



FINAL ENVIRONMENTAL IMPACT STATEMENT SOUTH MALL CAMPUS MASTER PLAN

APRIL 2018

Responsible Agency:



Project Owner:



Smithsonian Institution

In cooperation with:



With technical assistance from:



FINAL ENVIRONMENTAL IMPACT STATEMENT

Responsible Agency:
National Capital Planning Commission
401 9th Street, NW, Suite 500
Washington, DC 20004

Project Owner:
Smithsonian Institution

In cooperation with:
National Park Service

South Mall Campus Master Plan

The National Capital Planning Commission (NCPC), acting as lead federal agency, along with the Smithsonian Institution (SI) as the project owner, and in cooperation with the National Park Service (NPS), has prepared this Final Environmental Impact Statement (EIS) to evaluate the potential environmental impacts associated with implementing the South Mall Campus Master Plan. The No-Action Alternative and three action alternatives are studied in detail in this Final EIS.

Questions or comments on the Draft Environmental Impact Statement should be addressed to:

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EXECUTIVE SUMMARY

The Final Environmental Impact Statement has been prepared pursuant to:

- National Environmental Policy Act (NEPA) of 1969;
- Council on Environmental Quality's Regulations of Implementing NEPA (40 Code of Federal Regulations [CFR] 1500-1508);
- NCPC's implementing regulations (1 CFR § 601);
- National Capital Planning Act (40 United States Code [USC] § 8722 (b)(1)(d)).

ES.1 PROPOSED ACTION

The Smithsonian Institution (SI) is preparing a Master Plan for its South Mall Campus to guide future short-term and long-term renovation and development of the 17-acre campus by establishing holistic planning and design principles. The Campus includes the Smithsonian Institution Building, the Arts and Industries Building, the Freer Gallery of Art, the Quadrangle Building, and the Hirshhorn Museum and Sculpture Garden, and associated Gardens and landscaped settings. The proposed Master Plan would be implemented over a 10- to 20-year period beginning in 2018.

The proposed Master Plan has four primary goals:

- To preserve and protect the historic buildings and features of the Campus;
- To improve and expand visitor services and education;
- To create clear accessible entrances and connections between the museums and gardens of the South Mall Campus, the National Mall, and the neighborhood; and
- To replace aging building systems that have reached the end of their lifespan.

The Master Plan is needed to meet SI's long-term space requirements and to address physical and operational deficiencies across the campus that impact visitor use and experience as well as SI's ability to implement its programs effectively and safely. SI identified the following needs for the campus:

- Restore, repair, and rehabilitate historic properties;
- Replace roofs and building systems that are at the end of their useful lives;
- Improve accessibility and usability by individuals with disabilities;
- Improve circulation throughout the campus, including creation of a clear east-west at-grade pedestrian connection from the east side of the Freer Gallery to the Hirshhorn Museum entry plaza;
- Improve access and visibility from the National Mall and the Castle for the NMAfA and Sackler Gallery entrances;
- Create expanded and linked centralized visitor services and education spaces;
- Provide additional museum and event space;
- Establish a new central utility plant and related infrastructure to reduce energy and operating costs and greenhouse gas emissions;
- Provide expanded below grade loading and delivery facilities serving the Quadrangle Building, Castle, AIB and Freer buildings; and
- Update security measures to meet SI and federal requirements.

NCPC and SI will make a decision on which alternative would be implemented in the Master Plan for the South Mall Campus. NCPC and SI will consider comments received on the EIS when making their decision. This decision will be documented in a Record of Decision (ROD). The ROD will outline the selected alternative for the South Mall Campus Master Plan and describe measures the SI will take to reduce impacts associated with implementation of the Master Plan.

Environmental issues were identified through the initial scoping efforts and through the Section 106 Consultation process. These issues are addressed throughout the Draft Environmental Impact Statement.

ES.2 ALTERNATIVES

ES.2.1 NO-ACTION ALTERNATIVE

Under the No Action Alternative, the Smithsonian would continue to use the existing interior building spaces and exterior spaces as they do currently with minor adjustments over time to accommodate organizational changes in office areas, minor exhibit-related changes, seasonal garden changes and similar. Desired programmatic changes such as a central loading and mechanical plant would not be implemented. Programmed spaces for restrooms, kitchen, offices and other uses that are currently impinging on the Castle Great Hall and Upper Great Hall would not be relocated. Additional visitor amenities, galleries and educational spaces would not be added to any of the buildings. Specifically, under the No-Action Alternative, SI would continue its current management of the South Mall Campus including the following:

CASTLE

- Continue basic maintenance of interior and exterior façade.
- Upkeep of existing outdated and inefficient mechanical systems
- Retain undersized and inadequate visitor services.

