2.0 DESCRIPTION OF ALTERNATIVES
2.1 WHAT ARE THE GUIDING PRINCIPLES USED IN THE DEVELOPMENT OF THE ALTERNATIVES FOR THE NATIONAL MUSEUM OF AFRICAN AMERICAN HISTORY AND CULTURE?

The Smithsonian Institution, with input from the Section 106 consulting parties, developed design principles to guide the development of a design for NMAAHC. These original (Tier I) principles were intended to inform the design and were tested during the design competition to select an architect. Following completion of the Tier I NEPA process in 2008, the Smithsonian Institution and consulting parties refined the design principles. The refined (Tier II) design principles served as a guide to the development of the action alternatives that are described and analyzed in this Tier II EIS. The refined (Tier II) design principles are listed below (Smithsonian Institution, 2009).

2.1.1 Refined (Tier II) Design Principles

Preamble: This set of principles was developed specifically to guide the design process for the proposed museum. The Smithsonian has consulted with interested parties, including the National Capital Planning Commission, the U.S. Commission of Fine Arts, the District of Columbia Historic Preservation Office, and the Advisory Council on Historic Preservation to identify and analyze the character of cultural and historic properties on and near the museum site and the potential impacts to them, as required by the National Environmental Policy Act and the National Historic Preservation Act.

These design principles summarize the analysis of the design character of the National Mall, the selected museum site, and the surrounding urban context, and articulate parameters for avoiding or minimizing the adverse effects of new construction.

The principles shall be used in conjunction with the analysis of the design character and historic resources in the Tier I Environmental Impact Statement, as well as the minutes of the consulting parties.

A. General Composition of the National Mall:
The National Mall at the heart of Monumental Washington presents a unity of overall spatial design but is composed of distinct parts, including the historic Mall east of 14th Street, the Washington Monument Grounds, and West Potomac Park. Though administratively separate, the Ellipse, White House Grounds, and Capitol Grounds are also part of this extended landscape composition.

The museum site occupies a highly prominent location at the juncture of the east-west axis of the National Mall from the U.S. Capitol to the Lincoln Memorial and the north-south axis from the White House to the Jefferson Memorial.
1. The design of the museum must respect the character and the history of the monumental core as it has evolved through seminal plans, most notably the L’Enfant Plan and the McMillan Plan, but also including the Victorian-era and mid-20th century plans. The addition of a large new structure in the midst of this historic environment must be accomplished in a way that is harmonious and respectful of existing hierarchies.

2. The design must consider long views within the National Mall, as well as distant views from higher locations, such as Arlington Cemetery, the Old Post Office Pavilion, the Washington Monument itself, and from the air; it must not detract from panoramic views that open and widen on the approach to the Washington Monument Grounds from the National Mall or the Ellipse.

3. The spatial organization of the National Mall is cross-axial, marked by the Washington Monument at the crossing. The museum is situated at a “hinge” where the surrounding frame of buildings will reach its closest approach to the Monument. The museum should be a distinctive part of this frame, yet must recognize its role in the larger composition of the Mall, particularly in turning the long view between the cross-axes.

B. Context of the Washington Monument Grounds:
The site is located on the Washington Monument Grounds. The setting of the tallest and most prominent structure in the Monumental Core, this 72-acre reservation is characterized by Olmstedian design principles and informal, irregular, and asymmetrical effects. Notable elements include open lawns, intermittent groupings of trees, and curvilinear paths and roads that create a sequential experience of changing picturesque and panoramic views.

1. The design of the museum must be respectful of the Washington Monument and its scale and design character and must not detract from its preeminence; its proximity to the Monument requires that this physical relationship be carefully controlled in the design of the building, in terms of placement, size, shape, orientation, landscaping, and illumination.

2. The design of the museum and its site should be informed by the naturalistic topography of the Grounds and the distinct characteristics of this historic environment. The site is part of the foreground peripheral “flats” from which the land gradually rises to the central mound; built features include the Monument Lodge, the Bulfinch Gateposts, and the curvilinear pathways.
3. The design must address the museum’s effects on the definition, character, and views of the Grounds as seen and experienced from within the reservation as a whole. The building will substantially alter the Grounds; the design of the site should be associated with the surrounding larger landscape rather than appearing as the insertion of an unrelated landscape. The design must maintain a fluidity of movement across the site by integrating new pathways to the existing landscape of the Grounds.

C. Relationship to Adjacent Architectural and Urban Context:
   The site is located at the convergence of three distinct contexts—the historic Mall, the Washington Monument Grounds, and the urban grid of the adjacent city. To the east of the site is a series of museum structures with an established pattern of height, setbacks, and site coverage; these help define the formal landscape of the Mall with its expansive panels of lawn flanked by double allées of trees. To the south and west is the open park landscape that extends past the Washington Monument to the Potomac River. To the north, the monumental Federal Triangle creates a more solid urban street wall that frames the composition of the National Mall.

1. The placement, shape, and orientation of the museum must address its relation to each of its adjacent contexts. The museum will be located at the western end of a sequence of museum buildings facing the Mall, and while its design should recognize this unique position, its massing must not exceed the prevailing height nor protrude beyond the prevailing setback of the primary building volumes (not terraces) of the museums along the Mall and Constitution Avenue.

2. All sides of the building, including the roof, will be highly visible and should be treated as public facades. The appearance of service and support functions should be eliminated to the greatest extent possible by placing them below grade, and any requisite perimeter security should be designed and integrated into the facility from the earliest concept design to be compatible with the character of the building and site.

3. The design of the museum and its site circulation should also recognize the important non-cardinal views and directions of approach to this site, in particular the corner street crossings, the historic Mall pathways, and the diagonal relationships with the Washington Monument, the Ellipse, and the Old Post Office tower.
2.1.2 NMAAHC Design Competition

The Smithsonian Institution held a design competition in the early part of 2009. The purpose of the design competition was to solicit, through the development of initial design concepts, the architectural and engineering (A/E) team best-suited to work with the Smithsonian Institution in the design of the new museum. Twenty-two firms were considered, of which six were invited to participate in the design competition. All six teams developed architectural concepts and models that were exhibited to the public at the Smithsonian Institution Building. The schemes developed for the design competition are provided in Appendix 9.2.

The Smithsonian Institution ultimately selected the A/E team of Freelon Adjaye Bond/SmithGroup to advance the design of the NMAAHC. The selected team began work on the design of the NMAAHC in November 2009. The team presented its initial competition ideas in information sessions to the U.S. Commission of Fine Arts (CFA) on November 19, 2009 and NCPC on December 3, 2009.

2.1.3 Application of the Design Principles

The Smithsonian Institution has held regular meetings since January 2007 with interested parties (consulting parties), including NCPC, NPS, CFA, the District of Columbia Historic Preservation Office (DCHPO) and Advisory Council on Historic Preservation (ACHP). The purpose of these meetings was to: (1) engage stakeholders early in the process; (2) aid in the development of the design principles; (3) inform the stakeholders regarding the design competition; (4) assist in the refinement of the design principles; and (5) keep the various constituencies apprised of work as the A/E team moved through the concept development process and regulatory and contractual work requirements. During the multi-year process, valuable input and insights were received that were instrumental in the development of the design alternatives.

The four action alternatives that are presented below and analyzed in this document demonstrate different approaches to massing, location, and landscape treatment. They represent further development of the physical parameters and design principles from the Tier I preferred alternative, and application of the refined (Tier II) design principles. Developing four action alternatives also allowed the design team to explore different ideas and test the basic blocking and stacking of the program in various mass configurations (Freelon Adjaye Bond /SmithGroup, 2010).

Figure 2.1.1 shows the siting considerations for the museum building as defined in the design principles, parameters, and Tier I EIS process. These setback and alignment lines indicate the potential envelope for building development.
Figure 2.1.1 Tier II Setback and Building Alignment Lines
Source: AECOM, 2010
2.2 HOW HAVE THE PUBLIC AND AGENCIES BEEN INVOLVED IN SHAPING THE ALTERNATIVES?

The Smithsonian Institution engaged the public and federal and local agencies in a series of meetings to help define the scope of the Tier II EIS and solicit feedback during the alternatives development process.

2.2.1 Public and Agency Scoping Process

The scope of an EIS is the range of actions, alternatives, issues, and impacts to be considered in an EIS. The EIS scoping process is designed to provide an opportunity for the public and other Federal and local agencies to express their concerns, which in turn help determine the scope of the EIS.

The Smithsonian Institution and NCPC initiated the public scoping process on November 10, 2009, through publication of the Notice of Intent in the Federal Register. The Notice of Intent described the proposed action and the reasons for preparing an EIS. The Notice of Intent also noted the Smithsonian Institution's continuation of related consultation under Section 106 of the National Historic Preservation Act (16 U.S.C. 470(f)). The public comment period was open through December 24, 2009. Comments received during the scoping process were taken into consideration in the development of this Tier II Draft EIS.

A public scoping meeting was held on Thursday, December 10, 2009, from 5:30 p.m. until 8:30 p.m. at the Smithsonian Institution Building, Castle Commons, located at 1000 Jefferson Drive SW, Washington, DC. During the scoping process and prior to conducting the public scoping meeting, the Smithsonian Institution and NCPC contacted NPS and the General Services Administration (GSA) to provide information on the project and to determine interest in face-to-face meetings to discuss the proposed action. A conference call was held with GSA and the National Aquarium staff on December 8, 2009. A meeting was held with the NPS on December 8, 2009.

