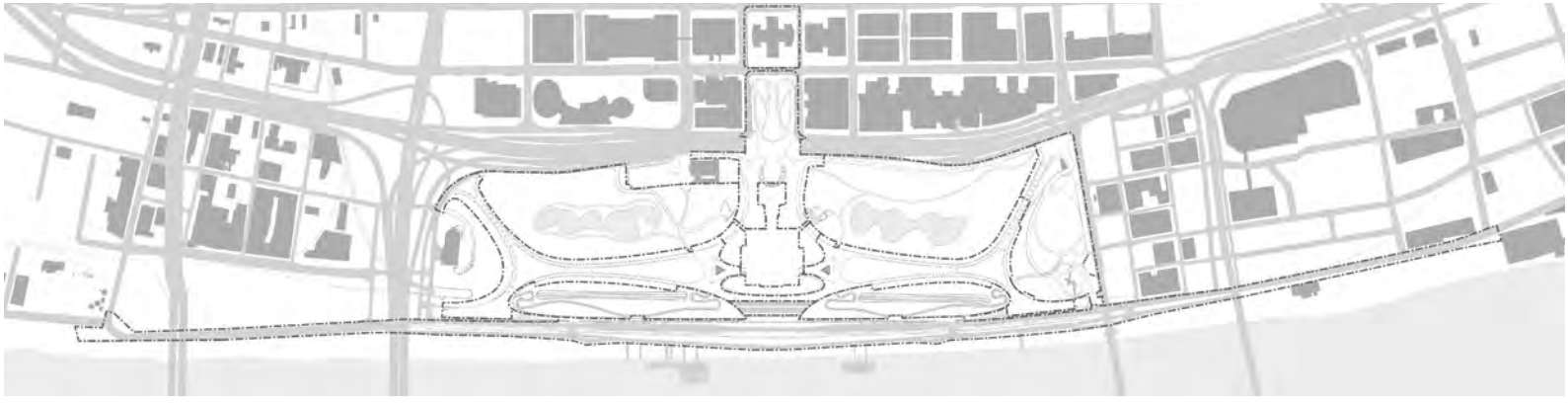

2. Alternatives

Jefferson National Expansion Memorial
Environmental Assessment for Implementing CityArchRiver Initiative Elements

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Alternatives

INTRODUCTION

This chapter describes the various actions that could be implemented to fulfill the goal of revitalizing the park and the Central Riverfront. NEPA requires federal agencies to explore a range of reasonable alternatives that address the purpose of and need for the action. The alternatives under consideration must include a "no action" alternative as prescribed by 40 CFR 1502.14. Action alternatives may originate from the proponent agency, local government officials, or members of the public at public meetings or during the early stages of project development. Alternatives may also be developed in response to comments from coordinating or cooperating agencies.

The NPS and Great Rivers Greenway District (GRG) explored and objectively evaluated three alternatives in this plan/EA. A no-action alternative (alternative 1) and two action alternatives (alternatives 2 and 3) are described in this chapter. Alternative 1, the no-action alternative, is a continuation of current NPS management with no major modifications or improvements to the park or the Central Riverfront. On park lands, the overall design approach of the action alternatives was guided by the 2009 Final Jefferson National Expansion Memorial General Management Plan and Environmental Impact Statement and the analysis and treatment recommendations included in the 2010 update to the Jefferson National Expansion Memorial Cultural Landscape Report. For the two action alternatives, the preliminary concepts and schematic designs for the park and the Central Riverfront were informed by the goals established in Framing a Modern Masterpiece | The City + The Arch + The River 2015 design competition, as well as extensive stakeholder and public input. The findings and recommendations of NPS Value Analysis workshops, undertaken during the summer of 2011, further refined and developed concepts from the design competition. These alternatives are the result of internal scoping and public scoping, and in accordance with NEPA, they meet the overall purpose of and need for the project, and the objectives, as described in chapter 1.

In this chapter, the alternatives are described by parkwide strategies that address the overall park, seven distinct project areas within the park, and an eighth project area that includes land within, adjacent to, and outside the park (the Central Riverfront). Parkwide strategies include proposed changes to security, accessibility, topography and grading, planting, and parking. Descriptions of the eight project areas are provided below. Actions that are common to the two action alternatives (2 and 3) for all project areas are also presented. In addition, this chapter describes mitigation measures, construction approaches, the environmentally preferred alternative, the NPS preferred alternative, and provides a comparison of environmental consequences.

Both action alternatives share the same framework of project areas. However, each alternative is distinct from the other based on the scope and character of proposed improvements within the framework of project areas.

GRAPHICS depicting project elements are provided for illustrative purposes to convey the design concepts. As design work continues during the detailed design process, changes could occur.

The project areas are shown in Figure 5 (the no-action alternative site plan) and include:

(1) The West Gateway encompasses Luther Ely Smith Square and the western entrance to the park, from North 4th Street at Luther Ely Smith Square across Memorial Drive/I-70 to the park.

(2) The Visitor Center/Museum includes the existing facilities and exhibits at the underground Visitor Center and Museum of Westward Expansion.

(3) The North Gateway is the area encompassed by the existing Arch Parking Garage, adjacent landscape, and Washington Avenue, up to the south face of the Eads Bridge.

(4) The East Slopes include the east side slopes that surround the railroad open cut walls and tunnels to the north and south of the sides of the Grand Staircase, parallel and adjacent to Leonor K. Sullivan Boulevard.

(5) The Reflecting Ponds comprise the areas surrounding and including the north and south reflecting ponds located between I-70 and the Processional Walks.

(6) The Processional Walks include the existing system of pedestrian walkways and adjacent allées of trees.

(7) The Old Courthouse includes the block occupied by the Old Courthouse (bounded by Chestnut Street, North 4th Street, Market Street, and Broadway) as well as the Old Courthouse building.

(8) The Central Riverfront includes Leonor K. Sullivan Boulevard from Chouteau Avenue to Biddle Street, the adjacent historic cobble levee along the Mississippi River, the sidewalks on both sides of Leonor K. Sullivan Boulevard, and the infrastructure between the road and the historic levee. The area includes an existing floodwall/levee system regulated by the US Army Corps of Engineers.

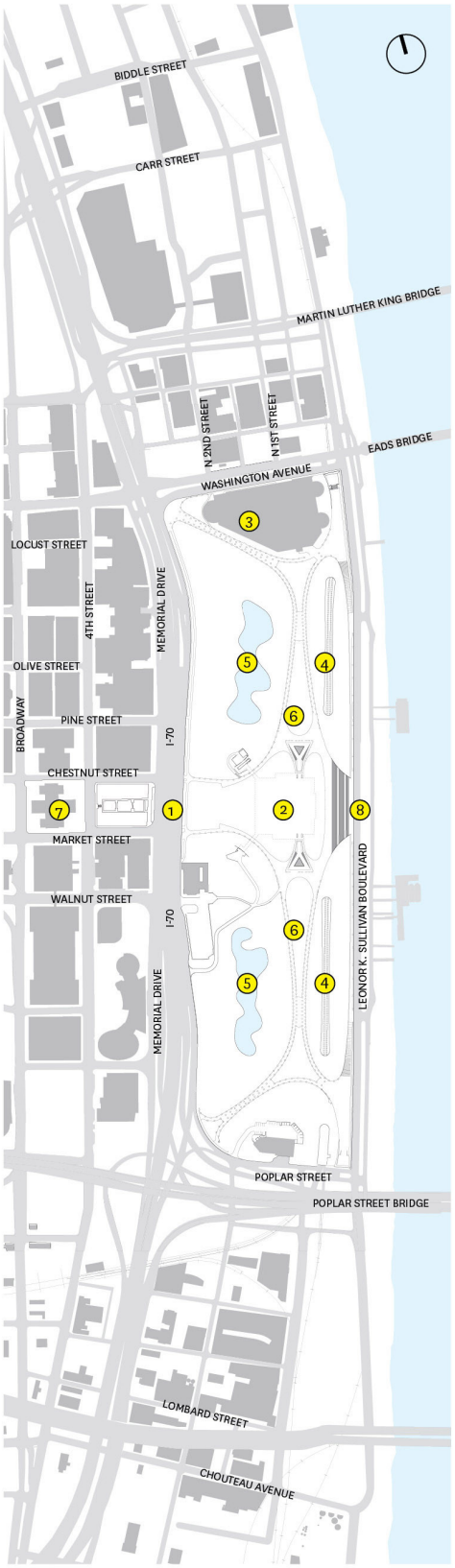


Figure 5 Alternative 1 site plan showing existing conditions + project areas (Source: MVVA)

ALTERNATIVE 1: NO-ACTION

The no-action alternative primarily reflects current conditions and activities at the park and the Central Riverfront (Figure 5). Under the no-action alternative, the park and the Central Riverfront would continue to function much the way they do today. The no-action alternative "sets a baseline of existing impacts continued into the future against which to compare impacts of action alternatives" (NPS 2001).

Over time, potential long-term deferred maintenance projects could occur at the park as funding becomes available. These projects are discussed in the Cumulative Impacts section in Chapter 4 of this EA. Actions proposed by other agencies that could impact the park are also discussed in the Cumulative Impacts section, including MoDOT's action to construct the Park Over the Highway structure. In alternative 1, the Park Over the Highway would be landscaped by NPS after MoDOT's construction is completed, creating a landscaped connection between the park and the city at the West Gateway.

PARKWIDE STRATEGIES

Security

Under the no-action alternative, the existing perimeter security would be maintained as would the visitor security screening under the Arch at the current building entrances. Existing perimeter security includes bollards surrounding the edges of the park, while the existing visitor security screening procedures involve visitors passing through metal detectors at both existing public entrances to the Visitor Center/Museum at the Arch legs.

Topography and Grading

The Park Over the Highway landscape would require grading at the existing berm running north-south along the western edge of the park next to the Memorial Drive/I-70 corridor. The existing topography and grading in other areas of the park would remain unchanged.

No-Action Alternative
The alternative in which baseline conditions and trends are projected into the future without any substantive changes in management. Alternative 1 is the no-action alternative in this planning process.

Action Alternative
An alternative that proposes a different management action or actions to address the purpose, need, and objectives of the plan; one that proposes changes to the current management. Alternatives 2 and 3 are the action alternatives in this planning process.

Planting

The plantings and turf throughout the park's landscape would remain. General landscape maintenance and reconditioning would occur.

Parking

Parking would continue to be provided on the park grounds in the Arch Parking Garage for visitors and employees. Space for visitors to be dropped off in the parking lot adjacent to the Old Cathedral would continue to be available. Bus, RV, and oversize vehicle parking would continue to be accommodated along South Leonor K. Sullivan Boulevard/South Wharf Street south of the Poplar Street Bridge.

Accessibility

Circulation within and around the park includes pedestrian routes and pathways, only some of which are accessible for visitors with mobility disabilities. At present there are no accessible routes from within the park grounds to the Central Riverfront. The existing entrances to the Visitor Center/Museum do not meet accessibility codes, causing difficulties for visitors with mobility disabilities to enter. The slopes of the exposed aggregate walks heading east into the park from Memorial

Accessibility is the design, construction and/or alteration of a building or facility that is in compliance with officially sanctioned design standards, and that can be entered, and used by individuals with a disability. Architectural accessibility is used in conjunction with the idea of program accessibility, a concept is used to ensure that programs, activities and opportunities provided to visitors and/or employees will be provided in such a way that individuals with disabilities are not excluded from, nor denied the benefits of, that program or activity.

Drive do not meet accessibility requirements. The currently accessible street-level entrance to the Old Courthouse would remain at the lift installed on the exterior of the building and the first floor of the courthouse would be accessible. The Park Over the Highway landscape would provide an accessible route between the park and the city. Accessibility would remain unchanged in other areas in the no-action alternative, as would accessible programs offered to visitors.

PROJECT AREAS

The West Gateway

The existing approach to the West Gateway of the park, involving pedestrians crossing Memorial Drive at signalized intersections would be replaced by the Park Over the Highway structure, to be constructed by MoDOT. The NPS would maintain the landscape portion of the Park Over the Highway, which would extend Luther Ely Smith Square and allow pedestrians direct access from Luther Ely Smith Square to the existing western approach to the Arch.

The Visitor Center/Museum

The existing Visitor Center/Museum and its exhibits would remain and interpretive and educational programs would continue to be provided. More detail on the existing museum and exhibits is provided in Chapter 3 of this document. The visitor fees collected at the park would continue to include the fee for the Ride to the Top of the Arch and the fee to view the films screened in the theaters at the Visitor Center/ Museum. Fees to access exhibits and programming in the Visitor Center and the Museum of Westward Expansion, to enter the Old Courthouse, or to enter the Arch grounds would not be collected.

The North Gateway

The existing Arch Parking Garage, adjacent landscape, and ranger station housed within the parking garage would remain. MoDOT's proposed changes to the highway and street infrastructure along the I-70 corridor would alter access to the Arch Parking Garage (Figure 6). These changes would close Washington Avenue between 1st Street and Memorial Drive (at the northwest intersection). Access to the Arch Parking Garage would be provided both through Laclede's Landing as well as via a "slip-lane" at the proposed northbound exit off the interstate highway at Washington Avenue. With the Washington Avenue ramps and intersection completed, the "slip-lane" would allow a single lane of traffic to turn right onto the eastbound only lane segment of Washington Avenue between Memorial Drive and North 1st Street, and proceed from there to the Arch Parking Garage or to Leonor K Sullivan Boulevard.

An additional pedestrian crossing at the vehicular "slip-lane" from I-70 onto Washington Avenue would be required to facilitate pedestrian access from the Washington Avenue intersection into the park. City access to the Arch Parking Garage would be from Washington Avenue, to North 3rd Street, to Laclede's Landing Boulevard, to North 2nd Street and then to the Arch Parking Garage (see the Cumulative Impacts section of Chapter 4 for more details about the proposed changes to the street network). Signage to address wayfinding to the Arch Parking Garage would be implemented.

The East Slopes

The East Slopes would remain in their existing configurations.

The Reflecting Ponds

The plantings and turf around the ponds would remain. The ponds would continue their stormwater retention function.

Figure 6 MoDOT vehicular movement changes to the North Gateway (Source: MVVA)

The Processional Walks

The existing Processional Walks would be maintained. The approved Emerald Ash Borer Environmental Assessment and FONSI (EAB EA) would be implemented. It was written to address the threat posed by the emerald ash borer on the Rosehill ash trees in the park, including the ash trees that comprise the allées of trees adjacent to the Processional Walks. The approach of the emerald ash borer would be monitored and the ash trees would be replaced in a phased approach with a species to be selected by the NPS in accordance with the approved EAB EA (NPS 2011b).

The Old Courthouse

The exhibits at the Old Courthouse would remain and access into the Old Courthouse would be unchanged. The recently replaced exterior lift would continue to provide accessible entrance to portions of the first floor of the Old Courthouse.

The Central Riverfront

The existing roadway, sidewalks, lighting, and utility infrastructure along Leonor K. Sullivan Boulevard would remain unchanged. The current shared traffic/bicycle lanes would remain in their present condition, except for periodic re-painting of pavement markings. Curb ramps and crosswalks would remain unchanged and would not meet accessibility standards. Flooding events would continue to require placement of temporary traffic control devices for roadway closures. Post-flood cleanup operations by City of St. Louis personnel would continue to be required prior to re-opening the Central Riverfront to the public.

CONSTRUCTION AND OPERATION COSTS

The net construction cost of this alternative would range between approximately $6 million and $8 million. Annual operating costs under this alternative would increase between $100,000 and $150,000. Identification of these costs does not guarantee NPS funding. Full project funding for both construction costs and annual operations and maintenance costs would most likely be provided by partners, donations and other non-federal and federal sources. In addition, the project would be designated to receive 30% of the revenue generated by a proposed sales tax increase for the benefit of parks and trails throughout the region.

ACTION ALTERNATIVES

ELEMENTS COMMON TO ALL ACTION ALTERNATIVES

The action alternatives (alternatives 2 and 3) would: alter visitor accessibility both to and within the park and the Central Riverfront; create new and enhance existing programming opportunities; and change plantings by implementing key unrealized parts of Dan Kiley's 1964 Final Conceptual Planting Plan. Changes to the existing landscape would maintain the integrity of the original design intent and the park's designation as a National Historic Landmark.

