

# TIER II FINAL ENVIRONMENTAL IMPACT STATEMENT FOR THE SMITHSONIAN NATIONAL MUSEUM OF AFRICAN AMERICAN HISTORY AND CULTURE



August 2011





**Smithsonian Institution**  
**National Museum of African American History and Culture**  
**Tier II Final Environmental Impact Statement**

Submitted Pursuant to 42 U.S.C. 4332 (2) (c) by the  
**Smithsonian Institution** and its Joint-Lead and Responsible Federal Agency the **National Capital Planning Commission**  
with the Cooperating Agency of the **National Park Service**

The following persons may be contacted for additional information concerning this document:

Jane Passman  
Smithsonian Institution  
600 Maryland Avenue SW, Suite 5001  
P.O. Box 37012 MRC 511  
Washington, D.C. 20013-7012  
(202) 633-6549

Ken Walton  
National Capital Planning Commission  
401 9th Street  
North Lobby, Suite 500  
Washington, D.C. 20004  
(202) 482-7200

The Smithsonian Institution with its joint-lead and responsible Federal Agency, the National Capital Planning Commission (NCPC), in cooperation with the National Park Service (NPS), prepared this Tier II Final Environmental Impact Statement (FEIS), which evaluates the potential environmental impacts associated with the construction and operation of a new Smithsonian National Museum for African American History and Culture (NMAAHC) to be located between 14<sup>th</sup> and 15<sup>th</sup> Streets NW, Constitution Avenue NW, and Madison Drive NW in Washington, DC.

This page is intentionally left blank

# **TIER II FINAL EIS TABLE OF CONTENTS**



This page is intentionally left blank

**A. Introduction to the Final EIS**

- A.1 Summary of Purpose and Need A-1
- A.2 Organization of the Final EIS A-2
- A.3 Background of the Environmental Review Process A-3
- A.4 Identification of the Preferred Alternative A-5
- A.5 Identification of the Environmentally Preferred Alternative A-5

**B. Summary of the Preferred Alternative**

- B.1 Modifications to the Design B-1
- B.2 Mitigation Measures B-27
- B.3 Impacts on the Environment B-37
- B.4 Additional Issues B-61

**C. Comments and Responses**

- C.1 Synthesis of Review Comments and Responses C-1
- C.2 Agency and Public Review Comments C-46

**D. Draft Environmental Impact Statement D-1**

**E. Errata for the Draft EIS E-1**

This page is intentionally left blank



## **A. INTRODUCTION TO THE FINAL EIS**



This page is intentionally left blank

## **A.1 SUMMARY OF PURPOSE AND NEED**

The Smithsonian Institution is proposing to construct and operate a permanent facility for the National Museum of African American History and Culture (NMAAHC) on a five-acre parcel on the Washington Monument Grounds and the National Mall. The site is located in the northwest quadrant of the District and bounded by Constitution Avenue on the north, Madison Drive on the south, 14<sup>th</sup> Street NW on the east, and 15<sup>th</sup> Street NW on the west.

The purpose of the proposed action is to fulfill the mandate of the National Museum of African American History and Culture Act, P.L. 108-184 (2003) to construct a world class building for a museum “dedicated to the collection, preservation, research, and exhibition of the African American historical and cultural materials reflecting the breadth and depth of the experience of individuals of African descent living in the United States.” The NMAAHC is needed because there is no national museum within the Smithsonian Institution that is devoted to African American life, art, history, and culture.

The Tier II Final Environmental Impact Statement (Final EIS) assesses the impacts of constructing and operating a permanent facility for the NMAAHC on the approved site to meet this purpose and need. The Tier II Final EIS for the NMAAHC considers design alternatives for the proposed museum and supplements the more programmatic Tier I Final EIS completed by the Smithsonian Institution and the National Capital Planning Commission (NCPC) in 2008 (Smithsonian Institution, 2008a). Taken together, the Tier I and Tier II Final EISs assess the impacts of the proposed museum.

## **A.2 ORGANIZATION OF THE FINAL EIS**

The Final EIS for the NMAAHC includes the design modifications to the proposed action, commitments to mitigation measures, a summary of impacts, public and agency comments on the Draft EIS, responses to the Draft EIS comments, and the Draft EIS. The Final EIS is organized into seven sections, as follows:

Section A describes the organization of the Final EIS, summarizes the environmental review process, and identifies the preferred alternative for achieving the proposed action.

Section B provides a text description of the design modifications to the proposed action, and an overview of the design evolution of the Preferred Alternative. The text description includes the building program, building area and height, building setback and alignments, building placement within the site, view considerations, conceptual landscape plan, and perimeter security. The text description is supported with tables and figures comparing the Preferred Alternative to the four previous action alternatives. Section B also includes commitments to mitigation measures and a summary of impacts by topic as presented in the Draft EIS.

Section C includes synthesized comments and responses to substantive comments received on the Draft EIS during the comment review period. This includes comments that provided different opinions or conclusions than those documented in the Draft EIS, as well as those comments that requested clarification of issues addressed in the Draft EIS. Comment letters and documented public meeting comments received during the comment review period are also included in Section C. These comments have numbers noted in the margin, which correspond to the responses provided.

Section D of the Final EIS includes the Draft EIS, which contains corrections as described in Section E. This section also includes an updated distribution list of the agencies, organizations, and private citizens receiving the Final EIS.

Section E provides the Errata, explaining any editorial, typographical, numerical or other corrections made to the Draft EIS.

### **A.3 BACKGROUND OF THE ENVIRONMENTAL REVIEW PROCESS**

The Smithsonian Institution and NCPC are acting as joint lead agencies, with NCPC in the role of responsible lead federal agency for National Environmental Policy Act (NEPA) purposes. This Final EIS has been prepared in compliance with NEPA 1969, as amended, the Council on Environmental Quality (CEQ) regulations implementing NEPA [40 Code of Federal Regulations (CFR) Parts 1500-1508], the National Historic Preservation Act (NHPA) of 1966, as amended, and NCPC's Environmental and Historic Preservation Policies and Procedures.

Certain Smithsonian Institution projects in Washington, DC are subject to review by NCPC, the central planning agency for the federal government in the National Capital Region. The Smithsonian Institution is not a federal agency for the purposes of NEPA; NCPC is required to comply with NEPA and has adopted NEPA guidance outlined in Section 4(D) of NCPC's Environmental and Historic Preservation Policies and Procedures. NCPC's guidelines require applicants to prepare the necessary NEPA and Section 106 of the NHPA documents, in conformance with respective CEQ and Advisory Council on Historic Preservation (ACHP) requirements.

The NMAAHC is also subject to review by the U.S. Commission of Fine Arts (CFA). CFA was established in 1910, in part to guide architectural development in Washington, D.C.

The Area of Potential Effect and the inventory of historic resources potentially affected by the proposed project have been carried over from the Tier I Final EIS issued June 2008. Various agencies and other parties outlined below have provided input throughout the Tier I and Tier II processes that has been incorporated into the Final EIS. The concluding product of the Section 106 process, a Programmatic Agreement (PA), will summarize the preliminary assessment of effects on historic resources, formally acknowledge that the Section 106 process will continue, and describe how it will continue. The PA will be appended to the final Record of Decision (ROD). Mitigation measures and monitoring plans described in the PA will be included in the ROD.

The Tier II Final EIS is being distributed to applicable review parties, including commentors on the Draft EIS. The ROD announcing the final decision and will be prepared and published by the Smithsonian Institution and NCPC following a 30-day review period to complete the NEPA process.

Because of its role in managing the property and open space and monuments on the National Mall, the National Park Service (NPS) has been a cooperating agency during the Tier I and Tier II EIS process and a consulting party in the Section 106 process.

Administrative jurisdiction of the property was transferred from NPS to the Smithsonian Institution on June 1, 2007. NPS continues to operate the site as a public recreation resource and parkland until construction of the NMAAHC commences.

In addition to the Smithsonian Institution, a number of other agencies and interested parties have participated in the Section 106 process. The list of consulting parties consists of the following agencies and organizations: Smithsonian Institution, NCPC, CFA, NPS, General Services Administration, District of Columbia Historic Preservation Officer, Advisory Council on Historic Preservation, National Trust for Historic Preservation, DC Preservation League, National Coalition to Save Our Mall, Committee of 100 on the Federal City, U.S. Capitol Historical Society, Afro American Historical and Genealogical Society, and Association for the Study of African American Life and History.

While the conclusion of the EIS process will coincide with the completion of the design development phase of the museum, design review meetings with the consulting parties and review agency staff will continue as designs are finalized in accordance with the Programmatic Agreement. Submittals will be made to NCPC and CFA for preliminary design review (expected in Fall 2011) and final design review (expected in Summer 2012). As a result, there will be opportunities to address the details of the design through the Section 106 consultation process, and the NCPC and CFA review processes.

**A.4 IDENTIFICATION OF THE PREFERRED ALTERNATIVE**

The CEQ regulations, which guide the EIS process, require that a federal agency identify its Preferred Alternative in the Final EIS, unless another law prohibits the expression of such a preference. Since the Draft EIS was published and circulated on November 12, 2010, for 60 days of public review, there have been several modifications to the proposed action. These design modifications demonstrate a continued evolution of the four action alternatives that were analyzed in the Draft EIS. The design that resulted from that evolution is the Refined Pavilion 2 Alternative.

As required by CEQ, the Smithsonian Institution and NCPC have identified the Refined Pavilion 2 Alternative as the Preferred Alternative. The Refined Pavilion 2 Alternative best meets the purpose and need of the proposed action.

The Refined Pavilion 2 Alternative is defined in Section B-1 of this document. Although the Refined Pavilion 2 Alternative is described as being of a particular size, the maximum build out of this alternative shall not exceed the stated size. Key dimensions relating to the building size include the square footage of space, height, and mass.

**A.5 IDENTIFICATION OF THE ENVIRONMENTALLY PREFERRED ALTERNATIVE**

The environmentally preferred alternative is the alternative that causes the least damage to the biological and physical environment. The environmentally preferred alternative is also the alternative that best protects, preserves, and enhances historic, cultural, and natural resources. In this case, the No Action Alternative is the environmentally preferred alternative, given that there would be no change, to existing conditions and it would involve the fewest impacts on environmental and historical resources.

This page is intentionally left blank



## **B. SUMMARY OF THE PREFERRED ALTERNATIVE**



This page is intentionally left blank

## **B.1 MODIFICATIONS TO THE DESIGN**

The design of the NMAAHC has been modified during the ongoing design review process to respond to the concerns of the public agencies and consulting parties identified in Section A, and the general public. Specifically, the design modifications reflect input from more than 30 consultation meetings, three public meetings, and continued communication between Smithsonian staff and the museum design team, and staff members of relevant review agencies. As a result of these improvements, the museum design has progressed substantially to eliminate and minimize adverse effects. This section of the Final EIS discusses the primary design modifications and the evolution of the design.

### **B.1.1 Evolution of the Preferred Alternative**

The Refined Pavilion 2 Alternative, which has been identified as the Preferred Alternative in Section A.4 of this document, evolved through the continued development of the museum design. As indicated in Figure B.1.1, the original action alternatives were developed during the concept design phase. Further refinement of the build alternatives presented in the Draft EIS resulted in the Refined Pavilion 2 Alternative, which has been selected for more detailed schematic design. Several key features are common to this alternative and the action alternatives that were analyzed in the Draft EIS.

Most notably, the Refined Pavilion 2 Alternative continues to feature a Corona as the defining form of the visible building structure. The Corona would be a singular, three-tiered building, similar to the Pavilion and Refined Pavilion Alternatives. The Corona's vertical core elements in the Refined Pavilion 2 Alternative would provide the primary load-bearing support for the roof and gallery floors. Site placement of the Corona in the Refined Pavilion 2 Alternative is most closely related to the Refined Pavilion Alternative, but the building has been shifted slightly west to minimize impacts to 14<sup>th</sup> Street traffic from the service access. Site placement and building dimensions for the Refined Pavilion 2 Alternative in relation to the other four action alternatives are discussed in greater detail in Sections B.1.3 and B.1.4.

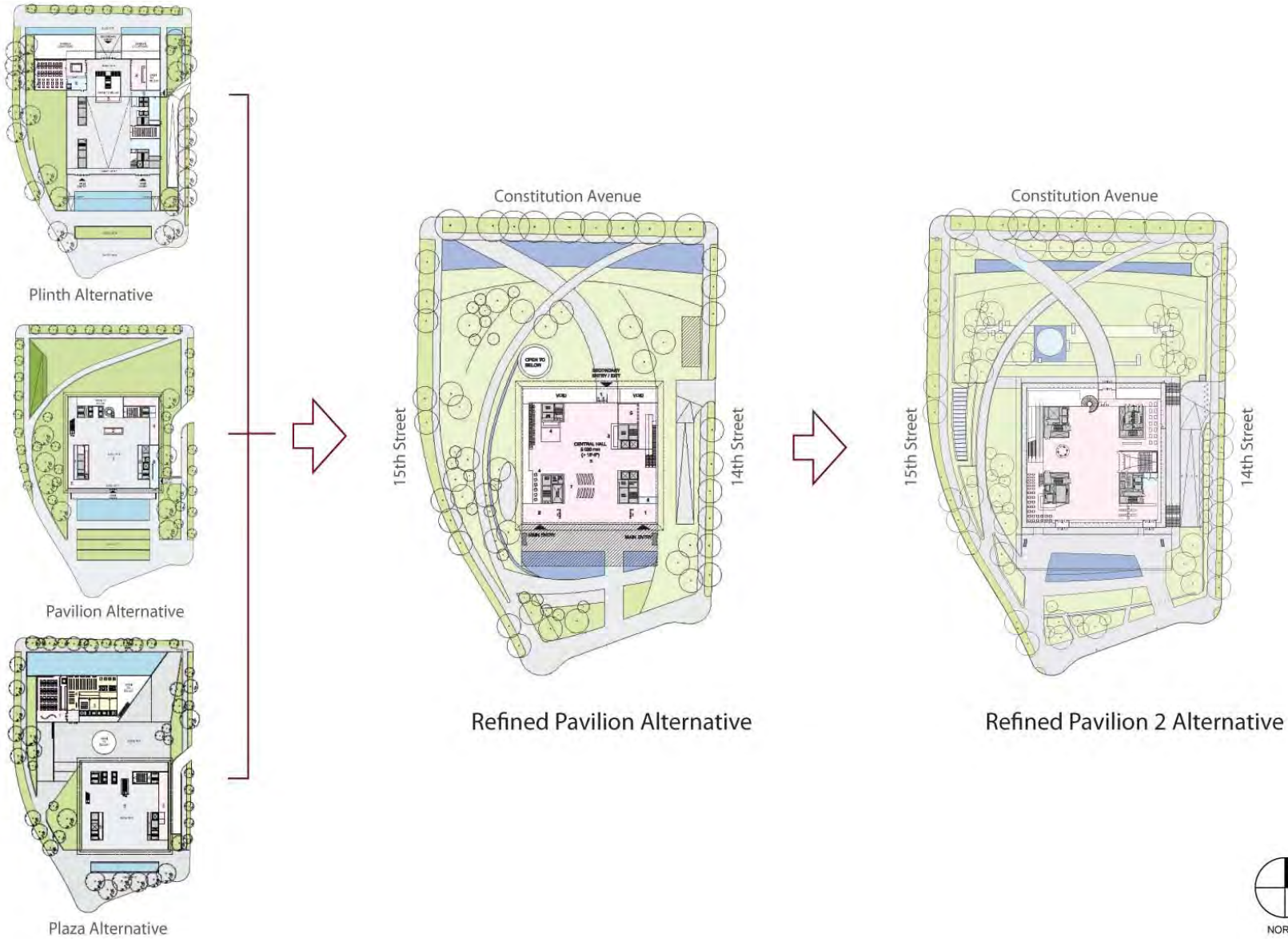
The decision to include a penthouse level, or fifth floor, above the Corona was made early in the Concept design phase to maintain the program while minimizing the impacts of the building's above-grade mass. The habitable penthouse level was an asymmetrical component of the building under the Plinth, Plaza, and Pavilion Alternatives in the Tier II Draft EIS. It was revised based on agency and consulting party review comments to a more symmetrical element as part of the Refined Pavilion Alternative. The interior of the penthouse/5<sup>th</sup> floor would consist of office space, meeting rooms, and support space. In previous action alternatives, offices were located on four different levels, including in the Corona and in spaces below grade. In an effort to consolidate exhibit galleries in

the Corona, provide daylight and views to the museum staff, and reduce the overall gross area of the building, the majority of offices were consolidated on the penthouse/5<sup>th</sup> floor level as part of the Refined Pavilion 2 Alternative. The penthouse level is also advantageous as a discreet means to mask such elements as stairs to the roof, mechanical equipment, and elevator shafts within a clean mass.

A terrace would run the entire length of the penthouse level on the south side of the building. The terrace would support special events and visitors and would not be open to the general public. The design team is exploring the use of a canopy that would match the character of the Corona to provide cover for the terrace. Including occupied space and the terrace, the penthouse/5<sup>th</sup> floor level now covers nearly the entire roof of the structure, although it is set back from the inner edge of the Corona to minimize visibility from the ground.

The roof of the building would be treated as a fifth facade and will be designed to be seen from above, with mechanical equipment carefully contained and roof surfaces detailed. The required overruns for elevator and mechanical louvers may be incorporated into a 'sawtooth' shaped skylight above the penthouse level that would allow daylight to enter the penthouse/5<sup>th</sup> floor and include photovoltaic panels that would generate sustainable energy for the museum. The skylights would be set back from the roof edge approximately 20 feet on all sides. In addition, a panel, or fascia, may be installed around the skylights to provide a clean, horizontal shape to the top of the building.

The NMAAHC site plan has also evolved to further integrate the museum with the Washington Monument Grounds. The topography has been made more fluid by reducing the height of the landforms.



**Figure B.1.1 Design Evolution of the Refined Pavilion 2 – Preferred Alternative**  
*Source: Freelon Adjaye Bond/SmithGroup, 2010 and 2011*

To promote pedestrian circulation through the site, the main paths, water features and plaza have been reshaped as part of the Refined Pavilion 2 Alternative. At the northern corners, the curvilinear paths are reminiscent of the original paths of the Washington Monument Grounds. The curvilinear paths originated with the Pavilion Alternative, were modified in the Refined Pavilion Alternative, and further refined in the Refined Pavilion 2 Alternative. A path along the west side of the building, as depicted in the Refined Pavilion Alternative and modified in the Refined Pavilion 2 Alternative, would provide a pedestrian connection from the south to north sides of the site. The water feature on the northern portion of the site has undergone several design changes but remains parallel to Constitution Avenue. It is a rain garden that incorporates a security wall and it has been reduced in size from that depicted in the Plaza and Refined Pavilion Alternatives by 65 percent.

On the southern portion of the site, the sidewalk, water element, and plaza would reinforce pedestrian movement from the Mall to the Washington Monument. The trapezoidal geometries of the plaza and the water feature would further integrate the NMAAHC site into its present context by continuing the trapezoidal geometries found south of Madison Drive. The water feature, in addition to being reshaped, has also been reduced in size from the Refined Pavilion Alternative. Walkways at the southeast and southwest corners of the site would facilitate circulation around the plaza and water feature, as well as entry and exit from the museum. The porch that

provides shade for the south entrance has been re-worked to ensure it has a thinner profile with more elegant supports. In addition, efforts are ongoing to reduce its width and length.

The ground floor would provide at-grade entry into the museum at the same level from the south and the north. To increase light into the lower levels of the museum, the Refined Pavilion 2 Alternative includes a glass skylight on the west side of the site, an oculus similar to that in the Refined Pavilion Alternative, and an egress courtyard on the east side of the site at the mezzanine level. Efforts have been made to modify the size of the skylight within the landscape and relate it to other landscape elements and pathways.

The ground floor plans for the Refined Pavilion 2 Alternative show the proposed location for cooling towers north of the 14<sup>th</sup> Street access drive (similar to the Refined Pavilion Alternative). If needed, these towers would be placed underground and the entrance covered with a metal grate. However, the design team is also considering the possible use of geothermal fields, and the excess capacity of the NMAH cooling towers to reduce and/or eliminate the need for the cooling towers, on the NMAAHC site. Geothermal heat exchanger systems provide heating and cooling to buildings by transferring heat between the constant temperature of the earth and the building via a heat pump system and pipes installed in wells below ground. The systems are highly efficient and can reduce the cooling load that a building's cooling tower would need to handle.

### **B.1.2 Building Program**

The Refined Pavilion 2 Alternative would continue to feature seven full levels, five of which would be located above grade as with the Plaza, Pavilion, and Refined Pavilion Alternatives. Due to site restrictions and building height limitations, the percentage of the prescribed program space that has been placed below ground has increased with each refinement of the design to date.

The Refined Pavilion 2 Alternative would place approximately 59 percent of its program space below ground, which is approximately 14 percent greater than the Plinth and Plaza Alternatives, 10 percent greater than the Pavilion Alternative and 2 percent greater than the Refined Pavilion Alternative. Two full levels (the basement and the concourse) and a mezzanine level would be located below grade. The entire basement level (Level -2) would be secured from public access and would contain mechanical spaces (as in the Refined Pavilion Alternative), and some building offices. The concourse level (Level -1) would be a mixed-use level with public spaces such as the theater, cafeteria, and history galleries, north of the Corona.

At the concourse level, in a contemplative space adjacent to the history galleries, the top of the Monument would be revealed through a circular oculus. The mezzanine level would contain the education program, some offices, visitor amenities, and an egress courtyard. The building cores would house the museum elevators, exit stairs, toilets, mechanical shafts, and other support spaces.

The ground floor would provide a visitor's entrance into the museum from the south (National Mall) and north (Constitution Avenue) sides of the building at the same building level, and a staff entrance. This is similar to the Refined Pavilion Alternative and an improvement upon the Pavilion Alternative, which only provided one visitor entrance from the south side. Circulation inside the museum has been shifted west to favor views along that side as visitors travel vertically in the building. Circulation would move to the north side for entrance into the galleries on levels three and four. From the third level galleries, visitors would be presented with a large window opening in the Corona, which specifically frames the Washington Monument. On the fourth level, the public sequence would be completed with a balcony and panoramic view west towards the Lincoln Memorial.

### **B.1.3 Building Area and Height**

#### **Building Area**

The Refined Pavilion 2 Alternative would involve the construction of up to 372,000 gross square feet on the project site, which is similar in gross square footage to the Plaza Alternative at 370,000 gross square feet, and slightly more than the Plinth Alternative at 360,000 gross square feet (Table B.1.1). The effective building footprint of the above-ground structure, or the maximum building coverage area, has decreased with the changes in design evolution and increased below-grade building space. Maximum building coverage for this alternative would be approximately 59,100 square feet, which is similar to the maximum building coverage for the Pavilion Alternative at approximately 60,200 square feet and within the range of building coverage dimensions for the Plinth Alternative (85,800) and the Refined Pavilion Alternative (53,750).

The Refined Pavilion 2 Alternative would cover approximately 25 percent of the site, which is less than the Plinth, Plaza, and Pavilion Alternatives, at 37, 34, and 26 percent, respectively. Site coverage for the Refined Pavilion 2 Alternative would exceed that of the Refined Pavilion Alternative, which would be 23 percent.

With this alternative, the outer edge of the Corona would measure up to 220 feet in length (along 14th and 15th Streets) and up to 220 feet in width (along Constitution Avenue). These dimensions, which are between the smallest and largest of the other action alternatives, are consistent with the Plinth, Plaza, Pavilion, and Refined Pavilion concepts, which had Coronas that measured 233 feet x 233 feet, 225 feet x 225 feet, 237 feet by 237 feet, and 210 feet x 210 feet, respectively (see Figure B.1.2).

While the evolution of the concept design generally resulted in a smaller building mass, as the concept design has advanced into a more detailed schematic design the maximum size of the Corona has increased. The increased size of the Refined Pavilion 2 Alternative was needed to accommodate development of structural and functional systems that respond to wind loads, support the glass curtain wall and skin, drain water, and incorporate access and maintenance between the curtain wall and metal exterior skin. The result was increased footprint dimensions of up to 5 feet on each side of the building. The resulting dimension of 220 feet x 220 feet is analyzed in this Final EIS as a maximum size that shall not be exceeded. Continuing design efforts are exploring the building's structural system in an effort to reduce the size of the Corona.



## Building Height

For most buildings, the relevant dimension with respect to apparent visual height is the cornice line, parapet, or the top of the facade. For the NMAAHC, the top of the Corona, which projects outward from the building, is equivalent to a cornice line. In addition, because the habitable penthouse would be set back from the edge of the building, the Corona would represent the most visible portion of the museum from ground-level views on adjacent parcels. Thus, the Refined Pavilion 2 Alternative would have an apparent height of approximately 96.5 feet above grade. The Corona heights for the Plinth, Plaza, Pavilion and Refined Pavilion Concepts were 105 feet, 105 feet, 103 feet and 96 feet, above grade, respectively. The Corona elevation above sea level for the Refined Pavilion 2 Alternative would be approximately 113 feet, which would be just one half of one foot above the Refined Pavilion Alternative (see Figure B.1.2), and nearly identical to the top of the façade of the adjacent Hoover building.

The maximum structure height for the Refined Pavilion 2 Alternative reflects the 6.5 feet of space required for elevator overruns, photovoltaic panels, and skylights; space that was not included in earlier action alternatives. As a result, the Refined Pavilion 2 Alternative penthouse and roof structure would extend approximately 19 feet above the Corona, to a maximum height of approximately 115.5 feet above grade or approximately 132 feet

above sea level, dimensions that are approximately 9.5 feet taller than those for the Refined Pavilion Alternative (Table B.1.1). However, the intent of the Smithsonian Institution is to further reduce the height of the building. The height of the alternative relative to adjacent buildings is discussed in Section B.3.5 and illustrated in Figure B.3.1.

In addition to the apparent building height discussed above, the design parameters included in the Tier I EIS called for a mean or average building height of 105 feet above grade. Because architectural embellishments can exceed the overall building height, the mean height of the building would be the average of the occupied levels. Thus, since the sawtooth roof above the penthouse/5<sup>th</sup> floor covers approximately 28 percent of the roof and measures approximately 115.5 feet above grade, the penthouse/5<sup>th</sup> floor without the sawtooth roof covers approximately 41 percent of the roof and measures approximately 109 feet above grade, and the Corona covers approximately 31 percent of the roof and measures 96.5 feet above grade, the mean building height is approximately 107 feet above grade. This minor deviation of 2 feet from the Tier I design parameters is primarily the result of guidance provided by review agencies to ensure a more elegant profile for the building by creating a more uniform and symmetrical roof that conceals and avoids the expression of mechanical air intakes, elevator overrides, and similar elements.

**Table B.1.1 Comparison of Action Alternatives with the Refined Pavilion 2 – Preferred Alternative**

Alternative Name	Action Alternative 1 – Plinth	Action Alternative 2- Plaza	Action Alternative 3- Pavilion	Action Alternative 4- Refined Pavilion	Refined Pavilion 2 – Preferred Alternative*
Corona Dimensions (at outside edge)	233 feet X 233 feet	225 feet X 225 feet	237 feet X 237 feet	210 feet X 210 feet	220 feet X 220 feet*
Corona Dimensions (at Base)	216 feet x 216 feet	208 feet x 208 feet	220 feet x 220 feet	198 feet x 198 feet	203 feet x 203 feet
Corona Height (Above Grade)	105 feet	105 feet	103 feet	96 feet	96.5 feet
Penthouse Height (Above Grade)	121.5 feet	119.5 feet	119.5 feet	106 feet	109 feet
Mean Height (Above Grade)****	118 feet	117 feet	116 feet	101 feet	107 feet
Total Structure Height (Above Grade)	121.5 feet	119.5 feet	119.5 feet	106 feet	115.5 feet
Elevation of the Site (Above MSL)**	13 feet	13 feet	15 feet	16.5 feet	16.5 feet
Corona Elevation (Above MSL)	118 feet	118 feet	118 feet	112.5 feet	113 feet
Penthouse Elevation (Above MSL)	134.5 feet	132.5 feet	132.5 feet	122.5 feet	125.5 feet
Mean Height (AMSL)****	131 feet	130 feet	131 feet	121 feet	123 feet
Total Structure Elevation (AMSL)***	134.5 feet	132.5 feet	132.5 feet	122.5 feet	132 feet
Museum Size (Approx Gross Sq Ft)	360,000	370,000	330,000	308,000	372,000*
Above Ground	7 stories, 55%	5 stories, 55%	6 stories, 50%	5 stories, 43%	5 stories, 41%
Below Ground	2 stories, 45%	2 stories, 45%	2 stories, 50%	2 stories, 57%	2 stories/Mezz.,
Site Coverage (%)	36.8%	34.5%	25.8%	23%	25.3%
Maximum Building Coverage (footprint, in square feet)	85,804	80,559	60,229	53,750	59,136

Source: Freelon Adjaye Bond/SmithGroup (FAB/S); AECOM, 2010; FAB/S 2011

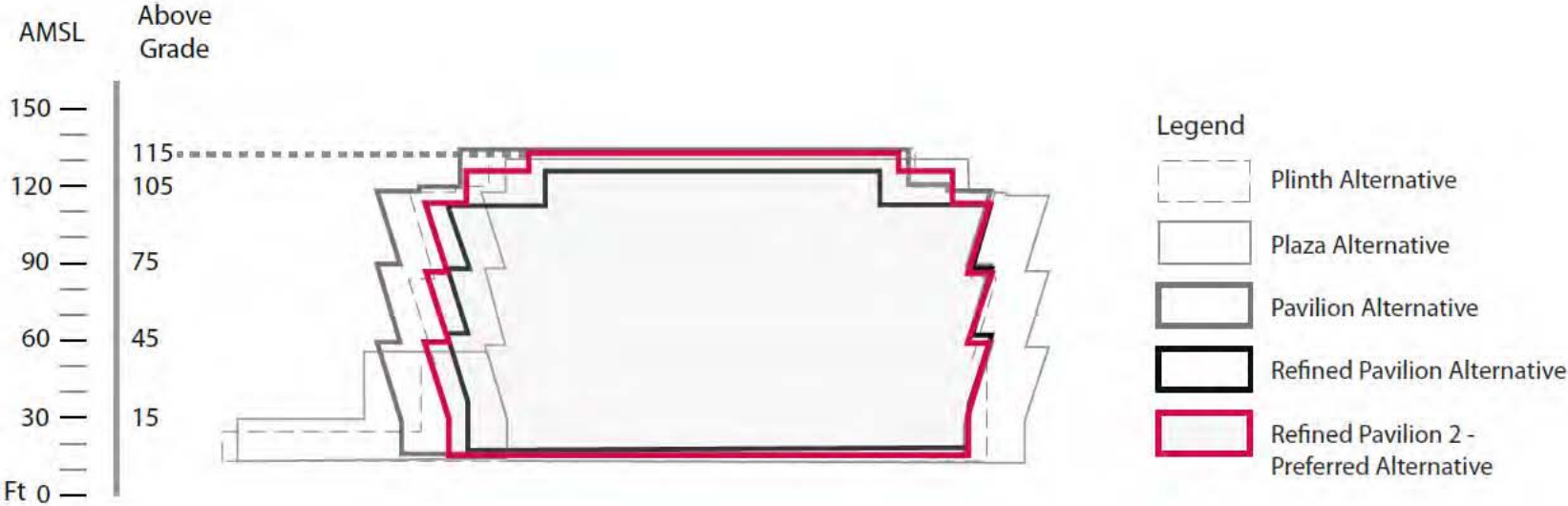
\* Approximate figures included here are the maximum dimensions of the Refined Pavilion 2 Alternative; the Smithsonian is working to reduce the size of the Corona and the overall museum.

\*\* The existing site grade of 13 feet above mean sea level is an average of the elevation measurements across the site, from a low of 7 feet above mean sea level (near Constitution Avenue) to a high of 19 feet above mean sea level (near Madison Drive). The future site elevations are equivalent to the floor elevation of the Central Hall.

\*\*\* Early iterations of the action alternatives were completed to a concept level of design (Alts 1-4) and did not include mechanical space above the penthouse; as a result, the height dimensions of the Penthouse and the overall Structure are identical for Alternatives 1 through 4.

\*\*\*\* Mean Height represents the average of the heights of the Corona and the occupied Penthouse/5<sup>th</sup> floor.

NOTE: All dimensions are rounded to the nearest half foot.



**Figure B.1.2 Building Profile Comparison: Refined Pavilion 2 - Preferred Alternative and Previous Action Alternatives (Looking north)**  
*Source: Freelon Adjaye Bond/SmithGroup, 2010 and 2011*

### **B.1.4 Building Setbacks and Alignment**

The setback distances discussed below reflect the increased size of the Corona and the evolution of the museum placement within the site to accommodate perimeter security considerations and service access needs on 14<sup>th</sup> Street (Table B.1.2). In general, the placement of the Refined Pavilion 2 Alternative within the site accommodates truck service without interfering with visitor flow in the vicinity of the site, and provides more preference to the diagonal views from the Monument Grounds to the Federal Triangle buildings and views from Constitution Avenue towards the Washington Monument while also providing diagonal paths that help integrate the site with the landscape of the Washington Monument Grounds.

#### **Building Setbacks**

The Refined Pavilion 2 Alternative would be set back approximately 221 feet from the curb on Constitution Avenue, as compared to approximately 226 feet with the Refined Pavilion Alternative, due to the increased size of the Corona. In addition, the alternative would be set back approximately 132 feet from Madison Drive on the south compared to 135 feet for the Refined Pavilion Alternative.

With this alternative, the setback distance to 14<sup>th</sup> Street would increase to approximately 76 feet and the setback to 15<sup>th</sup> Street would decrease to approximately 127 feet. This represents a shift west for the Refined Pavilion 2 Alternative relative to the Refined

Pavilion Alternative (Figure B.1.3). This shift accommodates improved functionality, including improved turning movements for the larger trucks servicing the facility, a new egress courtyard for below-grade levels, and security screening of the 14<sup>th</sup> Street service access.

Many service ramp options were extensively studied relative to functionality and impact on 14<sup>th</sup> Street traffic. The option selected was a single on-site ramp in the eastern portion of the site entering and exiting southbound 14<sup>th</sup> Street that can accommodate trucks that are 73 feet in length, and provide proper truck turning radius for trucks that are 55 feet in length without crossing the midline of 14<sup>th</sup> Street or interfering with the traffic traveling in the opposite direction. The ramp entry is located at least 60 feet from the intersection of 14<sup>th</sup> Street and Constitution Avenue, and has a slope of 12 percent or less. The resulting ramp is approximately 348 feet in length and 27 feet in width, and it has slopes of 5 percent for the top 40 feet before descending at 12 percent for the remainder of its length. The service court and ramp are aligned with the north face of the Corona. The location of the service ramp was reached through discussions between SI and staff from DC DOT, DC OP, NPS, DC HPO, NCPC, CFA and the design team.

## Building Alignments

The building's alignments have also changed with the evolution of the building placement on site. For the Refined Pavilion 2 Alternative, the Corona would not protrude beyond the east and west facades of the Herbert C. Hoover Building, or the north or south facades of the National Museum of Natural History.

The Corona would not intrude across the 445-foot setback line established by the McMillan Plan. The alignment of the Refined Pavilion 2 Alternative relative to the other action alternatives is shown in Figure B.1.3. In addition, the alignment of the Refined Pavilion 2 Alternative with respect to the McMillan Plan setback is shown in Figure B.1.6.

The outer edge of the Corona would be approximately 19 feet north of the 445-foot McMillan setback line. The attenuated tapered supporting piers of the porch would also be located north of the McMillan setback line. The cantilevered porch overhang on the south side of the Corona would extend approximately 32 feet beyond the setback line, which is approximately 4 feet more than that for the Refined Pavilion Alternative. While some consulting parties have objected to the scale and extent of the projection of the porch across this line, the Smithsonian considers the porch to be modest, ground-level intrusion across the McMillan line analogous

to the monumental stairs and porticos of other Mall buildings that extend into the setback established by the McMillan Plan.

The museum designers describe the porch as follows:

*Where the canopy extends beyond the McMillan line, it tapers to a blade-like shape to minimize its form and is roofed with indigenous, drought resistant plants that – when seen from above – blur the distinction between ground and structure. The porch is scaled to provide cover from weather for entering and exiting visitors, and prevent glare on the front (south) glazing area. It creates an outdoor room that bridges the gap between the exterior and interior of the museum. Its length also allows for multiple entrance and exit doors to be spread out along this façade, a necessary flexibility to gracefully accommodate the mandatory screening of entering visitors separately from exiting visitors and staff. The porch canopy extends welcoming shade, and creates a microclimate where breezes combine with the cooling effects of the water feature of the south plaza to generate a place of refuge from the hot summer sun.*

In addition, the Smithsonian Institution considers the porch a fundamental component of the interpretation of African American culture and thus an integral and essential element of the museum design and visitor experience.

The porch is contiguous with the base of the Corona across the full length of its south elevation and is approximately 49 feet wide. The museum design team studied reducing the width of the porch, and the computer modeled images were presented to the Smithsonian, review agencies, and consulting parties in November of 2010.

However, at 40 feet in width the porch appeared to be an appendage to the building instead of an integral and congruent element of the overall design and a fundamental component of the interpretation of African American culture that begins outside of the building.

Additional studies are being initiated to minimize the extension of the porch across the setback line, including reducing the width of the porch by alternative amounts and reducing its length along the south facade.

As with the Refined Pavilion Alternative, the Corona of the Refined Pavilion 2 Alternative would be rotated one degree from the Washington, DC street grid similar to the building masses of the other museums on the north side of the National Mall.

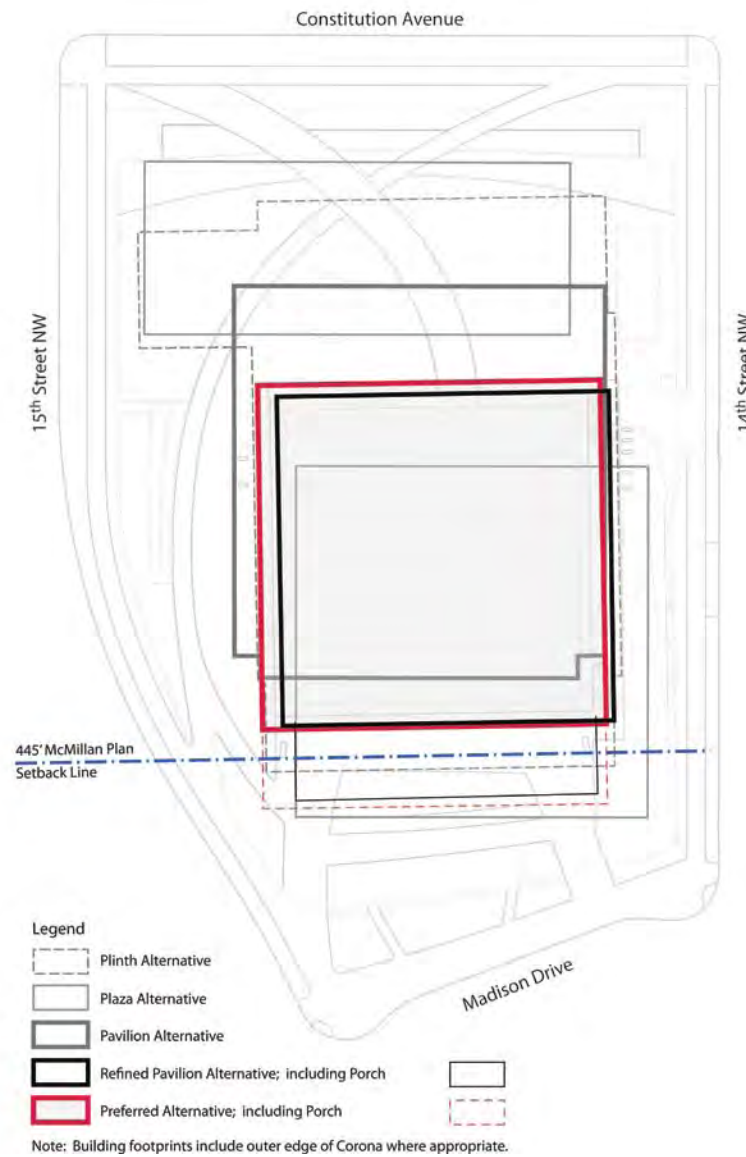
**Table B.1.2 Comparison of Setbacks for the Action Alternatives**

<b>Museum/Building *</b>	<b>Alternative 1 - Plinth</b>	<b>Alternative 2 - Plaza</b>	<b>Alternative 3- Pavilion</b>	<b>Alternative 4- Refined Pavilion</b>	<b>Refined Pavilion 2 - Preferred Alt.</b>
Corona Setback from Constitution Avenue (NW corner)	107 feet	90 feet	159 feet	226 feet	221 feet
Corona Setback from 15 <sup>th</sup> Street (NW corner)	49 feet	53 feet	115 feet	137 feet	127feet
Corona Setback from 14 <sup>th</sup> Street (NE corner)	74 feet	46 feet	72 feet	72 feet	76 feet
Corona Setback from Madison Drive (SE corner)	114 feet	73.5 feet	169 feet	135 feet	132 feet
Corona Setback from Mall Centerline	490 feet	403 feet	508.5 feet	467 feet	464 feet
Porch Setback from Mall Centerline	439 feet	401 feet	497 feet	417 feet	413 feet
Corona Setback from McMillan 445-foot Line	45	-42**	63.5	22	19
Building component that extends south of McMillan Plan setback (445 feet from centerline)	7 feet Plinth overhang	44 feet Corona	NA	28 feet Porch Overhang	32 feet Porch Overhang
South Alignment	Plinth to NMNH facade	None	Corona to NMAH facade	Corona to NMNH facade	Corona to NMNH facade
<b>Difference from the Refined Pavilion 2 – Preferred Alternative</b>					
Setback from Constitution Avenue	122 feet	139 feet	70 feet	-5 feet	-
Setback from 15 <sup>th</sup> Street	86 feet	82 feet	20 feet	-10 feet	-
Setback from 14 <sup>th</sup> Street	10 feet	38 feet	12 feet	4 feet	-
Setback from Madison Drive	28 feet	62.5 feet	43 feet	-3 feet	-

Source: Freelon Adjaye Bond/Smith Group, 2010, 2011; AECOM, 2010

\* Setback measurements are from the outer edge of Corona to the curb of adjacent streets (except for Alternative 1, where the measurements are taken from the outer edge of the plinth). Setback dimensions provided here are approximate and may not combine to a precise total due to (a) rounding during metric conversion, (b) shifts in the building sizes and locations within the site, and (c) the 1-degree rotation of the building relative to the street grid for several alternatives.

\*\* A negative number indicates that the Corona is south of the McMillan Plan setback.



**Figure B.1.3 Site Placement Comparison: Refined Pavilion 2 - Preferred Alternative and Previous Action Alternatives**

Source: Freelon Adjaye Bond/SmithGroup, 2010 and 2011



**B.1.5 Building Placement Rationale**

The current placement of the museum within the project site is the result of many iterative steps and several interrelated factors. With respect to the north-south location of the Corona, the preservation of viewsheds across the site, resolution of the site topography to reduce the height of the rolling landscape on the north side of the building, provision of pathways with slopes of 5 percent or less, building program considerations, and floodplain avoidance have been key drivers for both the location and the above-grade or visible size of the Corona. Specifically, the southeastern placement of the Corona causes the porch on the south side of the building to extend across the McMillan setback line.

**Viewshed Protection**

Between February 2010 and April 2010, as part of consultation with the staff of NCPC, CFA, NPS and DC SHPO, the museum design team conducted viewshed studies for alternatives 1-4. Their purpose was to understand how building massing and location on the site would impact viewpoints identified in the Tier I EIS, as well as additional viewpoints selected by representatives of the agencies during Tier II. The resulting analysis, which includes computer-generated models, demonstrates that locating the building mass near the center of the site either on axis with, or north of, the National Museum of American History, obscures the base of the Washington

Monument from view until reaching approximately two-thirds of the block when proceeding west from Constitution Avenue and 14th Street.

The studies show that with the Refined Pavilion 2 Alternative, the Corona’s mass is set back to reveal the full length of the Washington Monument from the proximity of that same intersection (see Figure B.1.4). The southeastern location of the Corona within the site also provides views of the Federal Triangle buildings from the Washington Monument, and opens up vistas intended by L’Enfant and Burnham to signal this important axial crossing of the Executive and Legislative branches. The location of the Corona mass, north of the Mall’s double row of trees, was selected to maximize views along the Mall without compromising the McMillan Plan’s hallmark west vista.



**Figure B.1.4 Refined Pavilion and Refined Pavilion 2 Alternatives Relative to the View of the Washington Monument from Constitution Avenue near 14<sup>th</sup> Street**  
*Source: Freelon Adjaye Bond/SmithGroup, 2011*

## Site Topography

According to the site survey conducted in December 2010, the museum's 5-acre site slopes approximately 14 feet from a high point of approximately 19 feet above mean sea level at the southwest corner of the site near Madison Drive to a low point of approximately 5 feet above mean sea level at the northwest corner of the site near Constitution Avenue. The Smithsonian and the museum design team wanted visitors to arrive at the same ground floor-level space whether arriving from the north or south, and further wanted on-site pathways to have a slope of 5 percent or less to provide universal accessibility and avoid railings and other obstacles that may inhibit moving freely across the site .

The design team addressed the challenge posed by the nearly 14-foot grade change through studies investigating numerous approaches, including a sloped ground level floor. The Smithsonian and the design team concluded that the site difference could best be reconciled through modulation of grade and by establishing an optimum ground floor elevation.

The siting of the Corona is an essential factor in realizing graceful approaches to both entries and useable outdoor program areas for the museum. Relative to the other action alternatives, the southern location of the building with the Refined Pavilion 2 Alternative provides the distance needed to shape the topography to create a flat area for the building, and absorb the change in grade between

the Corona and the Constitution Avenue sidewalk. On the south, the paths and grounds descend gently from the Madison Drive sidewalk towards the building. At about halfway to the façade, the grades reverse and rise with a minimal slope of 1.5 percent to provide positive drainage away from the building. On the north side, the two diagonal paths slope up gradually (3 to 5 percent) from the Constitution Avenue sidewalk as they cross the water feature. They then gradually flatten creating a useable area with a 2 percent slope in front of the north façade. With the existing site topography, achieving easily walkable slopes becomes nearly impossible the further north the Corona is moved.

The ground floor is set at an elevation of approximately 16.5 feet above mean sea level, the same as with the Refined Pavilion Alternative, to protect the building and its collections from flood, allow unobstructed on-grade access through the site and into the main hall of the building, and eliminate the need for ramps and guardrails which would detract from the goal of integrated accessibility, as well as the desire to extend the picturesque rolling topography of the Washington Monument Grounds into the site landscape.

### **B.1.6 Visual Minimization**

The design team incorporated a number of measures to minimize the visual impact of the museum on views through and across the site. These measures include locating the Corona to reveal vistas (as mentioned above), reducing the massing of the Corona, and preserving views through the site to the extent practicable.

In order to reduce the visible mass of the museum, the design team placed 59 percent of the building's square footage below grade as part of the Refined Pavilion 2 Alternative, which is more than any of the other action alternatives. This approach was taken in direct response to strong concerns expressed by the agencies about the size of the building. Placing more than half of the museum program below grade extended the depth of the building below the level recommended in the Tier I EIS and caused certain mechanical functions to be relocated to the roof, which slightly increased the building height. However, the overall reduced bulk of the Corona lessened the resulting visual impact of the building from all angles.

In order to maximize views through the site, the 18-foot high base of the building will be glazed, using clear, low iron glass. Such glass, which does not have the green tones or reflectivity of typical glass, will greatly enhance the transparency of exterior walls.

To further increase the transparency of the ground floor, the core interior elements of the Refined Pavilion 2 Alternative have been

sized and located to provide an increased clear area for generous views through the building. The four core elements, which are up to approximately 34 feet by 42 feet in size, collect egress stairs, ducts, and elevators. They are positioned approximately 30 feet inboard of the glass wall. As a result, the transparent space between cores is approximately 51 feet east-west and approximately 73 feet north-south.

As mentioned on pages B-11 and B-12, the porch has been tapered to a blade-like shape and partially covered with green plants to minimize its visual impact, particularly when seen from above. Again, studies are underway to further reduce the extension of the porch across the setback line and reduce its length along the south facade.

To preserve and frame views toward the base of the Washington Monument, the gentle topography of the Refined Pavilion Alternative has been maintained. To the west and south, the landscape is contoured in a manner that complements the gently rolling topography of the Washington Monument Grounds without impeding views of the Monument that are framed by the approach from Constitution Avenue.

Finally, security walls will be integrated into the landscape in a seamless way. In addition, only the minimum number of bollards will be installed at pathways and intersections to avoid a "hardened" appearance of the site.

### **B.1.7 Conceptual Landscape Plan**

The landscape design for NMAAHC has been developed in combination with the building design. Major landscape refinements include adjustment to the site grading, planting, refinement of the north and south entry sequences and water features, east egress, west skylight, and development of the site edges and perimeter security, and exterior illumination. These proposed design modifications are described below.

#### **Site Grading**

As part of the Refined Pavilion 2 Alternative, the site grading has been modified to lower the high point of the northwest and northeast landform relative to that of the Refined Pavilion Alternative. The northern landscape would slope up from the site's low point at Constitution Avenue to create a level area around the base of the building. The height of the landform on the north edge of Constitution Avenue has been lowered to maintain the open vistas across to the Washington Monument Grounds and to reveal views of the Monument from viewpoints along Constitution Avenue.

#### **Planting**

The landscape concept for the Refined Pavilion 2 Alternative integrates the project into the Washington Monument Grounds through the use of long sweeping curves, street trees, careful groupings of trees, and soft rolling topography. Most of the site would be planted with turf to fit into the context of the Washington Monument Grounds. However, there are certain areas where other types of planting are being proposed to frame spaces for the museum and provide more sustainable alternatives to turf grass. Within the site, the trees would consist of a combination of large canopy trees and flowering understory trees arranged in informal groups and consistent in character with the 2003 Washington Monument Grounds Master Plan. Along the 15<sup>th</sup> Street sidewalk, the street trees would be spaced to create openings that reinforce the views of the Washington Monument Grounds that are framed from within the site. Along 14<sup>th</sup> Street, the street trees would be regularly spaced canopy trees that fit in with the urban character of the street (Figure B.1.5).



**Figure B.1.5 Conceptual Landscape Plan for the Refined Pavilion 2 - Preferred Alternative**

*Source: Gustafson Guthrie Nichol, 2011*

**South Entry**

The main public entrance would continue to be on the south (National Mall) side of the building, and includes a 49-foot deep porch that extends the length of the building, a central water feature, a low hedge, and sloped lawn area that form the edge of the Madison Street sidewalk (Figure B.1.6). The main paths, water feature, and plaza have been reshaped to encourage more flexible pedestrian circulation to and from the museum, especially from the southwest and southeast corners of the site. The main entry path is on the east side of the plaza and the museum exit doors are on the west side of the building; the exit path has been configured to facilitate movement out to the sidewalk. Walkways from the southwest and southeast corners of the site were introduced with the Plinth Alternative and incorporated into the Pavilion Alternative.

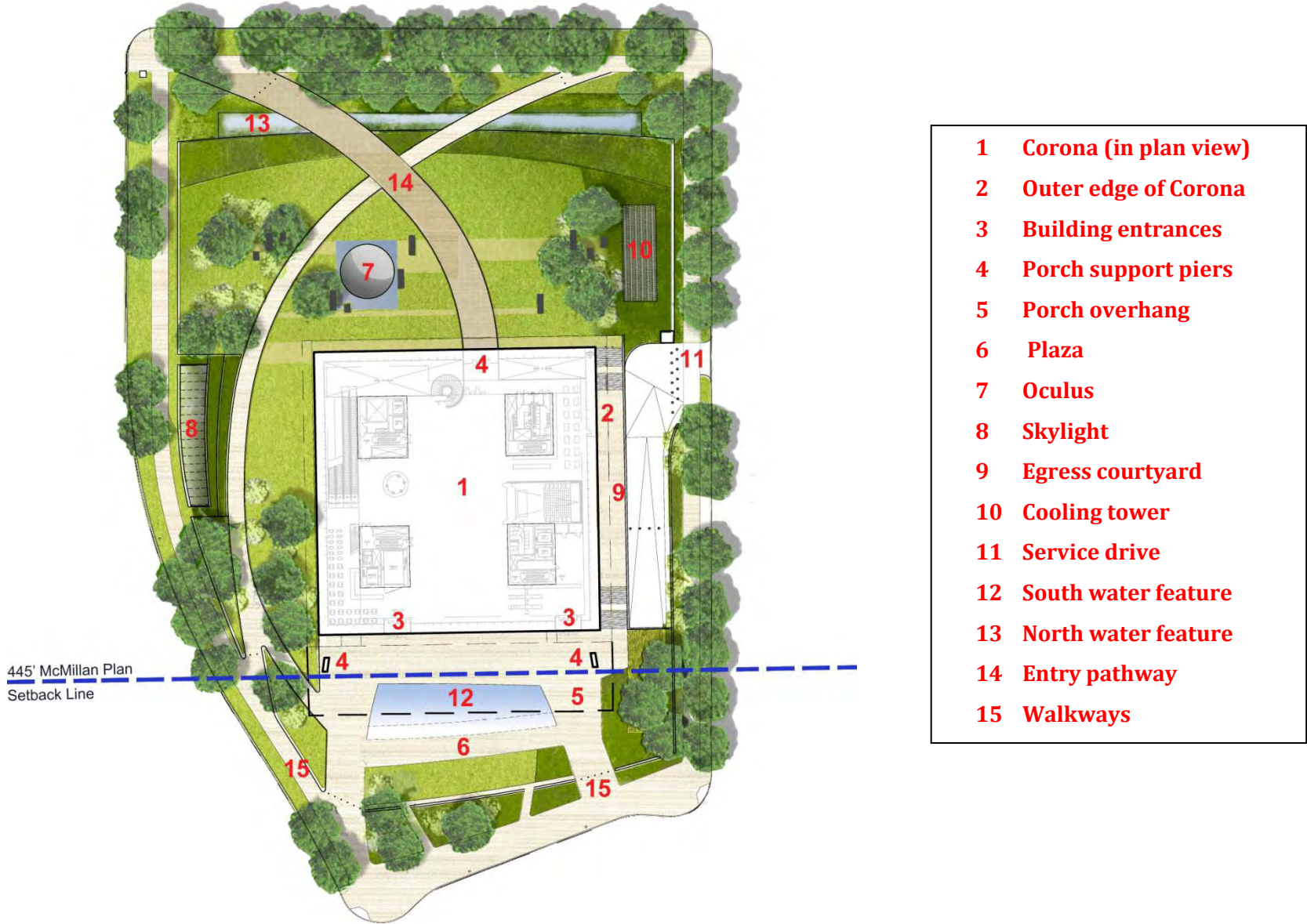
The southern water feature includes both still and moving water to express the duality of turbulence and calm strength, two significant themes in the history of the African American community. The water feature would be designed to be attractive (i.e. no exposed piping, etc.) when the water is turned off in the winter to prevent freezing or when the museum wants the flexibility to accommodate more people in the outdoor space.

The porch design has been refined to minimize the footprint and massing of the two support legs, to provide some overlap with the water element below, and to provide shading for visitors. On the porch rooftop, an outdoor patio would be accessed from the mezzanine level within the building. Less than half of the porch rooftop would be habitable; the remaining area would be planted with indigenous drought resistant plants.

**North Entry**

A second entrance would continue to be provided on the north side of the building. Visitors would pass through a layered landscape that includes crossing over water, a symbolic act recalling the historic passage of the African American people.

Along Constitution Avenue, the elm trees along both sides of the sidewalk would be maintained to provide continuity with Constitution Avenue both east and west of the site. Two broadly sweeping curvilinear paths would cross from the Constitution Avenue sidewalk. The path from 14th and Constitution Avenue is part of the connective fabric of the Monument Grounds and relates in scale, color and texture to the paths on the Grounds. The path from 15th Street and Constitution Avenue would be wider and would lead directly to the building entry. Its scale would relate to the White House Ellipse across Constitution Avenue. The path's material and color would reflect the color and texture of the NMAAHC building.



**Figure B.1.6 Site Landscape Design of the Refined Pavilion 2 - Preferred Alternative**

*Source: Gustafson Guthrie Nichol, 2011*

The two main paths would bridge over the north water feature, which would serve as an integral part of the project's stormwater management (Figure B.1.6). The water feature would be parallel to Constitution Avenue and would be set back from the sidewalk. The northern slope would be planted with a mix of groundcovers to provide a textural backdrop to the gardens. The oculus skylight would serve as a focal point of the northern landscape. The skylight would provide natural day lighting and a central space of contemplation to the history galleries below. This central feature would be integrated into the north landscape through a composition of linear paths and groups of benches that define spaces sized for multiple small groups or families to use. Groupings of trees would be arranged to further define these spaces. Such outdoor spaces would provide multiple opportunities for the museum's outside use and would be an enhancement relative to the other action alternatives.

#### **14<sup>th</sup> Street Service Access**

The Refined Pavilion 2 Alternative shifts the building approximately 9 feet further west of 14<sup>th</sup> Street, relative to the Refined Pavilion Alternative, to improve the functionality (i.e. trucking turning movements, etc.) and security screening for the 14<sup>th</sup> Street service access. The landscape buffer between the sidewalk and outer wall of the ramp would be widened to an average of eight feet to allow for additional planting area.

#### **East Courtyard- Egress**

An egress courtyard would be located in between the loading dock and the museum building and would serve as a key part of the egress strategy for the building. The courtyard would provide emergency egress for the levels located below grade while keeping staircase elements out of other areas of the landscape. The courtyard would also allow light to reach the mezzanine level of the building.

#### **West Skylight**

A skylight located along the edge of the 15<sup>th</sup> Street sidewalk would provide light to the below-grade cafeteria. The skylight edge would be the same height and material as the security walls and land forms so that it is visually integrated into the edge of the site. The ground around the skylight would be terraced and planted with hedges to maintain clear views to the Washington Monument and the museum building, and to deter pedestrians from walking over the skylight. The skylight may be eliminated in the next phase of the museum's design.



### **Exterior Illumination**

Exterior illumination is intended to achieve subtle exterior lighting that would not compete with or detract from the prominence of the adjacent Washington Monument, as determined by the review agencies (NCPC and CFA). It would consist of minimal building façade lighting, lighting of the outdoor gathering and circulation spaces, and accent lighting for special features.

### **Perimeter Security**

Perimeter security would continue to combine the unified approach along Constitution Avenue with a contextual approach along 14<sup>th</sup> Street, Madison Drive, and 15<sup>th</sup> Street both of which would be consistent with the Smithsonian *Mall-Wide Perimeter Security Improvements Plan*. As with the perimeter security approaches for the action alternatives that were depicted in the landscape conceptual plans, the Refined Pavilion 2 Alternative would have a reflecting pool at the south end of the site, low seating walls around the sidewalks on 14<sup>th</sup> and 15<sup>th</sup> Streets and a landscaped area in front of Madison Drive that would have a low seating wall around its perimeter for additional protection. There would be a low retaining wall at the base of the slope along Constitution Avenue (Figure B.1.7).

Bollards would only be used at path entries. On the east and west edges of the site, security walls would be integrated with the edge of the landform and pulled away from the sidewalks so that the sidewalks have plantings on both sides of them. On the north and south edges of the site, the security retaining walls would be integrated with and hidden within planted areas. The loading dock entry would be equipped with retractable hydraulic barriers along the sidewalk edge. Trucks would be screened within the loading dock. The west wall of the loading dock would be designed to be capable of resisting the impact of the specified threat.

Relative to the action alternatives, the Refined Pavilion 2 Alternative would have generally larger setback distances from Constitution Avenue and from 14<sup>th</sup> Street. The setback distance from 15<sup>th</sup> Street would be the greatest for the Refined Pavilion and Refined Pavilion 2 Alternatives.



**Figure B.1.7 Perimeter Security for the Refined Pavilion 2 - Preferred Alternative**  
*Source: Gustafson Guthrie Nichol, 2011*

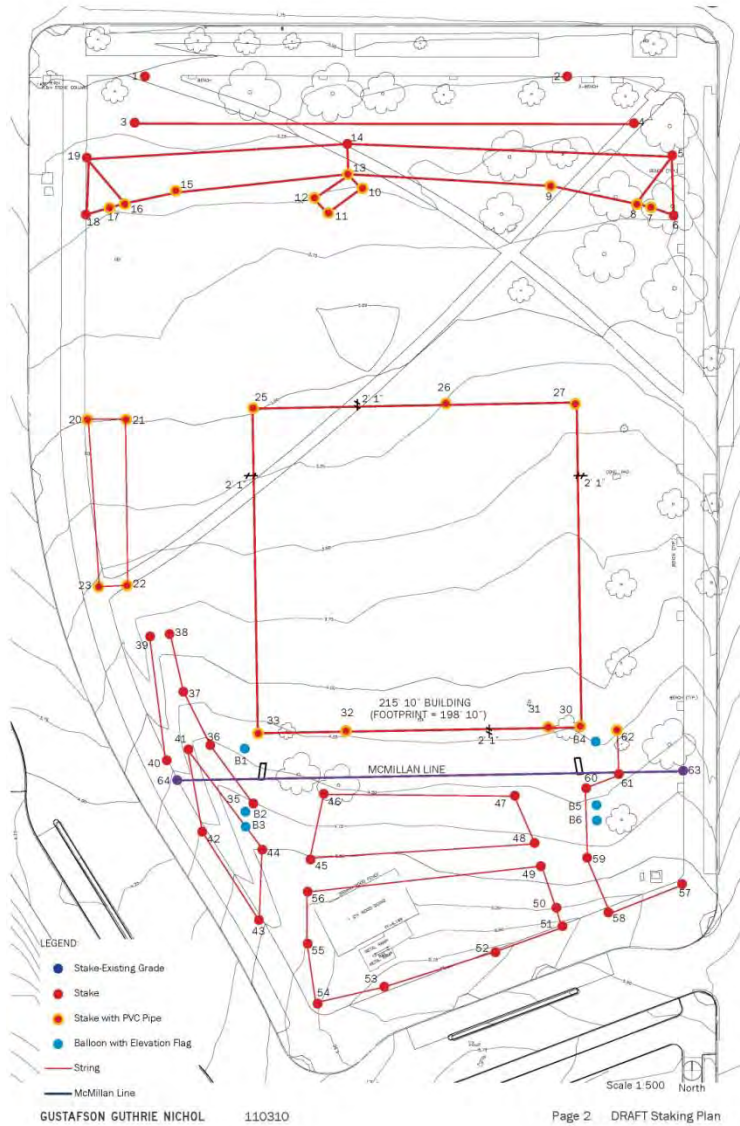
### **B.1.8 Site Staking Meetings**

The design plans for the building and the landscaping were staked out on the site on three occasions for review by various internal and external stakeholders. The purpose of the staking meetings was to illustrate the locations and dimensions of critical components on the site to convey a greater understanding of the project and its features and impacts.

Smithsonian Institution representatives, the museum design team, and staff members of the NPS, CFA and NCPC met at the site on January 5, 2011. A revised design was staked out for review by CFA Commissioners and staff on March 16, 2011. The same design was again staked out on April 7, 2011 for review by the NCPC Commissioners and NPS staff.

In preparation for these meetings, key elements of the building and landscape were staked out on the site including: the Corona and porch footprints and heights, ground floor slab elevation, water features, and the rolling mound features at the north end of the site (see Figure B.1.8).

During the site staking meetings there was much discussion and valuable feedback was received (see Figure B.1.9). Overall, while concerns were raised about the width and depth of the porch relative to the McMillan setback line, and the proximity of the southwest corner of the building to the Washington Monument, there was general agreement that the development of the design for the southern portion of the site was moving in the right direction. Ultimately, these meetings resulted in the decision to reduce the height of the landscape mounds at the north, and the size of the water feature along Constitution Avenue. These changes have been incorporated into the Refined Pavilion 2 (Preferred Alternative). Comments regarding the size and configuration of the skylight feature at the west are being further studied, and the Smithsonian is considering eliminating these features.



**Figure B.1.8 Site Staking Plan**  
 Source: Gustafson Guthrie Nichol, 2011



**Figure B.1.9 Site Staking Photograph**  
 Source: Gustafson Guthrie Nichol, 2011

## B.2 MITIGATION MEASURES

In this section, mitigation measures are identified to reduce the environmental impacts generated by the proposed action. For purposes of this EIS, mitigation measures are defined broadly to include project-specific actions, established guidelines and requirements, best management practices (BMP's), and design modifications. The summary of mitigation measures is organized by resource category to correspond with the format of the Tier II Draft EIS. These mitigation measures were identified to avoid, reduce or compensate for adverse impacts on the environment.

These mitigation measures were included in the Draft EIS as recommendations that 'should' be taken. Given the commitment of the Smithsonian Institution to implement, or coordinate with other agencies that will implement, these measures, the Final EIS uses the term 'shall' when referring to the implementation of mitigation measures. The Smithsonian Institution will document its commitment to mitigation measures in its Tier II ROD. Additional mitigation measures were developed as part of the Section 106 to avoid, minimize, or offset adverse effects on historic properties. (See comment 6.1 in Section C.1 of this Final EIS for further information on Section 106 measures.) NCPIC will issue a ROD that incorporates mitigation measures described in the Tier I and Tier II EIS documents. Mitigation measures included in the Tier I ROD are summarized below.

### B.2.1 Land Use and Planning Policy Mitigation

The following mitigation measures are included to minimize the long-term impact of the Refined Pavilion 2 Alternative related to planning policies:

- The Smithsonian Institution shall continue to explore options for reducing the facility's footprint to no more than 216 feet x 216 feet to maintain as much open space on the site as possible, particularly on the western and southern sides of the building.
- The alternative shall continue to respect the urban context and established setbacks of the site by locating the mass of the building (Corona) behind the 445-foot McMillan setback line; studies are underway to refine the Corona and the porch to modestly increase the setback of the building mass from the McMillan line and reduce the extension of the porch across the McMillan line by at least 20 percent.
- [To offset the loss of First Amendment activities from the NMAAHC site], outdoor space on the[museum] grounds will be open to the public and support a range of programmed activities, to be determined in the future, that will be related to the museum's program and enhance the adjacent open space (Tier I).

### **B.2.2 Visitor Experience Mitigation**

The following measures are included to minimize the long-term impacts of the Refined Pavilion 2 Alternative on visitor experience.

- Concealment screens will be implemented around the site during construction to minimize impacts to visitor experience from noise and dust. The screens should convey information relating to the NMAAHC, including its background and mission and elements of African American history and culture (Tier I).
- The loss of public space for large-scale gatherings and demonstrations will be reduced by providing outdoor space on the NMAAHC site for a range of programmed activities that will be open to the public (Tier I).
- No additional mitigation measures are required under Tier II.

### **B.2.3 Historic Resource Mitigation**

The following measures are included to minimize the long-term effect of the Refined Pavilion 2 Alternative related to historic resources.

#### **Views and Vistas**

- Minimize loss of views across the site by using low reflectivity glass along the perimeter wall of the Corona base to enhance transparency and allow for partial views through the building at the ground level.
- Minimize potential adverse effects on distant views of the Washington Monument Grounds, the Mall, and Federal Triangle from locations such as the top of the Washington Monument by avoiding the use of highly reflective materials on the exterior of the Corona and the roof, by minimizing the overall height of the building to no more than 126 feet above sea level, and by refining the sawtooth-shaped roof, comprised of north-facing skylights and south-facing photovoltaic panels, so that the roof is an attractive feature compatible with the adjacent architectural and urban context.
- Minimize adverse effects on views of the Washington Monument Grounds, the Mall, and Federal Triangle at night by reducing exterior night lighting levels to that required for pedestrian and visitor safety without competing with the light levels at the Washington Monument and the Capitol Building, based on light level readings from certain vantage points.

#### **Spatial Organization**

- Minimize adverse effects on the spatial organization of the Washington Monument Grounds by eliminating the west skylight in the proposed landscape design.

#### **Buildings and Structures**

- Continue to work to reduce the overall height of the building to a level that does not exceed the 126-foot height above sea level of the U.S. Department of Commerce Building.
- Continue to explore methods for reducing the size of the Corona to no larger than 216 feet x 216 feet.
- Continue to look at options to minimize intrusions of the porch into the 445-foot setback by at least 20 percent (i.e. no more than 25 feet across the McMillan line).

- Continue to minimize adverse effects on the Washington Monument by relating the west façade to the Washington Monument and providing windows to view the Monument and Grounds.
- Minimize adverse effects on the buildings and structures within the Washington Monument Grounds, Federal Triangle, and the Mall by refining the skin treatment of the Corona to ensure it is not highly reflective.

#### **B.2.4 Visual Resource Mitigation**

The following mitigation measures will minimize the effects of the Refined Pavilion 2 Alternative on the visual environment and surrounding urban context:

- The exterior building materials shall not be highly reflective to minimize glare.
- The Smithsonian Institution shall complete an illumination study as part of the final design to ensure that lighting levels of the NMAAHC would be consistent with the other museums on the north side of the National Mall and deferential to the Washington Monument and Capitol Building.
- The Smithsonian Institution shall explore ways to eliminate the skylight located on the western side of the site along the 15<sup>th</sup> Street sidewalk.
- Concealment screens will be implemented around the site during construction to minimize impacts to visitor experience from noise and dust. The screens should convey information relating to the NMAAHC, including its background and mission, and elements of African American history and culture (Tier I).



**B.2.5 Geology, Soils, and Groundwater Mitigation**

The potential impacts on geology, soils, and groundwater resources will be minimized to no impact or a less than significant impact with implementation of appropriate Best Management Practices (BMPs) during clearing, excavation, and construction. In addition to BMPs, the following measures will control soil erosion and stormwater runoff, and avoid off-site soil instability or groundwater impacts:

**Soil Erosion**

- Appropriate stormwater management and soil erosion measures shall be implemented in accordance with District of Columbia regulations and applicable federal storm water management guidelines and regulations.
- Positive surface drainage shall be maintained in a manner to prevent the accumulation of water and minimize erosion.

**Geology/Soils**

- To maintain soil stability on the project site, either on-site soils or compatible off-site soils shall be used as fill. Fill soils shall have a maximum liquid limit of 45 and plasticity of less than 20. The moisture content of fill soils shall be within two percentage points of the optimum moisture content as determined from the standard Proctor density test, ASTM D 698.

- The Smithsonian Institution is committed to protecting the nearby resources on the National Mall and within the Federal Triangle and will implement a monitoring and contingency plan that will be developed to monitor vibrations, soil stability and groundwater movement on site and within surrounding areas during construction. The monitoring and contingency plan, once developed, will outline the required monitoring periods for each type of monitoring instrument. Typically, monitoring well and excavation support monitoring instruments (inclinometers, tiltmeters, and survey points) are installed approximately one month prior to beginning excavation on site. This provides a preliminary period to develop a preconstruction baseline reading for the instrument showing natural deviations in readings. Once a baseline has been established readings may be taken weekly or daily depending on what is outlined in the plan. These plans would also include a preconstruction survey identifying the current conditions of adjacent structures prior to NMAAHC construction activities, as well as a post-construction survey. The monitoring plan will be coordinated with monitoring well access points already in place at the Washington Monument.

- Optical survey points and geotechnical instrumentation will be used during construction, to detect any movement in the area and take immediate corrective action. As specific monitoring plans are developed during the detailed design phase of the project, additional measures may be identified and coordinated with NPS.
- Test piles shall be conducted on the site prior to construction to determine the feasibility of utilizing a driven pile foundation system and provide input on the performance of the soils. Prior to any test of pile driving operations, a monitoring program utilizing seismographs and sound level meters to collect noise and vibration readings shall be installed at various radii from the test area and at critical buildings around the NMAAHC site, including the Washington Monument, the National Museum of American History, and the Department of Commerce Building, so that any vibrations during the test can be measured. Continuous baseline readings will be established before any pile driving.
- Pile installation monitoring shall be coordinated with adjacent property owners and occupants, and should be conducted by utilizing seismographs and a Pile Driving Analyzer (PDA) under the full time supervision of the geotechnical engineer (Froehling & Robertson, 2010).

### **Groundwater**

- To limit the effects of soil stress changes caused by excavation and construction on adjacent structures, the use of a rigid Support of Excavation (SOE) system shall be employed. The SOE system would function two ways: (1) it would allow for excavation and construction of the building by creating a rigid wall between the exterior of the site and the building area allowing for vertical soil excavation without causing soil instability in the surrounding area and (2) it would provide a permanent groundwater cutoff between the building and the surrounding area to maintain current groundwater pressures. The intent of the cutoff wall would be to greatly reduce the amount of groundwater intrusion into the site, allowing for dewatering of the zone within the SOE by utilizing a conventional subdrainage pumping system (Froehling & Robertson, 2010).
- Prior to construction, a licensed structural engineer shall review all SOE design plans and specifications to verify the stability of the system. Prior to construction, a licensed geotechnical engineer shall review all pile design plans and specifications for piles, or caissons, or augured piles, or drilled shafts for conformance to the design intent.

- Periodic groundwater monitoring shall occur before, during, and after dewatering activities to further verify data and establish a trend analysis of the groundwater data. A system of monitoring wells shall be installed and recorded during construction. These wells shall be used to demonstrate that the dewatering activities would be constrained to the site area and would not induce stress changes below adjacent structures. Monitoring is continued until the activity requiring monitoring is completed. For dewatering, water wells would be read until construction dewatering is completed and the permanent dewatering system is in operation. The SOE monitoring would continue until the building has reached ground level and the annular space between the SOE and the building wall has been filled in. With the use of vibration and/or air noise monitors are used, monitoring may continue past completion of construction. The NMAAHC vibration and groundwater monitoring efforts will be coordinated with the monitoring well access points already in place at the Washington Monument. Additionally, the SOE contractor will be required to install a groundwater reinjection system should groundwater depressions be observed during construction.

### **B.2.6 Natural Resource Mitigation**

The following mitigation measures will minimize construction and operational effects of the Refined Pavilion 2 Alternative on open space and natural resources (vegetation):

- Continue to consider measures to avoid the loss of trees on the site similar to the reduced size of the north water feature and the southern alignment of the building within in the site to protect the double row of trees along Constitution Avenue.
- To minimize adverse effects associated with the loss of healthy, mature trees, the Smithsonian shall retain existing site trees to the extent practicable. The drip lines of mature trees that can be retained in place shall be fenced by a certified arborist prior to the start of construction.
- To mitigate the loss of healthy, mature trees during construction, new trees that total the aggregate diameter breast height (dbh) of the healthy trees lost shall be planted on site. Given that the aggregate dbh is 493.5 inches, these new trees would have an average caliper size of 6 inches.

### **B.2.7 Transportation Mitigation**

The Refined Pavilion 2 Alternative would further increase existing pedestrian safety issues at nearby intersections. In addition, service and loading activities will interfere with the Metrobus stop and the informal commuter ridesharing collection point (slug line) located on 14<sup>th</sup> Street between Constitution Avenue and Madison Drive. The Smithsonian Institution shall work with DDOT to prepare and implement a Traffic Operations Plan to reduce adverse transportation impacts, including:

- Work with DDOT to optimize signal timing and coordination at appropriate intersections and install enhanced pavement markings and other roadway changes to accommodate the projected museum vehicular and pedestrian traffic. These improvements have been identified for the Constitution Avenue and 14<sup>th</sup> Street intersection by DDOT.
  - Work with DDOT to install signage to: prohibit left-turns at the Constitution Avenue and 14<sup>th</sup> Street intersection; restrict charter bus drop-off and pick-up activity to appropriate locations and times; and prohibit parking on 14<sup>th</sup> and 15<sup>th</sup> Streets along the site boundary.
  - Work with DDOT to “enhance signalization, signage and pavement marking improvements to address the increased potential amount of pedestrian-vehicular conflicts that would occur (Tier I)” and implement pedestrian mitigation measures at adjacent intersections, including optimized pedestrian count-down signals, 10-foot distance between stop bars and crosswalks to separate motorists from crossing pedestrians, ladder-patterned crosswalks for greater visibility, and new curb ramps facing crosswalks.
- Work with WMATA and DDOT to relocate the Metrobus stop and commuter “slug” line to the north or south along 14<sup>th</sup> Street to minimize conflicts with the eventual location of the 14<sup>th</sup> Street curb cut for servicing and loading.
  - Work with DDOT to identify appropriate time periods for truck access, particularly trucks over 70 feet in length that are restricted to the hours between 11:00 pm and 6:30 am.
  - Conduct constructions activities and transporting materials during the weekday off-peak periods, and utilize the lower volume streets (15<sup>th</sup> Street and Madison Drive) whenever possible, in keeping with the District and Federal [NPS] regulations to minimize the effects from construction traffic, lane closures [and sidewalk closures] (Tier I); and continue to study the possibility of providing alternative pedestrian routes and earlier reopening of the sidewalks along 14<sup>th</sup> and 15<sup>th</sup> Streets and possibly Madison Drive.

### **B.2.8 Additional Tier I EIS Mitigation Measures**

The mitigation measures documented in the Tier I EIS Record of Decision include measures for subjects that were not part of the Tier II EIS process. Those additional mitigation measures are included here.

#### **Surface Water**

The Tier I Final EIS (Smithsonian Institution, 2008a) required implementation of mitigation measures to minimize adverse effects on surface water resources:

- Erosion and sediment control plans will be implemented to minimize erosion of exposed soils, slow the rate at which water leaves the site, and capture eroded soils and concentrated nutrients before they enter the downstream water flow.
- Effluent created by dewatering practices associated with construction will be managed in a way that minimizes the potential impacts to water quality within the Potomac River Watershed and will be in compliance with all local and federal permits.

#### **Air Quality**

The Tier I Final EIS (Smithsonian Institution, 2008a) required implementation of mitigation measures during construction of the NMAAHC to minimize adverse effects associated with criteria air pollutant emissions:

- Use ultra low sulfur diesel fuel in off-road construction equipment.
- Limit unnecessary idling times on diesel powered engines.
- Locate diesel powered exhausts away from fresh air intakes.
- Utilize water or appropriate liquids for dust control during demolition, land clearing, grading, on materials stockpiled on the ground surfaces, and other activities.
- Cover open-body trucks for transporting materials.
- Control dust related to the construction site through a soil erosion sediment control procedures.

These mitigation measures will also be required to reduce the contribution of greenhouse gas (GHG) emissions during construction.

### **Noise**

- Construction activities and equipment will adhere to District of Columbia and EPA requirements and will be confined to normal working hours to the greatest extent possible.
- Noise-controlled construction equipment will be utilized to the greatest extent feasible.

### **Utilities and Infrastructure**

- Existing utility lines will be shielded from accidental damage or earth shifting and utilities in the construction area will be adequately rerouted. Consultation will occur with utility service providers.
- Solid and hazardous wastes will be managed per the appropriate regulations and criteria.

While the Tier I EIS addressed utilities and infrastructure, concerns were raised regarding the sufficiency of the analysis related to sanitary sewer service. As a result, to minimize potential impacts to the sanitary sewer system, the following measures shall be implemented to reduce the sanitary sewer load generated by the museum:

- Use low-flow toilets (1.28 gal per flush) and ultra low-flow urinals (0.125 gal per flush)
- Use low-flow sensor-operated lavatory faucets at all restrooms and flow-restricting aerators at general use sinks (1.5 gpm flow rate)
- Direct all mechanical equipment that discharges clean water to the storm system

### **Public Health and Safety**

- Appropriate [and visible] signage will be posted near the site to redirect pedestrians and bicyclists away from the [fenced-off and patrolled] construction area during the construction period.
- Construction activities will be conducted in compliance with the applicable regulations and guidance and ensure the safety and health of the workers during construction.
- Appropriate building security measures will be incorporated into the design.
- Enhanced signalization, signage, and pavement marking improvements are required to increase pedestrian safety.

## B.3 IMPACTS ON THE ENVIRONMENT

The following section analyzes the potential impacts of the Refined Pavilion 2 Alternative in relation to the other four action alternatives analyzed in the Draft EIS. The analysis of each resource topic follows a structure similar to that described in the Draft EIS, *Section 3.1 Introduction, Affected Environment and Impacts to the Human Environment* on page 3-1. The following resource topics are addressed:

- Land Use and Planning Policies
- Visitor Experience
- Historic Resources
- Visual Resources
- Geology, Soils and Groundwater
- Natural Resources
- Transportation

Although the Refined Pavilion 2 Alternative was not analyzed in the Tier II Draft EIS, no additional analysis was necessary given that the Refined Pavilion 2 Alternative represents a design evolution from the four action alternatives analyzed in the Draft EIS, and the potential impacts of the Refined Pavilion 2 Alternative are assumed to be similar to the potential impacts identified in the Draft EIS. As a result, the following sections include a summary of the identified issues.

### B.3.1 Land Use and Planning Policies Impacts

#### **How would the Refined Pavilion 2 Alternative affect the relevant planning policies?**

The landscaped areas and vegetation features proposed as part of this alternative would improve the physical and visual buffering on-site as compared with the other action alternatives. The Pavilion, Refined Pavilion, and the Refined Pavilion 2 Alternatives include compact building development and the percent site coverage for these three alternatives would be 25.8 percent, 23 percent, and 25.3 percent, respectively.

With approximately 75 percent open space, the Refined Pavilion 2 Alternative would be more consistent with the open space buffer intent of the *National Mall Plan's* Character Protection Area than the Plinth, Plaza, and Pavilion Alternatives, each of which would result in less open space on the site. As with the other alternatives, the Refined Pavilion 2 Alternative would involve implementation of pedestrian and visitor improvements consistent with the *National Mall Plan* such as improved intersection crossings, upgraded walking surfaces, and park furniture.

As with the other action alternatives, the Refined Pavilion 2 Alternative would create an additional cultural and aesthetic destination on the National Mall, which is inconsistent with the *Framework Plan* and the goal of increasing destinations beyond the Mall. However, due to its proximity, the new museum could contribute to an overall increase in visitation to the Federal Triangle.

The Smithsonian Institution's *Mall-Wide Perimeter Security Improvements Plan* requires perimeter security be provided with a combination of design features and hardscape elements. To protect the facility from vehicular threats, the south-facing entrance to the Refined Pavilion 2 Alternative would include a retaining wall and reflecting pool as with the other action alternatives and landscaped areas containing a cluster of trees similar to the Plaza, Pavilion, and Refined Pavilion Alternatives. The landscaped areas along 15<sup>th</sup> Street would contain a retaining wall and the landscaped areas along 14<sup>th</sup> Street would include a retaining wall north of the service access and a freestanding wall south of the service access. The contextual approach elements provided along 14<sup>th</sup> Street, 15<sup>th</sup> Street, and Madison Drive would be consistent with the *Mall-Wide Perimeter Security Improvements Plan*. Along Constitution Avenue, a water feature and a sunken retaining wall would provide perimeter security in compliance with the unified approach for Constitution Avenue. The wall would provide structural support for the landscaped area and perimeter security as with the Refined Pavilion

Alternative. Thus, perimeter security would comply with the Smithsonian Institution's requirements and provide long-term security from vehicular borne threats.

This alternative would be consistent with the *Center City Action Agenda* because it proposes similar streetscape features and sidewalk configurations as the Refined Pavilion Alternative, pedestrian access from the four corners of the site, and entrances from the north and the south. Similar to the Plinth and Refined Pavilion Alternatives the Refined Pavilion 2 Alternative would have entrances on Madison Drive and Constitution Avenue, which would draw pedestrians along 14<sup>th</sup> Street. It would integrate the composition of linear paths, and groups of benches and trees to help define public spaces providing multiple opportunities for the museum's outside use over the other action alternatives. The Refined Pavilion 2 Alternative would be consistent with the *Action Agenda's* intention to activate 14<sup>th</sup> Street.



### **B.3.2 Visitor Experience Impacts**

#### **How would the Refined Pavilion 2 Alternative affect visitor experience?**

The Refined Pavilion 2 Alternative would be similar to the Pavilion Alternative and the Refined Pavilion Alternative with respect to visitor experience. It would not include a plinth and would focus on the Corona as the most compelling feature of the museum building structure. It would continue to ensure a high level of accessibility to the museum by allowing visitors to enter at the same floor level when traveling from either the National Mall or from Constitution Avenue, by improving on-site circulation through its network of paths, and by providing visitor amenities.

Along Constitution Avenue, the Refined Pavilion 2 Alternative would continue to retain the current sidewalk width as in the Refined Pavilion Alternative. This alternative proposes to include a double row of elm trees providing shade along the sidewalk, which is an improvement upon the other action alternatives. Visitors approaching the museum from the north would access the site via one of two paths leading them through a layered landscape, beginning with a symbolic water crossing over a combined rain garden and aquatic garden and including informal gathering areas. An oculus would serve as a focal point of the northern landscape.

Along 15th Street, the sidewalk curves around a landscaped area and diverges into two paths. One would continue north and connect to the intersection of 15th Street and Constitution Avenue. The other path would generally follow the current path's alignment and would traverse the site to the north and east, bringing visitors to the corner of 14th Street and Constitution Avenue. With the Refined Pavilion 2 Alternative, the sidewalk adjacent to the site would be expanded to 15 feet in width and would match the finish, material and overall character along 15th Street within the Washington Monument Grounds.

When traveling north along 14th Street, visitors would cross the vehicular access point located approximately mid-block. The driveway would extend south and lead to a sub-grade service and loading dock. The driveway would be screened from view along 14th Street through the use of trees, a freestanding wall, and other landscape screening. Other sidewalks around the site's perimeter would remain largely unchanged, with the exception of 15th Street as described above.

On the southern side of the museum, the sidewalk, water element, and plaza would be composed to reinforce pedestrian movement from the Mall to the Washington Monument and accommodate visitors. The plaza and water feature would have a trapezoidal shape to further integrate the museum into its present context by continuing the trapezoidal geometries found south of Madison Drive. Walkways at the southeast and southwest corners of the site would improve circulation around the plaza and the water feature. The visitor amenities such as benches, shade, food, and restrooms would be accessible to Mall and Washington Monument visitors as well

### **B.3.3 Historic Resource Impacts**

#### **How would the Refined Pavilion 2 Alternative affect historic resources within the APE?**

The Refined Pavilion 2 Alternative would feature a singular building element – a three-tiered Corona. Bronze-clad panels would comprise the exterior skin of the Corona, which would rest on a base of clear glass panels. It would have a footprint area of approximately 59,100 square feet and, from a future average site elevation of 16.5 feet, would measure approximately 113 feet above sea level to the top of the Corona, 125.5 feet above sea level to the top of the penthouse (office) level, and 132 feet above sea level to the mechanical top of the structure. The porch on the south side of the Corona would extend 32 feet beyond the McMillan setback.

The landscape treatment of this alternative would situate the museum within the context of the Washington Monument Grounds as an object in a field, drawing the open, pastoral nature of the Washington Monument Grounds through the museum site. Exterior illumination would be subdued relative to the Washington Monument, consisting of minimal lighting for the building facade, lighting of outdoor gathering and circulation spaces, and lighting for special features.

A new above-grade structure on the project site would impact the multiple historic resources on and within proximity to the

Washington Monument Grounds. The long-term effects of the Refined Pavilion 2 Alternative are discussed below.

**Views and Vistas**

The height and massing of the Refined Pavilion 2 Alternative would obstruct or impede key views to and from the Washington Monument. It would also restrict key views of surrounding urban features, such as the Federal Triangle. This alternative would bring the existing row of museums on the north side of the Mall closer to the Washington Monument, thereby diminishing the open spaces that emphasize the Monument’s visual prominence as a central organizing feature within its setting.

Primary threshold views within the Washington Monument Grounds were identified through the Section 106 consultation process. These include both pedestrian-level and aerial views, as discussed below.

- The location and mass of this alternative would alter multi-directional, long, panoramic views within the Washington Monument Grounds. However, it would have an advantage over the Plinth, Plaza, and Pavilion Alternatives in that it would have a smaller footprint. The Refined Pavilion 2 Alternative would have a major, significant, adverse effect on views within the Washington Monument Grounds.

- From the base of the Washington Monument, this alternative would obstruct views of several historic buildings within the Federal Triangle, including the Old Post Office Tower, the Environmental Protection Agency Headquarters (formerly the Labor Building and the Interstate Commerce Commission Building), and the Mellon Auditorium. The Herbert C. Hoover Commerce Building, however, would remain visible.
- The Refined Pavilion 2 Alternative would obstruct views of the west end of the Mall – the site occupied by the NMAH. The perceived distance to the row of museum buildings along the Mall would be reduced with the structure becoming the closest building to the Washington Monument in this direction. This alternative would have a major, significant, adverse effect on pedestrian-level views from this portion of the Washington Monument Grounds looking northeast. The pedestrian level view from the Washington Monument Grounds looking northeast would be similar to the view illustrated in Draft EIS Figure 3.3.27 on page 3-82 for the Refined Pavilion Alternative. The Refined Pavilion 2 Alternative and its porch, however, would conceal a slightly greater portion of the west facade of NMAH.
- From the portion of the Washington Monument Grounds near the Monument Lodge, this alternative would block

views of the south elevation of the Herbert C. Hoover Commerce Building including its distinctive portico and tile roof. Thus, the Refined Pavilion 2 Alternative would have a major, significant, adverse effect on the view looking north along 15<sup>th</sup> Street NW.

In addition to the views from within the Washington Monument Grounds, the Refined Pavilion 2 Alternative would affect the multi-directional panoramic views from historic resources in the project vicinity.

- The location and massing of this alternative would block views of the lower portion and base of the Washington Monument and a large portion of the Washington Monument Grounds when viewed from the Federal Triangle at the corner of 14<sup>th</sup> Street NW and Constitution Avenue, which is widely perceived as a “gateway” view. It would block views of the Mall from Constitution Avenue near 15<sup>th</sup> Street NW adjacent to the north edge of the Washington Monument Grounds. Thus, the Refined Pavilion 2 Alternative would have a major, significant, adverse effect on important non-cardinal views from principal corner street crossings adjacent to historic resources. The view from 14<sup>th</sup> Street and Constitution Avenue would be comparable to the view illustrated in Draft EIS Figure 3.3.28 on page 3-83 for the Refined Pavilion Alternative. The

Refined Pavilion 2 Alternative, however, would be higher than the Refined Pavilion Alternative and would conceal a larger portion of the shaft of the Washington Monument.

- This alternative would eliminate a significant portion of the open space of the Washington Monument Grounds and constrict the wide-angle panoramic view of the Grounds that opens up from the Mall. Thus, the Refined Pavilion 2 Alternative would have a major, significant, adverse effect on the panoramic view that opens and widens on the approach to the Washington Monument Grounds from the Mall.
- Although this alternative would appear distant as viewed from the Ellipse, the oblique angle of view would create a wide frontage within the panoramic view and would be seen in direct relation to the Washington Monument, thereby diminishing its visual prominence. The height of the structure would also project vertically above the predominant tree line. The Refined Pavilion 2 Alternative would have a moderate, significant, adverse effect on the panoramic view that opens and widens on the approach to the Washington Monument Grounds from the Ellipse. The panoramic view of the Washington Monument Grounds from the Ellipse would be similar to the view illustrated in Draft EIS Figure 3.3.29 on page 3-84 for the Refined Pavilion

Alternative. The Refined Pavilion 2 Alternative, however, would be higher and have a larger volume and would have a wider frontage within the panoramic view.

- This alternative would intrude into the pedestrian-level views of the Washington Monument Grounds from pathways along the western end of the Mall and would be seen in direct relation to the Washington Monument, thereby diminishing its visual prominence. The location of the Refined Pavilion 2 Alternative would alter the established end point of the row of museum buildings along the Mall. The height of this alternative would project vertically above the predominant tree line defining the eastern edge of the Washington Monument Grounds. Thus, the Refined Pavilion 2 Alternative would have a moderate, significant, adverse effect on important non-cardinal views from historic Mall pathways. The views from historic Mall pathways would be similar to the view illustrated in Draft EIS Figure 3.3.30 on page 3-85 for the Refined Pavilion Alternative.

The Refined Pavilion 2 Alternative would also affect long views and vistas to and from Washington Monument Grounds and the surrounding historic buildings and features:

- Viewed from the top of the Washington Monument and from the air, the Refined Pavilion 2 Alternative would be a prominent new feature on the landscape. It would eliminate a significant portion of the historic open space of the Washington Monument Grounds and would alter the visual boundaries of the northeast corner of the Grounds. The Refined Pavilion 2 Alternative would have an advantage over the Plinth Alternative and the Plaza Alternative in that the landscape plan references the Washington Monument Grounds by treating the structure as an object in a field surrounded by open ground. Additionally, the rolling topography, broadly sweeping paths, and informal, more naturalistic water elements of the landscape plan of the Refined Pavilion 2 Alternative would be compatible with the picturesque character of the Washington Monument Grounds. It would also have an advantage over the other action alternatives due to the treatment of the penthouse, which follows the precedent of the other buildings along the Mall. Distant views of the Washington Monument Grounds would be similar to the view illustrated in Draft EIS Figure 3.3.31 on page 3-86 for the Refined Pavilion Alternative. The Refined Pavilion 2 Alternative, however, would be higher and have a larger volume and would eliminate a greater portion of open space as viewed from distant locations. Additionally, the view would be affected by the

addition of skylights, the larger porch, and the different roof treatment of the Refined Pavilion 2 Alternative. Thus, this alternative would have a major, significant, adverse effect on distant views of the Washington Monument Grounds from locations such as the top of Washington Monument and the air.

- The height of the Refined Pavilion 2 Alternative would position the roofline above the visible point at which the base of the Washington Monument meets the ground, altering the existing view of the entire Monument from the Old Post Office Tower. Distant views of the Washington Monument from the Old Post Office Tower would be similar to the view in Draft EIS Figure 3.3.32 on page 3-87 for the Refined Pavilion Alternative. The height of the roofline of the Refined Pavilion 2 Alternative, however, would conceal a greater portion of the shaft of the Washington Monument. Thus, the Refined Pavilion 2 Alternative would have a moderate, significant, adverse effect on distant views from the Old Post Office Tower.
- The location of the Refined Pavilion 2 Alternative within the site and the massing of the Corona would not substantially alter the key vistas looking east to west along the Mall from the center panels. Thus, this alternative would have a minor

adverse effect on long and mid-range vistas down the Mall looking west.

- Viewed from Arlington Cemetery, the distinction between the Mall and the Washington Monument Grounds would be difficult to distinguish, and the Refined Pavilion 2 Alternative would appear as a part of the general building massing in the area. Thus, this alternative would have no effect on distant views from Arlington Cemetery.
- Although the exterior night lighting of the Refined Pavilion 2 Alternative would be designed to complement and not compete with nearby landmarks, the lighting – including exterior lighting of outdoor gathering and circulation spaces, and special features – would illuminate a portion of the Washington Monument Grounds previously unlit at night (except for perimeter street lights). This would alter multiple nighttime views of the Washington Monument Grounds. The Refined Pavilion 2 Alternative would have a major, significant, adverse effect on views of the Washington Monument Grounds at night. Specifically, adverse effects will be minimized by reducing lighting levels so that the museum lighting does not compete with the lighting of the Washington Monument or the Capitol Building based on light level readings from certain vantage points.

## Spatial Organization

Due to the location, height, and massing of the structure, the Refined Pavilion 2 Alternative would have the following effects on the spatial organization of the Washington Monument Grounds and the Mall:

- It would eliminate open space from the Washington Monument Grounds and affect the prominence of the Monument as the central organizing feature of the Grounds. This alternative would also alter the spatial conception of the boundaries of the Washington Monument Grounds by extending the existing row of museums along the Mall into the Grounds. It would have an advantage over the Plinth Alternative and the Plaza Alternative in that it would have primary frontages on the north, south, and west facades, creating a multi-directional condition on the NMAAHC site that responds to its position within the Washington Monument Grounds. The Refined Pavilion 2 Alternative would have a major, significant, adverse effect on the spatial organization of the Washington Monument Grounds (Reservation No. 2).
- Although located outside the boundaries of the Mall, the Refined Pavilion 2 Alternative would be perceived as an extension of the museum buildings along the north side of the Mall, which would serve to reinforce the channel of

space and vista between the Capitol and the Washington Monument. While the mass of the building (Corona) would be located behind the setback line established by the McMillan Plan, a part of the porch overhang would extend south of the setback. As a result, this alternative would have a moderate, significant, adverse effect on the larger spatial organization of the Mall (Reservation Nos. 3, 3B, 4, 5, 6, and 6A).

Due to the location, height, and massing of the structure, the Refined Pavilion 2 Alternative would have the following effects on the spatial organization of the monumental core:

- It would alter the perceived boundaries of the Mall and the Washington Monument Grounds by extending the existing row of museums into the Grounds, modifying the cross-axial spatial organization of the monumental core. As a result, this alternative would have a major, significant, adverse effect on the cross-axial spatial organization of the monumental core, which is marked by the Washington Monument and its Grounds at the crossing.
- The location of the structure would cause a loss of symmetry of the open space elements designed to flank the Ellipse (President's Park South). As a result, the Refined

Pavilion 2 Alternative would have a moderate, significant, adverse effect on the spatial organization of the Ellipse.

The Refined Pavilion 2 Alternative would introduce a new element into the open space of the Washington Monument Grounds (Reservation No. 2). As a result, it would have a minor adverse effect on the spatial organization of features that contribute to the historic significance of the city plan.

### **Land Use**

The footprint of the Refined Pavilion 2 Alternative would occupy a significant portion of the site, reducing the amount of public gathering and recreational space within the Washington Monument Grounds. As part of the Smithsonian Institution, NPS permitted activities would not be allowed on the NMAAHC grounds, constituting a change in the historic use of the land for expression of First Amendment freedoms. This alternative would have a major, significant, adverse effect on the established land uses of the Washington Monument Grounds. The Refined Pavilion 2 Alternative would have no effect on the land use of the Mall or the surrounding urban context of the Federal Triangle.

### **Circulation**

The Refined Pavilion 2 Alternative would remove open circulation on a portion of the Washington Monument Grounds. Additionally, the vehicular service entrance along 14<sup>th</sup> Street, NW would introduce a new type of circulation feature that would not be compatible with the historic character of the Washington Monument Grounds. It would have an advantage over the Plinth Alternative and the Plaza Alternative in that the primary circulation routes of the landscape plan would consist of broadly sweeping curvilinear paths that would acknowledge and be compatible with the existing pedestrian paths of the Washington Monument Grounds and the Ellipse. As a result, the Refined Pavilion 2 Alternative would have a minor adverse effect on the distinctive circulation features of the Washington Monument Grounds. The Refined Pavilion 2 Alternative would have no effect on the circulation features of the Mall.

### **Topography**

The location of the Refined Pavilion 2 Alternative would eliminate a portion of the peripheral flats of the Washington Monument Grounds. However, it would have an advantage over the Plinth Alternative and the Plaza Alternative in that the landscape plan would feature a rolling topography, broadly sweeping paths, and informal groupings of trees that would be compatible with the picturesque character of the Washington Monument Grounds. As a



result, the Refined Pavilion 2 Alternative would have a minor adverse effect on the naturalistic topography of the Washington Monument Grounds and the distinct characteristics of this historic environment, including the "flats" and central mound. The Refined Pavilion 2 Alternative would have no effect on the topography of the Mall or the surrounding urban context.

### **Vegetation**

The footprint of the Refined Pavilion 2 Alternative would eliminate a large portion of the open lawn that defines the ground plane of the Washington Monument Grounds. The landscape design would feature water elements and hardscape areas that would occupy additional areas of open lawn. The Refined Pavilion 2 Alternative would have an advantage over the other alternatives in that it would preserve an open rolling landscape on the northern portion of the site and provide a double row of street trees along Constitution Avenue. As a result, this alternative would have a moderate, significant, adverse effect on the significant vegetative features of the Washington Monument Grounds. Because the reduction of open space on the site would result in an incremental increase in the intensity of use on the Mall, particularly during the turf reconstruction project, the Refined Pavilion 2 Alternative would have a minor, adverse effect on the grass panels and tree panels of the Mall.

### **Buildings and Structures**

The Refined Pavilion 2 Alternative would have the following effects on the buildings and structures within the Washington Monument Grounds:

- The height, massing, and location of this alternative would diminish the visual impact of the Washington Monument by adding a new element within the Washington Monument Grounds. The Refined Pavilion 2 Alternative would have a major, significant, adverse effect on the Washington Monument.
- The location of this alternative would alter the setting of the Bulfinch Gatepost located on the southeast corner of 15th Street NW and Constitution Avenue. However, it would provide a greater setback from the gatepost. As a result, the Refined Pavilion 2 Alternative would have a moderate, significant, adverse effect on the Bulfinch Gateposts.
- The height and massing of this alternative would diminish the visual impact of the Monument Lodge within the setting of the Washington Monument Grounds. The Refined Pavilion 2 Alternative would have a major, significant, adverse effect on the Monument Lodge.

The Refined Pavilion 2 Alternative would have the following effects on the buildings and structures in proximity to the NMAAHC site:

- The metal skin of the Corona would have an atypical visual character that would contrast with the existing character of the buildings and structures in the vicinity of the NMAAHC site. Because there would be no physical alteration, this alternative would have a minor adverse effect on the buildings and structures within the Washington Monument Grounds, Federal Triangle, and the Mall.
- The Refined Pavilion 2 Alternative would intrude upon the setting of the Federal Triangle buildings by altering their relationship with the open space of the Washington Monument Grounds and obstructing clear views of the buildings that comprise the Federal Triangle. Because the visual obstruction would be partial, the alternative would have a minor adverse effect on the Federal Triangle buildings from the Washington Monument Grounds.
- The Refined Pavilion 2 Alternative would alter the setting of NMAH as the end piece of the row of museums along the Mall and the relationship of NMAH with the open space of the Washington Monument Grounds. Because this alteration would be slight, the Refined Pavilion 2 Alternative would have a minor adverse effect on the buildings along the Mall.

### **B.3.4 Visual Resource Impacts**

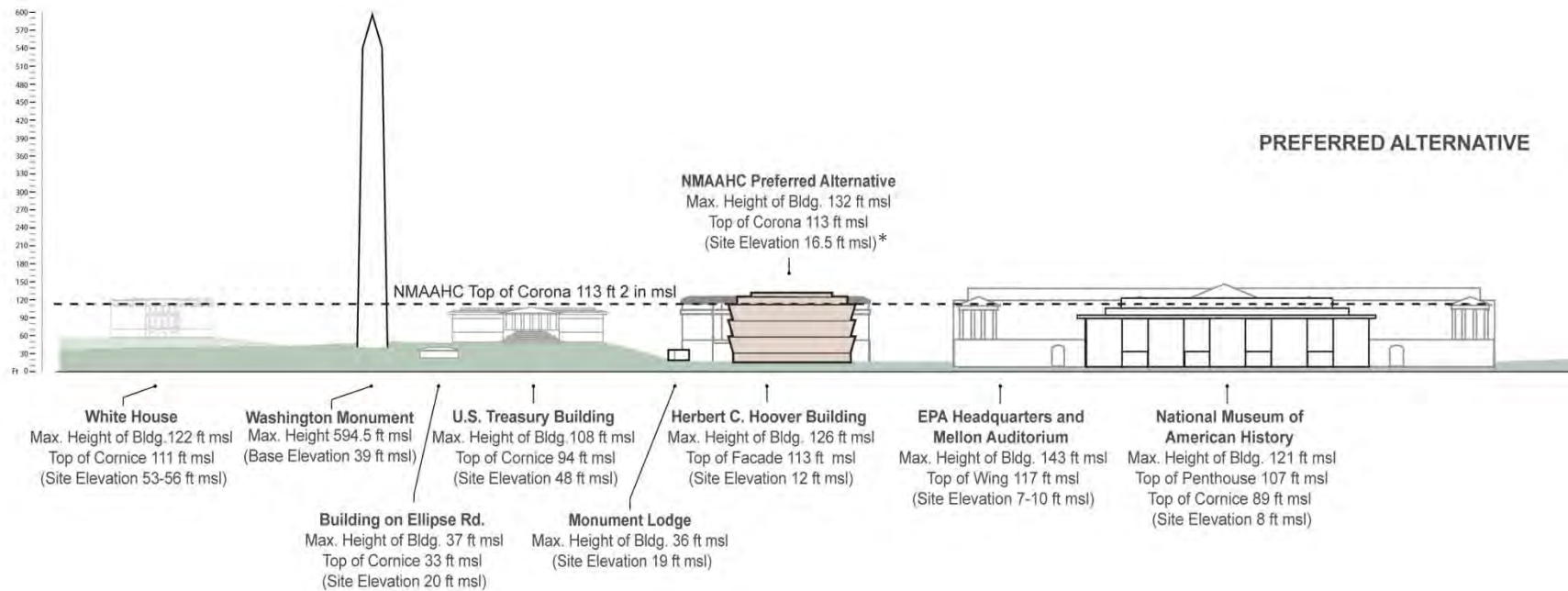
#### **What affect would the Refined Pavilion 2 Alternative have on visual resources?**

##### **Urban Context**

With the Refined Pavilion 2 Alternative, the heights of the primary building elements have changed slightly from the action alternatives analyzed within the Draft EIS. The top of the Corona would be approximately 96.5 feet above grade and approximately 113 feet above sea level. The penthouse would be stepped back from the edges of the Corona and would rise an additional 12.5 feet to a height of approximately 109 feet above grade and an elevation of approximately 125.5 feet above sea level. The overall height of the structure, including required mechanical overruns, would be approximately 115.5 feet above grade and a maximum elevation of approximately 132 feet above sea level. Thus, with this alternative the Corona and penthouse would be about 0.5 feet and 3 feet higher than the Corona and penthouse elevations, respectively, of the Refined Pavilion Alternative, but lower than the Corona and penthouse elevations on the Plinth, Plaza, and Pavilion Alternatives. With the mechanical overruns, the maximum height of the NMAAHC with the Refined Pavilion 2 Alternative would be approximately 9.5 feet taller than the Refined Pavilion Alternative, but lower than the Plinth, Plaza and Pavilion Alternatives.

The buildings surrounding the NMAAHC site vary in height and the Refined Pavilion 2 Alternative would lie within this range. At 113 feet, the top of the Corona on the Refined Pavilion 2 Alternative would be approximately the same elevation as the top of the façade of the Herbert C. Hoover building (the top of the façade and the top of the Corona both being the point at which the main façade begins to recede). The top of the Corona would also be approximately 6 feet taller than the top of the penthouse on the NMAH to the east and approximately 4 feet lower than the top of the wing of the EPA building. The vertical relationships between the Refined Pavilion 2 Alternative and surrounding buildings are illustrated in Figure B.3.1.

The Refined Pavilion 2 Alternative would be somewhat consistent with surrounding buildings in its form and alignment. Like the other action alternatives, the Corona would rest on a simple base, consistent with its surrounding building context. Its placement on the site would be similar to the Refined Pavilion Alternative, but the footprint of the Corona would be increased up to ten feet in both its north-south and east-west dimensions to a maximum of 220 feet by 220 feet. Despite the increased size of the Corona, the setback from 14<sup>th</sup> Street would increase to 76 feet and the museum would still lie within the setback lines established by the Herbert C. Hoover building to the north.



**Figure B.3.1: Refined Pavilion 2 – Preferred Alternative: Elevation showing relative building heights in the vicinity of the project site**  
 Source: AECOM

\*Future site elevation is equivalent to the base elevation of the Central Hall.  
 NOTE: Building heights have been rounded to the nearest half foot.

The outer edge of the Corona would be aligned with the primary façade of NMNH, approximately 19 feet north of the 445-foot McMillan setback line. While the structural supports for the porch on the south side of the building would be located north of the McMillan line, the cantilevered overhang of the porch would extend beyond the McMillan line by approximately 32 feet, which would be approximately 4 feet further than the Refined Pavilion Alternative.

The horizontal relationships between the Refined Pavilion 2 Alternative and other buildings on the Mall are illustrated in Figure B.3.2, including the encroachment of a portico on the north side of the Mall and several major building encroachments on the south side of the Mall

While some of the consulting parties have objected to the scale and extent of the projection of the porch south of the setback, the porch extension is considered by the Smithsonian Institution to be a fundamental component of the museum design and a relatively modest intrusion across the McMillan line that is largely a function of the building's location within the site and analogous to the intrusions of monumental stairs and porticos of other buildings along the Mall. The placement of the NMAAHC on the site, slightly south of center, would serve to increase the open space on the northern portion of the site and provide continuation to the Washington Monument Grounds along Constitution Avenue.

From a visual resource perspective, the siting of the Refined Pavilion 2 Alternative represents an effort to balance competing concerns for the views and vistas along Constitution Avenue, the view from the Monument, and the suggestion that the new museum be distinctive from the existing buildings along the north side of the Mall.

The landscape of the Refined Pavilion 2 Alternative has been modified substantially from the Refined Pavilion Alternative, lowering the elevation of the proposed knolls on the north side of the site in order to maintain the vista to the Washington Monument from Constitution Avenue. Further, the reduction in the size of the water feature on the north side of the site would allow for the continuation of the double row of trees that are present to the east and west of the site on Constitution Avenue. The rolling landscape and curving paths of the Refined Pavilion 2 Alternative would relate to the informal grounds of the Washington Monument and the pathways of the Ellipse.

The buildings on the National Mall represent a wide range of architectural designs and materials. Like the Pavilion and Refined Pavilion Alternatives, the Refined Pavilion 2 Alternative would rest on a simple base and would be capped by a penthouse. The penthouse would be centered on the Corona, similar to the Refined Pavilion Alternative and most of the other museums on the north side of the Mall. As such, although modern in style, the NMAAHC structure would be similar in mass and would respond to the classically inspired buildings that surround it.

Like the other action alternatives, the color and finish proposed for the exterior skin would make the building stand out from those that immediately surround it. If the roof includes skylights and solar panels, the sawtooth pattern could be visible from the Washington Monument and the Old Post Office. However, the roof would be designed as a fifth façade to be seen from above, with mechanical equipment carefully contained and roof surfaces detailed. Due to its setback from the edge of the penthouse, this element would not be visible from adjacent streets.

Overall, the Refined Pavilion 2 Alternative, like the Refined Pavilion Alternative, would result in minor/not significant effects on the urban context due primarily to the extension of the overhang of the porch on the south side beyond the McMillan setback line, and the potential contrast in color and appearance of exterior materials of the Corona with surrounding structures.



**Figure B.3.2: NMAAHC Refined Pavilion 2 – Preferred Alternative Alignment with Context**  
*Source: Freelon Adjaye Bond/SmithGroup, 2011*

**Key Urban Viewsheds***U.S. Capitol – East/West Cross Axis*

The Washington Monument is the focal point of the axial view looking west from the lower terrace of the U.S. Capitol Building. With the Refined Pavilion 2 Alternative, the penthouse and skylights would be slightly visible above the treeline, similar in height to the Pavilion Alternative (Draft EIS Figure 3.4.23 on page 3-131). However, the mass of the Corona would be closer in size to the Plaza Alternative, and the southern alignment of the structure would be similar to the Refined Pavilion Alternative (Draft EIS Figures 3.4.17 on page 3-125 and 3.4.29 on page 3-137). Overall, long-term impacts to the view west from the U.S. Capitol would be minor/not significant. There could also be minor/not significant short-term effects to this view during construction if equipment is visible above the treeline. No mitigation measures would be required for views from the U.S. Capitol.

*Lincoln Memorial – East/West Cross Axis*

The Washington Monument dominates the view looking east from the Lincoln Memorial, along the axis of the National Mall. With the Refined Pavilion 2 Alternative, the approximate southern alignment of the structure would be similar to the Refined Pavilion Alternative, and the maximum height would be similar to that of the Pavilion Alternative. With each of these alternatives, the museum would not

be visible due to dense tree cover (Draft EIS Figures 3.4.30 on page 3-138 and 3.4.24 on page 3-132). Similarly, with the Refined Pavilion 2 Alternative, the museum would be shielded from view. Thus, there would be no long-term effects to this viewshed. There is also the potential for minor/not significant short-term effects during construction if equipment is visible above the treeline.

*Jefferson Memorial – North/South Cross Axis*

The expansive view looking north from the Jefferson Memorial towards the Washington Monument includes the Tidal Basin in the foreground and a broken treeline beyond that reveals the White House in the distance. As referenced above, the maximum height of the structure for the Refined Pavilion 2 Alternative would be similar to that of the Pavilion Alternative, while the placement of the building on the site would be similar to the Refined Pavilion Alternative. With each of these alternatives, only a small portion of the structure would be visible through the trees (Draft EIS Figures 3.4.25 on page 3-133 and 3.4.31 on page 3-139). Due to the lack of visibility of the majority of the NMAAHC, long-term effects to this viewshed with the Refined Pavilion 2 Alternative would be minor/not significant. There is also the potential for minor/not significant short-term effects during construction if equipment is visible above the treeline.



### *Constitution Avenue View Corridor*

The view west along Constitution Avenue is framed by street trees. On the north side of the Avenue, buildings peak above the tree canopy, while on the south side the greenspace that comprises the Washington Monument Grounds and the National Mall are visible. Like the Refined Pavilion, the Refined Pavilion 2 Alternative would be located off of Constitution Avenue, closer to Madison Drive, thereby minimizing effects to this view (Draft EIS Figure 3.4.32 on page 3-140). Thus, there would be no long-term effect to this viewshed during the spring and summer months due to tree cover, and minor/not significant long-term effects during the fall and winter months when the leaves are off the trees. There would also be minor/not significant effects during construction due to the visibility of construction equipment. No mitigation measures would be required for views along Constitution Avenue.

### *14<sup>th</sup> Street View Corridor*

The existing view north on 14th Street from Independence Avenue is framed by mature street trees on either side of the right-of-way. Tall buildings line the corridor in the distance. Like the other action alternatives, the Refined Pavilion 2 Alternative would extend the building line one block to the south on the west side of 14th Street, thereby altering the perception of the intersection of the Washington Monument Grounds and the National Mall from points south. The placement of the building on the site would be similar to

the Refined Pavilion Alternative (Draft EIS Figure 3.4.33 on page 3-141), although it would be set back slightly further from 14th Street, thereby minimally diminishing the effect on the view. However, the building in the Refined Pavilion 2 Alternative would be slightly taller as depicted in the Pavilion Alternative (Draft EIS Figure 3.4.27 on page 3-135). Overall, short-term effects with the Refined Pavilion 2 Alternative would be moderate/significant during construction as a result of the potential visibility of construction equipment, and long-term effects to this viewshed would be major/significant.

### *15<sup>th</sup> Street View Corridor*

The view looking south on 15th Street is framed on both sides of the roadway by mature street trees. The Herbert C. Hoover building and the Washington Monument are partially visible through the trees on the east and west sides, respectively. The maximum height of the Refined Pavilion 2 Alternative would be similar to the Pavilion Alternative (see Figure 3.4.28 on page 3-136 in the Draft EIS); however, the building would be approximately 10 feet closer to 15th Street. While it would not obstruct the direct view looking south on 15th Street, it would substantially alter the perception of the Washington Monument Grounds as viewed from 15th Street. Long-term effects to this view would thus be major/significant. There is also the potential for moderate/significant short-term effects as a result of the potential visibility of construction equipment.

### *Night Lighting*

While the lighting of outdoor gathering and circulation spaces would be shielded to minimize glare, the placement of a museum on the parcel would transform a largely dark site at the edge of the Washington Monument to one with visible light at night. The extent of this effect will be more precisely clarified in future lighting studies that will depict lighting levels. These lighting studies will be approved by the review agencies (NCPC, CFA).

Like the Refined Pavilion Alternative, the overhang of the porch and southern water feature would project south beyond the historic 445-foot setback line, thereby narrowing night views looking west along the axis of the National Mall and altering the dark setting of the northern side of the Washington Monument. While the intent of the design is to select materials and finishes that minimize night glare and minimize the reflective qualities of the exterior building materials, there would be moderate/significant effects to night lighting as a result of the Refined Pavilion 2 Alternative.

### **B.3.5 Geology, Soils, and Groundwater Impacts**

#### **How would construction and operation of the Refined Pavilion 2 Alternative affect geology, soils and groundwater?**

Impacts that would occur during operation of the NMAAHC would be similar to those described for the Refined Pavilion Alternative in the Draft EIS. Given that the geologic, soil and groundwater conditions at the site would be the same as with the other alternatives, there would be no adverse impact on the stability of on-site or adjacent soils during construction or operation of this alternative. Because the Refined Pavilion 2 Alternative foundation would include drilled shafts, driven piles, basement floor slabs, and a permanent under-slab drainage system, there would be no long-term impact on the museum or adjacent building structures from groundwater. There would also be no significant impact on groundwater or groundwater quality.

### **B.3.6 Natural Resource Impacts**

#### **How would the construction and operation of the Refined Pavilion 2 Alternative affect the conservation of natural resources?**

##### **Open Space Resources**

The Refined Pavilion 2 Alternative would involve construction of a building with approximately 372,760 gross square feet of space on the project site. The building would cover approximately 59,136 square feet (approximately 25.3 percent) of the five-acre parcel site. However, because the below-grade footprint would be 142,890 square feet and given the engineering requirements for the site's soil and groundwater conditions, the majority of the site would be cleared, excavated and re-graded. An improvement over the four action alternatives, the Refined Pavilion 2 Alternative would reduce the size of the northern water feature and include a double row of elm trees along the sidewalk on Constitution Avenue. As a result, this alternative would only remove 22 trees from the site as compared with 38 trees with the other action alternatives. However, according to a recent arborist report (The Care of Trees, 2011), more than 50 percent of the trees evaluated, including six of the eleven trees along Constitution Avenue, are in fair to poor condition, suffering from trunk wounds, root damage, abnormal swelling, compacted soils, and signs of stress. Nevertheless, the

proposed removal of 14 mature trees from the project site would constitute a significant impact. The existing trees that would be removed measure an aggregate total of 493.5 inches in diameter at breast height (dbh).

Replacement of mature trees with one or more trees whose aggregate circumference equals the circumference of the mature trees to be removed would reduce the long-term adverse effect. As part of the landscape design for the Refined Pavilion 2 Alternative a total of 81 trees would be planted in clusters at the north, east and west sides of the building Corona, and within the plaza along Madison Drive. To replace the aggregate 493.5 inches dbh of all the trees lost due to development, the 81 new site trees included as part of the Refined Pavilion 2 Alternative would therefore have to average approximately 6.1 inches each. For this alternative, many of the 6-inch caliper trees that would be planted will mature to 14-to 16-inch dbh shade trees in approximately 8 to 15 years, depending on species and annual growing conditions. Initial monitoring and maintenance of the trees would be the responsibility of the landscape contractor; continued maintenance of the trees and site vegetation would be the responsibility of the Smithsonian Institution, as with other properties in the Smithsonian system.

Development of the Refined Pavilion 2 Alternative would reduce the total amount of open space located within the site from approximately 96 percent currently to approximately 75 percent.

Although converting the site from landscaped open space to development would result in a significant impact, the Refined Pavilion 2 Alternative would provide substantially more on-site open space than the other museums on the National Mall.

### **Site Performance**

The analysis of site performance is based on sustainability indicators. These indicators include: impervious surfaces, which affect stormwater runoff; energy conservation, as determined by green building measures; and energy conservation strategies.

In addition to occupying approximately 25 percent of the site with an above-ground building, the Refined Pavilion 2 Alternative would include a driveway, sidewalks, paths, water features, skylights and other hardscape features. On the south side of the site (National Mall side), the Refined Pavilion 2 Alternative would include a hardscape plaza and a shallow reflecting pool. Another water feature located on the north side of the site along Constitution Avenue would be a component of the site's water conservation and stormwater management treatment program. Including the building and other hardscape surfaces, approximately 42 percent of the site would be impermeable surfaces with the Refined Pavilion 2 Alternative, which is less than the 52 percent with the Refined Pavilion Alternative.

As with the other action alternatives, the Refined Pavilion 2 Alternative would comply with federal mandates and incorporate a number of sustainable features to minimize the adverse effects on water infiltration from additional impervious surfaces at the project site. It would be constructed to meet LEED Gold certification criteria, similar to the other action alternatives. Additional, sustainable design strategies would be implemented in order to improve the environmental impact of the construction and operation of the facility. The specific approach to sustainability would be finalized during detailed design and would include a comprehensive listing of the LEED points that could be obtained. At a minimum, compliance with federal mandates and LEED requirements would ensure that the Refined Pavilion 2 Alternative would not increase stormwater runoff from the project site.

In order to achieve the required number of LEED credit points, the Refined Pavilion 2 Alternative is also being designed to implement specific energy conservation strategies similar to the other action alternatives, including passive heating and cooling, comprehensive energy management, and the use of renewable energy. In addition, daylight would be brought into the west facing program areas on the concourse level and photovoltaic panels would be installed on the roof to capture solar energy. While operation of a museum would substantially increase energy demand at the site, compliance with federal mandates and LEED requirements would minimize impacts on energy use with the Refined Pavilion 2 Alternative.

## **Climate Change**

As with the other action alternatives, the operation of the Refined Pavilion 2 Alternative would increase GHG emissions compared to emissions from the temporary concession trailer that is currently operating on-site. The incremental contribution to climate change during its operation would be further reduced to no significant impact through project sustainability strategies. Although the Refined Pavilion 2 Alternative would not have a significant impact on air quality, the mitigation measures included in the Tier I final EIS would be carried forward.

## **B.3.7 Transportation Impacts**

### **How would operation of the NMAAHC affect traffic levels?**

#### **Roadways and Traffic**

Impacts on traffic levels with the Refined Pavilion 2 Alternative would be similar to those described for the other action alternatives. Because visitor levels would remain the same, future traffic volumes for the Refined Pavilion 2 Alternative would be the same as for the other action alternatives. As with the other alternatives, there would be no parking on site for visitors or staff. The projected vehicular trip generation would be derived from the projected annual visitor person trips (25 million) using the same trip assumptions as for the other alternatives. The circulation pattern would be similar to that described for the Refined Pavilion Alternative.

#### **Service and Loading**

As with the other alternatives, the service and loading area for the Refined Pavilion 2 Alternative would be located under the Corona with ingress and egress provided from 14th Street. Service access would be improved relative to the other action alternatives by increasing the setback from 14th Street to provide additional turning radii and pedestrian safety features. These provisions would enable the ingress and egress movements to occur without

significant vehicular and pedestrian traffic impacts. As with the other action alternatives, the addition of less than 15 delivery vehicles per day, generally during an off-peak hour, as part of the Refined Pavilion 2 Alternative would easily be accommodated at the 14th Street curb cut. Larger delivery vehicles would not operate during peak traffic hours, per an agreement with DDOT. In addition, delivery vehicles would represent less than 1 percent of the traffic on 14th Street during a given hour. The service access for the Refined Pavilion 2 Alternative would have no significant impact on the surrounding transportation system based on the planned service access, circulation and staging provisions.

The number of parking spaces would remain the same for the Refined Pavilion 2 Alternative and the use of these spaces would have no significant impact on service vehicle access and circulation, or the adjacent roadway network.

An informal commuter ridesharing collector point (slug line) and a Metrobus stop are currently located approximately mid-block on 14th Street between Constitution Avenue and Madison Drive within the NMAAHC site. Although the service access point for the Refined Pavilion 2 Alternative would not occur at the exact location of the slug line and Metrobus stop, service and loading activities could interfere with the ridesharing (slugging) and Metrobus loading and unloading activities. Relocating the Metrobus stop and slug line would minimize the potential impacts.

The Refined Pavilion 2 Alternative would increase the number of tour bus and school bus trips to the project area, as with the operation of the Refined Pavilion Alternative. However, given that the museum will open after the morning peak hour, and because most buses depart before the evening peak hour, these additional vehicle trips to and from the site would not have significant effect on area traffic volumes. As a result, the Refined Pavilion 2 Alternative would not have a significant impact on vehicular traffic during peak hour periods.

### **Pedestrian and Bicycle Access**

Pedestrian and bicyclist activity at the adjacent intersections and sidewalks would increase during operation of the Refined Pavilion 2 Alternative, as with the other action alternatives. DDOT recognizes that the intersection of Constitution Avenue and 14th Street is a high hazard location and has identified potential solutions that include improved signal visibility, timing and coordination, and upgraded pedestrian signage and pavement markings. The need for coordinated bicycle planning for privately owned and “bike share” bicycles on and around the National Mall will be addressed by NPS and DDOT. Overall, the Refined Pavilion 2 Alternative would not have a significant impact on external access routes or crossing volumes or patterns at adjacent intersections for pedestrians or bicyclists.

## **B.4 ADDITIONAL ISSUES**

Several issues were expanded upon in response to comments received on the Draft EIS. These topics included construction impacts, environmental justice, and cumulative impacts.

The impacts analysis of the Draft EIS focused primarily on the long-term operational impacts of the museum. Short-term impacts from construction were fully analyzed in the Tier I Final EIS and briefly revisited in the Tier II Draft EIS. A summary of short-term impacts is provided here in Section B.4.1. The issues relating to environmental justice communities and populations, and the potential cumulative impacts of the NMAAHC are summarized in Section B.4.2 and Section B.4.3, respectively.

### **B.4.1 Construction Impacts**

#### **What are the short-term impacts of the NMAAHC?**

Construction of NMAAHC is expected to start as early as late 2011 for site work and continue until the museum's opening in late 2015. During this time period, construction would include moderate and significant, adverse short-term impacts.

The Tier I Final EIS analyzed potential temporary impacts from construction activities related to the NMAAHC for resource topics including: cultural resources; aesthetics and visual resources;

geology, soils, and groundwater; surface water resources; air quality; noise; transportation; land use; visitor use and experience; communities and businesses; infrastructure and utilities; and public health and security. In many cases, it was concluded that potential impacts would be minimized due to the implementation of mitigation measures and Best Management Practices. The resources topics with identified construction impacts in the Tier I Final EIS are summarized below.

#### **Land Use and Visitation**

While the NMAAHC site would not accommodate public or recreational use during construction, significant impacts to land use and visitor experience are not anticipated during construction due to the abundance of adjacent recreational and concessions space available on the National Mall. Construction activities may lengthen pedestrian routes, increase noise and dust, and adversely affect a visitor's overall experience due to the aesthetic impacts of the construction area and the temporary closing of the sidewalks along 14<sup>th</sup> and 15<sup>th</sup> Streets, and Madison Drive. However, visitorship levels to the National Mall would not be expected to change. In addition, to minimize adverse impacts on visitor experience, the Smithsonian is considering establishing a visitor amenity facility to provide viewing portals of construction and display information on the museum, and plans to reopen the adjacent sidewalks prior to the end of the construction period.

### **Cultural and Visual Resources**

Construction impacts on cultural resources and aesthetic and visual resources would include moderate and major significant, adverse short-term impacts on the NMAAHC site and on the Washington Monument Grounds, including the loss of the existing visual character of the site (turf and existing trees). Additionally, short-term effects to cultural resources and aesthetics and visual resources would result from excavation activities and the stockpiling of construction equipment and materials as well as the loss of physical and visual access to the Mall and Washington Monument Grounds through the NMAAHC site.

### **Noise Levels**

Construction of the NMAAHC would cause short-term noise impacts due to intermittent noise-producing activities such as trenching, pavement removal and replacement, building foundation preparation (driven and drilled piles), and land excavation. Noise produced during construction would vary daily depending on the type of construction activity. D.C. noise regulations exempt individual pieces of construction equipment, but limit construction related noise (excluding noise from pile-drivers) to 80 dBA at 25 feet from the outer limits of the construction site from 7 a.m. to 7 p.m. on weekdays and to lower levels at all other times.

While noise produced by construction activities would occur and would be audible from adjacent properties, it would be temporary and would not exceed applicable noise standards because construction activities will adhere to D.C. noise regulations.



## Geology, Soils, and Water

Construction activities would result in short-term impacts on soils, resulting in soil disturbance and soil compaction, decreased soil productivity in disturbed areas, and an increased potential for erosion while soils are exposed. The construction of NMAAHC will extend below the depth of the groundwater table and therefore the NMAAHC design and specifications will include the use of construction techniques that limit the drawdown of groundwater outside of the site's cutoff wall.

The proposed building would be supported on a deep foundation system, as described on page 3-154 of the Draft EIS. In order to bear the loads from the major supporting elements of the building, deep foundations are required under the building cores and potentially under other major elements. Since the Draft EIS was prepared in 2010, several types of foundation systems, and the combination of systems, are currently being considered for use on the NMAAHC site including drilled shafts (caissons), driven piles, and mat slabs. Both the drilled shafts and the driven pile foundation systems are designed to transfer the building loads through the upper soils below the basement level of the building and into the decomposed rock or bedrock layer. The mat slab foundation is designed to distribute loads over large areas, but does not necessarily reach bedrock.