A follow-up coordination meeting was held with interested local and regional public agencies to solicit additional feedback related to the scope of the Tier II Draft EIS. The non-federal agencies that participated in the meeting held on April 20, 2010, included the following:

- District of Columbia Office of Planning (DC OP)
- District of Columbia Department of Transportation (DDOT)
- District of Columbia Department of Environment (DDOE)
- District of Columbia Water and Sewer Authority (WASA)

As part of the scoping process and to solicit input from interested organizations and individuals, the Smithsonian Institution and NCPC held a meeting with the Consulting Parties as part of the concurrent Section 106 consultation process for this project. The meeting was held on November 18, 2009.
2.2.2 Ongoing Consulting Parties Participation

Pursuant to Section 106 regulations which are implemented by the ACHP and encourage early coordination with groups or individuals with demonstrated interest in historic properties that may be affected by a proposed action, the Smithsonian Institution invited a number of potentially interested organizations and individuals to participate in the Section 106 process as "Consulting Parties." The Section 106 consultation process was initiated as part of Tier I in the spring of 2007 (Smithsonian Institution, 2008a). The consulting parties consist of the following agencies and organizations:

- National Capital Planning Commission
- National Park Service
- U.S. Commission of Fine Arts
- District of Columbia Historic Preservation Officer
- Advisory Council on Historic Preservation
- National Coalition to Save Our Mall
- Committee of 100 on the Federal City
- U.S. Capitol Historical Society
- Afro American Historical and Genealogical Society
- Association for the Study of African American Life and History

Several additional groups were invited to participate, but did not or rarely participated, including: the National Trust for Historic Preservation, Mary Annette McQuirter, Independent Scholar on African American issues in DC; the Guild of Professional Tour Guides of Washington, DC; the District of Columbia Preservation League; and Advisory Neighborhood Commissions 2A and 2F.

According to the Tier I Final EIS, the Section 106 consulting parties played a key part in shaping the development of the alternatives and determining their effects on historic resources. This was deemed necessary due to the complex and extensive nature of the historic resources in the project area and the importance of views and viewsheds (both historic and prominent, but non-historic) from and to the project site (Smithsonian Institution, 2008a).

Following the Tier I Draft EIS public comment period, the consulting parties continued to propose strategies to avoid, minimize, or mitigate adverse effects to historic resources. Following the publication of the Tier I Draft EIS and over the course of several meetings held during the spring of 2008, the consulting parties refined the original (Tier I) design principles to ensure that the Tier II conceptual designs would follow the principles of good contextual design. The development of these principles is fully described above in Section 2.1.

As part of the Tier II EIS process, the consulting parties participated in the review and refinement of alternative concepts that were being developed by the design team. Meetings were held in the winter of 2009 through the summer of 2010 to solicit feedback from the consulting parties and ensure consistency of the design alternatives with the design principles.
2.2.3 What issues were raised by the public and other government agencies?

The following is a summary of the major issues that were expressed by topic during the public scoping process, Section 106 consultation meetings, and agency coordination meetings:

**Land Use and Visitor Use and Experience**

These issues focused on site context and the use of the site by visitors. Specifically, participants are interested in how the museum would fit in with the context of the surrounding land uses, including the Washington Monument, and the other museums on the National Mall.

Comments were received about how visitors would interact with the site and use the museum. Comments expressed interest in the relationship between the public space that would be provided and the museum entrances to 14th Street, Constitution Avenue, and the National Mall. It was suggested that perimeter security measures be incorporated into the landscape design to the extent practicable so as not to impede visitor access to the site or to place perimeter security at the sidewalk or in public space.

**Cultural Resources and Visual Resources**

These comments related to the potential effects of the NMAAHC on adjacent historic resources and within the historic context of the U.S. Capitol Building, Washington Monument, and the National Mall. Participants expressed concern about the visual effects of the museum on scenic viewsheds and vistas. Participants suggested that the alternatives not block historic and key views in the vicinity of the site. Another issue that was raised is the relationship of the alternatives to the surrounding urban design context, including the Federal Triangle buildings located north of the site. The comments suggested that the alternatives should align with the surrounding museums on the National Mall and no alternative should extend south into the National Mall.

Questions were asked about the amount of nighttime lighting that would be created and the adverse effects on surrounding prominent features, including the Washington Monument and the U.S. Capitol Building. It was suggested that informal landscaping should be located on the south and west sides of the site to provide a transition to the less formal landscape of the Washington Monument Grounds compared to the formal and linear landscape design of the National Mall.

**Geology, Soils, and Groundwater**

A number of comments received during scoping related to the stability of the Washington Monument during construction of the NMAAHC and the long-term effects of the NMAAHC on the stability of the Washington Monument Grounds. Other comments included a request for information about the underlying soil types and the load-bearing capacity of these soils, ground water levels and its effects on soil stability, the type of foundation that would be required to support the NMAAHC, and the type of construction anticipated for constructing the foundation.
Natural Resources and Sustainability

These issues concern the museum’s potential effects on depletable natural resources, including open spaces, and methods to conserve them. Participants suggested the incorporation of sustainable features such as a green roof, reuse of stormwater for landscape irrigation, and water efficient native landscaping. Other issues included consideration of the effects on global climate change during construction and operation of the museum, including contributions of greenhouse gas emissions. Concerns were raised about the removal of existing vegetation, including mature trees that are located near Constitution Avenue. The comments asked about the potential for increased impervious surfaces that would generate additional stormwater runoff and how the alternatives would ensure that runoff would be retained within the site.

Traffic and Pedestrian Access

The comments questioned locating the driveway for servicing the museum and deliveries on 14th Street. The comments suggested that the number of curb cuts should be limited and that even a single driveway for servicing and loading may affect commuter traffic on 14th Street. It was suggested that the entrance to the loading dock be located on 14th Street and the exit be located on 15th Street. Concerns were raised about increased traffic on 15th Street and Madison Drive because these are considered park roads by NPS. Concerns were raised about new curb cuts on Constitution Avenue because this is a ceremonial route between Arlington National Cemetery and the U.S. Capitol Building.

Participants were concerned about pedestrian accessibility to the site and the lack of entrances along 14th Street. It was suggested that the museum should support alternative forms of transportation, including bicycle access. The comments asked about the location for tour bus drop-offs and staging.
2.2.4 How are these Issues addressed in this EIS?

As described in Chapter 1 (Section 1.8.1), a number of issues were eliminated from detailed study within the Tier II EIS because they were addressed as part of the Tier I EIS process. However, a number of issues were not fully addressed in the Tier I EIS. Thus, after scoping discussions in internal, agency, and public meetings, the following issues were carried forward for detailed analysis in this Tier II DEIS:

- Land Use, Planning Policies, and Visitor Use and Experience (Section 3.2)
  - Site context
  - Relevant plans
  - Visitor experience
- Historic Resources (Section 3.3)
  - Direct and indirect effects on historic resources
  - Spatial organization
  - Views from historic resources
- Visual Resources (Section 3.4)
  - Urban design context
  - Views corridors
- Geology, Soils, and Groundwater (Section 3.5)
  - Soil composition and stability
  - Distribution and movement of groundwater
- Conservation of Natural Resources (Section 3.6)
  - Open space resources
  - Site performance
  - Global climate change
- Transportation (Section 3.7)
  - Traffic and roadways
  - Site access and service
  - Pedestrian and bicycle connections
2.3 WHAT ALTERNATIVES ARE BEING CONSIDERED?

This Tier II Draft EIS evaluates a No Action alternative and four action alternatives. The four action alternatives differ in the design of the museum, building height, pedestrian access, and the location of the building mass within the site. The other components of the alternatives, including the building form, the vehicular drop-off area, the service and loading drive, and the primary entrance along the National Mall, are consistent between the four action alternatives.

2.3.1 No Action Alternative

According to Section 1502.14(d) of CEQ guidance, the alternatives analysis in the EIS must “include the alternative of no action.” The “No Action” alternative is defined by CEQ as considering the environmental consequences of not undertaking the Proposed Action. As discussed in the Tier I Final EIS, this alternative assumes continuation of current conditions and the current management of the site. The purpose of describing and analyzing a “No Action” alternative is to allow decision makers to better understand the environmental consequences of continuing to operate a project under the terms and conditions of its existing situation. These consequences can then be compared to those associated with the proposed alternatives. Therefore, the No Action Alternative provides a baseline for analysis (Smithsonian Institution, 2008a).
2.3.2  **Elements Common to the Action Alternatives**

There are several features of the proposed museum that are common to the action alternatives discussed below. These include the primary building form, pedestrian and service access, and sustainability.

**Building Form**

*Structure and Facade*

The action alternatives each feature a Corona as the defining form of the visible building structure. The Corona is, "the primary architectural idea for the museum [and it] was derived from the classical tripartite column with its base, shaft and capital. In Yoruban art and architecture, the column or wooden post was usually crafted with a capital resembling a crown" (Freelon Adjaye Bond/SmithGroup, 2010).

The Corona would be the primary location for the museum’s galleries. Although the number of tiers in the Corona would vary between the action alternatives, generally four interior levels would be housed within the Corona. Each alternative would feature two museum levels below grade.

The Corona would be a shell that frames a traditional building structure. It would "form a perimeter zone which surrounds the primary galleries" (Freelon Adjaye Bond/SmithGroup, 2010). Each tier of the Corona would extend approximately 15 feet from the building structure at the top. The width of the building varies because the Corona is inversely angled at 17.4 degrees, emulating the capstone of the Washington Monument. Therefore, the width of the building would be smaller at the ground floor than at the top of the Corona.

The Corona would be clad with a bronze panel system that would be perforated to provide natural light into the museum and gallery spaces where appropriate, although details regarding the exterior of the Corona are still being developed. While the bronze material of the Corona is still under exploration with respect to color, tone, and translucency, the intent is an exterior that would not be particularly reflective or dark.