QUADRANGLE BUILDING AND HAUPT GARDEN

- Patch and repair of roof membrane, as required.
- Replant the Haupt Garden following Quadrangle Building roofing membrane repairs.
- Retain pavilions for each component in the Quadrangle Building with no shared or integrated services.

UTILITIES, LOADING, AND OTHER MUSEUMS

- Retain GSA steam and chilled water, which does not meet museum curatorial exhibit criteria, and continue repairs to individual outdated mechanical systems.
- Patch and repair building envelopes, as required.
- Retain undersized existing loading docks which are not currently accessible to larger vehicles and requires curbside loading. The limited size of the existing loading facility also provides inadequate separation of collections, food services, recycling, and refuse.

ES.2.2 ELEMENTS COMMON TO ALL MASTER PLAN ALTERNATIVES

SMITHSONIAN INSTITUTION BUILDING (CASTLE)

With all Action Alternatives, a permanent relocation of many of the offices now housed on upper levels of the Castle to an offsite Central Administrative Headquarters, essential to the restoration of the Upper Great Hall and its return to use by the public would occur. These large spaces would provide additional education and assembly space. Similarly, uses currently impinging on the full length of the Great Hall would be relocated to below grade spaces in the renovated Castle Basement and new Visitor Center between the Castle and Quadrangle. The east wing of the Castle would remain as office space for central Smithsonian leadership. The Schermer Lounge and Castle Commons would continue to be public space, made more useful by the lowering of the Commons floor to eliminate the need for a ramp in the Lounge. All Master Plan Alternatives would also enhance the security of the Castle through blast mitigation of the building's exterior envelope. Excavation beneath the Castle and the addition of base isolators beneath the foundation would occur to protect from seismic occurrences. The Castle would also be structurally braced to protect it from seismic occurrence, if deemed necessary. The basement floor would be lowered to provide code-compliant floor to ceiling height and the

existing mechanical elements would be removed to expose the historic masonry vaults, piers, and walks. The new lowered basement floor would allow for a connection from the basement to the new, below-grade Visitor Center south of the Castle.

FREER GALLERY OF ART

The Freer Gallery of Art remains largely unchanged with the exception of altering the east wall and historic window configuration to create an Americans with Disabilities Act (ADA) accessible entrance, the new loading ramp descending from Independence Avenue on its west side, and below grade service connections to the new loading and central utilities. Specifically:

QUADRANGLE BUILDING AND HAUPT GARDEN

Elements common to all Action Alternatives include replace the roof membrane of the Quadrangle Building and demolishing the Ripley Center entry pavilion (Ripley Center education facilities to be accessed through the new Visitor Center).

HIRSHHORN MUSEUM AND SCULPTURE GARDEN

For all Action Alternatives, the Hirshhorn Museum and Sculpture Garden retains its current public exhibits space and office areas housed in above grade levels, with the benefit of an improved building envelope and renovated mechanical systems. The Hirshhorn building would be rehabilitated. A new connecting path from its plaza to the AIB would be implemented and the Hirshhorn Plaza and the Sculpture Garden perimeter walls would be restored.

ARTS AND INDUSTRIES BUILDING

For all Action Alternatives, the AIB would continue its current use and planned improvements as a location for a variety of interim uses, special events and

exhibits until renovation for a permanent use is designated by Congress, including a potential Latino Museum for which a bill has been introduced in both the Senate and the House of Representatives. Accommodation for a permanent use of AIB has been taken into account in the sizing and location of the central loading and mechanical facilities. The non-historic east door of the AIB would be removed and the interior of the AIB would be opened to provide a continuous connection from the Haupt Garden to the Hirshhorn Plaza. The surface parking lot east of AIB would be removed to expand the Ripley Garden. Structural underpinning to the west side of the AIB foundation would be added to accommodate below-grade excavation for the central utility plant. Lastly, progressive collapse measures to address seismic vulnerability would be implemented when the building is renovated.