A drilled shaft, or caisson, system would drill shafts into the bedrock that would be filled with reinforced concrete to support the building. The shafts would extend into the rock material to a depth equal to the diameter of the shaft (a minimum shaft diameter is 36 inches), or to caisson drill refusal level.

A driven pile system would employ long steel columns in the shape of an H to support the building. These piles would be inserted into the ground until reaching bedrock using a hydraulic-powered vibratory hammer or a diesel-powered impact pile hammer. For the NMAAHC, a combination of methods would be utilized. The piles would be vibrated into the ground for the first two-thirds (2/3) of the depth (approximately 50 feet) and driven by impact for the last one-third (1/3) of the depth.

The mat slab system would employ poured-in-place, steel-reinforced slab of concrete approximately 3 to 5 feet thick on grade that acts as a foundation element due to its depth and ability to distribute loads over large areas. This foundation system is installed after building excavation and sits below a thick bed of gravel and an additional concrete slab that provides access to building components such as plumbing. Due to the depth of excavation, no drilling or driving to the bedrock is involved in the installation.

The driven piles could have a greater potential to cause ground vibration and noise impacts than the drilled caissons, however;

none of the foundation options would be noise or vibration free. The potential impact to existing adjacent structures due to driven piles is directly related to the intensity of the vibration, the thickness of the pile, the density of the soil, and the sensitivity of the adjacent structures. The impact of vibrations is addressed on a case-by-case basis, with particular attention given to the Washington Monument, the Monument Lodge, the Commerce Building, and the National Museum of American History. Pile driving in similar soil conditions typically results in less than three inches of surface settlement within about 25 feet of pile driving activities. Structures located within about 100 feet could be impacted as a result of pile driving activities and associated surface settlements. The distance between potential pile locations at NMAAHC and nearby historic structures greatly exceeds these localized impacts (the Washington Monument is more than 650 feet from the closest potential pile location).

The installation of drilled shafts generally does not produce significant vibrations; however, the installation of temporary shaft casing could produce localized ground vibrations and localized ground settlement around the shaft construction area. Drilled shafts create large volumes of spoils and may require dewatering. Contaminated soil and groundwater that may be encountered during the installation of drilled shaft foundations could require special handling, treatment, and disposal.

While driven piles are faster to install than drilled caissons, the installation of more piles would be required than caissons because piles don't have the same load-bearing capacity as caissons. The mat slab could only be employed on certain portions of the site for deeper portions of the building because it does not have the capacity to support the entire load of the building cores and requires soil bearing characteristics found only in deeper locations on the site. Each of the foundation systems or a combination of systems could be viable options to deploy on the NMAAHC site. Determination of the most appropriate system or systems is dependent on the proposed structural loads, soil conditions, and construction constraints such as sensitivity of adjacent buildings. The determination would occur in conjunction with a thorough pile testing program to be conducted on site, and monitored off site, prior to construction activity; no method of foundation that exceeds vibration limits will be implemented.

These short-term soil-related impacts would be minimized using appropriate mitigation measures. Specifically, the rigid SOE may reduce the vibrations associated with a deep foundation system. Therefore, construction activities at the NMAAHC site would not significantly alter the underlying geology, soils, or current groundwater conditions of the study area. The mitigation measures used to prevent increased soil erosion would also reduce the potential for adversely impacting off-site surface water quality.

## Utilities

Prior to construction, active utility lines would be rerouted, which would cause temporary disruptions to operations. There could also be temporary (but not significant) disruptions to utility services in surrounding buildings during linkup stages. Modifications to the utility network and potential changes to utility options would be avoided through best management practices and effective coordination with providers. According to the Tier I Final EIS, adequate utility capacity exists to service the NMAAHC site. More recently, multiple meetings have been held with utility providers to confirm in writing that service capacity is available. Ongoing coordination with electricity, water/sewer, gas, and communication providers, including PEPCO, DC Water, Washington Gas, and Verizon, respectively, is occurring to finalize facility demand calculations and the necessary applications and approvals. With respect to wastewater service, the museum will connect to the District's sanitary sewer system.

## Waste

Debris generated during construction would increase the amount of solid waste generated and collected at the existing site. However, consistent with LEED construction sustainability requirements, solid waste would be sorted and recycled if practicable. Subsequent solid waste disposal would be done by external contracting agencies at a collective landfill consistent with disposal regulations. Additional loads would not be significant in comparison to the larger disposal operations and the generation of construction debris and disposal would take place over a three-year period.

Hazardous waste generated during construction would be stored, transported, and disposed as per a hazardous waste disposal program conforming to applicable EPA and District regulations and thus there would be no significant construction impacts relative to waste collection and disposal. Overall, the construction of NMAAHC is not expected to generate significant short-term environmental challenges.

**Transportation**

Construction at the NMAAHC site would cause short-term impacts to vehicular traffic, pedestrian and bicycle traffic, and transit operations due to additional truck traffic associated with construction, as well as lane and sidewalk closures for the streets adjacent to the site. Although the sidewalk along Constitution Avenue would remain open to the public and adjacent streets would remain as unobstructed as possible, it is assumed for purposes of this EIS, that the adjacent sidewalks and one lane against the curb may be closed along 14<sup>th</sup> Street and 15<sup>th</sup> Street. The Smithsonian Institution is engaged in ongoing discussion with DDOT, NPS, and NCPC with the intention of limiting the need to close a lane on either 14<sup>th</sup> or 15<sup>th</sup> Streets during construction other than for replacement of the water line in the western-most parking lane of 14<sup>th</sup> Street.

In addition, because the majority of construction vehicles are expected to access the site from the south, the northern lane of westbound Madison Drive between 14<sup>th</sup> and 15<sup>th</sup> Streets, the bus drop-off area on the north side of Madison Drive, and the sidewalk on the north side of the drop-off area would be closed during construction of the museum. Therefore, through access for vehicles and pedestrians on Madison Drive would be restricted to one lane for most of the block with two lanes maintained at 15<sup>th</sup> Street for turning vehicles. As a park road, temporary modifications to Madison Drive would be reviewed by and coordinated with NPS.

Potential use of a truck access point at the northern end of 15<sup>th</sup> Street would also require approval by NPS.

While there would be as many as 300 to 400 trucks accessing the site each day during excavation (which generally lasts from 6 to 10 months), and up to 150 trucks each day during the remainder of the construction period, these numbers would not alter the levels of service on adjacent roadways. In addition, the traffic signals that were recently installed along Madison Drive will be maintained and will help construction vehicles exit and enter 14<sup>th</sup> and 15<sup>th</sup> Streets. Thus, the traffic impacts would be temporary and would not be significant on the roadway network surrounding the site.

Traffic disruptions while utilities are connected to the site would be short-term in nature and would last approximately 4 weeks for each separate connection. A utility line that would be installed primarily under 14<sup>th</sup> Street would require one lane to be closed along 14<sup>th</sup> Street for up to 4 months and periodic lane closures along Constitution Avenue and Madison Drive during the same time period. These impacts would be temporary and would not be significant on the surrounding transportation network.

During the majority of the construction period, pedestrian and bicycle traffic would be routed away from on-site construction hazards. While alternate routes exist, rerouting pedestrians would result in a major disruption for Mall visitors, particularly with respect to pedestrian circulation between the NMAH and the Washington Monument. However, the adjacent sidewalks along 14<sup>th</sup> and 15<sup>th</sup> Streets between Madison Drive and Constitution Avenue do not uniquely serve other destinations and thus would not result in an unreasonable inconvenience for pedestrians on 14<sup>th</sup> and 15<sup>th</sup> Streets. It is anticipated that the sidewalks and adjacent lanes along the perimeter of the site would be reopened for full circulation prior to the public opening of the museum.

Construction activities would be conducted in coordination with other agencies, including NPS and DDOT. Construction will also comply with applicable regulations and guidance to avoid safety hazards and minimize conflicts between pedestrian and vehicles, including the provision of temporary sidewalks and trained personnel to guide pedestrians away from the site and across 14<sup>th</sup> Street. As a result, no significant short-term effects to external security, public health, or safety are anticipated due to construction of the NMAAHC.

### **Cumulative Construction Impacts**

Given the potential overlap with other construction projects on the Mall, including security improvements to the Washington Monument and road work on Constitution Avenue, the construction of NMAAHC would have a short-term adverse cumulative impact on the Mall. Visitors to the Mall would be disrupted by construction activities, noise, and a temporary loss of visual quality.

### **Construction Management Plan**

The construction manager for the NMAAHC will be responsible for implementing a construction management plan, including a traffic control plan and a staging plan. Although the construction management plan has not yet been prepared, the general approach of the plan is summarized below.

The construction management plan will identify the specific locations of construction trailers and site access points, determine the location and duration of sidewalk and curb lane closures, and establish pedestrian rerouting measures – including providing appropriate signage, ensuring ADA accessibility, and coordinating vehicular traffic signal timing. The plan will be prepared in coordination with and approval by NPS and adjacent property owners (GSA). The plan will be used to maintain pedestrian safety and minimize longer walking times due to sidewalk closures. The plan will also address vehicular safety and timing.

Initial construction activity will include the installation of site perimeter barricades and fencing, as well as construction trailers. There could be view ports in the construction fencing to allow pedestrians to observe construction progress and the fencing could also be used as an opportunity to tell the museum story.

The perimeter fencing and the sidewalk closures along 14<sup>th</sup> and 15<sup>th</sup> Streets would help to reduce the potential hazards to pedestrians from construction operations and hoisting. However, the intent is to reopen those sidewalks as early as possible, preferably prior to the end of construction. The sidewalk along Constitution Avenue would remain open to the public to maximize the pedestrian flow along this side of the project, except for limited times during utility connections

Most of the construction materials and equipment would be delivered to the project site via Madison Drive and would enter near 14<sup>th</sup> Street and exit near 15<sup>th</sup> Street. The existing traffic lights would help to control access on Madison Drive to and from 14<sup>th</sup> and 15<sup>th</sup> Streets. To facilitate circulation around the site, trained flagmen would be used when appropriate to minimize interruptions to pedestrian and vehicular traffic. The delivery of materials would be restricted to early morning hours to the extent possible and the majority of deliveries would be scheduled in advance.

## B.4.2 Environmental Justice Issues

### Would the NMAAHC affect minority or low-income communities?

There are federal mandates that guide decisions related to environmental justice. The Tier I Final EIS examined the potential impacts that the proposed action would have on local communities and businesses in the area. This section summarizes that examination and provides additional information related to environmental justice. *Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* calls on federal agencies to take appropriate steps, to the greatest extent practicable and permitted by law, to identify and address disproportionately high and adverse impacts of federal projects on the health or environment of minority and low-income populations. *Executive Order 13045, Protection of Children from Environmental Health and Safety Risk* requires federal agencies to identify and assess risks to child health and safety from proposed actions that have the potential to disproportionately affect children.

The Tier I Final EIS used an economic model to evaluate the significance of the impact that the construction and operation of the NMAAHC would have on the identified region of influence. The Economic Impact Forecast System (EIFS) model was used for the socioeconomic analysis. It is a standard input-output model that

considers local economic multipliers to determine impacts from construction spending and incoming salaries on economic conditions in the region of influence (ROI). To determine the historical range of economic variation, the model calculated a rational threshold value (RTV) profile for the ROI.

As defined by the “Environmental Justice Guidance Under NEPA” (CEQ, 1997), “minority populations” include persons who identify themselves as Asian or Pacific Islander, Native American or Alaskan Native, black (not of Hispanic origin), or Hispanic. Race refers to Census respondents’ self-identification of racial background. Hispanic origin refers to ethnicity and language, not race, and may include persons whose heritage is Puerto Rican, Cuban, Dominican, Mexican, and Central or South American.

A minority population exists where the percentage of minorities in an affected area either exceeds 50 percent or is meaningfully greater than in the general population. Low-income populations are identified using the Census Bureau’s statistical poverty threshold, which is based on income and family size. The Census bureau defines a “poverty area” as a census tract with 20 percent or more of its residents below the poverty level.

## **Regional Environmental Justice Communities**

The ROI established in the Tier I Final EIS for analysis of potential effects on environmental justice includes the area in which the predominant socioeconomic effects of the NMAAHC would take place. The established ROI includes Washington, D.C. (District of Columbia), where the NMAAHC would be constructed and the inner counties and cities in the Washington, D.C. metro area, including: Montgomery County and Prince George’s County located in MD; Fairfax County and Arlington County located in VA; and the independent cities of Alexandria, VA, Falls Church, VA, and Fairfax, VA.

According to the Tier I EIS, economic development within the ROI is expected to remain strong with continued development opportunities across multiple sectors. The counties and cities in the ROI have median household incomes that are substantially higher than the state and national averages except for Washington, D.C.

### *Washington, D.C.*

In the District of Columbia, the 2000 census estimated the City’s population at 581,530. Historically, the City’s population has been declining as residents have moved to surrounding Maryland and Virginia counties. However, according to the 2010 census, the City’s population increased to 601,723, primarily from the in migration of white households. Based on the 2010 population characteristics, the

District of Columbia’s minority population has decreased to approximately 65 percent.

### *Montgomery County, MD*

The Montgomery County, MD population was estimated at 941,777 in 2005. It has experienced rapid population growth in recent years and while it is expected to continue to grow, it is expected that the growth rate will slow. The county’s population per the 2010 census was 971,777. It is the second most populous county in the ROI. The minority population of Montgomery County is approximately 50 percent.

### *Prince George’s County, MD*

The population in Prince George’s County, MD per the 2010 census is 863,420 and it is one of the most affluent predominantly African-American counties in the United States. It is the least densely populated county in the ROI. Based on population characteristics from 2010, Prince George’s County’s minority population is approximately 85 percent.

### *Arlington County, VA*

Arlington County has an estimated population of 207,627 according to the 2010 census and is the third most densely populated area in the ROI. It has experienced moderate growth in comparison to the rest of the ROI. The minority population of Arlington County is approximately 36 percent.



*City of Alexandria, VA*

The City of Alexandria had an estimated population of 128,932 in 2003. While it is the third least-populous area of the ROI, it is second most dense. It experienced strong growth between 1990 and 2000, and while growth is expected to remain strong, it is projected slow, similar to the rest of the ROI. The city's population was 139,966 per the 2010 census, including approximately 46 percent minority.

*City of Falls Church, VA*

Falls Church had an estimated population of 10,377 in 2000. It has experienced moderate growth in comparison to the rest of the ROI and is the fourth-most densely populated area in the ROI. The city's population was 12,332 per the 2010 census, of which approximately 26 percent is minority.

*City of Fairfax, VA*

The City of Fairfax had an estimated population of 21,498 in 2000. It is the fifth most densely populated area in the ROI and had the slowest growth rate in the ROI. The city's population was 22,565 per the 2010 census, including a minority population of approximately 39 percent.

*Fairfax County, VA*

Fairfax County, VA is the most populous area in the ROI with a population estimated at 1,010,443 in 2005. It experienced the strongest growth rate in the ROI from 1990 to 2000; however, like the rest of the ROI, its growth is expected to decline in the future. The county's population per the 2010 census was 1,081,726. The Fairfax County minority population is approximately 45 percent.

**Environmental Justice Communities in the Vicinity of the Project Site**

The minority populations within a two-mile vicinity of the project site are depicted in Figure B.4.1. The majority of the land within one-half mile of the NMAAHC project site is comprised predominately of federal land uses including the National Mall, the White House, and federal office buildings. Due to the nature of the land use, the census tracts that are made up of federal land uses have negligible residential populations (less than 50 people recorded in a census tract). These areas were not considered in the environmental justice analysis and are denoted with no shading in the center of Figure B.4.1. The analysis conducted in the Tier I EIS, and updated in this Final EIS, found that although there are poverty and extreme poverty areas within the ROI, none are adjacent to, or within one-half mile of, the NMAAHC site.

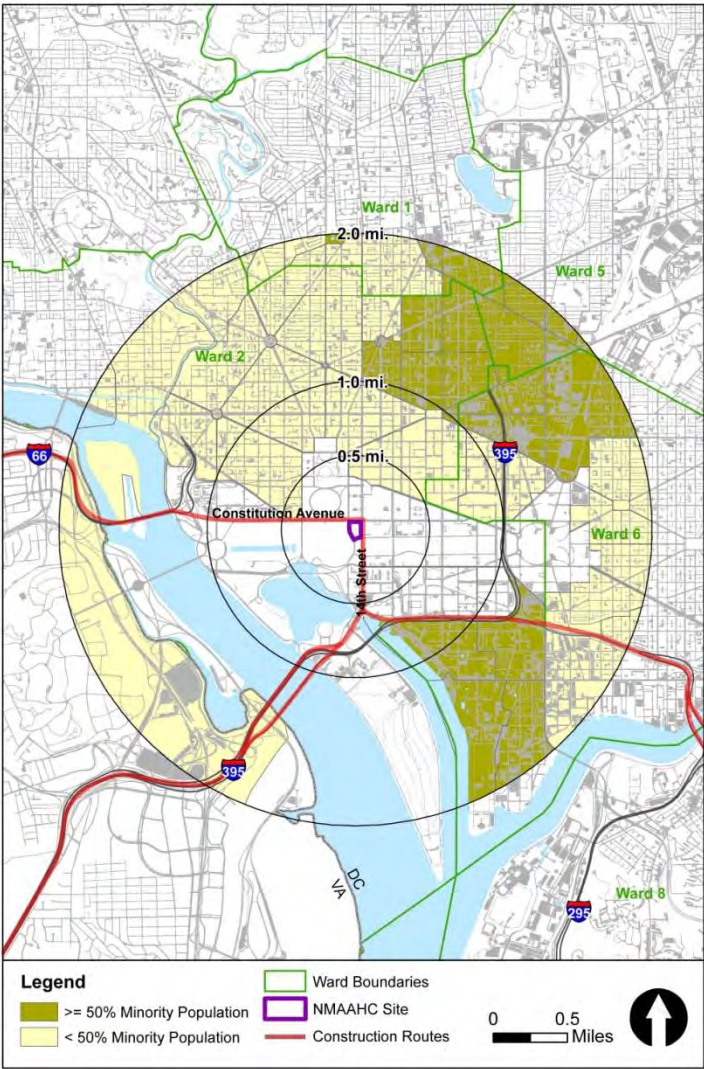
According to the 2010 census data for the District of Columbia, the minority population is less than 50 percent of the population within one-half mile of the NMAAHC project site. The downtown residential population is located north of the National Mall in the northwest quadrant of the District. This area is also predominately made up of office buildings and high-end condominiums, so negligible impacts on low-income populations would be expected.

Between one-half mile and one mile from the NMAAHC project site, minority populations greater than or equal to 50 percent of the population are located south of the site. These populations are located south of I-395 in the former urban renewal area of southwest Washington. Minority populations greater than or equal to 50 percent of the population are also located between one and two miles from the NMAAHC project site. These minority populations are primarily located east of 14<sup>th</sup> Street, NW, to the north and in the Near Southeast area to the south of the site (Figure B.4.1).

### **Environmental Justice Communities Located Near Construction Routes**

The Smithsonian Institution is preparing a construction plan that will address a range of construction activities, including best management practices, stockpiling of materials, and removal of contaminated soils from the site. Soil loads would be covered with tarps and trucked from the site using roadworthy registered dump trucks to the selected disposal site. The construction plan will also describe the routes construction vehicles will take to and from the site and the disposal site, which would be primarily via highways or interstates and major arterial roads.

For construction projects in the central core of Washington, these truck routes typically include Interstate 395/US Route 1 (14<sup>th</sup> Street Bridge); Interstate 395/Southeast Freeway (11<sup>th</sup> Street Bridge); and Interstate 66/Constitution Avenue (Theodore Roosevelt Bridge). As indicated on Figure B.4.1, these high-volume, arterial routes do not travel through environmental justice communities. As a result, construction of NMAAHC would not adversely affect environmental justice communities.



**Figure B.4.1 Location of Minority Populations Greater Than or Equal to 50 Percent of the Population Near the Project Site**  
*Source: AECOM 2011; U.S. Census 2010*

**Environmental Justice Conclusion**

According to the Tier I analysis, the construction and the operation of the NMAAHC facility would not significantly impact local economic development, demographics, or housing, would not further burden community services such as schools, fire and rescue services or hospitals and it would not significantly impact environmental justice populations or children. Based on the updated Tier II analysis, it can be concluded that the construction and operation of the NMAAHC facility would not have a significant impact on environmental justice.

### **B.4.3 Cumulative Impact Issues**

#### **What are the cumulative impacts of the NMAAHC?**

There are a variety of recent, ongoing, and future projects that could contribute to cumulative impacts for the NMAAHC. These other projects include new attractions and destinations, facility and physical improvement projects, and roadway projects.

As discussed in the Tier I EIS, construction of the Martin Luther King, Jr. Memorial, the American Veterans Disabled for Life Memorial, the Dwight D. Eisenhower Memorial, and the Vietnam Veterans Memorial Education Center would alter the visitor experience by creating new commemorative works and visitor destinations on the National Mall. Impacts on visitor use and experience; however, is not limited to the addition of new attractions. Circulation patterns, accessibility, visual and aesthetic quality would also affect visitor use. In addition, visitors come to the National Mall and surrounding area for different reasons and experience the Mall in different ways, resulting in a variety of potential impacts on land use, visitor experience, historic and visual resources, and transportation.

In addition to the projects discussed in Tier I, a number of physical improvement projects were described in the Tier II Draft EIS (see the detailed list provided in Table 1.1 on page 1-22 of the DEIS) Based on that updated list, the following projects would also affect

visitor experience by improving the existing facilities on the Mall: the Washington Monument Permanent Security Improvements, the Potomac Park Levee, the DC War Memorial Rehabilitation, the Lincoln Memorial Reflecting Pool, the Thomas Jefferson Memorial Plaza and Seawall Improvements, the NMAH Public Space Renewal Project, the Department of Commerce National Aquarium Entrance, and the potential reuse of the Arts and Industries Building and the Jamie L. Whitten Building. The National Mall Turf rehabilitation, the Centennial Initiative/Wayfinding and New Pedestrian Guides, and the completion of the NPS planting plan for the Washington Monument Grounds would result in a beneficial cumulative impact on visitor experience as they seek to restore the aesthetic nature and increase accessibility of the Mall.

Roadway improvement projects in the immediate area, including the separation of bicycle and vehicular lanes on Madison Drive, 15<sup>th</sup> Street, and Constitution Avenue, would result in cumulative, long-term impacts to site access and circulation for visitors wishing to bike to, from, and around the National Mall. Improving the Mall's grass and turf would enhance its visual quality, while placement of park furniture would enhance the visitors' experience (NPS, 2010).

Tourists who are visiting the Mall for the Smithsonian museums would see an overall beneficial cumulative impact to their visitor experience because of the new cultural destinations in proximity to NMAAHC. The addition of a museum with new subject matter would

also increase the educational breadth of the visitors' experience. However, due to increased visitorship levels, there would be potential negative impacts on visitors to the National Mall who are seeking a more reflective, contemplative experience at nearby memorials. Similarly, there would also be potential negative impacts on visitors who are using the National Mall for active recreation or public gathering because the aggregate placement of destinations on the Mall and loss of flexible open space would reduce options for First Amendment demonstrations and special events. This would result in significant negative impacts from the irretrievable loss of open space and the ability to practice these rights.

### **Cumulative Impacts Summary**

Overall, the cumulative impacts of the Refined Pavilion 2 Alternative would be similar to those for the other action alternatives, as described in the Tier I Final EIS and the Tier II Draft EIS. These cumulative impacts would include:

- land use – cumulative impacts due to the loss of flexible open space;
- visitor use and experience – cumulative impacts for those visitors seeking a contemplative experience or space for First Amendment demonstrations;
- historic resources – cumulative impacts due to changes in historic views and vistas, visual character, spatial organization, and historic land use, circulation patterns, topography and vegetation, and effects on the Plan of the City of Washington;
- visual resources – cumulative impacts due to night lighting;
- conservation of natural resources – cumulative impacts due to permanent loss of open space; and
- transportation resources – cumulative impacts due to pedestrian safety.

This page is intentionally left blank

## C. COMMENTS AND RESPONSES



This page is intentionally left blank



## **C.1 SYNTHESIS OF REVIEW COMMENTS AND RESPONSES**

Written comments on the Draft EIS were received from public agencies, organizations, and individuals during the 60-day review period that began November 12, 2010, and ended January 11, 2011. Oral comments on the Draft EIS were received during two public meetings held on November 17, 2010, at the National Museum of American History in the Carmichael Auditorium and on January 6, 2011, at the National Capital Planning Commission. All Draft EIS comments received during the review period were reviewed to identify relevant and substantive comments, including comments that provided different opinions or conclusions than those documented in the Draft EIS.

This section summarizes and responds to the substantive comments on the Draft EIS, as well as questions addressing the project overall. Similar comments received from multiple reviewers have been combined into a single comment. The verbatim comments are provided in Section C.2.

The comment topics are ordered generally in the format of the Draft EIS. Comments pertaining to typographical errors, erroneous factual information, or minor points of clarification are addressed in *Errata, Section E*.

## **1.0 General Issues**

### **1.1 What is the size of the NMAAHC building relative to the other Smithsonian museums on the Mall?**

**Response:** Examples of comparably-sized Smithsonian museums based on the ground floor square footage, site area square footage, lot coverage, and open space were provided in Table 3.2.1 Relevant Footprints and Lot Coverages in the Draft EIS. The NMAAHC is within an acceptable range of size and lot coverage as compared to other buildings on the Mall. With respect to overall size, NMAAHC would be smaller than the National Air and Space Museum and larger than the National Museum of the American Indian (NMAI) in total square footage.

### **1.2 This building is out of place. The current design is not the right fit for the site that has been selected. The current design of the NMAAHC does not adhere to the requirements of the project plan, most notably, the requirement that specifically states that the building must respect the Washington Monument and related historical buildings in proximity (particularly the Federal Triangle and the White House). The design does not respect the integrity of the Mall and the Washington Monument Grounds and the size, shape, materials and color of the NMAAHC do not belong on the National Mall. Please provide a more suitable design that is more cohesive with its surroundings.**

**Response:** The architectural design of the museum has evolved from the design concept that was selected as a result of the NMAAHC design competition in 2009. It has been modified to respond to the requirements of the Smithsonian Institution and in response to review comments by approval agencies, Section 106 consultation, and the NEPA public comments.

The Smithsonian Institution, in consultation with review agencies and other consulting parties, will continue to develop the design of the museum so that it is compatible with its context. It should be noted that the context for the NMAAHC, the National Mall, includes museums and other buildings that are extremely varied in size, shape, and material.

Continued design evolution will occur pursuant to Section 106 regulations, which encourage early and regular 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 consulting parties consist of the following agencies and organizations: Smithsonian Institution, 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, Capitol Hill Historical Society, Afro American Historical and Genealogical Society, and Association for the Study of African American Life and History.

With respect to the site, the National Museum of African American History and Culture Act, P.L. 108-184, which was enacted by the Congress to establish a museum within the Smithsonian Institution to be known as the NMAAHC, the Act required the Smithsonian Institution Board of Regents to select a final site from four identified options. After undertaking a site evaluation study and consultation with parties specified in the legislation, the Board of Regents of the Smithsonian Institution voted to select the present site. The decision by the Smithsonian Institution Board of Regents completed the site selection process as directed by Congress in the NMAAHC Act.

**1.3 What are the current designs for the Corona? Will the Corona screens be functional and can they be opened and closed? Are they free-standing or attached to the building?**

**Response:** 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 screens would be functional because they would provide shade. They would not open or close. The Corona skin has been developed to include openings in the façade to allow views of the surrounding landscape and specific historic resources.

The Corona would be attached to the building. The structural design of the Corona features a series of angular metal panels hung from the top of the façade. The space between the metal Corona panels and glazing was developed to allow for cleaning and maintenance of the façade system.

- 1.4 The original design had discussed possible physical connections with the NMAH using a pedestrian tunnel. Is this still the case? The tunnel could be a simple underground path, similar to that at the National Airport, which could have a glass casing over the top or some type of terrace to allow light in. This would be similar to the pathway from the East Wing to the West Wing of the National Art Museum. It would provide a beneficial way to come to the museum, particularly in inclement weather. A tunnel would also alleviate pedestrian congestion at street level.**

**The historical significance between American history and African American history should be made evident in the architecture. A tunnel would allow programmatic opportunity for audio experiences in the tunnel with walls as a mural to show the progression of African-American history. If an underground visitor center is going to be built at the Washington Monument, this is another opportunity to link the Washington Monument with the NMAH and the NMAAHC underground.**

**Response:** The Smithsonian Institution is not planning to include a tunnel between the NMAH and the NMAAHC. Practicality and cost are two issues, but most importantly, a tunnel would not be consistent with the need for an independent museum and the desire for an above-ground visitor approach and experience, particularly the experience of symbolically crossing water for visitors coming to the NMAAHC.

The NPS is preparing an environmental assessment that will analyze permanent security improvements at the Washington Monument, but no connections to NMAAHC are contemplated.

**1.5 There is only cursory mention of the agency collaboration related to future decisions on the design (i.e., through programmatic agreements in the NHPA 106 process and other agency approvals). This should be better described in the FEIS.**

**Response:** In response to this comment, an expanded description of the agency collaboration related to future decisions regarding the design is provided in Section A.3 of this Final EIS. As described in Section 1.3 of the Draft EIS (p. 1-5), the key review agencies include the National Capital Planning Commission (NCPC), the U.S. Commission of Fine Arts (CFA), and the National Park Service (NPS).

Certain Smithsonian Institution projects in Washington DC are subject to review by NCPC, the central planning agency for the federal government in the National Capital Region. Because the Smithsonian Institution is not a federal agency for the purposes of NEPA, it is following NCPC's NEPA guidance which requires applicants to prepare the necessary NEPA and NHPA Section 106 documents. NCPC will make an independent evaluation of the NEPA and NHPA documents.

CFA was established in 1910 in part to guide architectural development in areas of Washington DC. For NMAAHC, CFA reviews the building design and serves as a consulting party in the Section 106 process.

Because of NPS's role in managing this property and managing the open space and monuments on the National Mall surrounding the NMAAHC, NPS is a cooperating agency during the EIS process and a consulting party in the Section 106 process. Administrative jurisdiction of the property was transferred from NPS to the Smithsonian Institution on June 1, 2007. NPS continues to operate the site as a public recreation resource and parkland until construction of the NMAAHC commences.

Design review meetings with the consulting parties and review agency staff will continue as designs are finalized in accordance with the Programmatic Agreement. Submittals will be made to NCPC and CFA for preliminary design review and final design review.

**1.6 The document lacks a clear roadmap as to how decisions presented in the Draft EIS were made (regarding alternatives).**

**Response:** For a complex project such as the NMAAHC, which involves multiple review agencies, extensive input from consulting parties, and two tiers of environmental review, the decision-making regarding alternatives is multi-faceted and must be presented in several ways. In many respects, the development of alternatives reflects the evolution of the building's design, from the original principles through a series of concepts to the Refined Pavilion 2 Alternative (Preferred Alternative). As a result, each stage of decision-making generally is described in separate sections of the Draft EIS. However, in response to this comment, several passages have been included in Chapter B that address the design rationale for key design decisions (for example, see Section B.1.5 Building Placement Rationale).

The evolution of the museum design from the original Tier I principles to the refined Tier II design principles to the series of alternative design concepts is provided in Chapter 2 of Draft EIS. In particular, see Section 2.3.1, *Application of Design Principles* (page 2-4 of the DEIS), and Section 2.2.2, *Ongoing Consulting Parties Participation* (page 2-7 of the DEIS). In addition, the discussion of how building placement, building proportions, and museum programming expression concepts in the early schemes evolved into the more advanced alternatives is provided in Section 2.5, *What Other Design Concepts Were Evaluated?* (page 2-50 of the DEIS). Lastly, the evolution of the design is provided in Section B 1.1, *Evolution of the Preferred Alternative* in this Final EIS.

Specific elements that served as a basis for design development were also included in the Draft EIS. The Refined (Tier II) Design Principles were used to guide the development of the alternatives and were included in Section 2.1.1 of the Tier II Draft EIS (page 2-1). The Tier I Final EIS principles were included in Appendix 9.1 of the Tier II Draft EIS. Additionally, Appendix 9.3 of the Tier II Draft EIS provides a summary of the Section 106 effects analysis that included input from NCP, the U.S. Commission of Fine Arts, the D.C. Historic Preservation Office, the ACHP, and other consulting parties. Please see the response to comment 1.5 for a discussion regarding the lead agencies and related review agencies.

**1.7 After the EIS process is completed will there be opportunity for refinements to the design?**

**Response:** While there have been numerous opportunities to provide input on the concept designs and schematic designs for the museum to date, opportunities for public input into refinements to the design will be more limited after the EIS process is completed. This is because the conclusion of the EIS process will coincide with the completion of the schematic design phase of the museum. The opportunities for continued input will include provisions for certain ongoing consultations expected to be included in the proposed Section 106 Programmatic Agreement, as well as opportunities for formal public comment during additional preliminary and final reviews by CFA and NCPC.

## **2.0 Introduction and Background**

**2.1 A multi-year construction project adjacent to the grounds of the Washington Monument would have adverse impacts on visitor use, traffic and transportation, aesthetics and viewsheds. There are a few instances in the Tier I EIS where impacts during construction are referenced (Planning Policies, Historic Resources, Geology, Soils and Groundwater). However, a summary of these finding should accompany the Tier II discussion. The Tier II EIS should not assume that the reader has a copy of the Tier I EIS and is cross-referencing it as they read the Tier II document.**

**Response:** The Tier I Final EIS fully analyzed potential impacts from construction activities related to the NMAAHC for the full range of resource topics, including: cultural resources; aesthetics and visual resources; geology, soils, and groundwater; surface water resources; air quality; noise; transportation; land use; visitor use and experience; communities and businesses; infrastructure and utilities; and public health and security. In many cases, it was determined that potential impacts would be minimized through the implementation of mitigation measures. During the Tier II EIS scoping process, a number of resource topics were eliminated from further study, including: air quality, archaeological resources, communities and businesses, infrastructure and utilities, noise, public health and safety, surface water resources, and threatened and endangered species (see Section 1.8.1 on page 1-15).

In response to this comment, a summary of potential short-term impacts from construction of the NMAAHC is provided in Section B.4.1 of this Final EIS. In addition, these short-term impacts are briefly discussed below.

The potential construction impacts on cultural resources and aesthetic and visual resources would include significant and moderate adverse short-term impacts on the NMAAHC site and the Washington Monument Grounds, including the loss of existing open space. These short-term impacts would result from activities such as excavation, stockpiling, the movement and storage of on-site construction equipment and materials, as well as the loss of physical and visual access to the Mall and Washington Monument Grounds through the NMAAHC site.



Construction activities would result in soil compaction, soil layer structure disturbance and modification, decreased soil productivity in disturbed areas, and an increased potential for erosion while soils are exposed. The construction of NMAAHC would likely go below the depth of the groundwater table and therefore the NMAAHC design and specifications includes the use of construction techniques that limit the drawdown of groundwater. Construction activities at the NMAAHC site would not significantly alter the underlying geology, soils, or current groundwater conditions of the study area. The mitigation measures used to prevent increased soil erosion would also reduce the potential for adversely impacting surface water quality.

Short-term noise impacts would result from noise-producing activities such as trenching, pavement removal and replacement, land clearing, and foundation and building construction. The noise produced by these events would not be expected to last for prolonged periods, nor exceed applicable noise standards because construction activities would be temporary and would adhere to D.C. noise regulations.

Short-term impacts on vehicular traffic, pedestrian and bicycle traffic, and transit operations would occur due to additional truck traffic associated with construction, lane closures and sidewalk closures. During construction, safety hazards would need to be minimized by routing pedestrian and bicycle traffic away from the construction. Short-term impacts on public safety could occur if users must take alternate routes and incur increased conflict with cars. While there would be substantial disruption to localized pedestrian and vehicular circulation, there would be no significant impacts on the transportation network surrounding the site. Construction activities would be conducted in compliance with the applicable regulations and guidance and no significant effects on external security, public health, or safety are anticipated.

**2.2 The plan relies upon the Environmental Justice assessment conducted in the Tier I document as a basis for the assessment in this document. The Tier I document has determined that, " the construction and operation of the NMAAHC facility would not significantly impact local economic development, community services such as schools, fire and rescue services or hospitals and it would not significantly impact environmental justice populations or children." The complexity of this project makes it imperative that the assessment examine the potential for impacts upon communities of concern from the standpoint of risk, exposures to fugitive dusts, traffic related impacts, noise, business and transportation disruptions, utilities service disruptions, and other services that may impact the populations in the study area. There were questions and concerns expressed previously regarding the identification of at-risk populations, the assessment and identification of impacts, and the localization of given impacts in a manner that allows for the assessments of multiple impacts or exposures occurring in a given locality during the construction of this facility.**

**Response:**

In response to this comment, a discussion of the considerations relating to environmental justice concerns is provided in Section B.4.2 of this Final EIS. In particular, this section examines the potential effects of construction and operation of the proposed NMAAHC museum on low-income and minority populations. Analyses conducted in the Tier I EIS, and updated in this Final EIS, found that although there are poverty and extreme poverty areas within the ROI, none are adjacent to, or within one-half mile of, the NMAAHC site. As a result, the NMAAHC would not have a significant impact on environmental justice communities.

Please see the response to comment 2.1 above and Section B.4.1 of this Final EIS for further discussions of temporary construction impacts for the NMAAHC building.

### 3.0 Alternatives Analysis

3.1 The document is silent regarding the decision to include a penthouse suite. In addition, as stated in the Draft EIS.... "As long as the Tier II concept designs fit within the physical envelope defined by the Tier I Build Alternatives and conform to the design principles developed in Tier I, it will be unnecessary to revisit, in Tier II, the analysis of effects resolved in Tier I." The preferred alternative in the Tier I FEIS set the maximum building height at 105 feet. The Tier II Draft EIS introduces a penthouse structure that was not analyzed in the Tier I EIS. This penthouse is an element common to all alternatives and under each alternative surpasses the Tier I EIS's maximum build height of 105 feet. The total height of Alternative 1 is 121.5 feet; Alternatives 2 and 3 are 119.5 feet; and Alternative 4 is 106 feet. While the Draft EIS vaguely analyzes the impacts of the penthouse in terms of where it was placed on the structure, it remains entirely silent on what visual impacts are created by the additional height of these alternatives. Because the penthouse was never analyzed in the Tier I EIS, and maximum height was assumed at 105 feet, it must be assumed that analysis of the additional height was omitted in error; that the impacts will be thoroughly analyzed in the Tier II FEIS, and that mitigations would be developed to lessen any additional impacts that will occur.

**Response:** The Tier II Draft EIS thoroughly analyzed the heights of the action alternatives through a historic resources evaluation, which considers historic views and vistas, and by conducting a visual resources analysis, which includes the visual character of the site, urban design/architectural context, key urban viewsheds, and night illumination. Based on this analysis, the Refined Pavilion 2 Alternative (Preferred Alternative) reaches a maximum height of approximately 115.5 feet above grade, including a maximum height of 109 feet of habitable space above grade. Therefore, the Refined Pavilion 2 Alternative is in compliance with the 1910 Height of Buildings Act.

Furthermore, the Tier I EIS set the mean height of the building at 105', not the maximum height of the structure. The Tier I issues relating to building height are addressed below.

For most buildings, the relevant dimension with respect to apparent visual height is the cornice line, parapet, or top of the façade. For the NMAAHC, the top of the Corona, which projects outward from the building, is equivalent to a cornice line because the penthouse would be set back from the edge of the building. The Corona height above grade for the Plinth, Plaza, Pavilion, and Refined Pavilion Concepts were 105', 105', 103', and 96', respectively. The Corona of the Refined Pavilion 2 Alternative would have an apparent height that is approximately 96.5 feet above grade and approximately 113 feet above sea level, which would be consistent with the top of the facade of the Commerce Building, which is also 113 feet above sea level.

With respect to the penthouse/5<sup>th</sup> floor, the Tier II Draft EIS fully evaluated the height and visual impacts of the penthouse in each alternative. The decision to include a penthouse level extending above the height of the Corona was made early during the Concept Design phase to help offset placing a majority of the museum's space below grade (59 percent with the Refined Pavilion 2 Alternative) and to maintain the program while minimizing the impacts of the building's above-grade mass. The penthouse was included in each of the four alternative designs (Plinth, Plaza, Pavilion and Blended) presented to CFA and NCPC at the initial information presentations made in April 2010 and shared at that time in meetings with the Consulting Parties. The penthouse is advantageous as a discreet means to accommodate museum staff offices and meeting space, and to mask such elements as stairs to the roof, mechanical equipment and elevator shafts within a clean mass, particularly when viewed from the top of the Washington Monument.

The penthouse/5<sup>th</sup> floor initially covered an asymmetrical portion of the roof of the main Corona. In later designs, including the Refined Pavilion 2 Alternative, the decision was made to have a larger penthouse more symmetrically placed on top of the Corona to respond to consulting parties' concerns about the symmetry of the building and its roof, as well as to provide daylight and views for staff working in the museum. A terrace would run the entire length of the penthouse level on the south side of the building. The penthouse and terrace would not be open to the general public. The design team has explored the use of a roof that would match the character of the Corona to provide cover for the terrace.

In addition to the apparent building height discussed above, the Tier I EIS recommended that the mean or average height of the building should be 105 feet above grade. Also, as presented in the Tier I EIS, and referenced in the Tier II Draft EIS, the following urban design principle goals apply to the NMAAHC:

- The NMAAHC's mean height will not exceed the height of the tallest museum building on the Mall (the National Gallery of Art East Building) or the cornice height of the Commerce building immediately opposite the NMAAHC site, both about 105'.
- The NMAAHC building will have a minimum height that is not out of character (too horizontal) with its surroundings.
- The characterization of "mean height" will allow for building-height variation. Domes, penthouses, or architectural embellishments may exceed that height.

Because architectural embellishments can exceed the overall building height, the mean height of the building would be the average of the occupied levels. Thus, since the habitable penthouse covers 85 percent of the building and measures 109 feet above grade, while the Corona covers 15 percent of the building and measures 96.5 feet above grade, the mean building height calculates to approximately 107 feet above grade. The two-foot difference with the Hoover building would be indistinguishable; in addition, the top of the façade of the Hoover building and the top of the Corona would both be approximately 113 feet above sea level. This minor deviation from the Tier I design parameter is primarily the result of guidance provided by review agencies to ensure a more elegant profile for the building. In addition, the goal is to further reduce the total building height to a level that does not exceed the 126-foot height above sea level of the Department of Commerce Building.

**3.2 The movement towards a smaller building mass in the NMAAHC alternatives' analysis is wise.**

**Response:** The Plinth, Plaza, Pavilion, and Refined Pavilion Concepts included Coronas that were measured at 233' x 233', 225' x 225', 237' x 237', and 210' x 210', respectively. This evolution of the concept design did result in a smaller building mass. However, as the concept design has advanced into a more detailed schematic design, the Corona size has further evolved to accommodate structural and functional systems and circulation within the Corona structure. Therefore, the base of the Corona for the Refined Pavilion 2 Alternative would extend an additional 5' on all four sides as compared with the Refined Pavilion Alternative. As a result, the Refined Pavilion 2 Alternative analyzed in the Final EIS assumes a 220' x 220' Corona as a maximum size, although the designers are currently working to reduce the size of the Corona to no more than 216 feet x 216 feet.

**3.3 How much of public exhibit space in the Preferred Alternative will be below ground?**

**Response:** Due to site and building height restrictions, the percentage of the below-ground prescribed program space has increased with each new concept design. Approximately 59 percent of the programming space for the Refined Pavilion 2 Alternative would be below ground, which is approximately 14 percent higher than the Plinth and Plaza Alternatives, 10 percent higher than the Pavilion Alternative and 2 percent higher than the Refined Pavilion Alternative. However, while the below-ground space includes a theater, cafeteria, and history galleries, none of the public exhibit space would be located below ground.

### 3.4 Visitor accessibility benefits from both a north and south entrance.

**Response:** The benefits of both a north and a south entrance were considered in selecting the Preferred Alternative, which incorporates two entrances at the same level, as did several of the action alternatives analyzed in the Draft EIS.

For the Refined Pavilion 2 Alternative, the main public entrance would continue to be on the south (National Mall) side of the building, which is composed of a 49-foot deep porch that extends the width of the building, a central water feature, and a sloped open space that extends to the Madison Street sidewalk. The public entrance on the north side of the building would include a water feature parallel to Constitution Avenue, two broad sweeping pedestrian circulation paths, and an oculus in the landscape.

### 3.5 There are no architectural renderings of how the museum will be protected. What are the security requirements and designs for the proposed NMAAHC?

**Response:** In response to this comment, a figure has been added to the Final EIS to specifically depict perimeter security for the Preferred Alternative (see Figure B.1.7). In addition, perimeter security is discussed in Section B.1.7 of this Final EIS and summarized below.

The NMAAHC facility has been designed to adhere to the requirements of the Smithsonian Institution Security Design Criteria dated 27 March 2009, as well as the Security Site Threat Risk Assessment, dated 22 June 2009. Many of the provisions within these security criteria documents are adapted from the Interagency Security Committee (ISC) Security Design Criteria for New Federal Office Buildings and Major Modernization Projects, dated 29 September 2004. These criteria are intended to reduce the hazard to occupants. One of the primary threats that must be addressed at the concept stage is that of an explosive device or bomb blast. The goals of the specific provisions to address this threat are to provide an increased setback from the street curb, reduce the potential for progressive collapse, reduce the hazard of impacts from

flying debris, isolate occupants from direct blast pressures, maintain critical life support facilities, and aid in the rescue of victims. A combination of technical and operational security is required to maintain access control and screening of packages, parcels, pedestrians and vehicles entering the facility.

Site perimeter security requires that the building structure be designed for the specified Design Basis Threat located at the controlled perimeter of the site. Larger setback distances will correspond to reduced blast pressure loads on the building structure. A combination of bollards and retaining walls, capable of resisting the impact of the design basis vehicle threat, would be installed along the site perimeter to meet the security requirements of the project. Bollards would only be used at path entries. On the north and south edges of the site, security retaining walls would be integrated with and hidden within planted areas. On the east and west edges of the site, security walls would be integrated with the edge of the landform and pulled away from the sidewalks so that the sidewalks have plantings on both sides of them. The loading dock entry would be equipped with a retractable barrier along the sidewalk edge. Trucks would be screened within the loading dock. The west wall of the loading dock would be designed to be capable of resisting the impact of the specified threat.

### **3.6 Concerns were expressed over adequate security due to the lack of staff parking.**

**Response:** The proposed NMAAHC will be a safe and secure place to work. As with the other Smithsonian museums on the Mall, the vast majority of staff at NMAAHC will arrive and depart at the facility during traditional commuting hours when the number of workers ensures collective safety. In addition, the museum and grounds would be lighted at night for the safety of employees and visitors arriving or departing the facility when natural light is diminished.

NMAAHC employees would use public transportation, carpools, private vehicles, or alternative commuting methods to travel to and from work. There are two Metro Stations, the Smithsonian and Federal Triangle stations, within close walking distance that would serve NMAAHC staff. In addition, there are multiple private parking facilities nearby, including within the Federal Triangle.



**3.7 The identification of sidewalk widths within the project site on 15th Street is an example of the landscape design concept not being clearly coordinated with the remainder of 15th Street as it crosses the Washington Monument Grounds. Should the sidewalk width, material, finish and overall character be consistent along this section of 15th Street?**

**Response:** The Draft EIS stated that the sidewalk width would be approximately 10 feet along 15<sup>th</sup> Street. However, in the Refined Pavilion 2 Alternative, the sidewalk width would be expanded to 15 feet in width and it would match the appearance of the existing sidewalk on 15<sup>th</sup> Street. The width of the sidewalk on the eastern side of 15<sup>th</sup> Street was determined in consultation with review agencies and reflects a desire to separate the sidewalk from the perimeter security wall with a border of grass. The potential to use porous concrete is being considered by the Smithsonian Institution provided that the surface material would match with the finish, material and overall character along 15<sup>th</sup> Street within the Washington Monument Grounds.

#### 4.0 Impact Analysis

##### 4.1 Overall, there is not enough rationale within the impact analysis to accept the findings of the analysis beyond a reasonable doubt. The document relies too much on the reader's ability to infer what the analysis is trying to state.

**Response:** The standard of “beyond a reasonable doubt” is not required by the CEQ regulations or commonly used in evaluating the integrity of the findings of an EIS. However, both the Draft and Final EIS documents provide specific methodologies and objective criteria for analyzing impacts, as well as sufficient facts and illustrations (including maps and computer simulations) to assist the reader in understanding the conclusions of the analysis and assessing their validity.

Specifically, Section 3.1 of the Draft EIS (page 3-1) also describes the analytical structure for determining environmental impacts related to the project. In addition to impact methodologies, the Draft EIS also provides definitions for beneficial, adverse, context, duration, and intensity (page 3-2).

Furthermore, for each resource topic, the Draft EIS provides the key considerations as they pertain to the proposed alternatives, a discussion of the methodology used to evaluate how the resources would be affected by the alternatives, a description of the current conditions of the resources affected by the alternatives (the affected environment), an analysis of the environmental consequences the proposed actions would have on each resource, and mitigation measures that could be employed to avoid, minimize, offset, or compensate for adverse effects to the environment. In each resource section, discussion of the impact is followed by either a conclusionary paragraph or statement summarizing the level of impact significance.

Nevertheless, because the action alternatives are design options for the same site, it is acknowledged that many of the impacts are subjective, rather than scientific in nature. In such cases, as with visual impacts, for example, the subjective elements of the project are clearly noted and computer simulations are provided to make the analysis as objective as possible.

**4.2 The entire document assumes that there would be no impacts associated with the "No Action" alternative. The current use of the site and its proximity to nationally significant resources all have impacts on the resources that were presented in this Draft EIS (i.e., the site is currently an open space where demonstrations can be held (beneficial impact), visitor use on the site compacts soils (adverse impact), etc...). A more comprehensive impact analysis should be carried forward in the FEIS.**

**Response:** The CEQ regulations at 1502.14(d) require consideration of a No Action alternative as part of an EIS. The No Action alternative should be based upon no federal action being taken and can assume that other facts will remain the same in the event that there is no federal action. Given these fundamental assumptions, for most resource topics the No Action alternative would result in no change to existing conditions or to the current use of the site, and therefore, there would be no short-term or long-term adverse impacts.

Consistent with CEQ guidance, the Draft EIS states that the site would revert back to NPS jurisdiction for use as a flexible open space as part of the Washington Monument Grounds. As a result, the project site would continue to be an open space resource and periodic public demonstrations would continue. Maintenance and landscape activities would continue to occur. The site would continue to consist primarily of pervious surfaces, and remain largely landscaped, with existing trees and lawn cover, (although it is assumed that the NPS-approved planting plan for the Washington Monument Grounds would be implemented here and in other nearby areas). However, as a part of the No Action Alternative, increased pedestrian traffic and special events that require tents and other structures that cover the lawn for extended periods would continue, and those would diminish turf quality through soil compaction, shading, heat buildup, and physical wear and abrasion. Therefore, the No Action Alternative would result in damaged turf. With such a limited scope and intensity of adverse impacts associated with the No Action alternative, a more comprehensive impact analysis is not necessary.

## 5.0 Land Use, Planning and Policies, and Visitor Experience

5.1 **The National Mall Plan acknowledges that the project site was selected for the museum. However, the National Mall Plan does not call out specific landscape treatment for the project site, but refers to broad concepts about such landscape details as unified paving throughout the National Mall and the importance of the National Mall as a civic space. How are the landscape concepts for the vegetation, turf areas, public plaza, and pedestrian circulation as described in the Tier II Draft EIS consistent with the broader principles in the National Mall Plan?**

**Response:** The overall site design for the NMAAHC relates to the context of the National Mall and Washington Monument Grounds with respect to landscape concepts (vegetation, plazas, circulation), as well as through two-dimensional site geometries and three-dimensional shaping of the ground. The contextual approach of the landscape plan is consistent with the more general principles of the National Mall Plan that are protective of the existing setting.

As part of the Refined Pavilion 2 Alternative, the landscape plan for the site provides for a double row of elm trees along Constitution Avenue, and has reduced the size of the earthen landforms to more closely reflect the gently rolling terrain of the Washington Monument Grounds and minimize the 'berm' effect on the north side of the site. In addition, extensive turf areas would be provided, consistent with the dominant ground cover of the Washington Monument Grounds and the Mall. The compatibility of the landscape plan with its context is consistent with the National Mall Plan.

South of the building, the plaza design has been reworked to allow for direct approaches from each corner, consistent with the expected primary circulation patterns and to provide increased outdoor space for programming. The forms of the south entry plaza continue the trapezoidal geometries found south of Madison Drive further integrating the NMAAHC site into its context. By accommodating outdoor gatherings, the museum plaza is consistent with the National Mall Plan.

The main on-site paths form sweeping curves that are an extension of the geometry of the large curving pathways on the Washington Monument Grounds and the Ellipse. A sweeping path curves to the north building entry from Constitution and 15th Street and a second promenade path curves through the site towards the Monument Grounds from 14th Street and Constitution Avenue to Madison Drive and 15th Street. Improving pedestrian circulation is consistent with the National Mall Plan.

- 5.2 NCPC approved a planting plan for the site in 2003, based on the site work associated with the Washington Monument physical security project. The various NMAAHC alternatives should be reviewed as to the ways in which the concept landscape designs respect the existing, approved plan for the Washington Monument Grounds, the design principles developed for the project, as well as the continuation of the symmetry of design elements along the length of 15th Street. The guidelines in the Streetscape Manual should be incorporated into the proposed landscape design as the design effort progresses.**

**Response:** The Refined Pavilion 2 Alternative reflects and incorporates the landscape concepts of the 2003 planting plan and the Streetscape Manual. The landscape concept integrates the project into the Washington Monument Grounds through the use of long sweeping curves, street trees, careful groupings of trees and sidewalks, and soft rolling topography.

The landform of the site would be sculpted to relate to the gently rolling topography of the Washington Monument Grounds. The northern landscape would slope up from the site's low point at Constitution Avenue to create a level area around the base of the building. The landform on the north edge of Constitution Avenue would maintain the open vistas across to the Washington Monument Grounds and to ensure that the Monument would be seen from viewpoints along Constitution Avenue. The street trees along 15<sup>th</sup> Street would afford views to the Washington Monument, and the loading dock would be screened from view along the 14<sup>th</sup> Street sidewalk with taller shrubs.

**5.3 The Constitution Avenue entrance and a Madison Drive entrance are not likely to qualify as a mitigation effort, considering that most Smithsonian Institution and National Gallery of Art buildings on this side of the National Mall have multiple entrances. Would it be better to provide for a programmed public gathering space on the site?**

**Response:** In addition to the symbolic crossing of water at each entry, the exterior spaces of the museum building would be used to accommodate outdoor programs, additional operations, or functions of the building. Several examples of outdoor programmed space include courtyards, patios and dining areas, performance space and gardens. The outdoor public gathering space was described as part of the Conceptual Landscape Plan for each of the action alternatives.

For the Refined Pavilion 2 Alternative, the southern portion of the site has been designed for outdoor programs, including concerts or similar gatherings. In addition, the overall composition ties together the principal entry pieces of the south and north with a sequence of smaller, more intimate spaces that accommodate the museum's needs. Linear paths and groups of benches define spaces adequate for multiple small groups. Groupings of trees are arranged to help define these spaces and provide shade. Because of the desire to provide continuity with the rolling landscape of the Washington Monument Grounds and limit the extent of paved surfaces, the NMAAHC gathering spaces have been sized to accommodate museum visitors but not to provide capacity for other events.

**5.4 Please add the NPS Tourmobile stops on Madison Street and on 15th Streets to Section 3.2.2.2, How do visitors currently experience the project site?**

**Response:** In response to this comment, the two Tourmobile stops in the vicinity of the NMAAHC site, one on Madison Drive and one on 15th Street south of the site, have been included in Section 3.2.2.2 (page 3-19) of the Draft EIS.

**5.5 Continue to include the pedestrian improvement recommendations in project planning.**

**Response:** The *National Mall Plan* recommends several improvements related to pedestrian access and circulation around the project site. Recommendations to provide safe crossings for visitors and aid in pedestrian circulation, crosswalk improvements at each intersection surrounding the site include upgrading walking surfaces, developing consistent and identifiable crosswalks, creating bigger intersections and adjacent waiting areas to accommodate large numbers of people, programming automatic and extended pedestrian crossing times into signal phasing, and traffic-calming measures (NPS, 2010). Improvements to the paved pedestrian areas (sidewalks) along 14<sup>th</sup> Street and Madison Drive adjacent to the NMAAHC site are also included in the *National Mall Plan*. Given that the NMAAHC will incorporate the recommendations of the National Mall Plan, this text will remain in the Final EIS.

## 6.0 Cultural Resources / Visual Resources

### 6.1 Design refinements are indeed critical and ameliorative for cultural resources, but please also consider what might represent mitigation that is not related to design.

**Response:** The Draft EIS included a full range of mitigation measures for each resource topic including land use and planning policies, visitor experience, historic resources, visual resources, geology, soils and groundwater; conservation of natural resources, and transportation. The Section 106 process also addresses measures to avoid, minimize, and mitigate effects on historic resources, some of which are related to the design of the museum, but also others that address operational and programmatic issues.

#### Summary of Efforts Taken to Date to Minimize Impacts:

The concept designs have evolved over a period of four years based on public comment and Federal Agency reviews by the DC Historic Preservation Office, the National Capital Planning Commission and the Commission of Fine Arts. The Refined Pavilion 2 Alternative is a refinement of earlier concepts in order to minimize impacts on the site, landscape, building size and mass, architectural and site details. The design is the notion of a pavilion in a landscape. Efforts to minimize impacts that have been taken to date include:

- The size has been reduced by placing approximately 59% of the usable space below grade.
- The massing of the building is being reduced by approximately 17 percent from its largest bulk to be approximately 216 feet on a side forming the outside dimension of the Corona.
- The height is being reduced to approximately 126 feet above sea level in order for the top of the building to be no higher than the top of the facade of the Herbert C. Hoover Commerce building north of the site.
- The landscape has been made more fluid by reducing the berm effects of the landscape on the north side of the site, and increasing the grass area for seating and small group gatherings.



- The first floor has been maintained as a glass wall and the size of the interior core elements, such as elevators, have been regularized to increase the clear area for views through the building.
- Security walls have been integrated into the landscape in a seamless way with only the minimum number of bollards at pathways intersections to avoid a “hardened” appearance of the site.
- The entrance to the service drive has been pulled back to increase the sidewalk planting lanes to soften the effect of the driveway.

Summary of Proposed Non-Design Mitigation Measures:

As part of the public review process, the public is asked to make comments on potential impacts to historic properties in the Area of Potential Effects and to recommend measures that may offset or reduce the intensity of adverse effects that have not already been avoided or minimized. This list will be updated as proposed mitigations are deemed appropriate by the State Historic Preservation Office, the Advisory Council, and members of the consulting parties for this project. So far the proposed mitigation measures include:

- Undertake photo-documentation of the site before construction, using Historic American Building Survey standards and provide documentation for inclusion in the Library of Congress.
- Develop an exhibit for the public to be housed in the museum illustrating the archaeological finds of interest, the history of development of the museum on the site, and a history of the prevalent used of the site, such as for First Amendment demonstrations.
- Document the “found features” on the site, such as the abandoned subterranean Water Intake Tunnel that crosses the site and the Bulfinch Gatepost.
- Work with the National Park Service as they develop the listing of the National Mall by providing historical documentation of the Smithsonian Buildings to gain eligibility for listing in the National Register of Historic Places.
- Continue to study the history of the site as it pertains to African American history of Washington, DC.

- Expand the historical information on the Horatio Greenough sculpture of George Washington owned by the Smithsonian’s American Art Museum and include this information as part of the National Register of Historical Places multiple resource nomination on Sculpture. In addition consider laser scanning of the sculpture for full physical documentation.
- Undertake stewardship responsibilities for the Bulfinch Gatepost and ensure that preservation work is undertaken when needed and is consistent with the conservation methods established by the National Park Service for the other gateposts.

Section 106 mitigation measures will be included as part of the Programmatic Agreement attached to the ROD.

Commitments to these measures by the Smithsonian will be finalized in conjunction with completion of the Final EIS.

## 6.2 What is the implied horizontal plane in the existing museums on the National Mall?

**Response:** Envisioned by L’Enfant, and then reinforced and extended by the McMillan Commission, the National Mall and adjacent open spaces visually stretch west from the U.S. Capitol Building to the Potomac River, and north from the Jefferson Memorial to the White House. Its strong east-west axial alignment provides a formal landscaped setting for many of the city’s memorials and museums. The central lawn is defined by rows of American elms and a series of museums that line its north and south sides between 2nd and 14th Streets.

The buildings and structures surrounding the NMAAHC site vary somewhat in massing, height, materials, and style. The facades of the EPA Headquarters and Mellon Auditorium building and the Herbert C. Hoover building have strong vertical design elements like the Corona. However, these buildings, as well as NMAH, have simple bases that follow the lines and support the main bodies of the buildings. As discussed in the response to comment 3.1 above, which also discusses building heights with respect to the urban design principles, the Refined Pavilion 2 Alternative would have a Corona height of approximately 96.5 feet above grade and approximately 113 feet above sea level, and would be consistent with the 113-foot high façade of the Commerce Building.

**6.3 The Tier II Draft EIS is silent on the need to disregard the 445-foot setback from the centerline of the Mall as established by the McMillan Plan. Alternatives 1, 2, and 4 all encroach on this setback and no rationale is provided as to why this is necessary. Nor does the Draft EIS do an adequate job at analyzing the impacts of this encroachment.**

**Response:** The structures surrounding the NMAAHC site are generally located behind a minimum setback of 445-foot from the centerline of the National Mall, as drawn between the Capitol and the Washington Monument, and the reciprocal physical relationships between the museums on the north side of the National Mall and their counterparts on the National Mall's south side. The setback line was established by the McMillan Plan in 1901-1902. Projections such as porches and porticos or terraces and stairs, for example, sometimes extend beyond this line. The NMNH, National Gallery, and the East Wing of the National Gallery share a common setback on their south facades; each being located 445 feet from the Mall centerline. NMAH sits back 160 feet from the curblines on Constitution Avenue and on Madison Drive, and the south face of the building is set back approximately 505 feet from the centerline of the National Mall. As a result, the viewshed looking west along the National Mall widens as one approaches the Washington Monument Grounds.

The Draft EIS analyzed the impacts related to the McMillan setback by considering viewsheds, spatial organization, and cross-axial spatial organization of the monumental core. A visual resources analysis was conducted that included the visual character of the site, urban design/ architectural context, key urban viewsheds, and night illumination. These analyses found that the Plinth and Refined Pavilion Alternatives would have moderate/significant adverse effects on the urban context, due to the slight extension of the Plinth overhang to the south beyond the 445-foot McMillan setback line, and the minor extension of the porch overhang on the south beyond the 445-foot McMillan setback line for the Refined Pavilion Alternative. The Plaza Alternative would have major/significant adverse effects on the urban context due to the extension of the Corona to the south beyond the 445-foot McMillan setback line. The Pavilion Alternative would have minor/not significant adverse effects on the urban context, in part, because the porch does not extend over the 445-foot McMillan setback line.

The location of the building with respect to and in response to the 445' McMillan Plan setback line has evolved with the building's design. The thin tapering and cantilevered overhang of the Preferred Alternative's porch would extend 32 feet into the setback (see the response to comment 6.4), while the main mass of the building would be set back approximately 19 feet from the McMillan line. Additional studies are underway to further reduce the extension of the porch across the setback line by 20 percent (i.e. no more than 25 feet across the line) and reduce its length along the south façade.

This 1901 planning line is generally, though not rigidly, adhered to by the buildings on the north side of the Mall and their entrance elements, including projections into the setback by the monumental stairs and central portico on the National Museum of Natural History and by the monumental stairs of the National Gallery West Building. The south side of the Mall includes many buildings whose main mass projects into the McMillan setback including some that predate this plan such as the Smithsonian Castle and the Arts and Industries Building (both of which were indicated to be removed in the McMillan Plan), as well as the round Hirshhorn Museum, constructed much later.

The decision to locate the mass of the building towards the south of the site was made during the Concept Design stage, in consultation with the Consulting Parties, including NCPC, CFA, NPS and DC HPO staff primarily to improve the views to the Monument from the Constitution Avenue and 14<sup>th</sup> Street intersection and to provide greater continuity of the museum's landscape and paths with those of the Washington Monument Grounds. Due to site topography, the location of the building towards the south of the site also allows for universally accessible paths to connect the building's north entrance with the much lower elevation Constitution Avenue sidewalk, eliminating the need for ramps and stairs and enhancing the integration of the landscape. In order to minimize the visual impact of the museum on the Washington Monument, more than half of the museum space was located below grade. By placing the footprint of the Corona towards the south of the site, grading could be contoured around the building in a manner that allowed for gentle sloping of walkways across the site and up to the ground floor entrance.

**6.4 The south-facing porch is a design element that extends over the historic 445-foot line. This line was a criterion analyzed in the Tier I EIS, as all "porch" or entry landings at the other Smithsonian Institute / National Gallery of Art museums respect this line. The extension of this design element has not been accounted for in the Tier I EIS, nor in the ongoing Section 106 consultations and seems inadequately addressed in the TIER II (see matrix on xxix, and throughout document, such as on page 3-113, 3-116).**

**Response:** Not all Smithsonian or National Gallery museum buildings respect the McMillan setback line. There are a wide variety of setbacks and alignments for buildings and entry landings on the National Mall. The relationship of the McMillan setback line and the other buildings on the Mall is illustrated in Figure B.3.2 (on page B-53).

The Draft EIS thoroughly evaluated the porch element of the museum. Figure 2.2.1 of the Draft EIS, Tier II Setback and Building Alignment Lines (page 2-5), depicts the historic 445-foot McMillan Plan setback line in relation to the NMAAHC site, the NMAH, and the south façade of the NMNH. The extension of the porch for the Refined Pavilion was discussed in *Chapter 2 Description of the Alternatives*.

The porch of the Refined Pavilion 2 Alternative extends a maximum of 32 feet south of the McMillan Plan setback, which appears to be consistent with the terraces and plinths for other museums on the Mall. These other museums include the NMNH, the Freer Gallery, and the Hirshhorn Sculpture Garden and Museum. Based on the analysis of the porch overhang, the NMAAHC massing, setback, and height will respect views related to L'Enfant and McMillan Plans and the Washington Monument Grounds and other important views in the Area of Potential Effect. As noted above, efforts are underway to reduce that extension by at least 20 percent.

Further discussion of potential impacts on the spatial organization of the Washington Monument Grounds and the Mall, and visual impacts on the urban context are discussed in Sections 3.3 and 3.4 of the Draft EIS. Also, please refer to the response to comment 6.3 for additional discussion of the McMillan setback line.

**6.5 The compatibility of the NMAAHC building with other buildings on the National Mall could be lost if too much emphasis is placed on views to the Washington Monument.**

**Response:** The Refined Pavilion 2 Alternative appropriately balances respect for the views of the Washington Monument with the content of the existing buildings on the Mall. As documented within the discussion of the site's architectural context in the Draft EIS, the buildings on the National Mall and within the Federal Triangle represent a wide range of architectural styles and materials. Within this context, the Refined Pavilion 2 Alternative, with its main building, and penthouse, would respond to similar architectural components of the surrounding classically inspired buildings. Thus, while it would not be constructed in a similar style to the surrounding buildings, it would not be visually inconsistent in its essential massing. Further, while the building materials on the Mall and within the Federal Triangle differ, from Tennessee Pink marble to limestone to sandstone and even red brick, they are primarily natural stone. Relative to the white marble of the Washington Monument, the exterior material proposed for the Corona would be distinctive with both its darker color and finish.

**6.6 The NMAAHC will be how many feet from the plaza of the Washington Monument? How many feet from Monument Lodge? Both locations are places for Monument visitors to queue and gather.**

**Response:** With the Refined Pavilion 2 Alternative, the southwest corner of the NMAAHC building would be approximately 650 feet from the Washington Monument plaza. It would be approximately 425 feet from Monument Lodge.

**6.7 Historic Monument Lodge is located in close proximity to the project site and should be considered relative to proposed building heights analyzed and discussed in this section and shown in Figures 3.4.1, 2, 4, 6, and 3.4.8.**

**Response:** Figures 3.4.1, 3.4.2, 3.4.4, 3.4.6, and 3.4.8 have been updated in the Final EIS to include the Washington Monument and the Monument Lodge. These resources are also shown relative to the Refined Pavilion 2 Alternative (Preferred Alternative) in Figure B.3.1 of the Final EIS.

---

## 7.0 Geology, Soils and Water Resources

### 7.1 With collections located below grade, would flooding be an issue?

**Response:** Flooding will not be an issue for the collections. As described in the Draft EIS, the action alternatives would incorporate a support of excavation (SOE) system and the rigid SOE would help prevent flooding by providing a permanent groundwater cutoff between the building and the surrounding area. The SOE system was described in detail in Section 9.0 of the Draft EIS. Additionally, waterproofing measures will be installed on the building foundation walls and a flood protection plan has been developed for the site to protect the grounds and the building from the effects of a 100-year flood and 500-year flood.

### 7.2 The Draft EIS provides some sound methods and reasoning as to why it is believed that the construction of the NMAAHC under any of the action alternatives would not have an adverse impact on groundwater or soil stability, resulting in no impacts to surrounding buildings and structures (most notably the Washington Monument). However, the Draft EIS only assumes that the mitigations provided in Section 3.5.5 would be implemented.

**Response:** The mitigation measures provided in the Draft EIS (including Section 3.5.5) were recommendations to the Smithsonian Institution. The Smithsonian Institution and their design team have reviewed the recommended measures and the Smithsonian Institution will include the mitigation measures they are committed to implementing in the ROD with a mitigation and monitoring plan. For further discussion of mitigation measures, see the comments and responses in Section 11.0. Further analysis of soil stability is provided in a new section of the Final EIS that addresses construction impacts (see page B-63 of Section B.4.1).

**7.3 With regards to monitoring, the Draft EIS states: 'A monitoring and contingency plan would be developed to monitor the site and the surrounding areas during construction. These plans would include a preconstruction survey identifying the current conditions of adjacent structures prior to NMAAHC construction activities. The plan would specify instrumentation to be used on site, as well as threshold levels and monitoring frequency associated with each instrument. At a minimum, optical survey points would be placed along the support of excavation (SOE) system so that if any movement in the area is recorded, actions may be taken.' The text is especially vague on how monitoring would occur throughout the construction process. While it does state that a monitoring and contingency plan would be developed, it provides no details. What kind of instrumentation would be used? What kind of movement would it be looking for?**

**Response:** The Smithsonian is committed to implementing a program of mitigation to avoid adverse impacts on groundwater and soil stability relating to surrounding structures, including the Washington Monument. The detailed plan for these mitigation measures must necessarily await further development of the design for the building's foundation and SOE design, as well as coordination with the project's Construction Manager, who will be engaged shortly. The Smithsonian will continue to share information regarding this aspect of the project with NPS and others, and will engage them in coordinating the specifics of the mitigation plan, including the documentation of existing conditions, the placement of devices, and the procedures that will be implemented in the event a problem is detected.

As described on pages B-31 to B-33 of Section B.2.5 of this Final EIS, a monitoring and contingency plan for a building of this size and depth would typically include the use of an optical survey, seismographs, noise meters, groundwater monitoring wells, inclinometers, and/or tilt plates. The monitoring plan is recommended to provide an indication of the effects of construction on adjacent structures. The purpose of the monitoring and would be to measure lateral and vertical movement of the SOE wall to indicate adjacent ground movement. The monitoring and contingency plan typically would provide threshold values for each type of monitoring equipment and response to specified threshold values. Vibration monitors and noise monitors could also potentially be used in adjacent buildings to monitor the influence of construction. Typically several threshold values are included in the plan. The lower range values may invoke increased monitoring while the higher



values may require stopping construction and/or dewatering. If the movements observed required halting of construction, remediation measures would be taken to allow for work to continue. These remediation measures may include additional bracing for the excavation consisting of additional tie backs and/or rakers, underpinning of adjacent structures, etc. The monitoring plan would provide a base line for the site prior to construction and is valuable to determine and illustrate if a change has occurred due to construction activities or if a condition was existing prior to the beginning of construction. The monitoring and contingency plan on-site would thus provide early warning signs of complications on adjacent structures.

**7.4 Given the national significance of the Washington Monument and surrounding buildings, the commitment of the Smithsonian Institution should go beyond the minimum and provide long-term on-site monitoring and other appropriate mitigations to protect these sensitive resources to the greatest extent practicable.**

**Response:** The Smithsonian Institution is committed to provide necessary long-term monitoring and other appropriate measures to protect sensitive resources to the greatest extent possible and will coordinate these efforts with the agencies responsible for nearby structures, including NPS and GSA. See pages B-31 to B-33 of Section B.2.5 of this Final EIS for further description of the monitoring plan being proposed.

## 7.5 Is Tiber Creek under the museum?

**Response:** Tiber Creek is not under the museum, but its south bank was once under the northern portion of the museum site. The NMAAHC site and most of downtown Washington, D.C., was originally made up of swamplands and tidal marshes and marked by the drainage systems of Tiber Creek. According to the Tier I Final EIS, prior to 1791, when the City of Washington was laid out, the NMAAHC site was on the southern bank of Tiber Creek, partially on dry land and partially within the creek bed. In the early 1800s, the landscape along lower Tiber Creek had not changed much from its initial configuration and the museum site remained a poorly drained, undeveloped area that was used primarily for pasture. As the city developed in the nineteenth century, Tiber Creek was transformed first into the Washington City Canal, then into B Street Sewer. In the 1870s, the sewer was paved over and B Street became Constitution Avenue.

**8.0 Conservation of Natural Resources****8.1 Is there a LEED certification anticipated for this building?**

**Response:** Yes, the Smithsonian Institution has committed to a minimum level of Gold for the building as certified by the U.S. Green Building Council under the LEED 2009 green building rating system for New Construction and Major Renovations.

**8.2 Concern was expressed over the removal of trees on the project site, especially since the site is located in a hot area for pedestrians. How does the proposed landscape plan incorporate the use of existing trees as well as additional trees to provide shade at the NMAAHC site?**

**Response:** The nature of construction on such a small site necessitates the removal of most existing trees. The existing elm trees along both sides of the sidewalk along Constitution Avenue will be preserved to the greatest extent practicable. New trees within the site will consist of a combination of large canopy trees and flowering understory trees arranged in informal groups. Along 14th Street, street trees will be canopy trees that are regularly spaced to fit with the urban character of the street. Along the 15<sup>th</sup> Street sidewalk the street trees will be spaced to create openings that reinforce the views of the Monument Grounds. All of the canopy trees, and most of the understory trees, will provide shade for visitors to the museum and pedestrians passing by.

**8.3 Among the recognized climate change issues for the District of Columbia area is the frequency and intensity of storms. How will the project alternatives address capacity for storm-water detention on the site in light of more frequent severe weather events?**

**Response:** The stormwater management design for the proposed NMAAH project is consistent with the Energy Independence and Security Act (EISA) 2007 requirements, Section 438, Storm Water Runoff Requirements for Federal Development Projects. This section states that “the sponsor of any development or redevelopment project involving a federal facility with a footprint that exceeds 5,000 square feet shall use site planning, design, construction, and maintenance strategies for the property to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow.” The design storm per EISA is referred to as the “95th percentile storm” which equates to 1.7 inches of precipitation over a 24-hour period. The 95th percentile rainfall event is the event whose precipitation total is greater than or equal to 95 percent of all 24-hour storms on an annual basis.

The comprehensive on-site stormwater strategy will also meet LEED requirements. Full on-site retention would not be feasible due to the soil conditions, particularly the limited infiltration capacity and high groundwater on the site. The current design proposes the use of non-structural best management practices to provide water quality to the maximum extent feasible. Since there is little area available for on-site management strategies such as detention ponds, the design team is utilizing a rain garden, cisterns, and water features for stormwater management. Captured rainwater would be stored in the rain garden on the northern portion of the site and journey through the landscape providing a lesson in integrated ecological landscapes and context for the role of water in the lives and history of African Americans. Green roofs are also being included as part of the stormwater management strategy and landscape design.

The design team is in the process of evaluating the project’s ability and strategy to meet the stormwater quality goals following conversations with utilities and the EPA. Natural stormwater management strategies will be optimized before treatment.

## 9.0 Transportation

### 9.1 Do the transportation mitigation measures in this Draft EIS conflict with the recommendations for the National Mall?

**Response:** The proposed transportation mitigation measures identified in the NMAAHC Draft EIS do not conflict with the objectives identified in the Final National Mall Plan Environmental Impact Statement. Both the Refined Pavilion 2 Alternative and the National Mall Plan emphasizes an improved pedestrian environment. While basic historic circulation patterns would remain with the National Mall Plan, walking surfaces would be improved, walks would be widened, pedestrian lighting would be increased, more amenities would be provided, and crosswalks would be enhanced. Specifically, the Mall Plan recommends implementing pedestrian measures at the surrounding intersections, including optimized pedestrian count-down signal operations, ladder-patterned crosswalks for greater visibility, 10-foot distance between stop bars and crosswalks to better separate motorists from crossing pedestrians, and new curb ramps located at crosswalks rather than at the center of the intersection.

## 10.0 Cumulative Impacts

### 10.1 The projects cited for 14th Street may include impacts that are not strictly limited to 14th Street. The Washington Monument Security screening project might impact areas west of 15th and east of 17th Streets.

**Response:** Agreed; while the cumulative impact projects identified in the Draft EIS may have impacts that extend beyond 14<sup>th</sup> Street, the primary focus of the NMAAHC EIS and the cumulative impacts analysis is the area immediately surrounding the project site, which is located between 14<sup>th</sup> and 15<sup>th</sup> Streets NW. In addition to the summary response provided here, see *Section B.4.3, Cumulative Impact Issues* on page B-74.

The proposed Washington Monument Visitor Security Screening would replace and improve the existing visitor screening facility on the Monument Grounds. The project area is bounded by Constitution Avenue to the north, Maine Avenue to the south, 14<sup>th</sup> Street to the east and 17<sup>th</sup> Street to the west. There could be cumulative beneficial impacts on circulation in the vicinity of the Washington Monument Grounds due to improved visitor screening and circulation through and around the Monument Grounds.

For the National Mall, the *DC City Center Action Agenda* seeks to create a mixed-use corridor along 14<sup>th</sup> Street from downtown to the Tidal Basin. The Agenda identifies proposed actions for the 14<sup>th</sup> Street corridor include creating an active and pedestrian-friendly connection north and south of the Mall and capitalizing on infill development along 14<sup>th</sup> Street. Projects that would occur along 14<sup>th</sup> Street include: the NMAH Public Space Revitalization/Expansion, Department of Commerce National Aquarium Entrance, Washington Monument Permanent Security Improvements, Centennial Initiative/Wayfinding and New Pedestrian Guides, and U.S. Department of Agriculture – Jamie L. Whitten Building. These projects would create new destinations along 14<sup>th</sup> Street, further increasing pedestrian volumes and activating the corridor and adjacent areas.

The NMAH, site of the proposed NMAH Public Space Revitalization/Expansion, is located along Constitution Avenue at 14<sup>th</sup> Street. The proposed new entrance of the National Aquarium Entrance would be located at the Department of Commerce Herbert C. Hoover Building along Constitution Avenue. The NCPC Monumental Core Framework Plan proposes that the U.S. Department of Agriculture – Jamie L. Whitten Building, located along Independence Avenue at 14<sup>th</sup> Street, could become a cultural destination on the Mall. Each of these proposed projects could activate 14<sup>th</sup> Street and the adjacent areas.

The Centennial Initiative/Wayfinding and New Pedestrian Guides is an ongoing project that will provide a comprehensive sign and wayfinding program for both Mall and off-Mall destinations and could impact circulation on and around the National Mall. Overall, the implementation of these projects would result in a beneficial cumulative impact on planning policies.

**10.2 The cumulative projects' lists cited previously in the Draft EIS should be updated with the current list of scheduled projects for the Mall. Is the Lincoln Memorial Reflecting Pool project cited?**

**Response:** The list of scheduled projects for the Mall was has been updated in the Final EIS and can be found in Section B.4.3 on page B-74. The Lincoln Memorial Reflecting Pool was listed as one of the cumulative impact projects in Table 1.1 of the Draft EIS (see page 1-27).

**10.3 The overall cumulative impact analysis in Section 3.8 is questionable. The analysis does not make distinctions between the action alternatives; does not adequately consider the short-term adverse cumulative impacts associated with construction of the NMAAHC; and because the impact analysis incorrectly assumes no impacts resulting from the No Action Alternative, it also incorrectly assumes no cumulative impacts.**

**Response:** Where the various NMAAHC design alternatives had similar contributions to the overall cumulative impacts, the analysis of cumulative impacts in the Tier II Draft EIS did not make a distinction between alternatives. This is because each action alternative is a different building concept that would be constructed and operated on the project site. Therefore, the impact analysis evaluates how each building concept fits with the same site and surrounding environment; not how the building design would address different site locations. The design concepts have evolved into the Refined Pavilion 2 Alternative based on aspects of the building's mass, height limitations, impacts on views and historic resources, site coverage, use of open space, circulation, landscape design and perimeter security requirements. As with the other alternatives, the Refined Pavilion 2 Alternative features a Corona as the defining form of the visible building structure.

An analysis of the short-term cumulative construction impacts were analyzed in the Tier I EIS and updated in *Section B.4.3, Cumulative Impact Issues*. For convenience the cumulative impacts are also briefly summarized here. Impacts on geology and site soils would be site specific because the site is surrounded by roads and the only development on the site would be that of the proposed action. No cumulative construction impacts on groundwater are anticipated because the depth of construction would likely be above the water table. Adverse cumulative impacts on air quality would not be considered significant. There is little opportunity of major growth or development within the immediate area of the National Mall; therefore, adverse cumulative impacts on noise under any of the proposed alternatives would not be significant. No significant effects on vehicle parking within the immediate site area would be expected and no significant effects on existing public transportation would be expected. It is assumed that some of the construction vehicles would be staged on-site to minimize trips to and from the site. Some uses of surrounding land may be altered to accommodate movement of vehicles, supplies and people during the construction phase of the project. Cumulative construction impacts would not have any significant adverse cumulative impacts to land use or zoning as they relate to development or development patterns. The



proposed construction would be in compliance with land use designations and applicable zoning laws. No significant impacts would be expected on the visitor experience because the site is set apart from other museums by roads. There would be no cumulative construction impacts on other museums in terms of accessibility, convenience, visiting hours, or prices. There would be no cumulative effects expected on environmental justice and protection of children due to the proximity of cumulative projects to the Mall; they are not adjacent to any census tracts that may be characterized as low-income or minority. There would be a potential for cumulative effects on pedestrians and bicyclists within the area surrounding the site during construction activities should construction of the museum initiate during the latter time frame scheduled for the National Mall Road Improvements (2007-2012). It is anticipated that proper coordination with the applicable federal and local agencies, the adverse cumulative impacts would be addressed by enhanced signalization, signage and pavement marking improvements to a level that would be less than significant. Construction is not anticipated to have an adverse cumulative impact on emergency fires or the U.S. Park Police.

Please see the response to comment 4.2 for the impact analysis conducted on the No Action Alternative. For the majority of resource topics, the Tier II Draft EIS determined that the No Action alternative would not change existing resources and, thus, would have no cumulative impacts. For instance, while other projects in the area would result in land use changes around the site, because there would be no land use or planning impacts from the No Action Alternative, there would be no cumulative impacts. However, soil compaction would still continue to occur under No Action as a result of current activities and other cumulative projects occurring on the National Mall. The Draft EIS correctly determined that the No Action alternative would have no effect on historic or visual resources and, thus, would have no cumulative impact. Additionally, there would be no cumulative impacts on geology, soils, and groundwater; or transportation as a result of the No Action Alternative.

## 11.0 Mitigation

**11.1 The majority of mitigation measures provided in the document aimed at lessening the impacts to the various resources are primarily generic in nature and provide no specific information on how the mitigation would actually reduce an adverse impact. Some of the mitigations listed are not actually mitigations, but design requirements (i.e., the Smithsonian should minimize adverse effects on distant views by centering the penthouse on the Corona; re-routing underground utilities; etc...).**

**Response:** Mitigation measures are actions that could be taken to avoid, minimize, offset, or compensate for adverse effects to the environment. For the purposes of the NMAAHC EIS, mitigation measures are defined broadly to include project-specific actions, established guidelines and requirements, best management practices, and design modifications. The Draft EIS addresses the environmental impacts of the proposed project and recommends mitigation measures where appropriate. Toward this end, the refinement and evolution of the design concepts have incorporated specific measures to help minimize potential impacts on the environment. These include efforts to reduce building size, site coverage, and height; minimize the loss of trees on-site, promote water conservation, infiltration, water quality, and stormwater management techniques; adhere to best management practices, and improve site performance, sustainability, and energy requirements by achieving the number of points required for a LEED gold certification. (See Section B.2 for the mitigation measures identified for Refined Pavilion 2 Alternative).

The desire to more precisely define mitigations and their specific impact on an adverse effect is acknowledged and the Final EIS, in selecting a Preferred Alternative and identifying mitigations for it, moves in that direction. Because many of the impacts are affected by design decisions and the design continues to be refined, it is appropriate to include mitigations that address design actions that would reduce adverse impacts.

The EIS process has the ultimate goal of informing the Smithsonian Institution and the public of environmental consequences, including impacts that cannot be mitigated if the project proceeds as planned. The Smithsonian Institution

has reviewed the recommended mitigation measures included in the Draft EIS and is committed to implementing them as part of the NMAAHC project. The ROD will document the Smithsonian's commitment.

**11.2 There are insinuations that mitigation measures are at the discretion of the Smithsonian Institution and may, or may not be carried forward (i.e., The Smithsonian Institution should minimize adverse effects by addressing the treatment of the west facade to better relate to the Washington Monument Grounds without detracting from the idea of the entrance facades; The Smithsonian Institution should complete an illumination study as part of the final design to ensure that lighting levels are consistent with the other museums on the north side of the National Mall, and that lighting is deferential to the surrounding monuments and memorials; Areas intended to support new fill and pavements should be evaluated by a geotechnical engineer, etc..) To that end, the impact analysis in the Draft EIS assumes that the mitigations listed will be carried forward. When the document does not commit to specific mitigation and insinuates discretion by stating "should" occur, the impact analysis is not complete. This is due to the fact that the analysis of impact if the mitigations are not carried forward is lacking. In every instance this occurs, the Draft EIS lacks this additional analysis. Given the national significance of this site, specific mitigations to minimize adverse impacts on all affected resources should be developed and implemented to the greatest extent practical. These mitigation measures should be developed and described in the Tier II FEIS as well as through the NHPA Section 106 process.**

**Response:** The Draft EIS provided impact analyses for a range of resource disciplines and then identified mitigation measures to avoid, minimize, offset, or compensate for adverse effects to the environment. These mitigation measures were recommended in the Draft EIS and reviewed by the Smithsonian Institution, other review agencies, and consulting parties. Because the Smithsonian Institution has committed to implementing the measures, the Final EIS uses the term 'shall' versus 'should' when referring to the implementation of mitigation measures. The Smithsonian Institution will also include the mitigation measures they are committed to implementing in the ROD. It should be noted that NEPA does not require the Smithsonian Institution to evaluate or impose mitigation measures for every adverse impact of the proposed project.

**12.0 Miscellaneous**

**12.1 What will be the focus of the museum? Will the exhibits focus on past or contemporary issues?**

**Response:** Exhibit spaces will be a mix of rotating history and current topics to keep the museum interesting and a "living institution." The NMAAHC Act (Section 4 of the law) states that the NMAAHC must provide for: (1) The collection, study, and establishment of programs relating to African American life, art, history, and culture that encompass the (A) the period of slavery, (B) the era of Reconstruction, (C) the Harlem Renaissance, (D) the Civil Rights movement, and (E) other periods of the African American diaspora. (2) The creation and maintenance of permanent and temporary exhibits documenting the history of slavery in America, and African American life, art, history, and culture; and (3) The collection and study of artifacts and documents relating to African American life, art, history, and culture.

**12.2 Will there be permanent seating on the porch?**

**Response:** There will be no permanent seating provided on the porch; however the use of temporary seating is still under study. An outdoor patio on the porch rooftop would be accessed from the mezzanine level within the building.

**12.3 The water-feature looks appropriately sized.**

**Response:** As part of the Refined Pavilion 2 Alternative, the water features at the north and south entries have been reduced in size relative to the Refined Pavilion Alternative. Crossing water is a symbolic act recalling the historic crossing over water of the African American people. The north water feature contributes to the collection and treatment of stormwater on the site. The water feature located near the south entry includes both still and moving water. The two types of water express the duality of turbulence and calm strength, two significant themes in the history of the African American community. The water is designed to be turned off in winter to prevent freezing or when the museum wants the flexibility to accommodate more people in the space.

**12.4 Describe the involvement of the landscape architect in the project process.**

**Response:** The landscape architect designs the outdoor portion of the project and attempts to combine the natural environment with the built environment creating outdoor spaces for people. Factors considered by the landscape architect in altering the site are grading, drainage, vegetation, sustainability, aesthetics, emotions, and how the site will evolve over time.

**C2. Agency and Public Review Comments Received**

**Federal Agencies**

	<b>Date</b>	<b>Format</b>
U.S. Department of Interior	February 1, 2011	Letter
U.S. Environmental Protection Agency	January 10, 2011	Letter

**District Agencies**

District of Columbia Department of Public Works	November 17, 2010	Email
---	-------------------	-------

**Public Hearing**

DEIS Review Meeting #1	November 17, 2010	Verbal and Written
DEIS Review Meeting # 2	January 6, 2011	Verbal and Written

**Individuals**

William Haskett	January 9, 2011	Email
Joe Harper	November 12, 2010	Email



IN REPLY REFER TO:

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
Custom House, Room 244
200 Chestnut Street
Philadelphia, Pennsylvania 19106-2904



February 1, 2011

9043.1
ER 10/971

Ms. Ann Trowbridge, AIA
Associate Director for Facilities Master Planning
Smithsonian Institution

Mr. Marcel Acosta
Executive Director
National Capital Planning Commission

Subject: National Museum of African American History and Culture
Tier II Draft Environmental Impact Statement

Dear Ms. Trowbridge and Mr. Acosta:

This letter provides the Department of the Interior's comments on the Tier II Draft Environmental Impact Statement (DEIS) for the National Museum of African American History and Culture (NMAAHC) in Washington, D.C. We apologize for any inconvenience that you may experience as a result of receiving these comments beyond the requested due date. This letter is submitted in accordance with provisions of the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321 et seq). The DEIS has been prepared by the Smithsonian Institution and the National Capital Planning Commission as joint-lead agencies, in cooperation with the National Park Service (NPS). The NPS is a Cooperating Agency because of its role in managing the open space and monuments on the National Mall and within President's Park, which are located adjacent to the NMAAHC site and because of its historical role in managing the site for the new Museum, which is part of the Washington Monument Grounds.

This Tier II Draft EIS supplements the Tier I Final EIS completed by the Smithsonian Institution in 2008. The Tier I Final EIS addressed potential effects of six alternatives that varied in siting and mass, orientation, form, exterior spaces and profiles, as well as a no build alternative. The Tier I EIS process concluded with a Smithsonian Record of Decision (ROD) in 2008 and a set of design principles to guide the development of specific concepts for the building that would permanently house the museum collection. This Tier II Draft EIS analyzes the environmental effects associated with construction and operation of four specific build alternatives, as well as a No Action Alternative.

Although our specific comments are attached, we begin by saying that the NPS generally prefers Alternative 4, the Refined Pavilion, and that we appreciate the Smithsonian's efforts to reduce the perceived mass of the proposed facility. We encourage the Smithsonian to explore additional refinements to further reduce the perceived mass of the structure and note that all of the alternatives described in the Tier II DEIS exceed the maximum building envelop analyzed in Tier I. Although Alternative 4 is the shortest scheme, it still exceeds the Tier I Preferred Alternative height by 1 foot, but more importantly,

7.4

the porch in Alternative 4 projects beyond the historic 445-foot setback that delineates the southern boundary respected by all of the other museum structures on the north side of the Mall. As a result, consideration should be given to reducing the projection of the porch or to repositioning the overall building north of the 445-foot setback.

The NPS agrees with the DEIS's conclusion that all four of the alternatives will have major/significant impacts and adverse effects on the National Mall, the Washington Monument grounds, and the Washington Monument. Accordingly, the NPS believes that such impacts, particularly the adverse effects to historic structures and cultural landscapes, can be minimized to some degree, as indicated in the Draft Effects Analysis Matrix found in the Appendices. However, the NPS does not believe that the impacts can be mitigated solely through the refinements to the design referenced in the mitigation sections of the document and, therefore, recommends that specific mitigations be developed for consideration. Similarly, mitigations described for other impact topics are vague. As written, it is not clear if the Smithsonian intends to implement those mitigations; therefore, it is difficult to fully assess the levels of impact.

In response to NPS's previous concerns regarding the construction of the NMAAHC and its potential effects on groundwater and soil stability and any subsequent potential physical impacts to surrounding buildings and structures (most notably, the Washington Monument), the DEIS does provide some reasoning (i.e., geotechnical information, appropriate construction methods, potential mitigations) as to why it believes there would be no impacts to these resources. However, as mentioned above, the DEIS only assumes that the mitigations provided in Section 3.5.5 would be implemented. No commitment to the implementation of the listed mitigations is provided. Given the national significance of the Washington Monument and the surrounding buildings, NPS expects the commitment of the Smithsonian Institution to provide long-term on-site monitoring, as well as other appropriate mitigations to protect these sensitive, nationally significant resources to the greatest extent practicable.

The Department has a continuing interest in working with the Smithsonian Institution and the National Capital Planning Commission to ensure that the impacts to resources of concern to the Department and to the National Park Service are adequately addressed. For continued consultation and coordination with the National Park Service, please contact Peter May, Associate Regional Director in the Office of Lands, Resources and Planning, National Park Service, National Capital Region, 1100 Ohio Drive, S.W., Washington, D.C., 20242. Mr. May can be reached by telephone at (202) 619-7025.

The Department appreciates the opportunity to provide these comments.

Sincerely,

[Handwritten signature of Michael T. Chezik]

Michael T. Chezik
Regional Environmental Officer

Enclosure: DOI comments on Museum of African American History and Culture Tier II Draft EIS

P. May, NPS, Washington, DC
J. Gorder, NPS-NCR, Washington, DC

Date: 02/01/2011  
 PROJECT: National Museum of African American History and Culture Tier II Draft EIS  
 REVIEWING AGENCY: Department of Interior – National Park Service

PAGE, SECTION	REVIEWING AGENCY COMMENTS
<b>Overarching General Comments</b>	
<b>Impact Analysis</b>	<p>Overall, there is not enough rationale within the impact analysis to accept the findings of the analysis beyond a reasonable doubt. Document relies too much on the reader's ability to infer what the analysis is trying to state. In addition, the majority of impact analysis throughout the document remains silent on the impacts associated with the construction phase of the project. A multi-year construction adjacent to the grounds of the Washington Monument would have adverse impacts to visitor use, traffic and transportation, aesthetics and viewsheds. There are a few instances in the Tier I EIS where impacts during construction are referenced (Planning Policies, Historic Resources, Geology, Soils and Groundwater), however, a summary of these findings should accompany the discussion. Do not assume that the reader has a copy of the Tier I EIS and is cross-referencing as they read the Tier II document.</p> <p>Also, the entire document assumes that there would be no impacts associated with the "No Action" alternative. The current use of the site and its proximity to nationally significant resources all have impacts on the resources that were presented in this DEIS (i.e., the site is currently an open space where demonstrations can be held (beneficial impact), visitor use on the site compacts soils (adverse impact), etc...). NPS trusts that a more comprehensive impact analysis be carried forward in the FEIS.</p> <p>The overall cumulative impact analysis in section 3-8 is questionable. The analysis does not make distinctions between the action alternatives; does not adequately consider the short-term adverse cumulative impacts associated with construction of the NMAAHC; and because the impact analysis incorrectly assumes no impacts resulting from the No Action alternative, it also incorrectly assumes no cumulative impacts.</p>
<b>Decision Pathways</b>	<p>The document lacks a clear roadmap as to how decisions presented in the DEIS were made. For example, no discussion on why the decision was made to include the proposed penthouse and to encroach into the 445-foot setback from the centerline of the Mall. In addition, there is only cursory mention of the collaboration needed in making future decisions on the design (i.e., through programmatic agreements in the NHPA 106 process and other agency approvals.). NPS would like to see this better described in the FEIS.</p>
<b>Description of All Action Alternatives</b>	<p>The document is silent regarding the decision to include a penthouse suite. In addition, as stated in the DEIS ... "As long as the Tier II concept designs fit within the physical envelope defined by the Tier I Build Alternatives and conform to the design principles developed in Tier I, it will be unnecessary to revisit, in Tier II, the analysis of effects resolved in Tier I." The preferred alternative in the Tier I FEIS set the maximum building height at 105-feet. The Tier II DEIS introduces a penthouse structure that was not analyzed in the Tier I EIS. This penthouse is an element common to all alternatives and under each alternative surpasses the Tier I EIS's maximum build height of 105-feet. The total height of Alternative 1 is 121.5-feet; Alternatives 2 and 3 are 119.5-feet; and Alternative 4 is 106-feet. While the DEIS vaguely analyzes the impacts of the penthouse in terms of where it is placed on the structure, it remains entirely silent on what visual impacts are created by the additional height of these alternatives. Because the penthouse was never analyzed in the Tier I EIS, and maximum height was assumed at 105-feet, the NPS assumes that analysis of the additional height was omitted in error and that the impacts will be thoroughly analyzed in the Tier II FEIS and that mitigations be developed to lessen any</p>

Page 1 of 4

PAGE, SECTION	REVIEWING AGENCY COMMENTS
6.3	<p>additional impacts that will occur.</p> <p>The Tier II DEIS is also silent on any justification as to the need to disregard the 445-foot setback from the centerline of the Mall as established by the McMillan Plan. Alternatives 1, 2, and 4 all encroach on this setback and no rationale is provided as to how this was decided and why this is necessary, nor does DEIS do an adequate job at analyzing the impacts of this encroachment.</p>
4.1	<p>The majority of mitigations provided in the document aimed at lessening the impacts to the various resources are primarily generic in nature and provide no specific information on how the mitigation would actually reduce an adverse impact. Some of the mitigations listed are not actually mitigations, but design requirements (i.e., The Smithsonian Institution should minimize adverse effects on distant views by centering the penthouse on the Corona, following the precedent of other buildings along the Mall: re-routing underground utilities; etc...).</p> <p>There are also many insinuations that mitigations are at the discretion of the Smithsonian Institution and may, or may not be carried forward (i.e., <i>The Smithsonian Institution should minimize adverse effects by addressing the treatment of the west facade to better relate to the Washington Monument Grounds without detracting from the idea of the entrance facades: The Smithsonian Institution should complete an illumination study as part of the final design to ensure that lighting levels are consistent with the other museums on the north side of the National Mall, and that lighting is deferential to the surrounding monuments and memorials; Areas intended to support new fill and pavements should be evaluated by a geotechnical engineer; etc...</i>).</p> <p>To that end, the impact analysis in the DEIS assumes that the mitigations that are listed will be carried forward. When the document does not commit to specific mitigation and insinuates discretion by stating that mitigation "should" occur, the impact analysis is not complete. This is due to the fact that the analysis of impact if the mitigations are not carried forward is lacking. In every instance this occurs, DEIS lacks this additional analysis. Given the national significance of this site, NPS expects that specific mitigations to minimize adverse impacts to all affected resources will be developed and implemented to the greatest extent practical. NPS assumes that these mitigations will be developed and described in the Tier II FEIS as well as through NHPA Section 106 process.</p>
11.1	
2.1	
4.2	
10.3	<p>10.3</p>
1.6	<p>1.6</p>
1.5	<p>1.5</p>
5.2	<p>5.2</p>
3.1	<p>3.1</p>
<b>Global</b>	<p>NCPC approved a planting plan for the site in 2003, based on the site work associated with the Washington Monument physical security project. The various alternatives should be reviewed as to the ways in which the project concept landscape designs respect the existing, approved plan for the grounds of the Washington Monument, the design principles developed for the project, as well as the continuation of the symmetry of design elements along the length of 15<sup>th</sup> Street between Constitution and Independence avenues and along Madison Drive and Constitution Avenue.</p> <p>In addition, the 1992 inter-agency Streetscape Manual (most recent MOU signed by the NPS, the SI, and many other agencies in 2005), should also be considered with respect to the alternatives and, in particular, the treatment along designated National Mall roads such as 15<sup>th</sup> Street. The guidelines in the Streetscape Manual should be incorporated into the proposed landscape design as the design effort progresses.</p>
<b>Specific Comments</b>	
xix	Action Alt 2-Plaza. See elevation above sea level. Should be 13 feet not 113 feet.
5.1	<p>Table ES.2 The National Mall Plan acknowledges that the project site was selected for the museum. However, the National Mall Plan does not call out specific landscape treatment for the project</p>

Page 2 of 4



PAGE, SECTION	REVIEWING AGENCY COMMENTS	
	site, but refers to broad concepts about such landscape details as unified paving throughout the National Mall and the importance of the National Mall as a civic space. We are not sure how landscape concepts for the vegetation, turf areas, public plaza, and pedestrian circulation as described in the Tier II DEIS are consistent with the broader principles in the National Mall Plan. See above comment on the Streetscape Manual.	
1-25	Eliminate reference to "(Monument Lodge Underground Security Screening and Entryway)" since this is only one of several design ideas that is being explored during the current public scoping process of the EA for the Monument project	
2-44	Total height should be 108 feet not 108 inches.	
2-47, last PP	The identification of sidewalk widths on the project site's section of 15 <sup>th</sup> Street is an example of the landscape design concept not clearly coordinated with the remainder of 15 <sup>th</sup> Street as it crosses the Washington Monument Grounds. Should the sidewalk width, material, finish and overall character be consistent along this section of 15 <sup>th</sup> Street? See comment on Streetscape Manual.	3.7
3-6	Continue to include the pedestrian improvement recommendations in project planning.	5.5
3-19	NPS Tourmobile stops on Madison and on 15 <sup>th</sup> Streets –reference missing from PP 1 and PP 2	5.4
3-19	PP3 – The NMAAHC will be how many feet from the plaza of the Washington Monument? How many feet from the Monument Lodge? Both locations are places for Monument visitors to queue and gather.	6.6
3-29	Visitor accessibility benefits from both a north and south entrance.	3.4
3-29	3.2.2.4 –Constitution Ave entrance and a Madison Drive entrance are not likely to qualify as a mitigation effort, considering that most SI/NGA buildings on this side of the National Mall have multiple entrances. Better to provide for a programmed public gathering space on the site?	5.3
Refined Pavilion	South-facing porch is a design element that extends over the historic 445' line. This line was a criterion analyzed in Tier I EIS, as all "porch" or entry landings at the other SI/NGA museums respect this line. The extension of this design element has not been accounted for in the Tier I EIS, nor in the ongoing section 106 consultations and seems inadequately addressed in the Tier II (see matrix on xxix, and throughout document, such as on page 3-113, 3-116.)	6.4
3-93	PP2 implies that mitigation rests entirely with design refinements. Design refinements are indeed critical and ameliorative, but please also consider what might represent mitigation that is not related to design.	6.1
3-99	Historic Monument Lodge is located in close proximity to the project site and should be considered relative to proposed building heights analyzed and discussed in this section and shown in figures 3.4.1, 2, 4, 6, and 3.4.8.	6.7
3-147	NPS has a copy of the March 2009 Geotechnical report. The citation in the text and in the references mentions one completed in April. Were two investigations undertaken? If so, changes noted from one year to the next? Please share or inform NPS of the findings from the April 2010 report.	
3-157	3.5.5 – can the SI confirm that the procedures, such as those cited in subsequent PPs, will be among the construction techniques considered, as opposed to the authors' "assumption."	
3-159	PP3 – consider long-term monitoring?	
3-159	The DEIS does provide some sound methods and reasoning as to why it is believed that the	7.2

PAGE, SECTION	REVIEWING AGENCY COMMENTS	
7.3	construction of the NMAAHC under any of the action alternatives would not have an adverse impact on groundwater or soil stability, resulting in no impacts to surrounding buildings and structures (most notably the Washington Monument). However, the DEIS only assumes that the mitigations provided in Section 3.5.5 would be implemented. With regards to monitoring, the DEIS states: <i>"A monitoring and contingency plan would be developed to monitor the site and the surrounding areas during construction. These plans would include a preconstruction survey indentifying the current conditions of adjacent structures prior to NMAAHC construction activities. The plan would specify instrumentation to be used on site, as well as threshold levels and monitoring frequency associated with each instrument. At a minimum, optical survey points would be placed along the SOE so that if any movement in the area is recorded, actions may be taken."</i>	
	This text is especially vague on how monitoring would occur throughout the construction process. While it does state that a monitoring and contingency plan would be developed, it provides no details. What kind of instrumentation would be used? What kind of movement would it be looking for? Also, what actions would be taken if ground movement actually occurred? Where is the discussion of the Contingency Plan? If work on the museum had to be halted due to some unexpected ground movement, how could the project proceed? Finally, given the national significance of the Washington Monument and surrounding buildings, NPS expects the commitment of the Smithsonian Institution to go beyond the minimum and provide long-term on-site monitoring and other appropriate mitigations to protect these sensitive resources to the greatest extent practicable.	
8.3	3-169 Among the recognized climate change issues for DC area is the frequency and intensity of storms. How will the project alternatives address capacity for storm-water detention on the site in light of more frequent severe weather events?	
10.1	3-215 PP3 – the projects cited for 14 <sup>th</sup> Street are not strictly limited to 14 <sup>th</sup> Street. Washington Monument Security screening project might impact area west of 15 <sup>th</sup> and east of 17 <sup>th</sup> streets.	
10.2	3-216 Coordinate list of scheduled projects with lists cited previously in the document. The Lincoln Memorial Reflecting Pool project is not cited here, for example.	
9.1	3-214 Confirm that the transportation mitigation measures in this report do not conflict with the recommendations for the National Mall.	
	Appendix Section 106 matrix. Suggest adding numbers to cells on the left and right margins in order to follow the extension of the alternatives onto additional pages.	



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III  
1650 Arch Street  
Philadelphia, Pennsylvania 19103-2029

January 10, 2011

NMAAHC Tier II Draft EIS Comments,  
c/o AECOM  
675 N Washington Street  
Suite 300  
Alexandria, VA 22314

Re: Smithsonian Institution National Museum of African American History and Culture  
Tier II Draft Environmental Impact Statement, November 2010 # 20100441

Dear Sir/Madam:

In accordance with the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, the U.S. Environmental Protection Agency (EPA) offers the following comments regarding the National Museum of African American History and Culture Tier II Draft Environmental Impact Statement (DEIS). This Tier II DEIS supplements the Tier I Final EIS completed in 2008. In our February 4, 2008 letter, EPA rated the environmental impacts of the Tier I DEIS as "EC" (Environmental Concerns) and the adequacy of the impact statement as "2" (Insufficient Information). In our July 21, 2008 letter on the Tier I Final EIS, EPA stated that issues were addressed, though response to EPA concerns on Environmental Justice analysis remained outstanding; these comments have also not been fully addressed in this document. Based on our review, we rate this document an "LO" (Lack of Objections).

Project Purpose:

The Smithsonian Institution is proposing to construct and operate a permanent facility for the National Museum of African American History and Culture (NMAAHC) on a five-acre parcel on the Washington Monument Grounds and the National Mall. Although the NMAAHC currently exists in the form of exhibits displayed within other Smithsonian Museums, there is no permanent exhibition facility dedicated to its collection and programs. The National Capital Planning Commission (NCP) is the lead federal agency.

Alternatives:

This DEIS evaluates four action alternatives and a No Build Alternative. The four action alternatives demonstrate different approaches to massing, location, and landscape treatment. The Section 106 process of the National Historic Preservation Act is being undertaken concurrently with this EIS process. There are several features of the proposed museum that are common to

Printed on 100% recycled/recyclable paper with 100% post-consumer fiber and process chlorine free.  
Customer Service Hotline: 1-800-438-2474

the action alternatives: primary building form, pedestrian and service access and sustainability. The Smithsonian Institution has committed to a minimum level of Gold for the building as certified by the U. S. Green Building Council. The museum is also registered as a pilot project under the Sustainable Sites Initiative (SITES). The four build alternatives are: 1) Plinth Concept, 2) Plaza Concept, 3) Pavilion concept, and 4) Refined Pavilion Concept.

According to this DEIS none of the alternatives would have a significant impact on land use and planning policies, visitor use and experience, geology, soils and groundwater, global climate change, or stormwater runoff. Impacts would be related to historic resources and include historic views and vistas, special organization, distinctive historic planning features, topography, vegetation, buildings and structures. Impacts would also be to open space, mature trees, and increased pedestrian traffic at intersections.

The project team should work closely with the National Park Service and coordinate this effort with the plan for the National Mall and to continue to avoid and minimize impacts.

2.2

The plan relies upon the Environmental Justice assessment conducted in the Tier I document as a basis for the assessment in this document. The Tier I document has determined that, "the construction and operation of the NMAAHC facility would not significantly impact local economic development, community services such as schools, fire and rescue services or hospitals and it would not significantly impact environmental justice populations or children". However, as expressed in our previous letter of July 21, 2008, the Tier I document may not have examined the potential for adverse impacts upon communities of concern in a truly comprehensive manner. The complexity of this project makes it imperative that the assessment examine the potential for impacts upon communities of concern from the standpoint of risk, exposures to fugitive dusts, traffic related impacts, noise, business and transportation disruptions, utilities service disruptions, and other services that may impact the populations in the study area. There were questions and concerns expressed previously regarding the identification of at-risk populations, the assessment and identification of impacts, and the localization of given impacts in a manner that allows for the assessments of multiple impacts or exposures occurring in a given locality during the construction of this facility.

Thank you for the opportunity to offer these comments. If you have any questions, please contact Ms. Barbara Okorn at (215)814-3330.

Sincerely,

Barbara Rudnick  
Office of Environmental Programs  
NEPA Team Leader

Printed on 100% recycled/recyclable paper with 100% post-consumer fiber and process chlorine free.  
Customer Service Hotline: 1-800-438-2474

From: Carter, Michael A. (DPW) [michael.carter@dc.gov]  
Posted At: Wednesday, November 17, 2010 6:18 PM  
Conversation: National Museum of African-American History & Culture  
Posted To: NMAAHC EIS Comments

Subject: National Museum of African-American History & Culture

The DC Department of Public Works (DPW) has no comments.

Michael A. Carter  
Deputy Director for Operations  
Department of Public Works  
District of Columbia Government  
2000 14th Street NW  
Reeves Center - 6th Floor  
Washington, DC 20009  
(202) 671-2007 Telephone  
(202) 671-0642 Fax  
email: michael.carter@dc.gov

Preventing terrorism is everybody's business.  
If you SEE something, SAY something.  
Call the Metropolitan Police Department at (202) 727-9099 or email at SAR@DC.GOV to report suspicious activity  
or behavior that has already occurred.  
Call 911 to report in-progress threats or emergencies.

To learn more, visit <http://www.mpdc.dc.gov/operationtipp>.

National Museum of African American History and Culture  
 Public Hearing Comments on the Tier II Draft EIS  
 Held at the National Museum of American History in the Carmichael Auditorium  
 November 17, 2010

**Oral Comments during Presentation**

Jason Johnson, DC Exposure Group

- What is the current material of the museum facade? What is the reflectivity of that material? 1.4
- The original design had discussed possible connections with the National Museum of American History using a pedestrian tunnel, is this still the case?
  - The historical significance between American History and African American History should be evidenced in the architecture. Should be a physical connection.
  - Would also alleviate pedestrian congestion at street level; wider pedestrian thoroughfares will need to be made at the street level.
- Security around the museum has not been mentioned. Are there renderings of how the museum and grounds will be protected? 3.5

Rosemary Reed, DC Historic

- This is a hot area to be removing so many trees. Should retain as many trees as possible. Do we need to remove so many trees? How will the trees that are currently located on the site and provide shade be replaced? 8.2

**Comments Received after Presentation**

- Concerns over adequate security due to the lack of staff parking 3.6
- What will the corona screen (façade) be made of? How translucent or reflective will it be? 1.3
- Commenter concerned about the museum focus, will exhibits focus on past or contemporary issues? 12.1
- Compare this museum to the one in Baltimore. How will NMAAHC be similar and different from the museum in Baltimore?
  - Baltimore museum does a good job keeping local history alive and current, commenter was happy to hear exhibit spaces will be a mix of rotating history and current topics to keep the museum interesting and a "living institution"
- Commenter concerned with housing collections sub-grade, would flooding be an issue? 7.1
- Commenter concerned about the materials used for the corona screen, will the patina change over time?
- Commenter liked the theme of "celebration" and how this was embodied by the museum's design.

National Museum of African American History and Culture  
 Public Hearing Comments on the Tier II Draft EIS  
 Held at the National Museum of American History in the Carmichael Auditorium  
 November 17, 2010

- Commenter concern over the corona screens, will they be functional? Can they be opened and closed? Are they free-standing or attached to the building? 1.3
- Commenter concerned over the Plaza Alternative, thought there were too many buildings on site. Preferred alternatives that provided more green space for recreation, gatherings and visitor amenities.

National Museum of African American History and Culture  
Public Hearing Comments on the Tier II Draft EIS  
Held at the National Capital Planning Commission  
January 6, 2011

**Oral Comments**

- 7.5 - Tiber Creek, is it under Museum?
- Misses social meaning of museum - barren presentation of archeological ideals
- 1.1 - What is comparably-sized Smithsonian Museum?
- 1.7 - After EIS is there opportunity for refinements to design?
- 3.3 - How much of public exhibit space in preferred alternative will be below ground?
- 3.2 - Movement towards smaller structure in alternatives is wise
- NMAI design is evocative - NMAAHC design is not evocative
- 12.4 - Describe involvement of landscape architect in process
- 12.3 - Water feature looks appropriately - sized
- 6.2 - Implied horizontal plane in existing museums - should not make NMAAHC too small
- 6.5 - Think about building as on par with its neighbors; don't emphasize views to Washington Monument at expense of compatibility of NMAAHC
- 8.1 - Any LEED certification for this building?
- 12.2 - Will there be any permanent seating on porch?

**Written Comment**

- In the presentation why not say "this museum will tell the stories of African-Americans?"

From: William Haskett [williamhaskett@hotmail.com]  
Posted At: Sunday, January 09, 2011 9:45 AM  
Conversation: comments on TII Draft EIS for proposed National Museum of African American History and Culture  
Posted To: NMAAHC EIS Comments

Subject: comments on TII Draft EIS for proposed National Museum of African American History and Culture

Sunday, January 9, 2011: Please note that this is an extended version of my oral comments to the members of the NMAAHC-EIS at the Public Meeting of January 6, 2011 on the Tier 2 Draft Environmental Impact Statement, in the NCPC offices.

Friday, January 7, 2011  
Sunday, January 9, 2011

Comments on the Environmental Impact Statement for the African-American Museum of History and Culture, proposed for a site at the corner of Constitution Avenue and 14th. St. in Washington D.C.

There is a missed opportunity to use the EIS to declare an alliance with the Historical City of Washington: in particular, this is to bring to notice the existence of the Tiber Creek by visibly bridging it in some ways on the site of the Museum, and thus making an actual historical statement of how the present is intimately connected with the past, in ways that most people do not necessarily understand.

The anxiety to keep open the view towards the Washington Monument cannot do this because it steps aside to maintain an already-existent part of 'Monumental Washington' to the neglect of the actual and historical Washington, before Macmillan.

It also gives up the opportunity to point to an emphasis on the actual past of the line of the former Canal...which used to be there before Constitution Avenue and the Ellipse were even thought of, directly or adjacent to the line of the present Constitution Avenue and running under the Archives building...and again draws attention to the real point of the story---that the City of Washington was there (and is still there) alongside and not engulfed by the Monuments to which the modern-day tourists come.

The other dimension is the role of the Museum site in all its dimensions, not merely those which revolve around the Washington monument and its local space---between Independence and Constitution avenues, and alongside the unconsidered curves of 15th. Street in its vicinity.

The present proposals do not propose to make any more sense of the Mall, and do place this additional thing beyond the present boundaries of real attention at 14th. street. This is important in the sense of Kevin Lynch's IMAGE OF THE CITY, which would ask of designs for new things how they fitted or failed to fit into people's local sense of the city. I would remind people that before the riots of 1968, Fourteenth street was the major shopping street of downtown Washington, and defines much more adequately than 16th. street the local phrases of 'West of the Park' and 'East of the Park.' No-one merely crosses 14th. street and Constitution Avenue merely to get to the other side, because there is a gap of consciousness. The sense of going down Fifteenth-street from Pennsylvania Avenue towards Constitution is to leave here and to go along a great detail-less wall of the Commerce building and down, but towards Fourteenth-street NOT actually towards Constitution Avenue, its first physical terminus.

All this means is that the designers have to entice visitors across and beyond the heavily-travelled Fourteenth street, to the new Museum, and not expect them to come automatically.

The other dimension is of course the Mall itself, which is surrounded by Museum buildings which make no reference to each other, and are quite literally therefore meaningless. Their masses and shapes shapes, their relationships to one another, are without the dimension of mutual comprehension. The grass strip in the middle has only one real purview, from its two ends, from Lincoln, through Washington to the Capitol. On the grass itself, or the roads which cross it, or the tourist paths which destroy its grass-cover in summer, there is probably no meaning or perspective itself. In the mid-19th. Century Downing's landscaping made a certain amount of sense, but the railway station between it and the Capitol did away with that sense, and the buildings and tourist traffic have not succeeded in giving the Mall anything but disproportionate length, crossed by shaped rectangles what do not depend upon or embrace the buildings which have been placed there as time and chance decreed,

Now, I do not suggest that the Afro-American Museum can, of itself, resolve every one of these riddles but I do think that the design, and the relationship to its environment deserve better than we are presently offered. The actual architectural environment is not merely the local or even the tourist Washington, but needs to be thought of in the international context of other capital cities, across the world, which have just as much history (and often much more, as in Peking's Forbidden City, or Paris' river, or Berlin's Museuminsel, or even London's apologies for neglecting Wren or Evelyn.) Washington is not New York (or even Burnham's Chicago), nor does it need to be, but we ought to be able to think harder about local meaning and its environment when we propose to spend our money on the future of the Smithsonian in this way and in this place.

7.5

Dr. William Haskett  
2208 King Place N.W.  
Washington D.C. 20007  
tel. 202-333-4163  
e-mail: williamhaskett@hotmail.com

**From:** Joe Harper [joe.c.harper@gmail.com]  
**Posted At:** Friday, November 12, 2010 7:38 PM  
**Conversation:** Design of NMAAHC  
**Posted To:** NMAAHC EIS Comments

**Subject:** Design of NMAAHC

- 1.2 This building is utterly out of place. The current design of the NMAAHC does not adhere to the requirements of the project plan, most notably, the requirement that specifically states that the building must respect the Washington Monument and related historical buildings in proximity (particularly the Federal Triangle and the White House). The current design is not the right fit for the site that has been selected. Not even close. To say otherwise would be disingenuous at best. Though I do not know what specific authority the current commission overseeing the design phase has over the architectural aspects of the building; I can say that, based upon the meeting minutes I have read via the NMAAHC website, the commission has failed to help mold a design that does not disrespect the integrity of the Mall and the Washington Monument grounds. Like most Americans, I care very much about the beauty and integrity of our National Mall and feel as though it is slowly becoming more of a national embarrassment as opposed to a national treasure. In my opinion, the current design (size, shape, materials and color) of the NMAAHC does not belong on the National Mall. Please start enforcing and adhering to the original project plan and suggest the architect provide a more suitable design. One that is more cohesive with its surroundings.

Thank you for the opportunity to voice my opinion on the matter.

Sincerely,

Joe - Atlanta, GA

This page is intentionally left blank



## **D. DRAFT ENVIRONMENTAL IMPACT STATEMENT**



This page is intentionally left blank

# TIER II DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE SMITHSONIAN NATIONAL MUSEUM OF AFRICAN AMERICAN HISTORY AND CULTURE



Draft November 2010



This page is intentionally left blank

Smithsonian Institution  
National Museum of African American History and Culture  
Between 14<sup>th</sup> and 15<sup>th</sup> Streets NW and Constitution Avenue, and Madison Drive

**Tier II Draft Environmental Impact Statement**

Submitted Pursuant to 42 U.S.C. 4332 (2) (c) by the  
**Smithsonian Institution** and its Joint-Lead and Responsible Federal Agency the **National Capital Planning Commission**  
with the Cooperating Agency of the **National Park Service**

The following persons may be contacted for additional information concerning this document:

Jane Passman  
Smithsonian Institution  
600 Maryland Avenue SW, Suite 5001  
P.O. Box 37012 MRC 511  
Washington, D.C. 20013-7012  
(202) 633-6549

Ken Walton  
National Capital Planning Commission  
401 9th Street  
North Lobby, Suite 500  
Washington, D.C. 20004  
(202) 482-7200

The Smithsonian Institution with its Joint-Lead and responsible Federal Agency, the National Capital Planning Commission (NCPC), in cooperation with the National Park Service (NPS), prepared this Tier II draft environmental impact statement (EIS), to evaluate the potential environmental impacts associated with the construction and operation of a new Smithsonian National Museum for African American History and Culture (NMAAHC). The proposed museum is to be located between 14<sup>th</sup> and 15<sup>th</sup> Streets NW, Constitution Avenue, and Madison Drive in Washington, DC.

This page is intentionally left blank

# DRAFT EIS EXECUTIVE SUMMARY



This page is intentionally left blank

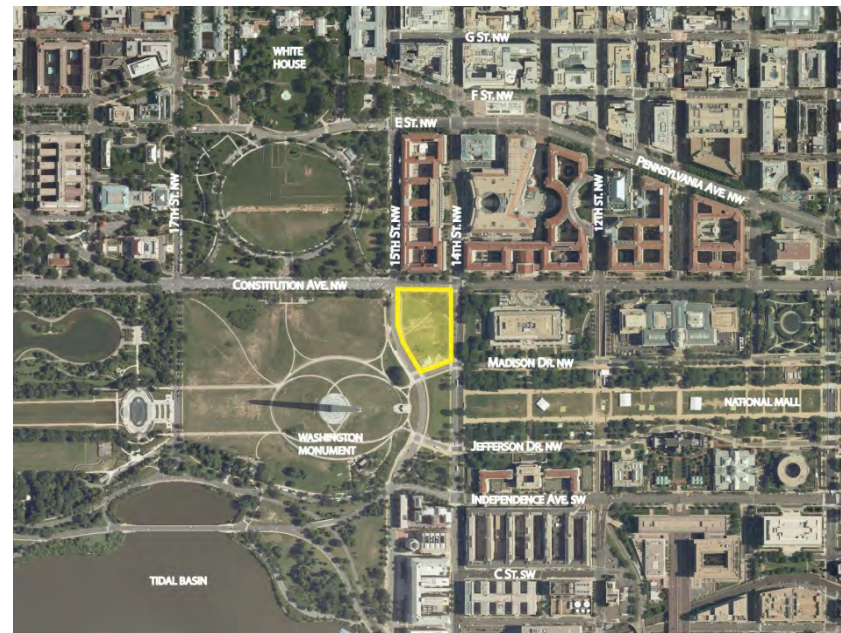


## A. Introduction

The Smithsonian Institution is proposing to construct and operate a permanent facility for the National Museum of African American History and Culture (NMAAHC) on a five-acre parcel on the Washington Monument Grounds and the National Mall, located in the northwest quadrant of the District, bounded by Constitution Avenue on the north, Madison Drive on the south, 14<sup>th</sup> Street NW on the east, and 15<sup>th</sup> Street NW on the west (see Figure ES-1). Although the NMAAHC currently exists in the form of exhibits displayed within other Smithsonian Museums, there is no permanent exhibition facility dedicated to its collection and programs.

The Smithsonian Institution has prepared this Tier II Draft Environmental Impact Statement (EIS) with its joint-lead and responsible federal agency, the National Capital Planning Commission (NCPC). The National Park Service (NPS) is a cooperating agency.

This Tier II Draft EIS has been prepared in accordance with the National Environmental Policy Act (NEPA) pursuant to 42 U.S.C. §4321 through 42 U.S.C. §4347 and Title 40 of the Code of Federal Regulations (40 CFR 1500 – 1508 (1986), as amended). NEPA requires all federal agencies to consider the impacts on the natural and human environments of major federal actions prior to making decisions and proceeding with an action. Additionally, the Smithsonian Institution is concurrently assessing effects on relevant historic and cultural resources in accordance with the Section 106 process of the National Historic Preservation Act (NHPA).



**ES-1: Site Location Map**

*Source: AECOM, 2010*

## **B. Relationship to the Tier I EIS**

This Tier II Draft EIS supplements the Tier I Final EIS completed by the Smithsonian Institution in 2008 (Smithsonian Institution, 2008a).

The Tier I Final EIS addressed potential effects of six massing alternatives that varied in siting and mass, orientation, form, exterior spaces, and profiles as well as a no build alternative. The Tier I Final EIS was prepared by Louis Berger Group, Inc. on behalf of the Smithsonian Institution (2008a). The Tier I EIS process concluded with a Smithsonian Record of Decision (ROD) in 2008 and a set of design principles to guide the development of specific concepts for the building that would permanently house the museum collection.

Since November 2009, several different architectural concepts have been developed for the NMAAHC. This Tier II Draft EIS analyzes the environmental effects associated with construction and operation of four specific build alternatives, as well as a No Action Alternative.

The Tier I Final EIS analyzed the potential impacts of the massing alternatives on the natural and manmade environments including archaeological resources, aesthetic and visual resources, distribution and movement of groundwater, surface water resources, air quality, noise, transportation, land use and planning policies, visitor use and experience, communities and businesses, infrastructure and utility services, threatened and endangered species, and public health and security.

As stated in the Tier I Final EIS, “the Tier I Preferred Alternative includes the range of all reasonable alternatives which were rigorously explored and objectively evaluated in the first tier. As

long as the Tier II concept designs fit within the physical envelope defined by the Tier I Build Alternatives and conform to the design principles developed in Tier I, it will be unnecessary to revisit, in Tier II, the analysis of effects resolved in Tier I. By carrying forward this analysis, Tier II can ‘eliminate repetitive discussions of the same issues’ and focus on ‘the actual issues ripe for decision’ (Council on Environmental Quality (CEQ) Section 1502.20)” (Smithsonian Institution, 2008a). The Tier I Final EIS is available for review at: <http://www.nmaahceis.com/tier-i-eis>.

This Tier II Draft EIS builds upon the environmental analysis completed in the Tier I EIS process and incorporates the Tier I Final EIS by reference. Further, the analysis in this Tier II Draft EIS is focused on those issues that were not resolved in the Tier I EIS process. In addition, mitigation measures developed during the Tier I EIS process are carried forward in this Tier II Draft EIS. These Tier II issues include the following:

- Land Use, Planning Policies and Visitation
- Historic Resources
- Visual Resources
- Geology, Soils and Groundwater
- Conservation of Natural Resources
- Transportation

### **C. Purpose and Need**

As explained in the Tier I Final EIS, the purpose of the proposed action is to fulfill the mandate of the National Museum of African American History and Culture Act, P.L. 108-184 (2003) to construct a world class building for a museum “dedicated to the collection, preservation, research, and exhibition of the African American historical and cultural materials reflecting the breadth and depth of the experience of individuals of African descent living in the United States.” This Tier II Draft EIS assesses the impacts of constructing and operating a permanent facility for the NMAAHC on the approved site to meet this purpose and need.

### **D. Tier II Alternatives**

Following completion of the Tier I NEPA process in 2008, the Smithsonian Institution held a design competition to select a team that would design the museum and develop alternatives. The initial (Tier I) design principles were used as parameters during the design competition to help the design teams prepare their submissions.

The design competition included the consideration of 22 architectural firms. In January 2009, an evaluation board narrowed the field to six teams, who were invited to participate in the competition. The six architectural concepts and models that were developed were exhibited to the public in the Smithsonian Institution Building. The Smithsonian ultimately selected the architectural and engineering (A/E) team of Freelon Adjaye Bond/SmithGroup to design the museum.