PARKWIDE STRATEGIES

Security

In alternatives 2 and 3, a continuous security perimeter would be established through the use of vehicle ram barrier walls (cast-in-place concrete retaining structures integrated as site walls) and bollards, similar to the existing security perimeter. The existing concrete planter barriers along the east side of the park would be replaced by vehicle ram barrier walls, designed with enough height and width to prevent pedestrian entry, except at designated walkways, which would have bollards. Bollards would also be located at the bottom of the overlook stairs. Vehicular access to the park for authorized vehicles would be provided at Luther Ely Smith Square via retractable bollards near the park entrances at the former intersections at Memorial Drive and Market Street and Memorial Drive and Chestnut Street. This access would be controlled and would be primarily for park maintenance vehicles. It would also serve for loading during special events and would accommodate emergency vehicle access. Day-to-day shipping and receiving operations at the Arch would continue existing operations, utilizing the existing delivery area at the Grounds Maintenance Facility. Where feasible, the existing perimeter bollards would be retained. The visual impact of the security features would be minimized by integrating them within the landscape. Retaining walls would double as vehicular ram barriers where possible and bollards compatible with the historic landscape would be placed as needed. Coordination on the location access points through perimeter security, either via manual or hydraulic bollards, would occur with park maintenance and law enforcement.

The security concern near the ponds is the adjacency of the historic landscapes to the Memorial Drive/I-70 corridor. At the south pond, the existing line of security bollards would be preserved. At the north pond, the concurrent elimination of the Memorial Drive northbound lanes by MoDOT/City of St. Louis would allow for the retaining wall at the western edge of the park to serve as a vehicle ram barrier wall until the depressed lanes return to surface grade, at which point bollards would be used to continue the security perimeter.

The primary security concern along the Central Riverfront is the prevention of unauthorized vehicles from using the paths on the East Slopes as a means to access the upper levels of the park, while still accommodating NPS maintenance vehicles. A concrete vehicle ram barrier wall would run along the toe of the East Slopes at Leonor K. Sullivan Boulevard, with breaks at the Grand Staircase, the entrances to the accessible paths, and at the North and South Overlook stairs. Entrances to the East Slopes would have a bollard system that meets vehicle protection criteria, and also provide a means to be removed or lowered for maintenance needs. This wall and bollard system would replace the existing concrete planters currently serving as vehicular barriers along the eastern boundary to the park. The existing video surveillance of the Central Riverfront would be maintained and improved as needed by the Port Authority of the City of St. Louis. Other bollards throughout the park (Service Rd., Poplar St., Old Cathedral, Washington Avenue and the Arch Parking Garage) would remain or be replaced in kind.

Security and access to the Old Courthouse would be supplemented with exterior and street lighting, new traffic signals, and additional pedestrian and vehicular signage. There would be no additional visitor screening. In the interior renovated

exhibition space, mechanical, electrical, alarm and fire protection systems would be installed, upgraded, or replaced as needed.

Accessibility

In alternatives 2 and 3, site improvements generally relate to accessibility for visitors with mobility disabilities. Enhancements and changes related to other disabilities would be addressed during the detailed design process through Citizens Universal Design Group, which was established to address all types of accessibility holistically, including the park's grounds, buildings, and exhibits.

Pedestrian accessibility would be added via a selective re-grading of routes that do not meet accessibility standards and the development of a new, secondary network of paths that would be compatible with and integrated into the historic landscape, including the landscapes around the north and south reflecting ponds. All proposed pathways, sidewalks, curb cuts, ramps and roadway crossings would meet or exceed the requirements or guidelines of the Americans with Disabilities Act, Architectural Barriers Act, International Building Code, Public Rights of Way Accessibility Guidelines, Director's Order 42 and NPS standards. Pathways would be graded so as not to exceed the 5% slope and 2% maximum cross slope. New paths would provide access across formerly difficult slopes, opening these landscapes up to all visitors. Mown lawn paths would provide another level of circulation throughout the pond landscapes. The accessible paths and routes for alternatives 2 and 3 would vary based on the overall alternative concept, as described later for each of the project areas.

Steep topographic change along Market Street prevents a continuous accessible pathway at the perimeter of Luther Ely Smith Square and would require the use of a stair and a ramp near the corner of Market and North 4th Streets. However, visitors arriving at the south drop-off along Market Street would have two additional points of access to the park. Accessible pedestrian curb ramps and signalized crossing areas would be provided at the public rights-of-way. Though the park as a whole would be made accessible for all visitors, at this time, a solution for making the trams and operating deck at the top of the Arch accessible has not been identified.

Both alternatives would improve accessibility between the park and the Central Riverfront, ensuring universal access at multiple points along the one and one-half mile stretch of riverfront. While the Grand Staircase would remain the most obvious route for much of the general public, the accessible East Slope walks would provide a secondary pathway that would be used by many visitors. Benches and shade plantings along their lengths would provide visitors with comfortable places to rest along the way. Depending on the location of the ramps, visitors that need to access the site via a ramp system would be able to move between the Central Riverfront and the area at the top of the Grand Staircase, and/or to the Processional Walks near the top of the North and South Overlooks. Accessible pathways connecting the Central Riverfront pedestrian sidewalks to the cobble levee would be included in both alternatives.

Alternatives 2 and 3 would include new interior and exterior ramps for the Visitor Center/Museum, supplementing the existing ramps at the Arch legs entrances, whose slopes are not universally accessible. The ramps, handrail, and guardrail system would be designed to have as minimal visual and structural impact to the existing architecture and landscape as possible. The interior ramps would be placed on top of the east sections of the existing split-ramps system. The ramps would lead from the Visitor Center/Museum to a new level platform at the location of the existing security screening area. A passage would be created through existing interior walls leading to doors opening onto the exterior ramps. The exterior ramps would follow the edge of existing pavement and terminate across from the Grand Staircase. A guardrail system would be installed at grade along the edges of the exterior ramps to protect visitors from falling into the depressed ramp. The guardrail would be designed to have as minimal a visual impact as possible. These changes would be subject to additional design review requirements and Section 106 compliance to ensure impacts to the cultural landscape and National Historic Landmark are minimized.

Alternatives 2 and 3 would provide new access to the first and second floors of the Old Courthouse. Two ramps would run along the south façade of the building and bring visitors to the uppermost level of the steps. To mitigate visual impact on the Courthouse exterior, these ramps would use light-weight steel construction. Smaller ramps or connecting platforms would make up the difference between the landing at the top of the Courthouse steps and the threshold to the first floor of the Old Courthouse. Within the Old Courthouse, access on the first floor is presently limited by changes in the finish floor elevation. Ramps and low infill platforms would be used to connect adjacent floor areas. Additionally, two new elevators would be installed to allow access to the second floor of the building. One would be located in the north wing for visitor access to the second floor, and one in the south wing to provide access to the park's administration office. These changes would be subject to additional design review requirements and Section 106 compliance to ensure impacts to the historic structure are minimized.

Topography/Grading

Proposed topographic changes within the project areas would be minimized by limiting re-grading to a few select areas, as driven by program and access requirements. At many locations, including the Reflecting Ponds, the East Slopes, and the Central Riverfront, re-grading would be used primarily to enable access and reduce maintenance-related issues such as stormwater runoff, erosion and flooding at Leonor K. Sullivan Boulevard.

The most extensive re-grading would likely be part of the proposed connection between the Old Courthouse and Luther Ely Smith Square to the west of the Memorial Drive/I-70 corridor and the park grounds to the east. Both alternatives 2 and 3 include the creation of park grounds situated on top of a structure over the depressed portion of I-70 between Market and Chestnut streets. The proposed structure would be constructed by MoDOT and NPS would landscape the structure. It would create continuous accessible west to east routes and a connected landscape across the Memorial Drive/I-70 corridor from Luther

Swales help to manage stormwater runoff as part of a vegetated, open-channel management practice designed specifically to treat and attenuate stormwater runoff for a specified water quality volume. As stormwater runoff flows along these swales, or channels, it is treated through vegetation which slows the water to allow sedimentation, filtering through a subsoil matrix, and/or infiltration into the underlying soils.

Ely Smith Square across the park and to the bottom of the Grand Staircase.

Entering the park from the west, the existing Processional Walks between the sidewalk at Memorial Drive and the existing entrances to the Arch are separated by a steeply sloped berm. This creates conditions where slopes exceed what is required for pedestrian accessibility compliance. The proposed action would re-grade the walks to both meet the proposed elevations at Luther Ely Smith Square, as well as bring the grades within compliance for pedestrian accessibility.

Implementing a well-integrated accessible west to east route across the park would require re-grading the existing berm running north-south along the western edge of the park next to the Memorial Drive/I-70 corridor. This re-grading would be implemented to improve drainage, provide accessible pedestrian connections and accommodate new program elements. Care would be taken to minimize the visual impact of such topographic changes to the historic landscape and protected viewsheds. Potential berm changes for alternatives 2 and 3 would vary based on the overall alternative concept, as described later for each of the project areas. These changes would be subject to additional design review requirements and Section 106 compliance to ensure impacts to the cultural landscape and National Historic Landmark are minimized.

The elevation of Leonor K. Sullivan Boulevard would be raised along the Central Riverfront, which would require the sidewalks adjacent

to the park along the East Slopes, the overlook stairs, and the Grand Staircase to be raised as well. New grading would be required between the East Slopes and the new sidewalks adjacent to the raised height of the roadway. To balance excavation and fill requirements across the project, and reduce the need for hauling soils offsite and importing additional soils, excavated soil from one project area may be used as fill in other project areas should it be deemed acceptable for use as fill material. A protocol for fill material would be developed during the detailed design process to ensure re-used fill does not contain artifacts and is culturally sterile. Additionally, top soil of acceptable quality in impacted areas would be stockpiled and amended as needed for re-use. Soil amendment strategies would mitigate existing deficiencies, and would reduce the need for importation of expensive planting soils. The proposed new paths throughout the landscape would use subtle cut and fill to create the accessible path network. Soil amendments in these areas would reduce the need to import additional planting soil.

Subtle grading around the ponds and new paths would create swales to catch and detain storm water runoff prior to infiltration. The new, gentle swale areas would have overflows directed to a discreet perimeter drainage system at the back of the reflecting pond walls that would be connected to the existing stormwater conveyance system. Shallow grass-lined swales along the upland side of introduced pathways would further slow and redirect surface runoff and debris from entering the reflecting ponds. The implementation of a conservation mowing regimen would also limit runoff while maintaining the original design intent of Dan Kiley's 1964 Final Conceptual Planting Plan. New grading would be subtle and designed to retain the overall character of the existing topography.

Planting

Proposed plantings in alternatives 2 and 3 would support the goals of the Cultural Landscape Report (NPS 2010) regarding strengthening of the plantings spatial organization as intended per Dan Kiley's Final Conceptual Planting Plan (Office of Dan Kiley 1964). Proposed planting strategies within contributing areas follow the original design intent and implement compatible sustainable management practices. Within non-contributing areas, plantings would be selected to be compatible with the historic landscape, to enhance visitor experience, to complement existing features, and to facilitate programmatic requirements established in the GMP. In these areas, plantings would be designed to retain character-defining viewsheds. Existing trees would remain as possible.

Planned planting typologies would include:

HIGH USE TURF: a grass mixture coupled with appropriate soils and amendments to prevent erosion and compaction. This would reduce the development of bald patches within lawn surfaces. These plantings are intended to be used in areas where visitor use is expected to be moderate to heavy.

CONSERVATION MOWN AREAS: a low-maintenance grass mixture that requires less mowing and irrigation than conventional lawn surfaces. This would reduce maintenance costs and surface runoff. These areas would retain the current monolithic, fine-textured, lawn character of the existing plantings. These plantings are intended to be used in areas where visitor use is expected to be light to moderate.

New plantings of understory and canopy trees throughout conservation mown areas would be used to strengthen the historic integrity of the landscape's spatial organization (i.e., the open mown viewshed area would be framed by trees). Species selection would be determined based on a process evaluating formal qualities as they relate to the original design intent, as well as horticultural value for the region.

WOODLAND PLANTINGS: areas of mixed vegetation, comprising the range of plant types found in a hardwood forest, including deciduous canopy trees, smaller understory trees and shrubs, and low groundcovers. These plantings are intended to be used in areas where visitor use is limited to pathways

and other paved areas. The typology references the spatial qualities achieved by the placement of denser plantings per Dan Kiley's 1964 Final Conceptual Planting Plan.

SINGLE-SPECIES ALLÉE PLANTINGS: The existing allée consists of a single tree species planting of "Rosehill" White Ash (Fraxinus americana), making this important feature susceptible to deforestation by the emerald ash borer, an invasive insect whose larvae feed specifically on ash trees. The emerald ash borer has already caused widespread devastation throughout Canada and the upper Midwest, and was confirmed in Missouri in 2008.

Alternatives 2 and 3 would replace the allée trees in phases. In accordance with the approved EAB EA (NPS 2011b) written to address the threat posed by the emerald ash borer, a single species with trees of uniform height, spread, and caliper would be selected for the allée plantings (Figure 7). A replacement species would be selected by the NPS in accordance with the EAB EA (NPS 2011b).

At Luther Ely Smith Square, new plantings of canopy trees would be conceived to reinforce the Saarinen vista in the same manner as the existing allées. New plantings would be differentiated from the existing historic landscape in that new canopy trees would be distinguished by the use of both a different tree species and a different planting pattern.

Existing irrigation equipment would be retained, upgraded, or replaced as necessary to serve the action alternative planting areas. With the proposed planting plans, the need for irrigation, however, would be reduced by introducing less intensive management strategies such as conservation mowing and selecting drought-tolerant mixes and species. Where new irrigation systems are required, current irrigation technology could be applied to further reduce potable water usage. The action alternatives' maintenance regime would be compatible with organic treatments that reduce the application of pesticides and fertilizers.

Utilities

Existing utilities, in particular the HVAC system for the Visitor Center/Museum, would be adapted to provide for expanded structures within the park. New utilities required to serve proposed new project elements and for construction would be designed and installed to mitigate impacts to the historic landscape and to comply with all applicable codes.

Figure 7 Proposed North Pond Allee Planting (Source: MVVA)

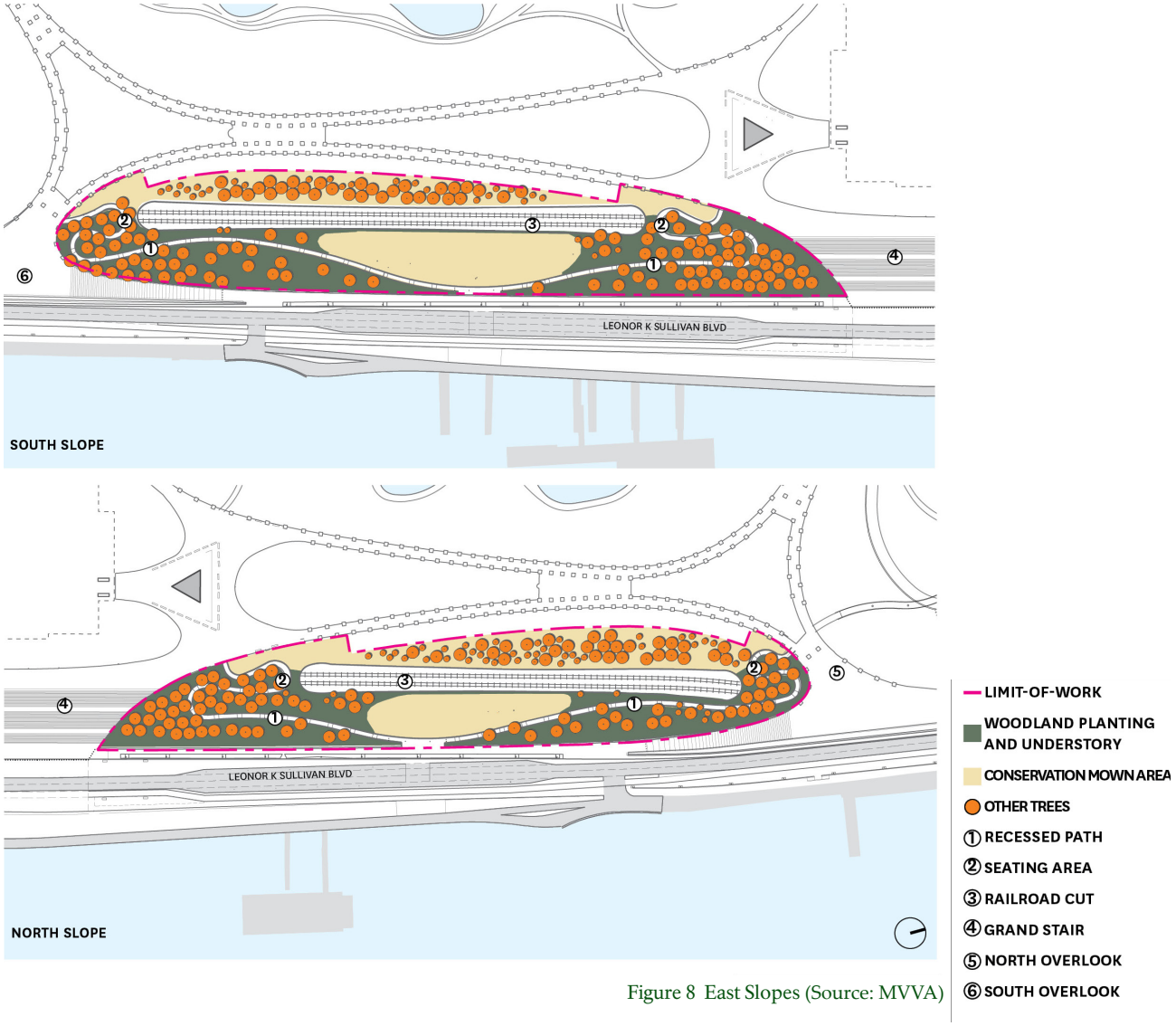


Figure 8 East Slopes (Source: MVVA)

PROJECT AREAS

East Slopes

As depicted in Figure 8, two to four universally accessible paths discreetly integrated into the topography would lead visitors from the top of the Grand Staircase and the overlooks down to the Central Riverfront. Benches along the paths would allow visitors to rest and enjoy long views of the river, and would be located to provide trainspotting opportunities as trains move through the railroad cuts and tunnels.