UTILITIES, LOADING, AND OTHER MUSEUMS

Elements common to all Master Plan Alternatives include the addition of a central mechanical plant to be located below grade between the existing Quadrangle building and the Arts and Industries Building. A central underground loading dock would be below the west end of the Castle and the Freer Gallery's north plaza would be constructed and would be accessed from a ramp to the west of the Freer Gallery. This larger loading facility would allow the current Sackler loading ramp to be removed from the Haupt Garden and would eliminate the need for the surface loading and parking lot to the east of the AIB building. Centralizing loading allows for the Smithsonian to accommodate the larger trucks used to deliver traveling exhibits and avoids the need for trucks to maneuver in the street or back down the existing one-way ramp at the Sackler. The new loading would also provide additional recycling space and storage for Smithsonian Gardens grounds keeping equipment and supplies. It would allow a more distinct separation of collections loading from other loading, improving the security and environmental protection of the Smithsonian's national collections and collections loaned by others.

PERIMETER SECURITY

Perimeter security elements would be installed around the entire South Mall Campus.

ES.2.3 ALTERNATIVE B: LIMITED ABOVE GROUND CHANGE

In this alternative, above grade changes would be minimized while still accommodating improvements to the South Mall Campus' infrastructure. For the Quadrangle Building, the current museum pavilions would remain. Consideration would be given to relocating the entrances to the existing full height pavilion windows facing north to provide greater visibility from the Castle and north side of the Haupt Garden. Alterations to the Haupt Garden would be limited to replacement of the Quadrangle Building's roof membrane and improvements to circulation. To protect the Castle from seismic events, base isolation would be used in conjunction with limited reinforcement. Related to the construction of a central loading facility, the Ripley pavilion would be demolished. At the east of the Hirshhorn Museum, the Sculpture Garden wall and existing tunnel would be restored. To better segregate exhibit, event, and trash delivery / transfer an enlarged below grade central loading dock would be built.

Below grade changes would be limited to those needed to create a minimal public connection to the Visitor Center and to connect the new loading and mechanical facilities to the existing circulation and air distribution systems of the Quadrangle. Remaining portions of the former Sackler loading dock would be repurposed for back-of-house support. Smithsonian Associates offices and NMAfA and the Sackler Gallery museum uses would be expanded into space made available by the relocation of some or all of the classroom and Discovery Theater education spaces to the new Castle Visitor Center. The connection to the Visitor Center would require further study to determine if this would still be

worthwhile because of the distances involved and the conflicts created by crossing paths with museum collections circulation which occurs when the museum public entrances and circulation are not moved closer to the Castle as in Alternatives D and F. Therefore, as shown in Figures 3-3, 3-4, and 3-5, in addition to the elements that are common to all Master Plan Alternatives, under Alternative B, SI would:

CASTLE

- Excavate a limited sub-basement area beneath the west end of the building footprint to provide loading and utility support.
- Construct new below-grade Visitor Center in previously unoccupied area between Castle basement and Quadrangle Building.
- Introduce new access stairs to below-grade Visitor Center.

QUADRANGLE BUILDING AND HAUPT GARDEN

- Make minor renovations to sublevels to connect the new loading dock to existing Collections circulation system and to connect the new central utility plant to the existing distribution system.
- Reinstall the Haupt Garden, and retain existing features, after replacement of the Quadrangle Building roof membrane.
- Maintain Quadrangle Building Museum Pavilions (Sackler and NMAfA) and relocate entries to north-facing elevations of existing pavilions.

HIRSHHORN MUSEUM AND SCULPTURE GARDEN

- Remove a small portion of west-facing Hirshhorn Plaza wall to create east-west circulation.
- Restore/reopen the original tunnel connection between the Hirshhorn Plaza and Sculpture Garden.

UTILITIES AND LOADING

- Construct a new below-grade utility plant in an unexcavated area west of AIB.

ES.2.4 ALTERNATIVE D: PLAN CHANGES ABOVE AND BELOW GRADE

Under Alternative D there would be increased visibility and access entries from the National Mall, new museum pavilions, direct access from garden to amenities, cohesive Campus circulation, and connections between the Castle and Quadrangle Building. A new below grade visitor center extending from the Castle basement to the Quadrangle Building would be accessed via a sloped Haupt Garden that provides for an at grade garden entrance and windows to the garden. Visitor amenities including dining and museum shop would be located at the new Visitor Center so as to enable a less encumbered restoration of the historic above grade public spaces of the Castle and to double the number of visitors accommodated from 1 million to 2 million annually. The amount of space for Smithsonian Associates and other educational programs would similarly significantly increase and would be housed in the Visitor Center as well as at the north end of the reconfigured Quadrangle building. Importantly, the visitor center and education spaces would be adjacent and connected and would provide the Smithsonian with a location that includes a central large assembly space with adjacent smaller rooms for breakout sessions, a requirement for many conferences. This would significantly improve the Smithsonian's ability to host scientific meetings and similar gatherings as there are no comparable venues currently.

