



REVITALIZATION OF THE NATIONAL AIR AND SPACE MUSEUM

Independence Avenue at 6th Street SW, Washington, DC 20560

FINDING OF NO SIGNIFICANT IMPACT

Pursuant to Section 102(2)(C) of the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) Regulations (40 CFR, Parts 1500-1508), and the National Capital Planning Commission's (NCPC) NEPA Regulations, I have evaluated the preliminary and final site and building plans for the Revitalization of the National Air and Space Museum, located on the south side of the National Mall in Southwest Washington, DC, as shown on NCPC Map File No. 1.41(38.00)44713; and the Revitalization of the National Air and Space Museum Environmental Assessment (EA) prepared by the Smithsonian Institution (SI), as project owner, for which NCPC was the lead agency; and the comments NCPC received on the EA. The EA is incorporated into this Finding of No Significant Impact (FONSI) by reference. Based on the foregoing, I have determined that Alternative C: Replacement Cladding with a Natural Stone with Similar Appearance to the Original Cladding, and Vestibule Design Option A: Flight will not have a significant impact on the human environment and therefore an Environmental Impact Statement will not be prepared. The specific stone that is being used is Colonial Rose Granite.

Purpose and Need

The purpose of the project is to revitalize the National Air and Space Museum (NASM) building and grounds, improve the visitor experience, protect museum collections, and allow the museum to better perform the mission for which it was created: to "commemorate the national development of aviation and spaceflight, educate and inspire the nation." In particular, the project entails replacing NASM's building exterior envelope and major building systems; revitalizing the landscape surrounding the building; improving site accessibility and building entrances; reducing carbon emissions and energy consumption.

The project is needed to address specific deficiencies related to the building systems and exterior envelope. Completed in 1976 for the nation's Bicentennial celebration, the weathering of the building has accelerated by the limited longevity of building components that were downgraded as part of the original construction in order to reduce cost and schedule. An example of the value engineering strategies included the use of a non-traditional wall construction, consisting of thin (1-1/4 inch thick) Tennessee Pink Marble (limestone) panels supported on a light steel frame with spray foam insulation applied on the back of the stone, in lieu of a thicker stone supported on a

masonry wall. The wall assembly did not provide adequate resistance to water penetration and air infiltration, and has resulted in extensive warping and cracking of the stone panels. The exterior cladding is integrated with the mechanical air distribution system, and therefore, it is necessary to undertake these upgrades simultaneously.

Today, the building's Tennessee Pink Marble cladding is deteriorating, does not meet current requirements for energy performance and insulation and must be replaced. The HVAC, plumbing and fire protection systems are inadequate, and at the end of their service lives. The waterproofing membrane of the terrace surrounding the building and building roof are beyond their projected life span. The terrace leaks into the underground parking level. Leaks have prevented the Delta Solar shallow pool from having an active water feature since 1995. The skylights, curtain walls, and entrances do not provide the required interior environmental conditions necessary to protect the museum collections. Accessible ramps are not centrally located. Entrances lack adequate queuing space, security screening requirements, and a sufficient buffer between exterior and interior environments.

Proposed Action

The revitalization is a complex project with numerous components, including improvements to exterior building envelope, entrances, landscape, and major building systems. The scope of the project entails the revitalization of the existing 687,000 gross-square-foot NASM building and museum grounds. The Smithsonian Institution (SI) proposes to replace the NASM's failing building exterior envelope, including wall assembly, stone cladding, curtain walls, skylights and roof systems. Specific components of the project include: revitalization of the 112,000 gross-square-foot terrace; replacement of building envelope including 160,600 gross-square-foot of stone cladding façade, plus 37,850 gross square feet of site walls, 40,000 gross-square-foot of curtain wall, 52,000 gross-square-foot of skylight and 70,000 gross-square-foot of roof area.