Following the design competition, the original (Tier I) design principles were further refined (and became known as the Tier II design principles) to inform the development of alternatives by the FAB/S team and to test the responsiveness of the design alternatives. As a result, the refined (Tier II) design principles helped shape the action alternatives that are addressed in this Tier II EIS.

NEPA requires that a federal agency propose a reasonable range of alternatives to fully understand the impacts associated with the proposed action. The four action alternatives identified and analyzed in this document demonstrate different approaches to massing, location, and landscape treatment and represent further development of the physical parameters and design principles representing the Tier I preferred alternative. Developing the 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).

The Section 106 process of the National Historic Preservation Act is being undertaken concurrently with the EIS process. This integrated approach allows the findings from Section 106 to be included in the EIS, providing insight into the effects on historic resources. The Section 106 process also played a key role in the Tier I Final EIS by allowing consulting parties to help shape the physical parameters and design guidelines in a way that respects important views and viewsheds, historic resources and cultural landscapes. Similarly, during this Tier II EIS process, the consulting parties reviewed the consistency of the alternatives with the Tier I Final EIS findings.

**E. No Action Alternative**

According to Section 1502.14(d) of CEQ guidance, the alternatives analysis in an 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 or project. As discussed in the Tier I Final EIS, this alternative assumes continuation of current conditions and 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).

For the purposes of this analysis, with the No Action Alternative no construction would occur and the project site would continue to be parkland managed and maintained by NPS as part of the Washington Monument Grounds. The area would continue to be designated as a location for public gathering (for example, First Amendment demonstrations and special events), and the NCPA-approved planting plan for the Washington Monument Grounds would continue to be implemented on this and other locations on the Grounds. The existing concessionaire’s temporary trailer would continue to operate on the site. However, NPS would continue to seek an alternative permanent location for the temporary concessions facility currently located on the site.

**F. Elements Common to Action Alternatives**

There are several features of the proposed museum that are common to the action alternatives and 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 and would be the primary location for the museum’s galleries. The concept of a Corona is derived from the crown or capital in Yoruban art and architecture.

The Corona would be a shell that frames a traditional building structure. The Corona would be 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 potential footprint of the museum is shown in Figure ES-2. Each tier of the Corona would extend outward approximately 15 feet beyond the building level below. Although the number of tiers in the Corona would vary among the action alternatives, generally four interior levels would be housed within the Corona and each alternative would feature two museum levels below grade.



**Figure ES-2 Building Setback and Alignment Lines**  
 Source: AECOM, 2010

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; the exact size and placement would vary among the action alternatives. The action alternatives generally build on the Contextual Building Alignment Massing Alternative that was studied in Tier I.

### 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 Grounds or from the adjacent museums on the National Mall. Approximately 30 percent of visitors would likely enter on the north side of the site from Constitution Avenue, 14<sup>th</sup> Street, or 15<sup>th</sup> Street. This would include visitors traveling from the White House, the Ellipse, and the Federal Triangle. Therefore, 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 plaza that incorporates a reflecting pool to symbolically convey the crossing of water. Perimeter security would be integrated into the landscape

and the water features and screened by vegetation. The action alternatives would also provide an employee entrance.

#### *Vehicular and Service Access*

Service access and limited vehicular access would be provided from 14<sup>th</sup> 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 14<sup>th</sup> Street. Approximately three parking spaces would be provided in the underground service and loading area for deliveries, the museum director, and special guests. The action alternatives would not accommodate employee parking on the project site. Therefore, the service driveway would be used primarily for delivery, loading, and service activities. To the extent possible, use of the access drive would be restricted to non-peak hour traffic periods.

#### *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. 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. To minimize energy use for lighting, approximately 50 percent of lighting of the public space for each action alternative would come from sunlight.

Comprehensive stormwater retention, reuse of stormwater runoff for landscape irrigation purposes, and recycling water within the proposed water features are some of the potential stormwater management and conservation strategies that would be employed. Other strategies would include using pervious paving materials, balancing pervious surfaces (infiltration) with areas for collection of rainwater (retention), 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).

Sustainable design strategies would be selected and implemented to reduce the environmental impact of the construction and operation 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 for certification.

### *Nighttime Lighting*

The building facade would retain a dignified presence on the National Mall that complements, but would not compete with, nearby landmarks such as the Washington Monument and White House 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 NMAAHC, the action alternatives would employ Dark Sky principles to achieve the Light Pollution Reduction credit for LEED Gold certification under the park/urban criteria.

**G. Action Alternative 1: Plinth Concept**

Alternative 1, the Plinth Concept evolved from the original competition winning scheme and is consistent with the Contextual Massing Alternative from Tier I. There are five primary features of the Plinth Alternative: a Corona, a Corona base, a north entryway, a cafeteria, and a plinth. The Plinth Alternative would locate the Corona in the central portion of the project site. The Corona would sit atop the plinth that accommodates a large ground floor program and frames the ground floor glass enclosure. On the north side (Constitution Avenue), the glass base of the plinth would extend an additional 57 feet to the north beyond the bottom of the Corona.

A glass cafeteria would be attached to the Corona base on the west side of the site (parallel to 15<sup>th</sup> Street). From the glass base of the Corona, a plinth would extend approximately 72 feet to the north and approximately 42 feet south. The plinth would not touch the ground floor level; instead, it would create a shaded porch-like feature over the north and south entrances.

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. 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 history galleries would be located

on the mezzanine (Level +1), which would be connected vertically with the central hall.

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 skylight 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. Offices spaces would be located on Level +4 and Level +5 and would not be accessible to the public. The penthouse at Level +6 would house a patrons lounge area and a café, as well as a south-facing terrace.

Building Area and Height

The Plinth Alternative would involve 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; the depth would be 32 feet below sea level. Approximately 65 percent of the programming would be located above ground with the Plinth Alternative.



As part of the Plinth Alternative, the museum building would occupy approximately 37 percent of the project site. The maximum building coverage area would be approximately 85,800 square feet including the Corona, plinth, ground floor cafeteria, and north entry plaza. The base of the Corona at the ground floor would measure approximately 233 feet in length (parallel to 14<sup>th</sup> and 15<sup>th</sup> 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 Corona base 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, approximately 121 feet from the curb to the north entry plaza, approximately 172 feet from the curb on Madison Drive, and approximately 74 feet from the curb on 14<sup>th</sup> Street. It would be set back approximately 50 feet to the cafeteria and 126 feet to the face of the Corona as measured from the curb on 15<sup>th</sup> 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 and approximately 114 feet from the curb on Madison Drive.

As part of the Plinth Alternative, the Corona would nearly align with the 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) as shown in Figure ES-3.

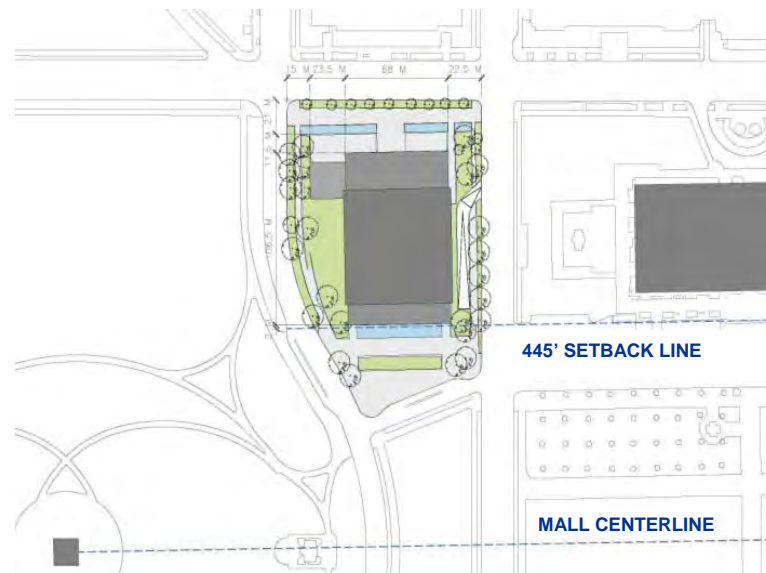
Conceptual Landscape Plan

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. At the south entrance (National Mall side), visitors would enter the building porch by crossing over a shallow reflecting pool located in front of the porch. A sloped green landform would incorporate seating walls in an amphitheater style that 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 (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 along 15<sup>th</sup> Street 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.

A separate pedestrian entrance for staff would be provided from Constitution Avenue. The driveway for the service and loading area would be located on 14<sup>th</sup> 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.



**Figure ES-3 Plinth Alternative**

Source: FAB/S, 2010

## H. Action Alternative 2: Plaza Concept

Alternative 2, the Plaza Concept, would divide the exhibit functions and administrative functions of NMAAHC into two distinct 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 14<sup>th</sup> Street. 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.

### Building Program

The Corona in the Plaza Alternative would feature seven levels, two of which would be below grade. The northern building in the Plaza Alternative 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. A staircase would provide visitor access to the Level +1 galleries. 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 penthouse at Level +5 would contain a patrons lounge area and a café, as well as a south-facing rooftop public terrace.

#### *Northern Building*

In the northern building, 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. 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 would involve construction of approximately 370,000 gross square feet in two structures on the project site. The buildings would occupy approximately 35 percent of the project site and the maximum coverage area would be approximately 80,600 square feet. 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 for a total height of 119 feet 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 above sea level to the top of the Corona and 132 feet above sea level to the top of the penthouse; the depth would be 32 feet below sea level.

With the Plaza Alternative, the Corona would cover approximately 50,625 square feet measuring approximately 225 feet in length (parallel to 14<sup>th</sup> and 15<sup>th</sup> Streets) and approximately 225 feet in width (parallel to Madison Drive and Constitution Avenue).

### *Northern Building*

The northern building would extend three stories above ground level for a total building height of approximately 43 feet above the average site grade. Two stories would be located underground for a maximum depth of 45 feet below grade. 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; the depth would be 32 feet below sea level.

The northern building would cover approximately 29,934 square feet measuring approximately 110 feet long (parallel to 14<sup>th</sup> and 15<sup>th</sup> Streets) and approximately 272 feet wide (parallel to Madison Drive and Constitution Avenue). Because Level +2 would extend beyond the building's base, its footprint is taken at the top, 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 14<sup>th</sup> Street, and approximately 53 feet from the curb on 15<sup>th</sup> Street. In 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 directly 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 side of NMAH or NMNH (see Figure ES-4).

### 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 14<sup>th</sup> 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.

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 of the plaza. A staff entrance would be provided from Constitution Avenue. 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 along the Constitution Avenue sidewalk, a planted water feature that would provide interpretive benefit and serve to collect stormwater runoff would be located between the building and the sidewalk. From the corner of Constitution Avenue and 14<sup>th</sup> Street, visitors would follow a wide extension of the plaza that would lead them to the central plaza. 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 skylight would provide natural lighting to below ground space on the concourse level.



**Figure ES-4 Plaza Alternative**

Source: FAB/S, 2010

## **I. Action Alternative 3: Pavilion Concept**

Alternative 3, the Pavilion Concept, is similar to Alternative 1, the Plinth Concept, but without the plinth. The intent of this alternative is to establish the Corona as an object in the landscape. 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 would sit atop a glass base at the ground floor level.

### 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. The ground floor level (Level 0) would be the main level into which visitors would enter the museum. The central hall would be located within this level. The ground floor level would also include visitors' services, museum shop, café, orientation theatre, and a staff entry from the southeast. The Level +1 would be accessed by escalators from the ground floor level. Ramps would be used to access additional gallery space on Level +2. Office space would be located on the Level +3. Level +4 would not be accessible to the public. The penthouse at Level +5 would house a patrons lounge and a café, as well as a south-facing terrace.

### 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 approximately five stories above ground and approximately 103 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 finished site grade would be 15 feet above sea level, the height of the Pavilion Alternative would translate to 118 feet above sea level to the top of the Corona and 132 feet above sea level to the top of the penthouse; the depth would be 32 feet below sea level. Approximately 50 percent of the programming would be located above ground under the Pavilion Alternative.

As part of the Pavilion Alternative, the museum building would occupy approximately 26 percent of the project site and the building's maximum coverage area would be approximately 60,200 square feet. The Corona would measure approximately 237 feet in length (parallel to 14<sup>th</sup> and 15<sup>th</sup> Streets) and approximately 237 feet in width (parallel to Madison Drive and Constitution Avenue) (see Figure ES-5).

### *Building Setbacks and Alignment*

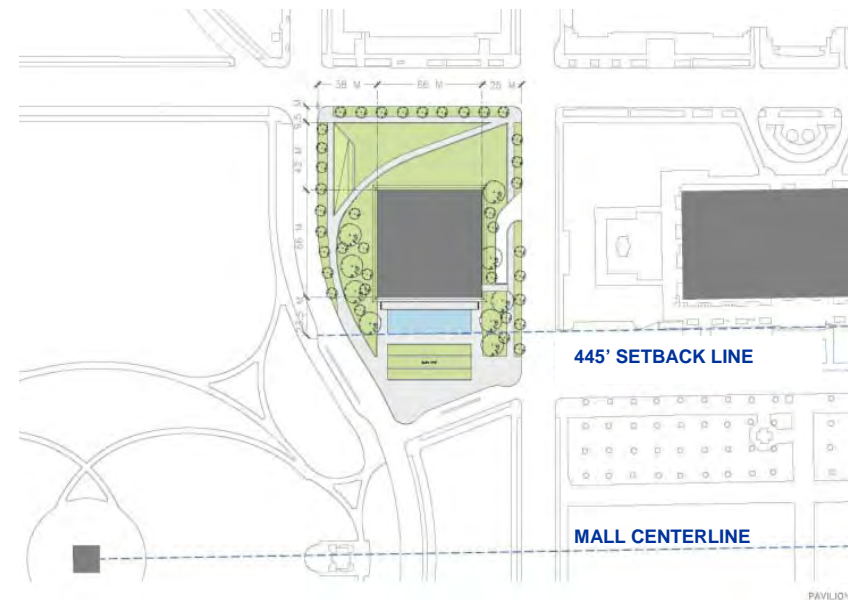
The Pavilion Alternative would be set back approximately 159 feet from the curb on Constitution Avenue, approximately 169 feet from the curb on Madison Drive, approximately 72 feet from the curb on 14<sup>th</sup> Street, and approximately 115 feet from the curb on 15<sup>th</sup> Street. In the Pavilion Alternative, the Corona would align with the primary mass of NMAH located directly to the east and would be within the east and west alignments 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. 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 14<sup>th</sup> 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.

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, and would incorporate a planted water feature to provide interpretive benefit and collect stormwater runoff. From the corner of Constitution Avenue and 14<sup>th</sup> Street, visitors would follow a curving path that would lead them to the west side of the building.

The driveway for the service and loading area would be located approximately mid-block on 14<sup>th</sup> 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.



**Figure ES-5 Pavilion Alternative**  
Source: FAB/S, 2010

**J. 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. 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.

*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, a cafeteria, a movie theater, and visitor amenities. The ground floor level (Level 0) would be the main level into which visitors would enter the museum and would include visitors' services, museum shop, cafe, and orientation theatre. The central hall would also be located within this level. The Level +1 history galleries would be accessed by escalators from the ground floor level. Additional gallery space would be located on Level +2 and Level +3. Level +3 would house the children's gallery and resource gallery. Office spaces would be located on Level +4 and Level +5. The penthouse would house a patrons lounge, as well as a south-facing terrace.

*Building Area and Height*

The Refined Pavilion Alternative would involve construction of approximately 308,000 gross square feet on the project site. The building would extend approximately five stories above ground level for a total building height of 96 feet above average site grade. A penthouse level would occupy a portion of the roof and extend an additional approximately 10 feet for a total height of 106 feet 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; the depth would be 28 feet six inches 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, the museum building would occupy approximately 23 percent of the project site and the maximum coverage area would be approximately 53,800 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-foot setback line from the McMillan Plan; however, the porch on the south side of the Corona would extend approximately 28 feet beyond the 445-foot line (see Figure ES-6).

### *Conceptual Landscape Plan*

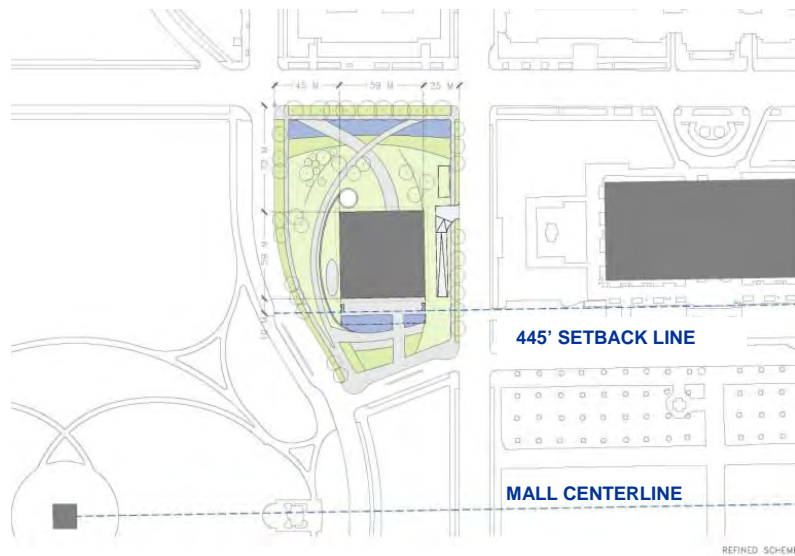
As part of the Refined Pavilion Alternative, a rolling green landscape would surround the museum. The main public entrance for the Refined Pavilion Alternative would be on the south (National Mall) side. A second entrance would be provided from the north side on Constitution Avenue. A staff entrance would be provided from 14<sup>th</sup> Street.

Visitors would enter the Refined Pavilion Alternative from the National Mall by a path leading over a shallow reflecting pool. 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 that would provide interpretive benefit and collect stormwater runoff. Different paving materials and widths would be used to differentiate the two paths, with the path leading to the Washington Monument paved with the same material as used on the Washington Monument Grounds.

One path would lead from the intersection of 14<sup>th</sup> Street and Constitution Avenue, across the lawn, to the west and south sides of the building and to Madison Drive. From the corner of Constitution Avenue and 14<sup>th</sup> 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 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 15<sup>th</sup> Street and Constitution Avenue across the water feature and the lawn into the museum's north entrance. This path would continue through the central hall and over the south water feature to Madison Drive.

A plaza would be provided along the west façade of the Corona to provide a gathering space and serve as an area for viewing the Washington Monument. Public seating and contemplative space would be incorporated into the rolling landscape between the west façade of the Corona and 15<sup>th</sup> Street. A screened driveway for the below-grade service and loading area would be located approximately mid-block on 14<sup>th</sup> Street.



**Figure ES-6 Refined Pavilion Alternative**

*Source: FAB/S, 2010*

### **K. Summary of Alternatives**

Table ES-1 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 ES.1 Comparison of Action Alternatives**

<b>Alternative Name</b>	<b>Action Alternative 1 - Plinth</b>	<b>Action Alternative 2- Plaza</b>	<b>Action Alternative 3- Pavilion</b>	<b>Action Alternative 4- Refined Pavilion</b>
Corona Dimensions	233 feet X 233 feet	225 feet X 225 feet	237 feet X 237 feet	210 feet X 210 feet
Corona Height (above grade)	105 feet	105 feet	103 feet	96 feet
Penthouse Height (above grade)	121 feet 6 inches	119 feet 6 inches	119 feet 6 inches	106 feet
Elevation of Site Above Sea Level	13 feet	13 feet	15 feet	16 feet 6 inches
Corona Elevation (Above Sea Level)	118 feet	118 feet	118 feet	112 feet 6 inches
Penthouse Elevation (Above Sea Level)	134 feet 6 inches	132 feet 6 inches	132 feet 6 inches	122 feet 6 inches
Gross Square Footage	360,000	370,000	330,000	308,000
Above Ground	7 stories, 65%	5 stories, 55%	6 stories, 50%	5 stories, 43%
Below Ground	2 stories, 45%	2 stories, 45%	2 stories, 50%	2 stories, 57%
Site Coverage (%)	36.8	34.5	25.8	23
Maximum Building Coverage (square feet)	85,804	80,559	60,229	53,750
South Alignment	NMNH	None	NMAH	NMNH
Distance to Historic Mall Centerline (445-foot Setback)	439 feet	401 feet	497 feet	417 feet
Primary Entrance	National Mall	National Mall	National Mall	National Mall
Second Entrance	Constitution Avenue	Plaza	None	Constitution Avenue
Staff Entrance	Constitution Avenue	Constitution Avenue	14 <sup>th</sup> Street	14 <sup>th</sup> Street
Servicing and Loading	14 <sup>th</sup> Street	14 <sup>th</sup> Street	14 <sup>th</sup> Street	14 <sup>th</sup> Street

Source: FAB/S; AECOM, September 2010

**L. Impact Summary**

The Tier II EIS builds upon the analysis conducted for the Tier I Final EIS, which evaluated the potential impacts that several massing alternatives would have on various resources. The Tier II analysis considered effects of more refined alternatives on specific resources that could not be evaluated fully in Tier I. The resources covered in this document include: Land Use, Planning Policies and Visitation; Historic Resources; Visual Resources; Geology, Soils and Groundwater; Conservation of Natural Resources; and Transportation. Table ES.2 summarizes the long-term impact analyses contained within the Tier II Draft EIS.

**Table ES.2 Tier II Draft EIS Impact Summary**

Impact Topic	No Action Alternative	Plinth Alternative	Plaza Alternative	Pavilion Alternative	Refined Pavilion Alternative
<p><b>Land Use, Planning Policies</b></p>	<ul style="list-style-type: none"> <li>No construction activities would occur.</li> <li>First Amendment demonstrations would continue on the site.</li> <li>Site administration would revert back to NPS.</li> <li>Loss of increased visitor activity may delay implementation of improvements proposed in the <i>DC Center City Action Agenda</i> along 14<sup>th</sup> Street.</li> </ul> <p><b>Overall there would be no impact on land use and planning policies.</b></p>	<ul style="list-style-type: none"> <li>Landscaped areas, public plaza, and pedestrian improvements would be consistent with the <i>National Mall Plan</i>.</li> <li>Placement of a cultural destination on the National Mall is inconsistent with the <i>Monumental Core Framework Plan</i>.</li> <li>Security features would be consistent with unified and contextual approaches required by the Smithsonian Institution's <i>Mall-Wide Perimeter Security Improvements Plan</i>.</li> <li>Operation of NMAAHC could increase visitor activity along 14<sup>th</sup> Street corridor, consistent with the <i>DC Center City Action Agenda</i>.</li> </ul> <p><b>Overall there would be no significant impact on land use and planning policies.</b></p>	<ul style="list-style-type: none"> <li>Landscaped areas, public plaza, and pedestrian improvements would be consistent with the <i>National Mall Plan</i>.</li> <li>Placement of a cultural destination on the National Mall is inconsistent with the <i>Monumental Core Framework Plan</i>.</li> <li>Security features would be consistent with unified and contextual approaches required by the Smithsonian Institution's <i>Mall-Wide Perimeter Security Improvements Plan</i>.</li> <li>Operation of NMAAHC could increase visitor activity along the 14<sup>th</sup> Street corridor, consistent with the <i>DC Center City Action Agenda</i>.</li> </ul> <p><b>Overall there would be no significant impact on land use and planning policies.</b></p>	<ul style="list-style-type: none"> <li>Landscaped areas, public plaza, and pedestrian improvements would be consistent with the <i>National Mall Plan</i>.</li> <li>Placement of a cultural destination on the National Mall is inconsistent with the <i>Monumental Core Framework Plan</i>.</li> <li>Security features would be consistent with unified and contextual approaches required by the Smithsonian Institution's <i>Mall-Wide Perimeter Security Improvements Plan</i>.</li> <li>Lack of entrance on Constitution Avenue would not encourage pedestrian traffic from the north, inconsistent with the <i>DC Center City Action Agenda</i>.</li> </ul> <p><b>Overall there would be a significant impact on land use and planning policies.</b></p>	<ul style="list-style-type: none"> <li>Landscaped areas, public plaza, and pedestrian improvements would be consistent with the <i>National Mall Plan</i>.</li> <li>Placement of a cultural destination on the National Mall is inconsistent with the <i>Monumental Core Framework Plan</i>.</li> <li>Security features would be consistent with unified and contextual approaches required by the Smithsonian Institution's <i>Mall-Wide Perimeter Security Improvements Plan</i>.</li> <li>Operation of NMAAHC could increase visitor activity along the 14<sup>th</sup> Street corridor, consistent with the <i>DC Center City Action Agenda</i>.</li> </ul> <p><b>Overall there would be no significant impact on land use and planning policies.</b></p>

Impact Topic	No Action Alternative	Plinth Alternative	Plaza Alternative	Pavilion Alternative	Refined Pavilion Alternative
<p><b>Visitor Use and Experience</b></p>	<ul style="list-style-type: none"> <li>• Site would continue to be used for First Amendment demonstrations, public gatherings, and informal recreation.</li> <li>• Current site vegetation, including street trees, and visitor amenities, including benches, walkways, and the temporary concession trailer would remain the same.</li> <li>• Transportation amenities used to access the site, such as Metrobus, DC Circulator and Metrorail, would remain unchanged.</li> <li>• Pedestrian access to the site would remain formally at the four corners and informally across the green space.</li> <li>• <b>Overall, there would be no impact on visitor use and experience.</b></li> </ul>	<ul style="list-style-type: none"> <li>• Plinth feature would create a welcoming “porch-like” atmosphere and provide shelter at both entrances.</li> <li>• Museum entrances would be provided on Madison Drive and from Constitution Avenue, resulting in increased museum accessibility and a beneficial effect on visitor experience.</li> <li>• A hardscape plaza on Madison Drive would be used as outdoor performance space.</li> <li>• Open space would be provided in landscaped areas adjacent to the Madison Drive entrance and along 15<sup>th</sup> Street NW for use by visitors and pedestrians.</li> <li>• Increased amount of visitor amenities would be a beneficial impact.</li> <li>• <b>Overall, there would be no significant impact on visitor use and experience.</b></li> </ul>	<ul style="list-style-type: none"> <li>• Museum entrances would be provided on Madison Drive and at central plaza, resulting in increased museum accessibility and a beneficial effect on visitor experience.</li> <li>• The central plaza would provide space for outdoor performance space or contemplative greenspace on the north side of the site.</li> <li>• The central plaza would be aligned to guide visitors to Madison Drive from 14<sup>th</sup> Street NW and Constitution Avenue.</li> <li>• Open space would be provided by a hardscape plaza along Madison Drive, in landscaped areas adjacent to the sidewalks and a large central plaza that could be used as outdoor performance space.</li> <li>• Increased amount of visitor amenities would be a beneficial impact.</li> <li>• <b>Overall, there would be no significant impact on visitor use and experience.</b></li> </ul>	<ul style="list-style-type: none"> <li>• Museum entrance would only be provided on Madison Drive, which would inconvenience visitors approaching from Constitution Avenue.</li> <li>• Hardscaped plaza with terraced green space on Madison Drive would provide outdoor performance space.</li> <li>• A cross-site path would be retained to guide visitors to Madison Drive from 14<sup>th</sup> Street and Constitution Avenue.</li> <li>• Open space would be provided by a hardscape plaza along Madison Drive, in landscaped areas adjacent to the sidewalks on 15<sup>th</sup> Street and Constitution Avenue; and a large green space north of the museum that could hold multiple uses.</li> <li>• Increased amount of visitor amenities would be a beneficial impact.</li> <li>• <b>Overall, there would be no significant impact on visitor use and experience.</b></li> </ul>	<ul style="list-style-type: none"> <li>• Museum entrances would be provided on Madison Drive and from Constitution Avenue, resulting in increased museum accessibility and a beneficial effect on visitor experience.</li> <li>• Hardscaped plaza on Madison Drive and green space north of the Corona would provide space for public gathering.</li> <li>• A cross-site path would be retained to guide visitors to Madison Drive from 14<sup>th</sup> Street and Constitution Avenue. An additional path would extend across Constitution Avenue from the Ellipse towards the entrance.</li> <li>• Open space would be provided by a hardscape plaza on Madison Drive, in landscaped areas adjacent to the sidewalks on 15<sup>th</sup> Street and Constitution Avenue, and a large green space north of the museum that could hold multiple uses.</li> <li>• Increased amount of visitor amenities would be a beneficial impact.</li> <li>• <b>Overall, there would be no significant impact on visitor use and experience.</b></li> </ul>

Impact Topic	No Action Alternative	Plinth Alternative	Plaza Alternative	Pavilion Alternative	Refined Pavilion Alternative
<p><b>Historic Resources: Views and Vistas</b></p>	<ul style="list-style-type: none"> <li>• <b>No effects on historic views and vistas:</b> <ul style="list-style-type: none"> <li>– Construction and operation of NMAAHC would not occur.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Major/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– Long views within the Washington Monument Grounds.</li> <li>– Pedestrian-level views from the Washington Monument Grounds looking northeast towards historic buildings in the Federal Triangle.</li> <li>– The view north along 15th Street towards the Herbert C. Hoover building.</li> <li>– Important non-cardinal views from principal corner street crossings.</li> <li>– The panoramic view that opens and widens on approach to the Washington Monument Grounds from the National Mall.</li> <li>– Important non-cardinal views from historic National Mall pathways.</li> <li>– Views of the Washington Monument Grounds at night.</li> <li>– Distant views of the Washington Monument Grounds from locations such as the top of the Washington Monument and the air.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Major/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– Long views within the Washington Monument Grounds.</li> <li>– Pedestrian-level views from the Washington Monument Grounds looking northeast towards historic buildings in the Federal Triangle.</li> <li>– The view north along 15th Street towards the Herbert C. Hoover building.</li> <li>– Important non-cardinal views from principal corner street crossings.</li> <li>– The panoramic view that opens and widens on approach to the Washington Monument Grounds from the National Mall.</li> <li>– Important non-cardinal views from historic National Mall pathways.</li> <li>– Views of the Washington Monument Grounds at night.</li> <li>– Distant views of the Washington Monument Grounds from locations such as the top of the Washington Monument and the air.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Major/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– Long views within the Washington Monument Grounds.</li> <li>– Pedestrian-level views from the Washington Monument Grounds looking northeast towards historic buildings in the Federal Triangle.</li> <li>– The view north along 15th Street towards the Herbert C. Hoover building.</li> <li>– Important non-cardinal views from principal corner street crossings.</li> <li>– The panoramic view that opens and widens on approach to the Washington Monument Grounds from the National Mall.</li> <li>– Views of the Washington Monument Grounds at night.</li> <li>– Distant views of the Washington Monument Grounds from locations such as the top of the Washington Monument and the air.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Major/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– Long views within the Washington Monument Grounds.</li> <li>– Pedestrian-level views from the Washington Monument Grounds looking northeast towards historic buildings in the Federal Triangle.</li> <li>– The view north along 15th Street towards the Herbert C. Hoover building.</li> <li>– Important non-cardinal views from principal corner street crossings.</li> <li>– The panoramic view that opens and widens on approach to the Washington Monument Grounds from the National Mall.</li> <li>– Views of the Washington Monument Grounds at night.</li> <li>– Distant views of the Washington Monument Grounds from locations such as the top of the Washington Monument and the air.</li> </ul> </li> </ul>

Impact Topic	No Action Alternative	Plinth Alternative	Plaza Alternative	Pavilion Alternative	Refined Pavilion Alternative
<p><b>Historic Resources: Views and Vistas (Continued)</b></p>		<ul style="list-style-type: none"> <li>• <b>Moderate/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– The panoramic view that opens and widens on the approach to the Washington Monument Grounds from the Ellipse.</li> </ul> </li> <li>– Distant views from the Old Post Office Tower.</li> <li>• <b>Minor adverse effects on:</b> <ul style="list-style-type: none"> <li>– Long and mid-range vistas down the National Mall looking west.</li> </ul> </li> <li>• <b>No effects on:</b> <ul style="list-style-type: none"> <li>– Distant views from Arlington Cemetery.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Moderate/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– The panoramic view that opens and widens on the approach to the Washington Monument Grounds from the Ellipse.</li> </ul> </li> <li>– Distant views from the Old Post Office Tower.</li> <li>• <b>Minor adverse effects on:</b> <ul style="list-style-type: none"> <li>– Long and mid-range vistas down the National Mall looking west.</li> </ul> </li> <li>• <b>No effects on:</b> <ul style="list-style-type: none"> <li>– Distant views from Arlington Cemetery.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Moderate/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– The panoramic view that opens and widens on the approach to the Washington Monument Grounds from the Ellipse.</li> <li>– Important non-cardinal views from historic National Mall pathways.</li> </ul> </li> <li>– Distant views from the Old Post Office Tower.</li> <li>• <b>Minor adverse effects on:</b> <ul style="list-style-type: none"> <li>– Long and mid-range vistas down the National Mall looking west.</li> </ul> </li> <li>• <b>No effects on:</b> <ul style="list-style-type: none"> <li>– Distant views from Arlington Cemetery.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Moderate/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– The panoramic view that opens and widens on the approach to the Washington Monument Grounds from the Ellipse.</li> <li>– Important non-cardinal views from historic National Mall pathways.</li> </ul> </li> <li>– Distant views from the Old Post Office Tower.</li> <li>• <b>Minor adverse effects on:</b> <ul style="list-style-type: none"> <li>– Long and mid-range vistas down the National Mall looking west.</li> </ul> </li> <li>• <b>No effects on:</b> <ul style="list-style-type: none"> <li>– Distant views from Arlington Cemetery.</li> </ul> </li> </ul>



Impact Topic	No Action Alternative	Plinth Alternative	Plaza Alternative	Pavilion Alternative	Refined Pavilion Alternative
<p><b>Historic Resources: Spatial Organization</b></p>	<ul style="list-style-type: none"> <li>• <b>No effects on historic spatial organization:</b> <ul style="list-style-type: none"> <li>– Construction and operation of NMAAHC would not occur.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Major/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– The spatial organization and conceptual boundaries of the Washington Monument Grounds.</li> <li>– The cross-axial spatial organization of the monumental core.</li> </ul> </li> <li>• <b>Moderate/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– The larger spatial organization of the National Mall.</li> <li>– The spatial organization of the Ellipse.</li> </ul> </li> <li>• <b>Minor adverse effects on:</b> <ul style="list-style-type: none"> <li>– The spatial organization of features that contribute to the historic significance of the city plan.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Major/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– The spatial organization and conceptual boundaries of the Washington Monument Grounds.</li> <li>– The cross-axial spatial organization of the monumental core.</li> </ul> </li> <li>• <b>Moderate/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– The larger spatial organization of the National Mall.</li> <li>– The spatial organization of the Ellipse.</li> </ul> </li> <li>• <b>Minor adverse effects on:</b> <ul style="list-style-type: none"> <li>– The spatial organization of features that contribute to the historic significance of the city plan.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Major/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– The spatial organization and conceptual boundaries of the Washington Monument Grounds.</li> <li>– The larger spatial organization of the National Mall.</li> <li>– The cross-axial spatial organization of the monumental core.</li> </ul> </li> <li>• <b>Moderate/significant effects on:</b> <ul style="list-style-type: none"> <li>– The spatial organization of the Ellipse.</li> </ul> </li> <li>• <b>Minor adverse effects on:</b> <ul style="list-style-type: none"> <li>– The spatial organization of features that contribute to the historic significance of the city plan.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Major/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– The spatial organization and conceptual boundaries of the Washington Monument Grounds.</li> <li>– The cross-axial spatial organization of the monumental core.</li> </ul> </li> <li>• <b>Moderate/significant effects on:</b> <ul style="list-style-type: none"> <li>– The larger spatial organization of the National Mall.</li> <li>– The spatial organization of the Ellipse.</li> </ul> </li> <li>• <b>Minor adverse effects on:</b> <ul style="list-style-type: none"> <li>– The spatial organization of features that contribute to the historic significance of the city plan.</li> </ul> </li> </ul>

Impact Topic	No Action Alternative	Plinth Alternative	Plaza Alternative	Pavilion Alternative	Refined Pavilion Alternative
<b>Historic Resources: Land Use</b>	<ul style="list-style-type: none"> <li>• <b>No effects on historic land use:</b> <ul style="list-style-type: none"> <li>– Construction and operation of NMAAHC would not occur.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Major/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– Established land uses of the Washington Monument Grounds.</li> </ul> </li> <li>• <b>No effect on:</b> <ul style="list-style-type: none"> <li>– Land use of the National Mall or the surrounding urban context.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Major/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– Established land uses of the Washington Monument Grounds.</li> </ul> </li> <li>• <b>No effects on:</b> <ul style="list-style-type: none"> <li>– Land use of the National Mall or the surrounding urban context.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Major/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– Established land uses of the Washington Monument Grounds.</li> </ul> </li> <li>• <b>No effects on:</b> <ul style="list-style-type: none"> <li>– Land use of the National Mall or the surrounding urban context.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Major/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– Established land uses of the Washington Monument Grounds.</li> </ul> </li> <li>• <b>No effects on:</b> <ul style="list-style-type: none"> <li>– Land use of the National Mall or the surrounding urban context.</li> </ul> </li> </ul>

Impact Topic	No Action Alternative	Plinth Alternative	Plaza Alternative	Pavilion Alternative	Refined Pavilion Alternative
<b>Historic Resources: Circulation</b>	<ul style="list-style-type: none"> <li>• <b>No effects on historic circulation:</b> <ul style="list-style-type: none"> <li>– Construction and operation of NMAAHC would not occur.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Moderate/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– Distinctive circulation features of the Washington Monument Grounds.</li> </ul> </li> <li>• <b>Minor adverse effects on:</b> <ul style="list-style-type: none"> <li>– Circulation features of the historic L’Enfant and McMillan Commission Plans.</li> </ul> </li> <li>• <b>No effects on:</b> <ul style="list-style-type: none"> <li>– Circulation features of the National Mall.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Moderate/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– Distinctive circulation features of the Washington Monument Grounds.</li> <li>– Circulation features of the historic L’Enfant and McMillan Commission Plans.</li> </ul> </li> <li>• <b>No effects on:</b> <ul style="list-style-type: none"> <li>– Circulation features of the National Mall.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Moderate/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– Distinctive circulation features of the Washington Monument Grounds.</li> </ul> </li> <li>• <b>Minor adverse effects on:</b> <ul style="list-style-type: none"> <li>– Circulation features of the historic L’Enfant and McMillan Commission Plans.</li> </ul> </li> <li>• <b>No effects on:</b> <ul style="list-style-type: none"> <li>– Circulation features of the National Mall.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Minor adverse effects on:</b> <ul style="list-style-type: none"> <li>– Circulation features of the historic L’Enfant and McMillan Commission Plans.</li> <li>– Distinctive circulation features of the Washington Monument Grounds.</li> </ul> </li> <li>• <b>No effects on:</b> <ul style="list-style-type: none"> <li>– Circulation features of the National Mall.</li> </ul> </li> </ul>

Impact Topic	No Action Alternative	Plinth Alternative	Plaza Alternative	Pavilion Alternative	Refined Pavilion Alternative
<b>Historic Resources: Topography</b>	<ul style="list-style-type: none"> <li>• <b>No effects on historic topography:</b> <ul style="list-style-type: none"> <li>– Construction and operation of NMAAHC would not occur.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Minor adverse effects on:</b> <ul style="list-style-type: none"> <li>– Naturalist topography and distinct characteristics of the Washington Monument Grounds.</li> </ul> </li> <li>• <b>No effects on:</b> <ul style="list-style-type: none"> <li>– Topography of the National Mall or the surrounding urban context.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Moderate/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– Naturalist topography and distinct characteristics of the Washington Monument Grounds.</li> </ul> </li> <li>• <b>No effects on:</b> <ul style="list-style-type: none"> <li>– Topography of the National Mall or the surrounding urban context.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Minor adverse effects on:</b> <ul style="list-style-type: none"> <li>– Naturalist topography and distinct characteristics of the Washington Monument Grounds.</li> </ul> </li> <li>• <b>No effects on:</b> <ul style="list-style-type: none"> <li>– Topography of the National Mall or the surrounding urban context.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Minor adverse effects on:</b> <ul style="list-style-type: none"> <li>– Naturalist topography and distinct characteristics of the Washington Monument Grounds.</li> </ul> </li> <li>• <b>No effects on:</b> <ul style="list-style-type: none"> <li>– Topography of the National Mall or the surrounding urban context.</li> </ul> </li> </ul>

Impact Topic	No Action Alternative	Plinth Alternative	Plaza Alternative	Pavilion Alternative	Refined Pavilion Alternative
<b>Historic Resources: Vegetation</b>	<ul style="list-style-type: none"> <li>• <b>No effects on historic vegetation</b> <ul style="list-style-type: none"> <li>– Construction and operation of NMAAHC would not occur.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Major/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– Significant vegetative features of the site, and as consequence, of the Washington Monument Grounds.</li> </ul> </li> <li>• <b>No effects on:</b> <ul style="list-style-type: none"> <li>– Grass panels, tree panels, or elms of the National Mall.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Major/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– Significant vegetative features of the site, and as consequence, of the Washington Monument Grounds.</li> </ul> </li> <li>• <b>No effects on:</b> <ul style="list-style-type: none"> <li>– Grass panels, tree panels, or elms of the National Mall.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Major/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– Significant vegetative features of the site, and as consequence, of the Washington Monument Grounds.</li> </ul> </li> <li>• <b>No effects on:</b> <ul style="list-style-type: none"> <li>– Grass panels, tree panels, or elms of the National Mall.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Moderate/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– Significant vegetative features of the site, and as consequence, of the Washington Monument Grounds.</li> </ul> </li> <li>• <b>No effects on:</b> <ul style="list-style-type: none"> <li>– Grass panels, tree panels, or elms of the National Mall.</li> </ul> </li> </ul>

Impact Topic	No Action Alternative	Plinth Alternative	Plaza Alternative	Pavilion Alternative	Refined Pavilion Alternative
<p><b>Historic Resources: Buildings and Structures</b></p>	<ul style="list-style-type: none"> <li>• <b>No effects on historic buildings and structures:</b> <ul style="list-style-type: none"> <li>– Construction and operation of NMAAHC would occur not occur.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Major/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– The Washington Monument</li> <li>– Bulfinch Gateposts</li> <li>– Monument Lodge</li> </ul> </li> <li>• <b>Minor adverse effects on:</b> <ul style="list-style-type: none"> <li>– Federal Triangle buildings and museum buildings on the National Mall, as viewed from the Washington Monument Grounds.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Major/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– The Washington Monument</li> <li>– Bulfinch Gateposts</li> <li>– Monument Lodge</li> </ul> </li> <li>• <b>Minor adverse effects on:</b> <ul style="list-style-type: none"> <li>– Federal Triangle buildings and museum buildings on the National Mall, as viewed from the Washington Monument Grounds.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Major/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– The Washington Monument</li> </ul> </li> <li>• <b>Moderate/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– Bulfinch Gateposts</li> <li>– Monument Lodge</li> </ul> </li> <li>• <b>Minor adverse effects on:</b> <ul style="list-style-type: none"> <li>– Federal Triangle buildings and museum buildings on the National Mall, as viewed from the Washington Monument Grounds.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Major/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– The Washington Monument</li> <li>– Monument Lodge</li> </ul> </li> <li>• <b>Moderate/significant adverse effects on:</b> <ul style="list-style-type: none"> <li>– Bulfinch Gateposts</li> </ul> </li> <li>• <b>Minor adverse effects on:</b> <ul style="list-style-type: none"> <li>– Federal Triangle buildings and museum buildings on the National Mall, as viewed from the Washington Monument Grounds.</li> </ul> </li> </ul>

Impact Topic	No Action Alternative	Plinth Alternative	Plaza Alternative	Pavilion Alternative	Refined Pavilion Alternative
<p><b>Visual Resources: Surrounding Urban Context</b></p>	<ul style="list-style-type: none"> <li>• <b>No impacts on the surrounding urban context:</b> <ul style="list-style-type: none"> <li>– Construction and operation of NMAAHC would not occur.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Moderate/significant adverse effects on the urban context, due to:</b> <ul style="list-style-type: none"> <li>– The slight extension of the Plinth overhang to the south beyond the historic 445' McMillan setback line.</li> <li>– The misalignment with the common centerline established by the museums on the north side of the National Mall.</li> <li>– The inconsistency of the design of the southern portion of the site with the picturesque character of the Washington Monument Grounds.</li> <li>– Placement of Corona near center of site consistent with museums to east.</li> <li>– The potential contrast between the tone of the exterior material on the Corona and the surrounding structures.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Major/significant adverse effects on the urban context, due to:</b> <ul style="list-style-type: none"> <li>– The extension of the Corona to the south beyond the historic 445' McMillan setback line.</li> <li>– The misalignment with the common centerline established by the museums on the north side of the National Mall.</li> <li>– The inconsistency of the design of the southern portion of the site with the picturesque character of the Washington Monument Grounds.</li> <li>– Placement of Corona at south end of the site supports site as hinge between National Mall and Washington Monument Grounds.</li> <li>– The potential contrast between the tone of the exterior materials of the NMAAHC and the surrounding structures.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Minor/not significant adverse effects on the urban context, due to:</b> <ul style="list-style-type: none"> <li>– The alignment with the common centerline established by the museums on the north side of the National Mall.</li> <li>– The inconsistency of the design of the southern portion of the site with the picturesque character of the Washington Monument Grounds.</li> <li>– Placement of Corona near center of site consistent with museums to east.</li> <li>– The potential contrast between the tone of the exterior material on the Corona and the surrounding structures.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Moderate/significant adverse effects on the urban context, due to:</b> <ul style="list-style-type: none"> <li>– The minor extension of the porch overhang on the south beyond the historic 445' McMillan setback line.</li> <li>– The misalignment with the common centerline established by the museums on the north side of the National Mall.</li> <li>– Placement of Corona at south end of the site supports site as hinge between National Mall and Washington Monument Grounds.</li> <li>– The potential contrast between the tone of the exterior material on the Corona and the surrounding structures.</li> </ul> </li> </ul>

Impact Topic	No Action Alternative	Plinth Alternative	Plaza Alternative	Pavilion Alternative	Refined Pavilion Alternative
<b>Visual Resources: Key Urban Viewsheds</b>	<ul style="list-style-type: none"> <li>• <b>No impacts on key urban viewsheds:</b> <ul style="list-style-type: none"> <li>– Construction and operation of NMAAHC would not occur.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Major/significant effects on:</b> <ul style="list-style-type: none"> <li>– The 14<sup>th</sup> Street view corridor.</li> <li>– The 15<sup>th</sup> Street view corridor.</li> </ul> </li> <li>• <b>Moderate/significant effects on:</b> <ul style="list-style-type: none"> <li>– The Constitution Avenue view corridor.</li> <li>– The primary view corridor looking west from the U.S. Capitol Building.</li> </ul> </li> <li>• <b>Minor/no significant effects on:</b> <ul style="list-style-type: none"> <li>– The primary view corridor looking north from the Jefferson Memorial across the Tidal Basin.</li> </ul> </li> <li>• <b>No effects on:</b> <ul style="list-style-type: none"> <li>– The primary view corridor looking east from the Lincoln Memorial.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Major/significant effects on:</b> <ul style="list-style-type: none"> <li>– The 14<sup>th</sup> Street view corridor.</li> <li>– The 15<sup>th</sup> Street view corridor.</li> </ul> </li> <li>• <b>Moderate/significant effects on:</b> <ul style="list-style-type: none"> <li>– The Constitution Avenue view corridor.</li> <li>– The primary view corridor looking west from the U.S. Capitol Building.</li> </ul> </li> <li>• <b>Minor/no significant effects on:</b> <ul style="list-style-type: none"> <li>– The primary view corridor looking north from the Jefferson Memorial across the Tidal Basin.</li> </ul> </li> <li>• <b>No effects on:</b> <ul style="list-style-type: none"> <li>– The primary view corridor looking east from the Lincoln Memorial.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Major/significant effects on:</b> <ul style="list-style-type: none"> <li>– The 14<sup>th</sup> Street view corridor.</li> <li>– The 15<sup>th</sup> Street view corridor.</li> </ul> </li> <li>• <b>Moderate/significant effects on:</b> <ul style="list-style-type: none"> <li>– The Constitution Avenue view corridor.</li> </ul> </li> <li>• <b>Minor/no significant effects on:</b> <ul style="list-style-type: none"> <li>– The primary view corridor looking west from the U.S. Capitol Building.</li> <li>– The primary view corridor looking north from the Jefferson Memorial across the Tidal Basin.</li> </ul> </li> <li>• <b>No effects on:</b> <ul style="list-style-type: none"> <li>– The primary view corridor looking east from the Lincoln Memorial.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Major/significant effects on:</b> <ul style="list-style-type: none"> <li>– The 14<sup>th</sup> Street view corridor.</li> <li>– The 15<sup>th</sup> Street view corridor.</li> </ul> </li> <li>• <b>Moderate/significant effects on:</b> <ul style="list-style-type: none"> <li>– The Constitution Avenue view corridor.</li> </ul> </li> <li>• <b>Minor/no significant effects on:</b> <ul style="list-style-type: none"> <li>– The primary view corridor looking west from the U.S. Capitol Building.</li> <li>– The primary view corridor looking north from the Jefferson Memorial across the Tidal Basin.</li> </ul> </li> <li>• <b>No effects on:</b> <ul style="list-style-type: none"> <li>– The primary view corridor looking east from the Lincoln Memorial.</li> </ul> </li> </ul>

Impact Topic	No Action Alternative	Plinth Alternative	Plaza Alternative	Pavilion Alternative	Refined Pavilion Alternative
<b>Visual Resources: Night Lighting</b>	<ul style="list-style-type: none"> <li>• <b>No effects on night lighting:</b> <ul style="list-style-type: none"> <li>– Construction and operation of NMAAHC would not occur.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Moderate/significant adverse effects due to:</b> <ul style="list-style-type: none"> <li>– Introduction of an illuminated building on a portion of the Washington Monument Grounds.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Major/significant adverse effects due to:</b> <ul style="list-style-type: none"> <li>– Introduction of an illuminated building in close proximity to the Washington Monument.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Moderate/significant adverse effects due to:</b> <ul style="list-style-type: none"> <li>– Introduction of an illuminated building on a portion of the Washington Monument Grounds.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Moderate/significant adverse effects due to:</b> <ul style="list-style-type: none"> <li>– Introduction of an illuminated building on a portion of the Washington Monument Grounds.</li> </ul> </li> </ul>

Impact Topic	No Action Alternative	Plinth Alternative	Plaza Alternative	Pavilion Alternative	Refined Pavilion Alternative
Geology, Soils, and Groundwater	<ul style="list-style-type: none"> <li>• No impacts on:                             <ul style="list-style-type: none"> <li>– Geology and soils</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• No impacts on:                             <ul style="list-style-type: none"> <li>– Geology and soils because of the use of diaphragm slurry wall in combination with a dewatering system.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• No impacts on:                             <ul style="list-style-type: none"> <li>– Geology and soils because of the use of diaphragm slurry wall in combination with a dewatering system.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• No impacts on:                             <ul style="list-style-type: none"> <li>– Geology and soils because of the use of diaphragm slurry wall in combination with a dewatering system.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• No impacts on:                             <ul style="list-style-type: none"> <li>– Geology and soils because of the use of diaphragm slurry wall in combination with a dewatering system.</li> </ul> </li> </ul>
	<ul style="list-style-type: none"> <li>• No impacts on:                             <ul style="list-style-type: none"> <li>– Groundwater</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• No significant impacts from:                             <ul style="list-style-type: none"> <li>– Anticipated use of drilled shafts, basement floor slabs and under-slab drainage system.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• No significant impacts from:                             <ul style="list-style-type: none"> <li>– Anticipated use of drilled shafts, basement floor slabs and under-slab drainage system.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• No significant impacts from:                             <ul style="list-style-type: none"> <li>– Anticipated use of drilled shafts, basement floor slabs and under-slab drainage system.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• No significant impacts from:                             <ul style="list-style-type: none"> <li>– Anticipated use of drilled shafts, basement floor slabs and under-slab drainage system.</li> </ul> </li> </ul>

Impact Topic	No Action Alternative	Plinth Alternative	Plaza Alternative	Pavilion Alternative	Refined Pavilion Alternative
Conservation of Natural Resources	<ul style="list-style-type: none"> <li>• No impacts on:                             <ul style="list-style-type: none"> <li>– Open space resources</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Significant impacts on:                             <ul style="list-style-type: none"> <li>– Open space resources and existing mature trees.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Significant impacts on:                             <ul style="list-style-type: none"> <li>– Open space resources and existing mature trees.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Significant impacts on:                             <ul style="list-style-type: none"> <li>– Open space resources and existing mature trees.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Significant impacts on:                             <ul style="list-style-type: none"> <li>– Open space resources and existing mature trees.</li> </ul> </li> </ul>
	<ul style="list-style-type: none"> <li>• No impacts on:                             <ul style="list-style-type: none"> <li>– Global climate change</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• No significant impacts on:                             <ul style="list-style-type: none"> <li>– Stormwater runoff or energy use because of the anticipated implementation of Federal mandates and Executive Order 13514.</li> </ul> </li> <li>• No significant impacts on:                             <ul style="list-style-type: none"> <li>– Global climate change</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• No significant impacts on:                             <ul style="list-style-type: none"> <li>– Stormwater runoff or energy use because of the anticipated implementation of Federal mandates and Executive Order 13514.</li> </ul> </li> <li>• No significant impacts on:                             <ul style="list-style-type: none"> <li>– Global climate change</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• No significant impacts on:                             <ul style="list-style-type: none"> <li>– Stormwater runoff or energy use because of the anticipated implementation of Federal mandates and Executive Order 13514.</li> </ul> </li> <li>• No significant impacts on:                             <ul style="list-style-type: none"> <li>– Global climate change</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• No significant impacts on:                             <ul style="list-style-type: none"> <li>– Stormwater runoff or energy use because of the anticipated implementation of Federal mandates and Executive Order 13514.</li> </ul> </li> <li>• No significant impacts on:                             <ul style="list-style-type: none"> <li>– Global climate change</li> </ul> </li> </ul>

Impact Topic	No Action Alternative	Plinth Alternative	Plaza Alternative	Pavilion Alternative	Refined Pavilion Alternative
<b>Transportation</b>	<ul style="list-style-type: none"> <li>• <b>No impacts on:</b> <ul style="list-style-type: none"> <li>– Peak or off-peak traffic conditions.</li> </ul> </li>   <li>• <b>No impacts on:</b> <ul style="list-style-type: none"> <li>– Pedestrian and bicycle circulation.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Significant impacts on:</b> <ul style="list-style-type: none"> <li>– Pedestrian safety at the intersections of 14th Street/Constitution Avenue and 15th Street/Constitution Avenue, due to the increase in pedestrian traffic at these intersections.</li> </ul> </li>   <li>• <b>No significant impacts on:</b> <ul style="list-style-type: none"> <li>– Vehicular traffic during peak hour periods.</li> <li>– Surrounding transportation system based on the planned service access, circulation and staging provisions.</li> <li>– Bicycle access routes, crossing volumes or patterns at adjacent intersections.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Significant impacts on:</b> <ul style="list-style-type: none"> <li>– Pedestrian safety at the intersections of 14th Street/Constitution Avenue and 15th Street/Constitution Avenue, due to the increase in pedestrian traffic at these intersections.</li> </ul> </li>   <li>• <b>No significant impacts on:</b> <ul style="list-style-type: none"> <li>– Vehicular traffic during peak hour periods.</li> <li>– The surrounding transportation system based on the planned service access, circulation and staging provisions.</li> <li>– Bicycle access routes, crossing volumes or patterns at adjacent intersections.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Significant impacts on:</b> <ul style="list-style-type: none"> <li>– Pedestrian safety at the intersections of 14th Street/Constitution Avenue and 15th Street/Constitution Avenue, due to the increase in pedestrian traffic at these intersections.</li> </ul> </li>   <li>• <b>No significant impacts on:</b> <ul style="list-style-type: none"> <li>– Vehicular traffic during peak hour periods.</li> <li>– The surrounding transportation system based on the planned service access, circulation and staging provisions.</li> <li>– Bicycle access routes, crossing volumes or patterns at adjacent intersections.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Significant impacts on:</b> <ul style="list-style-type: none"> <li>– Pedestrian safety at the intersections of 14th Street/Constitution Avenue and 15th Street/Constitution Avenue, due to the increase in pedestrian traffic at these intersections.</li> </ul> </li>   <li>• <b>No significant impacts on:</b> <ul style="list-style-type: none"> <li>– Vehicular traffic during peak hour periods.</li> <li>– The surrounding transportation system based on the planned service access, circulation and staging provisions.</li> <li>– Bicycle access routes, crossing volumes or patterns at adjacent intersections.</li> </ul> </li> </ul>



# TABLE OF CONTENTS



This page is intentionally left blank

<b>Executive Summary</b>	i	2.3.1 No Action Alternative	2-11
<b>1.0 Introduction and Background</b>		2.3.2 Elements Common to the Action Alternatives	2-12
1.1 Introduction	1-1	2.3.3 Action Alternative 1 – Plinth Concept	2-16
1.2 What is the National Museum of African American History and Culture?	1-2	2.3.4 Action Alternative 2 – Plaza Concept	2-24
1.3 Which agencies are leading this project?	1-5	2.3.5 Action Alternative 3 – Pavilion Concept	2-32
1.4 Where is the site located?	1-6	2.3.6 Action Alternative 4 – Refined Pavilion Concept	2-40
1.5 What is the purpose of and need for the National Museum of African American History and Culture?	1-9	2.4 How do the alternatives compare with each other?	2-48
1.6 What is an EIS and what will it accomplish?	1-11	2.5 What other design concepts were evaluated?	2-50
1.7 Why is the EIS tiered?	1-12	2.5.1 Building Placement	2-50
1.8 What are the results of Tier I EIS?	1-13	2.5.2 Building Proportions	2-53
1.8.1 What issues were evaluated in the Tier I EIS?	1-15	2.5.3 Museum Programming Expression	2-56
1.8.2 What cumulative projects were evaluated in the Tier I EIS?	1-19	2.5.4 Service Access Options	2-58
1.8.3 What cumulative projects are being evaluated in the Tier II Draft EIS?	1-21	<b>3.0 Affected Environment and Impacts to the Human Environment</b>	
1.8.4 What determinations have been made regarding irretrievable and irreversible resource commitments?	1-29	3.1 Introduction	3-1
<b>2.0 Description of Alternatives</b>		3.1.1 General Approach and Methodology for Determining Impacts Related to the Project	3-2
2.1 What are the guiding principles used in the development of the alternatives for the National Museum of African American History and Culture?	2-1	3.2 Land Use, Planning Policies, and Visitor Experience	3-3
2.1.1 Refined (Tier II) Design Principles	2-1	3.2.1 Land Use, Planning and Policies	3-3
2.1.2 NMAAHC Design Competition	2-4	3.2.1.1 Introduction	3-3
2.1.3 Application of Design Principles	2-4	3.2.1.2 What plans and policies are relevant to the proposed action?	3-3
2.2 How have the public and agencies been involved in shaping the alternatives?	2-6	3.2.1.3 How would the proposed action affect the relevant planning policies?	3-11
2.2.1 Public and Agency Scoping Process	2-6	3.2.1.4 What efforts would be made to minimize the impacts on planning policies?	3-17
2.2.2 Ongoing Consulting Parties Participation	2-7	3.2.2 Visitor Experience	3-18
2.2.3 What issues were raised by the public and other government agencies?	2-8	3.2.2.1 Introduction	3-18
2.2.4 How are they addressed in this EIS?	2-10	3.2.2.2 How do visitors currently experience the project site?	3-18
2.3 What alternatives are being considered?	2-11	3.2.2.3 How would the proposed action affect visitor experience?	3-23
		3.2.2.4 What efforts would be made to minimize the impacts on visitor experience?	3-29

3.3	Historic Resources	3-31	3.6.3	What are greenhouse gases and why is climate change important?	3-163
3.3.1	What is the Area of Potential Effect (APE) for the proposed action?	3-31	3.6.4	What is Executive Order 13514 and what does it require?	3-164
3.3.2	How are historic resources evaluated?	3-40	3.6.5	What affect would construction and operation of NMAAHC have on conservation of natural resources?	3-166
3.3.3	How would the historic resources within the APE be affected?	3-45	3.6.6	What efforts would be taken to minimize impacts on natural resources?	3-177
3.3.4	What efforts would be taken to minimize the effects on cultural resources?	3-93	3.7	Transportation	3-179
3.4	Visual Resources	3-97	3.7.1	Introduction	3-179
3.4.1	What are the visual characteristics of the project site and how does it relate to the surrounding area?	3-97	3.7.2	How are traffic levels measured?	3-179
3.4.2	How are impacts to visual resources assessed?	3-100	3.7.3	What are the current vehicular traffic conditions at the project site?	3-180
3.4.3	How would the proposed action relate to the surrounding urban context?	3-101	3.7.4	How would operation of the NMAAHC affect traffic levels?	3-196
3.4.4	How would the proposed action impact key urban viewsheds?	3-117	3.7.5	What efforts would be taken to minimize impacts on transportation?	3-214
3.4.5	How would the proposed action affect night lighting in the area?	3-143	3.8	Cumulative Impacts	3-215
3.4.6	What efforts would be taken to minimize the effects on visual resources?	3-146	3.8.1	What are the results of the cumulative Impacts analysis?	3-215
3.5	Geology, Soils and Groundwater	3-147	<b>4.0</b>	<b>Consultation and Coordination</b>	
3.5.1	What are the existing sub-grade conditions of the site and surrounding area?	3-148	4.1	How did the public participation process work for the Tier II EIS?	4-1
3.5.2	What are the site's current geologic conditions and what is the depth to bedrock?	3-150	4.2	What agencies and organizations have been consulted during development of the Tier II EIS?	4-3
3.5.3	What is the depth to groundwater at the site?	3-150	<b>5.0</b>	<b>References</b>	5-1
3.5.4	How would construction and operation of the NMAAHC affect geology, soils and groundwater?	3-151	<b>6.0</b>	<b>Acronyms and Abbreviations</b>	6-1
3.5.5	What efforts would be taken to minimize the impacts on geology, soils and groundwater?	3-157	<b>7.0</b>	<b>List of Preparers</b>	7-1
3.6	Conservation of Natural Resources	3-161	<b>8.0</b>	<b>Notification List</b>	8-1
3.6.1	What are the site's current open space resources?	3-161	<b>9.0</b>	<b>Appendices</b>	
3.6.2	What issues are addressed as part of site performance?	3-163	9.1	Tier I Design Principles	9-1
			9.2	Design Competition	9-3
			9.3	Draft NMAAHC Section 106 Effects Analysis	9-7

# FIGURES

Figure 1.4.1	Site Location Map	1-6	Figure 2.3.19	Refined Pavilion Alternative 4: Plan View of Primary Building Components	2-43
Figure 1.8.1	Tier I Massing Alternatives	1-11	Figure 2.3.20	Refined Pavilion Alternative 4: Conceptual Landscape Plan	2-47
Figure 2.1.1	Tier II Setback and Building Alignment Lines	2-5	Figure 2.5.1	Rotated Pavilion Scheme: Ground Floor Plan	2-51
Figure 2.3.1	Plinth Alternative 1: Sketch of Building	2-17	Figure 2.5.2	Fragmented Plinth Scheme: Ground Floor Plan	2-52
Figure 2.3.2	Plinth Alternative 1: Cross-Sections	2-18	Figure 2.5.3	Design Competition Scheme: Site Plan	2-53
Figure 2.3.3	Plinth Alternative 1: Ground Floor Plan	2-19	Figure 2.5.4	Shorter Pavilion Scheme: Building Height	2-54
Figure 2.3.4	Plinth Alternative 1: Plan View of the Primary Building Components	2-19	Figure 2.5.5	Shorter Pavilion Scheme: Building Alignment	2-54
Figure 2.3.5	Plinth Alternative 1: Conceptual Landscape Plan	2-23	Figure 2.5.6	Two-Tier Corona Scheme: Cross-Sections	2-55
Figure 2.3.6	Plaza Alternative 2: Sketch of Building	2-25	Figure 2.5.7	Blended Scheme: Sketch of Building	2-56
Figure 2.3.7	Plaza Alternative 2: Cross-Sections	2-26	Figure 2.5.8	Clerestory Scheme: Sketch of Building	2-57
Figure 2.3.8	Plaza Alternative 2: Ground Floor Plan	2-27	Figure 3.2.1	Conservation Zoning under the <i>National Mall Plan</i> (Preferred Management Plan)	3-7
Figure 2.3.9	Plaza Alternative 2: Plan View of Primary Building Components	2-27	Figure 3.3.1	Area of Potential Effect	3-32
Figure 2.3.10	Plaza Alternative 2: Conceptual Landscape Plan	2-31	Figure 3.3.2	Plan of the City of Washington: Contributing Streets, Reservations, and Appropriations	3-34
Figure 2.3.11	Pavilion Alternative 3: Sketch of Building	2-33	Figure 3.3.2	Historic Districts and Contributing Properties	3-36
Figure 2.3.12	Pavilion Alternative 3: Cross-Sections	2-34	Figure 3.3.4	Individually Listed Historic Properties	3-38
Figure 2.3.13	Pavilion Alternative 3: Ground Floor Plan	2-35	Figure 3.3.5	Locations of Key Views	3-42
Figure 2.3.14	Pavilion Alternative 3: Plan View of Primary Building Components	2-35	Figure 3.3.6	Plinth Alternative: View from the Washington Monument Grounds Looking Northeast	3-47
Figure 2.3.15	Pavilion Alternative 3: Conceptual Landscape Plan	2-39	Figure 3.3.7	Plinth Alternative: View from the Federal Triangle at 14 <sup>th</sup> Street NW and Constitution Avenue Looking Southwest	3-48
Figure 2.3.16	Refined Pavilion Alternative 4: Sketch of Building	2-41	Figure 3.3.8	Plinth Alternative: View from the Ellipse at Constitution Avenue Looking East	3-49
Figure 2.3.17	Refined Pavilion Alternative 4: Cross-Sections	2-42	Figure 3.3.9	Plinth Alternative: View from the National Mall on Madison Drive Looking West	3-50
Figure 2.3.18	Refined Pavilion Alternative 4: Ground Floor Plan	2-43	Figure 3.3.10	Plinth Alternative: View from the Top of the Washington Monument Looking Northeast	3-51

Figure 3.3.11	Plinth Alternative: View from the Top of the Old Post Office Pavilion Tower Looking Southwest	3-52	Figure 3.3.27	Refined Pavilion Alternative: View from the Washington Monument Grounds Looking Northeast	3-82
Figure 3.3.12	Plinth Alternative: View from the National Mall Looking West	3-53	Figure 3.3.28	Refined Alternative: View from the Federal Triangle at 14 <sup>th</sup> Street NW and Constitution Avenue Looking Southwest	3-83
Figure 3.3.13	Plaza Alternative: View from the Washington Monument Grounds Looking Northeast	3-58	Figure 3.3.29	Refined Pavilion Alternative: View from the Ellipse at Constitution Avenue Looking East	3-84
Figure 3.3.14	Plaza Alternative: View from the Federal Triangle at 14 <sup>th</sup> Street NW and Constitution Avenue Looking Southwest	3-59	Figure 3.3.30	Refined Pavilion Alternative: View from the National Mall on Madison Drive Looking West	3-85
Figure 3.3.15	Plaza Alternative: View from the Ellipse at Constitution Avenue Looking East	3-60	Figure 3.3.31	Refined Pavilion Alternative: View from the Top of the Washington Monument Looking Northeast	3-86
Figure 3.3.16	Plaza Alternative: View from the National Mall on Madison Drive Looking West	3-61	Figure 3.3.32	Refined Pavilion Alternative: View from the Top of the Old Post Office Pavilion Tower Looking Southwest	3-87
Figure 3.3.17	Plaza Alternative: View from the top of the Washington Monument Looking Northeast	3-62	Figure 3.3.33	Refined Pavilion Alternative: View from the National Mall Looking West	3-88
Figure 3.3.18	Plaza Alternative: View from the top of the Old Post Office Pavilion Tower Looking Southwest	3-63	Figure 3.4.1	Elevation Showing Relative Building Heights in the Vicinity of the Project Site	3-99
Figure 3.3.19	Plaza Alternative: View from the National Mall Looking West	3-64	Figure 3.4.2	Plinth Alternative: Elevation Showing Relative Building Heights in the Vicinity of the Project Site	3-103
Figure 3.3.20	Pavilion Alternative: View from the Washington Monument Grounds Looking Northeast	3-70	Figure 3.4.3	Plinth Alternative: Building Alignment	3-104
Figure 3.3.21	Pavilion Alternative: View from the Federal Triangle at 14 <sup>th</sup> Street NW and Constitution Avenue Looking Southwest	3-71	Figure 3.4.4	Plaza Alternative: Elevation Showing Relative Building Heights in the Vicinity of the Project Site	3-106
Figure 3.3.22	Pavilion Alternative: View from the Ellipse at Constitution Avenue Looking East	3-72	Figure 3.4.5	Plaza Alternative: Building Alignment	3-107
Figure 3.3.23	Pavilion Alternative: View from the National Mall at Madison Drive Looking West	3-73	Figure 3.4.6	Pavilion Alternative: Elevation Showing Relative Building Heights in the Vicinity of the Project Site	3-110
Figure 3.3.24	Pavilion Alternative: View from the Top of the Washington Monument Looking Northwest	3-74	Figure 3.4.7	Pavilion Alternative: Building Alignment	3-111
Figure 3.3.25	Pavilion Alternative: View from the Top of the Old Post Office Pavilion Tower Looking Southwest	3-75	Figure 3.4.8	Refined Pavilion Alternative: Elevation Showing Relative Building Heights in the Vicinity of the Project Site	3-114
Figure 3.3.26	Pavilion Alternative: View from the National Mall Looking West	3-76			

Figure 3.4.9	Refined Pavilion Alternative: Building Alignment	3-115	Figure 3.4.26	Pavilion Alternative: View West on Constitution Avenue	3-134
Figure 3.4.10	Locations of Key Views	3-118	Figure 3.4.27	Pavilion Alternative: View North on 14 <sup>th</sup> Street NW	3-135
Figure 3.4.11	Plinth Alternative: View West from the U.S. Capitol Building	3-119	Figure 3.4.28	Pavilion Alternative: View South on 15 <sup>th</sup> Street NW	3-136
Figure 3.4.12	Plinth Alternative: View East from the Lincoln Memorial	3-120	Figure 3.2.29	Refined Pavilion Alternative: View West from the U.S. Capitol Building	3-137
Figure 3.4.13	Plinth Alternative: View North from the Jefferson Memorial	3-121	Figure 3.2.30	Refined Pavilion Alternative: View East from the Lincoln Memorial	3-138
Figure 3.4.14	Plinth Alternative: View West on Constitution Avenue	3-122	Figure 3.4.31	Refined Pavilion Alternative: View North from the Jefferson Memorial	3-139
Figure 3.4.15	Plinth Alternative: View North on 14 <sup>th</sup> Street NW	3-123	Figure 3.4.32	Refined Pavilion Alternative: View West on Constitution Avenue	3-140
Figure 3.4.16	Plinth Alternative: View South on 15 <sup>th</sup> Street NW	3-124	Figure 3.4.33	Refined Pavilion Alternative: View North on 14 <sup>th</sup> Street NW	3-141
Figure 3.4.17	Plaza Alternative: View West from the U.S. Capitol Building	3-125	Figure 3.4.34	Refined Pavilion Alternative: View South on 15 <sup>th</sup> Street NW	3-142
Figure 3.4.18	Plaza Alternative: View East from the Lincoln Memorial	3-126	Figure 3.6.1	Site Elevations	3-162
Figure 3.4.19	Plaza Alternative: View North from the Jefferson Memorial	3-127	Figure 3.7.1	Site Location Map	3-181
Figure 3.4.20	Plaza Alternative: View West on Constitution Avenue	3-128	Figure 3.7.2	Functional Roadway Classifications	3-182
Figure 3.4.21	Plaza Alternative: View North on 14 <sup>th</sup> Street NW	3-129	Figure 3.7.3	Existing Roadway Lane Configuration and Traffic Control Devices	3-185
Figure 3.4.22	Plaza Alternative: View South on 15 <sup>th</sup> Street NW	3-130	Figure 3.7.4	Existing Peak Hour Traffic Volumes	3-186
Figure 3.4.23	Pavilion Alternative: View West from the U.S. Capitol Building	3-131	Figure 3.7.5	Major Pedestrian Routes	3-188
Figure 3.4.24	Pavilion Alternative: View East from the Lincoln Memorial	3-132	Figure 3.7.6	Existing Pedestrian Accident Data	3-189
Figure 3.4.25	Pavilion Alternative: View North from the Jefferson Memorial	3-133	Figure 3.7.7	Existing Pedestrian Peak Hour Volumes	3-192
			Figure 3.7.8	Public Transportation	3-193
			Figure 3.7.9	Charter Bus/Tour Bus Parking Locations	3-194
			Figure 3.7.10	Future Traffic Volumes	3-199
			Figure 3.7.11	Pedestrian and Bicyclist Access Routes and Potential Conflict Locations	3-203
			Figure 3.7.12	Projected Pedestrian Volumes	3-204

# TABLES

Table 1.1	Cumulative Impact Projects	1-22
Table 2.1	Building Height of Plinth Alternative	2-20
Table 2.2	Building Height of Plaza Alternative	2-28
Table 2.3	Building Height of Pavilion Alternative	2-37
Table 2.4	Building Height of Refined Pavilion Alternative	2-45
Table 2.5	Comparison of Action Alternatives	2-49
Table 3.2.1	Relevant Building Footprints and Lot Coverages	3-20
Table 3.5.1	Site Soil Characteristics	3-149
Table 3.7.1	Existing Condition (2007) Intersection Capacity Analysis	3-187
Table 3.7.2	Pedestrian LOS	3-190
Table 3.7.3	Capacity Analysis Results: Total Future (2015) Conditions	3-200
Table 4.1	Newspaper Publication of the Scoping Notice	4-2



## 1.0 INTRODUCTION AND BACKGROUND



This page is intentionally left blank

## 1.1 INTRODUCTION

The Smithsonian Institution is proposing to construct and operate a permanent facility for the National Museum of African American History and Culture (NMAAHC) on a five-acre parcel on the Washington Monument Grounds and the National Mall bounded by Constitution Avenue on the north, Madison Drive on the south, 14<sup>th</sup> Street NW on the east, and 15<sup>th</sup> Street NW on the west. The NMAAHC currently exists in the form of exhibits displayed within other Smithsonian museums; there is no permanent exhibition facility dedicated to the containment of its collections and programs.

In 2003, the Smithsonian Institution began the process of identifying potential sites for a permanent facility for the NMAAHC within Washington, DC. This process resulted in the selection of the project site in 2006. Based on the selection of the preferred site, the Smithsonian Institution and the National Capital Planning Commission (NCPC), as joint leads, undertook preparation of a Tier I Environmental Impact Statement (EIS). The Tier I EIS addressed themes that included context, siting and mass, orientation, form, exterior spaces, and profiles for six massing alternatives, as well as a no build alternative. The Tier I EIS was prepared by Louis Berger Group, Inc. on behalf of the Smithsonian Institution (2008a). The Tier I EIS process concluded with a Record of Decision (ROD) in 2008 and a set of design principles to guide the development of specific building concepts that would permanently exhibit the museum collection.

Using the design principles as a guideline, a competition was held in 2009 to select an architect (Smithsonian Institution, 2008b). The team of Freelon Adjaye Bond/SmithGroup was selected. Beginning in November 2009, the design team developed a series of architectural concepts for the NMAAHC. This Tier II Draft EIS analyzes the environmental effects associated with construction and operation of specific build alternatives, as well as a No Action Alternative. Together, the EISs and source materials from the Tier I and Tier II NEPA processes will constitute the complete administrative record for the NMAAHC project.

The Tier I Final EIS analyzed the potential effects of the massing alternatives on the natural and manmade environments including but not limited to cultural resources, aesthetics and visual resources, distribution and movement of groundwater, surface water resources, air quality, noise, transportation, land use and planning policies, visitor use and experience, communities and businesses, infrastructure and utilities, public health and safety, cumulative effects, and irretrievable and irreversible resource commitments. As stated in the Tier I Final EIS, “the Tier I Preferred Alternative includes the range of all reasonable alternatives which were rigorously explored and objectively evaluated in the first tier. As long as the Tier II concept designs fit within the physical envelope defined by the Tier I Build Alternatives and conform to the design principles developed in Tier I, it will be unnecessary to revisit, in Tier II, the analysis of effects resolved in Tier I. By carrying forward this analysis, Tier II can ‘eliminate repetitive discussions of the same issues’ and focus on ‘the actual issues ripe for decision’ (CEQ Section 1502.20).” The Tier I Final EIS is available for review at: <http://www.nmaahceis.com/tier-i-eis>.

This Tier II Draft EIS builds upon the environmental analysis completed in Tier I EIS process and incorporates the Tier I Final EIS by reference. In addition, mitigation measures developed during the Tier I EIS process are carried forward in this Tier II Draft EIS. The analysis in this Tier II Draft EIS is focused on the issues that were not resolved in the Tier I EIS process including:

- Land Use, Planning Policies and Visitor Experience
- Historic Resources
- Visual Resources
- Geology, Soils and Groundwater Resources
- Conservation of Natural Resources
- Transportation

The first two chapters of this Tier II Draft EIS provide the foundation for the document. Chapter 1 includes the Introduction and Purpose and Need for the proposed action based on the Tier I EIS process. Chapter 2 describes the process used to develop the alternatives and those alternatives that are not carried forward for detailed analysis in this EIS. Chapter 3 presents the existing conditions and impact analysis for the Tier II resource areas listed above. Where applicable, a summary of the relevant information from the Tier I Final EIS is provided to give the reader background on the subject without providing the complete discussion included in the Tier I Final EIS. References to the specific section of the Tier I Final EIS are provided for ease of use by the reader.

Chapter 4 of this Tier II Draft EIS describes the role of the public and external agencies that were contacted during the preparation of this EIS. Chapter 5 includes the references for data sources used in the preparation of this Tier II Draft EIS. Chapter 6 provides a list of acronyms and abbreviations used throughout this document. Chapter 7 includes the list of preparers.

## **1.2 WHAT IS THE NATIONAL MUSEUM OF AFRICAN AMERICAN HISTORY AND CULTURE?**

As discussed in the Tier I Final EIS, “the effort to build a national museum centered on the history and achievements of African Americans dates back more than 90 years to the commemoration of the 50<sup>th</sup> anniversary of the end of the Civil War. In 1915, difficulties in finding accommodation for a contingent of black Civil War veterans planning to join in the conflict’s 50<sup>th</sup> anniversary victory parade along Pennsylvania Avenue in Washington, DC led African American community leaders to collect money and organize a National Memorial Association” (Smithsonian Institution, 2008a). According to *A Time Has Come: Report to the President and Congress* (Smithsonian Institution, 2003a), the Association’s appeal was as follows:

*It is the purpose of the National Memorial Association to erect a beautiful building to depict the Negro’s contribution to America in the military service, in art, literature, invention, science, industry, etc. – a fitting tribute to the Negro’s contributions and achievements, and which would serve as an educational center giving inspiration and pride to the present and future generations ...*

As explained in *The Time Has Come: Report to the President and Congress* (Smithsonian Institution, 2003a), a series of starts was made over the course of nearly a century to realize the proposal. Each one advanced further, but none resulted in a dedicated facility. Congress held hearings in 1919, but no action was taken. In 1929, Congress passed legislation to create a national commission to build the memorial. However, the legislation did not include funding for the museum. Claims were advanced unsuccessfully by the national commission for financial support in connection with the unclaimed pay to black Civil War soldiers and the collapse of the Freedmen's Bank in 1874. Nonetheless, by 1933 little had been accomplished and the commission's duties were transferred to the Interior Department, a tacit acknowledgement of its lack of progress.

Nothing of further importance to the matter occurred until 1968 when, in the midst of the civil rights movement and the wake of the assassination of Dr. Martin Luther King, Jr., legislative initiatives resumed. In 1986, under the leadership of Representative Mickey Leland, Congress passed a Joint Resolution "to encourage and support" private efforts to build what was now thought of as both a memorial and a museum in Washington (Smithsonian Institution, 2003a).

In 1988 and 1989, bills were introduced to create a "National African American Heritage Museum and Memorial" within the Smithsonian Institution. Also in 1989, the Smithsonian Institution hired Claudine K. Brown to create its Center for African American History and to lead the "African American Institutional Study," to be performed by a blue-ribbon commission appointed by the Smithsonian Institution.

In 1991, the commission recommended the creation of a national museum, concluding that "[t]here exists no single institution devoted to African Americans which collects, analyzes, researches, and organizes exhibitions on a scale and definition comparable to those of the major museums devoted to other aspects of American life." The blue-ribbon commission recommended that the African American museum be temporarily located in the Arts and Industries Building until a new, larger facility could be built. Nevertheless, controversy about funding and the appropriateness of the Arts and Industries Building prevented passage of legislation (Smithsonian Institution, 2003a).

In 2001, Representative John Lewis, Representative J.C. Watts, Jr., Senator Sam Brownback and Senator Max Cleland led a new bipartisan coalition to establish a National Museum of African American History and Culture within the Smithsonian Institution. Renewed questions about funding and the feasibility of using the Arts and Industries Building resulted in the formation of the NMAAHC Plan for Action Presidential Commission (Commission) on December 28, 2001 by P.L. 107-106 (see Appendix A of the Tier I Draft EIS) to develop a feasible plan to move forward on the NMAAHC (Smithsonian Institution, 2008a).

In April 2003, after a yearlong study and the convening of more than 50 national and local meetings, the Commission released its first report, *The Time Has Come, Report to the President and to the Congress* (Smithsonian Institution, 2003a). The report included some of these findings:

- The Commission found that there were many nationally significant art and cultural history collections available for loan or purchase to support the programming of the NMAAHC.
- The Commission's survey of regional African American museums found strong support for the National Museum with 87 percent reporting that they supported the idea of establishing the NMAAHC.
- The Commission studied several possible sites for the NMAAHC and recommended the site on the Capitol Grounds between Pennsylvania Avenue, Constitution Avenue, and 1<sup>st</sup> and 3<sup>rd</sup> Streets (the marshalling point for the 1915 march of the African American Civil War veterans and their white comrades in arms). As an alternative, the Commission recommended the "Monument" site immediately west of the National Museum of American History (NMAH) between Constitution Avenue, Madison Drive, and 14<sup>th</sup> and 15<sup>th</sup> Streets.
- The Commission studied the possibility of using the Arts and Industries Building for the NMAAHC. The cost to use the building for the NMAAHC was estimated to be approximately \$379 million in 2003 dollars and \$480 million in 2011 dollars. Because of the excessive cost and general unsuitability of the structure, the Commission did not recommend using the Arts and Industries Building.
- The Commission recommended that the NMAAHC be part of the Smithsonian Institution with certain governance provisions designed to ensure strong community participation in the NMAAHC's programs.

- The Commission found that a 350,000 gross square foot program represented a "reasonable need" and was neither "too conservative nor unnecessarily generous."

In September 2003, the Commission issued its *Final Site Report* (Smithsonian Institution, 2003b) which presented detailed planning analysis of the four possible sites for the NMAAHC: the Capitol Grounds site, the Monument site, the Liberty Loan site, and the Banneker Overlook site, having already discounted the feasibility of reusing the Arts and Industries Building. The report confirmed the Commission's preference for the Capitol Grounds site and the Monument site as an alternative.

Following the completion of the *Final Site Report*, the National Museum of African American History and Culture Act, P.L. 108-184, enacted by the Congress on December 16, 2003, established a museum within the Smithsonian Institution to be known as the National Museum of African American History and Culture (see Appendix A of the Tier I Draft EIS). The Act required the Smithsonian Institution Board of Regents to select a final site.

### 1.3 WHICH AGENCIES ARE LEADING THIS PROJECT?

This project is jointly led by the Smithsonian Institution and NCPC. The Smithsonian Institution is a trust instrumentality of the United States, established by Congress in 1846 for the “increase and diffusion of knowledge among men.” The Smithsonian Institution is not a “federal agency” within the meaning of the National Environmental Policy Act (NEPA) or the Council of Environmental Quality’s (CEQ) implementing regulations. However, it is the policy and intent of the Smithsonian Institution to inform and involve a host of communities in the planning of its facilities. Additionally, the Smithsonian Institution is concurrently assessing effects on relevant historic and cultural resources in accordance with the Section 106 process of the National Historic Preservation Act (NHPA).

Certain Smithsonian Institution projects in Washington, DC are subject to review by NCPC, the central planning agency for federal land and buildings in the National Capital Region. NCPC is a federal agency under NEPA and has its own guidance for implementing its NEPA compliance obligations.

For this project, the Smithsonian Institution and NCPC are acting as Joint Lead Agencies, with NCPC in the role of responsible lead federal agency for NEPA purposes. Because the Smithsonian is not a federal agency for the purposes of NEPA, it is following NCPC’s NEPA guidance, outlined in Section 4(D) of NCPC’s Environmental and Historic Preservation Policies and Procedures (69 Federal Regulation [F.R.] 41299). NCPC’s guidelines require applicants to prepare the necessary NEPA and Section 106 of the NHPA documents, in conformance with respective CEQ and Advisory Council on Historic Preservation (ACHP) requirements. NCPC will

make an independent evaluation of the NEPA and NHPA documents (Smithsonian Institution, 2008a).

A federal, state, tribal or local agency having special expertise with respect to an environmental issue or jurisdiction by law may be a cooperating agency in the NEPA process. A cooperating agency has the responsibility to assist the lead agency by participating in the NEPA process at the earliest possible time; by participating in the scoping process; in developing information and preparing environmental analyses, including portions of the environmental impact statement concerning which the cooperating agency has special expertise; and in making available staff support at the lead agency’s request to enhance the lead agency’s interdisciplinary capabilities.

Because of NPS’s role in managing this property and managing the open space and monuments on the National Mall surrounding the NMAAHC, the Smithsonian Institution invited NPS to be a cooperating agency during the Tier I EIS process. NPS has agreed to be a cooperating agency during the Tier II EIS process.

#### **1.4 WHERE IS THE SITE LOCATED?**

The project site consists of a 5.3-acre parcel (approximately 233,349 square feet) extending approximately 642 feet from Constitution Avenue on the north to Madison Drive on the south, and approximately 422 feet from 14<sup>th</sup> Street on the east to 15<sup>th</sup> Street on the west (see Figure 1.4.1).

The NMAAHC site is part of the Washington Monument Grounds on the National Mall. It is public open space designated as parkland for a variety of uses, including recreation, special events, and celebrations and it is part of a larger commemorative landscape.

The project site is owned by the United States and maintained by NPS. Administrative jurisdiction of the property was transferred from NPS to the Smithsonian Institution on June 1, 2007. However, NPS continues to operate the site as a public recreation resource and parkland until construction of the NMAAHC commences.





**Figure 1.4.1 Site Location Map**  
*Source: AECOM, 2010*

The project site currently can be characterized as primarily open space. It contains a concessionaire's temporary trailer offering food, beverage and other items for sale near the southern boundary of the site. Until recently, the site contained a larger blue concessionaire's temporary tent in this same location. A Bulfinch Gatepost is located in the northwest corner. Mature trees are concentrated in the northeast corner of the site and along Constitution Avenue and 14<sup>th</sup> Street. A bus drop-off and Tourmobile stop is located on the southern portion of the site at the lay-by on Madison Drive. The site also includes walkways and grass. The topography of the site slopes up from Constitution Avenue towards the southern boundary along Madison Drive and the National Mall. The elevation of the site changes by approximately 13 feet.

The Washington Monument is located approximately 670 feet southwest of the site. The Herbert C. Hoover Commerce Building is located to the north, NMAH is to the east, and the central spine of the National Mall as it extends across the Washington Monument Grounds to the south.

Provisions contained within Section 8 of the National Museum of African American History and Culture Act, P.L. 108-184 (2003), ("Building for the National Museum of African American History and Culture") directed the Smithsonian Board of Regents to select one site among four on or near the National Mall for the construction of the museum. As discussed in the Tier I Final EIS, the four identified sites included the Monument site, the Arts and Industries Building site, the Liberty Loan site, and the Banneker Overlook site. To facilitate the site selection process by the Board of Regents, the Smithsonian Institution produced a two-volume *Site Evaluation Study* (Smithsonian Institution, 2005a). In addition, the Board of

Regents consulted with a variety of groups through the Smithsonian Institution's website and at a November 2005 Town Hall meeting.

After undertaking a site evaluation study and consultation with parties specified in the legislation, the Board of Regents of the Smithsonian Institution voted to select the area bounded by Constitution Avenue, Madison Drive, and 14<sup>th</sup> and 15<sup>th</sup> Streets, now commonly known as the Monument site. The decision was announced on January 30, 2006. This decision by the Smithsonian Institution Board of Regents completed the site selection process as directed by Congress in the National Museum of African American History and Culture Act.

## 1.5 WHAT IS THE PURPOSE OF AND NEED FOR THE NATIONAL MUSEUM OF AFRICAN AMERICAN HISTORY AND CULTURE?

The purpose of the proposed action is to fulfill the mandate of the National Museum of African American History and Culture Act, P.L. 108-184 (2003). The Act states: “[Such a museum] would be dedicated to the collection, preservation, research, and exhibition of the African American historical and cultural materials reflecting the breadth and depth of the experience of individuals of African descent living in the United States.”

As set out in Section 4 of the Act, the NMAAHC must provide for:

- (1) *The collection, study, and establishment of programs relating to African American life, art, history, and culture that encompass*
  - a) *the period of slavery*
  - b) *the era of Reconstruction*
  - c) *the Harlem Renaissance*
  - d) *the Civil Rights movement*
  - e) *other periods of the African American diaspora*
- (2) *The creation and maintenance of permanent and temporary exhibits documenting the history of slavery in America, and African American life, art, history, and culture; and*
- (3) *The collection and study of artifacts and documents relating to African American life, art, history, and culture; and*
- (4) *Collaboration between the NMAAHC and other museums, historically black colleges and universities, historical societies, educational institutions, and other organizations that promote the study of or appreciation of African American life, art, history, or culture, including collaboration concerning*
  - a) *development of cooperative programs and exhibitions*
  - b) *identification, management, and care of collections; and*
  - c) *training of museum professionals*

Section 2 of the NMAAHC Act set out the findings of Congress as to why such a museum was needed.

- (1) *Since its founding, the United States has grown into a symbol of democracy and freedom around the world, and the legacy of African Americans is rooted in the very fabric of the democracy and freedom of the United States.*
- (2) *There exists no national museum within the Smithsonian Institution that-*
  - a) *is devoted to the documentation of African American life, art, history, and culture; and*
  - b) *encompasses on a national level- [the key time periods associated with African American life, art, history, and culture.]*
- (3) *A National Museum of African American History and Culture would be dedicated to the collection, preservation, research, and exhibition of African American historical and cultural material reflecting the breadth and depth of the experience of individuals of African descent living in the United States.*

The findings of Congress were based in large part on the conclusions of the Presidential Commission in its 2003 study *The Time Has Come: Report to the President and Congress* (Smithsonian Institution, 2003a). This Commission, known as the NMAAHC Plan for Action Presidential Commission, stated that:

*“the time has come to establish the National Museum of African American History and Culture because the NMAAHC is important not only for African Americans but for all Americans. It is the only institution that can provide a national meeting place for all Americans to learn about the history and culture of African Americans and their contributions to and relationship with every aspect of our national life. Further, the NMAAHC is the only national venue that can respond to the interests and needs of diverse racial constituencies who share a common commitment to a full and accurate telling of our country’s past as we prepare for our country’s future. And, even more importantly, it is the only national venue that can serve as an educational healing space to further racial reconciliation.”*

This Tier II Draft EIS assesses certain impacts associated with constructing and operating a permanent facility for the NMAAHC within the Smithsonian Institution’s approved site to meet this purpose and need. Overall, the purpose and need statements are consistent between the Tier I and Tier II EIS processes.

## 1.6 WHAT IS AN EIS AND WHAT WILL IT ACCOMPLISH?

NEPA was passed by Congress in 1969 and took effect on January 1, 1970. This legislation established this country's environmental policies, including the goal of achieving productive harmony between human beings and the physical environment for present and future generations. It provided the tools to implement these goals by requiring that every federal Agency prepare an in-depth study of the impacts of "major federal actions having a significant effect on the environment" and alternatives to those actions, and requiring that each agency make that information an integral part of its decisions.

The purpose of NEPA is to provide decision-makers with information on the environmental impacts associated with a decision before the decision is made. Federal agencies are also required to use the NEPA process to identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment. NEPA also requires that agencies make a diligent effort to involve the interested and affected public before they make decisions affecting the environment.

The proposed action is to construct and operate a permanent facility for the NMAAHC within the Smithsonian Institution on the five-acre parcel bounded by Constitution Avenue on the north, Madison Drive on the south, 14<sup>th</sup> Street on the east, and 15<sup>th</sup> Street on the west. Because of the importance of the setting of the NMAAHC site on the Washington Monument Grounds and the National Mall and the public interest in the site, the Smithsonian Institution made the decision with NCPC to prepare an EIS, as

suggested by NCPC's Environmental and Historic Preservation Policies and Procedures.

This Draft EIS analyzes alternative building concepts to exhibit the museum collections and programming, as well as a No Action Alternative. This document complies with NEPA and requires review by CEQ pursuant to 42 U.S.C. §4321 through 42 U.S.C. §4347 and Title 40 of the Code of Federal Regulations (40 CFR 1500 – 1508 (1986), as amended). A Record Of Decision (ROD) will be the end product of the Tier II NEPA process.

## 1.7 WHY IS THE EIS TIERED?

As explained in the Tier I Final EIS, “if a federal agency anticipates that the proposed project’s timeline will extend over a lengthy period and will require a phased decision making process, a federal agency may choose to identify elements to be carried forward in the near term and identify other elements which will warrant more detailed study in a future environmental document” (Smithsonian Institution, 2008a). CEQ regulations, 40 C.F.R. § 1502.20 state that:

*Agencies are encouraged to tier their environmental impact statements to eliminate repetitive discussions of the same issues and to focus on the actual **issues ripe for decision** [emphasis added] at each level of environmental review (Sec. 1508.28). Whenever a broad environmental impact statement has been prepared... and a subsequent statement or environmental assessment is then prepared on an action included within the entire program or policy (such as a site specific action) the subsequent statement or environmental assessment need only summarize the issues discussed in the broader statement... and shall concentrate on the issues specific to the subsequent action. The subsequent document shall state where the earlier document is available (CEQ, 1978).*

In order to focus on “issues ripe for decision” and encourage continued dialogue on cultural resource effects and other appropriate effects as architectural design concepts are developed, the Smithsonian Institution and NCPC, in consultation with the CEQ, elected to pursue a two-tiered NEPA process.

The Tier I Final EIS analyzed the potential effects of a range of massing alternatives with different heights, setbacks and configurations on the natural and manmade environments. The Tier I NEPA process included a Draft EIS and a Final EIS. The Smithsonian Institution concluded the Tier I NEPA process by issuing a ROD in 2008. NCPC did not issue a Tier I decision document because it will take action on the NMAAHC when the Smithsonian Institution submits the project to NCPC for approval, following completion of the Tier II NEPA process.

As stated in the Tier I Final EIS, “following the generation of conceptual designs by the NMAAHC design architect, there will be a Tier II EA or EIS that would analyze the historic and aesthetic/visual effects and any other significant effects found to be important to the final decision. Included in the Smithsonian Institution’s decision will be design principles, which will inform the subsequent design process and serve as guidance for the design architect. The design principles acknowledge the dialogue between stakeholders and consulting parties that occurred through the Tier I process” (Smithsonian Institution, 2008a).

As part of the Tier II NEPA process, the Smithsonian and NCPC are assessing a full range of viable alternative concept designs for viewshed impacts, possible historic resource effects, and certain geotechnical, transportation, and other effects.

## 1.8 WHAT ARE THE RESULTS OF THE TIER I EIS?

The Tier I EIS process was completed with a Final EIS issued on June 27, 2008, and a ROD, issued on August 8, 2008. The Tier I Final EIS analyzed a “no build” alternative along with six diagrammatic massing alternatives on the site (see Figure 1.8.1). The alternatives presented variations in context, siting and mass, orientation, form, square footage of interior spaces, exterior spaces, and profiles.

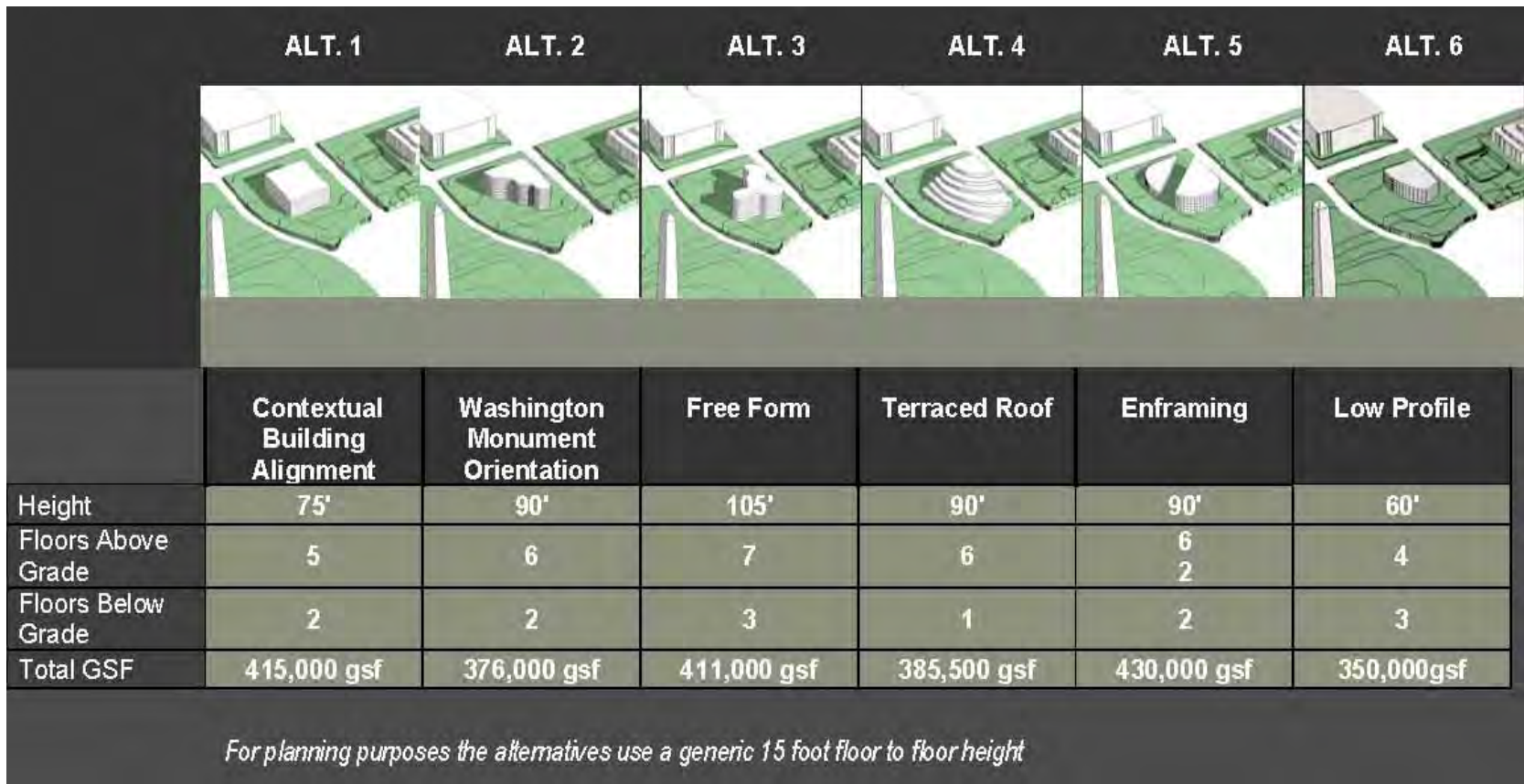
The Tier I Final EIS concluded that the massing alternatives all had comparable effects on the majority of resources analyzed, which included cultural resources, aesthetics and visual resources, distribution and movement of groundwater, surface water resources, air quality, noise, transportation, land use and planning policies, visitor use and experience, communities and businesses, infrastructure and utilities, public health and security, and cumulative impacts (see Section 1.8.1). The Smithsonian Institution and NCPC chose to assess more concrete design concepts for the NMAAHC for viewshed impacts, possible historic resource effects, site-specific geotechnical impacts, transportation impacts and other impacts in the Tier II Draft EIS (see Section 2.2.4). An expanded discussion of the tiered EIS process is provided in Section 1.7 above. The Tier I Final EIS is available for review at <http://www.nmaahceis.com/tier-i-eis>.

The Smithsonian Institution chose to express the Tier I Preferred Alternative as a set of physical parameters related to size, heights, setbacks and configuration. The program requirements and physical parameters resulted in a Smithsonian Preferred Alternative that consisted of the following:

- Approximately 350,000 gross square feet provided in buildings ranging in height from 60 to 105 feet;
- A minimum 50-foot setback from the inside face of the sidewalk of the surrounding streets for preliminary security planning purposes; and
- A subsurface volume not lower than 45 feet.

As shown in Figure 1.8.1 below, the massing parameters ranged from orthogonal and contextual to free-form and non-contextual. In addition to the physical parameters, the Smithsonian Institution, in coordination with the Section 106 consulting parties, developed a set of design principles to help guide architects and minimize adverse effects on historic resources. The design principles reflect the importance of relating to and respecting the character, views, and spatial arrangements of the National Mall; the character, scale, and historic context of the Washington Monument Grounds; and the relationship of the NMAAHC to adjacent architectural and urban contexts (Smithsonian Institution, 2008a).

The Smithsonian Institution used the decisions described in the ROD for the Tier I EIS as instructions to the design architects in developing concept designs for the NMAAHC. The environmental impacts of the resulting concept designs are evaluated in this Tier II Draft EIS. The final decisions on the design of the NMAAHC will not be made until the Tier II NEPA analysis is complete.



**Figure 1.8.1 Tier I Massing Alternatives**

Source: Smithsonian Institution, 2008a



### 1.8.1 What Issues Were Evaluated in the Tier I EIS?

The following is a summary of the impacts associated with each of the resource areas evaluated in the Tier I EIS and subsequently eliminated from the Tier II Draft EIS. These eliminated resource areas include air quality, archaeological resources, communities and businesses, infrastructure and utilities, noise, public health and security, surface water resources, and threatened and endangered species.

#### Air Quality

National Ambient Air Quality Standards, established by the U.S. Environmental Protection Agency (EPA) in compliance with the 1970 Clean Air Act and the 1977 and 1990 Clean Air Act Amendments, were enacted for the protection of the public health and welfare within an adequate margin of safety. The EPA has issued National Ambient Air Quality Standards for several pollutants which set *de minimis* levels for their presence. Air-quality Control Regions are monitored for their attainment or non-attainment of the standards. The Metropolitan Washington Council of Governments is the agency responsible for coordinating the air quality planning initiatives for Washington, DC, Virginia and Maryland in the Washington, DC metropolitan statistical area.

The area is currently in moderate nonattainment for the criteria pollutant ozone (O<sub>3</sub>), and nonattainment for particulate matter up to 2.5 micrometers in size (PM<sub>2.5</sub>): the area is in attainment for all other criteria pollutants.

Federal actions that take place in a nonattainment area are required to demonstrate compliance with the General Conformity Rule (40 CFR Part 93 Determining Conformity of Federal Actions to State or Federal Implementation Plans). The General Conformity Applicability analysis performed as part of the Tier I Final EIS involved estimating the level of potential air emissions for oxides of nitrogen (NO<sub>x</sub>), volatile organic compounds (VOC), sulfur dioxide (SO<sub>2</sub>) and PM<sub>2.5</sub> under moderate eight-hour *de minimis* levels and severe one-hour *de minimis* levels, as well as for regional significance. The Tier I Final EIS (Smithsonian Institution, 2008a) concluded that no significant impacts on air quality would occur on either a local or regional level during construction or operation of the NMAAHC.

#### Archaeological Resources

The Smithsonian Institution commissioned Phase I and Phase II archaeological studies of the entire NMAAHC site since no previous archaeological studies of the site had been completed. The Phase I archaeological study primarily focused on archival research of the site's physical development and its historic uses, as well as some geo-archaeological investigation and standard archaeological survey of the site. The Phase II archaeological study involved field investigations of the site through manually excavated test pits and mechanical trenching. Phase II shovel tests produced a small number of prehistoric and early-nineteenth century artifacts.

Prehistoric items consisted of waste flakes that resulted from the manufacture of stone tools; the early-nineteenth century artifacts included items such as ceramics, bottle glass, oyster shell and animal bone. As part of the Tier I Final EIS the Smithsonian Institution, in consultation with the State Historic Preservation

Office (SHPO), determined no significant impacts on archaeological resources were expected as a result of the NMAAHC project because construction of the proposed action would not limit future historic or archaeological study or interpretation of this area of the city.

### **Communities and Businesses**

The Tier I Final EIS examined the potential impacts that the proposed action would have on local communities and businesses in the area. In addition, *Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* calls on federal agencies to take appropriate steps, to the greatest extent practicable and permitted by law, to identify and address disproportionately high and adverse impacts of federal projects on the health or environment of minority and low-income populations. *Executive Order 13045, Protection of Children from Environmental Health and Safety Risk* requires federal agencies to identify and assess risks to child health and safety from proposed actions that have the potential to disproportionately affect children. The Tier I Final EIS used a model to evaluate the significance of the impact that the construction and operation of the NMAAHC would have on the region of influence.

According to this Tier I analysis, the construction and the operation of the NMAAHC facility would not significantly impact local economic development, demographics, housing, further burden community services such as schools, fire and rescue services or hospitals and it would not significantly impact environmental justice populations or children. In addition, a traffic control plan will be prepared to determine the routes construction vehicles will take to and from the site during construction to avoid residential neighborhoods.

### **Infrastructure and Utilities**

The NMAAHC site is currently served by several utilities and urban systems in the area including water, sewer (sanitary and storm), electricity, natural gas, communications, solid waste and hazardous waste. Some infrastructure improvements would be necessary to connect to the various utilities.

The District of Columbia Water and Sewer Authority (WASA, now known as DC Water) provides potable water and sewer service at the project site. Sufficient potable water resources and capacity are available to meet additional treatment demand. According to the Tier I Final EIS, WASA (DC Water) indicated that there is adequate capacity to accommodate the projected demand from the project site. PEPCO provides electric service in Washington, DC and has sufficient service capacity available to accommodate current and future electricity of the proposed action. Washington Gas supplies natural gas to the NMAAHC site and has sufficient capacity available to accommodate the proposed action. It should be noted there is a subsurface elevated pressure gas transmission line that passes along the northern edge of the site that would require a 10- to 12-foot service easement.

Verizon provides private and commercial voice, data and cable service in Washington, DC and would be the Local Exchange Carrier contracted to provide service to the NMAAHC site. The Smithsonian Institution maintains contracts with service providers for trash collection, and the removal and disposal of solid waste and hazardous waste from museums on the National Mall (Smithsonian Institution, 2008a).

This topic was eliminated from further detailed study in the Tier II Draft EIS because construction and operation of the proposed action would not significantly alter the existing infrastructure or utilities, or exceed the capacities of those systems within the project area.

### **Noise**

The NMAAHC site is located on the National Mall and is surrounded by numerous buildings, monuments, museums, roadways, and open spaces. There are no residential uses in the site vicinity. The biggest source of noise in the area is currently vehicular traffic on Constitution Avenue and 14<sup>th</sup> and 15<sup>th</sup> Streets. This noise is not confined to rush hour on the weekdays as there is heavy vehicular traffic and congestion on these roadways throughout the week and over the weekend. Noise levels on busy streets are estimated to range between 65 and 80 decibels (dB); noise levels on the land uses adjacent to the NMAAHC site range between 67 to 72 dB based on the Federal Highway Administration criteria. The project site is subject to some noise attributable to flights in and out of the Ronald Reagan Washington National Airport, although the higher noise exposure contours do not reach the site.

Finally, given the site's proximity to the National Mall and public spaces that often host special events, large crowds, motorcades, police and emergency services, the area is subject to activities that produce additional noise.

According to the Tier I Final EIS, construction noise from NMAAHC would be temporary and would not violate applicable regulations. Mitigation measures such as restricting construction and the arrival of heavy equipment and materials to permitted work hours, adhering to local District of Columbia regulations, and using

equipment that meets EPA standards would reduce noise levels to acceptable levels. Operation of the NMAAHC would not substantially increase noise levels in the project vicinity. Increased noise from mechanical systems, such as the heating, ventilation and air condition (HVAC), would be minimal. The Tier I Final EIS determined that long-term impacts from noise associated with vehicular traffic generated by the proposed action would be minimal because of the underground loading dock and because most visitors would access the site via Metro.

### **Public Health and Safety**

Public health and safety considerations exist for the construction phase of the facility, as well as during operation. During construction, the sidewalks near the site would remain open to pedestrian traffic, but signage would be used to safely redirect pedestrians and bicyclists away from the construction area. Furthermore, all construction activities would adhere to applicable regulations and standards to ensure the safety and health of workers. Enhanced signalization, signage, and improved pavement markings would be installed to reduce potential safety issues.

The building itself would incorporate a number of risk and security features into the design such as appropriate setbacks or installing window and glass systems with the appropriate level of blast-resistance. The building design would also comply with fire, life safety and environmental standards as set forth in applicable regulations. The Tier I Final EIS concluded that demand for public safety services would increase during project operation; however, it would not be significant given the historic pattern of demand at other Smithsonian Institution museums and the high volume of pedestrians currently accessing the monumental core.

## Surface Water Resources

As stated in the Tier I Final EIS, there are no permanent bodies of water present on, or near, the five-acre site. The closest water body is the Tidal Basin, located approximately 2,000 feet (approximately 0.4 miles) to the southwest. All surface waters in the District flow to the Potomac River either directly or indirectly, through tributaries including Rock Creek and the Anacostia River. Appropriate mitigation measures during construction, including stormwater best management practices (BMPs) and compliance with local regulations, and operation of NMAAHC would be implemented to minimize any potential adverse impacts on water quality.

As stated in the Tier I Final EIS, *Executive Order 11988, Floodplain Management*, directs federal agencies to consider the risks, danger, and potential impacts of locating projects within floodplains and to minimize potential harm on, or within, the floodplain when alternatives are not practical. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (Washington, DC, Community Panel Number 1100010020B; effective date November 15, 1985) that was official during the Tier I EIS process, the project site was located outside the boundaries of both the 100-year and 500-year floodplains (FEMA, 1985). However, FEMA recently modified the limits of the 100-year floodplain to include the project site. However, the Potomac Park levee project will be constructed by NPS at 17<sup>th</sup> Street to protect the Federal Triangle and downtown Washington. The levee project will keep the majority of the project site out of the 100-year floodplain (Smithsonian Institution, 2008a; updated DDOE, 2010). Nevertheless, requirements under *Executive Order 11988, Floodplain Management*, apply to NMAAHC and have been incorporated into the design of the build alternatives. Compliance

with Executive Order 11988 would ensure a less than significant adverse impact to the museum from flooding. As a result, surface water resources have been eliminated as a topic from detailed analysis in the Tier II Draft EIS.

## Threatened and Endangered Species

During the internal scoping process of the Tier I EIS, the Smithsonian Institution, NCPC and NPS determined that biological resources, including wetlands, wildlife and vegetation, would be dismissed from further review. The U.S. Fish and Wildlife Service confirmed that there are no proposed or federally-listed endangered or threatened species known to occur in the project area. Therefore, no biological assessment or a Section 7 consultation with the agency would be required.

### 1.8.2 What cumulative projects were evaluated in the Tier I EIS?

CEQ regulations (42 USC 4321 *et seq.*) require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). The Tier I Final EIS included an evaluation of the impacts of the NMAAHC in conjunction with the following cumulative projects:

- National Museum of American History, Kenneth E. Behring Center Public Space Revitalization
- National Mall Road Improvements
- Smithsonian Mall-Wide Perimeter Security Project
- Department of Commerce, Herbert C. Hoover Building Modernization
- Relocation of the National Aquarium Entrance
- Martin Luther King Jr. National Memorial
- American Veterans Disabled for Life Memorial
- Dwight D. Eisenhower Memorial
- Vietnam Veterans Memorial Visitors Center
- United States Institute of Peace Headquarters
- Fourteenth Street Bridge Corridor Traffic Studies
- City Center Action Agenda

According to the Tier I Final EIS, the combination of the proposed museum and these cumulative projects on the National Mall and surrounding monumental core could have an adverse effect on the historic plans for the city and the logic for the design of the National Mall. However, given the location of the project site, there were no current projects in the vicinity of the NMAAHC site that would adversely affect aesthetics or visual resources.

The Tier I Final EIS concluded that there were no cumulative impacts with respect to geology and soils because they are site-specific resources. The overall cumulative impact on groundwater was determined to be negligible, and thus, not significant, primarily because the cumulative projects would be expected to mitigate their potential impacts to the groundwater table to ensure equilibrium, similar to the requirements for the proposed action. The adverse cumulative impact on surface water was considered negligible, and thus, not significant, because, as with the proposed action, the cumulative projects would be required to comply with water quality regulations and treat surface runoff prior to discharge from a site. The adverse cumulative impact on floodplains was not considered significant because structures located within a potential flood area would be designed to flood or to withstand flooding and would not reduce the capacity of the floodplain.

The Tier I EIS concluded that the proposed action, in conjunction with the other cumulative projects, would cumulatively contribute to the continued exceedance of state and federal ambient air quality standards, but that the cumulative effect on air quality would not be significant. Heavy reliance on automobiles and the urban infrastructure that generates pollution was determined to be primarily the result of past developments that have generated the region's population and land use patterns.

According to the Tier I Final EIS, additional noise generated by the cumulative projects would not create a significant noise impact because the site is located in an already noisy commercial and public area, and is not in close proximity to residential uses.

Although the related projects would be expected to generate new vehicular trips, the combination of the additional traffic generated by the cumulative projects and the traffic generated by the proposed action would be well-distributed. As such, the cumulative impacts were determined to be not adverse. Long-term, it was anticipated that the NMAAHC site would benefit from the improvements to the streets in the surrounding area from other actions such as the National Mall Road Improvements Project and the 14<sup>th</sup> Street Bridge Corridor Traffic Project (Smithsonian Institution, 2008a).

It was assumed that planned projects in the area, including the proposed action, would comply with land use policies and zoning of the National Mall and the downtown Washington, DC area. As a result, the cumulative effect on land use and zoning was determined to be not significant (Smithsonian Institution, 2008a). The increase of other cultural destinations within and near the National Mall, combined with the proposed action, would have an overall beneficial cumulative impact with respect to increasing visitor use and experience in Washington, DC.

According to the Tier I Final EIS, there would be a temporary increase in local spending that would result from the proposed action and cumulative projects leading to short-term benefits, but there would be no significant long-term effects to local businesses. No cumulative impact was expected on environmental justice because the listed projects are not adjacent to census tracts that

may be characterized as low-income or minority and construction traffic would not traverse environmental justice communities.

While the proposed action and the cumulative projects would add to the service requirements for utility companies, it was determined in the Tier I Final EIS that the comparative loading numbers would not be significant and adequate capacity would be available. Based on the existing demand for the U.S. Park Police and DC Fire and Emergency services, the construction and operation of the NMAAHC was not anticipated to contribute significantly to a cumulative demand for such services. No adverse impact on public health and security was anticipated.

### **1.8.3 What cumulative projects are being evaluated in the Tier II Draft EIS?**

The CEQ regulations to implement NEPA require the assessment of cumulative impacts in the decision making process for federal actions. Cumulative impacts are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR 1508.7). As stated in the CEQ handbook, “Considering Cumulative Effects” (1997), cumulative impacts need to be analyzed in terms of the specific resource, ecosystem, and human community being affected and should focus on effects that are truly meaningful. Cumulative impacts are considered for all alternatives, including the No Action Alternative.

The NMAAHC site is located on the Washington Monument Grounds and the National Mall, a highly visible and culturally rich area. As such, a significant number of other public projects are underway or proposed in the vicinity. Additionally, because the site is located within an urban area, there are other ongoing private projects.

Cumulative impacts were determined by combining the impacts of the alternative being considered with other present and reasonably foreseeable future actions. Therefore, it was necessary to identify the relevant ongoing or reasonably foreseeable projects and plans on the National Mall and surrounding area. This analysis also incorporated the findings and analysis of the Tier I Final EIS. Some projects that were considered reasonably foreseeable during the Tier I EIS process are currently under construction and considered present projects. Table 1.1 summarizes actions that could affect

resources at the site. Additional explanation for a portion of these actions is provided in the narrative following the table.

**Table 1.1 Cumulative Impact Projects**

<b>Present Projects</b>	<b>Description</b>	<b>Percent Complete (approximate)</b>
Potomac Park Levee Project	The National Park Service (NPS) is improving the West Potomac Park Levee located near the intersection of 17th Street NW and Constitution Avenue. The USACE de-certified the levee system in 2007 after it was determined that it did not meet stricter policies for levees adopted after hurricane Katrina. As a result, the Federal Emergency Management Administration (FEMA) proposed to issue a new 100-year floodplain map that would place portions of downtown Washington, including the Federal Triangle and museums along the north side of the Mall, within the floodplain. The project is divided into two Phases; Phase I will include construction of a post and panel closure system across 17th Street and an on-site post and panel storage facility, and concrete retaining walls. Phase II will include permanent earthwork, surface treatments and landscaping necessary to ensure that the improvements are compatible with their surroundings (NCPC, 2008). The project is scheduled to begin in October 2010 with a completion date of October 2011 (NPS, 2010)	10%
United States Institute of Peace Headquarters	This project proposes to construct a new headquarters for the United States Institute of Peace at the corner of 23rd Street NW and Constitution Avenue NW on an approximately two acre parcel of land. The building will contain working spaces for program and administrative staff and research fellows, a research library and archives, a state-of-the-art conference center that includes classrooms and professional training rooms, and a public education center (Smithsonian Institution, 2008).	90%



Present Projects	Description	Percent Complete (approximate)
Martin Luther King, Jr. Memorial	This project involves the construction of a memorial dedicated to the legacy of Martin Luther King, Jr. The memorial is located in West Potomac Park between the Tidal Basin and Independence Avenue SW. The three main design elements include the <i>Mountain of Despair</i> , the crescent <i>Inscription Wall</i> forming the main plaza area of the memorial interior, and the <i>Stone of Hope</i> that features the likeness of Dr. King centered within the plaza. Additionally, a Visitor Contact/Bookstore/Restroom Building will be located at the west side of West Basin Drive. The project broke ground in 2006 and is expected to be completed in 2011 (NCPC, 2008; MLK Jr. Memorial Foundation, 2010).	50%
Thomas Jefferson Memorial Plaza and Seawall Improvements	The National Park Service is continuing to work on repairing the seawalls near the plaza on the north side of the Memorial. Construction is being funded by the American Recovery and Reinvestment Act of 2009. Construction began in Spring 2010 to stabilize and repair the seawalls. Work is expected to be completed by June 2011 (NPS, 2010).	40%
Smithsonian Institution Mall-Wide Perimeter Security Improvements	The Smithsonian Institution is constructing permanent perimeter security barriers for nine of the museums located on or near Constitution Avenue and Independence Avenue. As part of the project, temporary security elements would be removed and replaced by a variety of landscape elements and site amenities that will provide more attractive vehicular access control points. Additionally, Jefferson Drive will be realigned in front of the Smithsonian Castle. The project began in 2004 and is an ongoing initiative (NCPC, 2004)	50%

Future Projects	Description	Year
National Museum of American History, Kenneth E. Behring Center Public Space Revitalization/Expansion (Includes exploration of underground connections to NMAAHC)	The Smithsonian Institution proposes to construct infill space within the existing garage under the museum's terrace and adjacent to the Mall. The proposal includes building glass vestibules on the east and west driveway entries to bring daylight into the space. The proposed uses of this space will include the Lemelson Center for the Study of Invention and Innovation; the Smithsonian Institution Office of Protection Services; shared swing office space for visiting Fellows; Information Technology Group Exhibits Technology Group, NMAH Collections Documentation Services and the Smithsonian Early Enrichment Center (SEEC) child care facility adjacent to its playground. Sub-grade connections to the NMAAHC are also being investigated as part of this project and being addressed in other parts of this document (NCPC, 2009).	2007-2012 (per Tier I)
Department of Commerce, Herbert C. Hoover Building Modernization	The General Services Administration proposes to enhance the exterior site and building features of the Herbert C. Hoover Building, bring the building into compliance with American Disabilities Act (ADA) requirements, and provide Level IV protection for the facility. Improvements would include handicapped accessible ramps at six entrances; raised crosswalks at the four entrances to the motor courts; curb ramps at each of the four corners of the site and at the north and south entrances to the motor courts on 14th Street; and permanent perimeter security barriers provided around the exterior of the building (GSA, 2010).	2007-2012 (per Tier I)
Department of Commerce, Herbert C. Hoover Building, National Aquarium Entrance	The General Services Administration proposes to relocate the entrance to the National Aquarium along the Constitution Avenue, NW side of the Herbert C. Hoover Department of Commerce Headquarters Building. The proposed entrance is necessary to provide access to the Aquarium which will be relocated to a portion of the basement-level at the southern end of the building. The entrance will be located along the existing inside edge of the sidewalk and consist of two granite-clad walls. The wall immediately adjacent to the sidewalk will incorporate perimeter security. Signage will be located at either end of the entrance. Finally, the proposal also includes the placement of a public art element near the intersection of 14th Street and Constitution Avenue. The public art has yet to be designed though it is anticipated that it will relate to the mission of the National Aquarium (NCPC, 2010).	2011

Future Projects	Description	Year
Washington Monument Permanent Security Improvements	The National Park Service proposes to build upon a previously completed effort to improve the landscaping and perimeter security around the Washington Monument Grounds (NPS, 2010).	2008-2012
Washington Monument Steamlines	The General Services Administration intends to request construction funds to replace steam and condensate piping at the Monument as part of a project to upgrade piping at 6 sites throughout Washington, DC, in addition to 20 sites that have already been funded (NPS, 2010). This project proposes to build upon the recent repair of steam and condensate piping at the Washington Monument.	
Madison Drive Roadwork	The National Park Service proposes to mill and repave Madison Drive (NPS, 2010).	2010
Constitution Avenue Roadwork	The National Park Service proposes to repair and resurface the travel lanes and concrete lane for bus drop-offs from 17th to 19th Street NW along Constitution Avenue. Additionally, new granite curbs, curb cuts, new concrete sidewalks on both sides of the street, concrete walks connecting bus drop-offs to the main east-west sidewalk on the south side, new street lights, and a new stormwater drainage system will also be provided (NPS, 2010).	2014+
Visitor Transportation Study for the National Mall and Surrounding Park Areas	The National Park Service evaluated alternative approaches for visitor transportation in and around the National Mall in Washington, DC and within Arlington National Cemetery in Arlington, VA. The purpose of the project is to plan for a convenient, well-connected interpretive visit transportation service to national park sites in the DC area. The selected alternative includes two new interconnected routes within the visitor core. Basic orientation on the new routes will be provided via drivers, maps, and brochures. Optional interpretation would be provided by audio/electronic information systems, limited metered parking, and other amenities (NPS, 2010)	2003-2010

Future Projects	Description	Year
National Mall and Memorial Park Concession Contracts and Commercial Services	The National Park Service maintains a contracting program that allows vendors to provide concessions to park visitors. These concessions would include food and retail items along with equipment rentals. Economic feasibility assessments would determine the nature and scope of commercial business services (NPS, 2010).	Ongoing
National Mall Turf Study	The National Park Service, as one of the top priorities included in the National Mall Plan, proposes to improve the health, appearance, durability, sustainability, and recoverability of the Mall turf. The soil on the Mall has been heavily compacted and has lost much of its drainage capabilities due to over use. The turf is often worn away and presents an irregular and uneven appearance, and the irrigation system no longer functions. There have been no major reconstruction efforts on the Mall since the Bicentennial and since that time, demands have increased with more frequent and longer events and higher levels of visitation. Improvements would include a curb and gutter around the perimeter of the center panels to provide structural support and containment for the engineered soil, while also directing the run-off to the below-grade water management system (NCPC, 2010).	2010+
Centennial Initiative/Wayfinding and New Pedestrian Guides	The National Park Service proposes to install a comprehensive sign and wayfinding program for Mall and off-Mall destinations. The project is funded by the Centennial Fund, matched by funds raised by the Trust for the National Mall. Comprehensive wayfinding is a component of the preferred alternative in the National Mall Plan (NCPC, 2010).	Ongoing
The District of Columbia Tour Bus Management Initiative	The DC Department of Transportation prepared a plan to alleviate many of the demands that tour buses place on the local roadway infrastructure within the District of Columbia. Issues of concern include noise, traffic congestion, safety risks, illegal parking, visual blight, and wear and tear on residential roadways (USDOT, 2003).	Ongoing

Future Projects	Description	Year
Lincoln Memorial Reflecting Pool and Grounds	The National Park Service is proposing a comprehensive design for circulation and access, security, and rehabilitation on the Lincoln Memorial Grounds and in West Potomac Park, including the Reflecting Pool and Elm Walks. The proposal includes provision of accessible circulations paths throughout the site; incorporation of a security barrier for the east side of the Memorial; integrated with the circulation improvements; repair of structure damage to the Reflecting Pool and its coping stones and the addition of paved walkways along the north and south sides of the pool where visitors walk; replacement of the water intake source and drainage system for the Reflecting Pool; and refurbishment and relocation of site furnishings such as benches and trash receptacles along the Elm Walks and the provision of lighting (NPS, 2009).	2010-2012
Thomas Jefferson Memorial Permanent Security Improvements	The National Park Service proposes the construction of a vehicular barrier system to provide permanent perimeter security for the Thomas Jefferson Memorial. The proposed plan also includes the provision of parking for handicapped visitors, spaces for tour bus loading and unloading, and a new kiosk in a new location for continued food service (NCPC, 2010).	2010-2011
D.C. War Memorial Rehabilitation	The National Park Service proposes to rehabilitate the District of Columbia War Memorial located in West Potomac Park along Independence Avenue SW. The memorial was built in 1931 to memorialize the residents of Washington, D.C. who fought in World War I. The proposed project includes cleaning and repairing of the memorial stone, replacement of deteriorating bluestone paving, removal of vegetation close to the structure to restore its open setting, and the planting of elm trees according to the original landscape plan (NCPC, 2010)	2010-2011
Arts and Industries Building Renovation	The Smithsonian Institution is using ARRA funds to make necessary repairs to the Arts and Industries Building, including the proposed replacement of the (non-original) roof and windows, and repairs to the exterior and interior building fabric. Smithsonian Institution is considering possible future uses for the now-vacant building, including a possible location for a new national museum (NCPC, 2010).	2008+

Future Projects	Description	Year
U.S. Department of Agriculture - Jamie L. Whitten Building	The Jamie L. Whitten Building, the central administration headquarters for the U.S. Department of Agriculture, is located at 1400 Independence Avenue. The neoclassical building was completed in 1930. The NCPC Monumental Core Framework Plan (NCPC, 2009) proposes that the Whitten Building could become a cultural destination on the National Mall. Such action would require congressional legislation (NPS, 2010).	Ongoing
Vietnam Veterans Memorial Visitors Center	The Vietnam Veterans Memorial Foundation and the National Park Service propose to construct a Visitor Center for the Vietnam Veterans Memorial on the northern grounds of the Lincoln Memorial. This site was approved by NCPC in 2006 and is currently in use as active recreation space, containing two softball fields and a National Park Service concession facility. The proposed facility would occupy 34,100 square feet and include exhibit space, public amenities, administration offices, public programs, and maintenance (NCPC, 2009).	2009+
Dwight D. Eisenhower Memorial	The Eisenhower Memorial Commission and the National Park Service are proposing a national memorial to Dwight D. Eisenhower that is currently in the design-review process. The site was approved by NCPC in 2006. It consists of approximately 4 acres located south of the National Air and Space Museum, and bounded by Independence Avenue on the north, 4th and 6th Streets SW on the east and west, and the U.S. Department of Education Headquarters on the south. The site is bisected into two smaller parcels by Maryland Avenue, which runs roughly from the southwest corner to the northeast corner. The intent of the memorial is to honor the former President and educate the public on his accomplishments both in and out of office (NCPC, 2006).	2006+
American Veterans Disabled for Life Memorial	The National Park Service and the Disabled Veterans' Life Memorial Foundation have proposed a national memorial for disabled veterans on a 1.16 acre triangular piece of land located at Washington Avenue and 2nd Street SW near the National Mall. This site was approved by NCPC in August 2001. There are also two smaller parcels of land that will be used for supporting services for the Memorial. The Memorial will consist of a reflecting pool, a grove of trees, and a central fire in the middle of a water element. There will also be stone and glass walls that enclose the site and define pathways. The Memorial will be completely accessible to disabled visitors (NPS, 2006; KCT Technologies, 2007; Smithsonian Institution, 2008a).	2001+

**1.8.4 What determinations have been made regarding irretrievable and irreversible resource commitments?**

As discussed in the Tier I Final EIS, both natural and man-made resources would be expended in the construction and operation of the NMAAHC. These irretrievable resources would include the building materials, energy, and the human effort required to design, construct, and operate the proposed facility. The construction and operation of the NMAAHC on the project site would irretrievably and irreversibly commit the land use to be changed from open space resources to developed land. In addition, the public services required to operate the NMAAHC, would include commitments that might otherwise be used for other programs by the Smithsonian Institution, NPS, or the District of Columbia government. According to the Tier I Final EIS, while the proposed action would not directly generate tax revenues or other sources of public funds to offset these expenditures, the NMAAHC would serve as a destination and attraction for visitors from all over the world and indirectly generate spending. As a result, this topic was eliminated from further detailed study in the Tier II Draft EIS because it was determined not to be significant in the Tier I Final EIS.