Alternative D reconfigures the Quadrangle Building to better meet the program needs of the Sackler Gallery and NMAfA and the Smithsonian education programs currently housed there. A key priority for the museums is the location of their entrances closer to the Castle Visitor Center and the National Mall, providing better visitor access as well as benefitting from the ability to share

direct access to amenities including the new assembly and education spaces in the Visitor Center. The museums currently are adjacent but separated with little ability to share space and activities and circulate between them. Alternative D would provide greater connectivity between the museums, supporting the increasingly pan-Institutional emphasis in Smithsonian programming and research. This alternative would provide the ability for each museum to expand both galleries and back of house spaces while maintaining required separations between public space and collections processing and storage space. The roof of the building would include a substantially reconfigured and expanded Haupt Garden with direct access to the Visitor Center amenities and education spaces and improved ability to host educational programs and events in the garden.

At the Hirshhorn Museum, Alternative D would provide substantial expansion of gallery space suited to large contemporary artworks through a redesign of the Sculpture Garden that would raise the level of portions of the garden with the new galleries located below. These new galleries would be connected back to the museum through an expanded tunnel beneath Jefferson Drive to reconfigured basement level public space. The Hirshhorn Museum has recently enjoyed a substantial increase in visitation and this expansion below grade would allow it to better serve its visitors and support its ambitious program of changing exhibitions and educational programs.

In addition to circulation enhancements, Campus infrastructure would be developed. At the Castle, seismic base isolation would be installed in conjunction with a central utility plant. To better segregate exhibit, event, and trash delivery / transfer an enlarged below grade central loading dock would be built. Related to the construction of a central loading facility, the Ripley pavilion would be demolished. Therefore, as shown in Figures 3-6, 3-7, and 3-8, in addition to the elements common to all Master Plan Alternatives, under Alternative D, SI would:

CASTLE

- Excavate a sub-basement area that extends beyond the footprint of the Castle to provide loading and utility support.
- Reconfigure Castle basement for use as a Visitor Center and improve connection to Quadrangle Building.

QUADRANGLE BUILDING AND HAUPT GARDEN

- Introduce new, exterior, below-grade dip entrance with universal ADA accessibility to the Visitor Center.
- Replace a portion of Quadrangle Building's roof to allow for a sloped landscape-grade entry to the Visitor Center.
- Expand Haupt Garden and reconfigure garden pathways on to the former footprints of the museum pavilions and loading dock.
- Remove Sackler Gallery and NMAfA museum pavilions and Install new museum entry pavilions closer to the National Mall.
- Remove existing Quadrangle Building roof bulkheads.
- Expand extent of existing skylights and install new skylights immediately south of the Castle.
- Reestablish historic view of the Washington Monument from south of the Castle.
- Improve historic view of Castle from Independence Avenue, SW.

HIRSHHORN MUSEUM AND SCULPTURE GARDEN

- Remove the Hirshhorn Plaza walls to the north, east and west to open the Museum to the National Mall.
- Expand the tunnel from the Hirshhorn Museum to the Sculpture Garden.
- Remove and reconfigure interior Sculpture Garden walls.
- Reconfigure Sculpture Garden to add new below-grade galleries. The Sculpture Garden would maintain a recessed relationship to the National Mall.

UTILITIES AND LOADING

- Construct a new central utility plant at sub-basement level beneath the Castle.

ES.2.5 ALTERNATIVE F – MAINTAIN FLAT PLAN ON CASTLE AXIS

Alternative F provides Increased visibility and access entries from the National Mall, new museum pavilions, direct access from garden to amenities, cohesive Campus circulation, and connections between the Castle and Quadrangle.

With Alternative F new below grade visitor center extending from the Castle basement to the Quadrangle Building would be accessed via the existing north and south entrances and stairs or elevators from the Great Hall as well as new public stairways from the Haupt Garden. Alternative F maintains the character of the Haupt Garden while remaining at grade. Gardens focus on creating both intimate and education spaces. New pavilions provide accessible entry to visitor center. Visitor amenities including dining and museum shop would be located at the new Visitor Center so as to enable a less encumbered restoration of the historic above grade public spaces of the Castle and to double the number of visitors accommodated from 1 million to 2 million annually. The amount of space for Smithsonian Associates and other educational programs would similarly significantly increase and would be housed in the Visitor Center as well as in a new assembly space at the north end of the reconfigured Quadrangle Building. Importantly, the visitor center and education spaces would be adjacent and connected and would provide the Smithsonian with a location that includes a central large assembly space with adjacent smaller rooms for breakout sessions, a requirement for many conferences. This would significantly improve the Smithsonian's ability to host scientific meetings and similar gatherings as there are no comparable venues currently.