The project also includes replacing major building systems (including mechanical, electrical, plumbing, fire protection, life safety, information technology and security), and upgrading the structural frame and blast protection. The project also addresses related work including improvements to site accessibility; revitalization of the landscape; stormwater management; replacement of the terrace waterproofing, paving, planter wall cladding, portions of perimeter security, and planting. In addition the project includes a new 3,480 square foot security pavilion at the north entrance. A canopy at the south entrance is addressed in the EA and remains a desirable addition, if future funding permits.

The proposed action will include many sustainable strategies to reduce carbon emissions and energy consumption. The SI seeks to achieve a minimum of LEED Gold® certification from the U.S. Green Building Council, and reduce total building greenhouse gas emissions by a minimum of 32% by 2020 according to the SI's Strategic Sustainability Performance Plan. Furthermore, the

project intends to reduce energy use intensity (EUI) by 80% as compared to the average EUI of comparable buildings based on the American Institute of Architects 2030 Challenge.

Alternatives

The EA considered four alternatives including a no action alternative (Alternative A) and three action alternatives, Alternative B: Tennessee Pink Marble in-kind Replacement Stone; Alternative C: Replacement Cladding with an Alternate Natural Stone with Similar Appearance to the Original Cladding; and Alternative D: Replacement Cladding with a Manufactured Material. The action alternatives include common ways to address building and site deficiencies through: replacement of building systems and exterior envelope (curtain walls, skylights, and roof); addition of security vestibules; relocation of outdoor sculptures; and terrace alterations. The action alternatives differ only in their approach to replacement of the exterior stone cladding of the building, as well as the cladding for perimeter security walls and planters, which will match the proposed building cladding.

The EA also includes two options for the proposed security vestibules at the north and south entrances, both are similar in massing, scale, and function but differ in their form and architectural expression: Vestibule Design Option A: Flight, is composed of a tensile roof that evokes the mission of the museum; and Vestibule Design Option B: Glass Box, mimics the orthogonal massing of the existing building but uses glass instead of stone to maintain views. Alternative C with Vestibule Design Option A is identified as the selected alternative and is the alternative for which NCPC is issuing this Finding of No Significant Impact. The alternatives are described in Chapter 2 of the EA and the selected alternative and vestibule option are summarized below.

Alternative C: Replacement Cladding with Colonial Rose Granite, which is an Alternate Natural Stone with Similar Appearance to the Original Cladding

Alternative C entails replacing the existing NASM's exterior wall cladding, which consists of one and a quarter inch (1-1/4") thick Tennessee Pink Marble panels, with three-inch (3") thick Colonial Rose Granite panels, which is a stone that has a color and pattern range similar to the existing cladding, with an appropriate thickness to ensure durability. The existing Tennessee Pink Marble cladding continues inside the building atriums along Jefferson Drive with a coplanar relationship, separated by the glazed curtain walls. The coplanar condition between the exterior walls and the original stone cladding at the atriums will be maintained.

Alternative C will also incorporate replacement of the curtain walls with a new aluminum-framed curtain wall system. The proposed glazing will better protect the collection from exposure to ultraviolet rays, meet thermal, and blast resistance requirements. The project also includes replacement of the skylights to achieve the museum's performance criteria. Both the curtain wall and skylight glazing would increase visible light transmission. The replacement of building systems will improve energy efficiency, reduce carbon emissions and utility costs.

The project involves replacement of the roof systems, including the museum building roof and the portions of the terrace surrounding the museum, which serves as a green roof on top of the underground parking. The scope of the terrace was reduced to focus on the west end and north and south entrances. Photovoltaics on the roof were considered but eliminated due to incompatibility with the roof assembly and structure.

The project will also address related work including the revitalization of the landscape, which entails replacing planting and paving, hardening walls, and adding accessible ramps. A continuous pedestrian loop will be provided around the museum for visitor access and service utility vehicles. The planter beds and retaining walls will be clad in the same Colonial Rose Granite selected for the building façade.

