval in July 1970.¹²¹ The use of the pin oak as the dominant tree on the levee also brought about criticism. Ivan Parker, the newly appointed Superintendent, met with Leonard Hall, a *St. Louis Globe-Democrat* reporter and conservationist who had written about the plant controversy, to try to resolve the issue. Hall disapproved of the new choice because the alkalinity of the riverfront soil is high and the pin oak thrives in acidic soil.¹²² Hall's comments prompted further study of the new proposal and the existing riverfront soil.

Royce Lambert, Soils Conservationist for the NPS Western Service Center, and the Soil and Plant Laboratory at Palo Alto, California, conducted soil tests in the summer of 1971. While the pin oak tolerates a maximum pH of 6.5, the results indicated that the soil was more alkaline than previously reported with a pH of 7.5.¹²³ These findings instigated yet another review of the proposed plant list and more revisions. Again, the most significant change was the dominant tree species.

The NPS arranged another meeting with local plant authorities to recommend a tree that would perform well under the adverse urban conditions on the riverfront. Because of its dense green foliage, fall coloring, upright, sturdy habit, fibrous root system, and tolerance of alkaline soils they recommended the 'Rosehill' white ash (*Fraxinus americana* 'Rosehill') to replace the pin oak.¹²⁴ The NPS also eliminated the Austrian pine from the plant list due to concerns of tip moth infestations. John Ronscavage of the NPS Design Office of the San Francisco Service Center completed the final construction drawings for "Planting Phase I" in August 1971 and the plant list was revised by September.¹²⁵ The drawings included a "walk planter detail" for cobblestone pavers surrounding the tree pits, similar to Kiley's conception.¹²⁶

The NPS opened bids for "Planting Phase I" on October 27, 1971. Shortly thereafter, on November 9, 1971, the NPS awarded Suburban Tree Service, Inc. a contract for the ground preparation, seeding, and planting of 573 trees.¹²⁷ Because of the limits of construction for this phase, the only plants listed on this drawing were the Japanese black pine and redbud proposed for the railroad cut slopes, and the Rosehill white ash to line the sidewalks.¹²⁸

Suburban Tree Service, Inc. began work on December 1, 1971, with grading of the north and south railroad cut. By May 22, 1972, they had completed the grading, soil preparation, and

¹²¹ Ibid.

¹²² Sue Anne Wood, "The Greening of The Riverfront," *The St. Louis Globe-Democrat*, May 29, 1971.

¹²³ John Ronscavage, Captain JNEM Design Team, to Director, Western Service Center, September 9, 1971. (NPS, JNEM Archives)

¹²⁴ AECOM, *Jefferson National Expansion Memorial Cultural Landscape Report* (National Park Service, May 2010), 2-49.

¹²⁵ NPS, Western Service Center, Drawing No. 366/41006, "Planting, Phase I, Arch, Jefferson National Expansion Memorial," Sheets 1-4, by Ronscavage, August 1971. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_41006_[62941])

¹²⁶ See "Walk Planter Detail" on Sheet 4 from NPS Drawing No. 366/41006.

¹²⁷ This was Contract No. 6525-8025-404 (366-03X20025). See Completion Report, Planting Phase I, Work Order No. 6525-8025-404, Contract No. 4970B20053, Suburban Tree Service, April 1974. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 6, Folder 6)

¹²⁸ See NPS Drawing No. 366/41006.

planting of 120 redbuds and eighty black pines along the railroad cuts.¹²⁹ They continued work and by July 1972 they had spread topsoil and planted 280 Rosehill white ash along the newly constructed walks and ninety-three of the same species on the exterior of the walks. After paving the tree wells, Suburban Tree Service completed their contract for “Planting Phase I” on September 21, 1972.¹³⁰ During the following months, eighty-two of the 280 planted Rosehill white ash trees died, which were replaced by Suburban Tree Service, Inc. As the majority of dead trees were on the north end of the site, a study indicated that the area had insufficient drainage. This prompted the NPS to require underdrains for the tree pits for future landscaping.¹³¹

Construction Documents and Specifications Developed by Harland Bartholomew and Associates

On January 12, 1973, the NPS hired local landscape architecture firm HB&A to prepare construction documents and specifications necessary to complete the landscape development of the memorial.¹³² HB&A was involved in three contracts for the Jefferson National Expansion Memorial, spanning six years.¹³³ The contracts outlined that HB&A’s services should be in accordance with the 1966 Kiley plan and the construction drawings and specifications subsequently developed by the NPS design and construction office in San Francisco.¹³⁴

The NPS forwarded to HB&A the construction drawings they had produced as well as the approved design development plan and grading plan. Under the first contract, HB&A produced three important sets of drawings. The first was a set of “Site Development” plans for the JNEM landscape, which included grading, utility extensions, irrigation system, and construction of ponds and retaining walls.¹³⁵ HB&A completed this set by June 1974. The second set contained the specification of lighting standards, their location, and electrical requirements.¹³⁶ Several months later, in October 1974, HB&A finalized the third set of drawings, which provided a “Planting Plan” for the JNEM landscape.¹³⁷

¹²⁹ Completion Report, Planting Phase I, Work Order No. 6525-8025-404, Contract No. 4970B20053, Suburban Tree Service, April 1974. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 6, Folder 6.)

¹³⁰ Ibid; see NPS Drawing No. 366/41006.

¹³¹ Robert B. Schall, President of Suburban Tree Service, Inc. to Mr. Leon R. Thygesen, Contracting Officer, National Park Service, April 16, 1973. (NPS, JNEM Archives)

¹³² Basic Agreement between National Park Service and Harland Bartholomew and Associates, Contract No. CX-2000-3-0033, January 12, 1973. (NPS Denver Service Center Storage, Accession No: 079-86-0008, Box 2 of 7, RCL No. 902831)

¹³³ The first was Contract No. CX 2000-3-033 and the third was Contract No. CX 2000-7-0013. The second contract could not be located.

¹³⁴ Work Directive No. 0033-73-1, Basic Agreement No. CX-2000-3-0033, Jefferson National Expansion Memorial, 7. The drawings provided by the Government included Nos. 3071-C, 3030, 41001A, 41001C, 41009, 41006, and 3077, and an electrical system study of the Old Courthouse by J. Kozel.

¹³⁵ NPS, DSC, Drawing No. 366/41019, “Site Development, Arch Grounds, Jefferson National Expansion Memorial,” Sheets 1-54, created by Harland Bartholomew and Associates, June 1974. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_41019_[147027])

¹³⁶ For DSC plans and lighting details see: NPS, JNEM Archives, Gateway Arch Drawings 1938-1987, Record Unit 120, Drawer 15, Folder 4.

¹³⁷ NPS, DSC, Drawing No. 366/41027, “Planting Plan, Arch Grounds, Jefferson National Expansion Memorial,” Sheets 1-14, created by Harland Bartholomew and Associates, October 4, 1974. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_41027_[44001])

These sets included several notable differences from Kiley's plan approved in 1966. For example, in the site development set, HB&A had simplified the form of the north and south ponds and excluded the islands and foot bridges previously conceived by Kiley. In addition, the planting plan set introduced several new species to the plant list, including the following: red maple (*Acer rubrum*), sugar maple (*Acer saccharum*), thornless honeylocust (*Gleditsia triacanthos variety inermis* 'Shademaster'), and Kentucky coffeetree (*Gymnocladus dioicus*). According to the planting plans, HB&A removed the river birch (*Betula nigra*) and hackberry from the list.¹³⁸ Although the NPS approved the aforementioned three sets of drawings, implementation was not based on them. Subsequent construction drawings developed by both HB&A and the NPS Design and Construction Office, however, complied with these approved sets of drawings.

Because of financial restraints, the NPS wanted to divide the remaining work into phases so that they could implement a section at a time. Thus, the second contract between the NPS and HB&A required the reformatting of the existing "Site Development" and "Planting Plan" sets into six bidding packages.¹³⁹ These sets are listed as follows:

- "Site Development Plan - Phase II (North Section)," Drawing. No. 366/41037, Sheets 1-36.
- "Planting Plan - Phase II (North Section)," Drawing. No. 366/41038, Sheets 1-10.
- "Site Development Plan - Phase III (South Section)," Drawing. No. 366/41039, Sheets 1-38.
- "Planting Plan - Phase III (South Section)," Drawing. No. 366/41040, Sheets 1-10.
- "Site Development - Phase IV (Levee Section)," Drawing. No. 366/41041, Sheets 1-11.
- "Planting Plan - Phase IV (Levee Section)," Drawing. No. 366/41042, Sheets 1-10.

With these drawings, HB&A made several minor and one major change to Saarinen and Kiley's original plans. Among the minor changes was the introduction of Thunderhead pine (*Pinus thunbergii*) to the plan. HB&A also specified for cast-iron tree grates to replace the cobblestone paving that had been implemented in 1972. The original cobblestone paving had settled and become uneven, and the NPS had determined it was a safety hazard to visitors.

The major change impacted the central grand staircase, originally conceived by Eero Saarinen and Associates to have a unique tread-riser relationship. Saarinen had intended for each tread to decrease from the river to the Gateway Arch while the risers would remain a constant 9" high. This concept resembled Saarinen's design for the steps leading to the north and south overlooks, which had been implemented from 1960-62. The designers at HB&A were opposed to this design for the central grand staircase leading from Wharf Street to the Gateway Arch as they felt it was uncomfortable and potentially dangerous for the large numbers of visitors that would use the steps daily.¹⁴⁰

¹³⁸ It is unknown why HB&A modified the revised plant list that the NPS had approved in 1971.

¹³⁹ Architect-engineer Contract No. CX-2000-7-0013. The drawings produced as a result of this contract are Nos. 366/41037, 366/41038, 366/41039, 366/41040, 366/41041, and 366/41042.

¹⁴⁰ Eldridge Lovelace, former Partner, Harland Bartholomew and Associates. Interviewed by JNEM Historical Landscape Architect Regina Bellavia on December 6, 1994. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 8, Folder 6)

While HB&A retained the overall location and form of the central grand staircase (500' wide at the top and 291' wide at the bottom with curved sides) as intended by Saarinen, they redesigned the tread-rise relationships to a more consistent relationship of 6" risers and 1'-3" treads. They also incorporated two landings as well as snow-melting mats on the north end. HB&A developed the construction documents so that the central grand staircase would be constructed in two phases. The first construction phase consisted of two unconnected sections, while the second phase consisted of a middle section that would connect the two aforementioned sections.¹⁴¹

Continued Construction of the Jefferson National Expansion Memorial Landscape and Its Features

On November 9, 1973, the NPS Acting Regional Director approved and signed phases II, III, and IV of the site development and planting plans prepared by HB&A. A new period of development of the Jefferson National Expansion Memorial began in 1974. This period initially focused on construction of major features, such as the Museum of Westward Expansion and the central grand staircase. The latter part of this period focused on landscape development, which included implementation of the planting plans and other features, such as the north and south ponds. While various contractors completed much of this work based on HB&A's approved plans and specifications, some of the work involved plans and specifications produced by the NPS.

The NPS awarded a contract to Harding Electric Company on February 18, 1974, for the implementation of forty-five light fixtures and standards.¹⁴² The work also included the installation of transformers, control panels, and circuits in the Museum of Western Expansion and supplying underground conduit for telephone and electric circuits for the area lighting and power receptacles on the grounds. Harding Electric Company referenced plans, specifications, and construction layout for the walk and area lighting produced by R. Johanningsmeier of the Design Office of the NPS DSC.¹⁴³ Harding Construction Company completed the contract on August 3, 1974.¹⁴⁴

While construction of the lighting was underway, the NPS awarded a contract to Hankins Construction Company in June 1974 to construct a temporary maintenance building on the south end of the memorial site.¹⁴⁵ The contract included site grading, installation of utilities, construction of foundations, and erection of a 32' x 72' prefabricated steel panel building. They also completed a fenced yard measuring 50' x 72' at this time, which the NPS expected would

¹⁴¹ See Harland Bartholomew and Associates, Detail from Drawing No. 366/41025 showing proposed phased development of grand staircase. (NPS, JNEM Archives, Gateway Arch Drawings 1938-1987, Record Unit 120, Drawer 18, Folder 11)

¹⁴² Completion Report, Work Order No. 6525-7600-503, Contract No. CX6000-4-9009, Harding Electric Company, Walk and Area Lighting, March 22, 1976. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 6, Folder 14.)

¹⁴³ For specifications and details see: NPS, JNEM Archives, Gateway Arch Drawings 1923-1987, Record Unit 120, Drawer 15, Folder 4.

¹⁴⁴ AECOM, *Cultural Landscape Report*, 2-61.

¹⁴⁵ Completion Report, Work Order No. 6525-7103-404, Contract No. CX6000-4-9017, Hankins Construction Company, Temporary Maintenance Building, May 22, 1975. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 6, Folder 9)

meet the needs of the maintenance division for the following five years. NPS Assistant Chief of Park Maintenance, Roy J. Scown, was responsible for the preliminary surveys and construction layout, in addition to the plans and specifications for the building and yard.¹⁴⁶

By August 12, 1974, the NPS contracted Sahrman Construction Company to complete the paving of the north and south overlooks based on HB&A's plans and specifications.¹⁴⁷ Until this time, 18' wide pedestrian walks had extended to the overlook steps, but the overlooks remained covered in grass. Sahrman Construction Company's work included demolition, excavation, and construction of under drains, installation of base course and exposed aggregate paving, concrete light bases and manholes, and miscellaneous seeding. They fulfilled their contract on November 26, 1974.

Nearly a year later, on July 1, 1975, the NPS awarded a contract to Kozeny-Wagner to construct the central grand staircase that would provide visitors direct access to the Gateway Arch from Wharf Street.¹⁴⁸ The construction, which began on August 5, 1975, referenced the two phases of plans, specifications, and preliminary surveys previously completed by HB&A.¹⁴⁹ In addition to the central grand staircase, Kozeny-Wagner's work also included the construction of 1,500 square yards of new walks, installation of electrical service for light fixtures, and a drainage system. Throughout construction, Kozeny-Wagner requested several change orders, which the NPS approved. The most noteworthy was the extension of the snow-melting mat to the sidewalk at the base of the north stairs, replacement of a section of exposed aggregate concrete at the south overlook, and sodding the section between the stairs rather than seeding.¹⁵⁰

By June 10, 1976, Kozeny-Wagner had completed a vast majority of their work. St. Louis Mayor John H. Poelker participated in a ribbon-cutting ceremony on June 24 to open the central grand staircase. Shortly after, on August 10, the Museum of Westward Expansion was completed and opened to the public. Secretary of the Interior Thomas S. Kleppe, led a dedication ceremony for the museum on August 23.¹⁵¹

In March of 1978, the NPS contracted Schuster Engineering of Webster Groves, Missouri, for phases I, II, and III of the site development.¹⁵² The package included the following tasks: concrete placement; construction of retaining walls; flat work; construction of exposed aggregate walks; implementation of roads; completion of the north and south ponds; and installation of

¹⁴⁶ NPS Drawing No. 366/60010. (NPS, JNEM Archives, Gateway Arch Drawings 1938-1987, Record Unit 120, Drawer 122, Folder 4)

¹⁴⁷ Completion Report, Work Order No. 6525-7601-503, Contract No. CX6000-4-9018, Sahrman Construction Company, Overlook Paving, February 9, 1976. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 7, Folder 5); Harland Bartholomew and Associates, Drawing No, 366/41018A. (NPS, JNEM Archives, Gateway Arch Drawings 1938-1987, Record Unit 120, Drawer 24, Folder 5)

¹⁴⁸ Completion Report, Work Order No. 6520-7602-503, Contract No. CX6000-5-9005, Kozeny-Wagner, Inc., Monumental Entrance, January 5, 1977. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 7, Folder 4)

¹⁴⁹ Harland Bartholomew and Associates, Drawing No, 366/41031. (NPS, JNEM Archives, Gateway Arch Drawings 1938-1987, Record Unit 120, Drawer 16, Folder 1)

¹⁵⁰ AECOM, *Cultural Landscape Report*, 4-22.

¹⁵¹ See Chronology in Brown's *Administrative History*.

¹⁵² Contract No CX-6000-8-9003. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 6, Folder 4)

drop inlets. The project involved earth movement, irrigation systems and backflow preventers, walkway lighting, seeding, sodding, fertilizing and mulching of grass areas, and the creation of storm sewer and discharge areas. Several subcontractors were involved in the work, including the following: Sahrman Contracting Company (concrete); Gartland Company Incorporated (plumbing); Samuel Kraus Company (engineering); and Shelton and Sons Landscaping of Kansas City, Missouri (planting).

As Shelton and Sons Landscaping were contracted to implement the planting plan, their work involved the following: planting trees, shrubs, and groundcover; seeding lawn areas; spreading imported topsoil; and extending the irrigation system.¹⁵³ By December 1978, the NPS DSC produced “as constructed drawings” for the memorial plantings, which depicted additional changes to the revised plant list.¹⁵⁴ Prepared in compliance with the two previously approved planting plans,¹⁵⁵ these drawings depicted four new species while eliminating four others. The NPS had added red oak (*Quercus rubra*) and bur oak (*Quercus macrocarpa*) to the list of canopy trees. They also added Lalandi firethorn (*Pyracantha coccinea* ‘Lalandi’) and wintercreeper (*Euonymus fortunei* ‘Coloratus’) to the list of shrubs and groundcovers.¹⁵⁶ A comparison of Kiley's final plant list approved in 1966 and the “as constructed” one from 1978 reveals the extent of changes approved by the NPS; they retained approximately half of the original twenty-one plant species, while introducing ten new species.

Throughout 1979, Shelton and Sons Landscaping continued work on the landscape development. Their work involved turf renovation on the 8-acre levee slope along the Mississippi River and tree plantings to curb strong winds on the grounds. The planting closely followed Kiley's proposal and included flowering dogwood, star magnolia, Arnold crabapple, black pine, and Bulgarian ivy. Shelton and Sons eliminated temporary ground covers of Bulgarian ivy and winter creeper on the levee area, which they replaced with a mixture of bluegrass, fescue and ryegrass.¹⁵⁷

From summer 1980 through fall 1981, Schuster Engineering was heavily involved in implementation of the JNEM landscape. Their work resulted in the construction of 5 miles of paved sidewalks, the completion of the north and south ponds, implementation of an irrigation system for a lawn area of 46 acres, and the planting of 2,495 trees, 6,500 shrubs and 5.5 acres of ground cover.¹⁵⁸ The implemented north and south ponds reflected the changes made by HB&A and thus had a simpler curvilinear form and lacked the islands and footbridges depicted on the 1966 Kiley planting plan.

¹⁵³ Contract No. CX 6000-9-9003, package 206.

¹⁵⁴ NPS, DSC, Drawing No. 366/41047, “Planting Plan – Arch Grounds,” Sheets 1-23, drawn by Hall, checked by Ronscavage, December 1978. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_41047B_[44707])

¹⁵⁵ NPS, DSC, Drawing No. 366/41027, *Planting Plan, Arch Grounds, Jefferson National Expansion Memorial*, Sheets 1-14, created by Harland Bartholomew and Associates, October 4, 1974. JNEM Drawing No. 366/41047. (NPS, JNEM Archives, Gateway Arch Drawings 1938-1987, Record Unit 120, Drawer 14, Folder 1)

¹⁵⁶ The rationale behind these changes is unknown.

¹⁵⁷ Brown, *Administrative History*, 179; “Small Business Bids for Arch Landscaping,” *North St. Louis Commercial News*, January 24, 1979.

¹⁵⁸ See the Chronology in Brown's *Administrative History*.

Management of the Jefferson National Expansion Memorial Landscape, Additional Design Modifications, and Construction of the Parking Garage

While major developments of the JNEM landscape occurred throughout the 1970s, a period of management defined subsequent decades. For example, the central grand staircase was showing signs of deterioration by 1980, although Kozeny-Wagner had followed strict specifications when they constructed the feature in 1978. Accordingly, the NPS contracted Schuster Engineering, Inc. to make repairs, which included placing pre-cast exposed aggregate over the poured concrete. They completed this work during the summer of 1980.¹⁵⁹

By 1983, the terrazzo tiles on the north and south entrance ramps to the underground visitor center had badly deteriorated. Accordingly, on November 17, the NPS advertised for professional A/E services relating to the replacement of the ramps. The NPS selected WVP Corporation on April 30, 1984, to conduct problem analysis and determine alternative remedial solutions, in addition to preparing construction documents. On September 26, 1984, the NPS awarded a contract for construction of the ramps to Ed Jefferson Contracting Company. At this time, contractors replaced the existing terrazzo tiles with granite surface blocks. In addition, they waterproofed the ramps. Unfortunately, soon after the project was completed, NPS managers discovered water seeping under the stone. It was not until December 1985 when Ed Jefferson Contracting Company corrected the issue by applying a new gray granite surface to the entrance ramps. These material changes signified further modifications to Saarinen's original design.¹⁶⁰

Meanwhile, during the early 1980s, an agreement between the City of St. Louis, the Bi-State Development Agency, and the National Park Service enabled construction of a parking garage at the north end of the JNEM landscape.¹⁶¹ Decades earlier, Saarinen and Kiley had planned for a surface lot in this location but lack of funding had prevented its construction at the time. WVP Corporation thus prepared plans for a three-story structure, with two levels below ground and the top deck built on a contour with the memorial grounds. In addition, they prepared a landscaping plan for the area surrounding the parking garage.¹⁶² Subsequently, the NPS awarded the construction contract to Fred Weber and Son of St. Louis. Construction of the garage took several years and its official opening and dedication occurred on May 8, 1986. Upon completion of the parking garage, Fred Weber and Son began implementing the landscape plan, which they completed in 1987.¹⁶³

During construction of the parking garage, the NPS focused on replacing plant material that had struggled or died since implementation. On September 26, 1985, the NPS awarded a contract to Treeland Nurseries to replace plants such as Mugo pine, Lalandi firethorn, and fragrant sumac in the JNEM landscape. These replacements occurred in the following areas: at the top of the levee slope, south of the central stairway; along the fence line and the open railroad cut, north and south of the stairway; on the slope around the south service entrance to the visitor center; and

¹⁵⁹ Brown, *Administrative History*, 179.

¹⁶⁰ Ibid.

¹⁶¹ Moore, *Urban Innovation*, 13-22. Historian Dr. Robert J. Moore, Jr., details the history of the construction of the parking garage as well as the operating agreement among the three agencies.

¹⁶² See City of St. Louis, Missouri, "Arch Parking Garage," Drawing No. 366-60902, Sheets 1-93, prepared by WVP Corporation, 1983. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_60902_[128958])

¹⁶³ Moore, *Urban Innovation*, 13-22.

around the fenced area of the generator building and northwest service entrance. Treeland Nurseries completed this project on May 27, 1986.¹⁶⁴

The NPS awarded Treeland Nurseries another contract on September 23, 1986, to replace additional dead plant material, including 1,330 shrubs and 178 trees. Also in 1986, the NPS involved Davey Tree service to transplant 28 young Rosehill white ash trees from obscure locations on the grounds into tree pits lining the curvilinear walks around the Gateway Arch.¹⁶⁵ Following these efforts to revitalize the JNEM landscape, the Gateway Arch and its surrounding grounds were designated a National Historic Landmark (NHL) in 1987. Still, the landscape required further management and, in November 1988, the NPS contracted Hillside Gardens to replace 186 trees of eighteen species throughout the JNEM landscape. This project restored the tree inventory to within 96% of the total originally planted on the grounds.¹⁶⁶ For nearly a decade, no major changes occurred in the landscape.

In 1997, the NPS modified the planting along the northeastern edge of the parking garage. In this area, Saarinen and Kiley had originally proposed Japanese pagoda trees to shade the parking lot and to better integrate the structure into its surroundings. A new pedestrian sidewalk, however, necessitated the removal of trees along this edge.¹⁶⁷ The following year, in 1998, the NPS installed security cameras throughout the landscape and subsequently implemented some remote retractable bollards in areas such as the garage and along Poplar Street. By 2001, the NPS added large spotlights to illuminate the Gateway Arch at night, which predominantly served an aesthetic function. Following the terrorist attacks of September 11, 2001, the NPS added twenty-five concrete benches around the perimeter of the entrance ramps at each leg of the Gateway Arch. To further enhance security, the NPS later added fixed perimeter bollards along Memorial Drive and Leonor K. Sullivan Boulevard.

On May 15, 2003, funding from the Gateway Foundation enabled the completion of the second phase of construction of the central grand staircase. While completion of the central grand staircase improved circulation on the eastern side of the site, the NPS later aimed to facilitate visitor access along the memorial's western edge. For example, in 2009, the NPS installed accessible curb cuts at Memorial Drive.¹⁶⁸ Still, visitor access to the JNEM landscape from downtown remained problematic at Memorial Drive as the NPS never constructed the pedestrian overpasses as originally planned by Saarinen and Kiley. The NPS *2009 General Management Plan/Environmental Impact Statement* thus "called for a design competition to improve visitor access and experience, while better integrating the park into downtown St. Louis."¹⁶⁹ The competition began in December 2009, and, nearly a year later, a jury selected the winning concept by Michael Van Valkenburgh Associates from a field of five finalists.

¹⁶⁴ Ibid, 115; Jefferson National Expansion Memorial, Superintendent's Annual Report for 1986, 7-15. (NPS, JNEM Archives)

¹⁶⁵ Ibid.

¹⁶⁶ Ibid.

¹⁶⁷ AECOM, *Cultural Landscape Report*, 4-31.

¹⁶⁸ Ibid, 4-34.

¹⁶⁹ National Park Service, "City Arch River 2015," *accessed February 25, 2014*, <http://www.nps.gov/jeff/parkmgmt/car2015.htm>.

CityArchRiver 2015 Project

The CityArchRiver (CAR) 2015 project includes the conversion/elimination of six blocks of northbound Memorial Drive into a park green space. A “lid” in the one-block area between Chestnut and Market Streets over I-44 (previously I-70) will create an expanded Luther Ely Smith Square. At the edge of the expanded square, a new glass museum entrance will be located on the central axis of the Gateway Arch. The Museum of Westward Expansion will be expanded to include new interactive exhibits.¹⁷⁰

As for improvements made to the landscape, the CAR project will bring about more than 5 miles of new handicapped-accessible pedestrian pathways throughout the JNEM landscape, including ramps that will extend along the eastern slopes of the site. The parking garage is planned to be removed to create the “North Gateway,” which will include four acres of park space with a Lewis and Clark Explorers’ Garden for children. In addition, the JNEM landscape will expand to include the section of Washington Avenue between Memorial Drive and Leonor K. Sullivan Boulevard. Improvements also will be made along Leonor K. Sullivan Boulevard, such as elevating the street to reduce the impact of flooding.¹⁷¹

The CAR project thus marks the beginning of a new period of development in the history of the Jefferson National Expansion Memorial. While the project is aimed at integrating the Gateway Arch and its surrounding landscape into the fabric of the city, the implemented design inevitably will bring about further changes to Saarinen and Kiley’s original plan, such as with circulation patterns, topography, materials, features, and so forth. The projected completion of the project is planned for 2015 to coincide with the 50th anniversary of the completion of the Gateway Arch.