The combination of steep topography and overhead clearance requirements for the rail tunnels running across the site dictate the serpentine shapes of the proposed paths. In order to minimize their visual impact, the paths would be set below grade within two low retaining walls. Installation of the paths would require fairly extensive regrading. Grading across the site would be performed to balance cut and fill in order to limit the import and export of fill where feasible. Utility connections would be necessary along the length of the paths in order to power the new path lighting and drain stormwater. The general form of the existing slopes would be retained while accommodating the new path systems.

Figure 9 North and South Ponds (Source: MVVA)

The East Slopes would be planted with a combination of conservation mown areas and woodland planting. Breaks in the tree canopy would allow views of the river at strategic points along the paths. The conservation mown areas that would be located in the areas between the east edges of rail tunnels and the bottom of the slopes are intended for sitting and viewing the river and for large event gatherings. These plantings are intended to better reflect the character of Dan Kiley's 1964 Final Conceptual Planting Plan as well as improve maintenance operations.

Reflecting Ponds

Alternatives 2 and 3 would provide new universally accessible paths into the landscapes around the North and South reflecting ponds (Figure 9). Subtle grading around the ponds and new paths would create swales to catch and detain storm water runoff. These changes may require some retrenching of path edge utility lines (water and electric) as well as reconfiguration of stormwater drainage connections to existing combined sewers. The implementation of a conservation mowing regime would also limit runoff while maintaining the original design intent of Dan Kiley's 1964 Final Conceptual Planting Plan (Office of Dan Kiley 1964).

Processional Walks

NPS would replace the existing ash trees with a more suitable species, as discussed under the planting strategy, while utilizing this replanting process as an opportunity to

repair and amend the conditions underneath the walks. To accomplish this, NPS would incorporate new structural soil and repair or replace existing drainage and irrigation systems. Alternatives 2 and 3 would allow for the replacement in-kind of the exposed aggregate concrete surface of the walks throughout the Processional Walks and adjacent connections to the overlooks. Where appropriate and if feasible, a cobble border and tree pit treatment, similar to the Kiley design, would be considered during the design process. These changes may require some retrenching of path edge utility lines (water and electric) as well as reconfiguration of stormwater runoff drainage connections to existing combined sewers.

Old Courthouse

Alternatives 2 and 3 would renovate galleries and install new exhibits within the first and second floors of the Old Courthouse. Accessibility would be improved at both the exterior and interior of the building, as described under the accessibility strategy. In the interior spaces, mechanical, electrical, or alarm systems would be upgraded or replaced as necessary. The surrounding streetscape would be improved to accommodate concurrent, proposed changes to adjacent city streets as well as improve accessibility at pedestrian crossings.

These improvements would include widening sidewalks along Market and Chestnut Streets, as well as the installation of new curb cuts. The sidewalks on the north side of Market Street and on the south side of Chestnut Street would be widened to provide a stronger physical and visual connection from Citygarden to the Arch grounds. Street trees would not be planted around the Old Courthouse in accordance with the historic streetscape that has existed around the perimeter of the building. The sidewalk improvements would also include accessibility improvements to the Market and Chestnut Street corridors.

Figure 10 Central Riverfront Project Area (Source: MVVA)

The sidewalk widening along Market Street adjacent to the park would be possible with the removal of an extra turn lane that exists between North Broadway and North 4th Street, where the sidewalk width would increase by approximately 10'. The sidewalk modification to the north side of Chestnut Street would be possible due to an existing travel lane that is 15' wide. The travel lane would be reduced to a more typical 10' width, allowing the sidewalk to increase in width by 5' to the north. Modifications of sidewalk widths around the Old Courthouse would be relatively minimal, as the existing block is already wider than other blocks along Market and Chestnut Streets. The proposed curb alignments would align to the proposed limits at Kiener Plaza and at Luther Ely Smith Square.

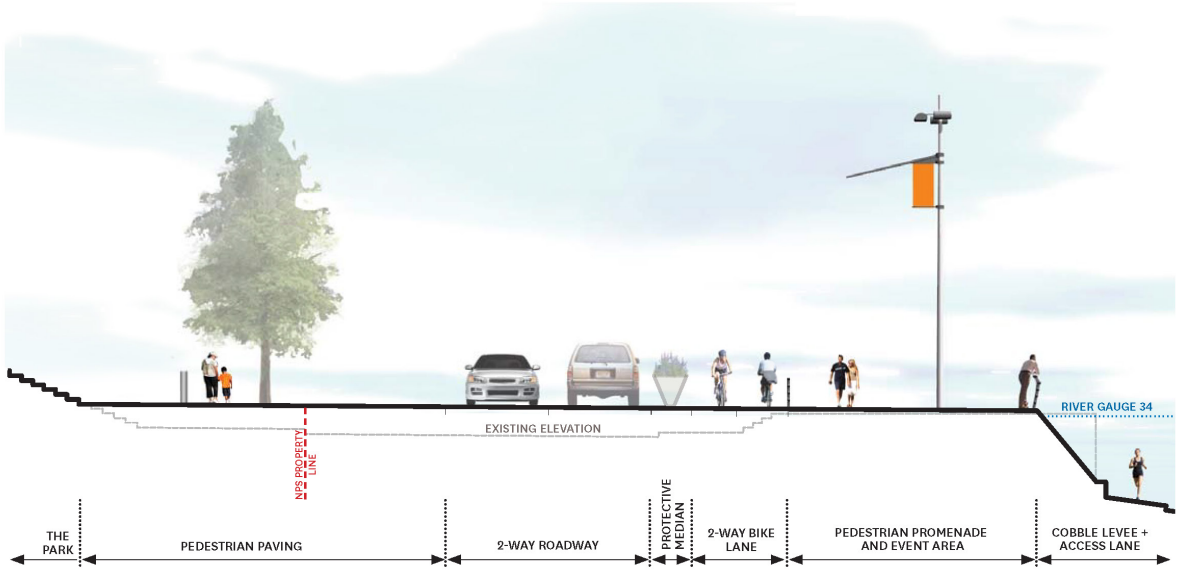
The Central Riverfront

Alternatives 2 and 3 would transform the Central Riverfront from Chouteau Avenue to Biddle Street by raising the elevation of Leonor K Sullivan Boulevard an average of 2.9 feet across the project site, varying between one foot and 4.5 feet, to reduce the frequency and impact of flood events. Elevation changes to Leonor K. Sullivan Boulevard would be subject to additional design review requirements and Section 106 compliance to ensure the potential for adverse effects under Section 106 is and impacts to the park's NHL District, Eads Bridge, and other historic buildings, structures, sites, objects, and districts and cultural landscapes are minimized.

A new multi-modal roadway would be established, providing a critical link in the regional system of bike trails, in this case between the bike trails and areas north and south of the Arch grounds. The proposed improvements would convert the existing two-lane roadway section with periodic left turn lanes into a narrower two-lane roadway section with a two-way bike path separated from the vehicle travel lanes and could include designated areas for bus drop-off/pick-up lanes (Figures 10 and 11).

A new pedestrian promenade would be created between the bike path and the historic cobble levee and would feature new street trees, street lighting, access to the historic cobble levee, and a central area for river viewing and programmed events. Existing sidewalk paving along the east side of the park would be replaced with exposed aggregate concrete to match existing paving. Traffic calming measures include raised pedestrian crossings at the base of the Grand Staircase and at the new crosswalk locations at the base of the East Slope paths. Flush curbs and/or accessible curb ramps would be provided at all new crosswalks.

Figure 11 Central Riverfront Leonor K. Sullivan Concept Section (Source: MVVA)



ALTERNATIVE 2: MODERATE CHANGE

This alternative provides improved connections between the park and the city, meeting the goals of the park's General Management Plan (NPS 2009). A key feature of the alternative includes a new landscape across the Park Over the Highway, which would connect a redesigned and expanded Luther Ely Smith Square to the western entrance to the park (Figure 12).

PARKWIDE STRATEGIES

Security

A continuous perimeter of vehicle ram barrier walls and bollards would provide security (Figure 13). Alternative 2 would maintain the existing security perimeter of bollards tying into the north facade of the existing Arch Parking Garage. Other bollards throughout the park would remain or be replaced in kind. The ranger station would remain in its current location within the Arch Parking Garage. Security screening for the Visitor Center/ Museum would remain in place at each of the Arch legs. Visitor security screening would remain in place at the Arch legs. The proposed new accessibility ramps at the Arch leg entrances would not alter these functions.

Topography/Grading

Luther Ely Smith Square would be re-graded to provide a large plaza at its western edge that slopes gently downward to the confluence of the extensions of the Processional Walks. Moving east, visitors would enter the lawn at its western edge, approaching a small rise before coming to a shallow valley that descends to the base of the Arch. The paths on either side of the lawn would be lower than the lawn, with planted slopes on both sides of the pathways that shield pedestrians from the noise and pollution of I-70. These paths would transition to meet with existing Processional Walks, creating an accessible link to the Arch. In order to make the connections to the Processional Walks from the West Gateway

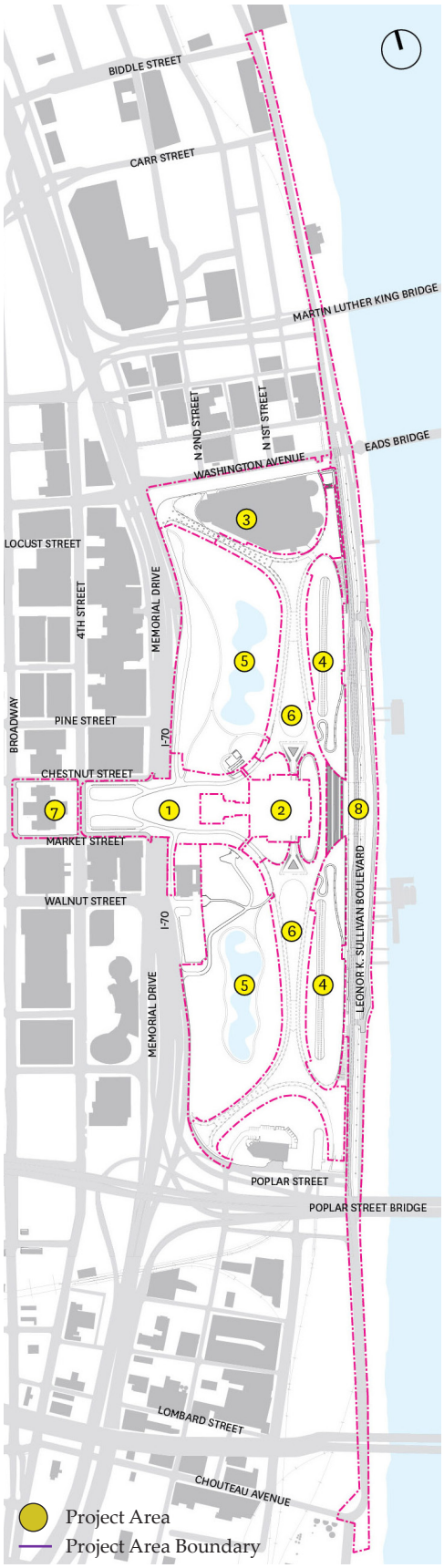


Figure 12 Alternative 2 Site Plan (Source: MVVA)

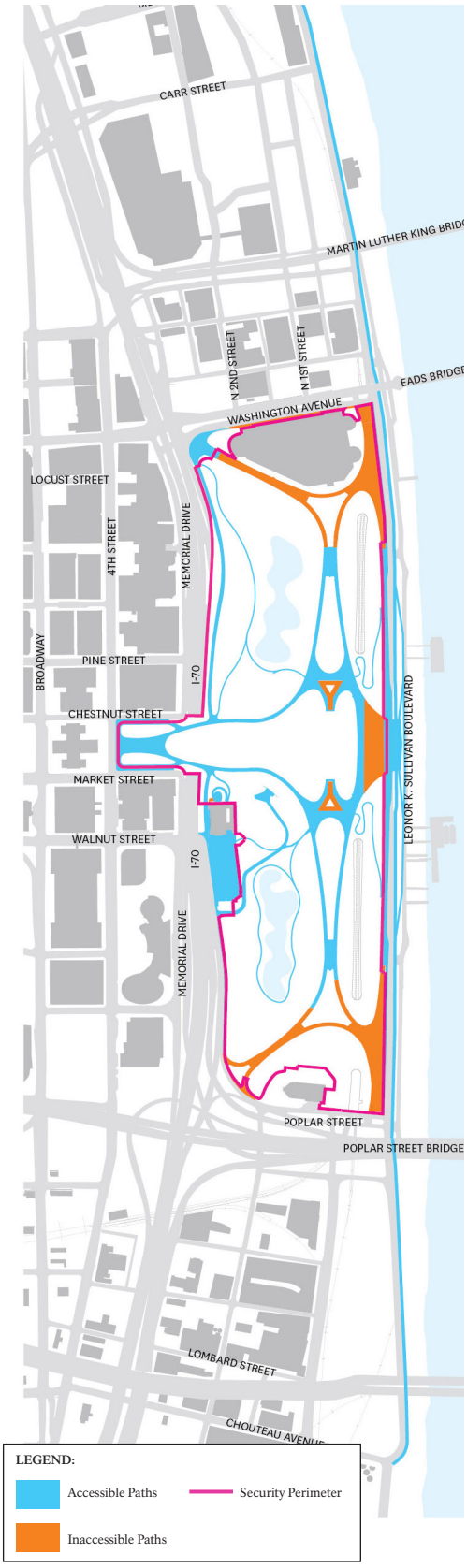


Figure 13 Alternative 2 Proposed Security and Accessible Routes (Source: MVVA)

accessible, portions of the walks would be rebuilt at a lower elevation than currently exists. Roadway clearance requirements over the interstate and structural requirements would dictate the elevation of the surface of the Park Over the Highway structure to be constructed by MoDOT. Any changes to the existing berm and the lawn area underneath the Arch would be subject to additional design review requirements and Section 106 compliance to ensure impacts to the cultural landscape and National Historic Landmark are minimized.

Slight re-grading of the northwest corner of the park (in the North Gateway) would occur in order to achieve an accessible connection into the park at the intersection of Washington Avenue and Memorial Drive. This would require minimal modifications to the existing topography and could likely be achieved without importing or exporting fill material. Due to the substantial removal of fill at the existing West Gateway berm, it is expected that there would be a surplus of fill that would need to be removed from the site. A protocol for fill material would be developed during the detailed design process to ensure re-used fill does not contain artifacts and is culturally sterile.

Accessibility

Under alternative 2, visitors with disabilities accessing the park from the North Gateway would be directed to use existing elevator facilities within the Arch Parking Garage. Figure 13 shows which park paths and circulation routes would be accessible under alternative 2.

Planting

Plantings lining the paths from Luther Ely Smith Square and crossing over the depressed highway would be comprised of shrubs that would not grow high enough to interfere with the Saarinen vista. Canopy trees would be planted along the gentle berms at the exterior edges of the long lawn that would run

at a lower elevation over the Park Over the Highway and create a pair of densely planted passages. There would be limited opportunities for planting at the North Gateway, with the majority of new plantings limited to the northwest intersection, planting at or on the structure of the garage as feasible, and planting of the streetscape adjacent to the garage. Proposed plantings for alternative 2 are shown in Figure 14.

Parking

The Arch Parking Garage would remain under alternative 2. Therefore, visitors and employees would be provided with a dedicated parking facility on park grounds for the remaining lifespan of the structure. Bus, RV, and oversize vehicle parking would continue to be accommodated along South Leonor K. Sullivan Boulevard/South Wharf Street south of the Poplar Street Bridge.

PROJECT AREAS

West Gateway

Alternative 2 proposes that the West Gateway serve as a major point of arrival for visitors to the park (Figure 15). It would provide outdoor spaces for group orientation and gathering and spaces for individual rest and relaxation. The West Gateway would act as both a conceptual and literal bridge between the park, the Old Courthouse and downtown St. Louis at an expanded Luther Ely Smith Square from North 4th Street to the existing western approach to the Arch. An agreement between MoDOT and the NPS would enable the creation of a structure built over the depressed section of I-70. While the structure itself would be constructed, owned and maintained by MoDOT, the surface would be managed and maintained by the NPS, in order to create a continuous landscape connection - a Park Over the Highway. Further description of the structure over I-70 that would be constructed by MoDOT is located in the Cumulative Impacts section of this EA.

