

A Bridge to the Mississippi:
A Transportation Museum on the St. Louis Riverfront

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A thesis
submitted in partial fulfillment of the
requirements for the degree of
Master of Architecture

University of Washington
2013

Committee:
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Program authorized to offer degree:

Architecture

University of Washington

St. Louis, like many riverfront cities around the world, has become isolated from the river upon which it was founded, the Mississippi. This thesis proposes a new riverfront transportation museum for St. Louis, as a means of reconnecting the city and the river. The museum, located in the post-industrial riverfront neighborhood of Chouteau's Landing, celebrates the city's heritage of transportation and industry that grew along the riverfront, and serves as an icon for a city seeking to remake the image of its riverfront.

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I would like to thank my parents, my brother, and my sisters for their love and support over the last several years. I truly would not be where I am without you behind me. I would also like to thank my instructors and my classmates for their advice and encouragement during my time here at the University of Washington. Three and a half years was too brief a time to spend in a place with such talented and amazing people.

INTRODUCTION

In December of 2009, a major international competition was announced seeking designs to remake the grounds of the Gateway Arch in St. Louis in time for the Arch's fiftieth anniversary in 2015. The competition brief issued by the National Park Service called for a redesign of the Jefferson National Expansion Memorial and its connections to St. Louis and the Mississippi River, tying the city, the Arch, and the River into a cohesive whole. A team led by Michael van Valkenburgh Associates (MVA) was named the winner of the competition in September 2010. The CityArchRiver proposal for 2015 bridges over an interstate highway that cuts off St. Louis from the Arch grounds and the riverfront, and reworks the riverfront on both sides of the Mississippi. Construction on the project is scheduled to begin sometime in 2013.

These efforts to reimagine the Arch grounds and the riverfront recognize that St. Louis, like many riverfront cities throughout the world, has become isolated from the river upon which it was founded. The Mississippi at St. Louis is primarily a working river, conveying commercial traffic up and down on its waters as it has for centuries. Layer upon



1. The St. Louis riverfront as seen from the east side of the Mississippi.



2. The working riverfront.

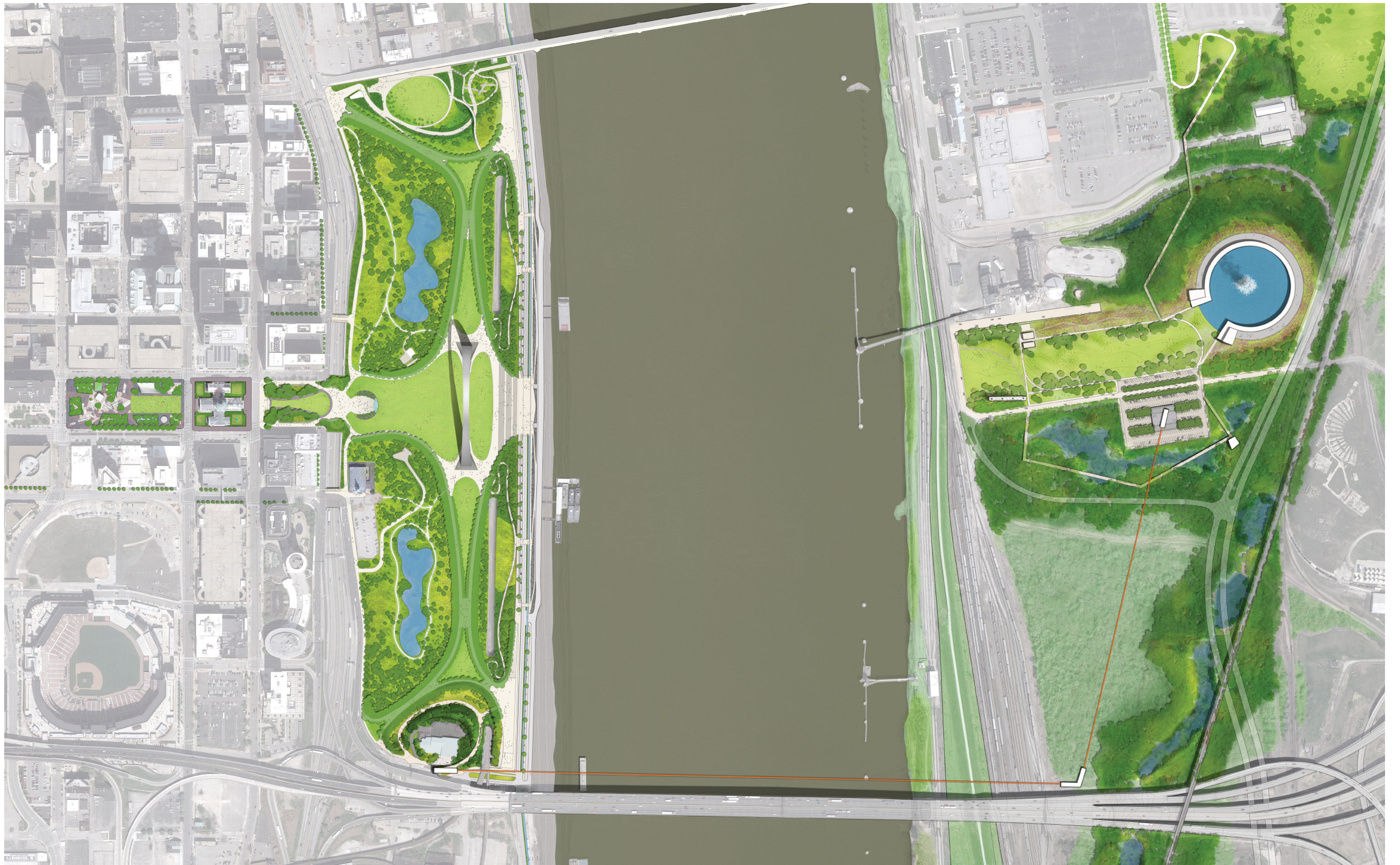


3. The connection between the city and the Arch before and after the CityArchRiver project .

layer of industry and transportation infrastructure have been built up along its banks, shaping the growth and development of the city from its earliest days. But these physical networks of production and conveyance also served to sever the city and much of its population from the Mississippi. Even though it remains a vital resource, in many respects the river has become almost invisible, both physically and perceptually from the life of the city. The Mississippi is typically only experienced when speeding past it or over it on an interstate highway. It only rises into the public consciousness as a threat when it inevitably floods and overflows the channels and walls that have been built to control and contain it.

One of the stated goals of the 2015 CityArchRiver project is to “weave connections and transitions from the City and the Arch grounds to the River, [and] mitigate the impact of transportation systems”.¹ And while the project will hopefully improve the physical connection between the city and the Arch, and the Arch and the Mississippi, the focus of the efforts of the project will be on the monument itself. Any connections between the city and the river will be made with the monument as an intermediary. In order for

¹ CityArchRiver 2015 Foundation



4. The plan for the CityArchRiver project.



5. The city and the river.

St. Louisans and visitors the riverfront to really understand and appreciate the influence of the Mississippi, they must be able to experience its history and current state as a working river, a living conduit that exists beyond the monument. This thesis proposes a new riverfront transportation museum for St. Louis, as a means to reconnect the city and the river. The museum, located in the post-industrial riverfront neighborhood of Chouteau's Landing, celebrates the city's heritage of transportation and industry that grew along the riverfront, and serves as an icon for a city seeking to reimagine the image of its riverfront.

SCOPE/SURVEY OF THE FIELD

The Mississippi

In his 1941 poem *The Dry Salvages*, T.S. Elliott depicts the life of a mighty river. Elliott charts the evolution of the river from a natural “frontier” to a utilitarian, working “conveyor of commerce”. Eventually the river evolves into an obstacle to be bridged over, at which point it becomes “almost forgotten.” And yet, the poet argues that this “brown god”, hemmed in by levees and turned into a tool of industry and trade, remains “untamed” and dangerous, an unpredictable force or nature, “keeping his seasons and rages, destroyer, reminder of what men choose to forget.” The river that Elliott describes is left unnamed, but bears a striking resemblance to the Mississippi, the river that gave rise to the city of his childhood, St. Louis.

The Mississippi, whose name means “great river” in the Ojibwa language, is the largest river in North America, and the third longest in the world. Combined with its tributary, the Missouri, it forms the longest river system in the world. Stretching 2,301 miles from its headwaters in Minnesota to its mouth south of New Orleans, the river drains 40 percent

I do not know much about gods; but I think that the river
Is a strong brown god—sullen, untamed and intractable,
Patient to some degree, at first recognised as a frontier;
Useful, untrustworthy, as a conveyor of commerce;
Then only a problem confronting the builder of bridges.
The problem once solved, the brown god is almost forgotten
By the dwellers in cities—ever, however, implacable.
Keeping his seasons and rages, destroyer, reminder
Of what men choose to forget. Unhonoured, unpropitiated
By worshippers of the machine, but waiting, watching and waiting.

- T.S. Elliot, *The Dry Salvages*, 1941



6. The Mississippi river system.



7. A working river.

of the contiguous United States.² The Mississippi continues to function as a working river, a watery highway dominated by huge towboats carrying a wide variety of goods up and down its course. Because of its importance as a commercial transportation conduit, the Mississippi is one of the most heavily managed rivers in the world. Dams and locks along its length control its flow and level to facilitate barge traffic. And the banks of the river are flanked continuously by a network of levees and flood walls stretching from New Orleans to Iowa. The results is that in many stretches, the river no longer follows its natural course, instead constrained to a narrow channel, to better serve the commerce that flows along it. Yet despite these efforts at control, and really, because of them, the Mississippi regularly attempts to flood, threatening communities up and down its banks.

The history of the city and the river

The French explorers Pierre Laclède and Auguste Chouteau founded St. Louis in 1764 on a bluff along the banks of the Mississippi. From its earliest days as a French trading post, the city was dependent on the river as its essential connection to the rest of the United States. Until the middle

² Fremling, p. 15



8. August Chouteau and Pierre Laclede and the founding of St. Louis.

The most significant event to affect cities was the development of mercantile cities... into industrial ports in the nineteenth century. As steam-powered boats transported goods faster and in larger quantities to ports globally, many of the world's urban waterfronts took on an industrial character.... A disconnect grew between the waterfront and the social, cultural, and environmental life of the city.

- Ryan Zoe, *Building with Water*, p. 8

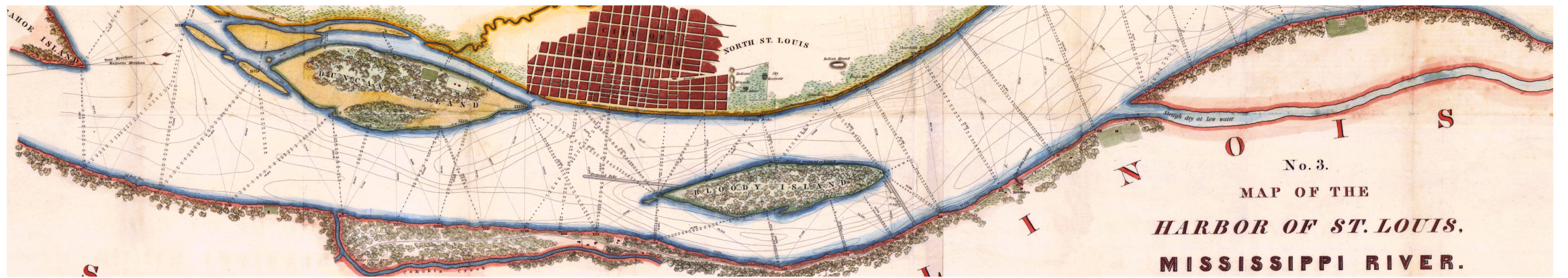
of the nineteenth century, “North America’s rivers were its superhighways, the prime carriers of commerce, news, and knowledge,”³ and essential conduits for expansion. St. Louis was located just south of the convergence of the mightiest of those rivers, the Missouri and the Mississippi. Served by canoes and keelboats that took weeks and even months to travel up and down its course, the river made the development of the city possible during its early years. That all changed with the arrival of the first steamboat traveling up the river in 1817. Over the next several decades, the city became an increasingly busy port, its waterfront crowded with warehouses and riverboats, and by 1841, grew to being second only to New Orleans in river traffic.⁴ The growth in trade along the Mississippi fueled a population explosion in the city, which grew from around 16,000 to over 300,000 between 1840 and 1870.⁵

But that explosive growth came at a significant cost. As St. Louis expanded and developed, its waterfront followed a trajectory taken by countless other riverfront cities during the Industrial Revolution. As growth and prosperity of the city became increasingly dependent upon the river,

3 Fremling, p. 163

4 Primm, p. 139

5 Primm, p. 143, 327.



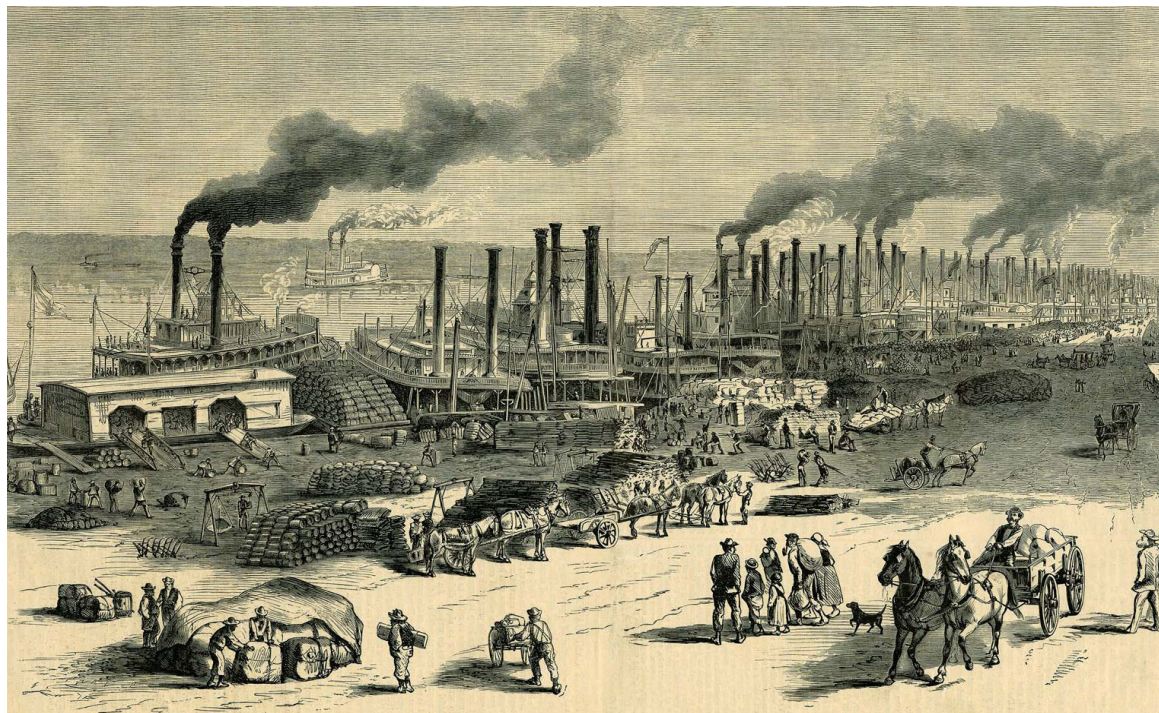
9. Map of St. Louis in 1837.



10. Map of St. Louis in 1874.



11. The St. Louis levee in 1852.

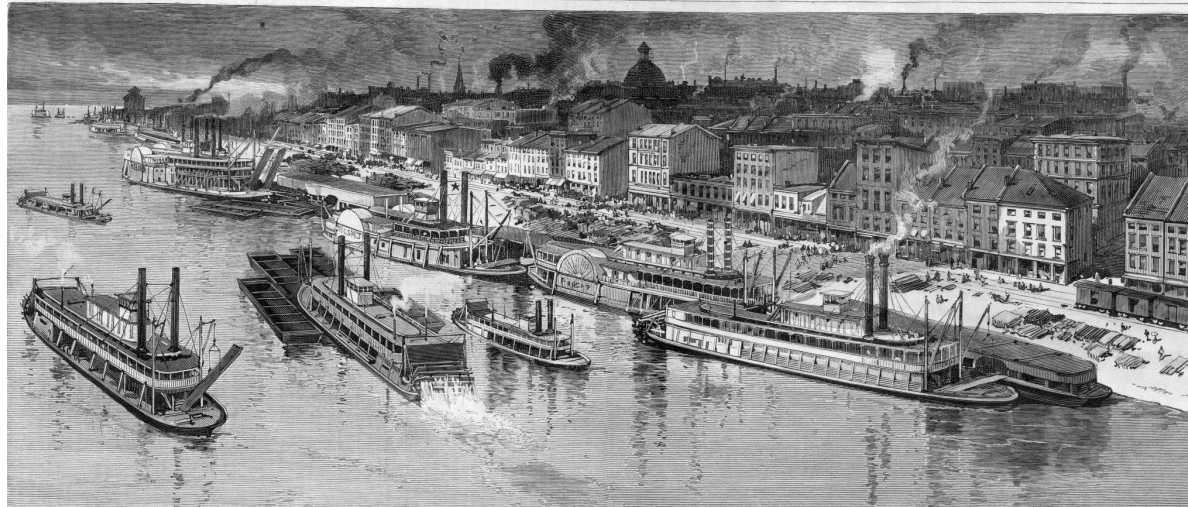
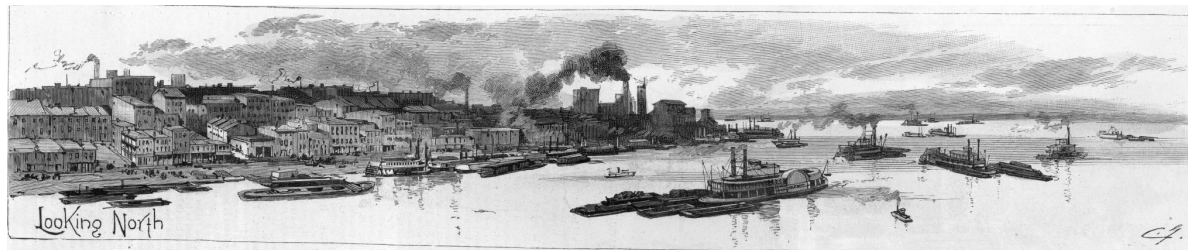


12. The levee in 1871.

the riverfront itself quickly grew into a bustling, gritty zone given over to commerce and industry, rather than a place for recreation or leisure. As is visible in Figures 11-14, the open space along the water's edge was dedicated to those ends.

Well into the 1870s, the riverfront remained the economic heart of the city. But following the Civil War, railroads began to replace river traffic as the most efficient and reliable method of transporting goods across the country.⁶ Dozens of railroad bridges were built across the river along its course, capturing east west trade, and rail lines running along the river captured north/south trade as well. This transition was hastened in St. Louis by the construction of the pioneering steel Eads Bridge in 1874, which connected rail lines across the river at the city for the first time. By the last decades of the nineteenth century, steamboat trade along the river was in sharp decline. In 1882, Mark Twain, upon returning to St. Louis after an absence of 21 years, commented sadly on the dearth of boats at the city's landing: "Half a dozen sound-asleep steamboats where I used to see a solid mile of wide-awake ones! This was melancholy, this was woeful!"⁷ The reduction in the riverboat traffic led to a

6 National Park Service, U.S. Department of the Interior, p. 24
7 Fremling, p. 166



13. The riverfront in 1876, from Harper's Weekly.



14. After the advent of the railroads.

slow decline of the waterfront through the last half of the nineteenth century. Most of the brick warehouses occupying a 40 square block area at the heart of the riverfront had become functionally obsolete by the turn of the century.⁸

As St. Louis's central waterfront faltered and declined as a nexus for river traffic, the city focused on building up the infrastructure for railroad transportation. In 1889, the St. Louis Municipal Bridge became the second rail bridge to cross the Mississippi just north of downtown St. Louis, and a massive passenger train depot, Union Station, was completed in 1894. By the turn of the century, St. Louis was the second largest rail terminal in the nation, with more than twenty rail lines converging at the city.⁹ The shift from riverboats to rails changed the focus of commerce and trade to rail yards and depots west of the riverfront, as the riverfront lacked sufficient space for such large developments. The urban core of the city followed, moving away from the narrow streets and dense built fabric of factories and warehouses that dominated the old city core located along the riverfront, further fueling its decline. Eventually, the river's edge came to be dominated by rail traffic, with five different railroads

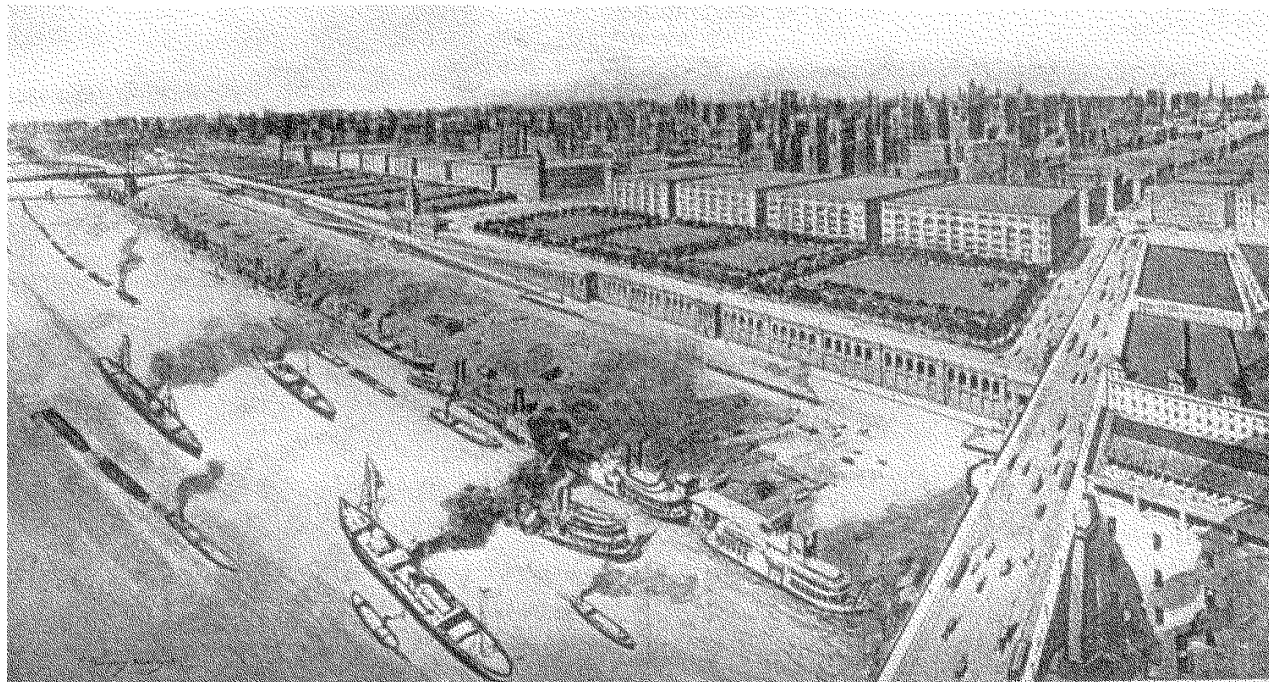
8 Tranel, p. 6

9 Primm, p. 312-313

running along the levee by 1930.¹⁰ These rail lines formed yet another barrier between the city and the river.

As the railroad infrastructure and industry came to dominate the river's edge, it became apparent to St. Louis's leaders that the large prominent zone of decaying industry at the central riverfront had become a liability to the city. In 1907, inspired by the City Beautiful movement, the first comprehensive master plan for the city called for clearing the warehouse district between the Eads and Municipal Bridges, and building an elevated park and esplanade on the site, with the rail tracks running along the river's edge hidden below. The intent was to conceal the industry and infrastructure that had once driven the growth of the city. In 1933, another proposal, A Plan for the Central Riverfront again called for clearing the old warehouse district, but now to replace it with parking for over six thousand automobiles.¹¹

At about the same time, plans began to form to create a monument celebrating the westward expansion of the country. As with the 1907 plan, the planners behind the project saw the historic waterfront as blighted and decaying, a remnant of a past life of the city that needed to



15. The plan for the city's riverfront, 1907.

10 Bahr Vermeer Haecker Architects, p. 24

11 Tranel, p. 6



16. The riverfront before clearance for the Jefferson National Expansion Memorial.



17. The riverfront after the original warehouse district was cleared.

be cleared away. Federal funding for acquiring the area that would become the Jefferson National Expansion Memorial was secured at the end of 1935, and over the next few years, virtually all of the historic structures along the waterfront were razed. The Gateway Arch, the centerpiece of the grounds of the memorial park designed by Eero Saarinen and Hannskarl Bandel, was completed in 1965. The Arch literally and figuratively changed the face of St. Louis, creating an iconic symbol for the city. But it came at a significant cost to the historical heritage of the city, and failed to make a significant connection between the city and the river.

Even as the Arch was nearing completion, a final barrier between the city and the river was under construction. In the last half of the 1950s, St. Louis followed cities such as Philadelphia, Seattle, and Cincinnati in building an interstate highway between its downtown and the riverfront. Interstate 55/70 paralleled the western edge of the Arch grounds, effectively severing the riverfront and the monument from the rest of the downtown. The areas between the river and the highway along the length riverfront for the most part became industrial no-man's lands, rarely ventured into by most of the residents of the city.

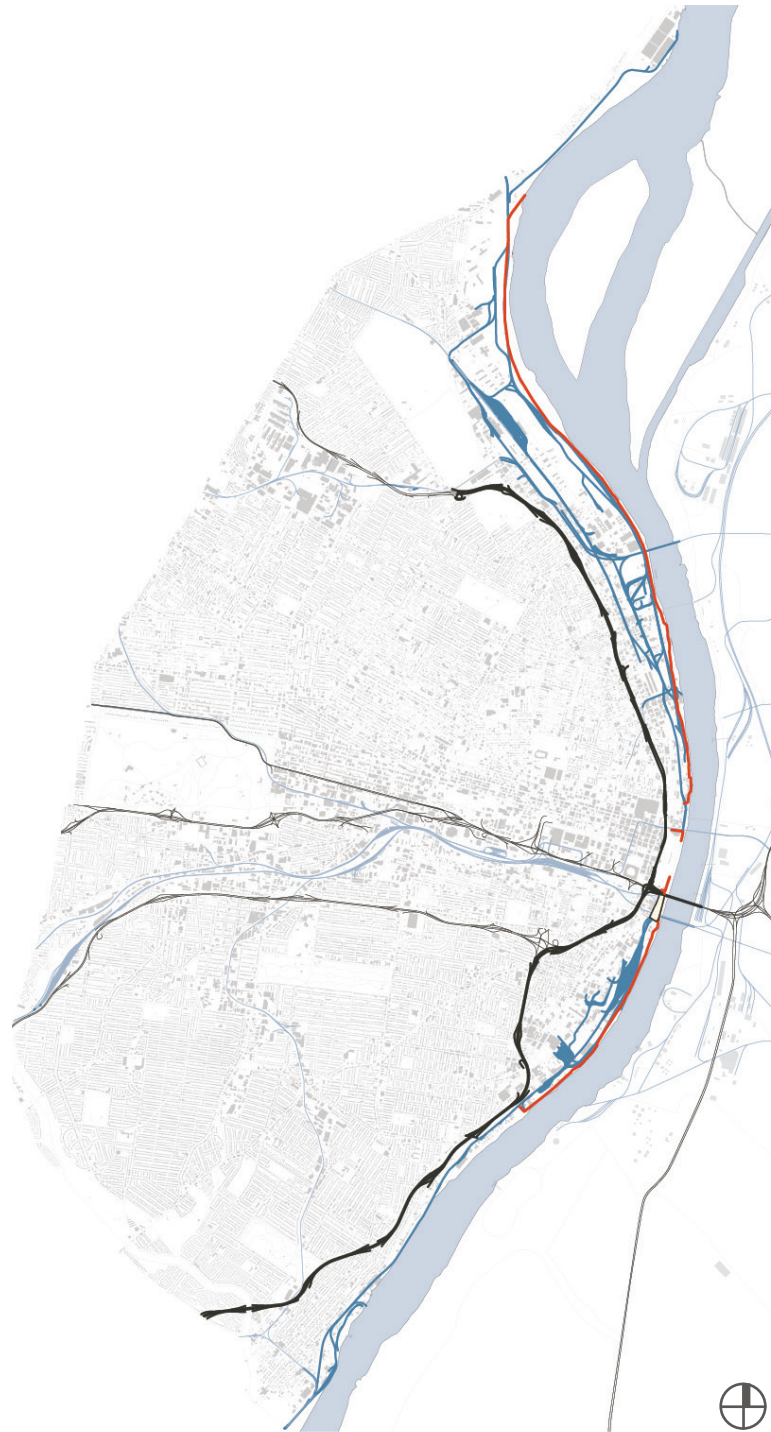


18. The Gateway Arch under construction, 1964.

The current state of the riverfront

The riverfront in St. Louis is cut off from the rest of the city by three layers of infrastructure. First, there is the interstate highway system that parallels the riverfront. A significant portion of the highway runs just a few blocks from the river's edge. Second are the multiple rail-lines and yards that run between the highway and the river's edge and service the industries along the river. And finally there is the massive flood wall that protects the city from the Mississippi.