Landscape Architect, Designer, Shaper, Creator:

Architect Eero Saarinen closely collaborated with landscape architect Dan Kiley on the design of the Jefferson National Expansion Memorial at the onset of the competition in 1947 until Saarinen’s death in 1961. Their collaboration for the memorial is significant because “it represents two masters of Modernism working together in the early years of the genre, solving new architectural problems, and establishing precedents for the relationships between building and landscape.”¹⁷² Indeed, Saarinen and Kiley were the primary creators and shapers of the Jefferson National Expansion Memorial.

While Saarinen died in 1961, his partners, Joseph Lacy, John Dinkeloo, and Kevin Roche supervised the completion of the Gateway Arch. Because the design of the Gateway Arch and overall site planning were essentially set at this time, Saarinen’s death did not result in radical changes to the concept and design. Several years after Saarinen’s death, Kiley’s involvement in the landscape design of the JNEM landscape ended in 1966 when NPS Director George Hartzog

¹⁷⁰ City Arch River 2015, “Plan and Scope,” accessed February 25, 2014, <http://www.cityarchriver.org/about-the-project/plan-scope/>.

¹⁷¹ Ibid.

¹⁷² Laura Thayer, Louis Joyner, and Malcolm Cairns, “National Historic Landmark, Nomination Form for Miller House,” 13. This form is available online at <http://www.nps.gov/nhl/designations/samples/in/miller.pdf>

approved his final conceptual planting plan. Still, Kiley's plan underwent further changes as the NPS involved other landscape architects, such as John Ronscavage of the NPS Western Service Center and St. Louis firm of Harland Bartholomew and Associates (HB&A). Although these two entities did not play a major role in the design, they helped shape the “as-built” landscape, such as by designing the layout and construction specifications of lighting and benches, changing the plant list, modifying the form of the north and south ponds, etc.

The following subsections provide brief biographies of the JNEM landscape's primary designers, Saarinen and Kiley, in addition to its secondary designers, John Ronscavage and Harland Bartholomew of HB&A. Emmet Layton is also included as he designed the Riverfront Garden that later became known as Luther Ely Smith Square.

Primary Designers

Dan Kiley (1912-2004)

Dan Kiley was born in Boston, Massachusetts in 1912. Shortly after he graduated from high school in 1930, he began an unpaid apprenticeship with Warren Manning. Manning had previously worked under the direction of Frederick Law Olmsted, Sr. and was the top plantsman in the country at the time. Kiley thus gained extensive firsthand knowledge of plants from Manning. Kiley later recognized the significance of this experience and wrote, “Without complete familiarity of a plant’s growth characteristics, its visual effect, hardiness and nutritional needs, a landscape architect works blindly.”¹⁷³ Kiley spent five years as Manning’s assistant before becoming an associate. In 1936, he enrolled as a Special Student at the Harvard Graduate School of Design while continuing to work for Manning.

Reminiscing about his studies at Harvard, Kiley wrote “I struggled against the dry teachings of the Beaux-Arts-weaned faculty, finding the stiff symmetries and insistence on design rules set forth in their collection of dusty lantern slides unappealing.”¹⁷⁴ Kiley thus befriended landscape architect students Garrett Eckbo and James Rose, who also shared his distaste for the “conservative, historicist tone of the department.”¹⁷⁵ Kiley explained that, following Eckbo’s lead, he “too adopted compositional techniques from Guevrekian, Legrain, and Vera, including ideas of graphically delineated plants beds and zig-zag edging.”¹⁷⁶ Kiley also responded to the way Fletcher Steele incorporated international influences into his designs and to Mies van der Rohe’s treatment of spatial volume, particularly in his design of the 1929 Barcelona Pavilion.¹⁷⁷ Kiley left Harvard in 1938 without completing a degree and, for a short time thereafter, worked with the Planning Commission and with Arthur Sylvester at the National Park Service in Concord, New Hampshire.

¹⁷³ Kiley and Amidon, *Complete Works*, 10.

¹⁷⁴ *Ibid.*, 11.

¹⁷⁵ *Ibid.*

¹⁷⁶ *Ibid.*

¹⁷⁷ *Ibid.*

Kiley eventually moved to Washington, D.C. where he worked for the Public Housing Authority (PHA) as associate to W. H. Planning, Architect. For the PHA, Kiley initially produced post office designs for small towns but later was transferred to the landscape division. Kiley then worked under Elbert Peets at the United States Housing Authority (USHA), where he attempted “to integrate modernist touches into low-income housing projects.”¹⁷⁸ In the early 1940s, Kiley was one of only a few practitioners of modern landscape architecture in the United States, particularly on the East Coast and in the Midwest. While at the USHA, Kiley met modern architect Louis Kahn and consulted on site plans for several of his housing projects. Around this time, Kahn introduced Kiley to Eero Saarinen. Kiley later explained how Kahn influenced his work: “he taught me about the concise and eloquent use of materials; his devotion to clarity of design structure is a cornerstone of my design philosophy.”¹⁷⁹

After leaving the USHA, Kiley opened an office in Franconia, New Hampshire, and focused on architectural projects. When the United States became involved in WWII, Kiley was sent to the Corps of Engineers in Texas. He soon became Chief of the Design Section for the Presentations Branch of the Office of Strategic Services at Fort Belvoir, Virginia, where he worked alongside Saarinen. This position enabled Kiley to travel to Germany in 1945 to rebuild the bombed-out Palace of Justice in Nuremberg into a courtroom for the trial of war criminals. Kiley then traveled throughout Western Europe where he experienced formal, spatial built landscapes firsthand. These experiences greatly influenced Kiley’s design work as he explained, “I suddenly saw that lines, *allées* and orchards/bosques of trees, *tapis verts* and clipped hedges, canals, pools and fountains could be used to build landscapes of clarity and infinity, just like a walk in the woods.”¹⁸⁰ Kiley integrated these elements into his designs of all scales—residential to institutional—upon returning to his office in Franconia.

In 1946, architect Eero Saarinen invited Kiley to join his design team for the Jefferson National Expansion Memorial architectural competition. By this time, Kiley and Saarinen had established a working relationship as they had collaborated two years earlier for a design competition to create a new parliament in Quito, Ecuador. For the Jefferson National Expansion Memorial architectural competition, Saarinen traveled to Kiley’s office in Franconia where they began working on their design concept. Subsequently, they spent a month in Saarinen’s office in Michigan as they worked hard to complete their stage on submission. The atmosphere remained intense during the second stage of the competition as Kiley explained, “I worked with Eero and Lily for four months working all night every night or as Eero put it, ‘till we achieved a definite advance.’”¹⁸¹

Winning the Jefferson National Expansion Memorial design competition was a turning point for both Kiley and Saarinen as it launched their respective careers. After winning the competition, Kiley and Saarinen collaborated on many other major projects including: Irwin Union Bank in Columbus, Ohio (1954/1966); the IBM Building in Rochester, Minnesota (1956); Concordia College in Fort Wayne, Indiana (1958); Dulles International Airport in Chantilly, Virginia

¹⁷⁸ Ibid.

¹⁷⁹ Ibid, 12.

¹⁸⁰ Ibid, 13.

¹⁸¹ Kiley, “Jefferson National Expansion Memorial,” 109.

(1958); Stiles and Morse Colleges in New Haven, Connecticut (1963); the Miller House in Columbus, Ohio (1964/1974); and North Christian Church, also in Columbus (1964/1974).

Aside from the Jefferson National Expansion Memorial, Kiley has contributed to the design of many other notable landscapes, including: Union Carbide Building in Eastview New York in collaboration with Gordon Bunshaft (1956); the University of Chicago Law Library with Skidmore, Owings, and Merrill (1958); Stanley McCormick Court; Art Institute of Chicago (1962); Rochester Institute of Technology in Rochester, New York with Kevin Roche, Harry Weese and Edward L. Barnes (1964); the National Gallery of Art, East Wing, in Washington, D.C. (1971); Kennedy Library in Dorchester, Massachusetts with I.M. Pei (1978); Christian Theological Seminary Housing in Indianapolis with Edward L. Barnes (1984); Fountain Place in Dallas with I.M. Pei, H. Cobb and Harry Weese (1985); North Carolina National Bank in Tampa, Florida (1988); Pierpont Morgan Library in New York (1988); Getty Center for the Arts in Los Angeles with Richard Meier (1990); and the U.S. Air Force Academy in Colorado Springs (1992). Throughout his career, Kiley received numerous honors and awards for his landscape designs. He was one of the pioneers of the Modern movement in landscape architecture, along with Garrett Eckbo (1910-2000), Lawrence Halprin (1916-2009) and a few others.

Eero Saarinen (1910-61)

Eero Saarinen was born in Finland in 1910 and immigrated to the United States with his family in 1923. His father was the famous Finnish-American architect Eliel Saarinen, who eventually became the director of Cranbrook Academy of Art in Bloomfield Hills, Michigan. Eero spent his youth in the creative atmosphere of Cranbrook. In 1934, he graduated from Yale University School of Architecture with honors. After graduation he traveled throughout Europe on a two-year fellowship. Upon returning to Bloomfield Hills in 1936, he became a design instructor at Cranbrook. A year later, he formed an architectural partnership with his father. The partnership continued until the elder Saarinen's death in 1950, excluding a period during WWII when Eero worked for the Office of Strategic Services.¹⁸²

Winning the competition for the Jefferson National Expansion Memorial for St. Louis in 1948 established Eero as a talented architect in his own right. Upon the death of his father in 1950, Eero formed his own firm, Eero Saarinen and Associates, and subsequently designed a number of nationally recognized buildings. Among his best-known works are the following: Kleinhaus Music Hall in Buffalo, New York (1938); Crow Island School in Winnetka, Illinois (1939); First Christian Church in Columbus, Indiana (1942); Kresge Auditorium and the Chapel at the Massachusetts Institute of Technology (1955); U.S. embassies in London (1956) and Oslo (1956); the John Deere Administration Center in Moline, Illinois (1957); General Motors Technical Center in Warren, Michigan (1957); the TWA Terminal at John F. Kennedy Airport (1960); and the Vivian Beaumont Theater at the Lincoln Center for the Performing Arts in New York City (1965). One of Saarinen's most acclaimed buildings was Dulles Airport in Chantilly, Virginia (1963) in which he also collaborated with Dan Kiley as the landscape architect.

¹⁸² Michael A. Capps, "Eero Saarinen – Architect with a Vision" *accessed April 29, 2014*, <http://www.nps.gov/jeff/planyourvisit/architect.htm>.

While most architects have a recognizable style and preference for materials that characterizes much of their work, Saarinen's style has proved more challenging for critics to describe because he approached each project "as a unique opportunity to explore the spirit and expression of the building, the site, new materials, and technology."¹⁸³ Saarinen once explained, "...the common denominator of my work is the constant philosophy—the constant respect for the principles."¹⁸⁴ Among those principles of modern architecture that are perhaps best exemplified in Saarinen's Gateway Arch are "function, structure, and being part of our time."¹⁸⁵

Secondary Designers

John Ronscavage, NPS Landscape Architect

John Ronscavage was born in Hudson, Pennsylvania, in 1926. His education was interrupted by WWII and the Korean Conflict, as he served with the U.S. Marine Corps in the South Pacific and China Theaters. He graduated from the State University of New York at Syracuse with a degree in Landscape Architecture, and began a career as a planner and designer of Montreal City Parks, Quebec, Canada. Ronscavage then joined the NPS Western Offices of Design and Construction (WODC) in San Francisco, California. He worked under Park Landscape Architects, Robert Hall and Merrick Smith on "Mission 66" projects, including Yellowstone, Grand Teton, Black Hills and Western Coastal Parks. As a member of the WODC, Ronscavage received the Secretary of the Interior Unit Citation for the redesign and construction of the Old Faithful area at Yellowstone National Park for the Park Centennial Anniversary.

Later in his career, Ronscavage served the Lake States and Missouri with the DSC. He worked in the field for many years as Liaison with the Federal Highway Administration and the Bureau of Public Roads on major western road projects, notably Rocky Mountain area parks, and was awarded for a project in Yellowstone National Park. Also, Ronscavage gained recognition for the installation of the world's largest solar powered electrical generation system in Natural Bridges National Monument, Utah.

Upon retirement, Ronscavage was a volunteer consultant in the parks, and joined his wife, Judith, an interior designer, for the DSC on trips to her park projects. He also joined the Denver Art Students League to study water color painting under "Buffalo" Kaplinski. Ronscavage and his wife, who passed away in 2013, served the National Park Service for over fifty years.¹⁸⁶

¹⁸³ Robert J. Moore, Jr., ed., *The Gateway Arch, An Architectural Dream: A Collection of Essays Commemorating Jefferson National Expansion Memorial* (St. Louis: Jefferson National Parks Association, 2010), 36.

¹⁸⁴ Saarinen, *Saarinen on His Work*, 8.

¹⁸⁵ *Ibid*, 6.

¹⁸⁶ John Ronscavage provided his biographical information for this report. E-mail from Terri Urbanowski to Dale Jaeger, Cameron Yates, and Stephanie Bryan on April 14, 2014.

Harland Bartholomew (1889-1989)

Harland Bartholomew was born in Stoneham, Massachusetts in 1889. In 1916, he moved to St. Louis when the Civic League of St. Louis gave him the opportunity to create a comprehensive plan for the city of St. Louis. In 1919 he was appointed City Planning Commissioner and became the first full-time planner employed by an American city. That same year, he established Harland Bartholomew and Associates and served as its chairman until his retirement in 1962.

Harland Bartholomew and Associates designed city plans for several hundred cities across the United States. The firm's projects in the St. Louis area included the 1920 Comprehensive Plan, the 1932 Major Street Plan, the Jefferson National Expansion Memorial, and the 1920 Comprehensive Plan for University City. The firm also helped plan the Metro system and the George Washington Parkway, in Washington D.C. In 1984, Parsons Corporation bought the firm, and moved its flagship offices from St. Louis to Memphis, Tennessee. Harland Bartholomew passed away in St. Louis in December 1989.¹⁸⁷

Emmet Layton (1905-1985)

Emmet John Layton was born in 1905 in St. Louis, Missouri. He received both bachelors and masters degrees in architecture from Washington University in St. Louis. He trained at the Missouri Botanical Garden under Dr. Edgar S. Anderson and John Noyes. He also studied at the University of Massachusetts-Amherst under Frank Waugh. Layton's career as a landscape architect in St. Louis, Missouri spanned over thirty years. During this time, he was in private practice with his first wife and business partner, Ruth Layton. Together they operated under the name Layton, Layton and Associates. They offered the following services: landscape architecture; industrial development; site planning; land use studies; renewal programs; environmental design; recreational analysis and programming; master planning for parks, urban areas, institutions, new communities, subdivisions and housing projects; and comprehensive plans for cities, areas, and regions. From 1948-59 Layton taught courses on city planning and landscape architecture at Washington University's School of Architecture. During this period, Layton produced interim plans for the JNEM landscape until funding became available to construct Saarinen's Gateway Arch. Later in his career, Layton was appointed landscape architect at the University of Wisconsin-Green Bay. He passed away in Clearwater Beach, Florida in 1985.¹⁸⁸

¹⁸⁷ Historical Note from the Harland Bartholomew and Associates Collection, 1919-1977, Washington University Archives, St. Louis, MO. The historical note can be accessed at the following website:

<http://archon.wulib.wustl.edu/index.php?p=collections/controlcard&id=523>

¹⁸⁸ "Collection Historical Note," accessed February 26, 2014:

<http://archon.wulib.wustl.edu/index.php?p=collections/findingaid&id=615&q=emmett+layton&rootcontentid=362371#id362371>

Builder, Contractor, Laborers, Suppliers

The following is an alphabetized list of major contractors and subcontractors involved in design and construction of the Jefferson National Expansion Memorial landscape, including descriptions of services.¹⁸⁹

Davey Tree Service

Construction Contract No.: Unknown

Description: Transplanting of twenty-eight Rosehill white ash trees.

Fred Weber, Inc.

Construction Contract No.: Unknown

Description: Construction of parking garage and implementation of surrounding landscaping.

Hankins Construction Company

Construction Contract No.: CX6000-4-9017

Description: Installation of temporary maintenance building.

Harding Electric Company

Construction Contract No.: 6000-4-9009

Description: Installation of walk and area lighting, including forty-five light fixtures.

Harland Bartholomew and Associates

A/E Contract No.: CX 2000-7-0013

Description: Reformatting existing site development drawings and specifications.

Hillside Gardens

Construction Contract No.: Unknown

Description: Replacement of 186 trees, eighteen species.

Hoel-Steffen Construction Company

Construction Contract No.: 14-10-0232-774

Description: Construction of Gateway Arch and interim visitor center.

Kozeny-Wagner Construction Company

Construction Contract No.: 14-10-7-971-267

Description: Implementation of Site Development Phase I, including the following: Schedule I grading and drainage along the north-south axis of Gateway Arch; Schedule II waterproofing and drainage of the Visitor Center; and Schedule III seeding.

Construction Contract No.: CX6000-5-9005

Description: Construction of grand staircase.

Subcontractors: Allied Plumbing Contractors (drainage); Louis Payne Electric Company (electric); Valley Sod Inc.

¹⁸⁹ Much of the information in this section derives from "Appendix A: List of Landscape Contracts & Contractors" in the AECOM, *Cultural Landscape Report* (May 2010).

Construction Contract No.: 4970B10045

Description: Construction of visitor center addition.

MacDonald Construction Company

Construction Contract No.: (Multiple) Unknown.

Description: Removal of the elevated railroad tracks and relocation of track through a 960-foot tunnel with an eighteen-foot vertical clearance; construction of two open railroad cuts: a 731' long cut on the north and an 840' long cut on the south; construction of retaining walls for the open cuts; construction of a tunnel connecting the two open cuts; excavation of the Gateway Arch foundations; excavation of the visitor center and its subterranean museum; redevelopment of the levee; construction of the north and south overlooks and construction of the Gateway Arch.

Millstone Associates, Inc.

Construction Contract No.: 4970B10107

Description: Implementation of Site Development Phase II, Schedules I and II, including the following: implementation of sidewalks, roads to HVAC, and SHIPREC; installation of 280 tree wells, fourteen concrete benches, and spreading of topsoil.

Construction Contract No.: 4970B2009

Description: Site Development Phase II, Schedules III & IV, including installation of sprinkler system.

Construction Contract No.: CX 2000-3-0033

Description: Title I: preparation of topographical or field surveys, test borings, other subsurface data; Title II: adaptation of Government designs, drawings, and specifications; preparation of preliminary and final working drawings, advice and interpretation of plans and specifications during construction; Title III: supervision and inspection of construction, review and approval of shop drawings, preparation of operation manuals, preparation of as-constructed drawings.

Rock Hill Mechanical Corporation

Construction Contract No.: CX 6000-6-9011

Description: Improvements to Visitor Center mechanical systems.

Eero Saarinen and Associates

A/E Contract #: 14-10-529-2039 (contract completed by successor firm of Kevin Roche John Dinkeloo and Associates)

Description: Production of design and construction documents for Gateway Arch.

Sahrman Construction Company

Construction Contract No.: CX-6000-4-9018

Description: Implementation of overlook paving.

Shelton & Sons Landscaping

Construction Contract No.: CX 6000-9-9003, package 206.

Description: Planting Plan Phase II, consisting of the following: planting trees, shrubs, and ground cover; seeding lawn areas; spreading imported topsoil; and extension of irrigation system.

Shuster Engineering, Inc.

Construction Contract No.: CX 6000-8-9003

Description: Site Development Phase I, II, III, consisting of the following: installation of water mains, storm drainage system, and electrical distribution; paving of concrete road and walkways; and landscaping, such as top soiling, seeding, and tree wells.

Subcontractors: Sahrman Contracting Company (concrete); Gartland Company Incorporated (plumbing); Samuel Kraus Company (engineering); Shelton & Sons Landscaping (planting).

Construction Contract No.: CX 6000-9-9005, package 225.

Description: Entrance repairs.

Schuster Engineering, Inc.

Construction Contract #: CX 6000-8-9004

Description: Relocation of generator.

Suburban Tree Service

Construction Contract No.: 4970B20053

Description: Planting Plan Phase I, including the following: grounds construction; grounds preparation; planting 573 trees, including Rosehill white ash, black pine, and Eastern redbud.

Treeland Nurseries

Construction Contract No.: CX6000-5-0049; File S7212 Federal Records Center

Description: Replacement of mugo pine, pyracantha, and fragrant sumac on top of levee slope, south of the grand staircase, along fence line and railroad open cut walls, north and south of the stairway, on slope around south service center entrance to the visitor center, and around fenced area of generator building.

Construction Contract #: CX6000-6-0032; File S7217 Federal Records Center

Description: Replacement of dead plant material. Treeland Nurseries planted 110 trees and 1,330 shrubs, while the grounds crew planted sixty-eight trees.

WVP Corporation

Construction Contract #: unknown.

Description: Problem analysis, alternative remedial solutions, construction documents for the parking garage and surrounding landscape.

Historical Context

The design competition for the Jefferson National Expansion Memorial occurred during the postwar era when the United States had emerged as the most prosperous and powerful industrialized nation in the world. Many practitioners of the day thus viewed architecture as full of limitless possibilities. At this time, the modern style of architecture, pioneered by Frank Lloyd Wright, Le Corbusier, Ludwig Mies van der Rohe, and others, had developed into the “international” style.¹⁹⁰ Still, the modern movement remained difficult for landscape architects to sell in terms of site design despite it saturating the architectural scene across the United States and Europe.

Overall, Modernism was defined by an embrace of abstraction, a questioning of tried-and-true forms and formalities, and a willingness to experiment with forms and materials. The pure geometries and monolithic materials that characterized Modernist designs lacked the traditional details and decorative motifs of earlier styles. Modernist designers felt that new technologies had rendered old styles and ways of building obsolete.¹⁹¹ Accordingly, the architects who entered the design competition for the Jefferson National Expansion Memorial had freedom to develop their own concepts and to determine what a memorial site should be in terms of design and materials.

The Jefferson National Expansion Memorial architectural competition was the first major one of its kind held postwar in the United States. The amount of prize money allocated to the winning team made the competition one of the largest at that point with regards to prize money. The competition thus drew entrants from all over the United States, including established architects, such as Walter Gropius, Eliel Saarinen, Charles Eames, Skidmore Owings and Merrill, Louis Khan, Eugene Mackey, Edward D. Stone, and Kazumi Adachi.¹⁹² For winners Eero Saarinen and Dan Kiley, the competition became their first major public design commission. It also provided them an opportunity to apply modern design to both the structures and the landscape.

Saarinen and Kiley’s close collaboration on the memorial resulted in an integrated design. In a 1961 interview, Saarinen explained his holistic approach: “I see architecture not as the building alone but the building in relation to its surroundings.”¹⁹³ While working together on the Jefferson National Expansion Memorial, Saarinen and Kiley nurtured a close relationship that set a precedent for their continued collaboration on other significant projects. Among the collaborative projects between Saarinen and Associates and the Office of Dan Kiley are the following: the Irwin Miller Residence, Columbus, Indiana in 1953; the Dulles Airport in 1958; and the Oakland Museum in 1962. Through these projects Kiley attempted to understand the modern trends in landscape architecture as they paralleled architecture, which was similar to his approach for the Jefferson National Expansion Memorial.

¹⁹⁰ Moore, *The Gateway Arch*, 25.

¹⁹¹ U.S. Department of the Interior, *Jefferson National Expansion Memorial Cultural Landscape Report*, updated by AECOM for the National Park Service, Department of the Interior (May 2010), 4-2.

¹⁹² Moore, *The Gateway Arch*, 25.

¹⁹³ Quoted in Mary V. Hughes (NPS Regional Historic Landscape Architect), “Understanding the Design Intent of Dan Kiley’s St. Louis Arch Landscape,” unpublished paper, written for the National Park Service, n.d. Originally published in an Eero Saarinen interview from *Perspecta Seven*, (1961), 32.

After Saarinen and Kiley submitted the winning entry for the Jefferson National Expansion Memorial in 1948, they made many modifications to their design. From 1948-64, the site plan evolved when Kiley was maturing as a designer. It was during this period that Kiley developed his preference for geometrically ordered landscapes and clear axial alignments.¹⁹⁴ By the time Kiley completed his final conceptual planting plan in 1964 (approved in 1966) for the Jefferson National Expansion Memorial, he had incorporated dense lines of regularly spaced trees in place of the more naturalistic woodland represented on the competition drawing. Kiley's design vocabulary of *allées* and grids was strongly influenced by André Le Nôtre, the 17th-century French landscape designer and gardener to King Louis XIV. Kiley's technique of integrating these classical elements into a modern composition came to characterize his major works.

The design competition for the Jefferson National Expansion Memorial launched Kiley's career as a designer. Subsequently, he became one of the nation's most important postwar landscape architects in the United States. Kiley's career was prolific, spanning nearly half a century. In addition to collaborating with Eero Saarinen and Associates on other projects, he also paired with other important architects, such as Louis Kahn and I.M. Pei to create internationally acknowledged examples of Modernist design.

The Jefferson National Expansion Memorial is considered one of the best and most significant built examples of Modern design in the United States—in terms of both its architecture and landscape architecture.¹⁹⁵ When selecting the arch to symbolize the memorial, Saarinen recalled the simple geometric forms evident in other iconic monuments: Robert Mill's Washington Monument, based on an Egyptian obelisk, which reflects a vertical line; Henry Bacon's Lincoln Memorial, based on a Greek Doric temple, which suggests a cube; and John Russell Pope's Jefferson Memorial, inspired by the Pantheon, which integrated a globe. Many critics have argued that the Gateway Arch is one of Saarinen's greatest designs. A quote by Saarinen's daughter, Susan, explains, "Dynamic and timeless, it fully embodies the pioneer spirit of the American people and has the power to inspire across all nations and cultures."¹⁹⁶

From the onset, the NPS has recognized the significance of the Jefferson National Expansion Memorial since President Franklin D. Roosevelt signed Executive Order 7253 in 1935, permitting the Secretary of the Interior to acquire and develop the site of Old St. Louis as a memorial. Subsequently, the property was designated the country's first national historic site under the Historic Sites Act of 1935. In 1966, only a few years after construction of the Gateway Arch, it was listed on the National Register of Historic Places. In addition, the Jefferson National Expansion Memorial was designated a National Historic Landmark in 1987. It was not until 1996, however, after Historic Landscape Architect Regina Bellavia completed the *Jefferson National Expansion Memorial Cultural Landscape Report* when the NPS began to formally recognize the significance of the memorial's landscape design, in its own right.