Alternative F reconfigures the Quadrangle Building to better meet the program needs of the Sackler Gallery and the NMAfA and the Smithsonian education programs currently housed there. A key priority for the museums is the location of their above grade entrances closer to the Castle Visitor Center and the National Mall, providing better visitor access as well as benefitting from the ability to share direct access to amenities including the new assembly and education spaces in the Visitor Center. The two new entrance pavilions would be smaller than the current three pavilions, increasing the area available for the Haupt Garden. The museums currently are adjacent but separated with little ability to share space and activities and circulate between them. Alternative F would provide greater connectivity between the museums, supporting the increasingly pan-Institutional emphasis in Smithsonian programming and research. This alternative would provide the ability for each museum to expand both galleries and back of house spaces while maintaining required separations between public space and collections processing and storage space. The roof of the building would include a reconfigured and expanded Haupt Garden with improved access to the Visitor Center amenities and education spaces and improved ability to host educational programs and events in the garden. Alternative F would retain many of the characteristics and specific features of the present Haupt Garden including a parterre on axis with the Castle, intimate gardens, gardens themed to adjacent museums and the Renwick Gates at Independence Avenue.

At the Hirshhorn Museum and Sculpture Garden, Alternative F would provide substantial expansion of gallery space suited to large contemporary artworks through a redesign of the Sculpture Garden that would raise the level of portions of the garden with the new galleries located below. These new galleries would be connected back to the museum through an expanded tunnel beneath Jefferson Drive to reconfigured basement level public space. The Hirshhorn Museum has recently enjoyed a substantial increase in visitation and

this expansion below grade would allow it to better serve its visitors and support its ambitious program of changing exhibitions and educational programs.

In addition to circulation enhancements, Campus infrastructure would be developed. At the Castle, seismic base isolation would be installed in conjunction with a central utility plant. To better segregate exhibit, event, and trash delivery / transfer an enlarged below grade central loading dock would be built. Related to the construction of a central loading facility, the Ripley Pavilion would be demolished. Therefore, in addition to the elements common to all Master Plan Alternatives, under Alternative F, as shown in Figures 3-9, 3-10, and 3-11, SI would:

CASTLE

- Excavate a limited sub-basement area beneath the west end of the building footprint to provide loading and utility support.
- Construct new below-grade Visitor Center in previously unoccupied area between Castle basement and Quadrangle Building and with a new entrance to the Visitor Center south of the Castle.

QUADRANGLE BUILDING AND HAUPT GARDEN

- Construct exterior entrance stairs to the Visitor Center at north edge of Quadrangle Building and Haupt Garden.
- Expand the Haupt Garden, while remaining at grade.
- Reconfigure garden pathways on to the former footprints of the museum pavilions and loading dock.
- Maintain intimate garden spaces, parterre, and Renwick Gates in the Haupt Garden.
- Remove Sackler Gallery and NMAfA museum pavilions and construct new entry pavilions closer to the National Mall.

- Expand extent of skylights around the Quadrangle Building and Castle.
- Reestablish historic view of the Washington Monument from south of the Castle.
- Improve historic view of Castle from Independence Avenue, SW.

HIRSHHORN MUSEUM AND SCULPTURE GARDEN

- Remove a small portion of west-facing Hirshhorn Plaza wall to create east-west circulation.
- Expand the tunnel from the Hirshhorn Plaza to the Sculpture Garden.
- Reconfigure the Sculpture Garden to add new below-grade galleries. The Sculpture Garden would maintain a recessed relationship to the National Mall.

UTILITIES AND LOADING

- Construct a new below-grade utility plant in an unexcavated area west of AIB.

ES.3 ENVIRONMENTAL IMPACTS SUMMARY

More detailed analysis for each alternative can be found in Chapter 4: Affected Environment and Environmental Consequences.

ES.3.1 IMPACTS ON TOPOGRAPHY

NO-ACTION ALTERNATIVE

- Minimal ground disturbance during routine repairs would result in direct and indirect short-term, negligible, adverse impacts.

ELEMENTS COMMON TO ALL MASTER PLAN ALTERNATIVES

- Exposure and disturbance of soils during construction would result in direct and indirect short-term, minor adverse impacts.

- Excavation would result in direct, short and long-term, minor, adverse impacts to previously disturbed soils and Campus' topography.