The Corona is a rectilinear shape, the primary mass of which would be placed near the center of the NMAAHC site, although the exact placement would vary between alternatives. These action alternatives build on the Contextual Building Alignment Massing Alternative that was studied in the Tier I EIS process.
**Access**

*Pedestrian Access*

Based on attendance patterns at other museums on the National Mall, it is estimated that 70 percent of museum visitors would be expected to enter the site from the National Mall, either from the Washington Monument or from the adjacent museums on the National Mall. Approximately 30 percent of visitors would likely enter on the north side of site from Constitution Avenue, 14th Street or 15th Street. This would include visitors traveling from the Federal Triangle or from the White House and the Ellipse. Because of this projected pedestrian approach pattern, the action alternatives would provide a primary entrance on the south side of the site adjacent to the National Mall. For each action alternative, the main entrance would feature a hardscape (paved) plaza that incorporates a reflecting pool. The action alternatives would also provide an employee entrance on 14th Street.

*Vehicular and Service Access*

Service and loading access and limited vehicular access would be provided from 14th Street. The service and loading area would be located underground and the access driveway would be shielded with landscaping to the extent possible. A single driveway curb-cut would be provided on 14th Street. The service and loading area would be sized such that a large, tractor-trailer truck would be able to drive into the below-grade loading dock and turn around within this area. No vehicles would be expected to back out onto 14th Street.

The service and loading access would be located on 14th Street to protect views from the Washington Monument Grounds, and because truck access into the city uses U.S. Route 1 (14th Street) and Interstate 395 (I-395), which connects to 14th Street. In addition, the peak pedestrian activity is east-west along Constitution Avenue and the National Mall. Finally, locating service access on 14th Street would not interfere with bus and taxi drop-off on Madison Drive (Gorove/Slade, 2010).

Approximately three parking spaces would be provided in the underground service and loading area for deliveries, the museum director, and other special guests. The action alternatives would not accommodate employee parking on-site. Therefore, the service and loading driveway would mainly be used for delivery and service activities.

*Bus and Taxi Drop-Off*

There is an existing lay-by on the north side of Madison Drive on the southern boundary of the project site. It is currently used for bus and taxi drop-off and as a Tourmobile stop. Each of the action alternatives would retain the existing lay-by for drop-off activity. It is intended to be a drop-off and pick-up area only. Buses and vehicles would not be permitted to park in this area.
Sustainability

LEED Certification

The Smithsonian Institution has committed to aggressive sustainability goals, including a minimum level of Gold for the building as certified by the U.S. Green Building Council under the Leadership in Energy and Environmental Design (LEED) 2009 green building rating system for New Construction and Major Renovations. Per federal mandates, government buildings are required to meet LEED Silver certification criteria. The Smithsonian Institution goal to achieve LEED Gold certification would exceed the Federal mandates. In addition, the Smithsonian Institution has registered the museum as a pilot project under the Sustainable Sites Initiative (SITES) that is still in development.

To meet the criteria for LEED Gold, the action alternatives would incorporate several integrated strategies, including: passive heating and cooling, daylighting, comprehensive stormwater management, and energy conservation. The Corona feature would be designed to block heat and sunlight on hot days, and to let in additional light and heat when it is cooler outside (Freelon Adjaye Bond/SmithGroup, 2010). Comprehensive stormwater retention, reuse of stormwater runoff for landscape irrigation purposes, and recycling water within the water features are some of the potential stormwater management strategies that would be employed. Other strategies would include using pervious paving materials, balancing pervious surfaces (infiltration) with areas for collection (rainwater), rainwater harvesting for irrigation, bioretention to filter and cleanse stormwater for reuse, using native and low-water plants to reduce irrigation and create cultural and natural interest, and using good soil mixes to minimize irrigation (Freelon Adjaye Bond/SmithGroup, 2010).

In addition to daylighting strategies to minimize energy use, the energy conservation strategies that would be employed could include using renewable energy, recovering waste heat, implementing a comprehensive humidity control strategy, using technologies that reduce the amount of air that needs to be treated, including energy management in office furniture and task lighting, and installing LED’s or fiber optics when small point sources of light would be required (Freelon Adjaye Bond/SmithGroup, 2010). Sustainable design strategies would be selected and implemented in order to improve the environmental impact of the construction, operation, and eventual deconstruction of the facility. The sustainability approach would be finalized during detailed design and would include a comprehensive listing of the LEED points that could be obtained.

To minimize energy use for lighting, approximately 50 percent of lighting of the public space for each action alternative would come from sunlight. This would be achieved by using skylights, top lighting, high ceilings, and interior glazing to allow daylight to penetrate deeper into the interior spaces (Freelon Adjaye Bond/SmithGroup, 2010).
Nighttime Lighting

The project site is located primarily within the Washington Monument Grounds and the National Mall, and within the viewsheds of the White House and the U.S. Capitol Building. As such, it is intended that the building facade would retain a dignified presence on the National Mall that complements, but would not compete with, these nearby landmarks at night. The nighttime lighting design would be intended to indicate a place of activity and give a clear indication as to whether the museum is open or closed (Freelon Adjaye Bond/SmithGroup, 2010).

To accomplish this, the lighting of outdoor gathering and circulation spaces would be well-shielded with hoods or other devices to direct the light while allowing the visitor maximum visibility for safety and low glare for comfort. Outdoor nighttime lighting would be directed or focused to cast light only on walkways or specific landscape features. Security lighting would be focused downward and onto the building façade. Minimal interior lighting would be maintained overnight for security purposes.

As part of the sustainability efforts for the NMAAH, the action alternatives would employ Dark Sky principles to the Light Pollution Reduction credit for LEED Gold certification under the park/urban criteria. This credit requires projects to limit light pollution and light trespass to surrounding areas.

Illuminating the internal architectural surfaces with views to the outside would make the building appear welcoming, while keeping within dark sky guidelines (Freelon Adjaye Bond/SmithGroup, 2010).
2.3.3 Action Alternative 1 - Plinth Concept

Alternative 1, the Plinth Concept, evolved from the original competition winning scheme. In addition, it is consistent with the Contextual Massing Alternative from Tier I. “The Plinth Alternative derives its name from the rectilinear building element that is positioned above the great hall and below the Corona. The plinth serves as the base for a two-tiered Corona, hovering over the site and forming a porch at both the north and south entries. The porch creates a covered area that is intended to shelter the entrances and create a threshold experience for the building entry” (Freelon Adjaye Bond/SmithGroup, 2010).

There are five primary features of the Plinth Alternative: the Corona, the Corona base, the north entry plaza, the cafeteria, and the plinth. The Plinth Alternative includes a Corona that is located in the central portion of the project site, aligned to the south with the National Museum of American History (NMAH). The Corona sits atop a glass base that forms the ground floor level. On the north side (Constitution Avenue), the glass base of the Corona extends an additional 57 feet to the north to form a glass entry plaza. A glass cafeteria would be attached to the Corona base on the west side of the site (parallel to 15th Street). From the glass base of the corona, a plinth would extend approximately 72 feet to the north and approximately 42 feet to the south. The plinth would not touch the ground floor level; instead, it would form a shaded porch-like feature over the north and south entrances.

Figure 2.3.1 shows a sketch of the north (Constitution Avenue side) portion of the Plinth Alternative. Figure 2.3.2 shows cross-sections of the Plinth Alternative. Figure 2.3.3 shows the ground floor plan and Figure 2.3.4 shows a plan view of the primary building components.

Building Program

The Plinth Alternative would feature a mezzanine and eight levels, two of which would be below grade. The basement level (Level -2) would contain mechanical equipment only. The concourse level (Level -1) would contain a theater, youth gallery, changing gallery, visitor services, and collection support. Two sunken courtyards located along Constitution Avenue would provide natural light to the north side of this level and would allow activity and functions to connect with outdoor space (Figure 2.3.2). The loading dock would also be located on this level.

The ground floor (Level 0) would be the main level into which visitors would enter the museum. The cafeteria and the museum shop would be located along Constitution Avenue and the remainder of the ground floor would feature a central hall. The central hall would connect vertically with the concourse level educational, assembly, and exhibit programs by a central staircase. Another staircase would provide visitor access to the mezzanine (Level +1), where the history galleries would be located.
Figure 2.3.1 Plinth Alternative 1: Sketch of building from 14th Street and Constitution Avenue looking southwest across the intersection
Source: Freelon Adjaye Bond/SmithGroup, 2010
Figure 2.3.2 Plinth Alternative 1: Cross-Sections
Source: Freelon Adjaye Bond/SmithGroup, 2010
Figure 2.3.3 Plinth Alternative 1: Ground Floor Plan
Source: Freelon Adjaye Bond/SmithGroup, 2010

Figure 2.3.4 Plinth Alternative 1: Plan View of the Primary Building Components
Source: Freelon Adjaye Bond/SmithGroup, 2010
Situated atop the plinth, Level +2 would include both gallery space and a large south-facing terrace. It would be connected to the mezzanine level and Level +3 by a ramp. Level +3 would contain gallery space and a three-story sky light that would extend upwards to the roof. This space would allow for the display of oversized objects, as well as provide natural light to the center of the gallery. Gallery spaces would be enhanced by gallery “lenses,” or window areas that would offer areas for respite and contemplation, as well as educational points with their connections to historic landmarks and monuments throughout the city (Freelon Adjaye Bond/SmithGroup, 2010).

Offices spaces would be located on Level +4 and Level +5 and would not be accessible to the public. Staff access would be accommodated by an elevator in the northeast core. The Level +3 sky light would extend through the Level +4 and Level +5 offices. The sky light would bring natural day lighting throughout the space.

