



PDHonline Course C629 (8 PDH)

Gateway Arch: Monument To A Dream

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Part 1

Manifest Destiny

3

Corps of Discovery

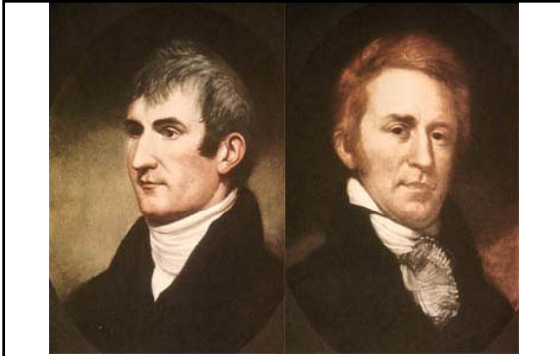
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"To find the most direct & practicable water communication across this continent, for the purposes of commerce."
 Thomas Jefferson, POTUS
 RE: the Lewis and Clark Expedition, a.k.a. the Corps of Discovery Expedition (1804-1806). It was the first transcontinental expedition to the Pacific coast undertaken by the United States. Led by U.S. Army Captain Meriwether Lewis and William Clark, it was commissioned in 1803 by President Thomas Jefferson. ⁵

Thomas Jefferson had a long interest in western expansion and in 1780s met John Ledyard who discussed with him an expedition to the Pacific Northwest. Two years into his presidency, Jefferson asked Congress to fund an expedition through the Louisiana Purchase and beyond; to the Pacific Ocean. The expedition's goals were:

- Explore the Louisiana Purchase;
- Establish trade and U.S. sovereignty over the native peoples along the Missouri River;
- Establish a U.S. claim of "Discovery" to the Pacific Northwest and Oregon Territory by documenting an American presence there before Europeans could claim the land;
- Seek out a "Northwest Passage"

Jefferson also understood the U.S. would have a better claim of ownership to the Pacific Northwest if the expedition gathered scientific data on indigenous animals and plants. The U.S. mint prepared special silver medals (with a portrait of Jefferson) which had a message of friendship and peace, called Indian Peace Medals or Peace Medals. The Corps was entrusted to distribute them to the Indian nations they met who did not know/understand that these coins symbolized U.S. sovereignty over them. The expedition carried advanced weapons (to display their firepower) including a powerful 0.44 caliber air rifle. ⁶



Meriwether Lewis (left) and William Clark (right). Lewis was the leader of the expedition selecting Clark as his partner. 7

Vilest Miscreants of the Savage Race

8

"...in an imence Plain a high Hill is Situated, and appears of a Conic form and by the different nations of Indians in this quarter is Suppose to be the residence of Deavels. that they are in human form with remarkable large heads and about 18 Inches high, that they are Very watchful, and are arm'd with Sharp arrows with which they Can Kill at a great distance; they are Said to Kill all persons who are so hardy as to attempt to approach the hill..."

William Clark, August 24th 1804

9

"All earlier Missouri River travelers had warned of this powerful and aggressive tribe, determined to block free trade on the river...The Sioux were also expecting a retaliatory raid from the Omaha Indians, to the south. A recent Sioux raid had killed 75 Omaha men, burned 40 lodges, and taken four dozen prisoners."

Harry W. Fritz, Historian

RE: the route of the Lewis and Clark expedition; up the Missouri River to its headwaters, then on to the Pacific Ocean via the Columbia River was influenced by the transcontinental journey of Moncacht-Ape by the same route about a century before. Jefferson had a copy of a book supposedly detailing Moncacht-Ape's itinerary in his library (Meriwether Lewis carried a copy of the book with him during the expedition). The book was probably the source of Lewis and Clark's mistaken belief that they could easily carry boats from the Missouri's headwaters to the westward-flowing Columbia since the book neglects to mention the need to cross the Rocky Mountains. They left on May 14th 1804, following the Missouri River westward. Soon they passed La Charrette, the last American settlement on the Missouri River. The Lewis and Clark Expedition established friendly relations with two dozen indigenous nations without whose help the expedition would have starved to death or become hopelessly lost in the Rocky Mountains. The Americans and the Lakota nation (whom the Americans called Sioux, short for "Teton-wan Sioux") had problems when they met coming close to fighting several times before both sides backed down. Clark wrote that they were "wariike" and were the "vilest miscreants of the savage race."

10



"I Set out at 4 o'clock P.M. in the presence of many of the Neighbouring inhabitants, and proceeded on under a jentle brease up the Missourie..."

William Clark, May 14th 1804

11

"...we gave them (the Sioux) some of our provisions to eat...I went in a perogue with those Chief who left the boast with great reluctians...as Soon as I landed 3 of their young men Seased the Cable of the Perogue, one Soldiar Huged the mast...and the 2d Chief was exceedingly insolent both in words and justures to me declaring I Should no go off, Saying he had not recived presents Suffient from us - I attempted to passify him but it had a contrary effect for his insults became so personal and his intentions evident to do me injurey, I Drew my Sword and ordered all hands under arms at this motion Capt. Louis ordered all in the boat under arms, the fiew men that was with me having previously taken up their guns with a full deturmination to defend me if possible...the Soldier got out of the perogue and the 2nd Chief walked off to the Party at about 20 yards back, all of which had their bows Strung & guns Cocked - I then Spoke in verry positive terms to them all, but principally addressing myself to the 1st Chief (Black Buffalo), who let the roape go and walked to the Indian, party about, 100"

William Clark, September 25th 1804

12

A Young Man of Much Merit

13

"...Serj.' Floyd Died with a great deel of Composure... he was buried with the Honors of War much lamented; a Seeder post with the Name Sergt. C. Floyd died here 20th of August 1804 was fixed at the head of his grave - This Man at all times gave us proofs of his firmness and Deturmined resolution to doe Service to his Countrey and honor to himself...."

William Clark, August 20th 1804

RE: Sergeant Charles Floyd of Kentucky died on August 20th 1804, near present-day Sioux City, Iowa from what is now believed to have been a ruptured appendix. He was the only member of the Corps of Discovery who died on the journey. Meriwether Lewis regarded him as "a young man of much merit."

14

"...I beheld the Rocky Mountains for the first time...these points of the Rocky Mountains were covered with snow and the sun shone on it in such manner as to give me the most plain and satisfactory view. While I viewed these mountains I felt a secret pleasure in finding myself so near the head of the heretofore conceived boundless Missouri; but when I reflected on the difficulties which this snowey barrier would most probably throw in my way to the Pacific, and the sufferings and hardships of myself and party in them, it in some measure counterbalanced the joy I had felt in the first moments in which I gazed on them..."

Meriwether Lewis, May 26th 1805

15

"This evening we entered much the most remarkable cliffs that we have yet seen. these cliffs rise from the waters edge on either side perpendicularly to the height of about 1200 feet. Every object here wears a dark and gloomy aspect. The towering and projecting rocks in many places seem ready to tumble on us. The river appears to have forced it's way through this immense body of solid rock...it happens fortunately that altho' the current is strong it is not so much so but what it may be overcome with the oars for there is here no possibility of using either the cord or setting pole... from the singular appearance of this place I called it the gates of the rocky mountains."

Meriwether Lewis, July 19th 1805

16



The Corps of Discovery meet Chinooks on the Lower Columbia, October 1805 by Charles Marion Russel (ca. 1905)

17

"The Cho-pun-nish or Pierced nose Indians are Stout likeley men, handsom women, and verry dressey in their way, the dress of the men are a white Buffalow robe or Elk Skin dressed with Beeds which are generally white, Sea Shells- the Mother of Pirl hung to ther hair & on a pice of otter Skin about their necks hair Cewed in two parsels hanging forward over their Sholders, feathers, and different Coloured Paints which they find in their Countrey Generally white, Green & light Blue. Some fiew wore a Shirt of Dressed Skins and long legins, & Mockersons Painted which appears to be their winters dress, with a plat of twisted grass about their necks."

William Clark, October 10th 1805

18



"...towards evening we met Several Indians in a canoe who were going up the River. they Signed to us that in two Sleeps we Should See the Ocean..."
 Joseph Whitehouse, November 3rd 1805

19



"Great joy in camp we are in View of the Ocean...this great Pacific Ocean which we been so long anxious to See. and the roreing or noise made by the waves brakeing on the rocky Shores (as I Suppose) may be heard distinctly..."
 William Clark, November 7th 1805

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Lewis and Clark Expedition 150th Anniversary USPS commemorative issue postal stamp (1954). The stamp features Sacajawea, a Shoshone woman who accompanied her husband Toussaint Charbonneau on the expedition to the Pacific Ocean. Her son Jean Baptiste Charbonneau was born (in 1805) with the help of the Corps of Discovery.

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"About five o'clock this evening one of the wives of Charbono (Sacagawea) was delivered of a fine boy. It is worthy of remark that this was the first child which this woman had born and as is common in such cases her labour was tedious and the pain violent"
 Meriwether Lewis, February 11th 1805

22



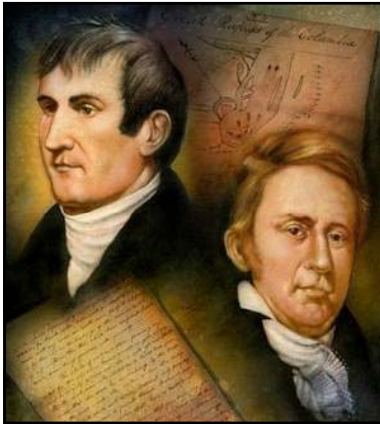
"Sacagawea was not the guide for the Expedition, she was important to them as an interpreter and in other ways."

Ella Elizabeth Clark, Author
 RE: the sight of a woman with her infant son would have been reassuring to many indigenous Indian nations no doubt, and Sacagawea played an important role in diplomatic relations by talking/interpreting with chiefs, easing tensions and giving the impression that the expedition represented a peaceful mission.

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"The Indian woman (Sacagawea) recognized the point of a high plain to our right which she informed us was not very distant from the summer retreat of her nation on a river beyond the mountains which runs to the west. This hill she says her nation calls the beaver's head from a conceived resemblance of its figure to the head of that animal...I determined to proceed tomorrow...until I found the Indians..."
 Meriwether Lewis, August 8th 1805

24



"...We loaded our Canoes & at 1 P.M. left Fort Clatsop on our homeward bound journey. At this place we had wintered and remained from the 7th of Dec. 1805 to this day and have lived as well as we had any right to expect, and we can say that we were never one day without 3 meals of some kind a day either pore Elk meat or roots..."
 William Clark, March 23rd 1806

25



Above: map (ca. 1814) of Lewis and Clark's expedition. It changed mapping of northwestern America by providing the first accurate depiction of the relationship of the sources of the Columbia and Missouri Rivers and the Rocky Mountains. They followed the Missouri to its headwaters and traversed the Continental Divide at Lemhi Pass. In canoes, they navigated the Clearwater, Snake and Columbia River/s, past Celilo Falls and past what is now Portland, Oregon (at the meeting of the Willamette and Columbia Rivers). The Corps were able to return home quickly via the Missouri River reaching St. Louis on September 23rd 1806. The Corps met their objective of reaching the Pacific Ocean, mapping and establishing their presence for a legal claim to the land. They also established diplomatic relations and trade with at least two dozen indigenous Indian nations, but they did not find the Northwest Passage.

26

Divine Providence

27



"The whole continent of North America appears to be destined by Divine Providence to be peopled by one nation, speaking one language, professing one general system of religious and political principles, and accustomed to one general tenor of social usages and customs. For the common happiness of them all, for their peace and prosperity, I believe it is indispensable that they should be associated in one federal Union."

John Quincy Adams
 RE: excerpt from an 1811 letter to his father


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John L. O'Sullivan, was a journalist and an influential advocate of the Jacksonian model of democracy. He wrote an article in 1839 which predicted a "divine destiny" for the United States of America based upon values such as equality, rights of conscience, and personal enfranchisement: "to establish on earth the moral dignity and salvation of man." This destiny was not explicitly territorial, but O'Sullivan predicted that the United States would be one of a "Union of many Republics" sharing these values. Six years later, in 1845, O'Sullivan wrote another essay entitled *Annexation* (in the *Democratic Review*) in which he first used the phrase "Manifest Destiny." In this article he urged the United States to annex the Republic of Texas, not only because Texas desired this but because it was "our manifest destiny to overspread the continent allotted by Providence for the free development of our yearly multiplying millions" (Texas was annexed in 1845). O'Sullivan's first use of the phrase "Manifest Destiny" attracted little attention.

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The Great Experiment of Liberty

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"And that claim is by the right of our manifest destiny to overspread and to possess the whole of the continent which Providence has given us for the development of the great experiment of liberty and federated self-government entrusted to us."

John L. O'Sullivan, Journalist

RE: on December 27th 1845, in his newspaper (the *New York Morning News*), O'Sullivan addressed the ongoing boundary dispute with *Great Britain* arguing that the *United States* had the right to claim "*the whole of Oregon.*" O'Sullivan believed that Providence had given the United States a mission to spread republican democracy: "*the great experiment of liberty.*" O'Sullivan argued that, because Great Britain would not use Oregon for the purposes of spreading democracy, British claims to the territory should be overruled. O'Sullivan believed that *Manifest Destiny* was a moral ideal; a "higher law," that superseded other considerations. O'Sullivan's second use of the phrase "*Manifest Destiny*" would become extremely influential in the arguments for and against national expansion westward. ³¹


"...that the designers and supporters of schemes of conquest, to be carried on by this government, are engaged in treason to our Constitution and Declaration of Rights, giving aid and comfort to the enemies of republicanism, in that they are advocating and preaching the doctrine of the right of conquest...the right of a manifest destiny to spread will not be admitted to exist in any nation except the universal Yankee nation..."

RE: Whig party opposition to the concept of "Manifest Destiny"

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The Era of Manifest Destiny

33



America's westward expansion was idealized in Emanuel Leutze's famous painting entitled: *Westward the Course of Empire Takes Its Way* (1861). The title of the painting (from a 1726 poem by Bishop Berkeley) was a phrase often quoted in *The Era of Manifest Destiny*, expressing a widely held belief that civilization had (and should) move steadily westward throughout history. ³⁴

Leader of the Free World

35

"...I think we all realize that the day has come when Democracy is being put upon its final test. The Old World is just now suffering from a wanton rejection of the principle of democracy and a substitution of the principle of autocracy as asserted in the name, but without the authority and sanction, of the multitude. This is the time of all others when Democracy should prove its purity and its spiritual power to prevail. It is surely the manifest destiny of the United States to lead in the attempt to make this spirit prevail."

Woodrow Wilson, POTUS

RE: excerpt from his 1920 message to Congress. This was the only time a sitting president had used the phrase "Manifest Destiny" (in his annual address). Wilson's version of Manifest Destiny was a rejection of expansionism and an endorsement of self-determination, emphasizing that the *United States* had a mission to be a world leader for the cause of democracy. This vision of the United States as the leader of the "Free World" would grow stronger, especially in the aftermath of WW II, but rarely would it be described as "Manifest Destiny," as Wilson had done in the aftermath of WWI. ³⁶



The above painting (ca. 1872) by *John Gast* entitled: *American Progress*, is an allegorical representation of the modernization of the new west. Here *Columbia* (a female personification of the *United States*) leads civilization westward with settlers stringing telegraph wire as she sweeps west (holding a school book). The various stages of economic activity of the pioneers are highlighted and, in particular, the evolving forms of transportation as the nation expanded west.³⁷

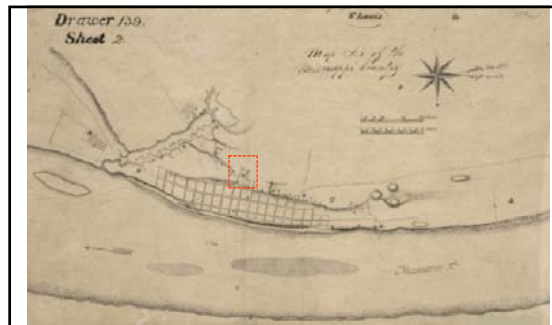
Part 2

The Spirit of St. Louis

38



Just after mid-day on February 14th 1764, French fur trader *Pierre Laclède* (1729-1778) told his aide, *Auguste Chouteau*, to build a city on the site they were standing upon. Laclède was sponsored by a *New Orleans* merchant (*Gilbert Antoine Maxent*) who, in 1863, had instructed Laclède (left) to build a trading post at the confluence of the *Missouri* and *Mississippi* River/s. Finding the actual confluence of the two great rivers too marshy to build upon, they selected a site eighteen miles downriver. Clearing of the land proceeded and Laclède returned in April 1764 with plans and a name for the new city: *St. Louis*. In his honor, the downtown riverfront area of *St. Louis* was named *Laclède's Landing*. In 1822, *St. Louis* was incorporated as a city and in 1841 expanded via a major annexation.³⁹



The *United States* and *France* signed the *Louisiana Purchase Treaty* on April 30th 1803. As part of the treaty, the town of *St. Louis* in what is now the state of *Missouri* was officially transferred to the *United States* less than a year later. The map above (ca. 1804) shows a small town of 180 homes nestled under a bluff along the river. The small, four-pointed star on the bluff is a fort completed in 1764.⁴⁰

Sixty miles south of *St. Louis*, iron resources led to a booming factory and foundry industry in the city. Iron pipes, plows, stoves, and tools were produced of *pig iron*. Decorations on grand homes and elaborate pointed fences were created from *wrought iron*. After a fire (in 1849) destroyed the center of the city, the demand for iron to rebuild increased dramatically. *St. Louis* entered the *Victorian Age* with style and a massive growth of industry and much commerce generated from river traffic. The era of the steamboat and railroad along with "The Age of Invention" molded the city into a thriving metropolis. Steamboats were the major river transportation between 1850 and 1870. At *St. Louis*, the steamboats were anchored three-deep and in a line for a mile along the levee. *St. Louis* was the nation's third busiest port until the beginning of the *Civil War* (1861). The 1874 completion of the *Eads Bridge* signaled the beginning of east-west railroad commerce at *St. Louis*. The railroads affected river traffic and were encouraged by local government thus, by the 1880s the age of the steamboat was drawing to a close. In the 1850s, *St. Louis* received a large number of *German* and *Irish* immigrants. Many Germans came to *St. Louis* to escape political unrest in their homeland. They settled in *St. Louis*, close to the area in mid-Missouri where other German settlers had established themselves due to the geographical similarity of Missouri and the German wine country. The Irish came to the *United States* to escape the *Potato Famine*. Many Irish were poor and illiterate. One Irish immigrant; *Joseph Murphy*, became a wagon builder and after learning the required skills, opened a business of his own. The famous "Murphy Wagon" could hold up to 5K-pounds of freight and was used by pioneers on the *Santa Fe Trail*. Murphy also made "Prairie Schooners" used to follow the trails west.⁴¹



St. Louis Waterfront (ca. 1850s)

42



Birdseye view of St. Louis, Missouri (1859) 43

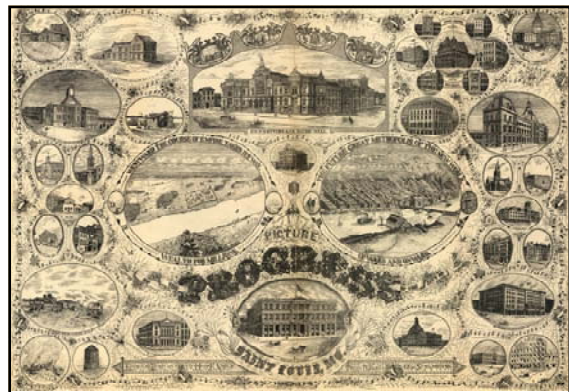
Once Free, Always Free

44



In St. Louis, African-Americans were both free and slave. One very famous national case originated at the *Old Courthouse* (above) in which *Dred Scott* - a slave, sued for his freedom. A final court ruling by the *U.S. Supreme Court* in 1857 declared that blacks were not citizens and had no rights under the law. This decision only divided the nation further amid the pre-Civil War tensions and hastened the start of the bloody conflict. It's believed that Scott's abolitionist friends in St. Louis had encouraged him to sue for his freedom on the grounds that he had once lived in a free territory (he had accompanied his owner - an army surgeon, to posts in *Illinois* and the *Wisconsin Territory*, where slavery had been prohibited by the *Missouri Compromise* of 1820). In the past, *Missouri* courts supported the doctrine of "once free, always free." Scott eventually won his freedom when his original owners (the *Blow* family, who had backed him financially through nearly eleven years of litigation) bought him his freedom soon after the Supreme Court decision in 1857. Thus, one of the most important cases ever tried in the *United States* was heard in St. Louis' Old Courthouse.

45



Henry F. Vogel's *Progress of the City of St. Louis* (1884) 46



View of St. Louis (1892) 47



Birdseye view of St. Louis, Missouri (1896) 48

As early as 1887, statesman *James G. Blaine* made a suggestion to build a statue of *Thomas Jefferson*, memorializing the *Louisiana Purchase* which had doubled the size of the nation and spurred westward expansion. In 1888, interested property holders held meetings to discuss dwindling property values within the riverfront district proposing an association to seek measures to restore property values in the area. Though their efforts failed, interest in the problem of riverfront revitalization did not die. In 1898, during planning for the *Louisiana Purchase Centennial*, an idea developed to rebuild a pioneer village on the site of *St. Louis'* founding. Such a project would have eliminated some of the dilapidated riverfront buildings. This plan failed when a majority of the *Centennial Committee* decided to instead build the *Louisiana Purchase Exposition* of 1904 in *Forest Park*.

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The Civic League

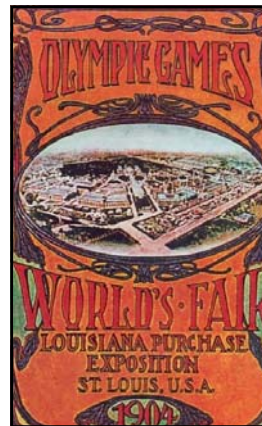
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"While the report is issued at this particular time with the hope that it will furnish suggestions for public improvements contemplated at in the recent \$1.2 million bond issue, its primary object is to supply this city with a plan which will to some extent, direct its future development along the right lines."

St. Louis Civic League, Executive Board

RE: excerpt from a report concerning the development of a *City Plan for St. Louis* issued in 1904 by the *Public Buildings Committee*. The League was founded in 1901 as the *St. Louis Improvements Association*. Immediately, it attracted a wide varied of professionals interested in *Progressive Era* causes such as health and sanitation ordinances, model tenement housing, playgrounds etc.

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The *Civic League* was intimately involved with cleanup effort in preparation for hosting the *Louisiana Purchase Exposition* and *Summer Olympics* in 1904. Featured at the exposition was a wide, curvilinear model "future" street with uniform setbacks and neoclassical buildings demonstrating the most modern city planning ideas. Suitably impressed, the League would spearhead the effort to write a *City Plan for St. Louis* in 1907. Six committees prepared the plan;

- General
- Inner and Outer Parks
- Civic Centers
- Street Improvements
- Municipal Art
- Legislation

Significantly, the latter committee was made up of five local attorneys including *Luther Ely Smith* who would be the moving force behind the creation of the *Jefferson National Expansion Memorial* and its centerpiece; *Gateway Arch*.

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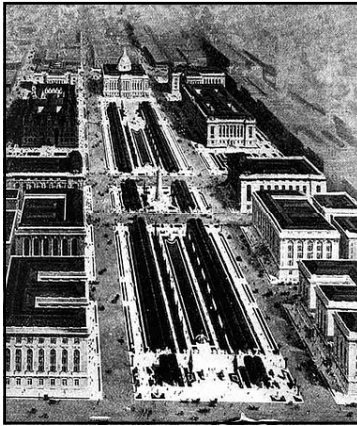


Above: Panoramic engraving of *St. Louis, Missouri*, published by *Fred Graf* in 1907. *St. Louis* continued to prosper until the *First World War*. Residential areas began to merge together between major roads that linked easily to the outlying communities. Along these roads shopping centers popped up at every intersection. The transit system used these thoroughfares making them busy hubs. In 1907 the *United Railways Company* took control of the last independent line creating one single transit system that would serve the entire city. The *World's Fair* of 1904 had brought worldwide attention to *St. Louis* and spurred a new era of construction that included hotels, office buildings and homes. *St. Louis* was becoming the world's largest producer of products such as beer, shoes, wagons and stoves by the end of the 20th Century's first decade.

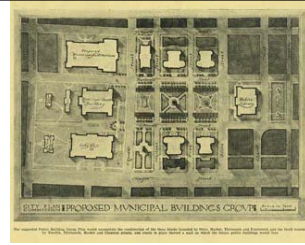
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City Beautiful

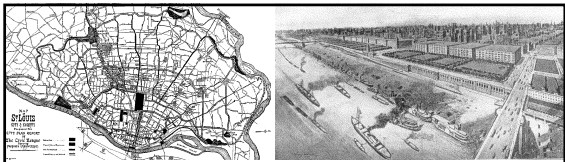
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Left: rendering of proposed *Municipal Court and Public Parkway for St. Louis* that appeared in the *Public Buildings Commission's 1904 report*. The national movement known as "City Beautiful" was highly influential in St. Louis due to the advocacy of landscape architect *George Kessler* for its principles. Kessler served on the *Inner and Outer Park Committee of the Civic League*, and his associate *Henry Wright* served on the *Civic Centers Committee*. Together they worked to ensure their philosophy was articulated in the city's first comprehensive plan (1907). The comprehensive plan included an entire chapter on "A Public Buildings Group" that quoted in full the earlier recommendation of the *Public Buildings Commission report (of 1904)* for a similar plan. 55



Above: *Public Building Group Plan for St. Louis: The City Plan Commission, St. Louis, Missouri by Harland Bartholomew*. Architect *Harland Bartholomew* worked for the *City Plan Commission*. In 1928, he drew up detailed plans for a riverfront development. A model was made and placed on public display. *Luther Ely Smith* served as chairman of the voluntary *Citizen's City Plan Commission* (which preceded the municipal body of the same name). This committee brought *Harland Bartholomew* to St. Louis. Though none of these plans gained enough public support to be realized, interest in riverfront development evolved during the tumultuous years of the *Great Depression*. 56

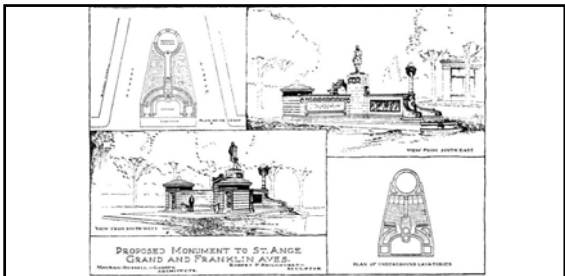


"Under no circumstances should this opportunity of establishing a focal center for public edifices be permitted to pass"
City Plan for St. Louis, 1907

RE: in January 1907, *St. Louis' Civic League* published a very elaborate plan for general civic improvement. A public building group was the important feature of the plan. These buildings consisted of a *Court House, Jail, Police Headquarters, Health Department Building and Library* (all immediately needed). Other structures, such as a *Law Library, Executive Building, Fire Department and Engine House* (which were included in the plan) were prospective only. The present *City Hall* was also included in the scheme. Boulevards were planned connecting all of the existing parks and several new parks were proposed. A broad plaza was suggested along the river front, with railway tracks and stations underneath and a warehouse fronting it. However, no particular change in street layout was recommended. 57

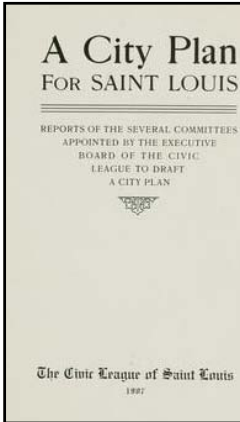


Above: following publication of the 1907 *City Plan*, several architects published renderings of their own versions of the *Civic Center*. *William Henry Gruen* published his "City Square" in 1911 (above). Kessler's *City Beautiful* vision provided a stark contrast to the reality of crowded western downtown *St. Louis*. The *Civic League* recommended alleviating downtown's overcrowding by clearing several blocks of buildings for a new park mall. Surrounding the mall would be grand public buildings. The area of downtown recommended for clearance was widely known as a notorious red-light district and *African-American* slum. The 1907 *City Plan* addressed the immediate need to both create a *Civic Center* and eradicate the blight around *City Hall*. Gone would be the patchwork of old brick buildings with a mix of tenement apartments, shops, corner storefronts and warehouses. Instead, the blocks would be a sweeping green space. Surrounding the park would be a controlled, monolithic use. The plan called for nothing short of complete control of multiple city blocks (park space was considered a remedy for many social problems). The 1907 *City Plan* did not result in a rush to implementation, but the *Civic Plaza* idea was gaining momentum. 58



Above: from: *Comfort Stations for St. Louis (1908)*. The *Civic League* suggested a mighty monument to *St. Ange (Captain Louis St. Ange de Bellerive)*, the first French commandant of *St. Louis* (to be located at the intersection of *Grand Boulevard and Franklin Avenue*). When he arrived at *St. Louis* in 1766, *St. Ange* established a proper government and created the first official system of land-grants for the area. Interestingly, underneath the monument to *St. Ange* would have been a system of lavatories. The project was never realized. 59

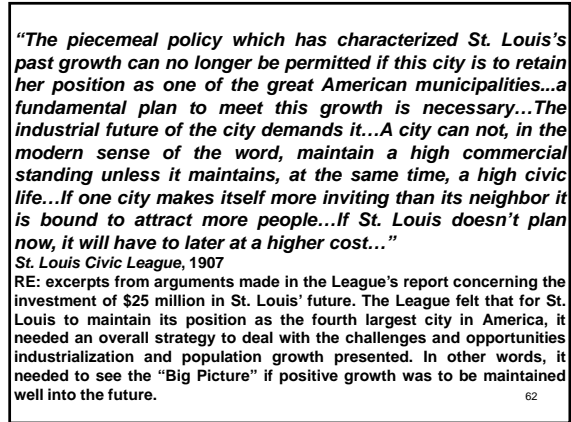
The Big Picture



"We hope that the plan as outlined will at least aid in arousing the public sentiment of St. Louis to the need of civic improvements on a comprehensive scale..."

William Trelease, Chairman – Executive Board, St. Louis Civic League

RE: excerpt from the preface of the League's 1907 *City Plan for St. Louis*. St. Louis was competing with its arch-nemesis *Chicago* for status as the mid-west's commercial, industrial and cultural center. Chicago already had an integrated parks system and provided public baths throughout the city. As well, The *Chicago Commercial Club* retained prominent architect *Daniel H. Burnham* to draft a city plan for Chicago that was as comprehensive as the plan for *Washington D.C.* St. Louis was, no doubt, playing a game of "catch up."



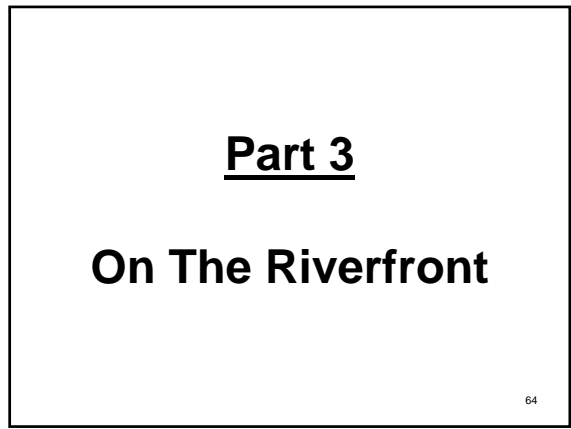
"The piecemeal policy which has characterized St. Louis's past growth can no longer be permitted if this city is to retain her position as one of the great American municipalities...a fundamental plan to meet this growth is necessary...The industrial future of the city demands it...A city can not, in the modern sense of the word, maintain a high commercial standing unless it maintains, at the same time, a high civic life...If one city makes itself more inviting than its neighbor it is bound to attract more people...If St. Louis doesn't plan now, it will have to later at a higher cost..."

St. Louis Civic League, 1907

RE: excerpts from arguments made in the League's report concerning the investment of \$25 million in St. Louis' future. The League felt that for St. Louis to maintain its position as the fourth largest city in America, it needed an overall strategy to deal with the challenges and opportunities industrialization and population growth presented. In other words, it needed to see the "Big Picture" if positive growth was to be maintained well into the future.

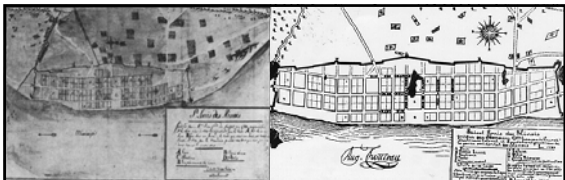


Left: this building at 1403 Pine Street (photographed in the 1930s) was typical of the kind of housing stock city planners wanted to remove from western downtown. The *Civic League* published their comprehensive plan in 1907. It reported that there was one acre of park for every 96 people living west of *Grand* and one acre for every 1,871 between *Grand* and the river. The League found this density undesirable and recommended creating additional park space through slum clearance. Over one-hundred years later, after decades of demolition in the central district of *St. Louis* destroyed entire neighborhoods and rendered others dysfunctional, the *Civic League's* plan, in retrospect, may have been short-sighted in this regard.

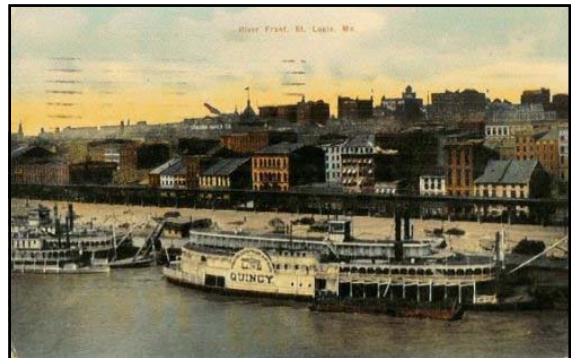


Part 3

On The Riverfront



Above: maps of *St. Louis* ca. 1780s. One of the major errors the *Civic League* pointed to in their 1907 *City Plan* was the development of the waterfront. The development of *St. Louis*, on the whole, had been haphazard, but the waterfront deserved special mention. *Laclede's* 1764 street plan had been, despite being the work of a novice, functional but did not utilize the waterfront to its full potential. *Laclede* provided a public square in the city's center and allowed for an elongated grid plan (rather than classical square blocks) along the river to facilitate river access. The League included an 1804 city map with the caption: *Map Showing How St. Louis Early Turned Her Back on a Beautiful River Front*



St. Louis Waterfront (1911)



"...In 1933, when Luther Ely Smith stared at the once-glorious St. Louis riverfront, he saw the blight of decrepit warehouses and he felt a sense of a city – the nation's fourth largest in 1900 – whose growth had been severely stunted..."

Moscow-Pullman News, October 26th 1990

RE: as a civic leader, then a member of the Council of Civic Needs, Luther Ely Smith (left) saw the creation of a riverfront memorial park as a way to relieve two problems at once; chronic unemployment (during the Great Depression) and clearing of the decaying riverfront.

67

Honoring Jefferson

68

"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."

RE: on December 15th 1933, in a meeting with city leaders, St. Louis Mayor Bernard Dickmann raised in a meeting with city leaders an idea communicated to him by local attorney and civic activist Luther Ely Smith for a waterfront memorial honoring the westward expansion of America. Smith was returning to St. Louis from the George Rogers Clark National Historical Park in Vincennes, Indiana. He saw in his minds eye a vision for the future of St. Louis's neglected riverfront as his train crossed the Mississippi into the city. The city government sanctioned the proposal and the nonprofit Jefferson National Expansion Memorial Association (JNEMA, pronounced "Jenny May") was thus formed. Smith was appointed Chairman and Dickmann vice chairman.

69



Left: map of St. Louis (1947) showing "Obsolete & Blighted Districts." Smith served as a member of the George Rogers Clark National Historical Park Federal Commission after being appointed by his college classmate Calvin Coolidge. As Smith gazed out the train window at the decaying St. Louis riverfront passing slowly by, he realized that only drastic measures could restore the district. The seed of an idea for a historical monument had been planted in Smith's fertile imagination. To his advantage, Smith had sympathetic ears among the business, cultural and political leaders of St. Louis with whom he was an intimate. Perhaps most important of all, he had a the backing of the POTUS (FDR) who was very fond of anything (particularly memorials) to his hero Thomas Jefferson.

70



"...greatly interested in the suggestion for the Jefferson National Expansion Memorial for the St. Louis Riverfront...I can tell you that I like the principle underlying the thought of a memorial to the vision of Thomas Jefferson and the pioneers in the opening up of the Great West."

Franklin Delano Roosevelt, POTUS

71

"...St. Louis attorney Luther Ely Smith and advertising executive William D'Arcy sparked the project in the early 1930s along with Mayor Bernard F. Dickmann. They envisioned the memorial as a way of wiping out an area of decaying, obsolete buildings, which were a drain on property values in the business district, and creating jobs to reduce public relief rolls, as well as honoring Jefferson. It was estimated that the memorial would provide work for 5,000 men for three or four years...but a string of events blocked their plans. Mr. D'Arcy died in 1948 and Mr. Smith in 1951..."

Wall Street Journal, June 19th 1964

72

Though other groups developed plans to: “improve the usefulness and value of the property” (next to the river), only the association headed by Smith progressed beyond the drawing-board stage. The group split-up into subcommittees to consider various phases of the project; *Legislative, Publicity, Finance, Historical Data, Plan and Scope*. Within months, the association members introduced their idea to their congressional representatives, determined the necessary level of funding and drafted bills for consideration by Congress. St. Louis architect *Louis La Beaume* gathered historical data, listed property holdings, and reported their results to the association’s executive committee. The area designated to be considered for the memorial was defined as “approximately one-half mile in length...from Third Street east to the present elevated railroad.”

73



“If we plan well and build well...we shall serve not only a splendid patriotic cause, but our own city too”

Luther Ely Smith, 1935

RE: at left, an aerial view of St. Louis’ riverfront (September 1935). Note the dotted outline representing the site area of “Riverfront Plaza” inclusive of the *Old Courthouse*.

74

The Booklet Blunder

75

“I do not think the President would even dare to make such a recommendation to the Congress with the finances of the country in the condition they are at present.”

John Cochran, Missouri Congressman

RE: in January 1934, Missouri Senator *Bennett Champ Clark* and Representative *John Cochran*, jointly introduced a resolution into both congressional houses appropriating \$30 million for the proposed memorial. Cochran reported to *Mayor Dickmann* that he had spoken with various congressional leaders and warned him that he would not get to first base with such an appropriation request in the midst of a depression. Smith and Dickmann then shifted tactics by proposing a commission patterned after the *George Rogers Clark Memorial Commission* on which Smith had served. In March 1934, joint resolutions were introduced in both the House and Senate “authorizing the creation of a *Federal Memorial Commission*” to construct a permanent memorial. Smith’s association made a major mistake when they mailed information booklets that contained the original resolution (requesting a \$30 million appropriation) to congressional members. This action reinforced fears that the association would later return to ask for that amount. Cochran continued to assure Smith that he would do everything in his power to help and he tried to counteract the booklet blunder by writing each House member an explanation stating that the new resolution would create a commission only without a commitment of any kind for an appropriation.

76

“I want to be frank...An association in my city, St. Louis, through its officers, approached me to introduce a resolution calling for an appropriation from the Federal Government of \$30,000,000 to construct a memorial...in honor of Thomas Jefferson and the Louisiana Purchase. The mayor of my city and other gentlemen made this request. I told them that I did not want to introduce such a resolution; that I knew it had absolutely no chance to pass. They insisted that the resolution be introduced. I introduced it; and on the day I introduced it I gave a statement to the press in my city practically ridiculing the idea of asking an appropriation of such amount from the Congress for a memorial, calling their attention to the cost...of other memorials that the Government has constructed. I suggested to them that they organize in the area covering the Louisiana Purchase, that they bring in all the States...but not to ask the Government of the United States to construct it. They took my advice and drew a second resolution, which does not obligate the Government in any manner, shape or form; and it is the second resolution that is under consideration at the present time...I presume that some day this organization may return to the Congress and ask for a reasonable appropriation; but if I happen to be here at that time I assure the gentleman as far as I personally am concerned I would not ask for the appropriation of more than a limited amount...”

John Cochran, Missouri Congressman

77

“The story begins back in 1934. St. Louis having elected a Democratic mayor, Bernard F. Dickmann, ex-head of the city’s real-estate exchange, it occurred to a bunch of the boys that here was an excellent opportunity to unload upon the federal government some thirty-seven blocks of loft buildings and the like along the municipality’s riverfront. They proposed to raze the buildings, park the area, erect in its center a Taj-Mahal-like structure, and call the result a memorial to the President who arranged the Louisiana Purchase. To that end, they had a resolution introduced in Congress appropriating \$30,000,000 for the memorial. It was an audacious request. St. Louis already had one memorial to Jefferson, a large stone building erected in Forest Park at the time of the World’s Fair. Secondly, it involved asking approval for a memorial at St. Louis from a Congress that for years has been haggling fruitlessly over plans to build a Jefferson memorial in the nation’s capital. Then, too, there was the breath-taking magnitude of the proposition; the Washington monument had cost about \$1,000,000, the Lincoln Memorial about \$10,000,000. The proposed Jefferson memorial was to surpass them and rival Bonneville Dam and Passamaquoddy. And there was yet another factor to be considered - the project’s sponsors proposed to sell back to the government at \$325,000 an acre land that the government had bought in 1803 for four cents an acre and sold to settlers at \$1.25...”