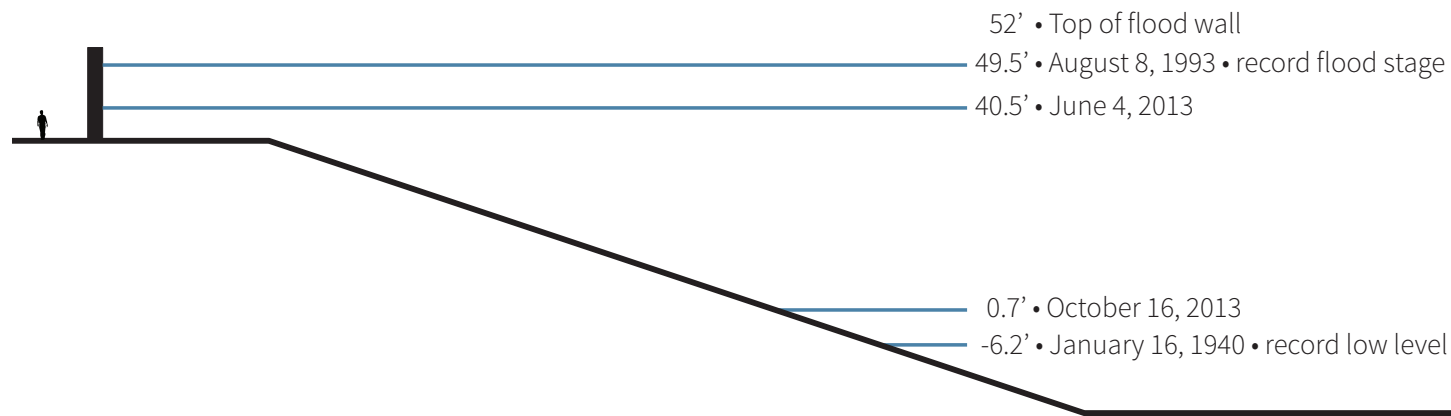
The flood wall, completed in 1964, is constructed of concrete panels 20 feet high and 3 feet thick and stretches 11 miles along the length of the riverfront. The flood wall makes a formidable but necessary barrier between the city and the Mississippi. Every year, as the winter snows melt and the spring rains arrive, the river level rises. If the river was allowed to follow its natural course, it would spread out into flood plains flanking its banks. But years and years of development along its banks and the construction of levees and flood walls have forced it into a narrower and narrower channel, and thus it has nowhere to go but up as its volume increases in the spring. The level of the river can fluctuate by as much as 40 feet each year, and the flood wall protects a significant swath of the city during those annual rises. The



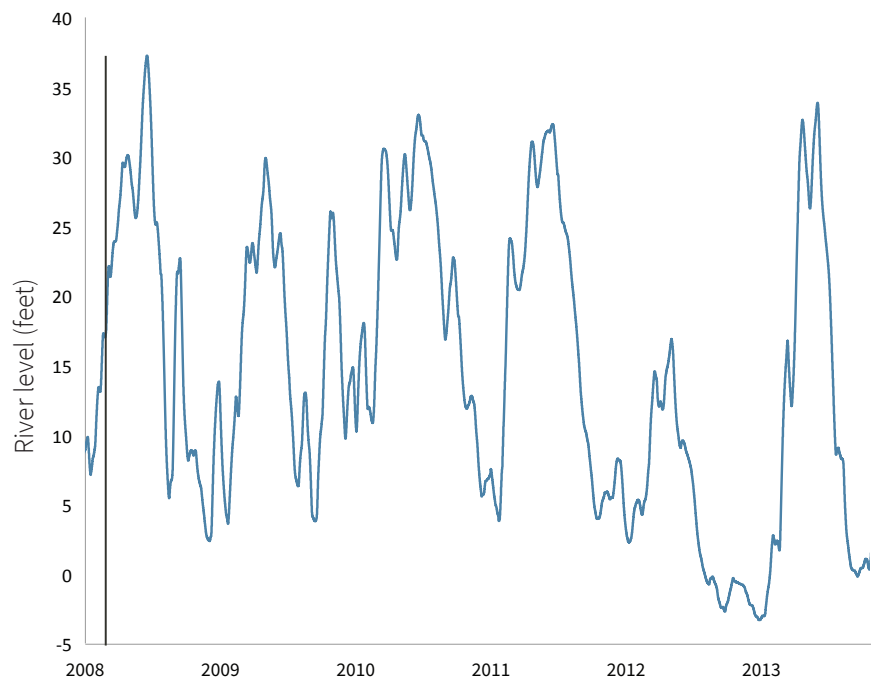
19. The highways (black), rail lines (blue), and flood wall (red) that border the St. Louis riverfront.



20. Examples of the highways, rail lines, and flood wall.



21. Extremes of the river levels.



22. Fluctuations in the river level over time.



23. The river at the flood wall during the 1993 flood.

top of the wall is at 52 feet of flood level, and in the spring and summer of 1993, the river reached its highest recorded level of 49.5 feet, nearly overtopping the wall.¹²

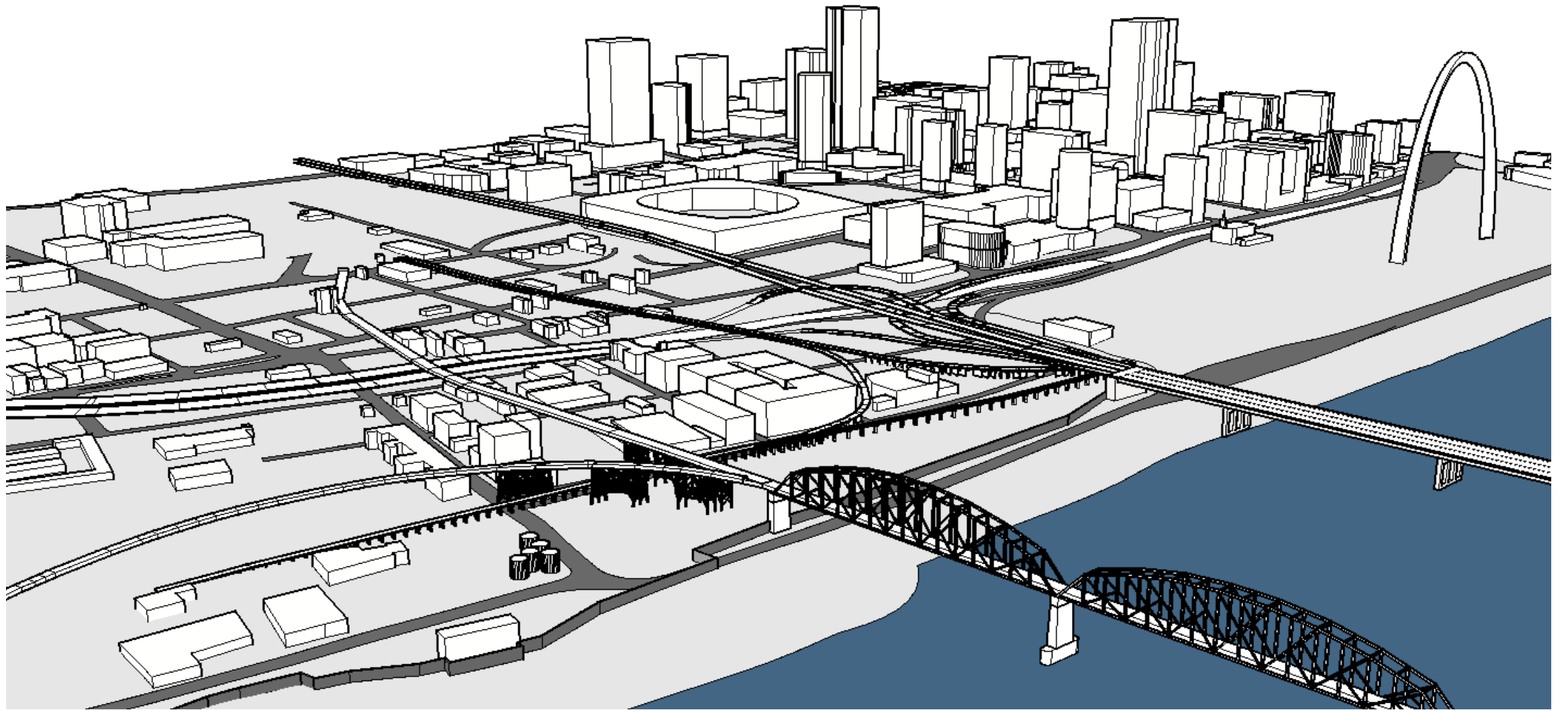
In its present state, the riverfront in St. Louis reflects three distinct conditions. First is the working industrial riverfront that is still a thriving economic engine for the city. While the clusters of barges, piles of freight, transportation infrastructure, and industrial structures in these areas of industry separate the city from the riverfront, they are also vital to its survival and vitality. Multiple active ports are scattered along the riverfront, where commodities like corn, coal, metal, gas, and wheat are loaded and unloaded. St. Louis is the second largest inland port in the United States, and the eighteenth largest overall.¹³ In 2012, over 36 million tons of freight were transferred through the city's ports.¹⁴ As Ann Breen describes: "A lack of appreciation for some waterfronts leads to overzealous cleanup and replacement programs, What appears to be messy and disorderly may be a viable...industry."¹⁵ These areas, such as the Municipal River Terminal north of downtown still support important river related activities.

12 http://www.crh.noaa.gov/lx/?n=1993_flood

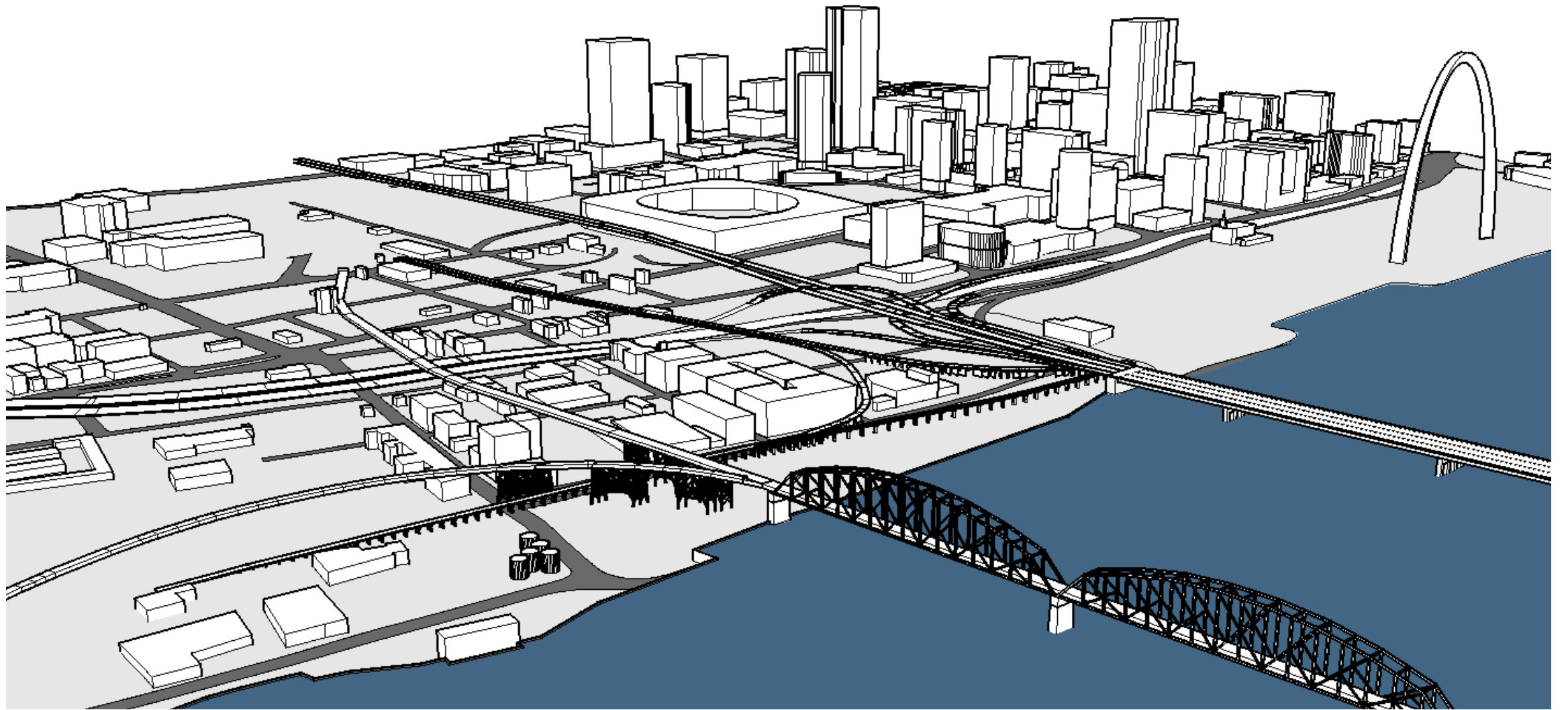
13 US Army Corps of Engineers

14 US Census Bureau

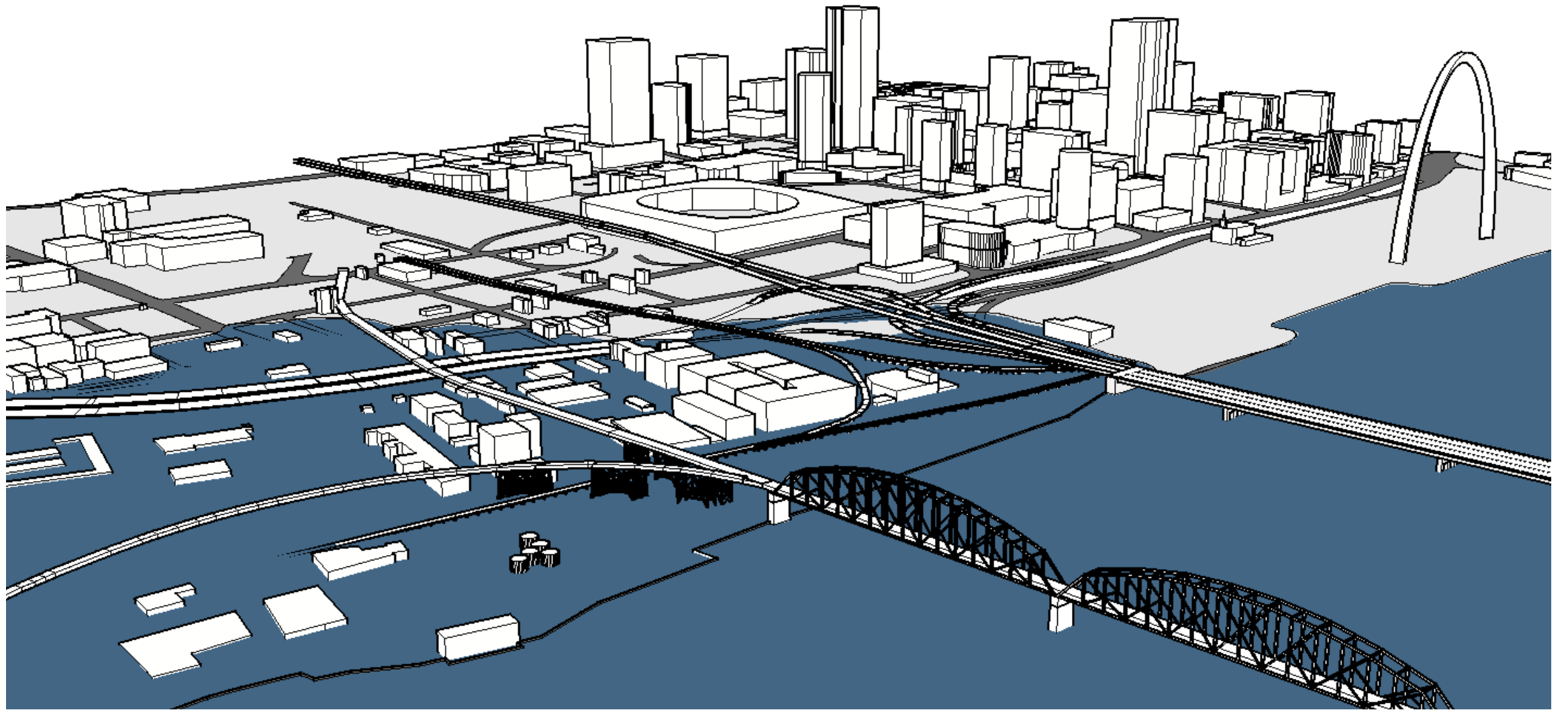
15 Breen, p. 25



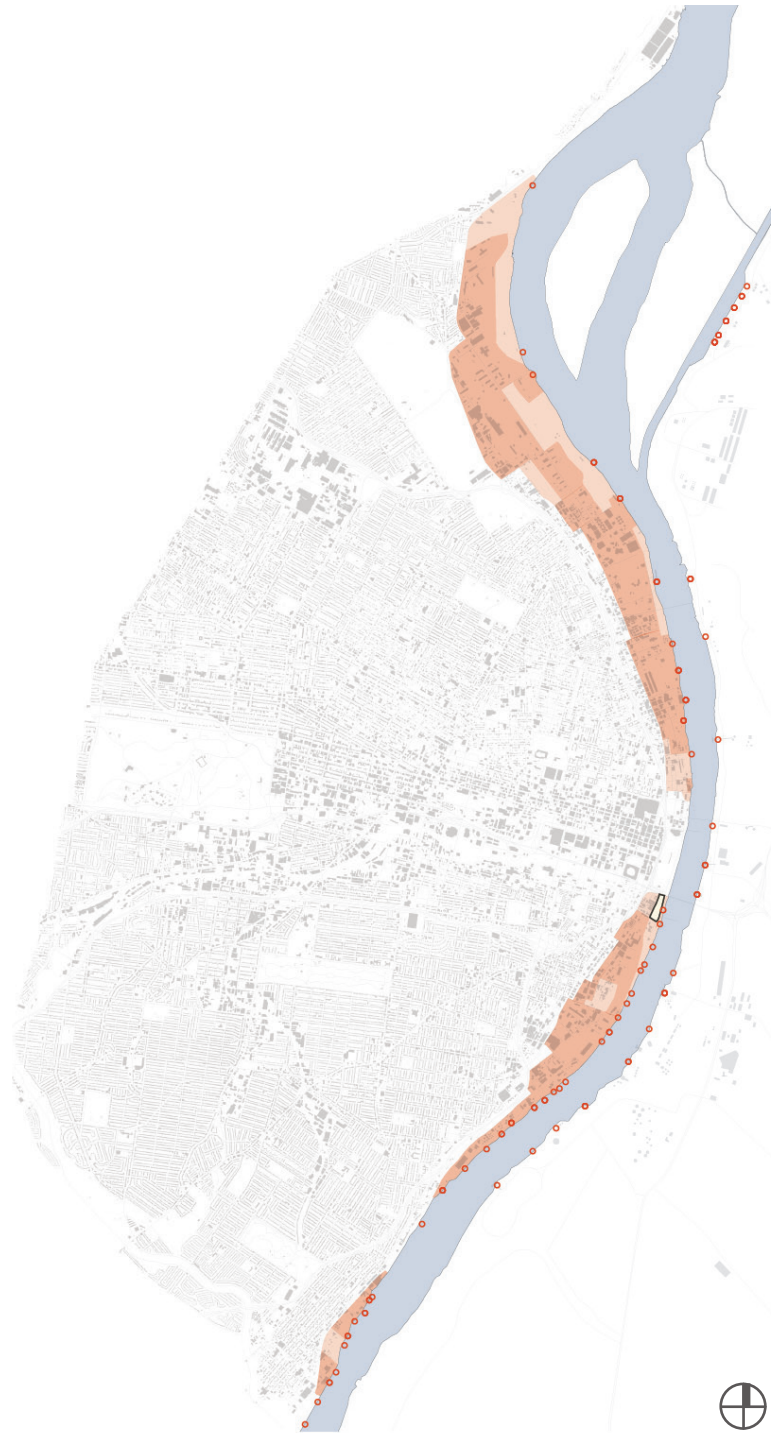
24. The riverfront at low river gauge level.



25. The riverfront at flood level, protected by the flood wall.



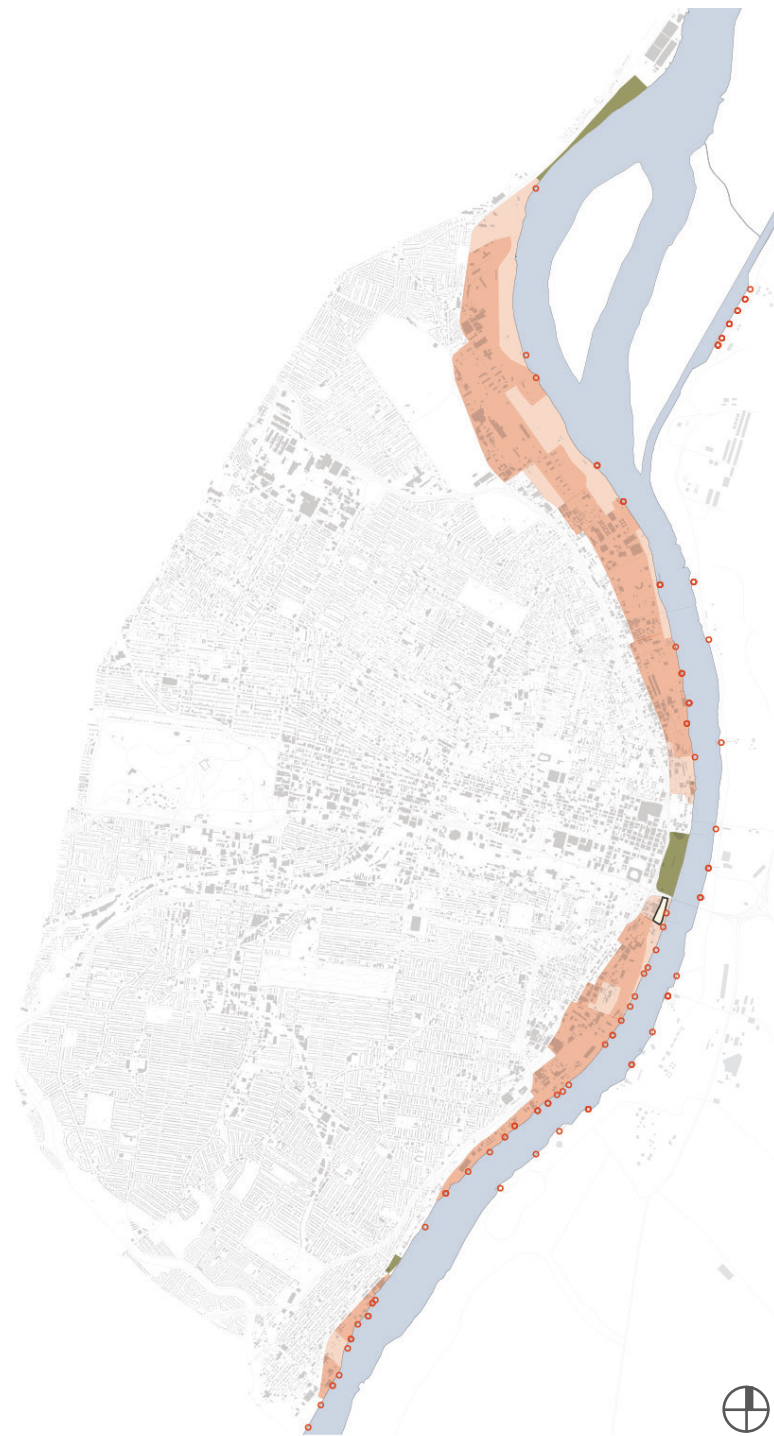
26. The riverfront if the flood wall fails during a flood.



27. Industrial areas (red), post industrial area (orange), and ports (dots) along the riverfront.



28. Examples of the industrial character of the riverfront.



The second condition found along the riverfront is the public access points to the river, which consist of three public parks. At the far north of the city is the North Riverfront Park, and at the far south is Bellerive Park. The North Riverfront Park directly borders the river, beyond the flood wall and levees that protect the city. But the park is far removed from the population center of the city. Bellerive Park is located on a bluff above the river, with rail-lines and the flood wall between it and the Mississippi. Finally, there is the monumental landscape of grounds of the Gateway Arch. While the clearing of the built industrial fabric along the river to create the site was intended to open up a connection between the city and the river, the connection is really only a visual one. Visitors to the memorial have a commanding view of the river from the base of the Arch, but one that is divorced from the original context of the riverfront. Virtually all traces of the historical riverfront have been removed, save for the cobblestones that formed the original levee. The grounds of the Arch itself are physically removed from the riverfront, sitting atop a massive berm and flood wall. Visitors do not have the opportunity to understand how the current condition of the river relates to the past, or how the city and river are still interconnected. Even the railroads

29. The three public parks along the St. Louis riverfront: North Riverfront Park, the Jefferson National Expansion Memorial, and Bellerive Park.



that dominated the riverfront for so many years are literally buried in a tunnel below the site.

Thus, public access to the river has been very limited, both in terms of physical connection and opportunities to understand the history and context of the river. However, recent years have seen the development of a public greenway along the north end of the city's riverfront, the North Riverfront Trail, which provides improved access to the river. The North Riverfront Trail follows the Mississippi River for eleven miles from downtown St. Louis, terminating at the Old Chain of Rocks Bridge, part of the legendary Route 66.¹⁶ The trail winds its way through the industrial fabric and flood control infrastructure of the north riverfront, providing visitors a novel experience of the river and its industrial character. A similar trail has been proposed that would start at the grounds of the Gateway Arch and stretch south along the river.¹⁷

The third and final condition of the riverfront, found at various points along the river's edge is the post-industrial riverfront, sites where industry has faltered and failed, or been isolated by transportation infrastructure.

¹⁶ Great Rivers Greenway; North Riverfront Trail

¹⁷ Great Rivers Greenway; Mississippi River Greenway

30. The Riverfront Trail along the north riverfront, and the proposed trail along the south riverfront.

Technological changes have redefined the relationships of transport and industry. The concurrent advancements of road, rail, and water transport, combined with the requirements of containerization, have shifted the basing points for water transport away from previously historic waterfronts. With this passing, the relationship between water and the generators of economic wealth have changed. Typically, these areas exist as spaces of urban redundancy, as left over spaces in the city.