¹⁹⁴ Gregg Bleam, "The Work of Dan Kiley," *Modern Landscape Architecture: A Critical Review*, ed. Marc Treib (Cambridge, MA: The MIT Press, 1993), 237.

¹⁹⁵ AECOM, *Cultural Landscape Report*, 4-2.

¹⁹⁶ Moore, *The Gateway Arch*, 36.

PART II: PHYSICAL INFORMATION

Landscape Character and Description Summary

The major character-defining landscape features that contribute to the significance of the Jefferson National Expansion Memorial include the Gateway Arch; the overall form of the landscape and the spatial organization of its various features; designed views; the system of walks; the single-species *allées*; the north and south ponds; the north and south overlooks and their accompanying staircases; the railroad open cuts and tunnels; the depressed service areas; the central grand staircase; the bald cypress circles; the entrance ramps into subterranean visitor center and museum; and the concrete benches.

Character-Defining Features

Topography

Saarinen designed the landform of the JNEM landscape with curving lines on the ground plane to reflect the catenary curve geometry characteristic of the Gateway Arch. The ground plane underneath the Gateway Arch is mostly flat at an elevation approximately 446' above mean sea level. The elevation gently increases to the northern and southern edges of the memorial and culminates at two high points. These high points, which protect the Gateway Arch from potentially damaging winds, sit at elevations of about 470'. These elevations reflect a vertical change of approximately 25' from the Gateway Arch.

Toward the west of the Gateway Arch, a gentle slope rises 19' to a berm that parallels Memorial Drive. As intended by Saarinen and Kiley, this berm provides a visual base to the Old Courthouse while effectively concealing Memorial Drive. Contractors added excess fill material to the berm from 1978-81, which elevated it from the original height. Saarinen and Kiley's design also incorporated berms near the northwestern and southwestern edges of the site. These, too, were elevated with excess fill material; the southwest berm is 6' higher than specified on Saarinen's original plan, while the northwest berm is 14' higher. The NPS intended for these raised berms to function as sound barriers from nearby traffic.

Saarinen intended for other topographical features on site to serve as visual barriers. For example, in order to hide the operational activities of the memorial from visitors, Saarinen depressed the topography around the service areas and maintenance facility. Saarinen also designed a combination of open cuts and tunnels so that the railroad track onsite would cause minimal distraction in the memorial setting. In addition, Saarinen sited the north and south ponds at some of the lowest elevations in the landscape as he conceived for them to function as part of the drainage system while also serving as an aesthetic feature. In contrast, Saarinen constructed the two overlooks high above the river levee to provide vantage points for visitors.

Overall, the NPS implemented the topographic features according to Saarinen's design intent. Several modifications have occurred since construction of the JNEM landscape, however. For example, contractors hired by the NPS constructed small berms along the north and south walks on the east side of the memorial to eliminate a drainage problem and to deter pedestrians from

walking on the lawn. The topography also has undergone minimal, incremental changes during seasonal turf renovation. Drainage problems in areas throughout the landscape have led to erosion, which, in turn, has further altered the designed topography of the JNEM landscape.

Spatial Organization

Saarinen and Kiley used a Modern interpretation of Beaux-Arts compositional principles to design the space of the memorial. They organized and unified the overall site by combining a nearly symmetrical plan with an east-west primary axis, a north-south secondary axis, and repetitive curvilinear forms that reflected the form of the Gateway Arch. They centrally located the monumental Gateway Arch in the landscape to establish an immediate connection between it, the Old Courthouse, and the river. They situated the overlooks to provide views of the river at the northeastern and southeastern edges of the site. Throughout the landscape, they planned for rows of trees to frame views of the Gateway Arch and for curvilinear north and south ponds to offer reflections of it.

Saarinen and Kiley achieved a monumental character to the landscape by varying the scales and relationships of the spaces and by creating a spatial experience of compression and expansion along the length of the pedestrian walks. Kiley's selection and placement of plant materials also contributed to the monumental character of the landscape. During implementation, the NPS altered Kiley's planting plan by changing species and quantities of plant materials. Inevitably, these changes affected the pattern of spatial organization as intended by Saarinen and Kiley.

When the NPS diminished the number of plants in the landscape plan, the implemented design contained fewer enclosed spaces, thresholds, and edges than originally planned by Kiley. In addition, implemented visual barriers were weakened because the NPS reduced the density of plantings around the north and south ponds, the Old Cathedral parking lot, maintenance area, service areas, railroad tunnels, and along Memorial Drive. Generally, the planting plan of the *allées* along the walks achieves Kiley's intended sense of enclosure. Still, the Rosehill white ash trees differ in size and form from the tulip poplar, which Kiley originally selected to give the feeling of a tall forest.

Overall, the as-built landscape reflects Saarinen and Kiley's design intention for spatial organization. Features, such as the Gateway Arch, pedestrian paths, overlooks, steps, north and south ponds, etc. exist in the locations specified on Saarinen and Kiley's designs.

Vegetation

Single-species Allées

Kiley's final conceptual planting plan called for the planting of three rows of tulip poplar trees along the pedestrian walks. The monoculture was the strongest single feature of the plan. Kiley intended for the tall trees to define the pedestrian space and conceptually strengthen the simplicity of the Gateway Arch and surrounding site design. During the first major phase of

construction, the NPS Western Service Center of Design and Construction changed the monoculture from tulip polar to Rosehill white ash. Despite the change in plant material, the NPS maintained the spacing as specified on Kiley's approved 1966 plan.

In the JNEM landscape, the oldest trees of the Rosehill white ash monoculture were planted from 1969-71. Consequently, many have reached maturity and are in fair condition. In November 2013, the landscape contained 707 Rosehill white ash trees, while 145 were missing. Of those existing, many are replacements in kind since 1981. Although the NPS did not implement the tulip poplar originally selected by Kiley, they carried out his concept of a monoculture with specified alignment and spacing. The rounded form of the Rosehill white ash, however, has given a different aesthetic appearance from the columnar form of the proposed tulip poplar.

Bald Cypress Circles

Kiley's final conceptual planting plan proposed two dense circles of bald cypress trees: one in the northwest portion of the park with fifty-one trees and another in the southwest section with seventy trees. These areas appeared on earlier plans by Saarinen and Kiley and were intended as campfire interpretive areas. During the second major planting phase of the late 1970s and early 1980s, the NPS planted thirty-four bald cypress trees in the northwest portion and thirty in the southwest. These plantings were nearly half the quantity specified by Kiley.

As implemented, the JNEM landscape contains two circles of bald cypress trees on site. In November 2013, the northwest circle consisted of thirty-one trees, while the southwest circle had twenty-nine. Several of the trees are replacements of the original planting. Although the NPS does not use the cypress circles as campfire interpretive areas, their overall form and plant material reflect Saarinen and Kiley's original concept. Still, when the NPS reduced the number of trees planted, it lessened the intimate feeling Kiley intended for the space to evoke.

Circulation

Entrance Ramps and Steps to the Subterranean Visitor Center and Museum

Eero Saarinen and Associates designed the entrance ramps and steps to the subterranean visitor center and museum. The concept of entering the Gateway Arch at the base was important because it dramatically affected the visitor experience. The sequence of approaching the Gateway Arch from across the memorial landscape then being able to touch the base, descending below, and finally ascending to the top provided visitors a breathtaking experience of contrast in scale. Saarinen intended for visitors to use concrete steps alongside portions of the ramps as sitting walls. Initially, the ramps were made of terrazzo tiles, which the NPS replaced with granite pavers in 1983 to ameliorate slippery conditions created by rain and ice. The steps, or architectural sitting walls, were made of poured concrete. While some of the materials have changed over time, the implemented ramps generally reflect the form and structure according to their original design.

Central Grand Staircase

Saarinen designed the central grand staircase to symbolize “the movement of peoples through St. Louis, the gateway.”¹⁹⁷ The stairs were a grand physical connection between the city and the riverfront. Saarinen cited the central grand staircase above the relocated railroad tracks to provide visitors direct access to the Gateway Arch. He designed the staircase to be 500' wide at the top and 291' wide at the bottom, with curved sides to reflect the form of the Gateway Arch. He also specified the treads to decrease in depth from the bottom (about 4') toward the top (about 1'-6") to “dramatize the upward sweep of the approach to the arch.”¹⁹⁸ For aesthetic purposes, he designed the risers to be 9" instead of the standard 6".¹⁹⁹

In 1974, HB&A redesigned the tread-riser relationship of the steps to a more consistent relationship of 6" risers and 1'-3" treads. HB&A also modified the design to include landings and snow-melting mats, which were not part of Saarinen’s original concept. HB&A developed the construction documents so that the central grand staircase would be constructed in two phases. Phase I, which included construction of two disconnected sections, occurred from 1975-76. Some of the original support beams and pilings constructed during the early 1960s were utilized for this project. Phase II of construction connected the two previously implemented sections and was completed in 2003.

Despite the changes HB&A made to the design, the implemented central grand staircase fulfills the location, function, general appearance and overall alignment of Saarinen's plan. In November 2013, the central grand staircase appeared in good condition. The middle section that was constructed in 2003, however, exhibited lighter coloring than the two side sections constructed from 1975-76. In addition, some of the seams between the middle and side sections of the central grand staircase were separating or shifting.

North and South Overlook Staircases

While the central grand staircase provided direct access to the Gateway Arch from the river, the north and south overlook staircases gave visitors an indirect route where they could experience other features of the designed landscape. For example, Saarinen designed the north and south overlook staircases to terminate at the elevated overlooks so that visitors could pause and view the Mississippi River before taking the pedestrian paths that would eventually lead to the Gateway Arch. Similar to the central grand staircase, Saarinen designed the north and south overlook staircases to be wider at the top than at the bottom thereby creating a curvature along the sides that would reflect the form of the Gateway Arch. He also specified the treads to decrease in depth toward the top of the staircases while the risers remained a consistent 9".

¹⁹⁷ Saarinen, *Saarinen on His Work*, 18.

¹⁹⁸ *Ibid.*

¹⁹⁹ Robert J. Moore, Jr., telephone conversation with Bruce Detmers, October 31, 1995 (transcript on file in the JNEM archives).

Saarinen completed a detailed plan and sections of the staircases leading to the north and south overlooks by November 1960.²⁰⁰

On February 9, 1961, the NPS awarded a construction contract to MacDonald Construction Company, which included construction of the north and south overlook staircases according to specifications by Eero Saarinen and Associates. Prior to construction, Saarinen's office spent a considerable amount of time testing the safety of the stairway design by constructing a full-scale mock-up of the steps in plywood. Unfortunately, the overlook steps were one of the few features of Saarinen's site design that he would see constructed before passing away on September 1, 1961.

In November 2013, the north and south overlook staircases appeared as implemented by MacDonald Construction Company. Because the staircases have settled since construction, the height of the risers ranges from 7-7/8" to 9-1/2". The steps decrease in depth from about 11' at the base to 3' at the top to create a curved vertical line in the same family as that of the Gateway Arch. The north overlook staircase contains fifty-eight steps, while the south overlook staircase has sixty-one. The overlook staircases have a Sika Top coating added to their surfaces. This material was noted as cracking and has separated from the stairs in many places. Poor drainage has contributed to the deterioration of the overlook staircases. Water seepage and pooling occurs on the overlook staircases during and after rain events.

System of Pedestrian Paths

The pedestrian circulation system of the JNEM landscape formed the basis of Saarinen and Kiley's site plan and thus is a significant character-defining feature. Saarinen and Kiley's circulation patterns provided a framework for people to move through the landscape and experience the Gateway Arch at different vantage points. Saarinen intended for the curvature of the walks to mimic the form of the Gateway Arch. The alignment of the walks strengthened the axial arrangement of the site design.

Saarinen and Kiley did not specify construction material for the walks, however. Accordingly, the sidewalks were implemented with exposed aggregate concrete as specified by NPS landscape architects. The NPS implemented the walks, which are about 16' wide, according to the alignment designed by Saarinen and Kiley. Some sections have been replaced or repaired since construction while others are deteriorating. One of the most significant changes the NPS made to the circulation system of the JNEM landscape was not constructing the pedestrian overpasses at Memorial Drive as proposed on Saarinen and Kiley's plans.

²⁰⁰ Eero Saarinen and Associates, Section Detail through proposed design for grand staircase, November 1960. (NPS, JNEM Archives, Gateway Arch Drawings 1938-1987, Record Unit 120, Drawer 22, Folder 12) For plans, elevations, and details of the overlook steps, refer to: NPS, JNEM Archives, Gateway Arch Drawings 1938-1987, Record Unit 120, Drawer 10, Folders 5 and 6.

Views and Vistas

East-West Axis, Between the Arch and the Old Courthouse

Saarinen created a vista by situating the Gateway Arch parallel to the river and on axis with the Old Courthouse. He intended for this vista to establish a strong visual relationship between the river and the city it influenced. He also placed the Gateway Arch so that this vista would emphasize the horizontality of the structure. Throughout design development, Saarinen and Kiley planned for the space around the base of the Gateway Arch to remain as open lawn thereby providing unobstructed views from the Gateway Arch to the Old Courthouse and vice versa.

To frame the vista, Kiley designed dense rows of trees along the outer edge of the curving pedestrian paths on either side of the lawn at the base of the Gateway Arch. Various site and planting plans produced by Saarinen and Kiley during design development showed their intent to frame the vista from the Old Courthouse to the Gateway Arch with rows of trees planted along the northern and southern edges of Luther Ely Smith Square.

During the 1950s, Emmet Layton created a temporary plan to improve the JNEM landscape, including a design for Luther Ely Smith Square (then referred to as the Riverfront Garden). Layton's plan called for trees to line the northern and southern edges of the square. Probably because the Gateway Arch had not yet been constructed, Layton's plan also called for the tree plantings to extend along the eastern edge of the square thereby terminating the view from the Old Courthouse to the river.²⁰¹ The trees along the eastern edge of Luther Ely Smith Square, however, were thinned after the Gateway Arch was constructed.²⁰²

Overall, the vista between the Old Courthouse and the Gateway Arch was implemented according to Saarinen's design and retains its strong axial alignment. The NPS slightly modified the vista from 1978-81, when contractors raised the original height of the berm that parallels Memorial Drive. When facing the Old Courthouse from the base of the Arch, the elevated berm may block more from the view than originally intended by Saarinen.

North-South Axis

While Saarinen designed the vistas from the east-west axis to emphasize the horizontality of the Gateway Arch, he intended for the north-south axis to highlight its verticality. Kiley planned the tight and consistent spacing of the trees along the gentle curve of the walks to give visitors a feeling of shelter while occasional openings would reveal glimpses of the Gateway Arch. The

²⁰¹ Refer to the following drawing: Office of Emmet Layton, Landscape Architect, "Landscape Development for Jefferson Memorial Plaza," date illegible. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_9015_[40767-2]) Also refer to the following photograph, which shows the implemented Riverfront Garden according to Layton's plan: "View of the Riverfront Garden" (later referred to as Luther Ely Smith Square), facing west toward the Old Courthouse, Ca. 1950. (NPS, JNEM Archives, Jefferson National Expansion Memorial Visual Reference Collection; VPRI-003824)

²⁰² Refer to the following photograph: "Jefferson National Expansion Memorial, Looking toward the Gateway from the Courthouse," Ca. 1960. Photo by M. Woodbridge Williams. (NPS, JNEM Archives, Jefferson National Expansion Memorial Visual Reference Collection, Visual Image No. 79-203)

NPS modified these views when they approved the planting of Rosehill white ash trees instead of the taller tulip poplars specified by Kiley. As the Rosehill white ash trees have grown substantially since they were planted from 1969-71, they are beginning to block the lower portion of some of these designed views.

Water

North and South Ponds

Kiley's 1966 approved planting plan depicted lagoons, or ponds, on the northwest and southwest portions of the site. Kiley also proposed an island on the north end of each pond with narrow footbridges for access. Kiley depicted the edges of the north and south ponds as complex and sinuous. In combination with the groupings of plants, Kiley intended for the intricate shapes to create a variety of intimate spaces along the edges of the north and south ponds. The north and south ponds also served to reflect the Gateway Arch.

By 1969, HB&A had modified the plans for the north and south ponds. While HB&A retained the curvilinear form of the north and south ponds, they simplified the design with less intricate and irregular geometry. In addition, they removed the islands and footbridges from the plan. The NPS hired Schuster Engineering to construct the north and south ponds from 1978-81. Although the sizes, shapes, and locations of the north and south ponds are comparable to Saarinen and Kiley's design, the simplified form represents a deviation from their original intent. Still, the edges of the north and south ponds mimic the curvature of the Gateway Arch. In addition, the north and south ponds continue to serve their function in reflecting the Gateway Arch from different vantage points.

Buildings and Structures

Depressed Service Areas

Saarinen and Kiley's plan sited various service areas as zones, including the generator building (north service area), shipping and receiving area (south service area), maintenance facility, and parking garage. Although Saarinen and Kiley did not design these zones in detail, their plans clearly showed the location of operational facilities within low points in the topography and screened by vegetation. Saarinen and Kiley did not appear concerned with the formal characteristics of the service facilities as they intended for these facilities to remain screened from public view.

The implemented service areas fulfill Saarinen and Kiley's concept as the NPS followed their intent to site them in low areas. The structures remain unobtrusive within the landscape. The NPS modified the design of the depressed service areas when they reduced the quantity of plants that Kiley had designed to screen the maintenance facility from view. Consequently, portions of the maintenance facility remain visible from some of the walks in the south end of the JNEM landscape.

Gateway Arch

The Gateway Arch, a 630' high, weighted, inverted catenary curve, underwent construction from 1962-65. The structure was constructed of 172 triangular, double-walled sections of stainless steel. The transportation system intended to bring visitors to the top of the Gateway Arch was completed in 1968. Saarinen intended for the tall structure to symbolize the "Gateway to the West." The Gateway Arch has not undergone any major structural changes since its construction and it retains its historical symbolism.

North and South Overlooks

Saarinen designed the overlooks to provide a place for visitors to view the Mississippi River and the activities that took place on the river. From 1960-62, the overlooks were constructed at an elevation of approximately 457' above sea level as designed by Eero Saarinen and Associates. The overlooks were 4,000' apart at the north and south ends of the JNEM landscape. Each overlook included a 56' x 60' building intended as museums that would interpret railroad and river transportation. Saarinen designed the building roofs as viewing platforms with concrete parapet walls and metal railings. The implemented east walls of the overlooks ranged from a few feet to 54' high and were an extension of the floodwall system. Saarinen designed the walls to curve vertically as well as horizontally to reflect the form of the Gateway Arch.

The overlooks have undergone few changes since their construction. Visitors use the spaces to view the river. The NPS has never used the interior of the north overlook as museum space and instead used it for storage. From 1990-91, the NPS installed ramps to facilitate moving materials in and out of the space. They also installed gates at the top of the ramps for safety. The south overlook interior space was not constructed. The overlooks have numerous condition problems, including spalling, efflorescing, and crumbling concrete, failing expansion joints, and water infiltration within the floodwalls.

North and South Railroad Open Cut Tunnels

Saarinen conceptualized and designed the north and south railroad open cut tunnels, which the MacDonald Construction Company implemented from 1959-62. Per Saarinen's specifications, the tunnels were comprised of poured concrete walls. The implemented north tunnel measures approximately 720' long while the south one is about 840' long. Both tunnels are 5' high. Saarinen designed a clearance of about 18' between the top of the railroad track and the underside of the tunnel. According to Saarinen's design, the MacDonald Construction Company also built a tunnel measuring 960' beneath the grand staircase to connect the two open cut tunnels. Saarinen designed a curved entrance to the tunnels to reflect the form of the Gateway Arch. The open cut tunnels have not undergone any significant modifications since their construction. In November 2013, the Terminal Railroad Association was noted as continuing to use the tracks.

Small-scale Elements

Concrete Benches

In 1960, Eero Saarinen and Associates designed benches for the levee development. The benches they proposed were 10' long, 2'-3" wide, and 1'-4" high. Eero Saarinen and Associates intended for the benches to have limestone tops set on a limestone block and concrete base. A steel dowel threaded through the base, block, and portion of the bench top would have anchored it together. It is unknown as to whether these benches were ever constructed on the levee.

NPS Western Service Center landscape architect John Ronscavage designed concrete benches for the JNEM landscape in May 1971. The size and construction specifications for the benches were similar to the design specifications proposed by Eero Saarinen and Associates. Ronscavage changed the material from limestone to concrete, however. The benches were constructed during two phases. Seven benches were constructed on the east side of each rest area during the first phase while seven more were installed at each rest area on the west side during the second phase. The NPS also installed benches similar to those designed by Ronscavage on the landings of the central grand staircase, which the NPS removed at an unknown date.

In November 2013, fifty-six concrete benches reflecting the specifications by Ronscavage existed in the JNEM landscape. The NPS have added many of these since 1996. Because Ronscavage mostly retained the size and construction specifications of the benches despite changing the material, the benches still reflect Saarinen's design intent.

PART III: SOURCES OF INFORMATION

Drawings, Plans

The Jefferson National Expansion Memorial (JNEM) Archives contains a large quantity of original and reproduced drawings and plans related to the conception, design development, and construction of the memorial site. They are located inside the Old Courthouse at 11 North Fourth Street, St. Louis, Missouri 63102. In addition, Kevin Roche and John Dinkeloo and Associates maintain an archive of Saarinen's work, including many original drawings. Their address is 20 Davis St., Hamden, Connecticut 06517.

The following is a list of plans and drawings referenced in the history section of this document.

Barr, J. Henderson. Perspective View, 1948. (NPS, JNEM Archives, Jefferson National Expansion Memorial Association Records Circa 1930-1975, Record Unit 104, Box 32, Folder 10, JNEM Visual Image 104-321)

Chan, Gargar. Comparison Sketch of Saarinen's lighting detail and NPS lighting detail, Drawing Nos. D-120-909 and D-120807. (NPS, JNEM Archives, Gateway Arch Drawings 1938-1978, Record Unit 120, Drawer 15, Folder 4)

City of St. Louis, Missouri

January 1983 "Arch Parking Garage," Drawing No. 366-60902, Sheets 2 of 93, prepared by WVP Corporation. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_60902_[128958])

"Arch Parking Garage – Landscape Plan" Drawing No. 366-60902, Sheets 3 of 93, prepared by WVP Corporation, January 1983. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_60902_[128958])

de Maillard de Bois Saint Lys, Georges. "Plan de la Ville de St. Louis des Illinois sur le Mississippi, avec les differents projets de la Fortifier" (Map), 1796, 12 1/2 x 17 inches. (Missouri History Museum, Map Collection, LibAcc-2013-0885)

Eero Saarinen and Associates

1949 Hill Tunnel Plan. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)

1957 Site Plan Studies. (multiple) (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)

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| October 1957 | Site Plan with 2-foot contour interval, Drawing 1 of 4. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) |
| April 1959 | Site Plan. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) |
| October 1959 | Site Plan – Part 1 of 2. (NPS, JNEM Archives, Collection Name, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) |
| February 1960 | Site Plan. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) |
| | Schematic Planting Plan. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) |
| August 1960 | Site Plan. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) |
| November 1960 | Section Detail through proposed design for grand staircase. (NPS, JNEM Archives, Gateway Arch Drawings 1938-1978, Record Unit 120, Drawer 22, Folder 12) |
| December 9, 1960 | Eero Saarinen and Associates, Drawing No. NHS-JNEM 3077 E-4, Construction detail of Walk Lighting. (NPS, JNEM Archives, Gateway Arch Drawings 1938-1978, Record Unit 120, Drawer 22, Folder 2) |
| 1960 | Drawing SD-13, Bench Detail and Plan. (NPS, JNEM Archives, Gateway Arch Drawings 1938-1978, Record Unit, 120, Drawer 23:7, File No. D-120-906) |
| Ca. 1960 | Studies of the proposed pedestrian overpasses (Multiple). (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) |
| National Park Service | |
| May 1942 | “Rehabilitation of Old Courthouse, Jefferson National Expansion Memorial,” Drawing No. 8118, Sheet 2 of 2, prepared by the Architectural Division at the St. Louis Office, May 1942. (NPS, JNEM Archives) |
| August 1969 | San Francisco Planning and Service Center, Drawing No. 366/41001-B, <i>Site Development, Arch, Phase I, Jefferson National Expansion Memorial</i> , Sheet 1 of 11, drawn by Patten and checked |

by Ronscavage, revised January 1970. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_41001B_[111690])

San Francisco Planning and Service Center, Drawing No. 366/41001-C, *Site Development, Phase I (por), Arch, Jefferson National Expansion Memorial*, Sheets 1-9, drawn by Patten and checked by Ronscavage, revised January 1970 and April 1970. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_41001C_[39036])

May 1971 Drawing No. 366/41009A, Sheets 1-4, drawn by John Ronscavage. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_41009A_[169963])

Western Service Center, drawing number 366/41009, *Site Development, Phase II, Arch, Jefferson National Expansion Memorial*, Sheets 1-18. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_41009_[25977])

August 1971 Denver Service Center, Drawing No. 366/41006, "Planting, Phase I, Arch, Jefferson National Expansion Memorial," Sheets 1-4, drawn by Ronscavage. (NPS, JNEM Archives)

June 1974 Denver Service Center, Drawing No. 366/41019, "Site Development, Arch Grounds, Jefferson National Expansion Memorial," Sheets 1-54, created by Harland Bartholomew and Associates. (NPS, JNEM Archives, Gateway Arch Drawings 1938-1978, Record Unit 120, Drawer 15, Folder 3; NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_41019_[147027])

Denver Service Center Drawing No. 366/41025 showing proposed phased development of grand staircase, by Harland Bartholomew and Associates. (NPS, JNEM Archives, Gateway Arch Drawings 1938-1978, Record Unit 120, Drawer 18, Folder 11)

October 4, 1974 Denver Service Center, Drawing No. 366/41027, "Planting Plan, Arch Grounds, Jefferson National Expansion Memorial," Sheets 1-14, created by Harland Bartholomew and Associates. (NPS, JNEM Archives, Gateway Arch Drawings 1938-1978, Record Unit 120, Drawer 15, Folder 3; NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_41027_[44001])

November 9, 1973 Denver Service Center, Drawing. No. 366/41037, "Site Development Plan - Phase II (North Section)," Sheets 1-36,

created by Harland Bartholomew and Associates, approved by Donald McLane, Acting Regional Director. (NPS, JNEM Archives, Gateway Arch Drawings 1938-1978, Record Unit 120, Drawer 17, Folder 5)

National Park Service, Denver Service Center, Drawing. No. 366/41038, "Planting Plan - Phase II (North Section)," Sheets 1-10, created by Harland Bartholomew and Associates, approved by Donald McLane, Acting Regional Director. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_41038_[17934])

Denver Service Center, Drawing. No. 366/41039, "Site Development Plan - Phase III (South Section)," Sheets 1-38, created by Harland Bartholomew and Associates, approved by Donald McLane, Acting Regional Director. (NPS, JNEM Archives, Gateway Arch Drawings 1938-1978, Record Unit 120, Drawer 18, Folder 4)

Denver Service Center, Drawing. No. 366/41040, "Planting Plan - Phase III (South Section)," Sheets 1-10, created by Harland Bartholomew and Associates, approved by Donald McLane, Acting Regional Director. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_41040_[60415])

Denver Service Center, Drawing. No. 366/41041, "Site Development - Phase IV (Levee Section)," Sheets 1-11, created by Harland Bartholomew and Associates, approved by Donald McLane, Acting Regional Director. (NPS, JNEM Archives)

Denver Service Center, Drawing. No. 366/41042, "Planting Plan - Phase IV (Levee Section)," Sheets 1-10, created by Harland Bartholomew and Associates, approved by Donald McLane, Acting Regional Director. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_41042_[75193])

December 1978

Denver Service Center, Drawing. No. 366/41047, "Planting Plan – Arch Grounds," Sheets 1-23, drawn by Hall, checked by Ronscavage. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_41047B_[44707])

Office of Dan Kiley

- February 1960 Sectional Studies. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)
- August 1960 Planting Plan Adjacent Railroad Cuts. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)
- December 1961 Master Plan. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)
- December 1962 “Approach to the Gateway Arch from the Southwest, Summer.” Watercolor rendering by Peter Ker Walker, December 1962. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)
- “Approach to the Gateway Arch from the South, Winter.” Watercolor rendering by Peter Ker Walker. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)
- Design Development Plan (watercolor). (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)
- “View from Pedestrian Overpass toward River.” Rendering by Joseph Karr. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)
- “View Towards Arch from C-C.” Rendering by Joseph Karr. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)
- “Wharf Street Looking North, Autumn.” Watercolor rendering by Peter Ker Walker. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)
- March 1963 Conceptual Planting Plan. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)
- Section and Plan Details of Tulip Poplar Plantings. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)
- September 1963 Study Sketches of Proposed Views within the Jefferson National Expansion Memorial. (multiple) (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12)

1964 Final Conceptual Planting Plan. Approved by the National Park Service in February 1966. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_41001_[21820])

Office of Emmet Layton, Landscape Architect

Date Unknown "Landscape Development for Jefferson Memorial Plaza." (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_9015_[40767-2])

"Landscape and Suggested Site Improvements for Old Cathedral." (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_9015_[40767-1])

Saarinen, Saarinen, & Associates

1947 Stage One submission, perspective and axonometric views. (NPS, JNEM Archives, Jefferson National Expansion Memorial Records Circa 1930-1975, Record Unit 104, Box 28, Folder 51, JNEM Visual Image 104-252)

Stage One submission, plan and section views. (NPS, JNEM Archives, Jefferson National Expansion Memorial Association Records Circa 1930-1975, Record Unit 104, Box 28, Folder 51, JNEM Visual Images 104-251)

1948 Winning Competition Entry, plan and section views. (NPS, JNEM Archives, Jefferson National Expansion Memorial Association Records, Circa 1930-1975, Record Unit 104, Box 28, Folder Number 52, JNEM Visual Images 104-253 through 104-254, 104-576)

U.S. Department of the Interior, National Park Service, "Area to be Acquired to Accompany Declaration of Taking for City Block No." Ca. 1936. (NPS, JNEM Archives, Jefferson National Expansion Memorial Association Records Ca. 1930-1975, Record Unit 104, Box 12, Folder 11)

Historic views, photographs

The Jefferson National Expansion Memorial Archives contain a large collection of historic photographs and slides that document the development and construction of the JNEM landscape and its various features. The photographs listed below are referenced in the history section of this document.