Vestibule Design Option A: Flight

The project includes the addition of security vestibules at the north and south entrances. The proposed canopies include a tensile roof structure that evokes the early flying machines by Leonardo da Vinci and the Wright Brothers exhibited within the museum. The form of the proposed canopies will contrast with the orthogonal building lines of the museum. At the north entrance, the roof will enclose a vestibule and provide protection for exterior queue areas. A desirable option includes the addition of a tensile canopy at the museum's south entrance along Independence Avenue, if future funding permits. The south canopy would include a photovoltaic installation developed as a flexible PV film integrated with the proposed tensile fabric roof to protect visitors from the sun while harvesting energy. The south canopy will express the mission of the museum by demonstrating the application of space age technology.

Standard for Evaluation

Under NEPA, the Council on Environmental Quality (CEQ) regulations, and NCPC NEPA Regulations, an EA is sufficient and an Environmental Impact Statement need not be prepared if the EA supports the finding that the major federal action will not significantly affect the human environment. The EA for this project was prepared in accordance with this standard.

Potential Impacts

No significant impacts were identified that will require analysis in an Environmental Impact Statement. The EA analyzed 15 environmental impact topic areas. Alternative C with Vestibule Option A will result in either beneficial or adverse impacts to historic resources, visual resources, visitor experience, circulation, planning policies, sustainability, air quality, noise levels, vegetation, stormwater management, floodplains, topography, solid waste, hazardous materials, climate change and carbon footprint. Impacts on affected resources are summarized below along with proposed mitigation, where applicable.

Historic Resources:

NASM contributes to the National Mall Historic District, which is listed in the National Register of Historic Places and the District of Columbia Inventory of Historic Sites. Alternative C with Vestibule Design Option A will result in direct, long-term, cumulative adverse effects to historic resources of the National Mall Historic District and the NASM building caused by all of the proposed changes to the building and site. Adverse effects will occur due to altering the exterior stone cladding which is one of the most notable character defining features of the museum and an element that establishes a strong visual connection to the similarly clad National Gallery of Art buildings across the National Mall. In addition, adverse effects will result from changing other features of the property's setting that contribute to its historic significance, including alterations to the terrace, introducing accessible walkways, new entry canopies, and cumulative adverse effects to the terrace and setting.

Pursuant to Section 106 of the National Historic Preservation Act (NHPA), SI has consulted with NCPC, the District of Columbia State Historic Preservation Officer (DCSHPO), the Advisory Council on Historic Preservation (ACHP), and other Consulting Parties regarding the proposed project. For purposes of Section 106 of the NHPA, there will be an adverse effect on the NASM and the National Mall Historic District. As part of the Section 106 process, SI, NCPC, DCSHPO, and ACHP, have entered into a Memorandum of Agreement (MOA) that seeks to avoid, minimize, and mitigate the adverse impacts. The executed MOA is appended to this FONSI as Attachment 3. The MOA includes minimization and mitigation measures related to historic resources.

Visual Resources:

Alternative C with Vestibule Design Option A will generate moderate short-term and long-term impacts to visual resources. In the short-term, construction activities (especially cranes) and removal of vegetation will change the appearance of the museum from significant vistas, including views from the National Mall, the National Gallery of Art West Building, the US Capitol Building, Independence Avenue, the intersection of 7th Street and Independence Avenue, the Washington Monument, and 6th Street, SW.

In the long-term, the addition of the entry canopies, and changes to the landscape will affect the character of the existing views. The proposed shade trees will open reciprocal views of the building from the terrace, the Mall, and Independence Avenue, to ensure that NASM is clearly visible and its entrances are identifiable. In addition, the exterior cladding of the building will not be the same stone as the original. The alternative stone (Colonial Rose Granite) will match the panel size with similar color and pattern of the existing Tennessee Pink Marble, but it will not be an exact match and the overall appearance of the building will change. Also, the building will become visually different from the National Gallery of Art West Building and East Building, both of which are constructed of Tennessee Pink Marble.

Considered with the ongoing and planned projects identified in Chapter 1 of the EA, implementation of Alternative C with Vestibule Design Option A will generate short-term and long-term moderate cumulative impacts to visual resources. In the short-term, if construction of the NASM revitalization project occurs concurrently with the implementation of other construction projects along the Mall and Independence Avenue, the combined effects will temporarily alter the overall appearance and character of the Mall and southwest neighborhood during the construction activities. Long-term cumulative beneficial impacts to views of NASM, along Independence Avenue and Jefferson Drive, could result from the combination of the NASM revitalization with the implementation of the Dwight D. Eisenhower Memorial, and the South Mall Campus Master Plan.