The penthouse at Level +6 would house a Patrons Lounge area and a café, as well as a south-facing terrace. The terrace could be utilized as a multi-functional space acting as the terminus to the museum sequence, an observation terrace, a place for light food and drink, as well as a special event and gathering space.

**Building Area and Height**

The Plinth Alternative involves construction of approximately 360,000 gross square feet on the project site. The building would extend approximately six stories above ground level. The Corona would be approximately 105 feet above the average site grade. A penthouse level would occupy a portion of the roof and extend an additional approximately 16 feet 6 inches for a total height of 121 feet 6 inches above grade. Two stories would be located underground for a maximum depth of 45 feet below grade. Because the average site grade is 13 feet above sea level, the height of the Plinth Alternative would translate to 118 feet above sea level to the top of the Corona and 134 feet 6 inches above sea level to the top of the penthouse, and the depth would be 32 feet below sea level. Table 2.1 summarizes the building height and depth. Approximately 65 percent of the programming would be located above ground with the Plinth Alternative.

**Table 2.1 Building Height of Plinth Alternative**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Building Height Relative to Average Grade</th>
<th>Building Elevation Relative to Mean Sea Level (MSL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top of Corona</td>
<td>105 feet</td>
<td>118 feet</td>
</tr>
<tr>
<td>Top of Penthouse</td>
<td>121 feet 6 inches</td>
<td>134 feet 6 inches</td>
</tr>
<tr>
<td>Basement</td>
<td>-45 feet</td>
<td>-32 feet</td>
</tr>
</tbody>
</table>
As part of the Plinth Alternative, the museum building would occupy approximately 36.8 percent of the project site. The maximum building coverage area would be approximately 85,804 square feet including the ground floor cafeteria, and the north entry plaza. The base of the Corona at the ground floor would measure approximately 233 feet in length (parallel to 14th and 15th Streets) by 233 feet in width (parallel to Madison Drive and Constitution Avenue). An additional base extension for the north entry plaza would measure approximately 96 feet long by 223 feet wide. The cafeteria would be located to the west of the base of the Corona on the ground floor. The cafeteria would measure 74 feet long by 68 feet wide. The plinth would also extend beyond the base of Corona and the south entry plaza by 20 feet 6 inches.

**Building Setbacks and Alignment**

At the ground floor, the Corona of the Plinth Alternative would be set back approximately 178 feet from the curb on Constitution Avenue and approximately 121 feet from the curb to the north entry plaza, approximately 172 feet from the curb on Madison Drive, approximately 74 feet from the curb on 14th Street, and setback approximately 49 feet from the cafeteria and 126 feet to the face of the Corona as measured from the curb on 15th Street. Because it would extend beyond the building footprint on the ground floor, the setback of the plinth would be approximately 107 feet from the curb on Constitution Avenue and approximately 114 feet from the curb on Madison Drive.

As part of the Plinth Alternative, the Corona would nearlyalign with southern façade of NMAH located directly to the east. The cantilevered plinth would extend south towards the National Mall and would extend approximately 6 feet beyond the historic 445 foot McMillan Plan setback, which is consistent with the southernmost line of the National Museum of Natural History's (NMNH) building mass (façade).
Conceptual Landscape Plan

The primary entrance for the Plinth Alternative would be located on the south (National Mall) side; a second public entrance would be located on the north side from Constitution Avenue. Figure 2.3.5 shows the conceptual landscape plan for the Plinth Alternative.

At the south entrance (National Mall side), visitors would enter the building porch by symbolically crossing a shallow reflecting pool located in front of the porch. A sloped green landform incorporating seating walls in an amphitheater style would moderate the grade change from the southern edge of the site to the ground floor elevation of the museum and entry plaza. The grade change and hardscape features would also act as perimeter security on the south side of the site.

At the north entrance (Constitution Avenue), visitors would approach the museum over a planted water feature followed by a bridge-like crossing over two sunken courtyards. These sunken courtyards are intended to provide natural light to public spaces on the concourse level (Level -1, the first story below grade). The water feature on Constitution Avenue would provide interpretive benefit and would be part of the measures designed to control stormwater runoff. The walls that would surround the water feature would act as a perimeter security barrier.

A walkway would connect the two entrances near 15th Street, along which the landscape would be strategically planted to frame views to the Washington Monument Grounds and to the Washington Monument. One side of the walkway would feature a security wall with integrated seating where people could gather and view the Washington Monument.

The sidewalks would measure approximately 29 feet wide on Constitution Avenue, a minimum of 12 feet wide on 15th Street, and approximately 17 feet wide on 14th Street. A large sidewalk would be located on Madison Drive. Instead of a continuous hardscape for the entire width of 85 feet (the distance to the established curb line), this sidewalk would have an inset of landscaped green space, which would also serve to buffer the change in grade. No section would the sidewalk be less than 14 feet wide.

A separate pedestrian entrance for staff would be provided from 14th Street. The driveway for the service/loading area would be located on 14th Street. Pedestrians and vehicles traveling on 14th Street would see the curb cut for the driveway entrance; however, the length of the driveway would be heavily landscaped and feature a perimeter security wall to screen the activities in the below grade service/loading area.
Figure 2.3.5 Plinth Alternative 1: Conceptual Landscape Plan
Source: Freelon Adjaye Bond/SmithGroup, 2010
2.3.4 Action Alternative 2 – Plaza Concept

Alternative 2, the Plaza Concept would divide the exhibit functions and administrative functions of NMAAHC into two buildings on the site: the Corona and the northern building. The primary purpose of this alternative is to preserve views of the Washington Monument from the intersection of Constitution Avenue and 14th Street. “The Plaza alternative draws from the historic L’Enfant plan and acknowledges the diagonal pedestrian movement that currently flows through the site. By separating the program into two primary components – public/exhibition spaces (the Corona) and the support functions – a two building configuration is created. This alternative envisions a plaza between the two structures which provides a vibrant and active outdoor public space” (Freelon Adjaye Bond/SmithGroup, 2010).

There are four primary features of the Plaza Alternative: the Corona, the Corona Base, the plaza, and the northern building. The Corona would be located at the southern portion of the site. The three-layer Corona would sit atop a glass base at the ground floor level. The northern building would be positioned near Constitution Avenue.

Between the two buildings is a large central plaza designed to provide circulation through the site. This feature will also contain a second entrance for visitors from the north and outdoor program space. A large oculus located in the center of the plaza will provide reveal exhibit space below and provide natural light to sub-grade levels.

Figure 2.3.6 shows a sketch of the north (Constitution Avenue side) portion of the Plaza Alternative. Figure 2.3.7 shows cross-sections of the Plaza Alternative. Figure 2.3.8 shows the ground floor plan and Figure 2.3.9 shows a plan view of the primary building components.

Building Program

As part of the Plaza Alternative, the Corona would feature seven levels, two of which would be below grade. The northern building would consist of five levels, two of which would be below grade.

Corona Building

As part of the Corona, the basement level (Level -2) would contain mechanical equipment only. The concourse level (Level -1) would connect the Corona with the northern building. Combined, the concourse level would contain a theater, youth gallery, changing gallery, visitor services, and collection support. The plaza between the two buildings would have an opening, providing natural light to the north side of this level and allowing activity and functions to connect with outdoor space.

The ground floor (Level 0) would be the main level into which visitors would enter the museum. The primary feature of the ground floor would be the central hall. The central hall would connect vertically with the concourse level educational, assembly, and exhibit programs by an escalator. Another staircase would provide visitor access to the mezzanine (Level +1), where the galleries would be located.

The Level +2 history galleries would be accessed by escalators on the ground floor level. Ramps would be used to connect additional gallery spaces on Levels +2, +3, and +4. The gallery spaces would be enhanced by gallery “lenses,” or window areas that would offer areas for respite and contemplation, as well as educational opportunities with their connections to historic monuments throughout the city (Freelon Adjaye Bond/SmithGroup, 2010).
Figure 2.3.6 Plaza Alternative 2: Sketch of building from 14th Street and Constitution Avenue looking southwest across the intersection
Source: Freelon Adjaye Bond/SmithGroup, 2010
Figure 2.3.7 Plaza Alternative 2: Cross-Sections
Source: Freelon Adjaye Bond;Smith Group, 2010
**Figure 2.3.8 Plaza Alternative 2: Ground Floor Plan**
*Source: Freelon Adjaye Bond/SmithGroup, 2010*

**Figure 2.3.9 Plaza Alternative 2: Primary Building Components**
*Source: Freelon Adjaye Bond/SmithGroup 2010*
The penthouse at Level +5 would contain a Patrons Lounge area and a café, as well as a south-facing public terrace. The terrace could be utilized as a multi-functional space acting as the terminus to the museum sequence, an observation terrace, a place for light food and drink, as well as a special event and gathering space.

**Northern Building**

In the northern building, the basement level (Level -2) and the concourse level (Level -1) would connect with the Corona, with the same programming described above. The ground floor (Level 0) of the northern building would be the main level into which people would enter the building. This level would contain a cafeteria that would be open to the public, collection services, and an auditorium/theater. Galleries would include the Changing Gallery, Musical Crossroads, and youth gallery. There would also be an area with stairs open to the concourse below. Level +1.5 would contain offices above the youth gallery and resource center. Level +2 would also contain offices that would extend over the area open to the plaza.