Ca. 1942 St. Louis riverfront after demolition of warehouses. (NPS, JNEM Archives, Jefferson National Expansion Memorial Visual Reference Collection, Visual Image No. 017954)

Ca. 1950 View of the Riverfront Garden facing west toward the Old Courthouse. (NPS, JNEM Archives, Jefferson National Expansion Memorial Visual Reference Collection, VPRI-003824)

1960 Construction of railroad open cut walls and tunnel. Photo by Arteaga (NPS, JNEM Archives, Jefferson National Expansion Memorial Visual Reference Collection, Visual Image No. 106-3732)

Photograph of the Memorial grounds used for municipal public parking. The image also shows the landscaping implemented around the Old Cathedral and part of the Riverfront Garden. (NPS, JNEM Archives, Jefferson National Expansion Memorial Visual Reference Collection, VPRI-003824)

Ca. 1960 “Jefferson National Expansion Memorial, Looking toward the Gateway from the Courthouse.” Photo by M. Woodbridge Williams. (NPS, JNEM Archives, Jefferson National Expansion Memorial Visual Reference Collection, Visual Image No. 79-203).

1961 Construction of the north overlook. Photo by Arteaga. (NPS, JNEM Archives, Jefferson National Expansion Memorial Visual Reference Collection, Visual Image No. 106-3792)

1975 Aerial view of memorial grounds after Phase I of landscape construction. Photo by Arteaga. (NPS, JNEM Archives, Jefferson National Expansion Memorial Visual Reference Collection)

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Interviewed by Emmeline Morris, William Shealy, and Stephanie Bryan at the Jefferson National Expansion Memorial on November 8, 2013.

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Glenn O. Hendrix, Chief, Design and Construction, SSC to Acting Assistant Director, Design and Construction, May 26, 1969. (NPS, JNEM Archives, Record Unit 106, Box 36, Folder 12)

Glenn O. Hendrix, Chief, Environmental Planning and Design, WSC to J.E.N. Jensen, Associate Director, Professional Services. June 25, 1970. (NPS, JNEM Archives, Record Unit 106, Box 36, Folder 27)

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Dan Kiley, Landscape Architect.

Interviewed by Mary Hughes at the Jefferson National Expansion Memorial on October 21, 1991. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 5, Folder 15)

Interviewed by JNEM Historian Robert J. Moore, Jr. on July 22, 1993, at the Kiley studio in Charlotte, Vermont. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 5, Folder 15)

Eldridge Lovelace, former Partner, Harland Bartholomew and Associates. Interviewed by JNEM Historical Landscape Architect Regina Bellavia on December 6, 1994. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 8, Folder 6)

John Ronscavage and Jim Holland, Landscape Architects who worked on the JNEM landscape. Interviewed by JNEM Historical Landscape Architect Regina Bellavia on November 15, 1994. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 7, Folder 7)

Kevin Roche, Architect with Roche-Dinkeloo. Interviewed by JNEM Historian Robert J. Moore Jr. on October 12, 1994, in Hamden Connecticut. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 8, Folder 3)

Susan Saarinen, Landscape Architect. Interviewed by JNEM Historian Robert J. Moore, Jr. on October 12, 1995, in Denver Colorado. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 8, Folder 16)

Terry Boyle, Landscape Architect with the Office of Dan Kiley. Interviewed by Landscape Architect Gregg Bleam and JNEM Historical Landscape Architect Regina Bellavia on July 27, 1995. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 8, Folder 2)

Sources not yet investigated

Center for Collections and Research, Cranbrook Academy of Art, Manuscript and Records Collections

The archives at Cranbrook Academy of Art contain historical documents related to Eero Saarinen and his work on the Jefferson National Expansion Memorial.²⁰³ Some of their items, however, are also available in the Jefferson National Expansion Memorial Archives. The following is a list of collections that may yield further information:

- *Architectural Drawings Collection* includes several conceptual schemes by Eero Saarinen.
- *Jack M. Goldman Collection of Eero Saarinen and Associates Material* includes articles on the Jefferson National Expansion Memorial from 1962-91, presentation boards, photographs, and slides.
- *Saarinen Family Papers Ca. 1880-1989* includes articles and correspondence related to the Jefferson National Expansion Memorial.

Jefferson National Expansion Memorial Archives

The Jefferson National Expansion Memorial Archives contains numerous resources related to the design, development, and construction of the memorial. Their archives are comprised of both public and private collections that contain photographs and slides, plans and drawings, models, correspondence, oral history transcripts, newspaper article clippings, superintendent reports, etc.²⁰⁴ Research for the history section of this report did not include an exhaustive survey of these resources. Therefore, the archives likely contain additional resources that would reveal more information about the history of the Jefferson National Expansion Memorial.

²⁰³ Finding aids for the various research collections at Cranbrook Academy of Art can be accessed via the following website: <http://www.cranbrook.edu/center/archives>.

²⁰⁴ Online finding aids for the Jefferson National Expansion Memorial Archival Collections can be accessed via the following website: <http://www.nps.gov/jeff/historyculture/archival-collections.htm>

The following is a list of collections that contain information most relevant to the history and development of the Jefferson National Expansion Memorial landscape:

- Record Unit 103 – *United States Territorial Expansion Memorial Committee Records, 1933-1973.*
- Record Unit 104 – *Jefferson National Expansion Memorial Association Records, Ca. 1930-1975.*
- Record Unit 118 – *Jefferson National Expansion Memorial Research Reports.*
- Record Unit 119.00 – *Newspaper Clippings: Creation of the Memorial.*
- Record Unit 119.01 – *Newspaper Clippings: Superintendency of Superintendent John L. Nagle.*
- Record Unit 119.02 – *Newspaper Clippings: Superintendency of Superintendent John L. Nagle.*
- Record Unit 119.04 – *Newspaper Clippings: Superintendency of Superintendent Julian C. Spotts, November 16, 1940-January 31, 1959.*
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- Record Unit 119.08 – *Newspaper Clippings: Superintendency of Superintendent LeRoy R. Brown, February 17, 1974-March 23, 1975.*
- Record Unit 119.09 – *Newspaper Clippings: Superintendency of Superintendent Robert S. Chandler, March 24, 1975-February 10, 1979.*
- Record Unit 120 – *Gateway Arch Drawings, 1938-1987.*
- Record Unit 125 – *Administrative History Collection.*
- Record Unit 126 – *Adeline Smith Boyd Papers.*
- Record Unit 128 – *Cultural Landscape Report.*

*Special Collections, Frances Loeb Library, Graduate School of Design, Harvard University.
Dan Urban Kiley Papers, 1912-2004.*

The Frances Loeb Library houses a large manuscript collection of Dan Kiley. The library's online finding aid states that Tube 0134 contains "substantial literature" from 1947 to 1963 relating to the design and construction of the Gateway Arch, including the design competition. The collection includes perspective drawings, planting plans, and prints. This collection was not researched for this report and therefore may yield further information about the Jefferson National Expansion Memorial landscape.²⁰⁵

²⁰⁵ The online finding aid for this collection can be accessed via this website:
<http://oasis.lib.harvard.edu/oasis/deliver/~des00008#t0134>.

Washington University Archives, Emmet Layton Papers, 1923-1984

The design of Luther Ely Smith Square (formerly known as the “Riverfront Garden”) is attributed to landscape architect Emmet Layton. The collection of his papers at the Washington University Archives was not researched for this report and thus may include correspondence, plans, drawings, or other types of historical documents related to his work at the Jefferson National Expansion Memorial during the 1950s.²⁰⁶

²⁰⁶ An online finding aid for this collection can be accessed at this website:
<http://archon.wulib.wustl.edu/index.php?p=collections/controlcard&id=615&q=emmett+layton>

PART IV: PROJECT INFORMATION

Documentation of the JNEM landscape was prepared by staff members of The Jaeger Company in accordance with the Indefinite Delivery / Indefinite Quantity Contract under the prime Architect-Engineer Service consultant, HDR Engineering, as a task order for the National Park Service. The project was contracted through the NPS Denver Service Center (DSC) with participation from the Jefferson National Expansion Memorial (JNEM). Individuals who participated in the project are as follows:

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HALS Photography

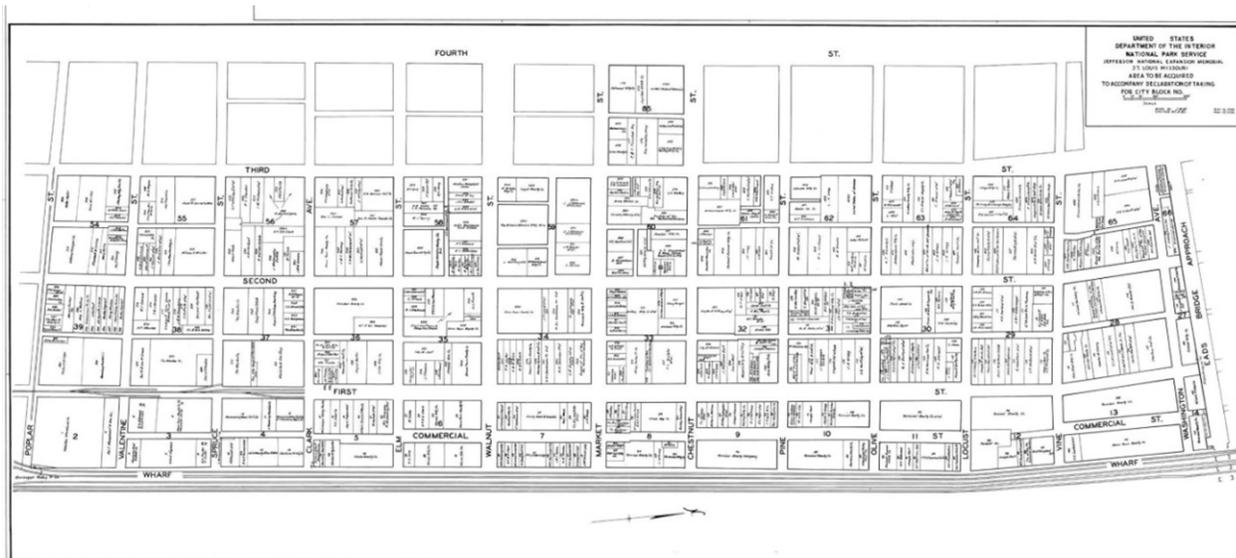
Lee Anne White, Photographer

SUPPLEMENTAL MATERIALS

Drawings, Plans

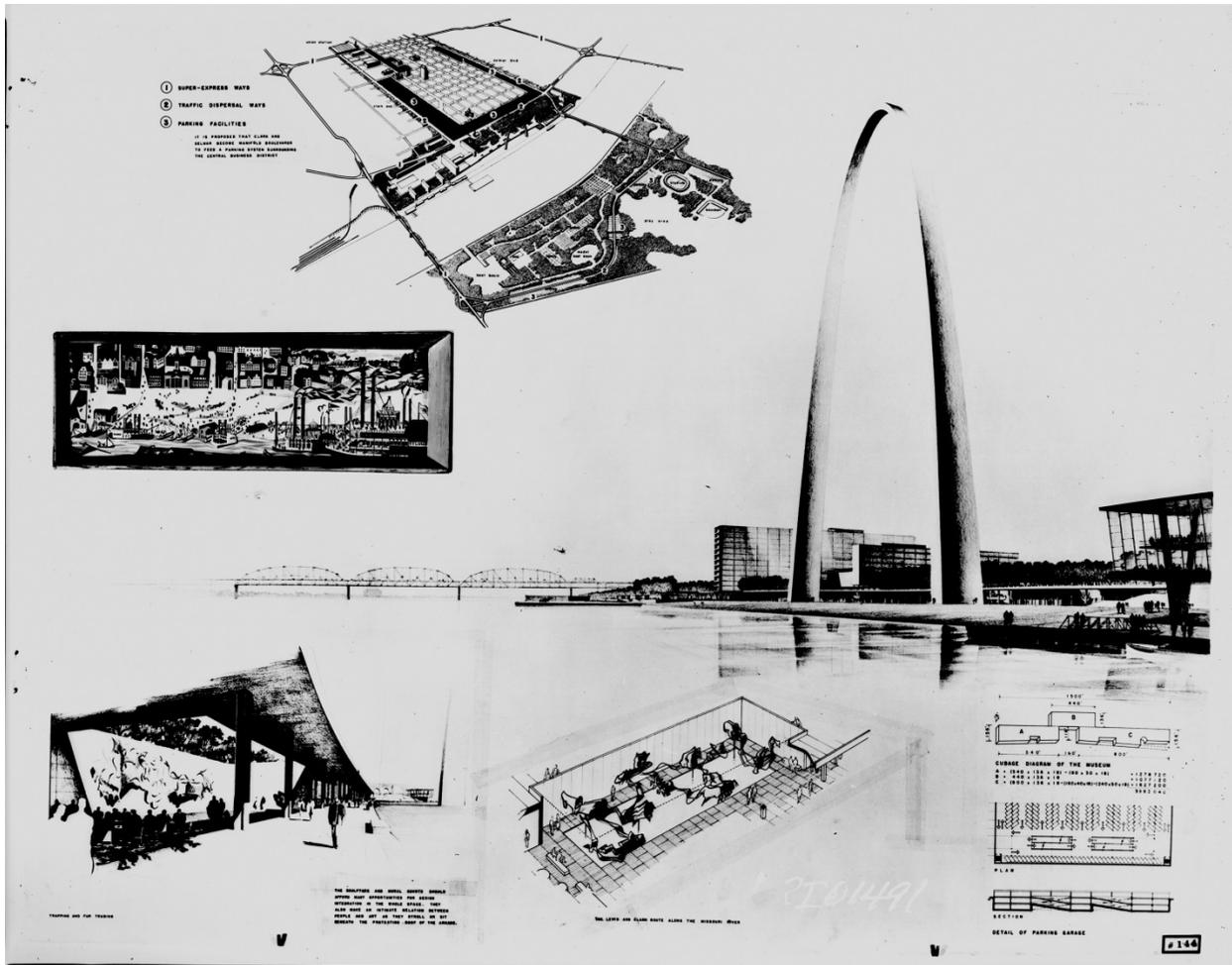
The following are reduced-size reproductions of some of the drawings and plans referenced in the history section of this document. They are organized in chronological order.

U.S. Department of the Interior, National Park Service, "Area to be Acquired to Accompany Declaration of Taking for City Block No." Ca. 1936. (NPS, JNEM Archives, Jefferson National Expansion Memorial Association Records Ca. 1930-1975, Record Unit 104, Box 12, Folder 11) Image shown below.



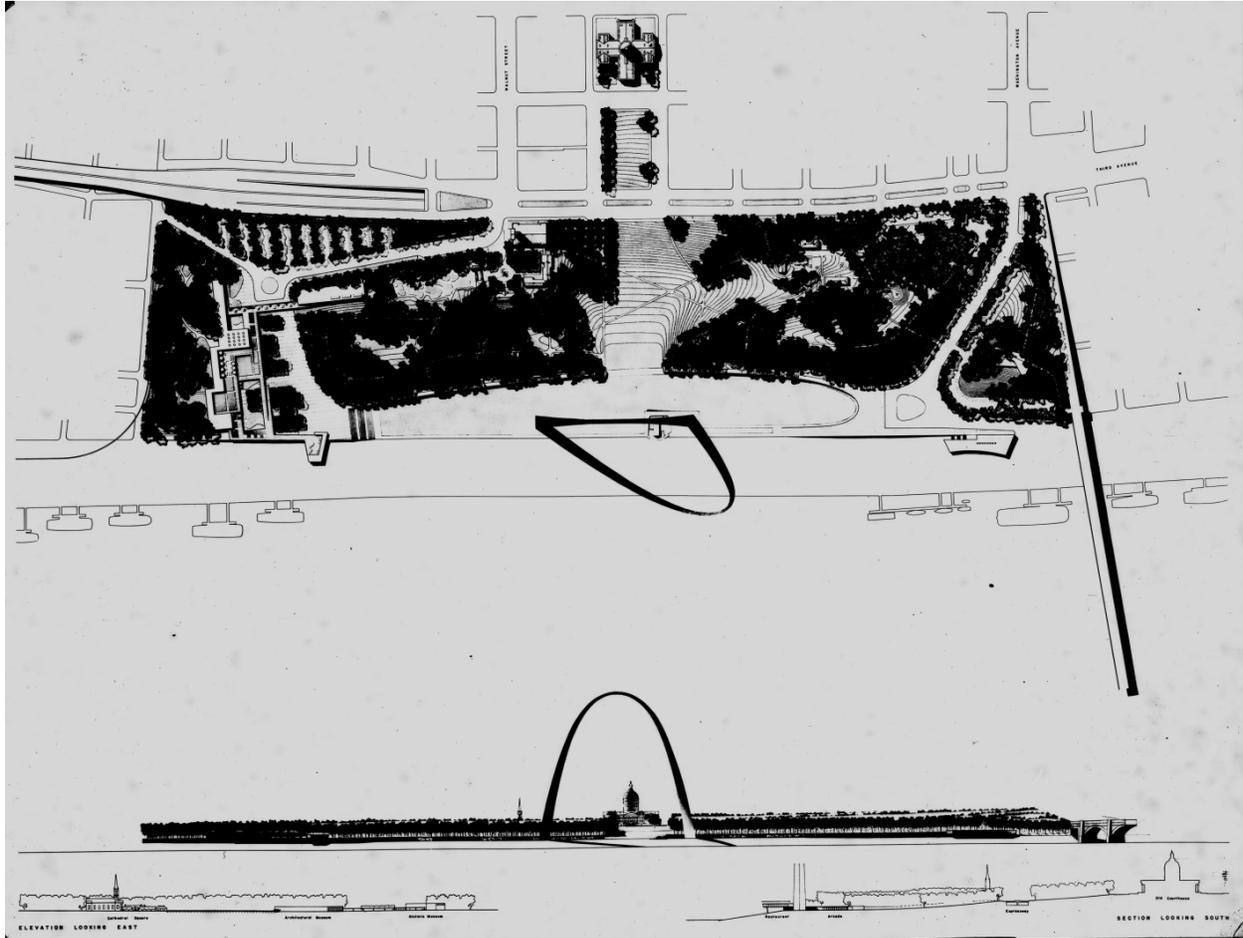
JEFFERSON NATIONAL EXPANSION MEMORIAL,
 HALS NO. MO-6 (Page 72)

Saarinen, Saarinen, & Associates, Stage One submission, perspective and axonometric views, 1947. NPS, JNEM Archives, Jefferson National Expansion Memorial Records Circa 1930-1975, Record Unit 104, Box 28, Folder 51, JNEM Visual Image 104-252) Image shown below.



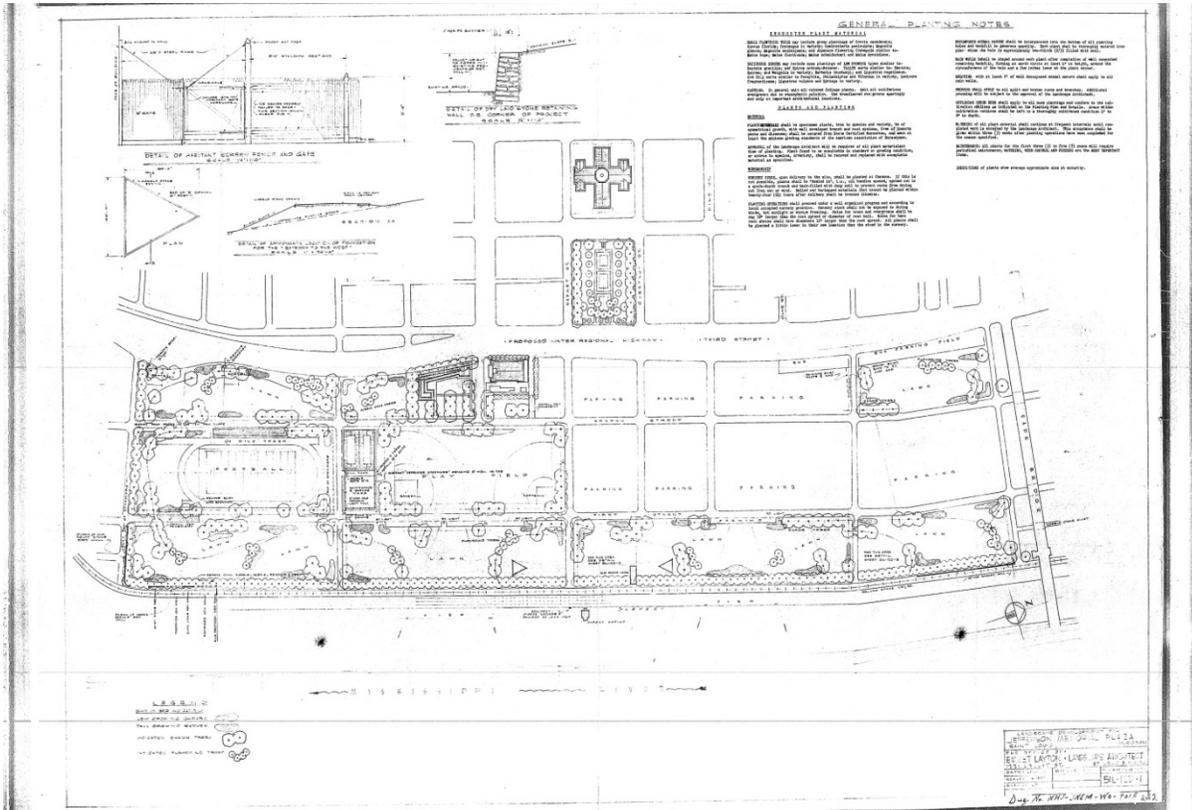
JEFFERSON NATIONAL EXPANSION MEMORIAL,
HALS NO. MO-6 (Page 74)

Saarinen, Saarinen, & Associates, Winning Competition Entry, plan and section views, 1948.
(NPS, JNEM Archives, Jefferson National Expansion Memorial Association Records, Circa
1930-1975, Record Unit 104, Box 28, Folder Number 52, JNEM Visual Images 104-253 through
104-254, 104-576) Image shown below.