Washington Weekly by Paul W. Ward (February 23rd 1936)

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79

An Opening Wedge

80

"...The resolution never got out of committee. Convinced that there was no chance of its being adopted, its sponsors had substituted for it a resolution creating the "United States Territorial Expansion Commission." It would have called for a "Thomas Jefferson Memorial Commission" had not Congress nine years earlier set up just such a commission for a memorial here, and at its last session given it a working fund of \$13,000. Senator Clark slipped the "Territorial Expansion Commission" resolution through the Senate without effort. It encountered difficulties in the House, where members of the Thomas Jefferson Memorial Commission assailed the resolution for just what it subsequently turned out to be - an opening wedge for the \$30,000,000 memorial project at St. Louis. However, when the resolution was brought up at a night session of the House in June, 1934, its backers there vigorously denied that the proposed commission would come back to Congress with requests for federal funds. They denied that the resolution was an "opening wedge," and they pointed out that it contained a provision specifically prohibiting the commission from incurring any expense to the federal government..."
Washington Weekly by Paul W. Ward (February 23rd 1936)

81

To Recall and Perpetuate

82

Congressional leaders remained cautious on the bill's chances of consideration. Finally, on June 8th 1934 the bill held second place on the day's procedure. That day it was considered, special rule *H. Res. 356* was agreed upon, and *S.J. Res. 93* passed the House by an overwhelming majority. President *Franklin D. Roosevelt* signed the bill into law on June 15th 1934 establishing the *United States Territorial Expansion Memorial Commission*. The Commission would have fifteen members. On December 19th 1934, the Commission held its first meeting in *St. Louis*. President Roosevelt personally sent them a congratulatory telegram: *"All good wishes for the success of your Commission's efforts to recall and perpetuate the ideals, the faith and courage of the pioneers who discovered and developed the great west."*

83

Whereas the American people feel a deep debt of gratitude to Thomas Jefferson and all those who contributed to the territorial expansion of our Nation; Now, therefore, be it

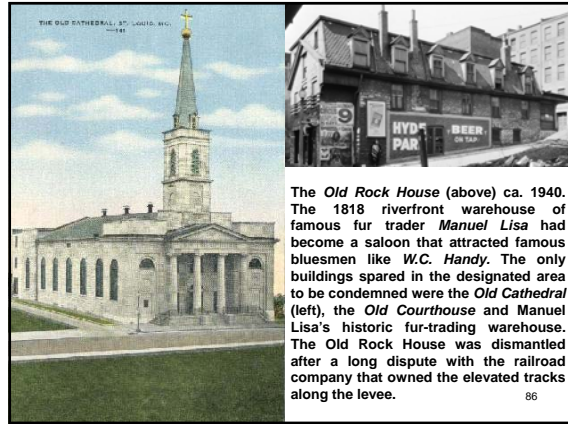
Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That there is hereby established a commission, to be known as the "United States Territorial Expansion Memorial Commission" (hereinafter designated as the "United States Commission"), for the purpose of considering and formulating plans for designing and constructing a permanent memorial on the Mississippi River, at Saint Louis, Missouri, said Commission to be composed of fifteen commissioners as follows: Three persons to be appointed by the President of the United States, three Senators by the President of the Senate, three Members of the House of Representatives by the Speaker of the House of Representatives, and six members of the Jefferson National Expansion Memorial Association to be selected by such association.

Public Resolution - No. 32 - 73d Congress (S. J. Res. 93)

84

“...So the resolution was passed by a vote of 115 to 15, and the commission later brought forth its plan. After months of meditation it had decided that there should be a \$30,000,000 Jefferson memorial project covering thirty seven blocks of St. Louis’s waterfront. The next step was to get the Missouri Legislature to pass an act enabling St. Louis to float \$7,500,000 in bonds to help the federal government pay for the project. The act specified that St. Louis could issue the bonds when, as, and if the federal government agreed to put up \$3 for every \$1 put up by the city...”
Washington Weekly by Paul W. Ward (February 23rd 1936)

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The *Old Rock House* (above) ca. 1940. The 1818 riverfront warehouse of famous fur trader *Manuel Lisa* had become a saloon that attracted famous bluesmen like *W.C. Handy*. The only buildings spared in the designated area to be condemned were the *Old Cathedral* (left), the *Old Courthouse* and *Manuel Lisa's* historic fur-trading warehouse. The *Old Rock House* was dismantled after a long dispute with the railroad company that owned the elevated tracks along the levee.

86

Despite the creation of the *United States Territorial Expansion Memorial Commission* in June 1934, association members continued to develop detailed plans for the riverfront. By December 1934, they discussed holding an architectural competition for the memorial. In January 1935 *Louis La Beaume* wrote his concept of a competition. It contained the principal elements of the competition which was actually held twelve years later, it was;

- National in scope;
- Held in two stages;
- Data included in the program;
- Included the acquisition of a professional advisor

At their first meeting in *St. Louis*, the commissioners received a briefing from the association, reviewed plans for the memorial, visited the historic site on the riverfront, and elected an executive committee. Their second meeting (held in *Washington, D.C.* on February 1st 1935) attracted many influential observers including Missouri Senator *Harry S. Truman*. At noon, Smith and a small group met with President *Roosevelt*. They presented a general outline of the development, answered questions about the architectural competition to be held, noted the number of *St. Louisans* who were unemployed, predicted a starting date, and estimated the project's duration. Although *Roosevelt* thought it impossible to obtain government funds for the memorial's entire cost of \$30 million, he thought that some available relief fund money could provide for at least a year's worth of work on the memorial.

87



St. Louis Civic leaders who traveled to *Washington D.C.* in early 1935 to garner support for a riverfront monument. Third from right is *St. Louis* Mayor *Bernard Dickmann*. At far right is *Luther Ely Smith*.

88

“...After applying for a \$22.5 million grant in 1935 from the *Public Works Administration*, *St. Louisans*, eager to fulfill their dream, quickly passed a \$7.5 million bond issue by the necessary 2-to-1 margin, having been assured the *Federal* money would be forthcoming, if they put up a fourth of the project's estimated cost. But after an initial allocation of \$6,750,000 in 1935, which was used along with \$2,250,000 from the city bonds to purchase and clear the 37-block site, the *New Deal* relief programs expired and the city was to wait nearly 20 years for further federal aid...”
Wall Street Journal, June 19th 1964

89

Smith and *Dickmann* had turned their attention to financial matters. At the end of March 1935, they considered the *Public Works Administration* (PWA) as a source of funds, but realized they would have to approach Secretary of the Interior *Harold Ickes* or other federal officials for money. A new relief disbursement office, the *Works Progress Administration* (WPA) had just been established, and by whom. Commission members conferred on April 20th 1935 with *Harry L. Hopkins*, director of the *Federal Emergency Relief Administration*. He asked specific questions concerning amounts of work relief in the project, the number of employable workers and other pertinent questions. Smith supplied information concerning the purpose, scope, and significance of the project, estimating that between five and six thousand people would be employed. *Frank C. Walker*, Executive Director of the *National Emergency Council* (NEC) immediately wrote a letter of transmittal to an official at the NEC office requesting that the plans and application for funds be received. This completed, the plans reached Assistant Director of the *Public Works Administration* *Horatio Hackett*, who sent them to the Missouri State PWA office in *St. Louis*. On July 1st 1935, the *St. Louis Board of Aldermen* passed an ordinance permitting the holding of a special bond issue election to contribute \$7.5 million toward the memorial. This was done on the understanding that federal authorities would approve the project while contributing a substantial allotment before the election date. The city would contribute funds on a ratio with federal funds.

90

"...On August 15 last the commission applied to the PWA for \$22,500,000, the federal share of the project's cost. Then, on September 12, St. Louis held its mandatory referendum on the bond issue. Although the PWA had made no commitment, the project's sponsors for weeks before the election closed their eyes to that fact. In huge advertisements urging the voters to approve the bond issue they asserted that 'actual work (on the project) can start ten days after the bond issue is approved.' These advertisements also said 'the memorial will become part of the national-parks system and will be maintained by the federal government forever without any cost to the city.' The chief argument advanced in behalf of the bond issue was that the project would at once create 5,000 new jobs..."

Washington Weekly by Paul W. Ward (February 23rd 1936)

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Authorized early in 1935, the *Emergency Relief Appropriation Act* (worth \$5 billion) represented the largest single appropriation in the history of the *United States*. Such a staggering sum fomented a battle over its control between Secretaries Ickes and Hopkins. Secretary Ickes favored large public works while Hopkins stressed maximum employment. Hopkins finally won the day when the newly established *Works Progress Administration* featured small projects providing relief work with negligible material costs. With relief money split between several agencies, Hopkins had only \$1.4 billion to spend. The WPA nevertheless hired some three million workers who left a lasting legacy. During the summer of 1935, Dickmann and Smith recognized that there were conflicts within the administration of Washington's relief policies when they tried to obtain work relief money for *St. Louis*. As early as May, Smith was warned of the Ickes-Hopkins rivalry. *National Park Service* (NPS) Director *Arno Cammerer* hinted that not only would the NPS consider taking care of the finished memorial, but that it might also supervise its construction. Since Smith believed the memorial offered the possibility of immediate expenditures for unskilled labor, he felt it fit; "more into Mr. Hopkins' plan than any other project can possibly do." As a result, Smith concentrated on winning Hopkins' support, followed by the President's. In consideration of *St. Louis*' promised contribution, Hopkins thought he could add \$8 million as a start. On August 7th 1935, several association members met with Secretaries Ickes and Hopkins seeking immediate federal action so that city officials could go ahead with final plans for the bond issue. Again, Ickes and Hopkins verbally approved the project and promised to allot \$10 million for the first year's work. When Hopkins asked about memorial maintenance, Ickes replied that the NPS (an agency within his department) would assume this responsibility. The men from *St. Louis* asked for written confirmation of this agreement but Secretary Ickes refused the request preferring a press statement. Following passage of the bond issue on September 10th 1935, the commission forged ahead with plans to enter into an agreement with Washington.

92

"...Even so, the ballot boxes apparently had to be stuffed to carry the election for the bond issue. The vote went against it in the residential wards. It was the vote in the machine wards that carried the day, with 95 per cent of the registered vote being cast in some of their precincts and more than 100 per cent in others. Shacks without a single bed turned out to be the residences of from fifty to a hundred voters. The only organized opposition to the project came from the fur, feather, and wool traders and the other manufacturers located in the buildings to be razed to make room for the memorial. They objected to the expense of having to move into higher-cost areas..."

Washington Weekly by Paul W. Ward (February 23rd 1936)

93

"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"

John Nagle, NPS Engineer

RE: Nagle was sent to *St. Louis* to inspect plans and the proposed location. In the report on his three-day fact-finding mission, Nagle favored the project stating that he believed the national significance of the project warranted federal aid. Nagle did not predict the pending bond issue election's outcome but did note that Federal approval of at least a major portion of the project was necessary before any city funds would be applied to it. The much quoted \$30 million cost of the memorial he thought was possibly too high since it did not rest on any definite plans. *St. Louis* proposed to match federal funds on a basis of three-to-one, supplying \$2.5 million to Washington's \$7.5 million. Even though the memorial's condemnation of forty city blocks would decrease city revenues by \$180K per year, *St. Louisans* felt that subsequent development would amortize the loss relatively quickly.

94

Smith and others hoped to get an appointment with Ickes to earmark \$22.5 million for completion of the memorial within three years. If Ickes and Hopkins accepted this proposition, they would reverse their past position that President Roosevelt was against obligating funds for more than one year. *Harry Hopkins* answered Smith's request by saying some funds could be allotted to the memorial. When asked if \$22.5 million would be earmarked to match the city's contribution, Hopkins replied that it was up to Ickes. The Board of Estimate's order that city money could be given only if matched three-to-one supported the argument for the entire allotment of \$22.5 million. On September 26th 1935, Ickes announced his decision: the proposed memorial would not qualify for work relief funds unless the legal problems were overcome. An allotment of \$22.5 million could not be made despite the ruling of the board of estimate. In no instance would more money be allocated than could be used in one year. On September 27th 1935, Roosevelt, Ickes and Hopkins met with Mayor *Dickmann* and others while the President was traveling west by train. Ickes and Hopkins indicated they wanted to begin the project as soon as possible and promised to furnish the necessary funds for the first year's work if the state enabling act authorizing the bond issue and financing would receive a favorable legal interpretation (legal challenges abounded). The President told the delegation to define the law, with reference to the limitation on expenditures.

95

"What we are now seeking to do is figure out a way through which the Federal Government may make a definite and authoritative allocation of its part of the funds without an Act of Congress."

Charles M. Hay, St. Louis City Counselor

RE: Hay believed the President possessed authority to allocate funds out of the PWA or WPA without falling under the expenditure time limit and that with such power, Roosevelt could solve the problem of financing without an *Act of Congress*. If the President allocated the funds with no time limitation, the city would be able to contribute all the allotted funds immediately, but doubt remained over the ability of a presidential executive order to accomplish both goals.

96

"I am herewith transmitting without my approval a proposed executive order approving the establishment and authorizing the construction of the Thomas Jefferson Territorial Expansion Memorial...The President has no authority to commit the Congress to future appropriations for the completion of this project."

Homer Cummings, United States Attorney General

RE: after the PWA approved the executive order draft, President Roosevelt received it and he, in turn, sent it to Attorney General Cummings for a ruling on its legality. On November 18th 1935, Cummings responded to the President's request stating he believed the President's only authority to construct the project lay in the *National Recovery Act* and the *Emergency Relief Appropriation Act of 1935*. Funds for the project were available under the latter act but, unfortunately, these funds could not be allocated for future use. Furthermore, any executive order operating on a legal basis would have to provide for the construction of the project out of funds then available and at the disposal of the President and, in Cummings' opinion, the federal government had no right to accept the \$7.5 million from the city of St. Louis on any other basis. To counter the claim that the Government had an agreement with the city to build the memorial, Cummings replied that acceptance of money implied only a moral commitment to complete the project, not a firm legal agreement. He offered an alternative way to obtain the money: ask Congress for it. Then and only then could the project receive relief funds.

97

"The Department of Justice had been so cooperative in September that it seemed impossible that there could be any substantial objection coming from that office."

Luther Ely Smith, November 15th 1935

RE: Attorney General Cummings' opinion left the association members bewildered, none more so than Smith. Advisors in the PWA legal department had drafted the executive order, satisfying Ickes' desire for action having sought approval of the general plans and an appropriation for the first year's construction. Consultation with the AG had never even been discussed. Ickes believed the executive order sufficient since he personally took it to the *White House* for President Roosevelt's signature. For his part, the president certainly did not expect such a ruling. The stunned *St. Louis* delegation returned home empty-handed.

98

"...With the bond issue approved, the project's sponsors put pressure on Washington for favorable action on their \$22,500,000 application. September and October passed without such action resulting, and in November a delegation came to Washington from St. Louis to force results. At the White House on November 18 they were met with a five-page opinion from Attorney General Cummings that caused some of them actually to weep and all of them to go scurrying home. The opinion was in the form of a letter to the President. It said Mr. Roosevelt had sent to the Attorney General for scrutiny an executive order under which, on receipt of \$7,500,000 from St. Louis under the terms of the state enabling act, the federal government would take over and construct the Jefferson memorial project. Mr. Cummings noted that the order did not say that the federal government would put up \$22,500,000, but he said it meant the same thing. He also said that under the Emergency Relief Appropriation Act of 1935 Mr. Roosevelt had power to issue such an order - if he had \$22,500,000 to spend in its fulfillment. But, said the Attorney General, the President did not have \$22,500,000 to spend on such a project, and his order therefore was illegal, because he could not commit the government to spending funds that had not yet been appropriated by Congress..."

Washington Weekly by Paul W. Ward (February 23rd 1936)

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"I know I need not impress upon you the fact that the people of St. Louis have ideas too regarding what morally binds. They don't like this even a little bit. If this communication sounds like lessons from the pulpit understand I am not responsible for this sudden emphasis on moral implications."

Mayor Dickmann

RE: telegraph sent to Senator *Bennett Champ Clark* concerning Cummings' opinion that only a moral binding held the federal government to the project. This angered and disappointed him in view of the money spent by *St. Louis* on the bond-issue election. For the next few weeks, Dickmann, Smith and their congressional representatives sought a way to obtain the authorization. Representative *John Cochran* searched for non-allocated money controlled by the president, but the director of the *Budget Bureau* reported that no such funds remained in fiscal year 1935. "Frankly, to me, it appears that the red tape is slowly winding itself around this project," Cochran told Dickmann, and he doubted that any appropriation resolution would get through Congress.

100

We Might as Well Face Reality

101

Aside from drafting a new executive order, an appeal to Congress seemed the only option. A bill could approve the area as a site for a national memorial as recommended by the commission. Rather than seeking an appropriation, the law would provide authorization for the *National Park Service* to accept *St. Louis'* \$7.5 million. Roosevelt would possess authority to allocate the money that Hopkins had set aside for the project. Smith felt that the obvious advantages of such direct relief would appeal to Congress so much so that even the staunchest critics of spending policy and treasury watchdogs would favor allotting money for such a project. Then, if future appropriations seemed unwise, Congress held the option of objection. Meanwhile, in view of the Attorney General's mid-November ruling, *Russell Murphy* summed up everyone's feelings: "We might as well face reality."

102

The Historic Sites Act

103

"...Then, in December, Mayor Dickmann came back to Washington alone and announced that he intended to remain until he got the project money he was after. He went to see Forbes Morgan of the Democratic National Committee. He went to see Jim Farley and Homer Cummings. He also saw Roosevelt. And he did a great deal of desk-pounding to force home his point that, if the Administration proposed to carry St. Louis next November, it would have to help Mayor Dickmann fulfill the promises made to the electorate there at the time of the bond election. The Mayor panicked them all, with the result that Harry W. Blair, an Assistant Attorney General, was put to work to find a way around the Attorney General's November opinion. Mr. Blair, a Missourian and the husband of Emily Newell Blair, turned up the Historic Sites Act, passed last August, declaring the preservation of historic sites and buildings to be a national policy..."
Washington Weekly by Paul W. Ward (February 23rd 1936)

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"One thing for Homer, however, is that he is agile. He found against it on one ground and now he discovers that he can qualify it under the Historic Sites Act, which was passed last session. I rather hooted at this, but since we are all committed up to our eyes on this project, I think we ought to go through with it under whatever guise."

Harold Ickes, Secretary of the Interior

RE: apparently, the idea of the St. Louis project had progressed well until Cummings rendered his adverse opinion. Dickmann called Cummings suggesting that he think about the issue not as Attorney General but in his role as a Democratic National Committeeman. Dickmann reminded Cummings that FDR would be running for re-election in 1936 and if St. Louis was refused this request, Dickmann would not hesitate to lead the fight in Missouri against the President's re-election. The threat worked and Homer Cummings drafted a new executive order. Under this order, Harry Hopkins would authorize a contribution to the Department of the Interior. The City of St. Louis and the Public Works Administration would furnish the balance up to \$9 million to be used on the project "until July 1, next."

105

Previously (on August 21st 1935), President Roosevelt signed an act to provide for the preservation of historic sites, buildings, objects, and antiquities of national significance. The *Historic Sites Act* gave the secretary of the interior broad powers to carry out this policy through the NPS. The secretary was to: *make a national survey of historic and archaeological buildings, sites, and objects which possess "exceptional value as commemorating or illustrating the history of the United States," to contract or make agreements with municipal departments, educational and scientific institutions, associations and individuals to preserve historic properties; and to acquire any real or personal property for purposes of the act.* Homer Cummings used this legality to justify establishing a St. Louis memorial to Thomas Jefferson. A new executive order was drafted, allocating \$3.3 million in WPA funds and \$3.45 million in PWA funds (under the *Emergency Relief Appropriation Act of 1935*) for site acquisition. Combined with the city's contribution of \$2.25 million (and based on a three-to-one ratio) the order provided \$9 million for one year's work. On December 21st 1935, President Roosevelt signed *Executive Order 7253* permitting the Secretary of the Interior to acquire and develop the *Jefferson National Expansion Memorial*. This became the country's first national historic site designated under the Historic Sites Act.

106

"...It then devolved upon the Interior Department to discover reasons why those thirty-seven blocks of waterfront property in St. Louis were historic. The Interior Department turned not to the standard historians but to the brochure of the project's sponsors, and on December 21 there issued from the White House an executive order finding that the St. Louis project came under the Historic Sites Act. Mr. Roosevelt gave nine reasons why the site was historic and ought to be preserved. Six of those reasons dealt with buildings. Four of the buildings no longer exist. Of the remaining two, one is a Catholic cathedral, the other a courthouse deeded to the city for use solely as a court house. (It is the house in which the Dred Scott case was tried.) The other three reasons had to do with events. At this site, said the President, the Lewis and Clark expedition 'outfitted,' and here the Santa Fe and Oregon trails 'originated.' The standard authorities on these last three happenings place them at sites from 20 to 250 miles away from St. Louis..."

Washington Weekly by Paul W. Ward (February 23rd 1936)

107

Executive Order

108

Executive Order

ALLOCATION OF FUNDS TO THE SECRETARY OF THE INTERIOR FOR THE ACQUISITION AND DEVELOPMENT OF A HISTORIC SITE TO BE KNOWN AS THE JEFFERSON NATIONAL EXPANSION MEMORIAL.

WHEREAS the act of August 21, 1935, Public No. 292, 74th Congress, declares it to be a national policy to preserve for public use historic sites, buildings, and objects of national significance for the inspiration and benefit of the people of the United States, and

WHEREAS the Secretary of the Interior through the National Park Service has determined that certain lands situate on the west bank of the Mississippi River at and near the site of Old St. Louis, Missouri, possess exceptional value as commemorating or illustrating the history of the United States and are a historic site within the meaning of the said act, since thereon were situated: the Spanish Colonial office where, during the administration of Thomas Jefferson, third President of the United States, all the first territory comprised in the Upper Louisiana Purchase was transferred to the United States; the Government House at which, on March 9, 1804, Charles Delaunay Delassus, the Spanish commandant in St. Louis, transferred possession of Upper Louisiana to Captain Amos Stoddard of the United States Army, who had been delegated by France as its representative, and at which, on the morning of March 10, 1804, Captain Stoddard, as the agent of the United States, took formal possession of the Louisiana Purchase and raised the American flag, by reason of which transactions the Spanish, French, and American flags waved successively over the site within a period of twenty-four hours; the old French Cathedral of St. Louis, earliest home of religion on the western bank of the Mississippi; the place where Laclede and Chouteau established the first civil government west of the Mississippi; the place where Lafayette was received by a grateful people; the places where the Santa Fe, the Oregon, and other trails originated; the place where Lewis and Clark prepared for their trip of discovery and exploration; and the Court House in which the Dred Scott case was tried; and

WHEREAS the City of St. Louis has agreed to contribute for the project of acquiring and developing the said site the sum of \$2,250,000, which is one-fourth of the entire amount to be expended for such purposes; and

WHEREAS I find that the said project will be a useful project, and will provide relief, work relief, and increased employment:

NOW, THEREFORE, by virtue of and pursuant to the authority vested in me by the Emergency Relief Appropriation Act of 1935, approved April 8, 1935 (Pub. Res. No. 11, 74th Cong.), I hereby allocate to the Secretary of the Interior from the funds made available by the said Act the sum of \$6,750,000, which with the sum of \$2,250,000 to be contributed by the City of St. Louis and accepted by the Secretary of the Interior under authority of the said act of August 21, 1935, will make available for the said project the total sum of \$9,000,000; and the Secretary of the Interior, through the National Park Service, is hereby authorized and directed to expend the said sum of \$9,000,000 in acquiring the said property and in developing and preserving it for the purposes of the said act of August 21, 1935, if and when the City of St. Louis shall make the said sum of \$2,250,000 available to the Secretary of the Interior for such purposes.

Franklin D. Roosevelt 109

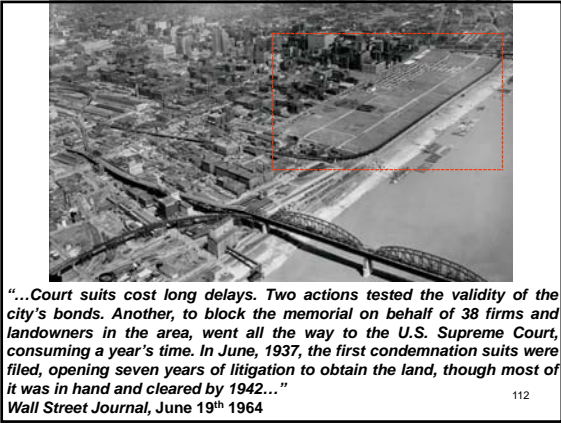
The White House,
December 21st 1935

A Mighty Fine Ending of the Old Year

110

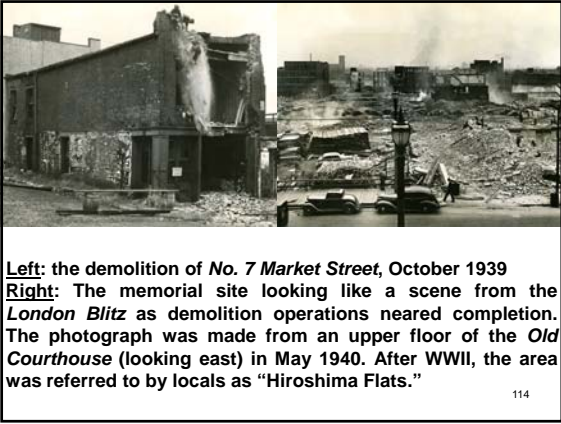
Mayor Dickmann returned home from *Washington D.C.* at the end of December triumphant. He believed this executive order to be better than the original because the site was taken for its historical value and placed directly under the control of the *Department of the Interior*. However, three days after President Roosevelt signed the executive order, opposition again erupted in St. Louis. A taxpayer's suit was filed attempting to stop the *City of St. Louis* from issuing and selling the bonds. Despite this setback, *Luther Ely Smith* exclaimed: *"This makes a mighty fine ending of the old year."* Little did Smith realize that that very-merry Christmas 1935 that the memorial to westward expansion he envisioned and worked so hard to achieve faced many years of delay before it would become a reality and it would not come to its full fruition in his lifetime.

111



Hiroshima Flats

113



A Fixed and Permanent Realty

115

"...The story does not end at this point, for Roosevelt had to do more than find that the thirty-seven blocks were historic. He also had to find funds. To accommodate him, the size of the project was scaled down temporarily to \$9,000,000...It was agreed that St. Louis would put up only \$2,250,000 at the beginning and that the federal government would match this on a three-to-one basis as the enabling act required. But the terms under which the PWA operates did not permit it to put up all of the \$6,750,000 federal share. So the PWA's outlay was limited to \$3,450,000. Mr. Roosevelt dipped into the WPA funds for the \$3,300,000 balance. There are a number of other details that remain to be mentioned. One is that in order to scrape up the \$6,750,000 for the boys in St. Louis Mr. Roosevelt had to cancel a commensurate amount of allotments to bona-fide works projects in various parts of the country. Another is that the manufacturers resident in the project area are contesting the bond issue's validity, with the result that the whole project is tied up in the courts. A third is that straight across the memorial site there runs an elevated railway which is to be regarded as 'a fixed and permanent realty' according to the instructions given architects submitting designs for the memorial..."
Washington Weekly by Paul W. Ward (February 23rd 1936)

116



"...Relocation of elevated tracks of the Terminal Railroad Association, which operates all St. Louis metropolitan rail facilities, delayed the project. The city ordered the tracks moved in 1937, but it took the five parties involved - Missouri, St. Louis, the National Park Service, the Interstate Commerce Commission and the railroad - 22 years to agree where to put them. (They now run underground along the river). World War II and the Korean War slowed the already-slow progress; the 82 acres, except for a 4,000-car parking lot, stood vacant..."
Wall Street Journal, June 19th 1964

117



"The most serious problem which will have to be solved is the proper handling of the elevated railroad viaduct which passes along the entire length of the front of the area to be improved and carries the passenger trains of all the railroads which cross the Mississippi over the Merchants Bridge...Although this viaduct introduces a question as to the architectural design, it is thought that this can be handled successfully."
John Nagle, NPS Engineer
RE: this issue would haunt the memorial for the next two decades

118

Hooverville

119



"...Finally, there is the fact that five blocks from the project site is St. Louis's 'Hooverville,' a river-front community in which some four hundred unemployed families live in packing cases and similarly improvised shelters, denied decent housing by city, state, and federal administrations that have millions to spare for memorials to the dead, the enrichment of real-estate speculators, and the furtherance of their own petty ambitions."
Washington Weekly by Paul W. Ward (February 23rd 1936)

120



Above: Hooverville Shack, St. Louis riverfront. Built of ramshackle makeshift housing, by 1931 it was home to five hundred black and white residents (later it would stretch for a mile). The *Unemployed Councils of St. Louis* (organized by the *Communist Party*), agitated in these areas against the power structure of St. Louis (and the nation) arguing for redistribution of wealth and an end to the capitalist system.

121

Off Dead Center

122

“...Finally in 1958 President Eisenhower got the project off dead center by signing legislation authorizing \$17,250,000 for construction. Relocation of the tracks began the next year and construction finally started in early 1961. Only in 1962 was the final appropriation measure signed by President Kennedy...”

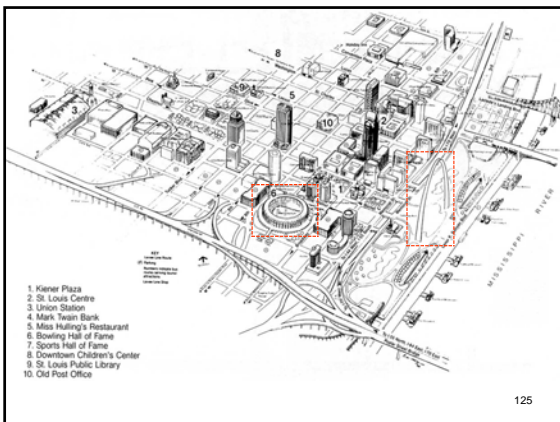
Wall Street Journal, June 19th 1964

123

“...Though the project hasn’t provided anywhere near 5,000 jobs (under 100 are employed currently), it has sparked some \$150 million of private riverfront improvement work, The biggest chunk, covering nearly 80 acres, will be a complex including a 55,000-seat sports stadium, 400-unit motel and four parking garages. Ultimately it will cost \$89 million, but the first phase will amount to \$51 million, \$20 million from St. Louis businesses and labor unions and a \$31 million loan from Equitable Life Assurance Society of the United States. Construction of the stadium began last month and is scheduled to be finished in time for the St. Louis Cardinal’s 1966 baseball season...”

Wall Street Journal, June 19th 1964

124



125

“...St Louis’ entire downtown river front, the arch’s foreground, is sprucing up. A \$51 million, 50,000 seat stadium is in the works. It will be the new home for the baseball and football Cardinals and the site of college football games. Slum areas have been eliminated. The old St. Louis courthouse and St. Louis’ Roman Catholic cathedral, oldest cathedral west of the Mississippi, have been cleaned. The Gateway Arch, which will rise 630-feet, is on the spot where the Frenchman Pierre Laclède and the 14-year old Auguste Chouteau founded the city in 1764...”

Chicago Tribune, March 15th 1964

126

"...On the drawing board are plans for a \$12.5 million, 24-story hotel (topped by a revolving restaurant) and an amusement center on the order of Disneyland which would be designed and operated by the Hollywood producer. It would include a town square patterned after Disneyland's Main Street, a re-creation of Old St. Louis and old New Orleans in miniature, automated depictions of historical events, such as the Lewis and Clark expedition, and a variety of eating places..."

Wall Street Journal, June 19th 1964

127

Common Sense Americanism

128

"Missouri typifies good, common sense Americanism. Whether your roots are in the farm or in the streets of its bustling cities, I guess you can gather from this that I still have a fine warm spot for the old home state."

Walt Disney

RE: Disney had a deep affection for the state of Missouri and, St. Louis in particular (having spent a great deal of his childhood in Marcelline, Missouri). This may be why he chose St. Louis as the place to build his second theme park. Riverfront Square was to be an impressive five-story theme park in downtown St. Louis (just north of Busch Stadium). In advance of the St. Louis Bicentennial celebration (planned for 1964), St. Louis city leaders approached Disney about producing a documentary film about the city. Why not, instead, build a theme park based on Westward Expansion and the Mississippi River? Disney insisted. So it was that in March 1963, Disney met with the Mayor of St. Louis to discuss plans for the construction of a new theme park in the riverfront area of St. Louis. Riverfront Square was to be for the most indoors, contained within a five-story building (allowing for year-round operation). An atrium would stretch to the ceiling where artificial lighting would simulate weather and time-of-day. The cost of the park was projected at \$40 million, with a targeted attendance of 25K visitors per day. The top floor of the park included a Banquet Hall, Restaurant, Lounge and Bar overlooking the river. By July 1965, Disney announced that plans for the park would not move forward because of a dispute over the financing and ownership of the park and Disney's desire to focus his attentions on Florida for what would become Walt Disney World (in fact, many attractions planned for Riverfront Square turned up in WDW)

129



Rendering for Disney's Riverfront Square project (showing the Lewis and Clark ride entrance)

130

"...Developers of these projects are hoping the memorial's Gateway Arch will prove to be a second Eiffel Tower (though the arch will be 254-feet shorter), drawing enough visitors to insure the success of their ventures. The National Park Service, which will operate the memorial, estimates more than 3 million tourists each year will make the 630-foot ascent to the arch's 65-foot long observation room where on a clear day they'll be able to see 30 to 40 miles into either Illinois or Missouri..."

Wall Street Journal, June 19th 1964

131



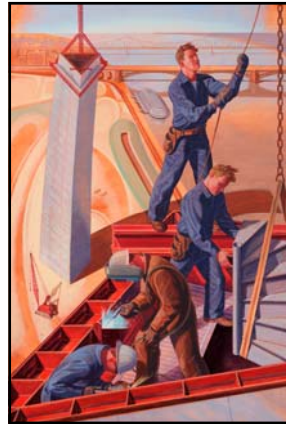
"Drawing of an observation platform in a plastic dome at the top of the arch. Visitors will be able to reach this lookout by train, elevator or stairs going up through the triangular legs of the arch. There will be two cable-operated trains. Each train, consisting of eight passenger capsules resembling automobile interiors, will move on a track up one leg of the arch and return by the same route."

RE: published May 7th 1961

132

Quite a Spectacle

133



"...Actually, the construction work itself is quite a spectacle, sufficient to draw a quarter million visitors last year, H. Raymond Gregg, superintendent of the memorial, estimates. So far the rate in 1964 is running well above 1963. When workers are ready to hoist another of the 45-ton sections nearly 300-feet into place, St. Louis radio stations announce the event so residents can be on hand to watch the spectacle..."
Wall Street Journal, June 19th 1964
134

Part 4

The Competition

135

Symbolism and Grandeur

136

"Our world, it has often been charged is incapable of symbolism and grandeur. When our architects build monuments, so the argument goes, they turn to the obelisks of the Egyptians or the triumphal arches and domed temples of the Romans, or create such trivia as the World's Fair Tylon and Perisphere. The shortage of contemporary monuments which convincingly express the ideas to which they were dedicated has tended, in fact, to bring commemorative memorials into disfavor. Many of those who argue for 'living' monuments – useful structures such as swimming pools and auditoriums – do so because they fear pompous, empty gestures as the only alternative. There are, of course, a few modern monuments which are exceptions. There are those which were built by the Germans after World War I, memorials to their defeated dead – simple, forthright interpretations of the basic tomb shapes, starkly accented with such literary symbols as helmets. In another direction are those monuments whose form is based on engineering devices, raised beyond function into esthetic significance. Such are the Eiffel Tower, built for the Paris Exposition of 1889, dramatizing skeletal steel construction into a symbol of the modern world...architects have had little opportunity to design monuments whose sole function is to inspire. That they have rarely built successful ones is, therefore, perhaps not their fault. But it is true..."
New York Times, February 29th 1948
137

"During the deep Depression of the early 1930s St. Louis was a grimy and rather grim city, more populous than now but with no great plans. A man named Luther Ely Smith helped to change that. He envisioned turning 40 acres of old business buildings and crumbling warehouses on the riverfront into a park recognizing St. Louis' position as the Gateway to the West. The Roosevelt administration listened, Congress agreed to a commission to supervise the project, and in 1935 the city voted a bond issue for its part of what would be the Jefferson National Expansion Memorial. World War II interfered with the project, and so did an elevated railroad trestle along the riverfront, which was only removed after years of argument. Still, clearing the area and planning the park's precincts got under way and, in 1948, Eero Saarinen won a contest for design of a memorial: the Arch. We cite this history to show that the riverfront development confronted more than three decades of frustration overcome only by persistence. The Arch did not come easily. What it did do was demonstrate that the city could revive itself, as it has been doing ever since..."
St. Louis Post Dispatch, 1985
138

Transcending in Spiritual and Aesthetic Values

139

By February 1947, the competition fund money had been raised, and association members began gathering ideas and plans for the competition. Architect *Louis La Beaume* had drawn initial drafts for an architectural competition as early as 1943. When Smith met with NPS Director *Newton Drury* in November 1944, he expressed his personal view that there should be one central feature; something that would symbolize American culture and civilization. Smith wanted something "transcending in spiritual and aesthetic values" which would attract people from other nations. The association formally announced the national architectural competition in January 1945. *Harold Ickes* believed that the association's success in raising funds to hold the competition revealed the organization's good will, but, nevertheless, he would not commit the *Department of the Interior* to accepting the jury's award. Neither would he approve of the association's desire to provide underground parking in the area for the use of the city's downtown district. The association decided it was in their best political interest to drop the parking idea. The association wanted assurances that the NPS would approve the competition and abide by the jury's decision. Without such assurance, no progress could be made. Therefore, La Beaume proposed omitting all reference to parking facilities from the program. Likewise, NPS officials needed to determine the extent of their participation.

140

NPS officials reviewed the materials Smith submitted and concluded that they did not foresee any great difficulty in agreeing on a working basis for the competition, condition being that the design should carry out the theme of westward expansion with emphasis on the site's historical significance and that a division be made for four million cubic feet of museum space. Aside from these limitations, the designer could have absolute liberty to design whatever best expressed the memorial's theme. Smith understood that no money could be spent until all the government agencies involved endorsed and ratified the program. Meanwhile, the NPS moved to draw up specifications for the competition after which any area where its ideas conflicted with the association's could be resolved in conference. NPS Director *Newton Drury* notified Smith that the *Department of the Interior* (DOI) could not commit itself to accepting either the design or the architect without specific congressional authority. The association could not be assured that the federal government would employ the winner as architect; it could only submit its recommendation to the DOI. Whether the winner was employed at all as either architect or consultant depended upon congressional authorization of the work and appropriation of funds. Despite all the legal restrictions, Drury believed that Smith and the association's desire for aesthetic and inspirational values in the design could be achieved. An important aspect of the competition remained; that of hiring a *Professional Advisor*. NPS officials agreed with Smith that an advisor from outside *St. Louis* would give the competition national standing.

141

Professional Advisor

142

The competitors needed to know the main access points to the memorial in order to plan vehicular and/or pedestrian traffic. NPS officials placed emphasis on relating the design of the memorial to the policies of the *Historic Sites Act*, meaning that the *Old Courthouse* and *Manuel Lisa's* warehouse were to be preserved *in situ* (latin for "in position") and that a major museum would be developed. By July 1946, NPS officials placed these requirements in perspective and worked up an outline draft of the competition. At the end of August 1946, Smith asked Philadelphian *George Howe*, fellow of the *American Institute of Architects*, to serve as professional advisor for the competition. He agreed to serve, but on several conditions all of which corresponded to his architectural philosophy. Howe admired ancient architecture but was convinced it did not meet the needs of modern life either materially or spiritually. He thought the proposed museum and reproductions of old structures would be expensive dust collectors. The modern architectural point of view was *activist*, rather than *stylistic*; the area should be dedicated to inspirational, educational, and recreational facilities. Howe wanted the grounds to be used for pageants, concerts and open-air dances. A monument might be included as a reminder of the past, but Howe thought Jefferson would have placed emphasis on living life rather than remembering it. Howe was confirmed as the competition advisor and spent the next few months formulating the competition's specifics. He followed many of the association's original plans stating that the competition should be in two stages, the first to eliminate all but a few competitors, the second to select one architect and one design. Both stages were to be anonymous. The competition was open to all architects, landscape architects, sculptors/painters who were U.S. citizens.¹⁴³

143



Left: Architect *George Howe* (ca. 1935). After a successful practice designing traditional residential structures, Howe teamed-up with Swiss architect *William Lescage* and designed the landmark *Philadelphia Savings Fund Society* (PSFS) Building at *12th* and *Market Street/s* in *Philadelphia*. After the partners split-up in 1932, Howe continued to work in *Philadelphia*, designing private residences and housing developments that he worked on in association with architects *Louis I. Kahn* and *Oscar Stonorov*.

144

Howe anticipated more than five-hundred submissions to the first stage, from which the jury would select five architects to participate in the second stage. In March 1947, Smith (now president of the association) and Howe met with NPS representatives to discuss the competition. The NPS wanted to be unhampered by preconceived provisions such as underground parking. NPS Director Drury felt compelled to approach Secretary of the Interior *Julius Krug* with the problems concerning inclusion of underground parking. Krug took a hard line stating that the provisions for underground parking (and a helicopter landing pad) were incompatible with the nature of a national memorial. Smith explained that the competition's first stage intended to encourage competitors to propose a wide variety of treatments and suggestions, leaving the second stage to solve specific problems. None of the first stage proposals were to be made public until the second stage winner was chosen. Secretary Krug remarked that the NPS was concerned over the influence of *St. Louis'* commercial interests. In particular, they were worried about the *Terminal Railroad Association (TRRA)*. As far as parking was concerned, Krug said he would keep an open mind.