- Richard Marshall, Waterfronts in Post Industrial Cities, p. 5



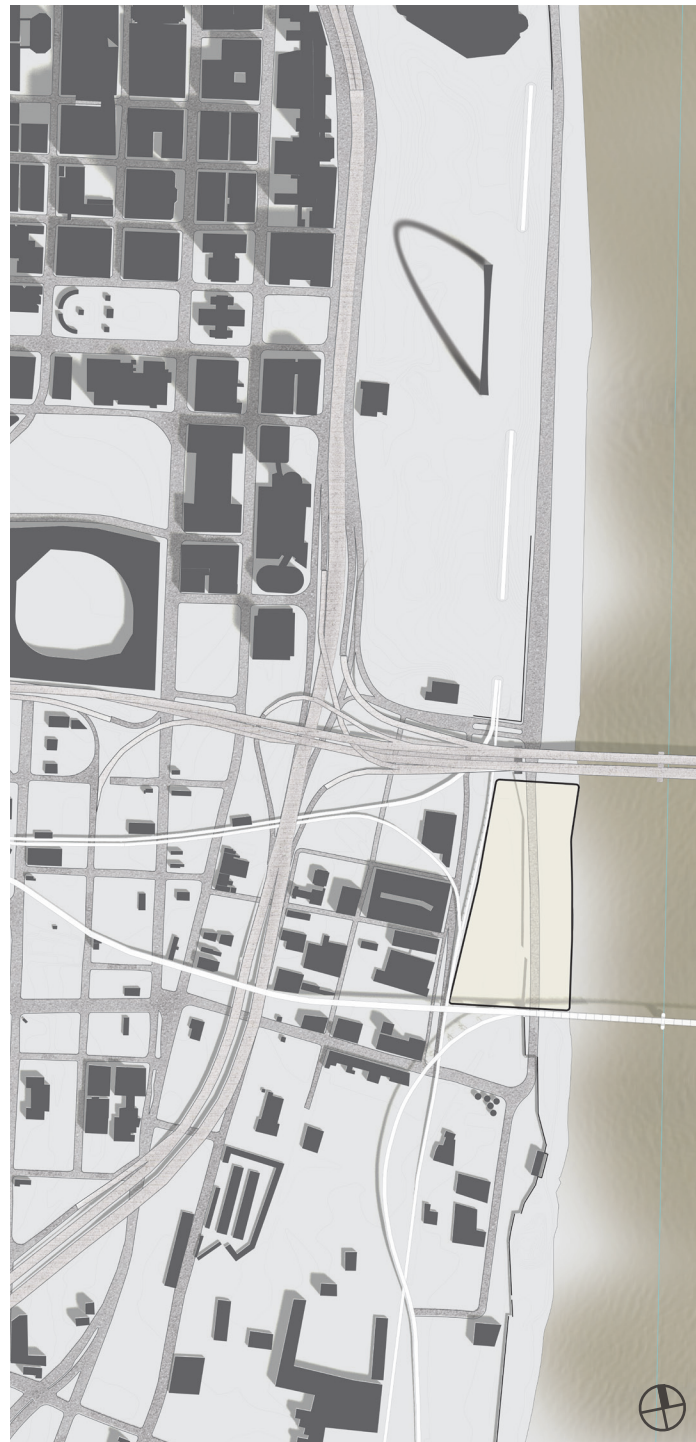
31. The Southwestern Rail Freight Depot.



32. The Laclede Power Company buildings.

Examples along the St. Louis riverfront include the abandoned St. Louis Southwestern Railroad Depot, and the Laclede Power Company buildings north of downtown, and the lands between them and the river. They are a reminder of the period of intense growth in St. Louis during the last half of the nineteenth century, to a period of time when the city truly was “The Gateway to the West”. As Richard Marshall describes, “They speak to the future by providing opportunities for cities to reconnect to their water’s edge”¹⁸. These third type of sites, made redundant by advancing technologies and changing demographics along the riverfront in St. Louis afford the best chance to reconnect the city to the river, not just physically, but psychologically as well. These vacant lands that hold traces of the past industry that thrived on them, offer an opportunity for interpretation and understanding of the city’s relationship with the river, both in the past, in the present, and into the future. Along the St. Louis riverfront, the most prominent of these post-industrial sites is the neighborhood of Chouteau’s Landing.

18 Marshall, p. 5



33. The site for the new St. Louis Transportation Museum.

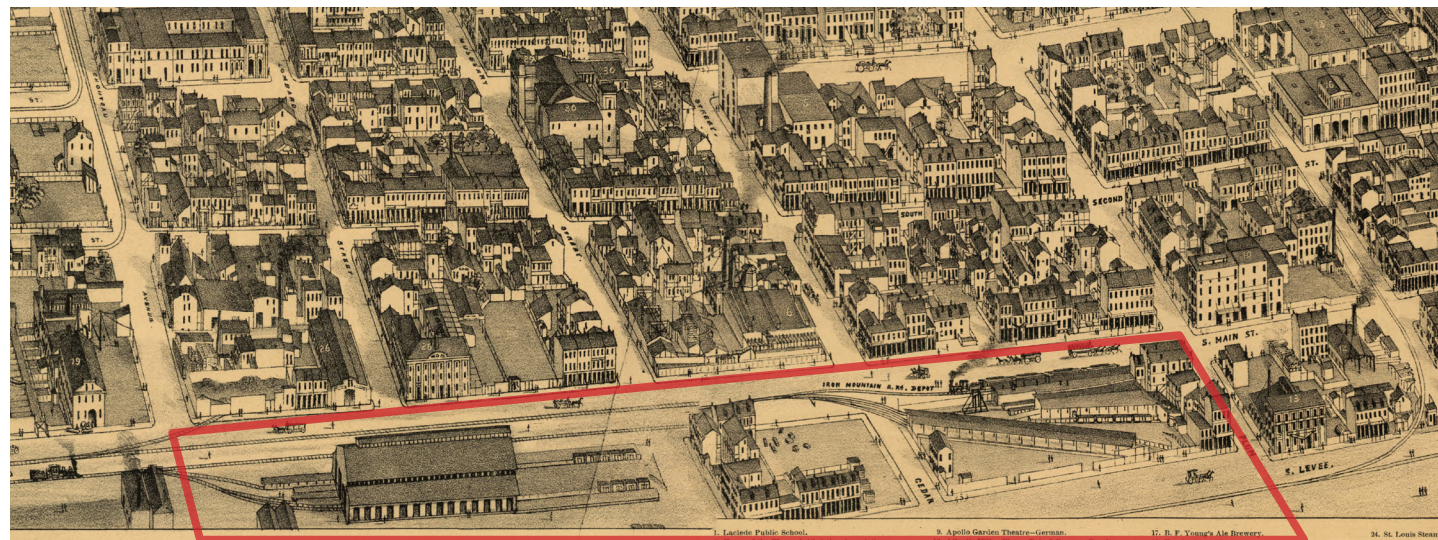


SITE ANALYSIS AND DESIGN METHODOLOGIES

Located directly south of the grounds of the St. Louis Arch, Chouteau's Landing occupies an area about 5 blocks square, bounded to the north by the Poplar Street Bridge, the main automobile bridge over the Mississippi leading into St. Louis, to the east by the Mississippi, and to the west by Interstate 55/70. Within this small neighborhood, it is possible to trace all the forces that have shaped the riverfront of St. Louis. There is the river itself, and the commerce it carries, that drove the growth of the city. The neighborhood is protected from the Mississippi when it overflows its banks by a massive flood wall, but that infrastructure simultaneously isolates it from the river. Chouteau's Landing contains of the last remnants of the built environment of the original warehouse and industrial district that grew up along the banks of the river. Also present on the site is the infrastructure of the rail lines that grew up to supplant the river trade. And finally, there is the most recent addition of the highway networks that severed the neighborhood and the river from the city. Each one of these elements has left its marks on Chouteau's Landing, and all continue to affect it today.



34. The project site in 1848.



35. View of the site from 1875 Compton and Dry map of the city.

Site History

Chouteau's Landing was named after Auguste Chouteau, one of the founders of St. Louis. Included as part of the original street grid laid out when the city was founded, the neighborhood followed a trajectory of development and growth similar that of the rest of the riverfront. As the river trade to and from the city intensified during the middle of the nineteenth century, the area transitioned from a primarily residential neighborhood to one of mixed uses, with an emphasis on river related commerce and industry.¹⁹ In the mid nineteenth century, riverboats began to dock along the levee bordering the neighborhood after a massive engineering program by the Army Corps of Engineers to clear away Duncan's Island, a sandbar directly in front of the neighborhood. An 1875 view of the city by Richard J. Compton and Camille Dry reveals that in 1875, the neighborhood was filled with a variety of small commercial buildings, light industrial buildings, and residences.²⁰ With the construction of several large mills along the levee, the area became a milling center in the city, the mills benefitting from their proximity to a spur of the St. Louis, Iron Mountain &

19 Landmarks Association of St. Louis, p. 5

20 Compton and Dry

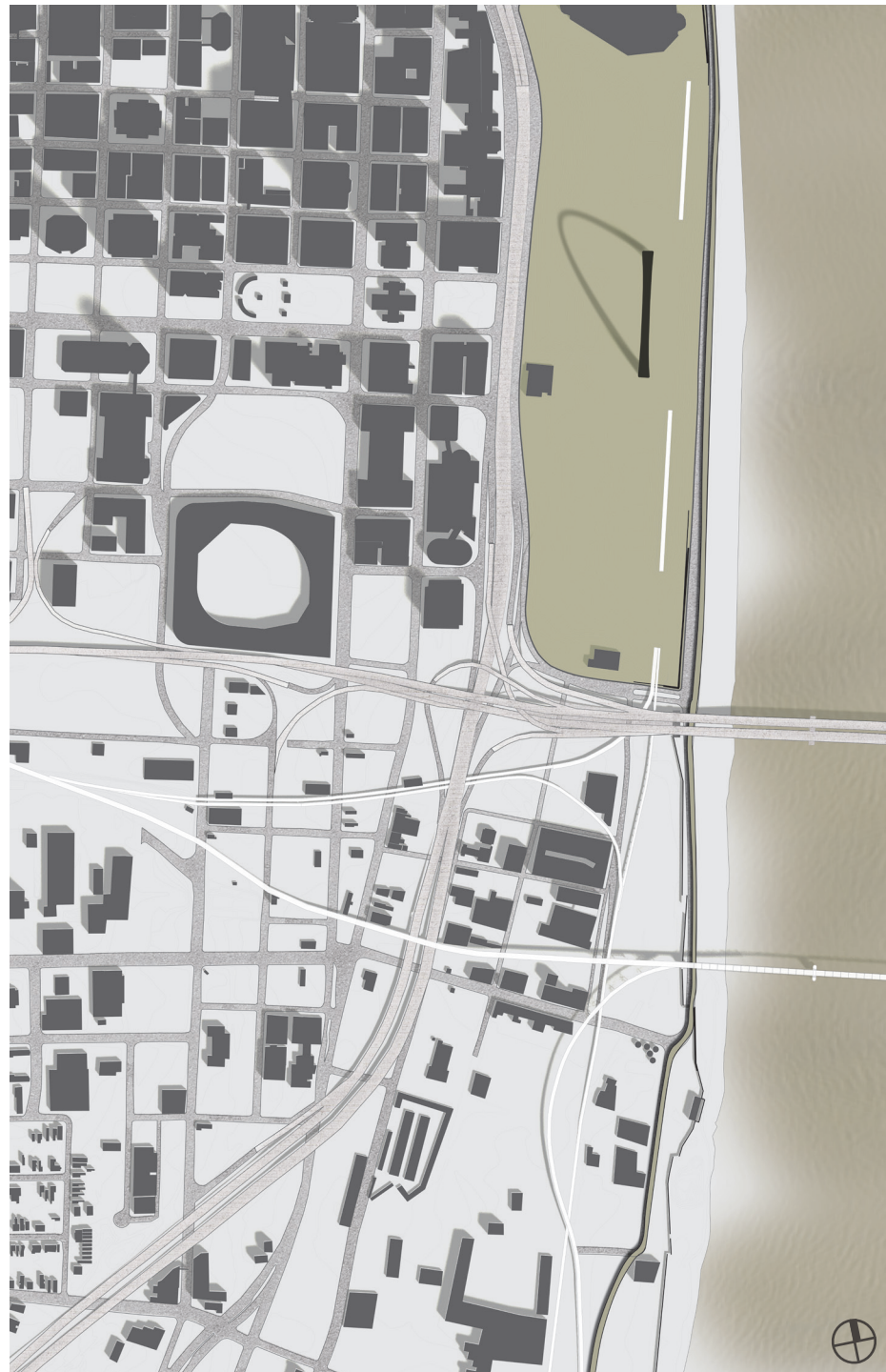
Southern Railway, and to the still vital riverboat traffic.²¹ The dominance of the railroads in the area became increasingly evident, with spurs of rail lines running on elevated tracks directly into some buildings.²² By the turn of the century, like most of the riverfront, the area had taken on a more purely industrial character with larger warehouses and factories taking over entire city blocks, with most of the residential fabric gone.²³

In 1904, the Crunden-Martin Manufacturing Company established itself in Chouteau's Landing. Over the next sixteen years the company would rapidly expand, eventually creating a complex of seven large factory buildings, taking up entire city blocks. These large brick buildings still survive today, representing some of the few extant examples of the industrial fabric that occupied the St. Louis riverfront before the construction of the Gateway Arch. For the better part of a century, Crunden-Martin manufactured a wide variety of woodenware and metal products, employing up to 500 people. Since 1990 when the company shuttered its doors and filed for bankruptcy, the structures, along with the rest of the neighborhood have for the most part languished, largely abandoned, and undergone a slow process of decay.

21 Landmarks Association of St. Louis, p. 4
22 Landmarks Association of St. Louis, p. 5
23 Landmarks Association of St. Louis, p. 5-6



36. The site, south of the Jefferson National Expansion Memorial, and the downtown core.



37. The grounds of the Arch, and the public greenway that will pass by the site.

Current conditions

Chouteau's Landing is like countless other post-industrial riverfront sites found throughout the world. As Richard Marshall describes,

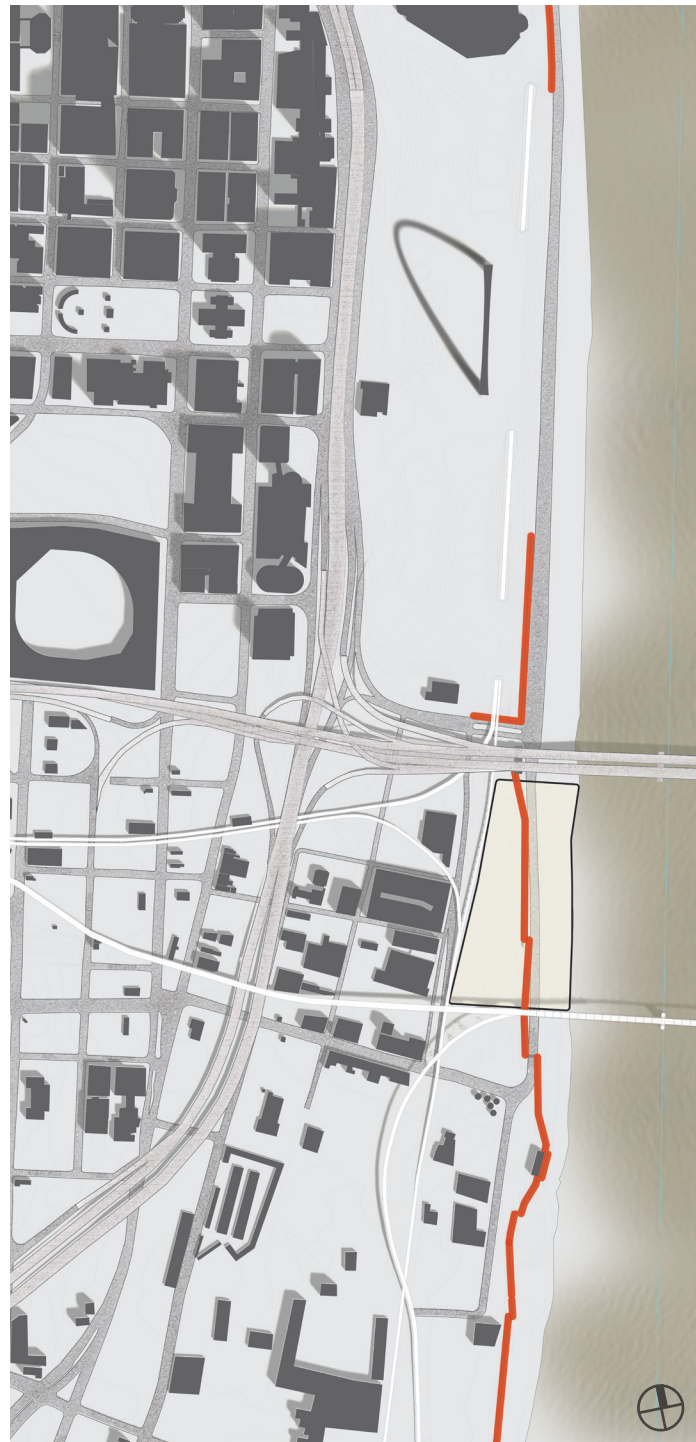
They speak to a past based in industrial production, to a time of tremendous growth and expansion, to social and economic structures that no longer exist...Through historical circumstance, these sites are immediately adjacent to centers of older cities and, typically, are separated from the physical, cultural, and psychological connection that exist in every city.²⁴

But at the same time this neighborhood is unique in the potential it hold for reimagining the image of the city. Located just south of what has become the symbol of the city to the wider world, the site is positioned on the front façade of St. Louis, and could help transform that face St. Louis presents to the world. But before this can happen, the isolation of the site must be addressed.

The park and path

The proposed greenway running south from the Jefferson National Expansion Memorial would pass directly by the site on its way along the riverfront. The path could serve as an ideal means of connecting the memorial grounds and the site, pulling visitors to the riverfront and the Gateway

24 Marshall, Richard, p. 5



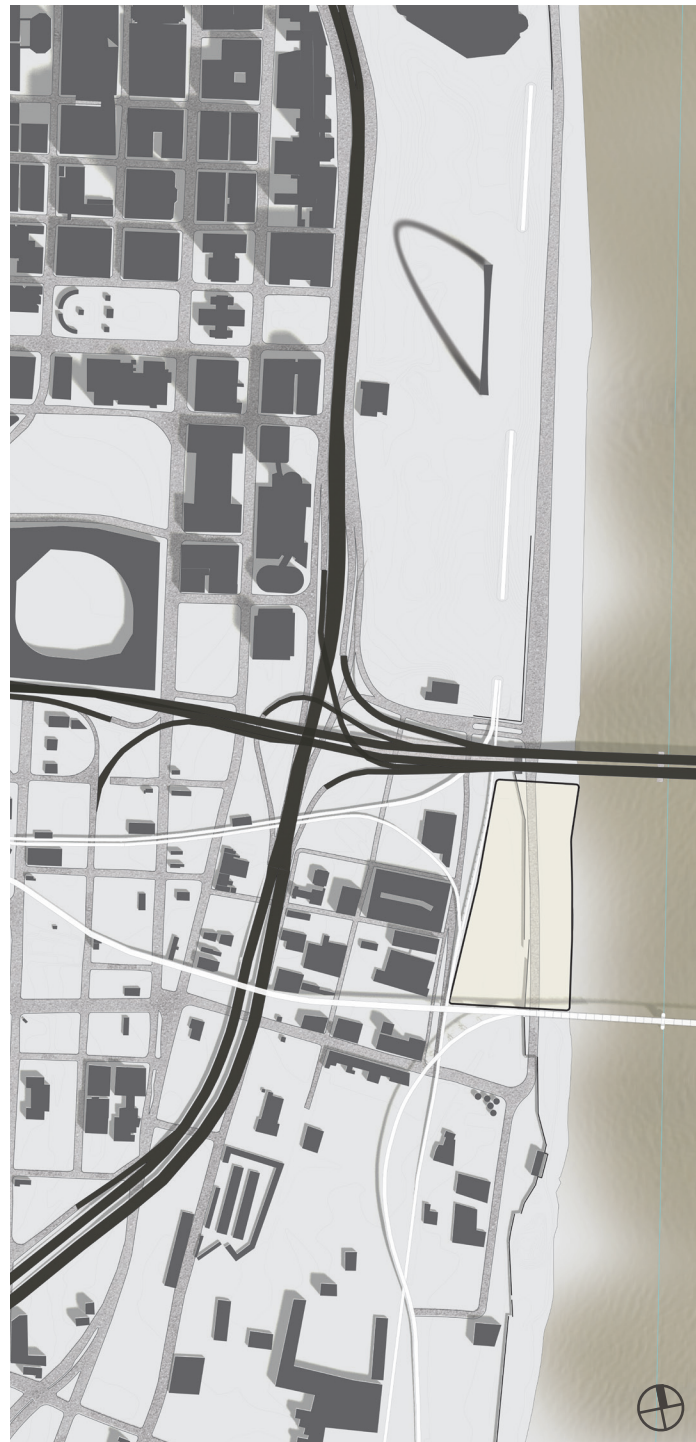
38. The St. Louis flood wall on the project site.



Arch grounds past the barrier of the interstate highway that separates them. However, the proper routing of the path is key to a proper connection. If the path follows the riverfront along the river-side of the flood wall, it will be cut off from the site, and pedestrians on the path will not have an easy way of reaching the site. But if the path runs at grade on the city side of the flood wall, pedestrians will continue to be cut off from the river.

The flood wall

The flood wall forms a harsh edge condition on the site, forming a barrier both physical and visual between the site and the river. There have been informal attempts in the past to mediate the harsh impact of the wall on the site and the riverfront. Beginning in 1998, the annual “Paint St. Louis” event opened up a two mile stretch of the flood wall to local artists to paint in whatever way they wanted to. Hundreds of artists created murals stretching along the flood wall each year for several years before the project was ended by the city in the early 2000s. However, in October 2012, the project has had a small revival when a small group of artists was given permission to paint a small section of the wall at the



39. Interstate highways bordering the site to the north and east.

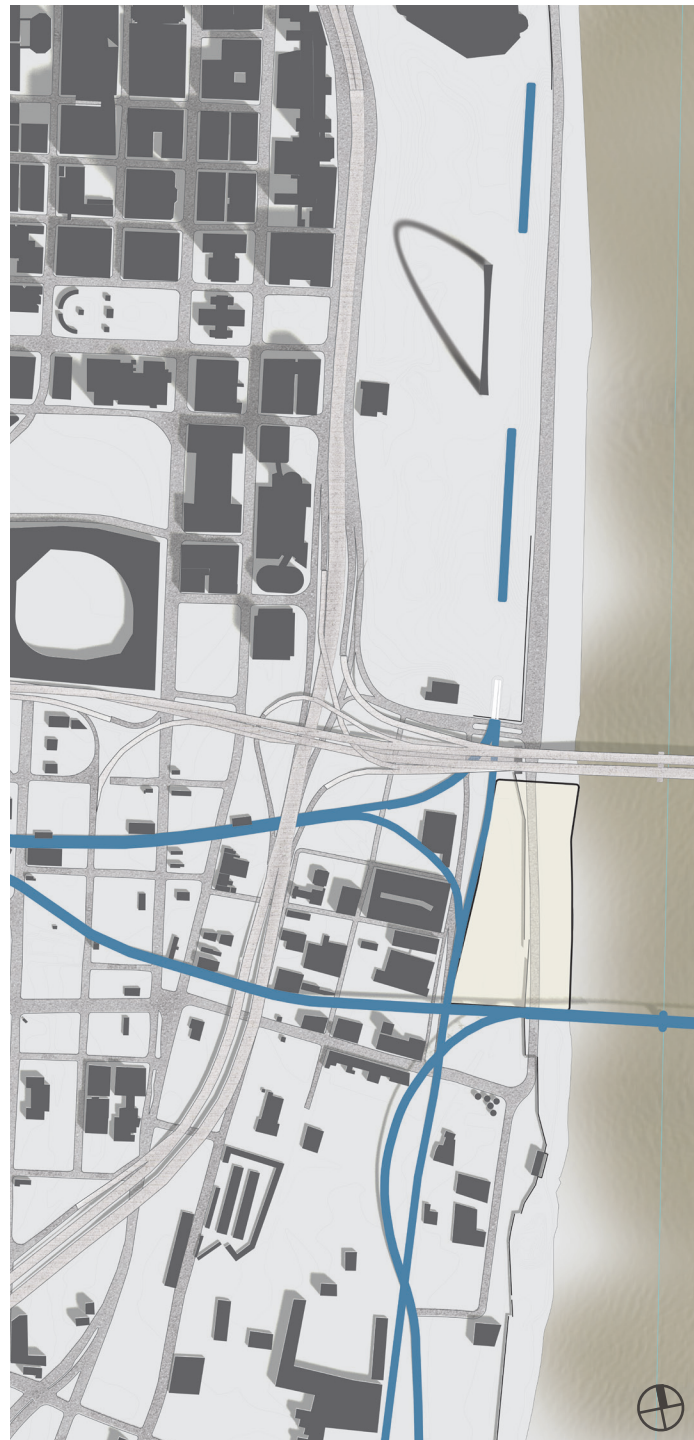


south end of Chouteau's Landing.²⁵ But in order to really reconnect the neighborhood to the river, a more spatial gesture is necessary, to connect across or through or over the wall without diminishing its essential utilitarian role.

The highways

The elevated interstate highways along the northern and western borders of the site cut it off from the rest of the city. The neighborhood has become an island of the original built fabric of the city's waterfront, as the surrounding neighborhoods were razed and replaced in the 1950s and 1960s by the highways, by the Arch grounds, and in some cases, simply parking lots. While the highways form a barrier between the site and the rest of the city, they also in a way raise the prominence of the site on the riverfront. Thousands of motorists traveling to and from St. Louis on the Poplar Street Bridge north of the site have a clear view onto the site.

25 Crone, p. 1



40. The rail-lines that cross over and through the site.



The rails and bridges

Chouteau's Landing is bracketed by the approaches to two bridges over the Mississippi. To the north, separating the neighborhood from the grounds of the Arch is the Poplar Street Bridge. Completed in 1967, the bridge is the major automobile bridge crossing the river at St. Louis, carrying the combined traffic of three interstate highways, 55, 70, and 64. This long-deck girder bridge is squat and massive, utilitarian in the extreme. The bridge forms a hard edge on the northern border of the site, hindering communication between the site and the Arch grounds. However, two roads crossing under the bridge hold the possibility of making a stronger connection. To the south is the MacArthur Bridge. Completed in 1924, it is the main rail bridge crossing the river at downtown St. Louis. The Eads Bridge to the north now only carries light rail and pedestrians over the river, leaving the MacArthur Bridge to shoulder the load of all freight and passenger rail crossing the river from the downtown area. The rusting lattice of the steel truss construction of the MacArthur Bridge contrasts strongly with the brick of the Crunden-Martin buildings and the massive concrete bulk of the flood wall. The bridge has a clearance of over a hundred



41. Elevated railway bordering the site to the west.



42. Elevated highways bordering Chouteau's Landing to the north.



43. Looking south along the flood wall towards the MacArthur Bridge.

feet above the river, hovering above Chouteau's Landing, imposing and yet delicate.

Several additional elevated rail lines intersect Chouteau's Landing. Crossing under the MacArthur and Poplar Street bridges, running parallel to the riverfront, they are remnants of the raised lines that ran the length of the levee in the beginning of the twentieth century. These rail-lines are all still functional, carrying traffic to and from large rail yards just to the south and west of Chouteau's Landing. The Iron Mountain Rail depot was removed years ago, and has been replaced by a huge parking lot, bracketed by the flood wall to the east, and elevated rail-lines to the west. It is on this spot that I propose to locate the new St. Louis Transportation Museum.