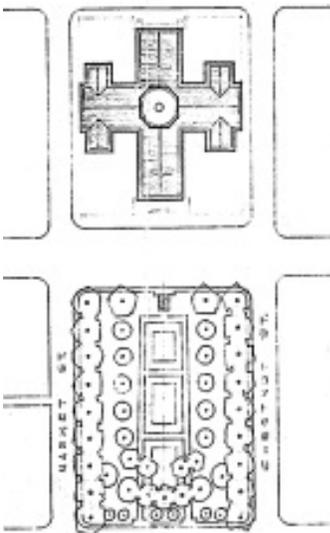


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HALS NO. MO-6 (Page 75)

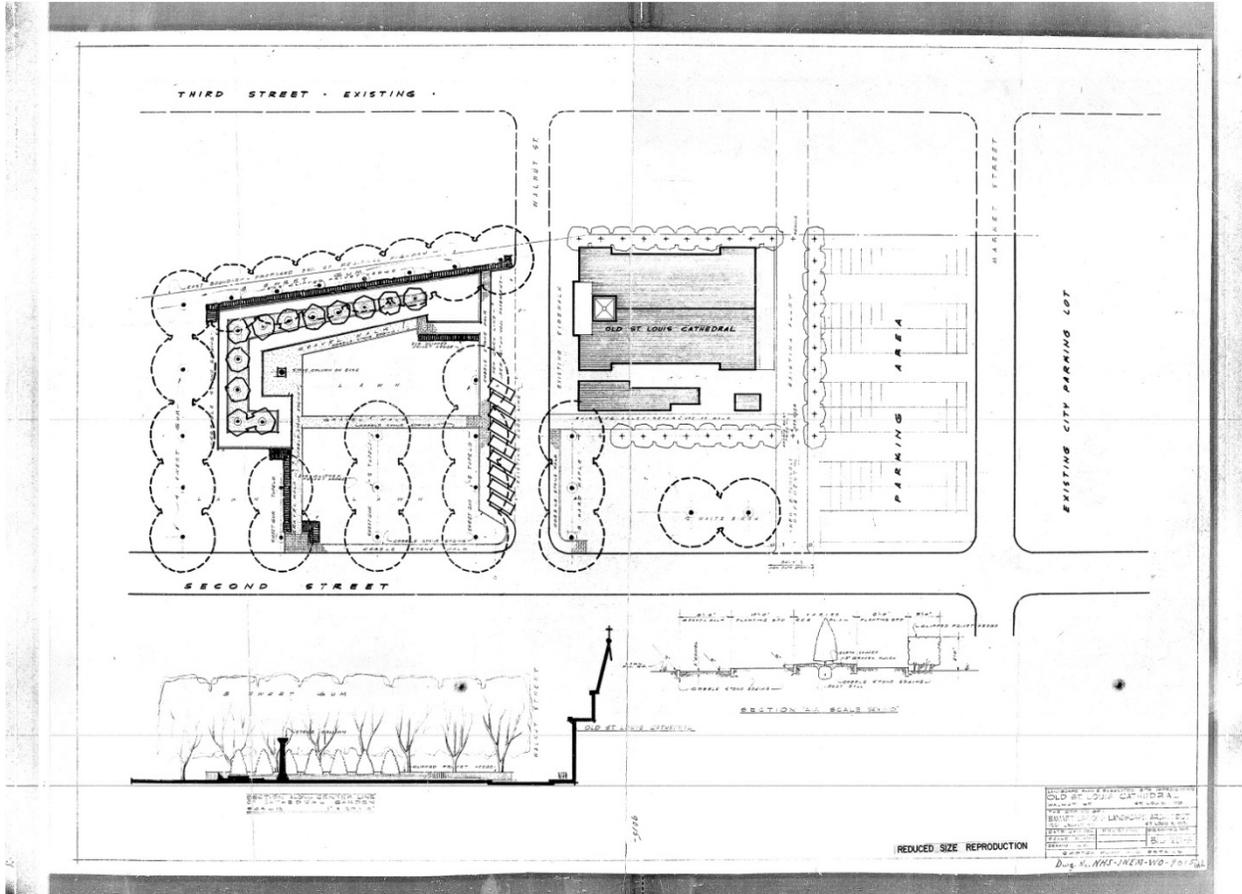
Office of Emmet Layton, Landscape Architect, "Landscape Development for Jefferson Memorial Plaza," date illegible. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_9015_[40767-2]) Image shown below.



Detail of Luther Ely Smith Square from the previous drawing. Image shown below.

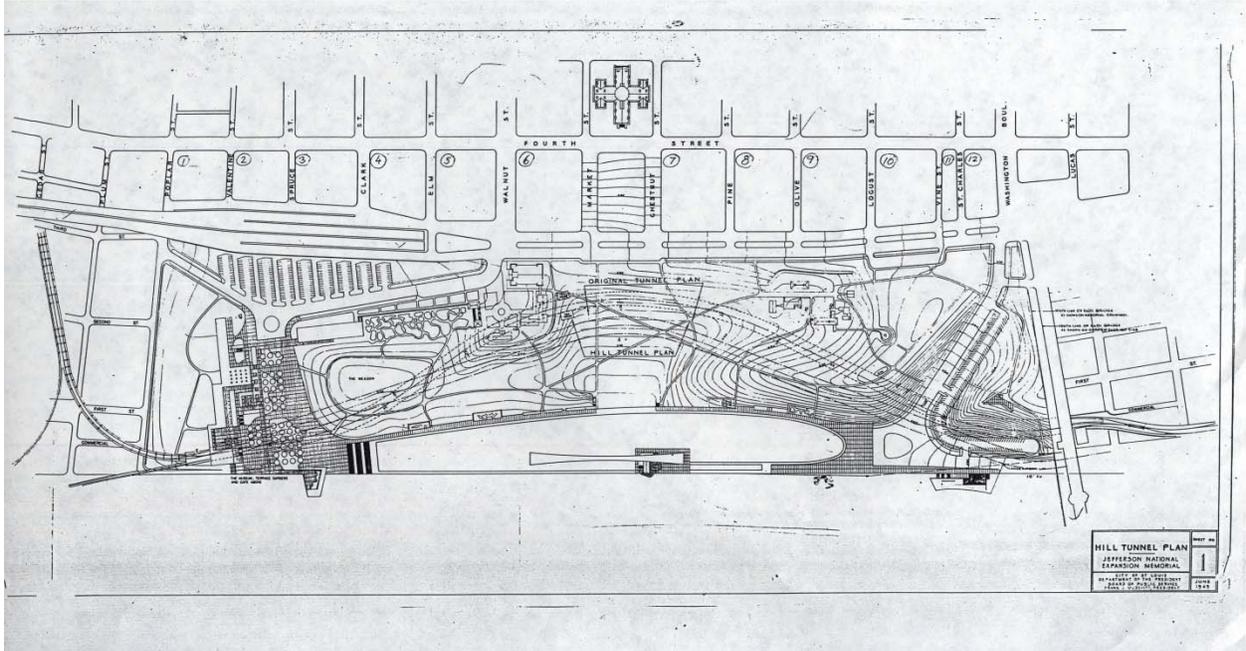


Office of Emmet Layton, Landscape Architect, "Landscape and Suggested Site Improvements for Old Cathedral," date illegible. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_9015_[40767-1]) Image shown below.

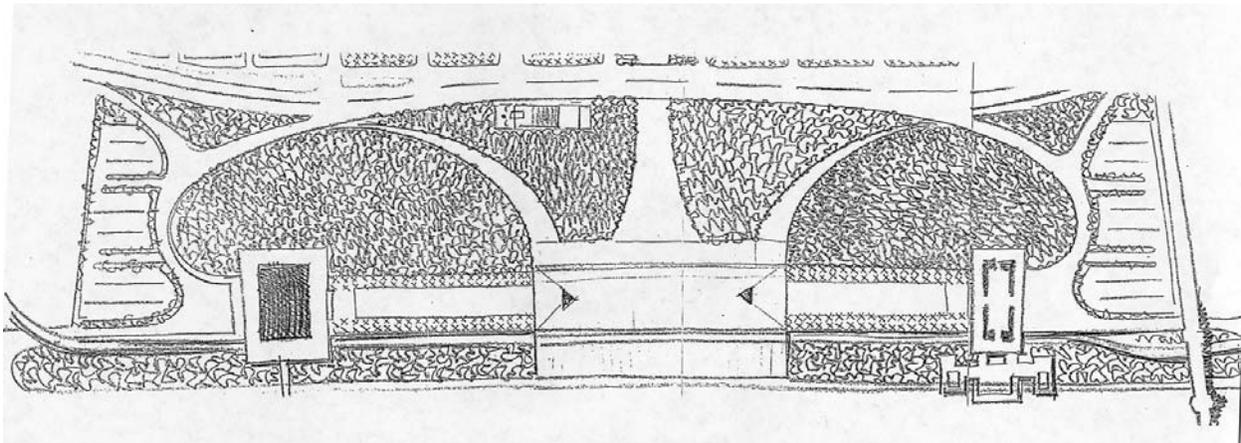


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HALS NO. MO-6 (Page 77)

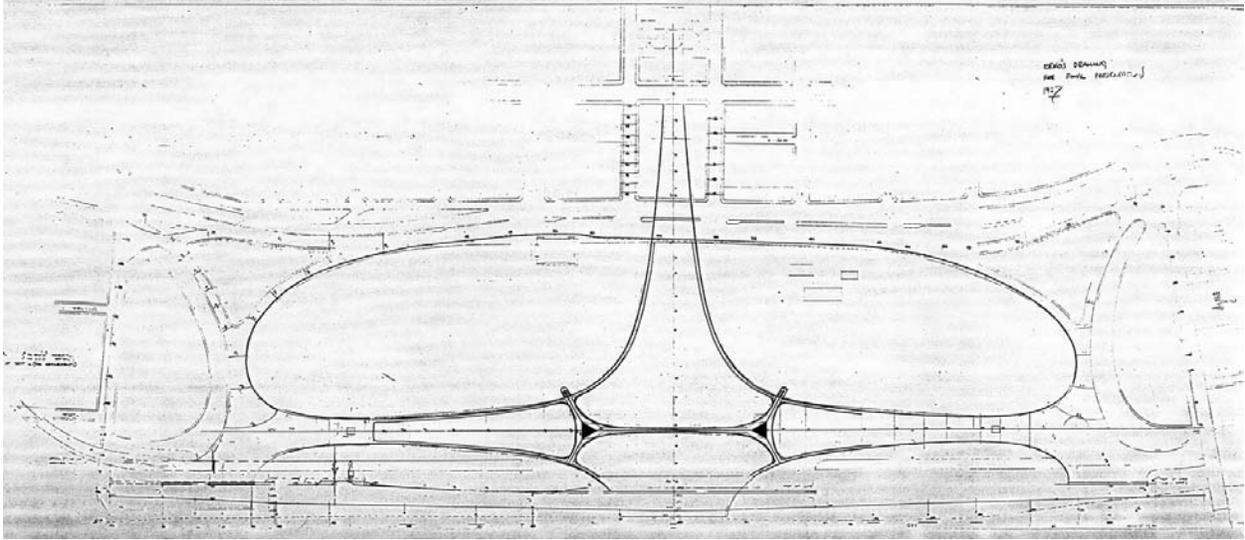
Eero Saarinen and Associates, "Hill Tunnel Plan," 1949. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.



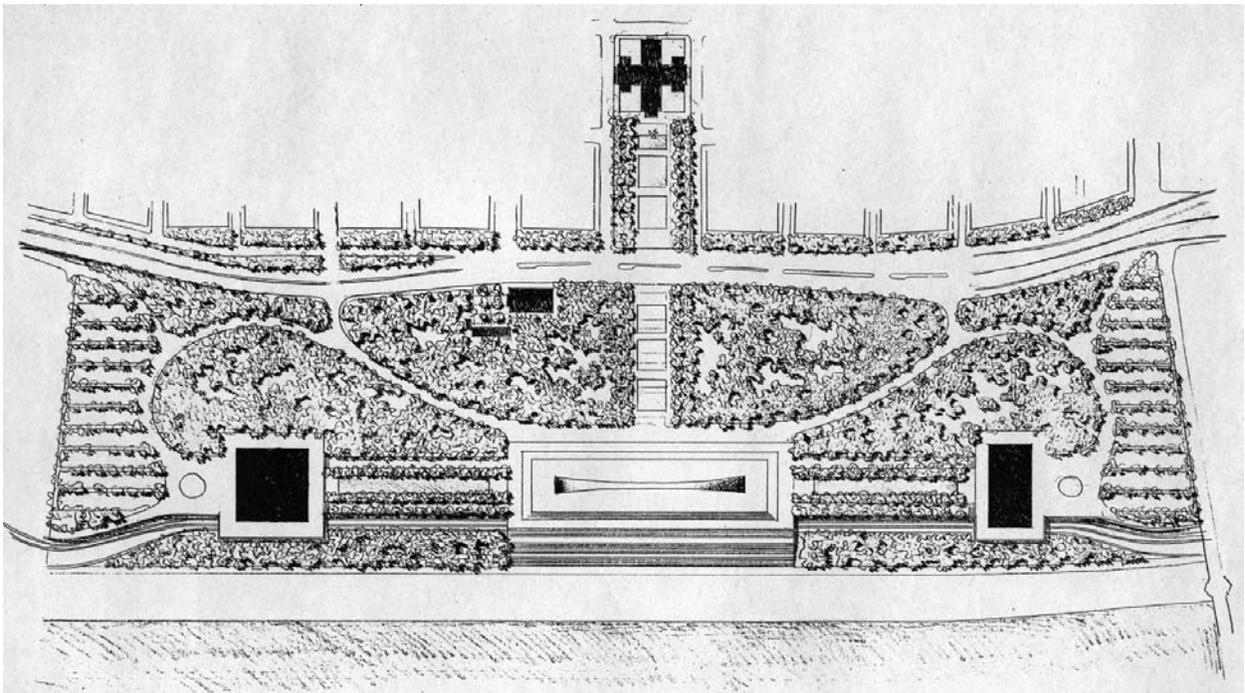
Eero Saarinen and Associates, Site Plan Study, 1957. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.



Eero Saarinen and Associates, Site Plan Study, 1957. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.

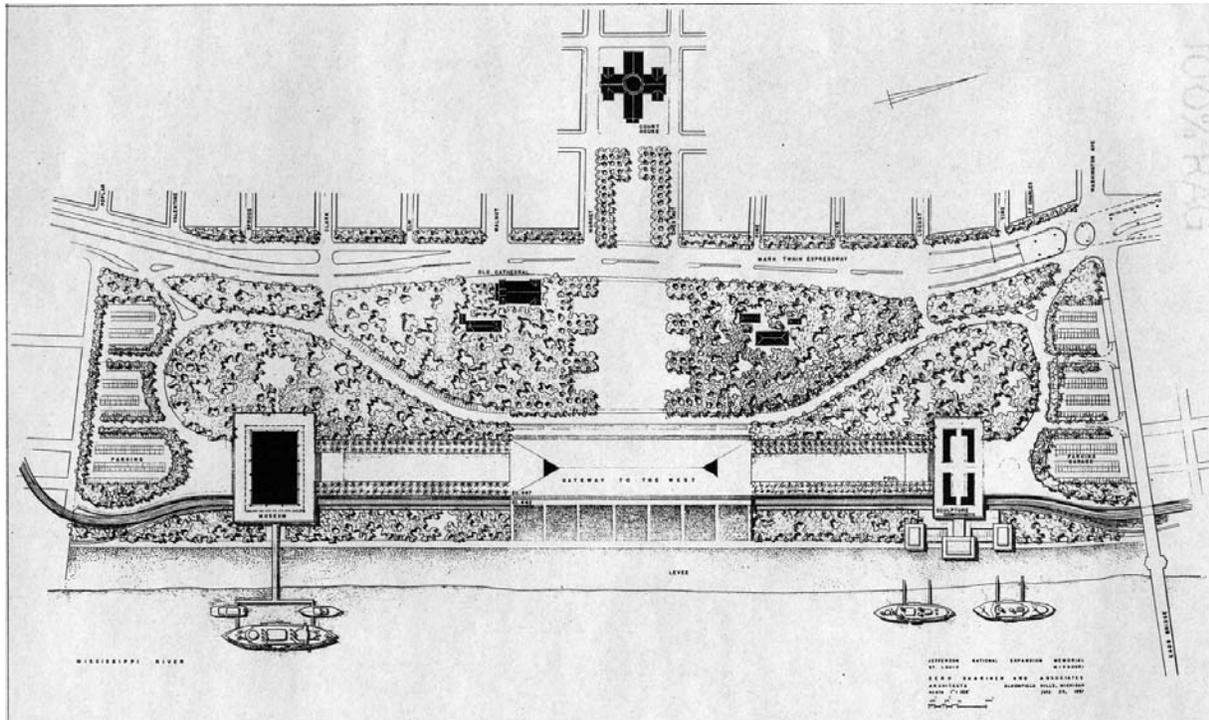


Eero Saarinen and Associates, Site Plan Study, 1957. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.

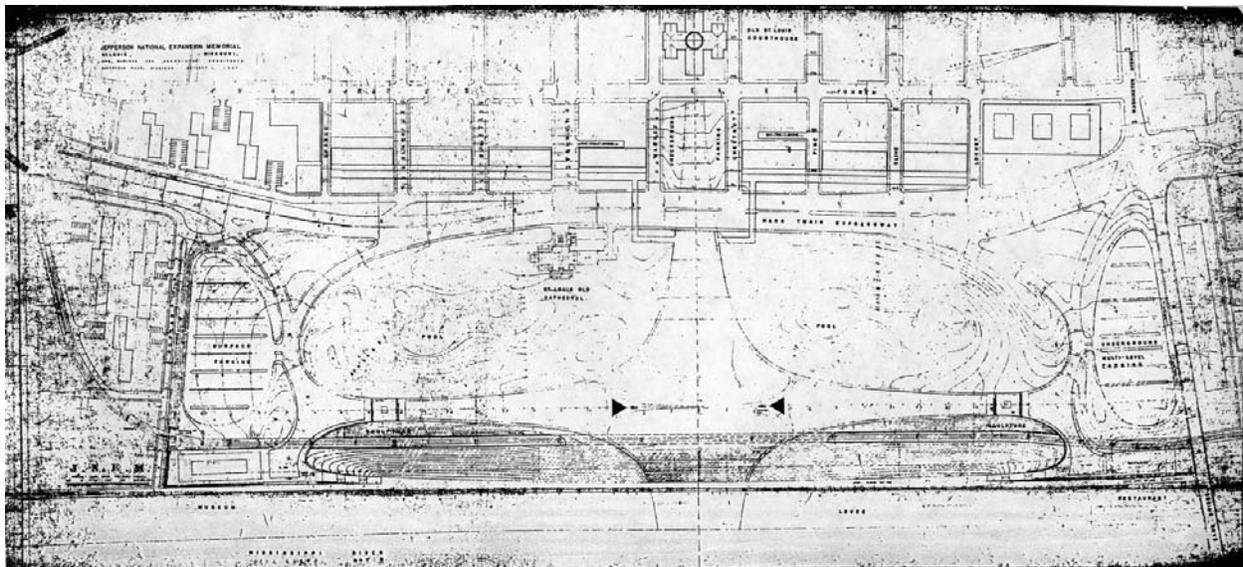


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HALS NO. MO-6 (Page 79)

Eero Saarinen and Associates, Site Plan Study, 1957. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.

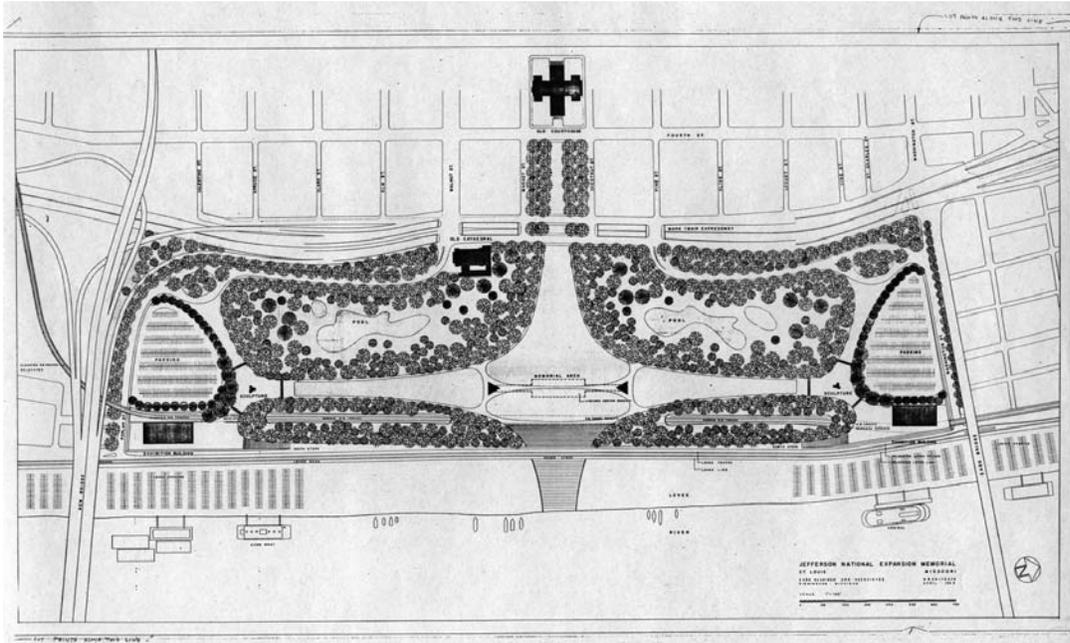


Eero Saarinen and Associates, Site Plan with 2-foot contour interval, Drawing 1 of 4, October, 1957. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.

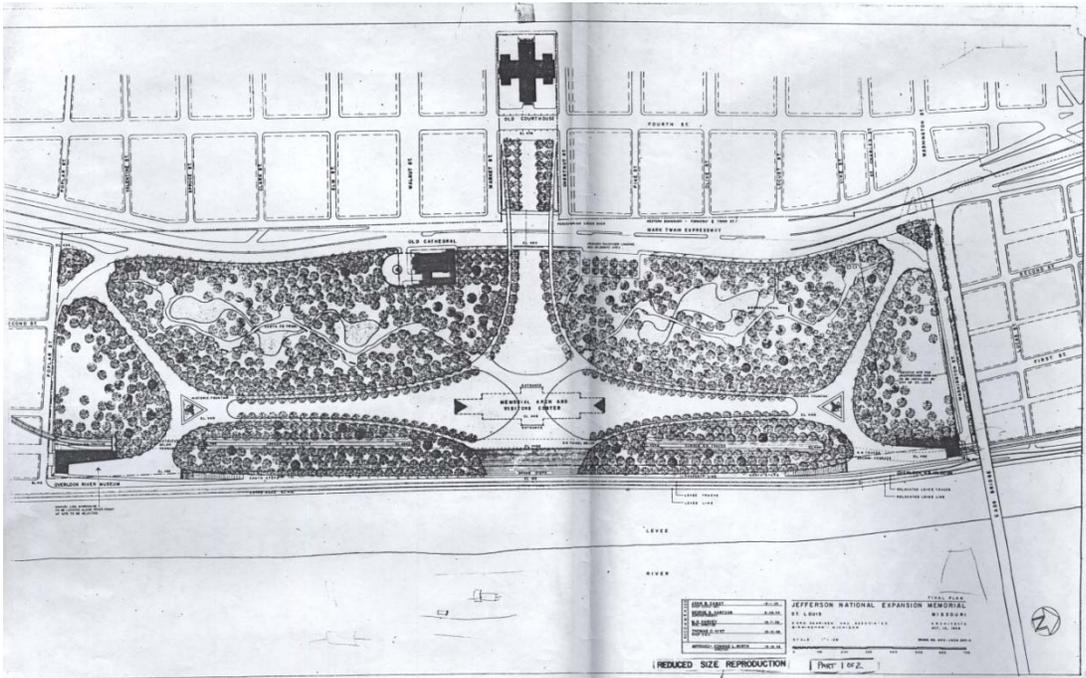


JEFFERSON NATIONAL EXPANSION MEMORIAL,
HALS NO. MO-6 (Page 80)

Eero Saarinen and Associates, Site Plan, April 1959. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.

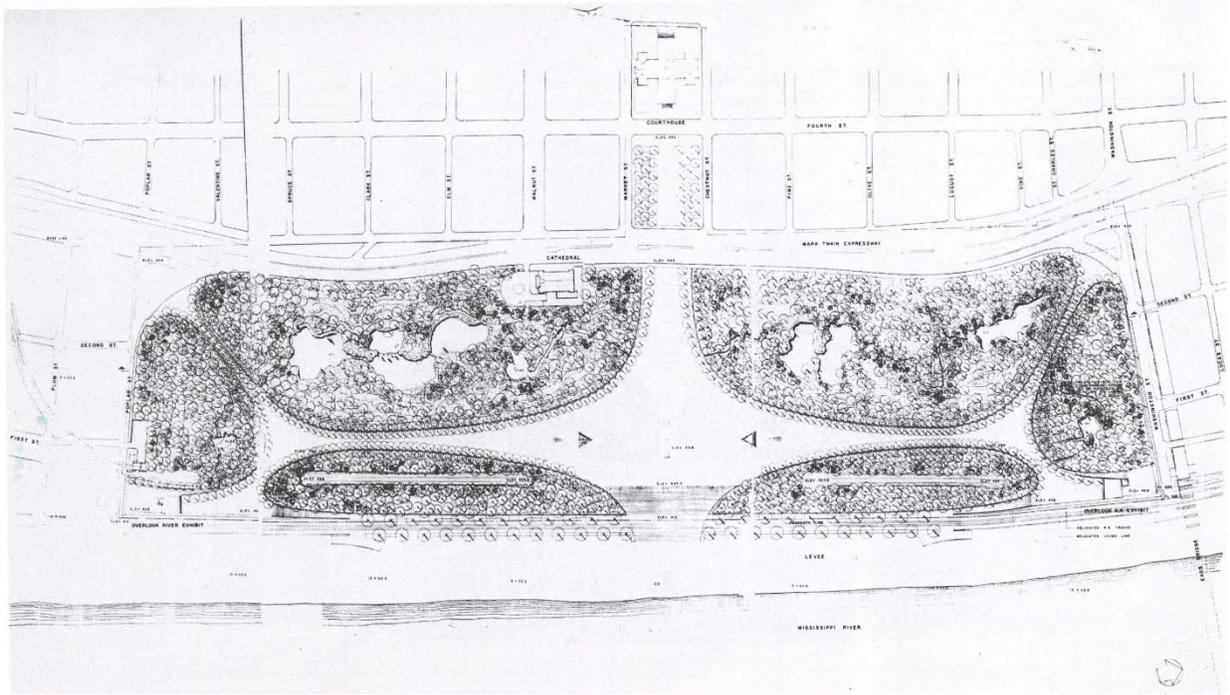


Eero Saarinen and Associates, Site Plan – Part 1 of 2, October 1959. (NPS, JNEM Archives, Collection Name, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.