145

The Program

146

"The purpose of the U.S. Commission to formulate plans looking to the creation of a Memorial, of the City to assist in creating the Memorial and to make certain that the throngs who will visit it from all parts of the world are provided with sufficient parking facilities and conveniences in a location where existing provisions are already inadequate, and of the Park Service to preserve an Historic Site within the meaning of the Act, are separate and distinct in legal theory, while the present purpose of the Association to create a Living Memorial to the vision of Thomas Jefferson in the form of Continuing Activities is a private concern and without legal sanction of any kind. Yet in reality all four have a common purpose, namely to develop an historic metropolitan area to the greatest advantage of the citizenry of the world at large, and each recognizes a moral obligation to consider the interests of the other three. The apparent conflict, then, is a conflict only in the best democratic sense. It is a conflict over means, not over ends."

147

RE: excerpt from the competition *Program*

The requirements of the program reflected the diverse purposes of the memorial project. They fell into seven categories:

- Building an architectural memorial;
- Preserving the site of *Old St. Louis* with a museum provision;
- Creating a living memorial to *Thomas Jefferson*;
- Exploiting the recreational possibilities of the site;
- Providing access for parking on the site;
- Relocating the railroad tracks;
- Providing for the *Interstate Highway* which officials knew would be coming through *St. Louis*

"Preserving the site..." included landscaping, providing for an open air campfire theater, and reproducing typical *Old St. Louis* buildings.

148

Jury of Award

149

The competition jury was composed of seven prominent architects selected by the association. The jury's deliberations, scheduled to take four days in the first stage of competition and two days in the second, centered on the response of the entries to the site, and the intent. George Howe, as advisor, participated in the deliberations but had no vote. The competitors' identities were kept secret until after the final awards in the second stage. The judging was by secret ballot and by majority vote. The five first stage winners received \$10K each. First prize for the second stage winner was \$40K; second prize \$20K; third prize \$10K; and runners-up \$2,500. The competition opened on May 30th 1947.

150

First Stage

151

After the first stage mailings, competitors had three months within which to submit their entries. More than two-hundred architects had signified their intention of submitting designs and by the deadline of September 1st 1947, Howe received 172 entries. On September 23rd 1947, the seven jury members met with the press and then retired to the upper rooms of the *Old Courthouse* to view the submissions. The jury spent the afternoon eliminating the more obviously inadequate submissions numbering more than sixty. On the second day of deliberation, they considered the remaining 110 designs, and eliminated another fifty-one. During the third day, the jury members analyzed the designs, exchanged opinions, and took several ballots, finally getting down to approximately fifteen designs. On the fourth and final day of deliberation, the jury voted on a series of five ballots, selecting the final five finalists.

152



The Jury of Award of the 1947 design competition for the *Jefferson National Expansion Memorial*. From left-to-right: *Richard J. Neutra*, *S. Hebert Hare*, *Louis LaBeaume*, *Fiske Kimball*, *George Howe* (advisor), *Charles Nagle, Jr.*, *Roland Wank* and *William Wurster*.

153

Inspired Would Be the Right Word

154

After four days of deliberation the jury had selected five projects representing a variety of concepts and ideas. The differences in treatment resulted from the entrants' handling of the requirements: *building grouping*, *traffic questions* and *memorial character*. Since the objective of the first stage was to select five designers rather than five designs, selection depended upon breadth of conception rather than on particular details. The numbers of the five finalists were given to the press on September 27th. All five designs were known to the jurors only as numbers and comments were written on them which ranged from "impractical" to "inspired" (on the design destined to win, that of an immense arch). *S. Herbert Hare* held doubts of the arch's practicality while praising the considerable thought that went into the plan. *Roland Wank* considered it to be: "*relevant, beautiful, perhaps inspired would be the right word.*" *Charles Nagel, Jr.*, thought the arch monumental, imaginative, exciting: "*an abstract form peculiarly happy in its symbolism.*"

155



Saarenin's first stage entry

156

Second Stage

157

George Howe began drafting the second stage addenda to the program. He described fine details needing consideration for the final development:

- The levee was city property and had to be left in its present state;
- The railroad tracks were to be handled as if they had already been removed and relocated (competitors were to assume that when the tracks were moved they would be below present grades and not affecting surface layout);
- The interstate highway would be assumed to be constructed along Third Street;
- Any underground structures, such as parking facilities, should not affect the site's surface development

Generally, the site was to be treated as a tree-shaded park, terraced down to the river and leaving a view from the *Old Courthouse* to the levee. The architectural memorial itself was to be conceived as an element visible from a distance; it had to be a notable structure. Its purpose, according to Howe, was to attract the interest of both the multitudes and the connoisseur of art. Howe extended the time for submitting the designs by ten days, to February 10th 1948.

158

No. 144

159

Association members made elaborate plans for revealing the grand prize winner. During the five months which passed between the first and second stages, they planned a prize award dinner for February 18th 1948, inviting the governors of all the states in the *Louisiana Purchase*, plus federal, state and local officials and representatives of civic and other private organizations. George Howe would let the five competitors know the results before the dinner, but the official announcement would be the culminating event of the banquet. Meanwhile, Howe kept in contact with all five competitors, making arrangements for the shipment of their final designs. Association funds paid for all their expenses for shipping their entries. There apparently existed a breakdown of anonymity and rumored identification of some or all of the first stage winners and complaints spread about George Howe's relationship with certain contestants. None of the rumors could be traced to authoritative sources and the NPS tried not to negate them as unverifiable. The deadline for the second stage arrived and the jury met on February 17th 1948 to take care of old business first. Publicity, disposal of the rejected entries, preparation of reports and the question of anonymity in the competition were all discussed. After reconsidering the drawings, the jury decided to hold an anonymous trial ballot for first place, just to show the general trend of opinion. Design number 144 won unanimously. No further balloting was needed. After more discussion the jury awarded second, third, and runner-up prizes. The winner: *Saارين and Associates of Bloomfield Hills, Michigan*. Jury members met the next day to prepare their reports and a summation of the judgment.

160

Like Son, Like Father

161

In September 1947, when George Howe informed "Saارين" of his selection in the first stage competition, he mistakenly sent the congratulatory telegram to Elie! Saارين, Eero's famous architect father and competition entrant rather than Eero Saارين. There were three days of celebration at the firm's headquarters in Elie!s honor before Howe realized and corrected the embarrassing error. The *Jefferson National Expansion Memorial* competition proved to be Eero Saارين's first opportunity to produce a major work independent of his father. Each had entered the St. Louis competition and their office in *Bloomfield Hills, Michigan*, was one of the most widely known and respected in the country. During WWII, Eero carried most of the responsibility for his and his father's combined effort, now he would make his own mark on the world though sadly, he would not live to see it stand tall in the mid-western sky.

162



Eero (left) and Eiel (right) Saarinen

163

Gateway to the West

164



"...In 1935, President Franklin D. Roosevelt signed an executive order for the federal government to acquire and develop the land, known as Jefferson National Expansion Memorial, as a national park. Smith then persuaded the mayor and some business leaders to help raise nearly \$250,000 for an architectural competition. There were 172 entries, but none so outstanding to the judge's as Eero Saarinen's towering arch, which came to be called 'Gateway to the West.' That was in 1948." ¹⁶⁵
Moscow-Pullman News, October 26th 1990

"In 1948, we won the national competition for a new national park in St. Louis, symbolizing and commemorating the westward expansion of America. The major concern here was to create a monument which would have lasting significance and would be a landmark of our time. An absolutely simple shape - such as the Egyptian pyramids or obelisks - seemed to be the basis of the great memorials that have kept their significance and dignity across time. Neither an obelisk nor a rectangular box nor a dome seemed right on the site or for this purpose. But here, at the edge of the Mississippi river, a great arch did seem right...Having arrived at a shape that seemed to have permanence and to belong to our time, what material would also fulfill these two qualities? Stainless steel seemed the inevitable answer - and so we decided on stainless steel with a concrete core."

Eero Saarinen, Architect

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Place, Purpose and Time

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"We began to imagine some kind of a dome which would be much more open than the Jefferson Memorial in Washington...We tried the three ribs that came together and formed a kind of a dome. Maybe it could be a great pierced concrete dome that touched the ground on just three points...But the three legs did not seem to fit in the plan, so we tried it with two legs, like a big arch. It seemed like...a modern adaptation of a Roman triumphal arch."

Eero Saarinen, Architect

RE: Saarinen's breakthrough idea was to search for a simple, basic form as the centerpiece of his design. He wanted to create a monument that would have lasting significance and be a landmark. He considered several basic shapes, including an open vaulted structure and a three-legged dome, but after visiting the St. Louis site he decided that neither obelisks nor domes were right. Eventually, the initial concept of a three-legged dome evolved into a two-legged arch. Saarinen wanted the arch to be the purest expression of the forces within it; a mathematically precise *Catenary Curve* in which the forces of thrust were kept within the center of each arch leg. It was an upward-thrusting form, not an earthbound one, to be constructed of materials emphasizing permanency (specifically, stainless steel with a concrete core). Saarinen believed his creation to be the right monument for that place, purpose, and time.

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“The arch could be a triumphal arch for our age as the triumphal arches of classical antiquity were for theirs”
Eero Saarinen, Architect
 RE: Saarinen’s winning design contained many other features in addition to the central memorial arch. He met the competition program’s basic concepts by placing the arch on an axis with the Old Courthouse, and by drawing the river into the total composition. The arch would bring people to the river’s edge to find museums, restaurants, and historic riverboats. On the levee side of the arch, Saarinen designed a stairway that would be monumental in terms of size and the symbolism of the westward pioneers moving through a “gateway.” Sculpture and paintings situated along an arcade below the arch would tell the story of America’s westward expansion. A campfire theater and a village of pioneer houses would stand on the site for historical/interpretive purposes. Saarinen provided for two museums, one historical, one architectural. Years later, many of these additional aspects were dropped because of financial problems. Saarinen redesigned the project in 1957, but his main concepts; that of the arch, the tree-lined mall and the staircases provided the main core of the memorial’s development throughout.

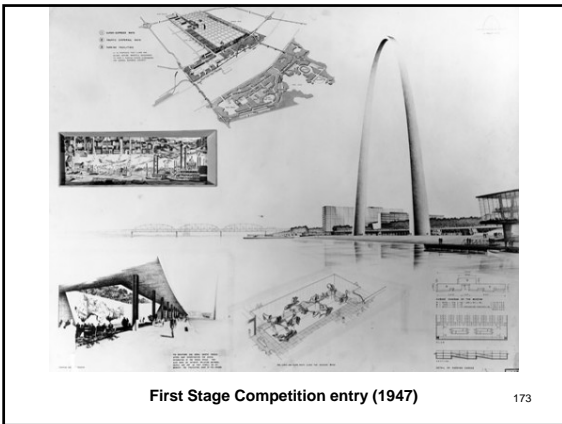
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By Way of Refutation

171

“...Now comes one more design by way of refutation. Finnish-born Eero Saarinen of Bloomfield Hills, Mich., and his associates have just won the \$40,000 first prize in the \$125,000 competition for the Jefferson National Expansion Memorial in St. Louis. Their conception, symbolizing the ‘Gateway to the West,’ is a boldly soaring 590-foot-high stainless steel arch – a modern monument, fitting, beautiful and impressive. It is, however, only the symbolic part of a large ‘living’ memorial, the focal point of the park and recreational building which will constitute the memorial, commemorating Jefferson, the Louisiana Purchase and the spirit which impelled pioneers westward. The area, about eighty acres along the Mississippi riverfront, is the historic site of Old St. Louis...”
New York Times, February 29th 1948

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First Stage Competition entry (1947)

173

“We are still breathless at the vision you have opened up for us by your marvelously fine design. The more we gaze upon it the more wonderful and gripping it grows.”
Luther Ely Smith
 RE: Saarinen returned the good feelings when he congratulated Smith on the masterful management and planning of the competition. Saarinen believed Smith, Howe, and the association had done a magnificent job.

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"When the project someday becomes a reality, we will remember this and, by refinement of detail, we will try to gain some of what has been lost by stepping down from a great dream to reality."

Eero Saarinen, Architect
 RE: Saarinen (left) believed that his primary mission was to make *Luther Ely Smith's* dream real. Saarinen knew all too well that many competitions create interest in the architectural profession but most are never realized because they fail to close the invisible gap between the actual practice of the profession versus the public's perception.

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"...The Saarinen plan envisages that most of the area will be so densely covered with trees that it will be a forest-like park, a green retreat from the tension of the downtown city. Within clearings will be an open campfire theatre, a frontier village and the dignified Old French Cathedral of 1834. An informal mall leads down a central axis from the Old Courthouse of 1862, where the Dred Scott case was tried, to the levee..."

New York Times, February 29th 1948

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The *United States Territorial Expansion Memorial Commission* members unanimously adopted a resolution approving the selection of *Eero Saarinen's* design in May 1948. The commission recommended to the NPS and the Secretary of the Interior that Saarinen be selected as architect for the memorial's development and construction. Saarinen personally attended the meeting along with supporters to describe his design and show commission members the completed model. On June 4th 1948, acting Secretary of the Interior *William Warne* advised Barkley of his approval of the Saarinen design as the basis for the memorial's future development. The design could not be executed unless and until the elevated tracks in front of the memorial were removed, he warned. He also assumed that the *City of St. Louis* would continue to work for that removal. All plans were contingent upon future appropriations from Congress.

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Also Rans

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JEFFERSON NATIONAL EXPANSION MEMORIAL

Gordon Phillips and *William Eng* (2nd Place). Eng worked with Saarinen from 1955-1960 in *Michigan*, where they collaborated on the *Dulles International Airport* in Washington, D.C. He later joined the faculty at the *University of Illinois at Urbana-Champaign*.

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William Breger, Caleb Hornbostel, and George S. Lewis (3rd Place). Breger studied under the *Bauhaus School of Architecture* and later became known for his designs of long-term nursing facilities. He also designed the *New York Civic Center Synagogue*, notable for its "floating" appearance. Before the *St. Louis* competition, Hornbostel competed in the *Wheaton College* art centre contest where, at age 33, he beat famous architects *Walter Gropius* and *Marcel Breuer*. In the later half of the twentieth century, Hornbostel coauthored several architecture books. Lewis became the director of the *New York* chapter of the *American Institute of Architects* and was outspoken in building preservation. In 1985, the chapter established an award in his honor.

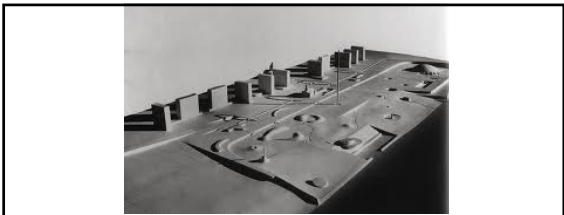
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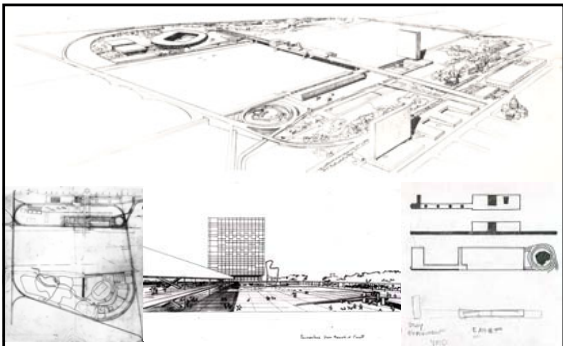
T. Marshall Rainey (Honorable Mention). Cleveland native Rainey spent his entire architecture career in *Ohio* where he worked on plans for a waterfront highway in *Cincinnati* and worked as a design critic at the *University of Cincinnati*.
181



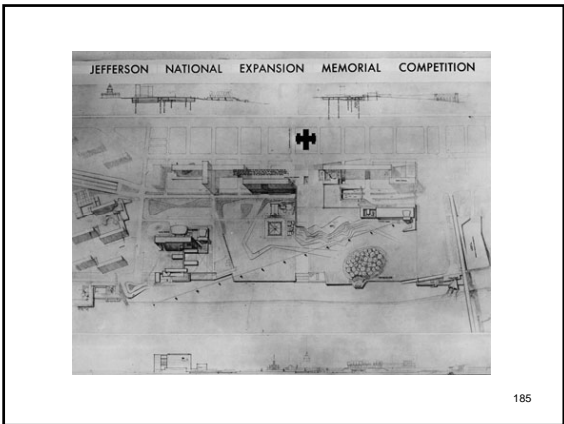
Harris Armstrong (Honorable Mention). The only finalist from St. Louis, Kirkwood-based Armstrong was also the only solo-finalist in the competition. His first round submission is considered bold and daring as he proposed to dramatically change the levee. The seven-man jury thought the design was impractical, yet chose Armstrong as a semi-finalist for showing promise. He completely reworked his design which, ultimately, didn't impress the jury. His others projects included the home of *Carl and Gerty Cori* (*Nobel Peace Prize* recipients), *Washington University*, *McDonnell Aircraft Corporation* and the *St. Louis Ethical Society*.¹⁸²



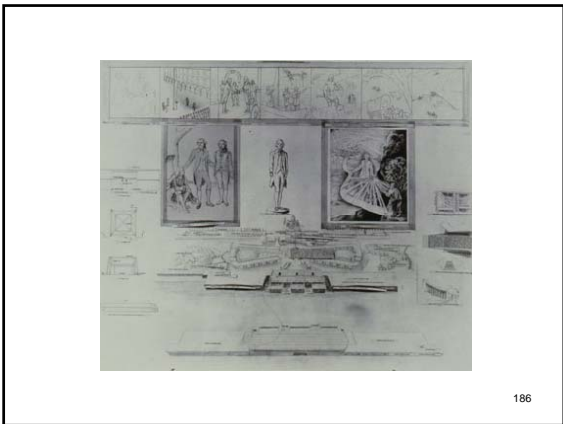
Isamu Noguchi and Edward D. Stone - *Jefferson National Expansion Memorial* Competition proposal, 1947. Architect Stone and sculptor Noguchi worked together on this entry to the Jefferson National Expansion Memorial Competition for the riverfront area located between downtown Saint Louis and the Mississippi River. Noguchi was a primary influence on the site development and landscape forms while Stone was responsible for the architectural and infrastructure elements (like the bridges, buildings, and monumental vertical pylon). The tall, thin central pylon acts as the symbolic focal point for the composition near the *Old Cathedral*, away from the levee.
183



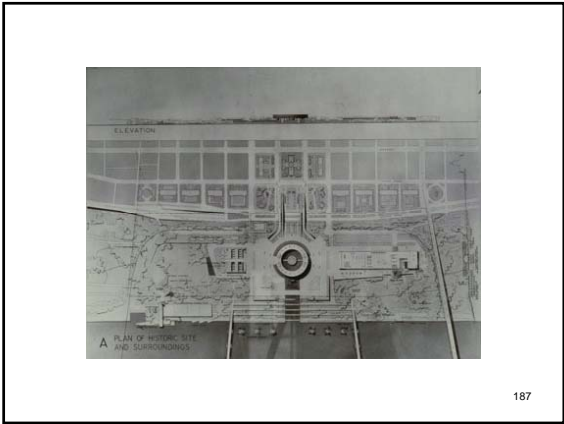
Proposal/s for the *Jefferson National Expansion Memorial*, 1947 by **Louis I. Kahn**. Kahn proposed a sprawling landscape of buildings and plazas on either side of the *Mississippi River*, lacking any monumental focus.
184



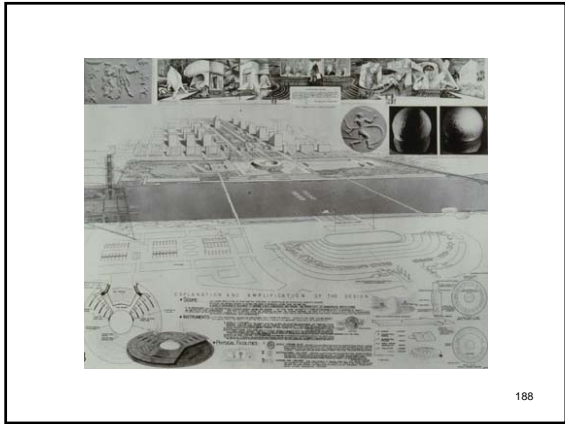
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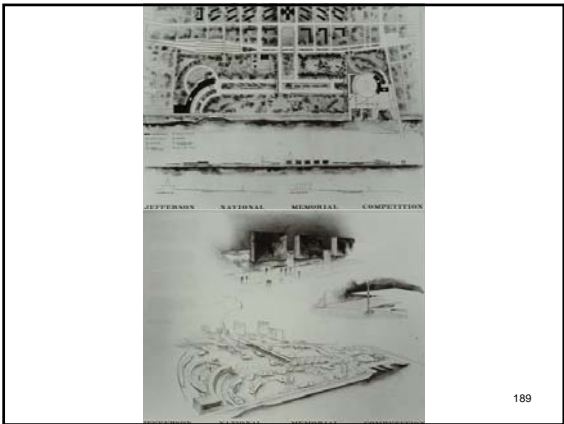
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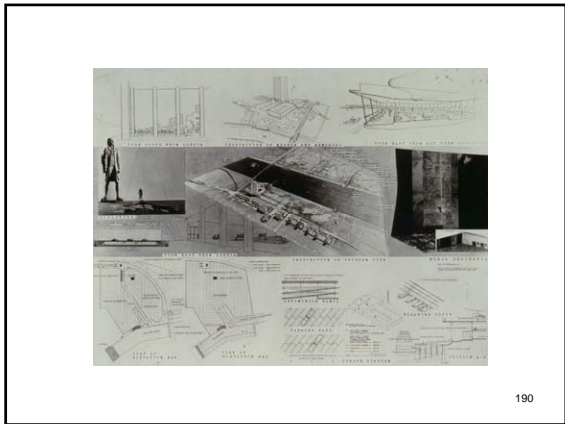
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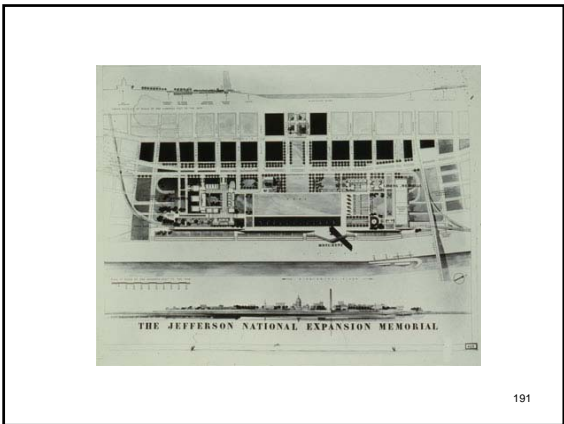
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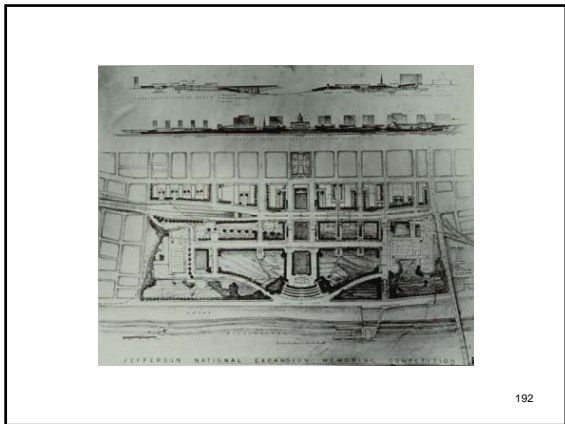
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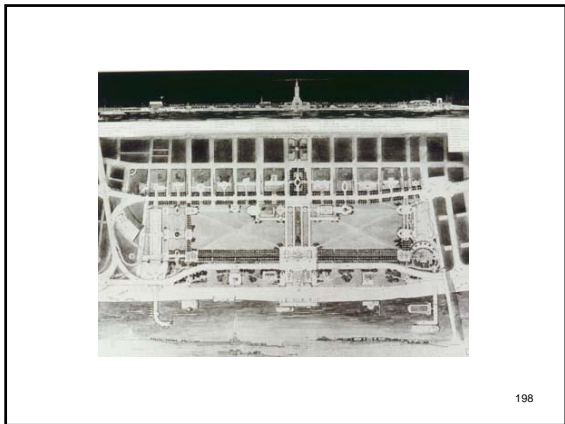
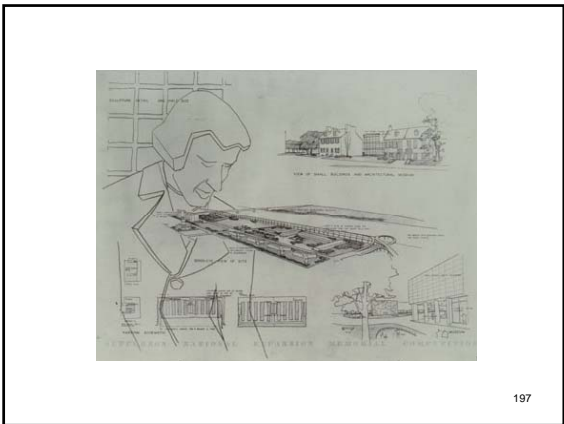
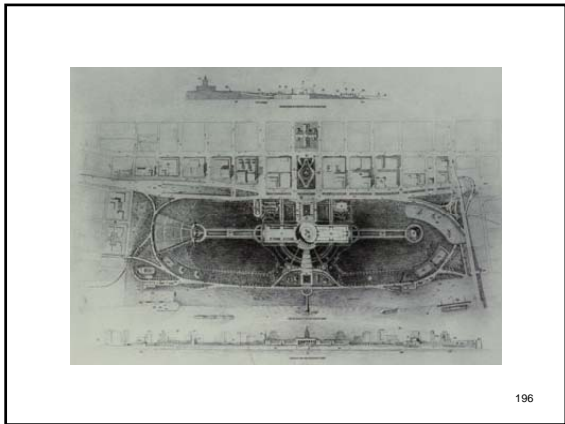
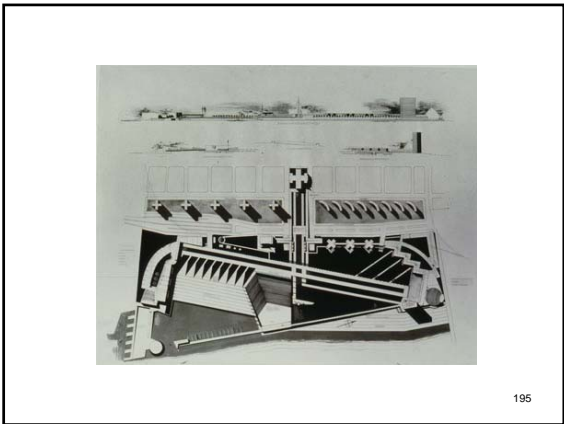
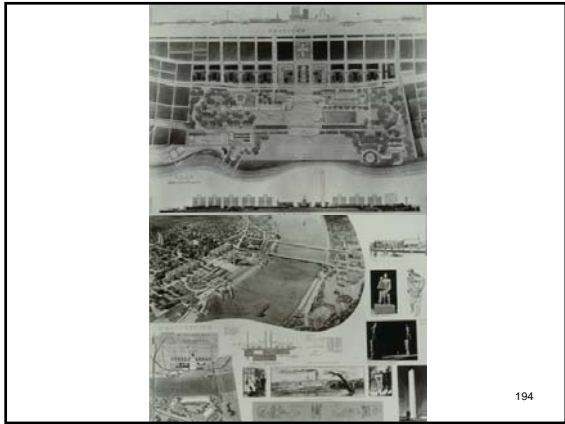
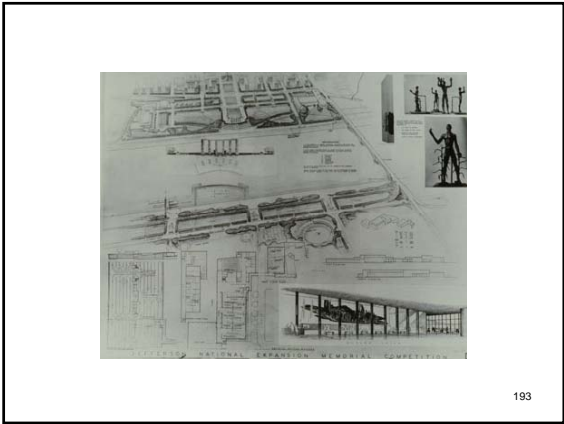
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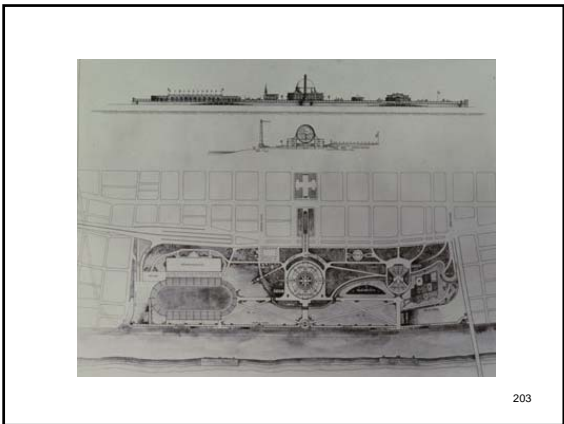
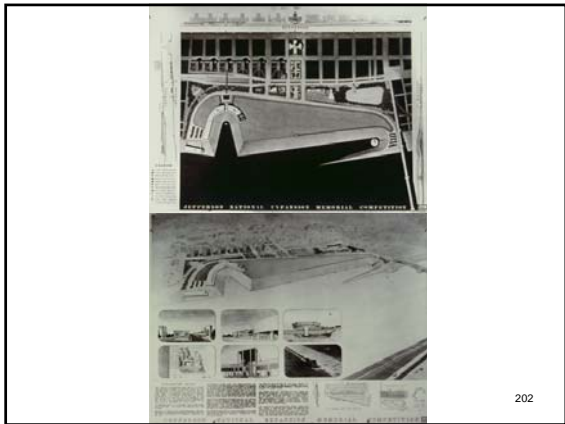
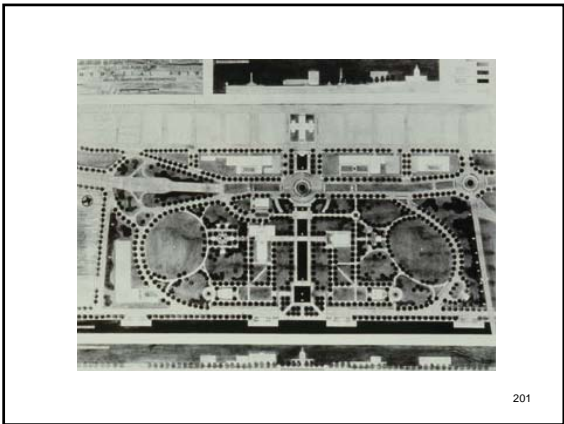
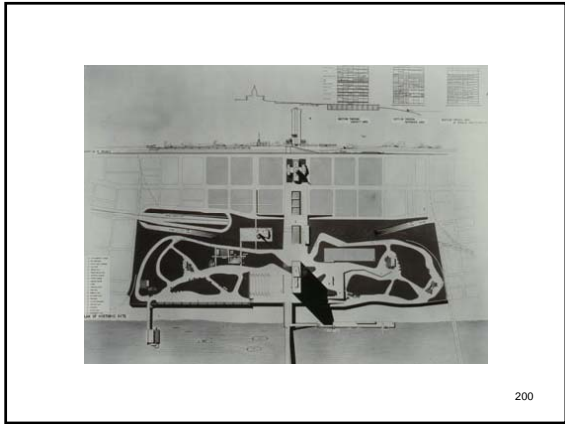
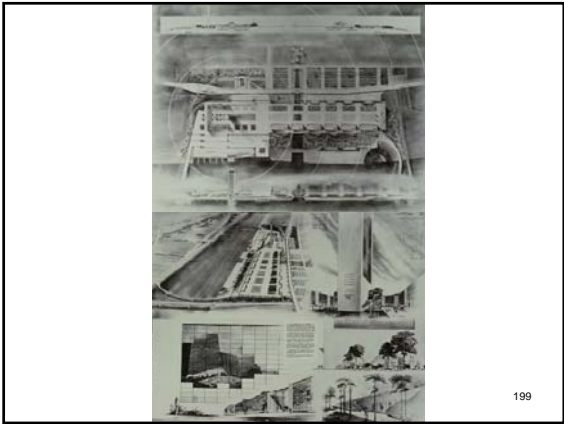


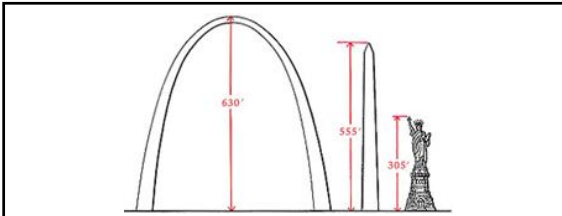
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“...The Gateway Arch on the city’s famous levee on the Mississippi River will symbolize St. Louis as the historic gateway to the American West. It will rank among the great structures of the world – structures such as the Eiffel Tower, the Washington Monument and the Statue of Liberty. The gleaming stainless-steel Arch, soaring 630-feet above the mighty river, promises to be a distinctive landmark that will identify St. Louis as readily as other structures distinguish Paris, Washington and New York...Heroic in size, unusual in design, and spectacular in appearance, the arch will surpass the 555-foot Washington Monument in the nation’s capital as the tallest national monument...”

205
The Rotarian, June 1963

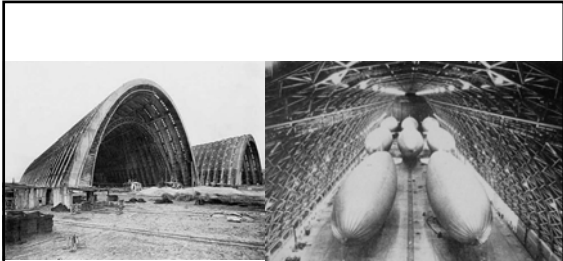
On the Levee

206

“...It is on the levee that the architects have placed the great arch and the restaurants and historic museums, hoping to recapture the busy, picturesque days when showboats docked there. The arch, of course, dominates. It is a parabola – a form first used in our time by the engineer Freyssinet for the dirigible hanger at Orly, France. Pictures of the ribbed steel skeleton of this hanger under construction in 1916 were widely known, and the image of the great curve against the sky impressed itself on many architects. Le Corbusier, Robert Allen Jacobs in the New York Asphalt plant and others have used it. A semi-circular arch for a fascist monument appears parabolic in perspective in a poster version...”

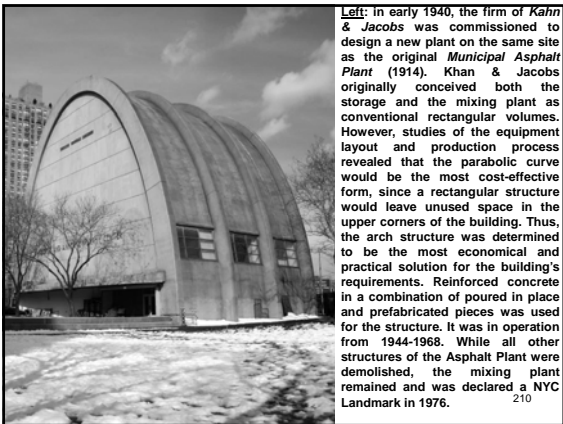
New York Times, February 29th 1948

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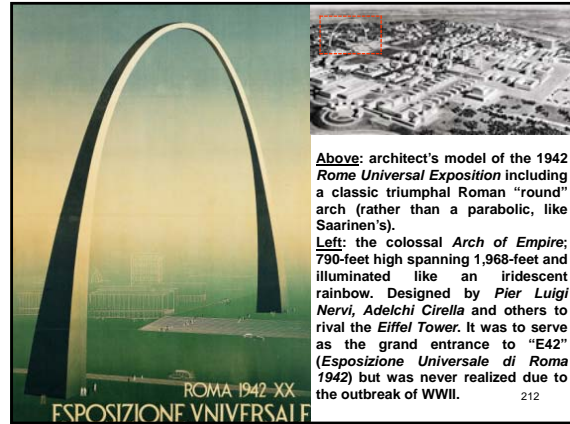
Left: Eugene Freyssinet’s parabolic, pre-stressed concrete shell hangar/s at Orly, France (built in 1923, demolished in 1942)
Right: the enormous interior

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Arch of Empire

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Above: architect's model of the 1942 Rome Universal Exposition including a classic triumphal Roman "round" arch (rather than a parabolic, like Saarinen's).
Left: the colossal Arch of Empire; 790-feet high spanning 1,968-feet and illuminated like an iridescent rainbow. Designed by Pier Luigi Nervi, Adelchi Cirella and others to rival the Eiffel Tower. It was to serve as the grand entrance to "E42" (Esposizione Universale di Roma 1942) but was never realized due to the outbreak of WWII.

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Great Dream

213

As soon as various versions of Saarinen's rendering of the "great dream" appeared in the national press, the nation had a field day rendering its judgment on the design. Comments ranged widely from the *New York Times*: "a modern monument fitting, beautiful and impressive" to St. Louisan's calling it a "giant hairpin" and a "stainless steel hitching post." One criticism, coming from *Gilmore D. Clarke*, chairman of the *National Commission on Fine Arts*, attracted national attention. In a letter to *William Wurster* he charged that Saarinen's idea of an arch was not new because it resembled an arch approved by *Benito Mussolini* for a fascist exhibition in Rome in 1942. In Clarke's mind the important question was not whether or not the design was plagiarized but, rather, whether it was appropriate to perpetuate *Thomas Jefferson's* memory by building a monument similar to one designed to glorify *Fascism*. As soon as Clarke's charge became publicly known, controversy arose around the design and its creator. *William Wurster* argued that hundreds of arches existed in architecture and Saarinen asserted that it was preposterous to link a basic form with any ideology. The arch was an impersonal, simple, pure form: a symbolic gateway, and Saarinen thought the whole controversy to be ridiculous.

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Rebuttal

215

Nevertheless, *William Wurster* and the *Jury of Award* drafted a rebuttal for circulation since they feared Clarke's influence as chairman of the *National Commission on Fine Arts*. Their rebuttal emphasized that the arch was of a general type going back many centuries, but nevertheless was not merely an adaptation of classical or historical motifs, for it was also one characteristic of modern architecture and engineering. The arch form was in the public domain, the jury asserted, and was not invented by the fascists. Saarinen's arch as a commemorative monument was wonderfully suitable in its symbolism as a Gateway to the West. Their statement ended the controversy and the *New York Herald Tribune* provided a bit of humor when it envisioned tall, redheaded, freckle-faced *Thomas Jefferson* having a good laugh over the whole matter.

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While the controversy over the fascist symbolism went on, Saarinen and the association went on working. Saarinen immediately made plans to build a scale model (above), including all features of the design, at a cost of \$5K (paid for by the association). 217

An Esthetic Transformation

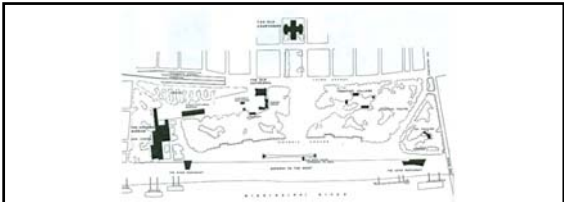
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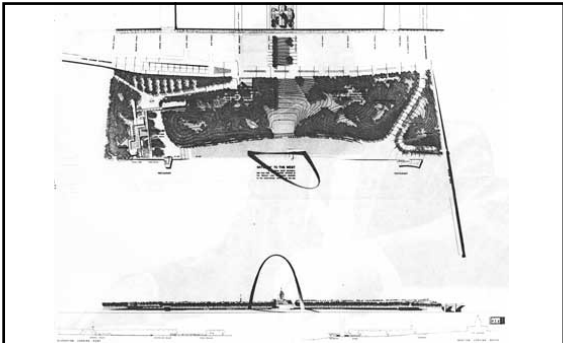
"...Here its symbolism is direct and convincing. Large in scale, the arch does not dwarf the other structures and its form is sympathetic with the courthouse dome which it frames. It has a simplicity which should guarantee timeliness; yet the audacious engineering, the material, and the implications of science in the choice of this curve make it wholly contemporary. It seems, indeed, an esthetic transformation of such fundamental creations as bridges and dams in which, to date, modern architecture has achieved its greatest perfection..."
New York Times, February 29th 1948 219

Between the Levels of the Levee

220



"...A long arcade makes a transition between the levels of the levee and the forest slope, and it is here the historic events will be commemorated in painting and sculpture. By placing these in small courts off the arcade, the architects have provided for an intimate relation between art and people, for the spectator can stroll along or sit beneath the projecting roof of the arcade and examine one group after another at his leisure. Considered thus as decorative entities in small, private areas, there is no necessity for the grandiose expression or architectural scale which a more comprehensive scheme would have required. Neither painting or sculpture will have to strain for monumentality nor counterfeit architectural scale by magnification and overstatement – devices to which, unfortunately, most contemporary artists resort when they design for architectural settings..." 221
New York Times, February 29th 1948



Eero Saarinen's prize winning entry (in the architectural competition's second stage) 222

A Gracious Park

223

"...The competition was sponsored and supported, as has been the idea of the memorial, by a group of private individuals. So far, \$9,000,000 has been spent to secure the site and to complete demolition of the dreadful slums which covered it...Although it may be modified with elements from the runner-up projects, the plan of the Saarinen Associates has made a real contribution to modern architecture. The arch will stand as a noble symbolic monument. The integration of painting and sculpture is one of the happiest solutions yet devised. The groupings of the buildings and relations between old and new architecture are harmonious – a slum area made into a gracious park."