Mitigation Measures:

The stone replacement cladding will be carefully selected to match the appearance of the existing cladding, in pattern, color and panel size, to the maximum extent feasible. SI will include a significant percentage of stone panels with color and tonal variation in the design specifications to avoid a monolithic stone facade.

The three existing outdoor sculptures will remain on the NASM site at approximately their current configurations. Ad Astra will remain centered on axis with the north entrance, but will move to the north toward the sidewalk area along Jefferson Drive to allow more room for the proposed north security pavilion. Delta Solar will shift closer to 7th Street and Independence Avenue, SW to allow its base to serve as an integrated perimeter security and water feature, and improve its visibility. The proposed fountain will maintain the reflection of the sculpture in the water as an integral part to the sculpture composition. Continuum will retain its current off-center location near the south entrance.

Although the addition of the north vestibule canopy will alter views of the north entrance to the building, and the addition of the south canopy would alter views of the south entrance of the building, if constructed in the future, the design for the north and south canopies will respond to the mission of the museum. The scale of the canopies will defer to the building and their forms will be purposefully developed to avoid presenting a false sense of history. The additions deemed necessary for visitor comfort and security will also serve as sculptural elements and transitional spaces to the monumental modern building for the visitors arriving to experience the museum. The new site walls and terraces will be clad with the same stone as the new cladding on the building, with existing panel sizes, to recreate the existing visual relationship between the two.

Visitor Experience:

Implementation of Alternative C and Vestibule Design Option A will have minor short-term adverse and moderate long-term beneficial impacts to visitor experience at NASM. In the short-term, the project anticipates minor disruptions to visitor experience during construction. In the long-term, visitors will experience improved wayfinding, shade, seating, and safety, shorter lines

at museum entrances, and enhanced understanding of links between the NASM building and its mission. Implementation of Alternative C with Vestibule Design Option A combined with the implementation of the Dwight D. Eisenhower Memorial and the DDOT north-south streetcar line will have a moderate beneficial cumulative impact on visitor experiences associated with NASM.

Mitigation Measures:

Public access to the museum will be maintained but restricted during construction. Construction will be phased to minimize disturbances to visitors; signage and flagging will be used to ensure that access to the museum is clearly marked and disruptions are limited. Work will be consolidated on the western half of the site and building in the first phase of construction, then shift to the eastern half of the site and building in the second and final phase of construction.

Circulation:

Implementation of Alternative C with Vestibule Design Option A will result in moderate short-term adverse impacts during construction due to increases in traffic congestion and delays during peak traffic periods. Trucks delivering construction materials to the site will access the project area via local roadways. Also, implementation of Alternative C may require use of roads or sidewalks around the building for temporary construction-related activities. The project anticipates temporary lane closures, occupation of parking spaces adjacent to construction areas, and sidewalk closures. Proposed waterproofing of the planters will result in the removal of the paving system on the terrace and its approaches. The project will replace the existing paving system with new pavement. Alteration of pedestrian building access routes will improve accessibility. These changes will result in short-term moderate negative impacts during construction and long-term moderate beneficial impacts once complete.

Overall, bicycle facilities and pedestrian circulation around the museum will be improved. The new design will simplify the planter layout on the west end to enhance circulation; provide universally accessible entrances to the grounds and museum; add comprehensive circulation routes throughout the property; and increase opportunities for thematic and museum-related activities on the grounds in the future. Curbside areas set aside for buses, taxis, and drop-off will not be impacted. Implementation of Alternative C with Vestibule Design Option A combined with the implementation of the Dwight D. Eisenhower Memorial, and the South Mall Campus Master Plan could have cumulative short-term moderate impacts due to increases in traffic and congestion, if construction of these projects occurs at the same time.