**Building Area and Height**

The Plaza Alternative involves construction of approximately 370,000 gross square feet on the project site. Table 2.2 provides a summary of the buildings height and depth. The two structures of the Plaza Alternative would occupy approximately 34.5 percent of the project site. The maximum building coverage area would be approximately 80,559 square feet, including both structures.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Building Height Relative to Average Grade</th>
<th>Building Elevation Relative to Mean Sea Level (MSL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top of Corona</td>
<td>105 feet</td>
<td>118 feet</td>
</tr>
<tr>
<td>Top of Penthouse</td>
<td>119 feet 6 inches</td>
<td>132 feet 6 inches</td>
</tr>
<tr>
<td>Top of Northern Building</td>
<td>43 feet</td>
<td>56 feet</td>
</tr>
<tr>
<td>Basement</td>
<td>-45 feet</td>
<td>-32 feet</td>
</tr>
</tbody>
</table>

Approximately 55 percent of the programming would be above ground with the Plaza Alternative. The details for each of the buildings are described below.

**Corona Building**

The Corona building would extend five stories above ground and approximately 105 feet above the average site grade. A penthouse level would occupy a portion of the roof and extend an additional approximately 14 feet 6 inches for a total height of 119 feet 6 inches above grade. Two stories would be located underground for a maximum depth of 45 feet below grade. Because the average site grade is 13 feet above sea level, the height of the Corona would translate to 118 feet sea level to the top of the Corona and 132 feet 6 inches above sea level to the top of the penthouse, and the depth would be 32 feet below sea level.
With the Plaza Alternative, the maximum coverage area for the Corona would cover approximately 50,625 square feet measuring approximately 225 feet in length (parallel to 14th and 15th Streets) and approximately 225 feet in width (parallel to Madison Drive and Constitution Avenue).

**Northern Building**

The northern building would extend approximately three stories above the ground for a total building height of 43 feet above the average site grade. Two stories would be located underground for a maximum depth of 45 feet below grade. Because the average site grade is 13 feet above sea level, the height of the northern building would translate to 56 feet above sea level to the top of the building and the depth would be 32 feet below sea level.

The northern building would cover approximately 29,934 square feet measuring approximately 110 feet in length (parallel to 14th and 15th Streets) and approximately 272 feet in width (parallel to Madison Drive and Constitution Avenue). Because Level +2 would extend beyond the building’s base, its coverage area is measured at the roof level, which includes the overhang.

### Building Setbacks and Alignment

The Plaza Alternative would be set back approximately 90 feet from the curb on Constitution Avenue, approximately 73 feet from the curb on Madison Drive, approximately 46 feet from the curb on 14th Street, and approximately 53 feet from the curb on 15th Street.

As part of the Plaza Alternative, the Corona would be positioned to the southern and eastern portion of the site, the southernmost point of which would align with the base of the steps of NMNH located to the east. The northern building component of the Plaza Alternative would align with the west façade of the Herbert J. Hoover Commerce Building, located on the north side of Constitution Avenue. Because the northern building would be located at Constitution Avenue, it would not align with the north facade of NMAH or NMNH.
Conceptual Landscape Plan

As part of the Plaza Alternative, the hardscape plaza would be the central focus of the landscape design, creating outdoor programming space. The plaza would be a central rectangle between the Corona and the northern building. Beyond this, the plaza would extend diagonally to Constitution Avenue and to the western sidewalk. This alignment would be to the northeast and southwest, the axis between the intersection of 14th Street and Constitution Avenue, and the Washington Monument.

The west end of the plaza would remain open to allow interior and exterior long views of the Washington Monument and Washington Monument Grounds from the site. Figure 2.3.10 shows the conceptual landscape plan for the Plaza Alternative.

The main public entrance for the Corona in the Plaza Alternative would be located on the south (National Mall) side. A second entrance would be provided from the north side from the plaza. A staff entrance would be provided from Constitution Avenue. The entrance to the northern building would be from the plaza. Visitors would enter the plaza from the northeast corner of the site or from the southwestern portion of the site. The southern portion of the site would feature a shallow reflecting pool. The landscaping would moderate the grade change and hardscape features that would also act as perimeter security on the south side of the site.

On the north side of the site, a planted water feature that would provide interpretive benefit and serve to collect stormwater runoff would be located between the building and the Constitution Avenue sidewalk. From the corner of Constitution Avenue and 14th Street, visitors would follow a wide extension of the plaza that would lead them to the central plaza. Views of the Washington Monument could be seen along this entrance. To the west of the northern building and plaza, a curved sidewalk would lead from Constitution Avenue to the plaza south of the Corona.

The landscape would also feature a symbolic skylight at the center of the plaza, between the Corona and the northern building. Using the grade change from Constitution Avenue towards Madison Drive, the sky light would provide natural day lighting to below ground space on the concourse level.

As part of the Plaza Alternative, perimeter security would primarily be incorporated into landscape walls along the site boundaries. Some of the security walls would include integrated seating where people would gather and view the Washington Monument. The driveway for the service/loading area would be located approximately mid-block on 14th Street. Pedestrians and vehicles traveling on 14th Street would see the curb cut for the driveway entrance; however, the length of the driveway would be heavily landscaped and feature a perimeter security wall to screen the activities in the below grade service/loading area.

The sidewalks surrounding the site would measure approximately 12 feet wide on Constitution Avenue, a minimum of 12 feet wide on 15th Street, approximately 73 feet wide on Madison Drive, and approximately 23 feet wide on 14th Street.
Figure 2.3.10 Plaza Alternative 2: Conceptual Landscape Plan

Source: Freelon Adjaye Bond/SmithGroup, 2010
2.3.5 Action Alternative 3 – Pavilion Concept

Alternative 3, the Pavilion Concept, is similar to Alternative 1, the Plinth Concept, but without the plinth. As a result, “the Pavilion alternative leverages the power of the Corona by placing this singular building element in a ‘field.’ The Corona form will then be viewed as an object or ‘jewel’ within the landscape. This treatment accentuates the Corona in its pure form, unencumbered by attached or adjacent structures. As an object in a ‘field,’ the Pavilion is surrounded by a landscape designed to emulate the Washington Monument Grounds. The contours of the site are sculpted to create a natural pedestrian flow into the building-below the Corona and through the Central Hall” (Freelon Adjaye Bond/SmithGroup, 2010).

There are two primary features of the Pavilion Alternative: the Corona and the Corona base. The Corona would be located in the central portion of the project site and sit atop a glass base at the ground floor level. Figure 2.3.11 shows a sketch of the north portion of the Pavilion Alternative. Figure 2.3.12 shows the building cross-sections. Figure 2.3.13 shows the ground floor plan. Figure 2.3.14 shows a plan view of the primary building components.

Building Program

The Pavilion Alternative would feature seven levels, two of which would be below grade. The basement level (Level -2) would contain mechanical equipment only. The concourse level (Level -1) would include educational spaces, youth gallery, and resource center. This level would include the cafeteria, memorial garden, and theater. Daylight would be brought into the west facing program areas on Level -1 by a sky light that would open outward to the west, providing views of the Washington Monument Grounds.

The ground floor level (Level 0) would be the main level into which visitors would enter the museum. The central hall located within this level would create visual connections to the Washington Monument Grounds and allow for large indoor gatherings and special events. The ground floor level would also include visitor’s services, museum shop, café, orientation theatre, and a staff entry from the southeast. The central hall would connect vertically with the galleries on the level above (Level +1) by escalators.
Figure 2.3.11 Pavilion Alternative 3: Sketch of building from 14th Street and Constitution Avenue looking southwest across the intersection

Source: Freelon Adjaye Bond/SmithGroup, 2010
Figure 2.3.12 Pavilion Alternative 3: Cross-Sections
Source: Freelon Adjaye Bond/SmithGroup, 2010
Figure 2.3.13 Pavilion Alternative 3: Ground Floor Plan
Source: Freelon Adjaye Bond/SmithGroup, 2010

Figure 2.3.14 Pavilion Alternative 3: Primary Building Components
Source: Freelon Adjaye Bond/SmithGroup, 2010
The Level +1 history galleries in the mezzanine level would be accessed by escalators on the ground floor level. Ramps would be used to access additional gallery space on Level +2. The gallery spaces would be enhanced by gallery “lenses,” or window areas that would offer areas for respite and contemplation as well as educational opportunities with their connections to historic monuments throughout the city (Freelon Adjaye Bond/SmithGroup, 2010).

Office spaces would be located on the Level +3 and Level +4 and would not be accessible to the public. Staff access would be accommodated by an elevator in the northeast core. Light courts would be cut into the center of the floor plan to allow natural daylighting on these floors.

The penthouse at Level +5 would house a Patrons Lounge and a café, as well as a south-facing public terrace. The terrace could be utilized as a multi-functional space acting as the terminus to the museum sequence, an observation terrace, a place for light food and drink, as well as a special event and gathering space.

### Building Area and Height

The Pavilion Alternative would involve construction of approximately 330,000 gross square feet on the project site. The building would extend five stories above ground and approximately 103 feet above the site. A penthouse level would occupy a portion of the roof and extend an additional approximately 14 feet 6 inches for a total height of 119 feet 6 inches above grade. Two stories would be located underground for a maximum depth of 45 feet below grade.

Because the finished site grade would be 15 feet above sea level, the height of the Pavilion Alternative would translate to 118 feet sea level to the top of the Corona and 132 feet 6 inches above sea level to the top of the penthouse; the depth would be 32 feet below sea level. Table 2.3 provides a summary of the building height and depth. Approximately 50 percent of the programming would be located above ground with the Pavilion Alternative.
Table 2.3 Building Height of Pavilion Alternative

<table>
<thead>
<tr>
<th>Feature</th>
<th>Building Height Relative to Average Grade</th>
<th>Building Elevation Relative to Mean Sea Level (MSL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top of Corona</td>
<td>103 feet</td>
<td>118 feet</td>
</tr>
<tr>
<td>Top of Penthouse</td>
<td>119 feet 6 inches</td>
<td>132 feet 6 inches</td>
</tr>
<tr>
<td>Basement</td>
<td>-45 feet</td>
<td>-32 feet</td>
</tr>
</tbody>
</table>

As part of the Pavilion Alternative, the museum building would occupy approximately 25.8 percent of the project site. The maximum coverage area of the building would be approximately 60,229 square feet measuring approximately 237 feet in length (parallel to 14th and 15th Streets) and approximately 237 feet in width (parallel to Madison Drive and Constitution Avenue).