New York Times, February 29th 1948

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Loose Ends

225

Working without a contract and/or guarantee that he would be hired as architect, Saarinen considered the as-yet-unsolved problems of parking, railroad relocation, and zoning. After serving on the competition jury, *Louis La Beume* was commissioned by the *Terminal Rail Road Association* (TRRA) to prepare studies seeking a harmonization of their track right-of-way with Saarinen's treatment of the area. The TRRA/La Beume wanted to lower the elevated tracks to the grade of the top edge of the levee, with river access provided for pedestrian and automobile traffic. Since Saarinen's firm had not been officially commissioned to develop the project, Saarinen's associate *J. Henderson Barr* told La Beume to inform the association of the proposal. Saarinen was alarmed at such an idea and said that any type of train passing through the memorial area would be a detraction. La Beume's solution meant compromising the whole idea of the memorial and association members were at a loss to explain why La Beume would associate himself with such a scheme. Saarinen also needed more information regarding parking. He knew the NPS's attitude, but wondered if provisions were being made for underground parking. Association executive secretary *Edward Dail* informed him of the association's decision to drop the parking plans until after the NPS and Congress approved the memorial project. Present officials might not be in office at that time, and their successors might not hold the same negative feelings about the issue. *St. Louis* retailers and businessmen remained strongly in favor of having onsite parking.

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Saarinen became involved with zoning when the executive committee of the association recommended to the *City Plan Commission* the establishment of a special zone to limit use in the memorial's immediate border thus preventing unregulated growth. Saarinen approved of the action and recommended that zoning restrictions extend to height as well. *St. Louis Real Estate Board* members, taking an interest in the proposal, contacted *Luther Ely Smith* to find out just what type of protective zoning he wanted. Saarinen, together with *William Wurster*, developed preliminary objectives for the type of development he wanted to occur around the memorial so that it would not interfere with his vision of the memorial as a whole. He drew up four major objectives:

- To prevent any future buildings from dwarfing the *Old Courthouse*;
- To make the buildings along *Third Street* more harmonious;
- To enhance the redevelopment of the narrow streets between *Third* and *Fourth Streets*;
- To prevent the construction of high towers which would compete with the arch.

This early involvement with such issues kept Saarinen involved in the project for the rest of his life. For the next thirteen years, Saarinen kept contact with NPS and city officials concerning various aspects of the memorial development. Even though no construction money was forthcoming for years, Saarinen expressed his views on zoning and railroad removal to lend guidance to the numerous interests attempting to carry out his design.

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End Game

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Thus, the stage was set for the next phase of memorial development. There now existed definite plans for the form the memorial would assume, and NPS officials ceased speaking of the "ultimate" memorial development in vague and ill-defined terms. After the competition, definite plans existed which fit their ideas for a memorial, a single architectural structure that embodied the westward expansion movement. Saarinen's plan met the standards set by the *Historic Sites Act* and the standards set in the minds of those who initially conceived the project. The next step was to promote the memorial in *Washington, D.C.*, among those holding the power to make the plans become reality. Lawmakers controlled the funds; they had to be reached with the arch design serving as the selling point in the redevelopment of St. Louis' riverfront. Near the end of 1948, the association's executive committee met to assess their spheres of influence in the nation's capital. The committee felt they had a good opportunity to successfully seek an appropriation. Several vital people were situated in key places. President *Harry S. Truman* was familiar with the project because of his former position as Missouri senator and commission chairman *Alben Barkley* now served as Truman's vice president. Missouri Representative *Clarence Cannon* served as chairman of the *House Appropriations Committee* and the federal government had already invested \$6.5 million in the project. In reality, their struggles to obtain funds would continue for years. In June 1948, Smith stepped down as president of the association, unable to handle the arduous duties any longer. Association members knew their first priority lay in getting the *City of St. Louis* and the TRRA together to remove the elevated tracks. Only then would the federal government provide funds to construct *Eero Saarinen's* beautiful stainless steel arch. ²²⁹

Part 5

Wunderkind

230

The Cradle of American Modernism

231

"The effect of Cranbrook and its graduates and faculty on the physical environment of this country has been profound...Cranbrook, surely more than any other institution, has a right to think of itself as synonymous with contemporary American design."

New York Times, 1984

RE: the *Cranbrook Academy of Art* in *Bloomfield Hills, Michigan* is considered one of the nation's leading graduate schools of architecture, art and design. It was founded by *George Gough Booth* and *Ellen Scripps Booth* in 1932. The buildings were designed and the school first headed by *Eliel Saarinen*, who integrated design practices and theories from the *Arts and Crafts Movement* through the *International Style*. *George Booth* wanted the *Cranbrook Academy* to possess an architecture reminiscent of the finest British boarding schools thus, they retained world-renowned Finnish architect *Eliel Saarinen* to design the campus. *Cranbrook's* initial phase of construction was completed in 1928. The academy has a very distinguished alumni and is known as: *"The Cradle of American Modernism."*

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Left: *Eliel Saarinen* (at right) with *Le Corbusier* (at left) on *Academy Way* (*Cranbrook Academy of Art*)
Right: *Charles Eames* (at right) with *Cranbrook's* founder *George Booth* (at left). In 1939 Eames was invited to study at the *Cranbrook Academy of Art* by *Eliel Saarinen*, who had seen and admired one of the two churches Eames designed in *Arkansas*.

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In 1904, the *Booths* bought the property that would become *Cranbrook Academy* and spent their first years at *Cranbrook* landscaping the property and constructing their family home (designed by architect *Albert Kahn*). With their estate established, they began with the buildings for public use. Foremost in their minds were plans for an art academy (based on their visit to the *American Academy* in *Rome*). At the suggestion of his son *Henry*, *George Booth* approached *Eliel Saarinen*, a visiting professor in architectural design at the *University of Michigan*, with his idea for an art academy. Ultimately, *Booth* invited *Saarinen* to move to *Cranbrook* from *Finland* to oversee the architectural and landscape development of the campus. Informal art education began at the academy in the late 1920s and the art academy was officially sanctioned in 1932 with *Eliel Saarinen* installed as president. He continued to design new buildings for the campus with academy student apprentices and son, *Eero*. ²³⁴

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Next Largest Context

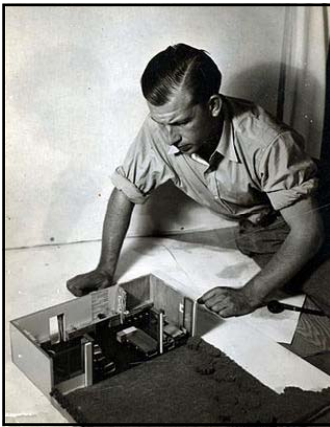
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"Always design a thing by considering it in its next largest context - a chair in a room, a room in a house, a house in an environment, environment in a city plan."

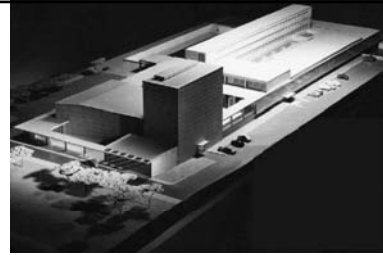
RE: Eero Saarinen was born in Kirkkonummi, Finland in 1910, the son of *Eliel Saarinen*, a respected and accomplished architect. His mother, *Loja Saarinen*, was a gifted sculptor, weaver, photographer, and architectural model-maker. Eero grew up in an environment where drawing and painting were the norm and taken very seriously. A devotion to quality and professionalism were instilled in him from an early age.

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Eero Saarinen with a combined Living-Dining Room-Study project model (created for *Architectural Forum* magazine (ca. 1937)

237



Eliel and Eero Saarinen won an architectural competition (in 1939) for the design of the *Smithsonian Gallery of Art* in Washington D.C. (model above) beating out more than four-hundred other entries. Their model comprised low, marble forms arranged along a reflecting pool. The project was never built after a heated controversy developed between *Modernists* and *Classicists* (the latter arguing that the proposed building clashed with the newly constructed *National Gallery of Art*, by *Russell Pope*).

238



"It never occurred to me to do anything but follow in my father's footsteps"
Eero Saarinen, Architect

239

Secret Service

240

During WWII, *Eero Saarinen* returned to the nation's capital and took up residence in a *Georgetown* townhouse with his wife *Lily*. A classmate of his at *Yale University* - a fellow architect named *Donald McLaughlin*, had helped recruit him to work at the *Office of Strategic Services (OSS)*, the precursor to the *Central Intelligence Agency (CIA)*. Saarinen was appointed as a consultant in research and analysis in the *Presentation Division* and later was named chief of the *Exhibitions Section*, where he helped design propaganda posters and models that the president and joint chiefs of staff used to plan military operations (in the *War Room*). He is also credited with inventing the three-dimensional organization chart, useful in managing workflow problems, Saarinen's fascination with the swivel chairs he designed for the *War Room* along with his experimentation with new materials and technology helped influence not only his *Tulip* and *Womb* chairs, but also his approach to architecture.

241



Above: Office of Strategic Services "War Room" designed by *Eero Saarinen*
Left: Eero Saarinen (ca. 1944)

242

Organic Furniture

243



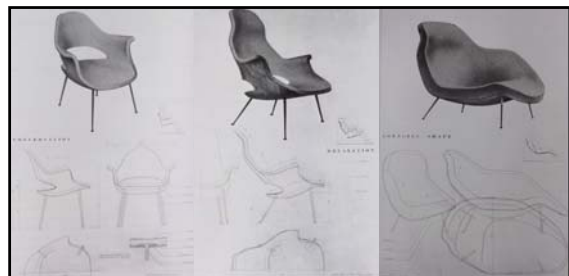
When the Saarinens settled in *Michigan* (in 1923), 13yo *Eero* began taking furniture design and sculpture classes. As it turned out, he had made friends with the right people, including *Charles* and *Ray Eames* and *Florence Knoll*. Saarinen attended the prestigious *Academie de la Grande Chaumiere* in *Paris* from 1934-1936. He made a name for himself as an industrial/furniture designer with a chair designed jointly with *Charles Eames* for the *Museum of Modern Art's (MoMA) Organic Design in Home Furnishings* competition of 1940. They received first prize for what is now known as the "Tulip Chair"

244

"In the field of home furnishings there has been no outstanding design developments in recent years. A new way of living is developing however requiring an adequate solution which takes into consideration the present social, economic, technical and aesthetic trends..."

Eliot Noyes, MoMA Director

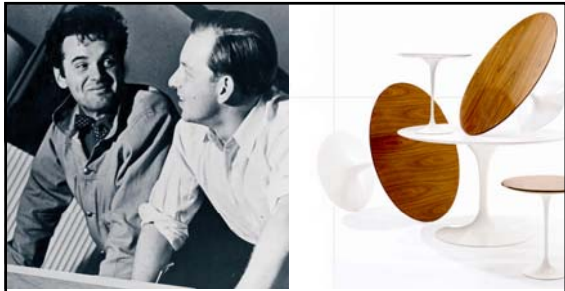
RE: contest brief statement. In 1940, Noyes announced the competition called: "Organic Design in Home Furnishing." Noyes organized the competition to shake the home furnishing design industry that, in his opinion, was stagnant and not responding to the modern home dwellers needs. The winning designs would be manufactured and marketed by twelve of the main U.S. department stores at the time. The contest was a huge success achieving 585 participation requests, five of which came from the *Cranbrook Academy of Art* where *Charles Eames* was working. *Charles Eames* teamed-up with *Eero Saarinen* and entered two categories of the competition consisting of molded shell chairs, case goods and tables. The *Charles Eames/Eero Saarinen* team won first prize in both categories (thanks in large part to pictures of scale models that were so well done that the *MoMA* jury thought they were full-scale prototypes). The set of furniture presented by *Charles Eames* and *Saarinen* consisted of 5 chairs, 2 sofas, a coffee table and end table.²⁴⁵



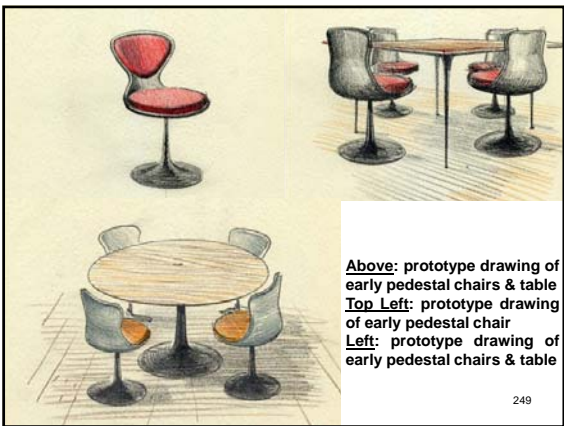
The revolutionary idea of the *Cranbrook* team was to design chairs obtained from a single piece of molded plywood that were comfortable, affordable and easy to mass produce. The *MoMA* jury was impressed by the *Charles Eames* and *Eero Saarinen* work because for the first time, a manufacturing method coming from an industry; *automobiles*, was applied to a completely different one; *furniture*. The result was an organically-shaped chair made of wood veneers in glued layers. To avoid the expensive hand finishing that was needed to produce the chairs, *Eames* and *Saarinen* adopted a brand-new technology developed by *Chrysler* consisting of cycle welding and rubber shock mounts to attach the chair's aluminum legs to the seat. Unfortunately, the imminent *World War* caused a moratorium on the innovative technology that was then reserved for military applications. As a consequence, the chairs' manufacture become extremely expensive and their mass production had to be postponed until the post-WWII era.²⁴⁶



Storage unit from the *Organic Designs in Home Furnishings* competition by Charles Eames and Eero Saarinen 247



Left: Charles Eames (left) and Eero Saarinen (right). Many more designs followed the *Tulip Chair*, including the "Grasshopper" lounge chair and ottoman set (1946), the "Womb" chair and ottoman (1948), the "Womb" settee (1950), "Side and Arm" chairs (1948–1950), and the "Tulip" or "Pedestal" group (top right, 1956), which included side and arm chairs, dining, coffee and side tables, as well as a stool. 248



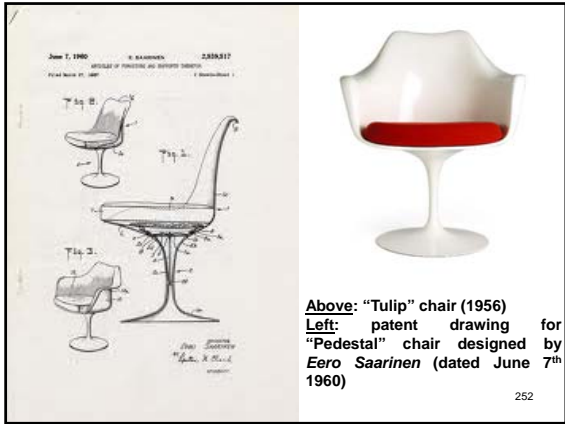
Above: prototype drawing of early pedestal chairs & table
Top Left: prototype drawing of early pedestal chair
Left: prototype drawing of early pedestal chairs & table 249



Above: molded "Shell" chair
Left: "Pedestal" stools and table 250



Pedestal Group dining table with oval white laminate top, accompanied by eight chairs, two arm and six side, with burnt orange naugahyde cushions on swivel bases by Eero Saarinen 251



Above: "Tulip" chair (1956)
Left: patent drawing for "Pedestal" chair designed by Eero Saarinen (dated June 7th 1960) 252



Eero Saarinen (right) with designer Florence Knoll Bassett (left) discussing a Tulip chair design 253



"Grasshopper" chair/s

254



Above: "Womb" chair
Left: The New Yorker magazine advertisement for the Womb chair

255



Womb chair and Ottoman

256



Eero Saarinen in his 1948 Womb chair

257



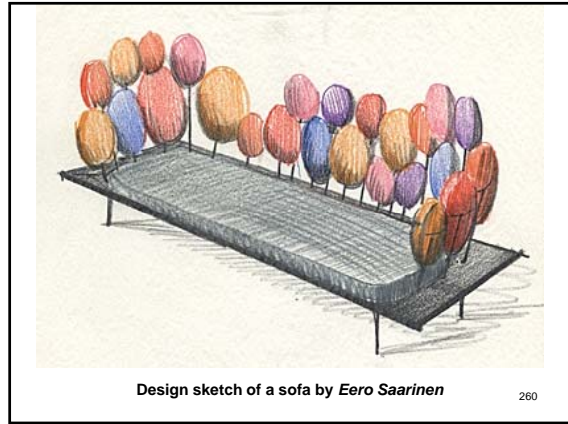
"Highback" chair

258



Above: Knoll No. 71 "Armchair"
Left: "Side" chairs

259



Design sketch of a sofa by Eero Saarinen

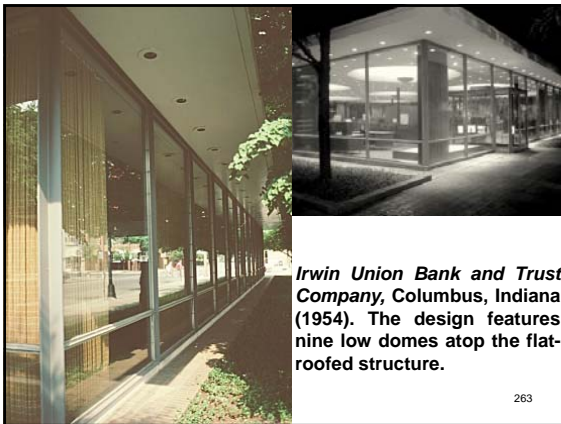
260

Modernist Master

261

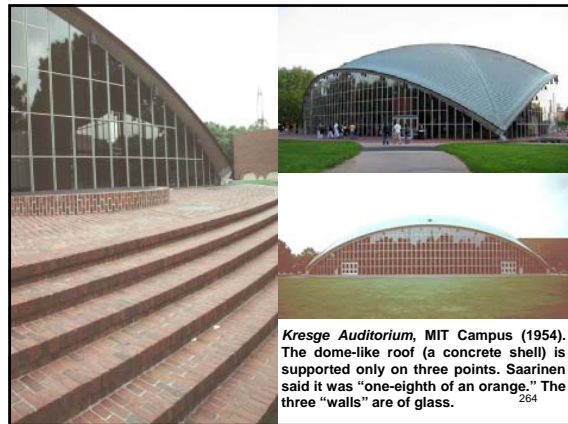
In 1922, at the age of twelve, *Eero Saarinen* took first place in a matchstick design contest. It was the first of many competitions he would win in his lifetime and foreshadowed his remarkable career as one of the premier "modernist" architects of the 20th Century. In 1923, the Saarinens emigrated to America settling in *Michigan*, north of *Detroit*, where Eliel administered the *Cranbrook Institute of Architecture and Design*. Between 1930 and 1934, Eero studied at the *Yale School of Architecture*. After a two-year fellowship in Europe, he returned to *Cranbrook* in 1936 to become an instructor of design and his father's partner in his architectural firm. It was during this period that he began to build a reputation as an architect who refused to be restrained by any preconceived notions. After working with his father on a number of projects, Eero had a chance to express his own philosophy when he entered the 1947 architectural competition for the *Jefferson National Expansion Memorial*. It was his first opportunity to establish himself as an architect independent of his father. The arch was Saarinen's first great triumph, but there would be many more. Projects such as the *General Motors Technical Center* (near *Detroit*), the *TWA Terminal* (in *New York City*) and the *Dulles International Airport* (near *Washington, D.C.*) brought acclaim and established him as one of the most successful and creative architects of the post-war era. Eero Saarinen was a man of great vision. He died of a brain tumor on September 1st 1961, at the age of 51.

262



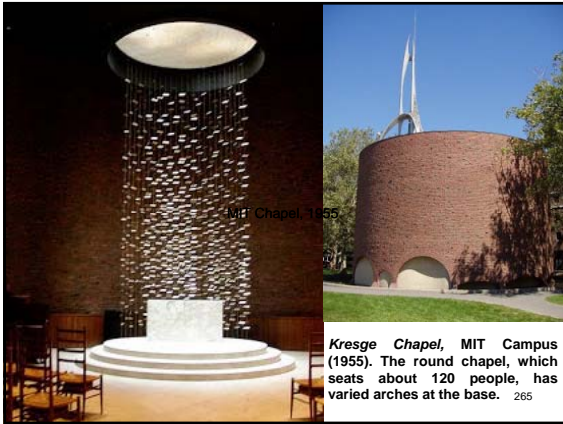
Irwin Union Bank and Trust Company, Columbus, Indiana (1954). The design features nine low domes atop the flat-roofed structure.

263



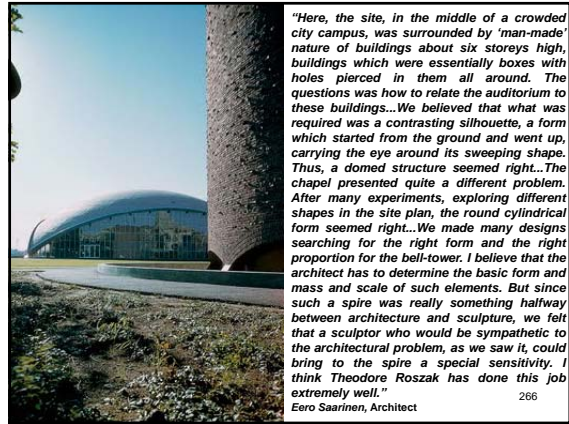
Kresge Auditorium, MIT Campus (1954). The dome-like roof (a concrete shell) is supported only on three points. Saarinen said it was "one-eighth of an orange." The three "walls" are of glass.

264

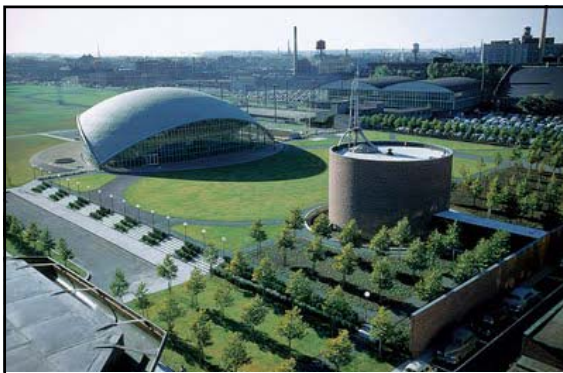


MIT Chapel 1955

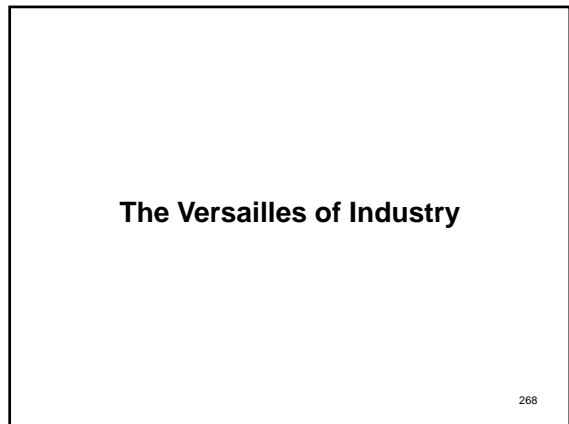
Kresge Chapel, MIT Campus (1955). The round chapel, which seats about 120 people, has varied arches at the base. 265



"Here, the site, in the middle of a crowded city campus, was surrounded by 'man-made' nature of buildings about six storeys high, buildings which were essentially boxes with holes pierced in them all around. The questions was how to relate the auditorium to these buildings...We believed that what was required was a contrasting silhouette, a form which started from the ground and went up, carrying the eye around its sweeping shape. Thus, a domed structure seemed right...The chapel presented quite a different problem. After many experiments, exploring different shapes in the site plan, the round cylindrical form seemed right...We made many designs searching for the right form and the right proportion for the ball-tower. I believe that the architect has to determine the basic form and mass and scale of such elements. But since such a spire was really something halfway between architecture and sculpture, we felt that a sculptor who would be sympathetic to the architectural problem, as we saw it, could bring to the spire a special sensitivity. I think Theodore Roszak has done this job extremely well." 266
Eero Saarinen, Architect

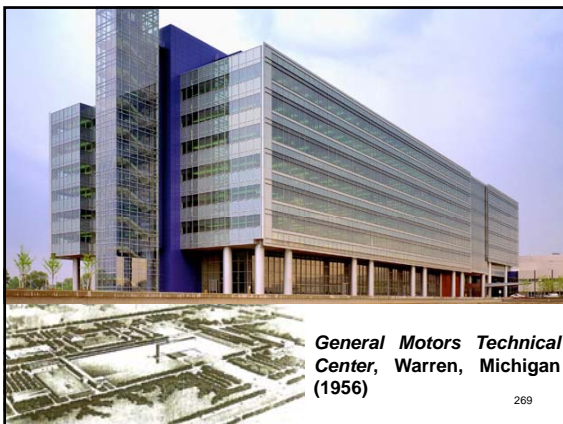


Kresge Auditorium and Chapel, MIT Campus, Cambridge, Mass. 267

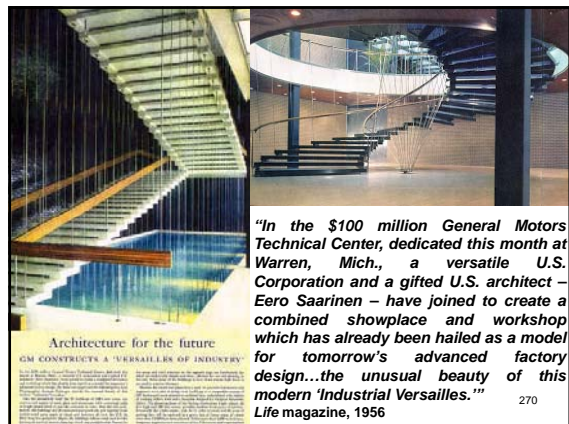


The Versailles of Industry

268



General Motors Technical Center, Warren, Michigan (1956) 269



"In the \$100 million General Motors Technical Center, dedicated this month at Warren, Mich., a versatile U.S. Corporation and a gifted U.S. architect - Eero Saarinen - have joined to create a combined showplace and workshop which has already been hailed as a model for tomorrow's advanced factory design...the unusual beauty of this modern 'Industrial Versailles.'" 270
Life magazine, 1956

Architecture for the future
GM CONSTRUCTS A 'VERSAILLES OF INDUSTRY'



The General Motors Technical Center in Warren, Michigan had futuristic nuances. GM's Chief of Design *Harley Earl* conceived of the idea, picked the location and chose the local architectural team of *Eliel and Eero Saarinen* to design it. Before completion, the complex was christened: *"The Versailles of Industry"* and the name stuck. It was nationally heralded in the media at its opening in May 1956. The twenty-two acre lake was a central element of the Tech Center. On the west side was a gigantic fountain that formed a wall of water 115-feet long and 50-feet high. A smaller decorative fountain, designed by the sculpture *Alexander Calder*, was placed at the northwest corner of the lake.

271



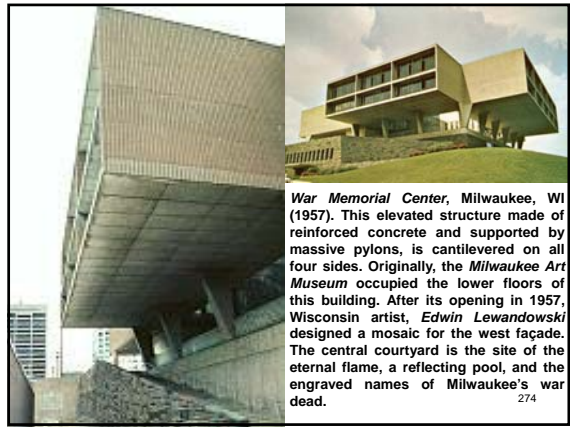
"The world's most modern and complete industrial design center, the largest of its kind in the world."
Harley Earl, General Motors' Chief of Design

272



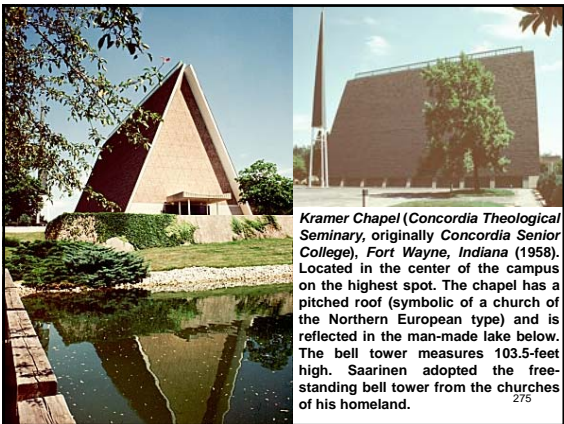
Miller House, Columbus, IN (1957)

273



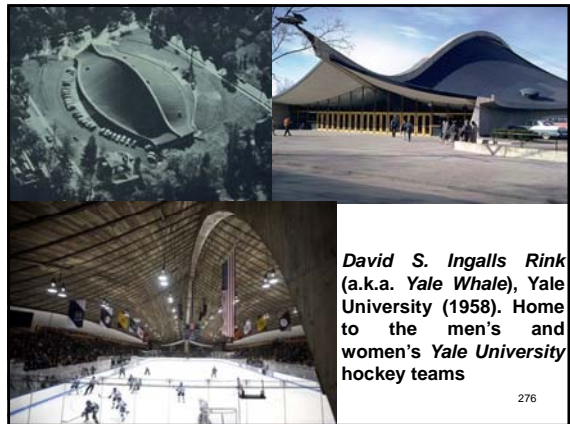
War Memorial Center, Milwaukee, WI (1957). This elevated structure made of reinforced concrete and supported by massive pylons, is cantilevered on all four sides. Originally, the *Milwaukee Art Museum* occupied the lower floors of this building. After its opening in 1957, Wisconsin artist, *Edwin Lewandowski* designed a mosaic for the west façade. The central courtyard is the site of the eternal flame, a reflecting pool, and the engraved names of Milwaukee's war dead.

274



Kramer Chapel (Concordia Theological Seminary, originally Concordia Senior College), Fort Wayne, Indiana (1958). Located in the center of the campus on the highest spot. The chapel has a pitched roof (symbolic of a church of the Northern European type) and is reflected in the man-made lake below. The bell tower measures 103.5-feet high. Saarinen adopted the free-standing bell tower from the churches of his homeland.

275



David S. Ingalls Rink (a.k.a. Yale Whale), Yale University (1958). Home to the men's and women's *Yale University* hockey teams

276



Hill College House (1958). One of the largest college houses (undergraduate dormitories) at the *University of Pennsylvania*. The building was unusual for its time, incorporating an interior atrium. In common with other buildings constructed at the height of the *Cold War*, the basement contains a fallout shelter, which links to the university's utility tunnels. 277

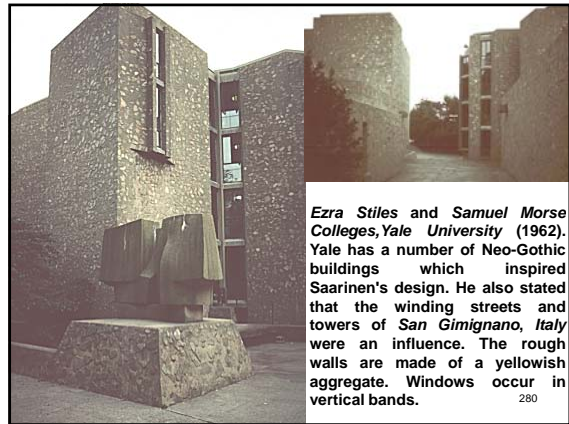


IBM Rochester (MN, 1958). Saarinen clad the structure in blue panels of varying hues after being inspired by the *Minnesota* sky. IBM, a.k.a. "Big Blue" was no doubt influential as well. These features and the facility's size has earned it the nickname: "*The Big Blue Zoo*" from employees. 278



Embassy of the United States, London (1960)

279



Ezra Stiles and Samuel Morse Colleges, Yale University (1962). Yale has a number of Neo-Gothic buildings which inspired Saarinen's design. He also stated that the winding streets and towers of *San Gimignano, Italy* were an influence. The rough walls are made of a yellowish aggregate. Windows occur in vertical bands. 280



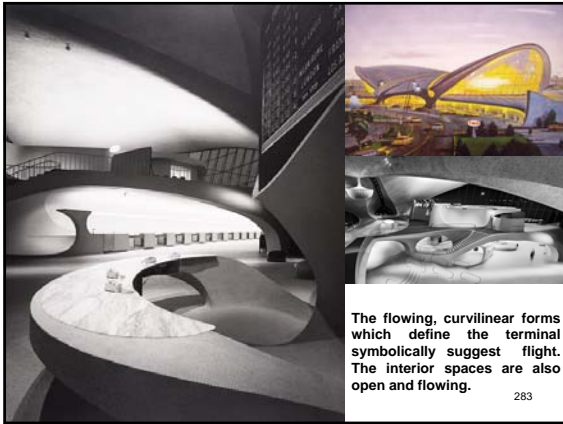
TWA Flight Center, John F. Kennedy International Airport (formerly Idlewild), NYC (1962)

281

"The challenge of the Trans World Airlines terminal was twofold. One, to create, within the complex of terminals that makes up Idlewild, a building for TWA which would be distinctive and memorable...Two, to design a building in which the architecture itself would express the drama and specialness and excitement of travel. Thus, we wanted the architecture to reveal the terminal, not as a static, enclosed place, but as a place of movement and transition. Therefore, we arrived at this structure, which consists essentially of four interacting barrel vaults of slightly different shapes, supported on four Y-shaped columns. Together, these vaults make a vast concrete shell, fifty feet high and 315 feet long, which makes a huge umbrella over all the passenger areas....we wanted an uplift. For the same reason, the structural shapes of the columns were dramatized to stress their upward-curving sweep. The bands of skylights, which separate and articulate the four vaults, increase the sense of airiness and lightness."

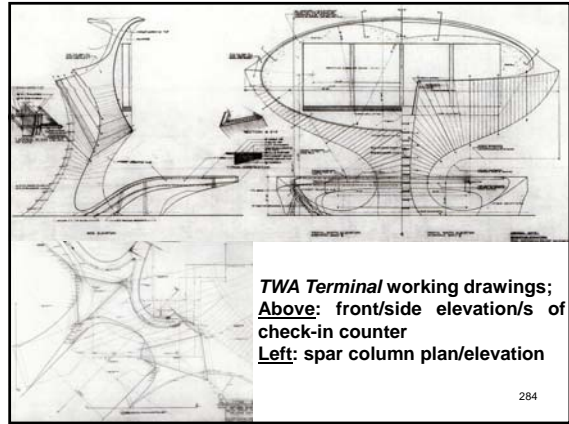
Eero Saarinen, Architect

282



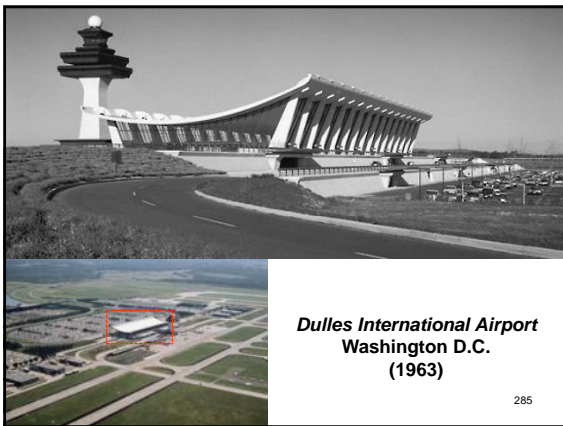
The flowing, curvilinear forms which define the terminal symbolically suggest flight. The interior spaces are also open and flowing.

283



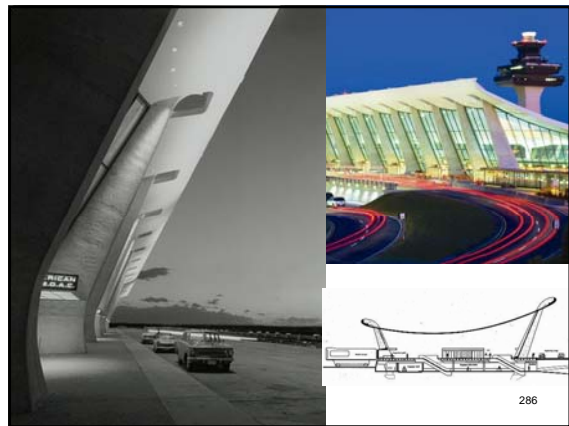
TWA Terminal working drawings;
Above: front/side elevation/s of check-in counter
Left: spar column plan/elevation

284

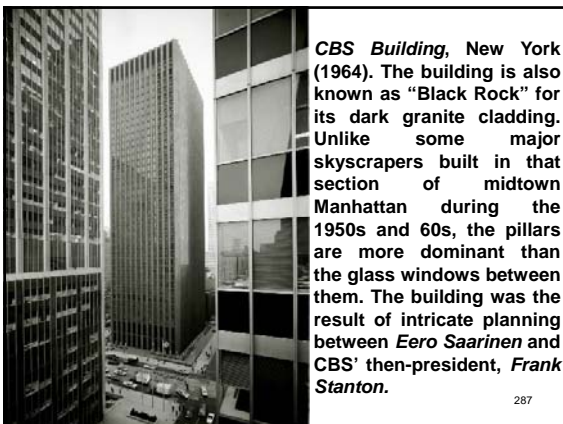


Dulles International Airport
Washington D.C.
(1963)

285

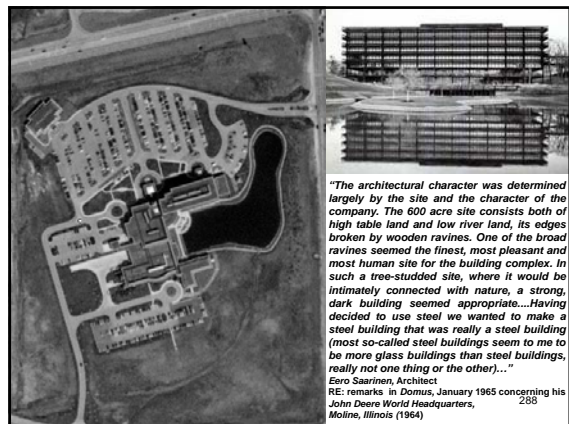


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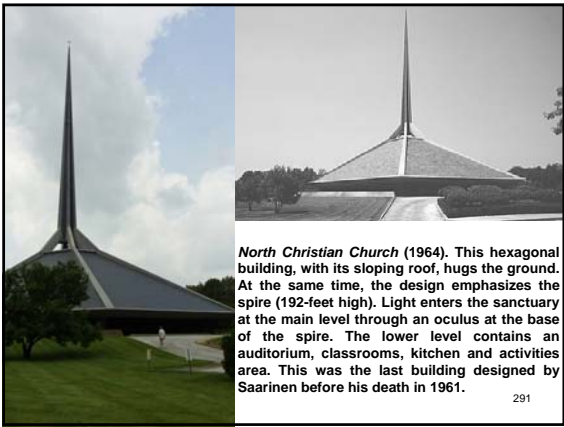
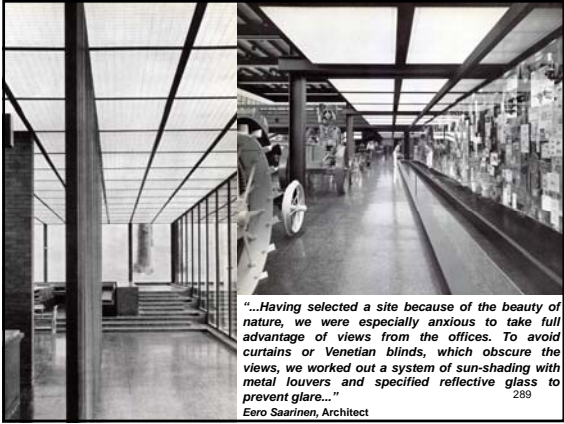
CBS Building, New York
(1964). The building is also known as "Black Rock" for its dark granite cladding. Unlike some major skyscrapers built in that section of midtown Manhattan during the 1950s and 60s, the pillars are more dominant than the glass windows between them. The building was the result of intricate planning between **Eero Saarinen** and CBS' then-president, **Frank Stanton**.