Some visitors would arrive at Luther Ely Smith Square, with car and bus drop-offs flanking its north and south sides. Others would walk into the park from the Arch Parking Garage

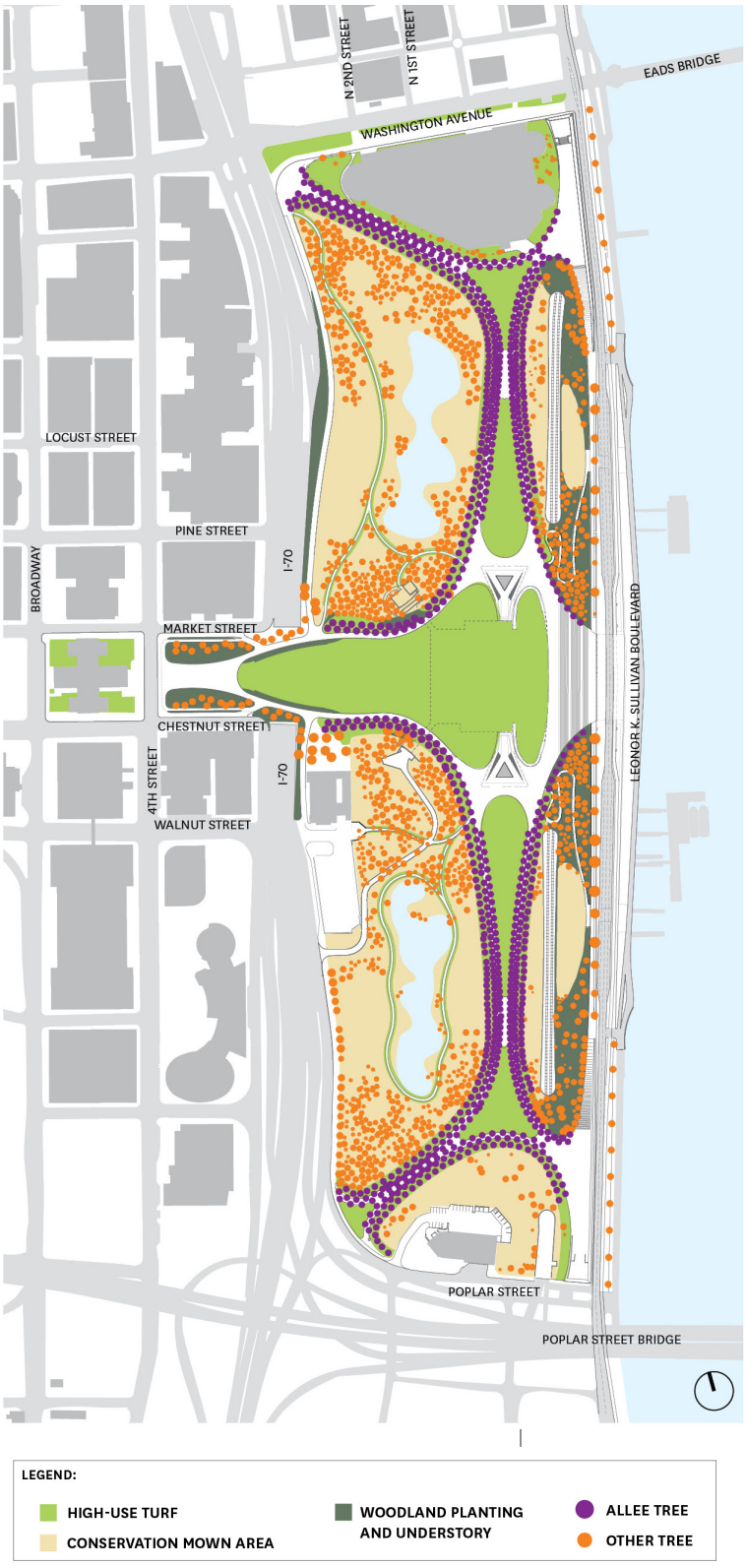


Figure 14 Alternative 2 Proposed Plantings (Source: MVVA)

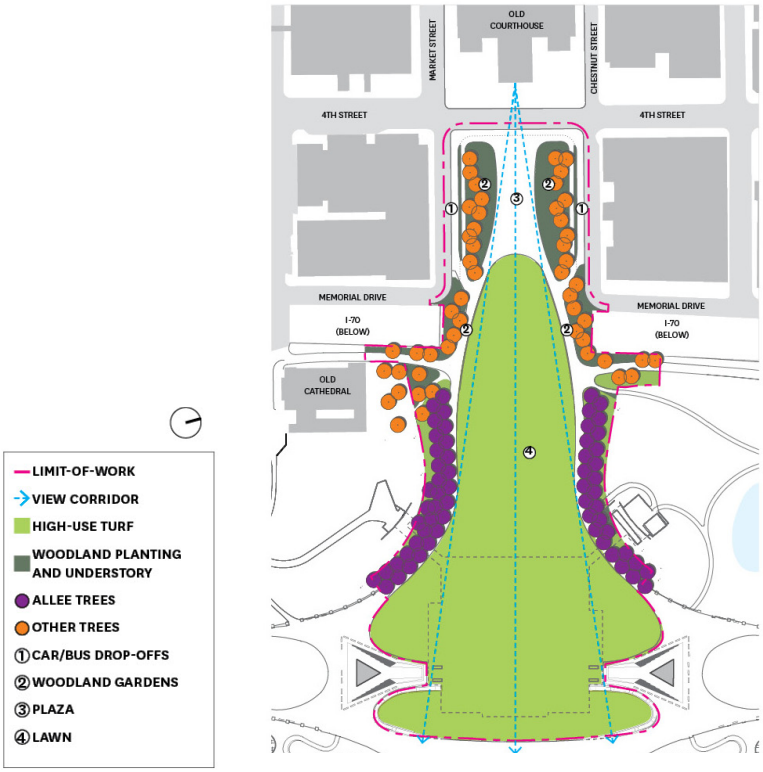


Figure 15 Alternative 2 West Gateway
(Source: MVVA)

and from downtown businesses, attractions, and parking structures. Traffic around Luther Ely Smith Square would flow in a clockwise direction. Woodland shade gardens would separate these drop-offs from a large plaza leading down to a large east to west oriented sloping lawn, which would transition into the existing park. The lawn would serve as an amphitheater for large events. Plantings lining the paths from Luther Ely Smith Square would be comprised of shrubs that would not grow high enough to interfere with the Saarinen vista. Gentle berms at the exterior edges of the long lawn would be flanked by canopy trees that would run at a lower elevation over the Park Over the Highway and create a pair of densely planted passages. These would shield visitors from views and noise associated with the Memorial Drive/I-70 corridor, and would provide a contrasting experience from walking the length of the larger lawn.

Visitor Center/Museum

Alternative 2 would renovate existing exhibit space. New interior and exterior ramps would supplement the existing ramps at the Arch legs and provide accessible entrance and egress routes for the Visitor Center/Museum. The interior ramps would be placed on top of the east sections of the existing split-ramps system. A passage would be created through existing interior walls leading to doors opening onto the exterior ramps via a new level platform at the location of the existing security screening area. The exterior ramps would follow the edge of existing pavement and terminate across from the Grand Staircase. A guardrail system would be installed at grade along the edges of the exterior ramps to protect visitors from falling into the depressed ramp. The guardrail would be designed to have as minimal a visual impact as possible. Due to their required length, the interior ramps would extend into the lobby, and would have benches for seating, in order to break up the length of the ramps for visitors. These changes would be subject to additional design review requirements and Section 106 compliance to ensure impacts to the cultural landscape and National Historic Landmark are minimized.

Visitor fees collected at the park would include the fee for the Ride to the Top of the Arch and to view the films screened in the theaters at the Visitor Center/Museum. Fees to access exhibits and programming in the Visitor Center and the Museum of Westward Expansion, to enter the Old Courthouse, or to enter the Arch grounds would not be collected.

North Gateway

Under alternative 2, the existing Arch Parking Garage would remain. Aesthetic improvements to the garage could include painting, new plantings, such as vines over the façade, and new, updated signage (Figure 16).

Changes to the highway and street infrastructure introduced by MoDOT would alter access to the garage. In response to these changes, NPS proposes that Washington Avenue be closed between 1st Street and Memorial Drive (at the northwest intersection). Access to the Arch Parking Garage would be provided both through Laclede's Landing as well as via a "slip-lane" at the proposed northbound exit off the interstate highway at Memorial Drive. With

Figure 16 Alternative 2 North Gateway
(Source: MVVA)

the Washington Avenue ramps and intersection completed, the "slip-lane" would allow a single lane of traffic to turn right onto the eastbound only lane segment of Washington Avenue between Memorial Drive and North 1st Street, and proceed from there to the Arch Parking Garage or to Leonor K Sullivan Boulevard. An additional pedestrian crossing at the vehicular "slip-lane" from I-70 onto Washington Avenue would be required to facilitate pedestrian access from the Washington Avenue intersection into the park. City access to the Parking Garage would be from Washington Avenue, to North 3rd Street, to Laclede's Landing Boulevard, to North 2nd Street and then to the Arch Parking Garage (see the Cumulative Impacts section of Chapter 4 for more details about the proposed changes to the street network). The graphic below is provided for illustrative purposes to show the proposed changes to the North Gateway and the location of the slip-lane and street network changes proposed by MoDOT and the City of St. Louis. As design work continues during the detailed design process, changes could occur.

With the increased elevation of Leonor K. Sullivan Boulevard at the Central Riverfront a new sloped transition would be required for the road and sidewalk surfaces from the west edge of Leonor K. Sullivan roadway to the existing surface of Washington Avenue below the Railroad trestle, between the North Overlook wall and Eads Bridge.

CONSTRUCTION AND OPERATION COSTS

The net construction cost of this alternative would range between approximately $75 million and $100 million. Annual operating costs under this alternative would increase between $800,000 and $1 million. Identification of these costs does not guarantee NPS funding. Full project funding for both construction costs and annual operations and maintenance costs may not be available all at once and would require a phased approach; it would most likely be provided by partners, donations and other non-federal and federal sources. In addition, the project would be designated to receive 30% of the revenue generated by a proposed sales tax increase for the benefit of parks and trails throughout the region.

ALTERNATIVE 3: MAXIMUM CHANGE

This alternative also provides extensive improved connections between the park and the city, meeting the goals of the park's General Management Plan (NPS 2009). A key feature of this alternative would be a new entrance at the West Gateway to the park that would lead to an expanded underground Visitor Center/Museum. This entrance would connect to a redesigned and expanded Luther Ely Smith Square across the landscaped Park Over the Highway structure, forming a new primary entrance to the park. Another substantial feature of this alternative would be the removal of the existing Arch Parking Garage after the implementation of an alternative parking strategy, and its replacement with a new landscape which would include an Event space, Welcome Center, and Explorer's Garden (Figure 17).

PARKWIDE STRATEGIES

Security

A continuous perimeter of ram barrier walls and bollards would provide site security (Figure 18). Facing Memorial Drive, Market Street, Chestnut Street and North 4th Street, retaining walls integrated with the topography and plantings at the outer edges of the Woodland Shade Gardens would act as ram barrier walls and limit the presence of bollards to only those points where paths connect the park to the surrounding streets. Through much of the North Gateway, a shared pedestrian/bicycle path would be constructed after removal of the Arch Parking Garage. It would be lined on the south side with a retaining wall/ram barrier. At the east and west ends of the path, this would transition to a line of bollards which would complete the security perimeter at the North Overlook wall and west to the highway edge. A small new Welcome Center with the potential to include restrooms would be added in the North Gateway and park staff would greet and direct visitors to improve the sense of safety. This alternative would relocate the existing ranger station to the maintenance facility at the south end of the park.

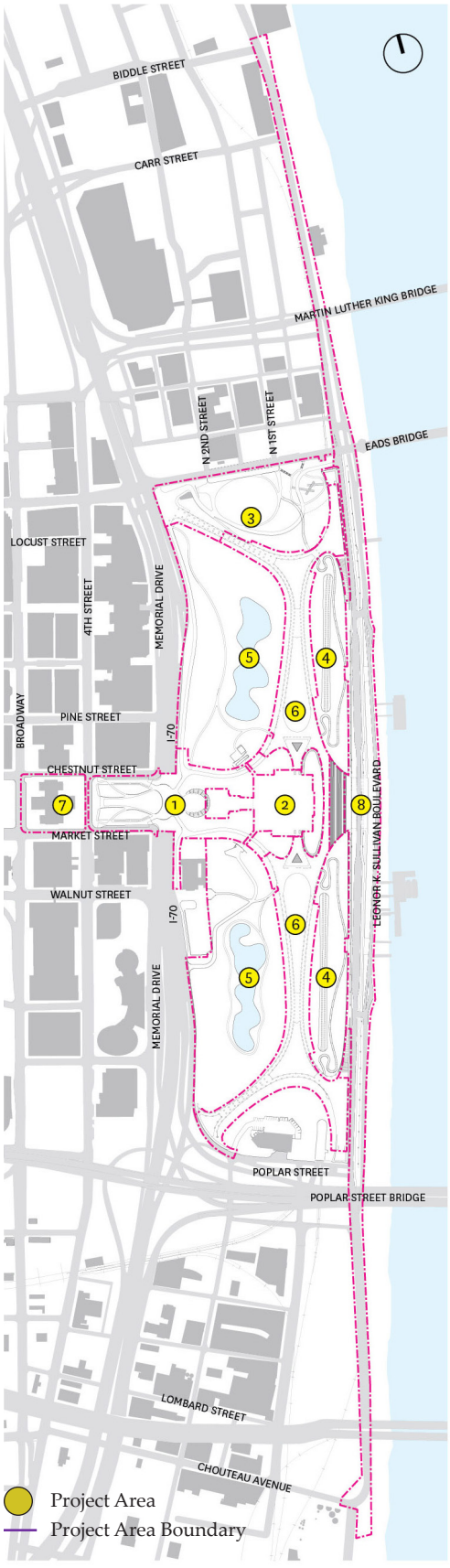


Figure 17 Alternative 3 Site Plan (Source: MVVA)

Within the Visitor Center/Museum, visitors would be screened with airport-style metal detectors and x-ray machines. Intrusion detection systems would include alarms, detection devices, and video surveillance. These security functions would be located off the main lobby space of the new West Entrance, serving critical screening and security needs while not dominating the visitor experience. At the Arch legs' exit doors and new accessible exit ramps, security screening equipment would be removed. In this alternative the Arch legs would serve as exits only and therefore a single guard would be posted at each exit to monitor the exits and prevent unauthorized entry. Unintended entry by visitors to the Visitor Center/Museum would be further discouraged by signs, one-way ramp flow, and one-way outer doors. Guardrails would be placed atop the ramp walls to minimize fall hazards.

Accessibility

Alternative 3 would create multiple accessible pedestrian passages between the park, the Washington Avenue corridor, Laclede's Landing and the Mississippi riverfront. All four existing connections underneath the Eads Bridge between Laclede's Landing and the park would be made compliant for pedestrian accessibility, creating full access between the two downtown attractions. Replacing Washington Avenue with a shared pedestrian and bicycle pathway would provide a pedestrian accessible route from the city to the Central Riverfront. Smaller paths off this route would make connections between Laclede's Landing and the rest of the park. An elevated walk would make a connection over the bike path to create an accessible route from North 1st Street to the park. The intersection of Washington Avenue and Memorial Drive would become a four-way intersection with the closure of Washington Avenue to through traffic between Memorial Drive and Leonor K Sullivan Boulevard.