44. View of the project site from the south.



45. View of the project site from the north.



46. The the river side of the flood wall bordering the site.



47. The MacArthur Bridge bordering the site to the south.



Program: A New Transportation Museum for St. Louis

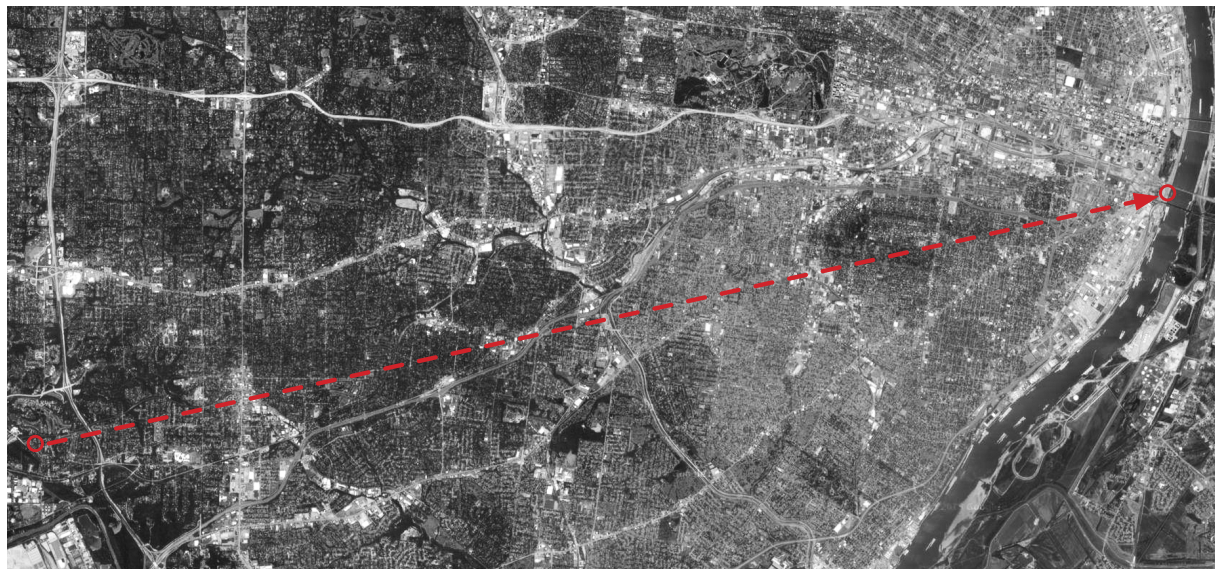
Because of its key historical position on the riverfront, this site at Chouteau's Landing offers a unique “opportunity to interpret, portray, and personify [St. Louis’s] history, both to itself and to the visiting public.”²⁶ But the site offers an opportunity for visitors to experience and connect with the riverfront not just as it was, but also as it exists today. A museum of transportation will leverage off of the existing fabric of the site, and allow visitors, both local and from elsewhere, to connect the past to the present. For the local population, it will foster a sense of ownership of the riverfront, by breaking down the barriers that have isolated the riverfront for so long, and exposing them to its current

26 Breen, p. 27

48. Some of the artifacts in the collections of the existing St. Louis Transportation Museum.



49. Aerial view of the current St. Louis Transportation Museum.



50. The current location of the Museum, relocated to its new downtown riverfront site.

condition. Kevin Walsh describes the potential for museums to foster an understanding of place:

The locality within which people spend the majority of their working and social lives is a place which, in the majority of cases, can be potentially knowable, and understood as a node in a network of relationships that cross both time and space. Places can therefore be perceived as localities which are at the same time both acting on, and being acted upon by, other places. It is therefore important that people realize that their places are important... However, for all of this to be appreciated, it is necessary that people come to terms with the processes that have affected, and continue to affect, their place.²⁷

By putting visitors into physical contact with the contents of the museum's collections, and by placing them in novel physical orientations to them, and by allowing them gain a new and novel perspective on the river, the museum can help them internalize the history of the city and the importance of the river and transportation to its development, and make it part of their own personal identity.

The existing museum of transportation

The current Museum of Transportation in St. Louis is located on a 29-acre site approximately 16 miles southwest of city's downtown.²⁸ Founded in 1944, the museum has been operated since 1979 by the St. Louis County Parks

²⁷ Walsh, p. 149

²⁸ Transportation Museum Association website



51. The Mill City Museum in Minneapolis.



52. The downtown Minneapolis Mill District.

Department. While the museum draws over 50,000 school children each year, it is not ideally located to attract many visitors from outside the St. Louis area. Moving the museum to Chouteau's Landing would allow it to capture a portion of the 2.5 million annual visitors to the Arch grounds allowing it to reach a much wider audience.

Case Study: Mill Ruins Park and Mill City Museum, Minneapolis, Minnesota

The Mill City Museum and Mill Ruins Park in Minneapolis, like the new St. Louis Transportation Museum, is located on a post-industrial riverfront site. The museum seeks to not just preserve Minneapolis's past industrial heritage, but to activate the city's working past, to bring its visitors into direct contact with that past.

At the turn of the century, Minneapolis had established itself as the "Flour Milling Capital of the World", with twenty some odd mills drawing power from the St. Anthony Falls on the Mississippi River. The decline of the milling industry had the same affect on the Minneapolis waterfront as the decline of the riverboat trade had on St. Louis. The area around the falls, which was directly adjacent to the heart of downtown Minneapolis, was blighted and nearly empty by the 1950s.



53. The Mill City Museum and the Mill Ruins Park.



54. The Mill Ruins Park at night.

The initial response from the city leaders was to level many of the abandoned mills and the waterpower infrastructure that supported them. The result is that today, very few residents of Minneapolis St. Paul have any idea about the extraordinary working landscape that occupied their city's river banks at the beginning of the twentieth century.²⁹

The Mill Ruins Park exposes the foundations of several of the mills that occupied the banks of the Mississippi, and allows visitors to explore and experience the complex network of industrial infrastructure that supported the mills. Included in the design of the park is the reconstruction of one of the hydropower tunnels that were used to power the machinery of the mills. Visitors to the site can viscerally experience the once tamed power of the water used to run the machinery in the mills. The park also educated visitors about the larger picture of the grain processing industry, and how that industry helped build the city of Minneapolis.³⁰

Built in 1878, the Washburn A mill was the largest and most technologically advanced mill of its time, but was abandoned following the decline of the milling industry. After the mill was left a smoldering shell after a fire nearly

29 Martin, p. 36

30 Martin, p. 41-42.



55. The Riverside Transportation Museum and the surrounding context on the River Clyde.

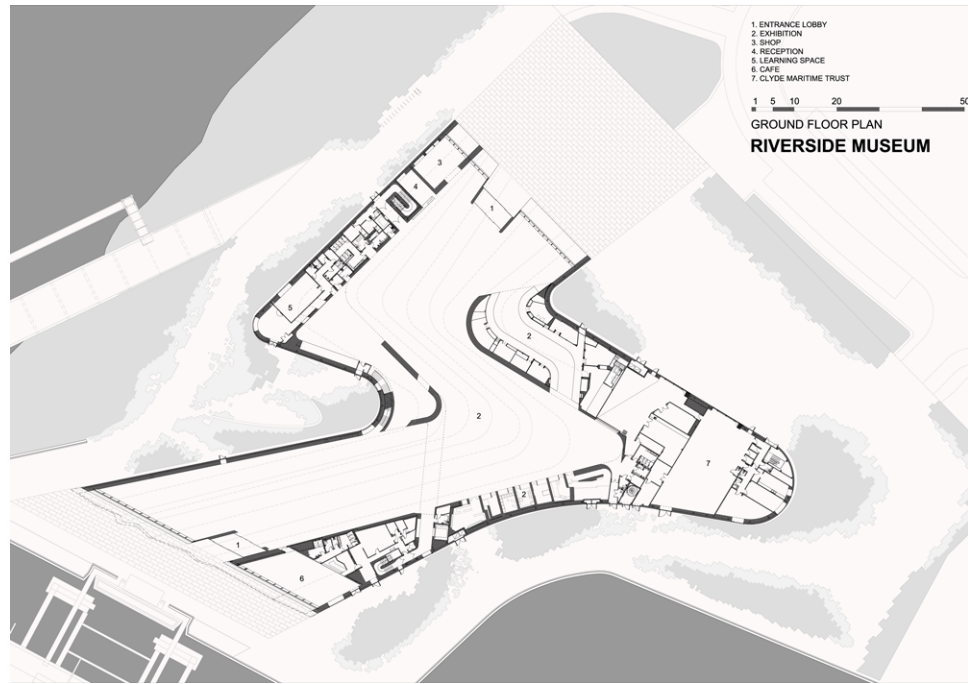
destroyed it in 1991, the Minneapolis Historical Society proposed adaptively re-using the ruin as a museum dedicated to the milling industry.

Construction on the museum began in 2001 and was completed in 2004. The architects for the project, Meyer, Scherer & Rockcastle (MS&R), “brought together the existing structure, milling artifacts, and new materials to create a building that, in itself, acts as a multilayered exhibition about the city’s history.”³¹ The museum brings the industry that supported and grew the town to life by putting the machinery that powered it on display and allowing visitors to see it in action.

Case Study: Riverside Museum, Glasgow

Like the Mill City Museum and Mill Ruins Park, the Riverside Museum in Glasgow, Scotland was part of a larger riverfront redevelopment plan. In middle of the nineteenth century, the River Clyde in Glasgow grew to become one of the shipbuilding centers of Europe. It held this position until after World War II, when other nations began to out-compete Scotland. By the 1970s, the industry was a shell of its former self, and was eventually nationalized by the British

31 LeFevre, p. 123



56. First floor and site plan for the Glasgow Riverside Museum.



57. The opaqueness of the museum to the site.

government. The area languished through the next several decades. In 2001, the Clyde Waterfront Regeneration Plan was developed to transform a 20km stretch of the Clyde starting from the center of Glasgow.³² The Regeneration Plan has developed over 200 projects on both sides of the Clyde. The area has become dotted with projects from leading architects, including Norman Foster's 'Armadillo' concert hall, David Chipperfield's BBC Scotland Headquarters, Rem Koolhaas's new Maggie's Centre, and Stephen Holl's Glasgow School of Art.³³

The Riverside Museum sits on a former shipyard at the intersection of the River Clyde and the River Kelvin. The museum features over 3000 different items on display, many of them vehicles that were manufactured in Glasgow.³⁴ The museum's management stated that they wanted the Riverside to avoid the tendency of transportation museums to be "inward-looking", and to focus too much on the technical aspects of the pieces of transportation technology that they were putting on display. Rather, they wanted the focus to be "on personal stories attached to how the public

32 Clyde Waterfront Foundation website

33 Olcayto, p. 27

34 Ramaswamy



58. Transportation artifacts on display in odd conditions.



59. The museum opening up to the waterfront.

uses and experiences transport”³⁵ This idea of personalizing the experience of the museum is a very powerful one. Visitors will inevitably internalize the ideas put forward by a museum if they are presented in a fashion that connects to their own lives.

These high-minded ideas of openness and connection fall apart some when put up against the architecture of the museum, which seems very inward facing and homogenous on the interior. The curving zinc standing seam façade of the building does not respond to its surroundings, and in essence turns a blank face to them. Rowan Moore in the Observer notes that “To be inward-looking might be necessary, given the wilderness in which the museum stands. At a distance is a huddle of credit-crunched flats, and between them and the museum some scrub awaiting transformation into a shopping development. In the other direction, across more empty space, are the Foster and Chipperfield buildings.”³⁶ But that is an oddly pessimistic view, and one that seems at odds with the siting of a transportation museum within an environment that was, and still is to some degree, an industrial area that was dedicated to the production of transportation technology. It

35 Stephens, p. 24

36 Moore

seems the building should want to direct its gaze outwards, rather than inwards. And while the swooping forms of the building is indicative of motion and the flows of the rivers upon which it sits, the form reads more like a 3d rendering scaled up and dropped down on the site. There is no real opportunity for connection between the environment and the building, and thus the items inside are cut off, stuck in the non-space of the building's interior.

Users

There are two primary user groups for the museum. One is the local population of St. Louis. The museum functions as a tool to help them gain a better appreciation of the riverfront and the transportation networks that built up around it, how they influenced the growth and development of the city, and how they continue to affect it today. The second group is the visitors to the Jefferson National Expansion Memorial. While some of these visitors are St. Louisans, many are from outside the St. Louis metropolitan area. The Arch attracts almost 2.5 million visitors per year, and this number is expected to increase as the improvements of the City|Arch|River development are implemented.

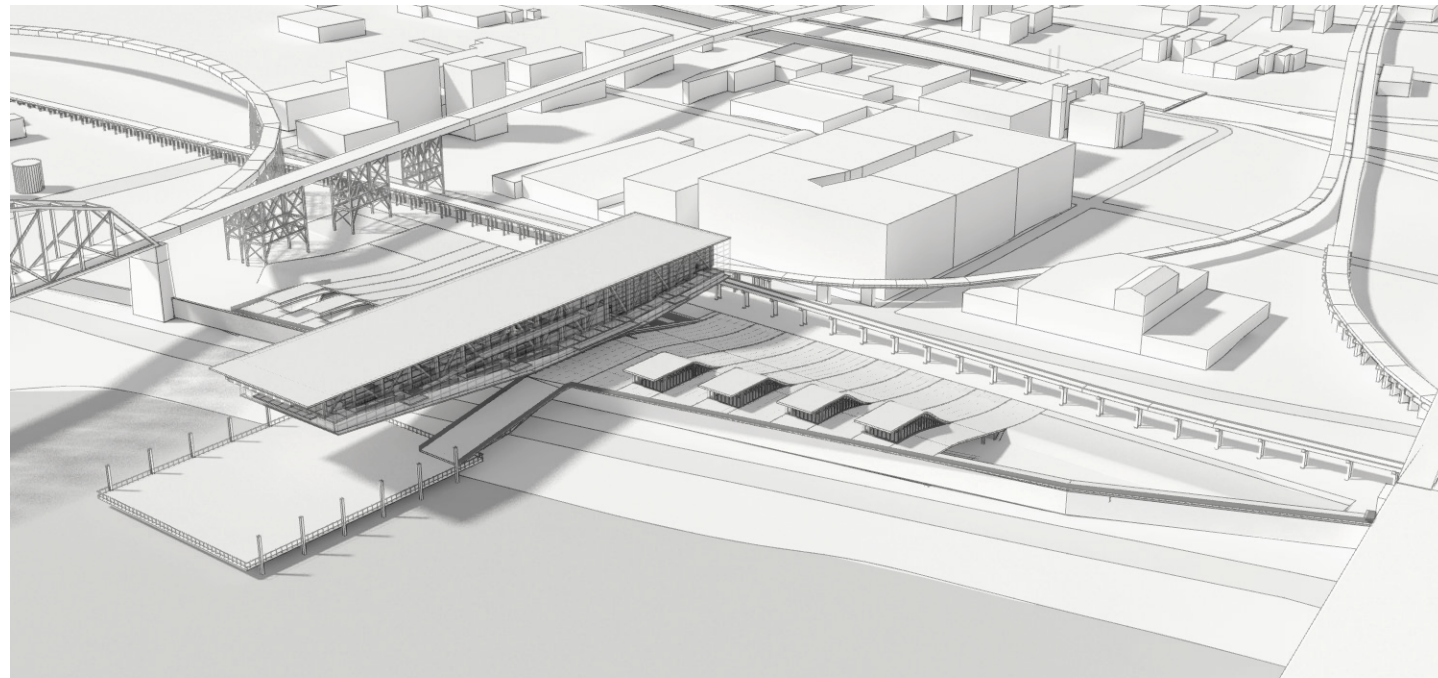


60. A rendering of the grounds of the Jefferson National Expansion Memorial by Michael Van Valkenburgh Architects showing the large number of visitors expected to visit the park after it is rebuilt.

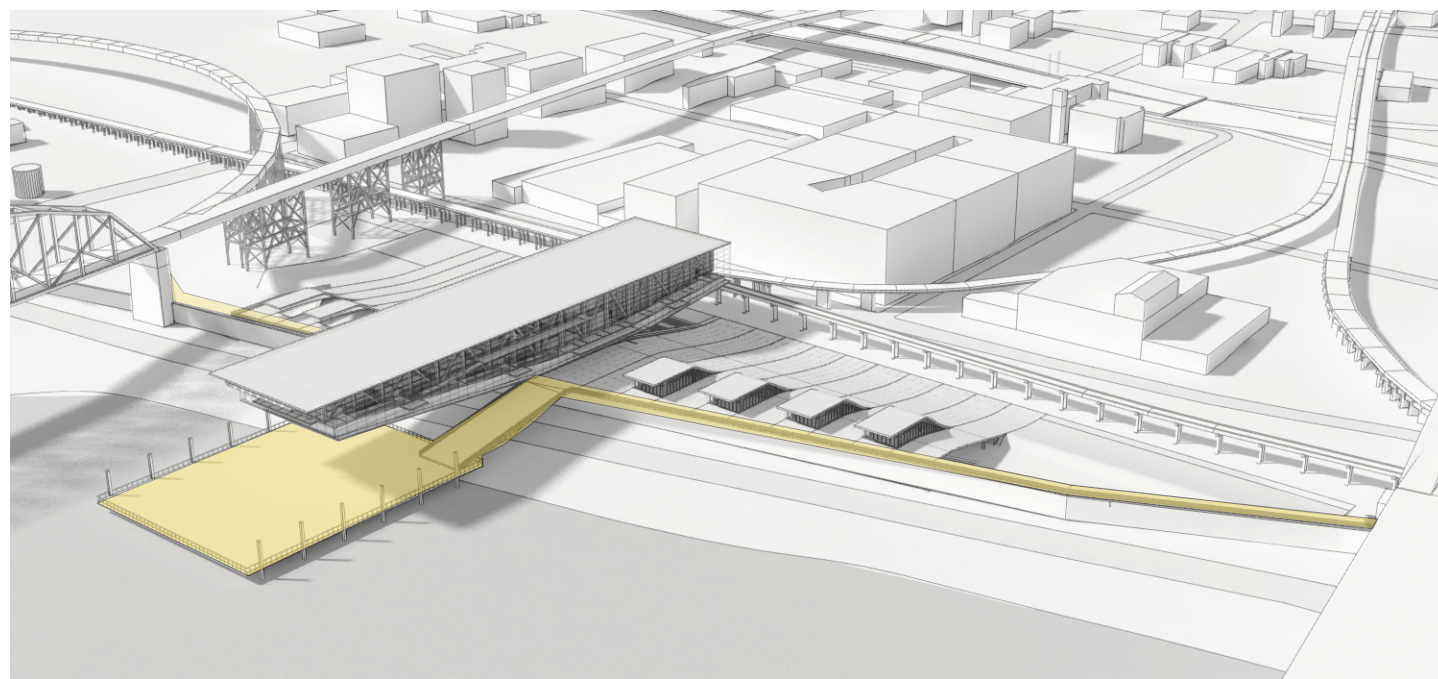
DESIGN RESPONSE: A BRIDGE BETWEEN A CITY AND A RIVER

The Museum consists of three basic elements that attempt to foster a stronger connection between the city, the site, and the river, and seek to mitigate the isolating affects of the layers of infrastructure on the site.

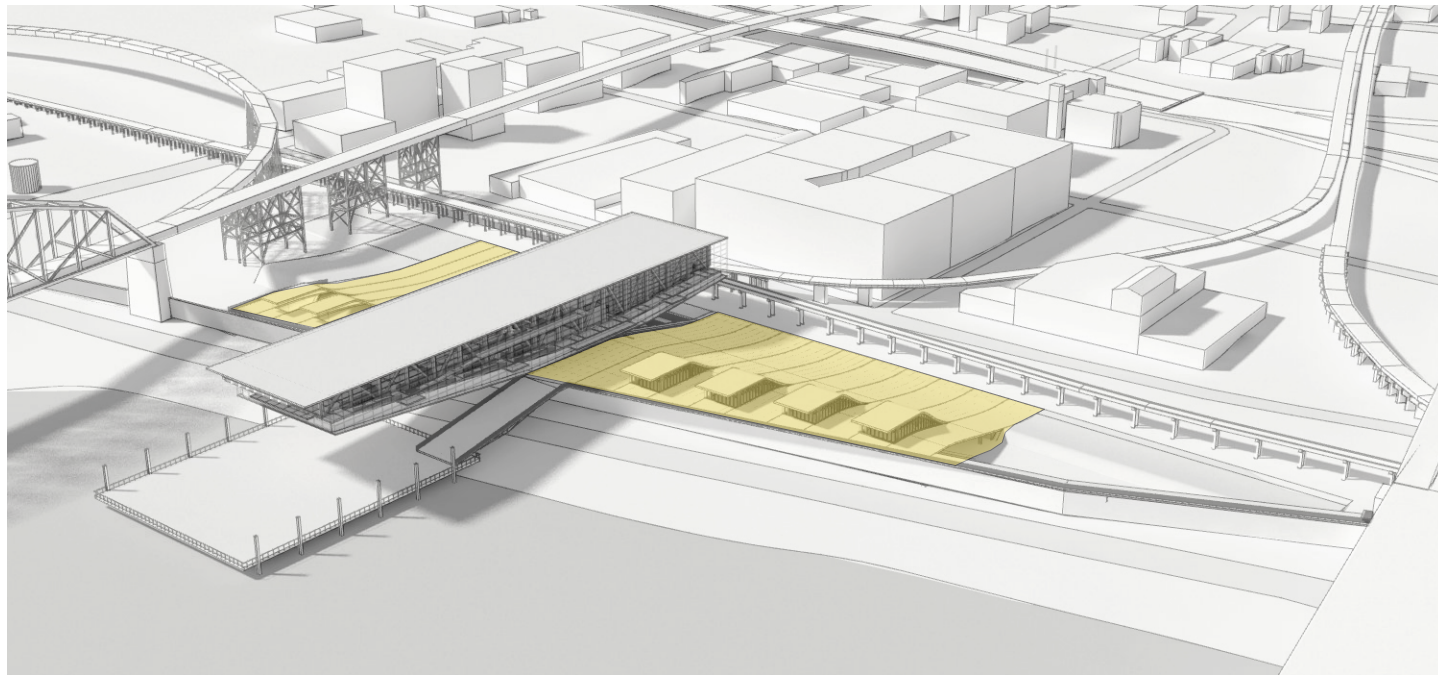
The first element is a promenade and pier that provide public access to the river. The promenade and pier form the start of the proposed greenway/bike path that will travel south along the riverfront from the Jefferson National Expansion Memorial.



61. The St. Louis Museum of Transport, reaching over and beyond the flood wall to the Mississippi.



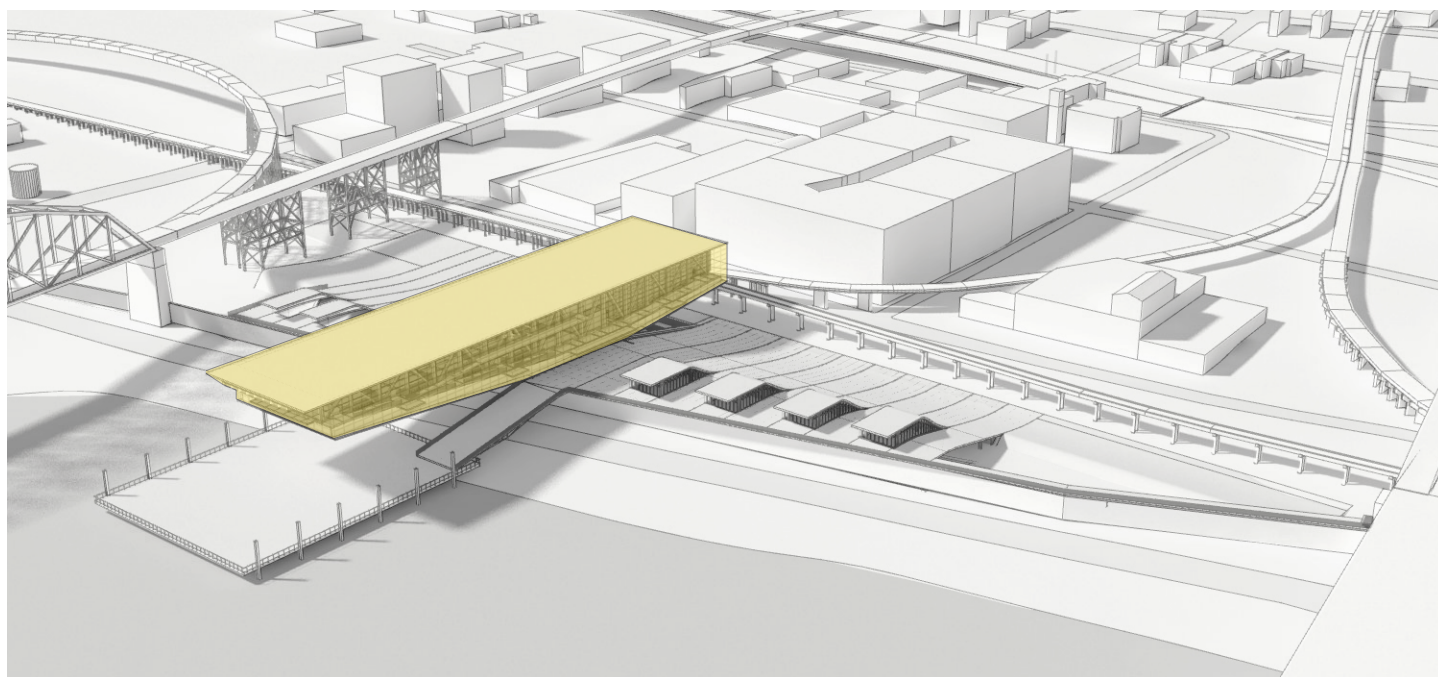
62. Design element 1: The public promenade on top of the flood wall, and the public pier on the river.



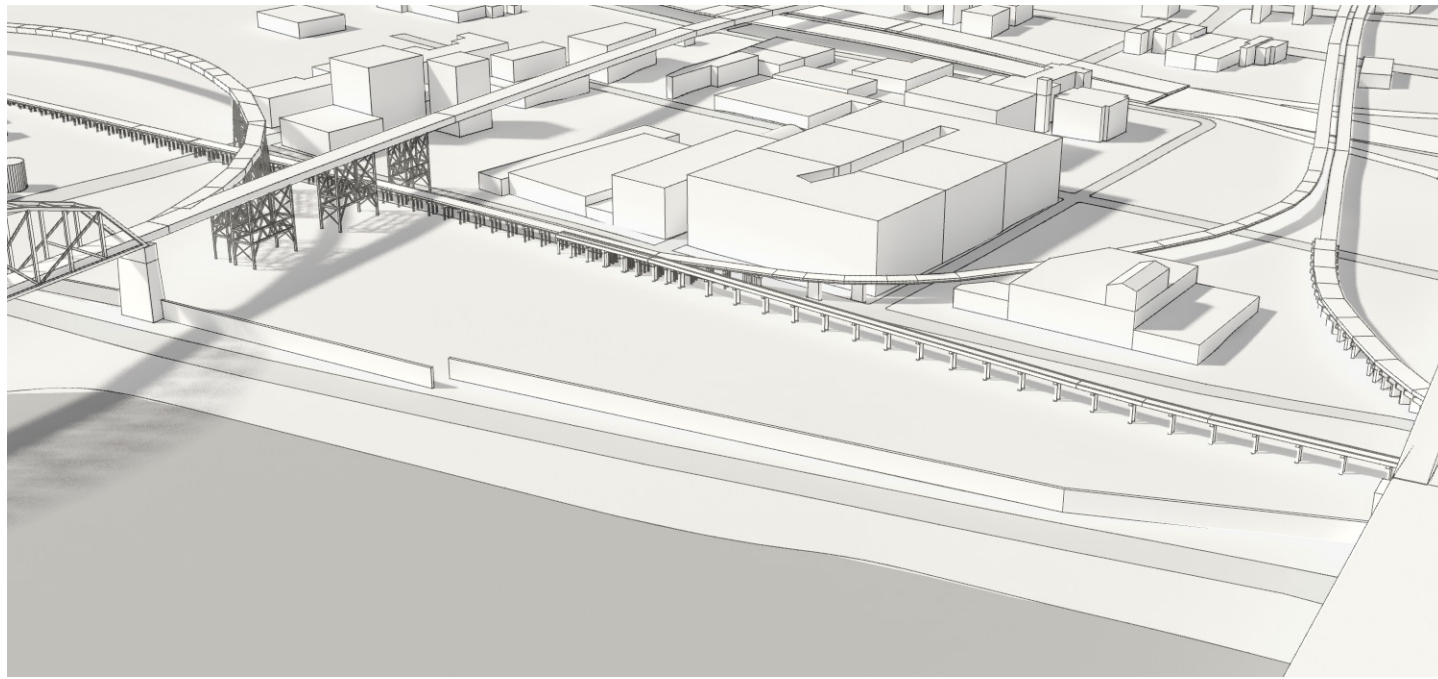
63. Design element 2: The a landscape raising up and over the flood wall.