287



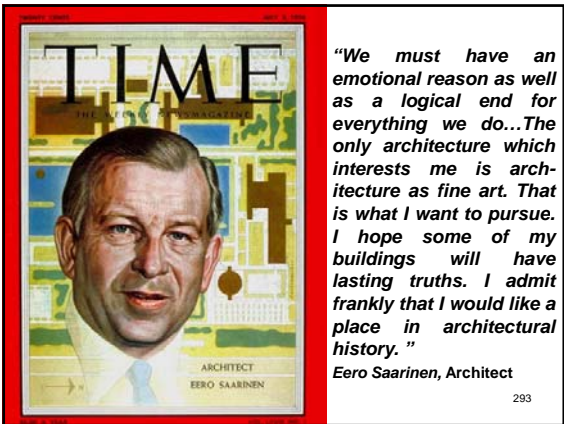
"The architectural character was determined largely by the site and the character of the company. The 600 acre site consists both of high table land and low river land, its edges broken by wooden ravines. One of the broad ravines seemed the finest, most pleasant and most human site for the building complex. In such a tree-studded site, where it would be intimately connected with nature, a strong, dark building seemed appropriate....Having decided to use steel we wanted to make a steel building that was really a steel building (most so-called steel buildings seem to me to be more glass buildings than steel buildings, really not one thing or the other)..."
Eero Saarinen, Architect.
RE: remarks in Domus, January 1965 concerning his John Deere World Headquarters, Moline, Illinois (1964)

288



A Place in Architectural History

292



Part 6
Post-Competition Blues

294

By 1949, memorial supporters had reason to be hopeful. With *Eero Saarinen's* design in hand the city and the railroads surely could agree on a plan-of-action to move the tracks in a way satisfactory to the federal government. The most favored plan proposed placing the tracks in a tunnel running diagonally across the memorial. The time seemed ripe for a federal funding allocation and authorization now that the war was over and prosperity was at hand. The fact that native son *Harry Truman* was in the White House added significantly to the positive feelings among memorial supporters that finally, the memorial was achievable. The U.S. *Army Corps of Engineers* had begun making core borings at the points of the triangular base section of the arch. NPS personnel in *St. Louis* received detailed plans for the development from *Eero Saarinen* which included alignments for a railroad tunnel diagonally across the area. Saarinen continued to oppose the TRRA/La Beume plan which provided for three tracks on a contained fill along the lines of the elevated tracks; NPS officials agreed with Saarinen's objections favoring two plans (*Bowen* and/or *Bates-Ross*) calling for a tunnel diagonally across the memorial area (differences between the two plans lay in the connections at both the north and south ends of the property). NPS Director *Spotts* preferred the *Bates-Ross* Plan, but remained willing to accept the *Bowen* Plan if the TRRA preferred it. *Eero Saarinen* agreed to adjust his memorial plans to fit the railroad scheme adopted. If they were to be eliminated from sight, there existed no alternative to placing the tracks in a tunnel. Saarinen stated he would not want to be architect for the memorial if the tracks separated the memorial from the river. Director *Newton Drury* reaffirmed the Department of the Interior's opposition to the tracks remaining between the area and the river. ²⁹⁵



Miss *Catherine Bauer* (third from left); housing writer and lecturer, being shown the model of *Eero Saarinen's* riverfront development design at the *Old Courthouse*. To Miss Bauer's left is *Luther Ely Smith*, October 1949 ²⁹⁶

To Hide a Railroad

²⁹⁷

"The ideal way for achieving a completely integrated design, in detail as well as in broad outline is to keep the solutions of all the component parts fluid until we know as much as we ever will about the programs of each one of them."

Eero Saarinen, Architect

RE: *Eero Saarinen* continued to both revise his design and point out the problems connected with having the tracks in a tunnel on the riverfront. The competition had set the park's design to a certain extent. However, several other features could yet be changed and Saarinen feared that the railroad tunnel would interfere with these features. The question of underground parking remained unsolved, as did the final treatment of the restaurants, museums, frontier village, and levee.

²⁹⁸

Saarinen's plan to place the tracks in a tunnel under the area between *Second* and *First* Streets was now called the *Hill-Tunnel Plan*. TRRA officials objected to the *Hill-Tunnel* plan as too hazardous for operation. The *Board of Public Service* wanted to lower the tracks and place them in a 1,500-foot cut immediately in front of the Arch, shielded by retaining walls and landscaping. The plan, labeled the *Levee-Tunnel Plan* was favored and praised by city hall. The NPS and Saarinen expressed their unhappiness while association members said nothing. Saarinen met with city officials to study the *Levee-Tunnel* plan making several technical propositions such as placing more tracks in the tunnel to make the plan aesthetically acceptable. Association president *William Crowder* stated that the group could not in good conscience agree in principle to the *Levee-Tunnel* Plan. It became evident to association members that Mayor *Joseph Darst* and city officials were determined to get the *Levee-Tunnel* plan adopted for political reasons. ²⁹⁹



Levee, elevated RR tracks and warehouse district (ca. 1930s) ³⁰⁰

A Formidable Barrier

301

After months of trying to fit the railroad schemes in with his design, *Eero Saarinen* finally decided to take a firm stand. Because the chosen *Levee-Tunnel Plan* would negatively influence the memorial park's design, Saarinen clarified his position to the NPS. In his estimation, any of the railroad plans that placed the tracks in an enclosed tunnel west of the memorial arch plaza could be incorporated into the project's overall design. Therefore, the *Hill-Tunnel plan* and/or the *Bowen Plan* met with his approval. Conversely, plans placing the tracks on the levee created "great hardships" on his design. The Levee-Tunnel plan established a "formidable barrier" between the memorial and the levee and he hoped that everything possible would be done to place the tracks where they would not conflict with the arch's design.

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Memorandum of Understanding

303

On December 6th 1949, the various groups vitally interested in the memorial's construction authorized a "Memorandum of Understanding" which was, in effect, a plan for the relocation of the surface and elevated railroad tracks extending in front of the historic site. The relocation was based on a plan designed by *Eero Saarinen*. The five tracks on the levee would be replaced by three tracks, one owned by the *Missouri Pacific Railroad* (MPRR) and two by the TRRA, proceeding through a tunnel not longer than 3K-feet. The tunnel would be approximately fifty-feet west of the current elevated line. The agreement would not become effective until several conditions were met. Approval of an eighteen foot vertical clearance (instead of the twenty-two feet normally required in a tunnel) had to come from the *Missouri Public Service Commission*. Permanent easements had to be granted by both the city and federal government to the MPRR and the TRRA for the track locations. The city was to be granted an easement for underground parking while the *Department of the Interior* would recommend to Congress the transfer of certain areas from the memorial to the city for above-ground parking structures, if needed. No cost divisions were solved in the memorandum; but it said the document would not be effective until all parties agreed on the cost division and the project's cost as a whole. NPS officials were pleased, thinking that the agreement would serve as a satisfactory basis for future negotiations regarding cost allocations and authorizing legislation. They recommended Secretary Chapman approve the document, which he did on December 22nd 1949.

304

Saarinen did not know if he or the railroads would design the tunnel. Engineer *Fred Severud's* calculations on the amounts of stress and strain the arch could endure indicated that placing the tracks next to the arch would create more expense because of the deeper footings needed, but Severud felt assured that vibrations from the trains would not shake the Arch due to its mass and the bedrock. All details of the relocated tracks including design, location grades, allocation of costs and approval of the *Public Service Commission* needed determining asap. Saarinen also needed studies of the tunnel's location with a profile of the grade lines. Saarinen's plan provided that the arch be placed east of the railroad tunnel. There were major construction difficulties in this configuration, but they were not insurmountable. If subsequent studies indicated a more desirable location, the NPS encouraged Saarinen to feel free to adopt a better solution. Saarinen's revisions - accepted by all concerned, appear to have saved the project; at least for the time being (memorial supporters believed the railroad relocation to be the greatest obstacle in the memorial's path).

305

Authorization or Bust

306

President *Harry S. Truman* was scheduled to visit to *St. Louis* on June 10th 1950. Truman, a member of the *Thirty-fifth Division Association* (a WWI veteran's group), was to attend that organization's thirtieth reunion in *St. Louis*, make a major foreign policy address and dedicate the site of *Jefferson National Expansion Memorial*. President Truman walked in a parade with his fellow *Thirty-fifth Division* veterans to a reviewing stand on the east steps of the *Old Courthouse* attracting large crowds. In his speech, he concentrated on the growing crisis in *Korea*. Truman dedicated the site and once inside the *Old Courthouse*, further indicated his interest by inspecting *Saارين's* model.

307



POTUS *Harry S. Truman* (center) confers with *Luther Ely Smith* (to the president's right) at the memorial's dedication on June 10th 1950. *William Crowds* of JNEMA is to the president's left.

308

Despite the positive publicity of the President's visit, no authorization bill yet existed to build the memorial, but it was close at hand by the end of June. On June 25th 1950, the *North Korean People's Army* invaded *South Korea*. Fiscal conservatism in the Senate became the principal consideration with the outbreak of war and commitment of American forces. In fact, the Senate had just killed a bill for construction of a Senate office building to save money for the Korean Conflict. Senators could not envision voting down their own office building and then giving money for a memorial in *St. Louis*. *Luther Ely Smith* found himself caught between two crises, the one in *Korea* and the climax of his own seventeen-year effort for the memorial. Smith did not want to see the memorial fail after the efforts of the past few months in Congress, so he proposed dropping the bill's clause providing for completion by 1952 in hopes of eventual passage. But President Truman's priorities were in *Korea*, not *St. Louis*.

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For the Sake of the National Interest

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Events had taken a harsh turn against the memorial project. At the beginning of 1950, the situation had seemed ripe for the project's authorization and appropriation in Congress. Association members were using the momentum started by the architectural competition to push through their bills. They had identified the pivotal congressmen, placed pressure upon them and worked with them but in the end, had to take congressional advice to abandon the efforts. All the vested interests (city, federal, railroads and association) had presented a united front once they worked out an authorization bill to their liking. But as unfamiliar names such as *Inchon* and *Pyongyang* entered the vocabulary of Americans, the memorial backers had to abandon their domestic desires for the sake of the national interest.

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East Side, West Side

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The 1949 *Memorandum of Understanding* called for an eighteen-foot clearance in the railroad tunnel and for the arch to be placed to the east of it (the standard clearance was required because certain physical facts made it impossible to depress the tracks to gain the necessary 22-feet and the height variance had to be approved by the *Missouri Public Service Commission*). Meanwhile, Saarinen considered NPS Superintendent *Julian Spotts'* suggestion to move the arch's location from the east side of the tracks to the west side. The tunnel could be built while the elevated still operated and Saarinen risked starting a new controversy if he departed from the memorandum's requirement that the tunnel be fifty feet west of the elevated line. Saarinen finally agreed and made the changes. He moved the arch west of the tracks, eliminated the historic arcade (which was to be composed of courts with sculpture and paintings) and removed the recently restored *Old Rock House* (it was in the way of the tunnel).

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"It is not only the relation between the levee and the Plaza which becomes so very difficult, it is also the profile through the whole project. At present you can see the river from the Old Courthouse...and if this was raised beyond 429 you would not see enough of the river to know that there was a river there."

Eero Saarinen, Architect

RE: Saarinen wanted to use as much of the site as possible for a dense forest. Also of critical concern to him was the relation of the monument to the river. The arch was not placed in the center of the site but, rather, on the edge of the levee because as he stated: *"most of the history of the west has passed by that levee."* Thus, Saarinen wanted to keep the tunnel's elevation from extending above 429-feet to preserve the sloping area between the levee and the memorial plaza. The Dean of the *School of Architecture at Washington University* provided support for the 18-foot clearance from an aesthetic viewpoint. Having a standard 22-foot clearance would raise the tunnel to an elevation of more than 429-feet, which would be extremely harmful to the overall design, he argued. In his opinion, since the memorial was not a utilitarian object, beauty remained the principal consideration.

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Opposition to shortening the tunnel by four-feet came from five *St. Louis* railroad brotherhoods, which did not oppose the memorial's construction or Saarinen's design. Rather, they opposed the construction of the relocated track in violation of safety laws of the *State of Missouri* when there existed no "real" reason (as they saw it) to depart from the twenty-two foot vertical clearance statute.

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"Congratulations! If we live long enough we'll have the railroad underground and the monument built."

Eero Saarinen, Architect

RE: on August 7th 1952 (after nearly two years considering the issue), the *Public Service Commission* approved the eighteen-foot vertical clearance in the tunnel for relocating the tracks fulfilling one of the key conditions of the *Memorandum of Understanding*

Left: Eero Saarinen giving testimony

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Interpretive Prospectus

While the tunnel clearance controversy was going on, NPS officials were reexamining the memorial's initial *"Interpretive Prospectus"* (an NPS document setting out the basic theme of the park to guide planning). NPS officials accepted Saarinen's space allotments for the proposed *Western Museum* and *Museum of Architecture* as well as the other general building plans. After the historical museum's completion, NPS planned to move the *Old Courthouse* exhibits into the new building incorporating them into the new exhibits (the *Old Courthouse* would then be used for offices exclusively). Differences existed over the proposed *Frontier* and *Cathedral Village/s* – the NPS simply did not want them. Soaring costs effectively forced the removal of the proposed villages, trails and outdoor campfire theatre. By the late 1950s, Saarinen had to cut his proposals down to the basic elements of arch, forest and the memorial-river relationship to get congressional appropriations.

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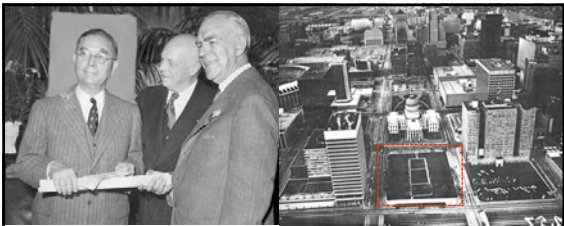
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Oh Captain, My Captain

319

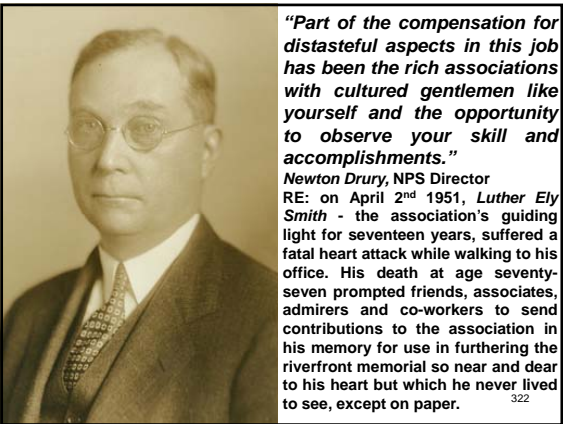
"When he met opposition, he would always say, 'They just don't understand. We'll have to take them to lunch and educate them'"
SaLees Seddon (Luther Ely Smith's daughter)
 RE: excerpt from a 1985 interview. She went on to recall that when several businessmen anonymously opposed his plan, Smith became angry, but only because he didn't know who they were so he could "educate them" over lunch.

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Left: *Luther Ely Smith* (at left) receiving the *St. Louis Award*. His commitment to the project and the improvement of St. Louis was recognized by the city in 1941 when he received the prestigious award
Right: The *Old Courthouse* and *Luther Ely Smith Square* (as seen from the top of *Gateway Arch*)

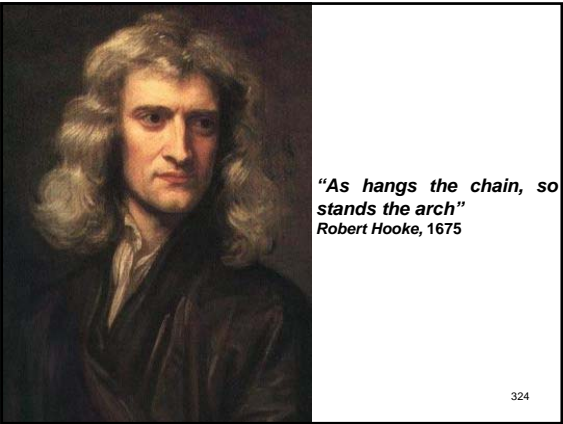
321



"Part of the compensation for distasteful aspects in this job has been the rich associations with cultured gentlemen like yourself and the opportunity to observe your skill and accomplishments."
Newton Drury, NPS Director
 RE: on April 2nd 1951, *Luther Ely Smith* - the association's guiding light for seventeen years, suffered a fatal heart attack while walking to his office. His death at age seventy-seven prompted friends, associates, admirers and co-workers to send contributions to the association in his memory for use in furthering the riverfront memorial so near and dear to his heart but which he never lived to see, except on paper.

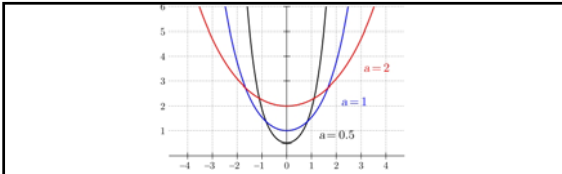
322

In 1951, in addition to the city's efforts to improve the site's condition and the association's effort to secure authorization, *Eero Saarinen* continued carrying out his contract with the NPS. His services were used more broadly than was first anticipated because of the railroad and parking lot situations. By January 1951, he completed work on twenty-one drawings, including profiles of the arch, scale drawings of the museums and restaurants, various parking proposals, the effect of the *levee-tunnel* railroad plan on the arch footings, the arch foundations, the *Third Street Expressway* and the internal and external structure of the arch. The engineering firm of *Fred N. Severud* provided the arch's structural calculations (based on wind tunnel tests of an arch model). Conferences were held with a bridge company to solve erection and stainless steel fabrication problems. When Saarinen fulfilled his contract for the preliminary investigations, the NPS approved his work and paid him.³²³



"As hangs the chain, so stands the arch"
Robert Hooke, 1675

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“This arch is not a true parabola, as is often stated. Instead it is a catenary curve - the curve of a hanging chain - a curve in which the forces of thrust are continuously kept within the center of the legs of the arch.”

Eero Saarinen, Architect (1959)

RE: actually, Gateway Arch is an *Inverted Weighted Catenary* - the arch is thicker at its two bases than at its vertex. Saarinen chose a weighted catenary over a normal catenary curve because it appears less pointed and less steep. A *catenary curve* is the shape assumed by a chain hanging freely between two points. “*Inverted*” means the shape has been projected upward. “*Weighted*” means that the triangular-shaped legs taper as they rise. ³²⁵

Transcendental Curve

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The word “catenary” is derived from the Latin word for “chain.” Thus, it is the curve of a hanging chain. Such a curve looks like a *parabola* but, in fact, mathematically it’s different. A parabola is what is known as an *algebraic curve* whereas a catenary is a *transcendental curve*. Even *Galileo* thought the equation for the shape formed by a hanging cord was that of a parabola and indeed, such a curve can be very close to that of a parabola (especially when the curve has an elevation of less than 45-degrees). Unfortunately for Galileo, the *Calculus of Variations* had not been invented yet. Gateway Arch is not an ordinary catenary rather, it’s closer to what is called a *modified catenary*, *flattened catenary* or, more often, a *weighted catenary*. Whereas a catenary is the ideal shape for a freestanding arch of constant thickness, the Gateway Arch’s cross-section is narrower near the top. Saarinen wanted the arch to appear to soar toward the heavens, so he came up with the idea of making the structure thinner at the top than at its bases. Although the Gateway Arch appears taller than it is wide, in fact it is nearly exactly as high as it is wide. The weighted catenary curve provides the optical illusion. To achieve the desired effect, Saarinen experimented with two different catenaries - one inside the other - for the *intrados* (inside) and *extrados* (outside) of the arch, but he felt the resulting arch was too severely sculptural in appearance. Ironic, considering his lifelong love of sculpture. The weighted catenary shape of Gateway Arch, with its heavier sections at the base and progressively smaller ones near the apex, is thus subtly “rounder” than a pure catenary. In the case of the Gateway Arch, the vertex of the curve is a local *minimum* of curvature. This type of weighted catenary is called a *two-posed catenary* and appears taller than it is wide. ³²⁷



A chain that supports only its own weight forms a *catenary*. In this configuration, the chain is solely in tension (the *Hyperbolic Cosine Function* describes the shape of a catenary). Likewise, an *Inverted Catenary Arch* (that supports only its own weight) is purely in compression, with no shear. The *catenary arch* is the most stable of all arch forms since the thrust passes down through the legs and is absorbed in the foundations, whereas in other arches, the pressure tends to force the legs apart. ³²⁸

It was German-American structural engineer *Hannskarl Bandel* (1925–1993), not Saarinen, who modified the inverted catenary shape for the *Gateway Arch*. Bandel was a partner in the firm of *Severud-Perrone-Sturm-Bandel*, later known as *Severud Associates*. Fred Severud was Saarinen’s structural engineer. When Saarinen tried to demonstrate the soaring shape for the arch with a chain suspended in his hands, he couldn’t do it. Bandel took the chain and returned in a few days, demonstrating Saarinen’s desired curve as if by magic, much to the delight and confusion of Saarinen himself. Bandel had simply replaced some of the links of constant length with variable-length links, thus changing the weight, the weight distribution and therefore the shape. Bandel also factored in the wind loads upon the 630-foot arch and found that if he added more weight to the first 300-feet of the arch and placed 25,980-tons of concrete in the arch’s foundation, the center of gravity would be lowered thus greatly increasing stability. ³²⁹

The geometric form of the structure was set by mathematical equations provided to Saarinen by *Hannskarl Bandel*. *Bruce Detmers* and other architects expressed the geometric form in blueprints with this equation:

$$y = -A \left(\cosh \frac{cx}{L} - 1 \right) \Leftrightarrow x = \frac{L}{c} \cosh^{-1} \left(1 + \frac{y}{A} \right)$$

with the constants;

$$A = \frac{L^2}{2c^2} \left(\frac{c}{L} - 1 \right) = 68.2973$$

$$c = \cosh^{-1} \left(\frac{L}{A} \right) = 3.81225$$

$f_c = 625.0925$ -feet is the maximum height of centroid;
 $Q_b = 1,262.6651$ square-feet is the maximum cross sectional area of arch at base;
 $Q_t = 125.1406$ square-feet is the minimum cross sectional area of arch at top;
 $L = 299.2239$ -feet is the half width of centroid at the base

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“...the chain has to be weighted the most near the vertex and then decrease as the steepness of the curve increases. As a result, if Saarinen had decided that he found a parabolic arch most pleasing esthetically, he would have been faced with the paradox that in order to have the line of thrust be everywhere directed along the arch, the arch would have to be thickest at the top and taper down toward the bottom, which would be both ungainly esthetically and potentially disastrous structurally.”

Robert Osserman, Stanford University

RE: Gateway Arch has a varying cross sectional area (thicker at the base; thinner at the apex). The cross-section/s of the arch's legs are equilateral triangles that narrow from 54-feet on each side (cross sectional area of 625.09 square feet) at the base to 17-feet on each side at the top (125.14 square feet).

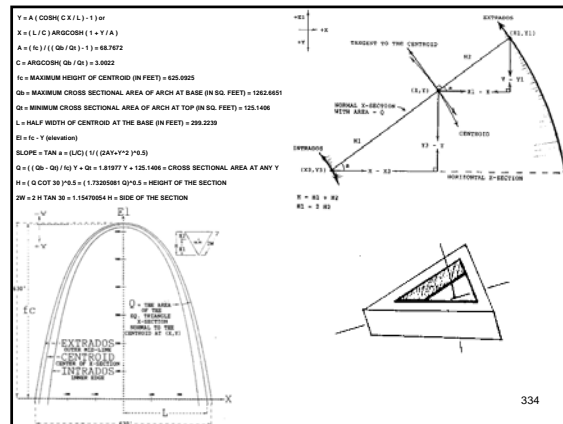
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The Centroid Curve

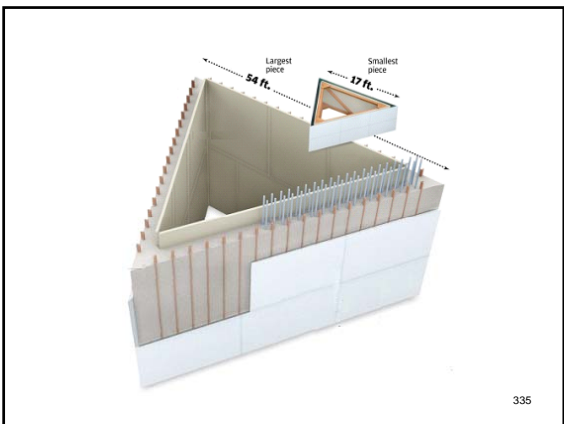
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The *Centroid* (geometric center) *Curve* is an imaginary line inside the triangular cross-section representing the true curve of the arch. Thus, the true curve of the arch is inside, not on the inner edge (the “intrados”) or outer edge (the “extrados”). The width of the curve at ground level is 598.45 feet. But this curve is *inside* the arch (it’s a “centroid” curve, at the geometric center of the equilateral triangular sections that are 54-feet on a side). For mathematical/aesthetic reasons, 15.59-feet must be added on each side to the width of the Centroid Curve (at ground level) to establish the width of the outer curve. Thus, a total *physical* width for the arch of 629.62-feet is established. Similarly, the Arch’s Centroid Curve is 625.09-feet high but once again, this curve is an imaginary line inside the structure (the equilateral triangular sections are 17-feet on a side at this point). Similarly, the arch’s centroid curve is 625.09-feet high, but once again, this curve is an imaginary line inside the structure (the equilateral triangular sections are 17-feet on a side at this high-point). Thus, 4.91-feet must be added to the curve to get the very top surface of the arch which is 629.99-feet above ground level (+/- 632-feet on a hot day).

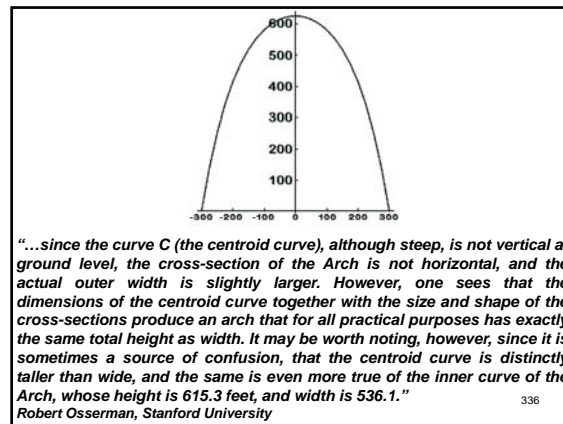
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Royal Arch of Heaven (?)

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"There are two points from which this form of arch can be approached; the first is that of architecture, and it is proverbial in this respect that there is no curve in Masonry which approaches the catenary in strength; as regards the second, it is summarized in the simple statement that in its due and proper arrangement every Royal Arch Chapter approaches as nearly as possible the form of a catenarian arch. Of all that arises herefrom and belongs hereto it is not possible to speak: the motto is: Come and See. The word catenarius signifies chained or linked."

New Encyclopedia of Freemasonry
RE: from a purely symbolic perspective, in Freemasonry is found the astrologically-based Royal Arch of Heaven in the form of a "Catenary Arch"

Left: the Masonic Royal Arch

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Hope and Determination

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The August 1952 Missouri Public Service Commission approval of the tunnel's eighteen-foot clearance was the only significant decision made that year toward the memorial's development. As for the association, it was still reeling from the sudden and unexpected death of its visionary leader *Luther Ely Smith* (in April 1951). No work was done on the site and Congress took no action on the authorization while the Korean War raged on. The war effectively served (as had *World War II*) to stop all progress on the Jefferson memorial. The post-competition years were bittersweet. There were some encouraging signs; they had managed to unite all the involved interests on the railroad question arriving at a *Memorandum of Understanding*. *Eero Saarinen* kept up his flexibility by drawing architectural plans and shifting the arch's location to avoid controversy and President Truman provided prestige and legitimacy to the project by personally dedicating the site (in June 1950). But the bitterness came when the association failed for three years (1950-52) to secure an authorization, let alone an appropriation. As 1953 approached, *Minette Forthmann* (the association's long-time secretary) asserted to Saarinen: "We all still have enough hope and determination to see it through."

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The Five Elements

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On January 29th 1953, the St. Louis area congressional delegation introduced five identical authorization bills in the *House of Representatives* to get work started on *Jefferson National Expansion Memorial*. Within a month, on February 18th Missouri Senator *Thomas Hennings, Jr.* submitted a similar authorization bill in the Senate. The bills called for the memorial to be built in accordance with *Eero Saarinen's* plan as approved by the *United States Territorial Expansion Memorial Commission* in 1948. The bills authorized five elements;

- Railroad relocation
- Grading and filling
- Landscaping
- Paved areas and utilities
- Restoration of the Old Courthouse

The bills also authorized the arch's construction. The memorial authorization bill passed the House on July 31st 1953, only after financial constraints dictated once again that authorization be limited to the "five elements" (not including the arch) and was referred to the Senate. The rest of 1953 passed with no Senate action. Finally, the Senate approved the House measure in May 1954 and President *Dwight D. Eisenhower* received the bill on May 11th 1954 and signed it into law on May 18th 1954. It was a great achievement despite the facts that the bill;

- only authorized five stages of development;
- the arch was not authorized;
- no more than \$5 million in federal funds could be spent

But for the first time in twenty years, the project's backers had proof-on-paper that the federal government would go through with the memorial plans.

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Sesquicentennial

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The year 1953 had celebrated the sesquicentennial of the *Louisiana Purchase*. In 1953, approximately 3,500 motorists routinely used the memorial area as a downtown parking lot. Realizing that this parking area would not be permanently available, former *Mayor Kaufmann* proposed an underground garage (in 1954). Starting in late December 1954, the *Missouri Highway Department* dumped 80K cubic-yards of earth on the site (northward from *Clark Street* toward the *Eads Bridge*, between *Memorial Drive* and *Wharf Street*). Nearly 300K cubic-yards had already been deposited from Clark Street south to the memorial boundary. The new soil gave city officials physical proof that riverfront parking would not be available forever, putting pressure on NPS officials to solve the parking problem. Since 1940, the NPS had maintained the *Old Courthouse*, but no restoration work had occurred. By 1951, serious deterioration needed to be addressed and some restoration work was performed (primarily for fire prevention). An NPS preservation specialist and eight art students restored the *Rotunda* paintings in 1955. They cleaned and touched up the high murals and in 1954, a new exterior coat of white paint gave the structure much prominence in the city. This new image was heightened by the addition of a wrought iron fence around the building. The Old Courthouse's facelift served to focus more attention on completing the memorial of which it was an integral part.

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Frustrated with the now familiar slow progress in Congress, in 1955 the association decided to look elsewhere for funding. They made appeals to both the *Ford* and *Rockefeller Foundation/s*, claiming that the citizens of *St. Louis* were deserving of their assistance, and asked for \$10 million to complete the work. Both replied that as private foundations, they could not issue grants for national memorials. Representative *Frank Karsten* - one of the memorial's staunchest supporters, sought to remove the restriction in the 1954 authorization bill against using federal money to build the arch. Both the House and Senate had agreed on a partial appropriation of \$2,640,000 on May 16th 1956 and *President Eisenhower* signed it into law on May 19th, but it could not be used for the arch. Now that federal money was appropriated, rumors of building stadiums instead of an arch on the site were circulating. There was a well-founded fear among memorial supporters that formally requesting funding for the arch would jeopardize the partial appropriation so bitterly won. A Chicago-based engineering firm; *Alfred Benesch and Associates*, was asked to prepare plans for the railroad relocation and estimates of cost. Their report unleashed a furor stating that the tracks in front of the memorial should not be removed. Saarinen, the association and the *American Institute of Architects (AIA)* denounced the idea outright while NPS Director *Conrad Wirth* simply stated that the NPS would have to analyze the report then sit down with the city and the railroads to come up with a solution. The *St. Louis Post-Dispatch* led the attack on the idea while the *St. Louis Globe-Democrat*, surprisingly, endorsed the Benesch report. Ultimately, the *Post-Dispatch* uncovered and printed the fact that Alfred Benesch and his firm were hired at the suggestion of the president of the TRRA.

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As it turned out, the situation developed because the NPS and the TRRA made a joint cooperative agreement in October 1956. The TRRA would hire an engineer to survey, design, estimate and report on the cost of all materials concerning relocation of the elevated tracks. *Alfred Benesch and Associates* submitted an interim report in December 1956 that analyzed five relocation methods. On February 6th 1957 representatives of the NPS, the *City of St. Louis*, the TRRA and the *Missouri Pacific Railroad* met and agreed that Benesch should prepare final plans and cost studies for two of the five plans;

- An open cut containing three tracks lower than the levee's present surface;
- A modified tunnel plan which would carry three tracks through the memorial area in a tunnel not longer than 3K-feet.

Thus the final Benesch report that appeared on May 3rd 1957 was expected; what was unexpected was the opinion against removing the tracks at all. The railroads considered the Benesch study a good delaying tactic while memorial supporters were confronted with the unwanted suggestion not to move the tracks - a vital component for completing the memorial. According to Benesch, placing the tracks in an open cut would cost more than \$11 million while the estimated tunnel costs ran in excess of \$14 million.

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The Saarinen Vista

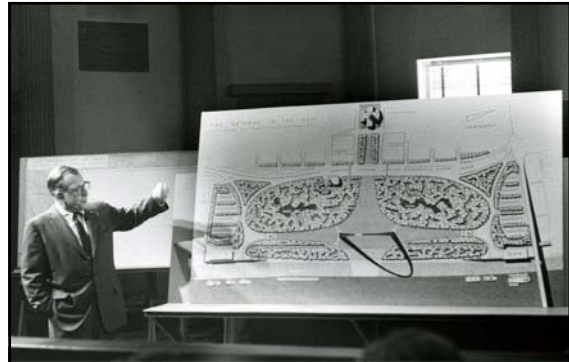
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"It's time to stop talking in generalities and go ahead with a definite order of procedure, definite cost estimates, and a definite schedule"

Conrad Wirth, NPS Director

RE: believing that relocation costs might not be as expensive as Benesch stated, Wirth had Saarinen study the possibility of making minor, technical design changes. Saarinen worked all summer and by October, he had finished his changes. The revised plans called for placing the five sets of railroad tracks into a shortened tunnel; 100-feet west of the trestle, with the tracks being lowered sixteen feet. This did not mean that the memorial would be cut off from the river for Saarinen provided a 960-foot long tunnel to be placed over the railroad where a "grand staircase" rose from the levee to the arch. At the north and south ends of the park, 150-foot tunnels spanned the tracks, and led to the overlook museum, restaurant, and stairways down to the levee. Saarinen designed a subterranean *Visitor Center* the length of the distance between the legs to include two theaters and an entrance by inward-sloping ramps. The new positioning made the Arch more prominent and reinforced its axial relationship with the *Old Courthouse*. This strong association with downtown *St. Louis* came at the sacrifice of association with the river (which could no longer be seen from the base of the arch or from the *Old Courthouse* steps). The "Saarinen Vista" was destroyed, and the *Museum of Architecture* and reproductions of "Old St. Louis" was abandoned.

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Eero Saarinen explaining revisions to the memorial (October 1957)

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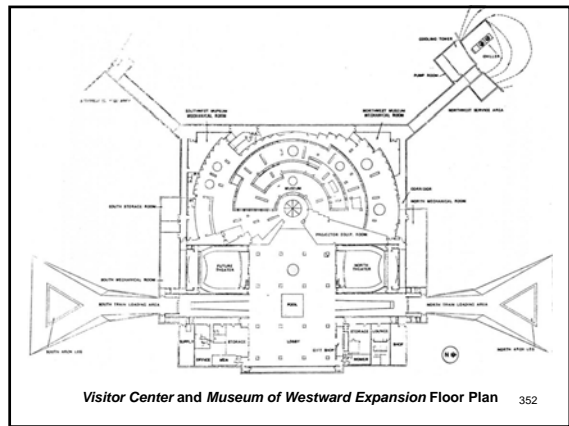


Above Left: the "Grand Staircase" rising from the levee to the arch

Above Right: viewing the river from the top of the stairs (RR tunnel below)

Left: view of the stairs from the Observation Deck

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Visitor Center and Museum of Westward Expansion Floor Plan

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Saarinen's revised plans had to pass muster with several groups. The *United States Territorial Expansion Commission* and the *Missouri Pacific Railroad* approved the plans while the TRRA studied the changes. On October 2nd 1957, Saarinen presented his plans in the west courtroom of the *Old Courthouse*. All parties holding a vested interest in the memorial were there to support the final push for planning, appropriation and construction of the memorial. On November 29th 1957, all parties signed another *Memorandum of Understanding* accepting Saarinen's revised plans for relocating the tracks. On December 17th 1958, the *Secretary of the Interior* signed the memorandum. To save money, Saarinen agreed to allow two surface tracks to remain on the levee (the \$5,053,000 estimate to carry out the track relocation covered only the cost of moving the elevated tracks and not those on the surface). After more than twenty years of negotiations and planning, the physical work could begin (in theory at least).

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The only remaining task; cost allocations, was thought to be a minor detail. It proved to be a major stumbling block. The TRRA offered a plan in late February 1958 proposing to eliminate the tunnel altogether, settling on an open cut 960-feet long shielded by shrubs and trees. On March 10th 1958, Mayor *Raymond Tucker* (an engineer by profession) proposed to save \$1.5 million in relocation costs by dropping the tunnel idea in favor of open cuts roofed with concrete slabs. The initial reaction from Saarinen and the NPS was favorable. Mayor Tucker simply took the TRRA's economical open cut idea and covered its unsightliness by placing concrete slabs on top as a roof in strategic locations. The cost of this plan stood at \$2,684,000. Saarinen approved the concept since the tracks remained where he had placed them and the roof slab would be at the same elevation as his proposed tunnel. The two ground level *Wharf Street* levee tracks would remain. A day earlier, the TRRA had dropped plans for a floodwall saving \$816K and offered to contribute \$500K toward track removal. On March 31st 1958, the TRRA accepted Mayor Tucker's plan. On May 12th 1958, city and railroad officials signed an agreement on open cuts and roofed areas covered with slabs (a.k.a. "bridges"). The TRRA would place \$500K in escrow for the project and the city would sell \$980K of the 1935 bonds to match the federal contribution while simultaneously dropping law suits (dating back to 1937 and 1943) against the TRRA by the *City of St. Louis*.

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St. Louis Mayor Raymond R. Tucker (right) and Eero Saarinen (left) conferring at the Statler Hilton Hotel, March 12th 1958 355



One of the prime factors breaking the years-long impasse over the railroad question was the leadership shown by *Missouri Pacific Railroad* President *Russell Dearmont*. The TRRA consistently opposed the relocation because of the expense, but in 1957 the new Missouri Pacific president believed the memorial was necessary. Dearmont persuaded his associates on the TRRA's board of directors to agree with the city and the federal government on the relocation. For his efforts, Dearmont received the 1958 *St. Louis Award* 356

Of the \$5 million authorized for the memorial to-date, only \$2,640,000 had been appropriated. Thus, \$2,360,000 remained un-appropriated. The *United States Territorial Expansion Commission* voted on March 21st and April 25th 1958 to request an immediate appropriation of the remaining balance. However, the St. Louis area congressional delegation went one step further seeking additional funds to provide for the construction of the entire *Jefferson National Expansion Memorial*. On July 1st 1958, they introduced six identical bills amending the 1954 authorization. In August 1958, the *Department of the Interior* and *Bureau of the Budget* approved the bills authorizing a \$12,250,000 increase in federal funds to the memorial without reservation. Added to the \$5 million previously authorized (1954), this would make a total of \$17,250,000 of federal funds available. The Bureau of the Budget approved the increased monetary authorization only, not the previously sought additional appropriation. Despite this, the congressional delegation approved of the action (they also wanted to lift the 1954 restriction against planning for the arch). On September 7th 1958, President Eisenhower signed the bill authorizing an increase of \$12,250,000 in federal funds for the memorial and dropping of the 1954 restrictive language. Appropriation bills would have to wait until a later session of Congress. For their part, the NPS had no intentions of asking Congress for additional funds. Their budget for 1959 had long since been submitted to the *Department of the Interior* (the NPS intended to begin work on the railroad removal with money already appropriated). Director Wirth wanted the project to be finished by 1963, but this date depended upon further congressional appropriations. 357

"The mental strains of steering this project through precarious channels are not endurable by me without the anticipated reward of performing the engineering services in addition to being Superintendent."
Julian Spotts, NPS Superintendent
 RE: NPS officials expected Spotts to be the area supervisor, NPS representative, and to do basic surveys and prepare preliminary data as needed for furthering Saarinen's work, but they decided that responsibility for the projects engineering should rest elsewhere. Spotts wanted to carry two responsibilities;
 • Direct the work of the architect
 • Supervise the construction of the memorial
 He thought it was understood that he, as Superintendent, would be the engineer for the actual development and that his office would cooperate with other NPS offices in preparing all engineering designs, plans, and specifications and supervise and execute all contracts in cooperation with the architect. Consulting engineers would lend assistance for some of the most difficult engineering problems. In 1956, he protested against the limitations placed on his duties as he saw them (having invested eighteen years of his life overseeing the birth struggles of the memorial) and the conflict intensified as construction neared. He believed he could not support his commitments, develop strategy and/or coordinate construction in proper sequence unless he controlled design and construction. Julian Spotts retired in protest on December 8th 1958. 358

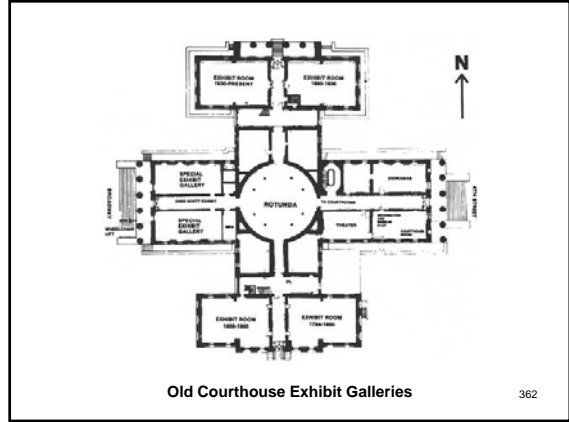
1959

359

On February 1st 1959, a young, dynamic lawyer named *George Hartzog, Jr.* assumed the position of NPS superintendent for the Jefferson memorial. Hartzog immediately inherited several unfinished projects. On the site, remaining buildings and parking lots had to be removed so construction could begin in midsummer. The *Old Rock House* stood in the way of the proposed railroad relocation and the grand levee staircase. As soon as the NPS announced it would tear the structure down, numerous protests arose which resulted in Saarinen studying the possibility of relocating the building. Dismantling began in August 1959. The public protest served to save *Manuel Lisa's* warehouse from total destruction for some original stones were saved. (the NPS had planned to reassemble the building and open it as a museum, but some stones were stolen). The *Old Courthouse* was destined to be a museum. Plans called for the new exhibits to consist of ten principal units each containing twenty-five exhibits in wall panels or cases. Dioramas, photographic displays and Indian and frontier artifacts were to be exhibited. All rooms in the Old Courthouse except the two courtrooms and NPS offices were destined to be temporary exhibit rooms. During 1958, when hundreds of cubic yards of fill were spread on the site (according to the grading plans) the *Denchar Warehouse* had to be removed (originally, it was to have served as the *Museum of American Architecture* but Saarinen had dropped it from the plan in 1957). 360



Left-to-right: St. Louis Mayor *Raymond Tucker*, Vice President *Richard M. Nixon*, Congressman *Tom Curtis*, *George B. Hartzog, Jr.*, *Morton D. "Buster" May* – Chairman of the *Jefferson National Expansion Memorial Association*. Superintendent *Hartzog* points out features on a model of the Jefferson memorial (ca. 1960). 361

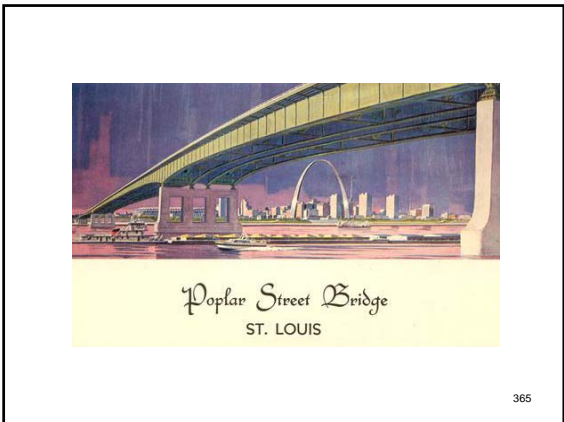


Old Courthouse Exhibit Galleries 362



One of the exhibits in the *Old Courthouse*; "St. Louis Revisited," featured portions of the historic *Old Rock House* (1818) 363

In December 1959, Mayor Tucker negotiated with the NPS on plans to build a parking garage on the memorial grounds. He issued an order to a drilling company to make test borings for the garage construction. In 1958, the city had awarded an \$8K contract to *Eero Saarinen* for a feasibility study for the proposed garage. Saarinen found that the proposal was feasible. Mayor Tucker also worked with various city and state officials to solve another planning problem. The states of *Missouri* and *Illinois* planned to build a free bridge near *Poplar Street* (at the south border of the memorial). Their plan calling for using twenty-five acres of memorial land caused considerable controversy, so Mayor Tucker appointed a committee (composed of Saarinen and the *City Plan Commission*) to work out a plan to the satisfaction of the city, state, and Saarinen. In June 1959, the committee agreed on a plan requiring only two-and-one-half acres of memorial land on the southern end for the new bridge. Missouri was then ready to proceed and submitted the plan to the *Illinois Division of Highways* for approval. The federal *Bureau of Public Roads* also had to approve the plan because the bridge was part of President Eisenhower's federal *Interstate Highway System*. 364



365

"Here is a rare opportunity to develop these areas in a unified way with the highest standards of design creating high property values"
Eero Saarinen, Architect
 RE: Saarinen believed that the memorial's success was dependent upon the harmonious development of the adjacent areas, including the north, west and south sides, the bridges spanning the river and the east river bank. He envisioned the redevelopment as a chance to impose appropriate and desirable restrictions. 366

Declaration of Blight

367

In the summer of 1959, Saarinen had the opportunity to express his views concerning a neighboring development. *Lewis Kitchen*, a real estate developer from *Kansas City, Missouri*, announced plans in April 1959 to build two forty-story buildings on *Third Street* opposite the memorial. When critics charged that the tall structures would interfere with the arch, Kitchen offered to lower the buildings' height. In July 1959, he met with city and NPS officials to solve the height problem. Even though the city controlled construction, the NPS and Saarinen were consulted. One step already taken by the *St. Louis Board of Aldermen* was providing for a *Declaration of Blight* to be placed on a fifteen-block area west of the memorial. The aldermen thus possessed control over the area because all developers would have to submit their plans to the board for review. As such, all redevelopment and/or rehabilitation would have to be in accordance with the city's general plan.