Mitigation Measures:

Construction will be phased to minimize disturbances to circulation. Signage and flagging will be used to ensure that access to the museum is clearly marked and disruptions are limited. SI will plan and implement racks for owned, dockless, and docked bicycles after the terrace construction is complete.

Planning Policies:

Implementation of Alternative C with Vestibule Design Option A is consistent with the *2013 Smithsonian Master Plan* for NASM; the 2016 update of the *Comprehensive Plan for the National Capital*, Federal Elements; the *Monumental Core Framework Plan*; and the *Southwest Ecodistrict Plan*. The selected alternative and vestibule option is also consistent with existing land use and zoning designations.

Implementation of Alternative C will support the efficient and effective operation of NASM while contributing to the aesthetic character and quality of the National Mall and providing a safe environment within the Monumental Core. In addition, the terrace improvements will support Comprehensive Plan policies to enhance the 7th Street corridor between the southwest waterfront and downtown. Any proposed improvements in the sidewalk zones will be designed in accordance with the District of Columbia's Public Space Regulations included in the *2011 DDOT's Public Realm Design Manual*; and the *2013 Mall Streetscape Manual* construction details and specifications. Because there will be no impact on land use and zoning, the selected alternative will not result in cumulative impacts to land use or zoning.

Sustainability:

Implementation of Alternative C with Vestibule Design Option A could result in long-term moderate beneficial impacts to sustainability. Application of strategies to improve sustainability could substantially reduce NASM's energy consumption, carbon emissions and energy use intensity (EUI). If future funding permits, the south canopy would include photovoltaics further reducing consumption of non-renewable energy. Considered with the ongoing and planned projects identified in Chapter 1 of the EA, implementation of Alternative C combined with implementation of the *Southwest Ecodistrict Plan* could have a long-term moderate beneficial cumulative impact on sustainability.

Air Quality:

Implementation of Alternative C with Vestibule Design Option A would result in no significant negative regional impacts to air quality. In the short-term, construction-related activities associated with the project will be less than those associated with typical new large-scale construction projects, as the building already exists on the property and is not being demolished. The work would include: (1) emissions from construction equipment and from trucks hauling construction materials to the site and removing waste materials from the site; (2) emissions from vehicles driven to and from the site by construction workers; and (3) fugitive dust from removal of existing cladding and construction activities.

Project contractors would adhere to appropriate best management practices during construction to reduce, minimize, or eliminate construction vehicle emissions and dust. Removal of stone from the building will avoid destructive demolition on site. Emissions produced during construction

will vary daily depending on the type of activity. In particular, removal of the existing building cladding stone and delivery of new stone will involve transportation of large quantities of material.

Implementation of Alternative C with Vestibule Design Option A could result in long-term minor beneficial impacts to air quality. Application of strategies to improve sustainability could substantially reduce NASM's energy consumption, carbon emissions and energy use intensity (EUI). Also, the addition of canopy trees and ground cover vegetation will have a positive effect on air quality. Considered with the ongoing and planned projects identified in Chapter 1 of the EA, implementation of Alternative C combined with implementation of the *Southwest Ecodistrict Plan* will have a long-term minor beneficial impact on air quality.

Noise Levels:

Implementation of Alternative C with Vestibule Design Option A could have minor, short-term adverse impacts to noise levels in the vicinity of the project due to construction activities. Minor, short term negative noise impacts are anticipated associated with haul routes. Implementation of Alternative C, when considered with the ongoing and planned projects identified in Chapter 1 of the EA, could generate minor short-term cumulative impacts to noise levels during construction. The project will not result in long-term, cumulative operational impacts to noise levels.

Mitigation Measures:

Short-term construction-related noise will be minimized by controlling noise at its source through implementation of appropriate best management practices, as necessary, to meet the District noise standards. Construction specifications will require the selection of truck routes that will minimize the potential for noise impacts to residences.

Vegetation:

Implementation of Alternative C with Vestibule Design Option A will have moderate short-term negative impacts and minor long-term beneficial impacts to vegetation. All paving, soil, and planter systems need to be removed to replace the terrace roof waterproofing membrane.