ALTERNATIVE B

- Exposure and disturbance of soils during construction would result in direct and indirect short-term, minor, adverse impacts.
- Excavation would result in direct, short and long-term, moderate, adverse impacts to previously disturbed soils and Campus' topography.

ALTERNATIVE D

- Exposure and disturbance of soils during construction would result in direct and indirect short-term, minor, adverse impacts.
- Excavation would result in direct, short and long-term, major, adverse impacts to previously disturbed soils and Campus' topography.

ALTERNATIVE F

- Exposure and disturbance of soils during construction would result in direct and indirect short-term, minor, adverse impacts.
- Excavation would result in direct, short and long-term, moderate, adverse impacts to previously disturbed soils and Campus' topography.

ES.3.2 IMPACTS ON SEISMIC VULNERABILITY

NO-ACTION ALTERNATIVE

- Direct, long-term, major, adverse impacts from lack of seismic protection.

ALL MASTER PLAN ALTERNATIVES

- Direct, short-term, minor, adverse impacts during construction due to increased vulnerability.
- Seismic upgrades would result in a direct, long-term, major, beneficial impact.

ES.3.3 IMPACTS ON STORMWATER

NO-ACTION ALTERNATIVE

- There would continue to be a limited ability to retain and filter stormwater resulting in an indirect, long-term, minor adverse impact would occur.

ALL MASTER PLAN ALTERNATIVES

- Direct and indirect, short-term, minor, adverse impacts during construction.
- Direct and indirect, long-term, moderate, beneficial impacts from reduction of impervious surface and implementation of stormwater management.

ES.3.4 IMPACTS ON AIR QUALITY

NO-ACTION ALTERNATIVE

- Construction activities during routine repairs would result in direct, short-term, minor, adverse impacts.
- Direct, long-term, minor, adverse impacts would occur from continued use of GSA steam and chilled water and existing mechanical systems.
- Indirect, long-term, negligible, adverse impacts from emissions created by additional traffic.

ALL MASTER PLAN ALTERNATIVES

- Construction activities would result in direct, short-term, minor, adverse impacts.
- New mechanical systems and central utility plant would result in direct and indirect, long-term, minor, beneficial impacts.
- A minor increase in vehicular trips would result in an indirect, long-term, negligible, adverse impact.

ES.3.5 IMPACTS ON GREENHOUSE GASES, CLIMATE CHANGE & ENERGY CONSUMPTION

NO-ACTION ALTERNATIVE

- Direct and indirect, short and long-term negligible, minor, adverse impacts from continued use of GSA steam and chilled water and existing mechanical systems.

ALL MASTER PLAN ALTERNATIVES

- Construction activities would result in direct, short-term, minor, adverse impacts.
- New mechanical systems and central utility plant would result in direct and indirect, long-term, negligible, beneficial impacts

ES.3.6 IMPACTS ON CULTURAL RESOURCES

NO-ACTION ALTERNATIVES

- Direct, long-term, moderate, adverse impacts from minor repairs and potential seismic and blast vulnerability.

ELEMENTS COMMON TO ALL MASTER PLAN ALTERNATIVES

- Construction activities would result in direct, short-term, moderate to major, adverse impacts.
- There would be long-term, minor, adverse impacts to the Freer Gallery from the alteration of the east wall.
- Blast protection, base isolation, and seismic bracing of the Castle would not result in adverse effects. Protecting the Castle from potential blast and/or seismic events would result in a long-term beneficial impact.
- Lowering the basement floor of the Castle and restoring the Castle would result in long-term, beneficial impacts.
- Removing the parking lot at AIB and restoring the east door to use would result in long-term, beneficial impacts.

- Renovating the Hirshhorn Building and Plaza and replacing the garden walls would result in long-term, beneficial impacts.
- Replacing the Quadrangle Building roof membrane would not adversely impact cultural resources.
- Perimeter security has the potential to have a long-term adverse adversely impact to the character of the National Mall.

ALTERNATIVE B

- Construction activities would result in direct, short-term, moderate to major, adverse impacts.
- The small opening that would be inserted on the west plaza wall of the Hirshhorn would create, long-term, minor adverse impacts.
- Reopening the tunnel would result in long-term, beneficial impacts.
- Minor, long-term, adverse impact would result from the reconfiguration of the Haupt Garden.
- Reorienting the Quadrangle Building Museum pavilions would not have an adverse impact on cultural resources.
- Impacts to cultural resources associated with the creation of a New Visitor Center, central utility plant, sub-basement excavation of the Castle, and excavation for a new loading ramp would be evaluated at the time of project design.
- There would be no indirect impacts.