The second element is a landform as trained which rises up behind the flood wall, and houses an exhibition space for large artifacts in the museum's collections.

The final element is the gallery bridge, which reaches up and over the food wall and floats above the river. The gallery bridge houses exhibition space for smaller artifacts, and exhibits related to the history and life of the river.

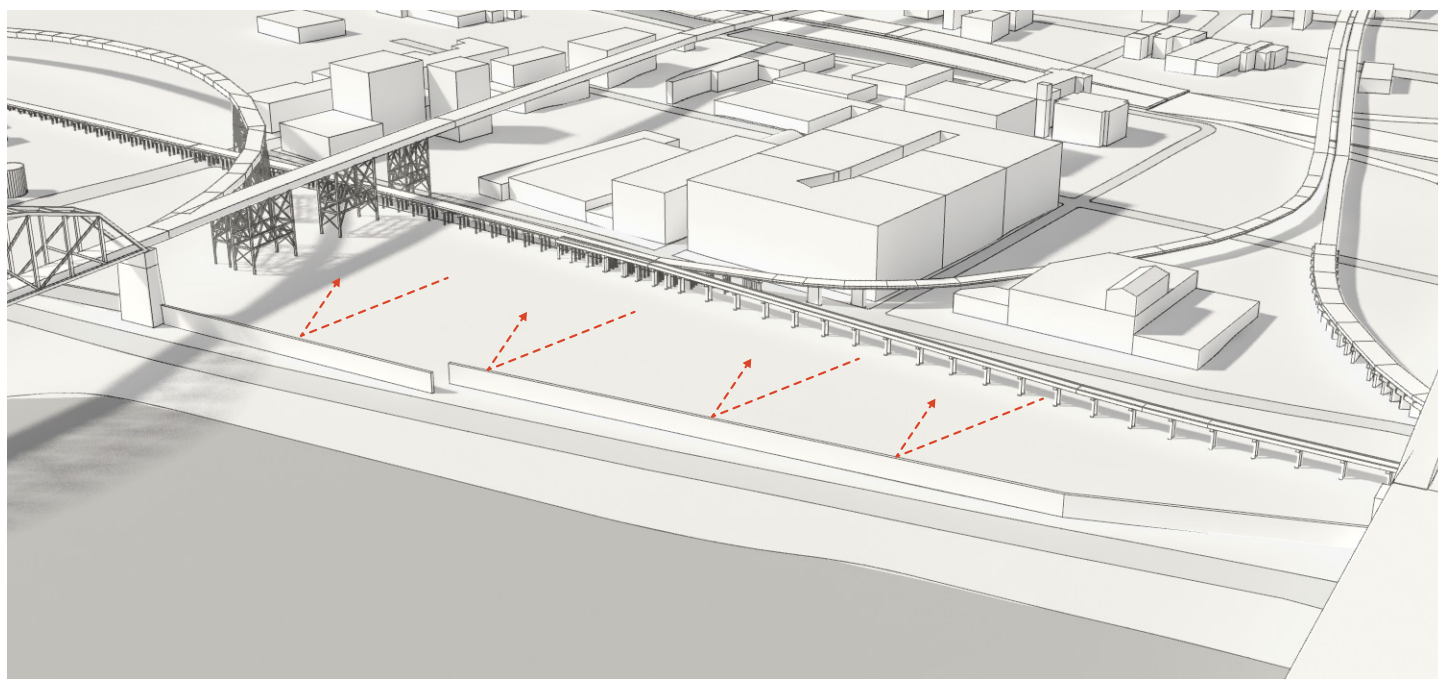


64. Design element 3: An exhibition hall as bridge, reaching out to the river.

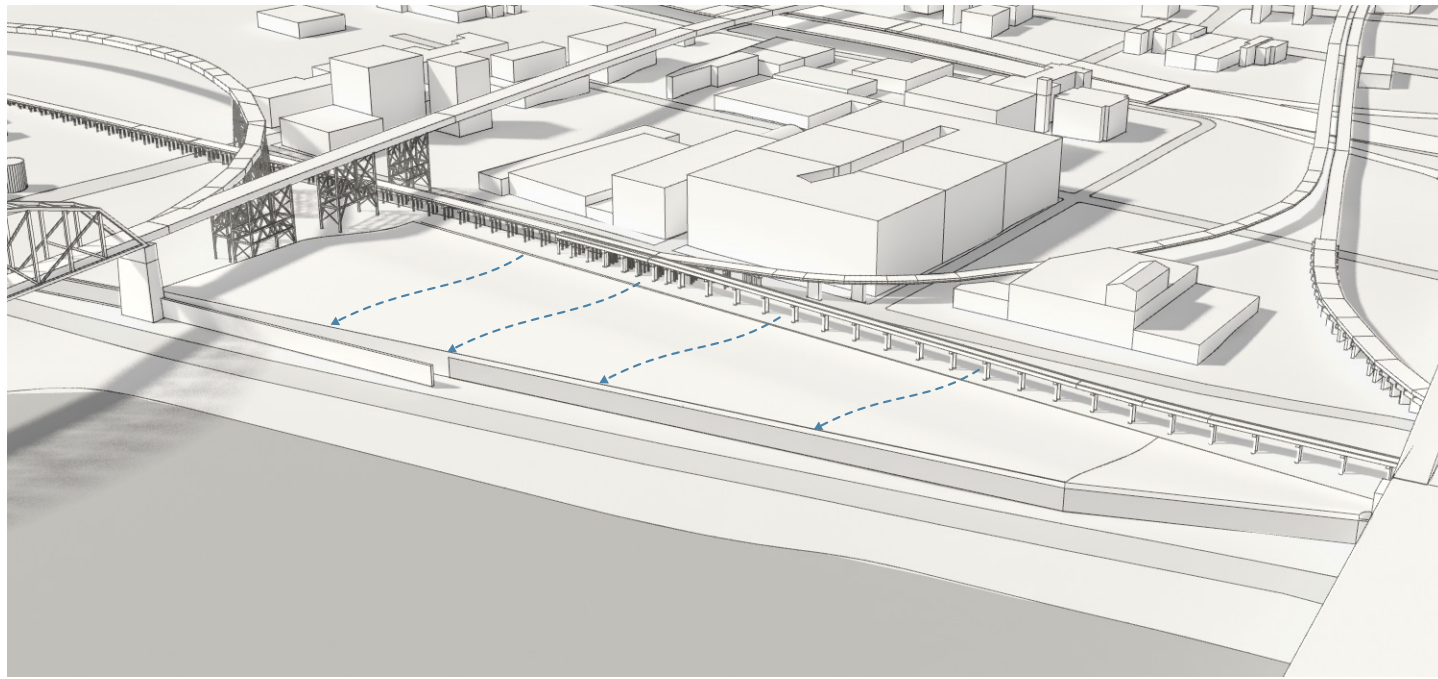


The most significant barrier between the city and the river on the site is the flood wall. It blocks physical and visual access to the river, isolating the site from the Mississippi. But removing the wall or even creating multiple breaks along its length is not an option, as it is necessary to protect the city during the spring floods.

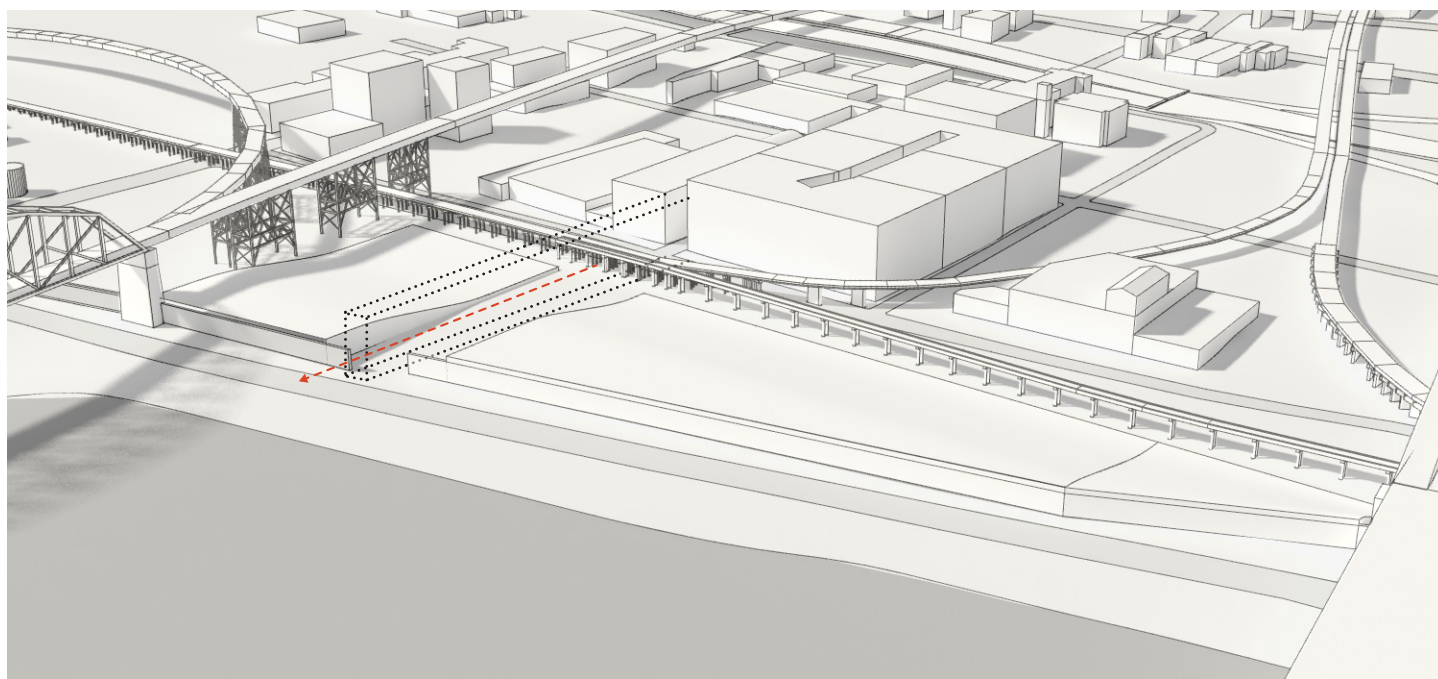
65. The site for the museum, surrounded by transportation and flood control infrastructure.



66. The flood wall cuts off the site and the city from the river, both physically and visually.



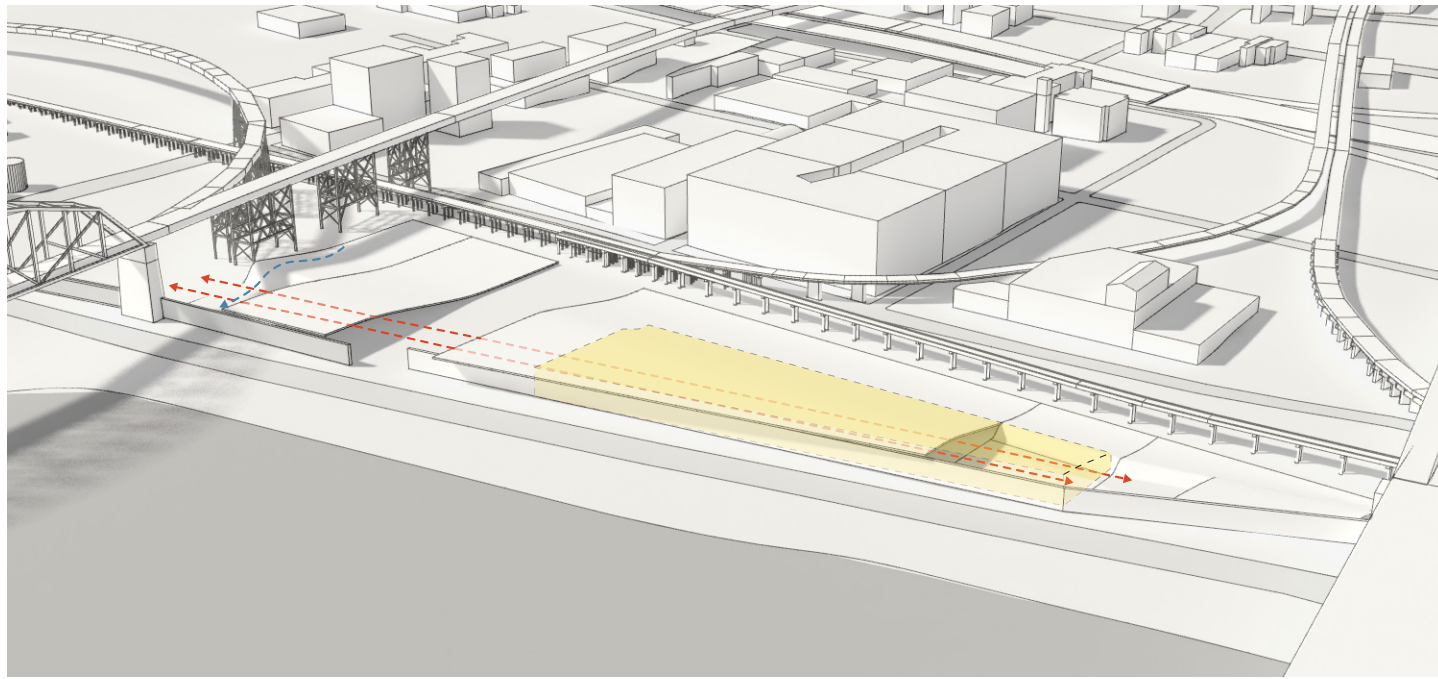
67. A new landscape on the site, reaching up and over the flood wall, mitigating its affect as a barrier.



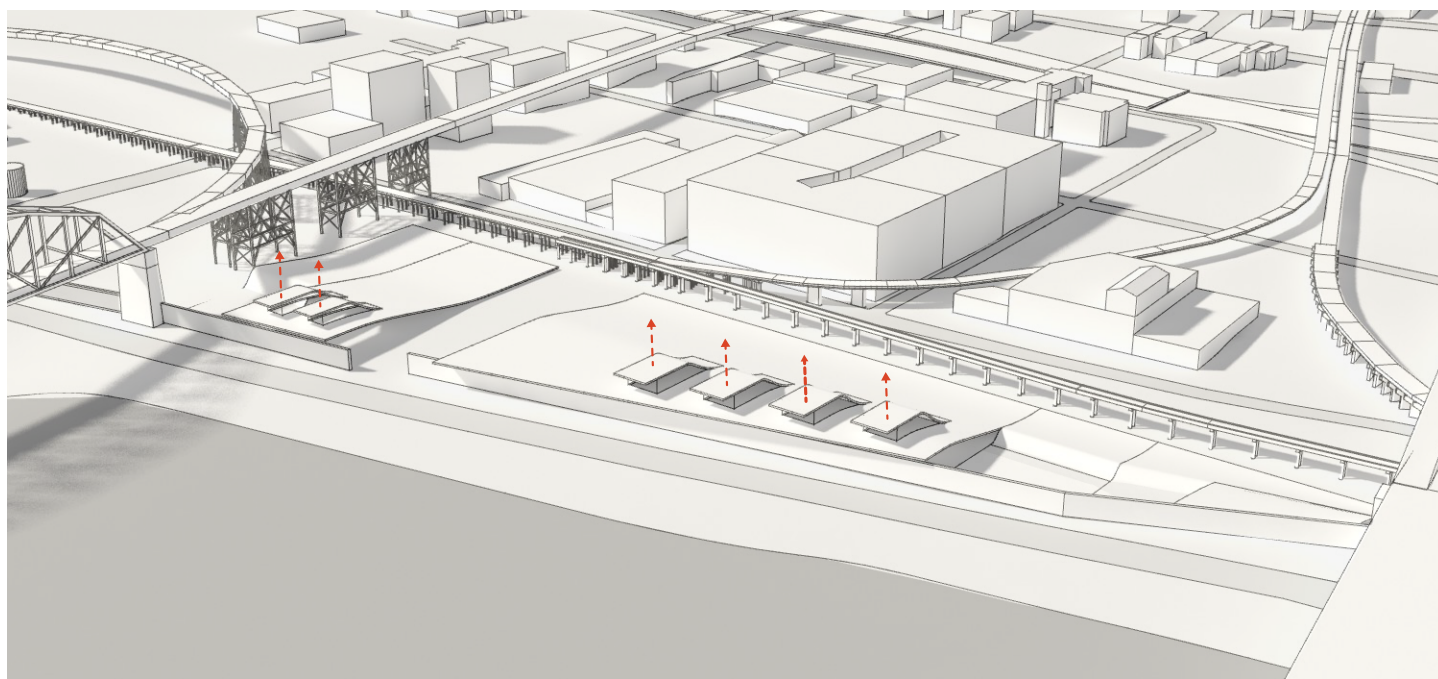
68. Continuing the street grid through the landscape and the flood wall, to create a visual corridor, and path of communication across the flood wall.

Breaking down and removing the wall is not an option, as the vertical barrier must remain. Ramping the ground behind the wall up and over it maintains its function, but permits visual access to the river while mitigating the isolating affect of the wall. The total height of the barrier remains, but changing it from a vertical step to a slow rise reduces its impact on the site.

Then, the visual corridor along Gratoit Street framed by two of the buildings of the Crunden-Martin complex is carried through the flood wall. This type of controlled break where the street grid is carried through the wall is actually a common condition, occuring at multiple points along the flood wall, allowing access to industry and ports occupying the space between the wall the river. This break allows visitors to easily access the site from the river side of the flood wall.



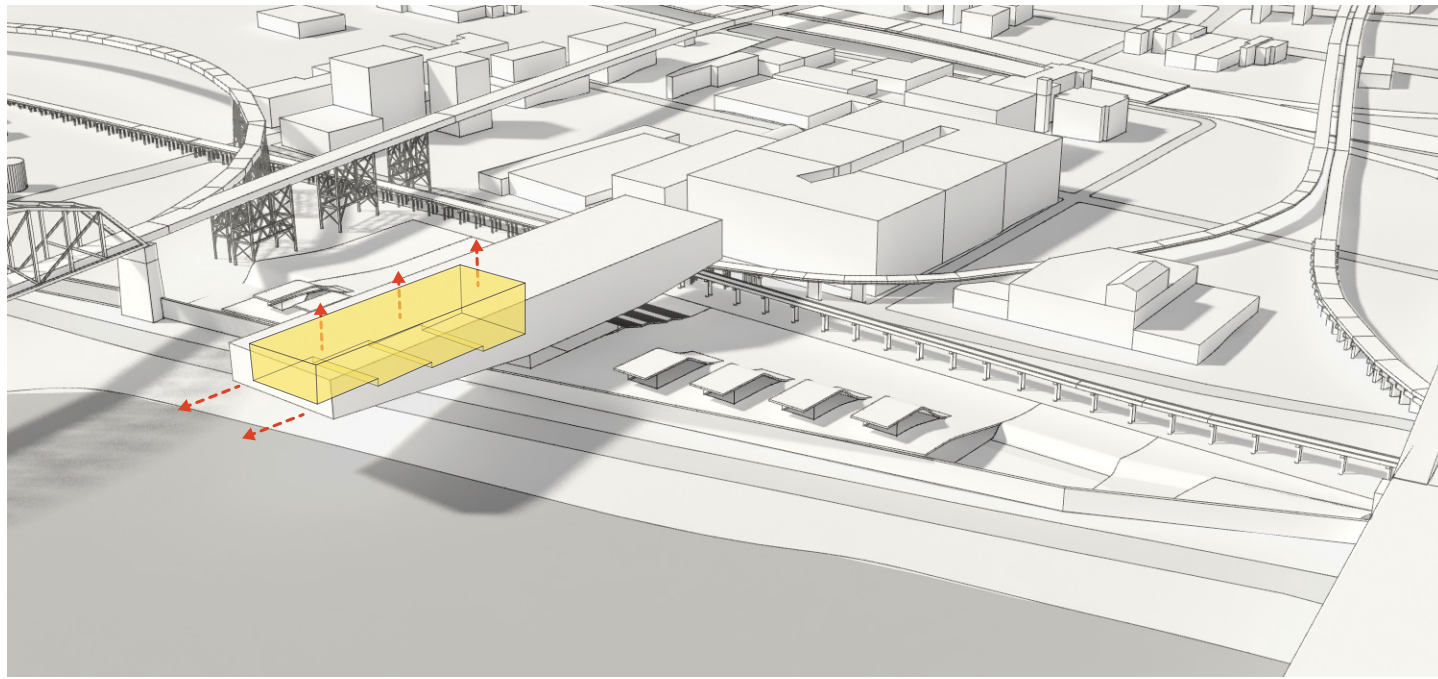
69. Creating a space for exhibition and work below the landscape on the site.



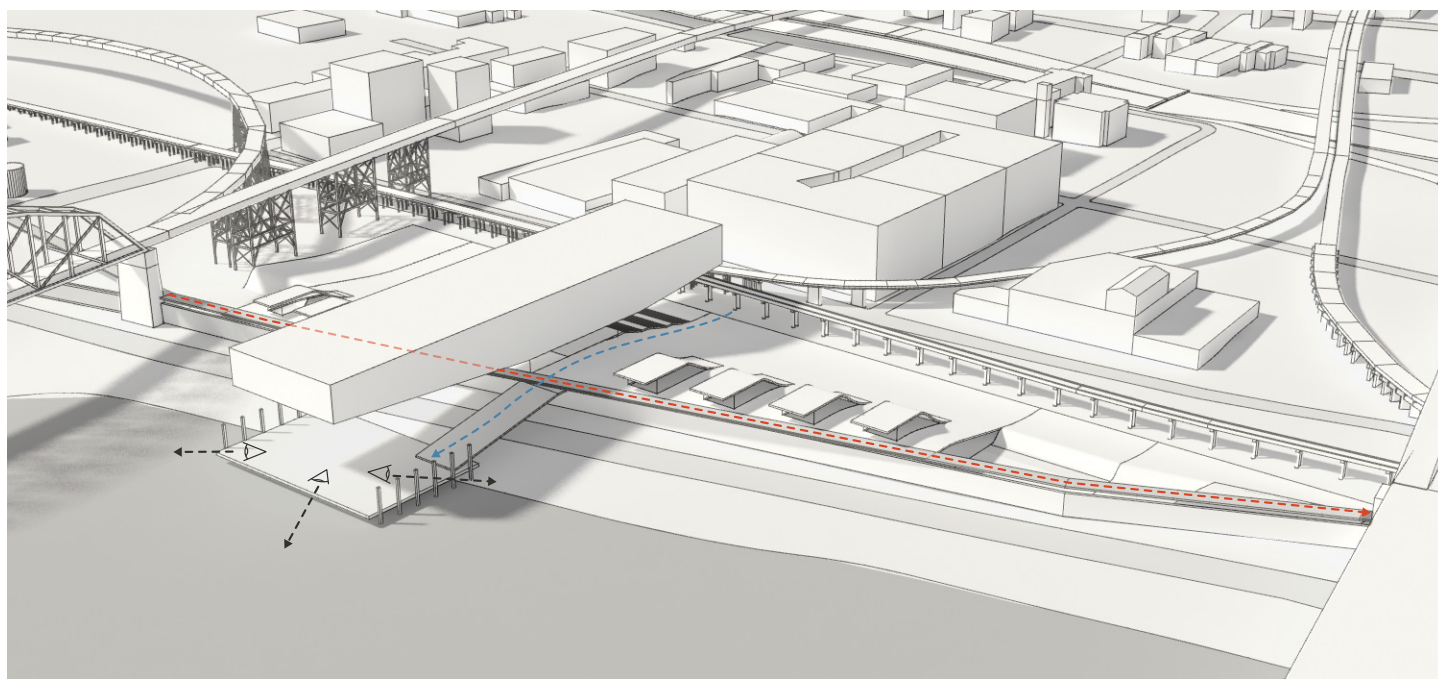
70. Peeling up the landscape, to create openings for daylight and visual access to the spaces for work and exhibition below.

The landform behind the wall is now split into two segments, and the spaces below them are cleared away, creating spaces for exhibiting and servicing the collections of the museum. Large artifacts requiring transportation by rail can be brought in from the south into the service space, and then into the larger exhibition space for display.

The landform ramp is then peeled up at regular intervals to facilitate day lighting the space below, and to permit visual access into the collections in the gallery hall below. As visitors to the museum and the site filter up the landform moving towards the river, the Mississippi slowly reveals itself as they rise up and over the flood wall. At the same time, as they pass the peeled openings in the landform, the transportation artifacts below are slowly revealed. This dual revelation of the river and the transportation elements in the museum reinforces the connection and importance of both. And this experience occurs not just for those entering the museum, but for any visitor to the site.