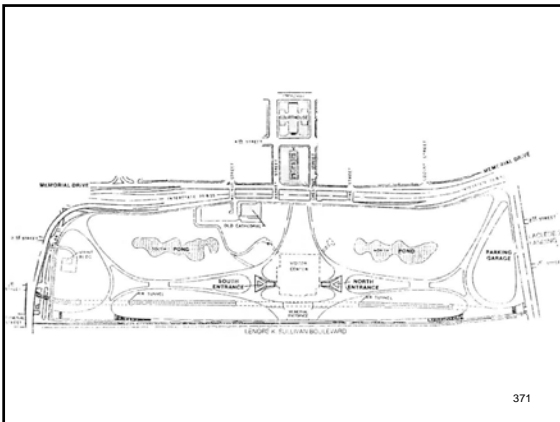
368

As of October 1959, NPS officials did not know how tall the arch was going to be. Saarinen was considering a height anywhere from 590 to 630-feet. He had not yet designed the arch's foundations; considering the task unfeasible until a definite height was determined. Saarinen's decision on the arch's height depended in part on adjacent development heights. A decision had to be made soon so that the foundations and *visitor center* could be designed. NPS Director Wirth decided to meet with Mayor Tucker to try and solve the problem. Late in October, Tucker and Wirth agreed to limit the total height of buildings facing the memorial to 275-feet or about twenty-seven stories. Lewis Kitchen cut down his height proposal for the *Mansion House* development and the city announced that any developers who wanted to build structures facing the memorial would have to have the city approve their plans. The NPS, along with Saarinen, agreed to raise the height of the arch.

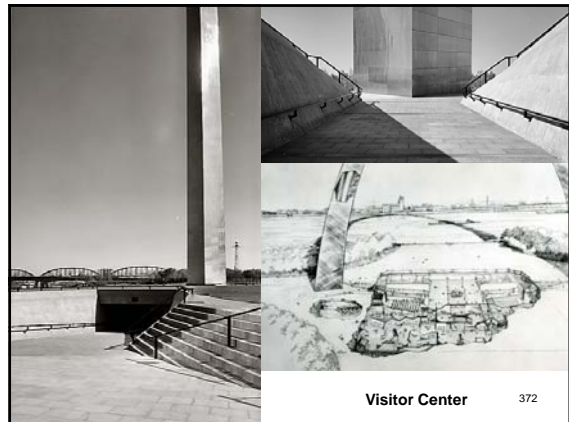
369

In March 1959, the NPS announced plans for a historical museum on the site. Because Saarinen had abandoned all plans for museums on the grounds for reasons of cost, he and *George Hartzog* decided to place the *Museum of Westward Expansion* underneath the arch. The 1959 *National Park Service Master Plan* revealed that the memorial's *Visitor Center* housing the museum, an auditorium and an information center would be located beneath the promenade at the foot of the arch. Access was gained by ramps leading to the elevators for the "sky-ride" to the top of the arch. All development would follow the general pattern of Saarinen's revised plans with the dominant physical and inspirational feature of the memorial remaining the stainless steel arch. The only historic structures to be preserved within the memorial were the *Old Courthouse*, the *Old Cathedral*, and the *Old Rock House* which was to be reconstructed near the south terrace overlook. The two river overlooks at the north and south ends of the memorial would contain exhibits concerning the river and railroad transportation aspects of westward expansion. The Old Courthouse was to serve as the administrative and operational headquarters for the area. Two developments specified in the 1959 plan were later dropped (two planted areas containing trail systems with interpretive devices relating to the *Oregon* and *Santa Fe Trails*).

370

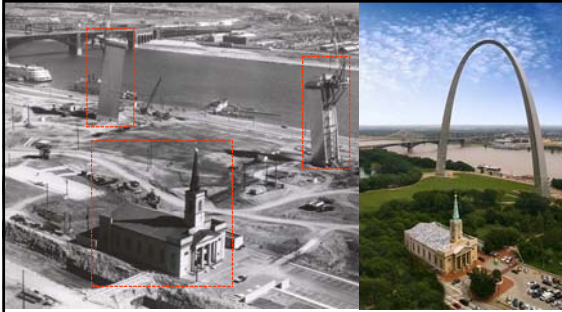


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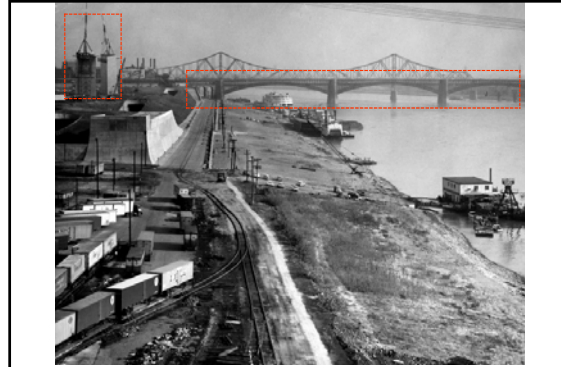
Visitor Center

372



Left: St. Louis' *Old Cathedral*, the only building left standing in a forty square block area. Note arch legs rising behind (October 1963)
Right: the *Old Cathedral* (present day)

373



View north (towards *Eads Bridge*), October 1963

374

Other 1959 policy decisions have remained in effect. It was decided then not to allow eating facilities within the memorial area. Parking facilities (above and/or below ground) would be constructed and operated by the *City of St. Louis* at the north or south end of the memorial. Ample room existed on the grounds to assemble crowds for infrequent dedication, ceremonial or patriotic events directly related to the proper functions of the park, but there were to be no special facilities for large scale events such as pageants, concerts or other extravagant affairs. The NPS believed that the *City of St. Louis* possessed the facilities for such events and it was not intended that the memorial be used as another public park.

375

Mission 66

376



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

377

On March 10th 1959, in a meeting in the *Old Courthouse's* oval east courtroom, the *Master Plan* was revealed to the press and city officials. By the end of April 1959, plans and specifications were approved for the railroad relocation; the first phase of the memorial's development program. On May 6th 1959, the *Public Service Commission* ordered that the construction of the 960-foot tunnel be undertaken with a provision for artificial ventilation (the *Brotherhood of Railroad Trainmen* had made an objection to the tunnel plan concerning adequate ventilation). The work included placing 3K-feet of dual tracks into a tunnel 105-feet west of the elevated railroad, along with filling, grading, and trestle work. On June 8th 1959, the NPS received eight bids for the railroad relocation project. With a bid of \$2,426,115 (well below the NPS's engineering estimate of \$2,940,919), *MacDonald Construction Company of St. Louis* was awarded the contract for the first phase of construction.

378



379

Turning of the Sod

380

At 10:30 a.m. on Tuesday, June 23rd 1959, the long awaited ground-breaking ceremonies took place. Mayor *Raymond Tucker* took a spade in hand for the *Turning of the Sod* while local business and civic leaders watched. The \$500K placed in escrow by the TRRA was now turned over to the NPS as the TRRA's contribution for relocating the tracks. Using these funds, the *MacDonald Construction Company* started work. By August 1959, the company finished demolition of the *Old Rock House*, started tunnel excavations and poured concrete. In the autumn of 1959, a nationwide steel strike made it difficult to get steel, but adequate pipe for pilings had been obtained causing no delay in the project. In November, about two weeks after a final master plan for the memorial's development received NPS Director Wirth's approval, MacDonald began pouring the concrete tunnel walls. All the work connected with moving the railroad was done entirely on preliminary plans since all the parties concerned could not agree on a final plan.

381



Ground-breaking ceremonies for the *Jefferson National Expansion Memorial*, June 23rd 1959

382

1960

383

Under Superintendent Hartzog, the construction proceeded like clockwork into the new year 1960. Tremendous amounts of work were done as the memorial development moved into full gear. In January 1960, contracts were issued to *Eero Saarinen* for design, working drawings, supervision and preliminary designs for the *Visitor Center* and arch. Core borings were under contract. Plans were complete and ready for contracting in January for the embankment retaining walls north and south of the railroad tunnel at the steps. Ongoing research continued on the historical aspects of the memorial. Restoration, historical research, exhibit plans, installation of museum units, archeological investigations and salvage occurred throughout 1960, 1961 and 1962. The railroad tunnel construction went well during the spring months and by March 1960, it was nearly one-third complete. Other work progressed at an equally fast pace. Mayor Tucker met with NPS officials to discuss the parking lot issue once more. They agreed in May 1960 to use \$300K in funds from the temporary parking lot to develop permanent parking facilities. The city and the NPS had an agreement whereby the city operated the lot with the revenue going for work on the *Old Courthouse* and other improvements. Now, at Tucker's request, the NPS agreed to use the funds instead to construct permanent parking facilities. The initial contribution was \$250K with an additional \$50K derived from future funds.

384

"It is entirely probable that we will be creating the outstanding memorial of the 20th century. If this is true the very finest creative effort in museum and interpretive planning should be employed."

George Hartzog, NPS Superintendent

RE: the *Jefferson National Expansion Memorial* was established to commemorate events in American history that occurred in buildings which no longer existed. Since NPS officials had agreed that a museum should be built on the site, the museum (to be the largest in the NPS system) had to be as effective and dramatic in interpreting the legacy of westward expansion as the arch was in commemorating it. George Hartzog's staff of historians; headed by *William Everhart*, were up to the task and would make it so.

385

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

Edward Zimmer, Chief – NPS Eastern Office of Design and Construction (EODC)

RE: now that railroad relocation was underway, the NPS planned for the arch development while attempting to cut costs. At the end of June 1960, in conferences between the EODC and Saarinen, the decision was made by EODC not to include excavation of the museum simultaneously with the arch and visitor center in the initial contract. Disappointed, Hartzog discussed the matter with NPS Director Wirth who agreed that the contracts should be changed to include the excavation and construction of the museum along with the arch and visitor center (Saarinen agreed with Hartzog as well). The EODC decision to schedule construction in two parts was made for two reasons;

- Support for the arch construction required bracing on solid ground and Saarinen originally wanted to avoid having the contractor work over the museum exhibit rooms during the arch's construction;
 - Saarinen could not design the exhibit space until he reviewed the historical narrative being prepared by NPS historians
- Ultimately, *George Hartzog* would have his way (w/Director Wirth's support)³⁸⁶

An Appropriate Appropriation

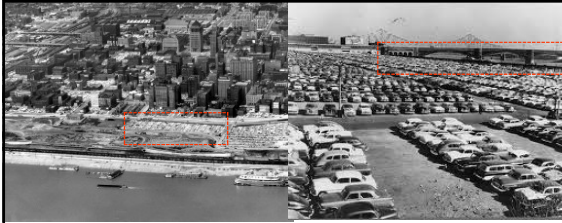
387

President Eisenhower's 1958 authorization of \$17,250,000 had yet to be appropriated at the beginning of 1960. The local congressional delegation asked the budget bureau for an appropriation of \$2,503,125 to be included in a supplemental appropriation bill to finance the *Department of the Interior* operations for the rest of the fiscal year. The delegation believed the supplemental money necessary because of what they considered inadequate appropriations proposed in Eisenhower's budget (Eisenhower only proposed \$1.65 million for fiscal year 1961 while Mayor Tucker and other leaders believed that a total of \$5,686,875 was needed to keep the development on schedule for completion by 1964). With city matching funds, the 1961 budget would total \$2.2 million for the year. On February 12th 1960, the *House Appropriations Committee* refused to grant more than \$1.65 million in funds; the amount specified by the administration. Thus, the need evolved for keeping the memorial development to a minimum. Superintendent Hartzog and *Joseph Jensen* (of *Eero Saarinen and Associates*) revised the schedule of operations to allow only a minimal development of the arch, visitor center, and museum. The fund amount they used was barely enough to keep the major features on schedule. Mayor Tucker wrote Senator Hayden stating that \$4,603,125 was needed to continue construction throughout fiscal years 1960 and 1961. On June 23rd 1960, the House approved a supplemental appropriation of \$2,953,000 for *Jefferson National Expansion Memorial*. The supplemental provision for \$2,953,000 added to the \$1.65 million approved earlier, made a total of \$4,603,000 for continued work on the memorial. In December 1960, the *Bureau of the Budget*, approved the full amount of \$9,497,000 in Eisenhower's budget for fiscal year 1962.³⁸⁸

Camelot Cometh

389

The \$9,497,000 in President Eisenhower's 1962 fiscal year budget was subject to review by President-elect *John F. Kennedy*. He allowed the amount to stand and the *House Appropriations Committee* approved the expenditure on April 14th 1961. Four days later, the full House approved (without a voice raised in protest) and from there the matter went before the Senate. Mayor Tucker and Missouri Senator *Stuart Symington* emphasized that the memorial was going to be finished within the original authorization. No construction plans required expenditures over 1958's \$17,250,000 authorization. The Senate went along with the request with no debate in June 1961 and on August 3rd 1961, President Kennedy signed the 1962 fiscal year *Interior Department Appropriation Bill* which included \$9,497,000 for the construction of the Gateway Arch. Only \$510K in federal funds remained to be appropriated from the original authorization of \$17,250,000.³⁹⁰



Left: aerial view of the cleared riverfront site and downtown *St. Louis* in 1961, before construction began on the arch. Much of it had been used for downtown parking since the 1940s.
Right: view looking north (towards the *Eads Bridge*) of the memorial site; a huge open-air parking lot (ca. 1950s)

391

Part 7

Two Weaknesses

392



"An arch consists of two weaknesses which, leaning one against the other, make a strength"
 Leonardo Da Vinci

393

I Like an Arch

394



"And if you think of Brick, for instance, and you say to Brick: 'What do you want Brick?' And Brick says to you: 'I like an Arch.' And if you say to Brick: 'Look, arches are expensive, and I can use a concrete lentil over you. What do you think of that Brick?' Brick says: '...I like an Arch'"

Louis I. Kahn, Architect (1963)

395

Second Stage

396

Delayed from December 1960, bids opened for the second stage of memorial construction on January 12th 1961. The low bidder was *MacDonald Construction Company* with a bid of \$3,796,015. Their bid was the only one under the NPS engineer's estimate of \$3,888,000, with the contract specifying the construction of the arch foundations, visitor center/museum excavations, and the levee redevelopment. The NPS assistant director approved the contract on February 9th 1961 and a notice to proceed was issued the next day.

397



"...The foundation of each arch leg is a block of concrete 45 feet deep and weighing 13,000 tons. This block is keyed into bedrock..."

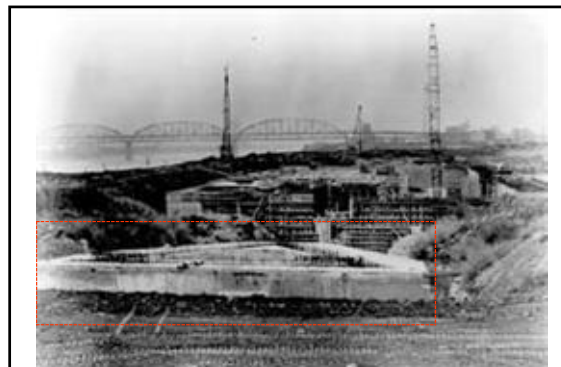
The Rotarian, June 1963
 RE: the first concrete pour for the arch's foundations occurred on June 27th 1962

398

"...No other Arch even approaching this size and shape has ever been built. Each dimension is absolutely critical. Take the possibility of a 1/64th-inch mistake in the foundation of either leg, which could keep the two legs from meeting high overhead. It isn't a difference of 1/64th-inch between the legs that is critical, but the precise angle at the top of each foundation. A mistake in this angle would be multiplied as the two probing fingers reached the sky, multiplied into a catastrophe when they failed to meet 630 feet overhead..."

Popular Mechanics, December 1963

399



North leg foundation and Visitor Center Shell
 (MacArthur Bridge in background)

400

The Arch

401

"...Into the arch will go 17,246 tons of material including 5119 tons of steel and 6,238 cubic yards of concrete. Its skin, which weighs 886 tons, represents the largest order ever placed for stainless steel...the hollow walls will be filled to the 300-foot level with 12,127 tons of pre-stressd reinforced concrete, which will make the Arch so stable that the pinnacle will deflect only 18 inches in a 150-mile-per-hour wind..."

Popular Mechanics, December 1963

402

"...The arch will be hollow with double steel walls. In cross-section, each leg is an equilateral triangle with sides 54 feet wide at the ground, tapering to 17-feet at the top. Each wall of the triangle structure will be three feet thick at the base, diminishing to 7.75 inches above the 300-foot level. The hollow core, also an equilateral triangle, tapers from 48 feet on the interior side at the ground to about 15.5 feet in the upper portion. The exterior of the arch will be composed of stainless steel panels 0.25 inch thick. Joints between the panels are welded smoothly but will be plainly visible, affording a rectangular pattern. Interior surface will be of structural steel plate 0.38 inch thick. The inner and outer steel skins will be bolted together (the bolt heads will not show on the outside), and the space between will be filled with steel-reinforced concrete to the 300-foot level. Post-tensioning of steel cables embedded in the concrete will provide additional strength. Above the 300-foot level, where the concrete filling stops, steel braces will tie together the inner and outer skins. This will make the top of the arch as light as possible and put the bulk of the weight in the base to reduce sway...The arch is designed to withstand a 155-mph wind..."

The Rotarian, June 1963

RE: construction of the arch began on February 12th 1963, when the first section of the south leg was maneuvered into place

403

THE ARCH'S BASIC BUILDING BLOCKS

Because the arch has no structural skeleton, it relies on its own skin of stainless steel and carbon steel for support.

The Arch is made up of a series of double-walled triangular sections stacked one on top of another, gradually decreasing in size as they rise.

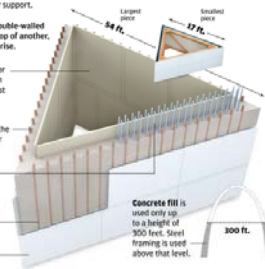
Carbon steel plates make up interior wall. There is a 3-foot space between the inner and outer wall in the largest piece, and narrows to less than 8 inches on the smallest section.

Concrete fill was pumped between the carbon and stainless steel walls after the section was set in place.

Post-tensioning rods, embedded in the concrete, kept the sections pulled tightly together during construction.

Strengthening rods

Stainless steel plates make up the exterior wall.



404



"The most difficult job I had was not only to train my men, but to train myself. I was so impatient to do the job that I had to force myself to work out all the little details instead of plunging ahead on a make-do basis. Any construction technique that has bugs at ground level will become a nightmare at 600 feet." Ken Kolkmeier, Project Manager - Pittsburgh-Des Moines Steel Company

Left: Kolkmeier directs the setting of one of the first triangular sections onto a flatcar for transportation to the construction site

405



The first leg section being lowered onto the foundation (February 12th 1963)

406



"...The scaffold was worked out by Mel Calabrisi, a construction engineer barely 21 years old. It also is held away from the gleaming sides, and it is positioned along the joint between sections to enable the joint to be welded. The higher the scaffold goes, the more it tips to match the weld joint. The welding rig itself is an innovation in the construction industry. Big suction cups hold a rail just above the joint. A welding head, towed along the track by a tractor, automatically welds the seam. The weld matches the seams of the prefabricated sections so precisely that it is almost impossible to locate a joint between sections..."

Popular Mechanics, December 1963

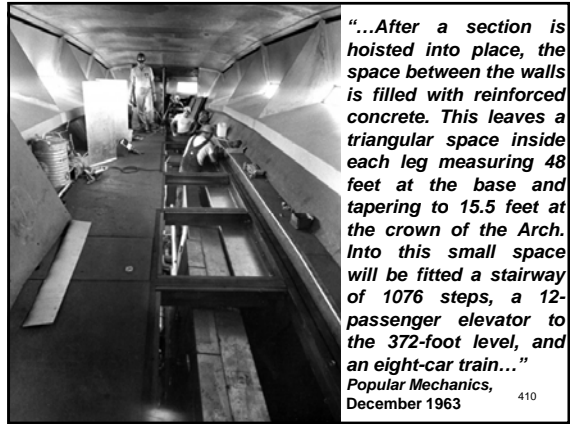
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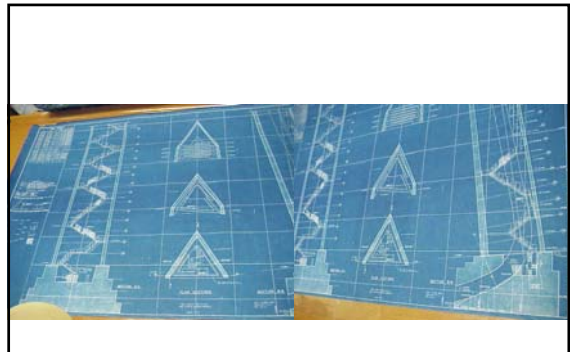
“...After a section is hoisted into place, the space between the walls is filled with reinforced concrete. This leaves a triangular space inside each leg measuring 48 feet at the base and tapering to 15.5 feet at the crown of the Arch. Into this small space will be fitted a stairway of 1076 steps, a 12-passenger elevator to the 372-foot level, and an eight-car train...”
Popular Mechanics, December 1963

410

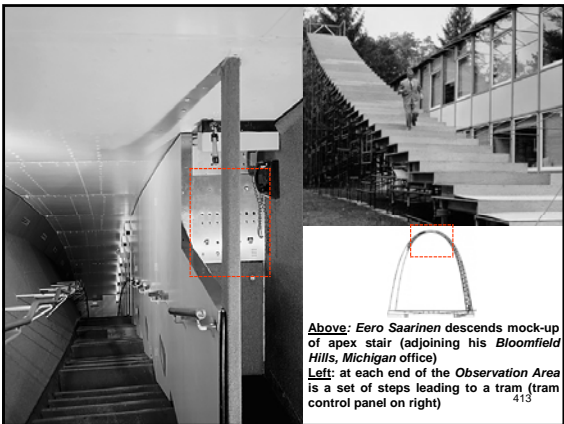


Placing concrete between inner and outer steel skins (below the 300-foot level)

411

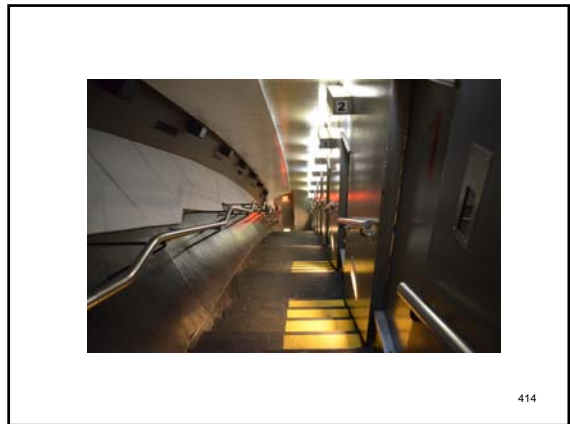


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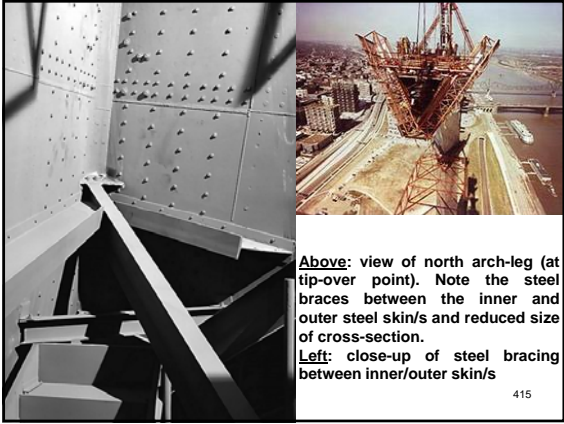


Above: Eero Saarinen descends mock-up of apex stair (adjoining his Bloomfield Hills, Michigan office)
 Left: at each end of the Observation Area is a set of steps leading to a tram (tram control panel on right)

413

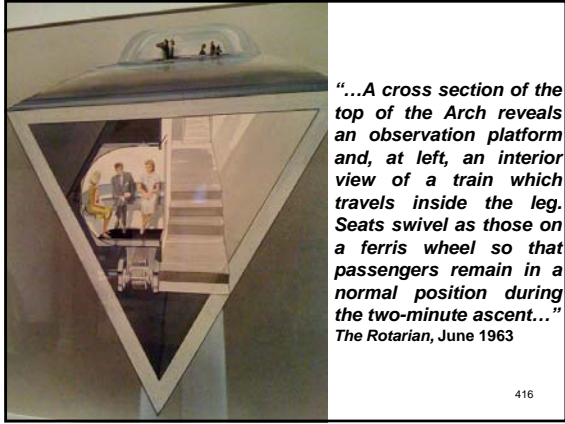


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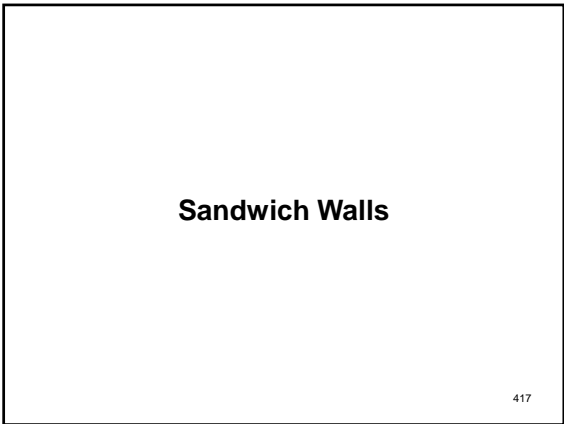
Above: view of north arch-leg (at tip-over point). Note the steel braces between the inner and outer steel skin/s and reduced size of cross-section.
Left: close-up of steel bracing between inner/outer skin/s

415



"...A cross section of the top of the Arch reveals an observation platform and, at left, an interior view of a train which travels inside the leg. Seats swivel as those on a ferris wheel so that passengers remain in a normal position during the two-minute ascent..."
The Rotarian, June 1963

416



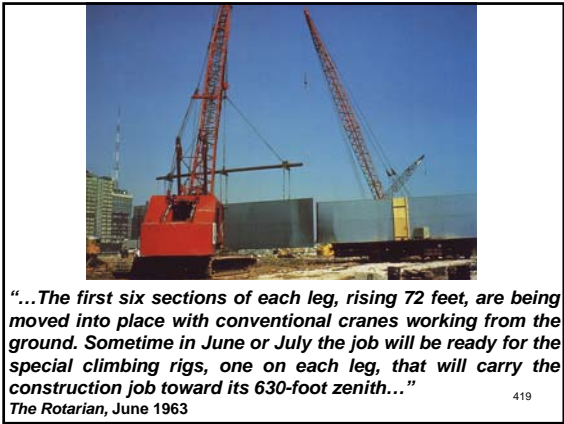
Sandwich Walls

417



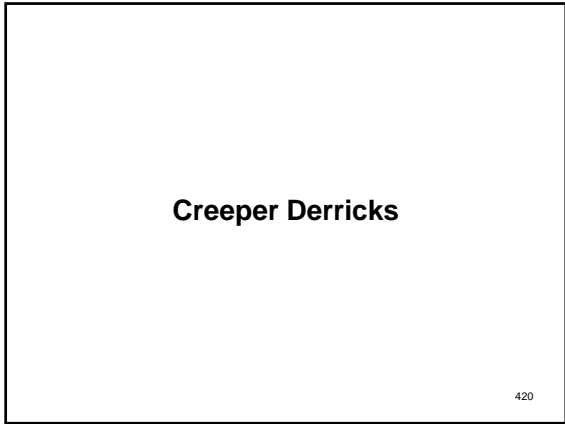
"...The Arch is being built in sections. 'Sandwich' walls are shipped to St. Louis from Pittsburgh, where they are fabricated, and are put together on the site to form triangular sections about twelve feet high. These sections, weighing up to 50 tons, are hoisted into place by a derrick..."
The Rotarian, June 1963

418



"...The first six sections of each leg, rising 72 feet, are being moved into place with conventional cranes working from the ground. Sometime in June or July the job will be ready for the special climbing rigs, one on each leg, that will carry the construction job toward its 630-foot zenith..."
The Rotarian, June 1963

419

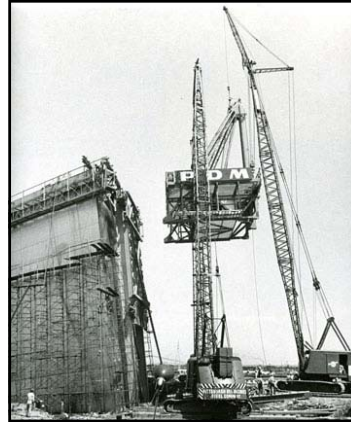


Creeper Derricks

420

Both legs of the arch acted as freestanding cantilevers before completion and were erected simultaneously without scaffolding. The first few triangular sections (up to a height of seventy-two feet) were handled by crawler cranes operating from the ground. Above that height, two creeper derricks weighing one-hundred tons each were used to raise the twelve-foot high, fifty-ton sections. The derricks pulled themselves up the curved legs of the arch; their adjustable supports kept them level regardless of the height and curvature of the legs. Because the height made it impracticable for workmen to climb to and from the work area, the forty-three by thirty-two foot derrick platforms were reached by a passenger elevator and were equipped with a tool shed for workmen, sanitary facilities and communications equipment. Two vertical tracks held the sled that supported the derrick and platform. These tracks, made from twelve wide-flange (WF) steel beams with cover plates on both sides, were spaced twenty-four feet apart. Each track was about two-feet from the extrados (exterior) of the arch leg and was attached to brackets held by four high-strength steel bolts of 1.25 inch diameter. Four high-strength steel pins of 5.75 inch diameter connected the sled to the tracks. The telescoping steel legs that extended between the outer corners of the platform framing and the lower part of the sled had pin connections at both ends. As construction progressed and the curvature of the arch increased, the telescoping legs were shortened to keep the derrick platform level. Sections of track were added in about forty-eight foot lengths and the entire derrick crept up after it had placed four sections of the arch. Lifting an arch section into place took about thirty minutes.

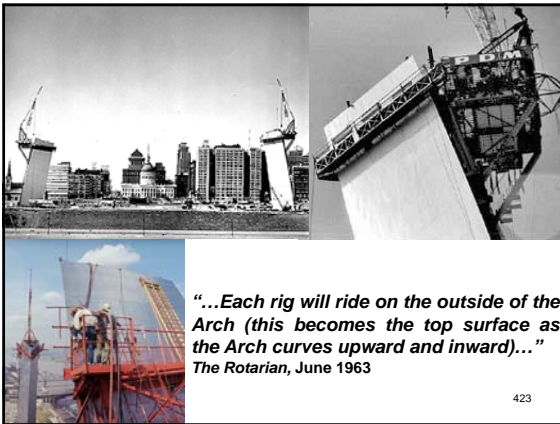
421



"...Each 'creeper derrick' is a huge 80-ton assembly. Essentially, it is a tiltable platform mounted on tracks fastened to the Arch itself. The platform will support a big derrick that will lift the Arch sections into place as construction proceeds. Elements of the rig are standard, but making it climb the structure it is building is unique...The unusual rigs will be provided and operated by Pittsburgh-Des Moines Steel Company, which has the \$8.5 million subcontract to furnish, fabricate and erect the steel..."

The Rotarian, June 1963

Left: cranes lifting the south leg's creeper derrick platform into position on the back of the arch-leg 422



"...Each rig will ride on the outside of the Arch (this becomes the top surface as the Arch curves upward and inward)..."

The Rotarian, June 1963

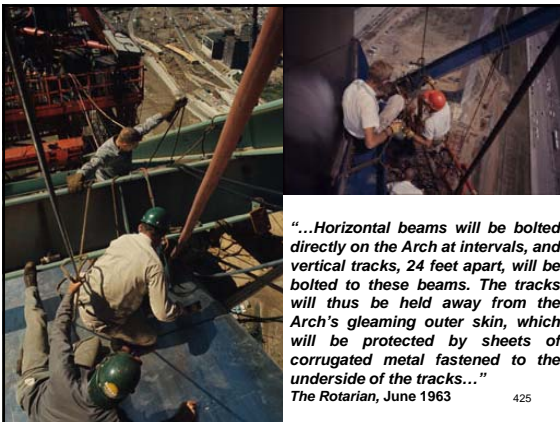
423



"...There were some tense moments when the derrick lifted the first 'piece of cheese' into place, for the cheese weighed 45 tons and the derrick weighed about 80 tons. The crawling rig is so cleverly designed, however, that the 125 tons of weight were transmitted to the tracks, then safely down the side of the leg to the Arch's foundation..."

Popular Mechanics, December 1963

424



"...Horizontal beams will be bolted directly on the Arch at intervals, and vertical tracks, 24 feet apart, will be bolted to these beams. The tracks will thus be held away from the Arch's gleaming outer skin, which will be protected by sheets of corrugated metal fastened to the underside of the tracks..."

The Rotarian, June 1963

425



Left: creeper derrick track/beams secured to back of south arch-leg (at right) Above: workmen use a long-handle wrench to torque-down a heavy nut attaching a support for the creeper-derrick track on the north leg. As the arch-leg/s rose, workmen bolted more track onto them so the derricks could rise as the work progressed. On the way down, they filled and polished the bolt holes making them difficult to notice.

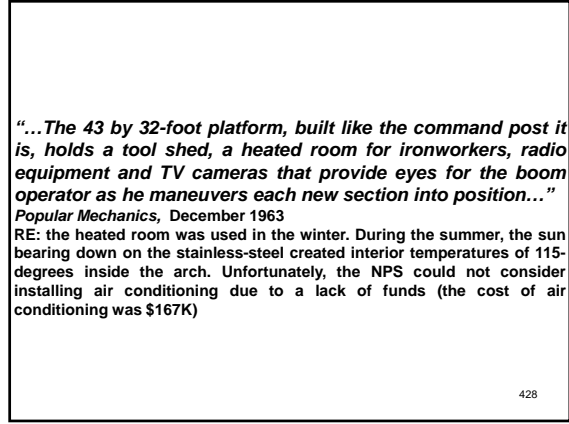
426



"...The rig platform, 43 by 32 feet, will rest on a steel undercarriage that will ride on wheels locked onto the I-beam tracks. The deck, hinged along the side nearest the Arch and its outer edge supported by adjustable braces, will be kept level as it climbs the curving structure. At first the deck will project at an 85-degree angle from the Arch; when the rig reaches the 595-foot elevation, as high as it will go, the deck will be leveled at a 37-degree angle to its carriage. Because the arch tapers as it rises, for 54 feet at the ground to 17 feet at the top, the tracks will be farther apart than the arch is wide near in the upper area. They will be held by the cross beams cantilevered over the outside edges..."

The Rotarian, June 1963

427



"...The 43 by 32-foot platform, built like the command post it is, holds a tool shed, a heated room for ironworkers, radio equipment and TV cameras that provide eyes for the boom operator as he maneuvers each new section into position..."

Popular Mechanics, December 1963

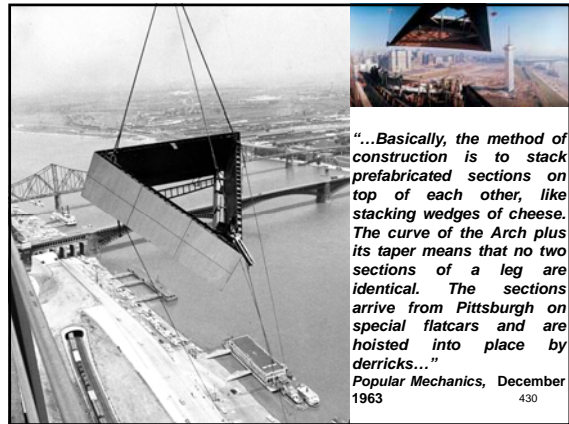
RE: the heated room was used in the winter. During the summer, the sun bearing down on the stainless-steel created interior temperatures of 115-degrees inside the arch. Unfortunately, the NPS could not consider installing air conditioning due to a lack of funds (the cost of air conditioning was \$167K)

428



Like Stacking Wedges of Cheese

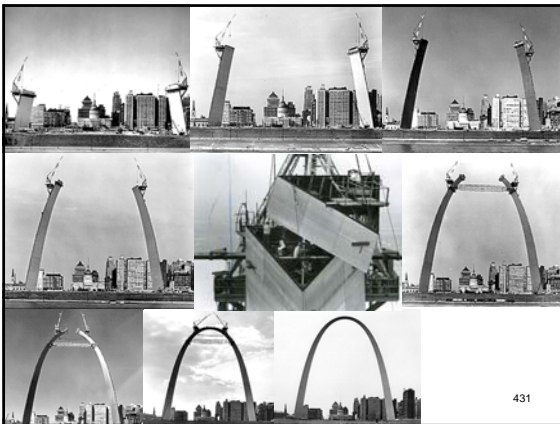
429



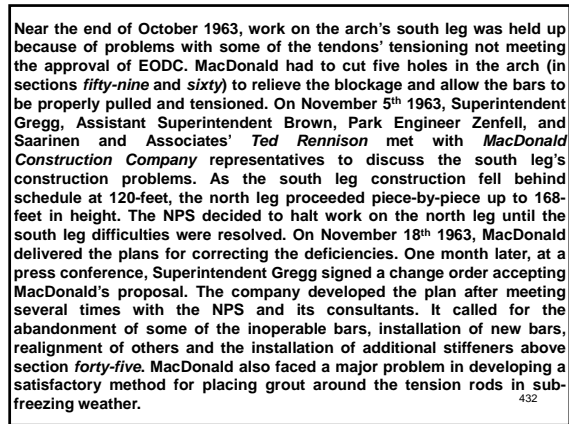
"...Basically, the method of construction is to stack prefabricated sections on top of each other, like stacking wedges of cheese. The curve of the Arch plus its taper means that no two sections of a leg are identical. The sections arrive from Pittsburgh on special flatcars and are hoisted into place by derricks..."