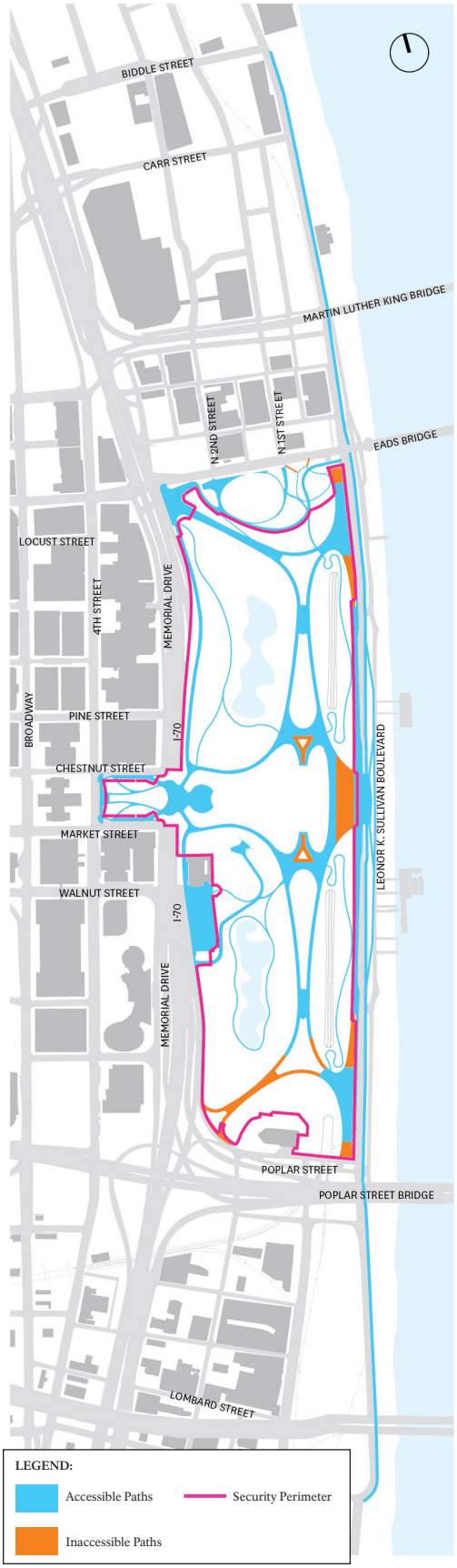


Figure 18 Alternative 3 Proposed Security and Accessible Routes (Source: MVVA)

The new West Entrance would provide an accessible entrance and exit for visitors. New interior and exterior ramps in the areas of the Arch legs, described further in the Visitor Center/Museum project area description, would provide additional accessible exits. The plaza leading to the West Entrance would slope at an accessible grade of no more than 5%. This would create a new arrival, visit, and departure sequence that would be fully accessible from the Old Courthouse through the West Gateway into the Visitor Center/ Museum. Figure 18 depicts accessible park paths and circulation routes in alternative 3.

Topography/Grading

Creating a new entrance to the Visitor Center/ Museum would require modification of the topography of the berm that currently runs along the western edge of the park between the Old Cathedral and Washington Avenue. Roadway clearance requirements over the interstate and structural requirements would dictate the elevation of the surface of the Park Over the Highway structure. Accessibility requirements limit the degree of slope that the plaza can descend to the West Entrance of the Visitor Center/Museum to less than 5%. Additional constraints include programmatic, structural, mechanical and accessibility requirements within the Visitor Center/Museum, which would require changes to the existing berm and the lawn area underneath the Arch. In order to make the connections to the Processional Walks from the West Gateway compliant with accessibility requirements, those portions of the walks demolished for construction of the West Entrance to the Visitor Center/Museum would be rebuilt at a lower elevation than currently exists. The topographical changes would be coordinated with the proposed west entrance to the Visitor Center/Museum. These changes would be subject to additional design review requirements and Section 106 compliance to ensure impacts to the cultural landscape and National Historic Landmark are minimized.

Demolition of the existing Arch Parking Garage would create a level surface of five acres approximately 25 feet below the existing elevation of the Processional Walks. Fill would be required to create a new landscape and path transitions between the park and the adjacent neighborhoods and amenities. The concrete structure of the existing garage could be crushed, re-used and/or recycled as appropriate to minimize the amount of fill needed. These topographic changes would create new vistas for visitors. From the park, eliminating the garage would open up views to the Eads Bridge (Figure 19). This would create a visual connection to

Figure 19 View of North Gateway and Eads Bridge (Source: MVVA)

and from Laclede's through the four portals underneath the Eads Bridge. Visitors arriving from the west via Washington Avenue would see an open view into the park and a partial view beneath the railroad trestle down to the Central Riverfront.

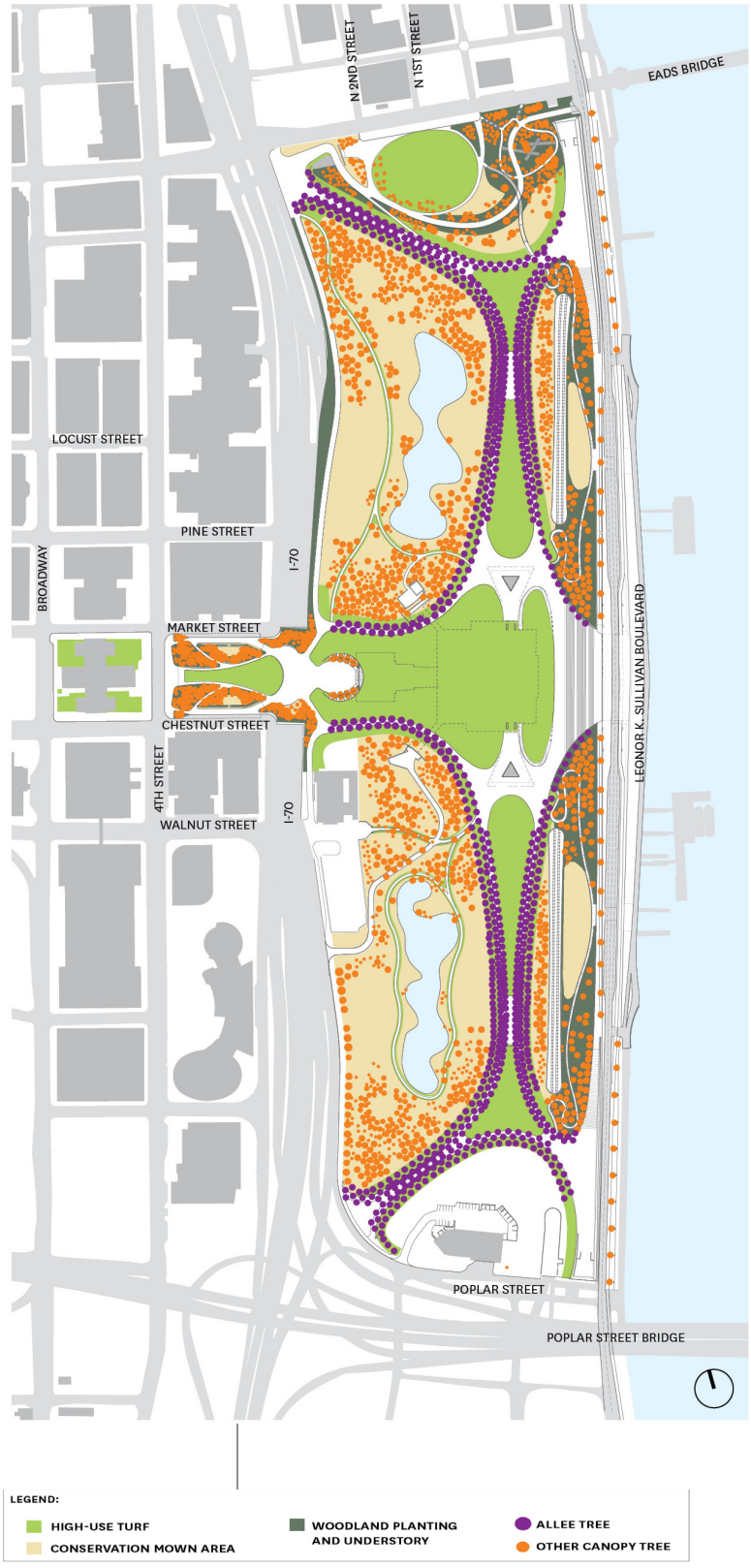
The central pathway through the North Gateway would slope down to the Central Riverfront, creating a long gentle valley (Figure 20). At the bottom, the Explorers Garden would include several shallow depressions that would create topographical variety for different planting types and also capture stormwater runoff. With the former Arch Parking Garage site as a depository, it is expected that most of the excavated fill from the new west entrance to the Visitor Center/Museum, the addition, and reflecting ponds landscapes could be retained on site. All excavated fill would be tested and determined if it is suitable for re-use. A protocol for fill material would be developed during the detailed design process to ensure re-used fill does not contain artifacts and is culturally sterile.

Parking

The removal of the existing Arch Parking Garage under alternative 3 would occur in a phased approach. The approach is dependent on a first phase of planning by the City of St. Louis, the St. Louis Development Corporation (SLDC), Metro/BiState and NPS. A parking strategy would be implemented prior to demolition to facilitate access to nearby parking for visitors, park staff, and others accessing the park and adjacent downtown activities. This planning approach was identified in the Value Analysis workshop in July 2011.

The first step in this process, a parking study, was conducted to document existing conditions and to help determine what parking strategies could be implemented. These strategies could include improved visitor wayfinding, identifying other existing parking locations downtown, and evaluating the potential for new parking locations. Unless otherwise identified by the parking study, bus, RV, and oversize vehicle parking would continue to be accommodated along South Leonor K. Sullivan Boulevard/South Wharf Street south of the Poplar Street Bridge. The potential for a new garage, however, is too speculative at this time. For the purposes of this EA analysis, it is assumed existing, underutilized parking identified in the parking study would be available for park visitors (Carl Walker 2012). Once the parking strategy has been developed through this public-private

Figure 20 View of North Gateway and Eads Bridge (Source: MVVA)



partnership process and implemented, the demolition of the garage and installation of landscape improvements could proceed.

The relationship to changes in the overall transportation network of the St. Louis metro area was shown to be a major factor in the function and value of the existing garage structure. With larger transportation changes taking effect (see the Cumulative Impacts section in chapter 4), convenient, safe, accessible, and attractive parking for visitors both to the city and the park would continue to be required. Programmatic coordination with local agencies on collaborative parking and/or way finding strategies would be encouraged in order to make use of the garage as transportation changes unfold. New highway and street signage would be installed with the roadway changes proposed by MoDOT and would include directional signage to the Arch and associated parking to aid park visitors. SLDC is also developing a local city streets signage program that would take into account the needs of park visitors.

Planting

Plantings directly in front of the West Entrance to the Visitor Center/Museum would be comprised of shrubs and small trees that would not grow higher than the berm or interfere with the Saarinen vista.

The North Gateway slopes and valley between the park and the Eads Bridge would be a conservation mown area with scattered trees, which would preserve views into the park. A large lawn of high-use turf intended to withstand heavy use would be constructed. An "Explorers" garden would feature woodland plantings that serve as educational tools, such

Figure 21 Alternative 3 Proposed Plantings (Source: MVVA)

as illustrating the botanical aspects of Lewis and Clark's journey. Plantings proposed for alternative 3 are shown in Figure 21.

PROJECT AREAS

West Gateway

Alternative 3 proposes that the West Gateway serve as a major point of arrival for visitors to the park (Figure 22). It would provide outdoor spaces for group orientation and gathering, and spaces for individual rest and relaxation. The West Gateway would expand Luther Ely Smith Square from North 4th Street to the new West Entrance and would act as both a conceptual and literal bridge between the park grounds, the Old Courthouse, and downtown St. Louis. An agreement between MoDOT and the NPS would enable the creation of a structure over the depressed section of I-70. While the structure itself would be constructed and maintained by MoDOT, the surface of the structure would be available to and managed by the NPS to create a continuous physical connection - a Park Over the Highway. Further description of the structure over I-70 that would be constructed by MoDOT is located in the Cumulative Impacts section of this EA.

Some visitors travelling to the park by car or bus would arrive at drop-offs along the north and south sides of Luther Ely Smith Square. Others would walk into the park from downtown businesses, attractions and parking structures, and would be greeted with generous sidewalk gathering spaces with long rows of benches shaded by trees. Entering from North 4th Street, visitors would first encounter a small plaza, introducing the historic Saarinen vista between the Arch and the Old Courthouse. Paths flanking a central lawn would lead visitors east to the plaza. The plaza would serve both as a formal entrance into the park and a visible connection to the proposed West Entrance to the Visitor Center/ Museum. Visitors could also choose paths leading north or south into the park.

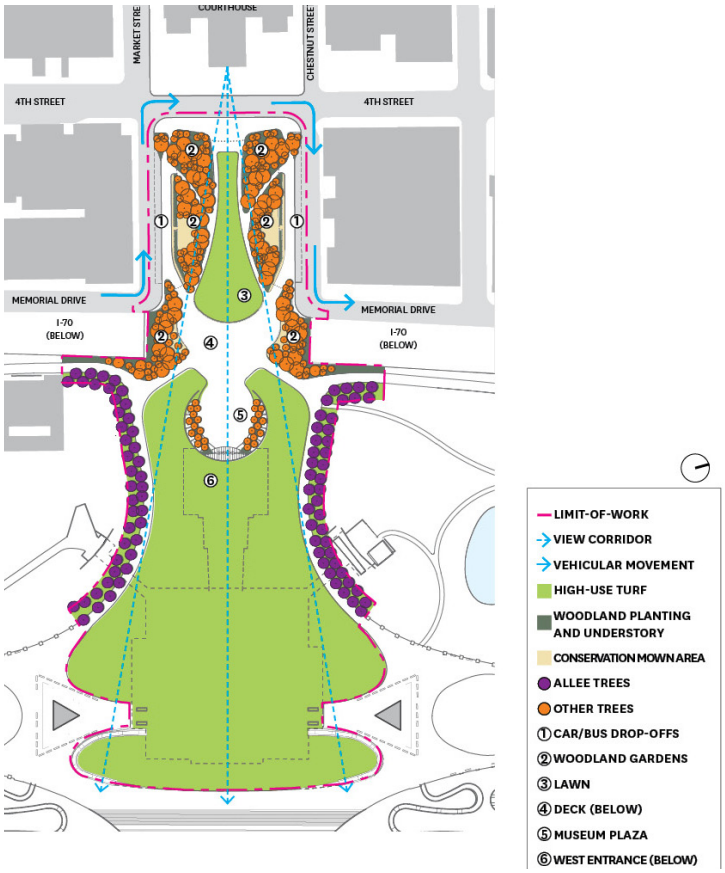
The plaza area in front of the West Entrance to the Visitor Center/Museum would also provide shade gardens and seating at its edges to ensure it is a comfortable space for all. It would be sized to accommodate large groups which could gather prior to entering the Visitor Center/Museum.

Outside the viewshed of the Saarinen vista, along Chestnut and Market Streets, and the edges of the structure built over I-70, plantings of canopy trees, shrubs and groundcover would be utilized to create densely planted shade gardens. These would shield visitors from vehicular noise and pollution, while providing comfortable spaces for relaxation.

Visitor Center/Museum

Under alternative 3, existing spaces in the Visitor Center/Museum beneath the Gateway Arch would be selectively renovated and an additional 35,000-50,000 square feet of space, depending on design development, is proposed, including visitor orientation, museum exhibit, and education space. The new addition would include a plaza and ground-level entry to the Visitor Center/

Figure 22 Alternative 3 West Gateway (Source: MVVA)



Museum complex beneath the Gateway Arch. The new West Entrance would be embedded within the existing berm landform. A glass façade would frame a direct visual connection to the Old Courthouse and this light-filled lobby would serve as the entrance to both the exhibits and the Arch. It would also serve as the Visitor Center for the park. The new lobby at the entrance would be large enough for visitors to assemble and orient themselves before moving into the Museum of Westward Expansion's exhibition spaces. An entrance fee for the Visitor Center/Museum, as well as any other fees for visitor experiences such as the Ride to the Top of the Arch, would be collected at ticket stations in the new lobby. A fee structure would be determined during the detailed design process. Free access to the Arch grounds and the Old Courthouse would continue.

New exhibits, casework, and lighting would be provided throughout. Ticketing, restrooms, and security would be relocated into the new entry. Within the expansion and existing visitor center and museum area, alternative 3 would rearrange circulation, exhibit, administrative/support, and store spaces. The expansion in alternative 3 would require new utility connections and adjustments to existing utilities such as water, steam, and telecommunication lines.

Alternative 3 would provide an accessible egress route out of the Visitor Center/ Museum near the Arch legs with new interior and exterior ramps to supplement the existing ramps at the Arch legs. The interior ramps would be placed on top of the east sections of the existing split-ramps system. A passage would be created through existing interior walls leading to doors opening onto the exterior ramps via a new level platform at the location of the existing security screening area.

The exterior ramps would follow the edge of existing pavement and terminate across from the Grand Staircase. A guardrail system would be installed at grade along the edges of the exterior ramps to protect visitors from falling into the depressed ramp. The guardrail would be designed to have as minimal a visual impact as possible. Due to their required length, the interior ramps would extend into the lobby, and would have benches for seating, in order to break up the length of the ramps for visitors.

These changes would be subject to additional design review requirements and Section 106 compliance to ensure impacts to the cultural landscape and National Historic Landmark are minimized.

The doors at the Arch legs ramps would no longer be entrances, and would be modified to serve as exits only. As such, a single guard would be posted at each exit to monitor the exits and prevent unauthorized entry. Unintended entry by visitors to the Visitor Center/Museum would be further discouraged by signs, one-way ramp flow, and one-way outer doors. Guardrails would be placed atop the ramp walls to minimize fall hazards.