This page is intentionally left blank



## 2.0 DESCRIPTION OF ALTERNATIVES



This page is intentionally left blank

## 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 14<sup>th</sup> 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-20<sup>th</sup> 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 National 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 (DC Water)

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 14<sup>th</sup> 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 and to avoid placing 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 depleting 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 14<sup>th</sup> 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 14<sup>th</sup> Street. It was suggested that the entrance to the loading dock be located on 14<sup>th</sup> Street and the exit be located on 15<sup>th</sup> Street. Concerns were raised about increased traffic on 15<sup>th</sup> 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 14<sup>th</sup> 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).

The No Action Alternative assumes that no construction would occur. For the purposes of this analysis, as part of the No Action Alternative the project site would continue to be parkland managed and maintained by NPS as part of the Washington Monument Grounds, the area would continue to be designated as a location for public gathering (First Amendment demonstrations and special events), and the NCPC-approved planting plan for the Washington Monument Grounds would continue to be implemented in this and other located on the Grounds. The existing concessionaire temporary trailer would continue to operate on the site. However, NPS would continue to seek an alternative permanent location for the temporary concessions facility currently located on the site.

### 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, 14<sup>th</sup> Street or 15<sup>th</sup> 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 14<sup>th</sup> Street.

### *Vehicular and Service Access*

Service and loading access and limited vehicular access would be provided from 14<sup>th</sup> 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 14<sup>th</sup> 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 14<sup>th</sup> Street.

The service and loading access would be located on 14<sup>th</sup> Street to protect views from the Washington Monument Grounds, and because truck access into the city uses U.S. Route 1 (14<sup>th</sup> Street ) and Interstate 395 (I-395), which connects to 14<sup>th</sup> Street. In addition, the peak pedestrian activity is east-west along Constitution Avenue and the National Mall. Finally, locating service access on 14<sup>th</sup> 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).

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).

Comprehensive stormwater retention, reuse of stormwater runoff for landscape irrigation purposes, and recycling water within the water features are some of the potential water conservation and stormwater management strategies that would be employed. Other strategies would include using pervious paving materials, balancing pervious surfaces (infiltration) with areas for rainwater collection (retention), 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 for building certification.



### *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 NMAAHC, 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 15<sup>th</sup> 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.

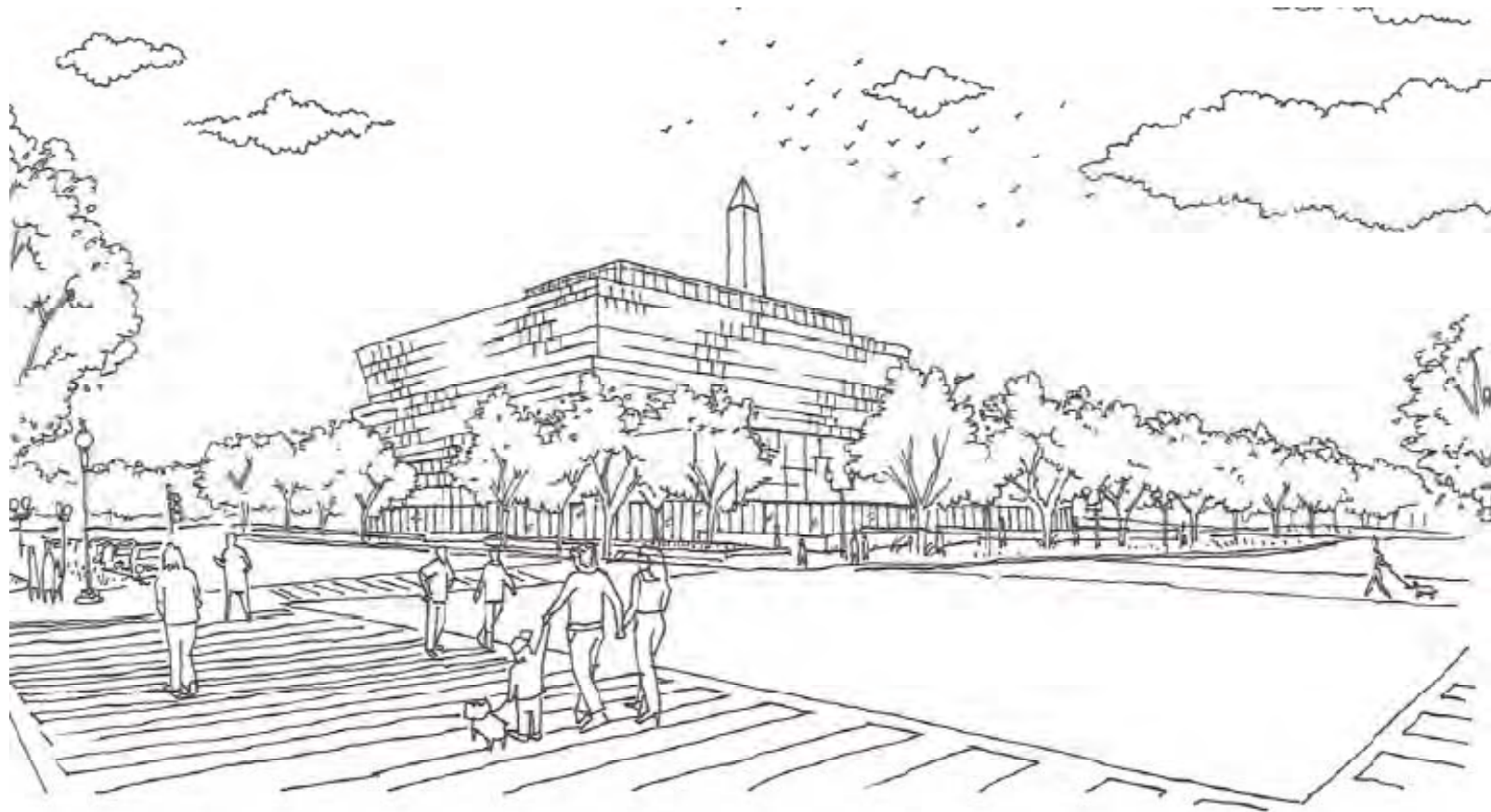
Figure 2.3.1 shows a sketch of the north (Constitution Avenue side) portion of the Plinth Alternative. Figure 2.3.2 shows cross-sections of the Plinth Alternative. Figure 2.3.3 shows the ground floor plan

and Figure 2.3.4 shows a plan view of the primary building components.

### Building Program

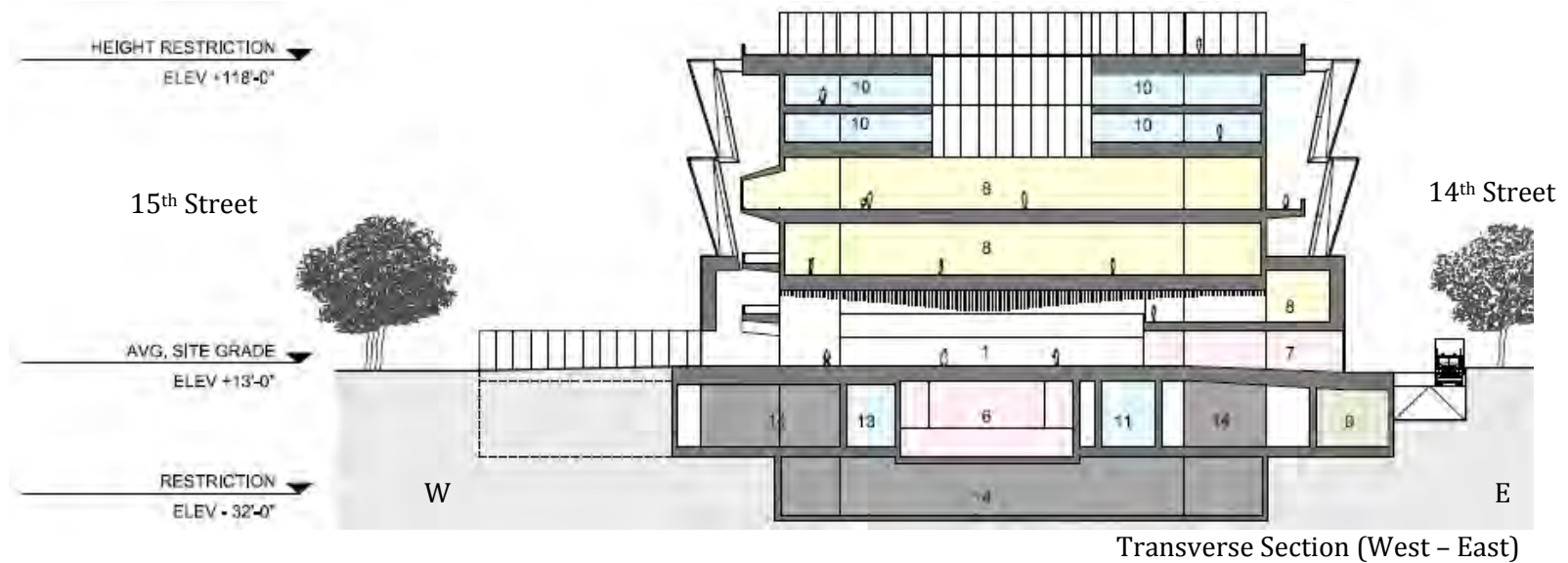
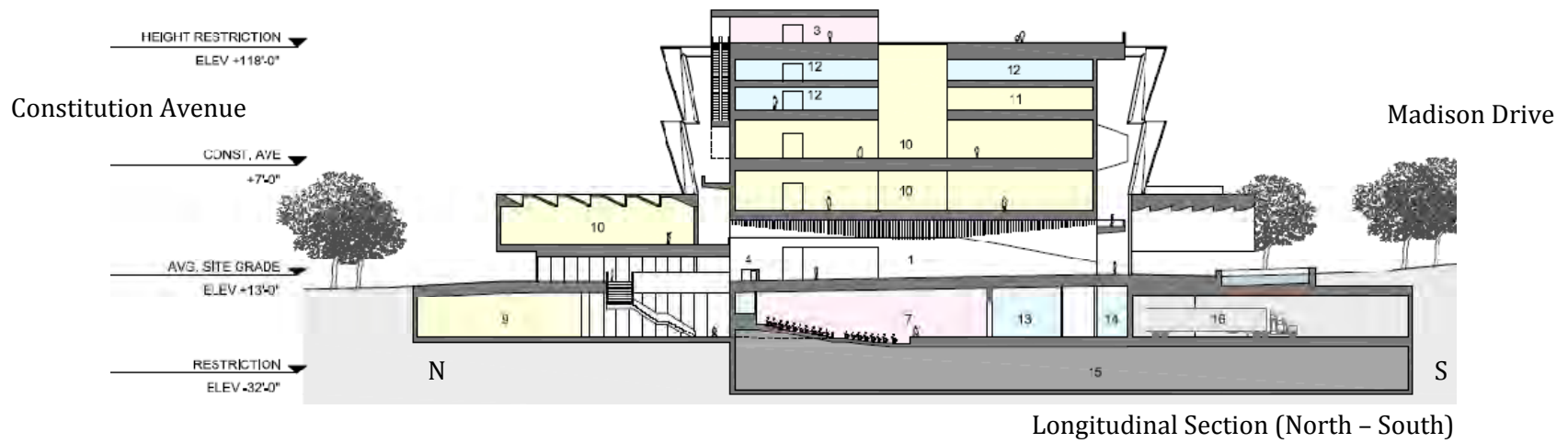
The Plinth Alternative would feature a mezzanine and eight levels, two of which would be below grade. The basement level (Level -2) would contain mechanical equipment only. The concourse level (Level -1) would contain a theater, youth gallery, changing gallery, visitor services, and collection support. 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.

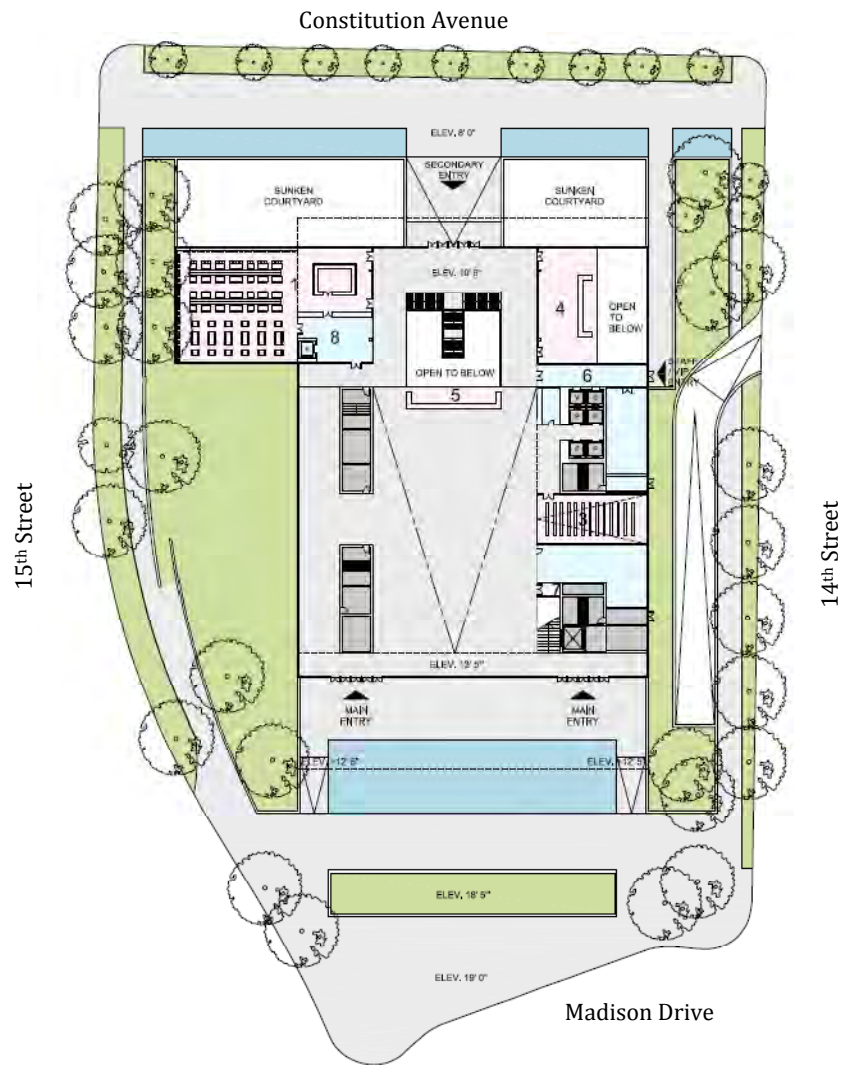


**Figure 2.3.1 Plinth Alternative 1: Sketch of Building from 14<sup>th</sup> Street and Constitution Avenue looking southwest across the intersection**

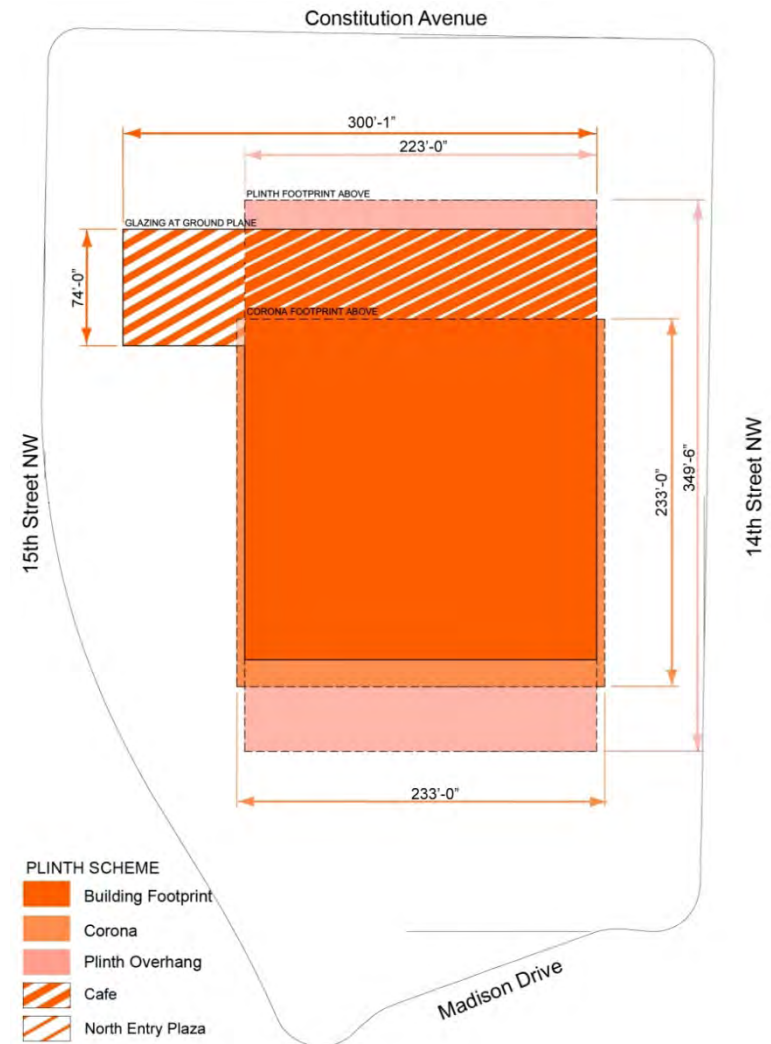
*Source: Freelon Adjaye Bond/SmithGroup, 2010*



**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 skylight 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 Levels +4 and +5 and would not be accessible to the public. Staff access would be accommodated by an elevator in the northeast core. The Level +3 skylight would extend through the Level +4 and Level +5 offices. The skylight 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 rooftop 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; 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**

<b>Feature</b>	<b>Building Height Relative to Average Grade</b>	<b>Building Elevation Relative to Mean Sea Level (MSL)</b>
Top of Corona	105 feet	118 feet
Top of Penthouse	121 feet 6 inches	134 feet 6 inches
Basement	-45 feet	-32 feet

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 14<sup>th</sup> and 15<sup>th</sup> 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 14<sup>th</sup> Street, and setback approximately 49 feet from the cafeteria and 126 feet to the face of the Corona as measured from the curb on 15<sup>th</sup> 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 nearly align 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 15<sup>th</sup> 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 15<sup>th</sup> Street, and approximately 17 feet wide on 14<sup>th</sup> 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 of the sidewalk would be less than 14 feet wide.

A separate pedestrian entrance for staff would be provided from 14<sup>th</sup> Street. The driveway for the service/loading area would be located on 14<sup>th</sup> Street. Pedestrians and vehicles traveling on 14<sup>th</sup> 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 14<sup>th</sup> Street. “The Plaza Concept 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 would 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

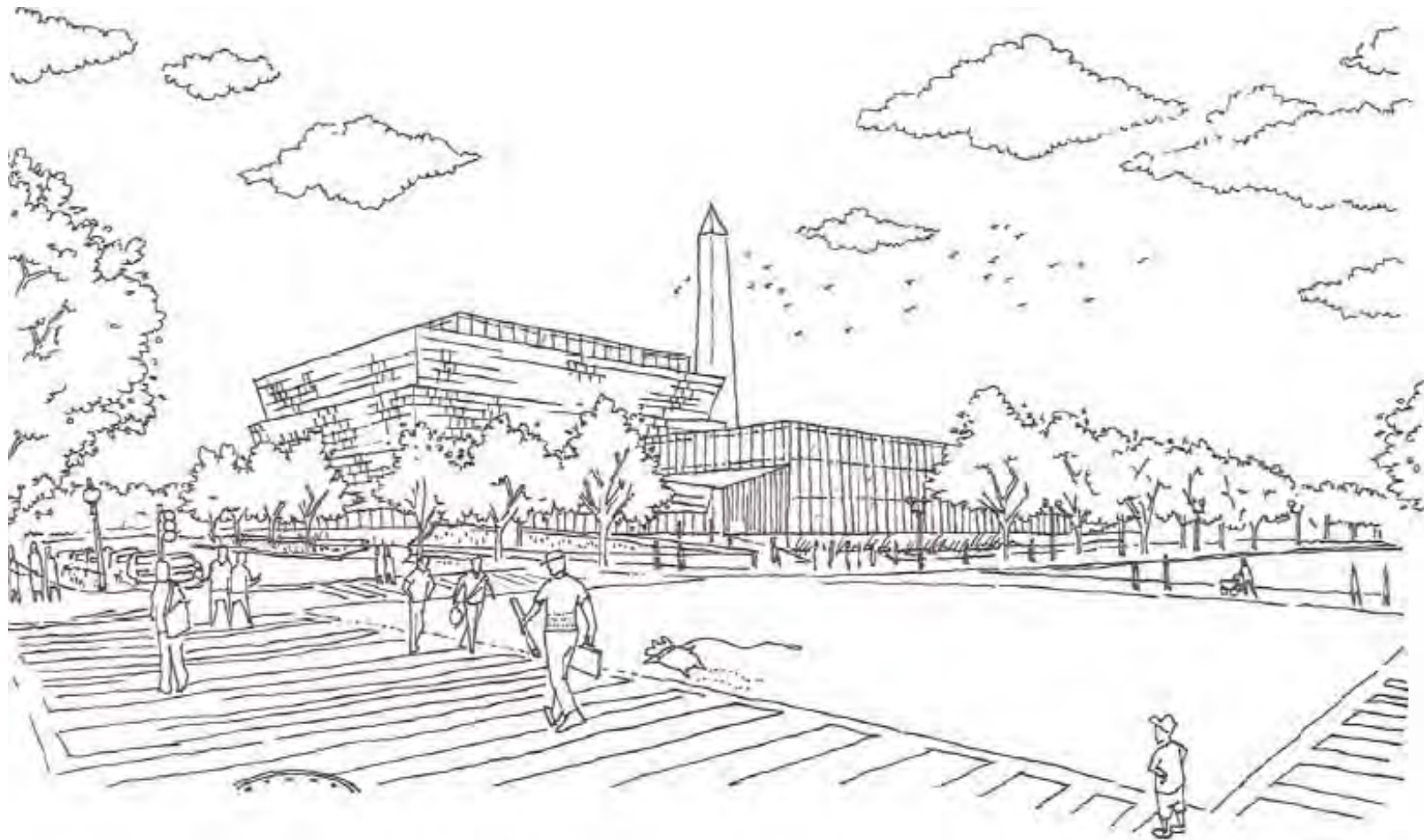
As part of the Plaza Alternative, the Corona would feature seven levels, two of which would be below grade. The northern building would consist of five levels, two of which would be below grade.

#### *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.

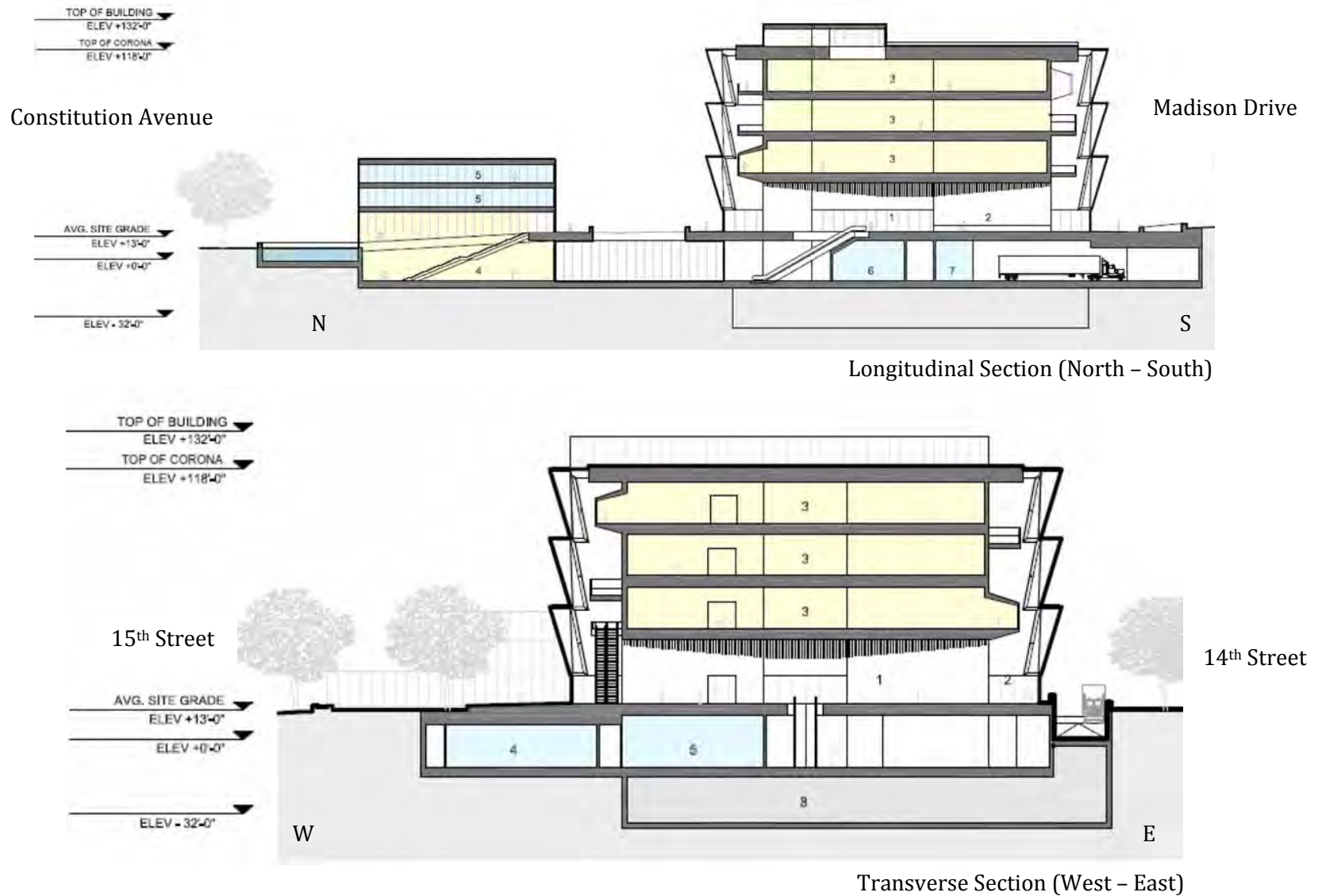
The ground floor (Level 0) would be the main level into which visitors would enter the museum. The primary feature of the ground floor would be the central hall. The central hall would connect vertically with the concourse level educational, assembly, and exhibit programs by an escalator. Another staircase 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 14<sup>th</sup> Street and Constitution Avenue looking southwest across the intersection**

*Source: Freelon Adjaye Bond/SmithGroup, 2010*

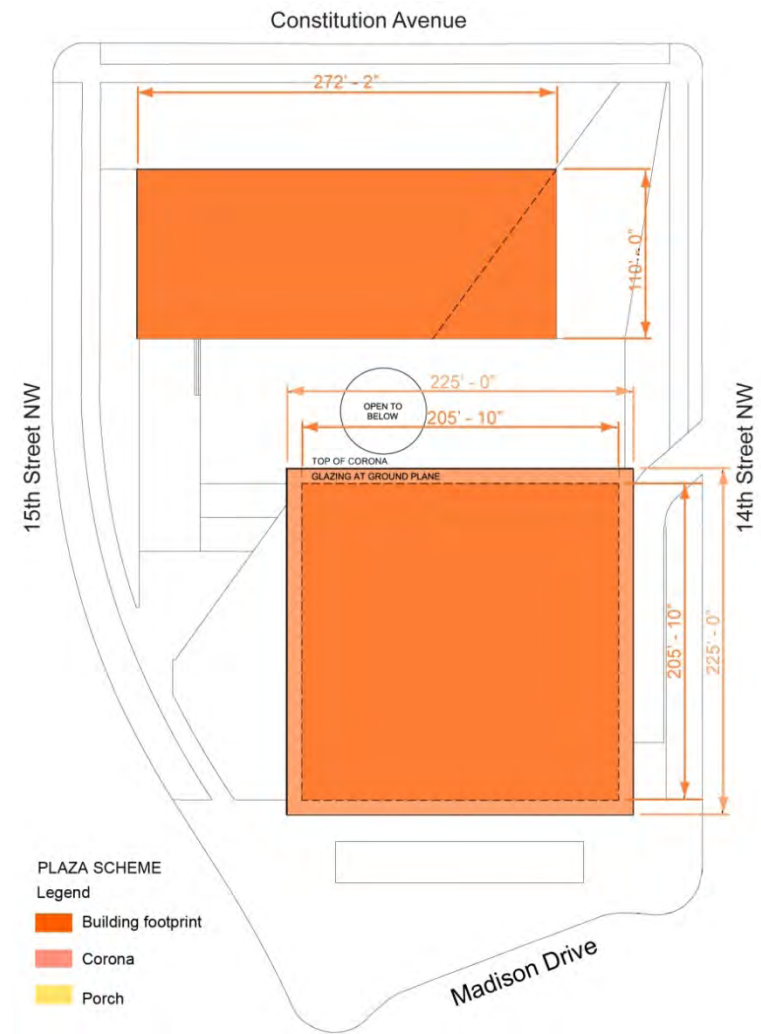


**Figure 2.3.7 Plaza Alternative 2: Cross-Sections**

*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 2.2 Building Height of Plaza Alternative**

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

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; 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 14<sup>th</sup> and 15<sup>th</sup> 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 14<sup>th</sup> and 15<sup>th</sup> 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 14<sup>th</sup> Street, and approximately 53 feet from the curb on 15<sup>th</sup> 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 Alternative 2 - Plaza Concept, 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 14<sup>th</sup> 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.

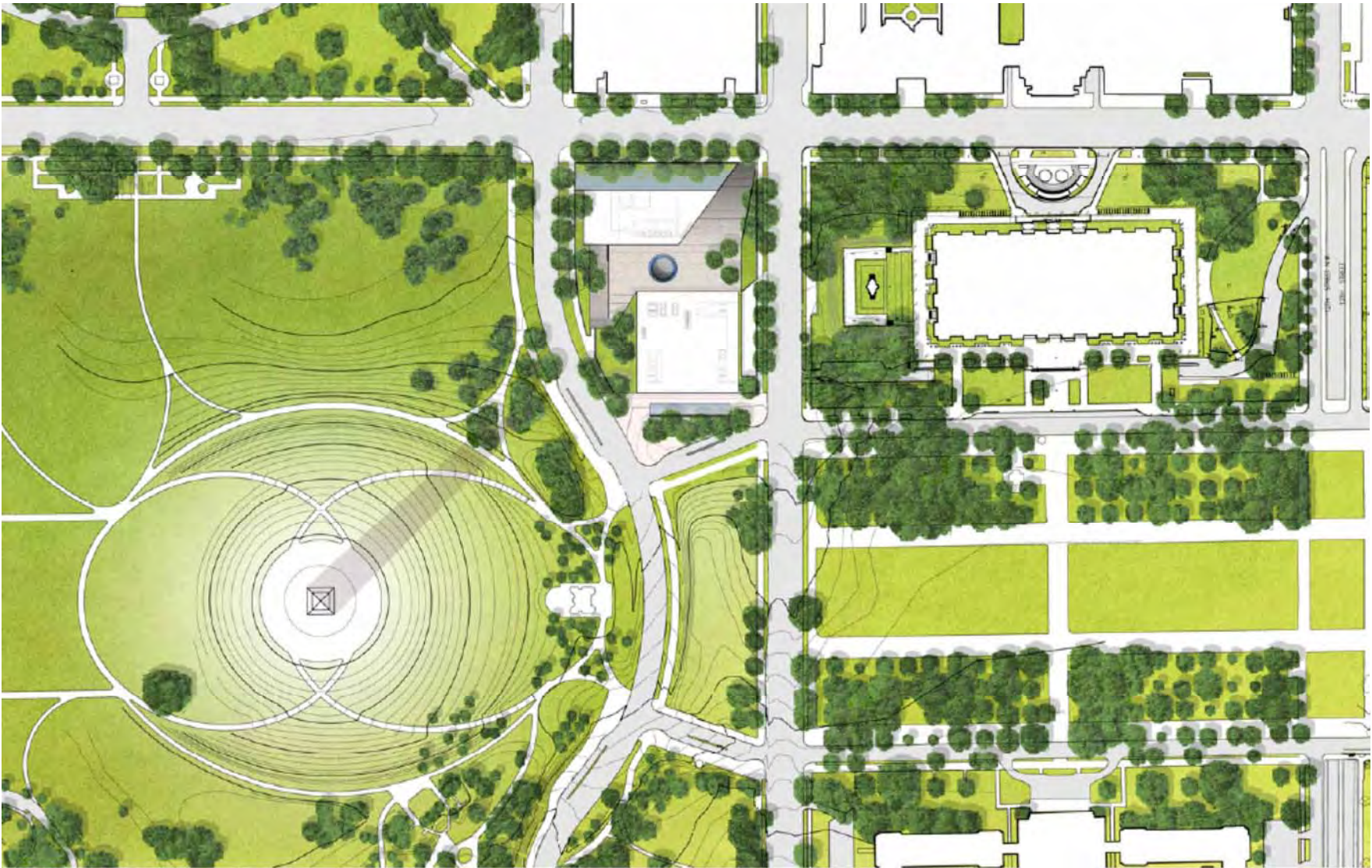
On the north side of the site, a planted water feature that would provide interpretive benefit and serve to collect stormwater runoff would be located between the building and the Constitution Avenue sidewalk. From the corner of Constitution Avenue and 14<sup>th</sup> Street, visitors would follow a 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 skylight 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 14<sup>th</sup> Street. Pedestrians and vehicles traveling on 14<sup>th</sup> Street would see the curb cut for the driveway entrance; 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 15<sup>th</sup> Street, approximately 73 feet wide on Madison Drive, and approximately 23 feet wide on 14<sup>th</sup> 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

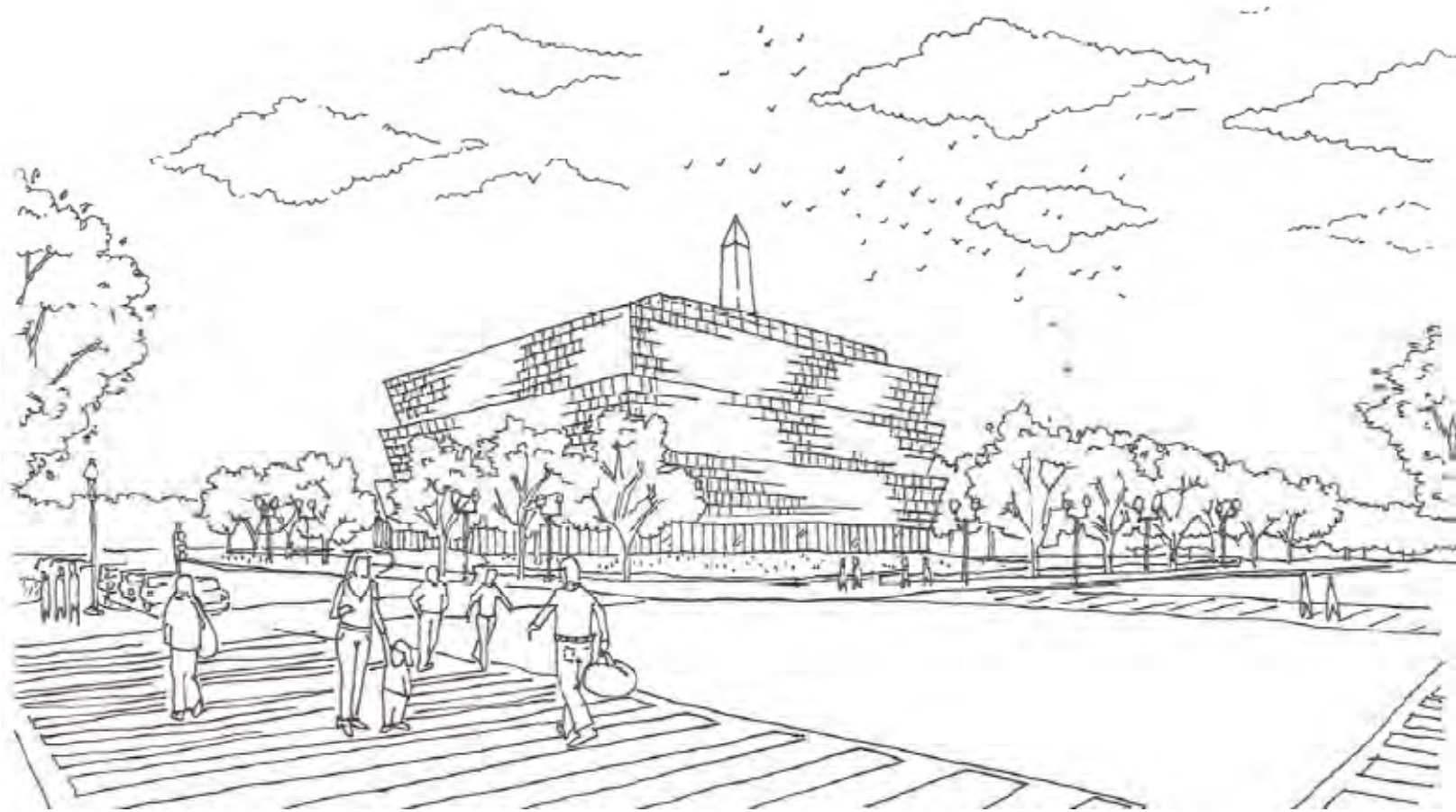
Alternative 3, the Pavilion Concept, is similar to Alternative 1, the Plinth Concept, but without the plinth. As a result, “the Pavilion alternative leverages the power of the Corona by placing this singular building element in a ‘field.’ The Corona form will then be viewed as an object or ‘jewel’ within 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 Concept: 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

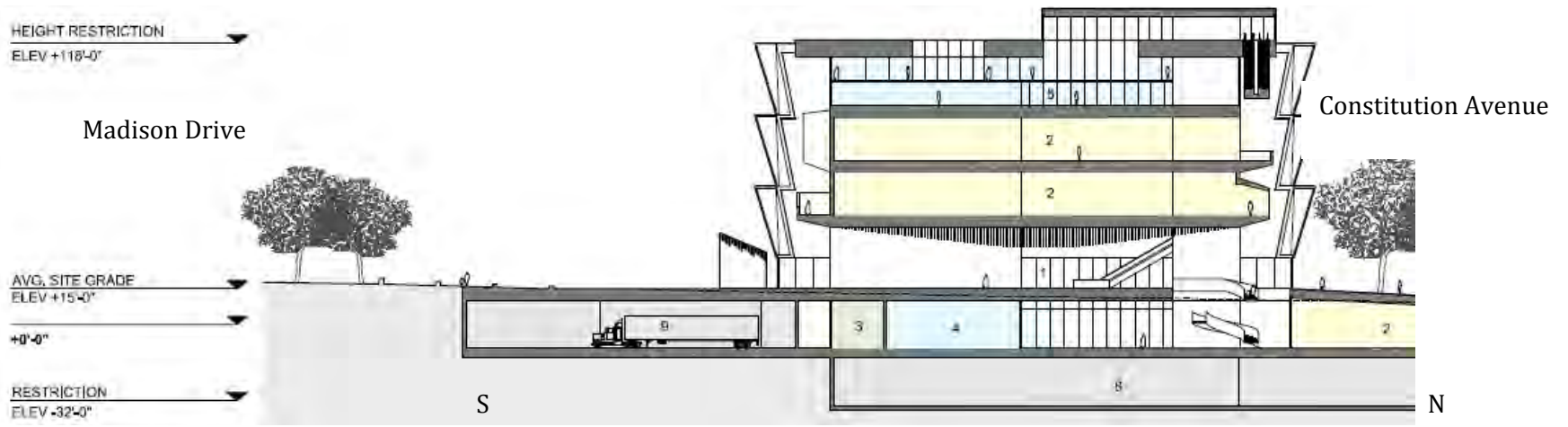
The Pavilion Alternative would feature seven levels, two of which would be below grade. The basement level (Level -2) would contain mechanical equipment only. The concourse level (Level -1) would include educational spaces, youth gallery, and resource center. This level would include the cafeteria, memorial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

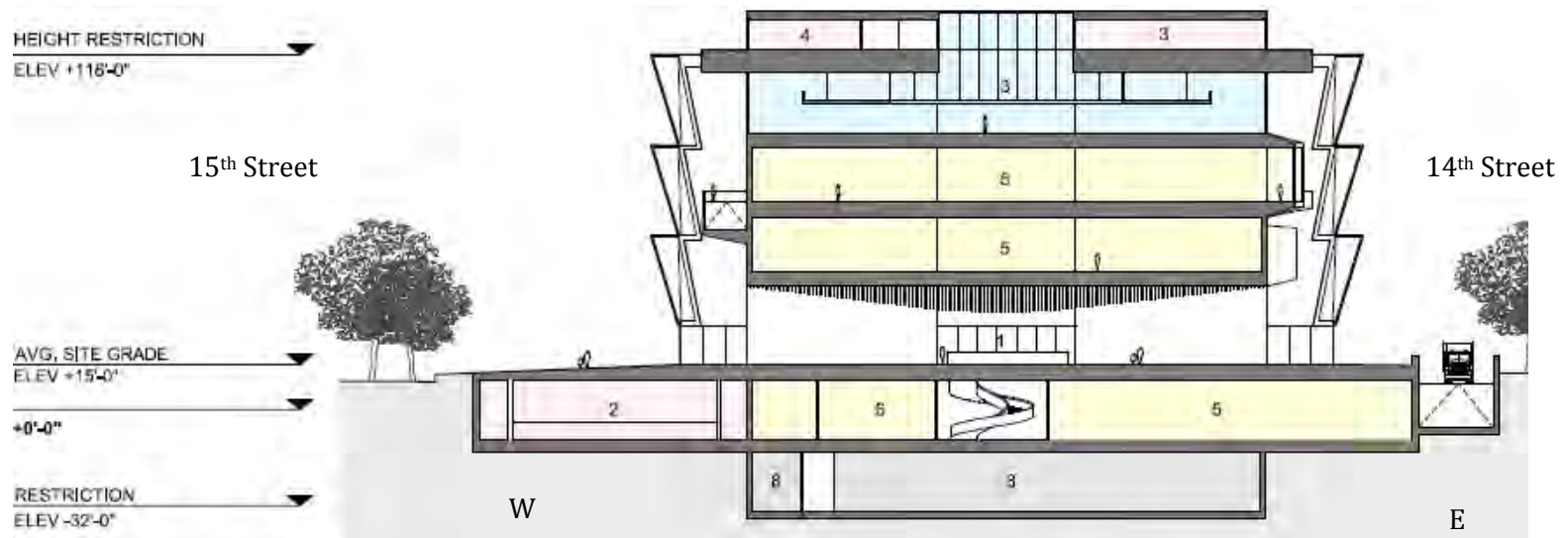


**Figure 2.3.11 Pavilion Alternative 3: Sketch of Building from 14<sup>th</sup> Street and Constitution Avenue looking southwest across the intersection**

*Source: Freelon Adjaye Bond/SmithGroup, 2010*

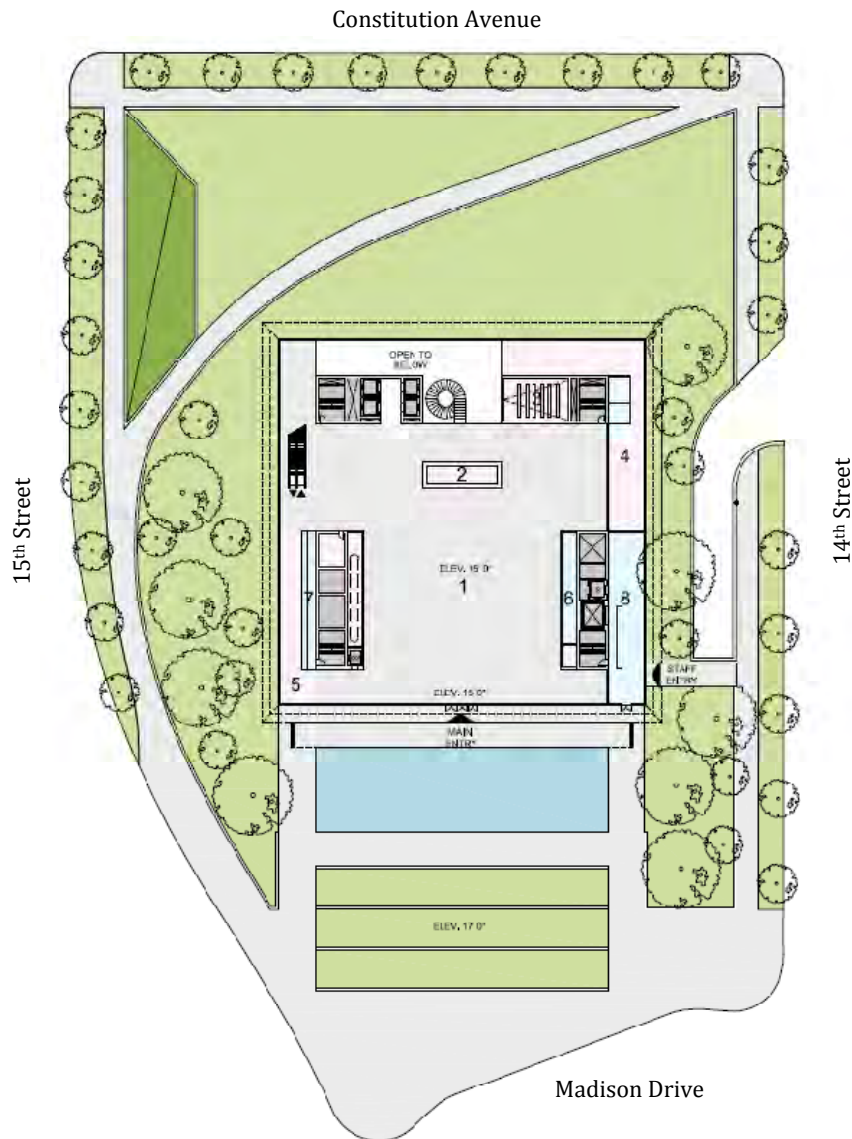


Longitudinal Section (South - North)

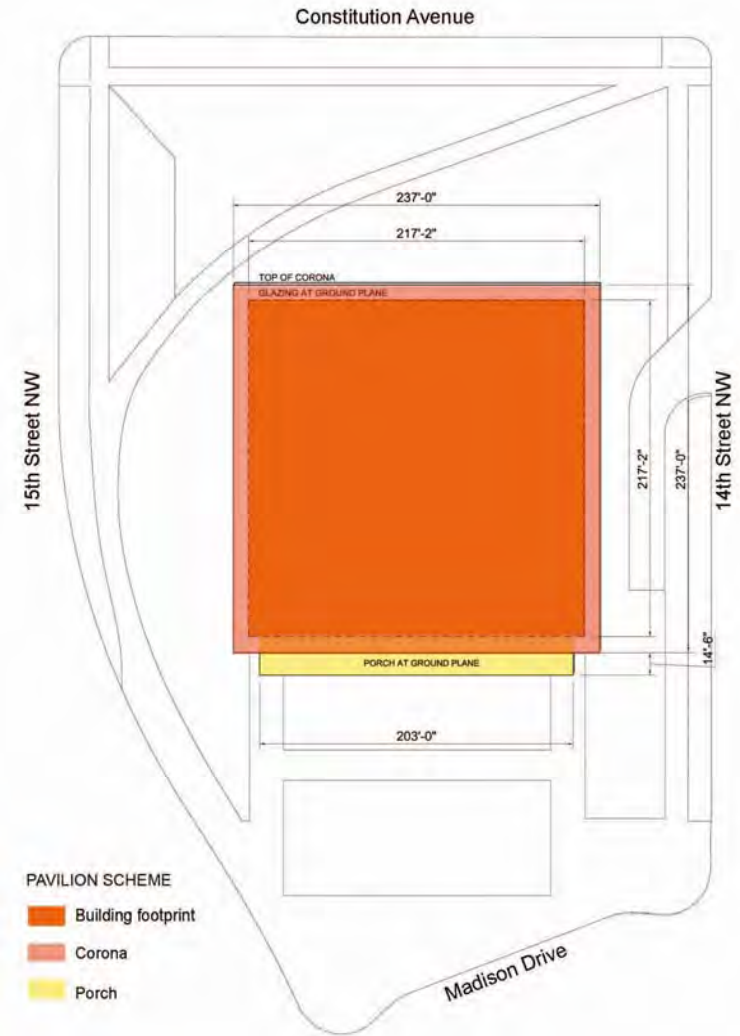


Transverse Section (West - East)

**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 rooftop 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 30 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**

<b>Feature</b>	<b>Building Height Relative to Average Grade</b>	<b>Building Elevation Relative to Mean Sea Level (MSL)</b>
Top of Corona	103 feet	118 feet
Top of Penthouse	119 feet 6 inches	132 feet 6 inches
Basement	-45 feet	-30 feet

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 14<sup>th</sup> and 15<sup>th</sup> 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 14<sup>th</sup> Street, and approximately 115 feet from the curb on 15<sup>th</sup> 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 14<sup>th</sup> 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 14<sup>th</sup> 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 14<sup>th</sup> 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 15<sup>th</sup> Street, a minimum of 14 feet wide on Madison Drive, and approximately 15 feet wide on 14<sup>th</sup> 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 Alternative 4, Refined Pavilion Concept 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.

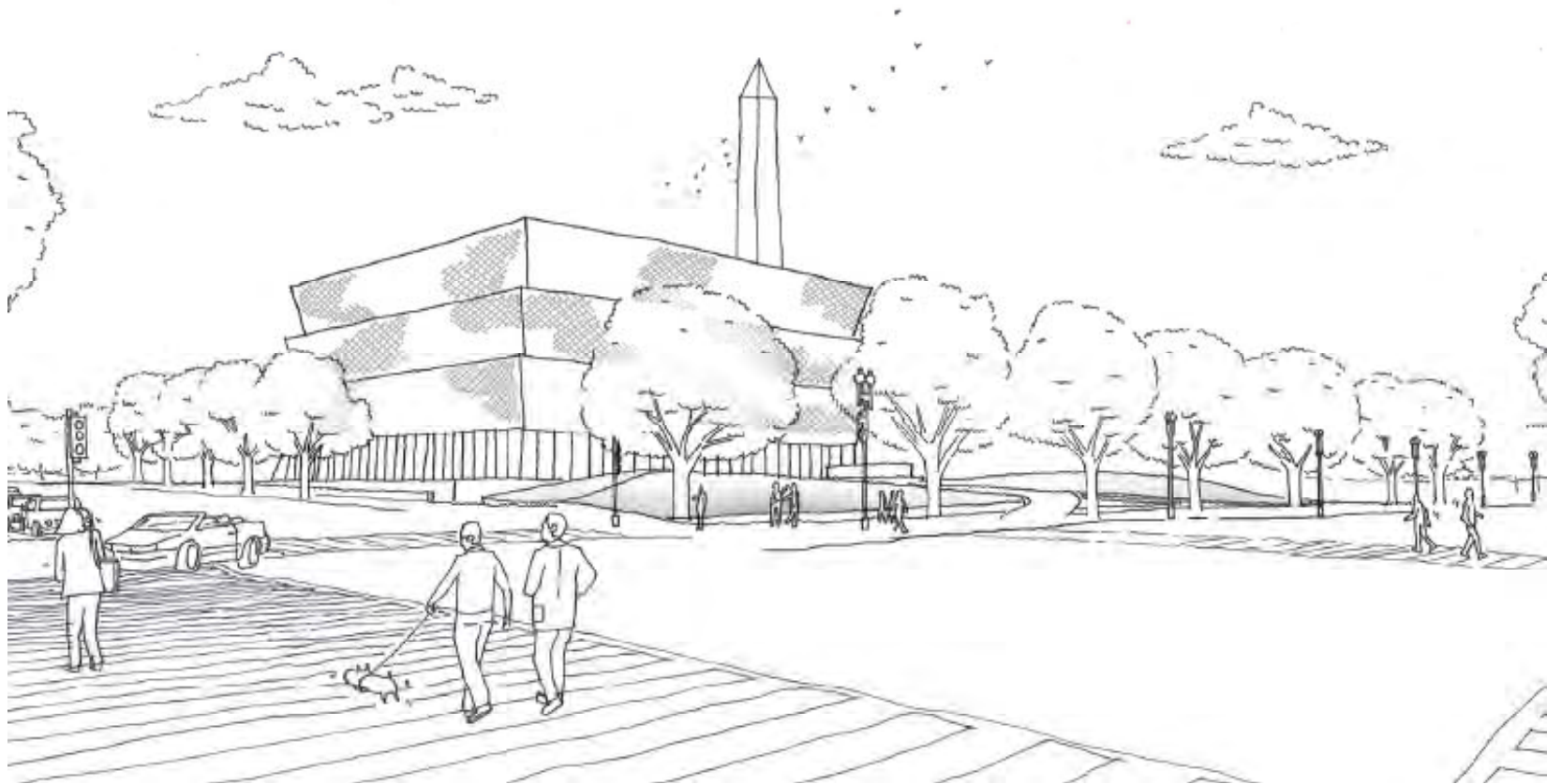
Figure 2.3.16 shows a sketch of the north (Constitution Avenue side) portion of the Refined Pavilion Alternative. Figure 2.3.17 shows the building cross-sections. Figure 2.3.18 shows the ground floor plan. Figure 2.3.19 shows the plan view of the primary building components.

### 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 skylight that would open outward to the west, providing views of the Washington Monument and Grounds.

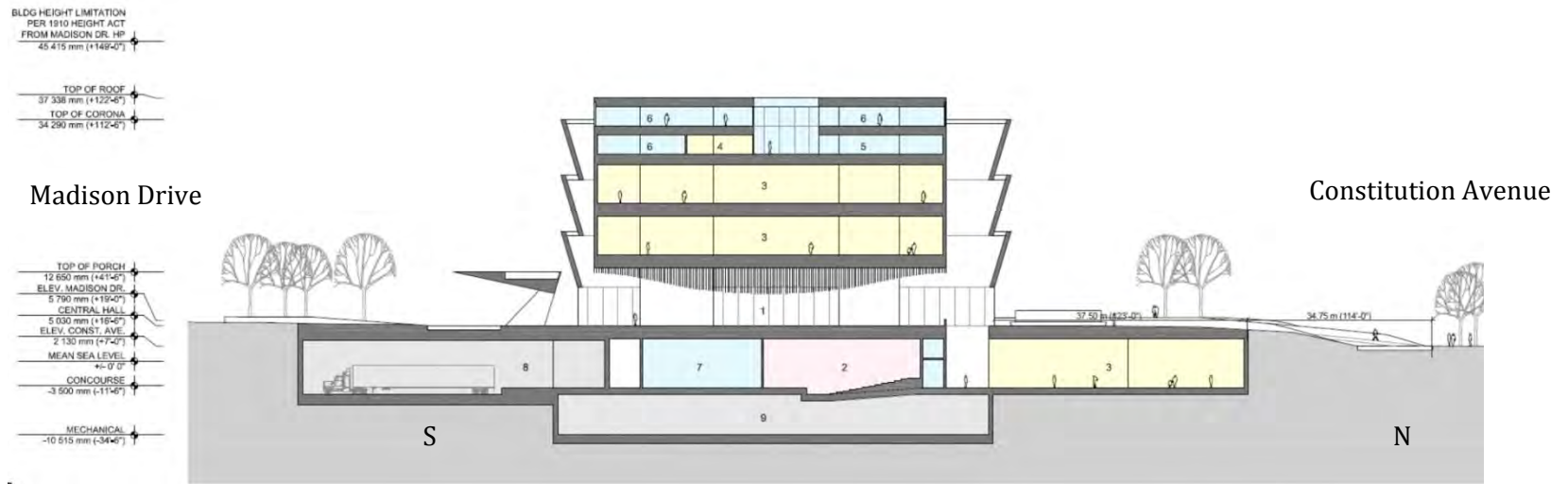
The ground floor level (Level 0) would be the main level into which visitors would enter the museum. The central hall located within this level would create visual connections to the Washington Monument Grounds and allow for large indoor gatherings and special events. The ground floor level would also 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).

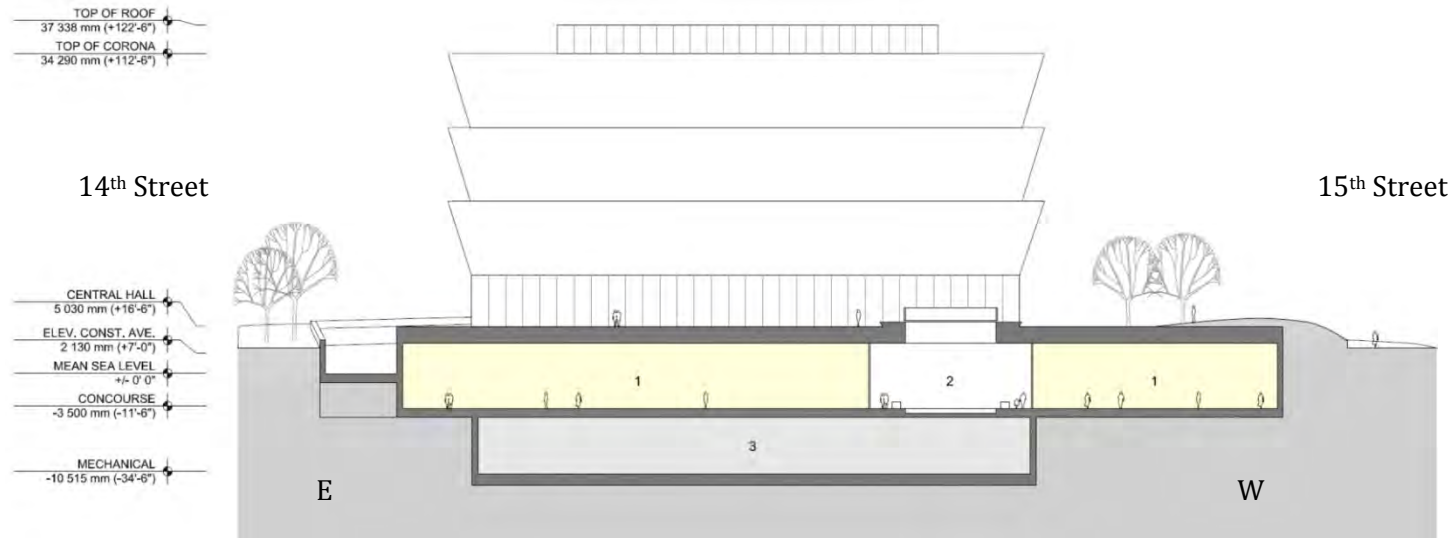


**Figure 2.3.16 Refined Pavilion Alternative 4: Sketch of Building from 14<sup>th</sup> Street and Constitution Avenue looking southwest across the intersection**

*Source: Freelon Adjaye Bond/SmithGroup, 2010*



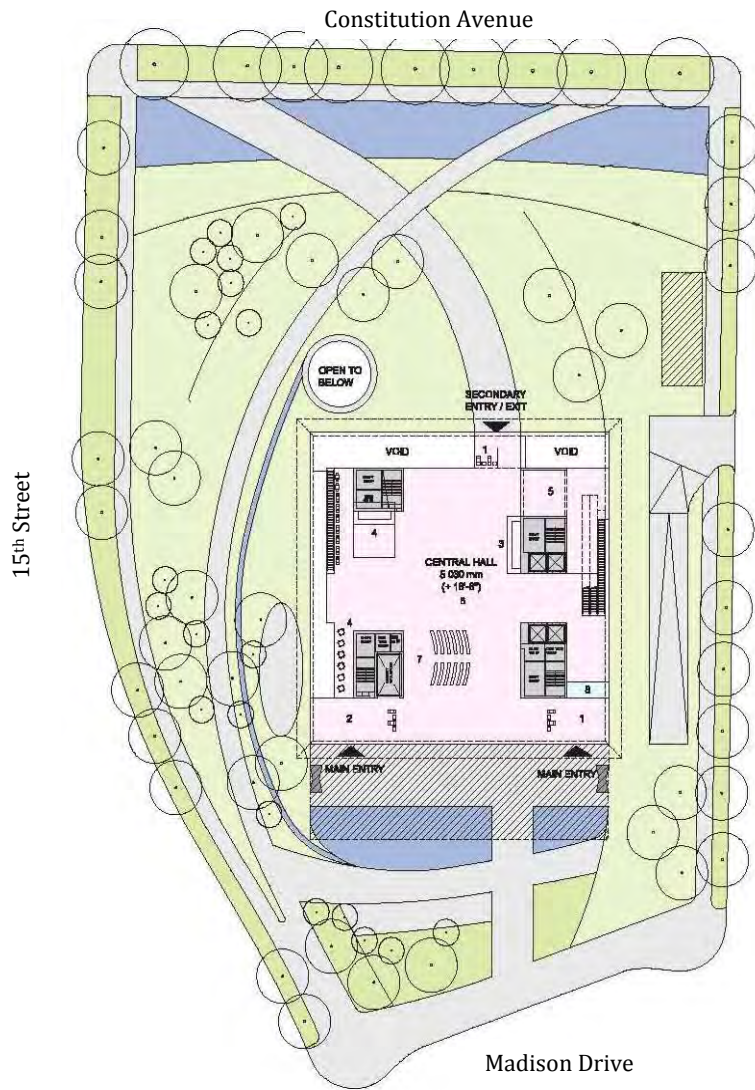
Longitudinal Section (South - North)



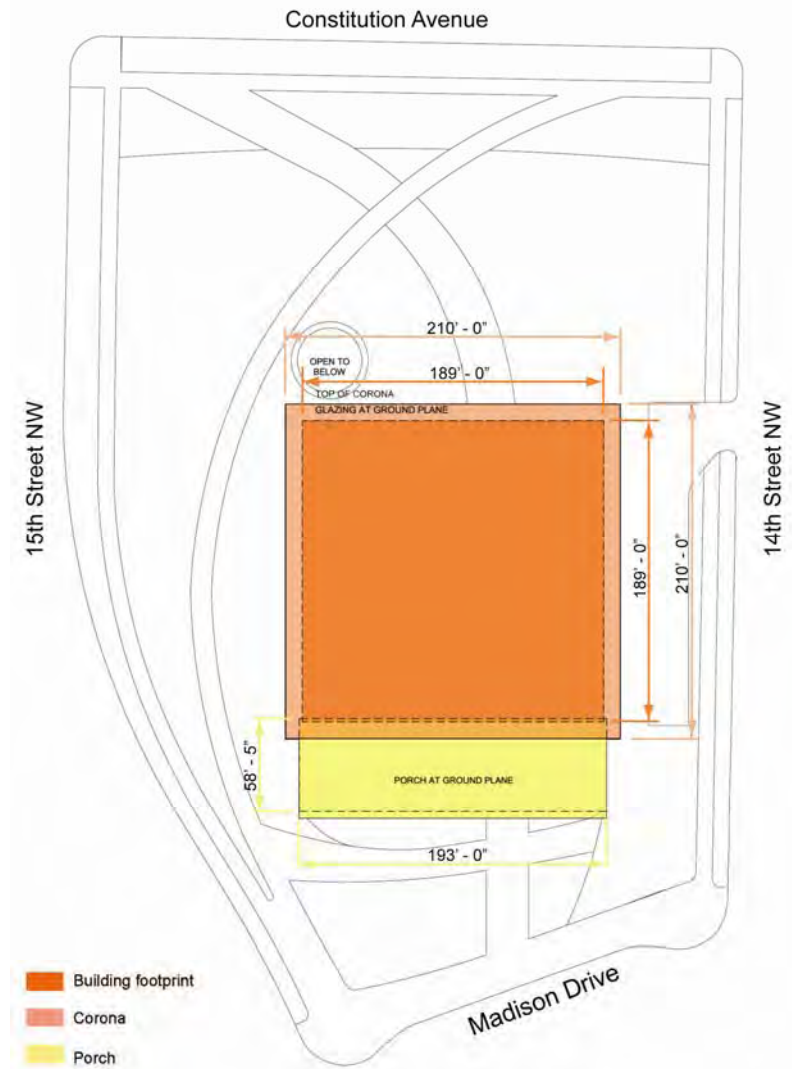
Transverse Section (East - West)

**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 rooftop 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 308,000 gross square feet on the project site. The building would extend approximately five stories above ground and approximately 96 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 106 feet 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. The depth of the basement would be 28 feet 6 inches 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**

<b>Feature</b>	<b>Building Height Relative to Average Grade</b>	<b>Building Elevation Relative to Mean Sea Level (MSL)</b>
Top of Corona	96 feet	112 feet 6 inches
Top of Penthouse	106 feet	122 feet 6 inches
Basement	-45 feet	-28 feet 6 inches

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-foot setback line from the McMillan Plan; however, the porch on the south side of the Corona would extend approximately 28 feet beyond the 445-foot 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 Refined 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 14<sup>th</sup> 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 14<sup>th</sup> 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 15<sup>th</sup> 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 15<sup>th</sup> 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 14<sup>th</sup> 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 15<sup>th</sup> Street, approximately 30 feet wide on Madison Drive, and approximately 10 feet wide on 14<sup>th</sup> 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**

<b>Alternative Name</b>	<b>Action Alternative 1 - Plinth</b>	<b>Action Alternative 2- Plaza</b>	<b>Action Alternative 3- Pavilion</b>	<b>Action Alternative 4- Refined Pavilion</b>
Corona Dimensions	233 feet X 233 feet	225 feet X 225 feet	237 feet X 237 feet	210 feet X 210 feet
Corona Height (above grade)	105 feet	105 feet	103 feet	96 feet
Penthouse Height (above grade)	121 feet 6 inches	119 feet 6 inches	119 feet 6 inches	106 feet
Elevation of the Site Above Sea Level	13 feet	13 feet	15 feet	16 feet 6 inches
Corona Elevation (Above Sea Level)	118 feet	118 feet	118 feet	112 feet 6 inches
Penthouse Elevation (Above Sea Level)	134 feet 6 inches	132 feet 6 inches	132 feet 6 inches	122 feet 6 inches
Gross Square Footage	360,000	370,000	330,000	308,000
Above Ground	7 stories, 65%	5 stories, 55%	6 stories, 50%	5 stories, 43%
Below Ground	2 stories, 45%	2 stories, 45%	2 stories, 50%	2 stories, 57%
Site Coverage (%)	36.8%	34.5%	25.8%	23%
Maximum Building Coverage (square feet)	85,804	80,559	60,229	53,750
South Alignment	NMNH	None	NMAH	NMNH
Distance to Historic Mall Centerline (445 feet Setback)	439 feet	401 feet	497 feet	417 feet
Primary Entrance	National Mall	National Mall	National Mall	National Mall
Second Entrance	Constitution Avenue	Plaza	None	Constitution Avenue
Staff Entrance	Constitution Avenue	Constitution Avenue	14 <sup>th</sup> Street	14 <sup>th</sup> Street
Servicing and Loading	14 <sup>th</sup> Street	14 <sup>th</sup> Street	14 <sup>th</sup> Street	14 <sup>th</sup> Street

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

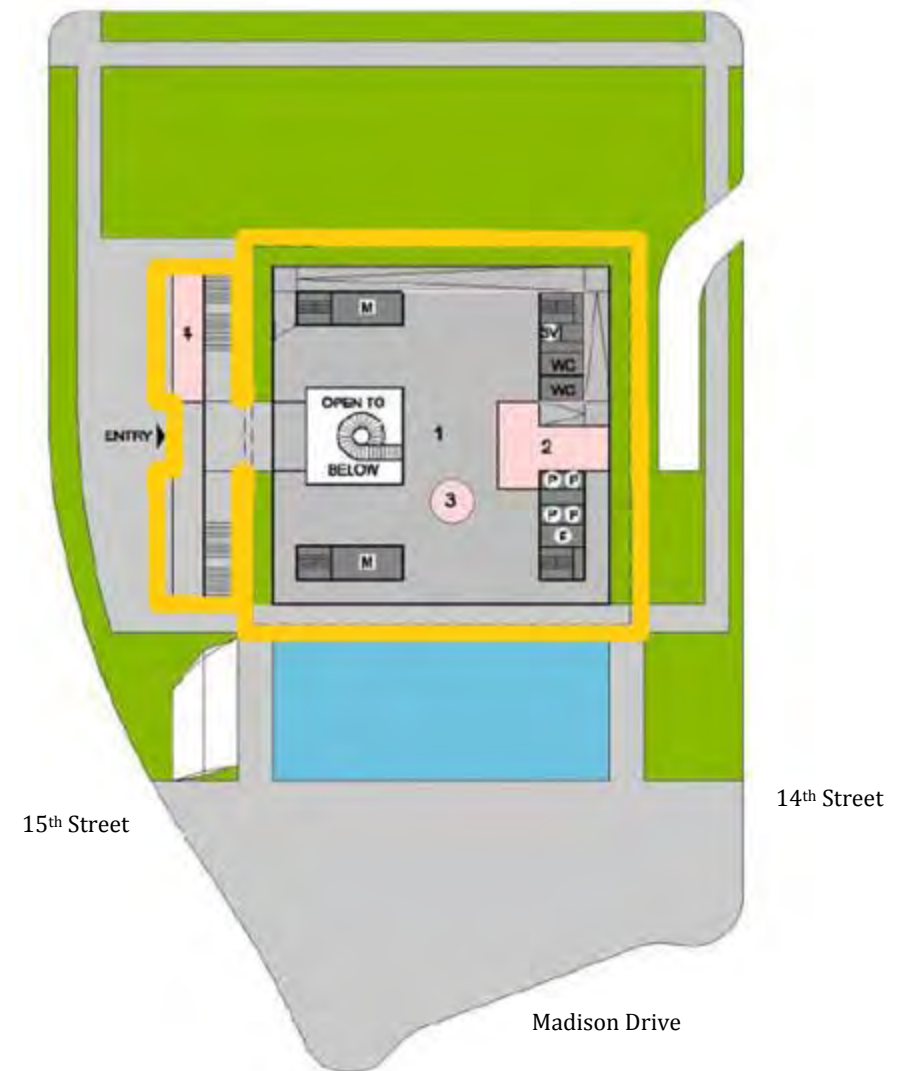
As a category of design studies, building placement included schemes that considered different locations of the building within the NMAAHC site. Concepts included in this category are the Rotated Pavilion scheme and the Fragmented Plinth scheme.

Constitution Avenue

### 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 15<sup>th</sup> 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 15<sup>th</sup> 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.



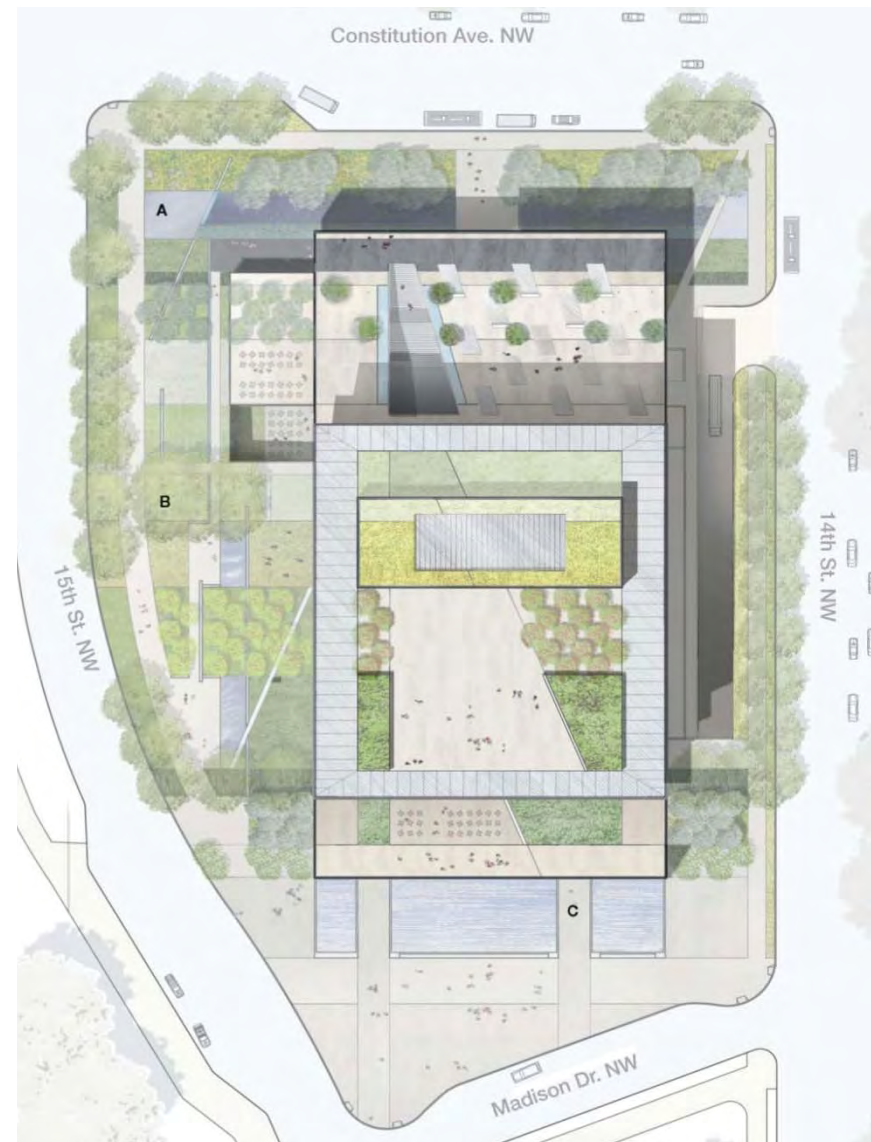
**Figure 2.5.2 Fragmented Plinth Scheme: Ground Floor Plan**  
 Source: Freelon Adjaye Bond/SmithGroup, 2010

## 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 the NMAH or the 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.

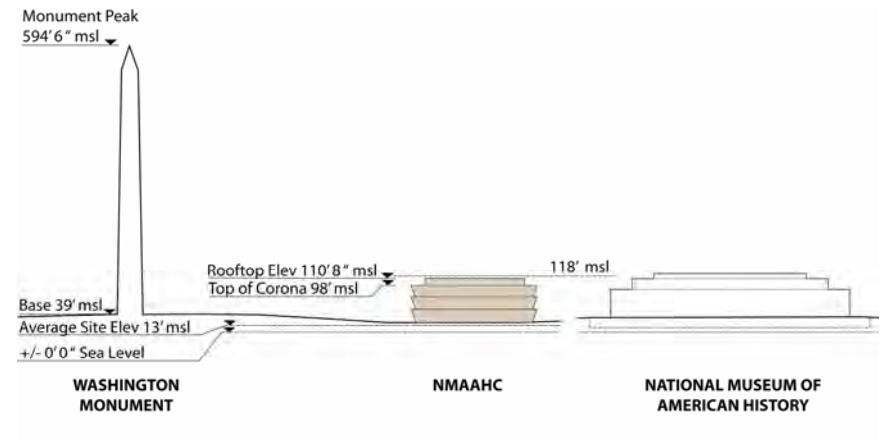


**Figure 2.5.3 Design Competition Scheme: Site Plan**  
 Source: Freelon Adjaye Bond/SmithGroup, 2009

### 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 the 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 the 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 NMAAHC site. The simplified building form of the Corona in this concept evolved to become the Refined Pavilion Alternative.



**Figure 2.5.4 Shorter Pavilion Scheme: Building Height**  
 Source: Freelon Adjaye Bond/SmithGroup, 2010



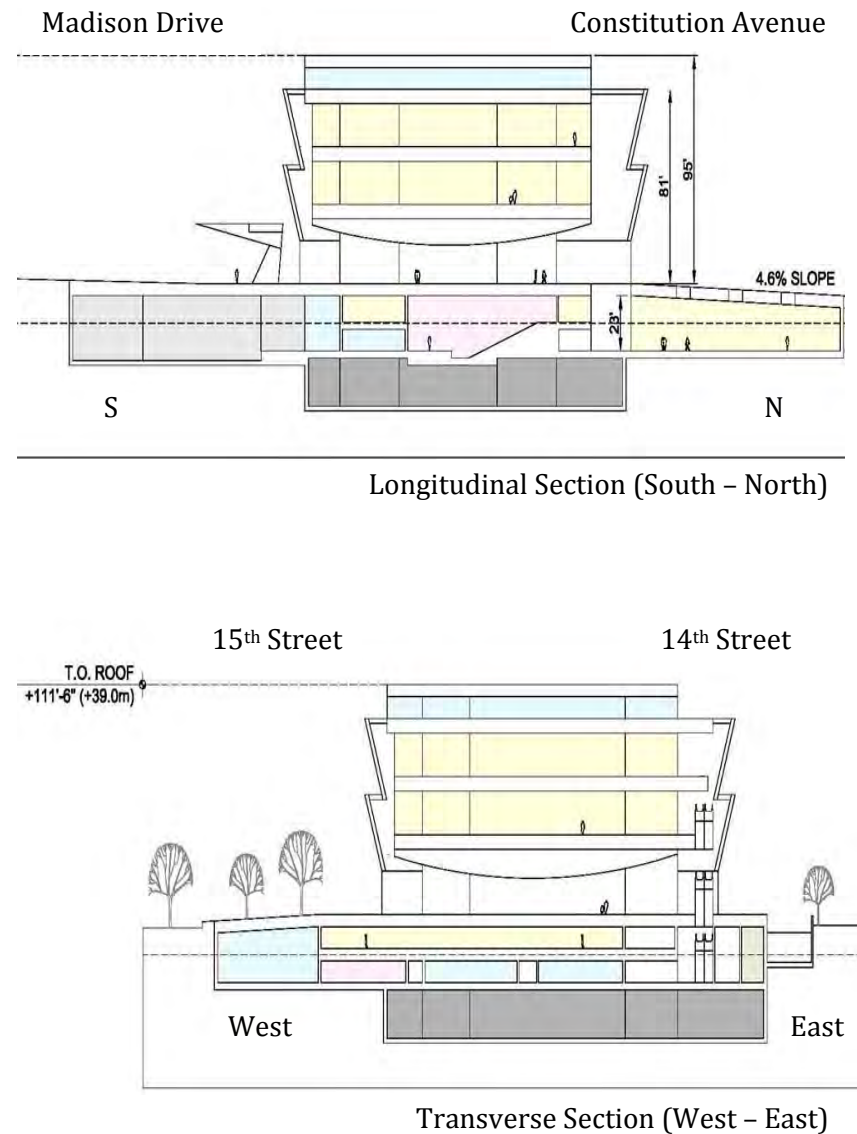
**Figure 2.5.5 Shorter Pavilion Scheme: Building Alignment**  
 Source: Freelon Adjaye Bond/SmithGroup, 2010



### 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

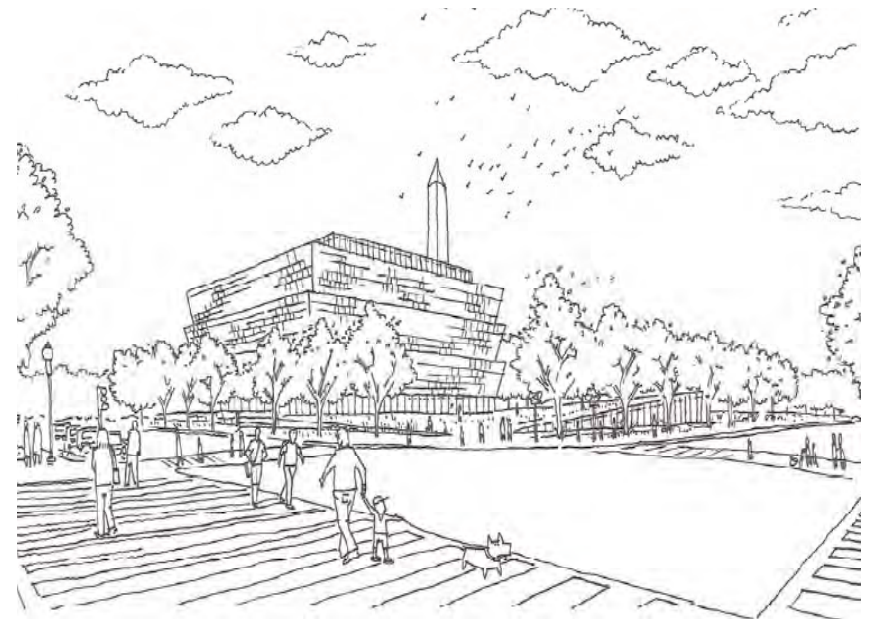
Several design concepts provided a range of variation in the amount of above ground versus below ground programming spaces. The Smithsonian Institution wanted to maximize the use of available natural light while maintaining the height limits and setbacks established in the design principles. Several 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 15<sup>th</sup> 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 15<sup>th</sup> Street frontages. Because of the angle of the grade change, the upturned landform would frame views from the corner of Constitution Avenue and 14<sup>th</sup> 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.



**Figure 2.5.7 Blended Scheme: Sketch of Building from 14<sup>th</sup> Street and Constitution Avenue looking southwest across the intersection**

*Source: Freelon Adjaye Bond/SmithGroup, 2010*

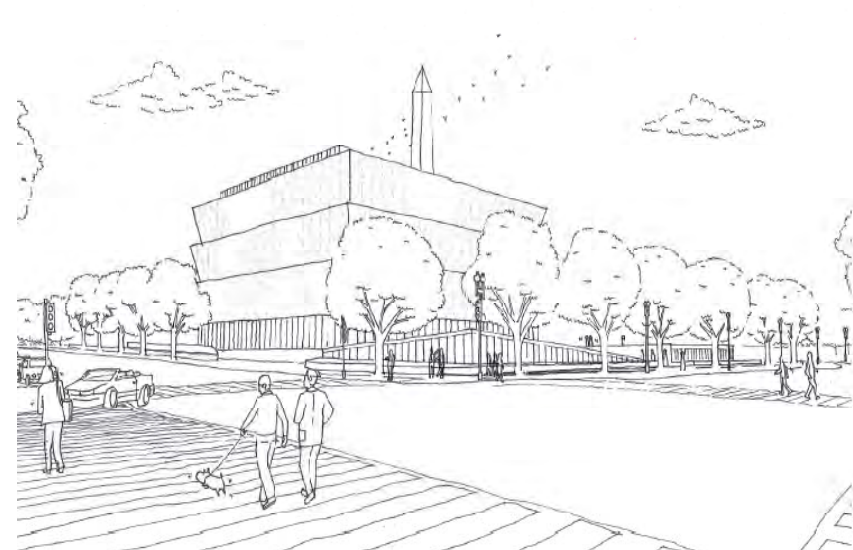
### Clerestory Scheme

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 14<sup>th</sup> Street and Constitution Avenue and 15<sup>th</sup> 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 14<sup>th</sup> Street and 15<sup>th</sup> 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 14<sup>th</sup> 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](http://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 14<sup>th</sup> 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 14<sup>th</sup> 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 15<sup>th</sup> Street+

This option locates the service drive to 15<sup>th</sup> 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 14<sup>th</sup> 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 14<sup>th</sup> St. Southbound and Exit 15<sup>th</sup> 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 14<sup>th</sup> Street.

### Off-Site Options

At the request of staff of the Fine Arts Commission, DC Office of Planning and the 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 14<sup>th</sup> 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 14<sup>th</sup> Street to construct the tunnel -- one lane of seven at a time -- in a 40-foot deep excavation to avoid major utilities, would be particularly difficult and would occur around 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 12<sup>th</sup> Street Service ramp; All exit at a NMAAHC 15<sup>th</sup> 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 14<sup>th</sup> 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 12<sup>th</sup> Street and exit at 14<sup>th</sup> Street with an additional truck tunnel under 14<sup>th</sup> 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 14<sup>th</sup> 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 12<sup>th</sup> Street and Exit 14<sup>th</sup> Street with an expanded NMAH loading area serving both museums and providing a materials-only tunnel under 14<sup>th</sup> 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.

### **3.0 AFFECTED ENVIRONMENT AND IMPACTS TO THE HUMAN ENVIRONMENT**



This page is intentionally left blank



### 3.1 INTRODUCTION

Consistent with the Tier I Final EIS, the information provided in this chapter is organized by resource topic. While there are slight variations, the analysis of each resource topic generally follows a similar structure:

- **Key considerations of each resource as it pertains to the proposed alternatives.** The discussion of the key considerations provides the rationale why each resource topic was chosen for analysis and outlines the focus of the description of each resource and impact analysis.
- **A discussion of the methodology used to evaluate how the resource would be affected by the alternatives.** Methodologies used to assess the impacts to each resource topic are described in each resource section.
- **A description of the current condition of the resources affected by the alternatives (the affected environment).** The affected environment describes the existing environmental and social conditions that have the potential to be impacted by the alternatives. The descriptions focus only on those resources and characteristics of the environment most likely to be beneficially or adversely affected. Resource topics likely to be affected by the alternatives described in this chapter are:
  - Land Use, Planning Policies and Visitor Experience
  - Historic Resources
  - Visual Resources
  - Geology, Soils and Groundwater
  - Natural Resources
  - Transportation

In addition, federal or District laws and regulations or executive orders pertinent to a particular resource impact analysis are described within each resource section.

- **An analysis of the environmental consequences the proposed actions would have on each resource.** A detailed discussion of the environmental consequences that could occur from the alternatives, including, the No Action Alternative, is presented after the affected environment has been described.
- **Mitigation measures that could be employed to minimize adverse impacts.** To help ensure the protection of natural, cultural, and social resources, the Smithsonian Institution and NCPC would avoid, minimize, and mitigate potentially adverse environmental impacts associated with the NMAAHC to the best of their abilities where practicable and reasonable. Following the description of environmental consequences, a general description of the measures that could be utilized, or are required by law to minimize the intensity or duration of identified impacts are presented in each section.

Resource topics not affected by proposed action have been dismissed from analysis in this Tier II Draft EIS. These resources, along with a rationale for their dismissal, are described in Chapter 2.

### 3.1.1 General Approach and Methodology for Determining Impacts Related to the Project

As discussed in the Tier I Final EIS, environmental consequences were determined by looking at how the actions associated with each of the alternatives would impact each of the resource topics identified in this chapter. Impacts for the action alternatives were considered for both the construction and operational phases of the proposed NMAAHC. In addition, impacts are described in terms of type (beneficial or adverse); context; duration (short- or long-term); and intensity (significance). “Impact” and “Effect” are interchangeable terms according to CEQ. Definitions of these descriptors include:

- **Beneficial:** A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.
- **Adverse:** A negative change that declines, degrades, and/or moves the resource away from a desired condition or detracts from its appearance or condition.
- **Context:** The affected environment within which an impact would occur, such as local, regional, global, affected interests, society as whole, or any combination of these.
- **Duration:** Impacts resulting from construction are considered short-term and would occur during the period between initial ground-breaking and the time the museum opens its doors to the public. Operational impacts are considered long-term and are associated with ongoing operation, maintenance, and management of the proposed facility.
- **Intensity:** Because definitions of significance (Minor, Moderate, and Major Impacts; No Effect, Effect, and Adverse Effect; No Effect, No Significant Effect, and Significant Effects) vary by impact topic, significance definitions are provided separately for each impact topic analyzed.

## 3.2 LAND USE, PLANNING POLICIES AND VISITOR EXPERIENCE

### 3.2.1 Land Use and Planning Policies

#### 3.2.1.1 Introduction and Summary of Tier I Analysis

The Tier I Final EIS examined the land use conditions on and around the site, relevant zoning policies, and historical and contemporary planning documents that apply to the site. The purpose of the Tier I analysis was to determine the impacts of a range of hypothetical building layouts and forms.

With implementation of the proposed action, five acres of open space on the National Mall that accommodates a variety of uses, including recreation activities and public gatherings, would be lost, as conclude in the Tier I Final EIS. The loss of flexible open space would reduce the options for First Amendment demonstrations and special events (Smithsonian Institution, 2008a).

The site's location on the Washington Monument Grounds places it under the jurisdiction of the federal government, and exempts it from local zoning codes. Previous development efforts for the site include a proposed State Department headquarters in 1910 and consideration for the World War II Memorial in 1995.

Historical plans examined as part of the Tier I analysis included the L'Enfant Plan (1791) and the McMillan Plan (1901-1902). Both of these plans indicated that the NMAAHC site is appropriate for development. The L'Enfant Plan originally proposed the National Mall as the "Grand Avenue" of Washington. Approximately 100 years later the McMillan Plan was developed to reexamine the

configuration of the National Mall as part of the "City Beautiful Movement" of that period. While the McMillan Plan was not fully realized, it guided the land use of the Mall and adjacent areas, calling for the placement of "scientific buildings and for great museums" on the National Mall. Since then, the National Mall has evolved into the grand space present today.

The Tier I Final EIS concluded that there would be no significant effects to either plan because both plans designated the "NMAAHC site as a potential building site at the intersection of a proposed row of Monumental buildings north of the National Mall and the similar row of buildings proposed east of the Ellipse" (Smithsonian Institution, 2008a).

This Tier II Land Use analysis differs from the Tier I Final EIS in that it examines how the physical structure proposed with each alternative would interact with the site, and conform to the relevant policies and plans not discussed in the Tier I EIS. This Tier II analysis is an extension of the Tier I analysis.

#### 3.2.1.2 What plans and policies are relevant to the proposed action?

A number of planning documents are relevant to the proposed action, the *National Mall Plan* (NPS, 2010), the *Monumental Core Framework Plan* (NCPC, 2009), the *Mall-wide Perimeter Security Improvements Plan* (SI, 2004), and the *Center City Action Agenda* (DC OP, 2008). These plans include land use and planning policies that apply to either the project site or its immediate environs.

## National Mall Plan

The NPS *National Mall Plan*, which was completed in 2010, is the primary management document for the National Mall. It provides various use classifications and restrictions in conjunction with a variety of physical and programmatic improvements. The main focus of the *National Mall Plan* is to protect the cultural resources located on the Mall, continue to allow citizens the ability to express their First Amendment rights, and enhance the experience of visitors to the Mall.

The plan defines the National Mall as the area stretching from Union Square (in front of the U.S. Capitol Building) to the Lincoln Memorial and associated grounds and from Constitution Avenue to the Jefferson Memorial and associated grounds. East of 15<sup>th</sup> Street, the area narrows to the space located between Constitution Avenue and Independence Avenue. These boundaries include the NMAAHC site. However, because the *National Mall Plan* acknowledges the construction of NMAAHC, no specific improvements or use classifications are proposed for the site. Several improvements are proposed around the perimeter of the NMAAHC site and within its vicinity (NPS, 2010).

The overarching goal of the preferred alternative in the *National Mall Plan* is to “establish a sense of place and an overall identity for the National Mall” (NPS, 2010). In order to accomplish this, the plan proposes four conservation zones that provide a range of allowable uses and activities to best improve site functionality and visitor experience. The four conservation zoning areas are:

- Memorial Area: In general, Memorial Areas would be the most restrictive areas, allowing visitors to fully appreciate

the memorials located on the National Mall. They would be pedestrian-only, providing a tranquil and contemplative atmosphere for visitors. These areas would also be sufficiently large enough to allow each visitor to interpret, photograph, and experience each memorial without being distracted or interrupted by others. The proposed user density would be 100-200 square feet per person; with linear memorials this number may be reduced. These areas would have the highest maintenance requirements in order to preserve the quality of the memorials and the area immediately surrounding them. Allowable facilities include visitor seating, visitor information areas, exhibits, restrooms, bookstores, or retail in or around the memorial. Limited signage is allowed.

- Character Protection Area: Character Protection Areas would be located throughout the National Mall and would essentially serve as a buffer between the memorials and higher-intensity zones. In addition to providing a spatial buffer, the Character Protection Areas protect important views and vistas by restricting the allowable uses. Predominant uses in these areas are landscaped features that accentuate the important views and vistas to and from the memorials and allow for both active and passive recreational opportunities. The desired user density would be 1,000 square feet per person during normal use and slightly higher intensities during peak hours, special programs, or First Amendment demonstrations. Allowable facilities include: pedestrian and vehicular access and circulation; multimodal transportation corridors and intermodal transportation stops; visitor facilities; park

furnishing, outdoor educational wayside exhibits; directional, orientation and transit-related signage; and gardens and reflective or active water features.

- **Multipurpose Area:** Multipurpose Areas would be small, targeted areas located adjacent to the Memorial Areas, where the land forms or other natural features do not allow for high-intensity use or partially obscure views and vistas of important cultural resources. However, these areas present opportunities for signage, pedestrian and vehicular access, programs and activities, events and recreation. Due to the wide variety of uses these areas can accommodate, the proposed user densities range from 50-100 square feet per person in the visitor service areas to greater than 1,000 square feet per person in the recreational areas. Allowable facilities include: pedestrian sidewalks and trails; vehicular circulation; parking and multi-modal transportation corridors; visitor facilities; limited athletic facilities; park furnishings; outdoor wayside exhibits; signage; and gardens.
- **High-Use Area:** High-Use Areas would include the large tracts of land that are able to accommodate large, well-attended activities that include First Amendment demonstrations, national celebrations, and other special events. Additionally, these areas can accommodate active recreation, such as organized and impromptu athletics, and sightseeing. The primary locations of these High-Use Areas are in the central portions of the National Mall, including Union Square; areas north and west of the Washington Monument Grounds, areas adjacent to the Reflecting Pool, and areas southwest of the Tidal Basin. User density within

the High-Use Areas would vary depending on the situation; for large-scale events the density could be as high as 3 square feet per person, however, during periods of normal use this density would be reduced to 100 square feet per person. Allowable facilities include paved areas, pedestrian sidewalks or trails, athletic fields, parking lots, and event infrastructure.

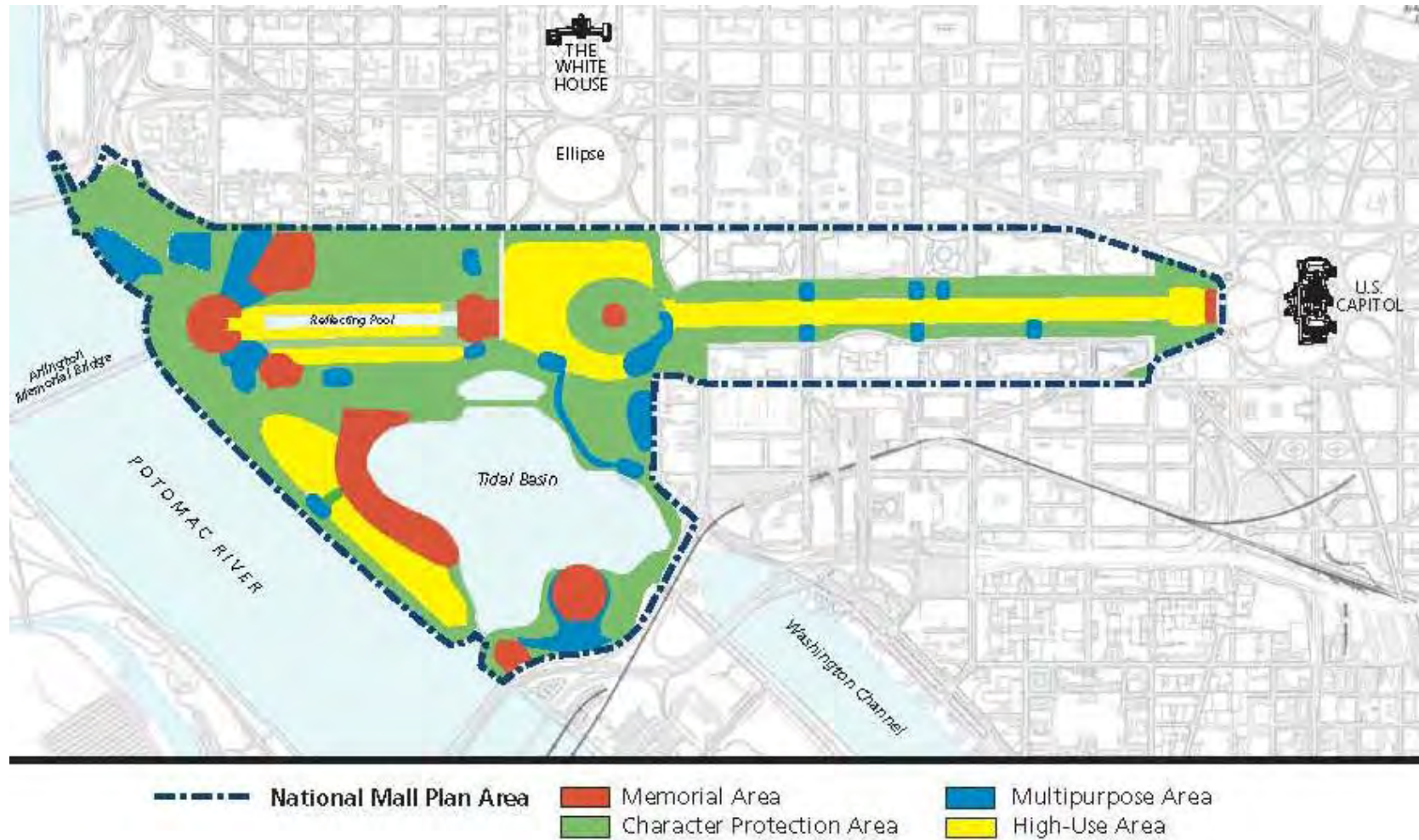
While the NMAAHC site is not identified as a particular type of conservation zone in the *National Mall Plan*, the site shares several characteristics with high use areas. In addition, several zones are located within vicinity of the site.

The conservation zone closest to the NMAAHC site is a Character Protection Area that runs from the intersection of 15<sup>th</sup> Street and Madison Drive north to Constitution Avenue and then west to 17<sup>th</sup> Street. This area would function as a buffer to the High-Use Area that covers the remainder of the Monument Grounds in proximity to the site. Similarly, on the Mall side, in areas south of Madison Drive, a Character Protection Area is designated for the outer Mall panels and a High-Use Area is designated for the central Mall panels (NPS, 2010). Figure 3.2.1 illustrates the locations of the conservation zones proposed under the *National Mall Plan*.

In addition to the conservation zones, the *National Mall Plan* also specifies various standards that dictate the amount of care and maintenance each area should be given. The standards are divided into five "Levels" ranging from Level 1, areas that require the most care and upkeep, to Level 5, areas that would see little use and require little maintenance. It was determined that a majority of the National Mall area would fall within the first three Levels (NPS, 2010).

The *National Mall Plan* recommends several improvements related to pedestrian access and circulation around the project site. To provide safe crossings for visitors and aid in pedestrian circulation, crosswalk improvements at each intersection surrounding the site would include: upgrading walking surfaces, developing consistent and identifiable crosswalks, creating bigger intersections and adjacent waiting areas to accommodate large numbers of people, programming automatic and extended pedestrian crossing times into signal phasing, and traffic –calming measures (NPS, 2010). Improvements to the paved pedestrian areas (sidewalks) along 14<sup>th</sup> Street and Madison Drive adjacent to the NMAAHC site are also included in the *National Mall Plan*.

Roadway improvements around the site call for the separation of bicycle and vehicular lanes on Madison Drive, 15<sup>th</sup> Street, and Constitution Avenue to improve site access and circulation for visitors wishing to bike to, from, and around the National Mall. Other Mall-wide improvements that would occur within the vicinity of the site include improvements to the grass/turf and trees, and the placement of park furniture. Improving the Mall's grass and turf would enhance its visual quality, while placement of park furniture would enhance the visitors' experience (NPS, 2010).



**Figure 3.2.1: Conservation Zoning under the *National Mall Plan* (Preferred Management Plan)**

Source: NPS, 2010

## Monumental Core Framework Plan

The *Monumental Core Framework Plan (2009)*, herein after referred to as the Framework Plan, is a planning document prepared jointly by NCPC and CFA. In part, the plan’s intent is to “help preserve the historic landscape of the National Mall as a place for national gatherings and a place to honor our country’s heroes and cultural heritage” (NCPC and CFA, 2009). The four primary goals of the *Framework Plan* are:

- Protect the National Mall from overuse;
- Create distinctive settings for cultural facilities and commemorative works;
- Improve connections between the National Mall, the city, and the waterfront; and
- Transform the monumental core into a vibrant and sustainable place to visit, work, and live.

An overarching theme to achieving these goals is the creation of destinations near the National Mall that would offer distinct amenities and experiences. These destinations would help alleviate much of the pressure on the National Mall generated by the demand for new memorials, and activities. The intent of the *Framework Plan* is to encourage the location of new memorials, museums, and cultural attractions off of the Mall, thereby improving connections to other parts of the District.

The Framework Plan includes specific recommendations for the four precincts, or focus areas, surrounding the National Mall. The focus area located closest to the project site is the Federal Triangle, which provides an opportunity to link downtown to the National

Mall. Creating mixed-used destinations would add to the public realm within the Federal Triangle.

The first goal of establishing new destinations within the Federal Triangle would be accomplished through redevelopment that would concentrate a mix of office, cultural, and hotel uses on Pennsylvania Avenue between 9<sup>th</sup> and 12<sup>th</sup> Streets while also increasing usability and sustainability. Specific targeted areas for redevelopment include: the Old Post Office Annex and IRS building as a site for cultural and hospitality uses; redevelopment of the J. Edgar Hoover Building with federal office space, street-level retail, and cultural uses; and redevelopment of 10<sup>th</sup> Street to create a welcome forecourt to NMNH and connection to the National Mall.

To improve usability, the plan proposes adding two entrances to existing Metrorail stations; improving Pennsylvania Avenue to increase street life, culture, and commerce; improving pedestrian comfort in Pershing Park and Freedom Plaza; and constructing buildings to the highest sustainability standards.

The second goal of enhancing the public realm within the Federal Triangle would be accomplished by improving the area’s aesthetic quality and increasing visitor amenities. Proposed visitor amenities contained within the plan would include a heritage trail showcasing the missions, history and architecture of the agencies located in the Federal Triangle; provision of year-round services at the Woodrow Wilson Plaza; and improving links between Benjamin Franklin Circle and the Old Post Office Plaza (NCPC and CFA, 2009).



### **Smithsonian Institution Mall-Wide Perimeter Security Improvements Plan**

The Smithsonian Institution developed a plan for providing upgraded, permanent perimeter security around 10 of its buildings located on the National Mall. The security systems would neutralize the threat of explosive-laden vehicles by providing an adequate defended standoff between the security line and the building face. The need for this arises as a means to protect many of the priceless artifacts and cultural resources housed within these buildings (Smithsonian Institution, 2004).

The *Mall-Wide Perimeter Security Improvements Plan* (2004) proposed two approaches to perimeter security treatments, both of which would be used at each building. The first approach is the unified approach, which is proposed for the sides of buildings located along Constitution Avenue. The unified approach would include a low free-standing wall to be placed at the out edge of the building yard. This approach creates consistency between the buildings along Constitution Avenue and reinforces the formal setting of the National Mall.

The second approach is the contextual approach which is proposed for the sides of the building located along Madison Drive and the numbered streets, such as 14<sup>th</sup> Street. This approach responds to the fact that each museum has a different configuration and would need site-specific security features to provide adequate protection. Security features that could be used in the contextual approach include a mix of free-standing walls, bollards, fence panels, hardened street furniture, and tree panels. The ultimate goal is to blend these features into the building fabric and site design to the greatest extent possible (Smithsonian Institution, 2004).

The NMAAHC would have to conform to similar perimeter security requirements as the other Smithsonian Institution museums along the National Mall, which would combine the unified approach along Constitution Avenue with a contextual approach along 14<sup>th</sup> Street, Madison Drive and 12<sup>th</sup> Street. The contextual security features include low free-standing walls along a majority of the site's perimeter with custom bollards located at access points. Guard booths would be located at each driveway, providing the ability to screen vehicles prior to accessing the loading/parking area (Smithsonian Institution, 2004).

### **DC Center City Action Agenda**

The *Center City Action Agenda* (DC OP, 2008) (Action Agenda) is a plan developed by DC OP to enhance the downtown area by capitalizing on emerging neighborhoods, improving transportation resources and investing in significant corridors. The *Action Agenda* proposes investment in the following areas to preserve the existing economic base and create new opportunities for growth:

- Creating great places that can anchor developing areas with key amenities and a mix of uses;
- Improving corridors that can link destinations;
- Developing multi-modal transportation networks that can support an increasing density of residents, employees and visitors and sustain environmental quality; and
- Investing in those areas of the DC economy that need assistance to create a self-sustaining critical mass, such as culture, entertainment, retail and new industry clusters that would diversify and strengthen the city's economy.

The NMAAHC’s site is in the vicinity of several identified priority places or corridors. One of the places identified relevant to NMAAHC is the National Mall, which the *Action Agenda* considers the “Heart of the Center City” and the potential threshold connecting the waterfront areas and the rest of downtown DC. To accomplish this, improved pedestrian access, seamless transitions between areas, and enhanced programming are necessary. These improvements are targeted at both enhancing the experience of DC residents, as well as tourists. It is the ultimate goal of the plan to integrate the National Mall “as part of the day-to-day life of the City” (DC OP, 2008).

One of the major challenges the National Mall faces is the perception that the area is a barrier separating work-life from leisure time. To reverse this, the *Action Agenda* calls for improvements to public space, roadways, signage systems, and transit services. Implementing these improvements would create cohesion on both sides of the National Mall and facilitate the movement of people back and forth across it. One of these key provisions is aimed at turning 14<sup>th</sup> Street NW and SW into a mixed-use corridor.

The vision for the corridor is to provide a link, both physically and symbolically, from downtown DC to the Tidal Basin, Washington Channel, and Southwest Waterfront. To achieve the transformation, one major obstacle is to reduce the street’s role as a commuter corridor and implement pedestrian-friendly amenities. Physical improvements, such as intersection design, signage, and directional flow would facilitate the change. Constitution Avenue and 14<sup>th</sup> Street is identified as one of the key intersections within the corridor because of its location and potential to improve the connections to the National Mall. In addition to heavy traffic volumes, one of the challenges facing 14<sup>th</sup> Street is its alignment south of the National Mall which infringes on existing memorials and serves to isolate many of the recreational amenities in that area, such as Potomac Park. Possible future realignment of the roadway may be necessary to fully realize the potential of this corridor (DC OP, 2008).

### 3.2.1.3 How would the proposed action affect the relevant planning policies?

This Tier II analysis builds upon the conclusions drawn in the Tier I Final EIS by evaluating the alternatives design concepts with respect to applicable planning documents and policies.

Impacts were defined using the following criteria:

**No Impacts:** No change or impact on planning policies would be expected as a result of the proposed action

**No Significant Impacts:** No notable changes to applicable planning policies would result from the proposed action. (this corresponds to no significant effect in the Tier I analysis)

**Significant Impacts:** Noticeable changes to applicable planning policies would result from the proposed action.

#### No Action Alternative

With the No Action Alternative, construction of the NMAAHC would not occur and the site would remain as open space. The current use of the site, which includes a temporary concession trailer and periodic public demonstrations, would continue. Further, site administration would also revert to NPS jurisdiction for use as a flexible open space resource consistent with the management of the Washington Monument Grounds.

The *National Mall Plan* is the primary management document used for determining the future land use and site improvements on the National Mall. The document includes the assumption that the

NMAAHC would be constructed; however, continuation of the site as open space with the No Action Alternative would be consistent with the proposed surrounding conservation zones, including Character Protection Areas and High-Use Areas. The proposed pedestrian improvements and visitor amenities would occur independently of the site development and would not be affected.

The *Framework Plan* seeks to protect the National Mall from overuse and to improve the area in and around the Mall through the creation of new destinations and corridors beyond the Mall to disperse visitors and improve their overall experience. Within the vicinity of the NMAAHC site, the *Framework Plan* also recommends creating destinations and enhancing the public realm within the Federal Triangle. With the No Action Alternative, there would be no additional museum created on the National Mall which would be consistent with the Framework Plan.

With the No Action Alternative, the NMAAHC would not be constructed and no additional perimeter security would be required. Therefore, the No Action Alternative would have no impact on the *Mall-Wide Security Improvements Plan*.

The *Action Agenda* also focuses on strengthening the downtown fabric of the District by improving corridors and emerging neighborhoods. For the National Mall, the *Action Agenda* proposes to improve pedestrian amenities to aid in circulation in and around the area. One of the significant intersections listed in the *Action Agenda* is the corner of 14<sup>th</sup> Street and Constitution Avenue, which is the northwest corner of the project site. With the No Action Alternative, it is likely improvements, such as improved pedestrian crossing and signage, would still occur; however, they may become a lower priority.

With the No Action Alternative, the NMAAHC would not be constructed. There would be no increase in pedestrian activity along 14<sup>th</sup> Street; nor would the demand for greater visitor amenities increase. Consequently, implementation of some of the proposed improvements to the project site and immediate area as proposed in the relevant planning documents may not have as great a priority. Because the related projects and planning policies of the Action Agenda would likely still be implemented even if construction of the NMAAHC did not occur, the No Action Alternative would no impact on the *Action Agenda*.

### **Action Alternative 1: Plinth Concept**

#### *Short-Term Effects*

Construction activities associated with the Plinth Alternative would be contained on site. The current features of the NMAAHC site, including the temporary concession trailer, would be relocated. The short-term effect on land use plans would not be significant.

#### *Long-Term Effects*

The *National Mall Plan* is the primary management document that outlines the future land uses and proposed physical improvements to the National Mall. The *National Mall Plan* was prepared with the assumption that the NMAAHC site would be developed with a museum (NPS, 2010). As such, the Plinth Alternative would be consistent with the *National Mall Plan* in concept; however, the new museum would reduce the amount of open space on the Mall, which is inconsistent with the intent of the National Mall Plan. The most prevalent conservation zone within the *National Mall Plan* in proximity to the NMAAHC site is the Character Protection Area that

is adjacent to the western and southern portions of the site. The intent of these areas is to provide spatial buffers in between National Mall destinations (NPS, 2010).

The existing open space on the NMAAHC site provides a substantial buffer for the Washington Monument. Implementation of the Plinth alternative would create a new destination on the National Mall, which would be required to provide additional open space buffering. However, with the Plinth Alternative, only a limited amount of open space would be located around the site's perimeter in the form of street trees, landscaping areas, and plaza along Madison Drive. Two larger landscaped areas, also containing trees, are found within the interior of the site between the building and the sidewalks on 14<sup>th</sup> and 15<sup>th</sup> Streets. These two areas would be publically accessible open space, which would help provide a limited buffer between the proposed building and the Washington Monument.

While the concentration of open space in the southern and western portions of the site would be consistent with the adjacent Character Protection Areas proposed under the *National Mall Plan*, the loss of recreational and demonstration space would be inconsistent with the plan.

The *Framework Plan* was developed to create new destinations beyond the National Mall to protect the Mall from overuse, while increasing the accessibility and sustainability of the surrounding area. Adding a new museum of the National Mall would not create new destination outside of the Mall. However, one of the goals of the Plan is to strengthen the Federal Triangle by establishing destinations along Pennsylvania Avenue. While the Plinth Alternative is not on this street, nor in the Federal Triangle, its

proximity could indirectly help increase pedestrian and visitor activity within the Federal Triangle by attracting new visitors to its edge. Overall, the long-term operation of the Plinth Alternative, by creating a new cultural destination on the National Mall, would be inconsistent with the goals and policies of the *Framework Plan*.

The Smithsonian Institution *Mall-Wide Perimeter Security Improvements Plan* requires perimeter security be provided with a combination of design features and hardscape elements. The main entrance to the Plinth Alternative would have a reflecting pool located underneath the plinth that would help protect the facility from vehicular threats. The landscaped area in front of Madison Drive would have a low seating wall around its perimeter providing additional protection. The landscaped areas along 14<sup>th</sup> and 15<sup>th</sup> Streets would also be lined by low seating walls. In addition to perimeter security, these seating walls would act as retaining walls for the landscaped areas.

The contextual approach elements provided along 14<sup>th</sup> Street, 15<sup>th</sup> Street and Madison Drive would be consistent with the Smithsonian Institution's standards. The second entrance along Constitution Avenue would have a water feature that runs underneath the entryway and extends from the 15<sup>th</sup> Street sidewalk to the 14<sup>th</sup> Street sidewalk. This water feature would be supplemented by two sunken courtyards. Perimeter security would comply with the unified approach, which seeks to place a low freestanding wall along Constitution Avenue. The water feature would incorporate a wall to contain the water. Thus, the Plinth Alternative would provide long-term, permanent protection from threats in accordance with the *Mall-Wide Perimeter Security Improvements Plan*.

The *Action Agenda* seeks to improve downtown DC by capitalizing on emerging neighborhoods, improving transportation resources, and encouraging investment in significant corridors. One of the corridors targeted in the *Action Agenda* is 14<sup>th</sup> Street, with specific attention given to the intersection of 14<sup>th</sup> Street and Constitution Avenue located at the northwest corner of the site. The *Action Agenda* suggests improvements to the design, signage and direction of pedestrian flow of this intersection.

The Plinth Alternative would provide streetscape features, such as seating walls, and widen the sidewalk along Constitution Avenue, which would improve the pedestrian environment and contribute to visitor satisfaction. Providing an entrance to the NMAAHC on Madison Drive would draw museum visitors up 14<sup>th</sup> Street from the south, increasing pedestrian activity within this corridor. Similarly, the entrance along Constitution Avenue would draw pedestrians down 14<sup>th</sup> Street from the north. These actions would be consistent with the Action Agenda goals of improving intersections and creating more pedestrian activity within this important corridor. The Plinth Alternative would also be consistent with the Action Agenda goal of making the National Mall part of everyday life through increasing visitation to the Smithsonian Institution by local residents.

In the long term, the NMAAHC would induce an increased amount of tourism to the area and thus help generate a greater demand for visitor amenities in the site vicinity. This increased demand would encourage implementation of some of the recommendations proposed in the relevant planning documents, as discussed above. From this perspective, the Plinth Alternative would generally be consistent with these planning documents, and there would be no significant effect to planning policies.

**Action Alternative 2: Plaza Concept***Short-Term Effects*

Similar to the Plinth Alternative, the Plaza Alternative would contain construction activities within the site. The current features and uses of the NMAAHC site would be removed and relocated from the site during construction and operation of NMAAHC. These impacts would be similar to those discussed in the Plinth Alternative. The short-term effect on land use would not be significant.

*Long-Term Effects*

The new museum would reduce the amount of flexible open space on the Mall, which is inconsistent with the National Mall Plans. However, the landscaped areas and vegetation features proposed to be implemented as part of the Plaza Alternative would provide limited physical and visual buffering on the site. Additionally, the dual building configuration and landscape design of the Plaza Alternative would help preserve views of the Washington Monument from 14<sup>th</sup> Street at Constitution Avenue. As a result, the Plaza Alternative would not be entirely inconsistent with the intent of the *National Mall Plan's* Character Protection Area. As with the Plinth Alternative, the Plaza Alternative would involve implementation of the pedestrian and visitor improvements consistent with the *National Mall Plan*.

The Plaza Alternative would create an additional cultural and aesthetic destination on the National Mall, which is inconsistent with the *Framework Plan* and the goal of increasing destinations

beyond the Mall. However, the new museum, and particularly the plaza, could contribute to an overall increase in visitation to the Federal Triangle.

The Smithsonian Institution's *Mall-Wide Perimeter Security Improvements Plan* requires perimeter security be provided with a combination of design features and hardscape elements. The south (Madison Drive) entrance to the Plaza Alternative would include a reflecting pool and cluster of trees that would protect the facility from vehicular threats. The landscaped areas along 14<sup>th</sup> and 15<sup>th</sup> Streets would also include low seating walls and retaining walls. The contextual approach elements provided along 14<sup>th</sup> Street, 15<sup>th</sup> Street, and Madison Drive would be consistent with the Smithsonian Institution's standards. Along Constitution Avenue, a large reflecting pool and low freestanding wall would provide perimeter security for the Office building and would comply with the unified approach for Constitution Avenue. Thus, perimeter security with the Plaza Alternative would comply with the Smithsonian Institution's requirements and provide long-term security from vehicular borne threats.

The Plaza Alternative would be consistent with the *Action Agenda* because it proposes similar streetscape features, sidewalk configurations, and entrance locations as the Plinth Alternative. The Plaza Alternative would incorporate a large, central, plaza providing gathering space and access to the museum from the north. The Plaza Alternative would be consistent with the *Action Agenda's* intention to activate 14<sup>th</sup> Street.

### Action Alternative 3: Pavilion Concept

#### *Short-Term Effects*

Similar to the Plinth and Plaza Alternatives, the Pavilion Alternative would contain construction activities within the site. The current features and uses of the NMAAHC site would be removed and relocated from the site during construction and operation of NMAAHC. The impacts would be similar to those discussed in the Plinth and Plaza Alternatives. As such, the short-term effect to land use would not be significant.

#### *Long-Term Effects*

The new museum would reduce the amount of flexible open space on the Mall, which is inconsistent with the *National Mall Plan*. The landscaped areas and vegetation features proposed to be implemented as part of the Pavilion Alternative would provide limited physical and visual buffering on the site. Because the Pavilion Alternative includes more compact building development, more open space would be retained on the NMAAHC site. This alternative would be somewhat more consistent with the intent of Character Protection Areas proposed in the *National Mall Plan*. As with the Plinth and Plaza Alternatives, the Pavilion Alternative would involve implementation of the pedestrian and visitor improvements consistent with the *National Mall Plan*.

The Pavilion Alternative would create an additional cultural and aesthetic destination on the National Mall, which is inconsistent with the *Framework Plan* and the goal of increasing destinations beyond the Mall. However, the new museum could contribute to an overall increase in visitation to the Federal Triangle.

The Smithsonian Institution's *Mall-Wide Perimeter Security Improvements Plan* requires perimeter security be provided with a combination of design features and hardscape elements. The entrance to the Pavilion Alternative would include a reflecting pool on the south side of the building that would protect the facility from vehicular threats. The terraced green space in front of Madison Drive would incorporate a low seating wall around its perimeter providing additional protection. The landscaped areas along 14<sup>th</sup> and 15<sup>th</sup> Streets would also include low seating walls and retaining walls. The contextual approach elements provided along 14<sup>th</sup> Street, 15<sup>th</sup> Street and Madison Drive would be consistent with the Smithsonian Institution's standards. Along Constitution Avenue, a low freestanding wall would provide structural support for the landscaped area and perimeter security in compliance with the unified approach for Constitution Avenue. Thus, perimeter security with the Pavilion Alternative would comply with the Smithsonian Institution's requirements and provide long-term security from vehicular borne threats.

The Pavilion Alternative would be consistent with the *Action Agenda* because it proposes similar streetscape features as the Plinth Alternative and the Plaza Alternative. While the Pavilion Alternative would provide wider sidewalks than the Plinth Alternative, it does not have an entrance along Constitution Avenue, forcing pedestrians to enter the museum after walking through the site from Constitution Avenue to Madison Drive. The lack of an entrance from Constitution Avenue would not encourage additional pedestrian volumes from the north. The proposed pathways of the Pavilion Alternative would direct pedestrians diagonally through the site instead of along 14<sup>th</sup> Street. The Pavilion Alternative would not be fully consistent with the *Action Agenda's* intention to activate 14<sup>th</sup> Street.

**Action Alternative 4: Refined Pavilion Concept***Short-Term Effects*

Similar to the other Alternatives, the Refined Pavilion Alternative would contain construction activities within the site. The current features and uses of the NMAAHC site would be removed and relocated from the site during construction and operation of NMAAHC. The impacts would be similar to those discussed in the other Alternatives. The short-term effect to land use would not be significant.

*Long-Term Effects*

The landscaped areas and vegetation features proposed as part of the Refined Pavilion Alternative would provide physical open space and visual buffering on the site. Similar to the Pavilion Alternative, the Refined Pavilion Alternative includes an even more compact building development, retaining more open space on the NMAAHC site than the other alternatives. As a result, the Refined Pavilion Alternative would be more consistent with the intent of the *National Mall Plan's* Character Protection Area than the other alternatives. As with the other alternatives, the Refined Pavilion Alternative would involve implementation of the pedestrian and visitor improvements consistent with the *National Mall Plan*.

The Refined Pavilion Alternative would create an additional cultural and aesthetic destination on the National Mall, which is inconsistent with the *Framework Plan* and the goal of increasing destinations beyond the Mall. However, the new museum could contribute to an overall increase in visitation to the Federal Triangle.

The Smithsonian Institution's *Mall-Wide Perimeter Security Improvements Plan* requires perimeter security be provided with a combination of design features and hardscape elements. The south-facing entrance to the Refined Pavilion Alternative would include a reflecting pool and landscaped areas containing a cluster of trees to would protect the facility from vehicular threats. The landscaped areas along 14<sup>th</sup> and 15<sup>th</sup> Streets would also include low seating walls and retaining walls. The contextual approach elements provided along 14<sup>th</sup> Street, 15<sup>th</sup> Street, and Madison Drive would be consistent with the Smithsonian Institution's standards. Along Constitution Avenue, a water feature would provide perimeter security in compliance with the unified approach for Constitution Avenue. Thus, perimeter security with the Refined Pavilion Alternative would comply with the Smithsonian Institution's requirements and provide long-term security from vehicular borne threats.

The Refined Pavilion Alternative would be consistent with the *Action Agenda* because it proposes similar streetscape features and sidewalk configurations as the other alternatives and it would include entrances from the north and the south. Similar to the Plinth and Plaza Alternatives the Refined Pavilion Alternative has entrances on Madison Drive and Constitution Avenue, which would draw pedestrians along 14<sup>th</sup> Street. The Refined Pavilion Alternative also incorporates a large area of green space to be used for public gatherings. The Refined Pavilion Alternative would be consistent with the *Action Agenda's* intention to activate 14<sup>th</sup> Street.



### 3.2.1.4 What efforts would be made to minimize the impacts on planning policies?

#### **Plinth Alternative**

The following mitigation measures are recommended to minimize the long term impact of the Plinth Alternative related to planning policies:

- The Plinth Alternative should explore options for reducing the facility's footprint to increase the amount of open space on site, particularly on the western and southern sides of the building.
- The Plinth Alternative should be located away from the Washington Monument while respecting the urban context and historic setbacks along Constitution Avenue and the other sides of the site.
- The number of trees located to the south and west portions of the site should be increased to enhance the limited buffer to the Washington Monument.

#### **Plaza Alternative**

The mitigation measures for the Plaza Alternative would be identical to those identified for the Plinth Alternative.

#### **Pavilion Alternative**

In addition to the mitigation measures listed with the Plinth Alternative, the following mitigation measure is recommended to minimize long term impacts of the Pavilion Alternative related to planning policies:

- The design of the Pavilion Alternative should be modified to include an entrance on the north side (Constitution Avenue) of the building to allow visitors to enter from both the north and south sides of the site.

#### **Refined Pavilion Alternative**

The mitigation measures for the Refined Pavilion Alternative would be identical to those identified for the Plinth and Plaza Alternatives.

### **3.2.2 Visitor Experience**

#### **3.2.2.1 Introduction**

One of the major considerations for the construction of a new museum is the capability to accommodate the projected increase in the number of visitors to the area. An analysis conducted for the NMAAHC in the Tier I Final EIS found that “when the National Museum of the American Indian (NMAI) first opened, overall Smithsonian Institution museum visitation, including museums on the National Mall, increased by 18 percent.” This is because a new museum attracts new visitors, gives visitors more options, and encourages the potential visitors to extend their stay in Washington, DC. A similar trend is anticipated after the NMAAHC opens, amounting to a projected total of 2.5 million additional visitors. While the Tier I Final EIS concluded that the NMAAHC would have a beneficial effect on visitation to the National Mall, further analysis of Mall and NMAI attendance patterns showed that “after the initial newness of the NMAAHC wears off, normal fluctuations in visitors to the National Mall and Smithsonian Institution museums would resume.” In addition, the Tier I Final EIS concluded that 70 percent of the visitors enter the museums along the National Mall from the south (Mall) side of the site (Smithsonian Institution, 2008a).

The visitor experience section of this Tier II Draft EIS examines how visitors would interact with the museum and the physical layout of the site with each alternative, rather than the quantification of increased visitation levels that was conducted in the Tier I Final EIS.

Additionally, this Draft Tier II EIS discusses the approach each action alternative would take to provide adequate perimeter security and its effect on visitor experience. The visitor experience analysis evaluates the location of museum entrances, the location of visitor access points, the site’s features and uses, and the location of perimeter security features.

#### **3.2.2.2 How do visitors currently experience the project site?**

##### **Character of the Site and the Washington Monument Grounds**

The Tier I Final EIS characterizes the NMAAHC site as a five-acre public open space resource that is “a component of a much larger commemorative landscape that is designated as parkland for a variety of uses” (Smithsonian Institution, 2008a). The site serves as a location for public gathering, informal recreational activities, and First Amendment civil demonstrations. Site circulation is achieved through two pathways that bisect the site; however, due to the open nature of the space, many visitors walk across the grass that covers the site.

One of the pathways extends southwest from the corner of Constitution Avenue and 14<sup>th</sup> Street towards the Washington Monument Grounds and terminates mid-block along 15<sup>th</sup> Street. The other pathway starts at the corner of 15<sup>th</sup> Street and Constitution Avenue and extends southeast towards the National Mall, terminating at 14<sup>th</sup> Street. In addition, sidewalks extend along the perimeter of the site. A grove of trees is located in the northeast corner of the site, providing shade for visitors. Similarly, a smaller grove of trees is found near the southeast corner of the site.

Other amenities found on the site include benches, a bus stop and a temporary concessions stand located in the southwest corner of the site. A Bulfinch Gate, an historic resource from the 1800s canal era that resembles a stone pillar, is located on the northwest corner of the site, similar to those found both on the other sides of 15<sup>th</sup> Street and Constitution Avenue. This provides a common visual and historical link between the corners of this intersection.

In addition to the uses found on site, a visitor's experience is also shaped by the site's accessibility and available amenities. Visitors primarily arrive to the site as pedestrians after reaching the National Mall via Metrorail, Metrobus, the DC Circulator, tour bus, or private vehicle. The NPS Tourmobile Sightseeing provides intermittent tour bus services on the National Mall with routes along 14<sup>th</sup> Street, 15<sup>th</sup> Street, and Madison Drive, and stops on 15<sup>th</sup> Street and on Madison Drive, in the vicinity of the NMAAHC site. Free all-day parking lots are available for Tourmobile patrons near the Jefferson Memorial. Spaces are limited and available on a first come, first serve basis. Parking within the site vicinity is very limited with on-street two-hour parking available during non-rush hours along Constitution Avenue and 14<sup>th</sup> Street. Longer term parking is available within parking garages near the site.

The closest Metrorail station within a ½-mile of the site is the Smithsonian Station, with entrances located on 12<sup>th</sup> Street at Jefferson Drive and another at the corner of 12<sup>th</sup> Street and Independence Avenue. The DC Circulator also offers visitors access to the site with the Purple line running along Constitution Avenue and stopping in front of the NMAH. Several DC Metrobus lines service the site including the following routes: 13A, 13B, 13F, 13G, N3, P1, X1, 11Y, and 52. In conjunction with one another, these services combine to make the project site extremely accessible.

Given its location at 14<sup>th</sup> Street and Constitution Avenue, the NMAAHC site would be adjacent to the NMAH and 670 feet from the Washington Monument. In addition, the relocated entrance currently proposed for the National Aquarium would be directly across Constitution Avenue from NMAAHC and the NMAH would be directly across 14<sup>th</sup> Street.