In the long-term the improvement of the planters will support plant growth, and replacement of trees with species selected specifically for the growing conditions, will improve the health of the vegetation in the project area. The planting design is based on multiple factors aimed to improve plant health and overall canopy coverage. These include soil root volume guidelines developed by Casey Trees Foundation in cooperation with the District of Columbia to ensure the potential for tree growth and health. Other criteria guiding the design include the need for sufficient sunlight to reach the soil surface to provide for viable ground plane planting. This approach will eventually result in total canopy exceeding the existing coverage at the site. Use of plant species selected specifically for adaptability to the site and improvement of plant growth medium will add to the longevity and health of the plants on site. Thematic and low groundcover plantings will be added to animate entrances and create interpretive opportunities.

Considered with the ongoing and planned projects identified in Chapter 1 of the EA, implementation of Alternative C will generate minor long-term beneficial cumulative impacts to vegetation. The improvement of growing conditions and use of species adapted to the growing environment at NASM combined with the implementation of the Eisenhower Memorial landscape design will improve the overall tree canopy in this area of the city. A group of mature oak trees, and street trees along Independence Avenue, Jefferson Drive, 4th and 7th Streets will be protected from site alterations and construction impacts.

Mitigation Measures:

Improvement of plant material and growth medium will add to the longevity and health of the plants on site. The varied palette of tree species, including native and those selected for their urban hardiness and resilience to climate change, will provide healthier ecological services. Mature trees and street trees will be protected during construction and replaced with approved trees if damaged. The west memorial grove of trees will be conserved as an integral part of the Delta Solar setting. Trees will be replaced in accordance with policies related to *Tree Canopy and Vegetation in the Federal Environment Element of the Comprehensive Plan for the National Capital*, which requires trees to be replaced to prevent a net tree loss in the project area.

The project will comply with the *Presidential Memo: Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators*. In particular, the landscape include a plant palette that will attract flying insects and birds.

Stormwater Management:

Implementation of Alternative C with Vestibule Design Option A will have long-term beneficial impacts to stormwater management. Opportunities for permeable paving are limited because the majority of the site is over structure, and because of the requirements to support maintenance vehicles and movement of large airplanes and space objects. In addition, there is an increase of impervious surfaces by approximately five percent due to implementation of universally accessible circulation on the site and the south west plaza improvements.

The proposed plan will meet the *District Department of Energy and Environment (DOEE) 2013 Stormwater Rule* and *Section 438 of the Energy Independence and Security Act (EISA) of 2007*. The proposed stormwater management plan will include rainwater harvesting, tree preservation and tree planting to achieve the required on-site retention volume. Two new 100,000 gallon underground cisterns will collect stormwater runoff from the building roof and paved terrace areas. One cistern will be located near the proposed fountain on the west side, and the other one will be installed on the east end of the site. The proposed cisterns will collect stormwater for irrigation, and flushing toilets.

The proposed stormwater management will help to meet the goals of the *Southwest Ecodistrict Plan* and create beneficial long-term cumulative impacts along with the stormwater management

proposed for the Eisenhower Memorial, the turf renewal project on the National Mall, and the South Mall Master Plan.

Floodplains:

Implementation of Alternative C with Vestibule Design Option A will have a negligible long-term beneficial impact to floodplains. The NASM building is located immediately adjacent to, but not within, the 100-year floodplain of the Potomac River. The northeast corner of the site along 4th Street, SW, including the parking and service drive, is located within the 500-year floodplain according to FEMA's National Flood Hazard map. Accepted flood protection measures, such as increased height of flood walls and flood gates at vulnerable openings to the basement along 4th Street, SW, will be applied to protect the NASM building and collections in accordance with Executive Order (EO) 11988 – Flood Plain Management. Flood zones are identified in Chapter 3 of the EA. When considered in combination with the ongoing and planned projects identified in Chapter 1 of the EA, implementation of Alternative C will not generate cumulative impacts for floodplains.