North Gateway

Alternative 3 proposes to remove the existing Arch Parking Garage and replace it with a new landscape that would take advantage of local adjacencies to the Laclede's Landing neighborhood to the north and the Washington Avenue/Convention Center corridor to the west (Figure 23). Washington Avenue would be closed to through traffic and a drop-off area would be established. The Arch Parking Garage would be removed after the implementation of an alternative parking strategy. New programs in the North Gateway would include a large Orientation/Event Lawn, a Welcome Center and a heritage-themed Explorers Garden for children. Additionally, a shared pedestrian/bicycle path would create an accessible link between the park, the city, and the Central Riverfront. Should removal of the garage be delayed for any period of time, the proposed increase in elevation of Leonor K. Sullivan Boulevard at the Central Riverfront may require a new sloped transition for the road and sidewalk surfaces from the west edge of Leonor K. Sullivan roadway to the existing surface of Washington Avenue below the Railroad trestle between the North Overlook wall and Eads Bridge. The removal of the Arch Parking Garage would necessitate the

Figure 23 Alternative 3 North Gateway (Source: MVVA)

resetting of underground electrical, water mains, and tie-ins to existing combined sewer infrastructure.

CONSTRUCTION AND OPERATION COSTS

The net construction cost of this alternative would range between approximately $180 million and $250 million. Annual operating costs under this alternative would increase between $2 million and $3 million. Identification of these costs does not guarantee NPS funding. Full project funding for both construction costs and annual operations and maintenance costs may not be available all at once and would require a phased approach; it would most likely be provided by partners, donations and other non-federal and federal sources. In addition, the project would be designated to receive 30% of the revenue generated by a proposed sales tax increase for the benefit of parks and trails throughout the region.

MITIGATION MEASURES

The NPS places a strong emphasis on avoiding, minimizing, and mitigating potentially adverse environmental impacts. Under any of the action alternatives, best management practices and mitigation measures would be used to prevent or minimize potential adverse effects associated with the project. These practices and measures would be incorporated into the project construction documents and plans. To help ensure the protection of cultural resources, natural resources, and the quality of the visitor experience, the following protective measures would be implemented.

GENERAL CONSTRUCTION MITIGATION MEASURES

The NPS would implement an appropriate level of monitoring throughout the construction process to help ensure that protective measures are being properly implemented and to achieve their intended results. The NPS would ensure the implementation of the measures outlined in the programmatic agreement (PA) to assess and resolve adverse effects to historic buildings, structures, sites, objects, districts and landscapes. The PA includes the establishment of a Collaborative Design Review Team to review draft schematic and design documents, evaluate how projects may affect resources within the Section 106 Area of Potential Effects, and make recommendations to avoid any adverse effects. The PA is included in Appendix D of this environmental assessment.

Construction and staging for construction would be coordinated with other ongoing construction efforts led by NPS and other entities, as well as with seasonal constraints and adjacent property owners as necessary. Staging for selective excavation and material delivery would need to be coordinated to keep visitor disruptions to a minimum. Construction would also be coordinated and timed to minimize disruptions to visitors and accessibility around the park.

Existing structures and newly completed construction would be protected from ongoing construction activity. Standard required construction site fencing, temporary security measures, and museum security would be provided throughout duration of the work in the park. As the construction phases are completed, care would be taken to make areas accessible to visitors where possible, while ensuring that the new construction is adequately protected and maintained for the final use and occupancy.

Construction on the park site and the Central Riverfront in all action alternatives would require the relocation of some utilities. Care would be taken to comply with all permitting and approvals required and to minimize horizontal movement, unnecessary disruption, and costs, and to avoid impacts to historic features. The West Gateway's new structure and landscape over the highway would require utility reconfiguration, including an existing steam pipe in the Market Street Bridge (to be coordinated with MoDOT), a water main, underground electrical lines, and possibly cable and telecom conduits. Coordination would occur with appropriate agencies and utility providers to maintain service during construction and during the installation of any new connections. New utilities required to serve proposed project elements and for construction would be designed and installed to mitigate impacts to the historic landscape and to comply with all applicable codes.

ARCHEOLOGY MITIGATION MEASURES

In accordance with the PA developed during the Section 106 process, prior to any ground disturbing activities, all locations that may be impacted by these activities would be tested and evaluated for potential to contribute archeological information. The NPS would consult with the Missouri State Historic Preservation Officer (SHPO) and the Osage Nation regarding any necessary archeological surveys to determine if any such archeological sites are present and whether such sites are eligible for the National Register. A protocol for fill material would be developed during the detailed design process to ensure re-used fill does not contain artifacts and is culturally sterile. Should unanticipated archeological resources be discovered during construction, all work in the immediate vicinity of the discovery would stop immediately and the

proper authorities would be notified. Work would be halted until the resources could be identified and documented and an appropriate mitigation strategy developed. Discovered resources would be evaluated for their potential NRHP significance, and, if needed, mitigation measures would be developed in consultation with the Missouri SHPO and appropriate representatives of affected tribes. The NPS would conduct identification and assessment of archeological resources consistent with the measures described in the PA, which is included in Appendix D of this EA.

In the unlikely event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act, as amended (43 CFR 10, Subpart B) and the Archeological Resources Protection Act of 1979 (43 CFR 7) would be followed. Appendix D of the PA includes further stipulations that would be followed.

Mitigation measures would be cognizant of resource significance and preservation needs, and could include such provisions as changes in project design and/or archeological monitoring of the project and data recovery conducted by an archeologist meeting the Secretary of the Interior's standards. NPS would ensure that the measures outlined in the PA are carried out to avoid, minimize, and mitigate adverse effects.

MITIGATION MEASURES BY PROJECT AREA

East Slopes

For concrete and grading work at the base of the East Slopes, attempts would be made to time construction so as to avoid the usual seasonal high water condition on the Mississippi River. Work would be coordinated with concurrent work throughout the park and with the work on the Central Riverfront, specifically at the edges of the project areas where the East Slopes meet the allées at the head of the slopes and the NPS property boundary near the toes of the slopes. Construction activities would be coordinated to minimize interference with current train or riverfront business operations wherever possible. Utility connections would be necessary along the length of the paths in order to power the new path lighting and drain stormwater. The path treatment and materials would be compatible with the historic landscape. Existing trees would be retained when possible and would be protected during construction to minimize disruptions to vegetation and soil.

Reflecting Ponds

Construction would need to be coordinated with MoDOT's work at the former Memorial Drive northbound area between Chestnut Street and the Washington Avenue intersection. Work around the Walnut Street area would be coordinated with adjacent property owners, including MoDOT and the Archdiocese of St. Louis. Work would also be coordinated with the design and construction of the Processional Walks. The Reflecting Ponds work may require some retrenching of path edge utility lines (water and electric) as well as reconfiguration of stormwater drainage connections to existing combined sewers. The path treatment and materials would be compatible with the historic landscape.

Processional Walks

During phased removal of the existing ash trees, work would proceed on renovating the pavement of the walks, including associated soil amendments and irrigation improvements, to coordinate construction and limit disruptions to the area. The Processional Walks work may require some retrenching of path edge utility lines (water and electric) as well as reconfiguration of stormwater runoff drainage connections to existing combined sewers.

Visitor Center/Museum

Renovations to the lobby, Visitor Center, and exhibits would be staged so as to maintain visitor flow and allow security screening during construction. The infill platform and interior ramps needed to make the Arch legs an accessible entrance/exit would be designed so as to be constructed off-site and installed during normal closing times. The exterior

ramps would be constructed with minimal interior disturbance, and then connected through service spaces in off-peak season, when an Arch leg Visitor Center/Museum entrance might be able to be temporarily closed. With the construction of the new pedestrian ramps at the Arch legs, substantial consideration would be given to protecting the Visitor Center/Museum's material fabric, preserving the visual appearance of the Arch leg entry, and respecting Kiley walkways. The interior ramps and steps would be constructed as light-weight infill platforms so that damage to the building is minimized should they need to be removed.

The accessible ramp routing would require the demolition of Visitor Center/Museum interior walls, alterations to existing stairwells, relocation of utilities, reconfiguration of administrative space, and a punch-through of the Visitor Center/Museum exterior wall. These alterations would all take place outside the primary visitor area in adjacent service spaces. The exterior ramps would require retaining walls and guardrails to prevent falls. The existing edge of pavement would be tapered into the ramp so as to minimize visual discontinuity.

Old Courthouse

Substantial consideration would be given to protecting the Old Courthouse's material fabric, preserving its historic integrity, and respecting the cultural landscape. Exterior ramps would be constructed so that damage to the building would be minimized should they need to be removed. The existing pedestal, sundial, and fountain on the east side of the Old Courthouse and the statue of Dred and Harriet Scott on the southeast side of the Old Courthouse would be protected and preserved. To mitigate visual impacts on the Old Courthouse exterior, the accessible ramps on the exterior of the building would use light-weight steel construction. Existing soil surrounding the building would be cleared, grubbed, and stockpiled to be replaced and reseeded with high use turf and augmented with additional planting soil as required. Construction work on the adjacent streets and sidewalks on Chestnut and Market Streets would be coordinated with the city and would be staged and implemented to comply with city permit and construction requirements and to minimize impacts to visitor experience.

Accessibility improvements, exhibit space renovations, and detailed designs would be sensitive to the historic fabric of the building. In the interior spaces, mechanical, electrical, or alarm systems would be upgraded or replaced as necessary. These interventions would be subject to Section 106 compliance and would be accomplished according to the Secretary of the Interior's Standards (NPS 1995).

The Central Riverfront

Construction would be coordinated and timed to minimize disruptions to visitors and riverfront businesses. Existing structures and newly completed construction would be protected from ongoing construction activity. Standard required construction site fencing, temporary security measures, and temporary traffic control devices would be provided throughout the duration of work on the Central Riverfront. Access to the riverfront and levee by emergency vehicles would be maintained at all times.

Raising the elevation of Leonor K. Sullivan Boulevard would require the placement of fill at the bottom of the Grand Staircase and the overlook steps, covering 4 or 5 of the Grand Staircase treads and 2 or 3 of the overlooks treads. The existing stair treads and foundations would be left intact and be buried. The stair treads would be covered with protective barriers to prevent damage during placement and compaction of fill. The sloping bases of the overlook walls would also be left intact and the surfaces would be protected by protective barriers before burying to the depth of the new elevation. Modifications to stair handrails would be in-kind with the existing handrails.

Raising the elevation of Leonor K. Sullivan Boulevard would require the placement of fill at the base of Eads Bridge. Efforts would need to be made to protect the Eads Bridge, including documentation of existing conditions, protective barriers, seismic monitoring and the monitoring of documented existing damaged and compromised elements

during construction. Particular care would be taken along the base of the bridge. Protective barriers would be placed against all masonry faces prior to placement and compaction of fill. The new elevation of the Leonor K. Sullivan roadway surface in the area of the Eads Bridge would be such that limited exposure of the existing red granite at the base of the pier would be maintained.

Elevation changes to Leonor K. Sullivan Boulevard would be subject to additional design review requirements and Section 106 compliance to ensure the potential for adverse effects under Section 106 and impacts to the park's NHL District, Eads Bridge, and other historic buildings, structures, sites, objects, and districts and cultural landscapes are minimized.

Construction of the bicycle and pedestrian promenade improvements along the east side of Leonor K. Sullivan Boulevard would require some disturbance to the cobblestones along the levee. Cobbles along the eastern edge of the project would be salvaged and reset in order to maintain the integrity of the cobble levee.

ALTERNATIVE 2 – CONSTRUCTION MITIGATION

West Gateway

Construction would be coordinated with that of the adjacent projects at the park and MoDOT work on the Memorial Drive/I-70 corridor. Staging areas for construction materials would be identified. Upon completion of MoDOT's construction of the Park Over the Highway structure over I-70 and associated retaining walls, NPS would have access to the structure, and construction of the Luther Ely Smith Square new landscape and the Park Over the Highway landscape could commence. Changes to the West Gateway would be subject to additional design review requirements and Section 106 compliance to ensure impacts to the cultural landscape and National Historic Landmark are minimized.

ALTERNATIVE 3 – CONSTRUCTION MITIGATION

West Gateway

Construction would rely on extensive coordination with the construction of the Visitor Center/Museum and the structure over the I-70/I-44 corridor that would be constructed by MoDOT. Staging areas for construction materials would be identified. Upon completion, NPS would have access to the Park Over the Highway structure and construction at Luther Ely Smith Square, the Park Over the Highway landscape, and the West Entrance of the Visitor Center/Museum could commence.

Restoration of the berm and walks would require substantial completion of the West Entrance of the Visitor Center/Museum, including interior elements requiring good access to the Visitor Center/Museum interior. As construction is completed, construction access would be limited to protect existing and newly constructed facilities. The last pieces to be constructed would be the plaza and the landscape across the Park Over the Highway, as the needs for construction access and staging would be substantially reduced by this point in construction. Changes to the West Gateway would be subject to additional design review requirements and Section 106 compliance to ensure impacts to the cultural landscape and National Historic Landmark are minimized.

Visitor Center/Museum

The Visitor Center/Museum expansion in alternative 3 would require new utility connections and adjustments to existing utilities such as water, steam, and telecom lines. This work would be done per the general construction mitigation practices described above.

Staging for selective excavation and material delivery would need to be coordinated to keep visitor disruptions to a minimum. As the construction phases are completed, care

would be taken to make areas accessible to visitors where possible, while ensuring that the new construction is adequately protected and maintained for the final use and occupancy. Visitor security screening would be accommodated during construction.

North Gateway

A parking strategy would be implemented prior to demolition of the Arch Parking Garage to facilitate access to nearby parking for visitors, park staff, and others accessing the park and adjacent downtown activities. Discovery of asbestos and lead paint during demolition of the Arch Parking Garage or other renovations are not anticipated; however, testing for asbestos and lead paint would be performed prior to demolition. Any other hazardous materials, such as those associated with mechanical systems, would be removed from the garage prior to demolition.

Garage demolition would occur in a controlled manner as the parking garage is constructed with concrete blocks that are reinforced with high-strength steel strands that are pulled tight to actively reinforce the building (known as post-tensioning). The exact demolition methods that would be used would be determined as part of a demolition plan to ensure safe and efficient demolition. If possible, portions of the structure would be salvaged for re-use and metal would be recycled.

Efforts would need to be made to protect the Eads Bridge, including documentation of existing conditions, protective barriers, seismic monitoring and the monitoring of documented existing damaged and compromised elements during construction. Particular care would be taken along the base of the bridge where manipulation of grade may be required. Repair of previously buried walls would also need to be performed along the western face of the North Overlook as the proposed grade would be lower than existing conditions, exposing previously buried portions of the overlook.

HOW ALTERNATIVES MEET OBJECTIVES

As stated in the "Purpose of and Need for Action" chapter, all action alternatives selected for analysis must meet all objectives to a large degree. The action alternatives must also address the stated purpose of taking action and resolve the need for action; therefore, the alternatives were individually assessed in light of how well they would meet the objectives for this plan/EA, which are stated in the "Purpose of and Need for Action" chapter. Table 1 compares the alternatives by summarizing the elements being considered. The section "How Alternatives Meet Project Objectives" discusses how the alternatives described in this chapter would meet the plan objectives. Alternatives that did not meet the objectives were not analyzed further (see the "Alternatives or Alternative Elements Considered but Rejected" section in this chapter).

The "Environmental Consequences" chapter describes the effects of each alternative on each impact topic, including the impact on cultural resources and visitor experience. These impacts are summarized in Table 2, "Summary of Environmental Consequences".

Table 1 Summary of Alternatives

Project Area/ Alternative Element	Alternative 1: No-Action	Alternative 2: Moderate Change	Alternative 3: Maximum Change
West Gateway	Access to the park from Luther Ely Smith Square would occur via the landscaped Park Over the Highway structure constructed by MoDOT and landscaped and maintained by NPS.	The West Gateway would serve as a major point of arrival for visitors to the park. At an expanded Luther Ely Smith Square, a large plaza leading down to a large east to west oriented sloping lawn, which would transition into the existing park. The lawn would serve as an amphitheater for large events. The surface of the Park Over the Highway structure that would be constructed by MoDOT connecting the Old Courthouse and downtown St. Louis with the park would be managed by the NPS to create a continuous landscaped connection. It would provide outdoor spaces for group orientation and gathering and spaces for individual rest and relaxation. From south to north, traffic around Luther Ely Smith Square would flow in a clockwise direction, with bus drop-offs on the north and south sides.	The West Gateway would serve as a major point of arrival for visitors to the park with a central lawn at an expanded Luther Ely Smith Square between the Old Courthouse and the new plaza and West Entrance to the Visitor Center/Museum. The central lawn would span across the Park Over the Highway structure that would be constructed by MoDOT to create a continuous landscaped connection. A new accessible Western Entry to the Visitor Center/Museum would be constructed and would include a plaza area in front of the entrance. From south to north, traffic around Luther Ely Smith Square would flow in a clockwise direction, with bus drop-offs on the north and south sides.
Visitor Center/ Museum	Museum exhibits would remain and interpretive and educational programs would continue within the current square footage of the museum.	The existing Visitor Center/ Museum exhibit space would be renovated and exhibits updated. Interpretive and educational programs would continue to be provided and updated.	The existing Visitor Center/ Museum space would be selectively renovated, exhibits updated, and an additional 35,000-50,000 square feet of space would be constructed for exhibits, storage, interpretive, and administrative functions. The new West Entrance would include a glass façade providing light to the lobby and a visual connection to the Old Courthouse. Ticketing, restrooms, and security would be relocated to the new lobby. Interpretive and educational programs would continue to be provided and updated.