One of the reasons the National Mall is such a large draw for tourists is the breadth of topics covered by the collection of museums found there. These museums include: NMAH, NMNH, National Gallery of Art, the East Wing of the National Gallery of Art, the Smithsonian Institution Building and Quadrangle, the Hirshhorn Museum and Sculpture Garden, the National Air and Space Museum, and NMAI.

#### **Site Layout and Relationship to National Mall**

The layout of each of the buildings framing the National Mall creates a distinct visitor experience. The open space setting of the Mall is reinforced through adjacent building footprints that occupy less than 50 percent of their respective parcels. A summary of open space percentages of existing buildings in relation to the proposed action alternatives can be found in Table 3.2.1. Most of the visitors to the museums enter from the National Mall side, and thus, the primary entrances to the museums are oriented to the National Mall.

**Table 3.2.1 Relevant Building Footprints and Lot Coverages**

<b>Museum/Building</b>	<b>Ground Floor Square Footage (SF)</b>	<b>Site Area Square Footage (SF)</b>	<b>Lot Coverage</b>	<b>Open Space</b>
Plinth Alternative	85,804	233,349	37%	63%
Plaza Alternative	80,559	233,349	35%	65%
Pavilion Alternative	60,229	233,349	26%	74%
Revised Pavilion Alternative	53,750	233,349	23%	77%
National Museum of American History	170,390	478,550	36%	64%
National Museum of Natural History	238,400	487,600	49%	51%
National Gallery of Art Sculpture Garden	5,300	227,550	2%	98%
National Gallery of Art West Building	177,700	490,060	36%	64%
National Gallery of Art East Wing	71,700	173,540	41%	59%
National Museum of the American Indian	48,700	157,600	69%	31%
National Air and Space Museum	165,800	353,750	53%	47%

Note: At grade roofs of underground spaces are counted as open space and are not included in the lot coverage.

Source: Freelon Adjaye Bond/SmithGroup, 2010; AECOM, 2010

Immediately east of the NMAAHC site is the NMAH, which provides visitor entry from both the National Mall and from Constitution Avenue. The entrance on Constitution Avenue is highlighted by a semi-circle shaped plaza with a central water feature. The plaza is lined by a horseshoe-shaped driveway that allows both pedestrian and limited vehicular access to the museum. At the entrance points on either end of the driveway, are bollards for perimeter security. Vehicular access is restricted to building employees and VIPs. Along the entirety of Constitution Avenue a hardened seating wall provides additional security.

Between the roadways and the building base, manicured lawns and groves of trees exist to reinforce the ceremonial aspect of Constitution Avenue and the National Mall's park-like character. The building's main entrance is located on the south side along Madison Drive and contains a large rectangular plaza. Extending directly south of the plaza is a large crosswalk that provides a link to the National Mall across Madison Drive. Much of the public space available on the NMAH site is found along the building's base, which wraps around the building's entire perimeter. This area provides a location for visitors to relax and take a break from sightseeing. A small gazebo, found in the open building yard along 14<sup>th</sup> Street, is an amenity available for public use.

Further east of the NMAAHC site (and directly adjacent to NMAH) is the NMNH. This building has a much larger footprint than the other buildings on the north side of the National Mall, leaving less open space around its perimeter. The building's main access point is located on Madison Drive and consists of a grand staircase that leads visitors to a formal, column-lined entryway. A small plaza is located on the approach to the building, providing a place for visitors to gather or relax.

On the Constitution Avenue (north) side of the building, a horseshoe-shaped drive leads to the building entrance. Several small garden beds are found within the center of the driveway.

Similar to NMAH, bollards are present and provide security from vehicular threats. A hardened seating wall also stretches around the building's perimeter along the inside edge of the Constitution Avenue sidewalk. Between the seating wall and the face of the building, manicured green space is present; however, it is not generally used by the public. Much of the open space within the vicinity of NMNH is found within these landscaped areas along Constitution Avenue. A large parking lot that is restricted to employees and VIPs is located along the south side of the building, as well as on the east and west sides of the building. The parking lots, however, are recessed below grade to screen them from the view of visitors and thus provide additional building security. A large grove of trees is found in the northeast corner of the site, and street trees are interspersed around the building creating a visual link to other museums on Constitution Avenue and to the National Mall. A butterfly garden is located on the east side of the site, between NMNH and the 9<sup>th</sup> Street underpass, providing visual screening and a safe pedestrian pathway to the National Mall.

The remaining buildings that line Constitution Avenue east of the NMAAHC site are associated with the National Gallery of Art, including: the National Gallery of Art Sculpture Garden, the West Building and the East Wing. The Sculpture Garden is a highly interactive outdoor exhibit that includes large pieces of artwork throughout the site. Pathways connect the sculptures and allow visitors to circulate through the site at their leisure. The site's perimeter defined by a fence and dense plantings. Primary access points are found at the site's corners with a secondary access point

located on 7<sup>th</sup> Street. There is a large water feature in the center of the site that serves as a skating rink in the winter months. Additionally, a food service pavilion is located in the western part of the site.

Directly east of the Sculpture Garden is the National Gallery of Art West Building, the largest of the museums located on the north side of the National Mall. The main entrance on Madison Drive takes the form of a large stairway leading to a formal, monumental entrance lined with columns. Manicured green space around the building's perimeter reinforces its formal setting. Public space is provided on either side of the main entrances in the form of courtyards recessed into the buildings. A large public plaza, located in front of the building's east façade, contains a water feature and a sculpture piece. This area also doubles as a car drop-off location. A secondary entrance is located at the end of a horseshoe shaped driveway along Constitution Avenue. Similar to the main entrance, manicured green space lines Constitution Avenue.

The final building along the row of museums located on the south side of Constitution Avenue is the East Wing of the National Gallery of Art, which contains the modern art collection. The building form and site layout are shaped by the diagonal orientation of Pennsylvania Avenue. The main entrance to the East Wing is on 4<sup>th</sup> Street and is mostly recessed into the building's mass. The site perimeter is defined by green space that is generally not used by the public. Street trees are located within this green space along with several sculptures.

The north side of Constitution Avenue is comprised of large-scale federal buildings. Directly across from the NMAAHC site is the Herbert C. Hoover Building, which houses the Department of Commerce. The building is currently undergoing modernization and renovation that will include relocation of the entrance to the National Aquarium from 14<sup>th</sup> Street on the east side of the building to the south side of the building on Constitution Avenue. This is being done to capitalize on the popularity of the National Mall as a tourist destination and the larger flow of pedestrian traffic along Constitution Avenue. The buildings on the north side of Constitution Avenue, in the vicinity of NMAAHC, have limited setbacks to the sidewalk and little usable green space for visitors or employees. Much of the open space associated with these buildings is in the form of internal courtyards which are largely inaccessible to the public. As a result, tourists may admire the grand architecture or see which department is housed in each building; however, the buildings are generally not intended for visitor enjoyment. One exception is the Woodrow Wilson Plaza located approximately two blocks from the NMAAHC site between the Ronald Reagan Building and the Ariel Rios Building. The plaza provides food, outdoor programming, amenities, and a place for employees and tourists to relax. In addition, the National Archives, which displays the Declaration of Independence and other notable documents, is located within the Federal Triangle between 7<sup>th</sup> and 9<sup>th</sup> Streets.

### 3.2.2.3 How would the proposed action affect visitor experience?

The following analysis examines how each of the alternatives would affect visitor experience at the site and within the surrounding area. The analysis addresses circulation patterns, accessibility, and overall experience for museum visitors, visitors to the National Mall, and users of NPS open space for public gatherings or recreation. Impacts were determined using the following criteria:

**No Impacts:** No change to visitor experience would be expected to result.

**No Significant Impact:** No noticeable changes to visitor experience within the study area would result.

**Significant Impact:** Noticeable changes to visitor experience within the study area would result.

**Positive Impact:** The impacts would improve visitor experience within the study area.

#### No Action Alternative

With the No Action Alternative, the existing site conditions would remain. The site would continue to be used as a location for public gatherings, informal recreation, and First Amendment demonstrations as part of the Washington Monument Grounds. No permanent structures would be constructed on the site. It would continue to be maintained by NPS and the existing vegetation would remain in their current state. Similarly, the benches, walkways and other visitor amenities, such as the temporary concession trailer, would also remain, at least for the near term.

Transportation resources would remain in their current state and would continue to service the site via Metrobus, DC Circulator and Metrorail. Site access would continue to be provided formally at the four corners of the site and more informally across the green space, including special events that could result in soil compaction and turf compaction. Thus, the No Action Alternative would have no effect on the visitor experience of the National Mall as it relates to the amount of visitor amenities offered. However, because the No Action Alternative would not result in the construction of the NMAAHC on the project site, the experiences associated with a new museum would not be realized.

#### Action Alternative 1: Plinth Concept

The Plinth Alternative places the main building feature, the Corona, on top of a base referred to as a plinth. The goal of the design is to create a welcoming “porch-like” atmosphere at the ground level and provide additional outdoor gathering space. The primary access point would be located on the south side of the site. Visitors approaching from the National Mall would encounter a hardscape plaza along Madison Drive and symbolically cross a shallow reflecting pool in front of the entryway. The plinth would extend from the face of the building to provide shade and cover from foul weather at the building’s main entrance.

Additional pedestrians coming from the White House, the Federal Triangle, or other points north, would access the site from either the northeast or northwest corners. The most likely entrance for these visitors would be the entry on Constitution Avenue. When approaching the Constitution Avenue entrance, visitors would pass by sunken courtyards on either side of the sidewalk and symbolically cross over a water feature to enter the building.

The Plinth Alternative would provide two entrances, which would ensure a high level of accessibility to the museum by allowing visitors to enter when traveling from the National Mall or from Constitution Avenue. Transportation resources would remain in their current state and would continue to service the site via Metrobus, DC Circulator and Metrorail. Thus, there would be a positive impact on visitor accessibility.

Sidewalks would extend northwards from Madison Drive along both 14<sup>th</sup> and 15<sup>th</sup> Streets towards Constitution Avenue. When traveling north along 14<sup>th</sup> Street, visitors would cross over the vehicular access point located near the intersection of 14<sup>th</sup> Street and Constitution Avenue. The driveway would extend south and lead to a sub-grade service and loading dock. According to the proposed landscape plan, the driveway would be screened from view along 14<sup>th</sup> Street through the placement of trees, a low wall and other landscape screening. Along 15<sup>th</sup> Street, visitors would be allowed access to one of the interior landscaped areas for relaxation and contemplation.

To facilitate this, the landscaped area would be terraced to provide seating. Connections to the cafeteria would also allow visitors to eat outside. The retaining wall located along the 15<sup>th</sup> Street side of the building would incorporate seating walls and other visitor amenities at key locations to provide views to the Washington Monument framed by breaks in the locations of the proposed trees, per the landscape plan, as well as provide perimeter security.

Along Constitution Avenue, the Plinth Alternative would widen the sidewalk and provide a water feature. Similar to the entry on Madison Avenue, the secondary entrance would be covered by the plinth.

The Plinth Alternative would remove two pathways that cut diagonally across the site resulting in a slightly longer walk time between the northwest and southeast corners, and between the northeast and southwest corners. Circulation along the 14<sup>th</sup> Street, 15<sup>th</sup> Street, and Madison Drive sidewalks would be similar to the current conditions and the widened sidewalk along Constitution Avenue would enhance pedestrian traffic flow. Thus, the impact on circulation would be negligible with the Plinth Alternative because the pathways that would be lost to accommodate the NMAAHC building would be replaced by enhanced perimeter sidewalks.

The NMAAHC would remove from the National Mall approximately 5 acres of flexible open space used for First Amendment demonstrations, special events, and informal recreation. The Plinth Alternative would provide open space directly adjacent to the building on the east, west and south sides in the form of the hardscape plaza along Madison Drive, manicured green space, and planting areas. Seating walls would be provided within the perimeter security features to allow contemplative space for visitors traveling to the NMAAHC or passing by on Madison Drive to and from the Washington Monument. The hardscape plaza at the south entrance would also provide an opportunity to create performance space at the site.

Visitors would be allowed access to the green space located adjacent to the west side of the building. This area would be used for both relaxation and contemplation. Street trees would be placed around the site on Constitution Avenue, 14<sup>th</sup> Street, and 15<sup>th</sup> Street, according to the landscape plan. These trees would provide shade, frame views to the Washington Monument and, in some locations, visually screen mechanical equipment and the service and loading area.



Overall, while the Plinth Alternative would provide visitor amenities such as a new cultural destination, an enhanced pedestrian environment, passive gathering space, vegetative screening, and outdoor program and performance space, there would be a net loss of open space due to the placement of a building on the site. Therefore, there would be significant positive impact on visitor experience for museum patrons and a negative impact on visitor experience for users of NPS open space.

### **Action Alternative 2: Plaza Concept**

The Plaza Alternative proposes a two-building format that would separate the office and back-of-house components of the museum program from the Corona, which would contain exhibit space. A major component of this alternative is the open plaza that would be created between the two buildings, with a large oculus located in the center revealing exhibit space below. The northern building would be placed along Constitution Avenue and 15<sup>th</sup> Street, and would be accessed from the plaza. The Corona would generally be located in the southeast corner of the site and would have two points of entry. The primary entrance, similar to the Plinth Alternative, would be located on the south side of the building. Visitors approaching from the National Mall and points south would encounter a cluster of trees along Madison Drive, and would symbolically cross over a water feature. The second entrance would be located on the north side of the building and allow visitors access from the plaza.

The Plaza Alternative would provide two entrances, which would ensure a high level of accessibility to the museum by allowing visitors to enter when traveling from the National Mall or from Constitution Avenue. Transportation resources would remain in

their current state and would continue to service the site via Metrobus, DC Circulator and Metrorail. Thus, there would be a positive impact on visitor accessibility.

Sidewalks would extend northwards from Madison Drive along both 14<sup>th</sup> and 15<sup>th</sup> Streets towards Constitution Avenue. When traveling north along 14<sup>th</sup> Street, visitors would cross over the vehicular access point located near the intersection of 14<sup>th</sup> Street and Constitution Avenue. The driveway would extend south and lead to a sub-grade service and loading dock. According to the landscape plan, the driveway would be screened from view along 14<sup>th</sup> Street through the placement of trees, a low wall, and other landscape screening. Along 15<sup>th</sup> Street, visitors would be allowed access to the plaza for relaxation and contemplation. Along Constitution Avenue, the Plaza Alternative would retain the current sidewalk width and proposes a large water features between the face of the northern building and the sidewalk.

The two paths that currently bisect the site would be removed as part of the Plaza Alternative to accommodate the buildings and the plaza. The plaza, however, would still allow movement across the site between the northeast and southeast corners, similar to one of the paths. The impact on circulation would be negligible with the Plaza Alternative, because despite one of the pathways being lost to accommodate the NMAAHC building, the other sidewalks would remain the same.

The NMAAHC would remove from the National Mall approximately 5 acres of flexible open space used for First Amendment demonstrations, special events, and informal recreation. With the Plaza Alternative, the major open space component would be the large, central plaza located between the two buildings. This area

would serve as a gathering location for visitors and would also accommodate outdoor program space. Additionally, by creating this plaza, the view towards the Washington Monument from 14<sup>th</sup> Street at Constitution Avenue would be preserved. An additional hardscape plaza would be located in the southern portion of the site along Madison Drive. Green space, in the form of manicured lawns, would be located between the sidewalks and street on 14<sup>th</sup> and 15<sup>th</sup> Streets, as well as Constitution Avenue. Additional green space would be located adjacent to the plaza and on the west side of the Corona.

Similar to the Plinth Alternative, visitors would be allowed access to the green space located adjacent to the west side of the building. This area would be used for both relaxation and contemplation. Street trees would be placed around the site on Constitution Avenue, 14<sup>th</sup> Street, and 15<sup>th</sup> Street, according to the landscape plan. These trees would provide shade, frame views to the Washington Monument and, in some locations, visual screening of mechanical equipment and the service and loading area.

Overall, while the Plaza Alternative would provide visitor amenities such as a new cultural destination, an enhanced pedestrian environment, passive gathering space, vegetative screening, and outdoor program and performance space, there would be a net loss of open space due to the placement of a building on the site. Therefore, there would be significant positive impact on visitor experience for museum patrons and negative impact on visitor experience for users of NPS open space.

### **Action Alternative 3: Pavilion Concept**

The Pavilion Alternative would not include a plinth and would focus on the Corona as the most compelling feature of the museum building structure. The sole access point for the Pavilion Alternative would be located on the south side of the site. Visitors would encounter a hardscape plaza along Madison Drive with a terraced green space located adjacent to the sidewalk and a reflecting pool directly in front of the entryway. The terraced green space could also be used for passive recreation, such as contemplation and relaxation; seating would be established on the slope from the Madison Drive elevation to the hardscape plaza located at the building entrance. The hardscape plaza would provide an area for outdoor performance space.

No second entrance would be provided as part of the Pavilion Alternative. All visitors would need to travel towards Madison Drive along 14<sup>th</sup> or 15<sup>th</sup> Streets when approaching the museum from Constitution Avenue or points north, or they would be directed through a path near the intersection of 14<sup>th</sup> Street and Constitution Avenue towards the southwest corner of the site. This inconvenience would result in a slightly longer walk for visitors coming from Constitution Avenue and could result in confusion for first time visitors who are not aware of the entrance location. Transportation resources would remain in their current state and would continue to service the site via Metrobus, DC Circulator and Metrorail. The negative impacts on visitor accessibility with the Pavilion Alternative would not be significant; however, mitigation is recommended to minimize this impact.

Although no entrance would be provided from Constitution Avenue, the meandering path that would direct visitors from the corner of 14<sup>th</sup> Street and Constitution Avenue to the Pavilion Alternative entrance on Madison Drive would provide an opportunity for visitors to wander through green space and enjoy views of the Washington Monument. Seating would be provided within the perimeter security and retaining wall located adjacent to 15<sup>th</sup> Street. This path would follow approximately the same route as the path that currently exists on the site. It would allow for easy access to the Washington Monument when travelling west on Constitution Avenue.

Sidewalks would extend northwards from Madison Drive along both 14<sup>th</sup> and 15<sup>th</sup> Streets towards Constitution Avenue. When traveling north along 14<sup>th</sup> Street, visitors would cross the vehicular access point located near the intersection of 14<sup>th</sup> Street and Constitution Avenue. The driveway would extend south and lead to a sub-grade service and loading dock. According to the landscape plan, the driveway would be screened from view along 14<sup>th</sup> Street through the use of trees, a low wall, and other landscape screening. Along 15<sup>th</sup> Street, the sidewalk would curve around a landscaped area and diverge into two paths. One would continue north and connect to the intersection of 15<sup>th</sup> Street and Constitution Avenue. The other path would traverse the site to the east and bring visitors to the corner of 14<sup>th</sup> Street and Constitution Avenue.

Around the perimeter of the site, the Pavilion Alternative would retain the current sidewalk width and would include landscaped green space between the building face and the sidewalk. The Pavilion Alternative would remove one of the pathways that currently allows visitors to traverse the site. Impacts on visitor circulation with the Pavilion Alternative would not be significant because the sidewalks would remain the same; and one curving pathway would be retained to allow access to the Washington Monument.

The NMAAHC would remove from the National Mall approximately 5 acres of flexible open space used for First Amendment demonstrations, special events, and informal recreation. The Pavilion Alternative would provide open space directly adjacent to the building on all sides in the form of the hardscape plaza and the terraced green space along Madison Drive. On the west side, a semi-circular area of green space would abut the building, and a strip of green space and street trees would run along the curb. The edge of the semi-circular green space would be formed by the 15<sup>th</sup> Street sidewalk and the pathway that connects to the corner of 14<sup>th</sup> Street and Constitution Avenue. On the north side of the building, the large green space would mimic the surrounding open space of the Washington Monument Grounds. On the west side of this feature, the grade change would also allow for placement of outdoor programmatic elements or performance space. According to the landscaping plan, street trees would be placed around the site on Constitution Avenue, 14<sup>th</sup> Street, and 15<sup>th</sup> Street. These trees would provide shade and, in some locations, visual screening.

Overall, while the Plaza Alternative would provide visitor amenities such as a new cultural destination, an enhanced pedestrian environment, passive gathering space, vegetative screening, and outdoor program and performance space, there would be a net loss of open space due to the placement of a building on the site. Therefore, there would be significant positive impact on visitor experience for museum patrons and negative impact on visitor experience for users of NPS open space.

#### **Action Alternative 4: Refined Pavilion Concept**

Similar to the Pavilion Alternative, the Refined Pavilion Alternative would not include a plinth and would focus on the Corona as the most compelling feature of the museum building structure. Two access points would allow visitors to enter the museum from the north and south. Visitors approaching from the north would symbolically cross over a water feature that spans the entire block along Constitution Avenue. The main pathway would enter the site from the corner of 15<sup>th</sup> Street and Constitution Avenue and would follow a similar alignment as the pathways in the Ellipse. Another pathway would enter the site near the corner of 14<sup>th</sup> Street and Constitution Avenue and would follow a similar alignment as the current pathway. Visitors approaching from the south would encounter green space that would contain a rolling lawn and clusters of trees along Madison Drive, and would symbolically cross over a water feature.

Providing two entrances with the Refined Pavilion Alternative would ensure a high level of accessibility to the museum by allowing visitors to enter when traveling from the National Mall or from Constitution Avenue. Transportation resources would remain in their current state and would continue to service the site via

Metrobus, DC Circulator and Metrorail. Thus,, there would be a positive impact on visitor accessibility.

Improving on the Pavilion Alternative, the Refined Pavilion Alternative would provide entrances from both Madison Drive and Constitution Avenue and sidewalks and pathways would extend around and through the site. When traveling north along 14<sup>th</sup> Street, visitors would cross the vehicular access point located approximately mid-block. The driveway would extend south and lead to a sub-grade service and loading dock. According to the landscape plan, the driveway would be screened from view along 14<sup>th</sup> Street through the use of trees, a low wall, and other landscape screening. Along 15<sup>th</sup> Street, the sidewalk would curve around a landscaped area and then diverge into two paths. One would continue north and connect to the intersection of 15<sup>th</sup> Street and Constitution Avenue. The other path would follow the current path's alignment and would traverse the site to the east, bringing visitors to the corner of 14<sup>th</sup> Street and Constitution Avenue.

Along Constitution Avenue, the Refined Pavilion Alternative would retain the current sidewalk width and add an adjacent water feature incorporating stormwater management and perimeter security. The green space would be segmented by the proposed walkways that would mirror the current pathways on the site. Sidewalks around the site's perimeter would remain largely unchanged. Impacts on visitor circulation with the Refined Pavilion Alternative would be negligible because the sidewalks would remain the same and the pathways would be retained to allow access to the Washington Monument.

The NMAAHC would remove from the National Mall approximately 5 acres of flexible open space used for First Amendment demonstrations, special events, and informal recreation. The Refined Pavilion Alternative would provide open space directly adjacent to the building on all sides in the form of the hardscape plaza and planted green space along Madison Drive. On the west side an area of green space would abut the building and a strip of green space and street trees would run along the curb. On the north side of the building, the large green space would mimic the rolling landscape of the Washington Monument Grounds. Per the landscape plan, street trees would be placed around the site on Constitution Avenue, 14<sup>th</sup> Street, and 15<sup>th</sup> Street. These trees would provide shade and, in some locations, visual screening.

Overall, while the Plaza Alternative would provide visitor amenities such as a new cultural destination, an enhanced pedestrian environment, passive gathering space, vegetative screening, and outdoor program and performance space, there would be a net loss of open space due to the placement of a building on the site. Therefore, there would be significant positive impact on visitor experience for museum patrons and negative impact on visitor experience for users of NPS open space.

#### **3.2.2.4 What efforts would be made to minimize the impacts on visitor experience?**

##### **Pavilion Alternative**

The following mitigation measure is recommended to minimize operational effects of the Pavilion Alternative on visitor experience:

- The design of the Pavilion Alternative should be modified to include an entrance on the north side (Constitution Avenue) of the building to allow visitors to enter from both the north and south sides of the site.

This page is intentionally left blank

### 3.3 HISTORIC RESOURCES

The Tier I Final EIS evaluated the potential for the massing alternatives to create adverse effects to historic resources, including buildings, views, and landscapes. It was determined that the massing alternatives would create short-term adverse effects with the disruption of the NMAAHC site during construction. Long-term adverse effects were identified relating to the loss or alteration of character-defining features that contribute to the historic significance of features located within the Washington Monument Grounds and historic resources in proximity to the NMAAHC site. Further, it was determined that any new above-grade structure on the NMAAHC site would significantly alter the character-defining features of multiple historic resources contained within the area of potential effect (APE) (Smithsonian Institution, 2008a).

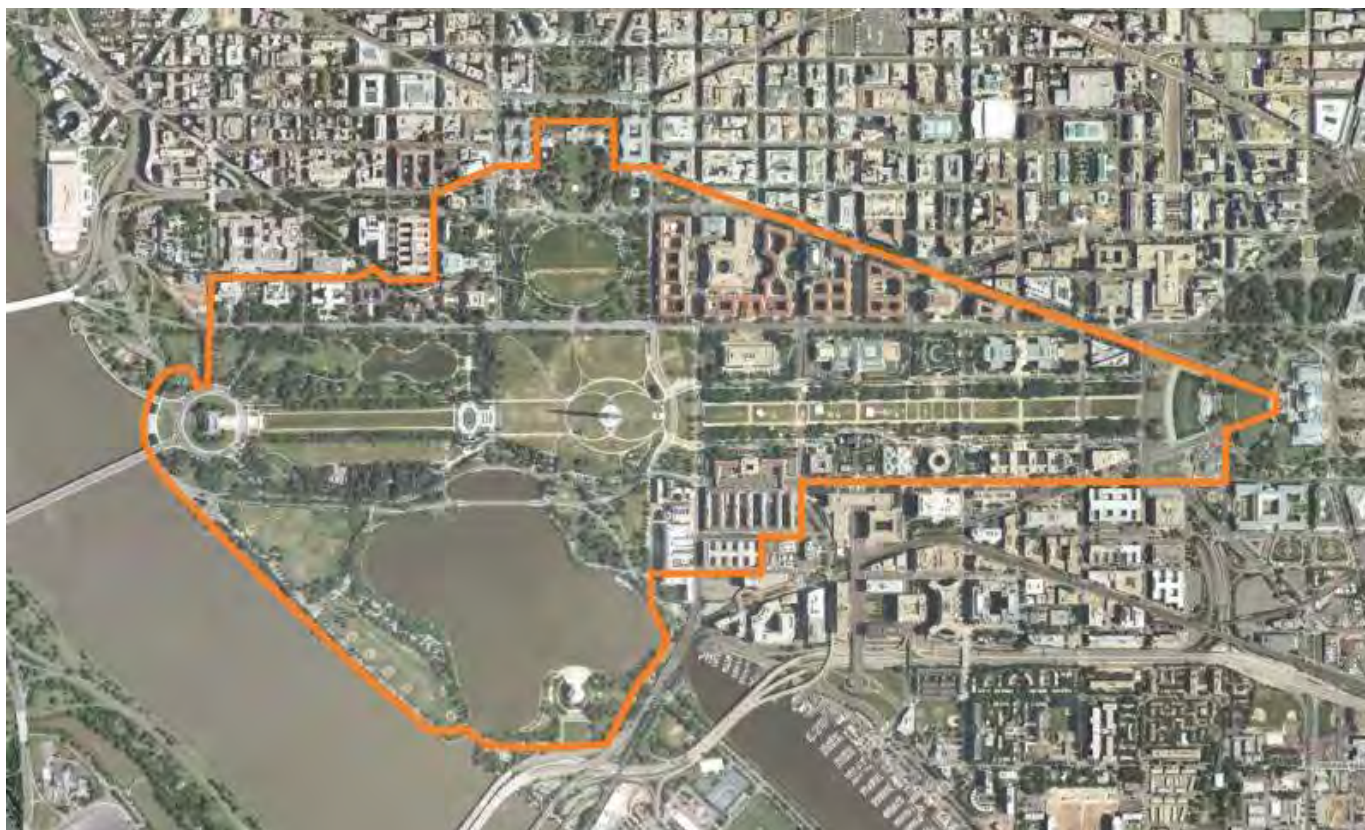
This section identifies the historic resources that are present on the project site, as well as within the surrounding area, and defines the APE in accordance with regulations for Section 106 of the National Historic Preservation Act relating to the identification of historic properties (36 CFR § 800.4) and the assessment of adverse effects (36 CFR § 800.5). The APE and the inventory of historic resources potentially affected by the proposed action have been carried over from the Tier I Final EIS issued June 2008 (Smithsonian Institution, 2008a). A summary of Section 6.1 Cultural Resources from the Tier I Final EIS follows (see pages 99-119 of the Tier I Final EIS, which can be viewed at <http://www.nmaahceis.com/tier-i-eis>).

#### 3.3.1 What is the Area of Potential Effect (APE) for the proposed action?

The project site sits in the northeast corner of the Washington Monument Grounds, which is defined by 17<sup>th</sup> Street to the west, 14<sup>th</sup> Street to the east, Constitution Avenue to the north, and the Tidal Basin to the south. Due to the prominent location of the project site, a broad APE was defined to identify the historic resources potentially affected by the proposed action. The APE was developed through research and analysis, site visits, photographic studies, and discussions with consulting parties as part of the Tier I EIS process. At the beginning of the Tier II EIS process, the Section 106 consulting parties confirmed that the Tier I APE is appropriate for this Tier II EIS. Figure 3.3.1 shows the boundaries for the APE.

The historically significant resources contained within the APE include buildings, streets, historic districts, landscape features, monuments and memorials, and elements of the L'Enfant and McMillan plans, as identified by the National Register of Historic Places (NRHP), the National Historic Landmarks Program, and the District of Columbia Inventory of Historic Sites. Resources consulted in the identification process included NRHP nominations and determinations of eligibility (DOE) for properties within the APE, Historic American Buildings Survey (HABS) and Historic American Engineering Record (HAER) documentation, cultural resource plans produced for the White House Precinct, cultural landscape inventories and cultural landscape reports for the historic Mall (hereafter referred to as the Mall) and the Washington Monument

Grounds that were produced by National Park Service (NPS), and multiple other records (Smithsonian Institution, 2008a).<sup>1</sup>



**Figure 3.3.1 Area of Potential Effect**

*Source: Smithsonian Institution, DCHPO, and Robinson & Associates, 2008*

---

<sup>1</sup> As defined by the National Mall Plan, the historic Mall is bound by Constitution and Pennsylvania avenues on the north, 1<sup>st</sup> Street on the east, Independence and Maryland avenues on the south, and 14<sup>th</sup> Street on the west.



As previously determined by the Smithsonian Institution, and agreed upon by District of Columbia Historic Preservation Office (DCHPO) and the Advisory Council on Historic Preservation (ACHP), the proposed action would cause adverse effects on certain historically significant properties, districts, and city plans (Smithsonian, 2008a). The historic structures, buildings, monuments, and districts potentially affected by the proposed action are illustrated in a series of three maps: “Plan of the City of Washington: Contributing Streets, Reservations, and Appropriations,” “Historic Districts and Contributing Properties,” and “Individually Listed Historic Properties” (see Figures 3.3.2 through 3.3.4).

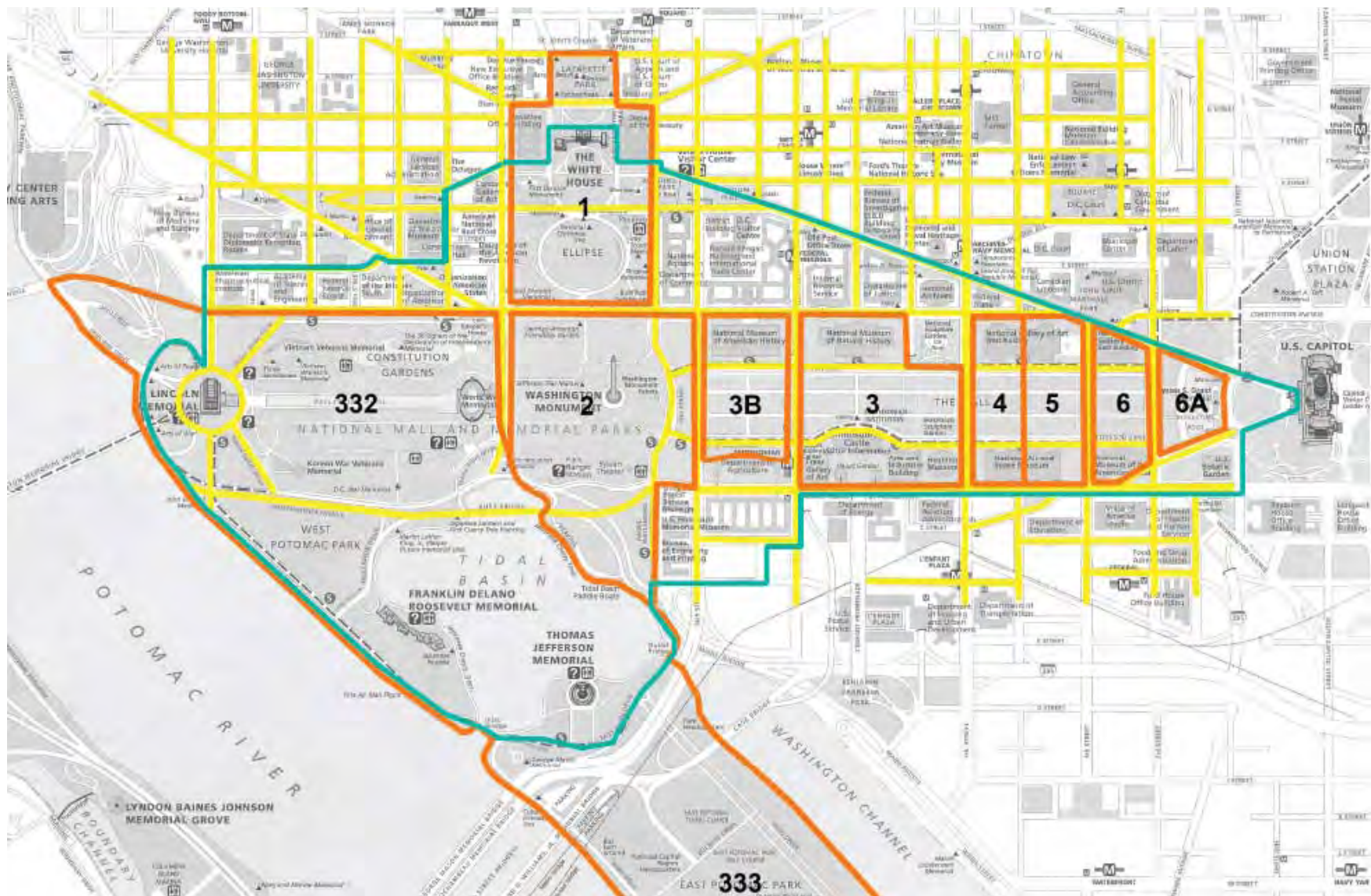
Figure 3.3.2 relies on the draft National Historic Landmark nomination “The Plan of the City of Washington,” which is currently held at the DCHPO. This document provides the current definitions for the significance of the historic plan of the city of Washington as it took physical shape during the period of significance (1791-1942). The original comprehensive plan of Washington was designed by Peter (Pierre) Charles L’Enfant in 1791 as the site of the Federal City. It was developed throughout the nineteenth century and substantially amplified in 1901-02 by the McMillan Commission (officially, the Senate Park Commission). Original appropriations and reservations were delineated in both the L’Enfant and McMillan Commission Plans as defining characteristics of the city and retain significance as major features of the city plan. Streets and diagonal avenues are also identified as significant resources and serve as important axes, cross axes, and boundaries within the plans (Smithsonian Institution, 2008a).

Figure 3.3.3 identifies historic districts within the APE and the contributing properties therein as determined by the NRHP, the National Historic Landmark Program, and the District of Columbia Inventory of Historic Sites. The historic districts within the APE include:

- National Mall Historic District [NR, DC Inventory];
- Northwest Rectangle Historic District [Determined Eligible for NR];
- Seventeenth Street Historic District [DC Inventory];
- Pennsylvania Avenue National Historic Site [NHS, DC Inventory];<sup>2</sup>
- Federal Triangle Historic District [DC Inventory, within the Pennsylvania Avenue NHS];
- West Potomac Park Historic District [NR, DC Inventory]; and
- East Potomac Park Historic District [NR, DC Inventory].

Figure 3.3.4 depicts the resources that are individually listed in or eligible for the NRHP, designated as National Historic Landmarks, or listed in the District of Columbia Inventory of Historic Sites. Currently, the Washington Monument is listed as an individual National Register property with boundaries encompassing the entire Grounds. Some of the most prominent resources include the Mall, Federal Triangle (including the Herbert C. Hoover Commerce building that is adjacent to the NMAAHC site), the White House Precinct, and the Ellipse (Smithsonian Institution, 2008a).

<sup>2</sup> Due to the large number of contributing resources within the Pennsylvania Avenue NHS (over 100), only those contributing features that were considered within reasonable proximity to the NMAAHC site were included in this study.



**Figure 3.3.2 Plan of the City of Washington: Contributing Streets, Reservations, and Appropriations**  
 Source: Tier I Final EIS (Smithsonian Institution, 2008a)

## Plan of the City of Washington: Contributing Streets, Reservations, and Appropriations



### Streets

2nd Street	21st Street
3rd Street	20th Street
4th Street	22nd Street
6th Street	23rd Street
7th Street	Constitution Avenue
8th Street	Independence Avenue
9th Street	Pennsylvania Avenue
10th Street	Virginia Avenue
11th Street	New York Avenue
12th Street	Indiana Avenue
13th Street	Maryland Avenue
14th Street	Madison Drive
15th Street	Jefferson Drive
16th Street	Henry Bacon Drive
17th Street	Daniel French Drive
18th Street	Lincoln Memorial Circle
19th Street	

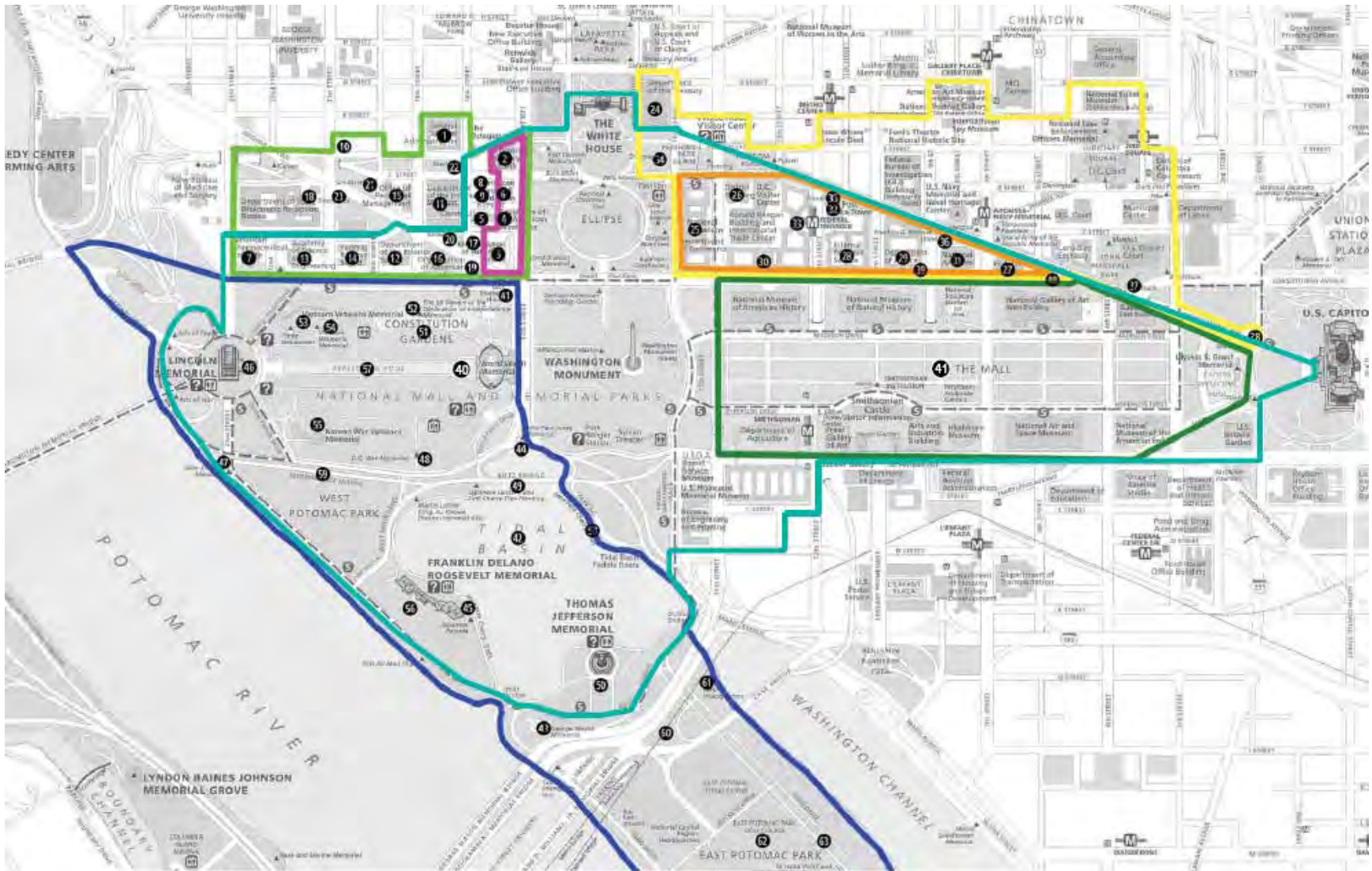


### Appropriations and Reservations

- Reservation No. 1 : President's Park (Original Appropriation No. 1)
- Reservation No. 2 : Washington Monument Grounds (Original Appropriation No. 3, Reservation No. 2)
- Reservation Nos. 3, 3B, 4, 5, 6, and 6A: National Mall (Part of Original Appropriation No. 2)
- Reservation No. 332: West Potomac Park
- Reservation No. 333: East Potomac Park



### Area of Potential Effect



**Figure 3.3.3 Historic Districts and Contributing Properties**  
 Source: Tier I Final EIS (Smithsonian Institution, 2008a)

**National Mall Historic District**

[National Register, October 15, 1966; DC Landmark, November 8, 1964]

**Northwest Rectangle Historic District**

[Determined Eligible for the National Register]

*Buildings*

1. Old Department of the Interior Building (GSA)
2. Corcoran Gallery of Art
3. Pan American Union
4. DAR Memorial Continental Hall
5. DAR Constitution Hall
6. American National Red Cross
7. American Institute of Pharmacy
8. American National Red Cross Administration Building
9. American National Red Cross Office
10. American Red Cross DC Chapter House
11. Department of the Interior Building
12. Department of the Interior South Building
13. National Academy of Sciences
14. Federal Reserve Board Building
15. Office of Personnel Management
16. Pan American Union Annex
17. Van Ness House Stable
18. War Department

*Statuary*

19. Jose Artigas Statue
20. Simon Bolivar Statue
21. General Jose de San Martin Statue
22. Major General John A. Rawlins Statue
23. Reproduction of Discus Thrower

**Seventeenth Street Historic District**

[DC Inventory, March 7, 1968]

2. Corcoran Gallery of Art (see individual listing)
3. Pan American Union (see individual listing)
4. DAR Memorial Continental Hall (see individual listing)
6. American National Red Cross

**Area of Potential Effect****Pennsylvania Avenue National Historic Site\***

[NHS, October 15, 1966; DC Inventory, June 19, 1973]

*Buildings*

24. Department of Treasury
25. Department of Commerce, Federal Triangle
26. District Building, Federal Triangle
27. Federal Trade Commission, Federal Triangle
28. Internal Revenue Service Building, Federal Triangle
29. Department of Justice, Federal Triangle
30. Labor Department, Interstate Commerce and Departmental Auditorium, Federal Triangle
31. National Archives, Federal Triangle
32. Old Post Office Building, Federal Triangle
33. U.S. Post Office Building, Federal Triangle

*Statuary/Memorials/Monuments*

34. Sherman Statue, Sherman Park
35. Benjamin Franklin Statue, Pennsylvania & 12<sup>th</sup> St
36. Franklin Delano Roosevelt Memorial, Market Sq Park
37. General George C. Meade Memorial, Meade Plaza
38. Peace Monument, Pennsylvania Avenue & 1st Street
39. Captain Nathan Hale Statue, Department of Justice

*Fountains*

40. Andrew W. Mellon Memorial Fountain, Mellon Park

**Federal Triangle Historic District**

[DC Inventory, March 7, 1968; within Pennsylvania Avenue NHS]

*Buildings*

25. Department of Commerce
26. District Building (see individual listing)
27. Federal Trade Commission
28. Internal Revenue Service
29. Department of Justice
30. Labor Department, ICC, & Departmental Auditorium
31. National Archives (see individual listing)
32. Old Post Office Building (see individual listing)
33. U.S. Post Office Department (Ariel Rios)

*Statuary*

39. Captain Nathan Hale Statue

**West Potomac Park Historic District**

[National Register, November 30, 1973 (revised November 11, 2001); DC Inventory, November 8, 1964]

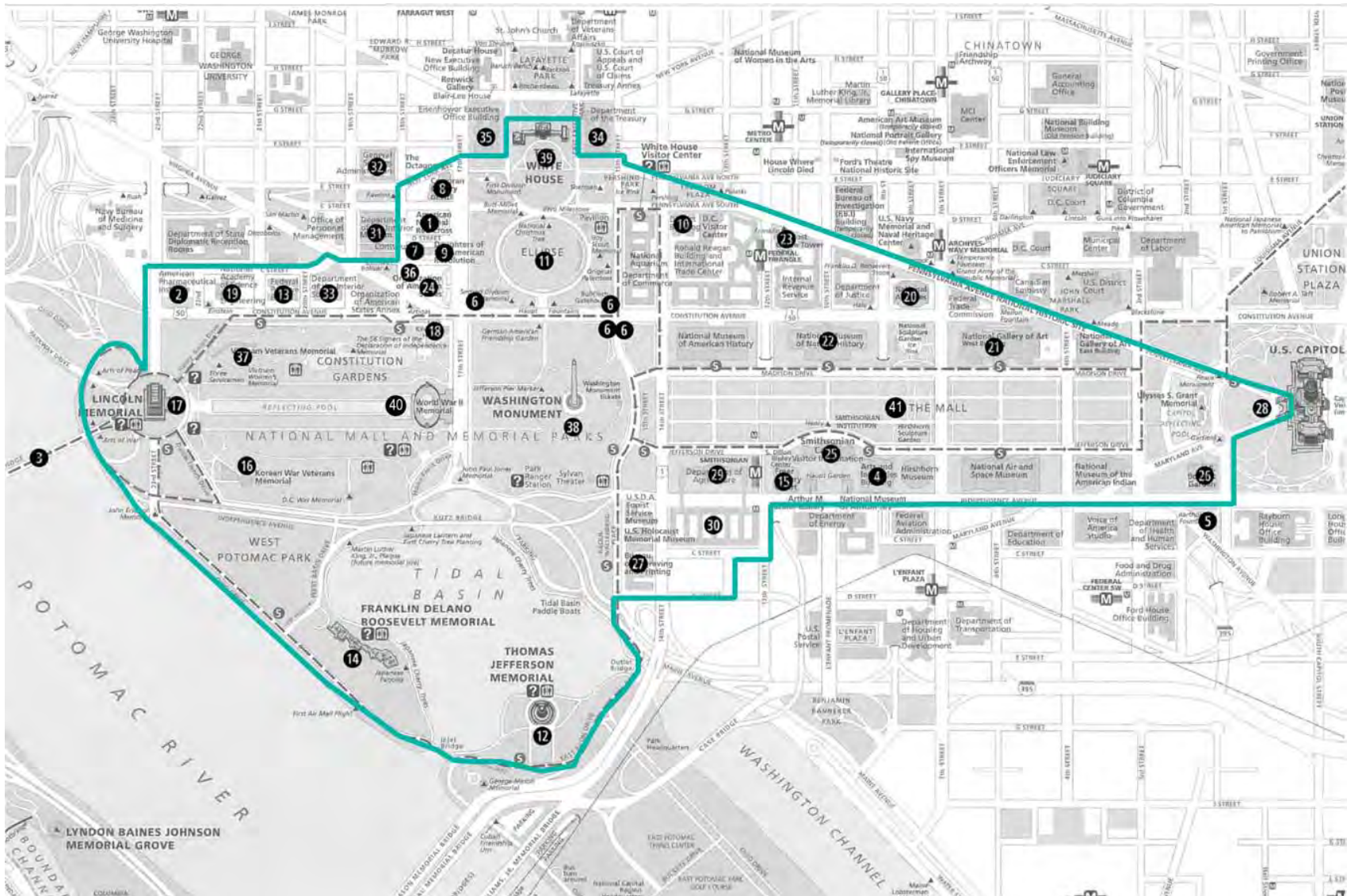
41. Lock Keeper's House (see individual listing)
42. Tidal Basin
43. Number 4 Fountain
44. John Paul Jones Monument
45. Japanese Cherry Trees and Statuary
46. Lincoln Memorial Grounds (see individual memorial listing)
47. John Ericsson Monument
48. DC WWI Memorial
49. Kutz Bridge & Independence Avenue Extension
50. Jefferson Memorial Grounds (see individual memorial listing)
51. Constitution Gardens
52. 56 Signers Memorial
53. Vietnam Veterans Memorial (see individual memorial listing)
54. Vietnam Women's Memorial
55. Korean War Memorial (see individual memorial listing)
56. Franklin Delano Roosevelt Memorial (see individual memorial listing)
57. Reflecting Pool
58. Stone Seawalls
59. Independence Avenue Extension

**East Potomac Park Historic District**

[National Register, November 30, 1973 (revised November 11, 2001); DC Inventory, November 8, 1964]

60. Potomac Railroad Bridge
61. U.S. Engineers Storehouse (900 Ohio Drive, SW)
62. Field House, Golf Course, Mini Golf Course
63. Ohio Drive, SW

\* The Pennsylvania Avenue National Historic Site contains approximately 111 contributing sites, buildings, structures, and objects. For reasons of clarity, the only historic resources that will be noted in this list and on corresponding maps will be those that could be significantly impacted by the area of potential affect.



**Figure 3.3.4 Individually Listed Historic Properties**  
 Source: Tier I Final EIS (Smithsonian Institution, 2008a)

**Individually Listed Historic Properties**

[NHL] National Historic Landmark

[NR] National Register of Historic Places

[DC] District of Columbia Inventory of Historic Sites

1. American National Red Cross	[NHL, NR, DC]	22. National Museum of Natural History	[DC]
2. American Pharmaceutical Institute	[NR, DC]	23. Old Post Office Building	[NR, DC]
3. Arlington Memorial Bridge	[NR, DC]	24. Pan American Union	[NR, DC]
4. Arts and Industries Building	[NHL, NR, DC]	25. Smithsonian Institution Building (Castle)	[NHL, NR, DC]
5. Bartholdi Fountain	[NR Exempt, DC]	26. U.S. Botanic Gardens	[DC]
6. Bulfinch Gatehouse and Gateposts	[NR, DC]	27. U.S. Bureau of Engraving and Printing	[DC]
7. Constitution Hall (DAR)	[NHL, NR, DC]	28. U.S. Capitol and Grounds	[NHL, NR, DC]
8. Corcoran Gallery of Art	[NHL, NR, DC]	29. U.S. Department of Agriculture (Admin Bldg)	[NR, DC]
9. DAR Memorial Continental Hall	[NHL, NR, DC]	30. U.S. Department of Agriculture South Building	[NR Eligible]
10. District of Columbia District Building	[NR, DC]	31. U.S. Department of the Interior (New Interior Bldg)	[NR, DC]
11. The Ellipse (President's Park South)	[NR]	32. U.S. Department of the Interior Offices	[NR]
12. Jefferson Memorial Bridge	[NR, DC]	33. U.S. Department of the Interior South Building	[NR Eligible]
13. Federal Reserve Board Building	[DC]	34. U.S. Department of the Treasury Building	[NHL]
14. Franklin Delano Roosevelt Memorial	[NR]	35. U.S. State, War, and Navy Building	[NHL, NR, DC]
15. Freer Gallery of Art	[NR, DC]	36. Van Ness House Stables	[DC]
16. Korean War Veterans Memorial	[NR]	37. Vietnam Veterans Memorial	[NR]
17. Lincoln Memorial	[NR, DC]	38. Washington Monument and Grounds	[NR, DC]
18. Lock Keeper's House	[NR, DC]	39. White House and Grounds	[NHL, NR, DC]
19. National Academy of Science and Engineering	[NR, DC]	40. WWII Memorial	
20. National Archives	[NR, DC]	41. The Mall	[NR,DC]
21. National Gallery of Art West Building	[DC]		

**Area of Potential Effect**

Additionally, as part of the Tier I EIS process, the Smithsonian Institution consulted with interested parties, including NCPC, CFA, DCHPO, and ACHP to identify and analyze the character of cultural and historic properties on and near the project site. As a result of this consultation, a set of design principles (see Appendix A) was established to summarize the design character of the project site, the Washington Monument Grounds, the National Mall, and the surrounding urban context and to articulate parameters for avoiding or minimizing the adverse effects of the alternatives.<sup>3</sup>

### 3.3.2 How are historic resources evaluated?

In order to evaluate the effects of the proposed action on the Washington Monument Grounds and on surrounding historic resources, it is necessary to understand the primary character-defining features of these resources. As discussed in the Tier I Final EIS (Smithsonian Institution, 2008a), the NPS's *Guide to Cultural Landscape Reports: Contents, Process, and Techniques* (1999), organizes character-defining features into seven main categories that include, but are not limited to:

**Views and Vistas:** Features that create or allow a range of vision which can be natural or designed and controlled.

**Spatial Organization:** The arrangement of elements creating the ground, vertical, and overhead planes that define and create spaces.

**Land Use:** Organization, form, and shape the landscape in response to land use.

**Circulation:** Spaces, features, and materials that constitute systems of movement.

**Topography:** Three-dimensional configuration of the landscape surface characterized by features and orientation.

**Vegetation:** Indigenous or introduced trees, shrubs, vines, ground covers, and herbaceous materials.

**Buildings and Structures:** Three-dimensional constructs such as houses, barns, garages, stables, bridges, and memorials.

Descriptions of the character-defining features of the Washington Monument Grounds, the Mall, and the project site's surrounding urban context are provided below.

#### Views and Vistas

A defining aspect of the Washington Monument Grounds is the relationship between the Washington Monument and its surrounding historic buildings and sites, and the views and vistas to and from these sites and structures.

The creation of planned views and vistas ("reciprocity of site") between and among notable sites was an important design principle of both the L'Enfant and McMillan Commission Plans. Important views and vistas of the plans include vistas within the National Mall, distant views from higher locations to the monumental core, panoramic views that open and widen on the approach to the

---

<sup>3</sup> As defined by the National Mall Plan, the National Mall is a large-scale cultural landscape made up of smaller landscapes such as Union Square, the Mall, the Washington Monument Grounds, the Thomas Jefferson Memorial, and Constitution Gardens.



Washington Monument Grounds from the Mall and the Ellipse, as well as important non-cardinal views from the Federal Triangle, principal street crossings, and Mall pathways.

The Mall is defined by the grand vista between the U.S. Capitol and the Washington Monument. The buildings, walks, and gardens along the Mall reinforce this visual corridor. The vista was an integral component of L'Enfant's Plan for a grand avenue connecting the U.S. Capitol with the planned monument to George Washington. The McMillan Commission Plan retained the axial promenade and east-west vista and reinforced the visual corridor through landscaping – primarily the lawn panels and rows of elm trees – and the symmetrical placement of institutional buildings on either side of the central corridor of space. In addition to the vista from the U.S. Capitol to the Washington Monument, significant views within the Mall include views to the elms from the walks and grass panels, views to the building facades from the Mall, views up cross streets, and views from the Mall to Union Square.

Character-defining views and vistas of the Washington Monument Grounds include: views from within the Federal Triangle, the city, and from the surrounding region to the Monument; views from the top of the Monument to the surrounding city and its important sites; vistas from the Washington Monument Grounds to the Lincoln Memorial, White House, Thomas Jefferson Memorial, and the U.S. Capitol; vistas of the Washington Monument from the Lincoln Memorial, White House, Thomas Jefferson Memorial, and the U.S. Capitol; screened views of Washington Monument Grounds features; and axial views through the Jefferson Pier to the White House and Thomas Jefferson Memorial.

Additional important views and vistas potentially affected by the proposed action were identified through the Section 106 consultation process. These views include: 1) pedestrian-level view from the Washington Monument Grounds to the NMAAHC site looking northeast toward the Federal Triangle; 2) pedestrian-level view across the site looking southwest from the Federal Triangle (at the northeast corner of 14<sup>th</sup> Street and Constitution Avenue) to the Washington Monument; 3) pedestrian level view to the NMAAHC site from the Ellipse on the north side of Constitution Avenue looking east; 4) pedestrian-level view from the Mall on Madison Drive in front of NMAH looking west toward the NMAAHC site; 5) aerial view from the top of the Washington Monument looking northeast across the NMAAHC site; 6) aerial view to the site and the Washington Monument Grounds from the Old Post Office Tower; and 7) vista to the Washington Monument Grounds from the center panel of the Mall at 12<sup>th</sup> Street looking west. Figure 3.3.5 shows the locations of the key views. The existing view and the photo simulations are shown in Section 3.3.8



Legend

- 1) View from the Washington Monument Grounds looking northeast
- 2) View from the Federal Triangle at 14<sup>th</sup> Street and Constitution Ave looking southwest
- 3) View from the Ellipse at Constitution Ave looking east
- 4) View from the Mall on Madison Drive looking west
- 5) View from the top of the Washington Monument looking northeast
- 6) View from the top of the Old Post Office Tower looking southwest
- 7) View from the Mall looking west

**Figure 3.3.5 Locations of Key Views**

*Source: AECOM, 2010*

## **Spatial Organization**

The spatial organization of the Plan of the City of Washington is defined by a Baroque structure of radiating avenues superimposed on a grid of orthogonal streets. This meeting of diagonal and orthogonal thoroughfares creates a system of parks, streets, avenues, open spaces, and vistas that give physical shape to the design of the National Capital.

The spatial organization of the Mall is defined by the channel of space between the U.S. Capitol and the Washington Monument, which is framed by lines of elm trees. This main spatial volume opens up and expands at both ends, into Union Square on the east and the Washington Monument Grounds on the west.

The Washington Monument provides the central focus for the spatial organization of the Washington Monument Grounds, which itself serves as the center point of the cross-axis of Washington's monumental core.

## **Land Use**

The land uses most significant to the Washington Monument Grounds and the Mall are commemorative, public gathering, recreation, and visitor service. These uses reflect the central importance of the Mall in the civic and daily life of the Nation's Capital.

## **Circulation**

Important circulation features of the historic L'Enfant and McMillan Commission Plans include all of the streets within the L'Enfant city (i.e. the portion of the city laid out by L'Enfant) that were specifically planned by, or grew directly out of, the historic plans.

The circulation features that contribute to the significance of the Mall include Jefferson Drive, Madison Drive, 3<sup>rd</sup> Street, 4<sup>th</sup> Street, 7<sup>th</sup> Street, 14<sup>th</sup> Street, the North Vista Walk (formerly Washington Drive), the South Vista Walk (formerly Adams Drive), the sidewalks along Madison Drive and Jefferson Drive, and the cross-axial walks.

Significant circulation features of the Washington Monument Grounds include: perimeter road corridors, including Constitution Avenue and 14<sup>th</sup> Street; Independence Avenue; Maine Avenue; and the walks along perimeter roads and the Tidal Basin. Although the existing pedestrian walks through the Washington Monument Grounds do not contribute to the significance of the Grounds, they are compatible with the curvilinear configuration of historic circulation.

## **Topography**

The plan of the historic city of Washington was laid out in a shallow topographic bowl at the confluence of the Potomac and Anacostia rivers. The riverbanks defined the southeastern and southwestern edges of the city; on the northeast and northwest, a man-made boundary tracked the irregular contour at the base of a natural escarpment.

The topography of the Mall is generally level. The west end slopes down to 14<sup>th</sup> Street and is particularly steep at the northwest corner. The land north of Madison Drive slopes steeply down to Constitution Avenue, and NMAH and NMNH are built into the slope. A similar grade change characterizes the northeast corner of the Washington Monument Grounds.

The topography of the Washington Monument Grounds is defined by the mound, or knoll, upon which the Washington Monument stands. Other character-defining features of the Washington Monument Grounds include the peripheral "flats" of the north Monument Grounds, the flood control levee of the northwest Monument Grounds, the berm east of the Monument Lodge, and the Potomac Flats of the south Monument Grounds.

### **Vegetation**

The vegetation of the Mall is primarily comprised of open lawns, American elm trees – many of which date from the original planting of the elms in 1935 – and several bald cypress trees, retained from the Mall's earlier picturesque landscape. The center lawn panels, framed by the elms, create the Mall vista. These elements – the grass panels, the tree panels, and the elms – are contributing elements of the Mall landscape.

The most significant vegetative features of the Washington Monument Grounds are the open lawns that define the ground plane, the street trees that delineate the perimeter, and the groves of cherry and other canopy trees that are generally located in the corners of the Grounds.

### **Buildings and Structures**

Significant buildings and structures in the vicinity of the project site include the White House, the museums along the Mall, and the Federal Triangle buildings. The Federal Triangle is an area with a distinct architectural image characterized by relatively uniform massing, building height, and other features. The Federal Triangle's assemblage of buildings creates a strongly defined architectural edge and backdrop along the north side of Constitution Avenue. The Herbert C. Hoover Commerce building is the closest Federal Triangle building to the site.

The buildings and structures integral to the significance of the Washington Monument Grounds include the Washington Monument, the Monument Lodge, the Survey Lodge, and the Jefferson Pier. Other structures that contribute to the integrity of the Washington Monument Grounds include the Bulfinch Gateposts, which flank the 15<sup>th</sup> Street entrance to the Grounds, and the Independence Avenue overpass bridge. The gatepost on the southeast corner of 15<sup>th</sup> Street and Constitution Avenue is located within the project site.

### **Section 106 Consultation**

The analysis of concept alternatives and their effect on cultural resources used a matrix format which will lead to the identification of a culturally preferred alternative. The matrix, a product of the Section 106 Consultation Parties, is found in Appendix 9.3.

### 3.3.3 How would the historic resources within the APE be affected?

This section analyzes the potential effects of the proposed action on historic resources within the APE and evaluated in terms both short-term (lasting through construction or less than one year) and long-term (lasting more than one year) effects. In the short term, the effects would be related to construction activity, while long-term effects would relate directly to loss or alteration of the character-defining features addressed in the following analysis.

The thresholds used for analyzing the intensity of effects are defined as follows:<sup>4</sup>

**No Effect:** The proposed action would not affect overall integrity or affect the character-defining feature(s) of a National Register, National Historic Landmark, or District of Columbia Inventory of Historic Sites eligible/listed property within the APE.

**Minor Effect or No Significant Effect:** The effect would be minor if the proposed action does not substantially alter primary character-defining feature(s) of a National Register eligible/listed property, including but not limited to views and vistas, spatial organization, land use, circulation, topography, vegetation, and buildings and structures. The effect would be minor if it alters character-defining features in a limited way. By nature, an accumulation of many minor effects would be adverse.

**Moderate Significant Effect:** The effect would be apparent and would diminish overall integrity or would alter a character-defining feature(s) of a National Register, National Historic Landmark, or District of Columbia Inventory of Historic Sites eligible/listed property.

**Major Significant Effect:** The effect would be serious and would greatly diminish overall integrity or would greatly alter a character-defining feature(s) of a National Register, National Historic Landmark, or District of Columbia Inventory of Historic Sites eligible/listed property.

#### No Action Alternative

With the No Action Alternative, the proposed action would not take place. There would be no new construction on the project site and the site would remain open space as part of the Washington Monument Grounds. No short- or long-term adverse effect on historic resources would occur because there would be no changes to the site. (The concession trailer, trees, and walkways would remain.)

<sup>4</sup> The thresholds and definitions used for assessing effects follows the methodology used in the NMAAHC Tier I Final Environmental Impact Statement (FEIS).

**Action Alternative 1: Plinth Concept**

The Plinth Alternative would feature a cantilevered rectilinear “plinth” element below a two-tiered Corona. The Plinth Alternative would be positioned north of the setback established by the McMillan Plan. The Corona would align with the primary mass of NMAH, while the south edge of the cantilevered plinth would align with the lower level elements of other museums on the north side of the Mall. The exterior skin of the Corona would consist of bronze-clad panels while the plinth would be faced with stone and the base would be glazed. The Plinth Alternative would have a footprint area of 85,804 square feet and measure, from a future average site elevation of 13 feet, approximately 118 feet msl to the top of the Corona and 134 feet 6 inches msl to the top of the penthouse. The landscape treatment of the Plinth Alternative would include a planted water feature and two sunken courtyards at the north entry, a pedestrian path along 15<sup>th</sup> Street, and a terraced amphitheater and shallow reflecting pool at the south (primary) entrance. Exterior building illumination would consist of lighting for outdoor gathering and circulation spaces, underwater light fixtures for water elements, and accent lighting for special pool surfaces and architectural features.

*Short-Term Effects*

Short-term effects on the project site within the Washington Monument Grounds would include the loss of the existing turf and most of the existing trees. Additional short-term effects would include excavation, materials stockpiling, construction staging, and other construction activities. Short-term effects on the Mall and the Washington Monument Grounds would include the loss of physical and visual access from and through the project site. Some

construction-related activity would be disruptive to activities on adjacent destinations including the Mall and the Washington Monument Grounds. Overall, the Plinth Alternative would have moderate, significant, adverse short-term effects on the Washington Monument Grounds and the Mall.

*Long-Term Effects*

A new above-grade structure on the project site would impact the multiple historic resources on and within proximity to the Washington Monument Grounds. The long-term effects of the Plinth Alternative are discussed below.

Views and Vistas

As stated in the Tier I Final EIS, “significant effects on the character-defining features of historic resources within the APE would result from obstructed or altered views and vistas” (Smithsonian Institution, 2008a). The views and vistas identified in this section as significant to the historic character of the Washington Monument Grounds, the Mall, the surrounding historic buildings and districts, as well historic L’Enfant and McMillan plans, were compiled and amended through a series of Section 106 consultation meetings and with the input from NCPC and CFA staff.

The height and massing of the Plinth Alternative would obstruct or impede key views to and from the Washington Monument. The Plinth Alternative would also restrict key views of surrounding urban features, such as the Federal Triangle. The Plinth Alternative would bring the existing row of museums on the north side of the Mall closer to the Washington Monument, thereby diminishing the monument’s visual prominence as a central organizing feature

within its setting. Primary threshold views within the Washington Monument Grounds were identified through the Section 106 consultation process. These include both pedestrian-level and aerial views, as discussed below.

- The location and mass of the Plinth Alternative would alter multi-directional, long, panoramic views within the Washington Monument Grounds. Thus, the Plinth Alternative would have a major, significant, adverse effect on long views within the Washington Monument Grounds.
- The Plinth Alternative would obstruct views of several historic buildings within the Federal Triangle including the Old Post Office Tower, the Environmental Protection Agency Headquarters (formerly the Labor Building and the Interstate Commerce Commission Building), and the Mellon Auditorium. The southern extension of the plinth would conceal a portion of the west facade of NMAH. The perceived distance to the row of museum buildings along the Mall would be reduced, with the Plinth Alternative becoming the closest building to the Washington Monument in this direction. Thus, the Plinth Alternative would have a major, significant, adverse effect on pedestrian-level views from the Washington Monument Grounds looking northeast (see Figure 3.3.6).
- From the eastern edge of the Washington Monument Grounds, the Plinth Alternative would block views of the south elevation of the Herbert C. Hoover Commerce building including its distinctive portico and tile roof. Thus, the Plinth Alternative would have a major, significant, adverse effect on the view looking north along 15<sup>th</sup> Street.

Existing View



Proposed View



**Figure 3.3.6 Plinth Alternative: View from the Washington Monument Grounds Looking Northeast**

*Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010*

In addition to the views from within the Washington Monument Grounds, the Plinth Alternative would affect the multi-directional panorama views from historic resources in the project vicinity.

- The location and massing of the Plinth Alternative would block views of the lower half and base of the Washington Monument and a large portion of the Washington Monument Grounds when viewed from the Federal Triangle at the corner of 14<sup>th</sup> Street and Constitution Avenue, which is widely perceived as a “gateway” view. The Plinth Alternative would block views of the Mall from Constitution Avenue near 15<sup>th</sup> Street adjacent to the north edge of the Washington Monument Grounds. Thus, the Plinth Alternative would have a major, significant, adverse effect on important non-cardinal views from principal corner street crossings adjacent to historic resources (see Figure 3.3.7 and Figure 3.3.8).
- The Plinth Alternative would eliminate a significant portion of the open space of the Washington Monument Grounds and constrict the wide-angle panoramic view of the Grounds that opens up from the Mall. The Plinth Alternative, however, would have advantage over the Plaza and Refined Pavilion Alternatives in that the Corona would not project as far south on the site; therefore, there would be less of an adverse effect on the panoramic views from the Mall. Thus, the Plinth Alternative would have a major, significant, adverse effect on the panoramic view that opens and widens on the approach to the Washington Monument Grounds from the Mall.

Existing View



Proposed View



**Figure 3.3.7 Plinth Alternative: View from the Federal Triangle at 14<sup>th</sup> Street and Constitution Avenue Looking Southwest**  
 Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010



- Although the Plinth Alternative would appear distant as viewed from the Ellipse (see Figure 3.3.8), the oblique angle of view would create a wide frontage within the panoramic view and would be seen in direct relation to the Washington Monument, thereby diminishing its prominence. The height of the structure would also project vertically above the predominant tree line. Thus, the Plinth Alternative would have a moderate, significant, adverse effect on the panoramic view that opens and widens on the approach to the Washington Monument Grounds from the Ellipse.

Existing View



Proposed View



**Figure 3.3.8 Plinth Alternative: View from the Ellipse at Constitution Avenue Looking East**

*Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010*

- The Plinth Alternative would intrude into the pedestrian-level views of the Washington Monument Grounds from pathways along the western end of the Mall and would be seen in direct relation to the Washington Monument, thereby diminishing its prominence. The location of the Plinth Alternative would alter the established end point of the row of museum buildings along the Mall. The height of the Plinth Alternative would project vertically above the predominant tree line defining the eastern edge of the Washington Monument Grounds. Thus, the Plinth Alternative would have a major, significant, adverse effect on important non-cardinal views from historic Mall pathways (Figure 3.3.9).

Existing View



Proposed View



**Figure 3.3.9 Plinth Alternative: View from the Mall on Madison Drive Looking West**

*Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010*

The Plinth Alternative would also affect long views and vistas to and from Washington Monument Grounds and the surrounding historic buildings and features:

- Viewed from the top of the Washington Monument and from the air, the Plinth Alternative would be a prominent new feature on the landscape. Located along Constitution Avenue between 14<sup>th</sup> and 15<sup>th</sup> Streets, the Plinth Alternative would eliminate a significant portion of the historic open space of the Washington Monument Grounds and would alter the visual boundaries of the northeast corner of the Grounds. Additionally, the formal, rectilinear approach to the landscape design and the scale and character of water elements within it would depart from the informality and picturesque quality of the Washington Monument Grounds. Thus, the Plinth Alternative would have a major, significant, adverse effect on distant views of the Washington Monument Grounds from locations such as the top of Washington Monument and the air (see Figure 3.3.10).

Existing View



Proposed View



**Figure 3.3.10 Plinth Alternative: View from the Top of the Washington Monument Looking Northeast**

*Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010*

- The height of the Plinth Alternative would position the roofline above the visible point at which the base of the Washington Monument meets the ground, altering the existing view from the Old Post Office Tower of the entire Monument. Thus, the Plinth Alternative would have a moderate, significant, adverse effect on distant views from the Old Post Office Tower (see Figure 3.3.11).

Existing View



Proposed View



**Figure 3.3.11 Plinth Alternative: View from the Top of the Old Post Office Tower Looking Southwest**

*Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010*

- The location of the Plinth Alternative within the site and the massing of the Corona and plinth would not substantially alter the key vistas looking east to west along the Mall from the center panels. Thus, the Plinth Alternative would have a minor adverse effect on long and mid-range vistas down the Mall looking west (see Figure 3.3.12).
- Viewed from Arlington Cemetery, the distinction between the Mall and the Washington Monument Grounds would be difficult to distinguish, and the Plinth Alternative would appear as a part of the general building massing in the area. Thus, the Plinth Alternative would have no effect on distant views from Arlington Cemetery.

Although the exterior night lighting of the Plinth Alternative would be designed to complement and not compete with nearby landmarks, the lighting – including exterior lighting of outdoor gathering and circulation spaces, water elements, pool surfaces, and architectural features – would illuminate a portion of the Washington Monument Grounds previously unlit at night (except for perimeter street lights). This would alter multiple nighttime views of the Washington Monument Grounds and detract from the prominence of the Washington Monument. Thus, the Plinth Alternative would have a major, significant, adverse effect on views of the Washington Monument Grounds at night.

Existing View



Proposed View



**Figure 3.3.12 Plinth Alternative: View from the Mall Looking West**

*Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010*

### Spatial Organization

Due to the location, height, and massing of the structure, the Plinth Alternative would have the following effects on the spatial organization of the Washington Monument Grounds and the Mall:

- The Plinth Alternative would eliminate a significant portion of the historic open space of the Washington Monument Grounds and diminish the prominence of the Washington Monument as the central organizing feature of the Grounds. The Plinth Alternative would also alter the spatial conception of the historic boundaries of the Washington Monument Grounds by extending the existing row of museums along the Mall into the Washington Monument Grounds. As a result, the Plinth Alternative would have a major, significant, adverse effect on the spatial organization of the Washington Monument Grounds (Reservation No. 2).
- Although located outside the formal boundaries of the Mall, the project site would be perceived as an extension of the museum buildings located along its north side and would serve to reinforce the channel of space and the vista between the U.S. Capitol and the Washington Monument. The Plinth Alternative, which would be one-dimensional and directional (axial north-south), would be inconsistent with the existing east-west axial arrangement of the museum buildings along the north side of the Mall and would not recognize the Mall's spatial organization. As a result, the Plinth Alternative would have a moderate, significant, adverse effect on the larger spatial organization of the Mall (Reservation Nos. 3, 3B, 4, 5, 6, and 6A).

Due to the location, height, and massing of the structure, the Plinth Alternative would have the following effects on the spatial organization of the monumental core:

- The Plinth Alternative would be located within a "hinge" site where the surrounding frame of buildings along the Mall and within the surrounding urban context of the Federal Triangle reaches its closest approach to the Washington Monument Grounds. The directional (north-south) massing of the Plinth Alternative, caused by the extensions of the plinth, would not respond to this "hinge" site and would alter the character of the Washington Monument Grounds within the larger composition of the monumental core. Thus, the Plinth Alternative would have a major, significant, adverse effect on the spatial conception of the monumental core.
- The Plinth Alternative would alter the perceived boundaries of the Mall and the Washington Monument Grounds by extending the existing row of museums into the Grounds, modifying the cross-axial spatial organization of the monumental core. As a result, the Plinth Alternative would have a major, significant, adverse effect on the cross-axial spatial organization of the monumental core, which is marked by the Washington Monument and its Grounds at the crossing.
- The location of the structure would cause a loss of symmetry of the open space elements designed to flank the Ellipse (President's Park South). As a result, the Plinth Alternative would have a moderate, significant, adverse effect on the spatial organization of the Ellipse.

In addition, the Plinth Alternative would introduce a new element into the open space of the Washington Monument Grounds (Reservation No. 2). As a result, the Plinth Alternative would have a minor adverse effect on the spatial organization of features that contribute to the historic significance of the city plan.

#### Land Use

The Plinth Alternative's large footprint would occupy a significant portion of the site, reducing the amount of public gathering and recreational space within the Washington Monument Grounds. As part of the Smithsonian Institution, NPS permitted activities would not be allowed on the NMAAHC grounds, constituting a change in the historic use of the land for expression of First Amendment freedoms. In addition, the landscape design would introduce formalized spaces and alter the traditional informal setting of the Washington Monument Grounds. As a result, the Plinth Alternative would have a major, significant, adverse effect on the established land uses of the Washington Monument Grounds. The Plinth Alternative would have no effect on the land use of the Mall or the surrounding urban context of the Federal Triangle.

#### Circulation

The Plinth Alternative would remove open circulation on a portion of the Washington Monument Grounds. The formal character of the landscape design of the Plinth Alternative would be a departure from the curvilinear configuration of historic circulation within the Washington Monument Grounds. As a result, the Plinth Alternative would have a moderate, significant, adverse effect on the distinctive circulation features of the Washington Monument Grounds.

The landscape design of the Plinth Alternative, which would feature a planted water feature and a bridge-like crossing over two sunken courtyards on the north side of the site, would not be consistent with the existing setbacks along Constitution Avenue, thereby altering its character. In addition, the service entrance along 14<sup>th</sup> Street would alter the existing character of the street. As a result, the Plinth Alternative would have a minor adverse effect on the circulation features of the historic L'Enfant and McMillan Commission Plans. The Plinth Alternative would have no effect on the circulation features of the Mall.

#### Topography

The location of the Plinth Alternative would eliminate a portion of the peripheral flats of the Washington Monument Grounds. The rectilinear treatment of the Plinth Alternative and the formal treatment of the landscape design would conflict with the naturalistic topography of the Washington Monument Grounds. As a result, the Plinth Alternative would have a minor adverse effect on the naturalistic topography of the Washington Monument Grounds and the distinct characteristics of this historic environment, including the "flats" and central mound. The Plinth Alternative would have no effect on the topography of the Mall or the surrounding urban context.

#### Vegetation

The ground-floor footprint of the Plinth Alternative would eliminate a large portion of the open lawn that defines the ground plane of the Washington Monument Grounds, and the landscape design would feature water elements and hardscape areas that would occupy additional areas of open lawn. The Plinth Alternative would also

diminish the visual impact of the street trees that delineate the perimeter of the Washington Monument Grounds. As a result, the Plinth Alternative would have a major, significant, adverse effect on the significant vegetative features of the Washington Monument Grounds. The Plinth Alternative would have no effect on the grass panels, tree panels, or the elms of the Mall.

### Buildings and Structures

The Plinth Alternative would have the following effects on the buildings and structures within the Washington Monument Grounds:

- The height, massing, and location of the Plinth Alternative would diminish the visual impact of the Washington Monument by competing for its prominence within the Washington Monument Grounds. As a result, the Plinth Alternative would have a major, significant, adverse effect on the Washington Monument.
- The location of the Plinth Alternative within the Washington Monument Grounds would alter the setting of the gatepost located on the southeast corner of 15<sup>th</sup> Street and Constitution Avenue. The northern extension of the plinth element and the ground-level build out at the northwest corner of the structure would reduce setbacks from the gatepost, further impacting its setting. As a result, the Plinth Alternative would have a major, significant, adverse effect on the Bulfinch Gateposts.
- The height and massing of the Plinth Alternative would diminish the visual impact of the Monument Lodge within

the setting of the Washington Monument Grounds. As a result, the Plinth Alternative would have a major, significant, adverse effect on the Monument Lodge.

The Plinth Alternative would have the following effects on the buildings and structures in proximity to the NMAAHC site:

- The metal skin of the Corona would have an atypical visual character that would divert attention from and alter the setting of the buildings and structures in the vicinity of the project site. As a result, the Plinth Alternative would have a minor adverse effect on the buildings and structures within the Washington Monument Grounds, Federal Triangle, and the Mall.
- The Plinth Alternative would intrude upon the setting of the Federal Triangle buildings by altering their relationship with the open space of the Washington Monument Grounds and obstructing clear views of the series of buildings that comprise the Federal Triangle. As a result, the Plinth Alternative would have a minor adverse effect on the visual impact of the Federal Triangle buildings from the Washington Monument Grounds.
- The Plinth Alternative would alter the setting of NMAH as the end piece of the row of museums along the Mall and the relationship of NMAH with the open space of the Washington Monument Grounds. As a result, the Plinth Alternative would have a minor adverse effect on the visual impact of the museum buildings along the Mall.



## **Action Alternative 2: Plaza Concept**

The Plaza Alternative would feature a two-building configuration surrounding an outdoor plaza, including a three-tiered Corona and the northern building. The northern building would align with the Herbert C. Hoover Commerce Building, while the Corona would be positioned to the south and east. The exterior skin of the Corona would consist of bronze panels while the northern building would be faced with a minimally detailed curtain wall. The Plaza Alternative would have a footprint area of 80,559 square feet, including both structures.

The Plaza Alternative would measure, from a future average site elevation of 13 feet, approximately 118 feet above sea level to the top of the Corona and 132 feet 6 inches above sea level to the top of the penthouse. The northern building would comprise three stories with a total height of 56 feet above sea level. The landscape treatment of the Plaza Alternative would create a “frame” along the northern and eastern edges of the site, directing visitor movements and views through and toward the Washington Monument Grounds. The landscape plan would include two water features, one adjacent to Madison Drive and another adjacent to Constitution Avenue, and a hardscaped outdoor public space that would bisect the two structures. Exterior building illumination would consist of lighting for outdoor gathering and circulation spaces, underwater light fixtures for water elements, and accent lighting for special pool surfaces and architectural features.

### *Short-Term Effects*

Short-term effects to the project site within the Washington Monument Grounds would include the loss of the existing turf and most of the existing trees. Additional short-term effects would include excavation, materials stockpiling, construction staging, and other construction activities. Short-term effects on the Mall and the Washington Monument Grounds would include the loss of physical and visual access from and through the project site. Some construction-related activity would be disruptive to activities on adjacent destinations including the Mall and the Washington Monument Grounds. Overall, the Plaza Alternative would have moderate, significant, adverse short-term effects on the Washington Monument Grounds and the Mall.

### *Long-Term Effects*

A new above-grade structure on the project site would impact the multiple historic resources on and within proximity to the Washington Monument Grounds. The long-term effects of the Plaza Alternative are discussed below.

### Views and Vistas

The height and massing of the Plaza Alternative would obstruct or impede key views to and from the Washington Monument. The Plaza Alternative would also restrict key views of surrounding urban features, such as the Federal Triangle. The Plaza Alternative would bring the existing row of museums on the north side of the Mall closer to the Washington Monument, thereby diminishing the monument’s visual prominence as a central organizing feature within its setting.

Primary threshold views within the Washington Monument Grounds were identified through the Section 106 consultation process. These include both pedestrian-level and aerial views, as discussed below.

- The location and mass of the Plaza Alternative would alter multi-directional, long, panoramic views within the Washington Monument Grounds. Thus, the Plaza Alternative would have a major, significant, adverse effect on long views within the Washington Monument Grounds.
- The Plaza Alternative would obstruct views of several historic buildings within the Federal Triangle including the Old Post Office Tower, the Environmental Protection Agency Headquarters (formerly the Labor Building and the Interstate Commerce Commission Building), and the Mellon Auditorium. The Plaza Alternative would have advantage over the other Plinth Alternative and the Pavilion Alternative in that it would open up the most views of the Federal Triangle. The Corona would conceal most of the west facade of NMAH. The facade of the northern building, visible from the Washington Monument Grounds, would be a significant departure from the picturesque character of the grounds. The perceived distance to the row of museum buildings along the Mall would be reduced, with the Plaza Alternative becoming the closest building to the Washington Monument in this direction. Thus, the Plaza Alternative would have a major, significant, adverse effect on pedestrian-level views from the Washington Monument Grounds looking northeast (see Figure 3.3.13).
- The Plaza Alternative would have major, significant, adverse effect on the view looking north along 15<sup>th</sup> Street.

Existing View



Proposed View



**Figure 3.3.13 Plaza Alternative: View from the Washington Monument Grounds Looking Northeast**

*Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010*

In addition to the views from within the Washington Monument Grounds, the Plaza Alternative would affect the multi-directional panoramic views from historic resources in the project vicinity.

- The location and massing of the Plaza Alternative would block views of the lower half and base of the Washington Monument when viewed from the Federal Triangle at the corner of 14<sup>th</sup> Street and Constitution Avenue; this is widely perceived as a “gateway” view. Although the landscape design of the Plaza Alternative would feature a public plaza between the support building and the Corona, the “gateway” view of the Washington Monument from 14<sup>th</sup> Street and Constitution would remain obstructed. The Plaza Alternative would block views of the Mall from Constitution Avenue near 15<sup>th</sup> Street adjacent to the north edge of the Washington Monument Grounds. Thus, the Plaza Alternative would have a major, significant, adverse effect on important non-cardinal views from principal corner street crossings adjacent to historic resources (see Figure 3.3.14).

Existing View



Proposed View



**Figure 3.3.14 Plaza Alternative: View from the Federal Triangle at 14<sup>th</sup> Street and Constitution Avenue Looking Southwest**  
*Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010*

- The Plaza Alternative would eliminate a significant portion of the open space of the Washington Monument Grounds and constrict the wide-angle panoramic view of the Grounds that opens up from the Mall. Of the four alternatives, the Plaza Alternative would have the greatest adverse effect on the wide-angle panoramic view of the Washington Monument Grounds that opens up from the Mall because the Corona would be located the farthest south on the site. Thus, the Plaza Alternative would have a major, significant, adverse effect on the panoramic view that opens and widens on the approach to the Washington Monument Grounds from the Mall.
- Although the Plaza Alternative would appear distant as viewed from the Ellipse (see Figure 3.3.15), the oblique angle of view would create a wide frontage within the panoramic view and would be seen in direct relation to the Washington Monument, thereby diminishing its prominence. The height of the structure would also project vertically above the predominant tree line. Thus, the Plaza Alternative would have a moderate, significant, adverse effect on the panoramic view that opens and widens on the approach to the Washington Monument Grounds from the Ellipse.

Existing View



Proposed View



**Figure 3.3.15 Plaza Alternative: View from the Ellipse at Constitution Avenue Looking East**  
 Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010

- The Plaza Alternative would intrude into the pedestrian-level views of the Washington Monument Grounds from pathways along the western end of the Mall (see Figure 3.3.16) and would be seen in direct relation to the Washington Monument, thereby diminishing its prominence. The location of the Plaza Alternative would alter the established end point of the row of museum buildings along the Mall. The height of the Plaza Alternative would project vertically above the predominant tree line defining the eastern edge of the Washington Monument Grounds. Thus, the Plaza Alternative would have a major, significant, adverse effect on important non-cardinal views from historic Mall pathways.

Existing View



Proposed View



**Figure 3.3.16 Plaza Alternative: View from the Mall on Madison Drive Looking West**

*Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010*

The Plaza Alternative would also affect long views and vistas to and from Washington Monument Grounds and the surrounding historic buildings and features:

- Viewed from the top of the Washington Monument and from the air, the Plaza Alternative would be a prominent new feature on the landscape. Located along Constitution Avenue between 14<sup>th</sup> and 15<sup>th</sup> Streets, the Plaza Alternative would eliminate a significant portion of the historic open space of the Washington Monument Grounds and would alter the visual boundaries of the northeast corner of the Grounds. The Plaza Alternative would have the greatest footprint of all the alternatives, and, from a distance, the Corona and the support structure would read as a single mass. The formal, rectilinear approach to the landscape design and the scale and character of water elements within it would depart from the informality and picturesque quality of the Washington Monument Grounds, further altering the view from these locations. Additionally, the landscape design of the Plaza Alternative features the most hardscape of all the alternatives. Thus, the Plaza Alternative would have a major, significant, adverse effect on distant views of the Washington Monument Grounds from locations such as the top of Washington Monument and the air (see Figure 3.3.17).

Existing View



Proposed View



**Figure 3.3.17 Plaza Alternative: View from the top of the Washington Monument Looking Northeast**

*Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010*

- The height of the Plaza Alternative would position the roofline above the visible point at which the base of the Washington Monument meets the ground, altering the existing view from the Old Post Office Tower of the entire Monument. Thus, the Plaza Alternative would have a moderate, significant, adverse effect on distant views from the Old Post Office Tower (see Figure 3.3.18).

Existing View



Proposed View



**Figure 3.3.18 Plaza Alternative: View from the top of the Old Post Office Tower Looking Southwest**

*Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010*

- The location of the Plaza Alternative within the site and the massing of the Corona would not substantially alter the key vistas looking east to west along the Mall from the center panels. Thus, the Plaza Alternative would have a minor adverse effect on long- and mid-range vistas down the Mall looking west (see Figure 3.3.19).
- Viewed from Arlington Cemetery, the distinction between the Mall and the Washington Monument Grounds would be difficult to distinguish, and the Plaza Alternative would appear as a part of the general building massing in the area. Thus, the Plaza Alternative would have no effect on distant views from Arlington Cemetery.

Although the exterior night lighting of the Plaza Alternative would be designed to complement and not compete with nearby landmarks, the lighting – including exterior lighting of outdoor gathering and circulation spaces, water elements, pool surfaces, and architectural features – would illuminate a portion of the Washington Monument Grounds previously unlit at night (except for perimeter street lights). This would alter multiple nighttime views of the Washington Monument Grounds and detract from the prominence of the Washington Monument. The Plaza Alternative would have a major, significant, adverse effect on views of the Washington Monument Grounds at night.

Existing View



Proposed View



**Figure 3.3.19 Plaza Alternative: View from the Mall Looking West**

*Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010*



### Spatial Organization

Due to the location, height, and massing of the structure, the Plaza Alternative would have the following effects on the spatial organization of the Washington Monument Grounds and the Mall:

- Located along Constitution Avenue between 14<sup>th</sup> and 15<sup>th</sup> Streets, the Plaza Alternative would eliminate a significant portion of the historic open space of the Washington Monument Grounds and would diminish the prominence of the Washington Monument as the central organizing feature of the Grounds. The Plaza Alternative would also alter the spatial conception of the historic boundaries of the Washington Monument Grounds by extending the existing row of museums along the Mall into the Washington Monument Grounds. The Plaza Alternative would have a major, significant, adverse effect on the spatial organization of the Washington Monument Grounds (Reservation No. 2).
- Although located outside the formal boundaries of the Mall, the Plaza Alternative would be perceived as an extension of the row of museum buildings located along the north side of the Mall. Additionally, the Corona would be located in the southern portion of the NMAAHC site beyond the existing setbacks of the museum buildings along the Mall, which would be inconsistent with the Mall's spatial organization. The Plaza Alternative would have a moderate, significant, adverse effect on the larger spatial organization of the Mall (Reservation Nos. 3, 3B, 4, 5, 6 and 6A).

Due to the location, height, and massing of the structure, the Plaza Alternative would have the following effects on the spatial organization of the monumental core:

- The Plaza Alternative would be located within a "hinge" site where the surrounding frame of buildings along the Mall and the surrounding urban context of the Federal Triangle reaches its closest approach to the Washington Monument Grounds. The Corona, which is located south on the NMAAHC site beyond the existing setbacks of the museum buildings along the Mall, would not respond to this "hinge" site and would alter the character of the Washington Monument Grounds within the spatial conception of the monumental core. In the Plaza Alternative, however, the plaza element of the landscape design would provide a transitional space indicative of the site's role as a "hinge." Thus, the Plaza Alternative would have a major, significant, adverse effect on the "hinge" site within the larger composition of the monumental core.
- The Plaza Alternative would alter the perceived boundaries of the Mall and the Washington Monument Grounds by extending the existing row of museums into the Grounds, modifying the cross-axial spatial organization of the monumental core. As a result, the Plaza Alternative would have a major, significant, adverse effect on the cross-axial spatial organization of the monumental core, which is marked by the Washington Monument and its Grounds at the crossing.

- The location of the structure would cause a loss of symmetry of the open space elements designed to flank the Ellipse (President's Park South). As a result, the Plaza Alternative would have a moderate, significant, adverse effect on the spatial organization of the Ellipse.

In addition, the Plaza Alternative would introduce a new element into the open space of the Washington Monument Grounds (Reservation No. 2). As a result, the Plaza Alternative would have a minor adverse effect on the spatial organization of features that contribute to the historic significance of the city plan.

#### Land Use

The Plaza Alternative's large footprint would occupy a significant portion of the site, reducing the amount of public gathering and recreational space within the Washington Monument Grounds. As part of the Smithsonian Institution, NPS permitted activities would not be allowed on the NMAAHC grounds, constituting a change in the historic use of the land for expression of First Amendment freedoms. In addition, the landscape design would introduce formalized spaces and alter the traditional informal setting of the Washington Monument Grounds. The Plaza Alternative, however, would have an advantage over the Plinth Alternative and the Pavilion Alternative in that the plaza element between the northern building and the Corona would have the potential to create an active public outdoor space and special event area. The Plaza Alternative would have a major, significant, adverse effect on the established land uses of the Washington Monument Grounds. The Plaza Alternative would have no effect on the land use of the Mall or the surrounding urban context of the Federal Triangle.

#### Circulation

The Plaza Alternative would remove open circulation on a portion of the Washington Monument Grounds. The formal character of the landscape design of the Plaza Alternative would be a departure from the curvilinear configuration of historic circulations within the Washington Monument Grounds. The Plaza Alternative, however, would have an advantage over the Plinth Alternative and the Pavilion Alternative in that the two building configuration and plaza element would acknowledge the existing diagonal pedestrian movement through the site. As a result, the Plaza Alternative would have a moderate, significant, adverse effect on the distinctive circulation features of the Washington Monument Grounds.

The support building of the Plaza Alternative would alter the established setbacks and building edge character along Constitution Avenue, and the water element at its periphery would introduce a new landscape element within the urban context. In addition, the service entrance along 14<sup>th</sup> Street would alter the street's existing character. As a result, the Plaza Alternative would have a moderate, significant, adverse effect on the circulation features of the historic L'Enfant and McMillan Commission Plans. The Plaza Alternative would have no effect on the circulation features of the Mall.

### Topography

The location of the Plaza Alternative would eliminate a portion of the peripheral flats of the Washington Monument Grounds. The rectilinear treatment of the Plaza Alternative and the formal treatment of the landscape design would conflict with the naturalistic topography of the Washington Monument Grounds. The Plaza Alternative would have the greatest impact on the topography of the Washington Monument Grounds because it would occupy the largest footprint of all the alternatives. As a result, the Plaza Alternative would have a moderate, significant, adverse effect on the naturalistic topography of the Washington Monument Grounds and the distinct characteristics of this historic environment, including the "flats" and central mound. The Plaza Alternative would have no effect on the topography of the Mall or the surrounding urban context.

### Vegetation

The ground-floor footprint of the Plaza Alternative would eliminate a large portion of the open lawn that defines the ground plane of the Washington Monument Grounds; the landscape design would feature water elements and hardscape areas that would occupy additional areas of open lawn. The Plaza Alternative would also diminish the visual impact of the street trees that delineate the perimeter of the Washington Monument Grounds. The Plaza Alternative would have the greatest footprint of all the alternatives, and the landscape design for this alternative features the most hardscape. As a result, the Plaza Alternative would have a major, significant, adverse effect on the significant vegetative features of the Washington Monument Grounds. The Plaza Alternative would

have no effect on the grass panels, tree panels, or the elms of the Mall.

### Buildings and Structures

The Plaza Alternative would have the following effects on the buildings and structures within the Washington Monument Grounds:

- The height, massing, and location of the Plaza Alternative would diminish the visual impact of the Washington Monument by competing for its prominence within the Washington Monument Grounds. As a result, the Plaza Alternative would have a major, significant, adverse effect on the Washington Monument.
- The support structure for the Plaza Alternative would be located at the north edge of the site directly adjacent to the gatepost located on the southeast corner of 15<sup>th</sup> Street and Constitution Avenue significantly impacting its historic setting. As a result, the Plaza Alternative would have a major, significant, adverse effect on the Bulfinch Gateposts.
- The height and massing of the Plaza Alternative would diminish the visual impact of the Monument Lodge within the setting of the Washington Monument Grounds. The Plaza Alternative would have the greatest impact on the Monument Lodge because it would be located the farthest south on the NMAAHC site of all the alternatives. As a result, the Plaza Alternative would have a major, significant, adverse effect on the Monument Lodge.

The Plaza Alternative would have the following effects on the buildings and structures in proximity to the NMAAHC site:

- The metal skin of the Corona would have an atypical visual character that would divert attention from and alter the setting of the buildings and structures in the vicinity of the project site. Additionally, the facade of the support building, composed of a minimally detailed curtain wall, would contrast with the structures of the Federal Triangle, the Mall, and the Washington Monument Grounds. As a result, the Plaza Alternative would have a minor adverse effect on the buildings and structures within the Washington Monument Grounds, Federal Triangle, and the Mall.
- The Plaza Alternative would intrude upon the setting of the Federal Triangle buildings by altering their relationship with the open space of the Washington Monument Grounds. As a result, the Plaza Alternative would have a minor adverse effect on the visual impact of the Federal Triangle buildings from the Washington Monument Grounds.
- The Plaza Alternative would alter the setting of NMAH as the end piece of the row of museums along the Mall and the relationship of NMAH with the open space of the Washington Monument Grounds. As a result, the Plaza Alternative would have a minor adverse effect on the visual impact of the museum buildings along the Mall.

### **Action Alternative 3: Pavilion Concept**

The Pavilion Alternative would feature a singular building element – a three-tiered Corona. The Pavilion Alternative would be positioned north of the setback established by the McMillan Plan, and the Corona would align with the primary building mass of NMAH. Bronze-clad panels would comprise the exterior skin of the Corona, which would rest on a glazed base. The Pavilion Alternative would have a footprint area of 60,229 square feet and would measure, from a future average site elevation of 15 feet, approximately 118 feet msl to the top of the Corona and 132 feet 6 inches msl to the top of the penthouse.

The landscape treatment of the Pavilion Alternative would situate the Corona as an object in a field surrounded by open grounds. The landscape plan would feature informal garden seating areas and a planted water feature on the north, open lawn to the west, and a hardscape plaza, reflecting pool, and terraced lawn at the south (primary) entry. Exterior building illumination would consist of lighting for outdoor gathering and circulation spaces, underwater light fixtures for water elements, and accent lighting for special pool surfaces and architectural features.

#### *Short-Term Effects*

Short-term effects on the project site within the Washington Monument Grounds would include the loss of the existing turf and most of the existing trees. Additional short-term effects would include excavation, materials stockpiling, construction staging, and other construction activity. Overall, the Pavilion Alternative would have moderate, significant, adverse short-term effects on the Washington Monument Grounds and the Mall.

Short-term effects on the Mall and the Washington Monument Grounds would include the loss of physical and visual access from and through the project site. Some construction-related activity would be disruptive to activities on adjacent destinations including the Mall and the Washington Monument Grounds.

#### *Long-Term Effects*

Any new above-grade structure on the project site would impact the multiple historic resources on and within proximity to the Washington Monument Grounds. The long-term effects of the Pavilion Alternative are discussed below.

#### Views and Vistas

The height and massing of the Pavilion Alternative would obstruct or impede key views to and from the Washington Monument. The Pavilion Alternative would also restrict key views of surrounding urban features, such as the Federal Triangle. The Pavilion Alternative would bring the existing row of museums on the north side of the Mall closer to the Washington Monument, thereby diminishing the monument's visual prominence as a central organizing feature within its setting.

Primary threshold views within the Washington Monument Grounds were identified through the Section 106 consultation process. These include both pedestrian-level and aerial views, as discussed below.

- The location and mass of the Pavilion Alternative would alter multi-directional, long, panoramic views within the Washington Monument Grounds. Thus, the Pavilion

Alternative would have major, significant, adverse effects on long views within the Washington Monument Grounds.

- The Pavilion Alternative would obstruct views of several historic buildings within the Federal Triangle including the Old Post Office Tower, the Environmental Protection Agency Headquarters (formerly the Labor Building and the Interstate Commerce Commission Building), and the Mellon Auditorium. The Herbert C. Hoover Commerce building, however, would remain visible. The perceived distance to the row of museum buildings along the Mall would be reduced, with the Pavilion Alternative becoming the closest building to the Washington Monument in this direction. Thus, the Pavilion Alternative would have major, significant, adverse effects on pedestrian-level views looking northeast from the Washington Monument Grounds (see Figure 3.3.20).
- From the eastern edge of the Washington Monument Grounds, the Pavilion Alternative would block views of the south elevation of the Herbert C. Hoover Commerce building including its distinctive portico and tile roof. Thus, the Pavilion Alternative would have major, significant, adverse effect on the view looking north along 15<sup>th</sup> Street.

Existing View



Proposed View



**Figure 3.3.20 Pavilion Alternative: View from the Washington Monument Grounds Looking Northeast**

*Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010*

In addition to the views from within the Washington Monument Grounds, the Pavilion Alternative would affect the multi-directional panoramic views from historic resources in the project vicinity.

- The location and massing of the Pavilion Alternative would block views of the lower half and base of the Washington Monument and a large portion of the Washington Monument Grounds when viewed from the Federal Triangle at the corner of 14<sup>th</sup> Street and Constitution Avenue, widely perceived as a “gateway” view. The Pavilion Alternative would block views of the Mall from Constitution Avenue near 15<sup>th</sup> Street adjacent to the north edge of the Washington Monument Grounds. Thus, the Pavilion Alternative would have major, significant, adverse effect on important non-cardinal views from principal corner street crossings adjacent to historic resources (see Figure 3.3.21).
- The Pavilion Alternative would eliminate a significant portion of the open space of the Washington Monument Grounds and constrict the wide-angle panoramic view of the Grounds that opens up from the Mall. The Pavilion Alternative, however, would have advantage over the Plinth Alternative, the Plaza Alternative, and the Refined Pavilion Alternative in that it would not project as far south on the site. Therefore there would be less of an adverse effect on the panoramic view that opens on approach to the Washington Monument Grounds. The Pavilion Alternative would have a major, significant, adverse effect on The Pavilion Alternative the panoramic view that opens and widens on the approach to the Washington Monument Grounds from the Mall.

Existing View



Proposed View



**Figure 3.3.21 Pavilion Alternative: View from the Federal Triangle at 14<sup>th</sup> Street and Constitution Avenue Looking Southwest**

*Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010*

- Although the Pavilion Alternative would appear distant as viewed from the Ellipse, the oblique angle of view would create a wide frontage within the panoramic view and would be seen in direct relation to the Washington Monument, thereby diminishing its prominence. The height of the Pavilion Alternative would project vertically above the predominant tree line. Thus, the Pavilion Alternative would have moderate, significant, adverse effect on the panoramic view that opens and widens on the approach to the Washington Monument Grounds from the Ellipse (see Figure 3.3.22).

Existing View



Proposed View



**Figure 3.3.22 Pavilion Alternative: View from the Ellipse at Constitution Avenue Looking East**

*Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010*



- The Pavilion Alternative would intrude into the pedestrian-level view of the Washington Monument Grounds from pathways along the western end of the Mall and would be seen in direct relation to the Washington Monument, thereby diminishing its prominence. The location of the Pavilion Alternative would alter the established end point of the row of museum buildings along the Mall. The height of the Pavilion Alternative would project vertically above the predominant tree line defining the eastern edge of the Washington Monument Grounds. Thus, the Pavilion Alternative would have moderate, significant, adverse effects on important non-cardinal views from historic Mall pathways (see Figure 3.3.23).

Existing View



Proposed View



**Figure 3.3.23 Pavilion Alternative: View from the Mall at Madison Drive Looking West**

*Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010*

The Pavilion Alternative would also affect long views and vistas to and from the Washington Monument Grounds and surrounding historic buildings and features:

- Viewed from the top of the Washington Monument and from the air, the Pavilion Alternative would be a prominent new feature on the landscape. Located along Constitution Avenue between 14<sup>th</sup> and 15<sup>th</sup> Streets, the Pavilion Alternative would eliminate a significant portion of the historic open space of the Washington Monument Grounds and alter the visual boundaries of the northeast corner of the Grounds. The formal, rectilinear approach to the landscape design on the south side of the Pavilion Alternative and the scale and character of water elements within it would depart from the informality and picturesque quality of the Washington Monument Grounds, further altering the view from the top of the Washington Monument and from the air. The Pavilion Alternative would, however, have advantage over the Plinth Alternative and the Plaza Alternative in that the landscape plan would reference the Washington Monument Grounds by treating the structure as an object in a field surrounded by open grounds. Additionally, the landscape elements north of the Pavilion Alternative – a gentle sloping topography featuring a curvilinear path and informal seating areas – would be less formal than those in the Plinth Alternative or the Plaza Alternative. Thus, the Pavilion Alternative would have a major, significant, adverse effect on distant views of the Washington Monument Grounds from locations such as the top of the Washington Monument and the air (see Figure 3.3.24).

Existing View



Proposed View



**Figure 3.3.24 Pavilion Alternative: View from the Top of the Washington Monument Looking Northwest**

*Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010*

- The height of the Pavilion Alternative would position the roofline above the visible point at which the base of the Washington Monument meets the ground, altering the existing view from the Old Post Office Tower of the entire Monument. Thus, the Pavilion Alternative would have moderate, significant, adverse effect on distant views from the Old Post Office Tower (see Figure 3.3.25).

Existing View



Proposed View



**Figure 3.3.25 Pavilion Alternative: View from the Top of the Old Post Office Tower Looking Southwest**

*Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010*

- The location and massing of the Pavilion Alternative within the project site would not substantially alter the key vistas looking east to west along the Mall from the center panels. Thus, the Pavilion Alternative would have a minor adverse effect on long and mid-range vistas looking down the Mall looking west (see Figure 3.3.26).
- Viewed from Arlington Cemetery, the distinction between the Mall and the Washington Monument Grounds is difficult to distinguish, and the Pavilion Alternative would appear as part of the general building massing in the area. Thus, the Pavilion Alternative would have no effect on distant views from Arlington Cemetery.

Although the exterior night lighting for the Pavilion Alternative and the site would complement and not compete with nearby landmarks, the lighting – including exterior lighting of outdoor gathering and circulation spaces, water elements, pool surfaces, and architectural features – would illuminate a portion of the Washington Monument Grounds previously unlit at night (except for perimeter street lights). This would alter multiple nighttime views of the Washington Monument Grounds and detract from the prominence of the Washington Monument. The Pavilion Alternative would have major, significant, adverse effect on views of the Washington Monument Grounds at night.

Existing View



Proposed View



**Figure 3.3.26 Pavilion Alternative: View from the Mall Looking West**

*Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010*

### Spatial Organization

Due to the location, height, and massing of the structure, the Pavilion Alternative would have the following effects on the spatial organization of the Washington Monument Grounds and the Mall:

- Located along Constitution Avenue between 14<sup>th</sup> and 15<sup>th</sup> Streets, the Pavilion Alternative would eliminate a significant portion of the historic open space of the Washington Monument Grounds and diminish the prominence of the Washington Monument as the central organizing feature of the Grounds. The Pavilion Alternative would also alter the spatial conception of the historic boundaries of the Washington Monument Grounds by extending the existing row of museums along the Mall into the Grounds. The Pavilion Alternative would have advantage over the Plinth Alternative and the Plaza Alternative in that it would have primary frontages on the north, south, and west facades, creating a multi-directional condition on the project site that would respond to its position within the Washington Monument Grounds. The Pavilion Alternative would have major, significant, adverse effect on the spatial organization of the Washington Monument Grounds (Reservation No. 2).
- Although located outside the formal boundaries of the Mall, the site would be perceived as an extension of the museum buildings located along the north side of the Mall, which serve to reinforce the channel of space and vista between the U.S. Capitol and the Washington Monument. As a result, the Pavilion Alternative would have a moderate, significant,

adverse effect on the larger spatial organization of the Mall (Reservation Nos. 3, 3B, 4, 5, 6, and 6A).

Due to the location, height, and massing of the structure, the Pavilion Alternative would have the following effects on the spatial organization of the monumental core:

- The Pavilion Alternative would be located within a "hinge" site where the surrounding frame of buildings along the Mall and the surrounding urban context of the Federal Triangle reaches its closest approach to the Washington Monument Grounds. The Pavilion Alternative, however, would have advantage over the Plinth Alternative, the Plaza Alternative, and the Refined Pavilion Alternative in that it would not project as far south into the project site. The Pavilion Alternative would have a major, significant, adverse effect on the spatial organization of the monumental core.
- The Pavilion Alternative would alter the perceived boundaries of the Mall and the Washington Monument Grounds by extending the existing row of museum buildings into the Grounds, modifying the cross-axial spatial organization of the monumental core. Thus, the Pavilion Alternative would have a major, significant, adverse effect on the cross-axial spatial organization of the monumental core, which is marked by the Washington Monument and its Grounds at the crossing.
- The location of the Pavilion Alternative would cause a loss of symmetry of the open space elements designed to flank the Ellipse (President's Park South) – now open space on

the Washington Monument Grounds. As a result, the Pavilion Alternative would have moderate, significant, adverse effect on the spatial organization of the Ellipse.

The Pavilion Alternative would introduce a new element into the open space of the Washington Monument Grounds (Reservation No. 2). As a result, the Pavilion Alternative would have a minor adverse effect on the spatial organization of features that contribute to the historic significance of the city plan.

#### Land Use

The footprint of the Pavilion Alternative would occupy a significant portion of the site, reducing the amount of public gathering and recreational space within the Washington Monument Grounds. As part of the Smithsonian Institution, NPS permitted activities would not be allowed on the NMAAHC grounds, constituting a change in the historic use of the land for expression of First Amendment freedoms. The Pavilion Alternative, however, would have advantage over the Plinth Alternative and the Plaza Alternative in that it would have less site coverage. The landscape design would introduce formalized spaces south of the Corona, altering the traditional informal setting of the Washington Monument Grounds. As a result, the Pavilion Alternative would have a major, significant, adverse effect on the established land uses of the Washington Monument Grounds. The Pavilion Alternative would have no effect on the land use of the Mall or the surrounding urban context.

#### Circulation

The Pavilion Alternative would remove open circulation on a portion of the Washington Monument Grounds. The formal

character of the landscape design south of the Pavilion Alternative would be a departure from the curvilinear configuration of historic circulation within the Washington Monument Grounds. As a result, the Pavilion Alternative would have moderate, significant, adverse effect on the distinctive circulation features of the Washington Monument Grounds.

The service entrance along 14<sup>th</sup> Street would alter the existing character of the street. As a result, the Pavilion Alternative would have a minor adverse effect on the circulation features of the historic L'Enfant and McMillan Commission Plans. The Pavilion Alternative would have no effect on the circulation features of the Mall.

#### Topography

The location of the Pavilion Alternative would eliminate a portion of the peripheral flats of the Washington Monument Grounds. The rectilinear treatment of the Pavilion Alternative and the formal treatment of the landscape design south of the Corona would conflict with the naturalistic topography of the Washington Monument Grounds. The Pavilion Alternative, however, would have advantage over the Plinth Alternative and the Plaza Alternative in that it would allow for the equal treatment of open space on the north and south sides of the site and would feature a curved path and informal seating areas on the north and open lawn on the west that would be harmonious with the informal character of the Washington Monument Grounds. As a result, the Pavilion Alternative would have a minor adverse effect on the naturalistic topography of the Washington Monument Grounds and the distinct characteristics of this historic environment, including the "flats" and

central mound. The Pavilion Alternative would have no effect on the topography of the Mall or the surrounding urban context.

### Vegetation

The ground-floor footprint of the Pavilion Alternative would eliminate a large portion of the open lawn that defines the ground plane of the Washington Monument Grounds, and the landscape design would feature water elements and hardscape areas that would occupy additional areas of open lawn. The Pavilion Alternative, however, would have advantage over the Plinth Alternative and the Plaza Alternative in that it would have less site coverage. The Pavilion Alternative would diminish the visual impact of the street trees that delineate the perimeter of the Washington Monument Grounds. As a result, the Pavilion Alternative would have a major, significant, adverse effect on the significant vegetative features of the Washington Monument Grounds. The Pavilion Alternative would have no effect on the grass panels, tree panels, or the elms of the Mall.

### Buildings and Structures

The Pavilion Alternative would have the following effects on the buildings and structures within the Washington Monument Grounds:

- The height, massing, and location of the Pavilion Alternative would diminish the visual impact of the Washington Monument by competing for its prominence within the Washington Monument Grounds. As a result, the Pavilion Alternative would have a major, significant, adverse effect on the Washington Monument.

- The location of the Pavilion Alternative within the Washington Monument Grounds would alter the setting of the gatepost located on the southeast corner of 15<sup>th</sup> Street and Constitution Avenue. The Pavilion Alternative, however, would have advantage over the Plinth Alternative and the Plaza Alternative in that it would be located in the center of the site within the established setbacks of the adjacent buildings along Constitution Avenue and farther from the gatepost. As a result, the Pavilion Alternative would have a moderate, significant, adverse effect on the Bulfinch Gateposts.
- The height and massing of the Pavilion Alternative would diminish the visual impact of the Monument Lodge within the setting of the Washington Monument Grounds. As a result, the Pavilion Alternative would have moderate, significant, adverse effect on the Monument Lodge.

The Pavilion Alternative would have the following effects on the buildings and structures in direct proximity to the NMAAHC site:

- The metal skin of the Corona would have an atypical visual character that would divert attention from and alter the setting of the buildings and structures in the vicinity of the project site. As a result, the Pavilion Alternative would have a minor adverse effect on the buildings and structures within the Washington Monument Grounds, Federal Triangle, and the Mall.

- The Pavilion Alternative would intrude upon the setting of the Federal Triangle buildings by altering their relationship with the open space of the Washington Monument Grounds and obstructing views of the series of buildings that comprise the Federal Triangle. As a result, the Pavilion Alternative would have a minor adverse effect on the visual impact of the Federal Triangle buildings from the Washington Monument Grounds.
- The Pavilion Alternative would alter the setting of NMAH as the end piece of the row of museums along the Mall and the relationship of NMAH within the open space of the Washington Monument Grounds. As a result, the Pavilion Alternative would have a minor adverse effect on the visual impact of the museum buildings along the Mall.



#### **Action Alternative 4: Refined Pavilion Concept**

The Refined Pavilion Alternative would feature a singular building element – a three-tiered Corona. The porch on the south side of the Corona would extend approximately 30 feet beyond the McMillan setback. Bronze-clad panels would comprise the exterior skin of the Corona, which would rest on a base of clear glass panels. The Refined Pavilion Alternative would have a footprint area of 53,750 square feet and measure, from a future average site elevation of 16 feet 6 inches, approximately 112 feet 6 inches msl to the top of the Corona and 122 feet 6 inches msl to the top of the penthouse. The landscape treatment of the Refined Pavilion Alternative would situate the museum within the context of the Washington Monument Grounds as an object in a field, drawing the open, pastoral nature of the Washington Monument Grounds through the museum site. The landscape plan would include a water feature at the south (primary) entry, a planted rain garden with a water feature adjacent to Constitution Avenue, two broad sweeping pedestrian circulation paths, and terraces located atop the Corona and south-facing porch. Exterior building illumination would consist of lighting for outdoor gathering and circulation spaces, underwater light fixtures for water elements, and accent lighting for special pool surfaces and architectural features.

##### *Short-Term Effects*

Short-term effects to the project site within the Washington Monument Grounds would include the loss of the existing turf and most of the existing trees. Additional short-term effects would include excavation, materials stockpiling, construction staging, and other construction activities. Short-term effects on the Mall and the Washington Monument Grounds would include the loss of physical

and visual access from and through the project site. Some construction-related activity would be disruptive to activities on adjacent destinations including the Mall and the Washington Monument Grounds. Overall, the Refined Pavilion Alternative would have moderate, significant, adverse short-term effects on the Washington Monument Grounds and the Mall.

##### *Long-Term Effects*

A new above-grade structure on the project site would impact the multiple historic resources on and within proximity to the Washington Monument Grounds. The long-term effects of the Refined Pavilion Alternative are discussed below.

##### Views and Vistas

The height and massing of the Refined Pavilion Alternative would obstruct or impede key views to and from the Washington Monument. The Refined Pavilion Alternative would also restrict key views of surrounding urban features, such as the Federal Triangle. The Refined Pavilion Alternative would bring the existing row of museums on the north side of the Mall closer to the Washington Monument, thereby diminishing the monument's visual prominence as a central organizing feature within its setting.

Primary threshold views within the Washington Monument Grounds were identified through the Section 106 consultation process. These include both pedestrian-level and aerial views, as discussed below.

- The location and mass of the Refined Pavilion Alternative would alter multi-directional, long, panoramic views within

the Washington Monument Grounds. The Refined Pavilion Alternative, however, has an advantage over the Plinth Alternative, the Plaza Alternative, and the Pavilion Alternative in that it is lower and has a smaller volume than the other alternatives and has the least impact on views of the Federal Triangle. The Refined Pavilion Alternative would have a major, significant, adverse effect on long views within the Washington Monument Grounds.

- The Refined Pavilion would obstruct views of several historic buildings within the Federal Triangle including the Old Post Office Tower, the Environmental Protection Agency Headquarters (formerly the Labor Building and the Interstate Commerce Commission Building), and the Mellon Auditorium. The Herbert C. Hoover Commerce building, however, would remain visible. The Refined Pavilion Alternative would conceal a portion of the west facade of NMAH. The perceived distance to the row of museum buildings along the Mall would be reduced with the structure becoming the closest building to the Washington Monument in this direction. Since the Refined Pavilion Alternative has a smaller footprint and is lower than the other alternatives, its impact would be slightly less than the Plaza Alternative, the Plinth Alternative, or the Pavilion Alternative. The Refined Pavilion Alternative would have a major, significant, adverse effect on pedestrian-level views from the Washington Monument Grounds looking northeast (see Figure 3.3.27).
- The Refined Pavilion Alternative would have a major, significant, adverse effect on the view looking north along 15<sup>th</sup> Street.

Existing View



Proposed View



**Figure 3.3.27 Refined Pavilion Alternative: View from the Washington Monument Grounds Looking Northeast**  
 Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010

In addition to the views from within the Washington Monument Grounds, the Refined Pavilion Alternative would affect the multi-directional panoramic views from historic resources in the project vicinity.

- The location and massing of the Refined Pavilion Alternative would block views of the lower half and base of the Washington Monument and a large portion of the Washington Monument Grounds when viewed from the Federal Triangle at the corner of 14<sup>th</sup> Street and Constitution Avenue, which is widely perceived as a “gateway” view. The Refined Pavilion Alternative would have an advantage over the Plinth Alternative, the Plaza Alternative, and the Pavilion Alternative in that it is lower and therefore would block less of the Washington Monument. The Refined Pavilion Alternative would block views of the Mall from Constitution Avenue near 15<sup>th</sup> Street adjacent to the north edge of the Washington Monument Grounds. Thus, the Refined Pavilion Alternative would have a major, significant, adverse effect on important non-cardinal views from principal corner street crossings adjacent to historic resources (see Figure 3.3.28).
- The Refined Pavilion Alternative would eliminate a significant portion of the open space of the Washington Monument Grounds and constrict the wide-angle panoramic view of the Grounds that opens up from the Mall. Thus, the Refined Pavilion Alternative would have a major, significant, adverse effect on the panoramic view that opens and widens on the approach to the Washington Monument Grounds from the Mall.

Existing View



Proposed View



**Figure 3.3.28 Refined Pavilion Alternative: View from the Federal Triangle at 14<sup>th</sup> Street and Constitution Avenue Looking Southwest**

*Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010*

- Although the Refined Pavilion Alternative would appear distant as viewed from the Ellipse, the oblique angle of view would create a wide frontage within the panoramic view and would be seen in direct relation to the Washington Monument, thereby diminishing its prominence. The height of the structure would also project vertically above the predominant tree line. The Refined Pavilion Alternative would have an advantage over the other alternatives in that its reduced mass and placement on the site reduces its impact on views of the Washington Monument Grounds when approaching from the Ellipse. The Refined Pavilion Alternative would have a moderate, significant, adverse effect on the panoramic view that opens and widens on the approach to the Washington Monument Grounds from the Ellipse (see Figure 3.3.29).

Existing View



Proposed View



**Figure 3.3.29 Refined Pavilion Alternative: View from the Ellipse at Constitution Avenue Looking East**

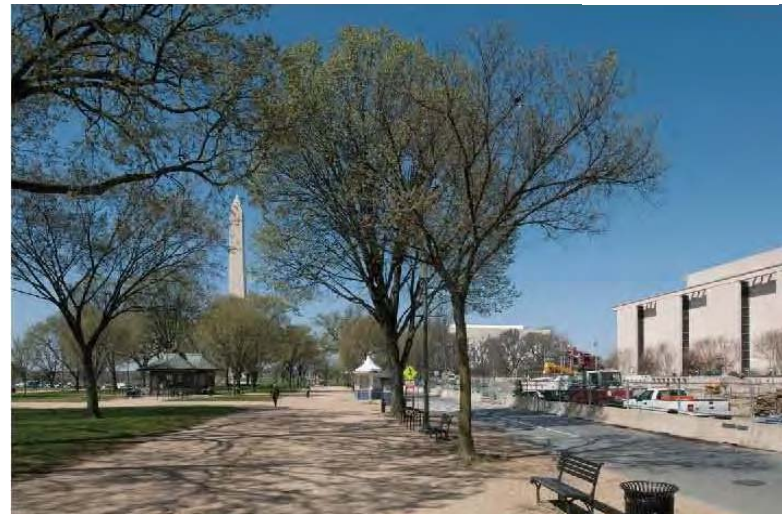
*Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010*

- The Refined Pavilion Alternative would intrude into the pedestrian-level views of the Washington Monument Grounds from pathways along the western end of the Mall and would be seen in direct relation to the Washington Monument, thereby diminishing its prominence. The location of the Refined Pavilion Alternative would alter the established end point of the row of museum buildings along the Mall. The height of the Refined Pavilion Alternative would project vertically above the predominant tree line defining the eastern edge of the Washington Monument Grounds. The Refined Pavilion Alternative would have an advantage over the other alternatives in that both the height and volume would be reduced, thereby lessening the impact on views from the Mall. Thus, the Refined Pavilion Alternative would have a moderate, significant, adverse effect on important non-cardinal views from historic Mall pathways (see Figure 3.3.30).

Existing View



Proposed View



**Figure 3.3.30 Refined Pavilion Alternative: View from the Mall at Madison Drive Looking West**

*Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010*

The Refined Pavilion Alternative would also affect long views and vistas to and from Washington Monument Grounds and the surrounding historic buildings and features:

- Viewed from the top of the Washington Monument and from the air, the Refined Pavilion Alternative would be a prominent new feature on the landscape. Located along Constitution Avenue between 14<sup>th</sup> and 15<sup>th</sup> Streets, the Refined Pavilion Alternative would eliminate a significant portion of the historic open space of the Washington Monument Grounds and would alter the visual boundaries of the northeast corner of the Grounds. The Refined Pavilion Alternative would have an advantage over the Plinth Alternative, the Plaza Alternative, and the Pavilion Alternative in that it would have the smallest footprint and would occupy the least amount of the Washington Monument Grounds. Additionally, the rolling topography, broadly sweeping paths, and informal, more naturalistic water elements of the landscape plan of the Refined Pavilion Alternative would be compatible with the picturesque character of the Washington Monument Grounds, and the landscape plan references the Washington Monument Grounds by treating the structure as an object in a field surrounded by open ground. The Refined Pavilion Alternative would also have an advantage due to the treatment of the penthouse, which – following the precedent of the other buildings along the Mall – is placed symmetrically on the roof of the Corona. The Refined Pavilion Alternative would have a major, significant, adverse effect on distant views of the Washington Monument Grounds from locations such as the top of Washington Monument and the air (see Figure 3.3.31).

Existing View



Proposed View



**Figure 3.3.31 Refined Pavilion Alternative: View from the Top of the Washington Monument Looking Northeast**

*Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010*

- The height of the Refined Pavilion Alternative would position the roofline above the visible point at which the base of the Washington Monument meets the ground, altering the existing view from the Old Post Office Tower of the entire Monument. Thus, the Refined Pavilion Alternative would have a moderate, significant, adverse effect on distant views from the Old Post Office Tower (see Figure 3.3.32).

Existing View



Proposed View



**Figure 3.3.32 Refined Pavilion Alternative: View from the top of the Old Post Office Tower Looking Southwest**

*Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010*

- The location of the Refined Pavilion Alternative within the site and the massing of the Corona would not substantially alter the key vistas looking east to west along the Mall from the center panels. Thus, the Refined Pavilion Alternative would have a minor adverse effect on long and mid-range vistas down the Mall looking west (see Figure 3.3.33).
- Viewed from Arlington Cemetery, the distinction between the Mall and the Washington Monument Grounds would be difficult to distinguish, and the Refined Pavilion Alternative would appear as a part of the general building massing in the area. Thus, the Refined Pavilion Alternative would have no effect on distant views from Arlington Cemetery.

Although the exterior night lighting of the Refined Pavilion Alternative would be designed to complement and not compete with nearby landmarks, the lighting – including exterior lighting of outdoor gathering and circulation spaces, water elements, pool surfaces, and architectural features – would illuminate a portion of the Washington Monument Grounds previously unlit at night (except for perimeter street lights). This would alter multiple nighttime views of the Washington Monument Grounds and detract from the prominence of the Washington Monument. The Refined Pavilion Alternative would have a major, significant, adverse effect on views of the Washington Monument Grounds at night.

Existing View



Proposed View



**Figure 3.3.33 Refined Pavilion Alternative: View from the National Mall Looking West**

*Source: Freelon Adjaye Bond/SmithGroup in association with Robinson & Associates, 2010*



### Spatial Organization

Due to the location, height, and massing of the structure, the Refined Pavilion Alternative would have the following effects on the spatial organization of the Washington Monument Grounds and the Mall:

- Located along Constitution Avenue between 14th and 15th streets, the structure would eliminate open space from the Washington Monument Grounds and diminish the prominence of the Monument as the central organizing feature of the grounds. The Refined Pavilion Alternative would also alter the spatial conception of the historic boundaries of the Washington Monument Grounds by extending the existing row of museums along the Mall into the grounds. The Refined Pavilion Alternative would have an advantage over the Plinth Alternative, the Plaza Alternative, and the Pavilion Alternative in that it would occupy the smallest footprint of all the alternatives and have less impact on the site. The Refined Pavilion Alternative would also have an advantage over the Plinth Alternative and the Plaza Alternative in that it would have primary frontages on the north, south, and west facades, creating a multi-directional condition on the NMAAHC site that responds to its position within the Washington Monument Grounds. Additionally, the rolling topography, broadly sweeping paths, and informal, naturalistic water elements of the landscape plan would be compatible with the picturesque character of the Washington Monument Grounds. As a result, the Refined Pavilion Alternative would have a major, significant, adverse effect on the spatial organization of the Washington Monument Grounds (Reservation No. 2).

- Although located outside the boundaries of the Mall, the Refined Pavilion Alternative would be perceived as an extension of the museum buildings along the north side of the Mall, which would serve to reinforce the channel of space and vista between the Capitol and the Washington Monument. The Refined Pavilion Alternative, which would be located south on the NMAAHC site beyond the existing setbacks of the museum buildings along the Mall, would be inconsistent with the Mall's spatial organization. The porch on the south side of the Corona violates the McMillan Plan setback, established to be 445 feet from the centerline of the Mall. As a result, the Refined Pavilion Alternative would have a moderate, significant, adverse effect on the larger spatial organization of the Mall (Reservation Nos. 3, 3B, 4, 5, 6, and 6A).

Due to the location, height, and massing of the structure, the Refined Pavilion Alternative would have the following effects on the spatial organization of the monumental core:

- The Refined Pavilion Alternative would be located within a “hinge” site where the surrounding frame of buildings along the Mall and within the surrounding urban context reaches its closest approach to the Washington Monument Grounds. The Refined Pavilion Alternative, which would be located south on the NMAAHC site beyond the existing setbacks of the museum buildings along the Mall, would not respond to this “hinge” site and would alter the character of the Washington Monument Grounds within the spatial conception of the monumental core. Thus, the Refined Pavilion Alternative would have a major, significant,

adverse effect on the “hinge” site within the larger composition of the monumental core.

- The Refined Pavilion Alternative would alter the perceived boundaries of the Mall and the Washington Monument Grounds by extending the existing row of museums into the Grounds, modifying the cross-axial spatial organization of the monumental core. As a result, the Refined Pavilion Alternative would have a major, significant, adverse effect on the cross-axial spatial organization of the monumental core, which is marked by the Washington Monument and its Grounds at the crossing.
- The location of the structure would cause a loss of symmetry of the open space elements designed to flank the Ellipse (President’s Park South). As a result, the Refined Pavilion Alternative would have a moderate, significant, adverse effect on the spatial organization of the Ellipse.

In addition, the Refined Pavilion Alternative would introduce a new element into the open space of the Washington Monument Grounds (Reservation No. 2). As a result, the Refined Pavilion Alternative would have a minor adverse effect on the spatial organization of features that contribute to the historic significance of the city plan.