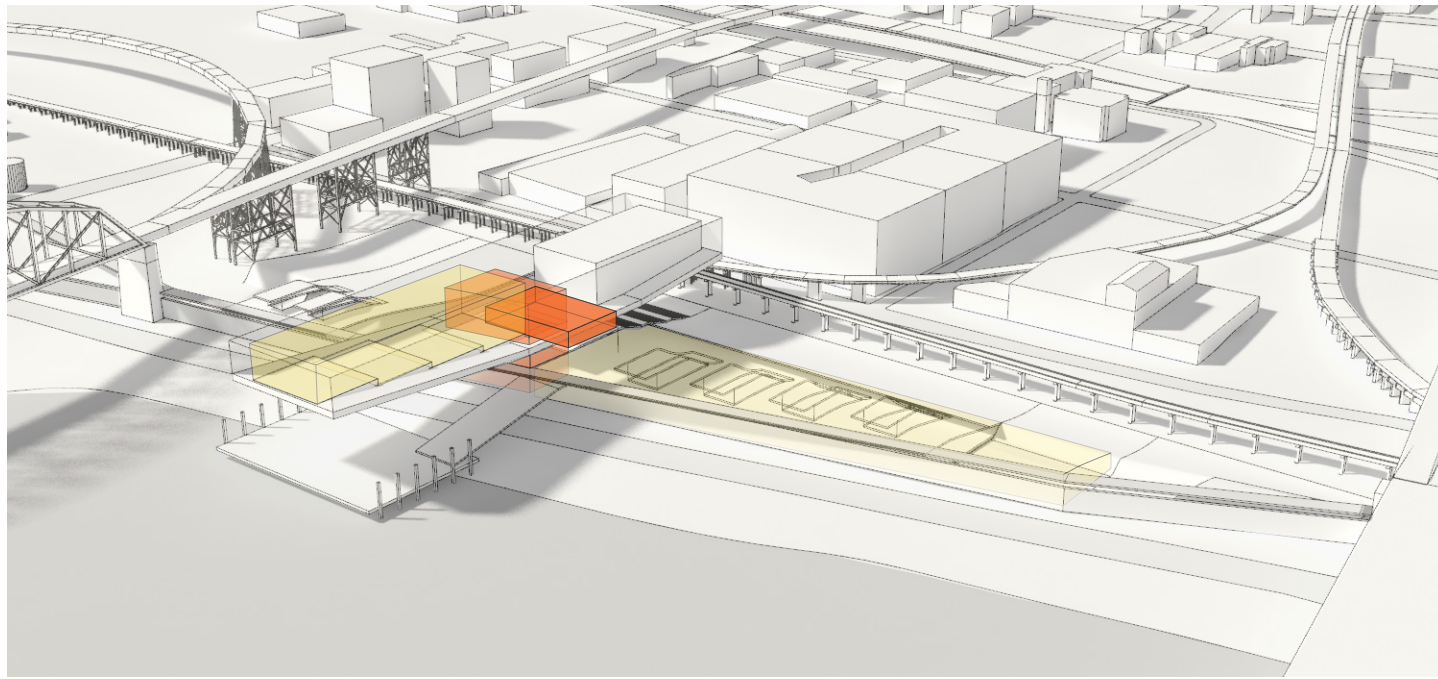
71. Projecting up and over the flood wall and the river, creating a space for exposition, both for the museum's collection, and of the site itself



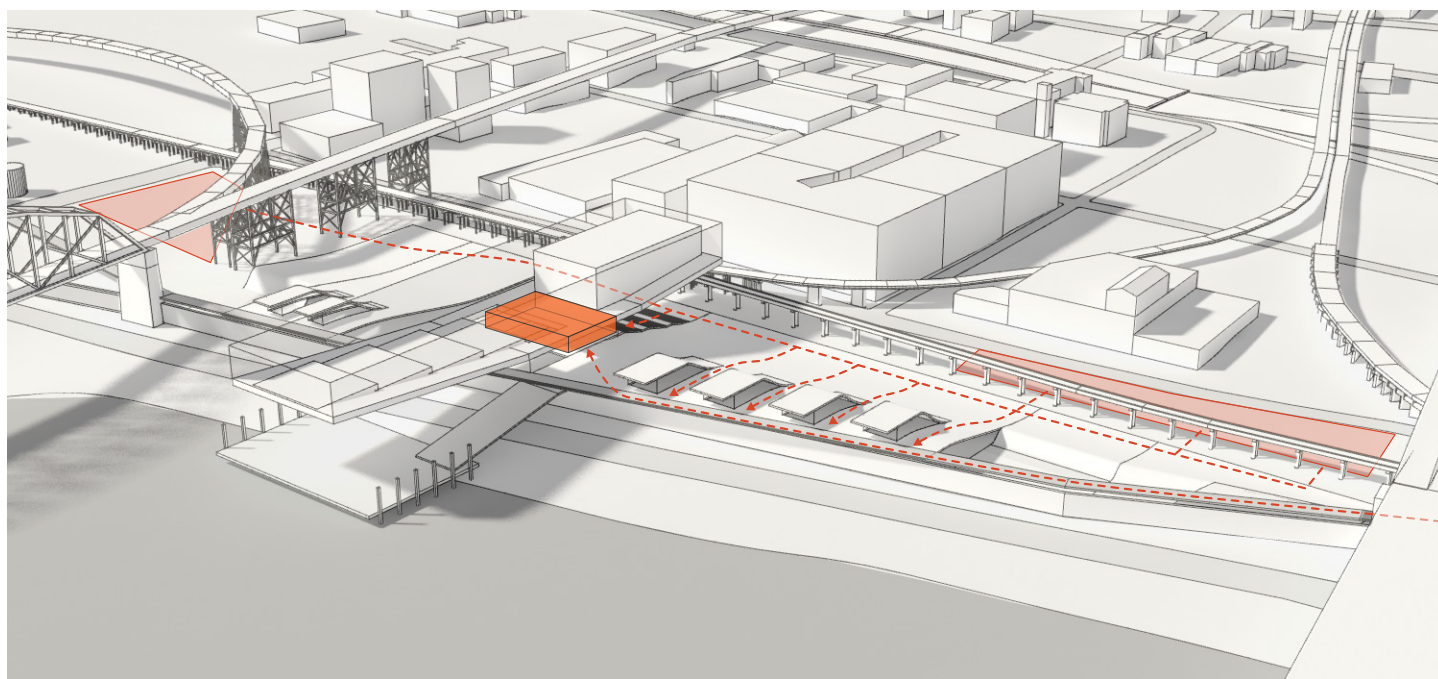
72. The public path carries along the top of the flood wall giving pedestrians views to the river and to the museum program below. The public pier provides a novel experience of the river to visitors, and marks the rise and fall of the river.

The museum projects out and over the flood wall and the river. Elevating the second gallery space and cantilevering it out references the multiple levels of transportation infrastructure which criss-cross the site, and provide an opportunity for visitors to the museum to observe the river and the surrounding industrial landscape from a unique vantage point.

The public promenade that runs along the top of the landscape that reaches up and over the flood wall, allows pedestrians unfettered views of the Mississippi throughout the year, no matter the level of the river. The pier that projects onto the river rises and falls with the changing level of the water, so that the museum itself responds to the river's fluctuations. The pier allows visitors to directly connect to the river in while the other experiences in the museum are primarily visual in nature.



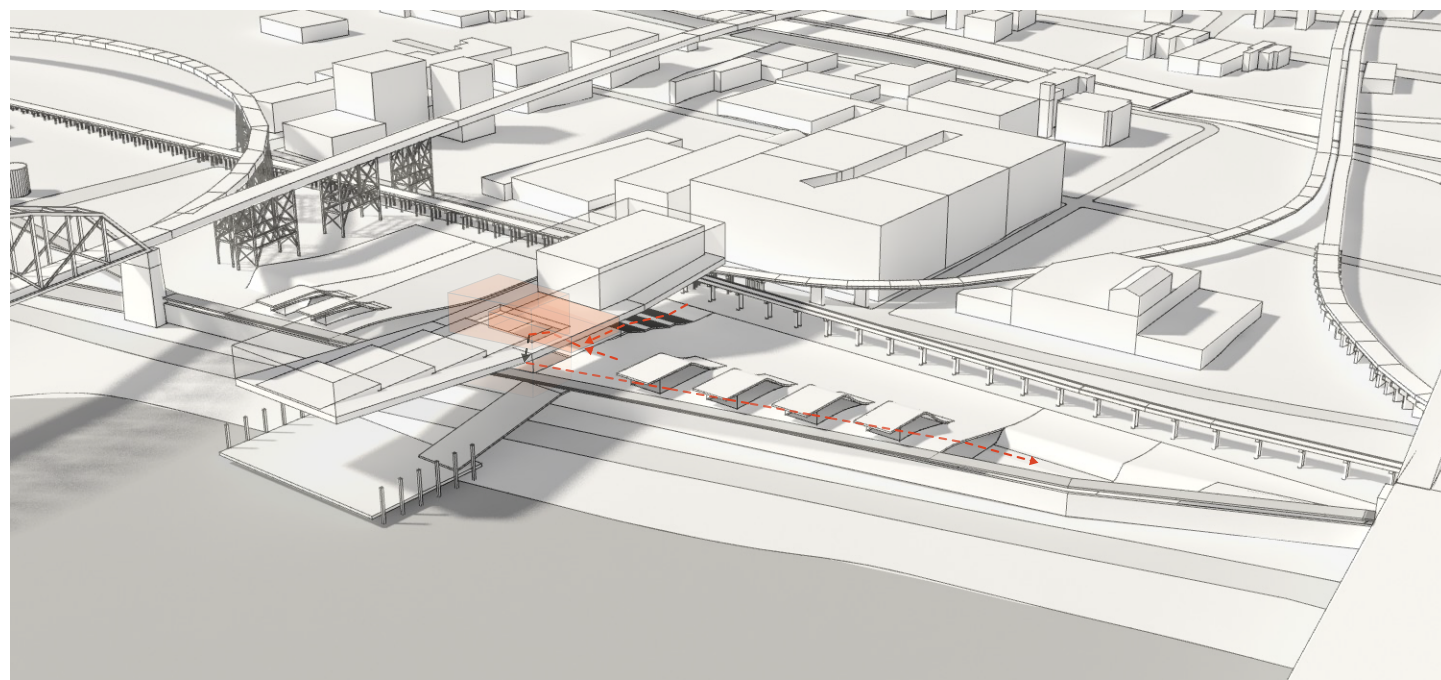
73. The intersection of the gallery bridge and the landform as trained forms a node which serves as the entrance and vertical circulation space for the museum.



74. Two access paths into the museum: The first, along the public promenade on top of the flood wall, providing access for pedestrians from the grounds of the Gateway Arch. The second, along the elevated railway, providing access for those arriving by automobile.

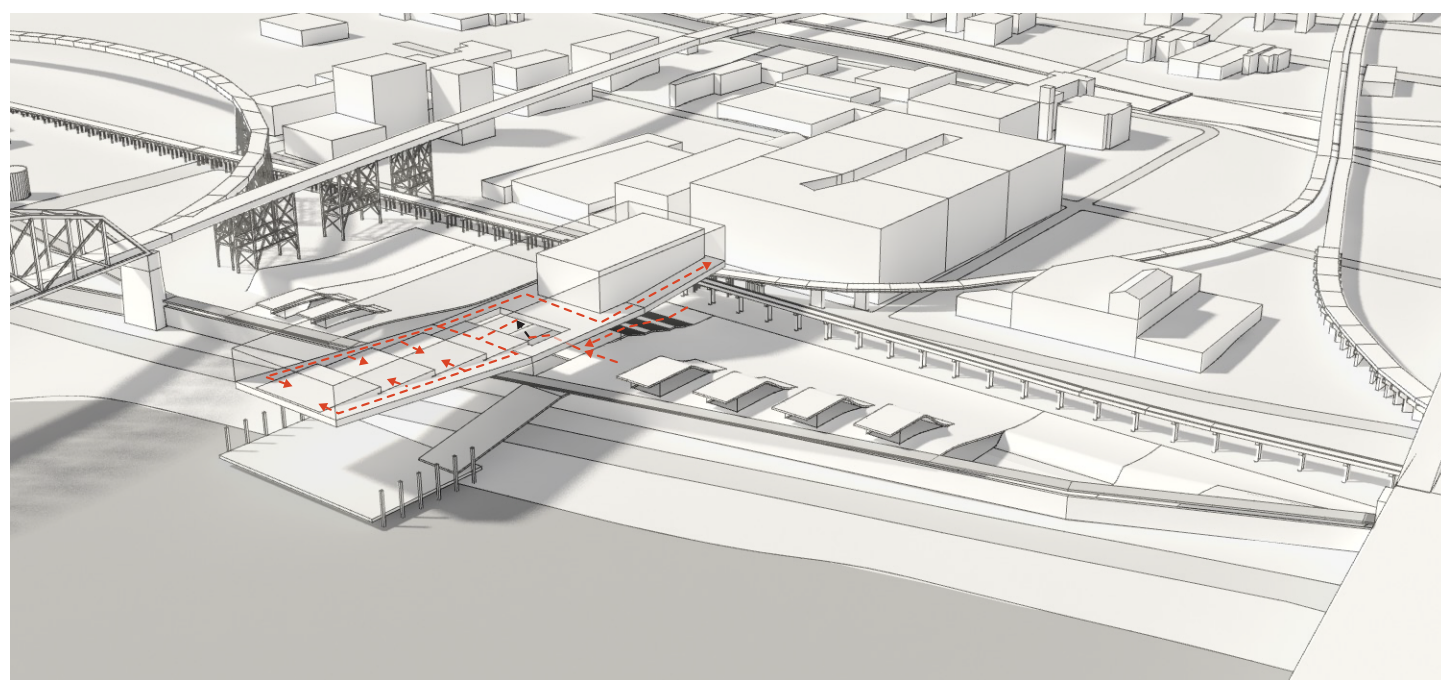
The intersection of the landform building below and the gallery bridge above forms a node which connects the two, and references the multiple such intersections that occur on the site. The node serves as both entrance and the vertical circulation space of the museum.

There are two main access paths into the museum. One is the public promenade which travels above the flood wall, and connects to the Gateway Arch grounds to the north. Pedestrians on the path are presented with the choice of continuing south along the path and underneath the museum, or turning off the path and into the museum. The second access path is along the western edge of the site. Visitors can park to the south or west of the site, and then proceed next to the elevated rail lines bordering the western edge of the site, before turning and traveling up and into the museum.



Once into the entrance level of the museum (at the top of the flood wall), visitors move towards the river, and are presented with two options: Continue moving out towards the water and up in to the elevated gallery space, or travel down into the lower gallery space behind the flood wall.

75. Circulation path to the lower exhibition space below the landscape behind the flood wall.



76. Circulation path to the upper exhibition space above the river.

Visitors experience a series of moments of compression and release as they travel up and into the museum. First, as they move up the stairs into the entrance, they pass below the compressing form of the theater which cantilevers out over them and towards the city. Once inside, the museum opens up into a full height atrium that connects the upper and lower gallery spaces. As they proceed into the upper exhibition hall, the gallery spaces step upwards, progressively constricting the space until visitors reach the end of the hall, and the museum opens out to the river below.

The massive truss that supports the double cantilever form of the upper exhibition hall and the theater references the steel truss structure of the MacArthur Bridge.

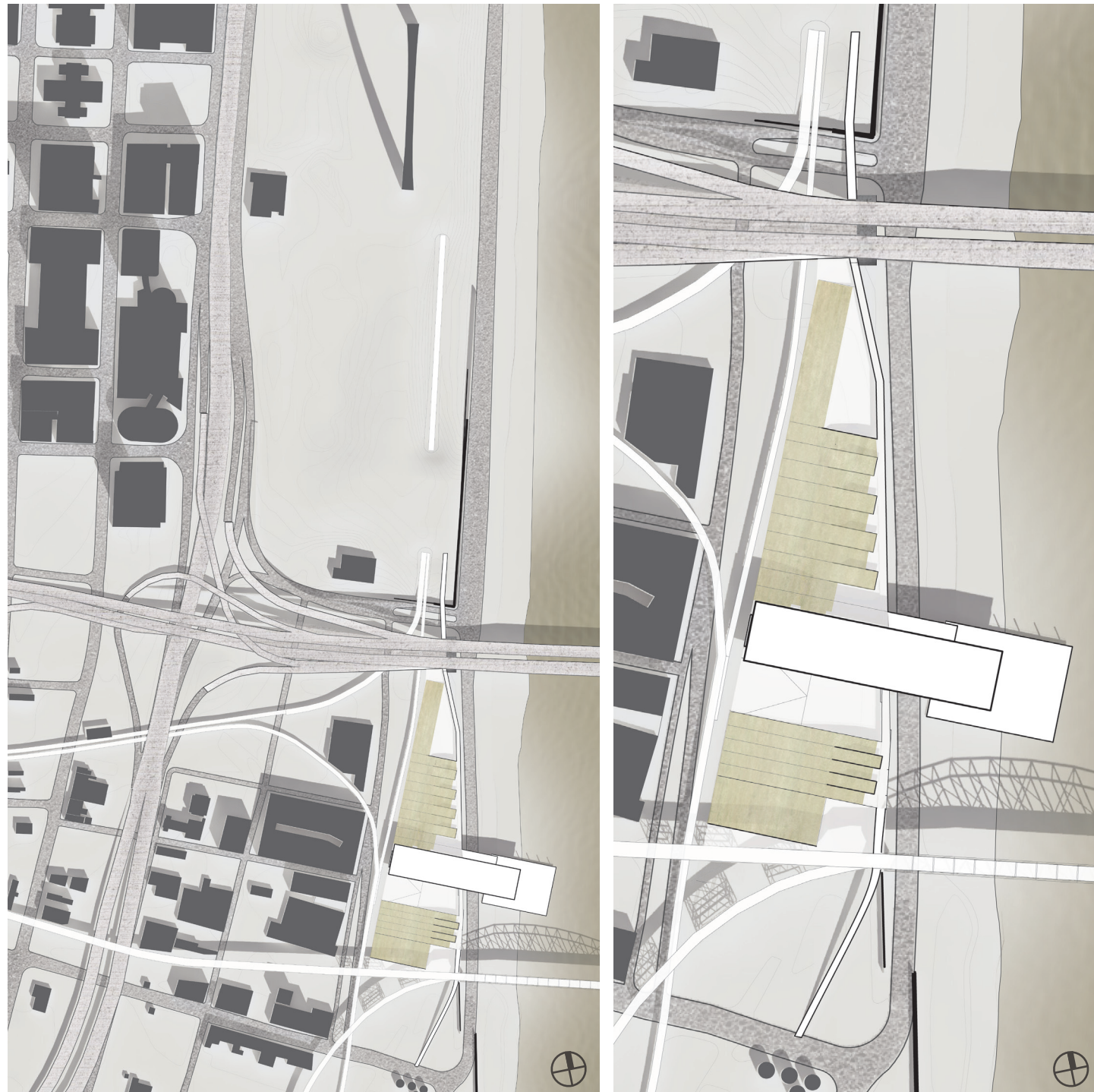


77. Section looking south through the upper exhibition space and auditorium, showing the sequence of compression and release as visitors move up into the museum, and then up into the exhibition space over the river.

The two gallery spaces create two very different experiences of viewing both the museum's collection and the site surrounding it. The upper exhibition space floats above the site, and allows for panoramic views of the industrial landscape, the river, and the city beyond. The lower exhibition space's gaze is directed inwards, and focuses on the museum's collection, and on the flood wall that it borders.

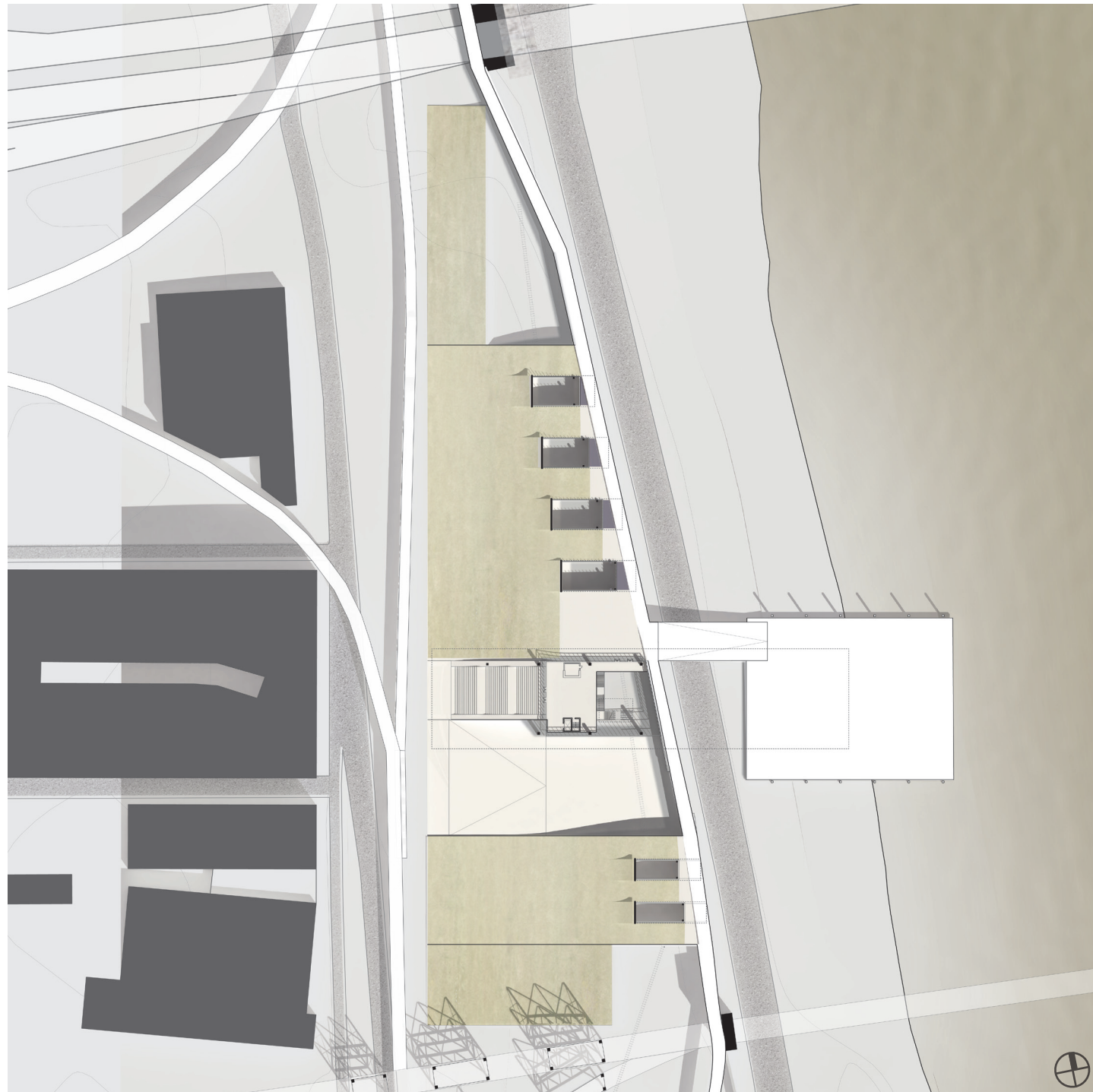


78. Section looking west through both the upper and lower exhibition spaces.



The site plan to the left shows the landscape of the lower exhibition space reaching up and over the flood wall, and the upper exhibition space reaching further out over the river. The public promenade along the top of the flood wall connects to the grounds of the Gateway Arch to the north, creating a path underneath the barrier of the Poplar Street bridge between the museum and the Arch.

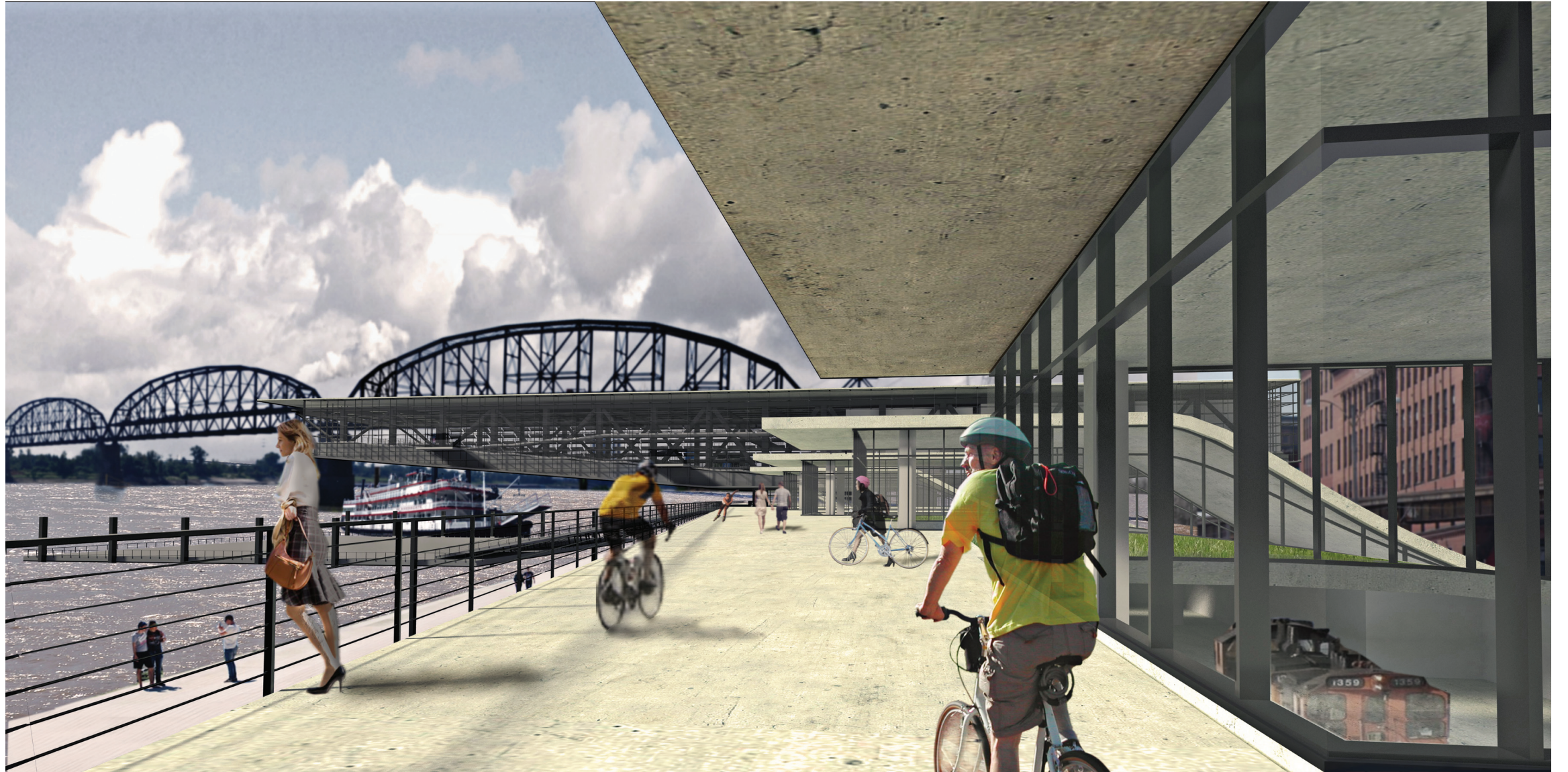
79. Site plan showing the museum in the surrounding context, and a closer view showing the site connections in detail.



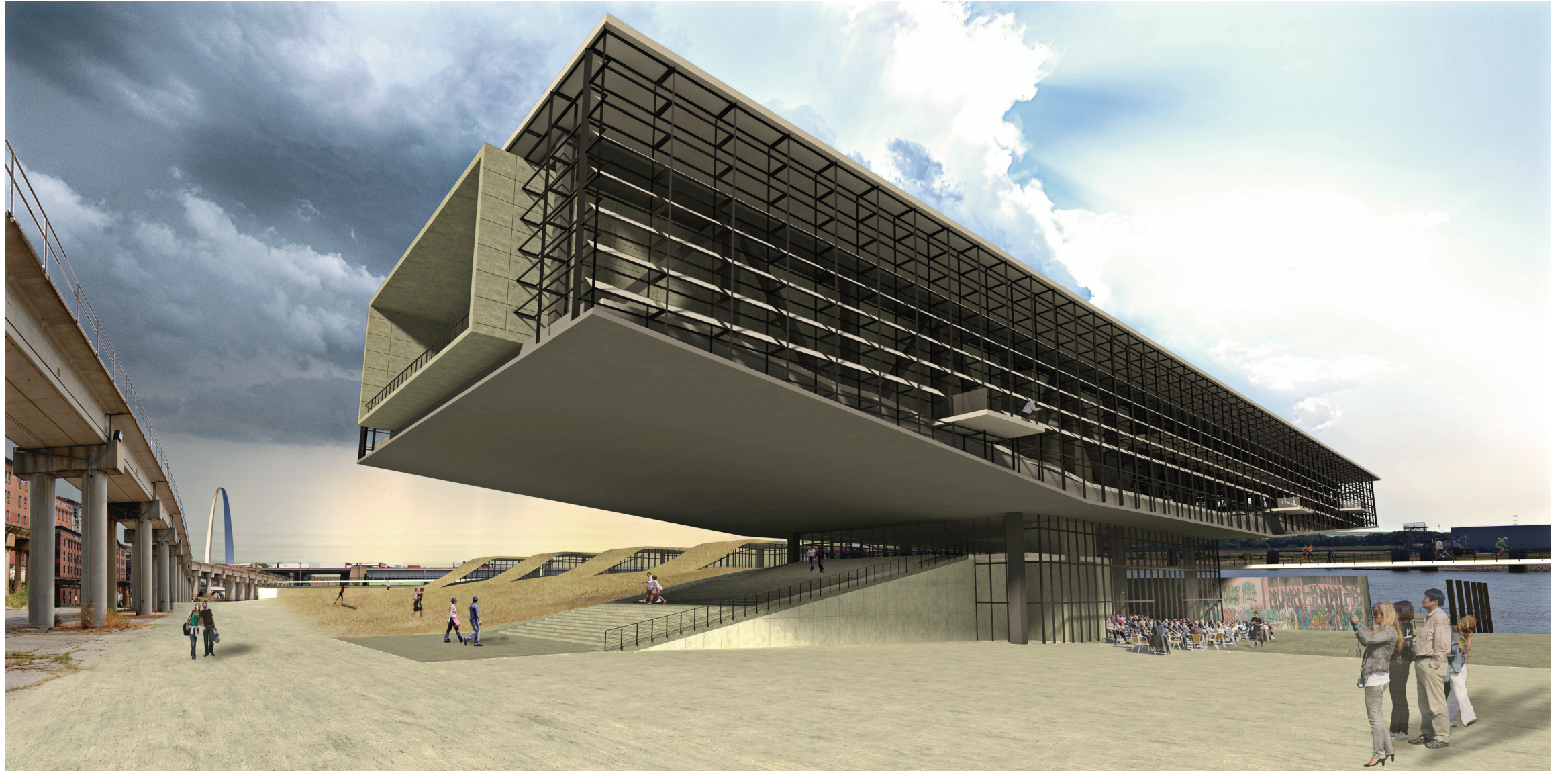
At the level of the museum entrance, between the upper and lower exhibition spaces, on top of the flood wall, it is clear the entrance space inside the museum and the large processional stairs leading to it are a continuation of the landscape outside the museum. This blurring between the landscape and the museum space is concurrent with the idea that the museum is not just displaying the artifacts that make up its collection, but also exhibiting the landscape of transportation in which it sits.