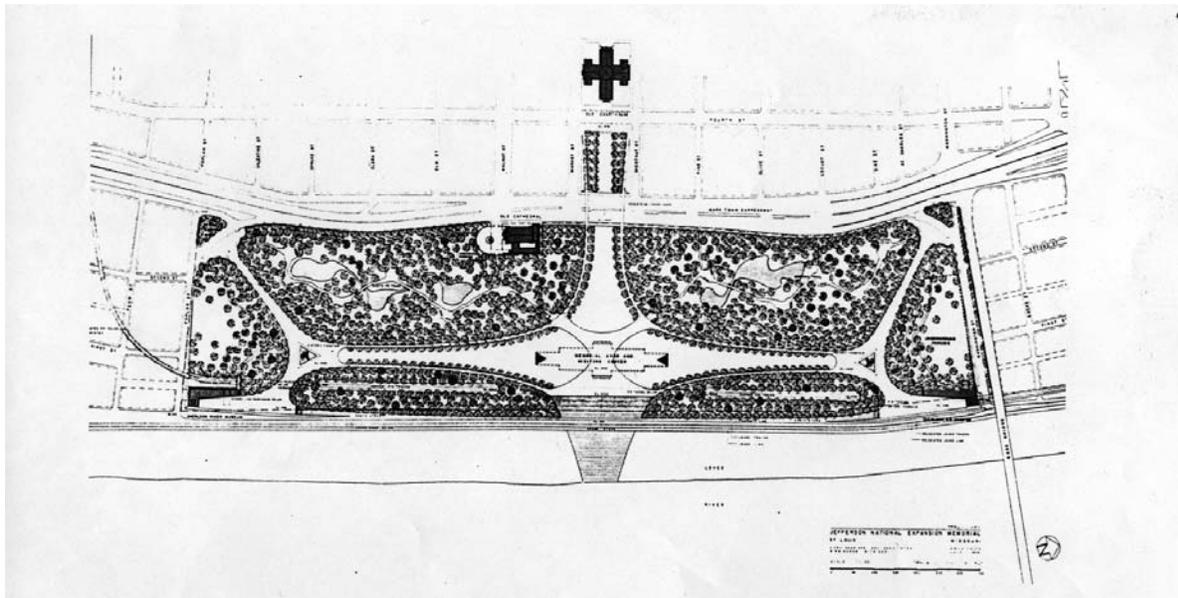


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HALS NO. MO-6 (Page 81)

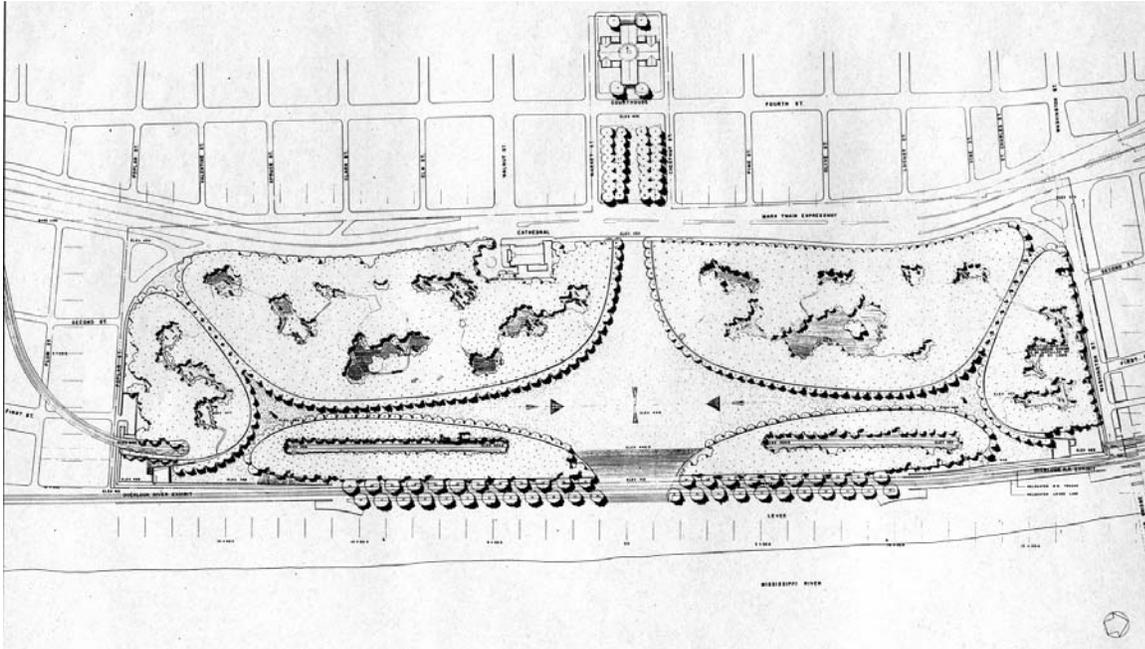
Eero Saarinen and Associates, Site Plan, February 1960. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.



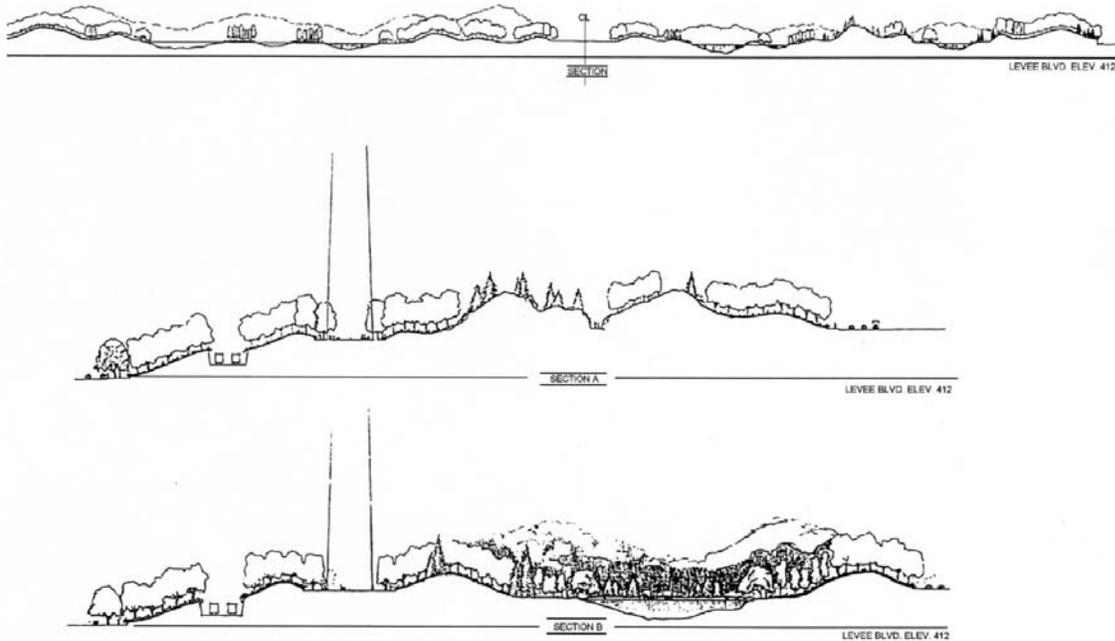
Eero Saarinen and Associates, Schematic Planting Plan, February 1960. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.



Eero Saarinen and Associates, Site Plan, August 1960. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.

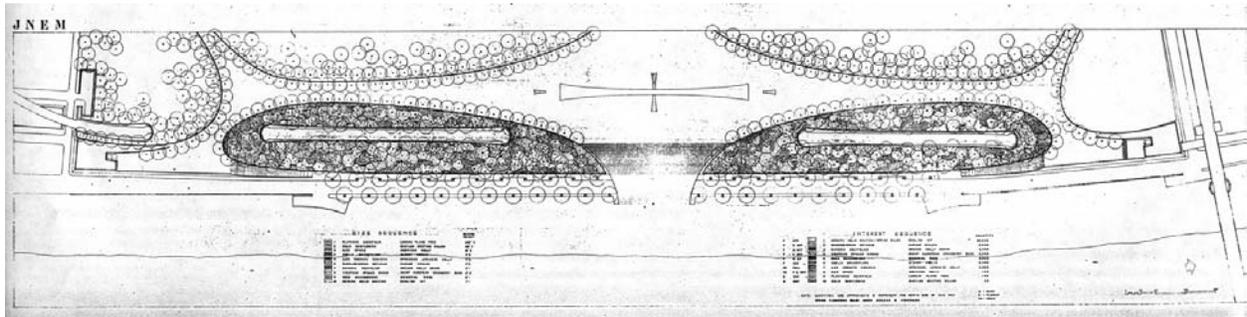


Office of Dan Kiley, Sectional Studies, February 1960. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.

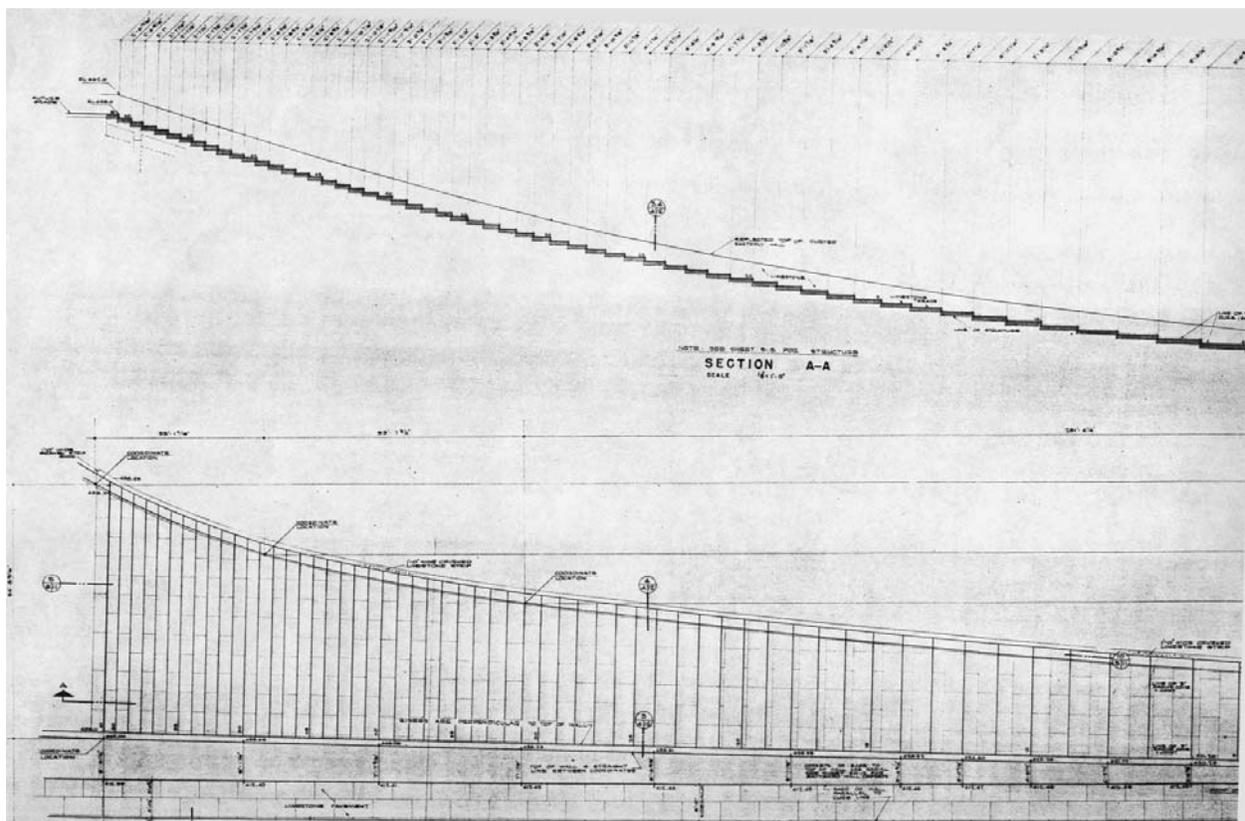


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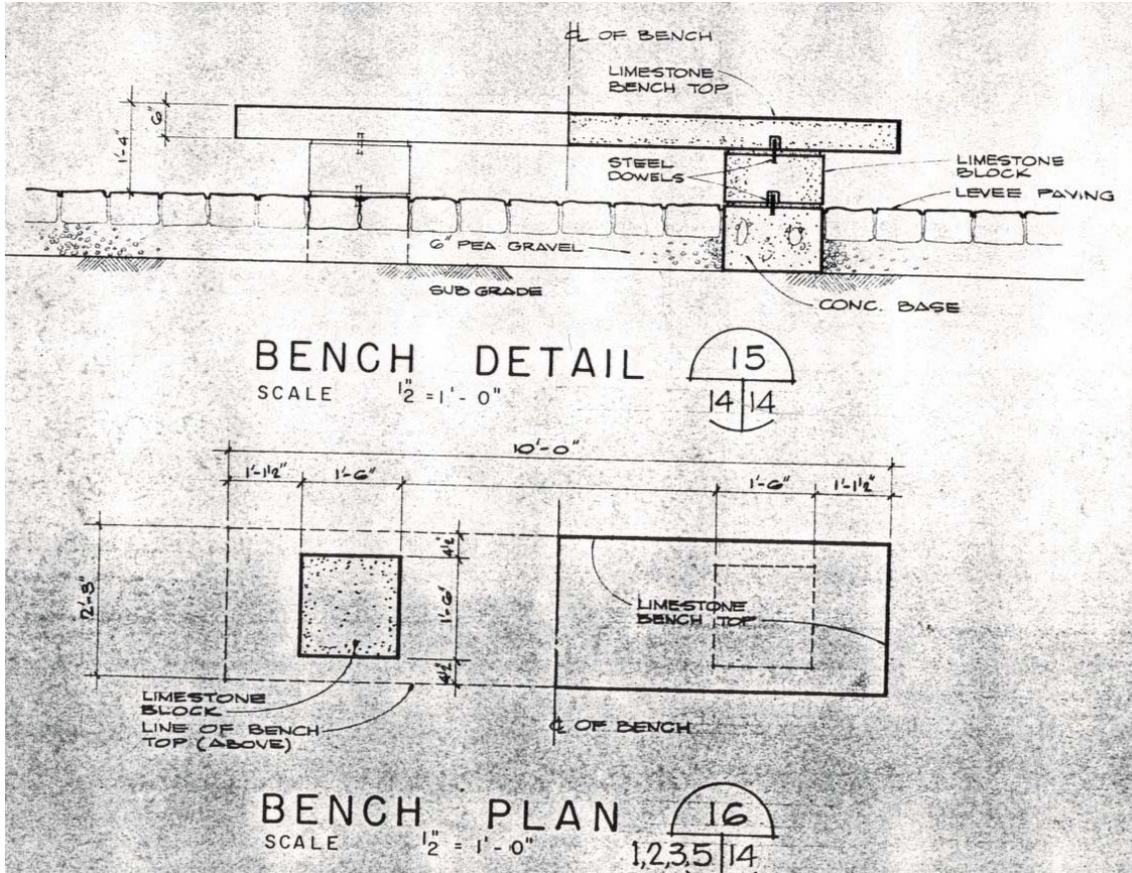
Office of Dan Kiley, Planting Plan Adjacent Railroad Cuts, August 1960. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.



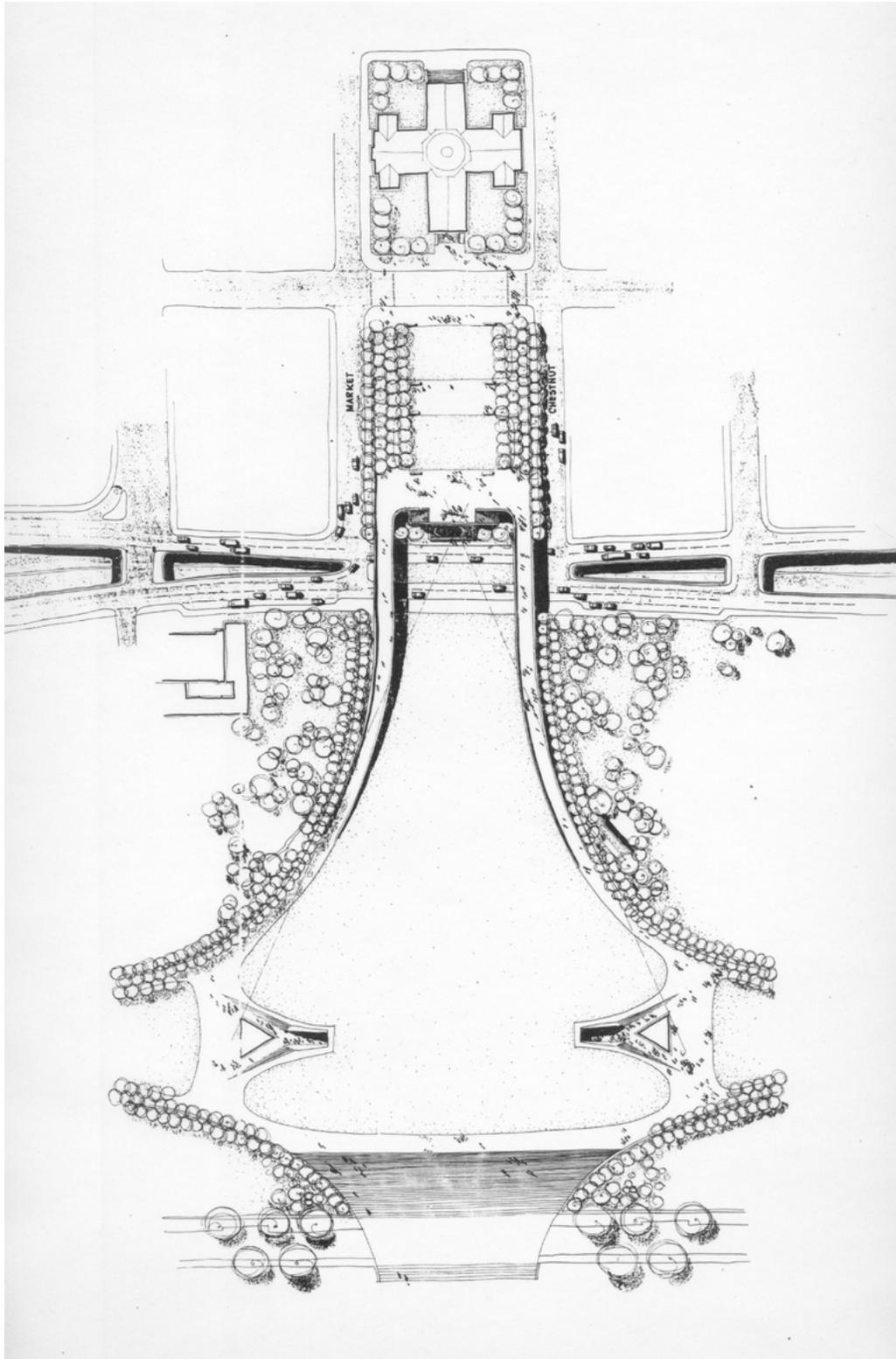
Eero Saarinen and Associates, Section Detail through proposed design for grand staircase, November 1960. (NPS, JNEM Archives, Gateway Arch Drawings 1938-1978, Record Unit 120, Drawer 22, Folder 12) Image shown below.



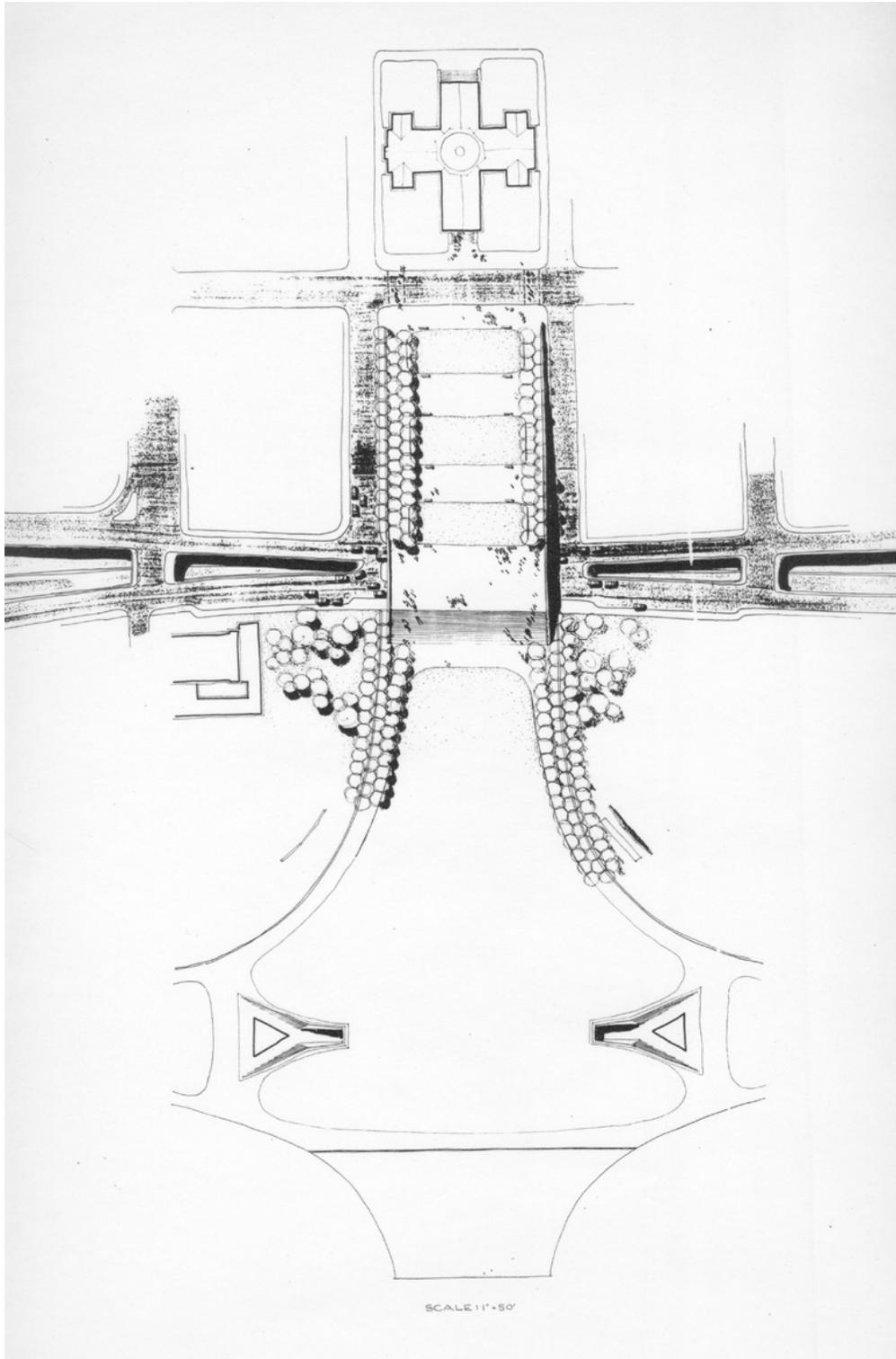
Eero Saarinen and Associates, Detail of Drawing SD-13, Bench Detail and Plan, 1960. (NPS, JNEM Archives, Gateway Arch Drawings 1938-1978, Record Unit, 120, Drawer 23:7, File No. D-120-906) The image below is a detail from the larger sheet.



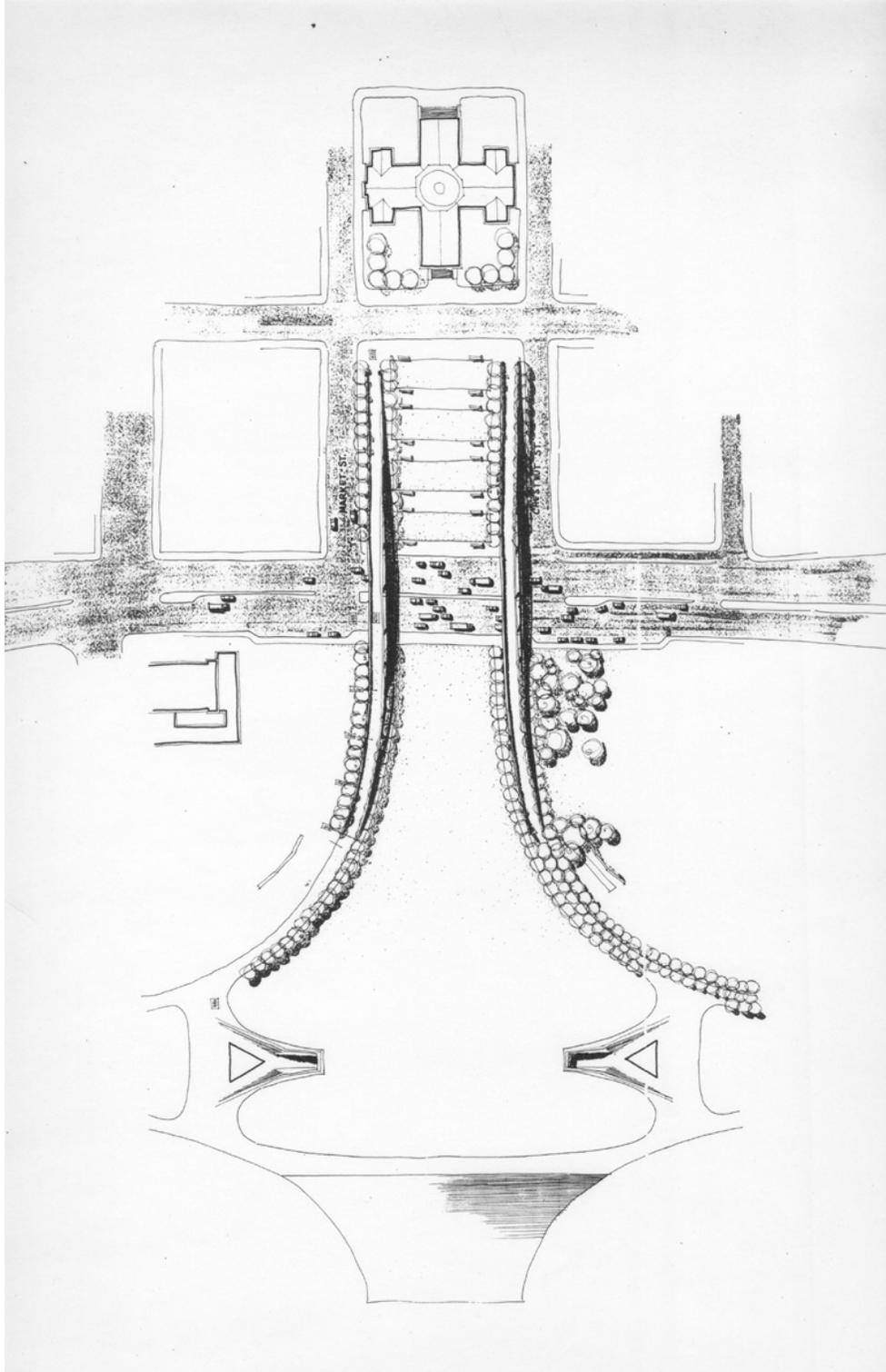
Eero Saarinen and Associates, Study of the proposed pedestrian overpasses, Ca.1960. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.