Project Area/ Alternative Element	Alternative 1: No-Action	Alternative 2: Moderate Change	Alternative 3: Maximum Change
North Gateway	The Arch Parking Garage, surrounding landscape, and ranger station would remain. Access to the Arch Parking Garage would be provided via a slip lane onto Washington Avenue from the reconfigured I-70 ramp, from Laclede's Landing, and from Leonor K. Sullivan Boulevard	The Arch Parking Garage would remain and aesthetic improvements would be made to the structure and landscape. The ranger station would remain in the Arch Parking Garage. Access to the Arch Parking Garage would be provided via a slip lane onto Washington Avenue from the reconfigured I-70 ramp, from Laclede's Landing, and from Leonor K. Sullivan Boulevard.	After a parking strategy is implemented, the Arch Parking Garage would be demolished and replaced with a new landscape including an orientation/event lawn, a welcome center, and a children's garden. Washington Avenue east of Memorial Drive would be closed to through traffic, a shared pedestrian/ bicycle path would be installed, and a drop-off area would be established. The ranger station would be moved to the maintenance facility at the south end of the park.
East Slopes	East Slopes would remain as presently configured	Two to four universally accessible paths would be integrated into East Slopes leading from the park to the Central Riverfront. The East Slopes would be planted with a combination of conservation mown areas and woodland planting. The conservation mown areas would be used as places for visitors to sit.	
Reflecting Ponds	The plantings and turf around the ponds would be unchanged.	Universally accessible paths into the landscape around the North and South ponds, swales to catch stormwater runoff and a stormwater management system would be installed.	
Processional Walks	The Processional Walks would be maintained and improved and the Rosehill ash trees would be replaced in accordance with the EAB EA.	The Rosehill ash trees would be replaced with another species in phases; the subsurface soil conditions, irrigation and drainage systems would be repaired or replaced; and the aggregate concrete surface of the walks would be replaced. The ash tree replacement would be guided by the EAB EA.	
Old Courthouse	Exhibits and access to the Old Courthouse would remain unchanged.	The galleries would be renovated and new exhibits would be installed on the first and second floors and the surrounding streetscape would be improved. Accessibility to the first floor of the Old Courthouse would be improved by exterior ramps and to the second floor by interior elevators	
Central Riverfront	The existing roadway, sidewalks, lighting, and utility infrastructure along Leonor K. Sullivan Boulevard would remain unchanged.	The elevation of Leonor K. Sullivan Boulevard would be raised from Chouteau Avenue to Biddle Street. A multi-modal roadway would be established providing a two-way bike path and a pedestrian promenade along Leonor K. Sullivan Boulevard. The existing two-lane roadway would be narrowed and would include raised pedestrian crossings at the base of the Grand Staircase and at the new crosswalk locations at the base of the East Slope paths and could include designated bus drop-off/pick-up lanes.	

Project Area/ Alternative Element	Alternative 1: No-Action	Alternative 2: Moderate Change	Alternative 3: Maximum Change
Security	Existing perimeter security and visitor screening would be maintained.	A continuous secure perimeter would be established using vehicle ram barrier walls and bollards. Remote operated mechanical bollards would be installed at the former intersections Market and Chestnut Streets with Memorial Drive, where emergency vehicle access would be provided. Entrances to the East Slopes would have a bollard system that meets vehicle protection criteria, and also provide a means to be removed or lowered for maintenance needs. Other bollards throughout the park (Service Rd, Poplar St, Old Cathedral, Washington Avenue and the Arch Parking Garage) would remain or be replaced in kind. Visitor security screening would remain in place at the Arch legs.	Same as alternative 2, except that the shared bicycle path would serve as the perimeter security in the North Gateway. Visitor screening would occur in the main lobby of the new West Entrance. The ramps at the Arch legs would serve as egress-only ramps and a guard would be posted to monitor each exit and prevent unauthorized entry.
Accessibility	Pedestrian routes that do not meet accessibility standards would remain from the park grounds to the Central Riverfront, and into the Visitor Center/Museum. Access between the park and the city across the Park Over the Highway would be accessible.	Routes to and within the park would be made accessible via selective re-grading and the addition of a secondary network of paths, including around the ponds and to the Central Riverfront from the park. Access to the park across the Park Over the Highway would be accessible. Visitors with disabilities accessing the Arch from the North Gateway would be directed to use existing elevator facilities in the Arch Parking Garage in order to access the park. At the Arch legs, lightweight, infill ramps would be added on top of the existing ramps and exterior ramps would be added to provide an accessible entrance and egress route into the Visitor Center/Museum. Accessibility to and within the Old Courthouse would be improved with ramps on the exterior of the building and elevators on the interior of the building.	Same as alternative 2, except accessible routes would be added to the North Gateway. The elevated walk would create an accessible route from North 1st Street to the park. An accessible link between the city, the park and the Central Riverfront would be added along Washington Avenue via the pedestrian and bicycle pathway. The existing connections underneath the Eads Bridge to Laclede's Landing would be accessible. The new West Entrance to the Visitor Center/Museum would be accessible. The lightweight accessible ramps at the Arch legs described in alternative 2 would be egress-only

Project Area/ Alternative Element	Alternative 1: No-Action	Alternative 2: Moderate Change	Alternative 3: Maximum Change
Topography and Grading	No grading would occur and topography would remain unchanged	Luther Ely Smith Square would be re-graded to provide a large plaza at its western edge that slopes gently downward to the confluence of the extensions of the Processional Walks, across the Park Over the Highway over I-70 that would be constructed by MoDOT. Any changes to the existing berm and the lawn area underneath the Arch would be subject to additional design review requirements and Section 106 compliance. Slight re-grading of the northwest corner of the park (in the North Gateway) would occur to create an accessible connection into the park at the intersection of Washington Avenue and Memorial Drive.	The new entrance to the Visitor Center/Museum would require modification of the topography of the berm that currently runs along the western edge of the park between the Old Cathedral and Washington Avenue. Any changes to the existing berm and the lawn area underneath the Arch would be subject to additional design review requirements and Section 106 compliance. The Arch Parking Garage would be demolished, creating a level surface below the existing elevation and would be filled to create a new landscape and path transitions between the park and the adjacent neighborhoods and amenities. The central pathway through the North Gateway would slope down to the Central Riverfront, creating a long gentle valley. At the bottom, the Explorers Garden would include several shallow depressions.
Parking	Parking for visitors and employees would be provided in the Arch Parking Garage		The Arch Parking Garage would be demolished and a parking strategy to facilitate access to nearby parking for visitors, park staff and others would be implemented.

Project Area/ Alternative Element	Alternative 1: No-Action	Alternative 2: Moderate Change	Alternative 3: Maximum Change
Planting	Plantings and turf would remain.	Proposed plantings would follow the original design intent, be compatible with the historic landscape, and would implement sustainable management practices. Planting typologies would include high use turf, conservation mown areas, woodland plantings, and single-species allée plantings. Plantings lining the paths from Luther Ely Smith Square and crossing over the depressed highway would be comprised of shrubs that would not grow high enough to interfere with the Saarinen conceived vista from the Old Courthouse to the Arch. Canopy trees would be planted along the gentle berms at the exterior edges of the long lawn that would run at a lower elevation over the Park Over the Highway and create a pair of densely planted passages. The majority of the plantings in the North Gateway would be limited to the northwest intersection, planting at or on the structure of the garage as feasible, and planting of the streetscape adjacent to the garage	Same as alternative 2, except plantings directly in front of the West Entrance to the Visitor Center/Museum would be comprised of shrubs and small trees that would not grow higher than the berm or interfere with the Saarinen conceived vista from the Old Courthouse to the Arch. The North Gateway, with the removal of the Arch Parking Garage, would include conservation mown areas and high-use turf on the large lawn.

HOW ALTERNATIVES MEET PROJECT OBJECTIVES

As noted previously, the action alternatives carried forward for detailed analysis in this EA must meet the project objectives described in chapter 1. Both action alternatives (alternatives 2 and 3) were evaluated against the objectives as a way of assessing how well they satisfy the purpose of the project and resolve the need for action. These alternatives were developed from elements of the winning entry in the design competition called for by the park's recently completed GMP. The park and its partners worked together to ensure the design competition itself and the subsequent refinement of the winning design reflect the status of the Gateway Arch, and embrace the Mississippi River. The interdisciplinary value analysis processes generated recommendations for extensive improvements within and adjacent to the park while ensuring requirements of the NPS Organic Act and Management Policies 2006 are met. Through substantial input from Section 106 consulting parties, character-defining elements of the National Historic Landmark and National Register Historic District are honored and preserved to the extent possible, and unacceptable impacts to cultural resources within and outside the park are avoided or mitigated. In some cases, some changes (e.g., landscaping) would be more in line with the original design intent for the park.

While alternative 3 would do a better job of providing opportunities to catalyze increased vitality in the greater St. Louis metropolitan area (by providing new and re-arranged space in the underground Visitor Center/Museum and new park landscapes at the North Gateway), both alternatives promote extended visitation in downtown by substantially increasing connections between the city, the park, and the river. Additional improvements would enhance and expand visitor experiences, and are expected to contribute to socioeconomic benefits, including: enhanced landscapes; enhanced accessibility for persons with disabilities; new and/or improved museum exhibits, interpretation, and education opportunities; and the multi-modal roadway along the central riverfront.

Both alternatives improve accessibility for persons with disabilities and create more welcoming environments, including at the Old Courthouse. However, alternative 3 does a better job by providing a new West Entrance to the Visitor Center/Museum and dedicated, accessible egress from the Arch legs.

New exhibits and education opportunities, especially under alternative 3, give the NPS and its partners an avenue for improving visitor understanding of the purpose of the park. Reduced flooding along the Central Riverfront provides more opportunities for visitors to use this area and for partners to develop programs connected to the river and levee. A reduction in regular flood events along the Central Riverfront would also help improve operations in this project area. Within the park, the proposed changes would improve park management and operations and reduce long-term maintenance requirements by incorporating sustainable landscape practices; improving stormwater management; and improving energy efficiency where possible. The NPS would also work with park partners to minimize the impact of these projects on financial resources and staffing requirements.

Table 2 Summary of Environmental Consequences

Impact Topic	Alternative 1: No-Action Alternative	Alternative 2: Moderate Change	Alternative 3: Maximum Change
Historic Buildings, Structures, Sites, Objects, and Districts	Parkwide and locally, construction-related impacts under the no-action alternative would result in short-term minor adverse impacts to character-defining features of the NHL District such as vegetation and topography. The addition of the Park Over the Highway landscaping would also have long-term minor adverse impacts to these features, but would also have long-term beneficial impacts for example on the setting of the NHL District.	Parkwide and locally, construction would result in short-term moderate adverse impacts to the NHL District due to, for example, addition of ramps at the Visitor Center/Museum, paths around the ponds and along the East Slopes, and the addition of the Park Over the Highway landscaping. Modifications for accessibility would occur at the Old Courthouse. This alternative would involve some alteration of historic buildings, structures, sites, objects, and districts through the addition of accessibility and security measures that alter the visual character of the resources and their settings and parkwide and local long-term moderate adverse impacts would occur. Negligible to minor short-term and long-term impacts on resources within the cultural resources impact area would occur along the riverfront, affecting the NHL District and Eads Bridge. Beneficial impacts would result from changes such as the replacement of the ash trees and repair of the Processional Walks.	Parkwide and locally, construction would result in short-term moderate adverse impacts to the NHL District due to, for example, the addition of the new West Entrance, ramps at the Visitor Center/Museum, paths around the ponds and along the East Slopes, and changes to the park landscape along the Central Riverfront. Modifications for accessibility would occur at the Old Courthouse. This alternative would involve some alteration of historic buildings, structures, sites, objects, and districts through changes addition of accessibility and security measures that alter the visual character of the resources and their settings and parkwide and local long-term moderate adverse impacts would occur. Negligible to minor short-term and long-term impacts on resources within the cultural resources impact area would occur along the riverfront, affecting the NHL District and Eads Bridge. Beneficial impacts would result from changes such as the replacement of the ash trees, repair of the Processional Walks and removal of the Arch Parking Garage.

Impact Topic	Alternative 1: No-Action Alternative	Alternative 2: Moderate Change	Alternative 3: Maximum Change
Archeological Resources	Ground-disturbing activities related to maintenance activities and the installation of the Park Over the Highway landscape in the no-action alternative could disturb as-yet unidentified archeological resources; however, mitigation measures would be implemented to minimize impacts and alternative 1 would result in minor adverse impacts to archeological resources.	Parkwide and along the Central Riverfront, ground disturbances related to the project elements including the Park Over the Highway could disrupt or displace as-yet identified archeological resources; however, mitigation measures would be implemented and alternative 2 would result in moderate adverse impacts to archeological sites.	Parkwide and along the Central Riverfront, ground disturbances related to the project elements including the Park Over the Highway, the new West Entrance, and the Visitor Center/Museum addition could disrupt or displace as-yet identified archeological resources; however, mitigation measures would be implemented and alternative 3 would result in moderate adverse impacts to archeological sites.
Museum Collections	Existing collections storage and exhibit spaces, access, and climate control conditions would remain and alternative 1 would result in minor short-term adverse and long-term negligible to minor **A**dverse impacts to museum collections.	The temporary disruption in access to museum collections during construction under alternative 2 would result in short-term minor adverse impacts. The improvements to collections storage, exhibit, and interpretation spaces would have long-term beneficial impacts to museum collections.	The temporary disruption in access to museum collections during construction under alternative 3 would result in short-term minor adverse impacts. The expansion of and improvements to collections storage, exhibit, and interpretation spaces would have long-term beneficial impacts to museum collections.
Vegetation	The no-action alternative would result in minor short-term adverse impacts due to temporary disturbances during implementation of the planted landscape across the Park Over the Highway. There would be negligible long-term impacts to vegetation as regular maintenance and existing conditions would continue.	Alternative 2 would result in moderate short-term adverse impacts due to temporary disturbances of a relatively large amount of vegetation during construction. Minor long-term adverse impacts to vegetation would occur due to the permanent removal of a limited amount of vegetation. Long-term beneficial impacts would also occur due to an increase in vegetation health and diversity.	Alternative 3 would result in moderate short-term adverse impacts due to temporary disturbances of a relatively large amount of vegetation during construction. Long-term beneficial impacts would occur from a substantial increase in the amount of vegetation as well as an increase in vegetation health and diversity.
Soundscape	The no-action alternative would result in minor short-term adverse impacts to soundscapes from noise generated by the installation of the Park Over the Highway landscape. The continuation occasional operational noises above background conditions would cause minor long-term adverse impacts to soundscapes.	Alternative 2 would result in moderate short-term adverse impacts to soundscapes due to intermittent noise above background conditions generated by construction activities to implement project elements. The continuation of occasional operational noises above background conditions would cause minor long-term adverse impacts to soundscapes. The potential for sound attenuation from landscape additions to the park would create long-term beneficial impacts by reducing noise intruding on the park's soundscape.	Alternative 3 would result in moderate short-term adverse impacts due to intermittent noise above background conditions generated by construction activities to implement project elements. The continuation of occasional operational noises above background conditions would cause minor long-term adverse impacts to soundscapes. The potential sound for attenuation from landscape additions to the park and the removal of vehicular traffic noise sources in the North Gateway would create long-term beneficial impacts by reducing noise intruding on the park's soundscape.