The elevated promenade that runs along the top of the flood wall references the elevated transportation infrastructure that criss-crosses the site. Traveling along this path, visitors have views out to the Mississippi on the east. They can observe the traffic on the river, and gain an appreciation of the current life of the river. Looking to the west, back to the city, they can see the rail traffic passing by on the elevated rail-ways bordering the site. Finally, they can look down into the lower exhibition space, and see the collections of the museum below. From one publically accessible point, they can take in both the past and the present of the transportation networks that have influenced the development of the city, the river, and the space between them.

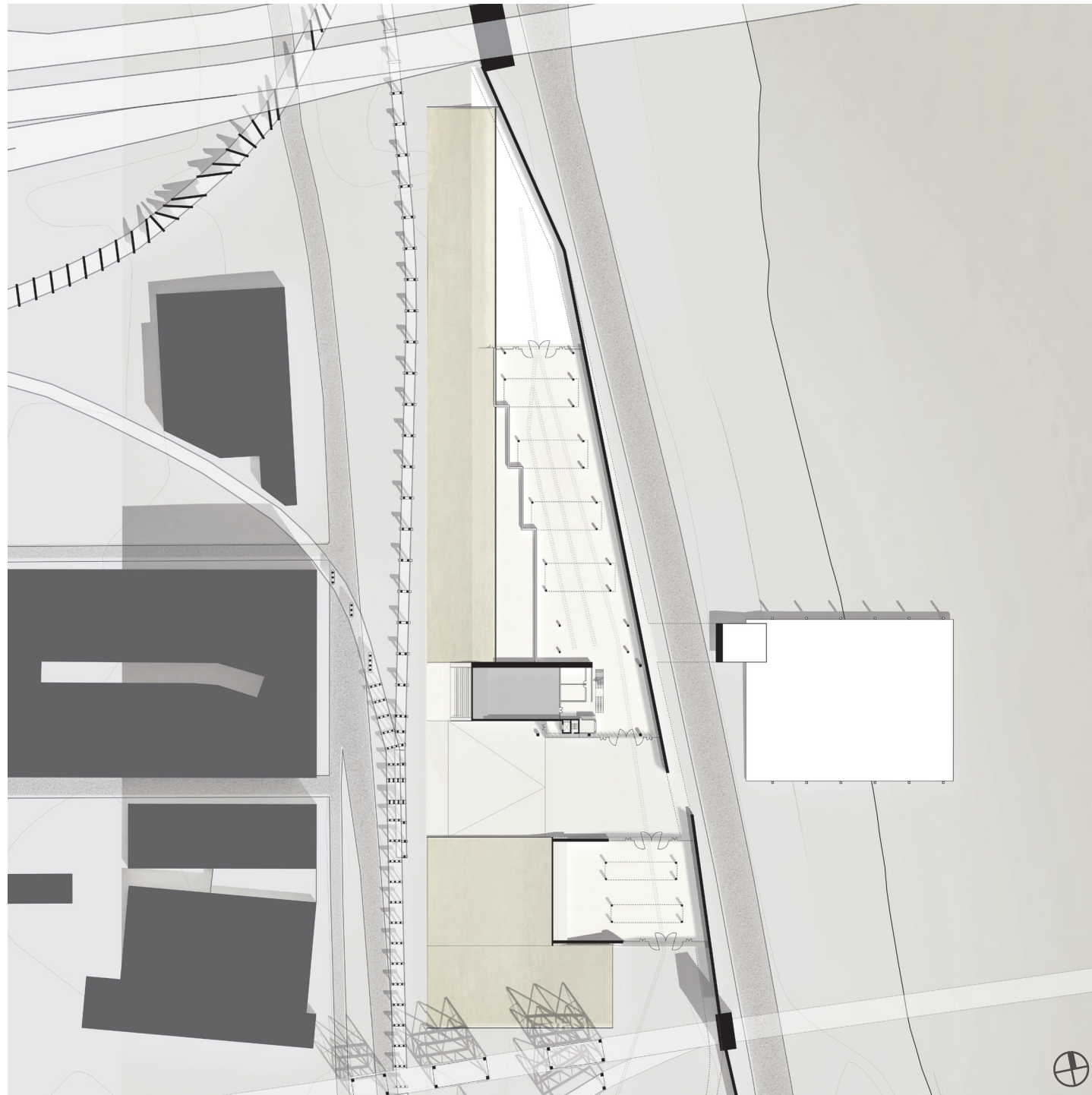
80. Entrance level plan, showing the connections between the museum and the surrounding landscape.



81. Traveling along the public promenade on top of the flood wall, visitors have concurrent views out to the river and down into the exhibition space below.



82. View approaching the museum from the south. The museum reaches simultaneously out to the river on the east, and the elevated railways on the west. The visual corridor cut through the flood wall allows views out to the river as visitors approach the museum and the landscape leading up to its entrance.



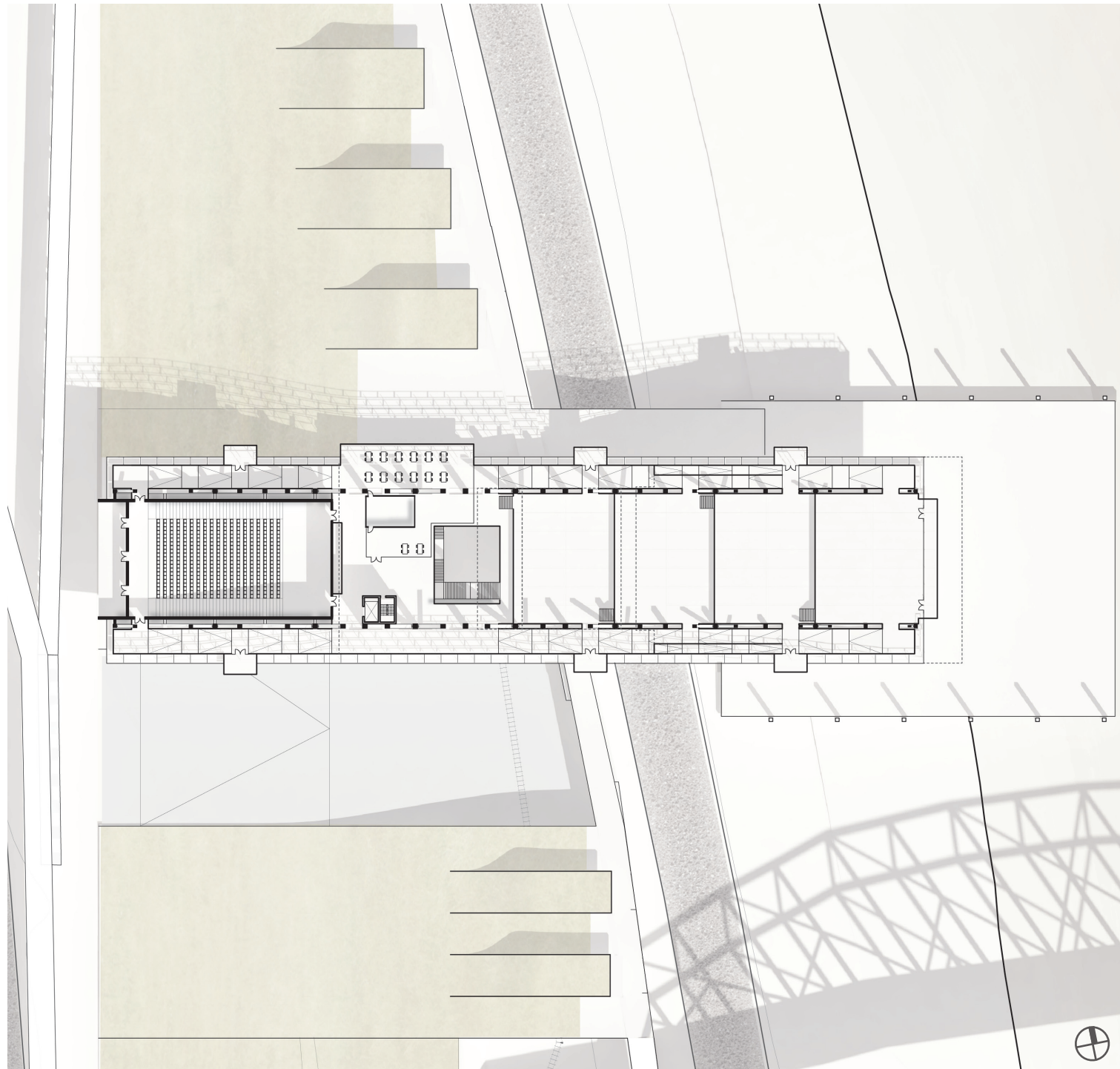
Moving down into the lower level of the museum, visitors are presented with a set of train tracks leading them into the exhibition hall. Light streams into the space from above from the swaths where the landform above has been pulled up. The ceiling of the hall floats above and over the flood wall, allowing additional light into the space from the gap between the landform and the wall. The artifacts on display are juxtaposed against the wall, which is left raw and covered in graffiti.

In the distance, at the far end of the end of the exhibition space, the light from an outdoor exhibition courtyard floods into the museum, and pulls visitors through the space.

83. Lower level plan, showing the large exhibition gallery, the full height atrium space to the south, and the space for servicing the collections of the museum, with a rail line spur passing through them all.

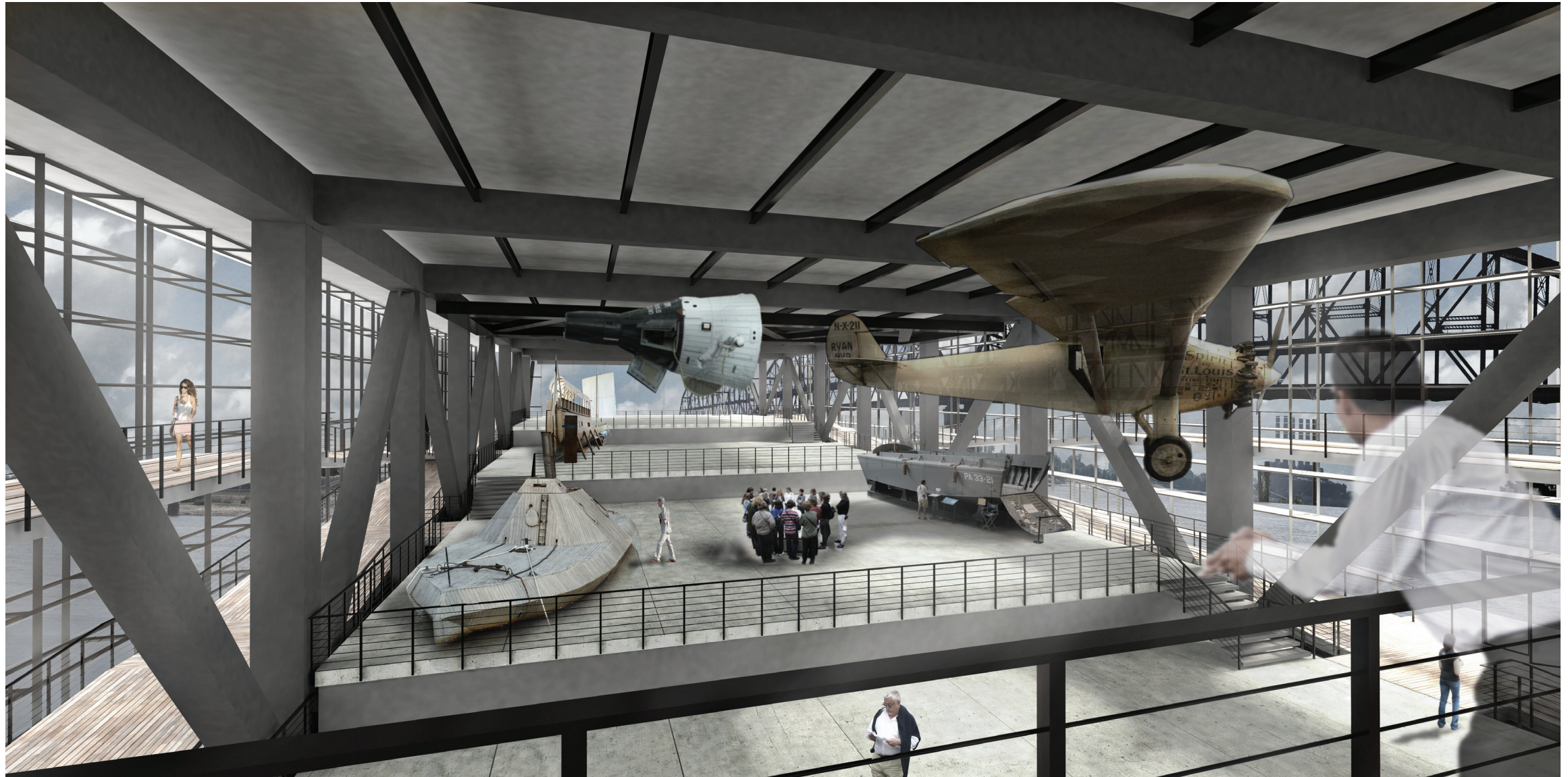


84. View looking north into the lower exhibition space, and up to the entrance of the museum above.

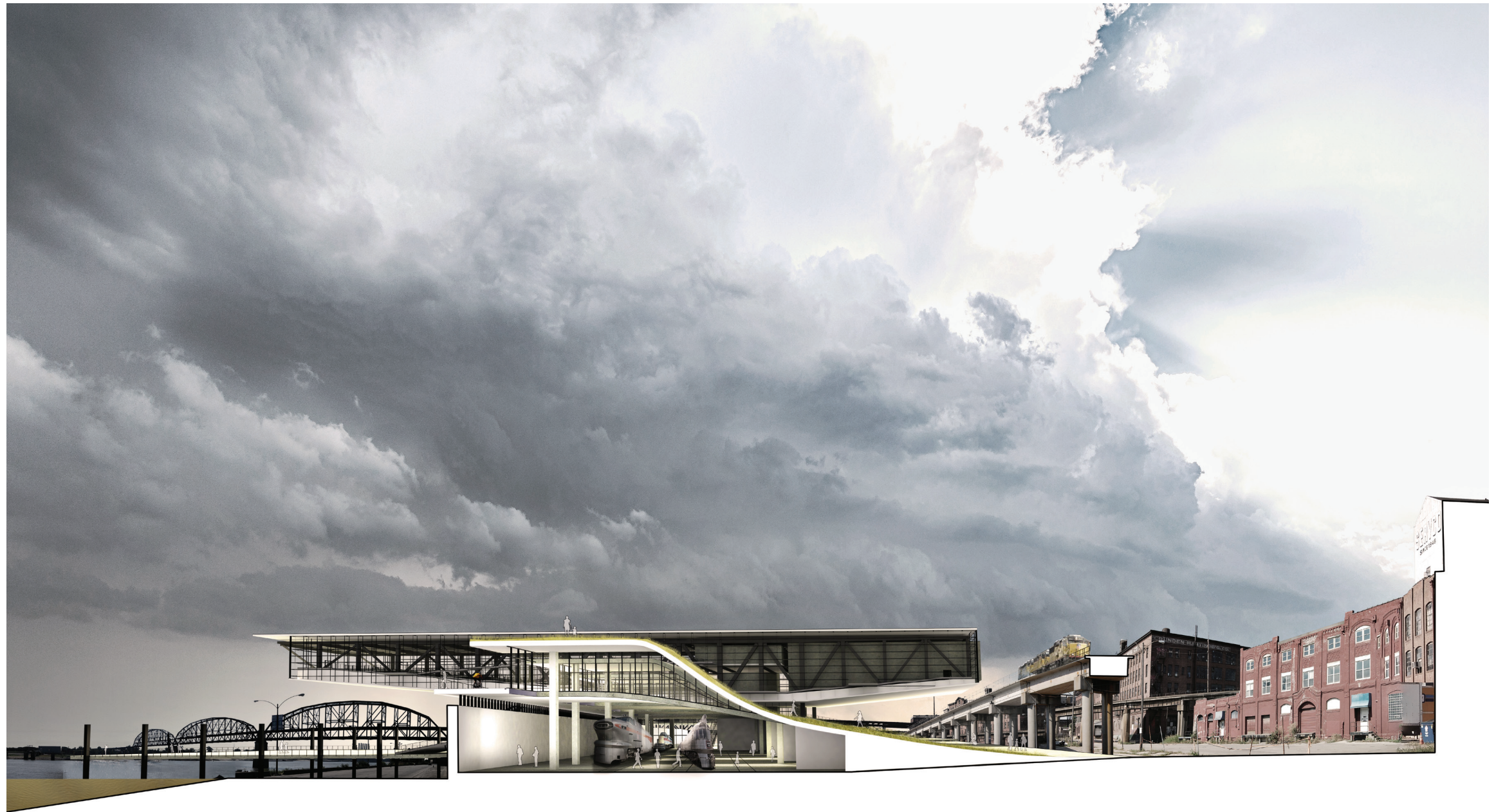


Alternatively, visitors can travel up into the upper exhibition hall stretching out over the river. The “gallery bridge” also contains a large auditorium space and restaurant that looks north out over the river and city. The stepped galleries in the exhibition hall are flanked by circulation spaces on either side, that run outside the full height trusses supporting the cantilevering form of the gallery bridge. A double wall glass facade permits maximum visibility out to the surrounding landscape.

85. Upper level plan, showing the exhibition space reaching out over the river, the auditorium floating above the main entrance stair, and the restaurant looking out over the river and the city.



86. View looking east into the upper exhibition space. The gallery spaces step upwards towards the river. Circulations spaces outside the truss framing the space provide views out to the river and the city beyond.



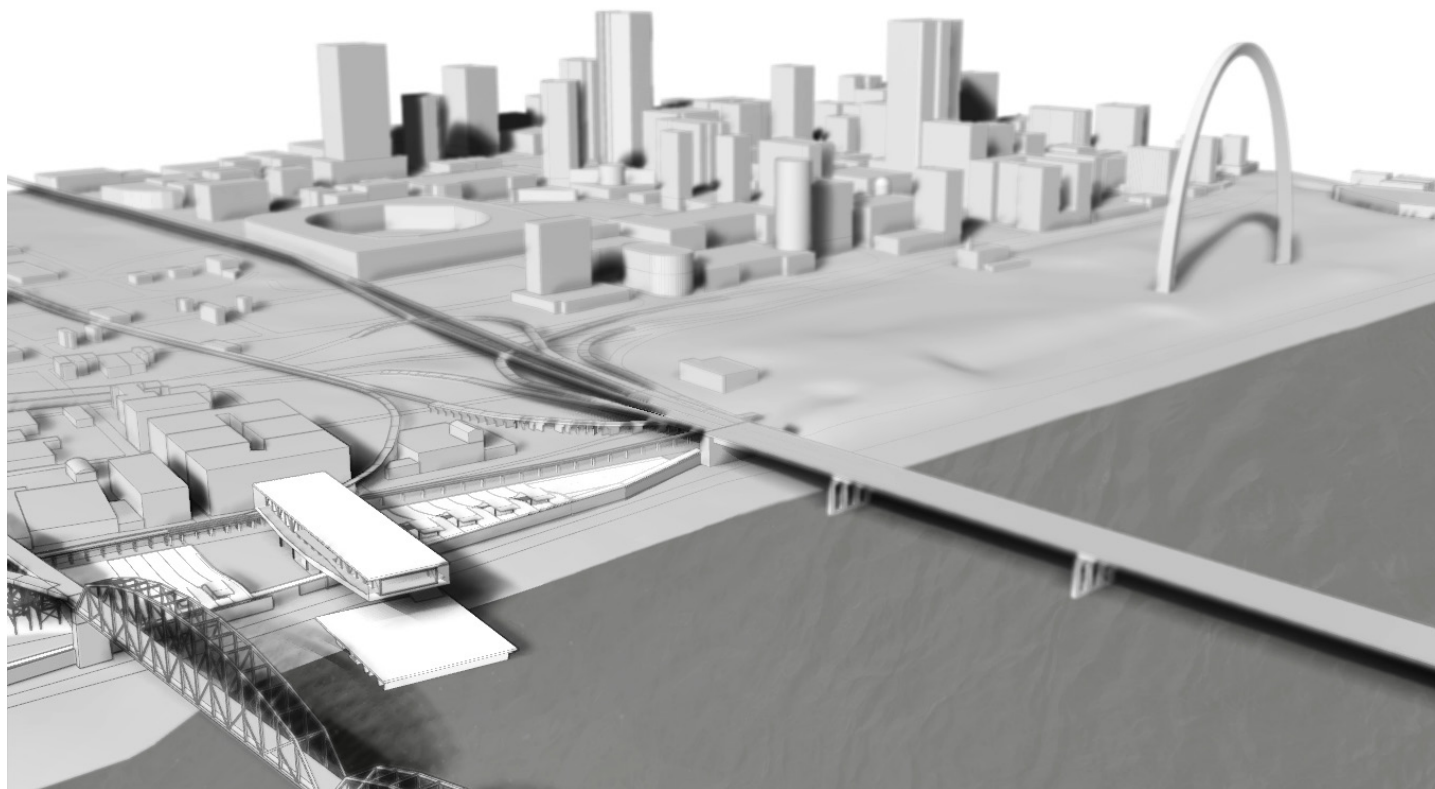
87. Section perspective looking south through the lower exhibition space, showing the landscape above flowing over the flood wall. As visitors proceed up the ramping landscape towards the river, the Mississippi is gradually revealed. At the same time, as the visitors pass by the openings to the gallery below, the artifacts on display become visible. This dual discovery reinforces the connections between the river and the museum's collections.



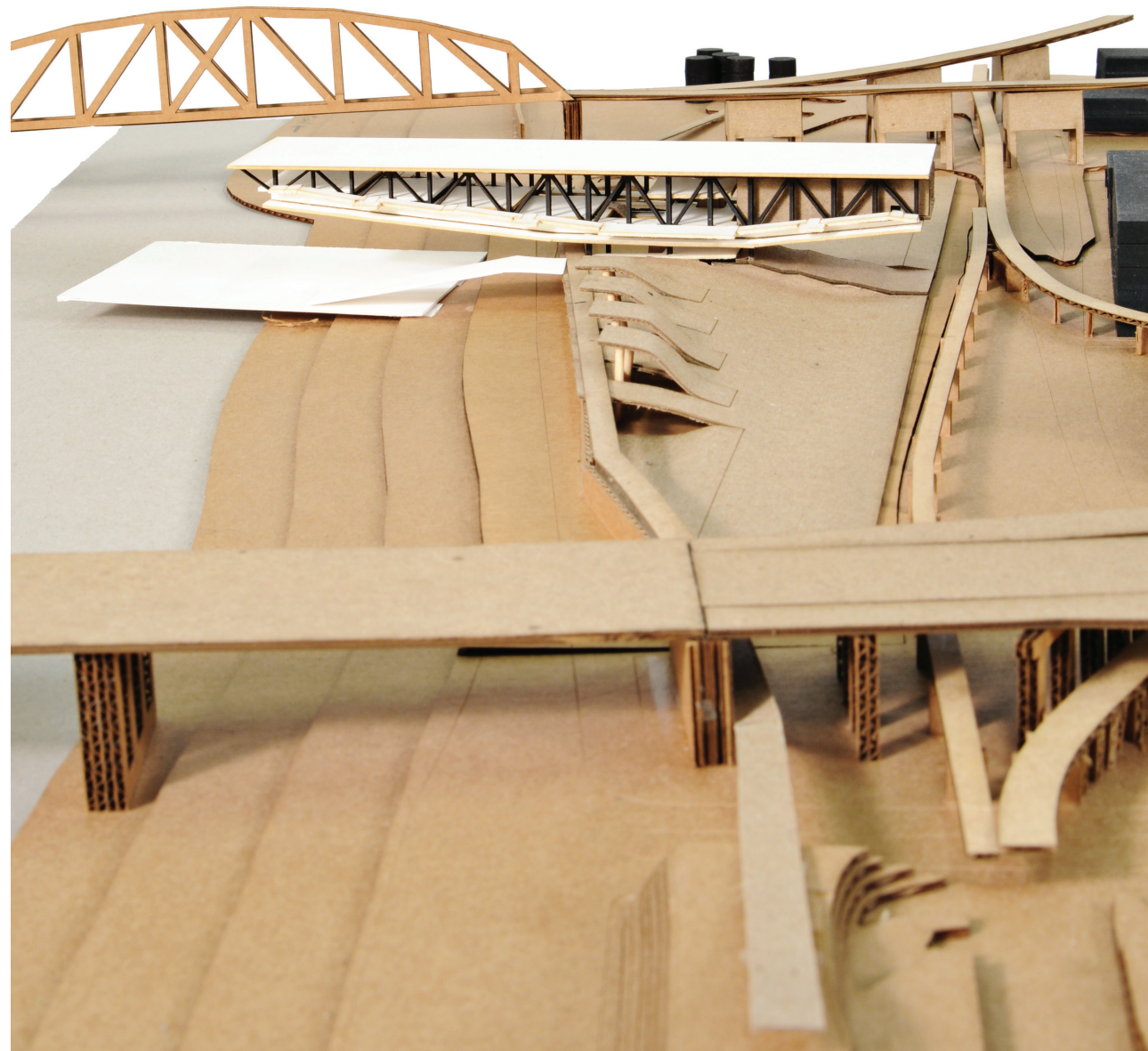
88. Section perspective looking north through the upper exhibition space. The landscape outside flows up into the museum. Visitors in the stepped galleries can view artifacts and exhibits related to the river's history and transportation on the river, while looking out to the river and the city.

CONCLUSION

The Mississippi is a testament to people's power to modify the landscape around them, for better or worse, to suit their needs. For thousands of years, the "great river" has served the needs of those that lived along its banks. Now, in its modern form, channelized, straightened, hemmed in by levees, floodwalls, and industry, it has been largely tamed, turned into a "useful" tool of commerce and trade. In this role, it is vital to the life of the city of St. Louis which grew up along its banks. But that history of industrialization and control has isolated the city from the river, to the point that the reality of the river has virtually vanished from the civic life of the city. While productive industry still thrives along the riverfront in St. Louis, there are multiple sites where industry has faltered or abandoned the banks of the river. And even though each one of these post-industrial sites has its own unique conditions and challenges, this intervention could serve as a model for how those sites could be remade and turned from places of isolation to points of reconnection between the city and the river.



89. The museum turns a place of isolation into a landscape of reconnection.



This idea of reconnection is achieved at two different scales. First, at a local site level, there is the physical and visual reconnection of the site with the river, by mitigating and/or eliminating the barriers that stand between the site and the river. At Chouteau's Landing, the flood wall is the most significant barrier separating the site and the river. Modifying the landscape of the site so that it is pulled up and over the flood wall helps to diminish the isolating affect of the wall, by reducing its physical impact and by creating a new vantage point for viewing the river and moving along it. All this is accomplished without undermining the important protective function of the wall.