Popular Mechanics, December 1963

430



431



Near the end of October 1963, work on the arch's south leg was held up because of problems with some of the tendons' tensioning not meeting the approval of EODC. MacDonald had to cut five holes in the arch (in sections *fifty-nine* and *sixty*) to relieve the blockage and allow the bars to be properly pulled and tensioned. On November 5th 1963, Superintendent Gregg, Assistant Superintendent Brown, Park Engineer Zenfell, and Saarinen and Associates' *Ted Rennison* met with *MacDonald Construction Company* representatives to discuss the south leg's construction problems. As the south leg construction fell behind schedule at 120-feet, the north leg proceeded piece-by-piece up to 168-feet in height. The NPS decided to halt work on the north leg until the south leg difficulties were resolved. On November 18th 1963, MacDonald delivered the plans for correcting the deficiencies. One month later, at a press conference, Superintendent Gregg signed a change order accepting MacDonald's proposal. The company developed the plan after meeting several times with the NPS and its consultants. It called for the abandonment of some of the inoperable bars, installation of new bars, realignment of others and the installation of additional stiffeners above section *forty-five*. MacDonald also faced a major problem in developing a satisfactory method for placing grout around the tension rods in sub-freezing weather.

432

Not to Proceed

433

When the Arch reached nearly 300-feet in height, the NPS Washington D.C. office issued a stop order (on June 23rd 1964) for work to halt at the assembly plant in *Warren, Pennsylvania*. The contractor was not to proceed with the fabrication or erection of an arch section above the top of section *forty-five*, which was the top of the concrete core sections. This stop order was issued because two consultants to *Pittsburgh-Des Moines Steel Company* (PDM) questioned the arch's basic design. They believed the steel plates would buckle and be out of configuration when the arch was jacked apart to allow the keystone section to be set in-place. The *Bureau of Public Roads* made seismographic measurements of the arch to study its movement and sway, and the NPS also brought in the *Bureau of Reclamation* which performed a structure design study. Their recommendations (dated June 11th 1964) supported the PDM consultants regarding the arch's design inadequacy. Upon receiving the bureau's report, the NPS decided to issue a "not to proceed" order above section *forty-five*. After consulting with *Saarinien and Associates* and *Fred Severud and Associates*, NPS Assistant Director *Joe Jensen* declared that the Bureau of Reclamation's conclusions were based on faulty assumptions and inadequate information and should be withdrawn.

434

Jensen met with *Bureau of Reclamation* officials to clarify the *Department of the Interior's* position on the stability of the arch. They agreed the work could proceed until further research was conducted and analyzed. Research was done on the structural properties of stainless steel, thermal flow characteristics between the inner and outer stainless steel skins, the testing of a three-section prototype panel and final wind tunnel tests. The officials also reached a consensus that the structure, as designed, posed no danger to future visitors. Jensen suggested to his superiors on July 2nd 1964 that the contractor resume work and fabrication recommenced that day. The final tests and reports were not completed until mid-1965 with the Bureau of Reclamation continuing to question the arch's stability and the NPS and its consultants defending it. Several months later, the contract architects and contracting officer rejected the north leg's section *forty-five* because of its failure to meet tolerances and aesthetic standards of the contract. In short, it wrinkled. The section was removed from the top of the Arch and placed on the assembly pod for reworking. The *forty-fifth* section of the south leg met the same fate. While still on the ground it was reworked to remove wrinkles before being placed. These sections did not wrinkle under compression. Rather, the contractor did not allow for enough distortion in the stainless-steel due to the welding. Whenever heat was applied to a weld, it caused an expansion which did not shrink uniformly. This and the fact that a stainless-steel plate could not be rolled completely flat caused the wrinkles to occur in the arch's skin. At the end of 1964, the north leg stood at 335-feet, eleven inches, with the south at 347-feet, three inches.

435

Light the Night

436

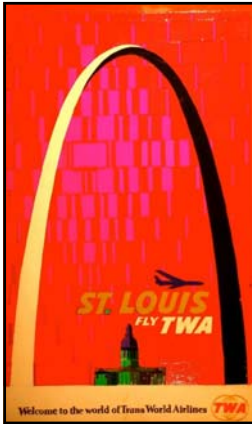


On July 14th 1964, Superintendent Brown met with representatives of *Union Electric Company* to discuss the possibility of floodlighting the arch. Several days later, he inspected searchlights and floodlights at the army depot in *Granite City, Illinois*. The army offered to move the lights to the memorial if Brown wanted them.

437

Attractive Nuisance

438



On July 26th 1964, an official of the *Federal Aviation Administration* (FAA) conferred with Superintendent Brown to form a policy regarding preventing flights through the legs of the *Gateway Arch*. FAA officials feared that the completed Arch would soon become too tempting a target for pilots. Their worst fears were realized in June 1966 when a private plane flew between the Arch legs. The FAA could charge any pilot with three violations of FAA regulations if the pilot was caught. This was the first incident; but it wouldn't be the last.

439

The Daily Commute

440



A unique temporary elevator system was devised to transport workmen up and down during the project. This system, designed by *Marshall Elevator Company*, had several unusual features:

- A travel path that could be extended as construction of the Arch progressed;
- An interference-free radio control inside the car that eliminated the need for collector rails or hanging electrical cables;
- A device to keep the cab level

One creeper derrick track on each leg served as the guide for the elevator car. Two hoist cables, attached to the top of the car, led directly up one track beam to the base of the creeper derrick, across the twenty-four foot span to the other track beam, then down to the base and horizontally to separate drums on a hoist at ground level. The elevator consisted of a main structural-steel frame or sling to which was welded the structural steel sub-frame that supported the tiltable cab. The main frame was held to, and guided by, the flange of the track beam by means of two sets of six steel rollers mounted at the top and bottom of the frame. A specially designed tilt-sensing mechanism and a motor-operated leveling device kept the cab level at all times.

441



“...The rig will build three or more sections above it, then hoist itself upward on tracks mounted on the newly built sections. Power for the self-lift and for the derrick will be provided by a four-drum hoist on the ground. Welders, steel workers, concrete men, and others will get to their work sites in a small elevator riding one track from the ground to the rig's undercarriage. Once up, they will not descend until quitting time. Communications with the ground will be by radio and telephone...”

442

The Problem of Vertigo

443

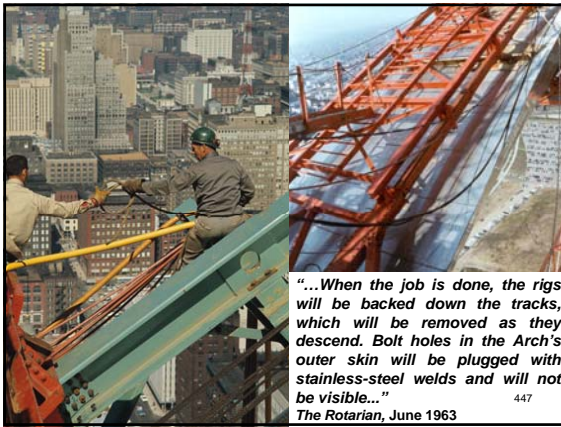
“...We've run into some problems so far, but nothing we really didn't anticipate. A major problem hasn't come up yet, but the possibility keeps nagging at me. That's the problem of vertigo. I don't know; maybe it never will come up. All my men are experienced, and are accustomed to working at great heights. However, in working on all other construction jobs, they've had a subconscious frame of reference – horizontal and vertical lines around them. In this job there isn't a straight line anywhere in the Arch. There simply isn't any frame of reference on the job, and the men will be working more than 600 feet in the air. They won't have anything to confirm their inner feeling of what is 'straight up' or 'sideways.' Who knows what this will do to their sense of balance?...”

Ken Kolkmeier, Project Manager – Pittsburgh-Des Moines Steel Company

444

A Little Longer to Pray

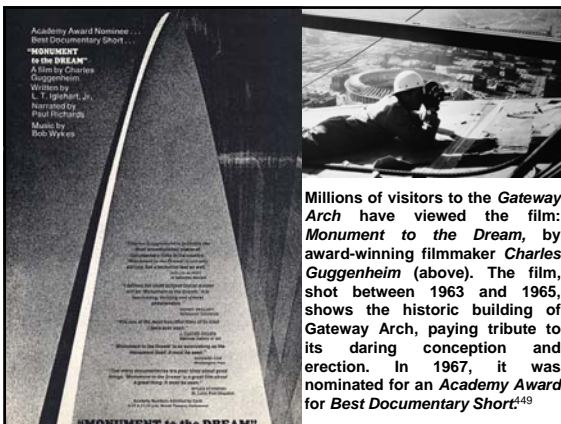
445



447

Monument to the Dream

448



449

Stabilizing Strut

450

By June 1965, the arch-legs reached the height where a stabilizing strut (a.k.a. "scissor jack") was necessary. The strut, measuring 225-feet long by 40-feet wide and 14.5-feet high, was hoisted into place between the two legs at 9:00am on June 17th 1965. The operation went without incident with only 0.63-inch deflection of the arch during the lift. *Pittsburgh-Des Moines (PDM) Steel Company* received some free if not controversial publicity when the strut was situated in place high in the sky between the arch legs. The company placed twelve-foot high letters bearing the initials "PDM" on the structure. NPS officials immediately ordered that the letters come down. They also ordered the removal of PDM signs on both the creeper crane platforms because the letters violated a contractual restriction on advertising. PDM responded slowly and after a month, the letters remained. The company arranged for the three letters facing east to be removed by mid-July because they could be reached. The three letters facing west over the city were very difficult to reach, the company asserted, and the letters seemed destined to remain indefinitely. NPS Superintendent *LeRoy Brown* did not agree. He stated that PDM would be charged a very large sum for advertising space seen by half a million people every day. General Contractor *MacDonald* would have payments deducted for sub-contractor PDM's continued wrongful use of federal property. Brown's action succeeded where his threats did not. When he deducted \$225K from MacDonald's progress payment, PDM promptly removed the letters on August 24th 1965. If the letters had not been removed, Brown would have charged \$42K per month for as long as the letters remained. However, the smaller PDM signs remained on the two creeper crane platforms.

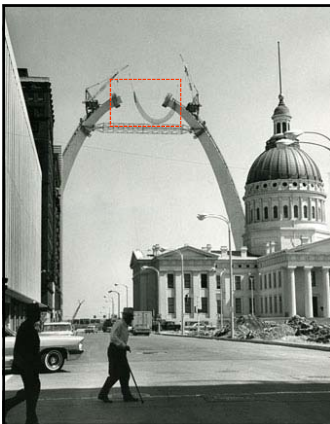
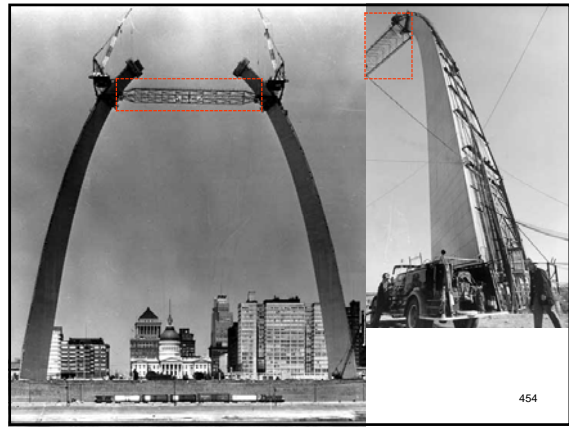
451



"...As the columns curve together, an 80-ton scissor jack will hold them far enough apart for a last 'keystone' section to be fitted into place. Then the jack will be removed the steel tines will snap together like huge clamps to close the arch. A deviation of even 1/64th of an inch between the bases could ruin a perfect closure at the top, with the error multiplied as the arches curve upward. The surveying was done at night so that the temperatures on all sides would be equal. Under the heat of the sun's rays, the steel on one side might have expanded enough to upset the careful measurements..."

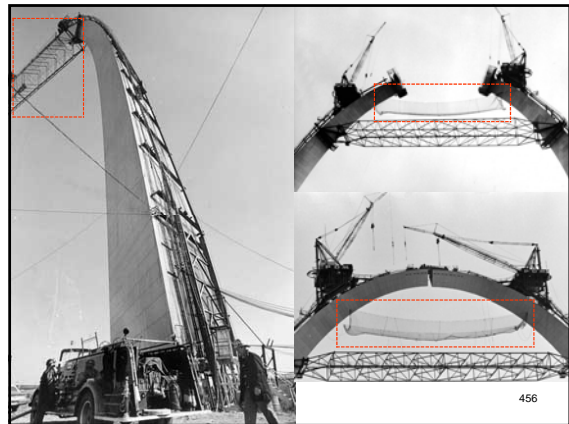
Lawrence Journal-World, April 2nd 1965

453



After the stabilizing strut was secured, the arch legs reached their "tip-over" point and the work became even more dangerous. Not only had the sections diminished in size, so too had orientation (from semi-vertical to semi-horizontal). As a safety measure, a net (being installed in the photo at left) was strung between the top/s of the arch-legs and the stabilizing strut.

455



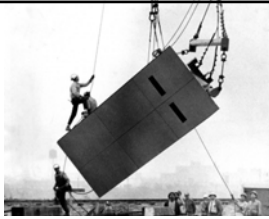
A Memorable Experience

457

"...Even now, before the Arch is finished, a visit to the site is a memorable experience. Stop in at Art Pritchard's headquarters and you will be presented with a fancy identification card designating you, by name, as a 'Sidewalk Superintendent of the Gateway Arch.' Then climb up into the 30-foot observation tower constructed to give a spectacular view of the worksite. To your right and left, workmen swarm around the foundations of the two legs. High overhead, the creeping derricks haul more materials into place. The legs are high enough that your eye can trace a graceful line across the sky that will be the path of the completed Arch. You can pick up one of several phones on the tower and a voice will tell you exactly what is happening..."

Popular Mechanics, December 1963

458



Above: the next-to-last section being lifted into place; October 19th 1965. On October 4th 1965, the first windowed section was set on the south leg to raise it to 628-feet. By October 17th 1965, workmen on the north and south legs threw a gangplank across the 10.5-foot gap at the 630-foot level. Only two eight-foot sections remained to be placed in the arch. The final section on the south leg (called "One South") had to be installed before the arch was topped out with the last of 142 sections (designated "One North"). Now the scheduled date was Thursday, October 28th 1965, susceptible to change because of foul weather. The workmen's final task was to use hydraulic jacks, each with a capacity of 300-tons pressure, to spread the distance between the legs from 2.5-feet to 8.5-feet in order to insert section One North (the Keystone section).

459

Most Amazing

460



"...Eero Saarinen never lived to see what his widow, Aline, called 'the most amazing' design of his life. Mrs. Saarinen, a special guest at topping out ceremonies, called the arch 'a monument to man's imagination and man's spirit.'"

Reading Eagle, October 29th 1965

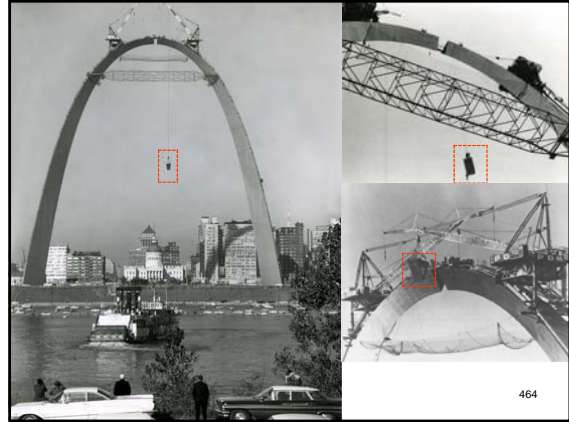
461

Civic leaders wanted to delay the topping-out date by two days to Saturday, October 30th 1965, in order to attract larger crowds for the ceremony. Superintendent Brown said no. It was left up to PDM to make the final decision and schedule the work accordingly, but the NPS did not want to approve a delay. The federal government consultants, including *Saarinen and Associates*, felt concern over the excessive weight at the top. They worried that the heavy crawler cranes might cause sag or strain on the welded joints above the stabilizing strut. The *St. Louis Ambassadors* and the *Gateway Arch Topping Out Committee* bowed to the NPS's wishes and the topping out date remained set for 10:00 am on Thursday, October 28th 1965. On October 26th 1965, work halted when members of the topping out crew refused to return to their jobs on orders from Iron Workers Union Local 396. The union wanted a safety check made, although the workers believed the structure safer than ever because of the jacking equipment. MacDonald's project manager asserted that there was no justification for the refusal to work. It was true that the project stood at a critical stage, but Superintendent Brown explained that this meant the arch was vulnerable to high winds or earthquakes; the project was not in itself dangerous. After conferences between NPS and construction company officials, the arch was inspected jointly by *The Travelers Indemnity Company* (insurer for *MacDonald Const. Co.*, *Saarinen and Associates*, and *Severud-Elstad-Krueger Associates*). The workers declared that the arch was the safest job they had ever worked on. More meetings were held on Wednesday, October 27th 1965. The main question concerned the time of day; whether to top it in the night's cool, the early morning hours or at 10:00 am, as planned.

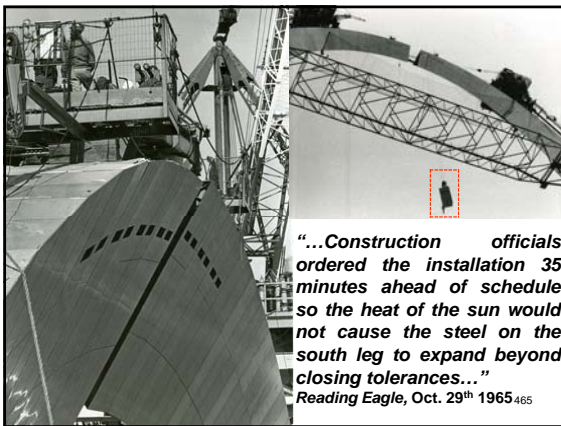
462

One North

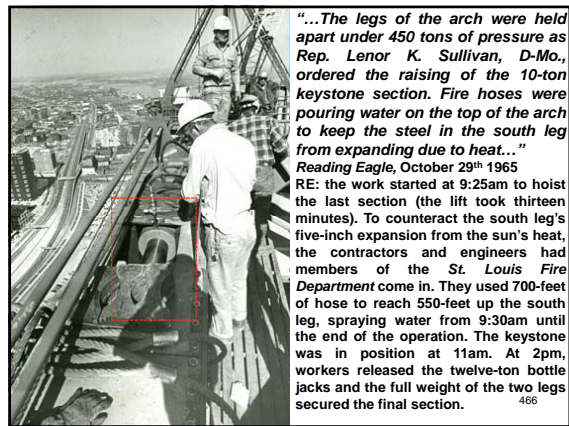
463



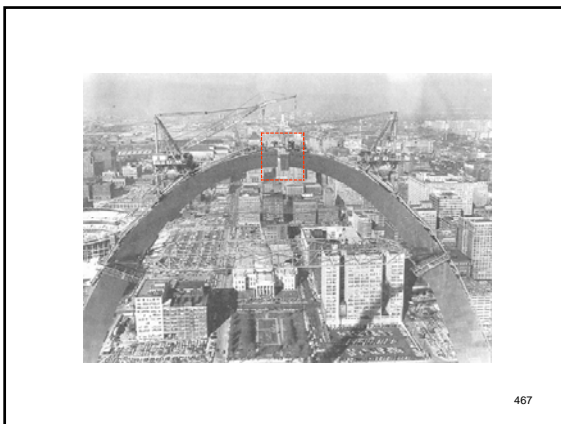
464



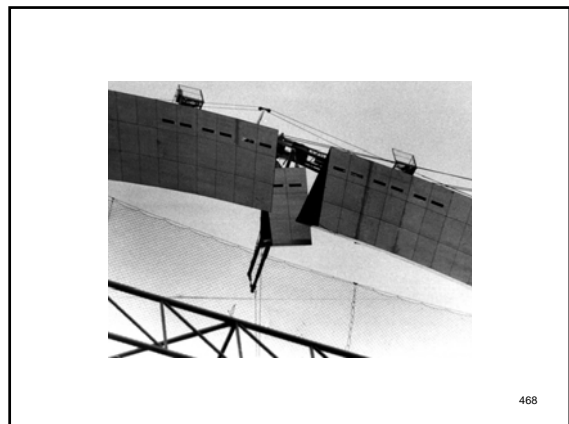
“...Construction officials ordered the installation 35 minutes ahead of schedule so the heat of the sun would not cause the steel on the south leg to expand beyond closing tolerances...”
*Reading Eagle, Oct. 29th 1965*⁴⁶⁵



“...The legs of the arch were held apart under 450 tons of pressure as Rep. Lenor K. Sullivan, D-Mo., ordered the raising of the 10-ton keystone section. Fire hoses were pouring water on the top of the arch to keep the steel in the south leg from expanding due to heat...”
Reading Eagle, October 29th 1965
RE: the work started at 9:25am to hoist the last section (the lift took thirteen minutes). To counteract the south leg's five-inch expansion from the sun's heat, the contractors and engineers had members of the St. Louis Fire Department come in. They used 700-foot of hose to reach 550-feet up the south leg, spraying water from 9:30am until the end of the operation. The keystone was in position at 11am. At 2pm, workers released the twelve-ton bottle jacks and the full weight of the two legs secured the final section.⁴⁶⁶



467



468

Meeting the Challenge

469



"...Fifteen iron workers on top of the arch moved the keystone section into place with three-inch clearances on each side in a little less than two hours. The pressure against the legs was gradually reduced to allow them to come together against the keystone. Workmen then spot welded the sections together..."
Reading Eagle, October 29th 1965

470



"No other comparable event is likely to occur in our lifetime"

LeRoy Brown, NPS Superintendent

RE: joining of the arch-legs with the keystone section (One North). LeRoy Brown began serving as acting Superintendent on June 19th 1965, when *H. Raymond Gregg* retired from the NPS. Brown actually assumed the duties of Superintendent in December 1964 since Gregg was working on other projects for the NPS. On August 1st 1965, Brown was officially appointed Superintendent.

471

"...Not just an engineering marvel, or an architectural great...reflects the impulse of the age it memorializes - westward expansion as 'our manifest destiny'...The grace of this catenary symbol - which lifts our eyes in a pleasing way, responsive to the genius of Eero Saarinen - evidences our commitment to this ideal. So does the harmony of the arch with the city and the unity of the site with its surroundings...I think it does meet the challenge - it fulfills man's belief in the nobility of his existence."

John A. Carver Jr., Undersecretary of the Interior

RE: remarks made at the topping-out ceremony

472

You'll Be Back

473

"...If you aren't souvenir-minded, you may soon throw away your Sidewalk Superintendent's card. But you'll never be able to discard the memory of one of the most spectacular and most difficult construction jobs in history. You'll be back, along with the millions of other Americans, to see your newest national monument."

Popular Mechanics, December 1963

474

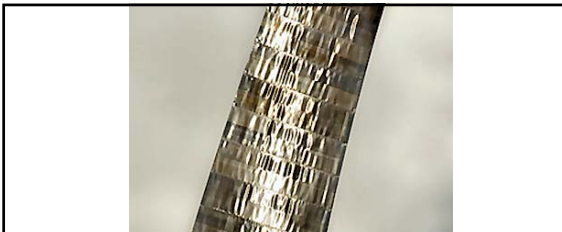


The work was not over. Even though all the attention focused on the Arch's completion, other matters demanded attention. Installation of the trains, stairs, elevators and interior steel and electrical equipment continued, while work in the visitor center was essentially complete. By early November 1965, workmen had lowered the two creeper cranes and their platforms that had hauled up the 142 stainless-steel sections. The stabilizing strut was lowered on November 16th 1965 after electricians installed lightning rods and a two-foot high red blinking aircraft warning light on the top of the arch (left). As the cranes descended (right), the arch's steel skin was cleaned, the holes from the crane tracks filled and the skin polished.

475

Wrinkles in Time

476



In March 1966, a new problem developed in the stainless steel skin of the arch. Wrinkles appeared and for the next two months Superintendent Brown met with federal and construction officials to discuss repair and responsibility. Several of the arch sections had been damaged during shipment from Pittsburgh and the PDM worked to correct the marks. However, by May 1966 Brown learned that *MacDonald Construction Company* and PDM experts could not, by any known method, correct the damage. The NPS did not let the matter of the wrinkled stainless steel sections drop. *Saarinen and Associates* supplied a figure on the value of the damaged exterior surfacing, estimating \$367,631.20 for the damage, which MacDonald could not satisfactorily repair.

477



The Outstanding Civil Engineering Achievement
1967
Awarded in a National Competition
The Gateway Arch
By The American Society of Civil Engineers

478

Part 8

Topsy-Turvy

479

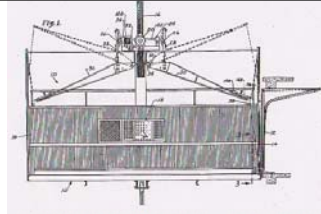
Dick Bowser

480

"...With the completion of the Arch itself, the transportation system will be fitted into each leg. The most novel part of the system, of course, is the train that will lift visitors up and down the Arch...Consider the problems in designing such a train: It moves along a weird, continually changing curve. In order to handle the anticipated volume of traffic it must travel at a speed of 340 feet per minute; the space is extremely restricted. The problem of designing such a train obviously was a nightmare and Richard B. Bowser, the design consultant called in for the job, came up with a surprisingly effective plan..."

Popular Mechanics, December 1963

481



Richard B. Bowser (1921–2003) was a college dropout who left the University of Maryland in 1942 to enlist in the Navy during WWII. A natural-born engineer, in the early 1950s Bowser helped (in conjunction with his father) develop, manufacture and install thirty-five examples of the innovative Bowser Parking System for parking cars in high-density cities. This employed an elevator system that could travel horizontally and diagonally through a structure as well as (the normal) vertical manner. There were no ramps or driveways in a Bowser System Garage. Instead, a lift mechanism could serve many spaces in a multi-level garage (some being over twelve-stories in high).

482

Does an Elevator Have to Travel Vertically?

483

"As soon as he saw me in his office, Martin had his secretary make a return call to Saarinen's office. While this was going on he was explaining what he was doing. He then took the telephone and was introducing me to one of the partners. By the time he handed the telephone to me there were two of Saarinen's partners on the line. Their first question was 'did an elevator have to travel vertically?' I said I didn't think so. I could remember that my father built and installed a dumbwaiter that transferred from one hatchway to another hatchway about half way up its vertical travel. If they were interested the dumbwaiter was in a church building in Birmingham, Michigan. It turned out that the building was within a mile of their offices. Their next question was 'when can you meet with Eero Saarinen?'"

Richard B. Bowser

RE: one day in 1960, Dick Bowser walked into the Montgomery Elevator Company offices in Moline, Illinois to visit his friend, John Martin. By coincidence, the company had recently been contacted by Saarinen's office, which was looking for a company to design the visitor "transporter" project for the Gateway Arch.

484

Elevator and Ferris Wheel

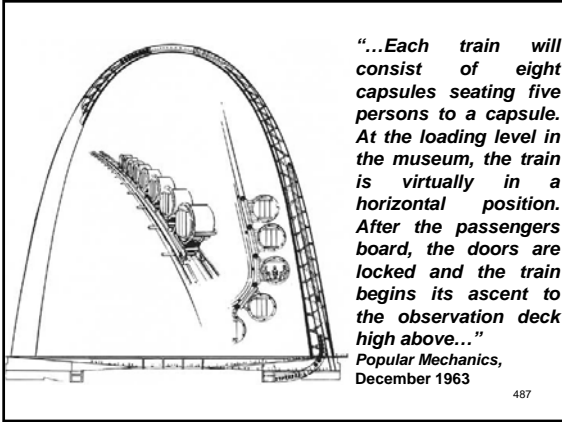
485

"I explained my two-week schedule and rather than wait they made arrangements to see me the following Saturday morning giving me time enough to travel to their office and get back on my schedule by Monday...The first drawing that I got had an outline of the Arch, and down at the bottom was a square that showed a walkway and it said 'elevator' - that's all there was"

Richard B. Bowser

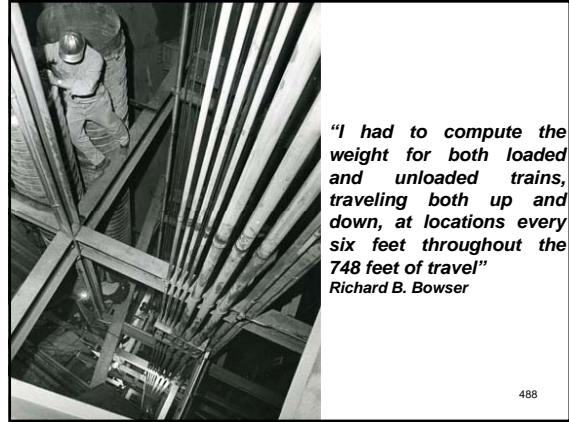
RE: one month after the initial contact, Eero Saarinen called back and wanted a presentation from Bowser within two weeks. For the next two weeks, Bowser worked around the clock in his basement to formulate a plan eventually settling on an combination Elevator-and-Ferris Wheel concept based upon a train of "eggs" or capsules.

486



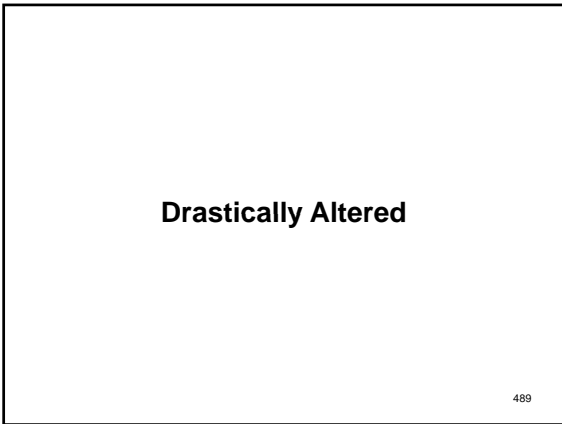
"...Each train will consist of eight capsules seating five persons to a capsule. At the loading level in the museum, the train is virtually in a horizontal position. After the passengers board, the doors are locked and the train begins its ascent to the observation deck high above..."
Popular Mechanics, December 1963

487



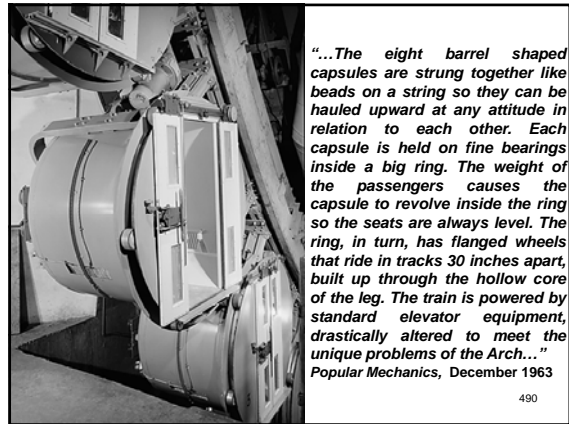
"I had to compute the weight for both loaded and unloaded trains, traveling both up and down, at locations every six feet throughout the 748 feet of travel!"
Richard B. Bowser

488



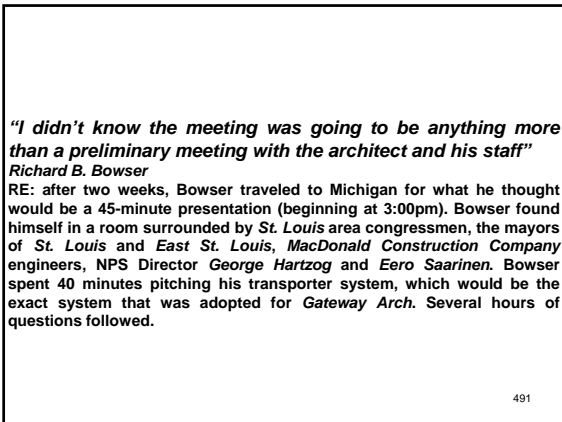
Drastically Altered

489



"...The eight barrel shaped capsules are strung together like beads on a string so they can be hauled upward at any attitude in relation to each other. Each capsule is held on fine bearings inside a big ring. The weight of the passengers causes the capsule to revolve inside the ring so the seats are always level. The ring, in turn, has flanged wheels that ride in tracks 30 inches apart, built up through the hollow core of the leg. The train is powered by standard elevator equipment, drastically altered to meet the unique problems of the Arch..."
Popular Mechanics, December 1963

490



"I didn't know the meeting was going to be anything more than a preliminary meeting with the architect and his staff"
Richard B. Bowser
 RE: after two weeks, Bowser traveled to Michigan for what he thought would be a 45-minute presentation (beginning at 3:00pm). Bowser found himself in a room surrounded by St. Louis area congressmen, the mayors of St. Louis and East St. Louis, MacDonald Construction Company engineers, NPS Director George Hartzog and Eero Saarinen. Bowser spent 40 minutes pitching his transporter system, which would be the exact system that was adopted for Gateway Arch. Several hours of questions followed.

491



I'm Thirty-Eight Years Old

492

"After the group had been advised that the restaurant could not delay dinner any longer someone asked 'Mr. Bowser, what are you.' I was sure he was addressing my academic credentials. In an effort not to ruin what I felt was a successful presentation I answered 'I'm 38 years old.' This 'brought the house down' and ended the meeting."

Richard B. Bowser

493

"Being a college dropout was hardly a credential to qualify me to design the arch trains. However, I was also a second-generation elevator man with more than a fair share of guts. My father and I had developed, manufactured, and installed Bowser Parking System elevator equipment. These elevators could travel horizontally & diagonally through a structure as well as the normal vertical travel. There were no ramps or driveways in a Bowser System Garage. The Bowser System and the competing Pigeon Hole Parking were the only mechanical parking systems that ever got beyond the prototype stage..."

Richard B. Bowser

RE: despite being a college dropout, Bowser was awarded a fee of \$40K for a two-year contract. As it turned out, the job lasted six-years (until 1967) and Bowser stayed on with the NPS maintenance staff at Gateway Arch until 1972.

494

A \$100K contract was awarded in March 1965 to *General Steel Industries, Inc. of St. Louis* to build the sixteen, five-passenger capsules for the arch transportation system. The company was to manufacture the capsules under contract to *Planet Corporation of Lansing, Michigan* which was the prime contractor on the arch train installation. By the end of the month, work started on the elevator system as the north leg reached 436-feet, four inches and the south leg touched 447-feet, one inch. These capsule cars were designed by Planet Corporation and built by General Steel Industries, *St. Louis Car Division*, from Reynolds aluminum supplied by *Joseph T. Ryerson & Son*.

495

Cement Mixers

496

"The eight small capsules, used in each of the two Arch trains, are similar to the barrels used in cement mixers. Each train capsule has a 5-foot diameter barrel that is open on the front and closed on the back. The back has a center pivot shaft, and surrounding the open front there is a frame with rollers, so the barrel can rotate within the frame that is supported by wheels running in the channel-shaped tracks. There are five seats in each barrel, so the weight of the passengers helps keep the capsule in an upright position. Each capsule rotates approximately 155 degrees during the trip to the top of the Arch. When the capsule starts out from the lower load zone, the tracks are overhead, but as it goes up the Arch they come to be beneath the capsule. All the way along, the framework rotates around the capsule. A separate train runs in each leg of the Arch because there is a great deal of difference in the amount of time that loading takes at the top, where it is cramped, and at the bottom, where there is a great deal of room. Several advantages were gained by having two independent tram units. As crowds increase, each train can run empty one way, or in the case of small attendance, only one train need be used. Each train of eight capsules is powered by a typical heavy-duty elevator machine with cables, counterweights and all of the safety features of a modern high-speed passenger elevator. Each of the Arch trains carries forty passengers and is capable of making a round trip with passengers in nine minutes including loading and unloading passengers in both directions. When running near capacity each train typically carries 200 to 225 passengers per hour."

Richard B. Bowser

497



Left: reverse (a.k.a. "control") side of one of a tram's passenger capsule pods. Each train consists of eight "eggs" or capsules (2 trains x 8 capsules = 16 total) resembling cement mixer barrels. Each of these barrel-like capsules has a diameter of five-feet and a door on the front-side (closed on the back side) with a flat floor. Each capsule accommodates five passengers in fiberglass seats, which are the only non-aluminum components in the cars and/or carrier frames. The back of each capsule has a center pivot shaft and a ring-like frame with rollers surrounds the open front so that the barrel can rotate within the frame supported by flanged wheels running in channel shaped tracks set thirty-inches apart that are laid up through the hollow core of the Arch's leg. The weight of the five passengers in each capsule helps it rotate inside the ring framework as the track curves, thus keeping the capsule upright and the seats positioned in a horizontal plane.

498



499

"In designing a conveyance system for the Arch, there were very few criteria to meet except that the National Park Service had established a passenger volume of 3,500 people in an 8-hour day, or up to 11,000 people in a 14-hour day, as visitors to the Arch. It was also required that in no way could the conveyance system distort the exterior of the Arch. The first attempts in designing an appropriate system were based on several schemes, beginning with elevators. To get 3,500 people to the top of the Arch, which is the equivalent of a 63-story building, during an 8-hour day would require more than an ordinary elevator. Because of the triangular shape and the different slopes in the Arch, a standard elevator could only go up about 300 feet above that level, a small elevator at a steeper angle would be required. Between the larger and smaller elevators would have to be machine rooms, pits, and waiting space for a large number of people, and these would have consumed about six stories of the interior of the Arch..."

Richard B. Bowser

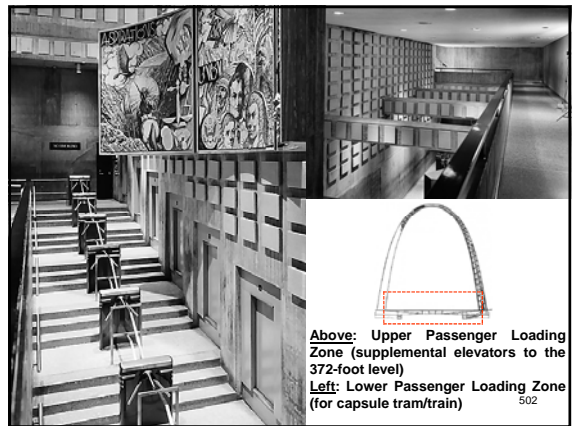
500

"...Each train will be able to make a round trip every 7.6 minutes. With both trains operating at peak efficiency, the system will handle a volume of 440 persons per hour, and the supplementary elevators to the 372-foot level will handle 277 passengers per hour. Thus 11,000 persons can make a trip up inside the Arch in 14 hours..."

Popular Mechanics, December 1963

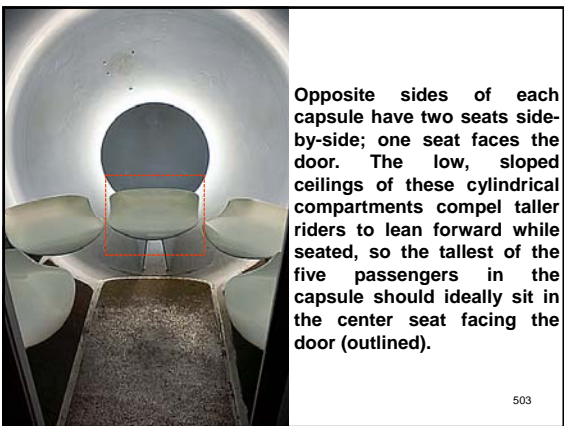
RE: there are two arch trains or trams (one for each leg of the arch). An independent train scheme was chosen owing to the difference in loading times between the cramped, top space of the arch and the more spacious base loading area. When running near capacity, each train typically carries 200 to 225 passengers per hour. Thus, the whole system of two trains can move eighty people per trip, or 400 to 450 passengers per hour. Even the elevators can, if necessary, move 277 passengers per hour. Thus 11K persons can make a trip up inside the Arch in 14 hours.

501



Above: Upper Passenger Loading Zone (supplemental elevators to the 372-foot level)
Left: Lower Passenger Loading Zone (for capsule tram/train)

502



Opposite sides of each capsule have two seats side-by-side; one seat faces the door. The low, sloped ceilings of these cylindrical compartments compel taller riders to lean forward while seated, so the tallest of the five passengers in the capsule should ideally sit in the center seat facing the door (outlined).

503



Above: step up to capsule door
Left: Lower Passenger Loading Zone (door/s to capsules)

504

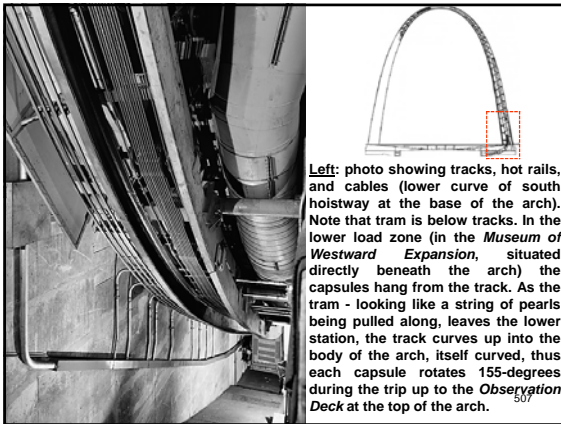
And I Had My Solution

505

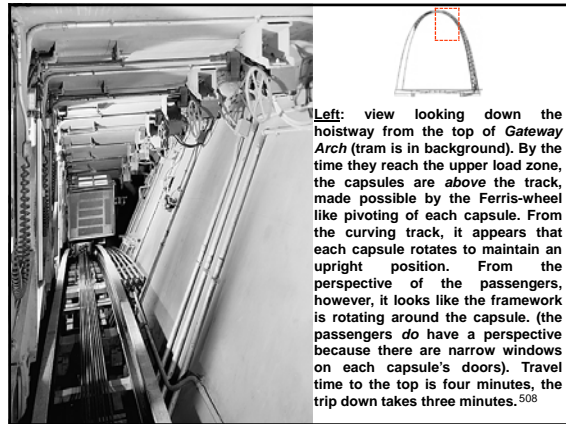
"...The triangular shape also presented a problem. Standard elevators were therefore determined to be impractical. The next solution to be considered was escalators but, here again, many units would have been needed, and the cost would have been very high. Additionally, in the upper sections of the Arch there was an area where the slope of an escalator would not follow the required curvature. The Ferris wheel principle was then considered. This involved utilizing small containers of people, with their seats pivoted to swing at any angle. This approach involved a continuous chain pulling seats which would go up one leg of the Arch and come down the other; but the distance up one leg of the Arch, and down the other side, and across the bottom, would have been almost half a mile, too long for any chains or cables to negotiate successfully. The Ferris wheel system would also have had to move on the centerline of the Arch, and no provision could be made for passengers to get off at the top observation area. The next consideration was the grouping of seats together so that there would be groups simultaneously at a loading zone, at the top, and at an unloading zone. This, too, presented problems, because the center portion of the upper part of the Arch would have been occupied with equipment, leaving no room for stairways and other devices for safety. Finally, a combination of the elevator principle and the Ferris wheel principle was developed into a train of capsules, and I had my solution."