Impact Topic	Alternative 1: No-Action Alternative	Alternative 2: Moderate Change	Alternative 3: Maximum Change
Floodplains	There would be no disturbance to floodplains and therefore no short- or long-term impacts to floodplains in alternative 1.	Construction-related activities under alternative 2 would not change floodplain functions or values and no short-term impacts would occur. The changes to the Central Riverfront would not alter the nature of the development in the floodplain or its functions and values and would have negligible long-term impacts to floodplains.	Construction-related activities under alternative 3 would not change floodplain functions or values and no short-term impacts would occur. The changes to the Central Riverfront would not alter the nature of the development in the floodplain or its functions and values and would have negligible long-term impacts to floodplains
Water Resources	Construction-related impacts under the no-action alternative would result in short-term minor adverse impacts to water resources due to an increased potential for soil erosion and transport of surface pollutants into adjacent water bodies and storm sewers. As the site would continue to operate under current conditions, pollutants in stormwater runoff would enter the Mississippi River during storm events and long-term minor adverse impacts to water resources and water quality would occur.	Alternative 2 would result in minor short-term adverse impacts during construction due to an increased potential for soil erosion and transport of surface pollutants into adjacent water bodies and storm sewers. Minor long-term adverse impacts would occur due to an increase in water use for irrigation in the park and the continued stormwater runoff that contains pollutants entering the Mississippi River during storm events. Beneficial impacts would also occur as new methods used to reduce and treat stormwater and a reduction in the use of pesticides would be implemented.	Alternative 3 would result in moderate short-term adverse impacts to water resources during construction due to an increased potential for soil erosion and transport of surface pollutants into adjacent water bodies and storm sewers. Minor long-term adverse impacts would occur due to an increase in water use for irrigation in the park and the continued stormwater runoff that contains pollutants entering the Mississippi River during storm events. Beneficial impacts would also occur due to new methods used to reduce and treat stormwater, increased vegetation, and a reduction in the use of pesticides.
Visitor Use and Experience	Construction of the Park Over the Highway landscape under the no-action alternative would result in short-term negligible to minor adverse impacts as visitor access to the West Gateway would be limited during construction. Long-term negligible to minor adverse impacts to visitor use and experience would occur as new destinations, activities, and improvements would not be added to the park and flooding events would continue to limit access to the Central Riverfront. The Park Over the Highway landscape would have long-term beneficial impacts to visitor use and experience due to the improved landscaped pedestrian connection between downtown and the park.	Construction-related impacts under alternative 2 would result in short-term moderate adverse impacts to visitor access to activities and destinations within areas of the park that could be limited or changed to accommodate construction. In the long term, there would be beneficial impacts to visitor experience and satisfaction due to the increase in destinations, activities, and accessibility within the park and along the Central Riverfront and the improved landscaped pedestrian connection between downtown and the park. Minor adverse impacts to visitor use and experience would also occur due to a continued shortage of oversize and short-term vehicle parking.	Construction-related impacts under alternative 3 would result in short-term moderate adverse impacts to visitor access to activities and destinations within areas of the park that could be limited or changed to accommodate construction. Long-term minor adverse impacts to visitor use and experience would occur due to the change in the designed visitor's entry approach to the Visitor Center/Museum and a continued shortage of oversize and short-term vehicle parking. In the long term, there would be beneficial impacts to visitor experience and satisfaction due to the increase in opportunities, destinations, activities, and accessibility within the park and along the Central Riverfront and the new West Entry that would provide a direct pedestrian connection between downtown and the park.

Impact Topic	Alternative 1: No-Action Alternative	Alternative 2: Moderate Change	Alternative 3: Maximum Change
Socioeconomics	Construction-related spending impacts from implementation of the Park Over the Highway landscape under the no-action alternative would have a short-term beneficial economic impact on the local economy as spending could generate revenue for individual businesses in the region. Long-term economic impacts in downtown St. Louis and the region would be negligible as no other broad changes in management, visitation, or operations would occur and visitorship levels and visitor spending in the local area would likely follow existing trends. There would be continued minor short- and long-term adverse impacts to socioeconomic resources as the livability benefits provided by the overall park would not be enhanced and periodic flooding along the Central Riverfront would continue. The park and the Central Riverfront would continue to have a short- and long-term local beneficial economic impact on the region driven by visitor spending and operational expenditures.	Construction-related spending impacts under 2 alternative would have a short-term beneficial economic impact on the local economy as spending would generate revenue for individual businesses in the region. Short-term minor adverse local impacts could also occur during construction if visitation declines while access to areas of the park is limited. Actions under alternative 2 would increase visitorship levels as well as visitor and operational spending by increasing and improving visitor facilities and infrastructure throughout the park and the Central Riverfront and connecting the park with the city and the river, which would have long-term beneficial economic impacts in downtown St. Louis and the region and would enhance the overall livability and social benefits the park and the Central Riverfront provide.	Construction-related spending impacts under 3 alternative would have a short-term beneficial economic impact on the local economy as spending would generate revenue for individual businesses in the region. Short-term local minor to moderate adverse impacts could also occur during construction if visitation declines while access to areas of the park is limited. Removal of the Arch Parking Garage would have long-term minor adverse impacts due to the loss of a revenue-generating facility. Actions under alternative 3 would increase visitorship levels as well as visitor and operational spending by increasing and improving visitor facilities and infrastructure throughout the park and the Central Riverfront and connecting the park with the city and the river, which would have long-term beneficial economic impacts in downtown St. Louis and the region and would enhance the overall livability and social benefits the park and the Central Riverfront provide.
Operations and Management	Operations impacts related to construction under the no-action alternative would include short-term minor adverse impacts as maintenance operations access to the Park Over the Highway construction areas would be limited. Flooding events would cause long-term minor to moderate adverse impacts on operations by limiting park maintenance access and require clean-up action by City of St. Louis staff. The lack of energy conservation and sustainable management practices would also contribute to the long-term adverse impacts.	Operations impacts related to construction under alternative 2 would include short-term minor to moderate adverse impacts due to increased use of energy and resources and limited access to areas of the park during construction. An increase in maintenance requirements would have a long-term minor adverse impact on park operations. Improved maintenance conditions, improved sustainability standards, and the potential for an overall reduction in energy and water use at the park would have long-term beneficial impacts	Operations impacts related to construction under alternative 3 would include short-term moderate adverse impacts due to increased use of energy and resources and limited access to areas of the park during construction. An increase in maintenance requirements and the loss of parking revenue would have a long-term minor adverse impact on park operations. Improved maintenance conditions, increased ticketing efficiency and revenue collection, improved energy efficiency and sustainability standards, and the potential for an overall reduction in energy and water use at the park would have long-term beneficial impacts.

ALTERNATIVES OR ALTERNATIVE ELEMENTS CONSIDERED BUT NOT CARRIED FORWARD

Council of Environmental Quality (CEQ) regulations for implementing NEPA require federal agencies explore and objectively evaluate all reasonable alternatives to the preferred alternative, and to briefly discuss the rationale for eliminating any alternatives that were not considered in detail. This section describes those alternatives or alternative elements that were identified during the design process and internal and public scoping but were not carried forward for analysis in this EA. Justification for eliminating alternatives from further analysis was based on factors relating to:

- Technical or economic feasibility;
- Conflicts with the statement of purpose and need, or other policies;
- Duplication with other, less environmentally damaging or less expensive alternatives; and
- Severe impact on environmental or historic resources.

For the purposes of this process, the NPS considered but dismissed the original winning design competition entry from the Michael Van Valkenburgh Associates team, as selected by the jury during the CityArchRiver 2015 competition, in September 2010. The concept and rationale for its dismissal are described below.

DESIGN COMPETITION ENTRY

Concept

The winning design competition entry, as submitted by the MVVA team, proposed numerous changes to the park and surrounding areas of downtown St. Louis, as well as the riverfront in East St. Louis. The winning design called for a new west entrance with skylights that led to an expanded underground Visitor Center and Museum of Westward Expansion. The design proposed to renovate the existing museum, and turn the entrances at the legs of the Arch into exits for visitors. The proposed design included approximately 58,000 square feet of new museum space, and 72,000 square feet of renovated existing gallery space.

In East St. Louis, the winning design proposed a green riverfront, the installation of wetland reserve, pedestrian and bicycle trails, and a water taxi between St. Louis and East St. Louis. At the North Gateway, the design proposed to replace the existing parking deck with a new landscape park, which included various programmed and passive recreational spaces and a below-grade parking garage. At the South Gateway, the design proposed to remove the maintenance facility and add a beer garden, and ice skating rink, and below-grade parking. An underground parking structure was also proposed below Luther Ely Smith Square. Along the park's east slopes, the design included partial re-grading and crash barriers along Leonor K. Sullivan Boulevard. At the north and south service areas, rooftop terrace/structures were proposed. A structure was also proposed near the Old Cathedral.

A substantial element of the winning design was the proposed 1+ block landscape structure over I-70, connecting Luther Ely Smith Square (and by extension the larger Gateway Mall) with a new west entrance to the underground Visitor Center/Museum. In the design concept, a reconfigured Memorial Drive remained open to traffic in front of the new Visitor Center and Museum entrance. At Luther Ely Smith Square, tulip poplar-lined walkways connected the Old Courthouse to the new west entrance of the Visitor Center and Museum.

Along the walks and allées within the park, the design proposed to replace the existing ash trees with a tulip poplar allée. Adjacent to the existing ponds within the park, the construction of new accessible walkways down to the ponds was proposed. The existing lawn was replaced by a meadow and shrub woodland planting plan and new plantings were proposed throughout the park.

Rationale

Many of the proposed concepts from the winning design competition entry evolved to become part of the action alternatives previously described in this chapter. Other elements were ultimately dropped from consideration by the design team, for a variety of reasons. Among the biggest changes from the winning design competition entry to the revised design unveiled to the public in January 2011 include:

- Changes to the structure over I-70 and the closing of Memorial Drive;
- relocation of the beer garden to Kiener Plaza and removal of the ice rink;
- addition of the aerial tram;
- the maintenance facility remaining in the south gateway;
- a smaller museum expansion;
- removal of the proposed underground parking garages at Luther Ely Smith Square, the North Gateway, and the South Gateway;
- removal of skylights;
- changes to Cathedral Square; and
- the removal of the rooftop terrace/ structure over the shipping and receiving entrance to the museum.

These changes to the winning design competition entry were facilitated by meetings amongst the CityArchRiver 2015 Foundation, the Technical Advisory Group (TAG) convened by the CityArchRiver 2015 Foundation, NPS, and the design team. The subsequent ongoing design discussions and the Value Analysis workshops that occurred in the summer of 2011 all resulted in changes to the original winning design competition entry. As a result, the team agreed that the winning design competition alternative should be considered but dismissed.

Reasons for dismissal include:

- Incompatible elements not possible due to NPS policy, such as removing the recently constructed maintenance facility on the south end of the park;
- proposed uses not consistent with the park purpose and significance, such as beer gardens and ice rinks;
- potential costs, such as the underground parking at Luther Ely Smith Square, or the proposed square footage expansion of the underground museum;
- severity of impacts to cultural resources, in particular cultural landscapes and archeological resources due to proposed structures at the north and south service areas within the NHL, the visibility of skylights at the west entrance, and substantial excavation for below-grade parking structures; and
- not meeting the goals and objectives of the GMP, for instance, the continued existence of Memorial Drive in front of the new western entrance to the underground visitor center and museum, preventing improved connectivity between the park and the city.

The changes to the East St. Louis side of the Mississippi River are still being considered as part of the CityArchRiver 2015 Initiative; however, proposed actions in East St. Louis are not ready for a decision at this time as project elements, funding, federal permitting, and other issues are still being defined. Therefore, the project elements in East St. Louis were not considered in this EA.

OTHER CONCEPTS CONSIDERED

East Entry

During the Value Analysis process, the interdisciplinary team considered the addition of an east entrance to the Visitor Center/Museum with an above-ground expression to the east of the Arch, between

the Arch legs and the Grand Staircase. This project element was dismissed due to significant impacts on the cultural landscape and financial feasibility.

Old Courthouse Accessibility

In order to provide for accessibility into and around the Old Courthouse, the installation of exterior masonry ramps and free standing elevators were considered. The impacts to cultural resources, in particular the historic fabric of the Old Courthouse, were too significant, and the alternative carried forward in the EA would achieve the same results; therefore, these ideas were dismissed.

Arch Parking Garage

During a Value Analysis workshop, the interdisciplinary team considered the potential to renovate the Arch Parking Garage with a landscape deck or demolish a portion of the garage. It was determined that these options had considerable technical, structural, and financial feasibility issues and therefore were dismissed from further analysis.

Central Riverfront

During a Value Analysis workshop several additional alternatives were considered by the workshop group but were not carried forward. One of these alternatives proposed raising the elevation of Leonor K. Sullivan Boulevard approximately two feet only between the North and South Overlooks steps. This alternative was dismissed as it only provided additional pedestrian access to the limited area between the steps and therefore did not improve connections between the city, the park, and the riverfront.

Another alternative was considered which would raise the roadway surface approximately two feet from Chouteau Avenue to Biddle Street but also proposed that the area in front of the Grand Staircase be raised an additional two feet to provide additional pedestrian and event protection from flooding in the most highly used area. This alternative was dismissed because the overall four-foot rise in front of the Grand Staircase was judged to be too significant an encroachment on this historic feature.

Another alternative considered during the development of the project concept was complete refurbishment of the roadway, the addition of a larger dedicated bike path, and an improved pedestrian promenade, but without elevating the roadway surface above existing elevations. This alternative was not carried forward as it failed to improve Central Riverfront operations by reducing flood-related closures and cleanup activities.

Another alternative considered was raising the elevation of Leonor K. Sullivan Boulevard to protect the road surface from a 100-year base flood event. The alternative was dismissed after a Hydrologic Engineering Centers River Analysis System analysis indicated that the Leonor K. Sullivan roadway would need to be elevated 14 feet to achieve protection from a 100-year flood event. A 14-foot increase in elevation would be unachievable from a constructability standpoint, would have unacceptable impacts to the park, and would increase the 100-year base flood elevation of the Mississippi River, which is prohibited under Federal Law.

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The NPS is required to identify the environmentally preferred alternative in its NEPA documents for public review and comment. The Department of Interior regulations implementing NEPA state that the environmentally preferred alternative is the alternative "that causes the least damage to the biological and physical environment and best protects, preserves, and enhances historic, cultural, and natural resources" (43 CFR Part 46.30).

While the no-action alternative (alternative 1) would do little damage to the biological and physical environment, alternatives 2 and 3 would have limited adverse impacts on natural resources, primarily from construction-related activities. However, these alternatives would also provide some long-term benefits to natural resources, primarily by enhancing the health of and expanding the amount of vegetation at the park, and improving stormwater management practices.

Despite these benefits, implementation of either alternative 2 or 3 would cause adverse impacts to integrity of cultural resources in and near the park. While these impacts would be avoided, minimized, or mitigated to the extent possible in accordance with the Programmatic Agreement developed under Section 106 of the NHPA, such impacts would not occur under alternative 1. As a result, the NPS has identified alternative 1 as the environmentally preferable alternative.

The alternative that best protects, preserves, and enhances historic, cultural, and natural resources while causing the least damage to the biological and physical environment is the "environmentally preferred alternative."

NPS PREFERRED ALTERNATIVE

To identify the preferred alternative, the planning team held discussions based on the CEQ guidance for implementing NEPA, which defines the agency's preferred alternative as that alternative "which the agency believes would fulfill its statutory mission and responsibilities, giving consideration to economic, environmental, technical and other factors" (CEQ 1981). The deliberations on the preferred alternative considered the mission of the NPS at Jefferson National Expansion Memorial; how well each alternative meets the purpose, need, and objectives of the EA and the goals of the 2009 General Management Plan (from which this EA is tiered); the results of value analysis conducted during design development; and the results of the impact analysis presented in the EA

The park has recommended alternative 3 as its preferred alternative to the Regional Director of the National Park Service's Mid-West Regional Office. The projects considered in alternative 3 were all developed from elements of the winning entry in the design competition called for by the park's recently-completed GMP. The NPS refined these elements through subsequent interdisciplinary value analysis processes and substantial input from Section 106 consulting parties, and used the recommendations from those efforts as the basis for alternative 3.

Although alternative 3 would cause some impacts to the integrity of the designed landscape and some historic structures, this alternative best accomplishes the goals set out in the recently completed GMP to revitalize the park by expanding visitor experience and creating connections with downtown St. Louis and the riverfront. In light of potential impacts to cultural resources, the NPS has worked with its Section 106 consulting parties to develop a Programmatic Agreement that outlines measures to protect cultural resources and to the extent possible avoid, minimize, and mitigate impacts on the National Register Historic District, the National Historic Landmark, and other nearby National Register-listed or eligible sites.

Alternative 3 also best meets other objectives described in this EA by providing increased connections between the park, downtown, Laclede's Landing, and the riverfront. Creating a new West Entrance to the park would provide benefits including a more direct connection to downtown, a more welcoming experience, and more efficient entry to the underground Visitor Center/ Museum. Changes to the Old Courthouse, the underground Visitor Center/Museum, and the North Gateway would also provide more access and opportunities for persons with disabilities, opportunities to provide new and expanded exhibits, and more opportunities to experience the park's stories and interpretive themes.

Alternative 3 also minimizes the impacts of flooding on the Central Riverfront, contributing to the overall socioeconomic benefits of the projects by expanding opportunities for visitor access and programming in this area. Additional benefits would also be realized through the use of more sustainable landscape and facility management practices which would improve the health of vegetation at the park, improve stormwater management, and minimize the impact of the projects on water and energy consumption and long-term operation and maintenance needs.

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