#### Land Use

The Refined Pavilion Alternative’s footprint would occupy a significant portion of the site, reducing the amount of public gathering and recreational space within the Washington Monument Grounds. As part of the Smithsonian Institute, NPS permitted activities would not be allowed on the NMAAHC grounds,

constituting a change in the historic use of the land for expression of First Amendment freedoms. The Refined Pavilion Alternative, however, would have an advantage over the Plinth Alternative, the Plaza Alternative, and the Pavilion Alternative in that it would occupy the smallest footprint of all the alternatives. The Refined Pavilion Alternative would have a major, significant, adverse effect on the established land uses of the Washington Monument Grounds. The Refined Pavilion Alternative would have no effect on the land use of the Mall or the surrounding urban context of the Federal Triangle.

#### Circulation

The Refined Pavilion Alternative would remove open circulation on a portion of the Washington Monument Grounds. The Refined Pavilion Alternative, however, would have advantages over the Plinth Alternative, the Plaza Alternative, and the Pavilion Alternative in that it would occupy the smallest footprint of all the alternatives and would feature the most open lawn. Additionally, the primary circulation routes of the landscape plan would consist of broadly sweeping curvilinear paths that would acknowledge and be compatible with the existing pedestrian paths of the Washington Monument Grounds and the Ellipse. As a result, the Refined Pavilion Alternative would have a minor adverse effect on the distinctive circulation features of the Washington Monument Grounds.

The landscape design of the Refined Pavilion Alternative, which would feature a planted rain garden with a water feature adjacent to Constitution Avenue, would not be consistent with the existing setbacks along Constitution Avenue, thereby altering its character of the street. In addition, the service entrance along 14<sup>th</sup> Street would

alter its existing character. As a result, the Refined Pavilion Alternative would have a minor adverse effect on the circulation features of the historic L'Enfant and McMillan Plans. The Refined Pavilion Alternative would have no effect on the circulation features of the Mall.

### Topography

The location of the Refined Pavilion Alternative would eliminate a portion of the peripheral flats of the Washington Monument Grounds. The Refined Pavilion Alternative, however, would have an advantage over the Plinth Alternative and the Plaza Alternative in that the landscape plan features a rolling topography, broadly sweeping paths, and informal, naturalistic water elements that would be compatible with the picturesque character of the Washington Monument Grounds. Additionally, the Refined Pavilion Alternative would have the least impact on the topography of the Washington Monument Grounds because it would occupy the smallest footprint of all the alternatives. As a result, the Refined Pavilion Alternative would have a minor adverse effect on the naturalistic topography of the Washington Monument Grounds and the distinct characteristics of this historic environment, including the "flats" and central mound. The Refined Pavilion Alternative would have no effect on the topography of the Mall or the surrounding urban context.

### Vegetation

The ground-floor footprint of the Refined Pavilion Alternative would eliminate a large portion of the open lawn that defines the ground plane of the Washington Monument Grounds. The Refined Pavilion Alternative, however, would have an advantage over the

Plinth Alternative, the Plaza Alternative, and the Pavilion Alternative in that it would occupy the smallest footprint of all the alternatives. The landscape design would feature water elements and hardscape areas that would occupy additional areas of open lawn. The Refined Pavilion Alternative would also diminish the visual impact of the street trees that delineate the perimeter of the Washington Monument Grounds. As a result, the Refined Pavilion Alternative would have a moderate, significant, adverse effect on the significant vegetative features of the Washington Monument Grounds. The Refined Pavilion Alternative would have no effect on the grass panels, tree panels, or the elms of the Mall.

### Buildings and Structures

The Refined Pavilion Alternative would have the following effects on the buildings and structures within the Washington Monument Grounds:

- The height, massing, and location of the Refined Pavilion Alternative would diminish the visual impact of the Washington Monument by competing for its prominence within the Washington Monument Grounds. The Refined Pavilion Alternative, however, would have an advantage over the Plinth Alternative, the Plaza Alternative, and the Pavilion Alternative in that it would have the smallest footprint and would occupy the least amount of the Washington Monument Grounds. The Refined Pavilion Alternative would have a major, significant, adverse effect on the Washington Monument.
- The location of the Refined Pavilion Alternative within the Washington Monument Grounds would alter the setting of

the gatepost located on the southeast corner of 15th Street and Constitution Avenue. The Refined Pavilion Alternative, however, would have an advantage over the Plinth Alternative, the Plaza Alternative, and the Pavilion Alternative in that the location and size of the Corona would provide a greater setback from the gateposts. As a result, the Refined Pavilion Alternative would have a moderate, significant, adverse effect on the Bulfinch Gateposts.

- The height and massing of the Refined Pavilion Alternative would diminish the visual impact of the Monument Lodge within the setting of the Washington Monument Grounds. However, the Refined Pavilion Alternative would have an advantage in that the Corona would have the smallest volume and height of all the alternatives and is closest in scale to the Monument Lodge. The Refined Pavilion Alternative would have a major, significant, adverse effect on the Monument Lodge.

The Refined Pavilion Alternative would have the following effects on the buildings and structures in proximity to the NMAAHC site:

- The metal skin of the Corona would have an atypical visual character that would divert attention from and alter the setting of the buildings and structures in the vicinity of the project site. As a result, the Refined Pavilion Alternative would have a minor adverse effect on the buildings and structures within the Washington Monument Grounds, Federal Triangle, and the Mall.

- The Refined Pavilion Alternative would intrude upon the setting of the Federal Triangle buildings by altering their relationship with the open space of the Washington Monument Grounds and obstructing clear views of the series of buildings that comprise the Federal Triangle. As a result, the Refined Pavilion Alternative would have a minor adverse effect on the visual impact of the Federal Triangle buildings from the Washington Monument Grounds.
- The Refined Pavilion Alternative would alter the setting of NMAH as the end piece of the row of museums along the Mall and the relationship of NMAH with the open space of the Washington Monument Grounds. As a result, the Refined Pavilion Alternative would have a minor adverse effect on the visual impact of the museum buildings along the Mall.

### 3.3.4 What efforts would be taken to minimize the effects on cultural resources?

#### *Short-Term Effects*

- Minimize short-term adverse effects of the action alternatives by using concealment screens around the project site during construction. The screens could be used to convey information relating to the background and mission of the NMAAHC. Other actions include protecting the street trees that delineate the perimeter of the site to the maximum extent possible.

#### *Long-term Effects*

Any new above-grade structures on the project site would impact the multiple historic resources on and within proximity to the Washington Monument Grounds. However, the adverse effects vary for each of the action alternatives. Later design phases could provide opportunity to further minimize some of the adverse effects.

### **Plinth Alternative**

#### Views and Vistas

- Minimize adverse effects on distant views of the Washington Monument Grounds, the Mall, and Federal Triangle from locations such as the top of the Washington Monument and from the air by modifying the treatment of the penthouse. As currently designed, the roof of the Plinth Alternative would feature an outdoor terrace/memorial and a penthouse containing VIP space and a café; the penthouse would be located along the north edge of the roof. This asymmetrical placement would be inconsistent with the placement of the penthouse features of the museum buildings along the north side of the Mall. The Smithsonian Institution should minimize adverse effects on distant views by centering the penthouse on the Corona, following the precedent of other buildings along the Mall.
- Minimize adverse effects on distant views of the Washington Monument Grounds, the Mall, and Federal Triangle from locations such as the top of the Washington Monument and from the air by reducing the size of the plinth. Viewed from locations such as the top of the Washington Monument and from the air, the cantilevered plinth would increase the perceived mass of the Plinth Alternative. The Smithsonian Institution should minimize adverse effects by pulling back or reducing the size of the plinth.

- Minimize adverse effects on views of the Washington Monument Grounds, the Mall, and Federal Triangle at night by reducing exterior night lighting.

#### Spatial Organization

- Minimize adverse effects on the spatial organization of the Washington Monument Grounds by altering the treatment of the landscape design. As currently designed, the Plinth Alternative would eliminate a significant portion of the historic open space of the Washington Monument Grounds. The Smithsonian Institution should minimize adverse effects by designing a landscape that is more harmonious with the informal, picturesque character of the Washington Monument Grounds. The Smithsonian Institution should include informal landscape elements and water features on the south side of the project site and limit formal landscape elements and water features to the north side of the project site. The Smithsonian should design the landscape with direct views to the Washington Monument.

#### Land Use

- Minimize adverse effects on land use by altering the treatment of the landscape design. The Plinth Alternative currently features formalized spaces and little public gathering or recreational space. The Smithsonian Institution should minimize adverse effects by increasing the opportunity for a publicly accessible landscape and gathering spaces.

#### Circulation/Topography/Vegetation

- Minimize adverse effects on the circulation, topography, and vegetation of Washington Monument Grounds by altering the treatment of the landscape design. The landscape design of the Plinth Alternative is currently formal in character. The Smithsonian Institution should minimize adverse effects by incorporating curvilinear circulation configurations, more open lawn, and less formal water elements to be more compatible with the informal, picturesque character of the Washington Monument Grounds.

#### Buildings and Structures

- Minimize adverse effects on the Washington Monument by reworking the treatment of the west facade. Although the west elevation in the Plinth Alternative would have the biggest exposure to the Washington Monument Grounds, it would read as a side facade, diminishing the prominence of the Washington Monument. The Smithsonian Institution should minimize adverse effects by addressing the treatment of the west facade to better relate to the Washington Monument Grounds without detracting from the idea of the entrance facades.
- Minimize adverse effects on the buildings and structures within the Washington Monument Grounds, Federal Triangle, and the Mall. The Smithsonian should refine the skin treatment of the Corona to minimize reflectivity and explore ways to reduce the relative scale of the Plinth Alternative.

## Plaza Alternative

### Views and Vistas

- Minimize adverse effects on distant views of the Washington Monument Grounds, the Mall, and Federal Triangle from locations such as the top of the Washington Monument and from the air by modifying the treatment of the penthouse. As currently designed, the roof of the Plaza Alternative would feature an outdoor terrace/memorial and a penthouse containing VIP space and a café; the penthouse would be located along the north edge of the roof. This asymmetrical placement would be inconsistent with the placement of the penthouse features of the museum buildings along the north side of the Mall. The Smithsonian Institution should minimize adverse effects on distant views by centering the penthouse on the Corona, following the precedent of the other buildings along the Mall.
- Minimize adverse effects on views of the Washington Monument Grounds, the Mall, and Federal Triangle at night by reducing exterior night lighting.

### Spatial Organization/Land Use/Circulation/Topography/Vegetation/Buildings and Structures

Same as the Plinth Alternative.

## Pavilion Alternative

### Views and Vistas

- Minimize adverse effects on distant views of the Washington Monument Grounds, the Mall, and Federal Triangle from locations such as the top of the Washington Monument and from the air by modifying the treatment of the penthouse. As currently designed, the roof of the Pavilion Alternative would feature an outdoor terrace and a penthouse containing VIP space and a cafe. The penthouse would be located along the north edge of the roof. This asymmetrical placement would be inconsistent with the placement of the penthouse features of the museum buildings along the north side of the Mall. The Smithsonian Institution should minimize adverse effects by centering the penthouse on the Corona, following the precedent of the other buildings along the Mall.
- Minimize adverse effects on views of the Washington Monument Grounds, the Mall, and Federal Triangle at night by reducing exterior night lighting.

### Spatial Organization/Land Use/Circulation/Topography/Vegetation/Buildings and Structures

Same as the Plinth Alternative.

## **Refined Pavilion Alternative**

### Views and Vistas

- Minimize adverse effects on distant views of the Washington Monument Grounds from locations such as the top of the Washington Monument and from the air by reducing the amount of hardscape in the landscape design
- Minimize adverse effects on views of the Washington Monument Grounds, the Mall, and Federal Triangle at night by reducing exterior night lighting

### Spatial Organization/Land Use/Circulation/Topography/Vegetation

- Same as the Plinth Alternative.

### Building and Structures

- Minimize adverse effects on the Washington Monument by reworking the treatment of the west facade. Although the west elevation in the Refined Pavilion Alternative would have the biggest exposure to the Washington Monument Grounds, it would read as a side facade, diminishing the prominence of the Washington Monument. The Smithsonian Institution should minimize adverse effects by addressing the treatment of the west facade to better relate to the Washington Monument Grounds without detracting from the idea of the entrance facades.



### 3.4 VISUAL RESOURCES

#### 3.4.1 What are the visual characteristics of the project site and how does it relate to the surrounding area?

The visual character of the site and its surrounding urban context were documented within the Tier I Final EIS (Smithsonian Institution, 2008a). The following discussion both summarizes and supplements that analysis.

##### Visual Character of the Site

The NMAAHC site is located on the northeast corner of the Washington Monument Grounds and within the National Mall, just west of the NMAH. It is bordered on four sides by streets: Constitution Avenue to the north and 14<sup>th</sup> Street to the east are major urban thoroughfares that follow the rectilinear city grid; 15<sup>th</sup> Street to the west and Madison Drive to the south carry lighter volumes and deviate from the grid, with Madison Drive angling slightly to the south, and 15<sup>th</sup> Street curving to the east. Sidewalks visually divide the vehicular rights-of-way from the open space, and two gently curving paths bisect the northern portion of the site. A double row of elm trees runs along the northern edge of the site and another grove of trees fills the northeast corner. The balance of the site is grassy lawn. A temporary concessionaire's trailer is located at the south end of the site along Madison Drive.

##### Urban Design/Architectural Context

The NMAAHC site is positioned at the convergence of three distinct urban districts: the Washington Monument Grounds, the National Mall, and the Federal Triangle. The Washington Monument Grounds, which encompass the project site and parcels to the south, southwest, and west, is an expanse of rolling lawn that rises slightly, culminating in the Washington Monument. The Grounds are bordered on the north, west, and south sides by mature trees, and the lawns are bisected by a series of curving paths that lead towards or encircle the Washington Monument.

Envisioned by L'Enfant, and then reinforced and extended by the McMillan Commission, the National Mall and adjacent open spaces visually stretch west from the U.S. Capitol Building to the Potomac River, and north from the Jefferson Memorial to the White House. Its strong east-west axial alignment provides a formal landscaped setting for many of the city's memorials and museums. The central lawn is defined by rows of American elms and a series of museums that line its north and south sides between 2<sup>nd</sup> and 14<sup>th</sup> Streets.

The Federal Triangle, located north and northeast of the site, is an area of monumental, classically inspired federal buildings on tightly defined urban parcels. The NMAAHC site can be considered a "hinge" between these three districts.

The NMAAHC site is defined in part by the setback and alignments of the buildings that surround it. NMAH sits back approximately 160 feet from the curblines on Constitution Avenue and on Madison Drive, and the south face of the building is set back approximately 505 feet from the centerline of the National Mall. The NMNH, National Gallery, and the East Wing of the National Gallery share a common setback on their south sides, each being located 445 feet from the centerline of the National Mall. As a result, the viewshed looking west along the National Mall widens as one approaches the Washington Monument Grounds. The Herbert C. Hoover building sits back approximately 160 feet from the curbline on Constitution Avenue, 85 feet on 14<sup>th</sup> Street, and 35 feet on 15<sup>th</sup> Street (Google, Inc., 2010). The structures surrounding the NMAAHC site are unified through a common centerline that runs east-west through the buildings on the north side of the National Mall, a minimum setback of 445-feet from the centerline of the National Mall, and reciprocal physical relationships between the museums on the north side of the National Mall, and their counterparts on the National Mall's south side.

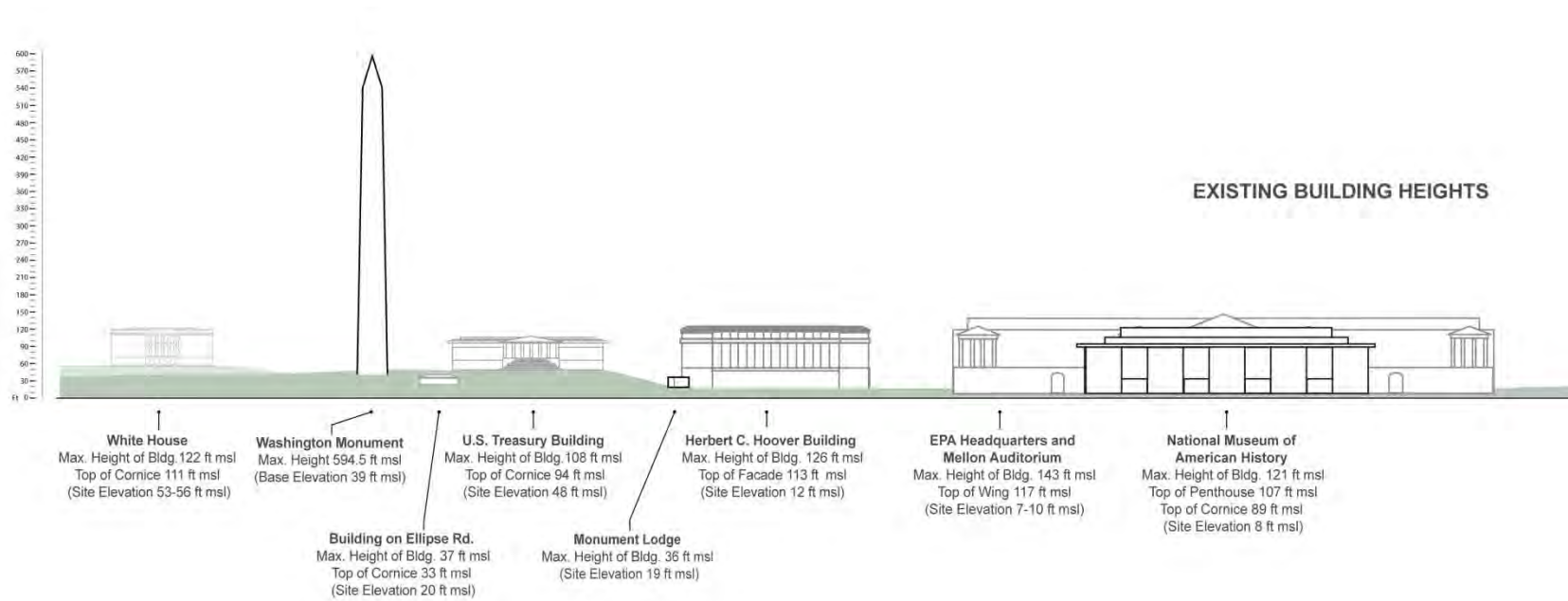
The buildings and structures surrounding the NMAAHC site vary somewhat in massing, height, materials, and style. While the form of the NMAH east of the site is rectangular and “blocky,” the Smithsonian Institution Building to the southeast is irregular in form with strong vertical elements. The building materials employed in the immediate vicinity of the site are diverse, but are uniformly light colored, non-reflective natural stones. Architectural styles vary from Classical Revival forms within the Federal Triangle, to the classically inspired, modern form of NMAH. Finally, adjacent building elevations measured from sea level to the peak of roofs vary from 108 feet at the U.S. Treasury building, to 143 feet at the Mellon Auditorium (see Figure 3.4.1).

### **Key Urban Viewsheds**

Views and vistas are defining elements of the L'Enfant and McMillan plans for the city of Washington. Designed views are afforded along north-south and east-west rights-of-way, diagonal avenues, and the major cross axes of the National Mall. While the views along rights-of-way are tightly defined, those along the open space of the National Mall are expansive. In addition to the designed axial views, there are non-cardinal views between buildings, monuments, and open spaces within the monumental core.

### **Night Illumination**

While there is no established hierarchy for lighting the monumental core, the U.S. Capitol Building, Washington Monument, Lincoln Memorial, White House, and Jefferson Memorial visually dominate the city at night (NPS, 2010). The Washington Monument is lit from its base, while each of the other four structures has both internal and external lighting. Directly north of the NMAAHC site, the south façade of the Herbert C. Hoover building is evenly lit by lights placed near the base of the building angled up. In addition, streetlights line Constitution Avenue. East of the site, NMAH is lit with a gentle yellow-white light within the vertical window wells on 14<sup>th</sup> Street and Constitution Avenue, at the pedestrian ramps, and at the glass entrance. Northeast of the site, the building that houses the EPA Headquarters and Mellon Auditorium is lit by a series of large lanterns along its south face. South from the NMAAHC site across the National Mall, the light from the U.S. Department of Agriculture building is similar in intensity to the Herbert C. Hoover building. Currently, the NMAAHC site is generally dark, with gentle lighting at the edges of the site. Views west along the axis of the National Mall culminate at the dramatically lit Washington Monument.



**Figure 3.4.1 Elevation Showing Relative Building Heights in the Vicinity of the Project Site**

Source: AECOM, 2010

\*Approximate dimensions for adjacent buildings based on field study and existing surveys.

### 3.4.2 How are impacts to visual resources assessed?

As documented in the NMAAHC Tier I EIS, the impacts of the proposed action on visual resources include both short-term and long-term impacts. Short-term impacts would result from visual disruptions due to construction activities. Long-term impacts would result from obstructed or altered views to and from the NMAAHC site; the visual compatibility of the proposed action with its existing visual environment and other proposed projects; and the loss or creation of unique visual or aesthetic elements (Smithsonian Institution, 2008a).

The thresholds used for assessing the intensity of impacts in this Tier II analysis are as follows:

**No Effect:** The proposed action would not impact the visual environment or surrounding urban context.

**No Significant Effect or Minor Effects:** The effects would not be significant if the proposed action would not substantially change the viewshed; would not substantially change the existing visual character or quality of the site and its surroundings; would not create substantial light or glare that would affect day or nighttime views in the area; and would not be inconsistent with the surrounding urban context. The adverse (or beneficial) effect is detectable, but slight, and would minimally diminish (or enhance) overall integrity of the viewshed or urban context.

**Moderate/Significant Effect:** The effects would be moderate/significant if the proposed action would result in a effect on a key viewshed; would alter the existing visual

character of quality of the site and its surroundings; would create a new source of light or glare that would affect day or nighttime views in the area; or would be inconsistent with the surrounding urban context. Most of the moderate/significant effects would somewhat diminish the overall integrity of the viewshed or urban context and thus would be, by nature, adverse. However, in some instances, there may also be beneficial effects, or a combination of adverse and beneficial effects.

**Major/Significant Effect:** The effects would be major/significant if the proposed action would result in a substantial effect on a key viewshed; would substantially alter the existing visual character of quality of the site and its surroundings; would create a new source of light or glare that would substantially affect day or nighttime views in the area; or would be substantially inconsistent with the surrounding urban context. Most of the major/significant effects would significantly diminish the overall integrity of the viewshed or urban context and thus would be, by nature, adverse. However, in some instances, there may also be a combination of adverse and beneficial effects.

The analysis that follows addresses effects on the surrounding urban context, key urban view corridors, and night lighting. Note that setback measurements are derived utilizing the maximum building coverage area, including overhangs. Also note that building heights are generally measured from sea level in order to make the most accurate visual comparisons between existing buildings and the proposed structure or structures.

### 3.4.3 How would the proposed action relate to the surrounding urban context?

#### No Action Alternative

With the No Action Alternative, the NMAAHC would not be constructed on the project site, and the current visual condition of the site would continue. Thus, there would be no impacts on the surrounding urban context.

#### Action Alternative 1: Plinth Concept

With the Plinth Alternative, the height of the proposed building would generally be consistent with adjacent structures. The top of the Corona would be approximately 105 feet above grade, and 118 feet above sea level. A penthouse would extend an additional 16 feet 6 inches above the roof on a portion of the building. Thus, the top of the penthouse would be located 134 feet 6 inches above sea level.

Measuring their relative elevations at the highest point on their roofs, the Plinth Alternative would be approximately 13.5 feet higher than NMAH, 8.5 feet higher than the Herbert C. Hoover building, and 8.5 feet lower than the EPA Headquarters and Mellon Auditorium building. The top of the Corona would be 29 feet taller than the cornice of the adjacent NMAH, 1 foot taller than the top of the wing of the EPA Headquarters and Mellon Auditorium, and 5 feet higher than the top of the facade at the Herbert C. Hoover Building. The relationship between the Plinth Alternative and the existing buildings is illustrated in Figure 3.4.2.

While the Plinth Alternative would generally be consistent in height with surrounding structures, it would differ somewhat in its

massing, alignment, and setbacks. The facades of the EPA Headquarters and Mellon Auditorium building and the Herbert C. Hoover building have strong vertical design elements like the Corona. However, these buildings, as well as NMAH, have simple bases that follow the lines and support the main bodies of the buildings. With the Plinth Alternative, by contrast, the Corona would rest on a plinth, which would project beyond the main building mass to the north and south. In addition, the penthouse of the Plinth Alternative would not be centered on the Corona, but would be pushed to the north side of the roof. This alignment of the penthouse would differ from other museums on the north side of the National Mall.

With the Plinth Alternative, the Corona would be set back approximately 74 feet from 14<sup>th</sup> Street and approximately 49 feet from 15<sup>th</sup> Street. This building placement would respect the eastern and western setbacks of the Herbert C. Hoover building to the north (see Figure 3.4.3). On Constitution Avenue, however, the plinth would be set back approximately 107 feet from the curblineline and would project approximately 36 feet beyond the northern face of NMNH. While the base of the plinth would not extend beyond the 445-foot setback line to the south, the overhang of the plinth would extend approximately 7 feet beyond this line. This could be exaggerated by the water feature at the south end of the site, as due to its formality, it could read as an extension of the building rather than as a landscape element. Roughly centered on the site, the proposed Corona in the Plinth Alternative would generally respect the common centerline that runs east-west through the buildings on the north side of the National Mall.

The NMAAHC site is located within the Washington Monument Grounds, immediately west of the westernmost museums that line

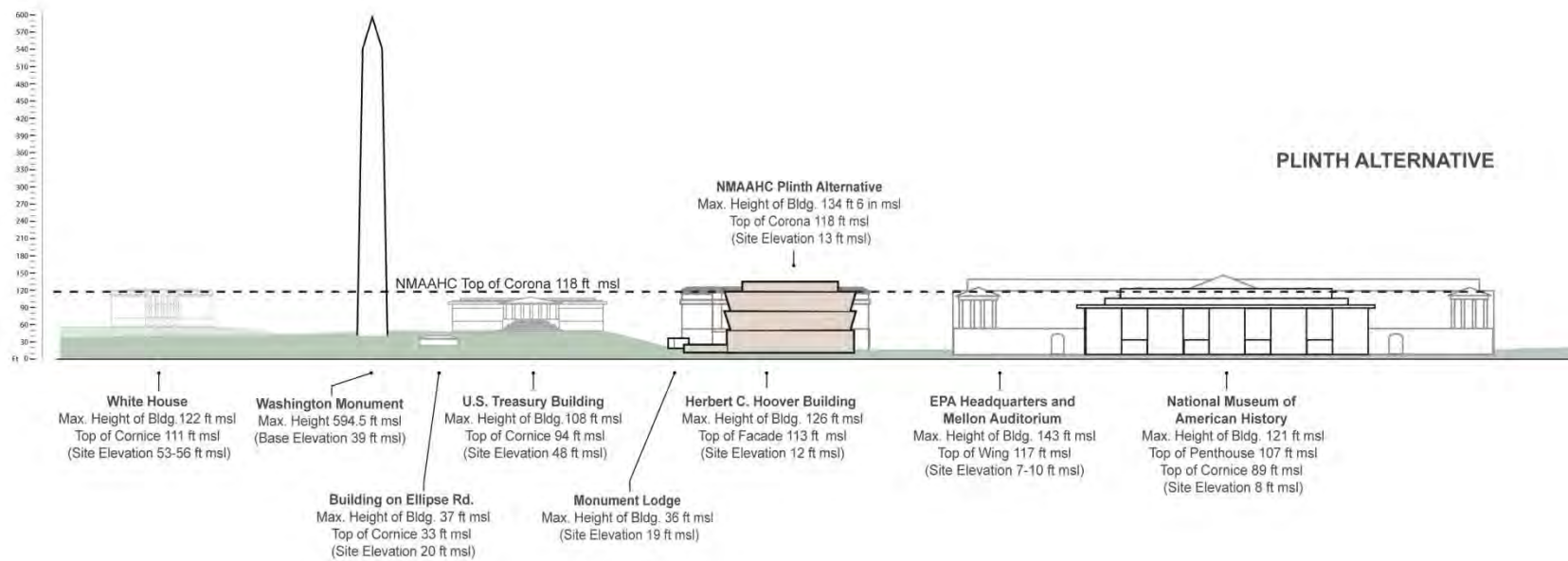
the north side of the National Mall. The site, and what is constructed on it, would be interrelated with the National Mall, the Washington Monument, and the Washington Monument Grounds. As discussed above, the overhang of the plinth would extend beyond the existing established setback lines on the north and south. The Plinth Alternative would thus be set apart from the museums on the north side of the National Mall. The formal design of both the building and the landscape on the north side of the site would be consistent with the Herbert C. Hoover building, and the irregularly spaced clumps of trees and curving path on the west side of the site would relate to the informal Grounds of the Washington Monument. The formal nature of the landscape on the south side of the site, including the expansive reflecting pool, would stand in sharp contrast to the picturesque nature of the Grounds. As such, the southwest side of the Plinth Alternative would not relate physically and visually to its context to the south.

As documented within the discussion of the site's architectural context, the buildings on the National Mall and within the Federal Triangle represent a wide range of architectural styles and materials. While the building materials differ, from Tennessee Pink marble to limestone to sandstone, they are uniformly light-colored and primarily natural, non-reflective stone. The exterior material proposed at the NMAAHC would contrast with the surrounding building materials not only in its darker color but also potentially in its finish. This has the potential to make the building stand out visually within the surrounding urban context as a distinctive feature relative to the white marble of the Washington Monument.

The form of the proposed NMAAHC, with its base, main building, and penthouse, would respond to similar architectural components of the surrounding buildings. However, the projection of the plinth

beyond the mass of the Corona, as well as the angled sides of the Corona, would represent a departure from the classical aesthetic that dominates the buildings in the vicinity of the Washington Monument.

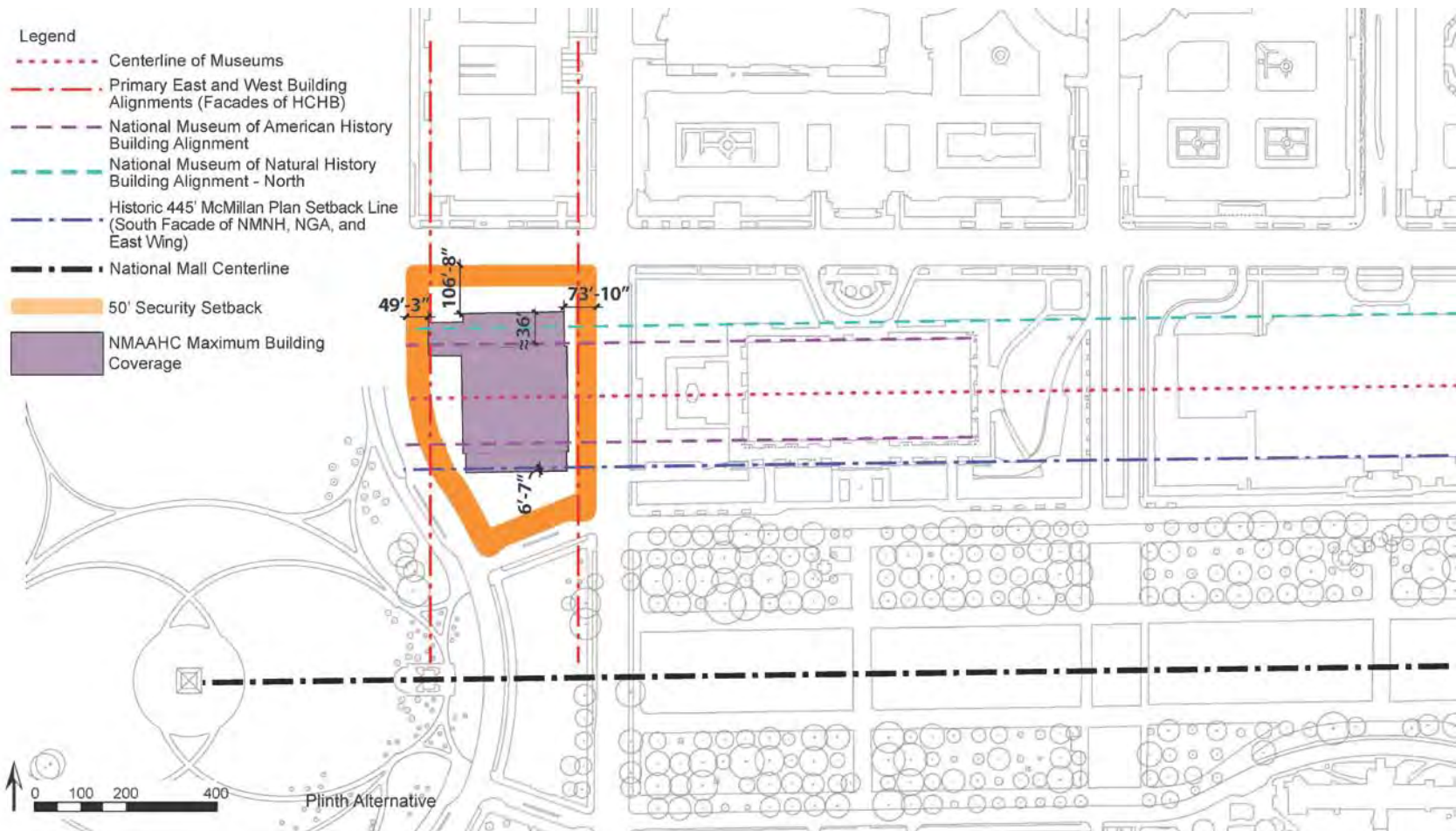
Overall, the Plinth Alternative would result in major/significant adverse effects on the urban context, due primarily to the projection of the overhang of the plinth beyond the established setback to the north, the slight overhang of the plinth beyond the 445-foot setback line on the south, and the slight misalignment with the common centerline established by museums on the north side of the National Mall, the lack of symmetry of the penthouse, the potential contrast between the tone of the exterior material on the Corona and the surrounding structures, and the inconsistency of the design of the southern portion of the landscape with the picturesque character of the Washington Monument Grounds.



**Figure 3.4.2 Plinth Alternative: Elevation Showing Relative Building Heights in the Vicinity of the Project Site**

Source: AECOM, 2010

\*Precise dimensions for NMAAHC obtained from current design documents; approximate dimensions for adjacent buildings based on field study and existing surveys.



**Figure 3.4.3 Plinth Alternative: Building Alignment**

Source: AECOM, 2010

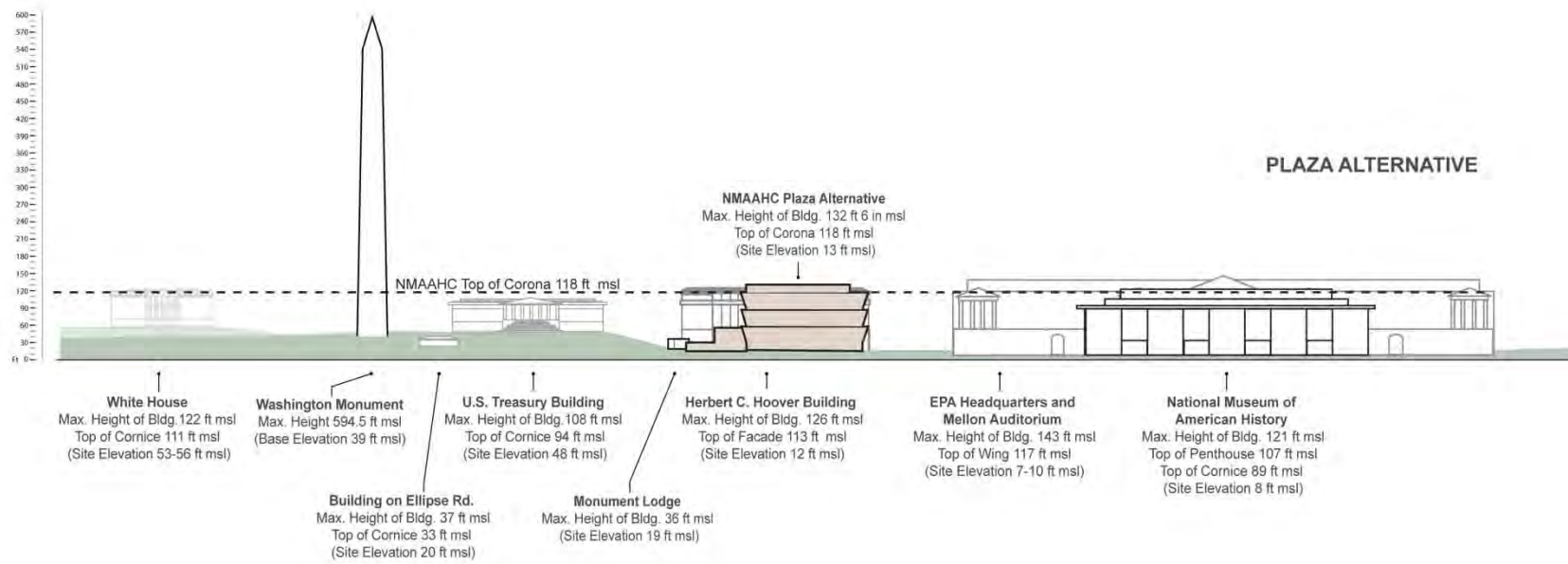


## Action Alternative 2: Plaza Concept

With the Plaza Alternative, the height of the proposed buildings would generally be consistent with adjacent structures. The top of the Corona would be approximately 105 feet above grade, and 118 feet above sea level. A penthouse would extend an additional 14 feet 6 inches above the roof on a portion of the building. Thus, the top of the penthouse would be located 132 feet 6 inches above sea level. Measuring their relative elevations at the highest point on the roofs, the Plaza Alternative would be approximately 11.5 feet taller than NMAH, 6.5 feet taller than the Herbert C. Hoover building, and 10.5 feet shorter than the EPA Headquarters and Mellon Auditorium building. Similarly, the height of the Corona would be 29 feet taller than the cornice of the adjacent NMAH, 1 foot taller than the top of the wing of the EPA Headquarters and Mellon Auditorium building, and 5 feet higher than the top of the facade at the Herbert C. Hoover Building. The relationship between the proposed building and the existing buildings is illustrated in Figure 3.4.4.

The form of the Plaza Alternative would be somewhat consistent with its surrounding context. The facades of the EPA Headquarters and Mellon Auditorium building and the Herbert C. Hoover building have strong vertical design elements like the Corona. In addition, like the surrounding buildings, the Corona in the Plaza Alternative would rest on a simple base that would follow the lines and visually support the main body of the building. In addition, the penthouse of the Plaza Alternative would not be centered on the Corona, but would be pushed to the north side of the roof. This alignment would be different than other museums on the north side of the National Mall. However, the placement of two buildings on a single site is different than the National Mall museums to the east.

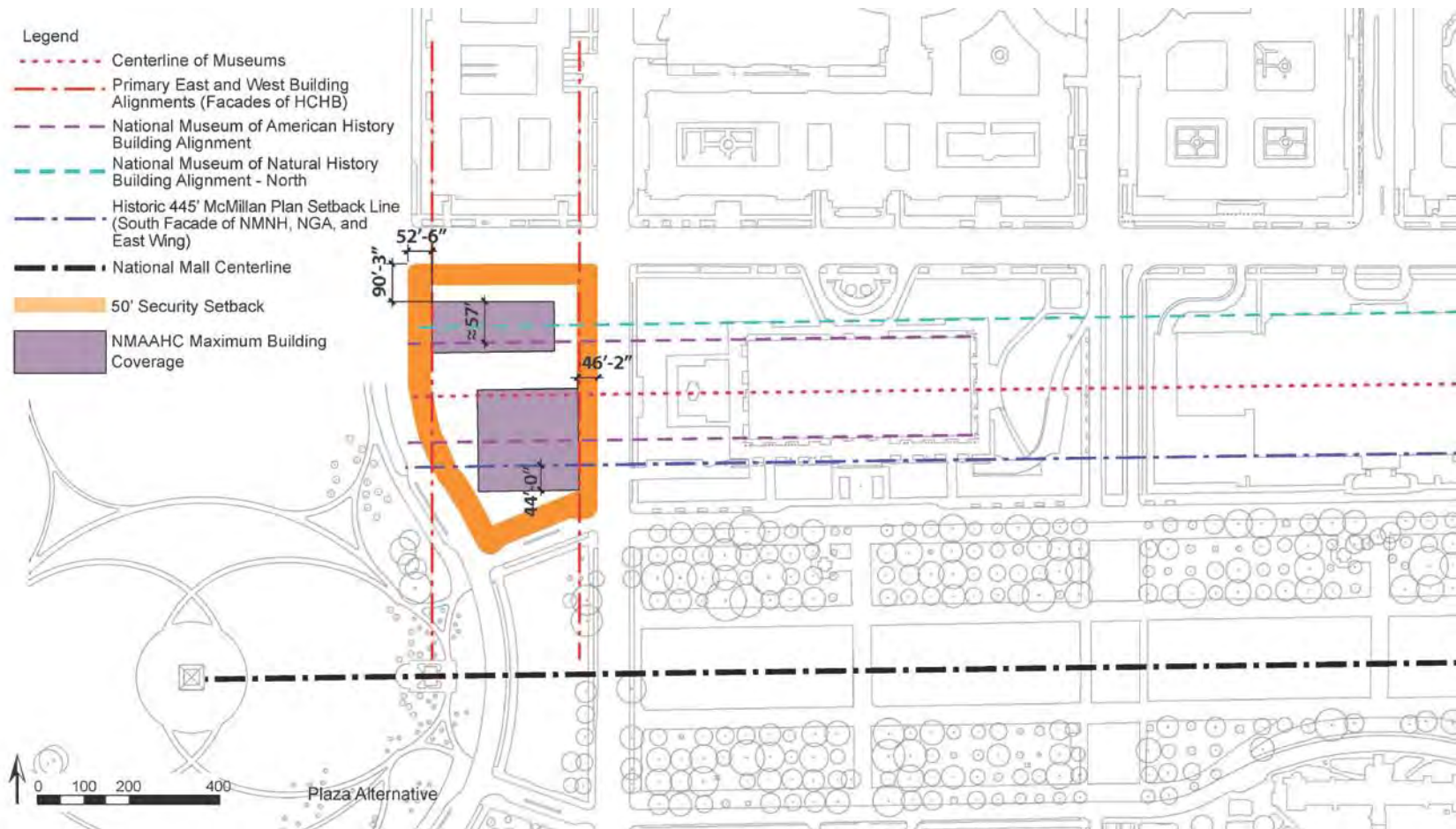
As part of the Plaza Alternative, portions of both the Corona and northern buildings would be located outside the common setback lines. The Corona would be set back approximately 46 feet from 14<sup>th</sup> Street and would thus respect the eastern setback established by the Herbert C. Hoover building (see Figure 3.4.5). The northern building would be set back approximately 53 feet from 15<sup>th</sup> Street and would also respect the western setback established by the Herbert C. Hoover building. However, on Constitution Avenue the building would be set back approximately 90 feet from the curblin, extending 57 feet beyond the setback established by the north face of the NMNH to the east. The south face of the Corona would also extend 44 feet beyond the 445-foot setback established by the McMillan Plan. Further, by creating the open plaza, the Plaza Alternative would not respect the common centerline established by the buildings on the north side of the National Mall, as the Corona would be shifted to the south and the northern building would be shifted to the north. This alignment, together with the siting of two buildings on a single parcel, would make the NMAAHC stand out from the buildings on the north side of the National Mall.



**Figure 3.4.4 Plaza Alternative: Elevation Showing Relative Building Heights in the Vicinity of the Project Site**

Source: AECOM, 2010

\*Precise dimensions for NMAAHC obtained from current design documents; approximate dimensions for adjacent buildings based on field study and existing surveys.



**Figure 3.4.5 Plaza Alternative: Building Alignment**

Source: AECOM, 2010

With the Plaza Alternative, the large central plaza would not relate to the informal, green space present at the grounds of the Washington Monument. However, the plaza would allow for similar pedestrian movement through the site and preserve some views of the Washington Monument and Grounds. The more formal nature of the landscape on the north side of the site would relate to the formality of the Herbert C. Hoover building. However, the formal nature of the landscape on the south side of the site, including the reflecting pool, would stand in sharp contrast to the picturesque nature of the Washington Monument Grounds.

As documented within the discussion of the site's architectural context, the buildings on the National Mall and within the Federal Triangle represent a wide range of architectural styles and materials. The Corona building, with its main building and penthouse, would respond to similar architectural components of the surrounding classically-inspired buildings. Conversely, the northern building would stand in contrast to the surrounding structures.

While the building materials on the National Mall and within the Federal Triangle differ, from Tennessee Pink marble to limestone to sandstone, they are uniformly light-colored and primarily natural, non-reflective stone. The exterior materials of the Corona and the northern building proposed in the Plaza, both a bronze metal and expansive glass, would contrast with the surrounding building materials in color and finish. This has the potential to make the buildings stand out visually within the surrounding urban context as distinctive features relative to the white marble of the Washington Monument.

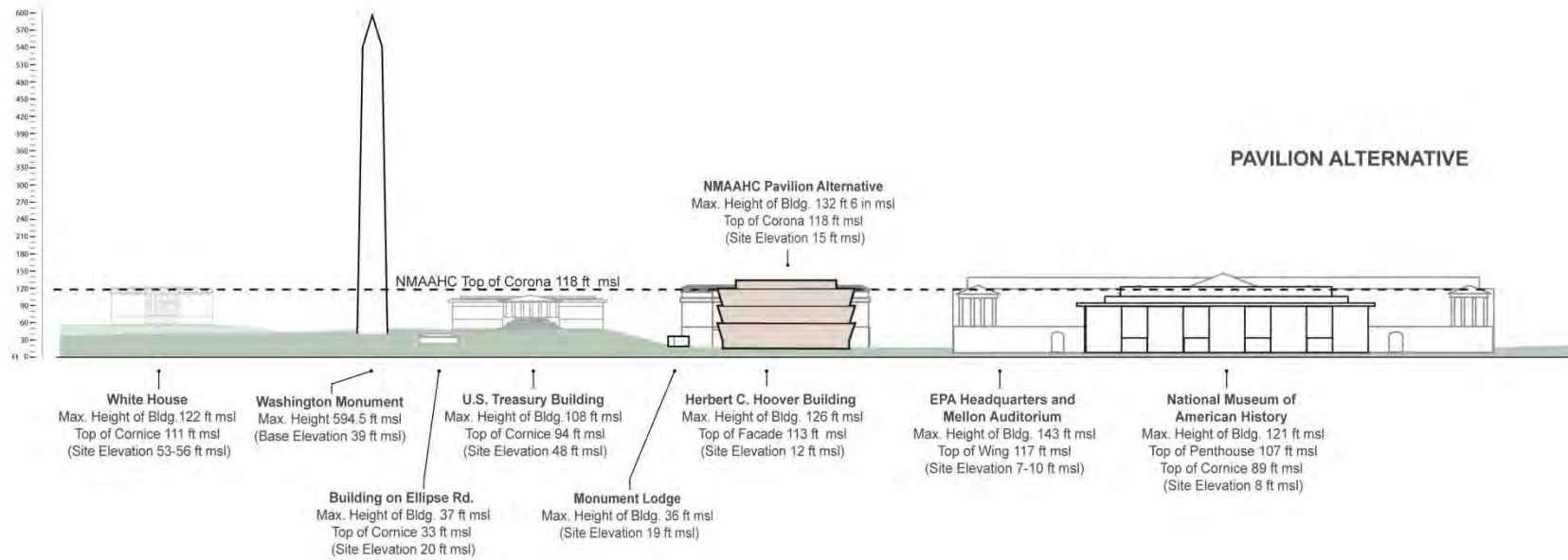
Overall, the Plaza Alternative would result in major/significant adverse effects on the urban context due primarily to the placement of the buildings beyond the common setback lines, including the 445-foot setback from the centerline of the National Mall, the inconsistency of the design of the south side of the site with the picturesque character of the Washington Monument Grounds, the lack of symmetry of the penthouse, the potential contrast between the tone of the exterior material of the Corona and the surrounding structures, and the misalignment with the common centerlines established by the museums on the north side of the National Mall.

### **Action Alternative 3: Pavilion Concept**

With the Pavilion Alternative, the height of the proposed building would generally be consistent with adjacent structures. The top of the Corona would be approximately 103 feet above grade, and 118 feet above sea level. A penthouse would extend an additional 14 feet 6 inches above the roof on a portion of the building. Thus, the top of the penthouse would be located 132 feet 6 inches above sea level. Measuring their relative elevations at the highest point on the roofs, the Pavilion Alternative would be approximately 11.5 feet taller than NMAH, 6.5 feet taller than the Herbert C. Hoover building, and 10.5 feet shorter than the EPA Headquarters and Mellon Auditorium building. The height of the Corona would be taller 29 feet taller than the cornice of the adjacent NMAH, 1 foot taller than the top of the wing of the EPA Headquarters and Mellon Auditorium building, and 5 feet higher than the top of the facade at the Herbert C. Hoover Building. The relationship between the proposed building and the existing buildings is illustrated in Figure 3.4.6.

The Pavilion Alternative would also be somewhat consistent in its form and alignment. The facades of the EPA Headquarters and Mellon Auditorium building, and the Herbert C. Hoover building, have strong vertical design elements like the Corona. In addition, like the surrounding buildings, the Pavilion Alternative would rest on a simple base that would follow the lines and visually support the main body of the building. However, the penthouse of the Pavilion Alternative would not be centered on the Corona, but would be pushed to the north side of the roof. This alignment would be different than other museums on the north side of the National Mall.

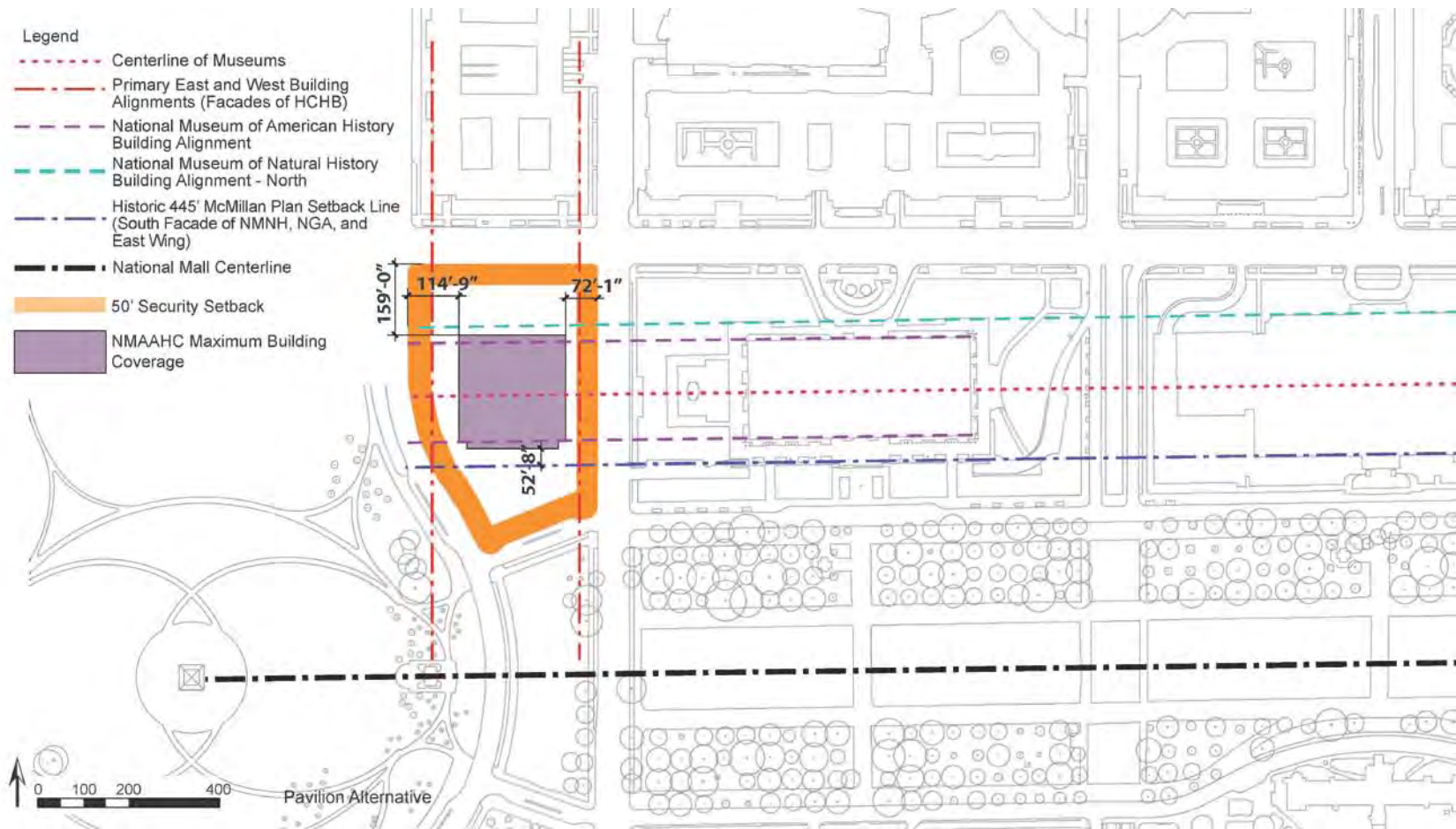
With the Pavilion Alternative, the Corona would be generally located within common setbacks established by adjacent structures. It would be set back approximately 72 feet from 14<sup>th</sup> Street and approximately 115 feet from 15<sup>th</sup> Street would thus respect the eastern and western setbacks established by the Herbert C. Hoover building (see Figure 3.4.7). Similarly, on Constitution Avenue the Corona would be set back approximately 159 feet from the curblin, which is a greater setback than the façade of NMNH. The south face of the NMAAHC would respect the 445-foot setback from the center line of the National Mall. Further, the mass of the building would be centered on the site, such that it would generally respect the common centerline of the northern National Mall museums.



**Figure 3.4.6 Pavilion Alternative: Elevation Showing Relative Building Heights in the Vicinity of the Project Site**

Source: AECOM, 2010

\*Precise dimensions for NMAAHC obtained from current design documents; approximate dimensions for adjacent buildings based on field study and existing surveys.



**Figure 3.4.7 Pavilion Alternative: Building Alignment**

Source: AECOM, 2010

With the Pavilion Alternative, the irregularly spaced clumps of trees and curving path on the west side of the site would relate to the informal Grounds of the Washington Monument. However, the more informal nature of the landscape on the north side of the site would not relate to the formality of the Herbert C. Hoover building. In addition, the formal nature of the landscape on the south side of the site, including the reflecting pool, would stand in sharp contrast to the picturesque nature of the Washington Monument Grounds. As such, both the landscapes on the north and south sides of the Pavilion Alternative would not relate physically and visually to their urban contexts.

As documented within the discussion of the site's architectural context, the buildings on the National Mall and within the Federal Triangle represent a wide range of architectural styles and materials. The Pavilion Alternative, with its main building, and penthouse, would respond to similar architectural components of the surrounding classically inspired buildings. Thus, while it would not be constructed in a similar style to the surrounding buildings, it would not be visually inconsistent in its essential massing. Further, while the building materials on the National Mall and within the Federal Triangle differ, from Tennessee Pink marble to limestone to sandstone, they are uniformly light-colored and primarily natural, non-reflective stone. The exterior material proposed in the Pavilion Alternative would contrast with the surrounding buildings not only in color, but also potentially in finish. This has the potential to make the building stand out visually within the surrounding urban context as a distinctive feature relative to the white marble of the Washington Monument.

Overall, the Pavilion Alternative would result in minor/not significant adverse effects on the urban context due primarily to the

inconsistency of the design of the southern portion of the site with the picturesque character of the Washington Monument Grounds, the lack of symmetry of the penthouse, and the potential contrast between the tone of the exterior material on the Corona and surrounding structures.

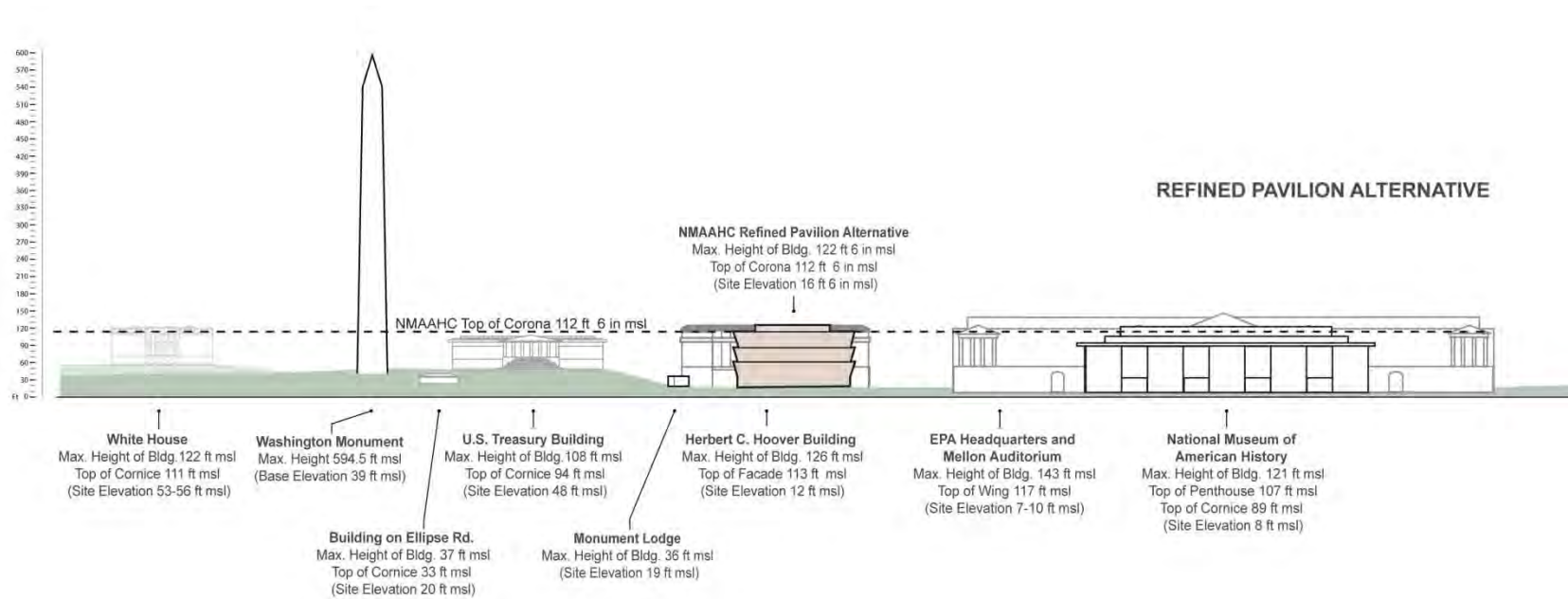


**Action Alternative 4: Refined Pavilion Concept**

With the Refined Pavilion Alternative, the height of the proposed building would generally be consistent with adjacent structures. The top of the Corona would be approximately 96 feet above grade, and 112 feet 6 inches above sea level. A penthouse would extend an additional 10 feet above the roof on a portion of the building. Thus, the top of the penthouse would be located 122 feet 6 inches above sea level. Measuring their relative elevations at the highest point on the roofs, the Pavilion Alternative would be approximately 1.5 feet taller than NMAH, 3.5 feet shorter than the Herbert C. Hoover building, and 20.5 feet lower than the EPA Headquarters and Mellon Auditorium building. Similarly, the height of the Corona would be approximately 23.5 feet taller than the cornice of the adjacent NMAH, approximately the 4.5 feet shorter than the top of the wing at the EPA Headquarters and Mellon Auditorium, and nearly the same height as the top of the façade at the Herbert C. Hoover building. The relationship between the proposed building and the existing buildings is illustrated in Figure 3.4.8.

The Refined Pavilion Alternative would also be somewhat consistent in its form and alignment. The facades of the EPA Headquarters and Mellon Auditorium building, and the Herbert C. Hoover building, have strong vertical design elements like the Corona. In addition, like the surrounding buildings, the Refined Pavilion Alternative would rest on a simple base that would follow the lines and visually support the main body of the building. Further, the penthouse of the Refined Pavilion Alternative would be centered on the Corona. This would be consistent with the other museums on the north side of the National Mall.

With the Refined Pavilion Alternative, the Corona would be set back approximately 72 feet from 14<sup>th</sup> Street and 137 feet from 15<sup>th</sup> Street, and would thus respect the eastern and western setbacks established by the Herbert C. Hoover building (see Figure 3.4.9). On Constitution Avenue, the Refined Pavilion Alternative would be set back approximately 226 feet from the curblineline, which is a substantially greater setback than the façade of NMNH and NMAH. While the edge of the Corona would not extend south beyond the McMillian Plan 445-foot setback line from the National Mall, the overhang of the porch would extend south beyond this line by approximately 28 feet. Its placement on the site, slightly south of center, locates it such that it would be out of alignment with the common centerline of the museum buildings on the north side of the National Mall. While inconsistent, the building's placement could be viewed as reinforcing the site as a hinge between the Washington Monument Grounds and the National Mall.



**Figure 3.4.8 Refined Pavilion Alternative: Elevation Showing Relative Building Heights in the Vicinity of the Project Site**

Source: AECOM, 2010

\*Precise dimensions for NMAAHC obtained from current design documents; approximate dimensions for adjacent buildings based on field study and existing surveys.



**Figure 3.4.9 Refined Pavilion Alternative: Building Alignment**

Source: AECOM, 2010

As proposed, the rolling landscape and curving paths of the Refined Pavilion Alternative would relate to the informal Grounds of the Washington Monument and correspond to the pathways at the Ellipse. However, the more informal nature of the landscape on the north side of the site would not relate to the formality of the Herbert C. Hoover building.

As documented within the discussion of the site's architectural context, the buildings on the National Mall and within the Federal Triangle represent a wide range of architectural styles and materials. The Refined Pavilion Alternative, with its main building, and penthouse, would respond to similar architectural components of the surrounding classically inspired buildings. Thus, while it would not be constructed in a similar style to the surrounding buildings, it would not be visually inconsistent in its essential massing.

Further, while the building materials on the National Mall and within the Federal Triangle differ, from Tennessee Pink marble to limestone to sandstone, they are uniformly light-colored and primarily natural, non-reflective stone. The exterior material proposed in the Refined Pavilion Alternative would contrast with the surrounding building materials in both its darker color and finish. This has the potential to make the building stand out visually within the surrounding urban context as a distinctive feature relative to the white marble of the Washington Monument.

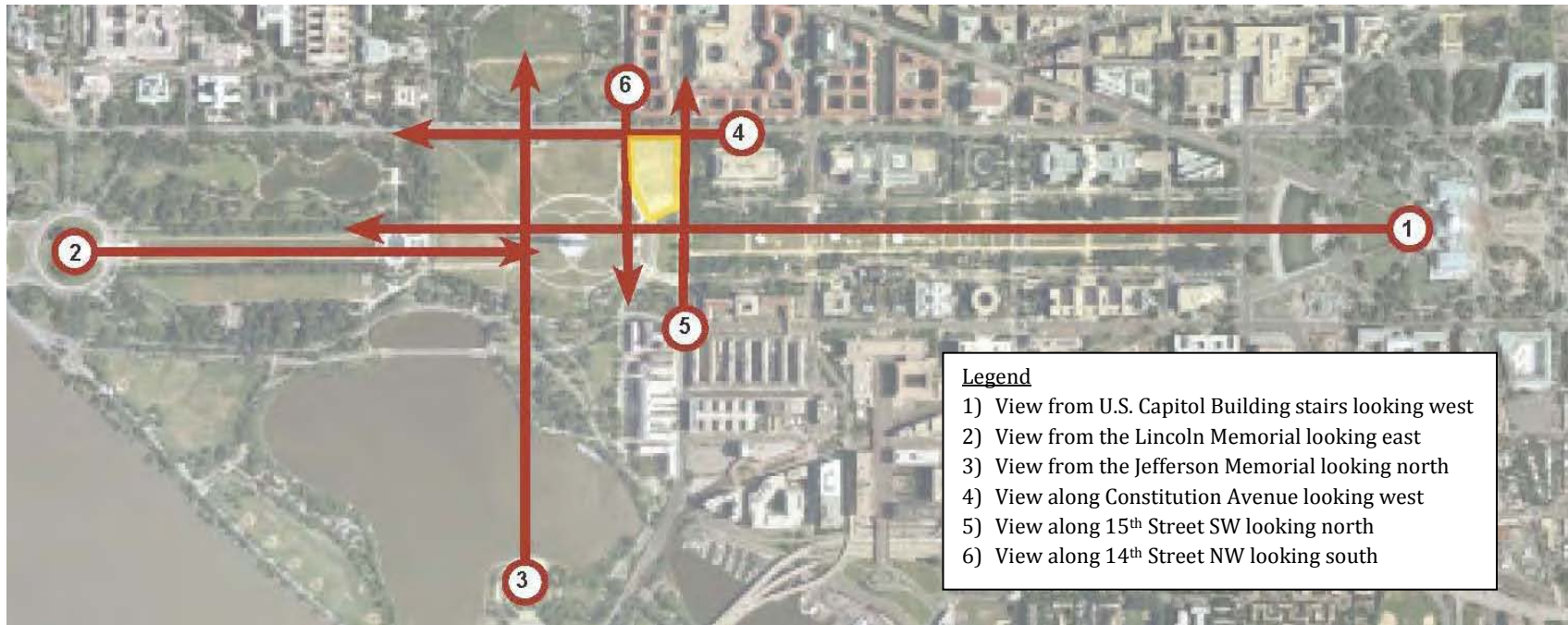
Overall, the Refined Pavilion Alternative would result in minor/not significant adverse effects on the urban context due primarily to the extension of the porch overhang south beyond the 445-foot setback line, the slight misalignment with the common centerline established by the museums on the north side of the National Mall, and the potential contrast between the tone of the exterior material on the Corona and the surrounding structures.

### **3.4.4 How would the proposed action impact key urban viewsheds?**

Six key viewsheds and view corridors were identified for analysis (see Figure 3.4.10). These include: a view west from the lower terrace of the U.S. Capitol Building, a view east from the steps of the Lincoln Memorial, a view from the steps of the Thomas Jefferson Memorial looking north along the 16<sup>th</sup> Street axis, a view west on the Constitution Avenue corridor from east of 14<sup>th</sup> Street, a view north along the 14<sup>th</sup> Street corridor from Independence Avenue, and a view south along the 15<sup>th</sup> Street corridor from north of Constitution Avenue. The views represent long vistas along major axes and they are intended to assess how the action alternatives would fit within the established urban context. For each of these corridor and axial views, simulations have been created to assist in the analysis. These views differ from those analyzed within the previous historic resources discussion. Those views focus on both direct and non-cardinal views of the proposed facility from identified historic properties within close proximity of the site, whereas this section of the Tier II EIS focuses on effects to existing major urban view corridors and visual axes.

#### **No Action Alternative**

With the No Action Alternative, the NMAAHC would not be constructed on the project site. Thus, there would be no impacts on key urban viewsheds.



**Figure 3.4.10 Locations of Key Views**

*Source: AECOM, 2010*

**Action Alternative 1: Plinth Concept***U.S. Capitol-East/West Cross Axis*

The Washington Monument is the focal point of the axial view looking west from the lower terrace at the U.S. Capitol Building (see Figure 3.4.11). The grassy lawn of the Capitol Grounds and the Capitol Reflecting Pool appear in the foreground, while the greensward of the National Mall stretches west to the Washington Monument. This central grassy panel is bordered on both sides by pedestrian paths and lined by large elm trees. The dome of NMNH and the turrets of the Smithsonian Institution Building are visible above the treeline. With the Plinth Alternative, the proposed NMAAHC would be slightly visible from this viewpoint as the top of the penthouse may be seen over the treecover, as illustrated in Figure 3.4.11. Due to the visibility of the roof elements and the sensitivity of the viewshed, effects would be moderate/significant.

Existing View



Proposed View

**Figure 3.4.11 Plinth Alternative: View West from the U.S. Capitol Building**

Source: AECOM, 2010

*Lincoln Memorial-East/West Cross Axis*

The Washington Monument is the focal point of the axial view looking east from the steps of the Lincoln Memorial (see Figure 3.4.12). The plaza on the east side of the Lincoln Memorial appears in the foreground, and beyond this pedestrian paths and grassy lawns line either side of the Reflecting Pool, drawing the viewer's eye east along the axis of the National Mall. The tower of the Old Post Office is visible just above the treeline on the left side of the view, and the U.S. Capitol Building is partially visible in the distance behind the Washington Monument. With the Plinth Alternative, the Corona and the penthouse would not be visible, as they would be shielded by trees. The approximate location of the building within the treecover is illustrated in Figure 3.4.12. Due to the fact that the building would not be visible, there would be no effects on this viewshed.

Existing View



Proposed View



**Figure 3.4.12 Plinth Alternative: View East from the Lincoln Memorial**

*Source: AECOM, 2010*



*Jefferson Memorial-North/South Cross Axis*

The expansive view looking north from the steps of the Jefferson Memorial includes the Tidal Basin in the foreground (see Figure 3.4.13). The cherry trees that encircle the Tidal Basin are visible in the midground, with the larger trees of the National Mall behind them. There is a break in the treeline that reveals the White House in the distance along the 16<sup>th</sup> Street axis. Additional buildings are visible above the treeline and the Washington Monument is a focal point at the right side of the view. With the Plinth Alternative, a portion of the NMAAHC would be slightly visible through the trees. Due to the limited visibility of the NMAAHC, effects to this viewshed would be minor/not significant.

Existing View



Proposed View



**Figure 3.4.13 Plinth Alternative: View North from the Jefferson Memorial**

*Source: AECOM, 2010*

*Constitution Avenue View Corridor*

The existing view looking west along the Constitution Avenue corridor is framed by street trees of various heights (see Figure 3.4.14). The upper stories and roofs of the mid-rise buildings in the Federal Triangle that front on the north side of the Avenue are generally visible above the tree canopies. The greenspace that comprises the National Mall and the Washington Monument Grounds is visible along the left side of the view. With the Plinth Alternative, although the proposed museum would be largely obscured by existing trees on the south side of Constitution Avenue during spring and summer months, resulting in minor/not significant effects, there would be moderate/significant effects during the fall and winter months when the leaves are off the trees.

Existing View



Proposed View



**Figure 3.4.14 Plinth Alternative: View West on Constitution Avenue**

*Source: AECOM, 2010*

### *14<sup>th</sup> Street View Corridor*

14<sup>th</sup> Street is a wide north-south thoroughfare that cuts through the National Mall and the center of downtown. The existing view looking north on 14<sup>th</sup> Street from Independence Avenue is framed by mature street trees on either side of the right-of-way (see Figure 3.4.15). No buildings are visible in the foreground or middle of the view; instead, this area reads as open space, corresponding to the greensward of the National Mall and the edge of the Washington Monument Grounds. Tall buildings line the view corridor north of Constitution Avenue. With the Plinth Alternative, the NMAAHC would extend the building line one block to the south on the west side of 14<sup>th</sup> Street. The proposed building would be highly visible, and would substantially alter the perception of the intersection of the National Mall and the Washington Monument Grounds from points south of the National Mall because the new building would be visible through the trees along the west side of the right-of-way. Long-term effects on this view corridor would thus be major/significant.

Existing View



Proposed View



**Figure 3.4.15 Plinth Alternative: View North on 14<sup>th</sup> Street NW**  
*Source: AECOM, 2010*

*15<sup>th</sup> Street View Corridor*

The existing view looking south on 15<sup>th</sup> Street from north of Constitution Avenue is framed by mature trees on either side of the right-of-way in the foreground (see Figure 3.4.16). At Constitution Avenue, the treeline breaks to reveal the Washington Monument Grounds. The greenspace of the Ellipse is visible on the right side of the view and the Washington Monument is partially visible through the trees. The Herbert C. Hoover building establishes the building line along the left side of the view. With the Plinth Alternative, the cafeteria and terrace above would project beyond the mass of the Corona towards 15<sup>th</sup> Street, restricting the left edge of the view and substantially altering the perception of openness of the Washington Monument Grounds as viewed along 15<sup>th</sup> Street. Long-term effects to this view would be major/significant.

Existing View



Proposed View



**Figure 3.4.16 Plinth Alternative: View South on 15<sup>th</sup> Street NW**  
 Source: AECOM, 2010

## Action Alternative 2: Plaza Concept

### *U.S. Capitol-East/West Cross Axis*

The Washington Monument is the focal point of the axial view looking west from the lower terrace at the U.S. Capitol Building (see Figure 3.4.17). The grassy lawn of the Capitol Grounds and the Capitol Reflecting Pool appear in the foreground, while the greensward of the National Mall stretches west to the Washington Monument. This central grassy panel is bordered on both sides by pedestrian paths lined by large elm trees. The dome of NMNH and the turrets of the Smithsonian Institution Building are visible above the treeline. Because of the southern placement of the Corona within the project site, the Plaza Alternative, the top of the penthouse and Corona would be clearly visible over the treecover, as illustrated in Figure 3.4.17. The introduction of these new elements to this key axial view would result in a moderate/significant effect.

Existing View



Proposed View



**Figure 3.4.17 Plaza Alternative: View West from the U.S. Capital Building**

*Source: AECOM, 2010*

*Lincoln Memorial-East/West Cross Axis*

The Washington Monument is the focal point of the axial view looking east from the steps of the Lincoln Memorial (see Figure 3.4.18). The plaza on the east side of memorial appears in the foreground, and beyond this pedestrian paths and grassy lawns line either side of the Reflecting Pool, drawing the viewer’s eye east along the axis of the National Mall. The tower of the Old Post Office is visible just above the treeline on the left side of the view, and the U.S. Capitol Building is partially visible in the distance behind the Washington Monument. With the Plaza Alternative, the NMAAHC buildings would not be visible, as they would be shielded by trees. The approximate location of the buildings within the treecover is illustrated in Figure 3.4.18. Due to the fact that the buildings would not be visible, there would be no effects to this viewshed.

Existing View



Proposed View



**Figure 3.4.18 Plaza Alternative: View East from the Lincoln Memorial**

*Source: AECOM, 2010*

*Jefferson Memorial-North/South Cross Axis*

The expansive view looking north from the steps of the Jefferson Memorial includes the Tidal Basin in the foreground (see Figure 3.4.19). The cherry trees that encircle the Tidal Basin are visible in the midground, with the larger trees of the National Mall behind them. There is a break in the treeline that reveals the White House in the distance along the 16<sup>th</sup> Street axis. Additional buildings are visible above the treeline and the Washington Monument is a focal point at the right side of the view. With the Plaza Alternative, a portion of the NMAAHC would be slightly visible through the trees. Due to the limited visibility of NMAAHC, effects to this viewshed would be minor/not significant.

Existing View



Proposed View



**Figure 3.4.19 Plaza Alternative: View North from the Jefferson Memorial**

*Source: AECOM, 2010*

*Constitution Avenue View Corridor*

The existing view looking west along the Constitution Avenue corridor is framed by street trees of various heights (see Figure 3.4.20). The upper stories and roofs of the mid-rise buildings in the Federal Triangle that front on the north side of the Avenue are generally visible above the tree canopies. The greenspace that comprises the National Mall and the Washington Monument Grounds is visible along the left side of the view. With the Plaza Alternative, although the proposed museum would be largely obscured by existing trees on the south side of Constitution Avenue during spring and summer months, resulting in minor/not significant effects, there would be moderate/significant effects during the fall and winter months when the leaves are off the trees.

Existing View



Proposed View



**Figure 3.4.20 Plaza Alternative: View West on Constitution Avenue**

*Source: AECOM, 2010*



### *14<sup>th</sup> Street View Corridor*

14<sup>th</sup> Street is a wide north-south thoroughfare that cuts through the National Mall and the center of downtown. The existing view looking north on 14<sup>th</sup> Street from Independence Avenue is framed by mature street trees on either side of the right-of-way (see Figure 3.4.21). No buildings are visible in the foreground or middle of the view; instead, this area reads as open space, corresponding to the greensward of the National Mall and the edge of the Washington Monument Grounds. Tall buildings line the view corridor north of Constitution Avenue. With the Plaza Alternative, the NMAAHC would extend the building line one block to the south on the west side of 14<sup>th</sup> Street. The proposed buildings would be highly visible and would substantially alter the perception of the intersection of the National Mall and the Washington Monument Grounds from points south of the National Mall because the new buildings would be visible through the trees along the west side of the right-of-way. Long-term effects to this view would thus be major/significant.

Existing View



Proposed View



**Figure 3.4.21 Plaza Alternative: View North on 14<sup>th</sup> Street NW**  
*Source: AECOM, 2010*

*15<sup>th</sup> Street View Corridor*

The existing view looking south on 15<sup>th</sup> Street from north of Constitution Avenue is framed by mature trees on either side of the right-of-way in the foreground (see Figure 3.4.22). At Constitution Avenue, the treeline breaks to reveal the Washington Monument Grounds. The greenspace of the Ellipse is visible on the right side of the view and the Washington Monument is partially visible through the trees. The Herbert C. Hoover building establishes the building line along the left side of the view. With the Plaza Alternative, the northern building would be located beyond the mass of the Corona towards 15<sup>th</sup> Street, restricting the left edge of the view and substantially altering the perception of the openness of the Washington Monument Grounds as viewed along 15<sup>th</sup> Street. Long-term effects to this view would be major/significant.

Existing View



Proposed View



**Figure 3.4.22 Plaza Alternative: View south on 15<sup>th</sup> Street NW**  
 Source: AECOM, 2010

### Action Alternative 3: Pavilion Concept

#### *U.S. Capitol-East/West Cross Axis*

The Washington Monument is the focal point of the axial view looking west from the lower terrace at the U.S. Capitol Building. The grassy lawn of the Capitol Grounds and the Capitol Reflecting Pool appear in the foreground, while the greensward of the National Mall stretches west to the Washington Monument. This central grassy panel is bordered on both sides by pedestrian paths and lined by large elm trees. The dome of NMNH and the turrets of the Smithsonian Institution Building are visible above the treeline. With the Pavilion Alternative, the proposed NMAAHC would be slightly visible from this viewpoint over the treecover, as illustrated in Figure 3.4.23. Due to the limited visibility of the roof elements, the effects would be minor/ not significant.

Existing View



Proposed View



**Figure 3.4.23 Pavilion Alternative: View West from the U.S. Capitol Building**

*Source: AECOM, 2010*

*Lincoln Memorial-East/West Cross Axis*

The Washington Monument is the focal point of the axial view looking east from the steps of the Lincoln Memorial. The plaza on the east side of Lincoln Memorial appears in the foreground, and beyond this pedestrian paths and grassy lawns line either side of the Reflecting Pool, drawing the viewer's eye east along the axis of the National Mall. The Old Post Office tower is visible just above the treeline on the left side of the view, and the U.S. Capitol Building is partially visible in the distance behind the Washington Monument. With the Pavilion Alternative, the NMAAHC would not be visible due to dense treecover, and thus, there would be no effects to this viewshed. As a reference, the location of the building within the trees is illustrated in Figure 3.4.24.

Existing View



Proposed View



**Figure 3.4.24 Pavilion Alternative: View East from the Lincoln Memorial**

*Source: AECOM, 2010*

*Jefferson Memorial-North/South Cross Axis*

The expansive view looking north from the steps of the Jefferson Memorial includes the Tidal Basin in the foreground (see Figure 3.4.25). The cherry trees that encircle the Tidal Basin are visible in the midground, with the larger trees of the National Mall behind them. There is a break in the treeline that reveals the White House in the distance along the 16<sup>th</sup> Street axis. Additional buildings are visible above the treeline and the Washington Monument is a focal point at the right side of the view. With the Pavilion Alternative, a slight portion of the NMAAHC would be visible through the trees. Due to the limited visibility of these elements, effects would be minor/not significant.

Existing View



Proposed View



**Figure 3.4.25 Pavilion Alternative: View North from the Jefferson Memorial**

*Source: AECOM, 2010*

*Constitution Avenue View Corridor*

The existing view looking west along the Constitution Avenue corridor is framed by street trees of various heights (see Figure 3.4.26). The upper stories and roofs of the mid-rise buildings in the Federal Triangle that front on the north side of the Avenue are generally visible above the tree canopies. The greenspace that comprises the National Mall and the Washington Monument Grounds is visible along the left side of the view. Due to the southern placement of the Pavilion Alternative within the project site, the proposed museum would be largely obscured by existing trees on the south side of Constitution Avenue during spring and summer months, resulting in minor effects; however, there would be moderate/significant effects during the fall and winter months when the leaves are off the trees.

Existing View



Proposed View



**Figure 3.4.26 Pavilion Alternative: View West on Constitution Avenue**

*Source: AECOM, 2010*

*14<sup>th</sup> Street View Corridor*

14<sup>th</sup> Street is a wide north-south thoroughfare that cuts through the National Mall and the center of downtown. The existing view looking north on 14<sup>th</sup> Street from Independence Avenue is framed by mature street trees on either side of the right-of-way (see Figure 3.4.27). No buildings are visible in the foreground or middle of the view; instead, this area reads as open space, corresponding to the greensward of the National Mall and the edge of the Washington Monument Grounds. Tall buildings line the view corridor north of Constitution Avenue. With the Pavilion Alternative, the NMAAHC would extend the building line one block to the south on the west side of 14<sup>th</sup> Street. The proposed building would be highly visible and would substantially alter the perception of the intersection of the National Mall and the Washington Monument Grounds from points south of the National Mall because the new building would be visible through the trees along the west side of the right-of-way. Long-term effects to this view would thus be major/significant.

Existing View



Proposed View



**Figure 3.4.27 Pavilion Alternative: View North on 14<sup>th</sup> Street NW**

*Source: AECOM, 2010*

*15<sup>th</sup> Street View Corridor*

The existing view looking south on 15<sup>th</sup> Street from north of Constitution Avenue is framed by mature trees on either side of the right-of-way in the foreground (see Figure 3.4.28). At Constitution Avenue, the treeline breaks to reveal the Washington Monument Grounds. The greenspace of the Ellipse is visible on the right side of the view and the Washington Monument is partially visible through the trees. The Herbert C. Hoover building establishes the building line along the left side of the view. With the Pavilion Alternative, the proposed building would continue the established building line to the south on the east side of the right-of-way. While it would not obstruct the view, it would substantially alter the perception of the openness of the Washington Monument Grounds as viewed along 15<sup>th</sup> Street. Long-term effects on this view would be major/significant.

Existing View



Proposed View



**Figure 3.4.28 Pavilion Alternative: View South on 15<sup>th</sup> Street**  
 Source: AECOM, 2010



### Action Alternative 4: Refined Pavilion Concept

#### *U.S. Capitol-East/West Cross Axis*

The Washington Monument is the focal point of the axial view looking west from the lower terrace at the U.S. Capitol Building (see Figure 3.4.29). The grassy lawn of the Capitol Grounds and the Capitol Reflecting Pool appear in the foreground, while the greensward of the National Mall stretches west to the Washington Monument. This central grassy panel is bordered on both sides by pedestrian paths and lined by large elm trees. The dome of NMNH and the turrets of the Smithsonian Institution Building are visible above the treeline. With the Refined Pavilion Alternative, the proposed NMAAHC would be slightly visible over the treecover, as illustrated in Figure 3.4.29. Due to the limited visibility of the roof elements, the effects would be minor/not significant.

Existing View



Proposed View



**Figure 3.4.29 Refined Pavilion Alternative: View West from the U.S. Capitol Building**

*Source: AECOM, 2010*

*Lincoln Memorial-East/West Cross Axis*

The Washington Monument is the focal point of the axial view looking east from the steps of the Lincoln Memorial (see Figure 3.4.30). The plaza on the east side of the Lincoln Memorial appears in the foreground, and beyond this pedestrian paths and grassy lawns line either side of the Reflecting Pool, drawing the viewer's eye east along the axis of the National Mall. The Old Post Office tower is visible just above the treeline on the left side of the view, and the U.S. Capitol Building is partially visible in the distance behind the Washington Monument. With the Refined Pavilion Alternative, the NMAAHC would not be visible due to dense treecover, and thus, there would be no effects to this viewshed. As a reference, the location of the building within the trees is illustrated in Figure 3.4.30.

Existing View



Proposed View



**Figure 3.4.30 Refined Pavilion Alternative: View East from the Lincoln Memorial**

*Source: AECOM, 2010*

*Jefferson Memorial-North/South Cross Axis*

The expansive view looking north from the steps of the Jefferson Memorial includes the Tidal Basin in the foreground (see Figure 3.4.31). The cherry trees that encircle the Tidal Basin are visible in the midground, with the larger trees of the National Mall behind them. There is a break in the treeline that reveals the White House in the distance along the 16<sup>th</sup> Street axis. Additional buildings are visible above the treeline and the Washington Monument is a focal point at the right side of the view. With the Refined Pavilion Alternative, a portion of the NMAAHC would be slightly visible through the trees. Due to the limited visibility of the proposed museum, effects to this viewshed would be minor/ not significant.

Existing View



Proposed View



**Figure 3.4.31 Refined Pavilion Alternative: View North from the Jefferson Memorial**

*Source: AECOM, 2010*

*Constitution Avenue View Corridor*

The existing view looking west along the Constitution Avenue corridor is framed by street trees of various heights (see Figure 3.4.32). The upper stories and roofs of the mid-rise buildings in Federal Triangle that front on the north side of the Avenue are generally visible above the tree canopies. The greenspace that comprises the National Mall and the Washington Monument Grounds is visible along the left side of the view. With the Refined Pavilion Alternative, the proposed museum would be largely obscured by existing trees on the south side of Constitution Avenue during spring and summer months, resulting in negligible effects; however there would be minor/not significant effects during the fall and winter months when the leaves are off the trees.

Existing View



Proposed View



**Figure 3.4.32 Refined Pavilion Alternative: View West on Constitution Avenue**

*Source: AECOM, 2010*

### *14<sup>th</sup> Street View Corridor*

14<sup>th</sup> Street is a wide north-south thoroughfare that cuts through the National Mall and the center of downtown. The existing view looking north on 14<sup>th</sup> Street from Independence Avenue is framed by mature street trees on either side of the right-of-way (see Figure 3.4.33). No buildings are visible in the foreground or middle of the view; instead, this area reads as open space, corresponding to the greensward of the National Mall and the edge of the Washington Monument Grounds. Tall buildings line the view corridor north of Constitution Avenue. With the Refined Pavilion Alternative, the NMAAHC would extend the building line one block to the south on the west side of 14<sup>th</sup> Street. This would alter the perception of the intersection of the National Mall and the Washington Monument Grounds from points south of the National Mall because the new building would be visible through the trees along the west side of the right-of-way. Long-term effects to this view would thus be major/significant.

Existing View



Proposed View



**Figure 3.4.33 Refined Pavilion Alternative: View North on 14<sup>th</sup> Street NW**

*Source: AECOM, 2010*

*15<sup>th</sup> Street View Corridor*

The existing view looking south on 15<sup>th</sup> Street from north of Constitution Avenue is framed by mature trees on either side of the right-of-way in the foreground (see Figure 3.4.34). At Constitution Avenue, the treeline breaks to reveal the Washington Monument Grounds. The greenspace of the Ellipse is visible on the right side of the view and the Washington Monument is partially visible through the trees. The Herbert C. Hoover building establishes the building line along the left side of the view. With the Refined Pavilion Alternative, the proposed building would continue the established building line to the south on the east side of the right-of-way. While it would not obstruct the view, it would substantially alter the perception of the openness of the Washington Monument Grounds as viewed along 15<sup>th</sup> Street. Long-term effects on this view would be major/significant.

Existing View



Proposed View



**Figure 3.4.34 Refined Pavilion Alternative: View South on 15<sup>th</sup> Street NW**

*Source: AECOM, 2010*

### **3.4.5 How would the proposed action affect night lighting in the area?**

#### **No Action Alternative**

With the No Action Alternative, the NMAAHC would not be constructed on the project site. Thus, there would be no effects on night lighting in the area.

#### **Action Alternatives 1: Plinth Concept**

With the Plinth Alternative, the museum building would be lit on the inside and there would be exterior lighting on its four facades, at the gathering spaces at the south end of the building, along its walkways, and within its water features at the north and south ends of the site. The interior architectural surfaces would be lit in a manner so that light would be visible from outside the building, but would not substantially contribute to light pollution or light trespass. Because of the bronze panels that would clad the building, the lighting of the outdoor gathering and circulation spaces would provide visibility for pedestrian safety, but would be partially shielded from view. Water features would be softly lit with underwater light fixtures to accentuate water movement and architectural features.

The overall intent would be that the Plinth Alternative would be visible as an important feature in the monumental core, but not compete with nearby landmarks including the Washington Monument and the White House. Dark sky initiatives would be employed to attain the Light Pollution Reduction credit under LEED v.3.0 (Park/Urban).

While the illumination of the Plinth Alternative would not be greater than the surrounding monuments and memorials, it would transform a largely dark site at the edge of the Washington Monument Grounds to one with substantial light at night. This would effectively continue the line of light that emanates from the museums on the north side of the National Mall one block to the west. As such, it has the potential to encroach upon the Washington Monument Grounds.

Due to the projection of the plinth overhang and southern water feature beyond the 445-foot setback line, night views west along the axis of the National Mall would narrow at the Washington Monument Grounds such that the current dark setting of the north side of the Monument would be partially lost. Similarly, night views south on 14<sup>th</sup> and 15<sup>th</sup> Streets would be altered dramatically, as the current dark foreground of the Washington Monument would be lit. If the exterior building materials have reflective qualities, there is the potential for night glare, creating adverse effects on night lighting. However, the intent of the design is to select materials and finishes that minimize such impacts. Overall, long-term effects would be moderate/significant.

**Action Alternative 2: Plaza Concept**

With the Plaza Alternative, the Corona building would be lit on the inside, on its four facades, at the gathering spaces at the south end of the building, along its walkways, and within its water features at the north and south ends of the site. The interior architectural surfaces would be lit in a manner so that the light would be visible from outside the building, but would not substantially contribute to light pollution or light trespass. The lighting of the outdoor gathering and circulation spaces would provide visibility for pedestrian safety, but would be partially shielded from view. Water features would be softly lit with underwater light fixtures to accentuate water movement and architectural features. It is anticipated that the northern building would not be lit at night outside of any necessary security lighting.

The overall intent would be that the Plaza Alternative would be visible as an important feature in the monumental core, but not compete with nearby landmarks including the Washington Monument and the White House. Dark sky initiatives would be employed to attain the Light Pollution Reduction credit under LEED v.3.0 (Park/Urban).

While the illumination of the Plaza Alternative would not be greater than the surrounding monuments and memorials, it would transform a largely dark site at the edge of the Washington Monument Grounds to one with substantial light at night. This would effectively continue the line of light that emanates from the museums on the north side of the National Mall one block to the west. Night views south on 14<sup>th</sup> and 15<sup>th</sup> Streets would be altered substantially, as the current dark foreground of the Washington Monument would be lit.

Since the southern face of the Corona building and water feature would project well beyond the 445-foot common setback, night views west along the axis of the National Mall would narrow at the Washington Monument Grounds such that the current dark setting of the north side of the monument would be partially lost. If the exterior building materials have reflective qualities, there is the potential for night glare, further creating adverse effects on night lighting. However, the intent of the design is to select materials and finishes that minimize such impacts. Overall, there would be major/significant effects.

**Action Alternative 3: Pavilion Concept**

With the Pavilion Alternative, the building would be lit on the inside, on its four facades, at the gathering spaces at the south end of the building, along its walkways, and within its water features at the north and south ends of the site. The interior architectural surfaces would be lit in a manner so that the light would be visible from outside the building, but would not substantially contribute to light pollution or light trespass. The lighting of the outdoor gathering and circulation spaces would provide visibility for pedestrian safety, but would be partially shielded from view. Water features would be softly lit with underwater light fixtures to accentuate water movement and architectural features.

The overall intent would be that the Pavilion Alternative would be visible as an important feature in the monumental core, but not compete with nearby landmarks including the Washington Monument and the White House. Dark sky initiatives would be employed to attain the Light Pollution Reduction credit under LEED v.3.0 (Park/Urban).



While the illumination of the Pavilion Alternative would not be greater than the surrounding monuments and memorials, it would transform a largely dark site at the edge of the Washington Monument Grounds to one with substantial light at night. This would effectively continue the line of light that emanates from the museums on the north side of the National Mall one block to the west. Night views south on 14<sup>th</sup> and 15<sup>th</sup> Streets would be altered substantially, as the current dark foreground of the Washington Monument would be lit.

Since the building and the southern water feature would not project beyond the common 445-foot setback line, night views west along the axis of the National Mall would not narrow at the Washington Monument Grounds. However, the design would introduce a new light source on the Washington Monument Grounds. If the exterior building materials have reflective qualities, there is the potential for night glare, creating adverse effects on night lighting. However, the intent of the design is to select materials and finishes that minimize such impacts. Overall, there would be moderate/significant effects.

#### **Action Alternative 4: Refined Pavilion Concept**

With the Refined Pavilion Alternative, the building would be lit on the inside, on its four facades, at the gathering spaces at the south end of the building, along its walkways, and within its water features at the north and south ends of the site. The interior architectural surfaces would be lit in a manner so that the light would be visible from outside the building, but would not substantially contribute to light pollution or light trespass. The lighting of the outdoor gathering and circulation spaces would provide visibility for pedestrian safety, but would be partially shielded from view. Water features would be softly lit with

underwater light fixtures to accentuate water movement and architectural features.

The overall intent would be that the Refined Pavilion Alternative would be visible as an important feature in the monumental core, but not compete with nearby landmarks including the Washington Monument and the White House. Dark sky initiatives would be employed to attain the Light Pollution Reduction credit under LEED v.3.0 (Park/Urban).

While the illumination of the Refined Pavilion Alternative would not be greater than the surrounding monuments and memorials, it would transform a largely dark site at the edge of the Washington Monument Grounds to one with substantial light at night. This would effectively continue the line of light that emanates from the museums on the north side of the National Mall one block to the west. Night views south on 14<sup>th</sup> and 15<sup>th</sup> Streets would be altered substantially, as the current dark foreground of the Washington Monument would be lit.

Since the overhang of the porch and southern water feature would project south beyond the 445-foot historic setback line, night views along the west axis of the National Mall would narrow at the Washington Monument Grounds, altering the dark setting of the north side of the monument. Further, if the exterior building materials have reflective qualities, there is the potential for night glare, creating adverse effects on night lighting. However, the intent of the design is to select materials and finishes that minimize such impacts. Overall, there would be moderate/significant effects.

### 3.4.6 What efforts would be taken to minimize the effects on visual resources?

The following mitigation measures are recommended to minimize the effects of the action alternatives on the visual environment and surrounding urban context:

#### Plinth Alternative

- Options should be explored that would reduce or eliminate the slight overhang of the plinth beyond the historic 445-foot setback line at the south end of the site.
- The detailed design of the landscape on the south side of the site should relate to the informal, picturesque character of the Washington Monument Grounds.
- The exterior building materials should be non-reflective to minimize night glare.
- There should be multi-zone dimming of the building and site lighting in order to adjust lighting levels once the building is complete.
- The Smithsonian Institution should complete an illumination study as part of the final design to ensure that lighting levels are consistent with the other museums on the north side of the National Mall, and that lighting is deferential to the surrounding monuments and memorials.

#### Plaza Alternative

The mitigation measures for the Plaza Alternative would include all those identified for the Plinth Scheme, with the exception of the one pertaining to the overhang of the plinth. Instead, design measures should be explored that would minimize the extension of a built

form south of the 445-foot setback line. In addition, the following mitigation measure would be required:

- Glazing associated with the northern building should be tinted in such a way to reduce the amount of glare from surrounding light sources.

#### Pavilion Alternative

The mitigation measures for the Pavilion Alternative would be identical to those identified for the Plinth Alternative. However, since the Pavilion would not extend south of the 445-foot McMillan setback line, that measure would not be necessary.

#### Refined Pavilion Alternative

The mitigation measures for the Refined Pavilion Alternative would be identical to those identified for the Plinth Alternative. However, instead of reducing the overhang of the plinth, options should be explored to reduce the overhang of the porch beyond the 445-foot setback line.

### 3.5 GEOLOGY, SOILS, AND GROUNDWATER

The analyses conducted in this section of the Tier II Draft EIS focuses on the potential impacts on adjacent resources. Potential impacts of natural resources on-site were addressed in the Tier I EIS. The Tier II analyses determined that there would be no adverse impact on on-site soil stability or soils adjacent to the Washington Monument during construction and operation of the museum. Impacts on geology would be less than significant because no significant geologic features were found on-site. Groundwater within the project site would be isolated from groundwater surrounding the site from the use of diaphragm slurry walls or another form of Support of Excavation (SOE) System. Groundwater would be captured and channeled to storm drains or other sewer disposal systems at a rate that would not induce settlement within the project site or at nearby structures. The overall quality of groundwater would not be degraded beyond its current condition (Smithsonian Institution 2008a).

The Tier I Final EIS determined that the soil at the site is predominantly fill installed in the mid-19<sup>th</sup> century when sewers were networked with Tiber Creek. The fill at the site ranges from a depth of 5.5 feet to 17 feet below the surface. Below the fill are layers of clayey sands or stiff plastic clays mixed with sand and gravel. No significant geologic features were found on the site (Smithsonian Institution, 2008a).

Groundwater at the site is recharged through precipitation, percolation and from infiltration of the Potomac River. The on-site soils are compacted due to heavy visitor use therefore limited percolation is expected. The site's proximity to the Potomac River provides the potential for abundant groundwater recharge (D.D.

WRRC 1995). No site specific groundwater study was conducted for this project. Instead, the impact analysis assumed conditions similar to those observed at adjacent sites. Groundwater at the site was expected to be 15 to 25 feet below the surface. Due to the underlying clays, the Tier I analysis anticipated groundwater movement to be slow.

As evaluated in the Tier I Final EIS, impacts on soils would occur from the action alternatives as a result of construction activities and site preparation, resulting in soil disturbance, compaction, soil excavation, and the loss of soil productivity. Impacts on soils would be minimized through the implementation of an approved erosion and sediment control plan, pursuant to the District of Columbia's Soil Erosion and Sediment Control Program (Erosion and Sediment Control Act of 1977). The Tier I Final EIS called for additional analyses to be undertaken in order to better understand existing conditions and expected impacts. Sixteen test borings were collected during the period from February 2 to March 10, 2010, under the full observation of Froehling & Robertson, Inc, and were compared to previous borings conducted in the immediate area. Froehling & Robertson completed their analytical studies in April 2010, and the results are incorporated in the analysis in this Tier II document.

### 3.5.1 What are the existing sub-grade conditions of the site and surrounding area?

The general subsurface profile encountered at the site consists of organic soils, overlying fill, coastal plain soils, and residual soils. Table 3.5.1 summarizes the on-site soil conditions.

#### Organic Soils

The soil surface layer consists of approximately two (2) to seven (7) inches of surficial organic soils. Surficial organic soil is typically a dark-colored soil material containing roots, fibrous matter, and/or organic components. It is generally unsuitable for engineering purposes (Froehling & Robertson, 2010).

#### Fill Materials

Fill materials were found below the surficial organic soils to depths ranging from 5.5 to 17 feet below the surface (elevation 5.4 to -7 feet AMSL). The fill materials consisted of sandy gravel, silty sand, clayey sand, sandy silt, and lean clay soils.

The Standard Penetration Test (SPT)<sup>5</sup> conducted in general accordance with American Society of Testing and Materials D 1586 indicated that the soils in this stratum are a very soft to hard consistency, or a very loose to very dense state. The SPT N-values

---

<sup>5</sup> In the SPT test, a split-spoon sampler is driven into the soil by freely dropping a weight of 140 pounds from a height of 30 inches. The number of blows that are needed to drive the split-spoon sampler three consecutive 6-inch increments is recorded. The Standard Penetration Resistance (N-value) is the sum of blows from the last two six-inch increments. The N-value provides a general indication of in situ soil conditions (e.g., consistency) and is correlated with certain soil engineering properties.

recorded ranged from the Weight of Hammer to 50 blows per one inch of sampler penetration. Elevated SPT N-values in these soils can be attributed to varying amounts of gravel within the stratum. An average SPT N-value of 10 blows per foot (bpf) was recorded within this stratum (Froehling & Robertson, 2010).

#### Coastal Plain

Coastal Plain materials are present underneath the fill materials to depths ranging from 52 to 75 feet below the surface (elevation -43.5 to -59.5 feet AMSL). Coastal Plain deposits consisted of sandy gravel, silty gravel, gravel with silt and sand, gravelly sand, gravelly sand with silt, sand with silt, silty sand, sand, clayey sand, sandy silt, silty clay, lean clay, and fat clay.

An average SPT N-value of 20 bpf was recorded for the granular soils in this stratum indicating a very loose to very dense state. An average SPT N-value for 14 bpf was recorded for the cohesive soils in this stratum (Froehling & Robertson, 2010).

#### Residual Soils

Residual soils form due to in-place weathering of the parent rock. They were encountered below the Coastal Plain soils in 6 of the 16 borings, ranging from 62 to 83 feet below the surface (elevation -48.5 to -71 feet AMSL). These soils consist of sandy silt, elastic silt, and silty sand. An average SPT N-value of 24 bpf was recorded for the granular soils in this stratum. An SPT N-value of 14 bpf was recorded for the cohesive soils in this stratum, indicating a stiff consistency (Froehling & Robertson, 2010).

**Table 3.5.1 Site Soil Characteristics**

<b>Soil</b>	<b>Components</b>	<b>Bottom of Stratum (below grade)</b>	<b>Average SPT N-Value</b>	<b>Consistency</b>
Organic soils	Containing roots, fibrous matter, and/or organic components	2 to 7 inches	n/a	Unsuitable for engineering purposes
Fill materials	sandy gravel, silty sand, clayey sand, sandy silt, and lean clay	5.5 to 17 feet	10 bpf	Very soft to hard, very loose to very dense
Coastal Plain	gravel, silty gravel, gravel with silt and sand, gravelly sand, gravelly sand with silt, sand with silt, silty sand, sand, clayey sand, sandy silt, silty clay, lean clay, and fat clay	Underlying fill materials to depths of 52 to 75 feet	20 bpf (granular soils) 14 bpf (cohesive soils)	Very loose to very dense (granular soils) Very soft to hard (cohesive soils)
Residual soils	sandy silt, elastic silt, and silty sand	62 to 83 feet	24 bpf (granular soils) 14 bpf (cohesive soils)	Very loose to very dense (granular soils) Stiff (cohesive soils)
Decomposed Rock	Sampled as silty gravel, sand, silty sand, and sandy silt	62 to 83 feet	In excess of 60 bpf	Very Dense
Rock	Schist	NA	NA	Moderate to highly weathered, moderately to highly fractured

Note: Based on field data, a Seismic Site Class D was established for the site per Section 1613.5.3 of the 2006 International Building Code.

Source: Froehling & Robertson, 2010

### **3.5.2 What are the site's current geologic conditions and what is the depth to bedrock?**

The general geologic conditions encountered at the site consist of decomposed rock and bedrock.

#### **Decomposed Rock**

The majority of test borings encountered decomposed rock below the Coastal Plain and/or Residual soils. Decomposed rock, for the purposes of this analysis, is defined as residual material with an average SPT-N value in excess of 60 bpf, indicating that it is very hard or dense. Decomposed rock can be more difficult to excavate than the residual soils. Decomposed rock encountered at the site consisted of silty gravel with sand, sand with silt and gravel, silty micaceous sand, sandy micaceous silt, and elastic silt with trace rock fragments.

Weathering of the parent bedrock is generally more rapid near fracture zones, and therefore, the bedrock surface may be irregular. The difference in weathering may also result in areas of rock and decomposed rock appearing within residual soils (Froehling & Robertson, 2010).

#### **Bedrock**

Rock was generally encountered at a depth of 62 to 96 feet below the surface. Seven borings were extended five to ten feet into rock. Bedrock encountered on site consisted of gray to olive brown, moderately to highly weathered, moderately to highly fractured, micaceous shist. A layer of quartz rock was encountered within one test boring. Rock recovery values recorded at the site ranged from 35 to 100 percent. Rock Quality Designation values recorded ranged from zero to 87 percent (Froehling & Robertson, 2010).

### **3.5.3 What is the depth to groundwater at the site?**

Based on subsurface water observations conducted at wells and through test borings, Froehling & Robertson estimate the groundwater was at an elevation of five feet below sea level (elevation -5 feet) during the field exploration. This represents an approximately one foot rise in the ground water level recorded from their May 2009 exploration. This difference can be attributed to the elevated rain and snow totals experienced during the time of the field exploration in February 2010. Generally, seasonal and yearly fluctuations of the water table should be expected with variations in precipitation, surface runoff, evaporation, and other similar factors.

### 3.5.4 How would construction and operation of the NMAAHC affect geology, soils and groundwater?

For the purpose of defining whether any of the proposed alternatives could potentially affect the geology and soils of the site, several criteria are considered.

**No Impact:** The geology or soils of the site would not be impacted or the impact to these resources would be below or at the lower levels of detection.

**No Significant Impact:** Impacts would be detectable. Mitigation would be needed to offset adverse impacts and would be relatively simple to implement and would likely be successful.

**Significant Impact:** Impacts would be readily apparent and result in a change to the character of the resource over a relatively wide area. Mitigation needed to offset adverse impacts may or may not be successful.

Short-term impacts would occur during construction of the action alternatives and were addressed in the Tier I Final EIS (Smithsonian Institution 2008a). Long-term impacts would occur during operation of the NMAAHC.

For the purposes of analyzing the impacts of the four action alternatives, it is assumed that all four alternatives would extend to an elevation at about -32.0 feet AMSL. The building would be primarily column supported, with maximum column loads ranging from about 350 to 400 tons. Total settlements on the order of one inch with differential settlements of less than 0.5 inches were considered acceptable for design (Froehling & Robertson, 2010).

### No Action Alternative

The No Action Alternative would not result in any changes to the project site or new development on the site. As such, there would be no short- or long-term impacts on geology, soils and groundwater.

**Action Alternative 1: Plinth Concept*****Geology and Soils***

The primary concern with construction adjacent to the Washington Monument would be the potential to induce settlement of the structure's foundation. The Washington Monument has a shallow foundation system bearing at an elevation of approximately two feet AMSL. The foundation is based on a compressible clay stratum located between the monument foundation and bedrock, which extends to an elevation of approximately -60 feet AMSL. Additional loading of the compressible clay could cause additional settling.

The Washington Monument lies approximately 669 feet southwest of the NMAAHC site. A study conducted in 1962, the results of which have been reviewed and confirmed as recently as 2002, outlined soil loading parameters for areas near the Washington Monument (NPS, 1962; Lacy, 2002). The reports addressed allowable permanent net increase and allowable permanent net decrease of soil loading, as well as allowable excavation for areas within 200 feet of the Washington Monument. The study did not specify parameters for sites over 200 feet from the Washington Monument.

In addition, other structures, including NMAH and the Herbert C. Hoover Commerce building are located less than 500 feet from the NMAAHC site. Disturbance of soils on the NMAAHC could potentially cause settlement of any adjacent structures. However, since all building loads for the Plinth Alternative would be founded on deep foundations extended to bedrock, the construction would not cause load changes in the soils founding the Washington Monument or other nearby structures (Froehling & Robertson, 2010). As such, there would be no adverse impact on on-site soil stability or soils

adjacent to the Washington Monument during construction of the Plinth Alternative. Impacts on geology would be less than significant because no significant geologic features were found on-site.

***Groundwater***

During site observation, subsurface groundwater registered at an elevation of approximately -5 feet AMSL within the observation wells. Therefore, groundwater levels were close to the surface level. Subsurface water levels and soil moisture would likely fluctuate due to changes in precipitation, runoff, and season. Groundwater fluctuations within five feet are considered normal. Changes in groundwater levels greater than 10 feet could also cause stress changes within soils on the project site and adjacent properties.

A temporary dewatering system would be used to isolate the building area and dispose of groundwater that would be encountered during construction.

Following construction, continuous dewatering of the site is not anticipated to be necessary due to the fact that groundwater flows on the site would be permanently diverted by diaphragm slurry walls<sup>6</sup> and because the soils beneath the groundwater table are primarily clays that prohibit rapid movement of groundwater. Due to the depth of the excavation, as well as the amount of groundwater expected to be encountered, a diaphragm slurry wall would be utilized. Groundwater would be captured and channeled to storm drains or other sewer disposal systems at a rate that would not induce settlement within the project site or at nearby structures.

---

<sup>6</sup> or another form of Support of Excavation (SOE) System that could use jet grout and secant.



The volume of the proposed structure occurring below the groundwater table would impede groundwater flows and could cause minor variations in the depth of groundwater to occur within the immediate vicinity of the proposed structure. The depth of the groundwater table would fluctuate and rise on the up gradient side and lower on the down gradient side. Variations in groundwater depth would return to normal levels as the water moves farther away from the structure. The overall quality of groundwater would not be degraded beyond its current condition. Groundwater within the project site would be isolated from groundwater surrounding the site from the use of slurry walls or another form of SOE System (Smithsonian Institution 2008a).

#### *Diaphragm Slurry Wall System*

The design of the Plinth Alternative could include a diaphragm slurry wall (slurry wall) system that would create a hydraulic break between the interior of the building site and the surrounding areas. No groundwater level change is expected beyond the limits of construction for the new building.

The diaphragm slurry wall system would be paired with a “dewatering” system. In this system, deep dewatering wells or a well point system would remove the groundwater to the desired level. The water would typically be disposed of through a sewer system and/or water canals. However, due to the required drawdown level of -32 feet AMSL which would likely result in ground settlement, a slurry wall system could be used to isolate the building area from the surrounding soils (Froehling & Robertson, 2010).

A diaphragm slurry wall is a cast-in-place structural concrete wall, formed utilizing the slurry-supported trench method. Using this method, construction equipment is used to dig trenches, which are formed in individual sections called panels. Once a panel is dug, a bentonite and/or polymer slurry is deposited in the panel to provide support and avoid collapse of the panel’s earthen wall. Reinforcing steel is placed into the slurry. Concrete is then funneled into the panel, which displaces the slurry and forms the wall.

The purpose of the diaphragm wall system would be to surround the site and buffer the Plinth Alternative from the surrounding soil and groundwater level. Diaphragm walls have been shown to provide a rigid earth retention system, as well as provide a hydraulic barrier between the surrounding groundwater and the interior building area (Froehling & Robertson, 2010).

Based on the recommendations in the Preliminary Geotechnical Engineering Evaluation completed by Froehling & Robertson, the slurry walls should be a minimum of 36 inches thick, extend a minimum of 5 feet into the decomposed rock stratum, and be designed to withstand the lateral earth pressure that would be encountered during construction. Once the diaphragm wall is installed, the building area would be dewatered without inducing groundwater drawdown of the surrounding areas (Froehling & Robertson, 2010).

For these reasons, neither construction nor operation of the Plinth Alternative would create settlement of on-site buildings or adjacent structures. No significant short-term or long-term impact on soils or groundwater would occur as a result of the Plinth Alternative. Impacts on geology would be less than significant because there are no significant geologic resources on-site.

The analysis conducted for the Tier I EIS assumed that the Plinth Alternative would be designed as a “bath tub” structure, meaning that once construction has been completed, the temporary dewatering system surrounding the site would be discontinued and water would be allowed to return to hydrostatic conditions. No groundwater level change would occur beyond the limits of construction (Froehling & Robertson, 2010).

#### *Foundation Systems*

Determination of an appropriate foundation system for a given structure is dependent upon the structural loads, soil conditions and construction constraints, such as proximity to other structures. A variety of foundation systems were evaluated for long-term support of the building, including driven piles and drilled shafts. Froehling & Robertson concluded that driven piles would be the most efficient and economical foundation system for the Plinth Alternative. However, this foundation system was dismissed because of public concerns about disruption to adjacent structures due to vibrations, as well as noise concerns from pile driving on the National Mall. As an alternative, a system of drilled shafts and subfloor drainage was recommended and is described below (Froehling & Robertson, 2010).

In order to address the foundation appropriately, shafts would be drilled into the bedrock. These shafts would extend into the rock material one shaft pile diameter, a minimum of 36 inches, or to caisson drill refusal level. Test borings indicate rock layers range from -62 to -96 feet AMSL.

Analysis indicated that total settlements for the drilled shafts would be less than one inch, with differential settlements up to about one-half of the estimated total settlement. They would vary based on the changes in excavation requirements across the building footprint, the distribution of loads, differences in column spacing and loads, and the variability of underlying soils (Froehling & Robertson, 2010).

The Plinth Alternative would also incorporate basement floor slabs in the building design. Basement floor slabs would be designed as a structural slab system supported by the deep foundation system and/or grade beams. The lowest slab would be constructed approximately 27 feet below the observed ground water level on the site. The floor slab would be designed to resist uplift pressures created by the groundwater. Horizontal waterproofing would be used below the floor slab to prevent cracking and groundwater intrusion into the building (Froehling & Robertson, 2010).

Additionally, a permanent under-slab drainage system would be installed on-site. This would address groundwater intrusion through the decomposed rock and rock stratum that would exert force to raise the building structure. Additionally, a drainage system would be incorporated into all surface retaining walls to prevent the unanticipated buildup of hydrostatic pressures (Froehling & Robertson, 2010).

The combination of drilled shafts, basement floor slabs and under-slab drainage system would prevent groundwater intrusion in the Plinth Alternative, settlement of the structure or floating during the long-term operation of the Plinth Alternative. No significant impact on the building structure from groundwater would occur. Additionally, there would be no significant impact on groundwater or groundwater quality. Potential impacts on geology would be less than significant from installation of the building as there are no significant geologic features on-site.

### **Action Alternative 2: Plaza Concept**

Because the geologic, soil and groundwater conditions at the site would be the same with the Plaza Alternative as the Plinth Alternative, the Plaza Alternative would have the same effects as described above. Since building loads for the Plaza Alternative would be founded on deep foundations extended to bedrock, the construction of the NMAAHC would not cause load changes in the soils founding the Washington Monument or other nearby structures. Further, the Plaza Alternative would incorporate a SOE System (e.g., a diaphragm slurry wall system) and a dewatering system to ensure that building loads on-site and the adjacent properties would not be affected by groundwater induced settlement. There would be no adverse impact on the stability of on-site soils during construction or operation of the Plaza Alternative. There would be a less than significant impact on geology because there are no significant geologic features on-site.

As with the Plinth Alternative, the Plaza Alternative could be subject to groundwater intrusion or a floating building during long-term operation. The Plaza Alternative foundation would include drilled shafts, basement floor slabs, and permanent under-slab drainage system. This combination would ensure no significant long-term impact on the building structure from groundwater. Additionally, there would be no significant impact on groundwater or groundwater quality.

**Action Alternative 3: Pavilion Concept**

Because the geologic, soil and groundwater conditions at the site would be the same with the Pavilion Alternative as the Plinth and Plaza Alternatives, the Pavilion Alternative would have the same effects as described above. Since building loads for the Pavilion Alternative would be founded on deep foundations extended to bedrock, construction of the NMAAHC would not cause load changes in the soils founding the Washington Monument or other nearby structures. Further, the Pavilion Alternative would incorporate a SOE System (e.g., a diaphragm slurry wall system) and a dewatering system to ensure that building loads on-site and the adjacent properties would not be affected by groundwater induced settlement. There would be no adverse impact on the stability of on-site soils during construction or operation of the Pavilion Alternative. There would be a less than significant impact on geology because there are no significant geologic features on-site.

As with the Plinth and Plaza Alternatives, the Pavilion Alternative could be subject to groundwater intrusion or a floating building during long-term operation. The Pavilion Alternative foundation would include drilled shafts, basement floor slabs, and permanent under-slab drainage system. This combination would ensure no significant long-term impact on the building structure from groundwater.

**Action Alternative 4: Refined Pavilion Concept**

Because the geologic, soil and groundwater conditions at the site would be the same with the Refined Pavilion Alternative as the other Alternatives, the Refined Pavilion Alternative would have the same effects as described above. Since building loads for the Refined Pavilion Alternative would be founded on deep foundations extended to bedrock, the construction of the NMAAHC would not cause load changes in the soils founding the Washington Monument or other nearby structures. Further, the Refined Pavilion Alternative would incorporate a SOE System (e.g., a slurry wall system) and a dewatering system to ensure that building loads on-site and the adjacent properties would not be affected by groundwater induced settlement. There would be no adverse impact on the stability of on-site soils during construction or operation of the Refined Pavilion Alternative. There would be a less than significant impact on geology because there are no significant geologic features on-site.

As with the other action alternatives, the Refined Pavilion Alternative could be subject to groundwater intrusion or a floating building during long-term operation. The Refined Pavilion Alternative foundation would include drilled shafts, basement floor slabs, and permanent under-slab drainage system. This combination would ensure no significant long-term impact on the building structure from groundwater. Additionally, there would be no significant impact on groundwater or groundwater quality.

### 3.5.5 What efforts would be taken to minimize the impacts on geology, soils and groundwater?

The potential impacts on geology, soils, and groundwater would be minimized to no impact or a less than significant impact with the incorporation of Best Management Practices to control soil erosion and stormwater runoff during site preparation and construction, and with the incorporation of design measures described above in this section. It is assumed that the following procedures would be adhered to during building construction.

#### Site Preparation

- Any surficial soils and other deleterious non-soil material, such as asphalt or concrete, should be removed from the proposed construction area. Positive surface drainage should be maintained to prevent the accumulation of water.
- Underground utilities should be re-routed to locations a minimum of 10 feet or greater outside of the proposed building footprint.
- Areas intended to support new fill and pavements should be evaluated by a geotechnical engineer. The potential need for and extent of undercutting and in-place stabilization required can best be determined by a geotechnical engineer at the time of construction.

#### Diaphragm “Slurry” Wall Construction

- Prior to construction, the project engineer and structural engineer should review all diaphragm wall design plans and

specifications. Construction plans should include guide wall details, a panel excavation sequence, and slurry mix design.

- The guide wall is recommended to be at least 4 feet above the groundwater level. The slurry in the panel door should be desanded prior to placement of the concrete so that concrete placement does not create pockets of sand.
- A minimum concrete strength of 4,000 psi should be used with concrete slumps ranging from eight to ten inches for slurry wall construction.
- The project geotechnical engineer should review all pile design plans and specifications. Compressive load tests should be conducted according to ASTM D-1143. The load test should be conducted prior to construction to confirm that the contractor’s construction methods and installation equipment can produce a foundation that will perform satisfactorily.
- The project geotechnical engineer should be retained to observe and document all field activities and develop recommendations for production pile driving criteria.

#### Drilled Shaft Construction

- If non-slurry or “dry” drilling methods are utilized, temporary steel casing should be installed in the drill hole of each caisson to keep the hole from collapsing. This would also allow workers to excavate, clean, and inspect the drilled shaft prior to placement of concrete. Soft or loose soil should be cleaned out of the bottom of the caisson prior to placement of reinforcing steel and concrete.

- The steel casing should not be removed until there is a sufficient head of concrete at the bottom of the casing to prevent slurry, water, or loose material from entering the excavation and creating a zone of weakness in the shaft.
- Installation records including drilling effort and drilling times associated with the final three feet of installation should be recorded. The time should include the penetration rate of the auger to determine refusal on bedrock.
- After the hole is completed, concrete should be placed as soon as possible and result in complete filling of the excavation without segregation.

### **Support of Excavation System**

- To limit the effects of excavation and construction on adjacent structures, the use of a rigid Support of Excavation (SOE) system should be employed. The SOE system would function two ways: (1) it would allow for excavation and construction of the building, and (2) it would provide a permanent groundwater cutoff between the building and the surrounding area. The intent of the cutoff wall would be to greatly reduce the amount of groundwater intrusion into the site, allowing for interior dewatering utilizing a conventional subdrainage pumping system. The SOE system would need to be keyed into the decomposed rock layer on site and would need to be comprised of very low permeable materials. Embedment into the decomposed rock would greatly reduce groundwater flow around the wall itself, while the low permeable materials would minimize

groundwater flow through the core (Froehling & Robertson, 2010).

- In order to prevent excess pressure on surface retaining walls, heavy equipment should not operate within five feet of below-grade walls. Footings or other surcharge loads should be evaluated to ensure excessive stress is not exerted.

### **Controlled Structural Fill**

- Because some landscape elements would likely use structural fill, either on-site soils or an off-site source having a classification of silty gravel, gravelly sand, sand, silty sand, clayey sand, lean clay, or sandy silt should be used. Controlled structural fill should be free of boulders, organic matter, debris, or other deleterious materials with a maximum particle size not greater than three inches. Fill soils should have a maximum liquid limit of 45 and plasticity of less than 20.
- If construction traffic or weather disturbs the subgrade, the upper 8 inches of soils used for structural support should be scarified and recompacted. Each lift of fill should be tested to confirm that the recommended degree of compaction is attained. In utility trenches and other confined areas, potable compaction equipment and thin lifts of three to four inches may be required to meet specified degrees of compaction.

- Moisture content of fill soils should be within two percentage points of the optimum moisture content as determined from the standard Proctor density test, ASTM D 698. The contractor should have equipment on-site during earthwork for both drying and wetting of fill soils.

### **Subsurface Water Conditions**

- Subsurface water is water existing below the ground surface. Groundwater at the site should be maintained a minimum of two feet below the bottom finished floor elevation of the building. This would allow construction to be conducted in dry conditions. Installation of vertical and horizontal water proofing for the building should be installed.
- A system of monitoring wells would be installed and recorded during construction. These wells would be used to demonstrate that the dewatering activities would be constrained to the site area and would not induce stress changes below adjacent structures. Additionally, the slurry wall contractor would install a groundwater reinjection system. This system would be used if groundwater depressions are observed during construction.

### **Monitoring and Contingency Plan**

- A monitoring and contingency plan would be developed to monitor the site and the surrounding areas during construction. These plans would include a preconstruction survey indentifying the current conditions of adjacent structures prior to NMAAHC construction activities. The plan would specify instrumentation to be used on site, as well as threshold levels and monitoring frequency associated with each instrument. At a minimum, optical survey points would be placed along the SOE so that if any movement in the area is recorded, actions may be taken. Inclometers and other geotechnical instrumentation have previously been used in diaphragm wall projects to measure deflections of the wall during construction.

This page is intentionally left blank



### 3.6 CONSERVATION OF NATURAL RESOURCES

The Tier I Final EIS evaluated the effects of the Massing Alternatives on surface water resources, floodplains and flooding, and water quality impacts associated with stormwater runoff. It also analyzed the potential effects to air quality. These potential effects are summarized in Section 1.8 of this Tier II Draft EIS. Energy consumption and the availability of sufficient energy supplies were addressed in the Tier I Final EIS under Infrastructure and Utilities. A summary of the analysis from Tier I is also provided in Section 1.8 of this Tier II analysis.

This section of the Tier II EIS addresses potential changes in on-site open space resources, site performance, and global climate change from implementation of the action alternatives. Included in the analysis of site performance is a description of sustainability features that would be implemented as part of the action alternatives, and the effect these features would have on minimizing effects on natural resources.

#### 3.6.1 What are the site's current open space resources?

The NMAAHC site is part of the Washington Monument Grounds on the National Mall. It is a public open space that is part of a larger commemorative landscape that is designated as parkland for a variety of uses, including recreation, special events and celebrations. The project site is owned by the United States and is maintained by NPS.

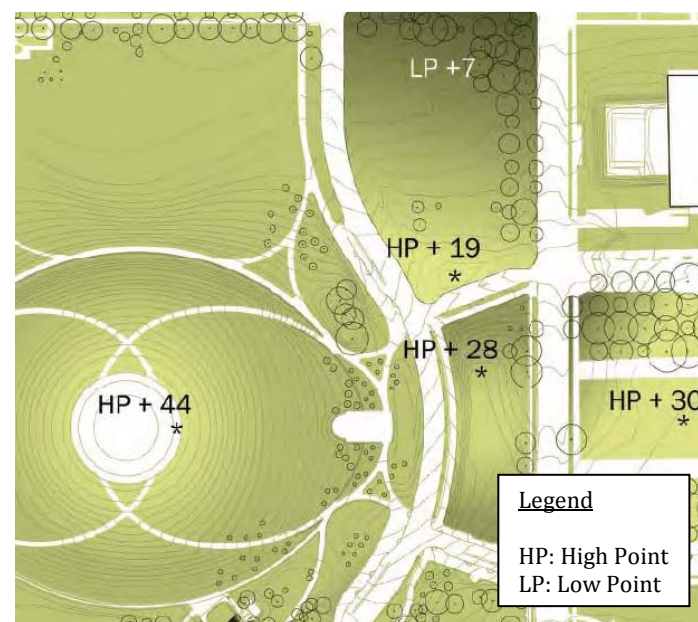
NPS completed an administrative land transfer of the site to the Smithsonian Institution on June 1, 2007, for the operation of the NMAAHC. During the land transfer, the boundaries of the project site were established as the inside of the curb. At this time, a Memorandum of Agreement was developed to allow NPS to continue to operate the site until 2010 or construction of the NMAAHC, whichever comes first. The Smithsonian Institution and NPS are currently developing a new agreement for maintenance of the site until construction activities begin.

The project site consists of a five-acre parcel bound by Constitution Avenue to the north, 14<sup>th</sup> Street to the east, Madison Drive to the south, and 15<sup>th</sup> Street to the west. Until recently, the only "structure" on the project site was a blue concessionaire's temporary tent near Madison Drive. This was replaced in March 2010 with a temporary trailer. The trailer is located in the same area as the blue concessionaire's tent near the curbside lay-by on Madison Drive. There is a patio made of pavers located west of the temporary trailer that includes picnic tables. Other paved surfaces include sidewalks that surround the project site and two walkways that cross through the middle of the NMAAHC site. One walkway connects the corner of 14<sup>th</sup> Street and Constitution Avenue with the mid-block of 15<sup>th</sup> Street. A second walkway connects the corner of 15<sup>th</sup> Street and Constitution Avenue with approximately the mid-block of 14<sup>th</sup> Street. The project site also features a Bulfinch Gatepost located in the northwest corner of the site at 15<sup>th</sup> Street and Constitution. Based on a review of maps and site diagrams, approximately 81 percent of the site consists of pervious ground cover and approximately 96 percent open space. As such, the project site is almost entirely public open space.

The site provides little habitat value to wildlife due to its urban setting and degree of human activity at the site. Additionally, the site is in close proximity to highly utilized roads with associated vehicle noise. There are no wetlands located on the site. In a letter dated March 20, 2007, the U.S. Fish and Wildlife Service confirmed that no proposed or federally-listed endangered or threatened species are known to occur within the project area (Smithsonian Institution, 2008a).

The remainder of the site contains open space resources. Trees are concentrated in the northeast corner of the site and along Constitution Avenue and 14<sup>th</sup> Street. Three types of trees are currently located on-site: American elm (*Ulmus americana*), Norway maple (*Acer platanoides*), and sugar maple (*Acer saccharum*). A single row of four American elms is located in a grassy median between the sidewalk and Constitution Avenue. These trees range in size from approximately 5 inches diameter at breast height (dbh) to approximately 11 inches dbh. There is a single row of five American elms located along 14<sup>th</sup> Street measuring approximately 8 to 9 inches dbh. Clusters of American elms parallel the street trees in an irregular pattern along Constitution Avenue and 14<sup>th</sup> Street ranging in size from approximately 3 inches dbh to approximately 28 dbh. The cluster of three trees located near the southwest portion of the site consists of two sugar maple trees (approximately 18 and 21 inches dbh) and one Norway maple (6 inches dbh). All 38 trees on-site are considered to be in good condition, or healthy (Casey Trees, 2006). Fourteen existing site trees meet the District's definition of a special tree because they have a circumference of at least 55 inches (17.5 inches dbh). The remainder of the open space area is lawn. In total, more than 81 percent of the site is landscaped.

The topography of the site slopes up from Constitution Avenue towards the southern boundary along Madison Drive and the National Mall. The elevation of the site changes by approximately 13 feet. Because the majority of the site consists of pervious surfaces, stormwater runoff from the project site is entirely contained within the site boundaries and percolates into the ground surface. Figure 3.6.1 shows the site topography.



**Figure 3.6.1 Site Elevations**

Source: Freelon Adjaye Bond/SmithGroup, 2010

### 3.6.2 What issues are addressed as part of site performance?

The issues addressed as part of site performance include the amount of impervious surface on-site, sustainability measures, stormwater, and energy. A change in the impervious surface would affect vegetation, infiltration and the amount of stormwater runoff. Sustainable design strategies would be selected and implemented in order to improve the environmental impact of the construction and operation 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. Compliance with federal mandates and LEED requirements would ensure that there would be no increase in stormwater runoff from the project site during operation of the museum. In order to achieve the required number of points to obtain LEED certification, the building would be designed to implement specific energy conservation strategies. These strategies are discussed for the four action alternatives.