Richard B. Bowser

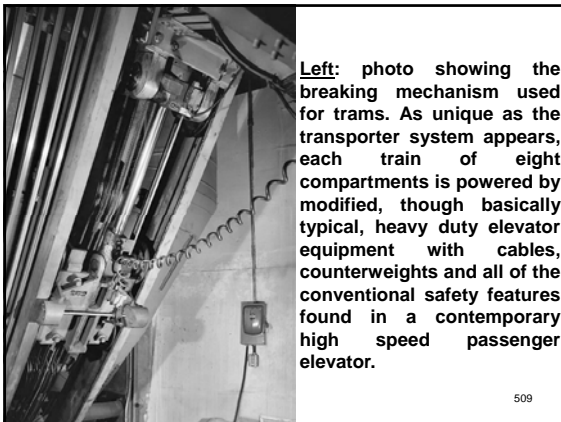
506



Left: photo showing tracks, hot rails, and cables (lower curve of south hoistway at the base of the arch). Note that tram is below tracks. In the lower load zone (in the *Museum of Westward Expansion*, situated directly beneath the arch) the capsules hang from the track. As the tram - looking like a string of pearls being pulled along, leaves the lower station, the track curves up into the body of the arch, itself curved, thus each capsule rotates 155-degrees during the trip up to the *Observation Deck* at the top of the arch.⁵⁰⁷



Left: view looking down the hoistway from the top of *Gateway Arch* (tram is in background). By the time they reach the upper load zone, the capsules are above the track, made possible by the Ferris-wheel like pivoting of each capsule. From the curving track, it appears that each capsule rotates to maintain an upright position. From the perspective of the passengers, however, it looks like the framework is rotating around the capsule. (the passengers do have a perspective because there are narrow windows on each capsule's doors). Travel time to the top is four minutes, the trip down takes three minutes.⁵⁰⁸



Left: photo showing the breaking mechanism used for trams. As unique as the transporter system appears, each train of eight compartments is powered by modified, though basically typical, heavy duty elevator equipment with cables, counterweights and all of the conventional safety features found in a contemporary high speed passenger elevator.

509



Left: photo showing south hoistway for the tram that runs in the south leg of *Gateway Arch*.

510



The Arch Transportation System is considered to be a public transportation system, and is run by the Bi-State Development Agency, a quasi-governmental organization. The original financing for the construction - as well as the day-to-day operation of the Arch Transportation System, was/is provided by the Bi-State Development Agency.

511

Unsung Hero

512

"My wife, Nell, and I were standing in a leg of the Arch watching a train go up. There were relays clicking, motors running, capsules rotating in an effort to remain level, some cables were going up, others were moving down, wheels, trolleys, wires, chains, etc. I told my wife, 'I can't believe I was involved in all this and I don't believe I have the guts to do such a thing again.'"

Richard B. Bowser

RE: recalling a 1992 visit to the arch from his home in Florida. The arch tram system he created is as unique and special as the arch it serves. Richard "Dick" Bowser is surely one of the unsung heroes in the dramatic story of the creation of Gateway Arch.

513

By early 1967, the transportation system remained unfinished. Formal testing of the transportation system occurred on January 30th 1967. The first trip to the top proceeded smoothly, but a hitch occurred when the second train jammed. Superintendent Brown hoped the trains would open to the public by March 1st 1967. Brown and Hartzog both met with the Bi-State Development Agency multiple times during the first months of the year to discuss opening the north leg and completing the accelerated work program on the interior finishes. Dick Bowser came to St. Louis to inspect the transportation work and to discuss his findings with Brown, while the Planet Corporation supplied the memorial staff with a list of spare parts they believed should be on hand at all times for the tram operation. At the end of February 1967, temporary landscaping commenced in hopes of opening the transportation system within a few weeks, but delays set the date further back. The north leg's air handling unit was kept running to keep down the humidity (the train/s could only be run under these conditions since it was found that the absence of ventilation lead to considerable rusting). The NPS issued a stop order on January 20th 1967 to halt all work in the arch's south leg until train testing was complete. This was a necessary safety precaution because of the open electrical equipment. The testing, witnessed by the Detroit Testing Laboratory, lasted throughout the first two weeks of March 1967.

514



"...In July of 1967 the great day came, and the train in the north leg of the arch began running. From then on there were lines and lines of visitors! Rumors of hours of waiting kept many St. Louisans from attempting the ascent, but out-of-town visitors braved the crowds. Our family stayed away. For one thing, I was still not convinced of the need to view our city from the top..."

The Christian Science Monitor, November 4th 1967

RE: the long-awaited opening of the transportation system took place on July 24th 1967. The north leg system opened to the public at noon that day. Eight months passed before the south train opened for public use. It too suffered delays before it finally opened at 10:00am on March 19th 1968. The north leg was then closed for the installation of automatic passenger-handling equipment. Simultaneous operations did not occur in both legs' transportation systems until May 18th 1968.

Left: visitors waiting in line (for about two hours) to take the tram/train to the Observation Deck (July 1967)

515

Our Curved Journey Upward

516

"...It was an ingenious arrangement; eight doors in a big concrete wall opened every few minutes to take on or let off their passengers, five in each car. When our turn came, the doors slid open and attendants ushered the five of us into a small, lighted, capsule-like gondola, where we could just comfortably sit on five seats. The car doors shut, then the concrete doors in the wall shut – and we were off in our little cocoon. As we started our curved journey upward, there were occasional clicks and soft jerks as the cars were regulated (somewhat like a Ferris wheel) to keep them always vertical. The trip up took four minutes, during which we could look out the windows of the door into the hollow leg of the arch, where we could see the lighted interior and its winding staircase. We found ourselves in a narrow place where we had to climb up a few shallow steps past a trainload of people waiting to go down. Once at the end of the short ride, there we were at the very top, 630 feet up! We were in a place about the size of a large plane cabin, without seats. The windows on each side slanted outward at somewhat of an angle. Underneath the windows were broad slanting counters on which we could comfortably lean while looking out..."

The Christian Science Monitor, November 4th 1967

517

Best View Just West of the Mississippi

518

"...Sightseers will be able to pass through the hollow core of the legs to an observation platform at the top for a 30-mile view of the prairies on a clear day. The more hardy visitors can climb 1,076 steps (it's 898 steps up the Washington Monument). Others less ambitious can take an elevator to the 372-foot level and walk the rest of the way..."

Lawrence Journal-World, April 2nd 1965

519



Riders of the Arch Transportation System inevitably find themselves exiting their capsule near the apex of the Arch, where they walk up some steps and a slight grade to enter the arched *Observation Deck*. The Observation Deck is seven-feet wide by sixty-five feet long and has thirty-two rectangular windows (sixteen on each side) each measuring seven-inches by twenty-seven inches and 0.5-inches thick. The Observation Deck has a capacity of about 160 people. Because of the shape of the chamber, the sound of shoes on a bare floor and people's conversations reflected in so many directions compelled the NPS to eventually install noise-absorbing carpeting.

520

Overgrown Croquet Wicket

521

"...'You won't catch me going up in that overgrown croquet wicket!' For several years we had watched the St. Louis Gateway Arch being built...my sentiments had been unchanging. How could such a delicate-looking steel arch support 200 people at the top observation level, where tiny pinpoint windows could be seen from below? I was unconvinced!..."

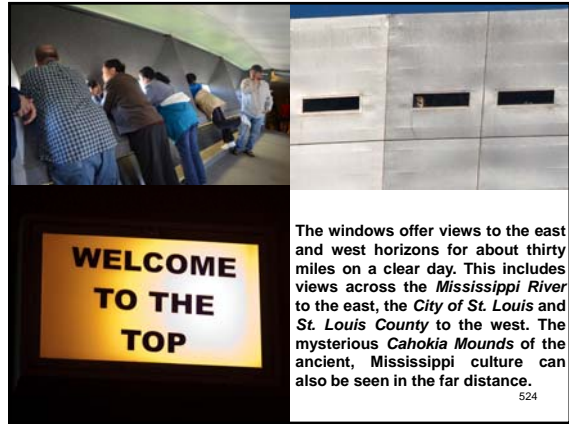
The Christian Science Monitor, November 4th 1967

522



Top Left: Missouri Governor Warren Hearnes views construction of Busch Stadium and the rest of downtown through one of the Observation Deck windows (the stadium opened in 1966)
Top Right: a contemporary vista of St. Louis from an Observation Deck window
Left: typical viewing bay

523

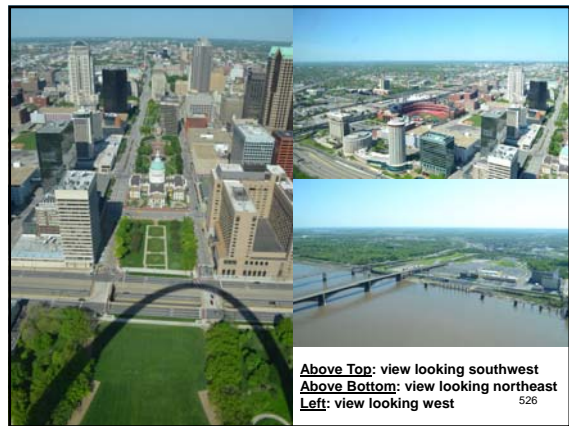


The windows offer views to the east and west horizons for about thirty miles on a clear day. This includes views across the Mississippi River to the east, the City of St. Louis and St. Louis County to the west. The mysterious Cahokia Mounds of the ancient, Mississippi culture can also be seen in the far distance.

524

"...We turned our attention first to the view to the east, a magnificent sweep which included the broad Mississippi River and Illinois on the opposite bank. Below us to the left and right were bridges spanning the mighty river. Near Eads Bridge, the oldest steel bridge across the Mississippi, completed in 1874, we could see the Admiral, a streamlined boat which was just leaving on one of its river trips. Next to it was a showboat, a paddle-wheeler on which one can see performances of old-fashioned 'meller-drammer.' Directly in front of us was the slope toward the broad cobblestone river levee, a slope on which will eventually be built a grand staircase leading from the arch to the levee and riverfront..."
The Christian Science Monitor, November 4th 1967

525

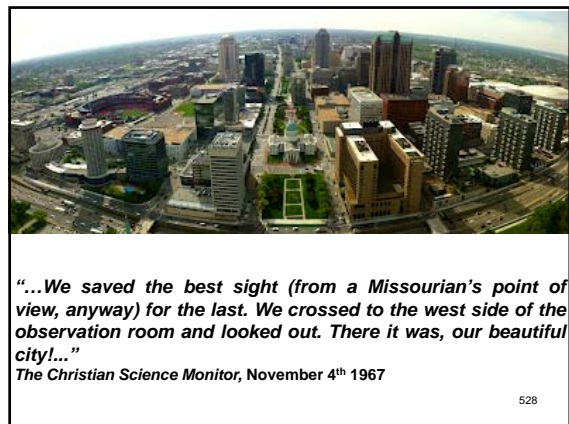


Above Top: view looking southwest
Above Bottom: view looking northeast
Left: view looking west

526

There it Was, Our Beautiful City

527



"...We saved the best sight (from a Missourian's point of view, anyway) for the last. We crossed to the west side of the observation room and looked out. There it was, our beautiful city!..."
The Christian Science Monitor, November 4th 1967

528

Dedication

529

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

530



Original plans had scheduled the dedication for October 1965. Now, almost two and a half years later, Secretary of the Interior *Stewart Udall* and Mayor *Alfonso Cervantes* announced the date for May 25th 1968. Sponsors still hoped for President *Lyndon Johnson* to make an address, but no commitment came from *Washington, D.C.* The mayor appointed all the former living mayors, including *Bernard Dickmann*, to serve as honorary chairmen of the *Arch Dedication Committee*.

531

Just Like the Red Sea Closing on the Egyptians

532

As dedication day drew near, plans evolved into a two-day celebration complete with parade, ball and a regatta of boats on the *Mississippi River*. Dignitaries from the *Louisiana Purchase* states were expected to attend, along with the Secretary of the Interior, the chairman of the *United States Territorial Expansion Memorial Commission*, and hundreds of representatives from patriotic and fraternal organizations. Hopes that President Johnson would honor the occasion with his presence were never realized. Vice President *Hubert H. Humphrey* represented the federal government instead. The date; May 25th 1968, was significant since it was twenty years to the day when the United States Territorial Expansion Memorial Commission accepted Eero Saarinen's design for the arch. The day dawned but the sun did not come out. Unusually heavy rain began that morning which washed out the proceedings. The arch grounds turned into channels of running water that flooded everything. Water ran down the walkways into the visitor center and stood several inches deep on the floor. It followed the visitors into the complex as they scrambled to seek shelter from the deluge. The NPS had prepared no alternative plan. Assistant Superintendent *Harry Pfanz* remembered it as being "*just like the Red Sea closing on the Egyptians*." Inside the visitor center the ceremonies proceeded with a certain sense of decorum, despite the deluge. VP Humphrey gave the address and went out smiling. The rain could not diminish the accomplishment.

533



Dedicated arch fans wait in the rain for the formal dedication to begin (May 25th 1968)

534

The Gateway Arch

Dedicated to
The People of the United States

May 25, 1968

Lyndon B. Johnson
President of the United States

The City of St. Louis, Missouri

The United States Territorial
Expansion Memorial Committee

United States Department of the Interior
National Park Service



535



Gateway Arch signified a new beginning for the *City of St. Louis*. It prompted rebirth, renewal and provided the impetus and incentive for investment and growth. The arch's impact on surrounding *St. Louis* was visibly apparent. More important was its impact on the nation. Its symbolism as a "Gateway to the West," its architectural and engineering significance and its overwhelming physical presence became known nationwide. *St. Louisans* rediscovered their riverfront while the rest of the nation rediscovered *St. Louis*. *Gateway Arch* was added to the *National Historic Landmark Survey* on May 28th 1987.

536

Part 9

Peripheral Development

537

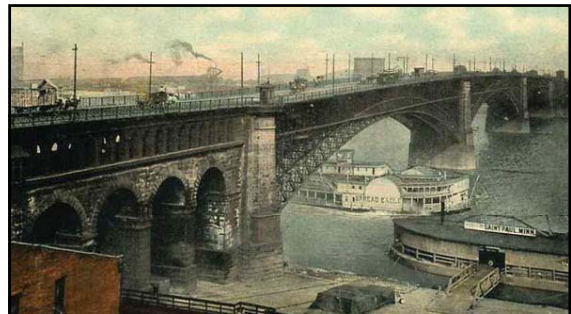
Eero Saarinen stayed involved with the memorial's peripheral development. In 1960, the *City of St. Louis* was poised to begin a major redevelopment of its downtown and riverfront areas. Zoning changes, the *Mansion House* and proposed *Laclede's Landing* developments and the construction of the *Interstate Highways* added to the memorial construction in providing impetus to *St. Louis'* facelift. *Saarinen* stayed involved with those projects that affected the overall riverfront development such as peripheral zoning. The proposed interstate highway bridge; to be located south of the memorial area, subsequently attracted *Saarinen's* attention. He approved of the bridge's construction, thinking that this bridge (along with the *Eads Bridge* bordering the memorial on the north) would help tie the entire complex together. When the bridge was first proposed in the late 1950s, *Saarinen* had pushed for a close visual relationship between the bridge and the memorial. It was important to him that the bridge be of a design sympathetic to the memorial. NPS officials wanted a single-level girder deck bridge with clean architectural lines, hoping this bridge would block out much of the adjacent *MacArthur Bridge* from the memorial visitor's view. *Saarinen* and NPS engineers met with the *Missouri* and *Illinois* state highway departments, the *Bureau of Public Roads* and *Sverdrup and Parcel Engineering* to discuss both the bridge and its approaches.

538



In his studio, architect *Eero Saarinen* using a scanning device to study a model of the *Jefferson National Expansion Memorial*, May 1961

539



Eads Bridge (1874)

540



MacArthur (formerly *St. Louis Municipal*) Bridge (1912)

541



During the summer of 1962, NPS officials believed that the *City of St. Louis* should establish rigid regulations for development and operations on the riverfront for the length of the memorial. Without such regulation, the riverfront would be cluttered with watercraft of all kinds. The ideal situation was to have the riverfront devoid of boats and barges, but this being impractical the NPS wanted a minimum distance of 1K-feet in length in front of the arch and steps to be free of watercraft and docking facilities. Under no circumstances could the craft moored north and south of this section have permanent anchorage. Only by establishing such regulations could the city assure that the quality of the riverfront would match that of the memorial.

542



The St. Louis riverfront (in its heyday)

543

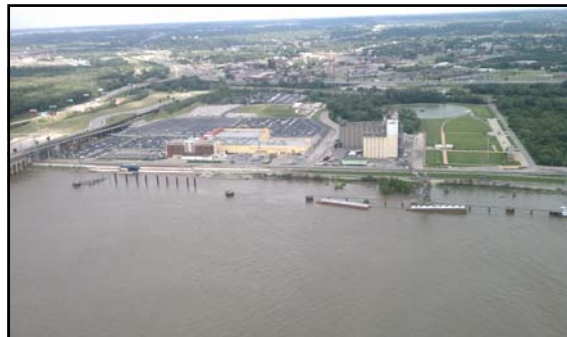


St. Louis riverfront (ca. 1961)

544

The idea of controlling the riverfront appearance also applied to the *Illinois* side of the *Mississippi River*. *East St. Louis* Mayor *Alvin Fields* received a letter in February 1963 from Mayor Tucker telling him of the recent *St. Louis City Plan Commission* resolution covering the zoning proposals for the area in front of the memorial. The city adopted the NPS recommendations and wanted to apply their restrictions to the east side (*Eero Saarinen's* original 1948 memorial concept included development of the east side of the river). Mayor Fields was assured of the cooperation of the *St. Louis Plan Commission* as well as that of the NPS in developing compatible plans. NPS personnel met with Mayor Fields several times during the year to express their views on the east side development. On May 14th 1963, Superintendent Gregg conferred with *East St. Louis' City Planning Commission* members, urging them to write an overall plan for development instead of proceeding piecemeal.

545



Present-day *East St. Louis, Illinois* riverfront (as seen from the *Observation Deck*)

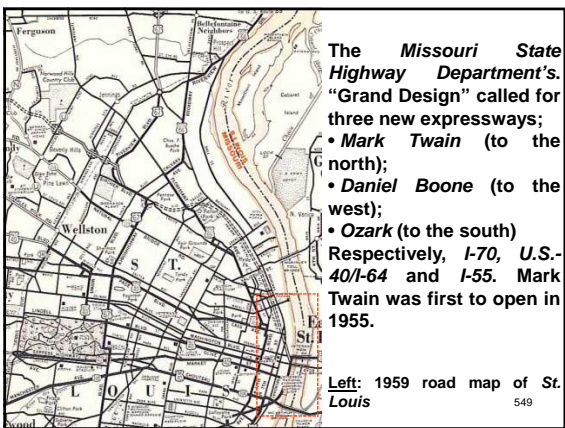
546

In September 1963, George Hartzog (now Associate Director of the NPS), met with Mayor Fields' *East St. Louis Riverfront Development Committee* which expressed interest in having the east side developments included in the memorial program. Hartzog explained that the authorization included only development of the west side and that additional legislation would be needed for NPS expenditures on the east side. He also suggested that federal standards for NPS development might be more restrictive than East St. Louis officials would desire. The committee favored constructing a scenic road, but such a road's development, levee access and railroad relocation would create many problems. Despite this, Superintendent Gregg considered the interest of the group commendable and hoped the results of their meeting would be profitable to the memorial.

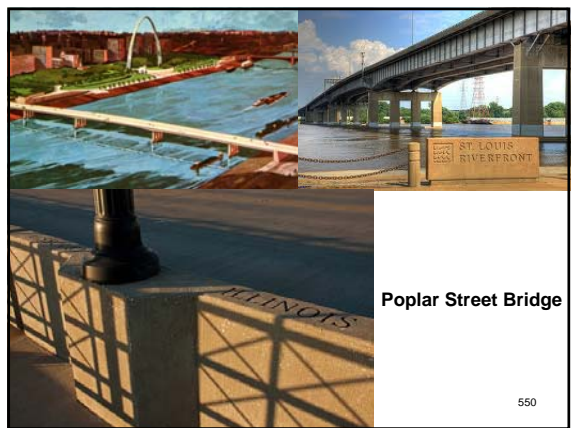
547

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

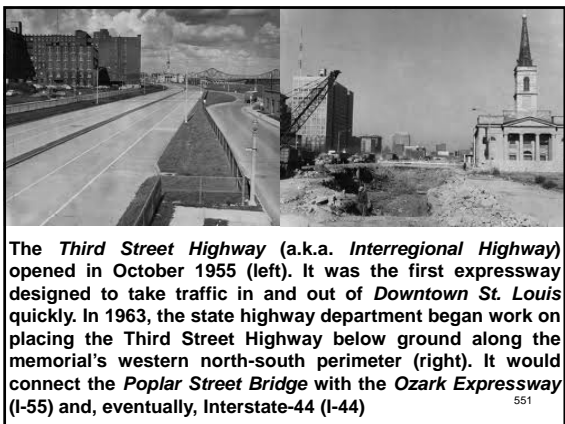
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549



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551

Flavored with the Romance of the Past

552



"Branching fingerlike from the downtown St. Louis area, some 135 mile of new, limited-access freeways are rapidly nearing completion, drawing the metropolitan area closer together. To the north, south west, and cross-city, point-to-point traveltime on these great highways will often be cut 50% or more. Their names – the Mark Twain, The Ozark Expressway, The Daniel Boone – are flavored with the romance of the past. But their existence and objectives speak well of the youthful progressiveness of modern St. Louis, planning its future with action, today!"

St. Louisans will drive downtown in half the time with these New Multilaned Freeways

When the new freeways are completed, the travel time from downtown to the airport will be cut in half. The new freeways will also provide a direct route to the airport from the downtown area.

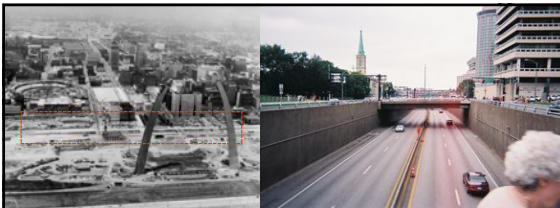
St. Louis Post-Dispatch

St. Louis Post-Dispatch
RE: editorial advertisement

553

Grand Design

554



On May 24th 1965, Superintendent Brown attended ceremonies officially opening the reconstructed *Third Street Mark Twain Expressway* (right). The memorial's peripheral development was beginning to take shape as the arch legs topped the 500-foot mark by the end of May 1965 (left).

555

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

556

Gone, But Not Forgotten

557

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

558

The Sky is (Not) the Limit

559

Still further planning for redeveloping the east riverbank occurred at the end of 1966. A group of business and civic leaders proposed a massive project to rebuild much of *East St. Louis*. The plans included levee developments and an expansion of *Jefferson National Expansion Memorial* to include forty-five acres on the *Illinois* side. Reaction to the plan was favorable, but many people expressed doubts about financing. Monetary problems would continue to plague *East St. Louis'* planning efforts throughout the coming years. On the *St. Louis* side of the river, the question of peripheral building height emerged again in 1967, causing several memorial supporters to worry that the uncertainty over height limits could adversely affect the possibility of receiving federal appropriations. The problem began in January 1967 when redevelopment plans were unveiled for the area immediately north of the memorial between the *Eads* and *Veterans Bridges*. The *River Center Redevelopment Corporation* proposed high rise apartment and office buildings costing \$101 million. Developers would be eligible for full tax relief under urban renewal programs. The alternative plan (stressing rehabilitation and preservation of historic structures in the area) was called *Laclede's Landing* and was sponsored by the *Levee Redevelopment Corporation*. Mayor *Alfonso Cervantes* favored the high-rise proposal, but indicated he would take the advice of the *City Plan Commission*. On January 19th 1967, the commission voted to approve the high-rise proposal and recommend a height limit of 500-feet from the base line of the arch. NPS Director *George Hartzog* favored development in the area, but he objected to any height over 275-feet. Years before, the *Mansion House* controversy had effectively set the height limit at 275-feet when the arch height was raised to 630-feet.⁵⁶⁰

"Had that agreement not been reached, it is doubtful if the Arch would have been built at all"

George Hartzog, NPS Director (January 1967)

RE: Hartzog believed that any plan providing for a building height to exceed 275-feet could/would adversely affect the chances of obtaining additional federal funds. The *United States Territorial Expansion Memorial Commission*, meeting in *Washington, D.C.* on February 3rd 1967, adopted a resolution supporting the height limitation. The *Mansion House* plans had shown a parapet height of 275-feet, but when the penthouses were added the height reached 306-feet. The *Mansion House* height was thus officially 306-feet. On December 5th 1967, the *Aldermanic Zoning Committee* unanimously endorsed a bill setting the height limit of buildings in the peripheral area at the same height as *Mansion House*; 306-feet. The group believed that failure to establish the definite limitations would jeopardize further federal appropriations.

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Hurry-Up and Wait

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In May 1970, an NPS study team completed a report on alternatives for developing the *East St. Louis* riverfront. Final recommendations would come from *Washington D.C.* after the report moved through administrative channels, but the agency made no commitments to *East St. Louis*. Any large scale development required relocating railroad facilities. In October 1970, the NPS made public a preliminary report in draft form suggesting four alternatives for the east side;

- A state park;
- An extension of *Jefferson National Expansion Memorial*;
- A national *Urban Demonstration Park* administered by the NPS;
- A city park

The *Urban Demonstration Park* proposal received immediate endorsement from local interests because no local or state money existed for the city or state park alternatives. History repeated itself on the riverfront. Further development depended upon local support, moving railroad tracks and balancing the interests of the national and local governments. Once again, local interests concentrated on immediate financial benefits and saw the development only in the light of sparking an economic rebirth. *East St. Louisans* hoping to emulate *St. Louis'* thirty-year success story would have to "hurry-up and wait."⁵⁶³

563

Malcolm W. Martin Memorial Park

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“...Decades in the making, the 34-acre Malcolm W. Martin Memorial Park opening Saturday transformed a once-scrubby patch of riverfront land into a thing of beauty. It’s also what architect Eero Saarinen wanted when he finished the arch 44 years ago - a compliment to his masterpiece across the Mississippi River and a vantage point from which visitors could admire it...Martin, the park’s namesake, was a prominent lawyer who pushed for it for years before dying in 2004 at age 91. In 1968, he formed a non-profit group to raise money to protect the tract from commercial development. The park’s opening couldn’t have come at a better time for East St. Louis Mayor Alvin Parks, Jr. He hopes the park draws tourists and precious development to the city and its riverfront...Now the park, with a four-story overlook and a mechanical geyser, represents a beacon of hope for urban renewal, supporters say...”
 USA Today, June 2009

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“...Supported by concrete columns the size of a giant redwood trunk, the overlook amounts to a continuous, rectangular ramp, highlighted by stainless steel railing, winding its way to the observation deck 43 feet in the air. There, a statue of Martin occupies the edge of a stone bench, his leg folded as the likeness gazes at the arch...”
 USA Today, June 2009
 RE: designed by HO•K, the 43-foot-tall viewing structure is located at Malcolm W. Martin Memorial Park. A contemporary of Saarinen, Martin shared the architect’s vision of creating parks on both sides of the river.

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“...On the park’s other end, past the tiered seating for events including fireworks shows, is the fourteen-year-old Gateway Geyser, which a few times a day from April through October puts on a 15-minute show, shooting water skyward nearly as high as the 630-foot arch...”
 USA Today, June 2009

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“I am terrifically excited about what the development is...It gives you the absolute best view of St. Louis as you will have anywhere on the planet”
 Alvin Parks, Jr., Mayor - East St. Louis, Illinois

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St. Louis Riverfront Marker (partially submerged Lewis and Clark statue can be seen behind marker, Eads Bridge at left)

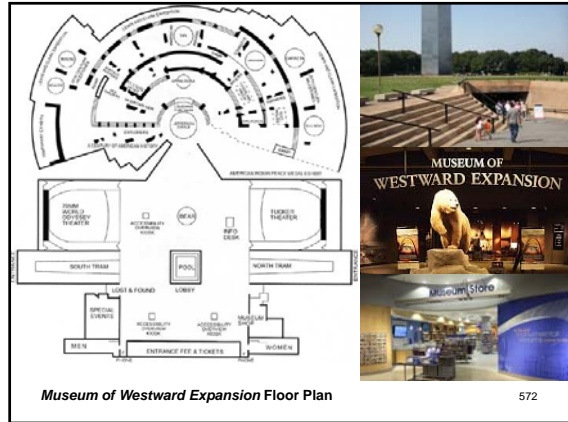
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The Spirit of '76

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Along with the monumental staircase opening, *Jefferson National Expansion Memorial's* bicentennial birthday present to the nation was the completion of the *Museum of Westward Expansion* after many difficult years of planning, financing and construction. Many Park Service officials questioned the museum's unique concept, even after final official reviews and approvals. Superintendent Chandler had to defend the museum's design as late as July 1976, one month before the opening. Security problems remained the main consideration because of *Aram Mardirosian's* unique, open design. Almost none of the museum's objects were placed under protective glass. Chandler believed the museum incorporated the same openness and free response as did the time and place it interpreted. He intended to maintain museum effectiveness and professionalism while insuring object safety by having park rangers on duty in the museum at all times. Artifacts were placed on the museum walls to reduce handling; many items were reproductions or replaceable originals displayed out of reach. Chandler sought ideas and alternatives within the approved design concept to increase security effectiveness as well as to utilize the museum's flexibility and potential. Despite Chandler's confidence that the idea would work, he had a nagging feeling that something would go wrong. If the NPS spent more than \$3 million on the museum only to have people walk off with the artifacts, the organization would look foolish. But Chandler took the risk because he did not want a static museum. He realized that many of his park's visitors came to see and ride up into the arch, and he wanted to offer them a taste of history as well. He had faith that the museum would grow in importance.

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Museum of Westward Expansion Floor Plan

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Planning for the museum focused on four major subject divisions;

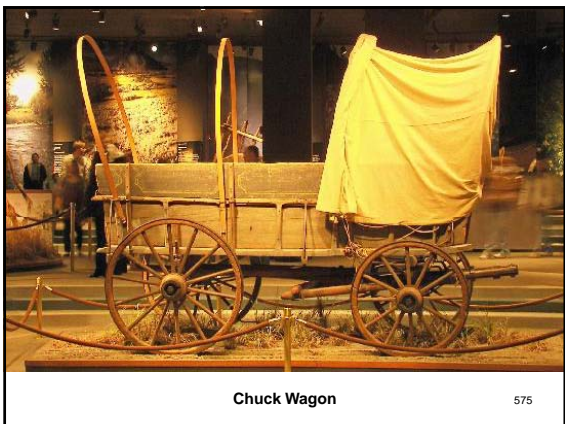
- The land;
- Its acquisition;
- The people who mastered it;
- The significance and meaning of westward expansion to the nation and its people

The exhibits were researched and designed to convey the western drama to the visitor in terms of personal experiences, i.e. to tell what it was like to be involved in the westward expansion experience between 1803 and 1890. The research team planned for the *Charles Guggenheim* documentary film: *Time of the West*, to introduce and summarize westward expansion thereby preparing visitors for the interpretive story in the museum itself. The NPS staff believed that the twelve-unit museum and documentary film would be a fitting and appropriate companion to the *Gateway Arch* experience.

573

In the beginning of 1963, the NPS began to concentrate on awarding contracts for artistic museum pieces. They commissioned *Rudolph Torrini* to sculpt a bronze casting of a Fifth Infantry bugler, *William Traher* for four large western scenic paintings, *J.K. Ralston* for a painting of *Lewis and Clark* meeting the *Shoshone Indians*, and *Hillis Arnold* for a manifest destiny eagle wood carving. NPS Regional Curator *Newell Joyner* collaborated with the museum planning staff to prepare an accurate want-list of specimens for the museum. They also prepared a list of surplus property available for exchange with other park areas and/or institutions. Two historic wagons were also acquired for the museum; a *Chuck Wagon* and an *Overland Wagon*.

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Chuck Wagon

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Overland Wagon

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"...The ride (or walk) to the Missouri ozone and back is only part of the show. The rest is underground. The distance between the legs of the arch is far enough to accommodate a pair of football fields and then some. Most of it is being tunneled into the world's spiffiest and probably largest underground museum. Now being assembled by the National Park Service, the museum is being divided into 12 galleries that will dramatize the nation's westward expansion from 1803 until 1890. Two theaters, each seating 250, will provide a colorful orientation to the subject. Although the fact hasn't been widely publicized, the Visitors' Center under the arch can also double as a fallout shelter with room for 10,000 refugees..."

Chicago Tribune, December 5th 1965

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Conflict of Interest?

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Left: the roof of the underground visitor center/museum exposed for repair (1990), as seen from the top of Gateway Arch. *Aram Mardirosian* received much acclaim for the museum design, but his involvement with NPS contracts came under scrutiny by the *Department of Justice* in 1976. When Mardirosian was awarded his first St. Louis contract in October 1970, he had recently left a position in the NPS. This raised conflict of interest questions and allegedly violated the one-year rule which stated that a federal government employee could not, for one year, be involved with duties if they were under his/her official responsibility before leaving federal employment. Mardirosian asserted that his position as *Chief Architectural Advisor* and *Architect-in-Residence* with the NPS did not interfere with any authority involving conflict of interest. The entire issue had been explored and resolved in 1970 before Mardirosian accepted the museum contract, but was revived in 1976. A year and a half later - in March 1978, Mardirosian was absolved of the conflict of interest charge. The Justice Department looked into the matter, decided not to prosecute and so informed the *Department of the Interior*.

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The museum's opening helped spur an increase in visitation to the memorial along with bicentennial events. A record 3,458,000 visitors came to the memorial during 1976. *Aram Mardirosian's* design was indeed a manifestation of the NPS's desire to build a museum important and effective enough to complement the Gateway Arch.

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Part 10

Legacy

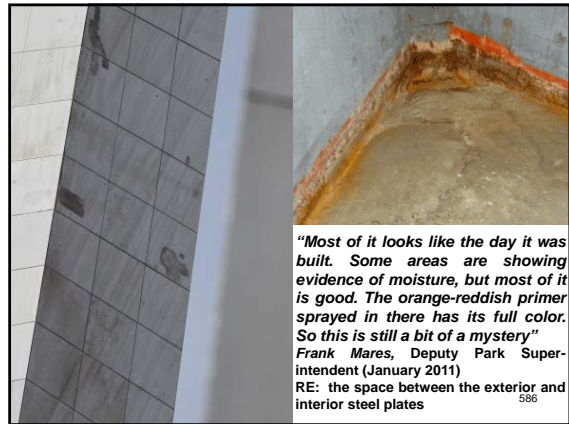
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Corrosion

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"Contractors will soon begin drilling into the steel-and-concrete Gateway Arch in St. Louis to create monitoring ports and obtain core samples as authorities deepen their study of the growing corrosion plaguing the nation's tallest monument. A structural steel study, commissioned in September, is now underway to determine the cause and extent of the decay and staining on both the stainless-steel exterior and carbon-steel interior of the iconic Arch, which opened in 1967...The Arch's exterior never received a protective coating, because planners and builders considered stainless steel impervious to corrosion. Cleaning every 50 years was all that was required for the structure to last 1,000 years, they said. Time proved otherwise, however, with interior and exterior corrosion and decay becoming visible over the years. The study now underway follows one conducted in 2006 that reportedly noted corroding bolt heads and staircases; a leaky, sometimes-fog-shrouded, rusting interior; and a degenerating exterior. Some sort of battleship-gray lead-based protective coating was applied to the interior during construction, but except for spot repairs and touch-ups, the reinforced-concrete-and-steel structure has never been recoated or even thoroughly cleaned, according to the NPS...Part of the current effort will be to determine the source of the moisture infiltration...Consultants are now examining archival records to more precisely determine the structure's coatings and concrete formulations. Also on the consultants' to-do list: Determine a way to fully access the structure's exterior, to collect samples and eventually make repairs...We presume that it will involve some sort of rappelling...Cranes could reach it, but there's really no way to bring a crane in...The aesthetic prettifying-up of it will be the least of the problem," stated Frank Mares of the NPS."

Paint and Coatings Industry News, November, 2010



587

CityArchRiver 2015

588



"CityArchRiver 2015 will make the Arch easier and safer for everyone to experience by connecting, invigorating and expanding the park's grounds and museums. Designed by world-renowned landscape architecture firm Michael Van Valkenburgh Associates, CityArchRiver 2015 connects the Gateway Arch grounds with the East and West riverfronts and the region. Through the creation of new spaces for events and public education, expanded museum space, additional park acreage and bicycle trails, children's play areas, performance venues and a lively, invigorated riverfront, locals and tourists alike will find new opportunities to learn, linger and enjoy one of the world's most recognized icons. The design starts with a new, dramatic Park Over the Highway that will, for the first time, allow visitors to walk from the Old Courthouse to the Arch grounds to the riverfront on one continuous greenway, without a curb or stair step in their way. With your support, the CityArchRiver 2015 project will have a lasting impact on the economic, social, environmental, recreational and educational fabric of the entire bi-state metropolitan region."

589

CityArchRiver 2015



"There are several components to the project that together create a whole that is far greater than the sum of the parts: a safe, accessible and enjoyable experience for residents and visitors that encompasses the energy of the region, the power of the riverfront and the calm beauty of an urban national park. Construction is expected to begin in 2013 and many of the components will be completed by October 2015, when the nation and the region will come together to celebrate the 50th anniversary of the Gateway Arch."

590

CityArchRiver 2015



Northwest Entry to the Arch Grounds



Southwest Entry to the Arch Grounds

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"New Museum Entrance - A new glass entrance to the Museum of Westward Expansion below the Arch will face the Park Over the Highway and the Old Courthouse and bring natural light underground to create a fitting terminus of the Gateway Mall."

CityArchRiver 2015

592



"Expanded Museum - The current museum space under the Arch will be renovated and expanded to include new exhibit, event, and public education areas."

CityArchRiver 2015

593



"Landscape Improvements - More than five miles of new pedestrian pathways – accessible to all – will be created, allowing access to the Arch and Riverfront from the north and south and throughout the Arch grounds, including the now inaccessible reflecting ponds."

CityArchRiver 2015

594



"The Riverfront - Leonor K. Sullivan Boulevard will be elevated, eliminating the majority of the flooding that closes the Riverfront during the year. This will provide access for pedestrians, bicyclists and vehicles to a 1.5 mile promenade for activities and commerce between Biddle Street and Chouteau Avenue, with connections to existing bicycle trail networks."
 CityArchRiver 2015 595



"North Gateway - The north gateway parking garage will be replaced with four acres of usable park space and include a Lewis and Clark Explorers' Garden with a raised walkway featuring views of Eads Bridge and the Mississippi River. Washington Avenue will end at Memorial Drive allowing the Park to expand directly to Eads Bridge."
 CityArchRiver 2015 596



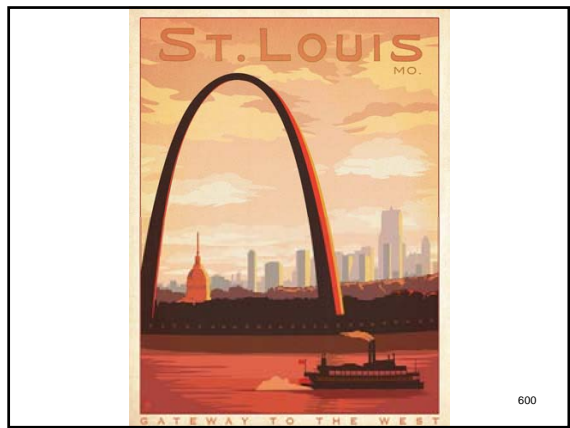
"Pedestrian Pathways - More than five miles of new pedestrian pathways – accessible to all – will be created, allowing access to the Arch and Riverfront from the north and south and throughout the Arch grounds, including the now inaccessible reflecting ponds."
 CityArchRiver 2015 597



"Kiener Plaza - Kiener Plaza will be developed to bring the Gateway Mall and the park together."
 CityArchRiver 2015 598



"Illinois Park - A pavilion area centered on the Gateway Geyser at Malcolm W. Martin Memorial Park will be constructed on the Illinois side of the Mississippi River. A one-mile long aerial tram is planned to transport visitors from the Arch grounds to and from Malcolm W. Martin Memorial Park. (Post 2015)"
 CityArchRiver 2015 599



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