Building Setbacks and Alignment

The Pavilion Alternative would be set back approximately 159 feet from the curb on Constitution Avenue, approximately 169 feet from the curb on Madison Drive, approximately 72 feet from the curb on 14th Street, and approximately 115 feet from the curb on 15th Street. In the Pavilion Alternative, the Corona would align with the primary mass of NMAH located directly to the east and would be within the east and west alignment of the Herbert C. Hoover Building’s south-facing portico.
Conceptual Landscape Plan

As part of the Pavilion Alternative, an open green landscape would surround the museum. A hardscape plaza would be created at the south entry and provide outdoor programming space. The west end would remain open to allow interior and exterior long views of the Washington Monument and Washington Monument Grounds. Figure 2.3.15 shows the conceptual landscape plan for the Pavilion Alternative.

The public entrance for the Pavilion Alternative would be on the south (National Mall) side. No entrance would be provided from the north side on Constitution Avenue. A staff entrance would be provided from 14th Street. Visitors would enter the Pavilion Alternative through a plaza featuring a shallow reflecting pool. A sloped green landform that would incorporate seating walls in an amphitheater style would moderate the grade change from the south elevation of the site to the ground floor elevation of the museum and entry plaza. The grade change and hardscape features would also act as perimeter security on the south side of the site.

On the north side along Constitution Avenue, a gradual slope would lead from a lower ground plane to an upper level. The upper level would feature informal garden seating areas overlooking a lower level, closer to Constitution Avenue, which would incorporate a planted water feature to provide interpretive benefit and collect stormwater runoff. From the corner of Constitution Avenue and 14th Street, visitors would follow a curving path that would lead them to the west side of the building for views of the Washington Monument, then south to the main entry plaza on the National Mall side.

As part of the Pavilion alternative, perimeter security would primarily be incorporated into landscape walls along the site boundaries. Some of the security walls would include integrated seating where people would gather and view the Washington Monument.

The driveway for the service and loading area would be located approximately mid-block on 14th Street. The length of the driveway would be heavily landscaped and feature a perimeter security wall to screen the activities in the below-grade service and loading area.

The sidewalks surrounding the site would measure approximately 12 feet wide on Constitution Avenue, a minimum of 12 feet wide on 15th Street, a minimum of 14 feet wide on Madison Drive, and approximately 15 feet wide on 14th Street.
Figure 2.3.15 Pavilion Alternative 3: Conceptual Landscape Plan

Source: Freelon Adjaye Bond/SmithGroup, 2010
2.3.6 Action Alternative 4 – Refined Pavilion Concept

Alternative 4, the Refined Pavilion Concept, is similar to Alternative 3, the Pavilion Concept, as an object in the landscape. However, the Refined Pavilion Concept would feature a Corona with reduced above-grade dimensions and it would include entries on both the north and south sides of the site. As a result, the Refined Pavilion Alternative would retain "the power of the Corona by placing this singular building element in a field," allowing "the Corona form to be viewed as an object or 'jewel' within the landscape." The Refined Pavilion Alternative "includes the best features of all the previous design studies. It includes a significant reduction in program, bulk, and mass" (Freelon Adjaye Bond/SmithGroup, 2010).

There are three primary features of the Refined Pavilion Alternative: the Corona, the Corona base, and the south-facing porch. The Corona would be located near the southeastern portion of the project site and would sit atop a glass base at the ground floor level.

Figure 2.3.16 shows a sketch of the north (Constitution Avenue side) portion of the Refined Pavilion Alternative. Figure 2.3.17 shows the building cross-sections. Figure 2.3.18 shows the ground floor plan. Figure 2.3.19 shows the plan view of the primary building components.

Building Program

The Refined Pavilion Alternative would feature seven levels, two of which would be located below grade. The basement level (Level -2) would contain mechanical equipment only. The concourse level (Level -1) would include educational spaces, galleries, and visitor amenities. This level would also include the cafeteria, memorial garden, and theater. Daylight would be brought into the west-facing program areas on Level -1 by a sky light that would open outward to the west, providing views of the Washington Monument and Grounds.

The ground floor level (Level 0) would be the main level into which visitors would enter the museum. The central hall located within this level would create visual connections to the Washington Monument Grounds and allow for large indoor gatherings and special events. The ground floor level would also include visitor’s services, museum shop, cafe, and orientation theatre. The main entrance would be at the south, although a second entry and exit would be located on the northern portion of the building. The central hall would connect vertically with the history galleries on the level above (Level +1) by escalators.

The Level +1 history galleries would be accessed by escalators from the ground floor level. Additional gallery space on Levels +2 and +3. The gallery spaces would be enhanced by gallery “lenses,” or window areas that would offer areas for respite and contemplation as well as educational opportunities with their connections to historic monuments throughout the city (Freelon Adjaye Bond/SmithGroup, 2010).
Figure 2.3.16 Refined Pavilion Alternative 4: Sketch of building from 14th Street and Constitution Avenue looking southwest across the intersection
Source: Freelon Adjaye Bond/SmithGroup, 2010
Figure 2.3.17 Refined Pavilion Alternative 4: Cross-Sections

Source: Freelon Adjaye Bond/SmithGroup, 2010
Figure 2.3.18 Refined Pavilion Alternative 4: Ground Floor Plan
Source: Freelon Adjaye Bond/SmithGroup, 2010

Figure 2.3.19 Refined Pavilion Alternative 4: Primary Building Components
Source: Freelon Adjaye Bond/SmithGroup, 2010
Level +3 would house the children’s gallery and resource gallery, in addition to offices. Office spaces would be located on Level +4 and Level +5. Staff access would be accommodated by an elevator in the northeast core. Light courts would be cut into the center of the floor plan to allow natural daylighting on these floors.

The penthouse would house a patrons lounge, as well as a south-facing public terrace. The terrace could be utilized as a multi-functional space acting as the terminus to the museum sequence, an observation terrace, a place for light food and drink, as well as a special event and gathering space.

**Building Area and Height**

The Refined Pavilion Alternative would involve construction of approximately 294,000 gross square feet on the project site. The building would extend approximately five stories above ground and approximately 98 feet above the site. A penthouse level would occupy a portion of the roof and extend an additional approximately 10 feet for a total height of 108 inches above grade. Two stories would be located underground for a maximum depth of 45 feet below grade. Because the finished site grade would be 16 feet 6 inches above sea level at this location, the height of the Refined Pavilion Alternative would translate to 112 feet 6 inches above sea level to the top of the Corona and 122 feet 6 inches above sea level to the top of the penthouse, and the depth would be 32 feet below sea level. Table 2.4 provides a summary of the building height and depth. Approximately 43 percent of the programming would be located above ground with the Refined Pavilion Alternative.
### Table 2.4 Building Height of Refined Pavilion Alternative

<table>
<thead>
<tr>
<th>Feature</th>
<th>Building Height Relative to Average Grade</th>
<th>Building Elevation Relative to Mean Sea Level (MSL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top of Corona</td>
<td>98 feet</td>
<td>112 feet 6 inches</td>
</tr>
<tr>
<td>Top of Penthouse</td>
<td>108 feet</td>
<td>122 feet 6 inches</td>
</tr>
<tr>
<td>Basement</td>
<td>-45 feet</td>
<td>-32 feet</td>
</tr>
</tbody>
</table>

With the Refined Pavilion Alternative, the museum building would occupy approximately 23 percent of the project site. The maximum coverage area would be approximately 53,750 square feet. The Corona would measure approximately 210 feet in length (parallel to 14<sup>th</sup> and 15<sup>th</sup> Streets) and approximately 210 feet in width (parallel to Madison Drive and Constitution Avenue).

### Building Setbacks and Alignment

The Refined Pavilion Alternative would be set back approximately 226 feet from the curb on Constitution Avenue, approximately 135 feet from the curb on Madison Drive to the Corona (approximately 120 feet to the porch), approximately 72 feet from the curb on 14<sup>th</sup> Street, and approximately 137 feet from the curb on 15<sup>th</sup> Street. With the Refined Pavilion Alternative, the Corona would be within the east and west alignments of the Herbert C. Hoover Building’s south-facing portico and the historic 445’ setback line from the McMillan Plan; however, the porch on the south side of the Corona would extend approximately 28 feet beyond the 445’ line.
Conceptual Landscape Plan

As part of the Refined Pavilion Alternative, a rolling green landscape would surround the museum. A hardscape plaza would be created at the south entry and provide outdoor programming space. The west end would remain open to allow interior and exterior long views of the Washington Monument and Washington Monument Grounds. Figure 2.3.20 shows the conceptual landscape plan for the Refined Pavilion Alternative.

The main public entrance for the Revised Pavilion Alternative would be on the south (National Mall) side. A second entrance would be provided from the north side on Constitution Avenue. A staff entrance would be provided from 14th Street.

Visitors would enter the Refined Pavilion Alternative from the National Mall by a path leading over a shallow reflecting pool. At the entry point from the National Mall to the site, perimeter security would be integrated into the vegetation and water feature. Sidewalks and paths would connect to the main entrance from all directions.