### 3.6.3 What are greenhouse gases and why is climate change important?

Various gases in the Earth's atmosphere, classified as atmospheric greenhouse gases (GHGs), play a critical role in determining the Earth's surface temperature. Solar radiation enters the Earth's atmosphere from space, and a portion of the radiation is absorbed by the Earth's surface. The Earth emits this radiation back to space, but the properties of the radiation have changed from high-frequency solar radiation, to lower-frequency infrared radiation. GHGs, which are transparent to solar radiation, are effective in absorbing infrared radiation. This radiation that would have otherwise escaped back to space is now "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the Greenhouse Effect, is responsible for maintaining a habitable climate. Without the Greenhouse Effect, Earth would not be able to support life.

Prominent GHGs contributing to the Greenhouse Effect include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), ozone (O<sub>3</sub>), water vapor, nitrous oxide (N<sub>2</sub>O), and chlorofluorocarbons (CFCs). Human-caused emissions of these GHGs in excess of natural ambient concentrations are considered to be responsible for an increase in the Greenhouse Effect, which has led to significant change in measures of climate referred to as global climate change.

Emissions of GHGs contributing to global climate change have been attributed in large part to human activities associated with industrial/manufacturing, utility, transportation, residential, and agricultural sectors. Emissions of CO<sub>2</sub> are byproducts of fossil fuel combustion. Methane, a highly potent GHG, results from off-gassing associated with agricultural practices and landfills. Processes that absorb CO<sub>2</sub> are often referred to as sinks, and include uptake by vegetation and dissolution into the ocean.

Climate change is a global problem, and GHGs are global pollutants, unlike criteria air pollutants, which are pollutants of regional and local concern, respectively. The scientific community generally agrees that global warming will lead to adverse climate change effects around the globe and that the phenomenon is anthropogenic, i.e., caused by humans. Thus, it is the increased accumulation of GHGs in the atmosphere that may result in global climate change that causes adverse environmental effects.

Various local and federal initiatives to reduce contributions to GHG emissions have raised awareness that, even though the various contributors to and consequences of global climate change are not yet fully understood, global climate change is under way and there is a real potential for severe adverse environmental, social, and economic effects over the long term. Because every nation is an emitter of GHGs, and therefore makes an incremental cumulative contribution to global climate change, cooperation on a global scale will be required to reduce the rate of GHG emissions to a level that can help slow or stop human-caused increase in average global temperatures and associated changes in climatic conditions.

#### **3.6.4 What is Executive Order 13514 and what does it require?**

The *Executive Order 13514 Federal Leadership in Environmental, Energy, and Economic Performance* was signed on October 5, 2009. The purpose of Executive Order 13514 is to establish an integrated strategy towards sustainability in the federal government and to make reduction of GHGs a priority for federal agencies. Executive Order 13514 expands on the energy reduction and environmental performance requirements for federal agencies identified in *Executive Order 13423 Strengthening Federal Environmental, Energy and Transportation Management*.

Executive Order 13514 lays out the following numerical targets for federal agencies:

- Reduce petroleum consumption by 2 percent per year through fiscal year 2020 (applies to agencies with fleets of more than 20 vehicles) (assumes a baseline fiscal year 2005).
- Reduce by 2 percent annually:
  - Potable water intensity by fiscal year 2020 (26 percent total reduction) (assumes a baseline fiscal year 2007).
  - Industrial, landscaping, and agricultural water intensity by fiscal year 2020 (20 percent total reduction) (assumes a baseline fiscal year 2010).
- Achieve 50 percent or higher diversion rate:
  - Non-hazardous solid waste by fiscal year 2015.
  - Construction and demolition materials and debris by fiscal year 2015.

- Ensure at least 15 percent of existing buildings and leases (>5,000 gross square feet) meet the Guiding Principles by fiscal year 2015, with continued progress towards 100 percent.
- Ensure 95 percent of all new contracts, including non-exempt contract modifications, require products and services that are energy-efficient, water-efficient, biobased, environmentally preferable, non-ozone depleting, contain recycled-content, non-toxic or less-toxic alternatives.

Executive Order 13514 also sets non-numerical targets that federal agencies must reach, including:

- Increase renewable energy and renewable energy generation on agency property.
- Pursue opportunities with vendors and contractors to reduce GHG emissions (i.e., transportation options and supply chain activities).
- Reduce building energy intensity.
- Ensure all new federal buildings that enter the planning process in 2020 and thereafter are designed to achieve zero-net-energy standards by 2030.
- Use low GHG emitting vehicles, including alternative fueled vehicles, and optimize the number of vehicles in agency fleets.
- Implement water management strategies including water-efficient and low-flow fixtures.
- Implement source reduction to minimize waste and pollutant generation.
- Decrease use of chemicals directly associated with GHG emissions.

- Participate in transportation planning and recognize existing infrastructure in regions/communities.
- Ensure procurement preference for Electronic Product Environmental Assessment Tool (EPEAT)-registered electronic products.

In addition to these targets, Executive Order 13514 calls for specific management strategies to improve sustainability including:

- Develop and implement innovative, agency-specific policies and practices to reduce scope 3 GHG emissions in agency operations.
- Manage existing buildings to reduce energy, water, and materials consumption.
- Implement and achieve objectives in EPA's Stormwater Management Guidance (§14).
- Reduce paper use and acquire paper containing at least 30 percent postconsumer fiber.
- Minimize the acquisition, use, and disposal of toxic and hazardous materials.
- Employ environmentally sound practices for the disposition of all agency excess or surplus electronic products.
- Procure Energy Star and Federal Energy Management Program (FEMP)-designated electronic equipment.
- Continue implementation of existing Environmental Management System (EMS) programs.

### 3.6.5 What affect would construction and operation of the NMAAHC have on conservation of natural resources?

For the purpose of defining whether any of the proposed alternatives could potentially affect the geology and soils of the site, several criteria are considered.

**No Impact:** The natural resources of the site would not be impacted or the impact to these resources would be below or at the lower levels of detection.

**No Significant Impact:** Impacts would be detectable. Mitigation would be needed to offset adverse impacts and would be relatively simple to implement and would likely be successful.

**Significant Impacts:** Impacts would be readily apparent and result in a change to the character of the resource over a relatively wide area. Mitigation needed to offset adverse impacts may or may not be successful.

Short-term impacts would occur during construction of the proposed action. Long-term impacts would occur during operation of the NMAAHC.

### No Action Alternative

The No Action Alternative would not result in any changes to the project site or new development on the site. As part of the No Action Alternative, the project site would continue to be an open space resource operated by NPS.

Maintenance and landscape activities would continue to occur. The site would remain largely landscaped and contain pervious surfaces. There would be no removal of the existing trees on the site; however, it is assumed that the NPS-approved planting plan for the Washington Monument Grounds would be implemented here and in other nearby areas. As such, there would be no short- or long-term adverse impacts on open space resources.

No impacts would occur on site performance. There would be no increase in energy use or incremental increase in GHG emissions from the construction and operation of a new museum. Landscape and public open space activities would be expected to continue, as under current conditions and current management of the site. Therefore, the No Action Alternative would have no impact on global climate change.

## Action Alternative 1: Plinth Concept

### *Open Space Resources*

The Plinth Alternative would involve construction of an approximately 360,000 gross square feet of building space on the project site. The maximum building coverage area would be approximately 85,804 square feet (approximately 36.8 percent) of the five-acre parcel site. However, because of the below grade programming and engineering requirements for the site's soil and groundwater conditions, the majority of the site would be cleared, excavated and re-graded. For the purpose of this analysis, it is assumed that all of the 38 existing trees on-site and other existing site landscaping would be removed at the start of the construction process. This is 493.5" of total caliper inches at diameter breast height (dbh). The proposed removal of 14 mature trees from the project site would constitute a significant impact.

Replacement of mature trees with one or more trees whose aggregate circumference equals the circumference of the mature trees to be removed would minimize the long-term adverse impact. As part of the landscape design for the Plinth Alternative (see Figures 2.4 and 2.6), a single row of street trees would be planted between the curb and the sidewalk on Constitution Avenue running the length of the site and between the curb and the sidewalk on 14<sup>th</sup> Street south of the service and loading driveway. Trees would be planted along the sidewalk at Madison Drive on either side of the grass terrace leading to the museum's primary entrance to the museum. A cluster of trees would be planted at the northeast corner to mask the staff entrance that would be located on 14<sup>th</sup> Street. In addition, clusters of trees would be planted along 15<sup>th</sup> Street and used to frame views of the Washington Monument. Approximately 44 new trees would be planted as part of the Plinth Alternative to

minimize the adverse effect. Mitigation measures would be required to further minimize the impacts of tree removal. In order to replace the aggregate 493.5" dbh of the trees lost due to development, the 44 new site trees included as part of Alternative 1 would have to average approximately 11.2" dbh each, unless additional trees are planted.

Development of the Plinth Alternative would modify the total amount of open space located within the site boundaries from approximately 96 percent to approximately 63. percent of the total site area.

Although this would be a significant change from the current condition, the Plinth Alternative would actually provide more site open space than all of the other museums on the north side of the National Mall. Further, this open space calculation does not take into account the rooftop terrace and the outdoor terraces that would be created on top of the plinth. However, converting the site from landscaped open space to development would result in a significant impact.

### *Site Performance*

In addition to the building coverage area, Plinth Alternative would include a driveway, sidewalks, walkways, water features and other hardscape features. With the Plinth Alternative, approximately 65 percent of the site would be impermeable surfaces, including the building and other hardscape surfaces. Because approximately 81 percent of the existing site is covered with permeable surfaces, this would result in a net increase in impermeable surfaces of approximately 46 percent as a result of the Plinth Alternative.

In accordance with federal mandates *and Executive Order 13514*, the Plinth Alternative would incorporate a number of sustainable features to minimize the adverse effects of additional impervious surfaces at the project site. As discussed in Chapter 2, the Smithsonian Institution has committed to building a minimum level of Gold for the building as certified by the U.S. Green Building Council under the LEED program. In order to achieve LEED Gold certification, the Plinth Alternative could incorporate the following features that would minimize the adverse impacts of a net increase in impermeable surfaces (Freelon Adjaye Bond/SmithGroup, 2010):

- Use pervious paving materials where possible in lieu of impervious hardscape
- Balance pervious surfaces (infiltration) with areas for collection (rainwater) to ensure no net increase in stormwater runoff to WASA, now known as DC Water, storm drains
- Bio-retention – collect stormwater on-site and potentially from surrounding streets for reuse in on-site irrigation and water features
- Harvest rainwater for reuse in irrigation and water features
- Use native and low-water plants to reduce irrigation and create cultural/natural interest
- Use good soil mixes that retain moisture in order to reduce irrigation
- Use ultra-low flow fixtures in public areas and consider near zero (0.1 gallons per flush) or waterless urinals in staff areas
- Reuse water from site de-watering for nonpotable water sources or for use in the heat exchange system

- Install tree box filters to treat runoff from surrounding streets
- Consider purchasing recycled water from DC Water,
- Integrated systems – use a rainwater cistern combined with structural support for existing trees, water systems connect to water feature
- Use no potable water during building construction

Sustainable design strategies would be selected and implemented in order to improve the environmental impact of the construction and operation 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. However, compliance with federal mandates and LEED requirements would ensure that there would be no increase in stormwater runoff from the project site during operation of the Plinth Alternative.

In addition to stormwater management, site performance relates to the overall efficiency of the building operations, including energy use. Currently, the project site contains a temporary concessions trailer to serve visitors to the National Mall and the Washington Monument Grounds. The Plinth Alternative would involve construction of an approximately 360,000 gross square feet on the project site.

Due the requirements of Smithsonian facilities, the Plinth Alternative would not only be a larger structure than the temporary concession stand trailer, it would be operational for longer daily durations. Development of the site with the Plinth Alternative would substantially increase energy demand at the site.



As discussed above, the Plinth Alternative would be constructed to meet LEED Gold certification criteria. In order to achieve the required number of points, the Plinth Alternative would be designed to implement specific energy conservation strategies. To meet the criteria for LEED Gold, the Plinth Alternative would also incorporate the following strategies: passive heating and cooling, daylighting, 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. To minimize energy use for lighting, approximately 50 percent of lighting of the public space 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. To minimize the use of artificial lighting on the concourse level, the exhibit and other public spaces would be located around the sunken courtyards located on the north side of the site where natural light would be able to reach the lower level of the building interior. Other energy conservation strategies that may be implemented during building operation include the following (Freelon Adjaye Bond/SmithGroup, 2010):

- Purchase renewable energy
- Incorporate thermal mass – provides opportunities for moderating temperature swings, shifting peak loads, and engaging the mass with mechanical systems
- Recover waste heat
- Include atrium space in building design as an opportunity to get more daylight into deep spaces and to display large three-dimensional artifacts
- Implement a comprehensive humidity control strategy
- Use technologies that reduce the amount of air needing treatment

- Utilize, energy management in office furniture and task lighting
- Install LED's or fiber optics when a small point source of light would be required
- Use non-incandescent lighting where appropriate and motion detecting light sensors
- Use non-toxic and low VOC materials for building construction and exhibit cases
- Reduce or eliminate off-gassing concerns and negative impacts on collections

The Smithsonian Institution's sustainability approach would be finalized during detailed design and would include a comprehensive listing of the LEED points that could be obtained. Compliance with federal mandates and LEED requirements would ensure that there would be no significant impact on energy use or site performance.

#### *Global Climate Change*

Construction and operation of the Plinth Alternative would generate incremental short- and long-term sources of GHGs. Short-term sources of project-generated GHG emissions would be the off-road construction equipment and on-road vehicles used for site preparation, grading, and construction. Construction emissions would be short-term in nature and would not persist following completion of construction. As discussed in Section 3.1.1 of the Tier I Final EIS (Smithsonian Institution, 2008a) required implementation of the mitigation measures during construction of the NMAAHC would minimize adverse impacts on air quality. Implementation of these mitigation measures during project construction would also minimize the amount of short-term GHG emissions generated during site clearing, grading, and building

construction resulting in no significant impacts on global climate change during construction of the Plinth Alternative.

Compared to the operation of the existing temporary concession trailer, there would be a net increase in GHG emissions produced at the project site during operation of the Plinth Alternative. The consumption of fossil fuels to generate electricity and to provide heating and hot water for the Plinth Alternative, as well as fuel consumption by on-road mobile vehicles associated with vehicle deliveries, would be the primary sources of long-term GHG emissions. As discussed above, the Plinth Alternative would include a number of sustainability features designed to minimize energy and water consumption on-site and increase the overall efficiency of the site operations. These measures would minimize the amount of GHG emissions that would be produced during operation of the new museum.

Further, due to the location of the project site within the National Mall, visitors would be expected to access the site primarily through public transit. The closest Metro stations to the project site includes the Smithsonian and Federal Triangle. Metrobus stops are located on the north side of Constitution Avenue near 15th Street, on the 14th Street side of the site approximately mid-block, on the south side of Constitution Avenue near 14th Street, and on 14th Street on the east and west sides north of Constitution Avenue. A DC Circulator stop is located on the south side of Constitution Avenue just east of 14th Street. There is a bus and taxi vehicle drop-off area at the project site on Madison Drive that is also used as a Tourmobile stop. In addition, the Smithsonian Institution would provide public bicycle parking on-site.

As discussed in Chapter 2, the Plinth Alternative would not include parking for staff. As with visitors, staff would be expected to travel to the site using public transportation, or by walking or biking.

Bicycle racks would be provided for use by staff in the below grade loading/servicing area. Showers would also be provided for staff use to encourage walking or biking. Thus, the only additional vehicle traffic to the project site would be from service and delivery trucks. The limited number of vehicle trips to and from the site would minimize the amount of GHG emissions that would be produced during long-term operation of the Plinth Alternative.

Although there would be an incremental increase in GHG emissions produced on-site, the combination of energy efficiency and water conservation measures with the use of alternative forms of transportation for visitors and staff would substantially reduce the amount of GHG emissions produced compared to traditional building operations. Further, as mentioned above, global climate change is a worldwide problem. Because every nation is an emitter of GHGs, and therefore makes a cumulative contribution to global climate change, strategies implemented at the local and building-scale level would help to incrementally reduce the nation's overall contribution of GHGs. The Plinth Alternative's incremental contribution to global climate change would be reduced to no significant impact through project sustainability strategies.

## Action Alternative 2: Plaza Concept

### *Open Space Resources*

The Plaza Alternative would involve construction of an approximately 370,000 gross square feet of building space on the project site. The point of maximum building coverage would be approximately 80,559 square feet (approximately 34.5 percent) of the five-acre parcel site. However, because of the below grade programming and engineering requirements for the site's soil and groundwater conditions, the site would be cleared, excavated and re-graded. Therefore, implementation of the Plaza Alternative would involve the removal of 38 trees (493.5" of total caliper inches) from the site. The proposed removal of 14 mature trees from the project site would constitute a significant impact.

Replacement of mature trees with one or more trees whose aggregate circumference equals the circumference of the mature trees to be removed would minimize the long-term adverse effect. As part of the landscape design for the Plaza Alternative (see Figures 2.9 and 2.11), a single row of street trees would be planted between the curb and the sidewalk on Constitution Avenue, 14th Street and 15th Street running the length of the site. Clusters of trees would be planted at the east and west sides of the Corona and Office building and also along Madison Drive. Approximately 48 new trees would be planted as part of the Plaza Alternative to minimize the adverse impact. Mitigation measures would be required to further minimize the impacts of tree removal. In order to replace the aggregate 493.5" dbh of the trees lost due to development, the 44 new site trees included as part of Alternative 2 would have to average approximately 10.28" dbh each, unless additional trees are planted.

Development of the Plaza Alternative would modify the total amount of open space located within the site boundaries from approximately 96 percent undeveloped open space to approximately 65 percent of the total site area. Although this would be a significant change from the current condition, the Plaza Alternative would actually provide substantially more site open space than the other museums on the north side of the National Mall. Further, this open space calculation does not take into account the rooftop terrace that would be created on top of the Corona. However, converting the site from landscaped open space to development would result in a significant impact.

### *Site Performance*

In addition to the building coverage area, the Plaza Alternative would include a plaza, driveway, sidewalks, walkways, water features and other hardscape features. With the Plaza Alternative, approximately 69 percent of the site would be impermeable surfaces, including both buildings and other hardscape surfaces. Because approximately 81 percent of the existing site is covered with permeable surfaces, this would result in a net increase in impermeable surfaces of approximately 50 percent as a result of the Plaza Alternative.

As with the Plinth Alternative, the Plaza Alternative would incorporate a number of sustainable features to minimize the adverse effects of additional impervious surfaces at the project site. Sustainable design strategies would be selected and implemented in order to improve the environmental impact of the construction and operation 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. However,

compliance with federal mandates and LEED requirements would ensure that there would be no increase in stormwater runoff from the project site during operation of the Pavilion Alternative.

Currently, the project site contains a temporary concessions trailer to serve visitors to the National Mall and the Washington Monument Grounds. The Plaza Alternative would involve construction of an approximately 370,000 gross square feet on the project site. Due to the requirements of Smithsonian facilities, the Plaza Alternative would not only be a larger structure than the temporary concession stand trailer, it would have longer hours of operation. The development of the site with the Plaza Alternative would substantially increase energy demand at the site.

The Plaza Alternative would be constructed to meet LEED Gold certification criteria. In order to achieve the required number of points, the Plaza Alternative would be designed to implement specific energy conservation strategies similar to the Plinth Alternative. To minimize the use of artificial lighting on the concourse level, the exhibit and other public spaces would be located around a skylight located along 15th Street. A large oculus in the center of the plaza would provide light to reveal exhibit space below and provide natural light to subgrade levels. Compliance with federal mandates and LEED requirements would ensure that there would be no significant impact on energy use or site performance during operation of the Plaza Alternative.

#### *Global Climate Change*

As with the Plinth Alternative, construction and operation of the Plaza Alternative would incrementally increase GHG emissions compared to the existing temporary concession trailer that is currently operating on-site. Implementation of air quality mitigation measures during construction of the Plaza Alternative would

minimize the amount of short-term GHG emissions. Further, construction emissions would be short-term and would not persist following completion of construction activities. There would be no significant impact on global climate change during construction of the Plaza Alternative.

Operation of the Plaza Alternative would incorporate the same sustainability features described for the Plinth Alternative. In addition, visitors and staff would be expected to use alternative forms of transportation to access the site. These operational requirements of the Plaza Alternative would substantially reduce the amount of GHG emissions produced compared to traditional building operation. Because every nation is an emitter of GHGs, and therefore makes a cumulative contribution to global climate change, strategies implemented at the local and building-scale level would help to incrementally reduce the nation's overall contribution of GHGs. Thus, the Plaza Alternative's incremental contribution to global climate change from operation of the museum would be reduced to no significant impact through project sustainability strategies.

### **Action Alternative 3: Pavilion Concept**

#### *Open Space Resources*

The Pavilion Alternative would involve construction of an approximately 330,000 gross square of building space feet on the project site. The maximum building coverage would be approximately 60,229 square feet (approximately 25.8 percent) of the five-acre parcel site. However, because of the below grade programming and engineering requirements for the site's soil and groundwater conditions, the majority of the site would be cleared, excavated and re-graded. Therefore, implementation of the Pavilion Alternative would involve the removal of 38 trees (493.5" of total caliper inches) from the site. The removal of 14 mature trees from the project site would constitute a significant impact.

Replacement of mature trees with one or more trees whose aggregate circumference equals the circumference of the mature trees to be removed would minimize the long-term adverse effect. As part of the landscape design for the Pavilion Alternative (see Figures 2.14 and 2.16), a single row of street trees would be planted between the curb and the sidewalk on Constitution Avenue, 14th Street and 15th Street running the length of the site. Clusters of trees would be planted at the east and west sides of the building Corona. Approximately 46 new trees would be planted as part of the Pavilion Alternative to minimize the adverse impact. Mitigation measures would be required to further minimize the impacts of tree removal. In order to replace the aggregate 493.5" dbh of the trees lost due to development, the 44 new site trees included as part of Alternative 3 would have to average approximately 10.73" dbh, each unless additional trees are planted.

Development of the Pavilion Alternative would modify the total amount of open space located within the site boundaries from approximately 96 percent undeveloped open to approximately 74 percent of the total site area. Although this would be a change from the current condition, the Pavilion Alternative would actually provide substantially more site open space than all of the other museums on the north side of the National Mall. Further, this open space calculation does not take into account the rooftop terrace that would be created on top of the Corona. However, converting the site from landscaped open space to development would result in a significant impact.

#### *Site Performance*

In addition to the building coverage area, the Pavilion Alternative would include a driveway, sidewalks, walkways, water features and other hardscape features. With the Pavilion Alternative, approximately 49 percent of the site would be impermeable surfaces, including the building and other hardscape surfaces. Because more than 81 percent of the existing site is covered with permeable surfaces, this would result in a net increase in impermeable surfaces of approximately 30 percent as a result of the Pavilion Alternative.

As with the Plinth and Plaza Alternatives, the Pavilion Alternative would incorporate a number of sustainable features to minimize the adverse effects of additional impervious surfaces at the project site. Sustainable design strategies would be selected and implemented in order to improve the environmental impact of the construction and operation 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. However, compliance with federal mandates and LEED requirements would ensure that there would be no increase in stormwater runoff from the project site during operation of the Pavilion Alternative.

Currently, the project site contains a temporary concessions trailer to serve visitors to the National Mall and the Washington Monument Grounds. The Pavilion Alternative would involve construction of an approximately 330,000 gross square feet on the project site. Due to the requirements of Smithsonian facilities, the Pavilion Alternative would not only be a larger structure than the temporary concession stand trailer, it would have longer hours of operation. The development of the site with the Pavilion Alternative would substantially increase energy demand at the site.

The Pavilion Alternative would be constructed to meet LEED Gold certification criteria. In order to achieve the required number of points, the Pavilion Alternative would be designed to implement specific energy conservation strategies similar to the Plinth and Plaza Alternatives. Daylight would be brought into the west facing program areas on Level -1 by a skylight that would open outward to the west, providing views of the Washington Monument Grounds. Compliance with federal mandates and LEED requirements would ensure that there would be no significant impact on energy use and site performance during operation of the Pavilion Alternative.

### *Global Climate Change*

As with the Plinth and Plaza Alternatives, construction and operation of the Pavilion Alternative would incrementally increase GHG emissions compared to the emissions from the existing temporary concessions trailer that is currently operating on-site. Implementation of air quality mitigation measures during construction of the Pavilion Alternative would minimize the amount of short-term GHG emissions. Further, construction emissions would be short-term and would not continue following completion of construction activities. There would be no significant impact on global climate change during construction of the Pavilion Alternative.

Operation of the Pavilion Alternative would incorporate the same sustainability features described for the Plinth and Plaza Alternatives. In addition, visitors and staff would be expected to use alternative forms of transportation to access the site. These operational requirements of the Pavilion Alternative would substantially reduce the amount of GHG emissions produced compared to traditional building operation. Because every nation is an emitter of GHGs, and therefore makes an incremental cumulative contribution to global climate change, strategies implemented at the local and building-scale level would help to incrementally reduce the nation's overall contribution of GHGs. Thus, the Pavilion Alternative's incremental contribution to global climate change during its operation would be reduced to no significant impact through project sustainability strategies.

## **Action Alternative 4: Refined Pavilion Concept**

### *Open Space Resources*

The Refined Pavilion Alternative would involve construction of an approximately 308,000 gross square feet of building space on the project site. The point of maximum building coverage would be approximately 53,750 square feet (approximately 23 percent) of the five-acre parcel site. However, because of the below grade programming and engineering requirements for the site's soil and groundwater conditions, the majority of the site would be cleared, excavated and re-graded. Therefore, implementation of the Pavilion Alternative would involve the removal of approximately 38 trees from the site. The proposed removal of 14 mature trees from the project site would constitute a significant impact.

Replacement of mature trees with one or more trees whose aggregate circumference equals the circumference of the mature trees to be removed would minimize the long-term adverse effect. As part of the landscape design for the Pavilion Alternative (see Figures 2.19 and 2.21), a single row of street trees would be planted between the curb and the sidewalk on Constitution Avenue, 14th Street and 15th Street running the length of the site. Clusters of trees would be planted at the north, east and west sides of the building Corona, and within the plaza along Madison Drive. Approximately 52 new trees would be planted as part of the Refined Pavilion Alternative to minimize the adverse impact. Mitigation measures would be required to further minimize the impacts of tree removal. In order to replace the aggregate 493.5" dbh of all the trees lost due to development, the 44 new site trees included as a part of Alternative 4 would have to average approximately 9.49" dbh each, unless additional trees are planted.

Development of the Refined Pavilion Alternative would modify the total amount of open space located within the site boundaries. The site is currently approximately 96 percent undeveloped open space, which would be reduced approximately 77 percent of the total site area. Although this would be a change from the current condition, the Refined Pavilion Alternative would actually provide substantially more site open space than all of the other museums on the north side of the National Mall. Further, this open space calculation does not take into account the rooftop terrace that would be created on top of the Corona. However, converting the site from landscaped open space to development would result in a significant impact.

### *Site Performance*

The point of maximum building coverage with the Refined Pavilion Alternative would occupy approximately 23 percent of the site area. In addition, the Refined Pavilion Alternative would include a driveway, sidewalks, walkways, water features and other hardscape features. On the south side of the site (National Mall side), visitors would enter the Refined Pavilion Alternative through a plaza featuring landscaped areas and trees. A hardscape plaza featuring a shallow reflecting pool would be created at the south entry and provide outdoor museum space. There would be a large water feature on the north side of the site along Constitution Avenue for stormwater treatment. Additionally, two pathways provide access to the museum and the south side of the site.

The sidewalks would be made of a concrete aggregate consistent with the existing sidewalks and all of the sidewalks surrounding the National Mall. With the Refined Pavilion Alternative, approximately 52 percent of the site would be impermeable surfaces, including the building and other hardscape surfaces. Because more than 81 percent of the existing site is covered with permeable surfaces, this would result in a net increase in impermeable surfaces of more than 33 percent as a result of the Refined Pavilion Alternative.

As with the other action alternatives, the Refined Pavilion Alternative would incorporate a number of sustainable features to minimize the adverse effects of additional impervious surfaces at the project site. Sustainable design strategies would be selected and implemented in order to improve the environmental impact of the construction and operation 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. However, compliance with federal mandates and LEED requirements would ensure that there would be no increase in stormwater runoff from the project site during operation of the Refined Pavilion Alternative.

Currently, the project site contains a temporary concessions trailer to serve visitors to the National Mall and the Washington Monument Grounds. The Refined Pavilion Alternative would involve construction of an approximately 308,000 gross square feet on the project site. Due to the requirements of Smithsonian facilities, the Refined Pavilion Alternative would not only be a larger structure than the temporary concession stand trailer, it would have longer hours of operation. The development of the site with the Refined Pavilion Alternative would substantially increase energy demand at the site.

The Refined Pavilion Alternative would be constructed to meet LEED Gold certification criteria. In order to achieve the required number of points, the Refined Pavilion Alternative would be designed to implement specific energy conservation strategies similar to the Plinth Concept. Daylight would be brought into the west facing program areas on Level -1 by a light well that would open outward to the west, providing views of the Washington Monument Grounds. Compliance with federal mandates and LEED requirements would ensure that there would be no significant impact on energy use during operation of the Refined Pavilion Alternative.

#### *Global Climate Change*

As with the other action alternatives, construction and operation of the Refined Pavilion Alternative would increase GHG emissions compared to emissions from the existing temporary concession trailer that is currently operating on-site. Implementation of air quality mitigation measures during construction of the Refined Pavilion Alternative would minimize the amount of short-term GHG emissions. Further, construction emissions would be short-term and would not continue following completion of construction activities. There would be no significant impact on global climate change during construction of the Refined Pavilion Alternative.



Operation of the Refined Pavilion Alternative would incorporate the same sustainability features described for other action alternatives. Visitors and staff would be expected to use alternative forms of transportation to access the site. These operational requirements of the Refined Pavilion Alternative would substantially reduce the amount of GHG emissions produced compared to traditional building operation. Because every nation is an emitter of GHGs, and therefore makes a cumulative contribution to global climate change, strategies implemented at the local and building-scale level would help to incrementally reduce the nation's overall contribution of GHGs. Thus, the Refined Pavilion Alternative's incremental contribution to global climate change during its operation would be reduced to no significant impact through project sustainability strategies.

### **3.6.6 What efforts would be taken to minimize the impacts on natural resources?**

The following mitigation measure is recommended to minimize construction and operational effects of the action alternatives on open space and natural resources:

- To minimize adverse effects associated with the loss of mature trees, the Smithsonian should retain existing site trees to the extent possible. The drip lines of mature trees that can be retained in place should be fenced by a certified arborist prior to the start of construction. Mature trees that cannot be retained in place should be salvaged and reused within site landscaping to the extent feasible. If it is not feasible to retain the trees on-site, salvaged trees should be relocated within the National Mall in coordination with NPS.

- To minimize the loss of mature trees, new trees should be planted on site that total the aggregate dbh of trees lost during construction.

The Tier I Final EIS (Smithsonian Institution, 2008a) required implementation of the mitigation measures during construction of the NMAAHC to minimize adverse effects associated with criteria air pollutant emissions:

- Use ultra low sulfur diesel fuel in construction equipment.
- Limit unnecessary idling times on diesel powered engines to three to five minutes.
- Locate diesel powered exhausts away from fresh air intakes.

These mitigation measures would also be required to reduce the contribution of GHG emissions during construction.

This page is intentionally left blank

## 3.7 TRANSPORTATION

### 3.7.1 Introduction

The primary objective of this study is to assess existing and planned future (2015) transportation conditions within the immediate area of the NMAAHC site and to identify potential issues and improvement measures with respect to all transportation modes. The study follows and builds on the existing transportation conditions and issues reports which were prepared in support of the museum study process. These reports incorporated relevant information from the Tier I Final EIS completed for the NMAAHC. The Tier I Final EIS analysis concluded that the proposed action could be developed without any significant adverse impacts on existing and future traffic and parking conditions within the local area of the site. Specifically, the Tier I Final EIS (Smithsonian Institution, 2008a) concludes that the museum development would not degrade the existing capacity/level of service conditions, based on the following assumptions:

- Daily visitor person trips would constitute approximately 0.5 percent of the annual visitation (2.5 million).
- Approximately 90 percent of the daily trips would occur via alternative travel modes including transit and walk. The NMAAHC site is within three blocks of the Smithsonian and Federal Triangle Metrorail stations and several bus stops located along Constitution Avenue and 14<sup>th</sup> Street. Most of the visitors would approach the museum by walking from the transit stations and bus stops, and from other visitor attractions on the National Mall and adjacent areas.

- No off-street parking would be provided for site visitors.

However, site-specific action alternatives have since been developed. As such, this analysis analyzes the specific effects to roadways in the site vicinity, as well as pedestrian and bicycle circulation, based on the action alternatives. The analysis regarding public transportation and parking was not performed and is not included in this Tier II analysis. The design changes made to the facility since the Tier I Final EIS (Smithsonian Institution, 2008a) was completed would not affect public transportation operations or impacts regardless of the alternative selected.

### 3.7.2 How are traffic levels measured?

Level of Service (LOS) is based upon the traffic volume present in each lane on the roadway, the capacity of each lane at the intersection, and the delay associated with each directional movement. The LOS for signalized intersections are defined below:

**LOS A** describes operations with very low average delay per vehicle, i.e., less than 10.0 seconds. This occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop. Short signal cycle lengths may also contribute to low delay.

**LOS B** describes operations with average delay in the range of 10.1 to 20.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.

**LOS C** describes operations with delay in the range of 20.1 to 35.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level although many still pass through the intersection without stopping. This is generally considered the lower end of the range of the acceptable LOS in rural areas.

**LOS D** describes operations with delay in the range of 35.1 to 55.0 seconds per vehicle. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, and/or high traffic volumes as compared to the roadway capacity. Many vehicles are required to stop and the number of vehicles that do not have to stop declines. Individual signal cycle failures, where all waiting vehicles do not clear the intersection during a single green time, are noticeable. This is generally considered the lower end of the range of the acceptable LOS in urban areas.

**LOS E** describes operations with delay in the range of 55.1 to 80.0 seconds per vehicle. These higher delay values generally indicate poor progression, long cycle lengths, and high traffic volumes. Individual cycle failures are frequent occurrences. LOS E has been set as the limit of acceptable conditions.

**LOS F** describes operations with average delay in excess of 80.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with over-saturation, i.e., when traffic arrives at a flow rate that exceeds the intersection capacity. It may also occur at high volumes with many individual cycle failures. Poor progression and long cycle lengths may also contribute to such delays.

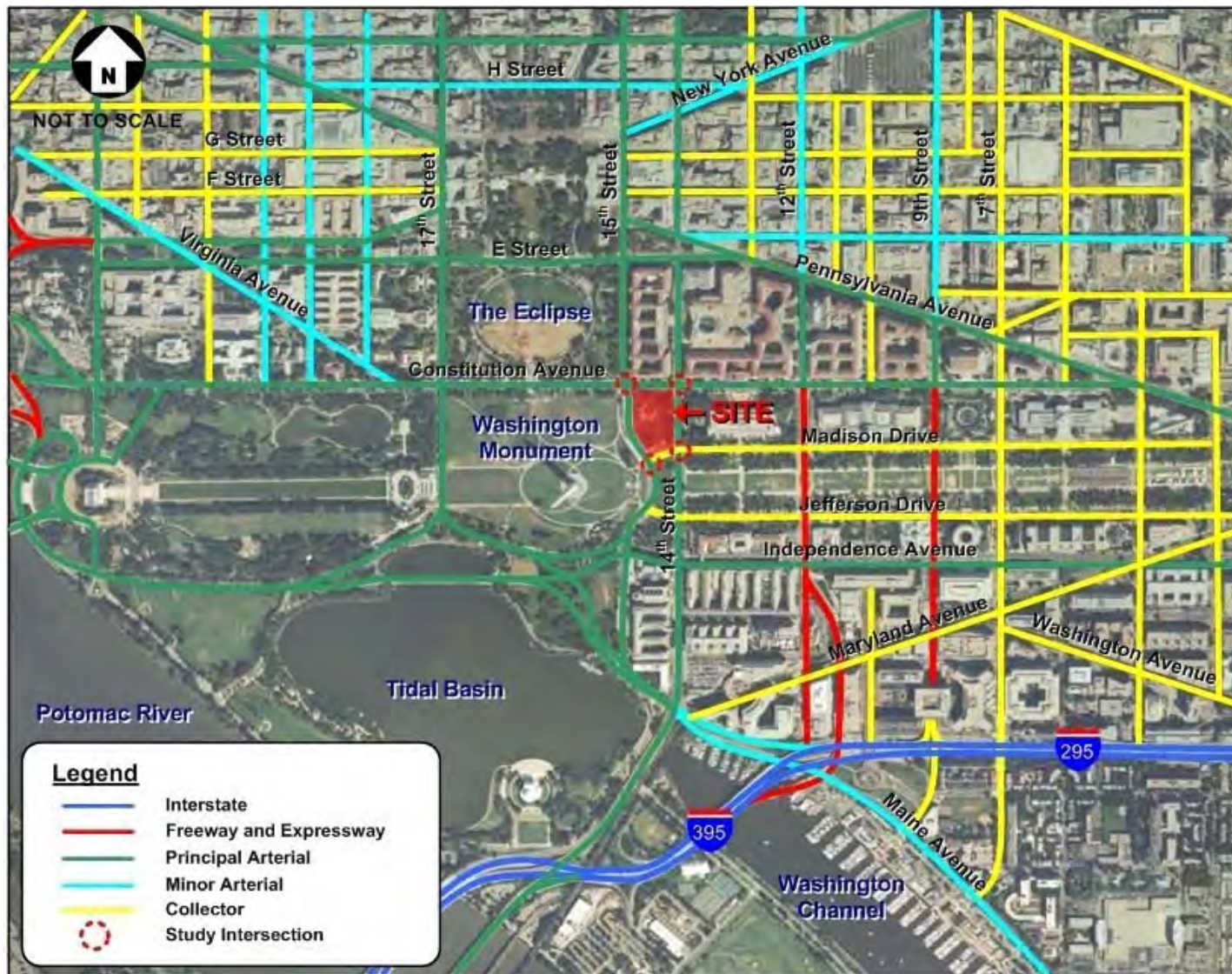
### **3.7.3 What are the current vehicular traffic conditions at the project site?**

Regional access to the site is provided via several roadway connections involving arterial and freeway networks, including Constitution Avenue (U.S. 50) – Interstate 66 (I-66) connection to the west and the 14<sup>th</sup> Street (U.S. 1) – I-395 connection to the south. Local access is provided via Constitution Avenue to the north, Madison Drive to the south, 14<sup>th</sup> Street to the east, and 15<sup>th</sup> Street to the west. Within the immediate vicinity of the site, Constitution Avenue and 14<sup>th</sup> Street function as major gateways to the District Downtown Area. Figure 3.7.1 shows the location of the site and Metrorail stations with the roadway network. Figure 3.7.2 illustrates the local roadway network and its functional roadway classifications. The operational and service characteristics of the key local roadways are described below.



**Figure 3.7.1 Site Location Map**

*Source: Gorove/Slade, 2010*



**Figure 3.7.2 Functional Roadway Classifications - Local Roadway Network**  
 Source: Gorove/Slade, 2010

### **Constitution Avenue**

Constitution Avenue is an eight-lane, two-way principal arterial running east-west to the north of the site. It is designated U.S. Route 1/U.S. Route 50 (U.S. 1/U.S. 50) east of 14<sup>th</sup> Street. West of 14<sup>th</sup> Street, it is designated U.S. 50 and connects directly with I-66 (not depicted in Figures 3.71. or 3.7.2). This roadway provides direct access to the NMAAHC site and a number of federal buildings, museums and other visitor attractions; and serves significant commuter and tourist traffic volumes. Curbside parking is provided along both sides of Constitution Avenue, with restrictions during the morning and afternoon peak periods. This roadway carries an ADT volume of approximately 36,900 vehicles per weekday in the vicinity of the site, with lower volumes on weekends. The posted speed limit is 25 mph.

### **Fourteenth Street**

Fourteenth (14<sup>th</sup>) Street is a seven-lane, two-way principal arterial running north-south to the east of the site. South of Constitution Avenue, it is designated U.S. 1, and connects with I-395 providing access to Northern Virginia and beyond. Fourteenth Street provides direct access to the NMAAHC site and several other museums, federal buildings and visitor attractions, and is a major commuter and visitor travel route. Parking is restricted along 14<sup>th</sup> Street in the immediate vicinity of the site at all times. This roadway serves an ADT volume of approximately 38,200 vehicles per weekday, with lower volumes on weekends. The posted speed limit is 25 mph.

### **Fifteenth Street**

Fifteenth (15<sup>th</sup>) Street is a four-lane roadway running north-south to the west of the site. It is classified as a principal arterial north of Constitution Avenue by the District Department of Transportation (DDOT). Fifteenth Street provides access to the NMAAHC site and several important land uses including museums, federal buildings and visitor attractions. Parking is restricted along 15<sup>th</sup> Street in the immediate vicinity of the site. This roadway carries an ADT volume of approximately 15,000 vehicles on weekdays, with significantly lower volumes on weekends. The posted speed limit is 25 mph.

### **Madison Drive**

Madison Drive is a two-lane, one-way westbound roadway situated to the south of the site. It is classified as a local park road by DDOT. Madison Drive traverses the National Mall from 3<sup>rd</sup> Street to 15<sup>th</sup> Street and provides access to the Smithsonian Institution museums and the National Gallery of Art. No parking is permitted between 14<sup>th</sup> and 15<sup>th</sup> Streets. However, a lay-by lane for use by the DC Tourmobile is provided on the north side of the roadway. Madison Drive carries an ADT volume of approximately 9,400 vehicles per weekday. The posted speed limit is 15 mph.

The primary intersections providing immediate access to the NMAAHC site are as follows:

- Constitution Avenue and 14<sup>th</sup> Street
- Constitution Avenue and 15<sup>th</sup> Street
- 14<sup>th</sup> Street and Madison Drive
- 15<sup>th</sup> Street and Madison Drive

Figure 3.7.3 illustrates the lane configurations and traffic control devices provided at those intersections.

### **Intersection Levels of Service**

Vehicular and pedestrian traffic counts were conducted at the study intersections between the hours of 6:30 a.m. to 9:30 a.m. and 4:00 p.m. to 7:00 p.m. on Thursday, May 31, 2007, and Wednesday, July 9, 2008. The data indicates that the morning and afternoon system peak hours are 8:15 to 9:15 a.m. and 5:00 to 6:00 p.m., respectively. The peak hour vehicle volumes are illustrated in Figure 3.7.4.

Capacity analyses were undertaken for the four signalized intersections providing immediate access to the proposed museum site. These intersections are listed above. The capacity analysis results, presented in Table 3.7.1, show that the intersections are operating within the arterial roadway congestion standard for DDOT, i.e., LOS D/E, based primarily on average vehicular delay (in seconds). It is also noted that the intersection of Constitution Avenue and 15<sup>th</sup> Street is approaching capacity, with LOS D during both the morning and afternoon peak hours.

### **Pedestrian and Bicycle Access**

The NMAAHC site is surrounded by an extensive on-street sidewalk and off-street path network providing connections to the National Mall's museums and monuments, downtown, and nearby Metrorail stations. The sidewalks on the west side of 15<sup>th</sup> Street and the south side of Madison Drive, are both designated as bicycle routes and provide bicycle connections to the rest of the National Mall and the Potomac River.

Sidewalks exist along both sides of all streets surrounding the site and an off-street path currently cuts diagonally across the site itself, connecting 14<sup>th</sup> Street and 15<sup>th</sup> Street. The off-street bike trails provide good conditions for novice and experienced cyclists. Roadway conditions in the vicinity of the site are fair to poor for bicycling conditions based on DDOT's Bicycle Map (2009). Several factors contribute to fair to poor conditions, including traffic volumes, traffic speeds, volume of turning vehicles, narrow travel lane widths, and lack of on-street bicycle facilities. Marked crosswalks, curb-ramps, and pedestrian count-down timers help facilitate pedestrian crossings to the proposed site at all four of its perimeter intersections.

Most pedestrians within the vicinity of the site appear to be tourists, with a large number of student groups. The dominant pedestrian flow occurs east-west along Constitution Avenue to the north, with lower pedestrian flows along Madison Drive to the south and north-south along 14<sup>th</sup> and 15<sup>th</sup> Streets. These are key connections between downtown and the Metro stations and the museums and monuments on the National Mall. Figure 3.7.5 shows the major pedestrian routes within the immediate area of the site.

Historical traffic accident data was obtained from DDOT for the three-year period of 2004 through 2006. The data indicates that the intersection of Constitution Avenue at 14<sup>th</sup> Street experienced a total of 122 reported accidents, including one (1) that is pedestrian-related. It is also noted that DDOT has included this intersection in its top 5 percent list of high hazard intersections for calendar year 2006 (Federal Highway Administration, 2010).



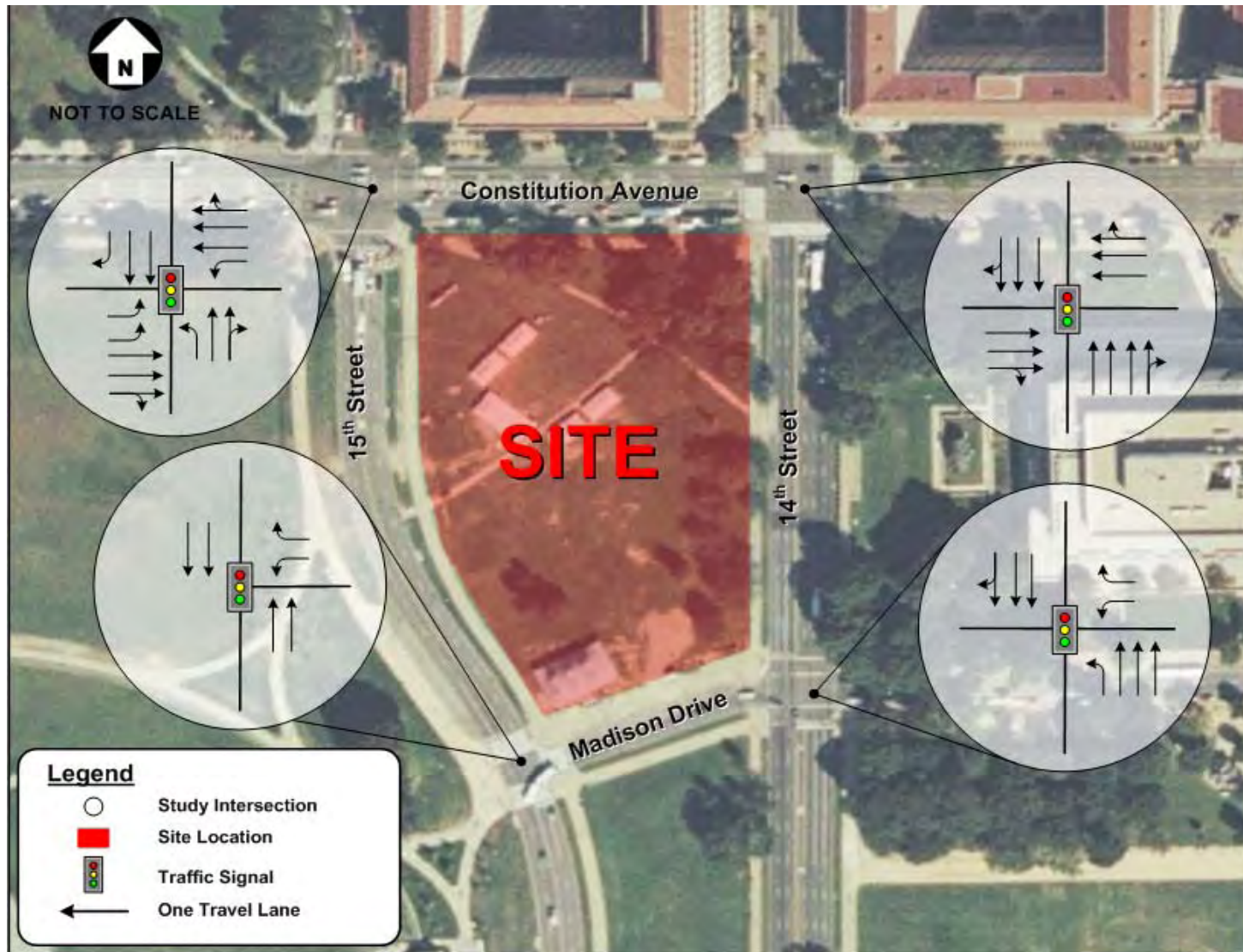
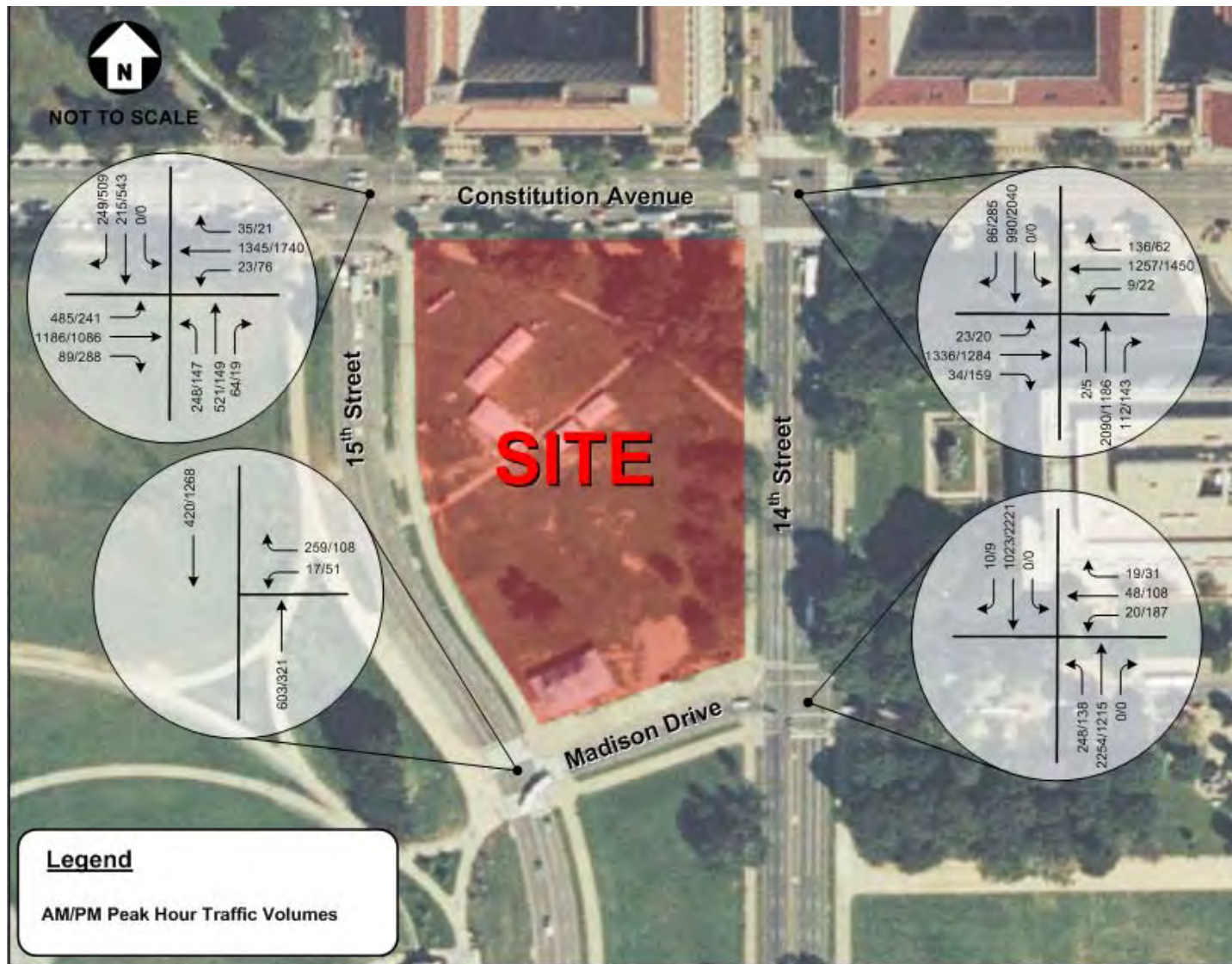


Figure 3.7.3 Existing Roadway Lane Configuration and Traffic Control Devices

Source: Gorove/Slade, 2010

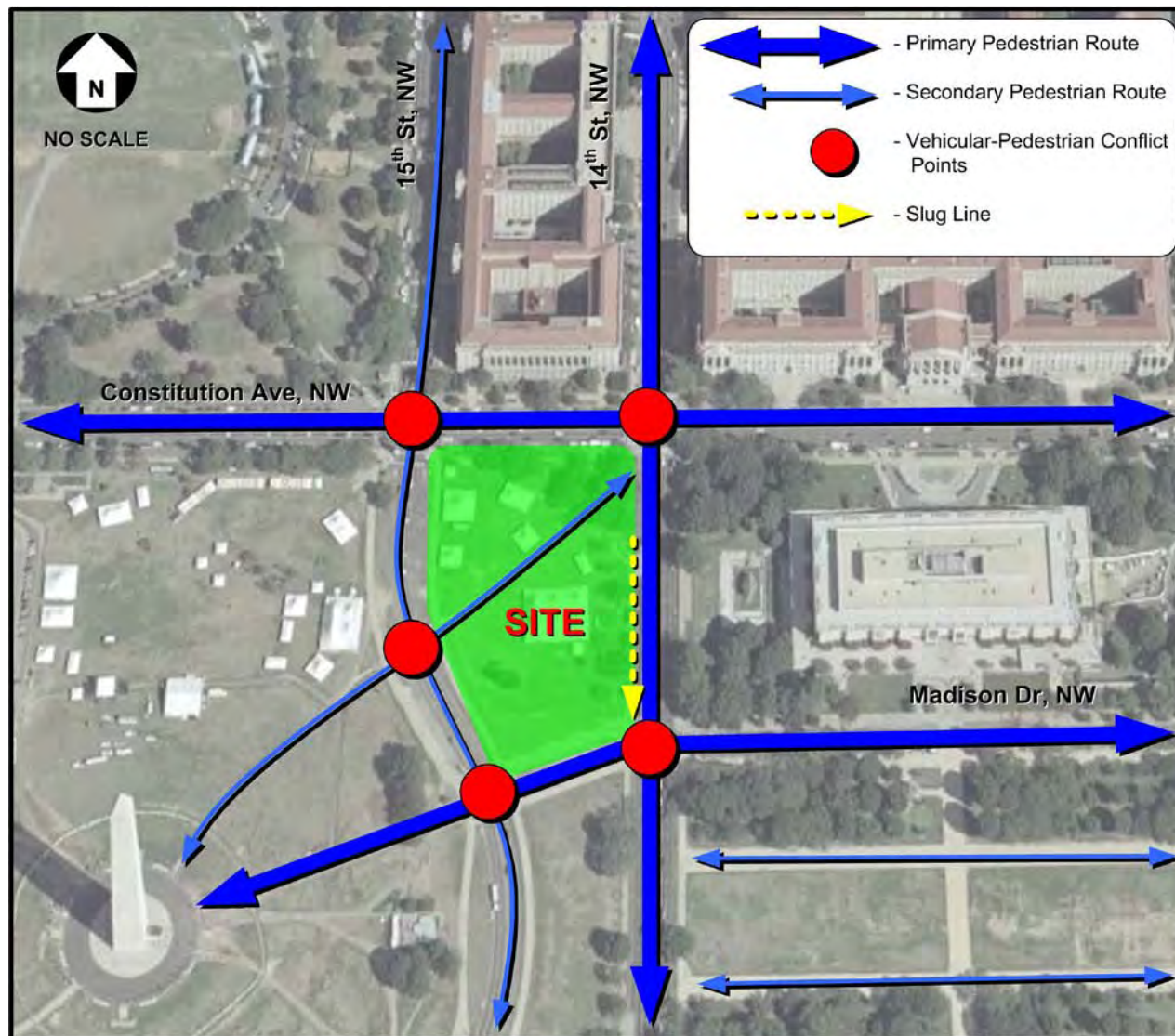


**Figure 3.7.4 Existing Vehicle Peak Hour Volumes**  
Source: Gorove/Slade, 2010

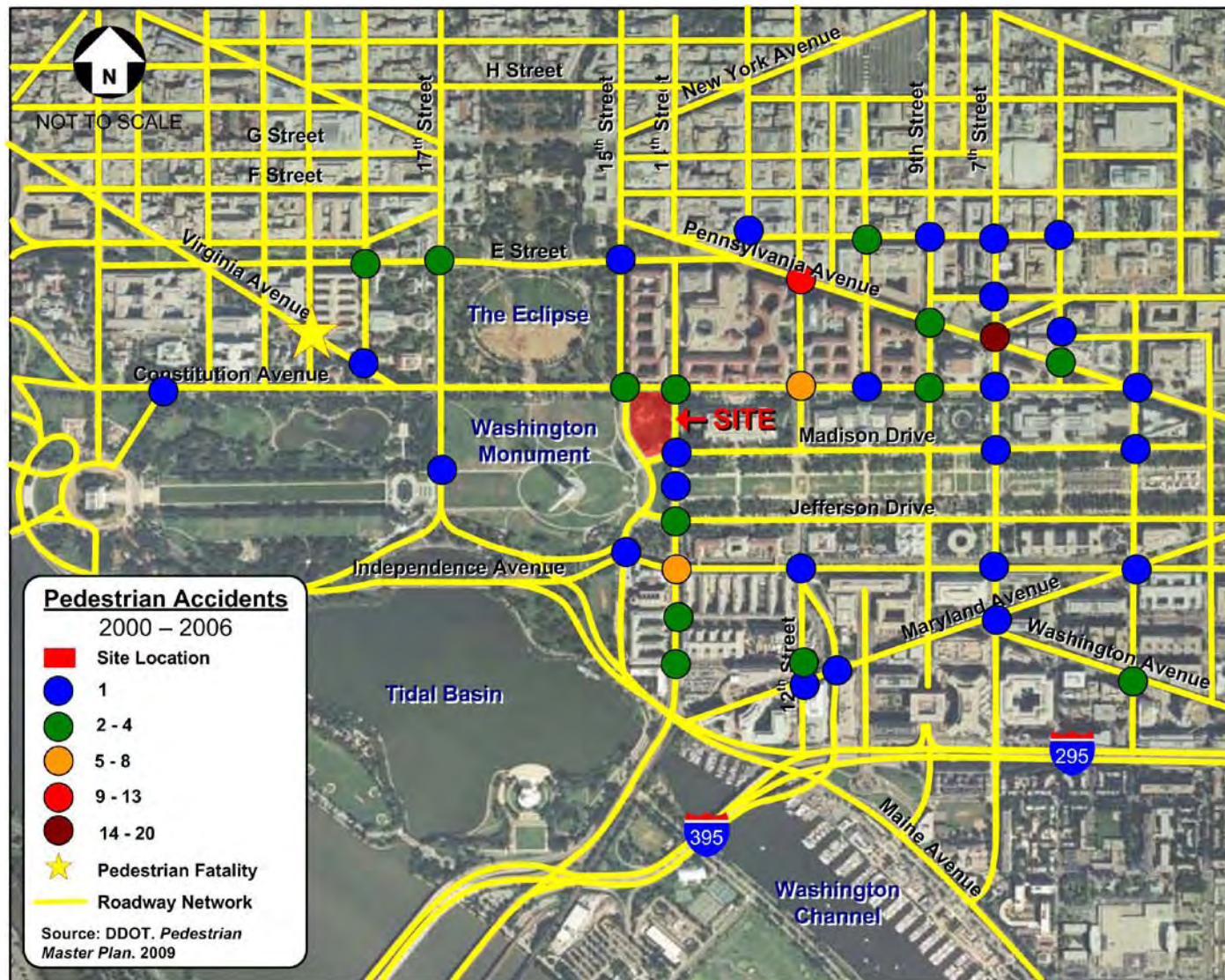
**Table 3.7.1 Existing Condition (2007) Intersection Vehicular Capacity Analysis**

Intersection	Existing Conditions			
	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
<i>Constitution Avenue and 15<sup>th</sup> Street</i>				
Overall	45.7	D	52.9	D
Eastbound	47.4	D	50.8	D
Westbound	46.6	D	51.4	D
Northbound	47.4	D	72.0	E
Southbound	33.9	C	53.0	D
<i>Constitution Avenue and 14<sup>th</sup> Street</i>				
Overall	34.7	C	38.3	D
Eastbound	25.9	C	32.6	C
Westbound	27.4	C	36.6	D
Northbound	51.5	D	22.1	C
Southbound	21.1	C	52.3	D
<i>Madison Drive and 14<sup>th</sup> Street</i>				
Overall	19.3	B	31.2	C
Westbound	35.3	D	48.5	D
Northbound	18.2	B	12.6	B
Southbound	20.5	C	39.9	D
<i>Madison Drive and 15<sup>th</sup> Street</i>				
Overall	14.0	B	39.4	D
Westbound	35.8	D	24.8	C
Northbound	8.3	A	27.1	C
Southbound	7.7	A	44.3	D

Source: Gorove/Slade, Inc., 2010



**Figure 3.7.5 Major Pedestrian Routes**  
*Source: Gorove/Slade, 2010*



**Figure 3.7.6 Existing Pedestrian Accident Data**  
Source: Gorove/Slade, 2010

In the vicinity of the site, at the intersections of 14th Street and 15th Street with Madison Drive, Jefferson Drive and Constitution Avenue, there have been less than four pedestrian accidents during the seven year period from 2000 to 2006, as identified in the 2009 DDOT Pedestrian Master Plan. In the vicinity of other Smithsonian Institution museums, most of the intersections along Constitution Avenue have also experienced less than four pedestrian accidents during the seven year period from 2000 to 2006, as identified in the 2009 DDOT Pedestrian Master Plan. The exception is the intersection of 12th Street and Constitution Avenue, which is where 12th Street is one-way northbound coming out from under the National Mall. Figure 3.7.6 shows the existing pedestrian accident data within the vicinity of the site.

Pedestrian traffic counts were conducted at the study intersections between the hours of 6:30 a.m. to 9:30 a.m. and 4:00 p.m. to 7:00 p.m. on Thursday, May 31, 2007, and Wednesday, July 9, 2008. Figure 3.7.7 presents the weekday peak hour pedestrian counts. Using these volumes, Gorove/Slade calculated the level of delay pedestrians experienced. Table 3.7.2 lists the results of this analysis. Pedestrian delay is associated with pedestrians waiting for signal changes and pedestrian signal heads to display walk signals.

**Table 3.7.2 Pedestrian LOS**

Intersection (Approach)	Existing Conditions			
	AM Peak Hour		PM Peak Hour	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
<i>Constitution Avenue and 15<sup>th</sup> Street</i>				
Constitution Avenue	30.4	D	19.2	B
15 <sup>th</sup> Street	15.7	B	16.8	B
<i>Constitution Avenue and 14<sup>th</sup> Street</i>				
Constitution Avenue	12.5	B	13.5	A
14 <sup>th</sup> Street	19.2	B	18.0	B
<i>Madison Drive and 14<sup>th</sup> Street</i>				
14 <sup>th</sup> Street	31.2	D	30.4	D
Madison Drive	6.5	A	8.0	A
<i>Madison Drive and 15<sup>th</sup> Street</i>				
15 <sup>th</sup> Street	30.3	C	21.6	C
Madison Drive	5.3	A	22.1	C

Source: Gorove/Slade, Inc., 2010

**Public Transportation**

The NMAAHC site is well served by rail transportation systems. These include the Washington Metropolitan Area Transit Authority (WMATA) Metrorail with connections to other regional and national rail lines, as well as several bus transit services. Figure 3.7.8 presents the public transportation map for the site.

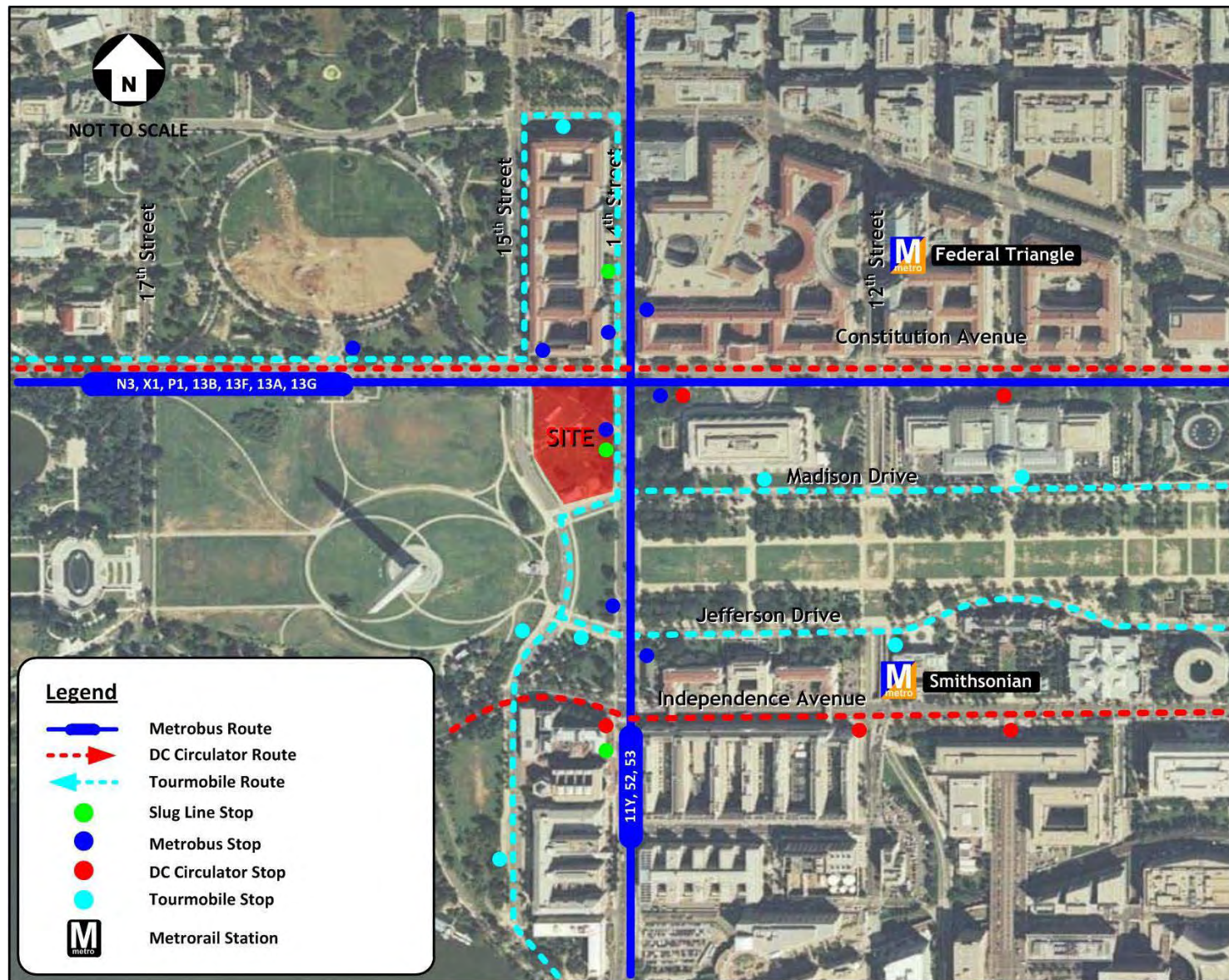
### **Shuttle and Tour Buses**

Tour bus operations are concentrated within the National Mall between the Lincoln Memorial and the U.S. Capitol. Major routes through the project area are along Constitution Avenue and Independence Avenue SW. The main access routes are New York Avenue, Pennsylvania Avenue, George Washington Memorial Parkway, I-66, Connecticut Avenue, Wisconsin Avenue, Arlington Memorial Bridge and South Capitol Street. Madison Drive and Jefferson Drive SW along the National Mall are used as drop-off areas. In addition, there are an estimated 300 tour bus spaces throughout the District of Columbia and at other visitor destinations such as Arlington National Cemetery and the National Cathedral. The Union Station garage provides tour bus parking in the central part of the city. Additional parking facilities are being developed at the old Convention Center site and at Robert F. Kennedy (RFK) Stadium. Figure 3.7.9 shows the charter bus and tour bus parking locations.

Tourmobile Sightseeing provides intermittent shuttle services on the National Mall with routes along 14<sup>th</sup> Street, 15<sup>th</sup> Street and Madison Drive, in the vicinity of the NMAAHC site. Free all-day parking lots are available for Tourmobile patrons near the Jefferson Memorial. Spaces are limited and available on a first come, first serve basis. Free 3-hour parking is available near the West Potomac Park stop on Ohio Drive SW, south of the Lincoln Memorial. Paid parking for both cars and buses is available at parking lots located at Arlington National Cemetery (\$1.25 per hour for the first 3 hours, \$2.00 per hour thereafter) and at Union Station. Tourmobile routes are also accessible within walking distance of several Metrorail stations including Union Station (Red Line), Arlington Cemetery (Blue Line) and Smithsonian (Blue and Orange Line) stations. Figure 3.7.8 illustrates the public transportation facilities and services discussed above.







**Figure 3.7.8 Public Transportation**  
 Source: Gorove/Slade, 2010

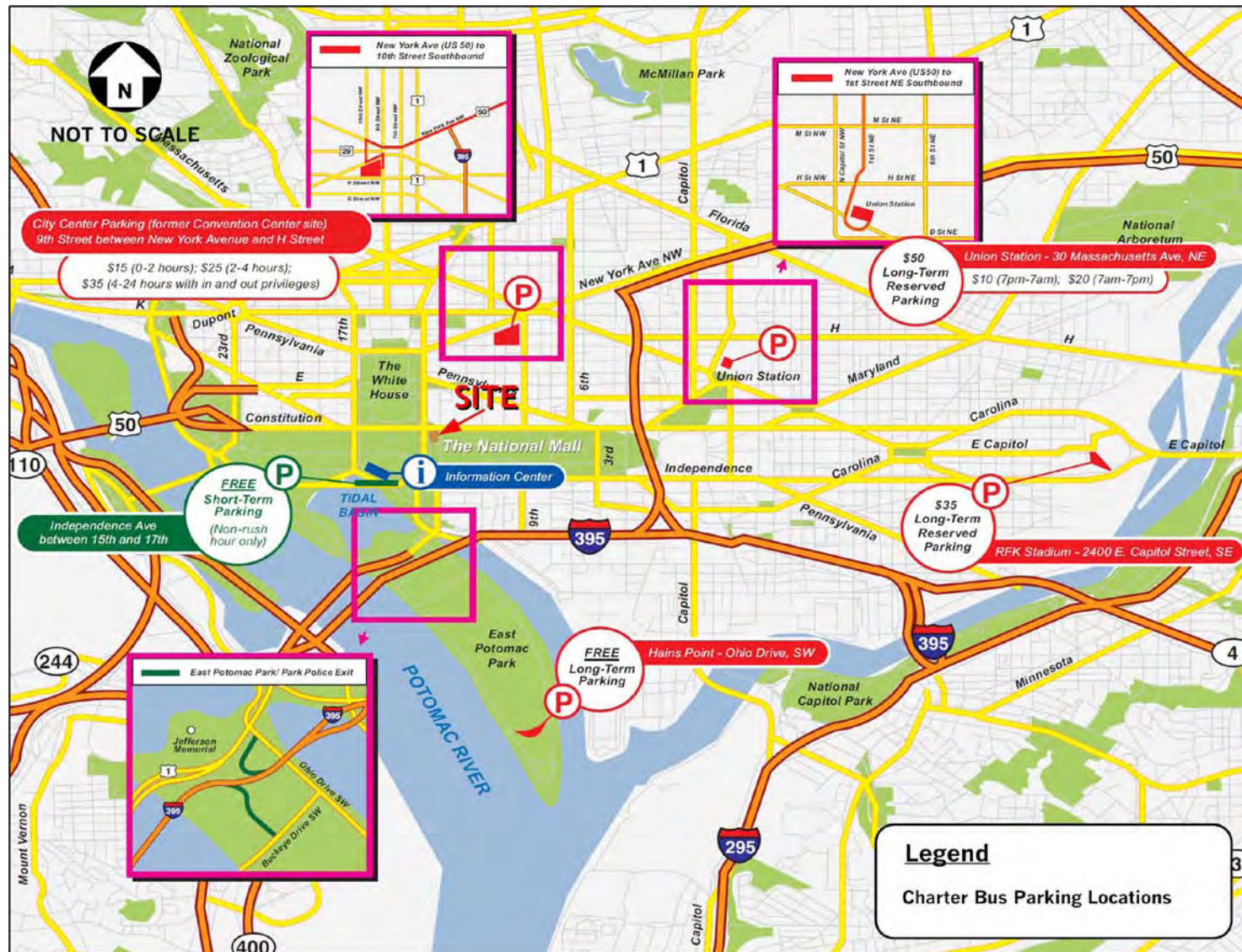


Figure 3.7.9 Charter Bus/Tour Bus Parking Locations  
 Source: Gorove/Slade, 2010

## Slug Lines

“Slugging” is a term used to describe a unique form of commuting within the Washington Metropolitan Area. Its uniqueness relates to the practice in which commuters stop to pick up passengers who are total strangers in an effort to use the high occupancy roadway facilities on I-395. However, this method of informal carpooling is an organized system with its own set of rules and specific pick-up and drop-off locations. It moves thousands of commuters daily, free of charge. The system of “slugging” operates as follows: a motorist needing additional passengers to meet the required high occupancy vehicle (HOV) minimum pulls up to one of the designated “slug” lines and the driver either displays a sign indicating the destination of the car or simply calls it out.

The “slugs” (commuters waiting) first in line for that destination then enter the vehicle and confirm the destination. The carpool vehicle then continues to the desired destination. The southbound side of 14<sup>th</sup> Street, approximately 150 feet south of Constitution Avenue, is the location of a slug line which forms primarily during 4:00 p.m. to 6:00 p.m. on working weekdays. The slug destinations are various suburban areas in Virginia located along the I-395 corridor.

## Other Modes of Transportation

Alternative modes of transportation are available to supplement transit access to the site, as well as recreational use within the National Mall. Currently, there are 16 miles of multi-use trails within the National Mall and Memorial Parks which support pedestrians, bicycles, water transport/excursion and personal transportation vehicles. The Segway® HT is another mode of

personal transportation and is a motorized two-wheeled vehicle with a maximum speed of up to 12.5 miles per hour. Access for persons with disabilities by Segway® HT and electric scooters are available throughout the National Mall. All other users of Segway® HT or electric scooters would be considered as recreational use. Recreational use is restricted to specific north-south sidewalks crossing the National Mall. Based on NPS policy, recreational Segway® HT riders may cross the National Mall on sidewalks adjacent to streets managed by the District of Columbia including 3<sup>rd</sup>, 4<sup>th</sup>, 7<sup>th</sup>, and 14<sup>th</sup> Streets.

Segway® HT rentals and tours of District sites are available through private companies. Segway® HT vehicles are also allowed on the Metro trains during evening and weekend periods, as well as during midday off-peak hours. NPS also has integrated the use of Segway® HTs for its staff, and U.S. Park Police throughout their sites within the District to increase mobility, while reducing transportation impacts on NPS resources.

### 3.7.4 How would operation of the NMAAHC affect traffic levels?

Total future peak hour LOS was calculated based on: (1) existing land use and traffic controls; (2) the total future traffic volumes; and (3) Highway Capacity Manual (HCM) methodologies (using Synchro 6 software). Copies of the LOS calculation worksheets are included in Appendix 9.4.

This section evaluates the transportation effects of each alternative. This assessment also includes an evaluation of the cumulative effects of implementing each alternative and other planned area developments.

For the purpose of defining whether any of the proposed alternatives could potentially affect transportation, several criteria are considered.

**No Effects:** No change to the current roadway network, traffic, existing public transportation, pedestrian, or bicycle circulation.

**No Significant Effect:** A change that would not alter the roadway network and traffic beyond the current level of service, produce excess demand on public transportation, or reduce vehicular-pedestrian-bicycle safety.

**Significant Effects:** A change that would alter the roadway network and traffic beyond the current LOS, produce excess demand on public transportation, or reduce vehicular-pedestrian-bicycle safety.

### No Action Alternative

#### *Roadways and Traffic*

The No Action Alternative would not result in any changes to the project site or new development on the site. With the No Action Alternative, the project site would continue to be an open space resource that would be operated by NPS. No effects on background traffic growth would occur with the No Action Alternative. This includes other development projects planned in the immediate project vicinity and regional growth that would generate additional traffic volumes on area roadways.

The future (no action) traffic projections are based on two factors: average annual traffic growth and other planned development projects in the site vicinity. The projected increase in through traffic on the study area roadways until year 2015 was based on a review of historical ADT data for the period 2001 to 2006, and recommendations of DDOT. The historical ADT data indicates that traffic growth along the study area roadways have either remained stable or increased marginally.

DDOT typically recommends consideration of a 2 percent growth factor for planning purposes. In addition, a number of land use changes are planned for the general study area, including the following:

- Institute of U.S. Peace
- National Museum of American History renovation
- Vietnam Veterans Memorial Visitors Center
- American Veterans Disabled for Life Memorial
- Dwight D. Eisenhower Memorial

- Martin Luther King, Jr. Memorial

Based on information obtained from DDOT, there are no short-term improvements programmed for the local area roadway network. Based on the locations of these developments within the monumental core and their proximity to rail and bus transit services, it is expected that the greater proportion of trips associated with these developments would utilize walk, bicycle, and transit modes. Vehicular trips are also likely to be concentrated during the off-peak periods on weekdays. Vehicular trip generation and related impacts of those sites would not be significant.

#### *Service and Loading*

Because the NMAAHC would not be constructed or operated as part of the No Action Alternative, there would be no new curb cuts installed at the project site. Some service and loading activities would occur as part of the operation of a temporary concession stand on the south side of the project site.

However, deliveries for the concession are minimal and would continue to be minimal. Service and loading would continue to occur using the bus drop-off area on Madison Drive. There would be no impact on peak or off-peak traffic associated with servicing and loading with the No Action Alternative.

#### *Pedestrian and Bicycle Access*

With the No Action, there would be no change in pedestrian and bicycle volumes to and from the site because the NMAAHC would not be constructed. There would be no increase in conflicts between

pedestrians and bicyclists with other vehicles. No impact would occur.

### **Action Alternative 1: Plinth Concept**

#### *Roadways and Traffic*

The potential traffic of the Plinth Alternative was assessed with respect to the four study area intersections: Constitution Avenue at 14<sup>th</sup> Street, Constitution Avenue at 15<sup>th</sup> Street, Madison Drive at 14<sup>th</sup> Street, and Madison Drive at 15<sup>th</sup> Street. The future traffic volumes are based on the combination of (1) the future No Action alternative volumes and (2) the projected weekday morning and afternoon peak hour vehicular trip generation and traffic assignment for the Plinth Alternative. The projected vehicular trip generation was derived from the projected annual visitor person trips (2.5 million) based on the following assumptions:

- Average daily visitor person trips would constitute 0.5 percent of the annual visitation (i.e., approximately 13,000 persons);
- Morning peak visitor trips would constitute approximately 5 percent of the daily trips;
- Evening peak visitor trips would constitute approximately 10 percent of the daily trips;
- Average auto occupancy would be approximately 2.5 persons per vehicle; and
- Peak hour modal splits would be approximately 10 percent passenger vehicle, 25 percent transit, 55 percent walk and 10 percent other, based on NPS Visitor Transportation Survey findings.

Based on these assumptions, the morning and afternoon peak hour trip generation for the Plinth Alternative would be quite low (i.e., 26 and 52 trips, respectively).

The expected trip distribution was determined based on (1) information presented in the NPS Visitor Transportation Survey regarding where visitors stay during their trips to the National Mall, and (2) the existing travel patterns and general familiarity with the District and the adjacent Maryland and Virginia suburbs. It is estimated that:

- approximately 30 percent of the vehicular trips would generally approach from the north via 14<sup>th</sup> and 15<sup>th</sup> Streets,
- 20 percent from the east via Constitution and Independence Avenues,
- 25 percent from the south primarily via 14<sup>th</sup> Street, and
- 25 percent from the west via Constitution Avenue.

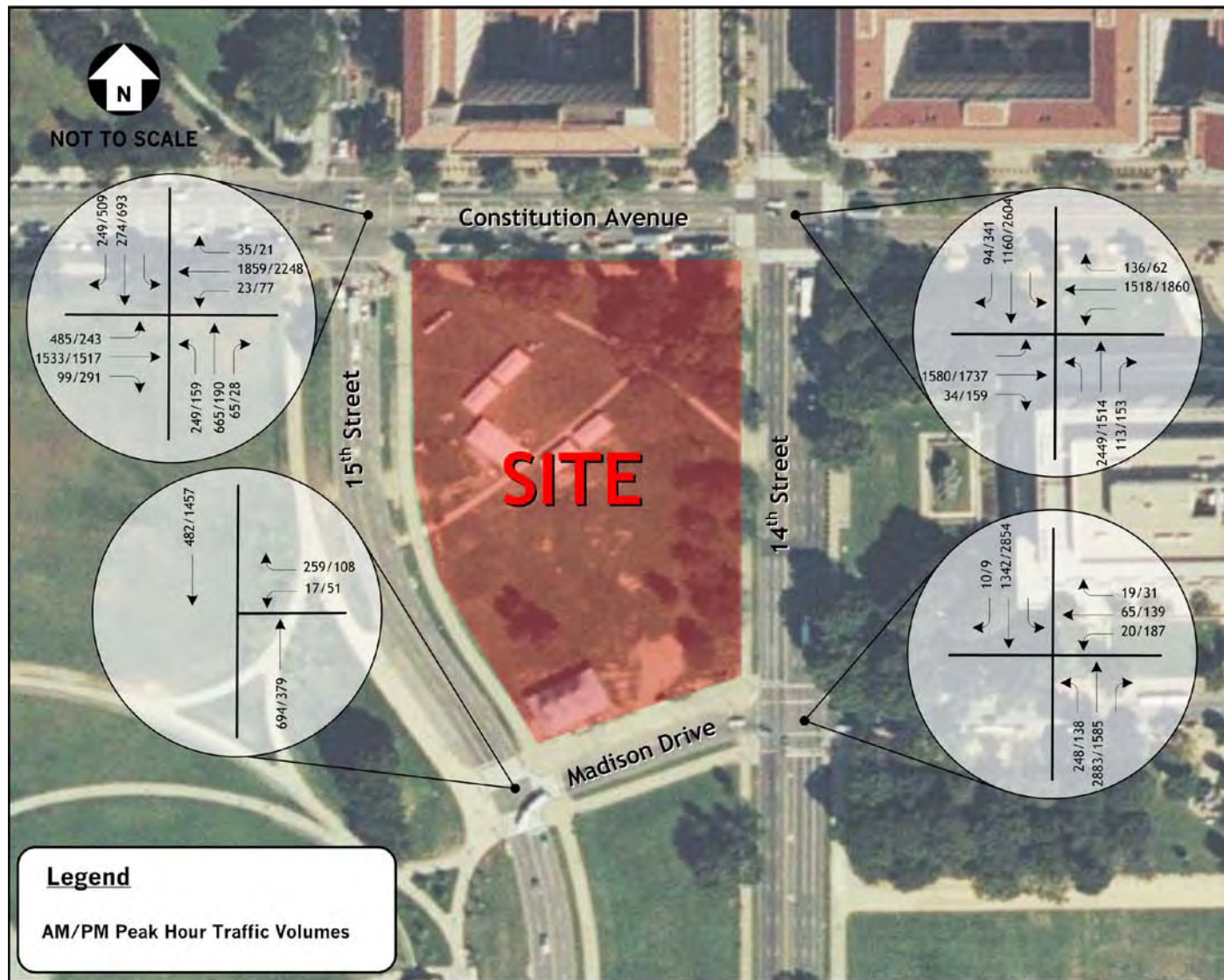
Because vehicle and bus drop-off would be located along Madison Drive with the Plinth Alternative, most vehicle traffic would be directed to the main entrance. Some drop-off and pick-up activity may occur on Constitution Avenue. It is not anticipated that this would have an adverse impact on traffic operations because the number of site generated vehicle trips would be very low.

The future (2015) total traffic projections were derived by combining the background (No Action) traffic volumes with the Plinth Alternative traffic assignment. Figure 3.7.10 shows the projected future (2015) total traffic volumes.

Capacity analyses were performed to determine the future LOS for the four study intersections when background traffic growth is

combined with traffic generated by the Plinth Alternative. The HCM 2000 methodology was used for all analyses. The vehicular capacity and future LOS results are shown in Table 3.7.3. The analysis considered increased pedestrian activity at the study intersections due to the Plinth Alternative and the cumulative projects.

The results in Table 3.7.3 indicate that the Plinth Alternative would have minimal or negligible impacts on future roadway and traffic conditions. However, background traffic growth is forecast to reduce overall LOS at 3 of the 4 intersections within the study area. Overall, no intersection is forecast to fail, but several approaches would experience lengthy delays. The increase in delay experienced at several approaches is associated with background traffic growth forecasted for the study area and is not associated with trips generated with the Plinth Alternative. No significant impact would occur to vehicular traffic during peak hour periods as a result of the Plinth Alternative.



**Figure 3.7.10 Future Traffic Volumes**  
Source: Gorove/Slade, 2010

**Table 3.7.3 Vehicular Capacity Analysis Results: Total Future (2015) Conditions**

Intersection (Approach)	Background and Total Future (2015) Conditions							
	AM Peak Hour				PM Peak Hour			
	Background		Total Future		Background		Total Future	
	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
<i>Constitution Avenue and 15<sup>th</sup> Street,</i>								
Overall	59.9	E	59.5	E	72.1	E	73.1	E
Eastbound	43.2	D	43.2	D	52.1	D	52.2	D
Westbound	88.4	F	88.4	F	102.0	F	102.0	F
Northbound	53.5	D	53.7	D	81.0	F	96.1	F
Southbound	34.8	C	34.8	C	45.3	D	45.3	D
<i>Constitution Avenue and 14<sup>th</sup> Street,</i>								
Overall	46.8	D	46.9	D	66.3	E	66.3	E
Eastbound	27.7	C	27.7	C	38.2	D	38.2	D
Westbound	28.2	C	28.2	C	38.2	D	38.2	D
Northbound	83.3	F	83.5	F	23.1	C	23.3	C
Southbound	21.5	C	21.5	C	127.2	F	127.2	F
<i>Madison Drive and 14<sup>th</sup> Street,</i>								
Overall	30.2	C	30.2	C	71.5	E	72.8	E
Westbound	35.8	D	35.8	D	51.3	D	51.3	D
Northbound	33.2	C	33.2	C	14.6	B	14.6	B
Southbound	22.8	C	22.8	C	108.3	F	110.4	F
<i>Madison Drive and 15<sup>th</sup> Street,</i>								
Overall	13.7	B	13.7	B	48.1	D	48.1	D
Westbound	36.4	D	36.4	D	24.7	C	24.7	C
Northbound	8.5	A	8.7	A	27.7	C	27.7	C
Southbound	7.9	A	7.9	A	56.0	E	56.0	E

Source: Gorove/Slade, Inc., 2010



### *Service and Loading*

For the Plinth Alternative, the service/loading area would be located under the Corona, with ingress and egress provided from 14<sup>th</sup> Street. This ingress point would be located on the west side of 14<sup>th</sup> Street and would be situated away from the entrances, bus drop-off and pedestrian facilities. Egress movements from the underground service/loading area would occur at the same access point on 14<sup>th</sup> Street.

Service access would be restricted to weekday and weekend off-peak daytime and night-time periods when the prevailing traffic volumes on the adjacent streets would be significantly lower compared with the peak commuting periods. In the vicinity of the site, 14<sup>th</sup> Street is a multi-lane roadway and the access point would provide adequate turning radii and pedestrian safety features. These provisions would enable the ingress and egress movements to occur without significant vehicular and pedestrian traffic impacts.

Based on off-peak observations of existing conditions at the study intersections, the traffic flows of the 14<sup>th</sup> Street corridor adjacent to the site operate efficiently with queues at the study intersections being processed through the intersection for every signal cycle during the off-peak periods of the day. With this level of efficiency along 14<sup>th</sup> Street, the addition of less than 15 delivery vehicles per day during off-peak hours would easily be accommodated at the 14<sup>th</sup> Street curb cut. Gaps in traffic would be created by the existing traffic signals on 14<sup>th</sup> Street at Constitution Avenue and at Madison Drive. The delivery vehicles that could potentially arrive during any off peak-hour would represent less than 1 percent of the traffic on 14<sup>th</sup> Street.

The potential for vehicle queuing along 14<sup>th</sup> Street would be eliminated by the provision of a loading area large enough to accommodate the anticipated delivery schedule. With the Plinth Alternative, the loading area would provide adequate space for truck maneuvers, which would eliminate the need for trucks to back out of the site. Thus, service access for the Plinth Alternative would have no significant effect on the surrounding transportation system based on the planned service access, circulation, and staging provisions. The adequacy of the service and loading facilities has been confirmed using the appropriate truck turning software.

A slug line and Metrobus stop are currently located approximately mid-block on 14<sup>th</sup> Street between Constitution Avenue and Madison Drive within the NMAAHC site. Although the curb cut with the Plinth Alternative would not be expected to occur at the exact location of the slug line and Metrobus stop, service and loading activities could interfere with the slugging and Metrobus loading/unloading. A significant effect to area circulation would occur as a result of the Plinth Alternative. Measures are required to minimize this impact by relocating the Metrobus stop and slug line.

The underground service area would also include minimal parking (three parking spaces). The vehicle trips associated with these three parking spaces were taken into account in the future capacity analysis shown in Table 3.7.3 above. The use of these spaces would have no significant impact on service vehicle access and circulation, or the adjacent roadway network.

Numerous tour bus companies operate within the project area, in addition to several private sightseeing operators that provide hop-on and -off services. The operation of the Plinth Alternative would increase the number of tour bus trips to the project area. However,

both tour buses and school buses typically drop off visitors at one central location for visitors that intend to visit multiple locations on the National Mall. It is likely that tour bus and school bus visits currently associated with nearby Smithsonian Institution and District landmarks that include the Washington Monument, World War II Memorial, NMAH, NMNH, and U.S. Holocaust Museum would also include a visit to the NMAAHC. The existing lay-by area located on Madison Drive just south of the subject site currently provides that facility for that activity and will continue to do so with the NMAAHC in place. The drop-off area would also accommodate drop-off activity associated with shuttle buses, automobiles, and taxis arriving at the site. These additional vehicle trips to and from the site would not have significant effect on area traffic volumes. The vehicle trips associated with these parking spaces were taken into account in the future capacity analysis shown in Table 3.7.3 above. There would be no significant impact on vehicular traffic during peak hour periods as part of the Plinth Alternative.

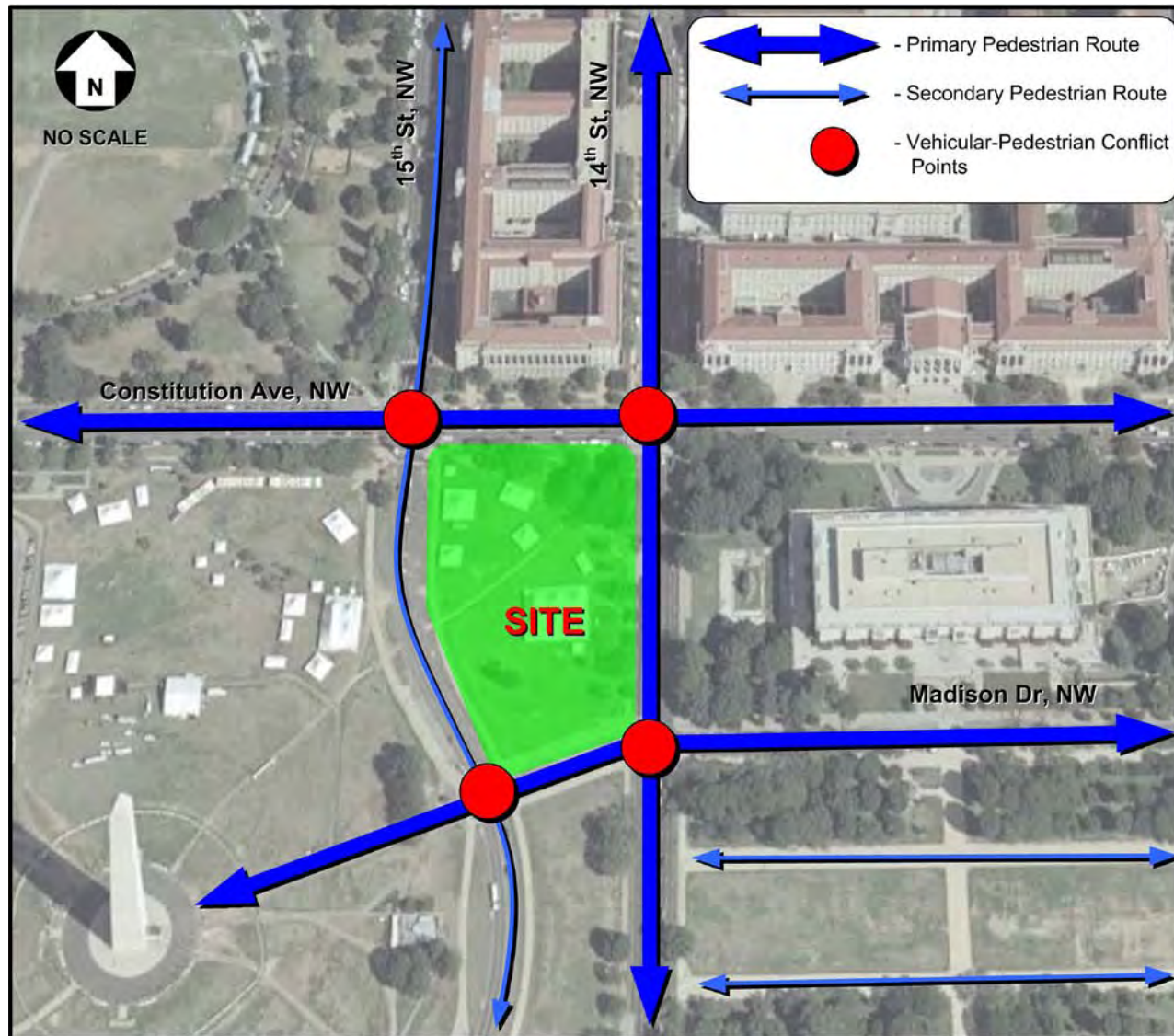
#### *Pedestrian and Bicycle Access*

The Plinth Alternative would locate the primary entrance on Madison Drive and a secondary entrance on Constitution Avenue. Pedestrians and bicyclists would likely use the entrance nearest to their access route such that pedestrians arriving from north of Constitution Avenue or along Constitution Avenue would enter predominantly through the secondary entrances. Pedestrians accessing the site from the south or from along the National Mall would enter predominantly through the main entrance. Because of the entrance location, it is anticipated that the number of pedestrians walking and bicyclists riding north-south along 14<sup>th</sup> and 15<sup>th</sup> Streets between Constitution Avenue and Madison Drive would be reduced. However, there would be no significant effect on

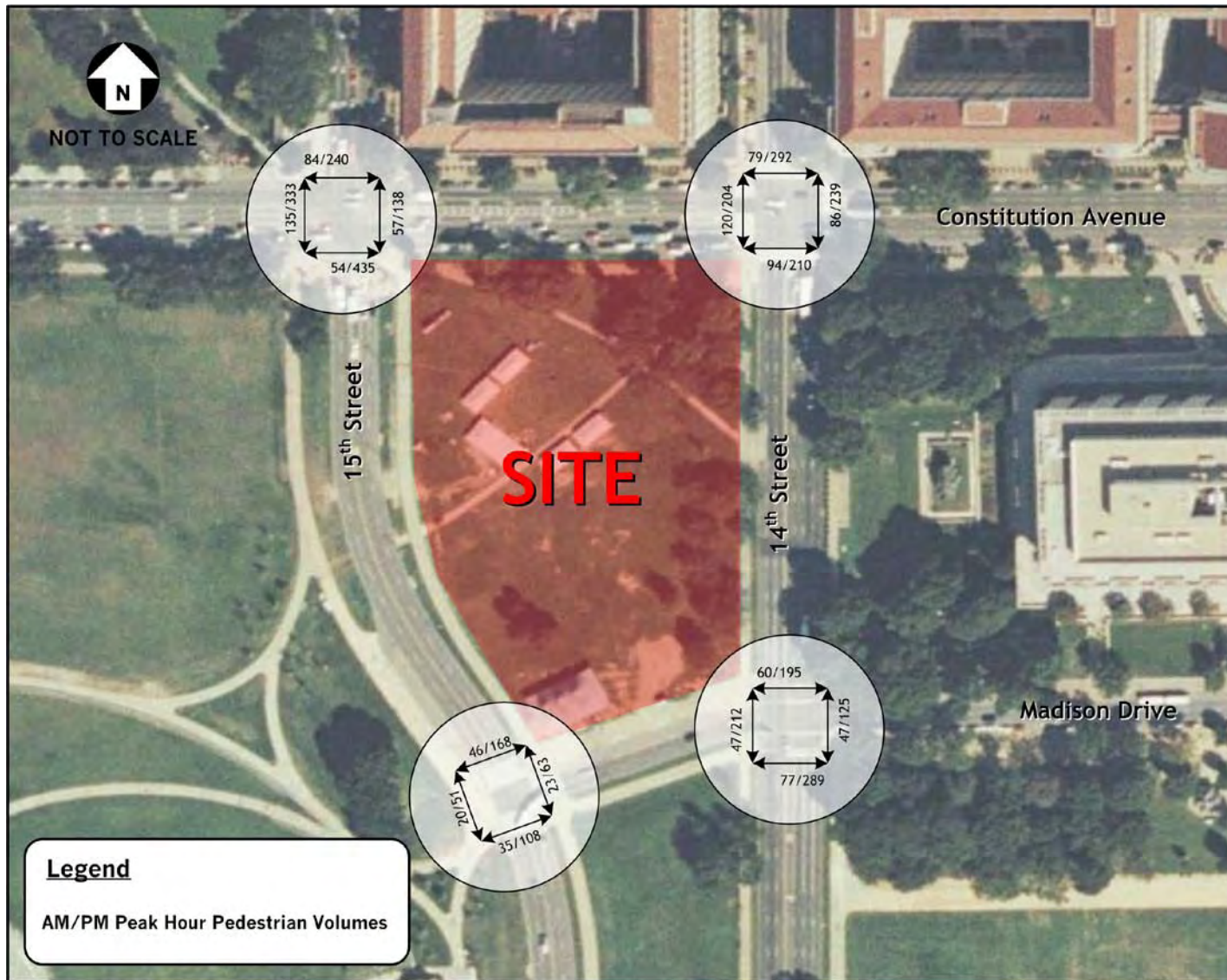
external access routes or crossing volumes or patterns at adjacent intersections.

Pedestrian and bicyclist activity at the adjacent intersections and sidewalks would increase during operation of Plinth Alternative. The majority of visitors would likely include pedestrians and bicyclists coming from the National Mall across both 14<sup>th</sup> and 15<sup>th</sup> Streets, and crossing Constitution Avenue at 14<sup>th</sup> and 15<sup>th</sup> Streets. The NMAAHC site is surrounded by an extensive on-street sidewalk and off-street path network providing connections to the National Mall's museums and monuments, downtown, and nearby Metrorail stations. Sidewalks exist along both sides of all streets surrounding the site and would be sufficiently wide with the Plinth Alternative to accommodate high pedestrian and bicyclist volumes. Marked crosswalks, curb-ramps, and pedestrian count-down timers would help facilitate pedestrian crossings to the site at all four of its perimeter intersections. Daily visitor person trips would constitute approximately 0.5 percent of the annual visitation (2.5 million person trips), or 13,000 visitors on a typical day. Ninety percent (90 percent) of the daily trips would occur via alternative travel modes including transit and walk.

Based on traffic accident data obtained from DDOT, only two accidents involving pedestrians have occurred over the last three-years for which data is available. These accidents occurred at the Constitution Avenue and 14<sup>th</sup> Street, and Constitution Avenue and 15<sup>th</sup> Street intersections. Figure 3.7.11 presents the potential pedestrian and bicyclist conflict locations based on existing roadway conditions around the site.



**Figure 3.7.11 Pedestrian and Bicyclist Access Routes and Potential Conflict Locations**  
 Source: Gorove/Slade, 2010



**Figure 3.7.12 Projected Pedestrian Volumes**  
Source: Gorove/Slade, 2010

At the intersections of 15<sup>th</sup> Street with Constitution Avenue, the number of pedestrian crossings is projected to reach up to a maximum of 438 weekday afternoon peak hour pedestrian crossings. At other locations around the subject site, the maximum weekday peak hour pedestrian crossings are in the range of 300 pedestrian crossings per hour. Over the course of the weekday afternoon peak hour, approximately 30 to 40 signal cycles would occur to allow for pedestrian crossings. Applying the range of 300 pedestrians crossing per hour, there would approximately be 7 to 10 pedestrians crossing per signal cycle, which could be easily accommodated by the existing crosswalks. Please refer to Figure 3.7.12 for projected pedestrian crossing volumes at the corners of the site.

DDOT recognizes that the intersection of 14<sup>th</sup> Street and Constitution Avenue is a high hazard location (Federal Highway Administration, 2010), and has identified potential mitigation measures that include improved signal visibility, timing and coordination, and upgraded pedestrian signage and pavement markings. An increase in the number of pedestrians at these intersections, during operation of the Plinth Alternative, would create a significant impact. To minimize adverse impacts, several improvements would be implemented at the study area intersections. These include optimized pedestrian count-down signal operations, ladder-patterned crosswalks for greater visibility, 10-foot distance between stop bars and crosswalks to better separate motorists from crossing pedestrians, and new curb ramps facing crosswalks as opposed to the center of the intersection.

## **Action Alternative 2: Plaza Concept**

### *Roadways and Traffic*

Visitor levels for the Plaza Alternative would be the same as the Plinth Alternative because the same programming would be offered. As with the Plinth Alternative, the future traffic volumes for the Plaza Alternative were based on (1) a combination of the future No Action Alternative and (2) the projected weekday morning and afternoon peak hour vehicular trip generation and traffic assignment for the Plaza Concept. The projected vehicular trip generation was derived from the projected annual visitor person trips (2.5 million) using the same assumptions as for the Plinth Alternative.

Based on these assumptions, the morning and afternoon peak hour trip generation for the Plaza Alternative would also be 26 and 52 trips, respectively. As with the Plinth Alternative, it is estimated that approximately 30 percent of the vehicular trips with the Plaza Alternative would generally approach from the north via 14<sup>th</sup> and 15<sup>th</sup> Streets, 20 percent from the east via Constitution and Independence Avenues, 25 percent from the south primarily via 14<sup>th</sup> Street, and 25 percent from the west via Constitution Avenue.

The future (2015) total traffic projections were derived by combining the background (No Action) traffic volumes with the Plaza Alternative traffic assignment. Figure 3.7.10 shows the projected future (2015) total traffic volumes. The future LOS results are shown in Table 3.7.3. The results in Table 3.7.3 above indicate that the Plaza Alternative would have minimal or negligible effects on future roadway and traffic conditions. However, background traffic growth is forecast to reduce overall LOS at 3 of the 4

intersections within the study area. Overall, no intersection is forecast to fail, but several approaches would experience lengthy delays. The increase in delay experienced at several approaches is associated with background traffic growth forecasted for the study area and is not associated with trips generated with the Plaza Alternative. No significant impact would occur on vehicular traffic during peak hour periods as a result of the Plaza Alternative.

### *Service and Loading*

As with the Plinth Alternative, the service/loading area for the Plaza Alternative would be located under the Corona, with ingress and egress provided from 14<sup>th</sup> Street. This ingress point would be located on the west side of 14<sup>th</sup> Street and would be situated away from the entrances, bus drop-off and pedestrian facilities. Egress movements from the underground service/loading area would occur at the same access point on 14<sup>th</sup> Street. Service access would be restricted to weekday and weekend off-peak daytime and night-time periods when the prevailing traffic volumes on the adjacent streets would be significantly lower compared with the peak commuting periods. In the vicinity of the site, 14<sup>th</sup> Street is a multi-lane roadway and the access point would provide adequate turning radii and pedestrian safety features. These provisions would enable the ingress and egress movements to occur without significant vehicular and pedestrian traffic impacts.

Based on off-peak observations of existing conditions at the study intersections, traffic flows of the 14<sup>th</sup> Street corridor adjacent to the site operate efficiently, with queues at the study intersections being processed through the intersection for every signal cycle during the off-peak periods of the day. With this level of efficiency along 14<sup>th</sup> Street, the addition of less than 15 delivery vehicles per day during

off-peak hour as part of the Plaza Alternative would easily be accommodated at the 14<sup>th</sup> Street curb cut. Gaps in traffic would be created by the existing traffic signals on 14<sup>th</sup> Street at Constitution Avenue and at Madison Drive. The delivery vehicles that could potentially arrive during any off peak-hour would represent less than 1 percent of the traffic on 14<sup>th</sup> Street.

In addition, the potential for vehicle queuing along 14<sup>th</sup> Street with the Plaza Alternative would be eliminated by the provision of a loading area large enough to accommodate the anticipated delivery schedule. The loading area would provide adequate space for truck maneuvers, which would eliminate the need for trucks to back out of the site. Service access for the Plaza Alternative would have no significant impact on the surrounding transportation system based on the planned service access, circulation and staging provisions. The adequacy of service and loading facilities has been confirmed using the appropriate truck turning software.

A slug line and Metrobus stop are currently located approximately mid-block on 14<sup>th</sup> Street between Constitution Avenue and Madison Drive within the NMAAHC site. Although the curb cut with the Plaza Alternative would not be expected to occur at the exact location of the slug line and Metrobus stop, service and loading activities could interfere with the slugging and Metrobus loading/unloading. A significant effect to area circulation would occur as a result of the Plaza Alternative. Measures are required to minimize this effect by relocating the Metrobus stop and slug line.

With the Plaza Alternative, the underground service/loading area would also include minimal parking (three parking spaces). The vehicle trips associated with these three parking spaces were taken into account in the future capacity analysis shown in Table 3.7.3

above. The use of these spaces would have no significant impact on service vehicle access and circulation, or the adjacent roadway network.

The operation of the Plaza Alternative would increase the number of tour bus trips to the project area. However, both tour buses and school buses typically drop off visitors at one central location for visitors that intend to visit multiple locations on the National Mall. It is likely that tour bus and school bus visits currently associated with nearby Smithsonian Institution and District landmarks that include the Washington Monument, World War II Memorial, NMAH, NMNH, and U.S. Holocaust Museum would also include a visit to the NMAAHC. The existing lay-by area located on Madison Drive just south of the subject site currently provides that facility for that activity and will continue to do so with the NMAAHC in place. The drop-off area would also accommodate drop-off activity associated with shuttle buses, automobiles, and taxis arriving at the site. These additional vehicle trips to and from the site would not have significant effect on area traffic volumes. The vehicle trips associated with these parking spaces were taken into account in the future capacity analysis shown in Table 3.7.3 above. There would be no significant impact on vehicular traffic during peak hour periods as part of the Plaza Alternative.

#### *Pedestrian and Bicycle Access*

The Plaza Alternative would locate the primary entrance to the NMAAHC on Madison Drive with a secondary entrance located on the south side of the central plaza. Pedestrians and bicyclists would likely use the entrance nearest to their access route such that pedestrians arriving from north of Constitution Avenue or along Constitution Avenue would predominantly enter through the

secondary entrance, while pedestrians accessing the site from the south or from along the National Mall would predominantly enter through the main entrance. Because of the entrance locations, it is anticipated that the number of pedestrians walking and bicyclists riding north-south along 14<sup>th</sup> and 15<sup>th</sup> Streets between Constitution Avenue and Madison Drive would be reduced. However, there would be no significant impact on external access routes or crossing volumes or patterns at adjacent intersections.

Pedestrian and bicyclist activity at the adjacent intersections and sidewalks would increase during operation of Plaza Alternative. The majority of visitors would likely include pedestrians and bicyclists coming from the National Mall across both 14<sup>th</sup> and 15<sup>th</sup> Streets, and crossing Constitution Avenue at 14<sup>th</sup> and 15<sup>th</sup> Streets. Sidewalks exist along both sides of all streets surrounding the site and would be sufficiently wide with the Plaza Alternative to accommodate high pedestrian and bicyclist volumes. Marked crosswalks, curb-ramps, and pedestrian count-down timers would help facilitate pedestrian crossings to the site at all four of its perimeter intersections. Daily visitor person trips would constitute approximately 0.5 percent of the annual visitation (2.5 million person trips), or 13,000 visitors on a typical day. Ninety percent (90 percent) of the daily trips would occur via alternative travel modes including transit and walk.

DDOT recognizes that the intersection of Constitution Avenue and 14<sup>th</sup> Street is a high hazard location (Federal Highway Administration, 2010). It has identified potential mitigation measures that include improved signal visibility, timing and coordination, and upgraded pedestrian signage and pavement markings. An increase in the number of pedestrians at this intersection during operation of the Plaza Alternative would create a significant impact. To minimize adverse impacts, several

improvements would be implemented at the study area intersections, including optimized pedestrian count-down signal operations, ladder-patterned crosswalks for greater visibility, 10 foot distance between stop bars and crosswalks to better separate motorists from crossing pedestrians, and new curb ramps facing crosswalks as opposed to the center of the intersection. Figure 3.7.12 shows the projected pedestrian crossing volumes at the corners of the site.

### **Action Alternative 3: Pavilion Concept**

#### *Roadways and Traffic*

Visitor levels for the Pavilion Alternative would be the same as the Plinth and Plaza Alternatives because the same programming would be offered. As with the Plinth and Plaza Alternatives, potential traffic from the Pavilion Alternative was assessed with respect to the four study area intersections: Constitution Avenue at 14<sup>th</sup> Street, Constitution Avenue at 15<sup>th</sup> Street, Madison Drive at 14<sup>th</sup> Street, and Madison Drive at 15<sup>th</sup> Street. The future traffic volumes were based on (1) the combination of the future No Action Alternative and (2) the projected weekday morning and afternoon peak hour vehicular trip generation and traffic assignment. The projected vehicular trip generation was derived from the projected annual visitor person trips (2.5 million) using the same assumptions as for the Plinth and Plaza Alternatives.

Based on these assumptions, the morning and afternoon peak hour trip generation for the Pavilion and Plaza Alternatives would also be 26 and 52 trips, respectively. As with the Plinth Alternative, it is estimated that approximately 30 percent of the vehicular trips with the Pavilion Alternative would generally approach from the north via 14<sup>th</sup> and 15<sup>th</sup> Streets, 20 percent from the east via Constitution and Independence Avenues, 25 percent from the south primarily via 14<sup>th</sup> Street, and 25 percent from the west via Constitution Avenue.

The future (2015) total traffic projections were derived by combining the background (No Action) traffic volumes with the Pavilion Alternative traffic assignment. Figure 3.7.10 shows the projected future (2015) total traffic volumes. The future LOS results are shown in Table 3.7.3. The results in Table 3.7.3 above indicate



that the Pavilion Alternative would have minimal or negligible impacts on future roadway and traffic conditions. However, background traffic growth is forecast to reduce overall LOS at 3 of the 4 intersections within the study area. Overall, no intersection is forecast to fail, but several approaches would experience lengthy delays. The increase in delay experienced at several approaches is associated with background traffic growth forecasted for the study area and is not associated with trips generated with the Pavilion Alternative. No significant impact would occur to vehicular traffic during peak hour periods as a result of the Pavilion Alternative.

#### *Service and Loading*

As with the Plinth and Plaza Alternatives, the service/loading area for the Pavilion Alternative would be located under the Corona, with ingress and egress provided from 14<sup>th</sup> Street. This ingress point would be located on the west side of 14<sup>th</sup> Street and would be situated away from the entrances, bus drop-off and pedestrian facilities. Egress movements from the underground service/loading area would occur at the same access point on 14<sup>th</sup> Street.

Service access would be restricted to weekday and weekend off-peak daytime and night-time periods when the prevailing traffic volumes on the adjacent streets would be significantly lower compared with the peak commuting periods. In the vicinity of the site, 14<sup>th</sup> Street is a multi-lane roadway and the access point would provide adequate turning radii and pedestrian safety features. These provisions would enable the ingress and egress movements to occur without significant vehicular and pedestrian traffic impacts.

Based on off-peak observations of existing conditions at the study intersections, traffic flows of the 14<sup>th</sup> Street corridor adjacent to the site operate efficiently with queues at the study intersections being processed through the intersection for every signal cycle during the off-peak periods of the day. With this level of efficiency along 14<sup>th</sup> Street, the addition of less than 15 delivery vehicles per day during off-peak hour as part of the Pavilion Alternative would easily be accommodated at the 14<sup>th</sup> Street curb cut. Gaps in traffic would be created by the existing traffic signals on 14<sup>th</sup> Street at Constitution Avenue and at Madison Drive. The delivery vehicles that could potentially arrive during any off peak-hour would represent less than 1 percent of the traffic on 14<sup>th</sup> Street.

In addition, the potential for vehicle queuing along 14<sup>th</sup> Street with the Pavilion alternative would be eliminated by the provision of a loading area large enough to accommodate the anticipated delivery schedule. The loading area would provide adequate space for truck maneuvers, which would eliminate the need for trucks to back out of the site. Thus, service access for the Pavilion Alternative would have no significant impact on the surrounding transportation system based on the planned service access, circulation and staging provisions. The adequacy of the service and loading facilities has been confirmed using the appropriate truck turning software.

A slug line and Metrobus stop are currently located approximately mid-block on 14<sup>th</sup> Street between Constitution Avenue and Madison Drive within the NMAAHC site. Although the curb cut with the Pavilion Alternative would not be expected to occur at the exact location of the slug line and Metrobus stop, service and loading activities could interfere with the slugging and Metrobus loading/unloading. A significant impact on area circulation would occur as a result of the Pavilion Alternative. Measures are required

to minimize this effect by relocating the Metrobus stop and slug line.

With the Pavilion Alternative, the underground service/loading area would also include minimal parking (three parking spaces). The vehicle trips associated with these three parking spaces were taken into account in the future capacity analysis shown in Table 3.7.3 above. The use of these spaces would have no significant impact on service vehicle access and circulation, or the adjacent roadway network.

The operation of the Pavilion Alternative would increase the number of tour bus trips to the project area. However, both tour buses and school buses typically drop off visitors at one central location for visitors that intend to visit multiple locations on the National Mall. It is likely that tour bus and school bus visits currently associated with nearby Smithsonian Institution and District landmarks that include the Washington Monument, World War II Memorial, NMAH, NMNH, and U.S. Holocaust Museum would also include a visit to the NMAAHC. The existing lay-by area located on Madison Drive just south of the subject site currently provides that facility for that activity and would continue to do so with the NMAAHC in place. The drop-off area would also accommodate drop-off activity associated with shuttle buses, automobiles, and taxis arriving at the site. These additional vehicle trips to and from the site would not have significant effect on area traffic volumes. The vehicle trips associated with these parking spaces were taken into account in the future capacity analysis shown in Table 3.7.3 above. There would be no significant impact on vehicular traffic during peak hour periods as part of the Pavilion Alternative.

#### *Pedestrian and Bicycle Access*

The Pavilion Alternative would locate the primary entrance to the NMAAHC on Madison Drive; no secondary entrance would be provided. As such, pedestrians and bicyclists would all use the main entrance located on the National Mall. Because of the location of the entrance, it is anticipated that the number of pedestrians walking and bicyclists riding north-south along 14<sup>th</sup> and 15<sup>th</sup> Streets between Constitution Avenue and Madison Drive would increase. However, there would be no significant impact on external access routes or crossing volumes or patterns at adjacent intersections.

Pedestrian and bicyclist activity at the adjacent intersections and sidewalks would increase during operation of Pavilion Alternative. The majority of visitors would likely include pedestrians and bicyclists coming from the National Mall across both 14<sup>th</sup> and 15<sup>th</sup> Streets, and crossing Constitution Avenue at 14<sup>th</sup> and 15<sup>th</sup> Streets. Sidewalks exist along both sides of all streets surrounding the site and would be sufficiently wide with the Pavilion Alternative to accommodate high pedestrian and bicyclist volumes. Marked crosswalks, curb-ramps, and pedestrian count-down timers would help facilitate pedestrian crossings at the site's four perimeter intersections. Daily visitor person trips would constitute approximately 0.5 percent of the annual visitation (2.5 million person trips), or 13,000 visitors on a typical day. Ninety percent (90 percent) of the daily trips would occur via alternative travel modes including transit and walk. Figure 3.7.12 shows the projected pedestrian crossing volumes at the corners of the site.

DDOT recognizes that the intersection of Constitution Avenue and 14<sup>th</sup> Street is a high hazard location (Federal Highway Administration, 2010). It has identified potential mitigation measures that include improved signal visibility, timing and coordination, and upgraded pedestrian signage and pavement markings. An increase in the number of pedestrians at this intersection during operation of the Pavilion Alternative would create a significant impact. To minimize adverse effects, several improvements would be implemented at the study area intersections, including optimized pedestrian count-down signal operations, ladder-patterned crosswalks for greater visibility, 10 foot distance between stop bars and crosswalks to better separate motorists from crossing pedestrians, and new curb ramps facing crosswalks as opposed to the center of the intersection.

#### **Action Alternative 4: Refined Pavilion Concept**

##### *Roadways and Traffic*

Visitor levels for the Refined Pavilion Alternative would be the same as the other Alternatives because the same programming would be offered. As with the other alternatives, the future traffic volumes for the Refined Pavilion Alternative were based on the combination of the future no action situation and the projected weekday morning and afternoon peak hour vehicular trip generation and traffic assignment. The projected vehicular trip generation was derived from the projected annual visitor person trips (2.5 million) using the same assumptions as for the other alternatives.

Based on these assumptions, the morning and afternoon peak hour trip generation for the Refined Pavilion Alternative would also be 26 and 52 trips, respectively. As with the other Alternatives, it is estimated that approximately 30 percent of the vehicular trips with the Refined Pavilion Alternative would generally approach from the north via 14<sup>th</sup> and 15<sup>th</sup> Streets, 20 percent from the east via Constitution and Independence Avenues, 25 percent from the south primarily via 14<sup>th</sup> Street, and 25 percent from the west via Constitution Avenue.

The future (2015) total traffic projections were derived by combining the background (No Action) traffic volumes with the Plaza Alternative traffic assignment. Figure 3.7.10 shows the projected future (2015) total traffic volumes. The future LOS results are shown in Table 3.7.3. The results in Table 3.7.3 above indicate that the Refined Pavilion Alternative would have minimal or negligible effects on future roadway and traffic conditions. However, background traffic growth is forecast to reduce overall

LOS at 3 of the 4 intersections within the study area. Overall, no intersection is forecast to fail, but several approaches would experience lengthy delays. The increase in delay experienced at several approaches is associated with background traffic growth forecasted for the study area and is not associated with trips generated with the Refined Pavilion Alternative. As such, no significant impact would occur on vehicular traffic during peak hour periods as a result of the Refined Pavilion Alternative.

#### *Service and Loading*

As with the other alternatives, the service/loading area for the Refined Pavilion Alternative would be located under the Corona, with ingress and egress provided from 14<sup>th</sup> Street. This ingress point would be located on the west side of 14<sup>th</sup> Street and would be situated away from the entrances, bus drop-off and pedestrian facilities. Egress movements from the underground service/loading area would occur at the same access point on 14<sup>th</sup> Street.

Service access would be restricted to weekday and weekend off-peak daytime and night-time periods when the prevailing traffic volumes on the adjacent streets would be significantly lower compared with the peak commuting periods. In the vicinity of the site, 14<sup>th</sup> Street is a multi-lane roadway and the access point would provide adequate turning radii and pedestrian safety features. These provisions would enable the ingress and egress movements to occur without significant vehicular and pedestrian traffic impacts.

Based on off-peak observations of existing conditions at the study intersections, the traffic flows of the 14<sup>th</sup> Street corridor adjacent to the site operate efficiently with queues at the study intersections being processed through the intersection for every signal cycle

during the off-peak periods of the day. With this level of efficiency along 14<sup>th</sup> Street, the addition of less than 15 delivery vehicles per day during off-peak hour as part of the Refined Pavilion Alternative would easily be accommodated at the 14<sup>th</sup> Street curb cut. Gaps in traffic would be created by the existing traffic signals on 14<sup>th</sup> Street at Constitution Avenue and at Madison Drive. The delivery vehicles that could potentially arrive during any off-peak-hour would represent less than 1 percent of the traffic on 14<sup>th</sup> Street.

In addition, the potential for vehicle queuing along 14<sup>th</sup> Street with the Refined Pavilion Alternative would be eliminated by the provision of a loading area large enough to accommodate the anticipated delivery schedule. The loading area would provide adequate space for truck maneuvers, which would eliminate the need for trucks to back out of the site. Thus, service access for the Refined Pavilion Alternative would have no significant impact on the surrounding transportation system based on the planned service access, circulation and staging provisions. The adequacy of the service and loading facilities has been confirmed using the appropriate truck turning software.

A slug line and Metrobus stop are currently located approximately mid-block on 14<sup>th</sup> Street between Constitution Avenue and Madison Drive within the NMAAHC site. Although the curb cut with the Refined Pavilion Alternative would not be expected to occur at the exact location of the slug line and Metrobus stop, service and loading activities could interfere with the slugging and Metrobus loading/unloading. As such, a significant effect to area circulation would occur as a result of the Refined Pavilion Alternative. Measures are required to minimize this effect by relocating the Metrobus stop and slug line.

With the Refined Pavilion Alternative, the underground service/loading area would also include minimal parking (three parking spaces). The vehicle trips associated with these three parking spaces were taken into account in the future capacity analysis shown in Table 3.7.3 above. The use of these spaces would have no significant impact on service vehicle access and circulation, or the adjacent roadway network.

The operation of the Refined Pavilion Alternative would increase the number of tour bus trips to the project area. However, both tour buses and school buses typically drop off visitors at one central location for visitors that intend to visit multiple locations on the National Mall. It is likely that tour bus and school bus visits currently associated with the nearby Smithsonian Institution and District landmarks that include the Washington Monument, World War II Memorial, NMAH, NMNH, and U.S. Holocaust Museum would also include a visit to the NMAAHC. The existing lay-by area located on Madison Drive just south of the subject site currently provides that facility for that activity and would continue to do so with the NMAAHC in place. The drop-off area would also accommodate drop-off activity associated with shuttle buses, automobiles, and taxis arriving at the site. These additional vehicle trips to and from the site would not have significant effect on area traffic volumes. The vehicle trips associated with these parking spaces were taken into account in the future capacity analysis shown in Table 3.7.3 above. There would be no significant impact on vehicular traffic during peak hour periods as part of the Refined Pavilion Alternative.

#### *Pedestrian and Bicycle Access*

The Refined Pavilion Alternative would locate the primary entrance to the NMAAHC on Madison Drive with a secondary entrance

located on the north face of the Corona on the Constitution Avenue side. Pedestrians and bicyclists would likely use the entrance nearest to their access route such that pedestrians arriving from north of Constitution Avenue or along Constitution Avenue would predominantly enter through the secondary entrances, while pedestrians accessing the site from the south or from along the National Mall would predominantly enter through the main entrance. Because of the entrance location, it is anticipated that the number of pedestrians walking and bicyclists riding north-south along 14<sup>th</sup> and 15<sup>th</sup> Streets between Constitution Avenue and Madison Drive would be reduced. However, there would be no significant impact on external access routes or crossing volumes or patterns at adjacent intersections.

Pedestrian and bicyclist activity at the adjacent intersections and sidewalks would increase during operation of Refined Pavilion Alternative. The majority of visitors would likely include pedestrians and bicyclists coming from the National Mall across both 14<sup>th</sup> and 15<sup>th</sup> Streets, and crossing Constitution Avenue at 14<sup>th</sup> and 15<sup>th</sup> Streets. Sidewalks exist along both sides of all streets surrounding the site and would be sufficiently wide with the Refined Pavilion Alternative to accommodate high pedestrian and bicyclist volumes. Marked crosswalks, curb-ramps, and pedestrian count-down timers would help facilitate pedestrian crossings to the site at all four of its perimeter intersections. Daily visitor person trips would constitute approximately 0.5 percent of the annual visitation (2.5 million person trips), or 13,000 visitors on a typical day. Ninety percent (90 percent) of the daily trips would occur via alternative travel modes including transit and walk.

DDOT recognizes that the intersection of Constitution Avenue and 14<sup>th</sup> Street is a high hazard location (Federal Highway

Administration, 2010). It has identified potential mitigation measures that include improved signal visibility, timing and coordination, and upgraded pedestrian signage and pavement markings. An increase in pedestrians at this intersection during operation of the Refined Pavilion Alternative would create a significant impact. To minimize adverse impacts, several improvements would be implemented at the study area intersections. These include optimized pedestrian count-down signal operations, ladder-patterned crosswalks for greater visibility, 10-foot distance between stop bars and crosswalks to better separate motorists from crossing pedestrians, and new curb ramps facing crosswalks as opposed to the center of the intersection. Figure 3.7.12 shows the projected pedestrian crossing volumes at the corners of the site.

### **3.7.5 What efforts would be taken to minimize impacts on transportation?**

As discussed above, the action alternatives would further compound existing pedestrian safety hazards at nearby intersections. In addition, service and loading activities could interfere with the Metrobus stop and slug line located on 14<sup>th</sup> Street between Constitution Avenue and Madison Drive. The following mitigation measures are recommended to reduce adverse impacts:

- Optimize signal timing and coordination at the study intersections and install enhanced pavement markings and other roadway changes to accommodate the projected museum vehicular and pedestrian traffic. These improvements have been identified for the Constitution Avenue and 14<sup>th</sup> Street intersection by DDOT.

- Install enhanced signage to prohibit left-turns by all vehicles, except buses and taxis, at the Constitution Avenue and 14<sup>th</sup> Street intersection.
- Install signage restricting charter bus drop-off and pick-up activity to 10:00 a.m. to 3:00 p.m. on 14<sup>th</sup> and 15<sup>th</sup> Streets along the site boundary.
- Install enhanced signage prohibiting parking on 14<sup>th</sup> and 15<sup>th</sup> Streets along the site boundary.
- Implement pedestrian measures at the surrounding area intersections, including optimized pedestrian count-down signal operations, ladder-patterned crosswalks for greater visibility, 10 foot distance between stop bars and crosswalks to better separate motorists from crossing pedestrians, and new curb ramps facing crosswalks as opposed to the center of the intersection.
- Work with WMATA and DDOT to relocate the Metrobus stop and “slug” line to the north or south along 14<sup>th</sup> Street to minimize conflicts with the eventual location of the 14<sup>th</sup> Street curb cut for servicing and loading.

### 3.8 CUMULATIVE IMPACTS

#### 3.8.1 What are the results of the cumulative impacts analysis?

The No Action Alternative along with the four action alternatives were considered during the cumulative impacts assessment. Several potential impacts among the action alternatives were similar due to the fact that they would all occur on the same site. At the cumulative level, the four action alternatives are proposing the same change in land use from open space to a site supporting a museum and open space, which would result in a similar set of impacts. Any impact unique to a specific action alternative is presented following the discussion of impacts common to all action alternatives within each resource section. The impact thresholds used to characterize the level of impact are the same as those used in Chapter 3 of this Tier II Draft EIS.

##### Analysis of Cumulative Impacts on Land Use and Planning Policies

The completion of several of the present and future projects described in Table 1.8.3 would result in cumulative impacts on land use. Projects involving the construction of new buildings, structures, or memorials (as opposed to renovations or security improvements) would result in the loss of flexible open space on or adjacent to the National Mall. These include the Potomac Park Levee project, the Martin Luther King, Jr. Memorial, and the U.S. Institute of Peace Headquarters and the Vietnam Veterans Memorial Visitor Center. While the intent of these projects is to improve the overall experience or to enhance the physical quality of the Mall, their completion would have a cumulative impact on the area's land use. When taken into consideration with the NMAAHC, this would yield

significant adverse cumulative impacts due to the loss of flexible open space that could otherwise be used for public gatherings and the display of First Amendment rights. In addition, projects that may be under construction during construction of the NMAAHC would have a cumulative short-term impact.