Second, the project reconnects the city to the river by fostering a better understanding of the river and its transportation networks in the visitors to the museum. Each component of the museum is designed to place visitors in positions to observe and interact with the river and the industrial landscape on its shores. The ramping landform and public promenade above the lower exhibition space permit visitors to simultaneously observe the life and activity of the river and the collections of the museum, without placing additional barriers between the city and the river. The public pier extending out onto the river allows visitors

90. Changing a barrier into a place of exploration and discovery.



91. An architecture open and responsive to its context.

to have a close physical experience of the river, while at the same time marking the annual fluctuations in the river's level. And the upper gallery space extending out over the flood wall places the river and the multitude of transportation networks converging on the site just as much on display as the transportation artifacts and exhibitions inside. In fact, this function of turning the site into part of the exhibition of the museum is just as important as displaying the contents of the museum's collections. This is a museum that looks as much outwards as it does inwards.

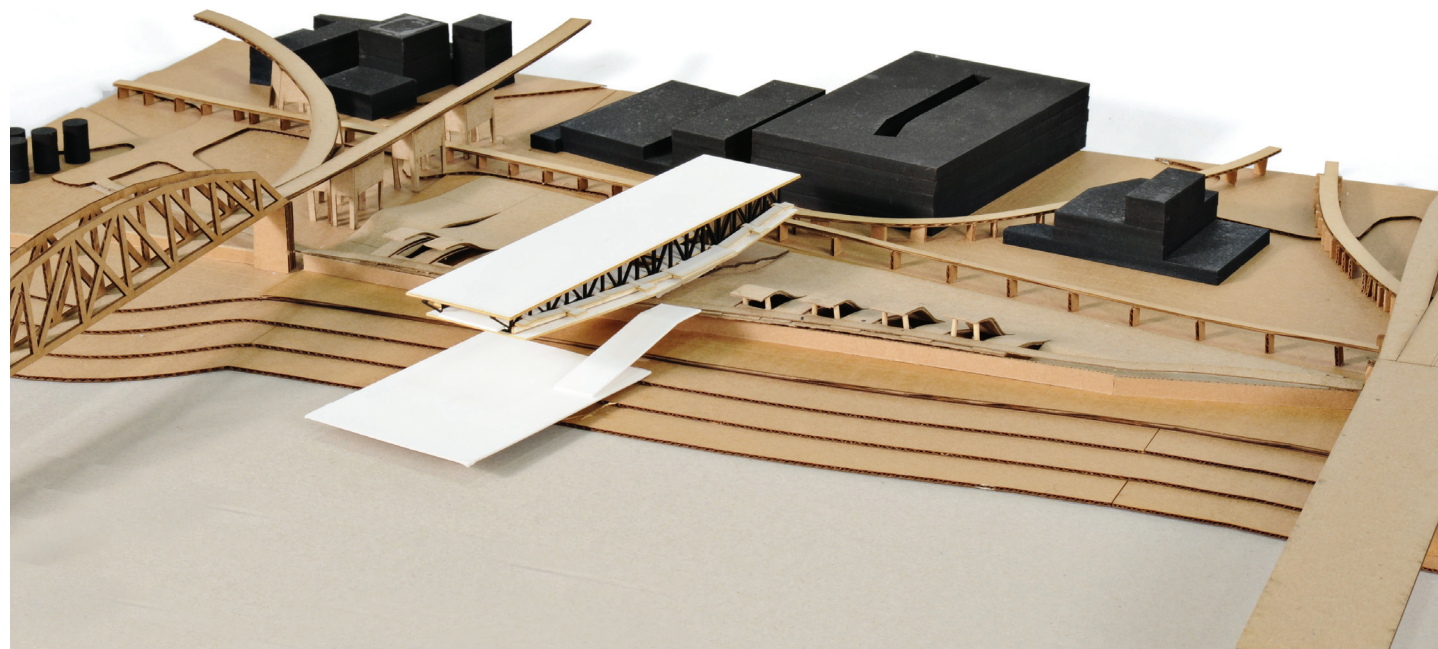
With the basic form and function of the project in place, the next step would be to further develop the role of the museum in "curating the site". First, there is the experience underneath the city facing side of the museum, in particular the stairs leading into the main entrance (see Figure 82). This area could act as more than just an entrance and become a significant gathering space on the site, acting as covered, semi-protected amphitheater. Lighting at both ground level and on the underside of the museum above could help make the space more inviting, and help to draw people into the museum.

Next, there is the experience underneath the museum on its river facing side. The floating pier at river level is

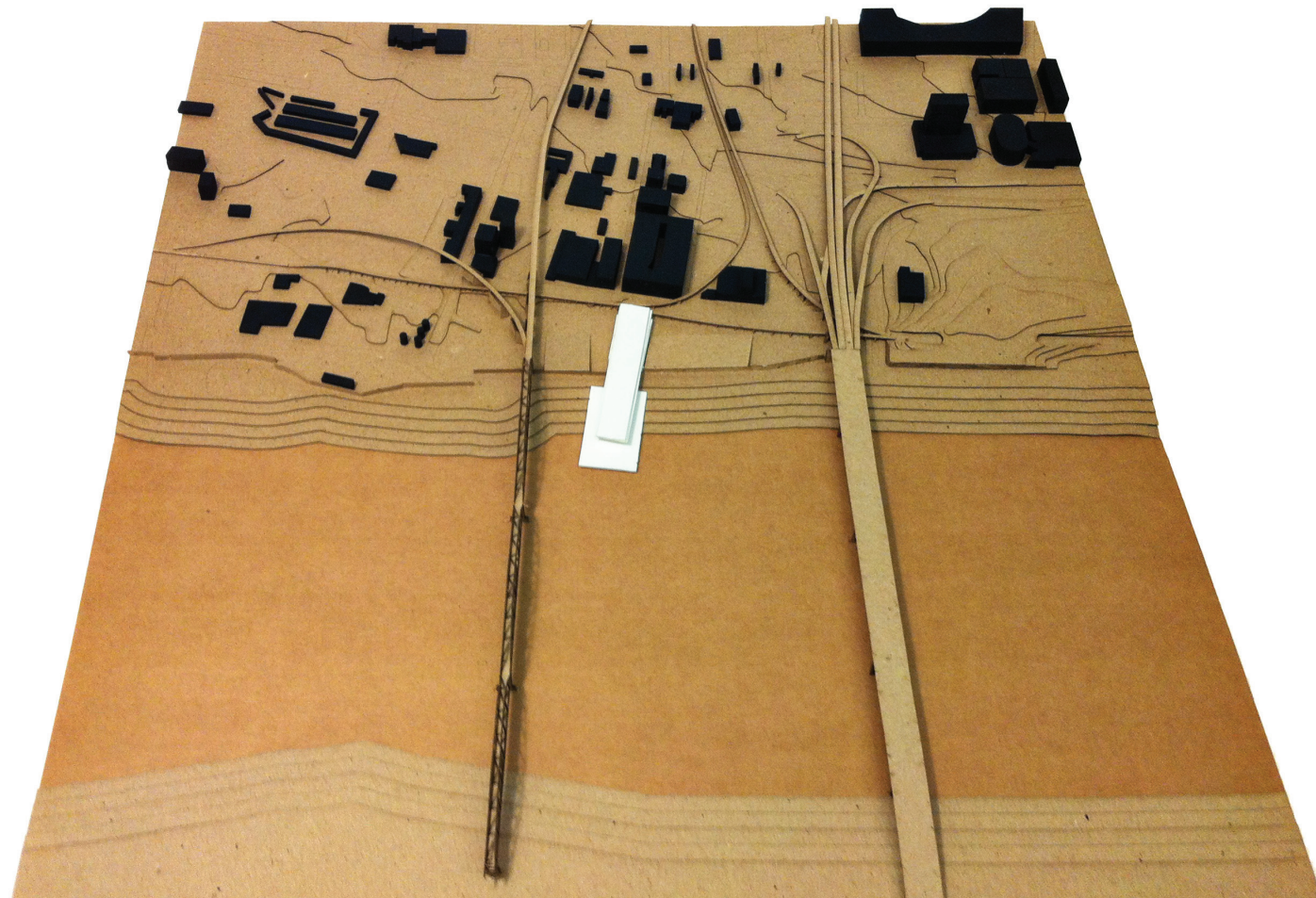
important to provide visitors an experience in close contact with the river, and for the exposition of larger transportation artifacts like riverboats. However, the pier could (and probably should) be more “pier” like, and form more of an “H” or “U” shape, to lower how much the it competes with the museum above, and to allow for additional moorage locations. Again, with the right application of lighting and materials, the pier could become an important public gathering space, a place for concerts, performances, and festivals.

Next, there is the question of how the museum interacts with the visiting public. There is a strong precedent of major cultural institutions in the city being public non profits, with free admission for all. The Art Museum, Zoo, Science Center, Botanical Gardens, and History Museum in St. Louis are all free to enter without admission. Adding the Museum of Transportation to this group would emphasize the blurring between the inside and outside, between the display of the context and the collections, that is already established by the architecture of the project.

Finally, there is the question of whether this museum will act as a catalyst for the revitalization of the rest of Chouteau’s Landing. By drawing people back to the site, it is



92. An new icon for the riverfront.



hoped that the project will it spur redevelopment in this very prominent and historic place in St. Louis. But in order for this to really happen, the connection between the museum and the rest of Chouteau's Landing to its west must be developed further.

In the end, though, his project very intentionally turns its focus towards the river. It shows that architecture can be used to create an environment for the interpretation and understanding of the importance to St. Louis of the Mississippi and the transportation networks surrounding it. And by fostering that understanding in its visitors, it can act as a catalyst for the reintegration of this and hopefully other stretches of St. Louis's riverfront into the life of the city.

93. A museum connecting a city and a river.

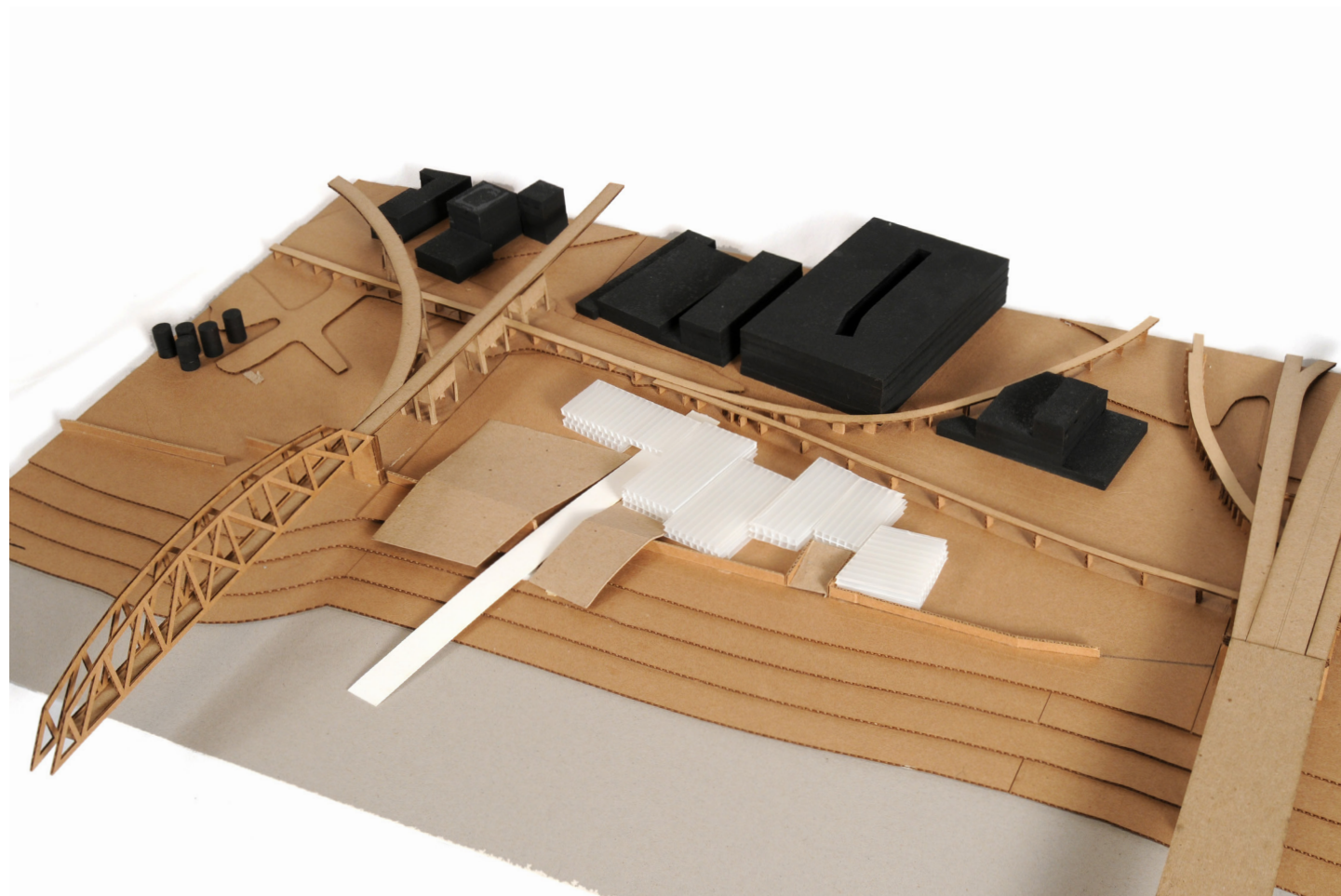
APPENDIX: DESIGN ITERATIONS

Working on a design through physical models, using multiple iterations is an important part of my design process. In this appendix, I document some of the models I built while developing the design of the St. Louis Museum of Transportation.

Iteration 1

The museum is composed of two branching forms, referencing the multiple transportation networks that join and split apart on the site. The museum has a north-south orientation, responding to the flows of the river, the flood wall, and the elevated rail way on the west edge of the site. A pier projects out through the flood wall, completing the visual corridor along Gratoit Street. This feature, in a handful of different forms, was carried through almost every iteration of the design. The lobby space for the museum is located at point where the two forms branch/meet. The museum is conceived to have multiple entrances leading into the lobby.





Iteration 2

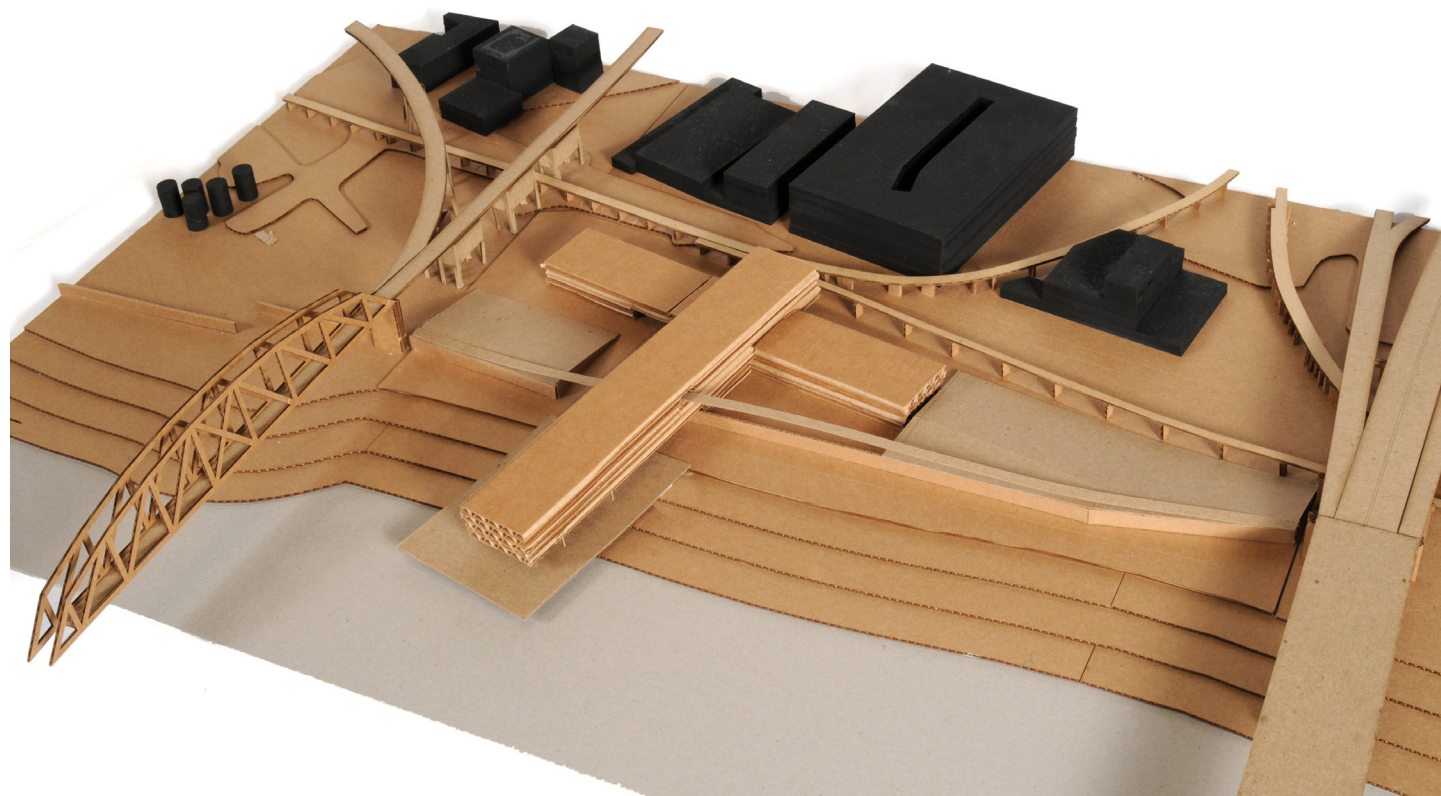
This study was an exploration of how the museum might modify or respond to the flood wall. Instead of the large contiguous forms of the previous iteration, in this design, the museum is broken up into smaller pieces, which push and pull away from the wall, forming outdoor display spaces. A landform reaches over the flood wall and cascades down from the top of the wall towards the river. The main lobby/entrance space is located along the pier extending out to the river. In addition to the cut for the pier, the flood wall is cut away for a set of large stairs leading up to what might be the restaurant for the museum. As the river levels rise and fall, the stairs would be covered and uncovered, marking the depth of the river. Visitors arriving along the corridor formed by the pier pass underneath the museum as they move east away from the city and towards the river.



Iteration 3

This design is an elaboration on the first iteration, and sees the first introduction of the idea of berming up to the flood wall on its western side, leaving the river side clear. The sloping landscape leading up to the flood wall is used for displaying large transportation artifacts. The organization of the space inside the museum has been developed further; the lobby space is now on the smaller arm closer to the flood wall. The taller form is now one contiguous gallery space that attempts to address both the flood wall and the elevated rail lines. The gallery space has catwalks running on its periphery, to facilitate views over the flood wall to the river, and to the elevated rail lines.

In critiquing this design, it became clear that it did not work with the important concept of breaking down barriers between the city and the river. By orienting and massing the museum in this fashion, the twenty foot tall flood wall was essentially being replaced by a fifty foot tall wall formed by the museum.



Iteration 4

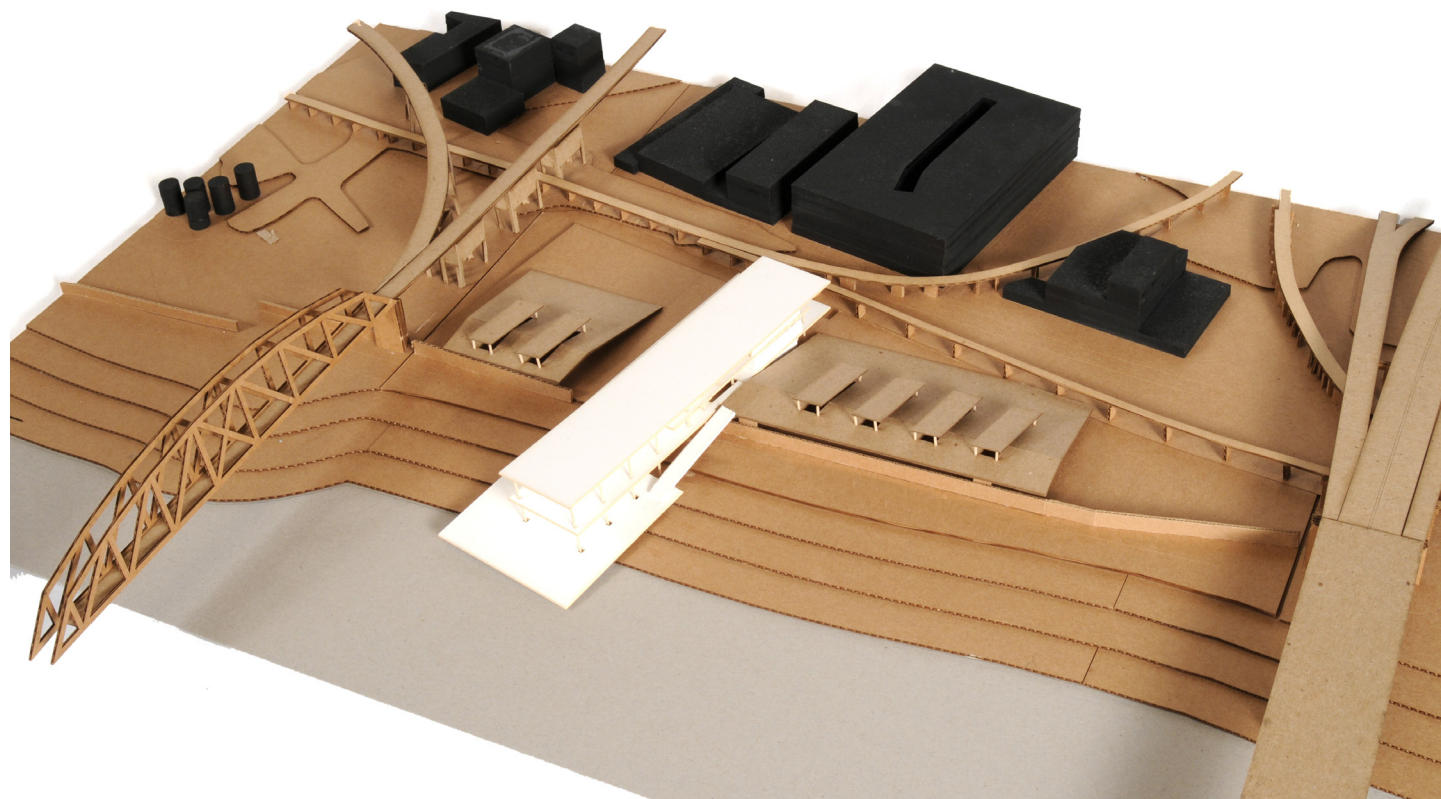
This design features the introduction of several concepts that exist in the final design. The exhibition space is now split into a lower and upper space, with the upper space reaching up and over the flood wall. But in this design, the lower gallery has not been pulled below the sloping landscape and still forms a significant barrier on the site. However, the sloping landscape on the city side of the flood wall has become more extensive, while lacking occupiable space below.

The design also sees the introduction of the pedestrian path on top of the flood wall. But in this iteration, the path ramps up to pass through the upper exhibition space, instead of passing below it. Additionally, the floating pier on the river has been added.



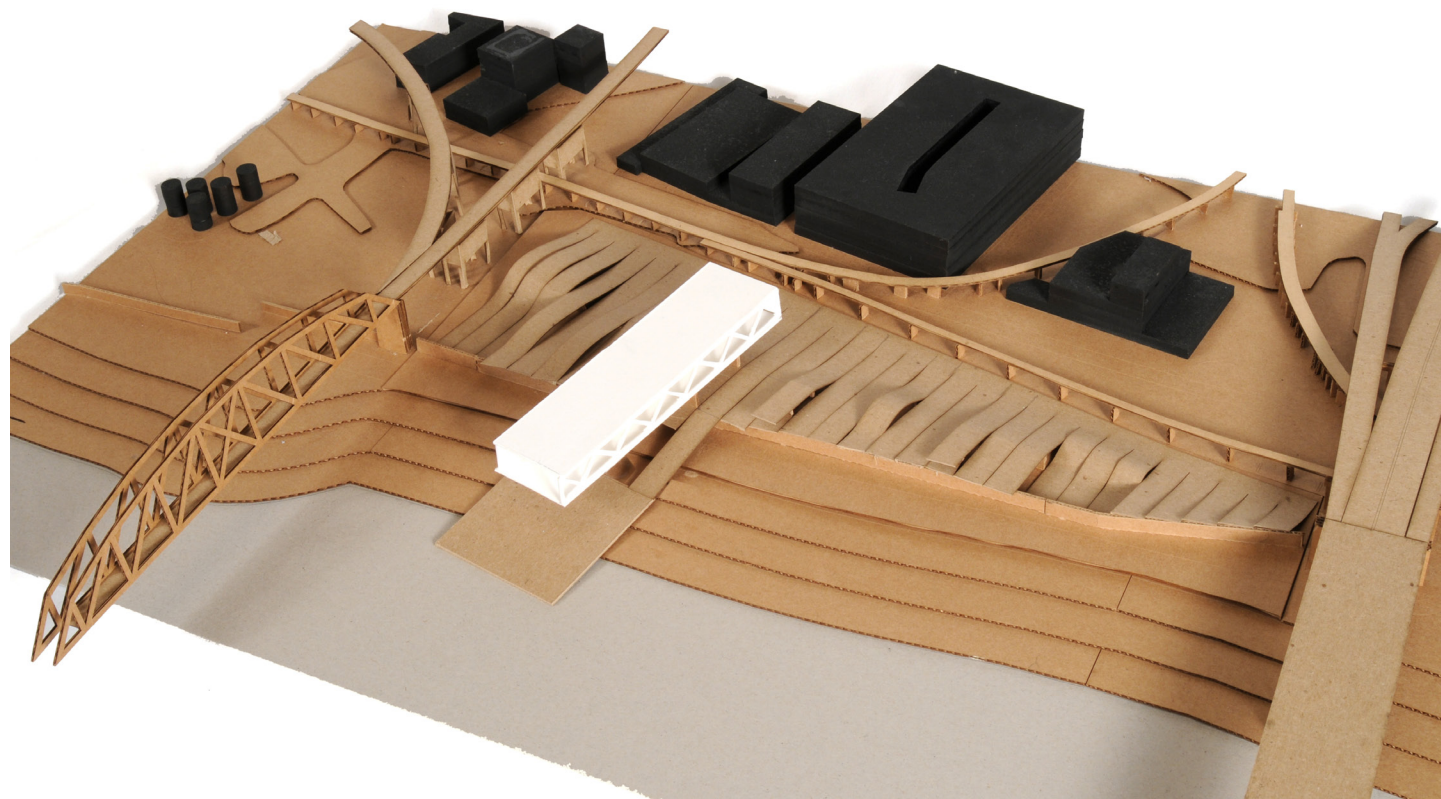
Iteration 5

This design sees the elimination of the lower gallery space altogether. The upper gallery space has expanded to compensate; the landscape on the city side of the flood wall has expanded as well. In this case, the sloping landscape is now used as display space, with artifacts arranged outside on the landscape so that visitors filter past them on their way up to the top of the flood wall.



Iteration 6

This design was presented at the mid-review for the project, and most of the basic parts of the design are in place. The landform sloping up over the wall with the exhibition space below, the upper gallery space extending out over the river, the floating pier on the river, and (although it is not shown here) the public path on top of the flood wall, connecting back to the Arch grounds. But in this design, the upper exhibition space is not floated above the landform, but intersects and cuts through it. And the lightwells for the lower exhibition space are more like objects sitting on top of the landscape than pieces of the landscape peeled up.



Iteration 7

In this step, the upper exhibition space is now floating above the landscape below, and is seen as a more singular object. The landscape itself has been softened, and the “strips” in the surface allow for playing with different ideas about pulling the landscape up and down to create light wells and courtyards. The pier on the river is seen an extension of the landscape behind the flood wall, as if it spilled over the wall and then over the river. An idea about the structure of the upper exhibition bar as one massive full-height truss has started to develop as well.



Iteration 8

The final design solution. The upper exhibition bar and the truss supporting are now tapered, making the form seem lighter, and referencing the sloping form of the landscape below. The landscape itself has been refined and ordered. Instead of multiple different moves pulling the roof up and back down again, the roof is pulled up the same way each time.

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