The northern portion of the site would feature two curved crossing paths, each of which would lead visitors over a water feature along Constitution Avenue, that would provide interpretive benefit and collect stormwater runoff. Distinct paving materials and widths would be used to differentiate the two paths. From the corner of Constitution Avenue and 14th Street, visitors would follow a curving path that would lead them to the west side of the building for views of the Washington Monument then south to the main entry plaza on the National Mall side. Outside of the primary path would be groves with low seat-height walls set into the change in elevation.

A second path would lead visitors from the corner of 15th Street and Constitution Avenue across the water feature and into the museum's north entrance. This path would continue through the central hall and over the south water feature to Madison Drive.

A public plaza would be provided along the west façade of the Corona with the Refined Pavilion Alternative. This plaza would provide an area for viewing the Washington Monument and public gatherings. Additional public seating and contemplative space would be incorporated into the rolling landscape between the west façade of the Corona and 15th Street.

The landscape would also feature a sky well at the northwest corner of the building to bring light into the concourse level. A water feature would carry water from the shallow reflecting pool located at the south entrance to the sky well, or oculus.

As part of the Refined Pavilion Alternative, perimeter security would primarily be incorporated into landscape features near the site boundaries. Some of the security walls would include integrated seating where people would gather and view the Washington Monument.

The driveway for the service and loading area would be located approximately mid-block on 14th Street. The length of the driveway would be heavily landscaped and feature a perimeter security wall to screen the activities in the below grade service and loading area.

The sidewalks surrounding the site would measure approximately 10 feet wide on Constitution Avenue, approximately 10 feet wide on 15th Street, approximately 30 feet wide on Madison Drive, and approximately 10 feet wide on 14th Street.
Figure 2.3.20 Refined Pavilion Alternative 4: Conceptual Landscape Plan
Source: Freelon Adjaye Bond/SmithGroup, 2010
2.4 HOW DO THE ALTERNATIVES COMPARE WITH EACH OTHER?

Table 2.5 Comparison of Action Alternatives provides a summary of the proposed building's dimensions and characteristics to facilitate comparison of the four design concepts. The data presented include the corona dimensions, number of stories, gross square footage, site coverage, maximum building coverage, and the location of building entrances, as well as the locations for service and loading.
### Table 2.5 Comparison of Action Alternatives

<table>
<thead>
<tr>
<th>Alternative Name</th>
<th>Action Alternative 1 - Plinth</th>
<th>Action Alternative 2 - Plaza</th>
<th>Action Alternative 3 - Pavilion</th>
<th>Action Alternative 4 - Refined Pavilion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corona Dimensions</td>
<td>233 feet X 233 feet</td>
<td>225 feet X 225 feet</td>
<td>237 feet X 237 feet</td>
<td>214 feet X 214 feet</td>
</tr>
<tr>
<td>Corona Height (above grade)</td>
<td>105 feet</td>
<td>105 feet</td>
<td>103 feet</td>
<td>96 feet</td>
</tr>
<tr>
<td>Penthouse Height (above grade)</td>
<td>121 feet 6 inches</td>
<td>119 feet 6 inches</td>
<td>119 feet 6 inches</td>
<td>106 feet</td>
</tr>
<tr>
<td>Elevation of the Site Above Sea Level</td>
<td>13 feet</td>
<td>13 feet</td>
<td>15 feet</td>
<td>16 feet 6 inches</td>
</tr>
<tr>
<td>Corona Elevation (Above Sea Level)</td>
<td>118 feet</td>
<td>118 feet</td>
<td>118 feet</td>
<td>112 feet 6 inches</td>
</tr>
<tr>
<td>Penthouse Elevation (Above Sea Level)</td>
<td>134 feet 6 inches</td>
<td>132 feet 6 inches</td>
<td>132 feet 6 inches</td>
<td>122 feet 6 inches</td>
</tr>
<tr>
<td>Gross Square Footage</td>
<td>360,000</td>
<td>370,000</td>
<td>330,000</td>
<td>294,000</td>
</tr>
<tr>
<td>Above Ground</td>
<td>7 stories, 65%</td>
<td>5 stories, 55%</td>
<td>6 stories, 50%</td>
<td>5 stories, 43%</td>
</tr>
<tr>
<td>Below Ground</td>
<td>2 stories, 45%</td>
<td>2 stories, 45%</td>
<td>2 stories, 50%</td>
<td>2 stories, 57%</td>
</tr>
<tr>
<td>Site Coverage (%)</td>
<td>36.8%</td>
<td>34.5%</td>
<td>25.8%</td>
<td>23%</td>
</tr>
<tr>
<td>Maximum Building Coverage (square feet)</td>
<td>85,804</td>
<td>80,559</td>
<td>60,229</td>
<td>53,750</td>
</tr>
<tr>
<td>South Alignment</td>
<td>NMNH</td>
<td>none</td>
<td>NMAH</td>
<td>NMNH</td>
</tr>
<tr>
<td>Distance to Historic Mall Centerline (445 feet Setback)</td>
<td>439 feet</td>
<td>401 feet</td>
<td>497 feet</td>
<td>417 feet</td>
</tr>
<tr>
<td>Primary Entrance</td>
<td>National Mall</td>
<td>National Mall</td>
<td>National Mall</td>
<td>National Mall</td>
</tr>
<tr>
<td>Second Entrance</td>
<td>Constitution Avenue</td>
<td>Plaza</td>
<td>None</td>
<td>Constitution Avenue</td>
</tr>
<tr>
<td>Staff Entrance</td>
<td>Constitution Avenue</td>
<td>14th Street</td>
<td>14th Street</td>
<td>14th Street</td>
</tr>
<tr>
<td>Servicing and Loading</td>
<td>14th Street</td>
<td>14th Street</td>
<td>14th Street</td>
<td>14th Street</td>
</tr>
</tbody>
</table>

*Source: FAB/S; AECOM, September 2010*
2.5 WHAT OTHER DESIGN CONCEPTS WERE EVALUATED?

Under NEPA, Federal agencies are required to rigorously explore and objectively evaluate a range of reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Reasonable alternatives include those that are practical or feasible from a common sense, technical and economic standpoint. CEQ guidance also states that for an EIS, the number of reasonable alternatives considered in detail should represent the full spectrum of alternatives for meeting the agency's purpose and need, but an EIS need not discuss every unique alternative when an unmanageably large number is involved. The agency does not have to look at every conceivable alternative, only those reasonable ones that will meet the goals and objectives of the proposed action.

As part of this Tier II EIS process, numerous design concepts were tested and given careful consideration and thorough analyses. Beginning with the original competition scheme (see Appendix B), these design concepts represent the early stages of the design process and show how it evolved based on input from the consulting parties and the reviewing agencies. These design concepts included variations in:

- Building placement
- Building proportions
- Museum programming expression

These concepts were not necessarily dismissed from further consideration; instead, these were early schemes that evolved into the more advanced concepts described above. Thus, these concepts did not receive detailed analysis in the Tier II EIS.

2.5.1 Building Placement

As a category of design studies, building placement included schemes that considered different locations of the building within the NMAAHC site. Concepts included in this category are the Rotated Pavilion scheme and the Fragmented Plinth scheme.
Rotated Pavilion Scheme

As part of the alternatives development process, the design team considered a Rotated Pavilion Scheme that would face the front of the building toward the Washington Monument. In this scheme, a plaza with a reflecting pool water feature would be located on the National Mall (south) side, but the museum entrance would be located on 15th Street. Figure 2.5.1 shows the ground floor plan for the Rotated Pavilion Scheme. The south façade of the building would align with the façade of NMAH. As with the other action alternatives, this scheme would measure 118 feet tall.

The Rotated Pavilion Scheme posed a challenge because the proximity of the building to 15th Street gave the undesirable impression that the building was encroaching on the Washington Monument. Since most visitors would come from the National Mall, and this scheme’s primary entrance would not be located on that side, the Rotated Pavilion Scheme did not adequately address visitor needs.

**Figure 2.5.1 Rotated Pavilion Scheme: Ground Floor Plan**
*Source: Freelon Adjaye Bond/SmithGroup, 2010*
Fragmented Plinth Scheme

The purpose of this scheme was to explore an irregular shaped plinth as a base for the Corona structure. This scheme looked at modifying the edges of the plinth on the west and south sides of the site to create a less rectilinear building feature in deference to the curvilinear landscape of the Washington Monument Grounds. This scheme is similar to the Free Form Massing Alternative explored in Tier I. Figure 2.5.2 shows the ground floor plan for the Fragmented Plinth Scheme.

In the Fragmented Plinth Scheme, the Corona would align with the facade of NMAH which is located immediately east and the plinth would align with the southern facade of NMNH, which is farther east. Similar to the Plinth Alternative, the height of the Corona would be 118 feet. The primary entrance would be located on the National Mall (south) side, with a second entrance on the Constitution Avenue (north) side.

The Fragmented Plinth Scheme created an unpleasant geometry. In an attempt to respond to the irregular site and minimize the presence of the building on the north-south axis, numerous angles were created. This resulted in a visually unappealing structure. Further, the alignment with the other buildings that line the north side of the National Mall would be broken by the fragmented plinth, and it would be inconsistent with the long views west on the Mall towards the Washington Monument.

Figure 2.5.2 Fragmented Plinth Scheme: Ground Floor Plan
Source: Freelon Adjaye Bond/SmithGroup, 2010
2.5.2 Building Proportions

Building proportion is another category of design studies that were undertaken in the alternatives development process. Building proportion includes the building height, volume, and mass. Concepts included in this category are the Design Competition scheme, the Shorter Pavilion scheme, and the Two-Tier Corona scheme.