ALTERNATIVE D

- Construction activities would result in direct, short-term, moderate to major, adverse impacts.
- Sub-basement excavation of the entire Castle would create a long-term, moderate, adverse impact.
- Below-grade “dip” entrance to the Visitor Center would result in direct, long-term, major adverse impacts to the Castle.

- Reconfiguration of the Haupt Garden and removal and replacement of the Quadrangle Museum Pavilions would result in direct, long-term, major, adverse impacts by improving visibility
- Direct, long-term, major adverse impacts from the removal of plaza walls at the Hirshhorn.
- Major, indirect, long-term impacts from the changes to the Hirshhorn Sculpture Garden and the reconfiguration of tunnel would result in moderate, long-term, adverse impacts.
- Removal of the pavilions would result in a long-term, major, adverse impact to the Quadrangle building.
- Removal and replacement of skylights would result in a long-term, moderate adverse impact.
- Impacts to cultural resources associated with the creation of a central utility plant would be evaluated at the time of project design.
- There would be no indirect impacts.

ALTERNATIVE F

- Construction activities would result in direct, short-term, moderate to major, adverse impacts.
- The new Visitor Center entrance may result in long-term, moderate adverse impacts to the Castle.
- The small opening that would be inserted on the west plaza wall of the Hirshhorn would create, long-term, minor adverse impacts.
- Major, indirect, long-term impacts from the changes to the Hirshhorn Sculpture Garden and the reconfiguration of tunnel would result in moderate, long-term, adverse impacts.
- Reconfiguration of the Haupt Garden and removal and replacement of the Quadrangle Museum Pavilions would result in direct, long-term, major, adverse impacts by improving visibility.
- Removal of the pavilions would result in a long-term, major, adverse impact to the Quadrangle building.

ELEMENTS COMMON TO ALL MASTER PLAN ALTERNATIVES

- Direct and indirect, long and short-term moderate, beneficial impacts by complimenting other planning efforts.

ALTERNATIVE B

- Alternative B would have a minor to moderate, long-term, adverse impact in strengthening the connection of the South Mall Campus to the SW Ecodistrict as it would continue to block out of the neighborhood across Independence Avenue, SW from within the site and continue to block views into the gardens and to the Castle from outside.

ALTERNATIVE D

- A moderate, long-term, beneficial impact would occur by strengthening the connection of the South Mall Campus to the SW Ecodistrict and would increase views into the gardens and to the Castle from outside. It would be consistent with the SW Ecodistrict goals for a pedestrian-oriented development and improved connection to public space. Due to impacts to the historic character of the South Mall Campus, this alternative may not be fully consistent with the Urban Design or Historic Preservation Elements of the Comprehensive Plan. It would restore and renovate historic buildings consistent with the National Mall Plan's cultural resource goals.

ALTERNATIVE F

- A moderate, long-term, beneficial impact would occur by strengthening the connection of the South Mall Campus to the SW Ecodistrict as it would continue to block out of the neighborhood across Independence Avenue, SW from within the site and would increase views into the gardens and to the Castle from outside. Alternative F is consistent with the Comprehensive Plan and SW Ecodistrict Plan goals for pedestrian-oriented development and for improved connections to public space, and the most consistent with the Urban Design and Historic Preservation Elements of the Comprehensive Plan. It would restore and renovate historic buildings consistent with the National Mall Plan's cultural resource goals.

- Direct, long-term, moderate, beneficial impacts would result from security upgrades including blast protection, perimeter security elements, and visitor screening upgrades.
- Does provide adequate daylight for staff that would result in minor, long-term, adverse impacts.

ALTERNATIVES D AND F

- Direct, short-term, minor, adverse impacts from the disturbance of hazardous materials and safety hazards during construction.
- Direct, long-term, minor, and moderate, beneficial impact from removal of hazardous materials and installation of Campus seismic and blast protection.
- Direct, long-term, major, beneficial impacts would result from security upgrades including blast protection, perimeter security elements, and visitor screening upgrades.

ES.3.12 IMPACTS ON UTILITIES

NO-ACTION ALTERNATIVE

- Continual need to repair utilities would result in direct, long-term, minor, adverse impacts.
- Remaining on GSA steam and chilled water would result in indirect, long-term, moderate, adverse impacts to SI collections.

ALL MASTER PLAN ALTERNATIVES

- Direct, short-term, negligible, adverse impacts from temporary increase in utility demand.
- Direct and indirect, long-term, moderate, beneficial impact from overall reduction in utility use.
- Indirect, short-term, minor, adverse impacts from disruption to utilities.