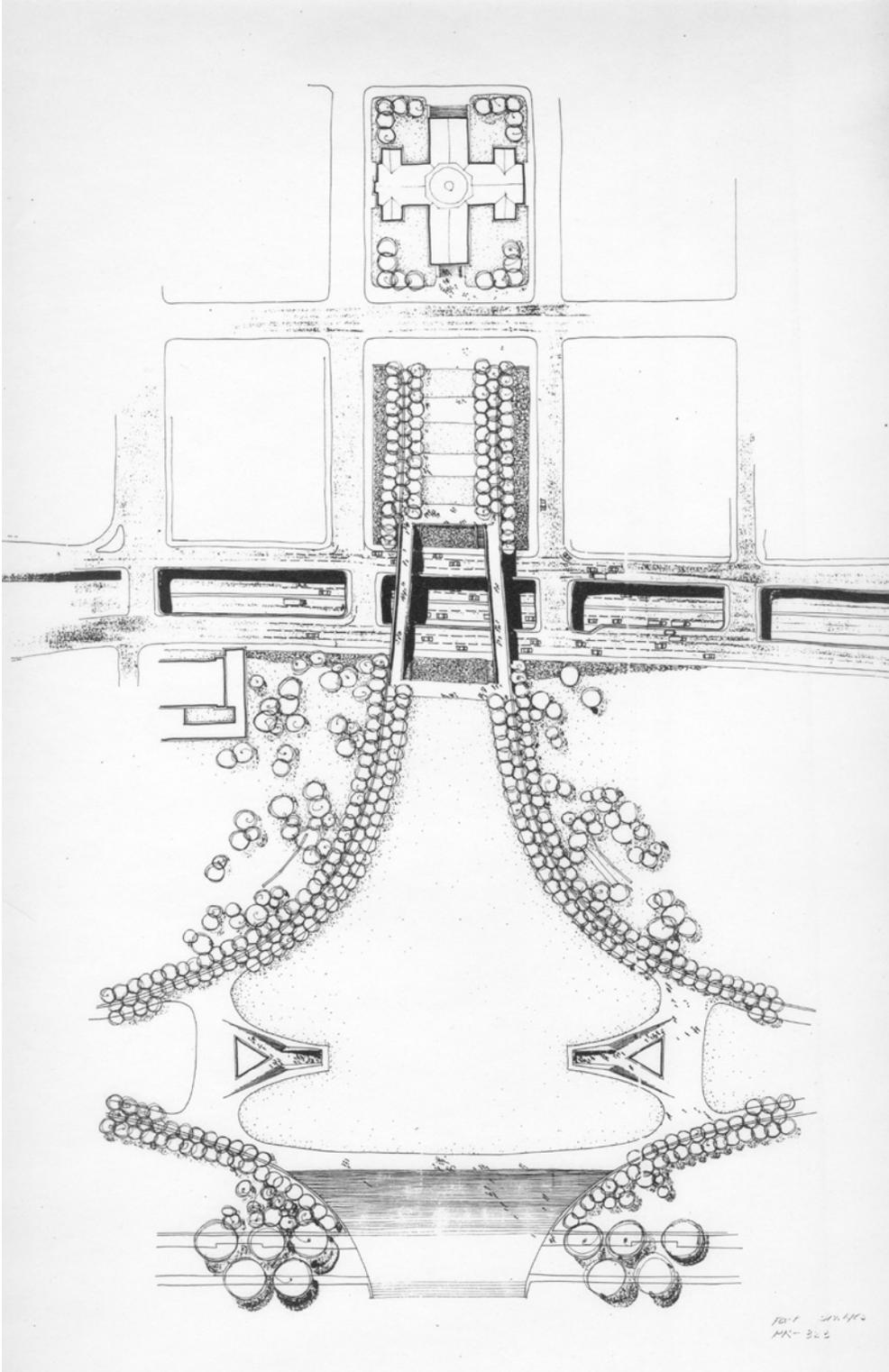
Eero Saarinen and Associates, Study of the proposed pedestrian overpasses, Ca.1960. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.



Eero Saarinen and Associates, Study of the proposed pedestrian overpasses, Ca.1960. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.

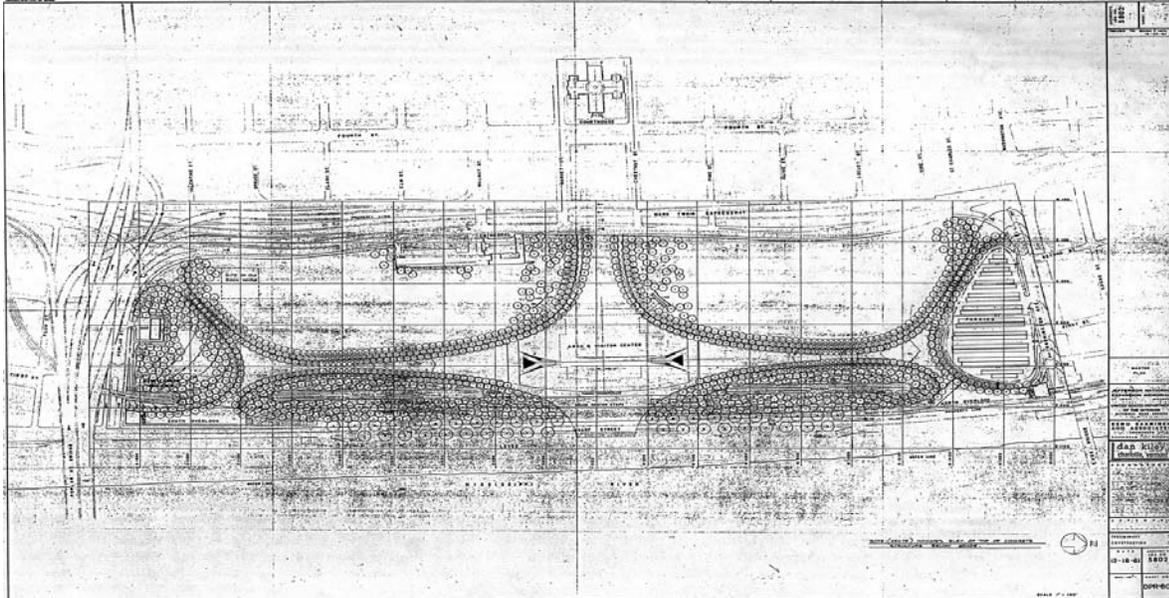


Eero Saarinen and Associates, Study of the proposed pedestrian overpasses, Ca.1960. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.

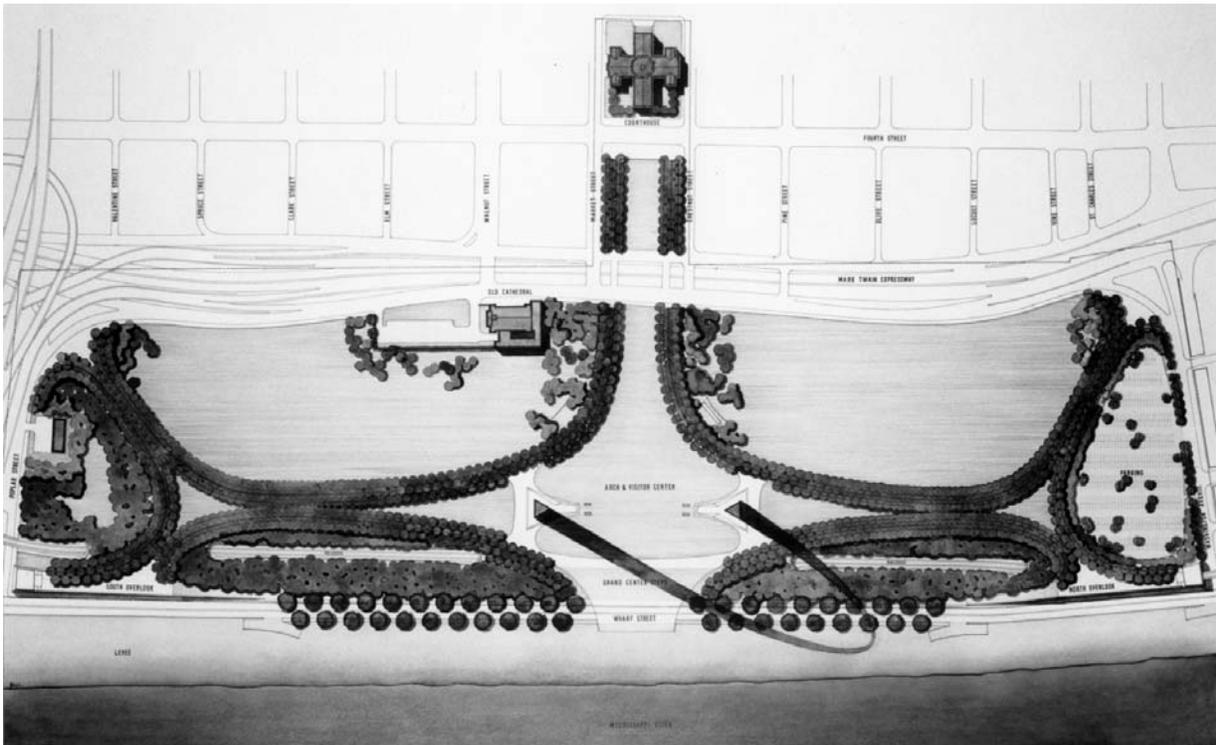


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HALS NO. MO-6 (Page 89)

Office of Dan Kiley and Eero Saarinen and Associates, Master Plan, December 1961. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.



Office of Dan Kiley, Design Development Plan (watercolor), December 1962. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.



Eero Saarinen and Associates and Office of Dan Kiley, "Approach to the Gateway Arch from the Southwest, Summer," watercolor rendering by Peter Ker Walker, December 1962. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.



APPROACH TO THE GATEWAY ARCH FROM THE SOUTH-WEST

SUMMER

J E F F E R S O N N A T I O N A L E X P A N S I O N M E M O R I A L

EERO SAARINEN AND ASSOCIATES, ARCHITECTS

OFFICE OF DAN KILEY, LANDSCAPE ARCHITECTS

Eero Saarinen and Associates and Office of Dan Kiley, "Approach to the Gateway Arch from the South, Winter," watercolor rendering by Peter Ker Walker, December 1962. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.



Eero Saarinen and Associates and Office of Dan Kiley, "Wharf Street Looking North, Autumn," watercolor rendering by Peter Ker Walker, December 1962. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.



WHARF STREET LOOKING NORTH

AUTUMN

J E F F E R S O N N A T I O N A L E X P A N S I O N M E M O R I A L

EERO SAARINEN AND ASSOCIATES, ARCHITECTS

OFFICE OF DAN KILEY, LANDSCAPE ARCHITECTS

Eero Saarinen and Associates and Office of Dan Kiley, "View Towards Arch from C-C,"
rendering by Joseph Karr, December 1962 (NPS, JNEM Archives, Cultural Landscape Report,
Record Unit 128, Box 4, Folder 12) Image shown below.

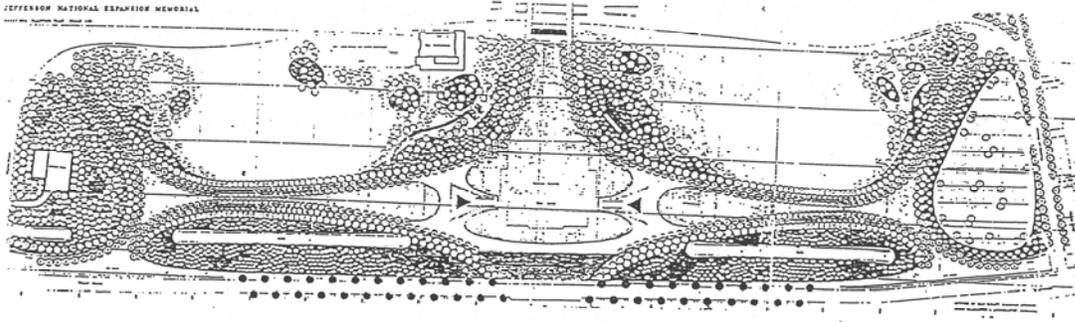


VIEW TOWARDS ARCH FROM C - C

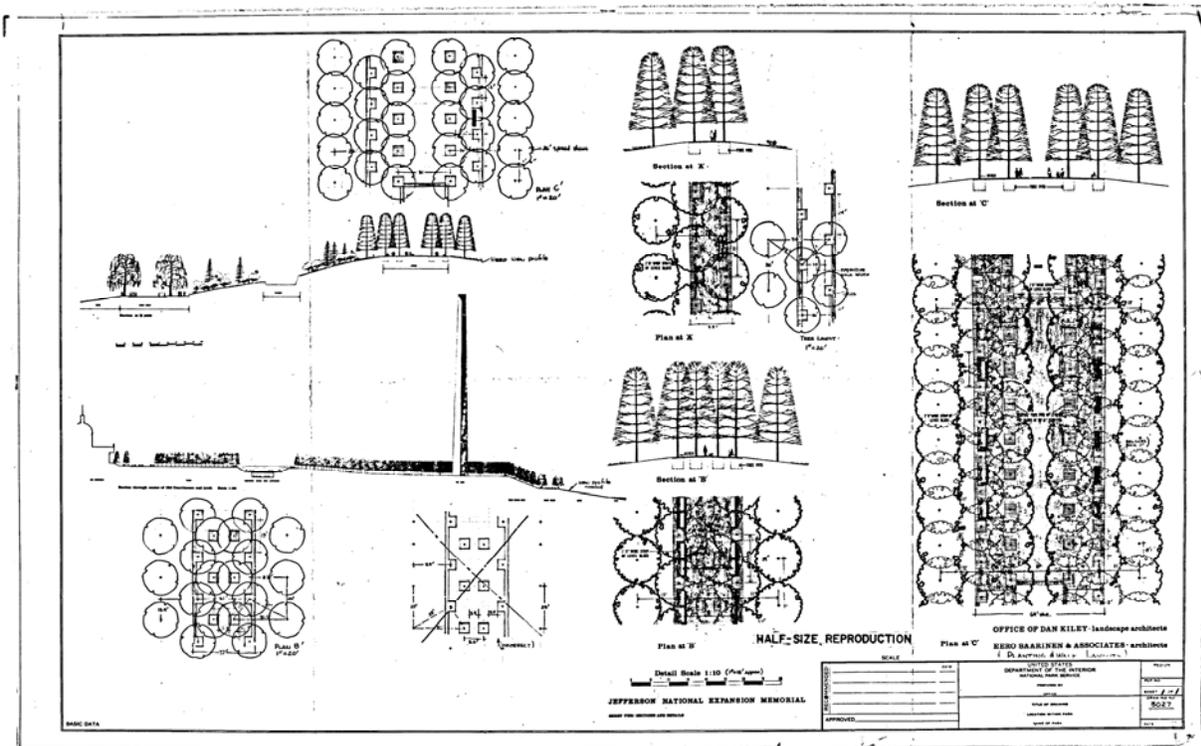
EERO SAARINEN & ASSOCIATES · architects
OFFICE OF DAN KILEY · landscape architect

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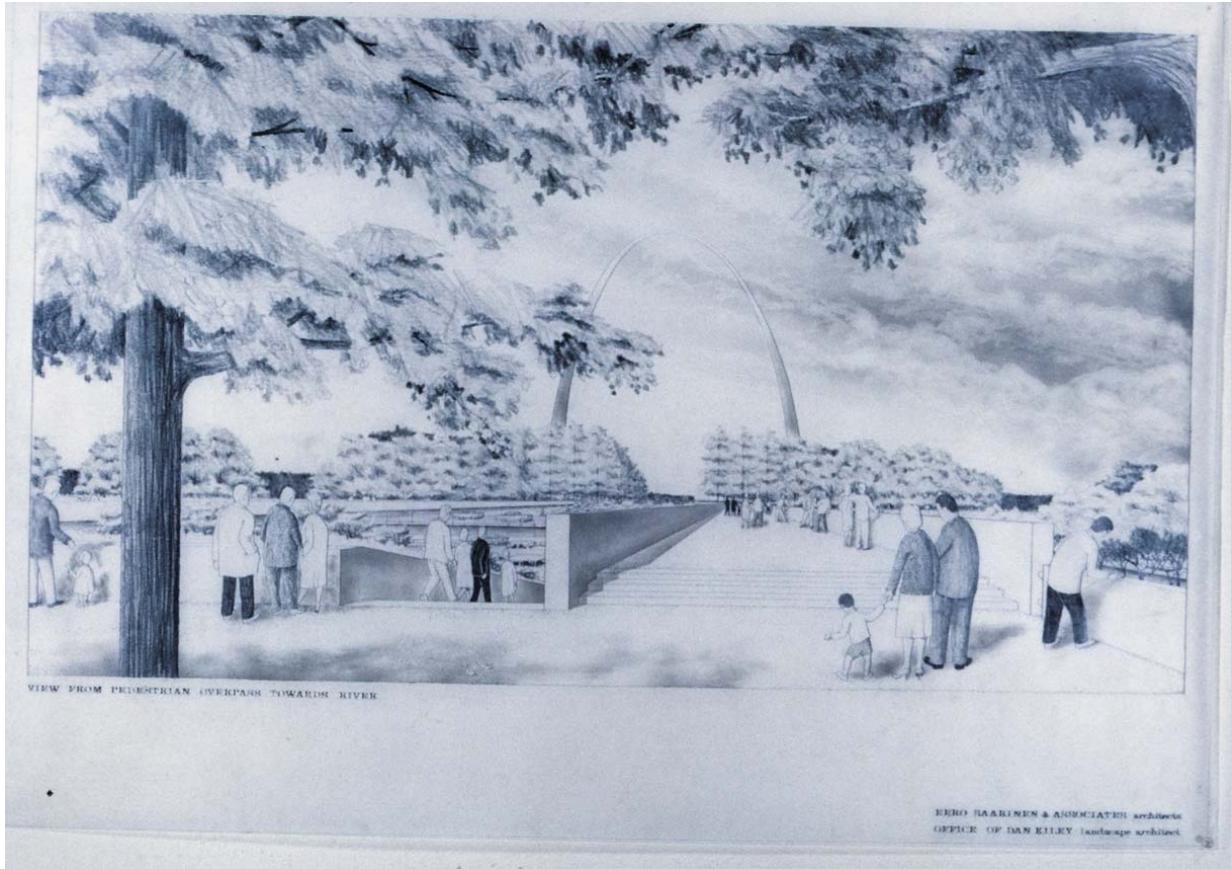
Office of Dan Kiley, Conceptual Planting Plan, March 1963. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.



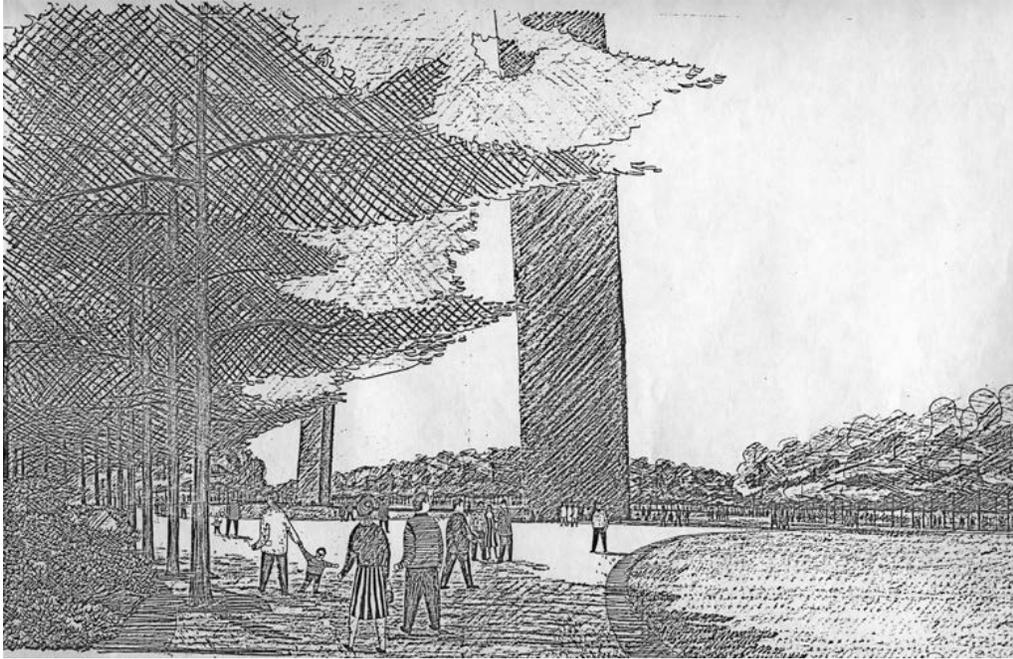
Office of Dan Kiley, Section and Plan Details of Tulip Poplar Plantings, March 1963. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.



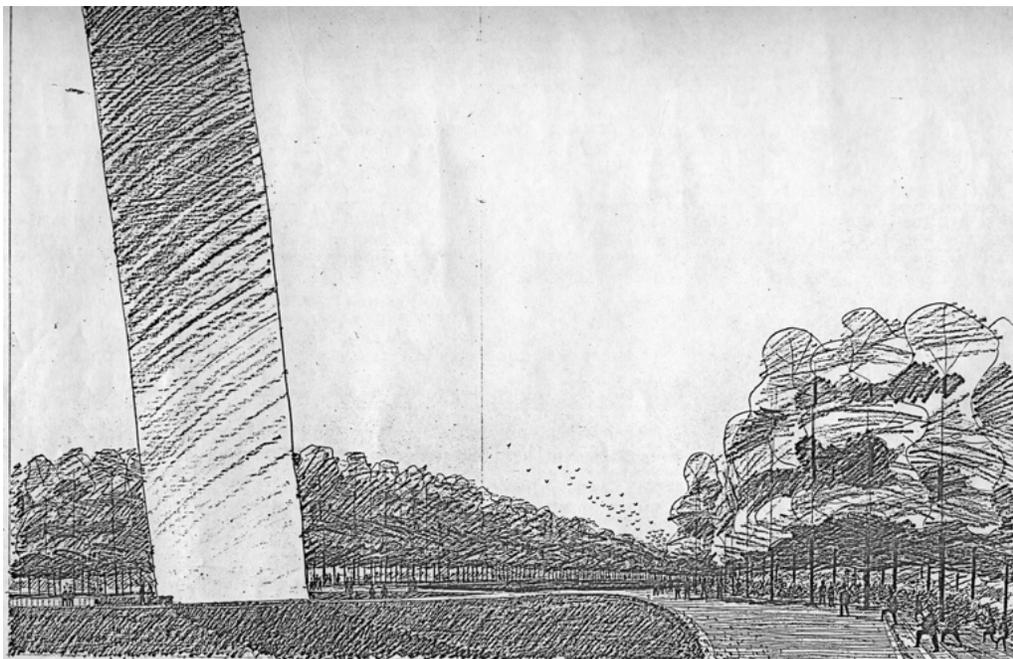
Eero Saarinen and Associates and Office of Dan Kiley, "View from Pedestrian Overpass toward River," rendering by Joseph Karr, December 1962. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.



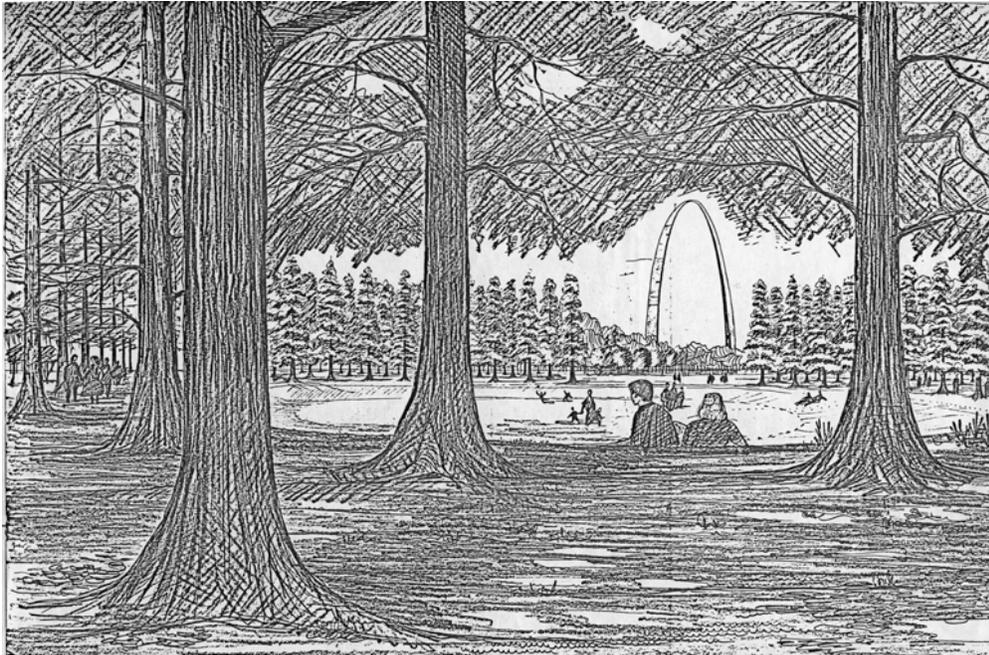
Office of Dan Kiley, Study Sketch of Proposed Views within the Jefferson National Expansion Memorial, September 1963. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.



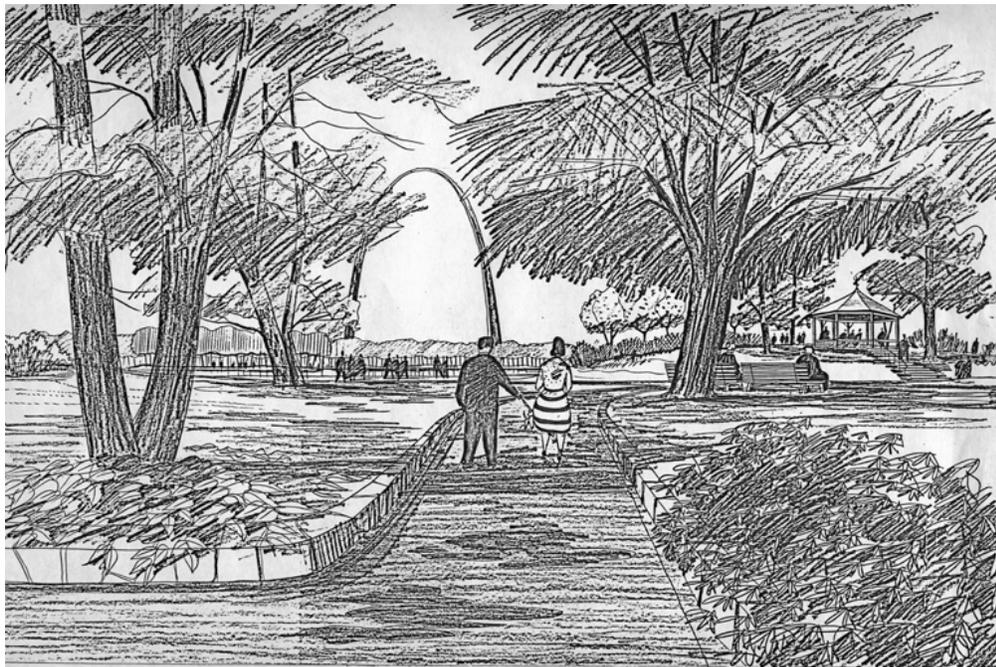
Office of Dan Kiley, Study Sketch of Proposed Views within the Jefferson National Expansion Memorial, September 1963. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.