With respect to planning policies, the *National Mall Plan* will guide the future land uses and management practices of the National Mall. A portion of the plan outlines projects that would incrementally preserve and enhance the National Mall experience. For the National Mall, the *DC Center City Action Agenda* seeks to create a mixed-use corridor along 14<sup>th</sup> Street from downtown to the Tidal Basin. Projects that would occur along 14<sup>th</sup> Street include: the NMAH Public Space Revitalization/Expansion, Department of Commerce National Aquarium Entrance, Washington Monument Permanent Security Improvements, Centennial Initiative/Wayfinding and New Pedestrian Guides, and U.S. Department of Agriculture – Jamie L. Whitten Building. These projects would create new destinations along 14<sup>th</sup> Street, further increasing pedestrian volumes and activating the corridor. Overall, the implementation of these projects would result in a beneficial cumulative impact on planning policies.

With the No Action Alternative, cumulative projects that would result in land use changes around the site would still occur. However, because there would be no land use or planning impacts from the No Action Alternative, there would be no cumulative impacts.

Analysis of Cumulative Impacts on Visitor Use and Experience

As discussed in the Tier I EIS, construction of the Martin Luther King, Jr. Memorial, the American Veterans Disabled for Life Memorial, the Dwight D. Eisenhower Memorial, and the Vietnam Veterans Memorial Visitors Center would alter the visitor experience by creating new destinations on the National Mall. Impacts on visitor use and experience, however, is not limited to the addition of new attractions. Circulation patterns, accessibility, visual and aesthetic quality would also affect visitor use. In addition, visitors come to the National Mall and surrounding area for different reasons. They would experience the Mall in different ways, resulting in a variety of potential impacts.

In addition to the projects discussed in Tier I, the following projects would also affect visitor experience: the Washington Monument Permanent Security Improvements, the DC War Memorial Rehabilitation, the Thomas Jefferson Memorial Plaza and Seawall Improvements and the NMAH Public Space Revitalization/Expansion, Department of Commerce National Aquarium Entrance, and the potential reuse of the Arts and Industries Building and the Jamie L. Whitten Building. The National Mall Turf Study and Centennial Initiative/Wayfinding and New Pedestrian Guides would result in a beneficial cumulative impact on visitors experience as they seek to restore the aesthetic nature and increase accessibility of the mall.

Roadway improvement projects in the immediate area, including the separation of bicycle and vehicular lanes on Madison Drive, 15<sup>th</sup> Street, and Constitution Avenue, would cumulatively improve site access and circulation for visitors wishing to bike to, from, and around the National Mall. Improving the Mall's grass and turf would

enhance its visual quality, while placement of park furniture would enhance the visitors' experience (NPS, 2010).

Tourists who are visiting the Mall for the Smithsonian museums would see an overall beneficial cumulative impact to their visitor experience based on the increase in cultural destinations in close proximity to NMAAHC. The addition of a museum with new subject matter would also increase the educational breadth of the visitors' experience. However, there would be potential negative impacts on tourists visiting the National Mall seeking a reflective, contemplative experience at the Washington Monument and memorials due to increased visitorship and the loss of a personal connection to these destinations. Similarly, there would also be potential negative impacts on visitors who are using the National Mall for active recreation or public gathering because the placement of destinations on the Mall and loss of flexible open space would reduce options for First Amendment demonstrations and special events. This would result in significant negative impacts from the irretrievable loss of open space and the ability to practice these rights.

There would be no cumulative impacts due to the No Action Alternative.

Analysis of Cumulative Impacts on Historic Resources

The NMAAHC project site is located in the northeast corner of the Washington Monument Grounds within the National Mall. There is an abundance of historic resources in the area and the development and construction of other projects within the vicinity would have a cumulative effect on this historic character. The historic resources



of the National Mall can be subdivided into several subcategories discussed below.

Short-term effects would be those associated with the construction phase, such as the loss of existing turf and vegetation, the placement and operation of construction equipment and machinery, stockpiling of excavation materials, and other construction activities. Projects occurring on the National Mall would include: the NMAH Public Space Revitalization/Expansion, the Vietnam Veterans Memorial Visitors Center, the Lincoln Memorial Reflecting Pool and Grounds, the Thomas Jefferson Memorial Permanent Security Improvements, the Constitution Avenue Roadwork, the Madison Drive Roadwork, the Washington Monument Permanent Security Improvements, the National Mall Turf Study, the DC War Memorial Rehabilitation, the Centennial Initiative/Wayfinding and New Pedestrian Guides, the Arts and Industries Building, the U.S. Department of Agriculture – Jamie L. Whitten Building, the Washington Monument Steamlines, the Martin Luther King, Jr. Memorial, the Potomac Park Levee Project, the Thomas Jefferson Memorial Plaza and Seawall Improvements, and the Smithsonian Institution Mall-Wide Perimeter Security Improvements. It is anticipated that construction of some of these projects would occur concurrently with construction of NMAAHC and would result in significant adverse cumulative short-term impacts.

The analysis of historic views and vistas examines the potential effects on historic resources within the vicinity of the site. Due to the varying locations of the historic viewsheds and the location of the cumulative projects on and around the National Mall, the projects listed in Table 1.1 would contribute to cumulative impacts on historic views and vistas. It is anticipated that cumulative impacts on view corridors directly adjacent to or in close proximity

of the National Mall would have major/significant adverse impacts. However, for more distant views, such as from Arlington Cemetery, cumulative impacts would be reduced as individual projects would be less distinguishable.

The analysis of historic spatial organization examines the cross-axial relationship that characterizes the National Mall as it extends outward from the Washington Monument and also how the Mall interacts within the historic city plan. Projects located close to the project site would generate cumulative impacts that are expected to be major/significant and adverse on the Washington Monument Grounds, the cross-axial spatial organization of the monumental core, and the larger spatial organization of the National Mall. The other projects listed in Table 1.1 would also result in cumulative impacts due to the development of currently undeveloped parcels, the placement of buildings in close proximity to established setback lines, the alteration of historic boundaries, and of roadway realignments or construction. Moderate/significant adverse cumulative effects are anticipated.

The historic land use and circulation patterns of the National Mall, Washington Monument Grounds and surrounding urban context would be affected by the projects listed in Table 1.1 because they are located on or adjacent to the National Mall and the Washington Monument Grounds. The cumulative effects on the Washington Monument Grounds would be major/significant and adverse due to the loss of parcels that are currently open space.

The naturalist topography and distinct characteristics of the Washington Monument Grounds and the topography of the National Mall and surrounding urban context would experience cumulative effects from the ground-disturbing projects listed in Table 1.1 due

to the alteration of the topography that would result from site development. Cumulative effects are anticipated to be minor and adverse because while there would be some degree of site grading for engineering or accessibility purposes the overall topography of the area would be retained.

The significant vegetative features of the Washington Monument Grounds and the grass panels, tree panels and elms within the National Mall would experience cumulative effects associated with the removal of vegetation during the construction of the projects listed in Table 1.1. Cumulative effects are anticipated to be moderate/significant and adverse because while some vegetation would be removed, the majority would remain intact. Furthermore, projects such as the National Mall Turf Study are seeking to improve the visual aesthetic and performance of the grass on the National Mall.

Historic buildings and structures, including the Washington Monument, Bulfinch Gateposts, Monument Lodge, and buildings within the Federal Triangle and the National Mall would experience cumulative effects from the projects listed in Table 1.1 due to the degradation of the visual character to and from these buildings or structures. Cumulative impacts on the historic buildings and structures within the Washington Monument Grounds would be major/significant and adverse due to the placement of new development or the alteration of vegetative buffering.

The No Action Alternative would not include construction of NMAAHC on the project site. As a result, there would be no cumulative impacts on historic resources.

### Analysis of Cumulative Impacts on Visual Resources

To properly assess visual impacts, several subcategories were evaluated including the surrounding urban context, urban viewsheds, and night lighting. Since changes to visual resources can be detected over a wider range than impacts to more site specific resources all of the cumulative projects listed in Table 1.1 are considered for potential visual impacts.

The scale, height, layout and massing of each project would visually affect adjacent structures. Projects located along Constitution and Independence Avenues would be more consistent with their context as these areas are more urban in nature. Cumulative impacts associated with projects in these areas would be moderate/significant and adverse. Projects located on and west of the Washington Monument Grounds, and along the Tidal Basin would have greater impacts due to the open space character of these areas. As a result, these cumulative impacts would be major/significant and adverse.

Key urban viewsheds and view corridors would experience cumulative effects from the placement of projects or buildings within these corridors that may obscure key viewpoints or alter the current visual character. By altering a key urban viewshed there would be major/significant cumulative effects.

The projects listed in Table 1.1 would contribute to light pollution within the Washington Metro area. While urban areas have a high concentration of light pollution due to higher densities of people and buildings, street lighting, and vehicles, each of the projects would include night lighting either for accessibility, aesthetic accent

lighting, or safety and would have moderate/significant cumulative effects on night lighting.

The No Action Alternative would not include construction of NMAAHC and, as a result, there would be no cumulative impacts.

#### Analysis of Cumulative Impacts on Geology, Soils and Groundwater

Potential geologic and soil impacts are site specific and thus would be potentially affected by the cumulative impact projects that would be located within 500 feet such as the Monument Lodge Security Screening project, NMAH Public Space Revitalization/Expansion, Department of Commerce, Herbert C. Hoover Building Modernization, the Washington Monument steamlines, and the Department of Commerce National Aquarium Entrance. A project outside of the 500 foot radius but still of concern would be the Washington Monument Permanent Perimeter Security Improvements. The potential for the NMAAHC to induce settlement of adjacent buildings would be alleviated by the use of deep pilings that extend to bedrock to bear all of the building's load. If other buildings are constructed similar to the NMAAHC, there would be no cumulative geologic and soil impacts, particularly with respect to potential settlement of adjacent structures..

Groundwater was observed onsite at an elevation of -5 above sea level, which is relatively shallow. Permanent changes in groundwater patterns or movement could have an effect on an entire watershed. Alteration of the natural groundwater patterns and movement could result in the reversal of the hydraulic gradient, where streams recharge the water table rather than the water table recharging the streams. This condition may also lead to a loss of soil stability and the settlement of surrounding structures. Due to the

potential widespread effects to groundwater levels, all of the projects listed in Table 1.1 were considered for cumulative impacts. However, potential cumulative impacts from the construction of the NMAAHC would be mitigated by the use of a diaphragm slurry wall in combination with a dewatering system to reduce fluctuations in groundwater levels. During construction, all excavation would be limited to the site. Thus, no cumulative impacts would occur on-site or within the surrounding area.

With the No Action Alternative, no construction would occur on the project site and there would be no cumulative impacts on groundwater are anticipated from implementation of other projects.

#### Analysis of Cumulative Impacts on the Conservation of Natural Resources

Potential cumulative impacts on open space, site performance, and global climate change could result from the Department of Commerce National Aquarium Entrance, the Dwight D. Eisenhower Memorial, the Vietnam Veterans Memorial Visitor Center, the Martin Luther King, Jr. Memorial, and the U.S. Institute of Peace Headquarters. The construction of these projects would result in a permanent cumulative loss of open space on and around the National Mall. While each of these projects would provide some degree of publicly accessible open space, the adverse cumulative impact on open space resources would be significant.

The amount of impervious surfaces, sustainability measures, stormwater runoff, and energy consumption would be cumulatively affected by the projects listed in Table 1.1. However, sustainability strategies and natural resource conservation implemented as part of the projects would minimize the cumulative impacts.

Emissions of GHGs are a major environmental concern due to their impacts on global climate change and overall air quality of a region. Impacts due to the emissions of GHGs are generally from non-point sources and, as a result, cumulative in nature. The projects listed in Table 1.1 would contribute to cumulative impacts. During the construction phase of projects, there would be an incremental increase in emission of GHGs from diesel burning construction machines and equipment. During the operation of the NMAAHC, emissions would result from HVAC systems, energy consumption and other sources such as increased vehicular traffic. There would be a negative cumulative impact from the incremental increase in GHG emissions; however, at the regional scale this amount would not be significant. Potential global climate change impacts from the construction and operation of the museum would be further mitigated by compliance with Executive Order 13514. EO 13514 is a federal mandate that establishes an integrated strategy towards reducing GHG emissions and improving sustainability. Implementation of EO 13514 would also help to incrementally reduce impacts on global climate change from the construction and operation of other projects.

The No Action Alternative would retain the project site in its current condition; as a result, there would no cumulative impacts.

#### Analysis of Cumulative Impacts on Transportation

The surrounding roadway, bicycle and pedestrian networks, along with public transportation systems would potentially be affected by the NMAH Public Space Revitalization/Expansion, Department of Commerce National Aquarium Entrance, American Veterans Disabled for Life Memorial, Dwight D. Eisenhower Memorial, Vietnam Veterans Memorial Visitors Center, Lincoln Memorial

Reflecting Pool and Grounds, Thomas Jefferson Memorial Permanent Security Improvements, Washington Monument Permanent Security Improvements, DC War Memorial Rehabilitation, Arts and Industries Building, U.S. Department of Agriculture – Jamie L. Whitten Building, Martin Luther King, Jr. Memorial, United State Institute of Peace Headquarters, Thomas Jefferson Memorial Plaza and Seawall Improvements. Because transportation impacts are assessed by creating a future scenario, where all reasonable projects (including future improvements to public transportation, pedestrian, and bicycle amenities) within the vicinity of a project site are quantified and aggregated, these future conditions are by definition, cumulative. Thus, the impacts on local and regional roadways, public transportation systems, and bicycle facilities would be viewed as cumulative. As documented in Section 3.7, it is anticipated there would be no significant cumulative effects on roadways, public transportation systems, or bicycle facilities.

It is likely that tour bus and school bus visits currently associated with the nearby Smithsonian Institution and District landmarks that include the Washington Monument, World War II Memorial, NMAH, NMNH, and U.S. Holocaust Museum would also include a visit to NMAAHC. The existing lay-by area located on Madison Drive just south of the project site currently provides that facility for that activity and would continue to do so with the NMAAHC in place. The cumulative impact of the operation of the NMAAHC on tour bus and school bus activity would be less than significant.

Pedestrian activity within the vicinity of the project site would cumulatively increase due to the development, roadways, public transportation systems, and bicycle facility projects listed in Table 1.1. Pedestrian safety would be of the most concern at the intersections of 14<sup>th</sup> Street and Constitution Avenue and 15<sup>th</sup> Street

and Constitution Avenue. Significant adverse cumulative impacts on pedestrian safety are anticipated.

The cumulative projects that seek to improve the conditions of the local and regional transportation resources, including the Constitution Avenue Roadwork, Madison Drive Roadwork, Centennial Initiative/Wayfinding and New Pedestrian Guides, The District of Columbia Tour Bus Management Initiative, and Visitor Transportation Study for the National Mall and Surrounding Park Areas would reduce cumulative impacts on transportation resources.

There would be no construction on the project site with the No Action Alternative. As a result, there would be no cumulative impacts.

This page is intentionally left blank

## 4.0 CONSULTATION AND COORDINATION



This page is intentionally left blank



## 4.0 CONSULTATION AND COORDINATION

This chapter describes the public participation process and provides a list of the Federal and local agencies, as well as interested parties who were involved in the development of this Tier II EIS for the NMAAHC in Washington, DC.

### 4.1 HOW DID THE PUBLIC PARTICIPATION PROCESS WORK FOR THE TIER II EIS?

#### Public Scoping

Project scoping is designed to provide an opportunity for the public and other Federal and local agencies to help determine the scope of an EIS—more specifically, the range of actions, alternatives and impacts to be considered in an EIS.

#### *Notice of Intent*

The first formal step in the preparation of the Tier II EIS was the publication of a Notice of Intent (NOI) to prepare the EIS. Pursuant to the NEPA, 42 U.S.C. 4321 et seq., the Smithsonian Institution and NCPC published the Notice of Intent for the proposed action in the Federal Register on November 10, 2009. The Notice of Intent described the proposed action and the reasons for why an EIS was to be prepared. In addition, the Notice of Intent stated the Smithsonian Institution and NCPC's continuation of related consultation under Section 106 of the National Historic Preservation Act (16 U.S.C. 470(f)).

The Notice of Intent initiated the public scoping period, a process that allows the public to identify issues or express their concerns about the development of the NMAAHC alternative. The Notice of Intent comment period for this project began on November 10, 2009, and concluded on December 24, 2009. Comments were accepted in writing or by email.

#### *Outreach Activities*

A number of outreach activities were employed in order to gather input from the community, Federal and local agencies, and other interested parties throughout the public scoping period. Some of these methods included the publication of newspaper advertisements, the distribution of flyers, a public scoping meeting held at a Smithsonian Institution building, and meetings with federal agencies and consulting parties. These activities are described in more detail below:

- **Newspaper Advertisements:** Details about the public scoping meeting were advertised in seven newspapers in Washington, DC: Washington Post Express, Capital Community News (Hill Rag, DC North, East of the River), El Pregonero, the Current Newspaper (Northwest, Dupont, Foggy Bottom, and Georgetown), Washington Informer, Washington City Paper, and the Afro American. All the advertisements announcing the date and location of the public scoping meeting were published in early December 2009. Table 4.1 shows specific publication dates.

Table 4.1 Newspaper Publication of the Scoping Notice

Newspaper	Publication Date
Washington Post Express	December 1, 2009
Capital Community News – Hill Rag	December 1, 2009
Capital Community News – DC North	December 1, 2009
Capital Community News – East of the River	December 1, 2009
El Pregonero	December 2, 2009
The Current Newspaper – Northwest	December 2, 2009
The Current Newspaper – Dupont	December 2, 2009
The Current Newspaper – Foggy Bottom	December 2, 2009
The Current Newspaper – Georgetown	December 2, 2009
Washington Informer	December 3, 2009
Washington City Paper	December 4, 2009
Afro American	December 5, 2009

Source: AECOM, 2010

- **Flyer Distribution:** A flyer with details about the Tier II EIS public scoping meeting was emailed to a mailing list of 91 individuals, neighborhood organizations, elected officials, Federal and local government agencies and institutions surrounding the project site. Furthermore, the flyer was sent via email to 2,527 email addresses on November 20, December 1 and December 8, 2009, preceding the public scoping meeting. The distribution list was compiled based on sign-in sheets at public meetings held during the Tier I EIS public scoping process, as well as agencies, organizations, and individuals reasonably expected to be interested, or with expertise or jurisdiction, or who

requested to be placed on the mailing list during the Tier I EIS process. The flyer was also distributed to an email distribution list compiled by Justice & Sustainability Associates for projects in the District.

- **Public Scoping Meeting:** The public scoping meeting took place at the Smithsonian Institution Building, Castle Commons (1000 Jefferson Drive, SW, Washington, DC, 20560) on Thursday, December 10, 2009 from 5:30 to 8:30 p.m. Attendees were greeted at the entrance and asked to provide their names and contact information on sign-in sheets. The public scoping meeting had a total of 41 individuals who signed in as attendees, with approximately 14 representing organizations, 20 interested individuals, 5 agencies, and 2 media outlets. The meeting began at 6:00 p.m. with a formal presentation and was followed by an informal open house format. The presentation portion of the meeting was led by the Smithsonian Institution and the consultant team; they explained the NEPA process and the purpose of scoping, as well as the need for the project and the Smithsonian Institution’s design competition to select the NMAAHC architect. After the presentation, participants were encouraged to visit topic area stations. Each station displayed up to three boards with information about the project. The topic areas covered included: 1) Purpose/Need and the NEPA Process/Roadmap; 2) Tier I EIS Issues and Section 106; and 3) Design Principles, Massing Parameters, and Design Competition Submission. Topic experts from the Smithsonian Institution, NCPC and the consultant team were on hand to answer participant questions and record

comments at each station. NPS also assisted as a Cooperating Agency at the event.

The complete Scoping Report can be viewed at [http://www.nmaahceis.com/documents/Scoping\\_Report\\_Final\\_040210.pdf](http://www.nmaahceis.com/documents/Scoping_Report_Final_040210.pdf).

#### **4.2 WHAT AGENCIES AND ORGANIZATIONS HAVE BEEN CONSULTED DURING DEVELOPMENT OF THE TIER II EIS?**

During the scoping process and prior to conducting the public scoping meeting, the Smithsonian Institution and NCPC—acting as the lead Federal agency, jointly leading the preparation of the Tier II EIS for NMAAHC project—initiated coordination and consultation with Federal and local agencies as part of the Tier II EIS process. The agencies who participated in the scoping process are listed below along with details of the coordination or consultation meeting.

##### **Agency Coordination**

- National Park Service: A meeting was held with the National Park Service on December 8, 2009.
- General Services Administration and National Aquarium: A conference call was held with the General Services Administration and National Aquarium staff on December 8, 2009.

An agency coordination meeting was held with interested public agencies on April 20, 2010 to solicit any additional feedback related to the scope of the Tier II Draft EIS. The agencies that participated in the meeting included:

- 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 & Sewer Authority (WASA)

##### **Consulting Parties**

Meetings with consulting parties to the concurrent National Historic Preservation Act, Section 106 consultation process were held monthly beginning on November 18, 2009 through the publication of this Tier II Draft EIS. Consultation with the consulting parties as part of the Section 106 process will continue until a programmatic document, such as a Memorandum of Agreement, can be finalized. A list of the consulting parties can be found on page 2-4 of this Tier II Draft EIS.

This page is intentionally left blank

## 5.0 REFERENCES



This page is intentionally left blank

## 5.1 REFERENCES

### Care of Trees, The

- 2011 "Observations for NMAAHC." Prepared for the Smithsonian Institution by Tony Faoro, Certified Arborist, The Care of Trees, Gaithersburg, MD.

### Casey Trees

- 2006 *DC Street Tree Map*. Tree data as of August, 2002, 2005 and 2006. Available at: <http://www.caseytrees.org/geographic/maps-tools/tree-map/index.php>, accessed April 2010.

### Council on Environmental Quality (CEQ)

- 1978 Executive Office of the President. 1978. *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*. Code of Federal Regulations Title 40, Parts 1500-1508. Washington, DC.
- 2010 NEPA Guidance. Accessible at: <http://ceq.hss.doe.gov/index.html>, accessed January 2010.

### District of Columbia Department of Environment (DDOE)

- 2007 *FEMA's Proposed Flood Maps and Study for the District of Columbia*. Available at: <http://ddoe.dc.gov/ddoe/cwp/view,a,1210,q,497150.asp>, accessed April 2010.

### District of Columbia Department of Transportation (DDOT)

- 2009 *DDOT Bicycle Map*. Available at: [http://ddot.washingtondc.gov/ddot/cwp/view,a,1245,q,629849,ddotNav\\_GID,1761,ddotNav,%7C34416%7C.asp](http://ddot.washingtondc.gov/ddot/cwp/view,a,1245,q,629849,ddotNav_GID,1761,ddotNav,%7C34416%7C.asp), accessed March 2010.
- 2010 *Motorcoach Guide to Washington*. Available at: <http://ddot.dc.gov/DC/DDOT/On+Your+Street/Traffic+Management/Parking/Motorcoach+Guide+to+Washington>, accessed April 2010.

### District of Columbia Office of Planning (DC OP)

- 2008 *Center City Action Agenda*. Available at: <http://www.planning.dc.gov/planning/cwp/view,a,1285,q,639047.asp>, accessed April 2010

### D.C. Water Resources Research Center (DCWWRC November 10, 1995)

- 1995 *DC WRRRC Report No. 156 – Development of a Groundwater Contour Map for the Water Table Aquifer in the Atlantic Coastal Plain Deposits of Washington D.C.* University of the District of Columbia 420 Connecticut Ave., NW Building 50, MB 8004 Washington, DC 20008

FedCenter

- 1977 Executive Order (EO) 11988, *Floodplain Management*. Signed May 24, 1977. Available at: [http://www.fedcenter.gov/Articles/index.cfm?id=2456&pge\\_id=1606](http://www.fedcenter.gov/Articles/index.cfm?id=2456&pge_id=1606), accessed April 2010.
- 2007 *Executive Order (EO) 13423, Strengthening Federal Environmental, Energy, and Transportation Management*. Signed January 24, 2007. Available at: [http://www.fedcenter.gov/kd/go.cfm?destination=Page&pge\\_id=3286&dialog=0](http://www.fedcenter.gov/kd/go.cfm?destination=Page&pge_id=3286&dialog=0), accessed February 20, 2010.
- 2009 *Executive Order (EO) 13514, Federal Leadership in Environmental, Energy, and Economic Performance*. Signed October 5, 2009. Available at: <http://www.fedcenter.gov/programs/eo13514/>, accessed February 20, 2010.

Federal Emergency Management Agency (FEMA)

- 1985 *Flood Insurance Rate Map*. Washington, DC, Community Panel Number 1100010020B; effective date November 15, 1985.
- 2010 *Flood Insurance Rate Map*. Washington, DC, Community Panel Number 1100010018C; effective date September 27, 2010.

Federal Highway Administration (FHWA)

- 2010 *Federal Highway Administration Safety Program*. Available at: <http://safety.fhwa.dot.gov/fivepercent/07dc.htm>, accessed April 6, 2010.

Freelon Adjaye Bond/SmithGroup

- 2010 *Concept Design Submissions for National Museum of African American History and Cultures*. April 1, August 6, and October 15, 2010. Prepared for the Smithsonian Institution by Freelon Adjaye Bond/SmithGroup, Washington, DC.

Froehling & Robertson, Inc.

- 2010a *Preliminary Environmental Subsurface Investigation Report of Findings for the Proposed National Museum of African American History and Culture Site, 15<sup>th</sup> Street and Constitution Avenue NW, Washington, DC*. April 12, 2010. Prepared for the Freelon Group.
- 2010b *Report of Preliminary Subsurface Exploration and Geotechnical Engineering Evaluation for the Proposed National Museum of African American History and Culture Site, 15<sup>th</sup> Street NW & Constitution Avenue, Washington, DC*. April 21, 2010. Prepared for the Freelon Group.



- 2010c Report of Preliminary Subsurface Exploration and Geotechnical Engineering Evaluation for the *Proposed National Museum of African American History and Culture Site, 15<sup>th</sup> Street NW & Constitution Avenue, Washington, DC*. October 13, 2010. Prepared for the Freelon Group.
- 2011 Limited Groundwater Sampling Report *Proposed National Museum of African American History and Culture Site, 15<sup>th</sup> Street NW & Constitution Avenue, Washington, DC*. February 10, 2011. Prepared for the Freelon Group.
- Gorove/Slade, Inc.
- 2010 Email from Erwin Andres, Principal, Gorove/Slade, Inc. to Marc Massey, Principal, David Brody Bond Aedas dated April 28, 2010.
- Lacy, H.S.
- 2002 *Subsurface Investigation of Monument Grounds and Visitors Facility Washington Monument*. Prepared by Mueser Rutledge Consulting Engineers, MRCE File 9726, New York.
- National Capital Planning Commission (NCPC) and U.S. Commission of Fine Arts (CFA)
- 2009 *Monument Core Framework Plan*. Available at: [http://www.ncpc.gov/ncpc/Main\(T2\)/Publications\(Tr2\)/iframpages/monumental\\_core\\_framework\\_plan\\_a.aspx#FrameworkPlanPub](http://www.ncpc.gov/ncpc/Main(T2)/Publications(Tr2)/iframpages/monumental_core_framework_plan_a.aspx#FrameworkPlanPub), accessed April 2010
- National Park Service (NPS)
- 1962 *Loading Limitations – Washington Monument Grounds*. Prepared by Edward S. Barber, December 31, 1962.
- 1999 *Guide to Cultural Landscape Reports: Contents, Process, and Techniques*. Written by Page, Robert R., Cathy A. Gilbert, and Susan A. Dolan. Washington, DC: Government Printing Office, 1998.
- 2010 *National Mall Plan*. Available at: <http://www.nps.gov/nationalmallplan/>, accessed April and October 2010
- Smithsonian Institution
- 1993 *National Museum of the American Indian on the National Mall, Washington DC Environmental Assessment*. Prepared for the Smithsonian Institution by EDAW, Alexandria, VA.

- 2003a *The Time Has Come Report to the President and Congress*. National Museum of African American History & Culture Plan for Action Presidential Commission prepared for the U.S. Department of Interior National Park Service, Washington, DC. by Interior Systems, Inc.
- 2003b *Final Site Report*. National Museum of African American History & Culture Plan for Action Presidential Commission prepared for the U.S. Department of Interior National Park Service, Washington, DC. by Interior Systems, Inc.
- 2004 *Smithsonian Institution Mall-Wide Perimeter Security Improvements Environmental Assessment*. Prepared for the Smithsonian Institution with the National Capital Planning Commission and National Park Service by EDAW, Alexandria, VA.
- 2005a *Phase I: Data Gathering Report*. Prepared for the Smithsonian National Museum of African American History and Culture, Washington, DC. by Plexus Scientific Corporation and PageSoutherlandPage.
- 2005b *Site Evaluation Study Phase II: Analysis and Modeling*. Prepared for the Smithsonian National Museum of African American History and Culture, Washington, DC. by Plexus Scientific Corporation and PageSoutherlandPage.
- 2008a *Tier I Final Environmental Impact Statement for the Smithsonian National Museum of African American History and Culture*. Prepared for the Smithsonian Institution by the Louis Berger Group, Inc., Washington, DC.
- 2008b *Tier I Record of Decision for the National Museum of African American History and Culture*. August 5, 2008. Signed by William W. Brubaker, Director, Office of Facilities Engineering & Operations.
- 2009a *Smithsonian National Museum of African American History and Culture Design Principles*. Prepared by the Consulting Parties to the NMAAHC. November 9, 2009.
- 2009b *National Museum of African American History and Culture, Building the Museum*. Accessible at: <http://nmaahcdesign.si.edu/>, accessed April 10, 2010.

U.S. Department of the Interior

- 2007 Letter from Dirk Kempthorne, Secretary, U.S. Department of Interior to Dr. Cristián Samper, Acting Secretary, Smithsonian Institution, dated May 30, 2007.

## 6.0 ACRONYMS AND ABBREVIATIONS



This page is intentionally left blank

**6.1 ACRONYMS AND ABBREVIATIONS**

ACHP	Advisory Council on Historic Preservation	DCHPO	District of Columbia State Historic Preservation Office
ADT	Average Daily Traffic	DC OP	District of Columbia Office of Planning
A/E	architecture and engineering	DDOE	District of Columbia Department of Environment
APE	Area of Potential Effect	DDOT	District of Columbia Department of Transportation
BMPs	Best Management Practices	EIS	Environmental Impact Statement
bpf	blows per foot	EMS	Environmental Management System
CEQ	Council on Environmental Quality	EPA	U.S. Environmental Protection Agency
CFA	U.S. Commission of Fine Arts	EPEAT	Electronic Product Environmental Assessment Tool
CFCs	chlorofluorocarbons	FEMA	Federal Emergency Management Agency
CH <sub>4</sub>	methane	FEMP	Federal Energy Management Program
CO	carbon monoxide	GHGs	greenhouse gases
CO <sub>2</sub>	carbon dioxide	GSA	General Services Administration
Commission	National Museum of African American History and Culture Plan for Action Presidential Commission	HCM	Highway Capacity Manual
dba	A-weighted decibel	HOV	high occupancy vehicle
dbh	diameter at breast height	I-66	Interstate 66
		I-395	Interstate 395
		kV	kilovolt

LEED	Leadership in Energy and Environmental Design	Pb	lead
LOS	level of service	PM <sub>2.5</sub>	particulate matter less than 2.5 microns in diameter
msl	mean sea level	PM <sub>10</sub>	particulate matter less than or equal to 10 microns in diameter
NCPC	National Capital Planning Commission	RFK	Robert F. Kennedy
NEPA	National Environmental Policy Act	RFQ	Request for Qualifications
NHPA	National Historic Preservation Act	ROD	Record of Decision
NMAAHC	National Museum of African American History and Culture	ROI	Region of Influence
NMAH	National Museum of American History	SHPO	State Historic Preservation Office
NMAI	National Museum of American Indian	SO <sub>2</sub>	sulfur dioxide
NMNH	National Museum of Natural History	SOE	Support of Excavation
N <sub>2</sub> O	nitrous oxide	SPT	Soil Penetration Test
NO <sub>2</sub>	nitrogen dioxide	TDA	Temporary Discharge Authorization
NOI	Notice of Intent	VOC	volatile organic compounds
NO <sub>x</sub>	oxides of nitrogen	WMATA	Washington Metropolitan Area Transit Authority
NPS	National Park Service		
NRHP	National Register of Historic Places		
O <sub>3</sub>	ozone		

## 7.0 PREPARERS



This page is intentionally left blank



## 7.1 LIST OF PREPARERS

### **AECOM (EIS Coordinators)**

Alan Harwood, AICP, Principal in Charge

Melissa Hatcher, Senior Environmental Planner

Judith Charles, Senior Environmental Planner

Stephanie Dyer-Carroll, AICP, Cultural Resource Specialist

Edward Switzer, Environmental Planner

Claire Sale, Environmental Planner

Laura Baker, Environmental Planner

Susan Bemis, Environmental Planner

Jeremy Palmer, Visual/SIMS

Jennifer O'Brien, Graphic Designer

Devin McDonald, Graphic Designer

Julie Noble, Project Assistant

Bill Wilbert, QA/QC Oversight

Maritza Mercado, Planner

Doug Johnston, Web Designer

Manqing Tao, Maps and Graphics

### **Robinson & Associates (Historic Preservation)**

Judith Robinson, Principal

Daria Gasparini, Associate

Janel Kausner, Associate

### **Gorove/Slade Associates, Inc. (Transportation)**

Erwin Andres, PE, Principal

Cullen Elias, PE, Transportation Engineer

Michael Hurley, PE, Transportation Engineer

### **Froehling & Robertson, Inc. (Geology)**

Alan Lederman, CHMM, Environmental Group Manager

Oscar J. Merida, Jr., PE, Geotechnical Engineer

Matthew Anderson, PE, Regional Manager

### **Justice & Sustainability Associates, LLC (Outreach)**

Gary Willoughby, Principal

Hadiyah Jordan, Mediator

This page is intentionally left blank

## 8.0 NOTIFICATION LIST



This page is intentionally left blank

## 8.1 AGENCIES RECEIVING PRINTED COPIES

### Federal Agencies

#### *National Capital Planning Commission (NCPC)*

Marcel C. Acosta, AICP  
Executive Director  
401 9th Street, NW  
North Lobby, Suite 500  
Washington, DC 20576

#### *National Park Service*

Robert Vogel  
Superintendent - National Mall and Memorial Parks  
900 Ohio Drive, SW  
Washington, DC 20242

Peter May  
Associate Regional Director, National Capital Region  
1100 Ohio Drive, SW  
Washington, DC 20242

Ann Bowman Smith  
Office of White House Liaison, National Park Service  
1100 Ohio Drive, SW  
Washington, DC 20242

#### *General Services Administration (GSA)*

Michael S. McGill  
Public Affairs Officer  
7th and D Streets, SW 7915  
Washington, DC 20407-0000

#### *United States Environmental Protection Agency (EPA)*

Barbara Rudnick  
1650 Arch Street  
Philadelphia, PA 19103-2029

## 8.2 AGENCIES AND ORGANIZATIONS RECEIVING A COMPACT DISC AND PRINTED COPY OF THE EXECUTIVE SUMMARY

#### *Commission of Fine Arts (CFA)*

Thomas Luebke, Secretary  
401 F Street, NW, Suite 312  
Washington, DC 20001-2728

#### *United States Department of Interior*

Dr. Willie R. Taylor  
Director, Office of Environmental Policy and Compliance  
Main Interior Building, MS 2462  
1849 C Street, NW  
Washington, DC 20240

*United States Secret Service (USSS)*

Lydia M. Canda  
Office of Government & Public Affairs  
245 Murray Drive, Building 410  
Washington, DC 20223

*Federal Highway Administration*

Jack VanDop  
21400 Ridgetop Circle  
Sterling, VA 20166

*Advisory Council on Historic Preservation (ACHP)*

John M. Fowler, Executive Director  
1100 Pennsylvania Avenue, NW, Suite 803  
Washington, DC 20004

**District Agencies**

*District of Columbia Office of Planning*

Harriet Tregoning, Director  
1100 4<sup>th</sup> Street, SW  
Suite E650  
Washington, DC 20024

*District of Columbia Department of the Environment*

Phetmano Phannavong  
1200 First Street, NE 5<sup>th</sup> Floor  
Washington, DC 20002

*District of Columbia Water Authority (DC Water)*

George S. Hawkins, General Manager  
5000 Overlook Avenue, SW  
Washington, DC 20032

*District Department of Transportation (DDOT)*

Terry Bellamy, Interim Director  
2000 14<sup>th</sup> Street NW, 6<sup>th</sup> Floor  
Washington, DC 20009

**Organizations**

*Afro American Historical & Genealogical Society*

Patsy Fletcher  
c/o 3949 1<sup>st</sup> Street, SW  
Washington, DC 20032

*American Association of Museums*

Kim Igoe, Executive Vice President  
1575 Eye Street NW, Suite 400  
Washington DC 20005

*Association for the Study of African American Life and History*

Dreck Wilson  
525 Bryant Street, NW Suite C142  
Washington, DC 20059

*Alexandria Black History Museum*

902 Wythe Street  
Alexandria, VA 22314

*Committee of 100 on the Federal City*

George R. Clark, Chairman  
1317 G Street, NW  
Washington, DC 20005

*DC Preservation League (DCPL)*

Rebecca Miller, Executive Director  
401 F Street, NW, Room 324  
Washington, D.C. 20001

*National Coalition to Save Our Mall*

Dr. Judy Scott Feldman, Chair  
P.O. Box 4709  
Rockville, MD 20849

*National Trust for Historic Preservation*

Elizabeth Merritt  
1785 Massachusetts Avenue, NW  
Washington, DC 20036

*National Organization of Minority Architects*

R. Steven Lewis, AIA, President  
College of Engineering, Architecture & Computer Sciences  
Howard University  
2366 6th Street, NW, Room 100  
Washington, DC 20059

**8.3 PLACES TO REVIEW THE TIER II DRAFT EIS***Martin Luther King Jr. Memorial Library*

901 G Street, NW  
Washington, DC 20001

*Northeast Branch Library*

330 7th Street, NE  
Washington, D.C. 20002

*Southeast Branch Library*

403 7th Street, SE  
Washington, D.C. 20003

*Southwest Branch Library*

900 Wesley Place, SW  
Washington, D.C. 20024

*National Capital Planning Commission*

401 9th Street, NW  
North Lobby, Suite 500  
Washington, DC 20004

*Smithsonian Institution Planning Library and Resource Room*  
Capital Gallery  
600 Maryland Avenue SW, Suite 5001  
Washington, DC 20013

**8.4 AGENCIES, ORGANIZATION AND INDIVIDUALS  
RECEIVING NOTIFICATION OF THE TIER II  
DRAFT EIS RELEASE**

**Federal Agencies**

*United States Fish and Wildlife Service*

Acting Director Rowan W. Gould  
1849 C Street, NW  
Washington, DC 20240

*United States Army Corps of Engineers, Baltimore District*

Jack Dinne  
PO Box 1715  
Baltimore, MD 21203-1715

*White House Military Office*

Paul Jackson  
Director of Policy, Plans & Requirements  
1600 Pennsylvania Avenue, NW  
Washington, DC 20500

**Regional Entities**

*Washington Metropolitan Area Transit Authority*

John Magarelli  
Office of Planning and Project Development  
600 Fifth Street, NW  
Washington, DC 20001

*Potomac Electric Power Company*

James Pringle  
Senior Account Manager  
3400 Benning Road, NE  
Washington, DC 20019

*Washington Gas*

Terry McCallister  
Chairman and Chief Executive Officer  
6801 Industrial Road  
Springfield, VA 22151



**District Agencies***District Department of Health*

Dr. Mohammad N. Akhter, Director  
 District of Columbia Department of Health  
 825 North Capitol Street, NE  
 Washington, DC 20002

*District of Columbia Office of Planning/State Historic Preservation Office (SHPO)*

David Maloney  
 State Historic Preservation Officer  
 1100 4<sup>th</sup> Street, SW Suite E650  
 Washington, DC 20024

*District of Columbia Department of Parks and Recreation*

Jesus Aguirre, Director  
 District of Columbia Department of Parks and Recreation  
 3149 16th Street, NW  
 Washington, DC 20010

**Organizations***African American Cultural Complex*

Dr. Elliott B. Palmer, CEO  
 119 Sunnybrook Road  
 Raleigh, NC 27610

*African American Heritage Preservation Foundation*

420 Seventh Street, NW, Suite 501  
 Washington, DC 20004-2211

*American Institute of Architects*

Washington Chapter  
 1777 Church Street  
 Washington, DC 20036

*American Society of Landscape Architects*

Potomac Chapter  
 P.O. Box 18184  
 Washington, DC 20036

*Anacostia Coordinating Council*

2401 Shannon Place, SE  
 Washington, DC 20020

*Association of African American Museums*

William Billingsley, Executive Director  
 P.O. Box 427  
 Wilberforce, OH 45384

*Association for Black Culture Centers*

Dr. Fred L. Hord  
Executive Director/Founder, Knox College  
2 East South Street, K-173  
Galesburg, IL 61401-4999

*Blacks In Government*

James Wilson  
3005 Georgia Avenue, NW  
Washington, D.C. 20001-3807

*The Cafritz Foundation*

Calvin Cafritz, Chairman of the Board  
1825 K Street, NW, Suite 1400  
Washington, DC 20006

*Concerned Black Men*

George Garrow, Executive Director  
1816 12th Street, NW, Suite 204  
Washington, D.C. 20009

*Conference of Presidents of Major American Jewish Organizations*

Alan Solow, Chairman  
633 3rd Avenue, 21st Floor  
New York, NY 10017

*Congress of National Black Churches*

Joe Leonard, Jr.  
910 17th Street NW, Suite 317  
Washington, DC 20006

*Council on Foundations*

Steve Gunderson, President and CEO  
2121 Crystal Drive, Suite 700  
Arlington, VA 22202

*Downtown DC Business Improvement District*

Richard H. Bradley, Executive Director  
1250 H Street, NW, Suite 1000  
Washington, DC 20005

*Federal City Council*

John W. Hill, CEO  
1156 15th Street NW, Suite 600  
Washington, DC 20005

*Greater Washington Urban League*

Maudine Cooper, President and CEO  
2901 14th Street, NW  
Washington, DC 20009

*Institute of Museum and Library Services*

Nancy Weiss, General Counsel  
1800 M Street, NW, 9th Floor  
Washington, DC 20036-5802

*The Meyer Foundation*

Amy K. Harbison, Director of Communications  
1250 Connecticut Avenue, NW, Suite 800  
Washington, DC 20036

*Muslim American Society*

1325 G Street, NW, Suite 500  
Washington, DC 20005

*NAACP, Washington DC Branch*

Lorraine Miller, President  
1000 U Street, NW Suite 100  
Washington, DC 20001

*National Association of Congregational Christian Churches*

PO Box 288  
8473 South Howell Avenue  
Oak Creek, WI 53154-0288

*The National Urban League*

Marc Morial, President and CEO  
120 Wall Street, 8th Floor  
New York, NY 10005

*National Society of Black Engineers*

Calvin Phelps, Chair  
205 Daingerfield Road  
Alexandria, Virginia 22314

*National Association of Black Journalists*

Drew Berry, Executive Director  
1100 Knight Hall, Suite 3100  
College Park, MD 20742

*National Council of Negro Women*

Dr. Barbara Shaw, Chair  
633 Pennsylvania Avenue, NW  
Washington, DC 20004

*Philip L. Graham Fund*

c/o The Washington Post Company  
1150 15th Street NW  
Washington, DC 20071

*Sierra Club*

Washington, DC Chapter  
Jason Broehm, Transportation Chair  
2437 15th Street, NW  
Washington, DC 20009

*United States Holocaust Memorial Museum*

Sara Bloomfield, Director  
100 Raoul Wallenberg Place, SW  
Washington, DC 20024-2126

*United States Commission on Civil Rights*

Gerald A. Reynolds, Chairman  
624 Ninth Street, NW  
Washington, DC 20425

*National Organization of Minority Architects, DC Chapter*

Bernard Suber, President  
P.O. Box 77174  
Washington, DC 20013-7174

*The Guild of Professional Tour Guides of Washington, D.C.*

Tom Whitley  
P.O. Box 242  
Washington, DC 20044-0242

*The Humanities Council of Washington, D.C.*

Joy Ford Austin, Executive Director  
925 U Street NW  
Washington, DC 20001

*U.S. Capitol Historical Society*

Felicia Bell, Director of Education and Outreach  
200 Maryland Avenue, NE  
Washington, DC 20002

**Educational Organizations**

*Howard University*

Bradford C. Grant, AIA, NOMA, Interim Dean  
Director, School of Architecture and Design  
Department of Architecture  
College of Engineering, Architecture and Computer Sciences  
2366 Sixth Street, NW  
Washington, DC 20059

*The Catholic University of America*

Dean Randall Ott, AIA  
School of Architecture & Planning  
620 Michigan Avenue, NE  
Washington, DC 20064

*University of the District of Columbia*

Dr. Rachel M Petty  
 College of Arts & Sciences  
 4200 Connecticut Avenue, NW  
 Washington, DC 20008

**Local Advisory Neighborhood Commissions***ANC-2A*

c/o West End Library  
 1101 24th Street, NW  
 Washington, DC 20037

*ANC-2C*

PO Box 26182, Ledroit Park Station  
 Washington, DC 20001

*ANC-2F*

5 Thomas Circle  
 Washington, DC 20005

**Elected Officials**

Mayor Vincent C. Gray  
 Washington, DC Office of the Mayor  
 1350 Pennsylvania Avenue, NW Suite 316  
 Washington, DC 20004

Eleanor Holmes Norton  
 2136 Rayburn HOB  
 Washington, DC 20515

**D.C. Council Members**

Kwame R. Brown, Chairman  
 1350 Pennsylvania Avenue, NW, Suite 504  
 Washington, DC 20004

Mary M. Cheh, Chair Pro Tempore, Ward Three  
 1350 Pennsylvania Avenue, NW Suite 108  
 Washington, DC 20004

Vincent B. Orange, Sr., Council Member At- Large  
 1350 Pennsylvania Avenue, NW, Suite 410  
 Washington, DC 20004

Michael A. Brown, Council Member At- Large  
 1350 Pennsylvania Avenue, NW, Suite 406  
 Washington, DC 20004

David A. Catania, Council Member At- Large  
 1350 Pennsylvania Avenue, NW, Suite 404  
 Washington, DC 20004

Phil Mendelson, Council Member At- Large  
 1350 Pennsylvania Avenue, NW Suite 402  
 Washington, DC, 20004

Jim Graham, Ward One Council Member  
 1350 Pennsylvania Avenue, NW, Suite 105  
 Washington, DC, 20004

Jack Evans, Ward Two Council Member  
 1350 Pennsylvania Avenue, NW, Suite 106  
 Washington, DC 20004

Muriel Bowser, Ward Four Council Member  
1350 Pennsylvania Avenue, NW, Suite 110  
Washington, DC 20004

Harry Thomas Jr., Ward Five Council Member  
1350 Pennsylvania Avenue NW, Suite 107  
Washington, DC 20004

Tommy Wells, Ward Six Council Member  
1350 Pennsylvania Avenue, NW Suite 408  
Washington, DC 20004

Yvette Alexander, Ward Seven Council Member  
1350 Pennsylvania Avenue, NW, Suite 400  
Washington, DC 20004

Marion Barry, Ward Eight Council Member  
1350 Pennsylvania Avenue, NW, Suite 102  
Washington, DC 20004

### **Newspapers**

*The Washington Post Express*  
1150 15 Street, NW  
Washington, DC 20071

*The Washington Informer Newspaper*  
3117 Martin Luther King Jr. Avenue, SE  
Washington, DC 20032

*Washington City Paper*  
2390 Champlain Street, NW  
Washington, DC 20009

*Capital Community News, Inc.*  
224 7th Street, SE Suite 300  
Washington, DC 20003

*Washington Hispanic*  
8455 Colesville Road, Suite 700  
Silver Spring, MD 20910

*Afro-American Newspapers*  
2519 North Charles St.  
Baltimore, MD 21218

### **Individuals**

Frank Morgan  
2046 S. 6th Street  
Arlington, VA 22204

Richard E. Barnes  
6818 Middlefield Terrace  
Fort Washington, MD 20744-1518

Camille Cosby  
P.O. Box 239  
New York, NY 10021

Dr. Kellie Jones  
Department of Art History and Archaeology  
Columbia University  
911 Schermerhorn Hall  
New York, NY 10027

Robert Wilkins  
Venable LLP  
575 7<sup>th</sup> Street, NW  
Washington, DC 20004

Robert L. Wright  
Dimensions International Inc.  
2800 Eisenhower Avenue, Suite 300  
Alexandria, VA 22314

This page is intentionally left blank



## 9.0 APPENDICES



This page is intentionally left blank

## 9.1 TIER I FINAL EIS DESIGN PRINCIPLES

As explained in the Tier I Final EIS, “the design principles below are a refinement of the overarching principles that informed the development of the six Build Alternatives for the National Museum of African American History and Culture that are analyzed in this Tier I FEIS. The principles reflect the analysis summarized in the overarching principles matrix and supporting documents (Robinson & Associates, 2008) that are the result of discussions with the Section 106 Consulting Parties and others, and that are intended to help in setting priorities for key critical issues that must be considered by future design architects” (Smithsonian Institution, 2008a).

These Tier I Final EIS principles represent the Smithsonian Institution’s preferred approach to the design of the NMAAHC as informed by the Smithsonian Institution’s consideration of the views expressed in the context of the Section 106 consultations that have taken place during the Tier I NEPA process. The Tier I Final EIS design principles are provided herein.

### A. *General Composition of the National Mall:*

*The National Mall presents a unity of overall spatial design but is composed of distinct parts, including the Mall, the Washington Monument Grounds, and West Potomac Park. Though administratively separate, the Ellipse and White House Grounds are also part of this extended landscape composition. The museum site occupies a highly prominent and pivotal location next to both the continuous 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.*

- *The design should respect the character and 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 Victorian-era and mid-20th-century plans.*
- *The spatial organization of the National Mall is cross-axial and the design of the proposed museum should not detract from this central idea.*
- *Impacts on panoramic views that open and widen on the approach to the Washington Monument Grounds from the National Mall or the Ellipse should be minimized.*
- *The design of the museum 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, from the air and from the Washington Monument itself.*

**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, notably open lawns, curvilinear paths and roads, and selective groupings of trees.*

- *The design of the museum must be respectful of the prominence of the Washington Monument and its scale and design character.*
- *The design of the museum should be informed by the distinct characteristics of this historic environment, which include picturesque, irregular, and asymmetrical forms, and the topography of the grounds.*
- *The design of the museum and its site should be responsive to other structures and features on the Washington Monument Grounds, such as the Monument Lodge, the Bulfinch Gateposts, the curvilinear pathways, tree placement and landscape features.*
- *The design of the building should take into consideration the physical definition, character, and views of the Washington Monument Grounds as seen and experienced from within the reservation.*

**C. Relationship to Adjacent Architectural and Urban Context:**

*The site is located to the west of 14th Street, NW, which forms the western end of the Mall. Between the Mall and Constitution Avenue 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 allees of trees. The composition of the National Mall landscape and the large museums is further framed by the monumental Federal Triangle to the north.*

- *The museum should not project beyond the existing screening of trees along the southern line of the row of museum structures.*
- *Given the context of the site, setbacks should respect the general character of the National Mall side of Constitution Avenue on the north, the tree buffer along 14th Street and should maximize views of the monument and grounds on the West.*
- *The height of the museum should be compatible with that of the predominant massing of the row of museum structures to the east.*
- *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.*
- *Any requisite perimeter security should be designed and integrated into the facility from the earliest concept design and be compatible with the character of the new building and site.*

## 9.2 NMAAHC DESIGN COMPETITION

The Smithsonian Institution began the architectural programming phase for the NMAAHC in October 2007. The architectural programming phase provides research and decision-making on the scope of the museum. Space and systems requirements for the major physical components of the museum were determined, including the size of the auditorium, exhibit space, and offices, as well as the energy usage requirements. The Smithsonian Institution initiated the architectural design process on July 10, 2008 when it issued a Request for Qualifications (RFQ) to architectural firms inviting them to submit professional qualifications to design the NMAAHC. The Smithsonian Institution posted the RFQ on [fedbizopps.gov](http://fedbizopps.gov), the federal business opportunities website, and advertised nationally using methods designed to reach the greatest number of firms. Additionally, the Smithsonian Institution performed outreach initiatives to attract bids from minority architectural firms.

In January 2009, an evaluation board narrowed the field of applicants to six firms and turned the process over to a design competition board, which included outside experts and Smithsonian Institution professionals. The design competition board reviewed the finalists' concept designs and presentations and the highest-ranked firm was asked to submit a formal proposal and subsequently begin contract negotiations with the Smithsonian. The architectural team Freelon Adjaye Bond/SmithGroup was selected and announced at a press conference at the Smithsonian Castle on April 14, 2009. They were among six architectural firms that entered the design competition in January 2009 from a total of 22 firms that responded to a RFQ issued during the summer of 2008.

The design competition submissions featured the following concepts by six notable architects:

*Devroux & Purnell Architects/Planners and Pei Cobb Freed & Partners Architects*



Source: National Museum of African American History and Culture, Smithsonian Institution, 2009

*"Our team began by discussing the importance of this project to our nation and the unique opportunity it affords to give voice in architecture to the African American experience. Equality, Journey, Change and Permanence are four words that resonated. Equality defined the objective. The Journey is what we celebrate. Change is what was necessary. And Permanence must be embodied in the outcome. These ideas inspired and informed our search."*

*Foster + Partners*



Source: National Museum of African American History and Culture, Smithsonian Institution, 2009

*"It is essential that this project is approached from the outside in and the inside out. Namely that the new building must succeed in its context and its function, but above all, as a symbolic response to such an important subject ... This museum explores and elucidates the impact on the nation of the complex history and rich culture of African Americans. It reminds us of what we were and the challenges we still face, and guides us toward what we can become. The museum is designed to be a place of meaning, a journey of memory and of reflection, a haven of music and laughter and a beacon of hope."*

*Diller Scofidio + Renfro*



Source: National Museum of African American History and Culture, Smithsonian Institution, 2009

*"The NMAAHC will sit on a historically charged site ... both the somber history of African American slave labor and spectacular, pivotal democratic events such as Martin Luther King Jr.'s "I Have a Dream" speech and the Inauguration of the first bi-racial president. The painful struggles and glorious achievements of African American history and culture must be embodied through the inextricable bond of building and site. Rather than passively sitting on the ground, the new building emerges from the ground as if its seeds were always planted but not yet germinated."*

*Moody Nolan in association with Antoine Predock Architect*

Source: National Museum of African American History and Culture, Smithsonian Institution, 2009

*"The living atmosphere of our proposal absorbs and illuminates the teachings, struggles and triumphs of African American culture, which then become lessons—inextricably connected to each visitor. The atmosphere...highlights the culture's circuitous, yet persistent movement towards brighter futures, and translates the trajectory of pitfalls and accomplishments that define African American culture. Our proposal offers a resounding celebratory means of navigating the building that synthesizes the African American experience of ascendance with the visitor's path of travel."*

*Moshe Safdie and Associates*

Source: National Museum of African American History and Culture, Smithsonian Institution, 2009

*"Two separate thoughts—one about urban design, the other about the museum's organization, merged into a singular concept for the project. The first insight ... was to reduce the mass of the building ... placing over one third of the program below street level. This minimal footprint was bisected by two view corridors. The primary one on the axis of the Washington Monument ... We felt that the building above ground should be kept simple and austere, focusing its expressive power on the entry and primarily on the Memorial Pavilion, which we set forward into the landscape, in its scale harmonious with the other memorials on the National Mall."*

*Freelon Adjaye Bond/SmithGroup*



Source: National Museum of African American History and Culture, Smithsonian Institution, 2009

*“At its best, architecture is the physical manifestation of a culture's highest ideals. The National Museum of African American History and Culture (NMAAHC)—the institution and the building—embodies the African American spirit. Majestic yet exuberant. Dignified yet triumphant. Of the African Diaspora yet distinctly African American. The NMAAHC will be a building worthy of the museum's vision—and its prominent place on the National Mall.”*



### 9.3 DRAFT NMAAHC SECTION 106 EFFECTS ANALYSIS

The analysis of concept alternatives and their effect on cultural resources used a matrix format which will lead to the identification of a culturally preferred alternative. The three initial design concepts studied for the EIS were the Plinth, Plaza and Pavilion and a fourth concept, the Refined Pavilion, is included as a natural evolution taking the best elements from each of the three initial concepts. Therefore, for the EIS, there are four concepts analyzed. The matrix did evaluate a fifth option for Section 106 Historic Preservation purposes, the Blended scheme, and while included in this Appendix, was not included for continued analysis of environmental impacts.




The matrix is focused specifically on impacts to cultural resources and used the framework of the Design Principles developed in Tier I and refined in Tier II. The variables for analysis considered for effects are those that primarily impact views and vistas and the characteristics of the landscape treatment. They are related to the placement of elements on the site, the scale of these elements, the above grade features of the construction, and the integration of building and landscape features on the site.

The matrix looked at 34 individual elements in three geographic categories; the General Composition of the National Mall, the Context of the Washington Monument Grounds, and the Relationship to Adjacent Architectural and Urban Context features. While most of the impacts were found to have a major adverse effect because they alter the existing open condition of the site, there were some interesting adjustments within the schemes that did minimize these impacts. The chart below, graphically illustrates that the Pavilion and Refined Pavilion are more successful in

minimizing impacts. The Refined Pavilion was found to have the least impact of the four alternative concepts, primarily due to the reduced size in plan, height and volume of the principal element, the corona. In addition, the more fluid open landscape and the placement of the corona on the southern portion of the site opened up greater views to the Washington Monument and the Federal Triangle, while providing more pedestrian access on a gently rolling topography. While there were some specific advantages to the Plinth and Plaza schemes, overall there were greater negative impacts to cultural resources. At this time, the Refined Pavilion has the least impact on cultural resources.

Graphic illustrating consolidated effects of the four alternatives as they relate to the impact on cultural resources. As the color band moves towards the yellow zone, there is greater minimization of impacts due to the location of the building, the landscape treatment, the size and massing of the building and impacts on views and vistas of cultural resources in the area. The Refined Pavilion has the least impact on cultural resources.



DRAFT NMAAHC SECTION 106 EFFECTS ANALYSIS MATRIX*	PLINTH	PLAZA	PAVILION
	 <p>Top of Corona: 118'-0" msl Top of Penthouse: 134'-6" msl Ground Floor Area: 66,580 SQF Site Area: 232,998 SQF Coverage: 29%</p>	 <p>Top of Corona: 118'-0" msl Top of Penthouse: 134'-0" msl Ground Floor Area: 67,870 SQF Site Area: 232,998 SQF Coverage: 29%</p>	 <p>Top of Corona: 118'-0" msl Top of Penthouse: 132'-6" msl Ground Floor Area: 44,943 SQF Site Area: 233,342 SQF Coverage: 19%</p>

\*This Effects Analysis Matrix is derived from the Design Principles developed specifically by the Smithsonian – through Section 106 consultation with interested parties, including the National Capital Planning Commission, the U.S. Commission of Fine Arts, the D.C. Historic Preservation Office, and the Advisory Council on Historic Preservation – to guide the design process for the proposed National Museum of African American History and Culture. The Design Principles summarize the analysis of the historic 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.

\*\*\*Major Effect: The serious adverse effect would diminish overall integrity, or alter a character-defining feature(s) of the National Register eligible/listed property.

\*\*Moderate Effect: The adverse effect is apparent and would diminish overall integrity, or would alter a character defining-feature(s) of the National Register eligible/listed property.

\*Minor Effect: The adverse effect is detectible, but slight, and would minimally diminish overall integrity, or affect the character-defining feature(s) of the National Register eligible/listed property.

**GENERAL COMPOSITION OF THE NATIONAL MALL<sup>1</sup>**

1	<p>The character, history, and existing hierarchies 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 building in the midst of this historic environment must be accomplished in a way that is harmonious and respectful of existing hierarchies</p>	<p><b>***Major adverse effect</b></p> <ul style="list-style-type: none"> <li>• The building introduces a significant built resource into the historically open grounds of the Monumental Core</li> <li>• It eliminates a significant portion of the open space of the Washington Monument Grounds</li> <li>• It alters the visual boundaries of the northeast corner of the grounds</li> <li>• It alters the perceived boundaries of the historic Mall<sup>2</sup> by extending the existing row of museums into the Washington Monument Grounds</li> </ul>	<p><b>***Major adverse effect</b> – same effects as the Plinth Scheme</p>	<p><b>***Major adverse effect</b> – same effects as the Plinth Scheme</p>
---	---	---	---	---

<sup>1</sup> As defined by the National Mall Plan, the National Mall is a large-scale cultural landscape made up of smaller landscapes such as Union Square, the Mall, the Washington Monument Grounds, the Thomas Jefferson Memorial, and Constitution Gardens.

<sup>2</sup> As defined by the National Mall Plan, the historic Mall is bounded by bound Constitution and Pennsylvania avenues on the north, 1<sup>st</sup> Street on the east, Independence and Maryland avenues on the south, and 14<sup>th</sup> Street on the west.

		PLINTH	PLAZA	PAVILION
2	The long views within the historic Mall	<p><b>*Minor adverse effect</b></p> <ul style="list-style-type: none"> <li>The location of the building within the NMAAHC site and the massing of the Corona and plinth do not substantially alter the key vistas looking east to west along the historic Mall from the center panels</li> </ul>	<p><b>*Minor adverse effect</b> – same effects as the Plinth Scheme</p>	<p><b>*Minor adverse effect</b> – same effects as the Plinth Scheme</p>
3	The distant views from higher locations such as Arlington Cemetery, the Office tower, the Washington Monument, and from the air	<p><b>***Major adverse effect</b> on views from the top of the Washington Monument and from the air</p> <ul style="list-style-type: none"> <li>The building is a prominent new feature on the landscape</li> <li>It eliminates a significant portion of the historic open space of the Washington Monument Grounds</li> <li>It alters the visual boundaries of the northeast corner of the grounds</li> <li>The formal, rectilinear approach to the landscape design and the scale and character of water elements within it depart from the informality and picturesque quality of the Washington Monument Grounds</li> </ul>	<p><b>***Major adverse effect</b> – same effects as the Plinth Scheme except:</p> <ul style="list-style-type: none"> <li>Together, the Corona and the support building have the greatest footprint of all the schemes, and, from a distance, the two buildings read as a single mass</li> <li>The landscape design of the Plaza Scheme features the most hardscape of all the schemes</li> </ul>	<p><b>***Major adverse effect</b> – same effects as the Plinth Scheme</p> <p><b>Design Advantages</b></p> <ul style="list-style-type: none"> <li><i>Unlike the Plinth Plaza schemes, the Pavilion Scheme landscape plan references the Washington Monument Grounds by treating the building as an object in a field surrounded by open ground</i></li> <li><i>The landscape elements north of the Corona - a gentle sloping topography featuring a curvilinear path and informal seating areas - are less formal than those in the Plinth Scheme and the Plaza Scheme</i></li> </ul>
4		<p><b>**Moderate adverse effect</b> on views from the Old Post Office tower</p> <ul style="list-style-type: none"> <li>The height of the building positions the roofline above the visible point at which the base of the Washington Monument meets the ground, altering the existing view of the entire Monument from the Old Post Office tower</li> <li>It eliminates a portion of the open space of the Washington Monument Grounds, altering the visual relationship between the Federal Triangle and the grounds</li> </ul>	<p><b>**Moderate adverse effect</b> – Same effects as the Plinth Scheme</p>	<p><b>**Moderate adverse effect</b> – Same effects as the Plinth Scheme</p>

		PLINTH	PLAZA	PAVILION
5		<p><b>No effect</b> on distant views from Arlington Cemetery</p> <ul style="list-style-type: none"> <li>From this distance, the distinction between the historic Mall, the Federal Triangle, and the Washington Monument Grounds is difficult to distinguish, and the building appears as part of the general building massing in the area</li> </ul>	<p><b>No effect</b>– Same effects as the Plinth Scheme</p>	<p><b>No effect</b> – Same effects as the Plinth Scheme</p>
6	The panoramic views that open and widen on the approach to the Washington Monument Grounds from the historic Mall or the Ellipse	<p><b>***Major adverse effect</b> on the panoramic view that opens and widens on the approach to the Washington Monument Grounds from the historic Mall</p> <ul style="list-style-type: none"> <li>The building eliminates a significant portion of the open space of the Washington Monument Grounds</li> <li>It constricts the wide-angle panoramic view of the grounds that opens from the historic Mall</li> </ul> <p><b>Design Advantages</b></p> <ul style="list-style-type: none"> <li><i>The Plinth Scheme Corona does not project as far south on the NMAAHC site as the Blended, Plaza, and Refined Pavilion schemes and therefore has less effect on the panoramic view from the historic Mall</i></li> </ul>	<p><b>***Major adverse effect</b>– Same effects at the Plinth Scheme, except:</p> <ul style="list-style-type: none"> <li>The Plaza Scheme has the greatest adverse effect on the wide-angle panoramic view of the Washington Monument Grounds that opens up from the historic Mall because the Corona is located the farthest south on the site of all four schemes</li> </ul>	<p><b>***Major adverse effect</b>– Same effects at the Plinth Scheme, except:</p> <p><b>Design Advantages</b></p> <ul style="list-style-type: none"> <li><i>The Pavilion Scheme building does not project as far south on the NMAAHC site as the Plaza, Blended, and Refined Pavilion schemes and therefore has less effect on the panoramic view that opens on approach to the Washington Monument Grounds.</i></li> </ul>
7		<p><b>**Moderate adverse effect</b> on the panoramic view that opens and widens on the approach to the Washington Monument Grounds from the Ellipse</p> <ul style="list-style-type: none"> <li>Although the building appears distant as viewed from the Ellipse, the oblique angle of view creates a wide frontage within the panoramic view and can be seen in direct relation to the Washington Monument, diminishing its prominence</li> <li>The height of the building also projects vertically above the predominant tree line</li> </ul>	<p><b>**Moderate adverse effect</b>– Same effects as the Plinth Scheme</p>	<p><b>**Moderate adverse effect</b>– Same effects as the Plinth Scheme</p>

		PLINTH	PLAZA	PAVILION
8	The cross-axial spatial organization of the National Mall, marked by the Washington Monument at its crossing	<p><b>***Major adverse effect</b></p> <ul style="list-style-type: none"> <li>The building alters the perceived boundaries of the National Mall by extending the existing row of museums into the Washington Monument Grounds, modifying the cross-axial spatial organization of the Monumental Core</li> </ul>	<p><b>***Major adverse effect</b>– Same effects as the Plinth Scheme</p>	<p><b>***Major adverse effect</b>– Same effects as the Plinth Scheme</p>
9	The "hinge" site within the larger composition of the National Mall where the surrounding frame of buildings reaches its closest approach to the Washington Monument	<p><b>***Major adverse effect</b></p> <ul style="list-style-type: none"> <li>The directional (north-south) massing of the building, caused by the north and south extension of the plinth, does not respond to the hinge site</li> <li>It alters the character of the Washington Monument Grounds within the spatial conception of the Monumental Core</li> </ul>	<p><b>***Major adverse effect</b>– Same effects as Plinth Scheme, except:</p> <p><u>Design Advantages</u></p> <ul style="list-style-type: none"> <li><i>The plaza element of the landscape design provides a transitional space indicative of the site's role as a hinge</i></li> </ul>	<p><b>***Major adverse effect</b>– Same effects as Plinth Scheme, except:</p> <p><u>Design Advantages</u></p> <ul style="list-style-type: none"> <li><i>Unlike the Plaza, Blended, and Refined Pavilion schemes, the Pavilion Scheme is consistent with the established setbacks of the museum buildings along the National Mall and does not project as far south into the project site</i></li> </ul>
<b>CONTEXT OF THE WASHINGTON MONUMENT GROUNDS</b>				
10	The scale, design character, and preeminence of the Washington Monument	<p><b>***Major adverse effect</b></p> <ul style="list-style-type: none"> <li>The height, massing, and location of the building diminish the visual impact of the Washington Monument by competing for its prominence within the Washington Monument Grounds</li> </ul>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme</p>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme</p>

		PLINTH	PLAZA	PAVILION
11	The naturalistic topography of the Washington Monument Grounds and the distinct characteristics of this historic environment, including the peripheral "flats" and central mound	<p><b>*Minor adverse effect</b></p> <ul style="list-style-type: none"> <li>The building eliminates a portion of the peripheral flats of the Washington Monument Grounds</li> <li>The rectilinear treatment of the building and the formal treatment of the landscape design conflicts with the naturalistic topography of the Washington Monument Grounds</li> </ul>	<p><b>**Moderate adverse effect</b></p> <ul style="list-style-type: none"> <li>The building eliminates a portion of the peripheral flats of the Washington Monument Grounds</li> <li>The rectilinear treatment of the building and the formal treatment of the landscape design conflicts with the naturalistic topography of the Washington Monument Grounds</li> <li>The Plaza Scheme has the greatest impact on the topography of the Washington Monument Grounds because it occupies the largest footprint of all the schemes</li> </ul>	<p><b>*Minor adverse effect – Same effects as Plinth Scheme</b></p>
12	The distinctive characteristics of the historic environment of the Washington Monument Grounds including the Monument Lodge, the Bulfinch Gateposts, and the curvilinear pathways	<p><b>***Major adverse effect</b> on the Bulfinch Gateposts</p> <ul style="list-style-type: none"> <li>The location of the building within the Washington Monument Grounds alters the setting of the gatepost</li> <li>The northern extension of the plinth element and the ground-level build out at the northwest corner of the building reduce setbacks from the gatepost, further impacting its setting</li> </ul>	<p><b>***Major adverse effect</b>– Same effects as the Plinth Scheme</p>	<p><b>**Moderate adverse effect</b></p> <ul style="list-style-type: none"> <li>The location of the building within the Washington Monument Grounds alters the setting of the gatepost</li> </ul> <p><b>Design Advantages</b></p> <ul style="list-style-type: none"> <li><i>Unlike the Plinth, Plaza, Blended, and Refined Pavilion schemes, the Pavilion Scheme building is located in the center of the site within the established setbacks of the adjacent buildings along Constitution Avenue and farthest from the gatepost</i></li> </ul>
13		<p><b>***Major adverse effect</b> on the Monument Lodge</p> <ul style="list-style-type: none"> <li>The height and massing of the building diminish the visual impact of the Monument Lodge within the setting of the Washington Monument Grounds</li> </ul>	<p><b>***Major adverse effect</b>– Same effects as the Plinth Scheme, except:</p> <ul style="list-style-type: none"> <li>The Plaza Scheme has the greatest impact on the Monument Lodge because it is located the farthest south on the NMAAHC site of all the schemes</li> </ul>	<p><b>**Moderate adverse effect</b></p> <ul style="list-style-type: none"> <li>The height and massing of the building diminish the visual impact of the Monument Lodge within the setting of the Washington Monument Grounds</li> </ul> <p><b>Design Advantages</b></p> <ul style="list-style-type: none"> <li>The Pavilion Scheme is located the farther from the Monument Lodge than any of the other schemes</li> </ul>

		PLINTH	PLAZA	PAVILION
14		<p><b>**Moderate adverse effect</b> on the distinctive circulation features of the Washington Monument Grounds</p> <ul style="list-style-type: none"> <li>The building removes open circulation from a portion of the Washington Monument Grounds</li> <li>The formal character of the landscape design of the NMAAHC site is a departure from the curvilinear configuration of historic circulation within the Washington Monument Grounds</li> </ul>	<p><b>**Moderate adverse effect</b> – Same effects as the Plinth Scheme, except:</p> <p><b>Design Advantages</b></p> <ul style="list-style-type: none"> <li><i>The two building configuration and plaza element acknowledge the existing diagonal pedestrian movement through the site.</i></li> </ul>	<p><b>**Moderate adverse effect</b> – Same effects as the Plinth Scheme, except:</p> <ul style="list-style-type: none"> <li>The formal character of the landscape design south of the Corona is a departure from the curvilinear configuration of historic circulation within the Washington Monument Grounds.</li> </ul>
15	The definition, character, and views of the Washington Monument Grounds as seen and experienced from within the reservation as a whole	<p><b>*** Major adverse effect</b> on long views within the Washington Monument Grounds</p> <ul style="list-style-type: none"> <li>The height and massing of the building obstructs the long, panoramic views of the National Museum of American History and the Federal Triangle from the Washington Monument Grounds</li> </ul>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme</p>	<p><b>*** Major adverse effect</b> – Same effects as the Plinth Scheme</p>

		PLINTH	PLAZA	PAVILION
16		<p><b>***Major adverse effect</b> on pedestrian-level views from the Washington Monument looking northeast</p> <ul style="list-style-type: none"> <li>• The building obstructs views to the Old Post Office tower and blocks views of several historic buildings within the Federal Triangle</li> <li>• The northern extension of the plinth partially conceals a portion of the south facade of the U.S. Department of Commerce building</li> <li>• The southern extension of the plinth conceals a portion of the west facade of the National Museum of American History</li> <li>• The perceived proximity to the row of museum buildings along the historic Mall is reduced, with the building becoming the closest building to the Washington Monument in this direction</li> </ul>	<p><b>***Major adverse effect</b></p> <ul style="list-style-type: none"> <li>• The Corona partially obstructs views of the Old Post Office tower and conceals a portion of the west facade of the National Museum of American History</li> <li>• The Corona and the support building block views of several historic buildings within the Federal Triangle</li> <li>• The support building conceals a portion of the south facade of the U.S. Department of Commerce Building</li> <li>• The facade of the support building, visible from the Washington Monument Grounds, is a significant departure from the picturesque character of the grounds</li> <li>• The perceived proximity to the row of museum buildings along the historic Mall is reduced, with the buildings becoming the closest buildings to the Washington Monument in this direction</li> </ul> <p><b>Design Advantages:</b></p> <ul style="list-style-type: none"> <li>• <i>The Plaza Scheme opens up the most views of the Federal Triangle</i></li> </ul>	<p><b>***Major adverse effect</b></p> <ul style="list-style-type: none"> <li>• The building obstructs views to the Old Post Office tower and blocks views of several historic buildings within the Federal Triangle</li> <li>• The perceived proximity to the row of museum buildings along the historic Mall is reduced, with the building becoming the closest building to the Washington Monument in this direction.</li> </ul> <p><b>Design Advantages:</b></p> <ul style="list-style-type: none"> <li>• <i>Unlike the Plinth Scheme, the U.S. Department of Commerce building remains visible</i></li> </ul>
17		<p><b>***Major adverse effect</b> on the view looking north along 15th Street</p> <ul style="list-style-type: none"> <li>• The building blocks the south elevation of the U.S. Department of Commerce building including its distinctive portico and tile roof</li> </ul>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme</p>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme</p>



		PLINTH	PLAZA	PAVILION
18		<p><b>***Major adverse effect</b> on views of the Washington Monument Grounds at night</p> <ul style="list-style-type: none"> <li>Although the exterior night lighting of the building and the NMAAHC site are designed to complement and not compete with nearby landmarks, the lighting - including exterior lighting of outdoor gathering and circulation spaces, water elements, pool surfaces, and architectural features - will illuminate a portion of the Washington Monument Grounds previously unlit at night (except for perimeter street lights)</li> <li>This will alter multiple nighttime views of the Washington Monument Grounds and detract from the prominence of the Washington Monument</li> </ul>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme</p>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme</p>
19		<p><b>***Major adverse effect</b> on the spatial organization of the Washington Monument Grounds</p> <ul style="list-style-type: none"> <li>Located along Constitution Avenue between 14th and 15th streets, the building eliminates a significant portion of the historic open space of the Washington Monument Grounds and diminishes the prominence of the Washington Monument as the central organizing feature of the grounds</li> <li>The building also alters the spatial conception of the historic boundaries of the Washington Monument Grounds by extending the existing row of museums along the National Mall into the grounds</li> </ul>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme</p>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme, except:</p> <ul style="list-style-type: none"> <li>The relationship with the row of museums along the National Mall is emphasized by the fact that the center line of the Pavilion Scheme aligns with the center line of the museum buildings. (See also effects on the site's unique position at the western end of the sequence of museum buildings facing the National Mall)</li> </ul>



		PLINTH	PLAZA	PAVILION
20		<p><b>***Major adverse effect</b> on the significant vegetative features of the Washington Monument Grounds</p> <ul style="list-style-type: none"> <li>The footprint of the building eliminates a large portion of the open lawn that defines the ground plane of the Washington Monument Grounds</li> <li>The landscape design features water elements and hardscape areas that occupy additional areas of open lawn and changes the character of the vegetation on the site</li> <li>The building diminishes the visual impact of the street trees that delineate the perimeter of the Washington Monument Grounds.</li> </ul>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme, except:</p> <ul style="list-style-type: none"> <li>The Plaza Scheme has the greatest footprint of all the schemes</li> <li>The landscape design for this scheme features the most hardscape</li> </ul>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme, except:</p> <p><b>Design Advantages</b></p> <ul style="list-style-type: none"> <li><i>The Pavilion Scheme occupies the smallest footprint of all the schemes</i></li> </ul>
21		<p><b>***Major adverse effect</b> on the established land uses of the Washington Monument Grounds</p> <ul style="list-style-type: none"> <li>The building's footprint occupies a significant portion of the site, reducing the amount of public gathering and recreational space, eliminating the site's use as a permanent special event area, and constituting a change in the historic use of the land for expression of First Amendment freedoms</li> <li>The landscape design introduces formalized spaces and alters the traditional informal setting of the Washington Monument Grounds</li> </ul>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme, except:</p> <p><b>Design Advantages</b></p> <ul style="list-style-type: none"> <li><i>The plaza element between the support building and the Corona has the potential to create an active public outdoor space and special event area</i></li> </ul>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme, except:</p> <p><b>Design Advantages</b></p> <ul style="list-style-type: none"> <li><i>The Pavilion Scheme occupies the smallest footprint of all the schemes</i></li> </ul>
22	The surrounding larger landscape and fluidity of movement across the site	<p><b>**Moderate adverse effect</b></p> <ul style="list-style-type: none"> <li>See effects on the topography of the Washington Monument Grounds</li> <li>See effects on the circulation features of the Washington Monument Grounds</li> <li>See effects on the spatial organization of the Washington Monument Grounds</li> <li>See effects on the vegetative features of the Washington Monument Grounds</li> </ul>	<p><b>**Moderate adverse effect</b> – Same effects as the Plinth Scheme</p>	<p><b>**Moderate adverse effect</b> – Same effects as the Plinth Scheme</p>

		PLINTH	PLAZA	PAVILION
<b>RELATIONSHIP TO ADJACENT ARCHITECTURAL AND URBAN CONTEXT</b>				
23	The site's relation to each of its adjacent contexts – the historic Mall, the Washington Monument Grounds, and the urban grid of the adjacent city	<p><b>***Major adverse effect</b> on the site's relation to the urban grid of the adjacent city</p> <ul style="list-style-type: none"> <li>The building alters the visual setting of the Federal Triangle</li> <li>The Corona has an atypical visual character that diverts attention from the buildings of the Federal Triangle</li> <li>The building intrudes upon the historic setting of the Federal Triangle buildings by altering their relationship with the open space of the Washington Monument Grounds</li> </ul>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme, except:</p> <ul style="list-style-type: none"> <li>The facade of the support building, composed of a minimally detailed curtain wall, contrasts with the prevailing vocabulary of the buildings along Constitution Avenue</li> </ul>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme</p>
24		<p><b>***Major adverse effect</b> on the site's relation to the historic Mall</p> <ul style="list-style-type: none"> <li>See effects under General Composition of National Mall</li> </ul>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme</p>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme</p>
25		<p><b>***Major adverse effect</b> on the site's relation to the Washington Monument Grounds</p> <ul style="list-style-type: none"> <li>See effects under Context of the Washington Monument Grounds</li> </ul>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme</p>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme</p>
26	The site's unique position at the western end of the sequence of museum buildings facing the historic Mall	<p><b>**Moderate adverse effect</b></p> <ul style="list-style-type: none"> <li>Although located outside the boundaries of the historic Mall, the NMAAHC site will be perceived as an extension of the museum buildings along the north side of the historic Mall, which serve to reinforce the channel of space and vista between the Capitol and the Washington Monument</li> <li>The building, which is one-dimensional and directional (axial north-south), is inconsistent with the existing east-west axial arrangement of the museum buildings along the north side of the historic Mall</li> </ul>	<p><b>**Moderate adverse effect</b></p> <ul style="list-style-type: none"> <li>Although located outside the boundaries of the historic Mall, the NMAAHC site will be perceived as an extension of the museum buildings along the north side of the historic Mall, which serve to reinforce the channel of space and vista between the Capitol and the Washington Monument</li> <li>The Corona, which is located south on the NMAAHC site beyond the existing setbacks of the museum buildings along the historic Mall, is inconsistent with the Mall's spatial organization</li> <li>The Corona violates the McMillan Plan setback, established to be 445'0" from the centerline of the historic Mall</li> </ul>	<p><b>*Minor adverse effect</b></p> <ul style="list-style-type: none"> <li>Although located outside the boundaries of the historic Mall, the NMAAHC site will be perceived as an extension of the museum buildings along the north side of the historic Mall, which serve to reinforce the channel of space and vista between the Capitol and the Washington Monument</li> </ul> <p><b>Design Advantages</b></p> <ul style="list-style-type: none"> <li><i>The center line of the building aligns with the center line of the museum buildings along the historic Mall</i></li> <li><i>The building's location on the site is consistent with existing setbacks</i></li> <li><i>See also effects on the spatial organization of the Washington Monument Grounds</i></li> </ul>

		PLINTH	PLAZA	PAVILION
27	The prevailing height and the prevailing setback of the primary building volumes (not terraces) of the museums along the historic Mall and Constitution Avenue	<p><b>*Minor adverse effect</b></p> <ul style="list-style-type: none"> <li>The Plinth Scheme is the tallest of all the schemes. The height of the building (134'6" to the top of the penthouse) exceeds the height of the National Museum of American History (106'6" to the top of the penthouse) and the height of the U.S. Department of Commerce building (126'4" to the top of the ridge)</li> <li>The setback of the Corona aligns with the setback of the south facade of the National Museum of American History, and the setback of the southern extension plinth aligns with the south facade of the National Museum of Natural History</li> </ul>	<p><b>**Moderate adverse effect</b></p> <ul style="list-style-type: none"> <li>The Plaza Scheme has the greatest impact on prevailing setbacks and building heights in that it extends the farthest into the setbacks along the historic Mall and Constitution Avenue</li> <li>The support building at the northwest corner of the site is directly adjacent to Constitution Avenue. This is inconsistent with the existing setbacks along the south side of Constitution Avenue, where there is no precedent for a building facade so close to the street</li> <li>The height of the Corona building (134'0" to the top of the penthouse) exceeds the height of the National Museum of American History (106'6" to the top of the penthouse) and the height of the U.S. Department of Commerce building (126'4" to the top of the ridge)</li> </ul>	<p><b>*Minor adverse effect</b></p> <ul style="list-style-type: none"> <li>The height of the building (132'6" to the top of the penthouse) exceeds the height of the National Museum of American History (106'6" to the top of the penthouse) and the height of the U.S. Department of Commerce building (126'4" to the top of the ridge)</li> </ul> <p><b><u>Design Advantages</u></b></p> <ul style="list-style-type: none"> <li><i>The center line of the building aligns with the center line of the museum buildings along the historic Mall</i></li> <li><i>The building's location on the site is consistent with existing setbacks</i></li> </ul>
28	Compatibility of all four facades and the roof, service/support functions, and perimeter security to adjacent architectural and urban context	<p><b>*Minor adverse effect</b> on compatibility with the adjacent architectural context</p> <ul style="list-style-type: none"> <li>The building has an atypical visual character that diverts attention from and alters the setting of the buildings and buildings in the vicinity of the NMAAHC site. (Note: Additional analysis of effects of perimeter security will be included as more information becomes available.)</li> </ul>	<p><b>*Minor adverse effect</b> – Same effects as the Plinth Scheme, except:</p> <ul style="list-style-type: none"> <li>The facade of the support building, composed of a minimally detailed curtain wall, contrasts with the buildings of the Federal Triangle, the historic Mall, and the Washington Monument Grounds. (Note: Additional analysis of effects of perimeter security will be included as more information becomes available.)</li> </ul>	<p><b>*Minor adverse effect</b> –Same effects as the Plinth Scheme</p>

		<b>PLINTH</b>	<b>PLAZA</b>	<b>PAVILION</b>
29		<p><b>*Minor adverse effect</b> on compatibility with the adjacent urban context</p> <ul style="list-style-type: none"> <li>The water element at the site's periphery introduces a new landscape element within the urban context</li> <li>The service entrance along 14th Street alters the street's existing character.</li> </ul>	<p><b>**Moderate adverse effect</b></p> <ul style="list-style-type: none"> <li>The support building alters the established setbacks and building edge character along Constitution Avenue, and the water element at its periphery introduces a new landscape element within the urban context</li> <li>The service entrance along 14th Street alters the street's existing character.</li> </ul>	<p><b>*Minor adverse effect</b> – Same effects as the Plinth Scheme</p>
30	The important non-cardinal views and directions of approach of the corner street crossings	<p><b>***Major adverse effect</b></p> <ul style="list-style-type: none"> <li>The location and massing of the building blocks views of the lower half and base of the Washington Monument and a large portion of the Washington Monument Grounds when viewed from the corner of 14th Street and Constitution Avenue, widely perceived as a "gateway" view</li> </ul>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme, except:</p> <ul style="list-style-type: none"> <li>The "gateway" view of the Washington Monument from 14th Street and Constitution remains obstructed, although the landscape design of the Plaza Scheme features a public plaza between the support building and the Corona</li> </ul>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme</p>
31	The important non-cardinal views and directions of approach of the historic historic Mall pathways	<p><b>***Major adverse effect</b></p> <ul style="list-style-type: none"> <li>The building intrudes into the pedestrian-level views of the Washington Monument Grounds from pathways along the western end of the historic Mall and can be seen in direct relation to the Washington Monument, diminishing its prominence</li> <li>The location of the Corona alters the established end point of the row of museum buildings along the historic Mall</li> <li>The height of the building projects vertically above the predominant tree line defining the eastern edge of the Washington Monument Grounds</li> </ul>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme</p>	<p><b>**Moderate adverse effect</b> – Same effects as the Plinth Scheme</p>

		PLINTH	PLAZA	PAVILION
32	The important non-cardinal views and directions of approach of the diagonal relationships with the Washington Monument, the Ellipse, and the Old Post Office	<p><b>***Major adverse effect</b> on important non-cardinal views and directions of approach from the Washington Monument Grounds</p> <ul style="list-style-type: none"> <li>• The building obstructs views to the Old Post Office tower and blocks views of several historic buildings within the Federal Triangle</li> <li>• The northern extension of the plinth partially conceals a portion of the south facade of the U.S. Department of Commerce building</li> <li>• The southern extension of the plinth conceals a portion of the west facade of the National Museum of American History</li> </ul>	<p><b>***Major adverse effect</b></p> <ul style="list-style-type: none"> <li>• The Corona partially obstructs views of the Old Post Office tower and conceals a portion of the west facade of the National Museum of American History</li> <li>• The Corona and the support building block views of several historic buildings within the Federal Triangle</li> <li>• The support building also conceals a portion of the south facade of the U.S. Department of Commerce Building</li> </ul>	<p><b>***Major adverse effect</b></p> <ul style="list-style-type: none"> <li>• The building obstructs views to the Old Post Office tower and blocks views of several historic buildings within the Federal Triangle</li> <li>• The Corona conceals a portion of the west facade of the National Museum of American History</li> </ul> <p><b>Design Advantages</b></p> <ul style="list-style-type: none"> <li>• <i>The U.S. Department of Commerce building remains visible</i></li> </ul>
33		<p><b>**Moderate adverse effect</b> on the important non-cardinal views and directions of approach from the Ellipse</p> <ul style="list-style-type: none"> <li>• Although the building appears distant as viewed from the Ellipse, the oblique angle of view creates a wide frontage within the panoramic view and can be seen in direct relation to the Washington Monument, diminishing its prominence</li> <li>• The height of the building also projects vertically above the predominant tree line</li> </ul>	<p><b>**Moderate adverse effect</b> – Same effects as the Plinth Scheme</p>	<p><b>**Moderate adverse effect</b> – Same effects as the Plinth Scheme</p>
34		<p><b>**Moderate adverse effect</b> on the important non-cardinal views and directions of approach from the Old Post Office</p> <ul style="list-style-type: none"> <li>• The height of the building positions the roofline above the visible point at which the base of the Washington Monument meets the ground, altering the existing view of the entire Monument</li> <li>• The mass of the building obstructs the northeast corner of the Washington Monument Grounds, altering the visual relationship between the Federal Triangle and the grounds</li> </ul>	<p><b>**Moderate adverse effect</b> – Same effects as the Plinth Scheme</p>	<p><b>**Moderate adverse effect</b> – Same effects as the Plinth Scheme</p>

BLENDED	REFINED PAVILION	COMMENTS FROM CONSULTING PARTIES
		
<p>Top of Corona: 118'-0" msl Top of Penthouse: 132'-6" msl Ground Floor Area: 59,390 SQF Site Area: 232,998 SQF Coverage: 25%</p>	<p>Top of Corona: 112'-6" msl Top of Penthouse: 122'-6" msl Ground Floor Area: 37,248 SQF Site Area: 233,342 SQF Coverage: 16%</p>	
<p>*This Effects Analysis Matrix is derived from the Design Principles developed specifically by the Smithsonian – through Section 106 consultation with interested parties, including the National Capital Planning Commission, the U.S. Commission of Fine Arts, the D.C. Historic Preservation Office, and the Advisory Council on Historic Preservation – to guide the design process for the proposed National Museum of African American History and Culture. The Design Principles summarize the analysis of the historic 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.</p>		
<p>***Major Effect: The serious adverse effect would diminish overall integrity, or alter a character-defining feature(s) of the National Register eligible/listed property.</p>		
<p>*Moderate Effect: The adverse effect is apparent and would diminish overall integrity, or would alter a character defining-feature(s) of the National Register eligible/listed property.</p>		
<p><b>GENERAL COMPOSITION OF THE NATIONAL MALL</b></p>		
<p>***Major adverse effect – Same effects as the Plinth Scheme</p>	<p>***Major adverse effect – Same effects as the Plinth Scheme</p>	

BLENDED	REFINED PAVILION	COMMENTS FROM CONSULTING PARTIES
<p><b>*Minor adverse effect</b> on the long views within the historic Mall – Same effects as the Plinth Scheme</p>	<p><b>*Minor adverse effect</b> – Same effects as the Plinth Scheme</p>	
<p><b>***Major adverse effect</b> on distant views of the Washington Monument Grounds from locations such as the top of the Washington Monument and the air – Same effects as the Plinth Scheme, except:</p> <p><b>Design Advantages</b></p> <ul style="list-style-type: none"> <li><i>The building at the northwest corner of the site - because it is beneath a landscaped roof - reads as open space when viewed from above</i></li> </ul>	<p><b>***Major adverse effect</b></p> <ul style="list-style-type: none"> <li>The building is a prominent new feature on the landscape</li> <li>It eliminates a significant portion of the historic open space of the Washington Monument Grounds</li> <li>It alters the visual boundaries of the northeast corner of the Washington Monument Grounds.</li> </ul> <p><b>Design Advantages</b></p> <ul style="list-style-type: none"> <li><i>It has the smallest footprint, ground floor area and coverage.</i></li> <li><i>The rolling topography, broadly sweeping paths, and informal, more naturalistic water elements of the landscape plan are compatible with the picturesque character of the Washington Monument Grounds, and the landscape plan references the Washington Monument Grounds by treating the building as an object in a field surrounded by open ground</i></li> </ul>	<ul style="list-style-type: none"> <li>In the Plinth Scheme, the Plaza Scheme, the Pavilion Scheme, and the Blended Scheme, minimize adverse effects on distant views of the Washington Monument Grounds from locations such as the top of the Washington Monument and from the air by modifying the treatment of the penthouse. In all three schemes the penthouse is located along the north edge of the roof of the Corona. This asymmetrical placement is inconsistent with the placement of the penthouse features of the museum buildings along the north side of the historic Mall. Center the penthouse on the Corona, following the precedent of the other buildings along the historic Mall.</li> <li>In the Plinth Scheme, minimize adverse effects on distant views of the Washington Monument Grounds from locations such as the top of the Washington Monument and from the air by pulling back or reducing the size of the plinth. Viewed from above, the cantilevered plinth increases the perceived mass of the building.</li> <li>In the Plaza Scheme, minimize adverse effects on distant views of the Washington Monument Grounds from locations such as the top of the Washington Monument and from the air by reducing the amount of hardscape in the landscape design.</li> </ul>
<p><b>**Moderate adverse effect</b> on distant views from the Old Post Office tower – Same effects as the Plinth Scheme</p>	<p><b>**Moderate adverse effect</b> – Same effects as the Plinth Scheme</p>	



BLENDED	REFINED PAVILION	COMMENTS FROM CONSULTING PARTIES
<p><b>No effect</b> on distant views from Arlington Cemetery – Same effects as the Plinth Scheme</p>	<p><b>No effect</b>– Same effects as the Plinth Scheme</p>	
<p><b>***Major adverse effect</b> on the panoramic view that opens and widens on the approach to the Washington Monument Grounds from the historic Mall</p> <ul style="list-style-type: none"> <li>The buildings eliminate a significant portion of the open space of the Washington Monument Grounds</li> </ul> <p><b>Design Advantages</b></p> <ul style="list-style-type: none"> <li><i>It has an advantage over the Plaza Scheme and the Refined Pavilion Scheme in that the Corona does not project as far south on the NMAAHC site and therefore has less effect on the panoramic view from the historic Mall</i></li> </ul>	<p><b>*** Major adverse effect</b> – Same effects as the Blended Scheme, except:</p> <p><b>Design Advantages</b></p> <ul style="list-style-type: none"> <li><i>The Refined Pavilion Scheme, however, has an advantage over the Plaza Scheme in that the Corona does not project as far south on the NMAAHC site and therefore has less effect on the panoramic view from the historic Mall</i></li> </ul>	<ul style="list-style-type: none"> <li>In the Blended Scheme, minimize adverse effects on the panoramic view that opens and widens on the approach to the Washington Monument Grounds from the historic Mall by adjusting the location of the Corona. Locate the Corona farther north on the NMAAHC site to be more consistent with the prevailing setbacks of the museum buildings along the historic Mall.</li> </ul>
<p><b>**Moderate adverse effect</b> on the panoramic views that open and widen on the approach to the Washington Monument Grounds from the Ellipse – Same effects as the Plinth Scheme</p>	<p><b>**Moderate adverse effect</b> – Same effects as the Plinth Scheme, except</p> <p><b>Design Advantages</b></p> <ul style="list-style-type: none"> <li><i>Its reduced mass and placement on the site reduces its impact on views of the Washington Monument Grounds when approaching from the Ellipse</i></li> </ul>	

BLENDED	REFINED PAVILION	COMMENTS FROM CONSULTING PARTIES
<p><b>***Major adverse effect</b>– Same effects as the Plinth Scheme</p>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme</p>	
<p><b>***Major adverse effect</b></p> <ul style="list-style-type: none"> <li>The buildings are located within a hinge site where the surrounding frame of buildings along the National Mall and within the surrounding urban context reaches its closest approach to the Washington Monument Grounds</li> <li>The Corona, which is located south on the NMAAHC site beyond the existing setbacks of the museum buildings along the historic Mall, does not respond to this hinge site and alters the character of the Washington Monument Grounds within the spatial conception of the Monumental Core</li> </ul> <p><u>Design Advantages</u></p> <ul style="list-style-type: none"> <li><i>It has an advantage over the Plaza Scheme in that it does not project as far south on the site and occupies a smaller footprint</i></li> </ul>	<p><b>***Major adverse effect</b> – Same effects as the Blended Scheme</p>	
<b>CONTEXT OF THE WASHINGTON MONUMENT GROUNDS</b>		
<p><b>*** Major adverse effect</b>– Same effects as the Plinth Scheme</p>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme, except:</p> <p><u>Design Advantages</u></p> <ul style="list-style-type: none"> <li><i>It has the smallest footprint</i></li> </ul>	<ul style="list-style-type: none"> <li>In the Plinth Scheme, the Plaza Scheme, the Pavilion Scheme, the Blended Scheme, and the Refined Pavilion Scheme minimize adverse effects on the Washington Monument by reworking the treatment of the west facades of the Coronas. In all schemes, the west elevations read as side facades, diminishing the prominence of the Washington Monument. Minimize adverse effects by addressing the treatment of the west facades to better relate to the Washington Monument Grounds without detracting from the idea of the entrance facades.</li> </ul>

BLENDED	REFINED PAVILION	COMMENTS FROM CONSULTING PARTIES
<p><b>**Moderate adverse effect</b> – Same effects as the Plinth Scheme, except:</p> <ul style="list-style-type: none"> <li>The sloped landscaped roof of the one-story building element at the northwest corner of the site introduces a new topography to the peripheral "flats" of the Washington Monument Grounds</li> </ul>	<p><b>*Minor adverse effect</b></p> <ul style="list-style-type: none"> <li>The building eliminates a portion of the peripheral flats of the Washington Monument Grounds</li> </ul> <p><b><u>Design Advantages</u></b></p> <ul style="list-style-type: none"> <li><i>The landscape plan features a rolling topography, broadly sweeping paths, and informal, naturalistic water elements that are compatible with the picturesque character of the Washington Monument Grounds</i></li> <li><i>It has the least impact on the topography of the Washington Monument Grounds because it occupies the smallest footprint of all the schemes</i></li> </ul>	<ul style="list-style-type: none"> <li>In the Blended Scheme, minimize adverse effects on the topography of the Washington Monument Grounds by refining the design of the one-story building element at the northwest corner of the NMAAHC site. The one-story building element, with its sloped roof, introduces a new topography to the peripheral "flats" of the Washington Monument Grounds. Minimize adverse effects by eliminating the building element or reducing the height of the lifted landscape.</li> </ul>
<p><b>***Major adverse effect</b> on the Bulfinch Gateposts</p> <ul style="list-style-type: none"> <li>The location of the Blended Scheme's one-story building element at the northwest corner of the site is directly adjacent to the gatepost located on the southeast corner of 15th Street and Constitution Avenue and significantly impacts its historic setting</li> </ul>	<p><b>**Moderate adverse effect</b></p> <ul style="list-style-type: none"> <li>The location of the museum on the Washington Monument Grounds alters the setting of the gatepost located on the southeast corner of 15th Street and Constitution Avenue</li> </ul> <p><b><u>Design Advantages</u></b></p> <ul style="list-style-type: none"> <li><i>The location and size of the Corona provides a greater setback from the gateposts than the other schemes</i></li> </ul>	
<p><b>***Major adverse effect</b> on the Monument Lodge – Same effects as the Plinth Scheme</p>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme, except:</p> <p><b><u>Design Advantages</u></b></p> <ul style="list-style-type: none"> <li><i>The Corona has the smallest volume and height of all the schemes</i></li> </ul>	<ul style="list-style-type: none"> <li>In the Plinth Scheme, the Plaza Scheme, the Pavilion Scheme, and the Blended Scheme, minimize adverse effects on the Monument Lodge by altering the treatment of the landscape design.</li> </ul>

BLENDED	REFINED PAVILION	COMMENTS FROM CONSULTING PARTIES
<p><b>**Moderate adverse effect</b> on the distinctive circulation features of the Washington Monument Grounds – Same effects as the Plinth Scheme</p>	<p><b>*Minor adverse effect</b></p> <ul style="list-style-type: none"> <li>The building removes open circulation from a portion of the Washington Monument Grounds</li> </ul> <p><b><u>Design Advantages</u></b></p> <ul style="list-style-type: none"> <li><i>It occupies the smallest footprint of all the schemes and features the most open lawn</i></li> <li><i>The primary circulation routes of the landscape plan consist of broadly sweeping curvilinear paths that acknowledge and are compatible with the existing pedestrian paths of the Washington Monument Grounds and the Ellipse</i></li> </ul>	<ul style="list-style-type: none"> <li>In the Plinth Scheme, the Plaza Scheme, the Pavilion Scheme, and the Blended Scheme, minimize adverse effects on the circulation of the Washington Monument Grounds by altering the treatment of the landscape design. The site design is formal in character. Minimize adverse effects by incorporating curvilinear circulation configurations and more open lawn to be more compatible with the informal, picturesque character of the Washington Monument Grounds.</li> </ul>
<p><b>*** Major adverse effect</b> on long views within the Washington Monument Grounds – Same effects as the Plinth Scheme</p>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme, except:</p> <p><b><u>Design Advantages</u></b></p> <ul style="list-style-type: none"> <li><i>It is lower and has a smaller volume than the other schemes</i></li> <li><i>It has the least impact on views of the Federal Triangle</i></li> </ul>	

BLENDED	REFINED PAVILION	COMMENTS FROM CONSULTING PARTIES
<p><b>***Major adverse effect</b> on pedestrian-level views from the Washington Monument looking northeast</p> <ul style="list-style-type: none"> <li>• The Corona obstructs views to the Old Post Office tower and blocks views of several historic buildings within the Federal Triangle</li> <li>• It conceals a portion of the west facade of the National Museum of American History</li> <li>• The one-story building element at the northwest corner of the site is visible from the Washington Monument Grounds, and its raised facade is a significant departure from the picturesque character of the grounds</li> <li>• The perceived proximity to the row of museum buildings along the historic Mall is reduced, with the building becoming the closest building to the Washington Monument in this direction.</li> </ul> <p><u>Design Advantages</u></p> <ul style="list-style-type: none"> <li>• <i>Unlike the Plinth Scheme, the U.S. Department of Commerce building remains visible</i></li> </ul>	<p><b>***Major adverse effect</b></p> <ul style="list-style-type: none"> <li>• The Corona obstructs views to the Old Post Office tower and blocks views of several historic buildings within the Federal Triangle</li> <li>• It conceals a portion of the west facade of the National Museum of American History</li> <li>• The perceived proximity to the row of museum buildings along the historic Mall is reduced, with the building becoming the closest building to the Washington Monument in this direction.</li> </ul> <p><u>Design Advantages</u></p> <ul style="list-style-type: none"> <li>• <i>Unlike the Plinth Scheme, the U.S. Department of Commerce building remains visible</i></li> <li>• <i>Since the Refined Pavilion Scheme has a smaller footprint and is lower than the other alternatives, its impact is slightly less than the Plaza, Plinth, Pavilion, or Blended schemes.</i></li> </ul>	<ul style="list-style-type: none"> <li>• In the Blended Scheme, minimize adverse effects on pedestrian-level views from the Washington Monument looking northeast by refining the design of the one-story building element at the northwest corner of the site. This building element is visible from the Washington Monument Grounds, and its glass facade is a significant departure from the picturesque quality of the grounds. Minimize adverse effects by relocating or reducing the height of the lifted landscape.</li> <li>* In the Plinth Scheme, the Plaza Scheme, the Pavilion Scheme, the Blended Scheme, and the Refined Pavilion Scheme minimize adverse effects on pedestrian-level views within the Washington Monument Grounds by moving security features farther toward the interior of the site. – Minimization suggestion with no corresponding adverse effect in the matrix.</li> </ul>
<p><b>***Major adverse effect</b> on the view looking north along 15th Street – Same effects as the Plinth Scheme</p>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme</p>	

BLENDED	REFINED PAVILION	COMMENTS FROM CONSULTING PARTIES
<p><b>***Major adverse effect</b> on views of the Washington Monument Grounds at night – Same effects as the Plinth Scheme</p>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme</p>	<ul style="list-style-type: none"> <li>• In the Plinth Scheme, the Plaza Scheme, the Pavilion Scheme, the Blended Scheme, and the Refined Pavilion Scheme minimize adverse effects on views of the Washington Monument Grounds at night by reducing exterior night lighting.</li> </ul>
<p><b>***Major adverse effect</b> on the spatial organization of the Washington Monument Grounds – Same effects as the Plinth Scheme</p>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme, except:</p> <p><b><u>Design Advantages</u></b></p> <ul style="list-style-type: none"> <li>• <i>It occupies the smallest footprint of all the schemes</i></li> <li>• <i>The rolling topography, broadly sweeping paths, and informal, naturalistic water elements of the landscape plan are compatible with the picturesque character of the Washington Monument Grounds</i></li> </ul>	<ul style="list-style-type: none"> <li>• In the Plinth Scheme, the Plaza Scheme, the Pavilion Scheme, and the Blended Scheme, minimize adverse effects on the spatial organization of the Washington Monument Grounds by altering the treatment of the landscape design. In all four schemes the buildings eliminate a significant portion of the historic open space of the Washington Monument Grounds. Minimize adverse effects by designing a landscape that is more harmonious with the informal, picturesque character of the Washington Monument Grounds. Minimize adverse effects by designing the landscape with direct views to the Washington Monument Grounds.</li> </ul>

BLENDED	REFINED PAVILION	COMMENTS FROM CONSULTING PARTIES
<p><b>***Major adverse effect</b> on the significant vegetative features of the Washington Monument Grounds – Same effects as the Plinth Scheme</p>	<p><b>**Moderate adverse effect</b> – Same effects as the Plinth Scheme, except:</p> <p><b><u>Minimization/Design Advantages</u></b></p> <ul style="list-style-type: none"> <li>• <i>It occupies the smallest footprint of all the schemes</i></li> <li>• <i>The rolling topography, broadly sweeping paths, and informal, naturalistic water elements of the landscape plan are compatible with the picturesque character of the Washington Monument Grounds</i></li> </ul>	
<p><b>***Major adverse effect</b> on the established land uses of the Washington Monument Grounds – Same effects as the Plinth Scheme</p>	<p><b>***Major adverse effect</b></p> <ul style="list-style-type: none"> <li>• The footprint of the Corona occupies a significant portion of the site, reducing the amount of outdoor public gathering and recreational space and eliminating the site’s use as a permanent special event area and constituting a change in the historic use of the land for expression of First Amendment freedoms</li> </ul> <p><b><u>Design Advantages</u></b></p> <ul style="list-style-type: none"> <li>• <i>It occupies the smallest footprint of all the schemes</i></li> </ul>	<ul style="list-style-type: none"> <li>• In the Plinth Scheme, the Plaza Scheme, the Pavilion Scheme, and the Blended Scheme, minimize adverse effects on land use by altering the treatment of the landscape design. In all four schemes the site design features formalized spaces and little public gathering or recreational space. Minimize adverse effects by increasing the opportunity for public-access landscape.</li> </ul>
<p><b>**Moderate adverse effect</b> – Same effects as the Plinth Scheme</p>	<p><b>**Moderate adverse effect</b> – Same effects as the Plinth Scheme</p>	

BLENDED	REFINED PAVILION	COMMENTS FROM CONSULTING PARTIES
<p><b>***Major adverse effect</b> on the site's relation to the urban grid of the adjacent city – Same effects as the Plinth Scheme, except:</p> <ul style="list-style-type: none"> <li>The one-story building element at the northwest corner of the site contrasts with the prevailing vocabulary of the buildings along Constitution Avenue</li> </ul>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme</p>	<ul style="list-style-type: none"> <li>In the Plinth Scheme, the Plaza Scheme, the Pavilion Scheme, and the Blended Scheme, minimize adverse effects on the site's relation to the urban grid of the adjacent city by refining the skin treatment of the Corona and reducing reflectivity.</li> </ul>
<p><b>***Major adverse effect</b> on the site's relation to the historic Mall – Same effects as the Plinth Scheme</p>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme</p>	
<p><b>***Major adverse effect</b> on the site's relation to the Washington Monument Grounds – Same effects as the Plinth Scheme</p>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme</p>	
<p><b>**Moderate adverse effect</b> – Same effects as the Plinth Scheme</p>	<p><b>**Moderate adverse effect</b></p> <ul style="list-style-type: none"> <li>Although located outside the boundaries of the historic Mall, the NMAAHC site will be perceived as an extension of the museum buildings along the north side of the historic Mall, which serve to reinforce the channel of space and vista between the Capitol and the Washington Monument</li> <li>The Corona, which is located south on the NMAAHC site beyond the existing setbacks of the museum buildings along the historic Mall, is inconsistent with the Mall's spatial organization</li> <li>The porch overhang on the south end of the Corona violates the McMillan Plan setback, established to be 445'0" from the centerline of the historic Mall</li> </ul>	



BLENDED	REFINED PAVILION	COMMENTS FROM CONSULTING PARTIES
<p><b>*Minor adverse effect</b></p> <ul style="list-style-type: none"> <li>The height of the Corona building (132'6" to the top of the penthouse) exceeds the height of the National Museum of American History (106'6" to the top of the penthouse) and the height of the U.S. Department of Commerce building (126'4" to the top of the ridge)</li> <li>The south facade of the Corona aligns with the south facade of the National Museum of Natural History</li> </ul>	<p><b>*Minor adverse effect</b></p> <ul style="list-style-type: none"> <li>The height of the Corona building (122'6" to the top of the penthouse) exceeds the height of the National Museum of American History (106'6" to the top of the penthouse)</li> </ul> <p><b><u>Design Advantages</u></b></p> <ul style="list-style-type: none"> <li><i>It is lower than the height of the U.S. Department of Commerce building (126'4" to the top of the ridge)</i></li> <li><i>The north elevation is set back farther from Constitution Avenue than are the other museums along the avenue</i></li> <li><i>The south elevation remains within the McMillan setback for the historic Mall</i></li> </ul>	<ul style="list-style-type: none"> <li>In the Blended Scheme, minimize adverse effects on the prevailing height and the prevailing setback of the primary building volumes of the museums along the historic Mall and Constitution Avenue by refining the design of the one-story building element at the northwest corner of the NMAAHC site.</li> <li>In the Plaza Scheme, minimize adverse effects on the prevailing height and the prevailing setback of the primary building volumes of the museums along the historic Mall and Constitution Avenue by refining the design and location of the support building along the north edge of the site to better recognize the spatial organization of the urban context.</li> </ul>
<p><b>*Minor adverse effect</b> on compatibility with the adjacent architectural context – Same effects as the Plinth Scheme</p>	<p><b>*Minor adverse effect</b> – Same effects as the Plinth Scheme</p>	<ul style="list-style-type: none"> <li>In the Plinth Scheme, the Plaza Scheme, the Pavilion Scheme, and the Blended Scheme minimize adverse effects on compatibility with the adjacent architectural context by refining the skin treatment of the Corona and minimizing reflectivity and night lighting.</li> </ul>

BLENDED	REFINED PAVILION	COMMENTS FROM CONSULTING PARTIES
<p><b>**Moderate adverse effect</b> on compatibility with the adjacent urban context</p> <ul style="list-style-type: none"> <li>The water element at the site’s periphery introduces a new landscape element within the urban context</li> <li>The service entrance along 14<sup>th</sup> Street alters the street’s existing character</li> <li>The one-story building element at the northwest corner of the site with its sloping landscaped roof alters the established setbacks and building edge character along Constitution Avenue</li> </ul>	<p><b>*Minor adverse effect</b> – Same effects as the Plinth Scheme</p>	<p>* In the Plinth Scheme, the Plaza Scheme, the Pavilion Scheme, the Blended Scheme, and the Refined Pavilion Scheme, avoid the adverse effects of the loading dock on the adjacent architectural and urban context by sharing the loading dock with the National Museum of American History or minimize its adverse effects by reducing its size or screening it from view.</p>
<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme, except:</p> <ul style="list-style-type: none"> <li>The one-story building element at the northwest corner of the site obstructs views of the Washington Monument Grounds</li> </ul>	<p><b>***Major adverse effect</b> – Same effects as the Plinth Scheme, except:</p> <p><b><u>Design Advantages</u></b></p> <ul style="list-style-type: none"> <li><i>It has an advantage over the Plinth, Pavilion, and Blended schemes in that it is lower and farther south, and therefore blocks less of the Washington Monument</i></li> </ul>	<ul style="list-style-type: none"> <li>In the Blended Scheme, minimize adverse effects on important non-cardinal views from principal corner street crossings by refining the design of the one-story building element at the northwest corner of the site. The location of this building element on the NMAAHC site obstructs pedestrian-level views of the Washington Monument Grounds. Minimize adverse effects by relocating or reducing the height of the lifted landscape.</li> </ul>
<p><b>**Moderate adverse effect</b> – Same effects as the Plinth Scheme</p>	<p><b>**Moderate adverse effect</b> – Same effects as the Plinth Scheme, except:</p> <p><b><u>Design Advantages</u></b></p> <ul style="list-style-type: none"> <li><i>Both the height and volume have been reduced, thereby lessening the impact on views from the historic Mall</i></li> </ul>	

BLENDED	REFINED PAVILION	COMMENTS FROM CONSULTING PARTIES
<p><b>***Major adverse effect</b> on important non-cardinal views and directions of approach from the Washington Monument Grounds</p> <ul style="list-style-type: none"> <li>• The Corona obstructs views to the Old Post Office tower and blocks views of several historic buildings within the Federal Triangle</li> <li>• The Corona conceals a portion of the west facade of the National Museum of American History</li> </ul> <p><b>Design Advantages</b></p> <ul style="list-style-type: none"> <li>• <i>The U.S. Department of Commerce building remains visible</i></li> </ul>	<p><b>***Major adverse effect</b> – Same effects and Minimization/Design Advantages as the Blended Scheme</p>	
<p><b>**Moderate adverse effect</b> on the important non-cardinal views and directions of approach from the Ellipse- Same effects as the Plinth Scheme</p>	<p><b>**Moderate adverse effect</b> – Same effects as the Plinth Scheme</p>	
<p><b>**Moderate adverse effect</b> on the important non-cardinal views and directions of approach from the Old Post Office – Same effects as the Plinth Scheme</p>	<p><b>**Moderate adverse effect</b> – Same effects as the Plinth Scheme</p>	

This page is intentionally left blank

## **E. ERRATA**



This page is intentionally left blank

**ERRATA FOR THE DRAFT EIS**

The purpose of this section is to provide a compilation of clarifications to the Tier II Draft EIS, including text, tables, and figures based on internal reviews. These corrections include typographical or grammatical errors that could alter the meaning of a sentence or paragraph, numerical revisions for consistency purposes, and updated factual data. The clarifications provided here do not change the analyses or the findings of the Tier II Draft EIS.

**E.1 EXECUTIVE SUMMARY**

- Page i First paragraph, first sentence insert “located in the northwest quadrant of the District,” between “the National Mall” and “bounded by Constitution.”
- Page iv Second paragraph, first sentence replace “under” between “For the purpose of this analysis, with” and “the No Action Alternative” with “with.”
- Page iv Fifth paragraph, fifth sentence replace “between” between “the Corona would vary among” and “the action alternatives” with among.
- Page vii Third paragraph, second sentence replace “areas for collection (rainwater)” with “areas for collection of rainwater (retention).”
- Page vii Fourth paragraph, first sentence replace “improve” with “reduce.”
- Page vii Fourth paragraph, second sentence add “for certification” after “LEED points that could be obtained.”
- Page ix First paragraph, fifth sentence delete “of the Corona” between “west of the Corona base” and “on the ground floor.”
- Page x First paragraph, second sentence insert “over” between “building porch by crossing” and “a shallow reflecting pool.”
- Page xvi Third paragraph, first sentence replace “294,000 gross square feet” with “308,000 gross square feet.”
- Page xvi Third paragraph, second sentence replace “98 feet” with “96 feet.”
- Page xvi Third paragraph, third sentence replace “108 feet” with “106 feet.”
- Page xvi Third paragraph, fifth sentence replace “32 feet” with “28 feet 6 inches.”

- Page xvi Fourth paragraph, second sentence replace Corona measurement of “214 feet” with “210 feet” for length and width.
- Page xix Table ES.1 Comparison of Action Alternatives, under Action Alternative 1 – Plinth replace “113 feet” with “13 feet” for Elevation of Site Above Mean Sea Level.
- Page xix Table ES.1 Comparison of Action Alternatives, under Action Alternative 4 – Refined Pavilion replace Corona dimensions of “214 feet x 214 feet” with “210 feet x 210 feet” and replace Gross Square Footage of “294,000” with “308,000.”
- Page xxv Table ES.2 Tier II Draft EIS Impact Summary, under Pavilion Alternative move “The larger spatial organization of the National Mall” from the Major/significant adverse effects category to the Moderate/significant effects category.

## **E.2 CHAPTER 1: INTRODUCTION AND BACKGROUND**

- Page 1-1 First paragraph, second sentence delete “however,” between “Smithsonian museums;” and “there is no permanent exhibition facility.”
- Page 1-2 First paragraph, third sentence should read “The analysis in this Tier II Draft EIS is focused on the issues that were not resolved in the Tier I EIS process including:”
- Page 1-17 Fourth paragraph, fifth sentence replace “deck” with “dock.”
- Page 1-25 Table 1.1 Cumulative Impact Projects, delete “Monument Lodge Underground Security Screening and Entryway” from the Future Projects column and delete “With this project, the current Washington Monument Lodge would be extended undergrounds towards 15<sup>th</sup> Street NW allowing for the construction of a security screening area and entryway” from the Description column.

## **E.3 CHAPTER 2: DESCRIPTION OF ALTERNATIVES**

- Page 2-6 Fifth paragraph, fourth bullet point replace “WASA” with “DC Water.”
- Page 2-14 Fourth paragraph, first sentence insert “water conservation and” between “some of the potential” and “stormwater management strategies.”
- Page 2-14 Fourth paragraph, second sentence replace “areas for collection (rainwater)” with “areas for collection of rainwater (retention).”
- Page 2-14 Fifth paragraph, third sentence insert “for building certification” after “LEED points that could be obtained.”



- Page 2-22 Fifth paragraph, fourth sentence should read “No section of the sidewalk would be less than 14 feet wide.”
- Page 2-24 Third paragraph, third sentence delete “provide” between the center of the plaza will” and “reveal exhibit space.”
- Page 2-30 Sixth paragraph, fourth sentence delete “however,” between “the driveway entrance;” and “the length of the driveway.”
- Page 2-36 Fifth paragraph, first sentence replace “32 feet” with “30 feet.”
- Page 2-37 Table 2.3 Building Height of Pavilion Alternative replace “-32 feet” with “-30 feet” for Basement Building Elevation Relative to Mean Sea Level (MSL).
- Page 2-44 Third paragraph, first sentence replace “294,000 gross square feet” with “308,000 gross square feet.”
- Page 2-44 Third paragraph, second sentence replace “98 feet” with “96 feet.”
- Page 2-44 Third paragraph, third sentence replace “108 inches” with “106 feet.”
- Page 2-44 Third paragraph, fifth sentence replace “32 feet” with “28 feet 6 inches.”
- Page 2-45 Table 2.4 Building Height of Refined Pavilion Alternative, replace “98 feet” with “96 feet” for Top of Corona Building Height Relative to Average Grade.
- Page 2-45 Table 2.4 Building Height of Refined Pavilion Alternative, replace “108 feet” with “106 feet” for Top of Penthouse Building Height Relative to Average Grade.
- Page 2-45 Table 2.4 Building Height of Refined Pavilion Alternative, replace “-32 feet” with “-28 feet 6 inches” for Basement Building Elevation Relative to Mean Sea Level (MSL).
- Page 2-46 Second paragraph, first sentence replace “Revised” with “Refined.”
- Page 2-49 Table 2.5 Comparison of Action Alternatives, under Action Alternative 4 – Refined Pavilion replace Corona dimensions of “214 feet x 214 feet” with “210 feet x 210 feet” and replace Gross Square Footage of “294,000” with “308,000.”
- Page 2-49 Table 2.5 Comparison of Action Alternatives, under Action Alternative 2 – Plaza Alternative replace “14<sup>th</sup> Street” with “Constitution Avenue” for the Staff Entrance.

#### **E.4 CHAPTER 3: AFFECTED ENVIRONMENT AND IMPACTS TO THE HUMAN ENVIRONMENT**

- Page 3-19 Second paragraph, after second sentence add “The NPS Tourmobile Sightseeing provides intermittent tour bus services on the National Mall with routes along 14<sup>th</sup> Street, 15<sup>th</sup> Street, and Madison Drive, and stops on 15<sup>th</sup> Street and on Madison Drive, in the vicinity of the NMAAHC site. Free all-day parking lots are available for Tourmobile patrons near the Jefferson Memorial. Spaces are limited and available on a first come, first serve basis.”
- Page 3-23 Third paragraph, second sentence add “including special events that could result in soil compaction and turf compaction” after “informally across the green space.”
- Page 3-46 First paragraph, fifth sentence should read “The Plinth Alternative would have a footprint area of 85,804 square feet and measure, from a future average site elevation of 13 feet, approximately 118 feet msl to the top of the Corona and 134 feet 6 inches msl to the top of the penthouse.”
- Page 3-57 Second paragraph, first sentence should read “The Plaza Alternative would measure, from a future average site elevation of 13 feet, approximately 118 feet above sea level to the top of the Corona and 132 feet 6 inches above sea level to the top of the penthouse.”
- Page 3-69 First paragraph, fourth sentence should read “The Pavilion Alternative would have a footprint area of 60,229 square feet and would measure, from a future average site elevation of 15 feet, approximately 118 feet msl to the top of the Corona and 132 feet 6 inches msl to the top of the penthouse.”
- Page 3-77 Third paragraph, second sentence replace “major” with “moderate.”
- Page 3-81 First paragraph, third sentence should read “The Refined Pavilion Alternative would have a footprint area of 53,750 square feet and measure, from a future average site elevation of 16 feet 6 inches, approximately 112 feet 6 inches msl to the top of the Corona and 122 feet 6 inches msl to the top of the penthouse.”
- Page 3-98 Second paragraph, fourth sentence should read “Finally, adjacent building elevations measured from sea level to the peak of roofs vary from 108 feet at the U.S. Treasury building, to 143 feet at the Mellon Auditorium.”
- Page 3-99 Figure 3.4.1 Elevation Showing Relative Building Heights in the Vicinity of the Project Site replaced with updated graphic depicting building heights; including the addition of the Washington Monument Lodge, and more accurate field survey data for existing buildings.

- Page 3-101 Third paragraph, first and second sentences should read “Measuring their relative elevations at the highest point on their roofs, the Plinth Alternative would be approximately 13.5 feet higher than NMAH, 8.5 feet higher than the Herbert C. Hoover building, and 8.5 feet lower than the EPA Headquarters and Mellon Auditorium building. The top of the Corona would be 29 feet taller than the cornice of the adjacent NMAH, 1 foot taller than the top of the wing of the EPA Headquarters and Mellon Auditorium, and 5 feet higher than the top of the facade at the Herbert C. Hoover Building.”
- Page 3-103 Figure 3.4.2 Plinth Alternative: Elevation Showing Relative Building Heights in the Vicinity of the Project Site replace with updated graphic depicting building heights; including the addition of the Washington Monument Lodge, and more accurate field survey data for existing buildings.
- Page 3-105 First paragraph, fifth and sixth sentences should read “Measuring their relative elevations at the highest point on the roofs, the Plaza Alternative would be approximately 11.5 feet taller than NMAH, 6.5 feet taller than the Herbert C. Hoover building, and 10.5 feet shorter than the EPA Headquarters and Mellon Auditorium building. Similarly, the height of the Corona would be 29 feet taller than the cornice of the adjacent NMAH, 1 foot taller than the top of the wing of the EPA Headquarters and Mellon Auditorium building, and 5 feet higher than the top of the facade at the Herbert C. Hoover Building.”
- Page 3-106 Figure 3.4.4 Plaza Alternative: Elevation Showing Relative Building Heights in the Vicinity of the Project Site replace with updated graphic depicting building heights; including the addition of the Washington Monument Lodge, and more accurate field survey data for existing buildings.
- Page 3-108 Third paragraph, second sentence should read “The exterior materials of the Corona and the northern building proposed in Alternative 2 - Plaza Concept, both a bronze metal and expansive glass, would contrast with the surrounding building materials in color and finish.”
- Page 3-109 First paragraph, second sentence replace “105 feet” with “103 feet.”
- Page 3-109 Second paragraph, first and second sentences should read “Measuring their relative elevations at the highest point on the roofs, the Pavilion Alternative would be approximately 11.5 feet taller than NMAH, 6.5 feet taller than the Herbert C. Hoover building, and 10.5 feet shorter than the EPA Headquarters and Mellon Auditorium building. The height of the Corona would be taller 29 feet taller than the cornice of the adjacent NMAH, 1 foot taller than the top of the wing of the EPA Headquarters and Mellon Auditorium building, and 5 feet higher than the top of the facade at the Herbert C. Hoover Building.”
- Page 3-110 Figure 3.4.6 Pavilion Alternative: Elevation Showing Relative Building Heights in the Vicinity of the Project Site replace with updated graphic depicting building heights; including the addition of the Washington Monument Lodge, and more accurate field survey data for existing buildings.

- Page 3-113 First paragraph, second sentence replace “99 feet” with “96 feet.”
- Page 3-113 First paragraph, fifth and sixth sentences should read “Measuring their relative elevations at the highest point on the roofs, the Pavilion Alternative would be approximately 1.5 feet taller than NMAH, 3.5 feet shorter than the Herbert C. Hoover building, and 20.5 feet lower than the EPA Headquarters and Mellon Auditorium building. Similarly, the height of the Corona would be approximately 23.5 feet taller than the cornice of the adjacent NMAH, approximately the 4.5 feet shorter than the top of the wing at the EPA Headquarters and Mellon Auditorium, and nearly the same height as the top of the façade at the Herbert C. Hoover building.”
- Page 3-114 Figure 3.4.8 Refined Pavilion Alternative: Elevation Showing Relative Building Heights in the Vicinity of the Project Site replace with updated graphic depicting building heights; including the addition of the Washington Monument Lodge, and more accurate field survey data for existing buildings.
- Page 3-134 First paragraph, third sentence should read “there would be moderate/significant effects during the fall and winter months when the leaves are off the trees.”
- Page 3-147 First paragraph, second sentence should read “Potential impacts of natural resources on-site were addressed in the Tier I EIS.”
- Page 3-175 First paragraph, first sentence replace “240,000 gross square feet” with “308,000 gross square feet.”
- Page 3-176 Third paragraph, second sentence replace “240,000 gross square feet” with “308,000 gross square feet.”
- Page 3-193 Figure 3.7.8 Public Transportation replace with updated graphic depicting Tourmobile stops on Madison Drive and 15<sup>th</sup> Streets.
- Page 3-220 Fifth paragraph, first sentence add “Smithsonian” between “the nearby” and “Institution.”

## **E.5 CHAPTER 5: REFERENCES**

- Page 5-1 First reference add “Care of Trees, The. 2011. “Observations for NMAAHC.” Prepared for the Smithsonian Institution by Tony Faoro, Certified Arborist, The Care of Trees, Gaithersburg, MD.”
- Page 5-3 Third Froehling & Robertson, Inc. reference add “2010c Report of Preliminary Subsurface Exploration and Geotechnical Engineering Evaluation for the *Proposed National Museum of African American History and Culture Site, 15<sup>th</sup> Street NW & Constitution Avenue, Washington, DC.* October 13, 2010. Prepared for the Freelon Group.”

**E.6 CHAPTER 8: DISTRIBUTION LIST**

- Page 8-1 Second listing replace “Maria Burks, Acting Superintendent” with “Robert Vogel, Superintendent.”
- Page 8-1 Sixth listing replace “William S. Arguto” with “Barbara Rudnick.”
- Page 8-2 Seventh listing replace “Gabe Klein, Director” with “Terry Bellamy, Interim Director.”
- Page 8-5 First listing replace “Dr. Pierre Vigilance” with “Dr. Mohammad N. Akhter.”
- Page 8-9 Fifth listing replace “Mayor Adrian Fenty” with “Mayor Vincent C. Gray.”
- Page 8-9 Seventh listing replace “Vincent C. Gray, Chairman” with “Kwame R. Brown, Chairman.”
- Page 8-9 Eighth listing replace “Jack Evans, Chairman Pro Tempore” with “Mary M. Cheh, Chair Pro Tempore.”
- Page 8-9 Ninth listing replace “Kwame R. Brown, Council Member At- Large” with “Vincent B. Orange, Sr., Council Member At- Large.”
- Page 8-9 Fourteenth listing move “Jack Evans, Ward Two Council Member.”

This page is intentionally left blank