ES.3.13 IMPACTS ON WASTE MANAGEMENT

NO-ACTION ALTERNATIVE

- No impacts.

ALL MASTER PLAN ALTERNATIVES

- Direct, short-term, minor, adverse impacts from increased waste generation during construction.
- Direct, long-term, moderate, beneficial impacts from streamlined waste management.
- Indirect, short and long-term, negligible, adverse impacts from waste generated on the Campus.

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APPENDICES

Appendix A - Consultation and Coordination

Appendix B - Consulting Parties - Assessment of Effects

Appendix C - Public Scoping Report

Appendix D - Comprehensive Traffic Report

Appendix E - Draft Programmatic Agreement

ACRONYMS

AADT	Annual Average Daily Traffic	EA	Environmental Assessment
ACHP	Advisory Council on Historic Preservation	EIS	Environment Impact Statement
ACM	Asbestos Containing Material	EO	Executive Order
ADA	American's with Disabilities Act	EPA	Environmental Protection Agency
AIB	Arts and Industries Building	ESA	Endangered Species Act
ANC	Area Neighborhood Commission	FEMA	Federal Emergency Management Agency
APE	Area of Potential Effect	FEMS	Fire and Emergency Medical Services
ASCE	American Society of Civil Engineers	FHWA	Federal Highway Administration
BIG	Bjarke Ingles Group	FIRM	Flood Insurance Rate Map
BMP	Best Management Practices	FR	Federal Register
CAA	Clean Air Act	FSL	Facility Security Level
CEQ	Council on Environmental Quality	FY	Fiscal Year
CFA	Commission of Fine Arts	GAR	Green Area Ratio
CFR	Code of Federal Regulations	GDP	Gross Domestic Product
CH ₄	Methane	GHG	Greenhouse Gas
CLR	Cultural Landscape Report	GSA	General Services Administration
CO	Carbon Monoxide	HCM	Highway Capacity Manual
CSS	Combined Sewer System	HCS	Highway Capacity Software
CWA	Clean Water Act	HOTD	Heating Operations and Transmission District
CZMA	Coastal Zone Management Act	HUD	Housing and Urban Development
dba	Decibels (A-weighted scale)	IBC	International Building Codes
DC	District of Columbia	IEBC	International Existing Building Codes
DCMR	DC Municipal Regulations	IPaC	Information for Planning and Conservation
DCOP	DC Office of Planning	ISC	Interagency Security Committee
DDOT	District Department of Transportation	LBP	Lead Based Paint
DOEE	District Department of Energy and Environment	LOMR	Letter of Map Revision

LOS	Level of Service	OSHA	Occupational Health and Safety
MPD	Metro Police Department	Pb	Lead
MS4	Municipal Separate Storm Sewer System	PCBs	Polychlorinated Biphenyls
MTA	Maryland Transit Authority	PM ₁₀	Particulate Matter
MWCOG	Metropolitan Washington Council of Governments	PM _{2.5}	Particulate Matter
NAAQS	National Ambient Air Quality Standards	PRTC	Potomac and Rappahannock
NASM	National Air and Space Museum	ROD	Record of Decision
NCPC	National Capital Planning Commission	RP	recommended practice
NEPA	National Environmental Policy Act	SD	Smithsonian Directive
NESHAP	National Emissions Standards for Hazardous Air Pollutants	SFWG	Sustainably Facilities Working Group
NHD	National Hydrography Dataset	SHPO	State Historic Preservation Office
NHPA	National Historic Preservation Act	SI	Smithsonian Institution
NMAfA	National Museum of African Art	SIP	State Implementation Plan
NMNH	National Museum of Natural History	SO ₂	Sulfur Dioxide
NO ₂	Nitrogen Dioxide	SOM	Skidmore, Owings, and Merrill
NOAA	National Oceanic and Atmospheric Association	SWMP	Stormwater Management Plan
NOI	Notice of Intent	TCP	Traditional Cultural Properties
NO _x	Nitrous Oxides	USACE	US Army Corps of Engineers
NPS	National Park Service	USC	United States Code
NRCS	Natural Resource Conservation Service	USDA	US Department of Agriculture
NRHP	National Register of Historic Places	USFWS	US Fish and Wildlife Service
NWI	National Wetlands Inventory	USGS	US Geological Survey
O ₃	Ozone	v/c	volume to capacity
OFMR	Office of Facilities Management and Reliability	VOCs	Volatile Organic Compounds
OMB	Office of Management and Budget	WMATA	Washington Metropolitan Area Transit Authority

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