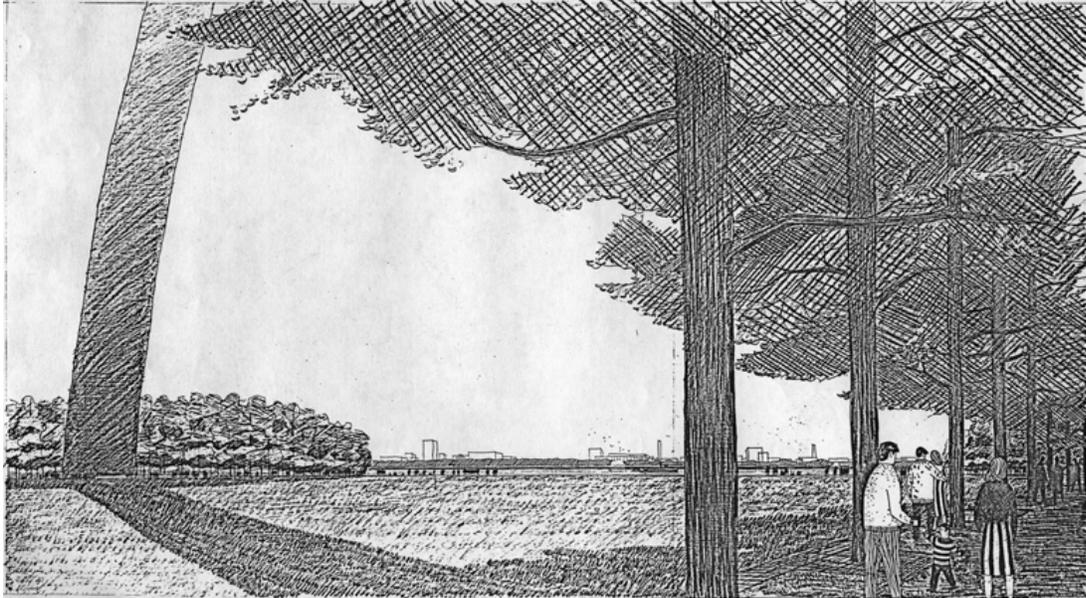
Office of Dan Kiley, Study Sketch of Proposed Views within the Jefferson National Expansion Memorial, September 1963. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.



Office of Dan Kiley, Study Sketch of Proposed Views within the Jefferson National Expansion Memorial, September 1963. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.



Office of Dan Kiley, Study Sketch of Proposed Views within the Jefferson National Expansion Memorial, September 1963. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.

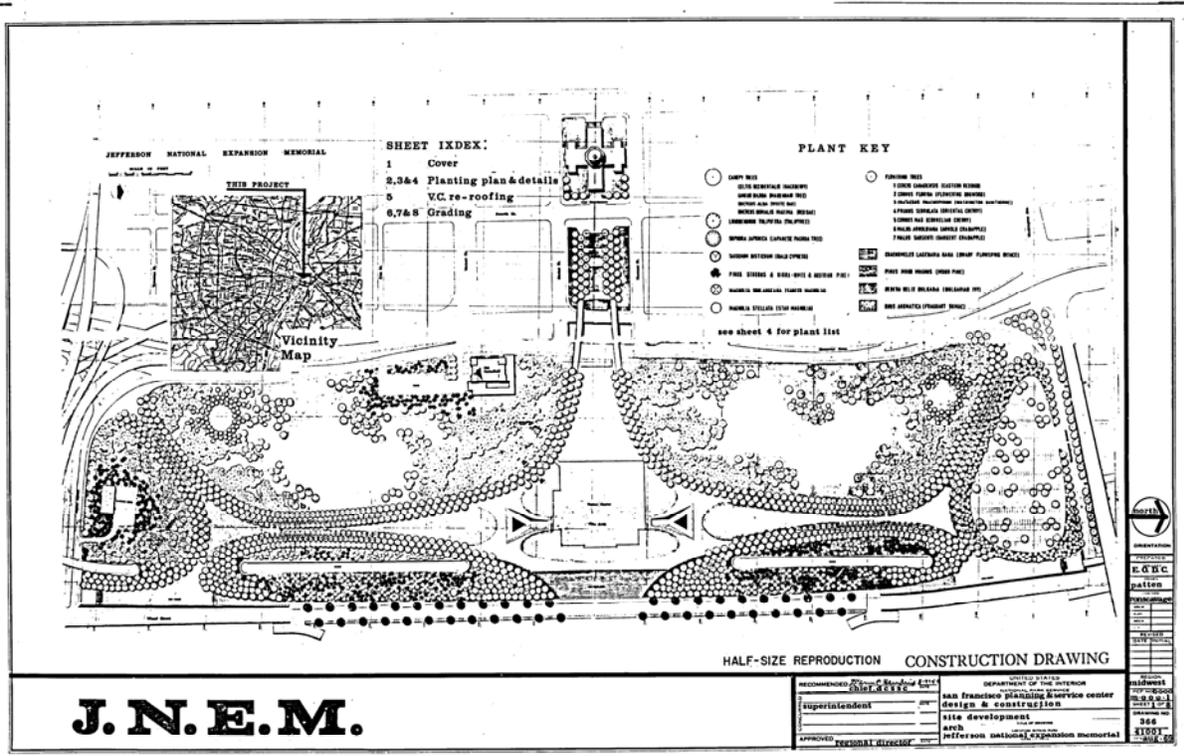


Office of Dan Kiley, Study Sketch of Proposed Views within the Jefferson National Expansion Memorial, September 1963. (NPS, JNEM Archives, Cultural Landscape Report, Record Unit 128, Box 4, Folder 12) Image shown below.

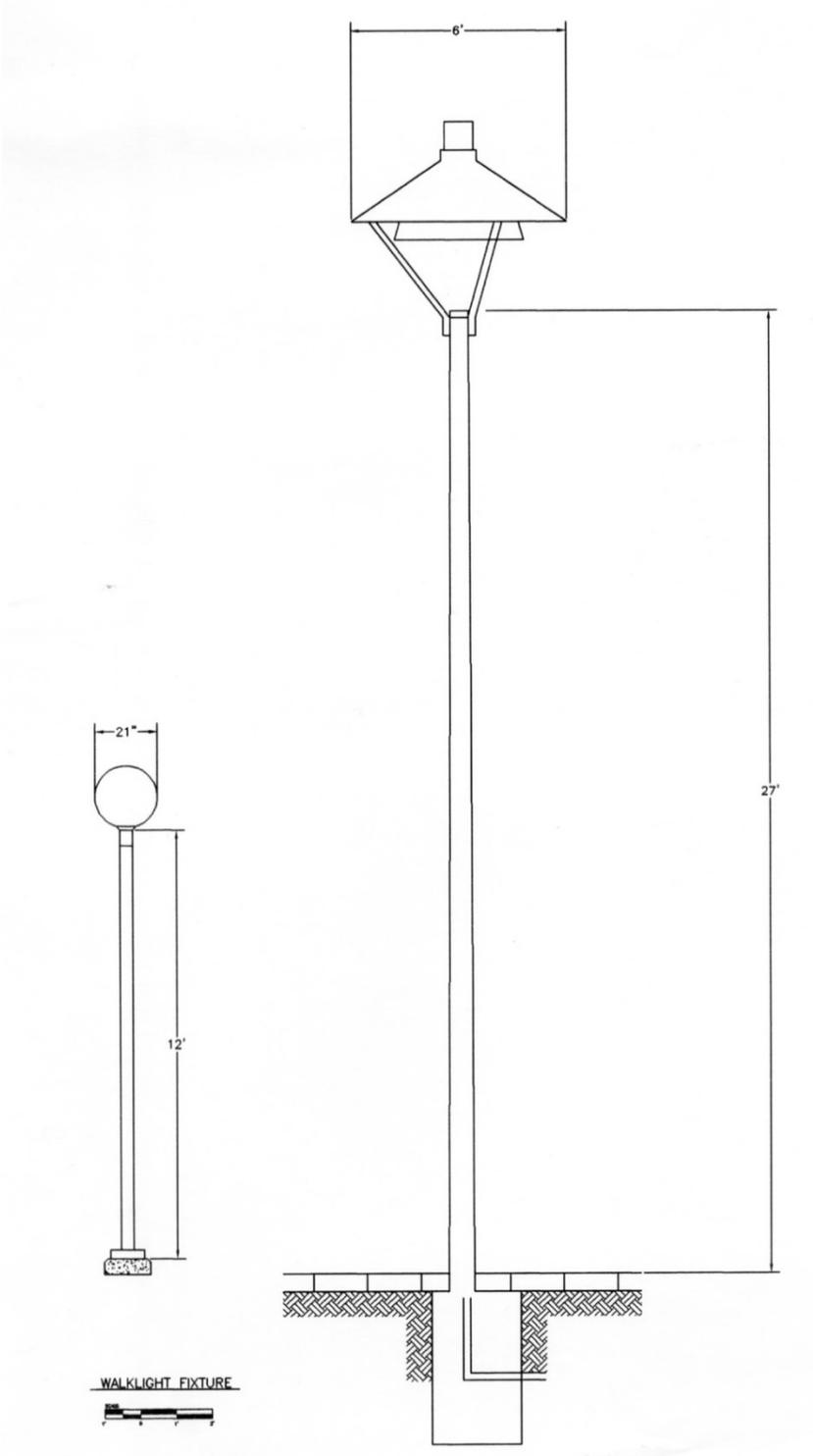


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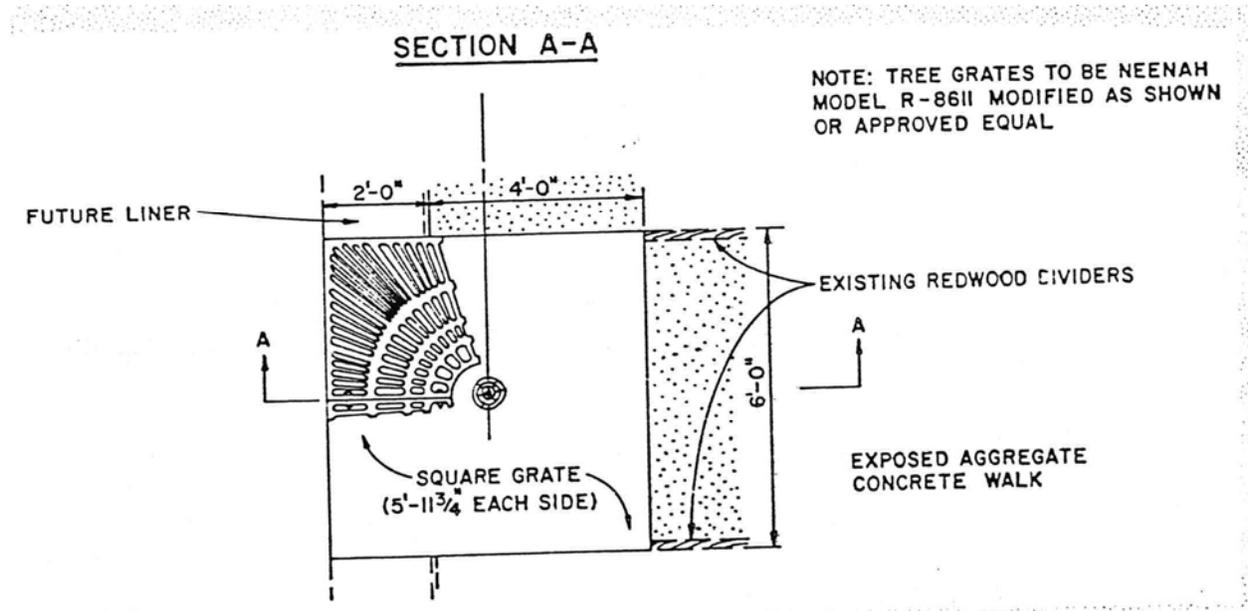
Office of Dan Kiley, Final Conceptual Planting Plan, 1964; approved by the National Park Service in February 1966. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_41001_[21820]) Image shown below.



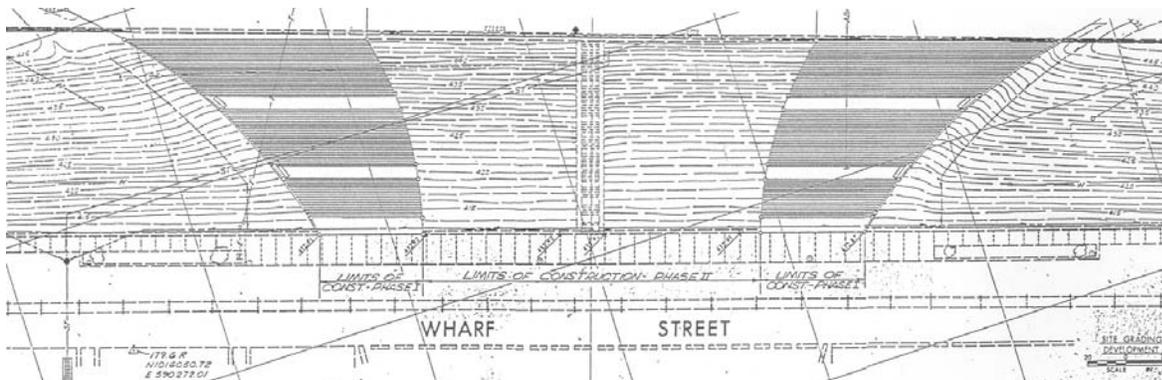
Gargar Chan, Comparison Sketch of Saarinen's lighting detail (right) and NPS lighting detail (left), Drawing Nos. D-120-909 and D-120807. (NPS, JNEM Archives, Gateway Arch Drawings 1938-1978, Record Unit 120, Drawer 15, Folder 4) Image shown below.



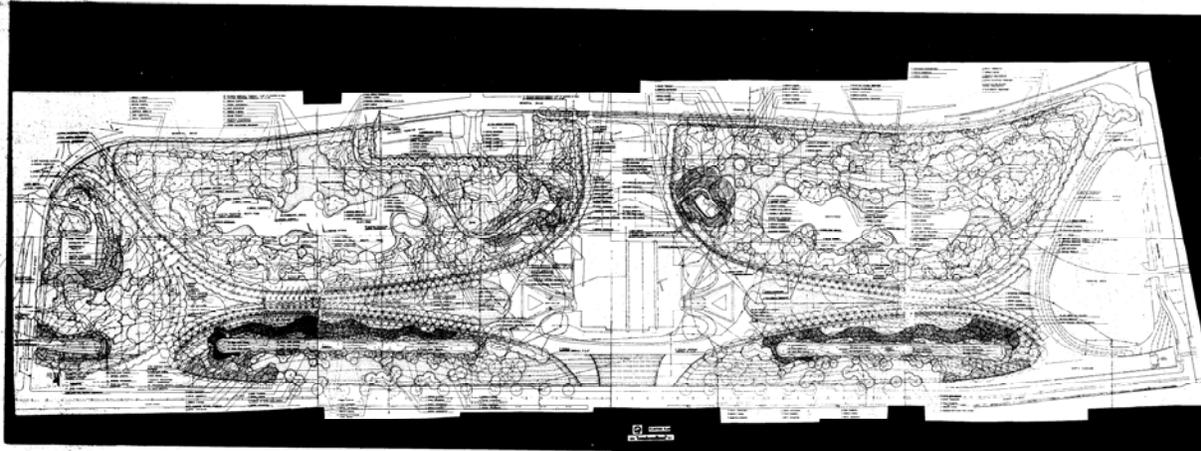
National Park Service, Denver Service Center, Drawing No. 366/41037, "Site Development Plan - Phase II (North Section)," Sheets 1-36, created by Harland Bartholomew and Associates, approved by Donald McLane, Acting Regional Director, November 9, 1973. (NPS, JNEM Archives, Gateway Arch Drawings 1938-1978, Record Unit 120, Drawer 17, Folder 5) The image below is a Tree Grate Detail from one of the sheets.



Harland Bartholomew and Associates, Detail from Drawing No. 366/41025 showing proposed phased development of grand staircase. (NPS, JNEM Archives, Gateway Arch Drawings 1938-1978, Record Unit 120, Drawer 18, Folder 11) Image shown below.

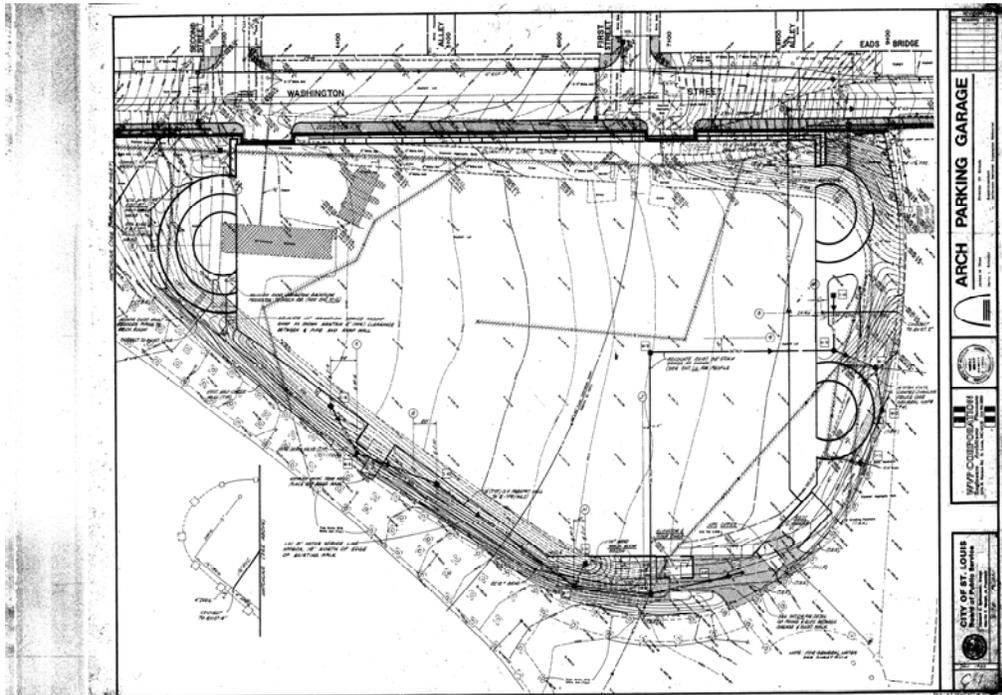


National Park Service, Denver Service Center, Drawing No. 366/41047, "Planting Plan – Arch Grounds," Sheets 1-23, drawn by Hall, checked by Ronscavage, December 1978. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_41047B_[44707]) This drawing represents the as-built landscape. The image below is a composite of several sheets from the drawing set. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_60116_[219678])

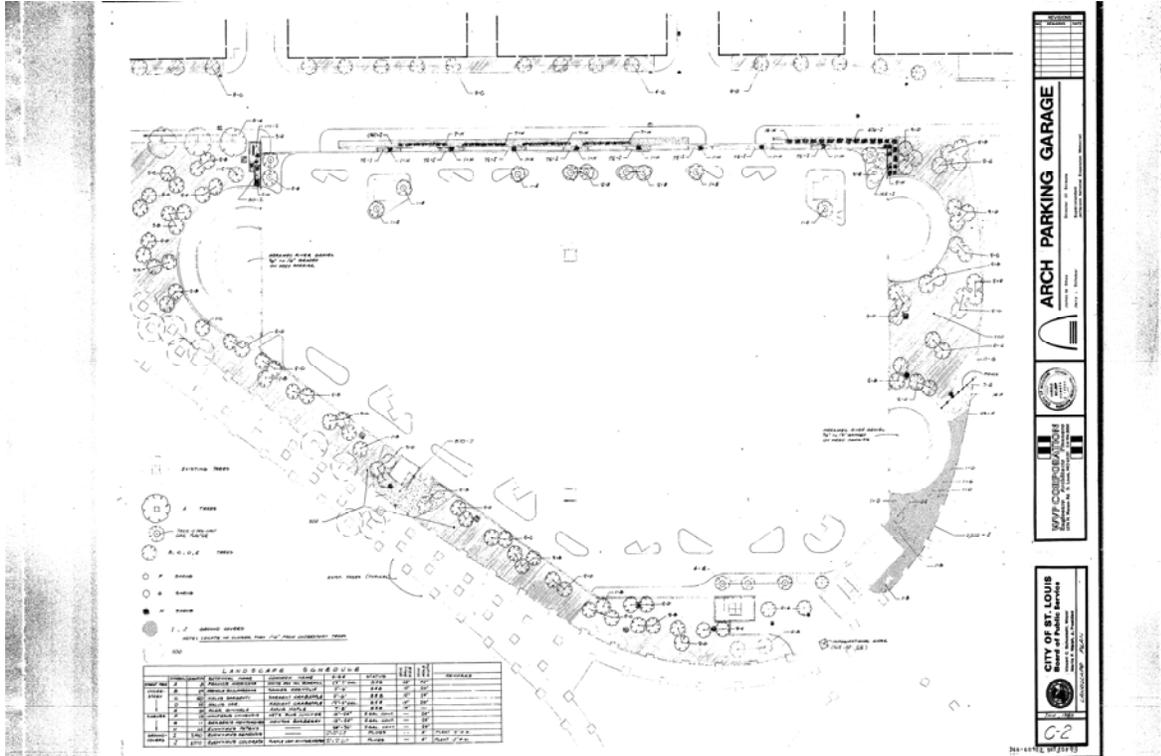


Composite of Drawing No. 366/41,047
Reduced Scale. See Bar Graph.

City of St. Louis, Missouri, "Arch Parking Garage," Drawing No. 366-60902, Sheets 2 of 93, prepared by WVP Corporation, January 1983. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_60902_[128958]) Image shown below.



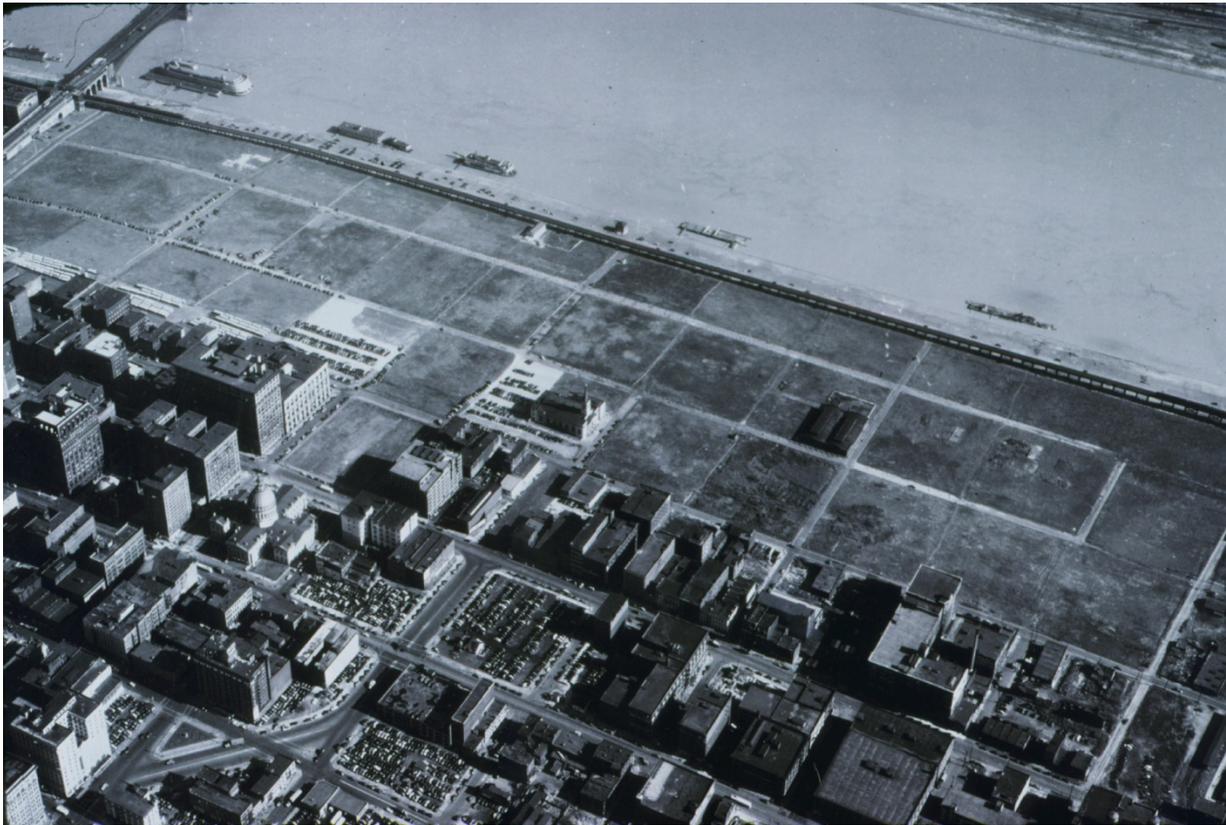
City of St. Louis, Missouri, "Arch Parking Garage – Landscape Plan" Drawing No. 366-60902, Sheets 3 of 93, prepared by WVP Corporation, January 1983. (NPS, DSC, Electronic Technical Information Center, Digital File, JEFF_366_60902_[128958]) Image shown below.



Historic views, photographs

The following are reduced-size reproductions of several photographs referenced in the history section of this document. They are organized in chronological order and are included because they document some of the major developments in the Jefferson National Expansion Memorial landscape.

St. Louis riverfront after demolition of warehouses, Ca. 1942. (NPS, JNEM Archives, Jefferson National Expansion Memorial Visual Reference Collection, Visual Image No. 017954) Image shown below.



View of the Riverfront Garden (later referred to as Luther Ely Smith Square), facing west toward the Old Courthouse, Ca. 1950. (NPS, JNEM Archives, Jefferson National Expansion Memorial Visual Reference Collection, VPRI-003824) Image shown below.



“Jefferson National Expansion Memorial, Looking toward the Gateway from the Courthouse.”
Ca. 1960. Photo by M. Woodbridge Williams. (NPS, JNEM Archives, Jefferson National
Expansion Memorial Visual Reference Collection, Visual Image No. 79-203). Image shown
below.



Construction of railroad open cut walls and tunnel, 1960. Photo by Arteaga (NPS, JNEM Archives, Jefferson National Expansion Memorial Visual Reference Collection, Visual Image No. 106-3732) Image shown below.



Construction of the north overlook, 1961. Photo by Arteaga. (NPS, JNEM Archives, Jefferson National Expansion Memorial Visual Reference Collection, Visual Image No. 106-3792) Image shown below.



Memorial grounds used for municipal public parking, 1961. Also visible is the landscaping implemented around the Old Cathedral (top, center) and part of the Riverfront Garden (right, center). (NPS, JNEM Archives, Jefferson National Expansion Memorial Visual Reference Collection, VPRI-003824) Image shown below.



Aerial view of memorial grounds after Phase I of landscape construction, 1975. Photo by Arteaga. (NPS, JNEM Archives, Jefferson National Expansion Memorial Visual Reference Collection) Image shown below.