**Design Competition Scheme**

The building plan that was submitted as part of the design competition did not respond adequately to the design principles. Among other issues, the building height exceeded the maximum permitted height of 118 feet and the building mass was not aligned with the facades of NMAH or NMNH or any buildings on the Mall. In other words, the original Design Competition Scheme was deemed too large for the project site. As a result, the Design Competition Scheme, shown in Figure 2.5.3, was modified at the beginning of the design process to more closely meet the design principles and evolved to become the Plinth Alternative.

![Figure 2.5.3 Design Competition Scheme: Site Plan](Source: Freelon Adjaye Bond/SmithGroup, 2009)
Shorter Pavilion Scheme

Initially, the Shorter Pavilion Scheme, an early iteration of the Refined Pavilion Alternative, was developed to comply strictly with the design principles. In the Shorter Pavilion Scheme, the mass of the Corona would align with the south façade of NMAH, and the building height would be approximately 90 feet. Further, this scheme would feature a three-tiered Corona building. Figure 2.5.4 shows the elevation of the Shorter Pavilion Scheme. Figure 2.5.5 shows the building footprint and alignment with NMAH.

The Shorter Pavilion Scheme posed a challenge because the symmetry of the building proportions was hampered by the reduced height. The layers of the Corona were compressed, giving the potential appearance of a short and squat box in the middle of the NMAAHCH site. The simplified building form of the Corona in this concept evolved to become the Refined Pavilion Alternative.
Two-Tier Corona Scheme

To better manage the building proportions and reduce the building height, a Two-Tier Corona Scheme was developed. Similar to the Shorter Pavilion Scheme, the mass of the Corona would align with NMAH, a minimum 50-foot setback would be maintained, and the building height would be approximately 90 feet. To minimize the appearance of a short and squat box in the middle of site, one tier of the Corona was removed and the proportions of the other tiers were modified. Figure 2.5.6 shows building cross-sections for the Two-Tier Corona Scheme.

The Two-Tier Corona Scheme was eliminated from further consideration because the symmetry of the building proportions, although an improvement on the Shorter Pavilion Scheme, was still hampered by the reduced height. A three-tier Corona was determined to be more visually appealing. The building proportions were ultimately modified and, as with the Shorter Pavilion scheme, the simplified building form of the Corona in this concept evolved to become the Refined Pavilion Alternative.

Figure 2.5.6 Two-Tier Corona Scheme: Cross-Sections
Source: Freelon Adjaye Bond/SmithGroup, 2010
2.5.3  Museum Programming Expression

Several design concepts provided a range of variation in the amount of above ground versus below ground programming space. The Smithsonian Institution wanted to maximize the use of available natural light while maintaining the height limits and setbacks established in the design principles. Several design concepts considered ways to bring light to below ground elements in order to minimize building height and mass. These concepts include the Blended scheme and the Clerestory scheme.

**Blended Scheme**

The Blended Scheme combines elements of the Plinth and Pavilion Alternatives. It would feature a Corona in the central portion of the project site atop a glass base at the ground floor level. Approximately 59 percent of the programming would be located above ground with the Blended Scheme. To achieve this, the Blended Scheme would include an upturned landform on the northwest corner of 15th Street and Constitution Avenue. This feature would allow light to enter the concourse level, as well as provide a second entrance on Constitution Avenue. Figure 2.5.7 shows a sketch of the north (Constitution Avenue side) portion of the Blended Scheme.

The upturned landform would measure approximately 16 feet 8 inches tall at the peak. The angle of the grade change would be such that the upturned landform would appear as a glass structure along portions of the Constitution Avenue and 15th Street frontages. Because of the angle of the grade change, the upturned landform would frame views from the corner of Constitution Avenue and 14th Street to the Washington Monument.

Although this design concept solved the problem of bringing light into the below ground elements, the massing along Constitution Avenue proved problematic and would have potentially detracted from the visitor experience traveling down Constitution Avenue.
Clerestory Scheme

The Clerestory Scheme was another design concept developed to bring light to below ground elements to reduce the overall height and mass of the Corona. As with the Pavilion and Refined Pavilion Alternatives, the Clerestory Scheme would feature a three-tier Corona up to 105 feet tall as a singular element in a field. However, in this scheme, the corners of both Constitution Avenue and 14th Street and Constitution Avenue and 15th Street would feature upturned landforms and a glass frontage would be constructed along Constitution Avenue.

The Clerestory Scheme improved upon the Pavilion Scheme in that it would provide entrances from Constitution Avenue (north side), moderate the grade change, and bring light to below ground elements. Building on the Blended Scheme, the Clerestory Scheme sought to maximize the amount of light that could be provided to the below ground elements. Figure 2.5.8 shows a sketch of the north (Constitution Avenue side) portion of the Clerestory Scheme.

As with the Blended Scheme, the Clerestory Scheme solved the problem of bringing light into the below ground elements. However, the massing along Constitution Avenue proved problematic because it would not have been consistent with the north alignment of the museums along Constitution Avenue and it would have potentially detracted from the visitor experience traveling down Constitution Avenue.

Further, the approaches from 14th Street and 15th Street, coupled with the grade change over the top of the glass frontage resulted in an unacceptable configuration of pathways to access the central hall. The treatment of the landscape and modifications of the grade change ultimately evolved into the Refined Pavilion Alternative.

Figure 2.5.8 Clerestory Scheme: Sketch of Building from 14th Street and Constitution Avenue looking southwest
Source: Freelon Adjaye Bond/SmithGroup, 2010
2.5.4 Service Access Options

In addition to the above noted variations in building form and location on the site, alternative locations for service access to the museum were evaluated. A detailed study titled, "Smithsonian National Museum of African American History and Culture" presents the full range of options and can be viewed on the project website at: www.nmaahceis.com. All options assume that the loading dock is below grade and that once trucks have turned into the loading dock ramp, they will maneuver on museum property rather than in the street. Options explored included the following:

Preferred On-Site Option:

- Option 1: Enter and Exit via Southbound 14th Street

The option is the preferred location of curb cut and service ramp assumed in all of the design alternatives for museum massing that have been considered. Although 14th Street carries a high volume of vehicular traffic and is a major pedestrian route, the advantages of this option in preserving the continuity and integration of the NMAAHC landscape with that of the Washington Monument Grounds, along with the museum’s intention of limiting service access to occur outside of high traffic hours result in significant advantages not equaled in any of the other options considered.

Other On-Site Options Considered but Rejected:

- Option 2: Enter and Exit via Northbound 15th Street+

This option locates the service drive to 15th Street where traffic volumes are lower. However, this option conflicts with the important goal of integrating the landscape on the western side of the site with that of the Washington Monument Grounds by introducing truck traffic and truck accommodations into what is perceived as the middle of those grounds. It also places the service ramp on the side of the building where it would interrupt views to the Washington Monument and Lincoln Memorial from important outdoor and indoor museum spaces. It interrupts diagonal flow across the site from the Federal Triangle to the Monument.

- Option 3: Enter and Exit via Eastbound Constitution Avenue

This option places service on an important ceremonial street whose eastbound morning traffic volume is higher than that of southbound 14th Street. It places service in a location where it conflicts with the requirement for a major public entrance on the north side of the building. This curb cut and service ramp would also occur at the lowest point of the site, making it far more difficult to armor the building against storm water flooding.
• Option 4: Enter and Exit via Madison Drive

This option was not physically feasible due to the longer length of the ramp required when entering at the high point of the site combined with the shorter distance to the building in which to accomplish the descent to the basement level.

• Option 5: Enter 14th St. Southbound and Exit 15th Street Northbound

This option with two ramps has most of the disadvantages of Option 2 with only a limited benefit from eliminating half of the traffic on 14th Street.

Off-Site Options

At the request of staff of the Fine Arts Commission, DC Office of Planning and DC SHPO, options that share portions of the National Museum of American History’s service access and loading area were explored. Each of these options requires the construction of a tunnel under 14th Street and each places an unreasonable demand on the already fully utilized and sometimes overtaxed, 50 year-old facilities of NMAH. The disruption to traffic on 14th Street to construct the tunnel -- one lane of seven at a time -- in a 40’ deep excavation to avoid major utilities, would be particularly difficult and would occur round the clock for approximately a year. Costs of these options are high enough to threaten the economic affordability of the museum, potentially adding more than $50 million to the NMAAHC project’s cost and potentially delaying its construction.

These options include:

• Tunnel Option A: All Enter at NMAH 12th Street Service ramp; All exit at a NMAAHC 15th Street Service exit ramp

This option retains all of the disadvantages of Option 2, only with significantly more truck traffic interrupting the continuity and integrity of the Washington Monument Grounds. The benefit of eliminating truck traffic entering or exiting either museum on 14th Street did not justify the enormous negative impact on NMAH operations, the huge cost and the significant disruption to traffic to construct the required tunnel.

• Tunnel Option B: Shared NMAH and NMAAHC service ramps enter at 12th Street and exit at 14th Street with an additional truck tunnel under 14th Street to NMAAHC

This option has the significant benefit to the public of eliminating at grade truck access to the NMAAHC site but does so at great, ongoing costs and disruption to operations for both museums. In addition to the costs and disruption of a 14th Street tunnel project, this option would require substantial modification and expansion of the existing underground NMAH loading area in the midst of construction of its own public space renewal project and would likely require closure of its main Mall entrance only recently rebuilt and reopened.
• Tunnel Option C: Shared NMAH and NMAAHC Service Ramps – Enter 12th Street and Exit 14th Street with an expanded NMAH loading area serving both museums and providing a materials-only tunnel under 14th Street to NMAAHC

This option has comparable disadvantages in construction disruption, costs and difficulty of operations as options A and B and represents the option with the greatest potential for compromises in environmental conditions, security and safety, thereby significantly endangering NMAAHC’s collections.