Topography:

Implementation of Alternative C with Vestibule Design Option A will have a minor long-term beneficial impact to the existing topography that was altered from its natural condition with the construction of the building and surrounding landscape. Changes to the terraces and planters will provide improved universal accessibility for pedestrians. When considered in combination with the ongoing and planned projects identified in Chapter 1 of the EA, implementation of Alternative C will not generate cumulative impacts for topography.

Solid Waste:

Implementation of the Alternative C with Vestibule Design Option A will have a minor long-term impact related to generation of non-hazardous solid waste in the form of existing building materials that must be removed (including 160,600 gsf stone façade, 40,000 gsf curtain wall, and 52,000 gsf skylight). When considered in combination with the ongoing and planned projects identified in Chapter 1 of the EA, implementation of Alternative C with Vestibule Design Option A will generate minor cumulative impacts for solid waste.

Mitigation Measures:

Focused and diligent efforts are being made to find uses for the existing building materials, on site or elsewhere that will be removed as part of the project. The project will reuse or salvage a portion of the existing Tennessee Pink Marble for use in new construction of the building interior. A select portion of salvageable Tennessee Pink Marble will be saved for re-use in a SI collection area for any future work on the original stone panels at the interior of the atriums or other locations. Salvaged exterior Tennessee Pink will be reused for interior atrium galleries and Concourse finishes, including replacement of wall cladding panels, baseboards, interior stone bench seating, and as the aggregate in the security vestibule terrazzo flooring. Salvageable material is required to

ATTACHMENTS FOLLOW ON SEPARATE PAGES

ATTACHMENT 1: ERRATA SHEET

ATTACHMENT 2: NCPC RESPONSE TO COMMENTS

ATTACHMENT 3: SECTION 106 MEMORANDUM OF AGREEMENT

Attachment 1: Errata Sheet

Since the publication of the EA, Alternative C has been refined as a result of consultation and coordination with NCPC, DC SHPO, ACHP and CFA. In addition, SI has reduced the project scope due to budget constraints. No changes to the analysis of environmental effects result from these refinements. This errata sheet documents the modifications to the text of the Revitalization of the National Air and Space Museum Draft Environmental Assessment EA as a result of the selection of a preferred alternative and corrections. Additions to the text are identified by bold lettering and deletions are marked by ~~strikeout~~ unless otherwise noted.

Page LT.1: ~~Table 4.21: Environmental Consequences~~ **Summary of Environmental Consequences**

Page 1.7: ~~as amended by EO 13690 Establishing a Federal Flood Risk Management Standard~~

Page 2.22: ~~A rooftop photovoltaic array system would be installed on the 70,000 square foot flat roof (see Figure 2.23). The percentage of electricity contributions from the rooftop photovoltaics could be as high as 6300,000kWh/year, approximately 7% of the electricity load for the revitalized museum. The installation of the rooftop photovoltaic array would be designed to minimize visibility from the Mall (see Figure 2.24). The roof photovoltaics would be situated to be non-visible from public thoroughfares. The percentage of electricity contributions from the south canopy photovoltaics of vestibule design ‘A’ could be as high as 70,000kWh/year, approximately 0.7% of the electricity load for the revitalized museum.~~

Page 2.22: Remove Figure 2.23

Page 2.23: Remove Figure 2.24

Page 2.26: ~~The *Continuum* sculpture, located at the south entrance and installed in 1976, would need to be moved if the south vestibule canopy is constructed, as the canopy would overlap with the sculpture in its current location~~

***Continuum* will retain its current off-center location near the south entrance.**

Page 2.32: Remove Figures 2.35: Proposed northeast corner, and 2.37: Proposed southeast corner.

Page 2.37: ~~Alternative B-C Building System~~

Page 4.8: ~~The proposed vestibule at the south entrance would require the relocation of the *Continuum* sculpture, which was installed in 1976, to another~~

~~location on the NASM site, altering the original design and constituting an adverse effect.~~

~~Finally, the proposed relocation of the *Continuum* sculpture from the 6th Street (South) entrance to the museum may also constitute an adverse effect to historic resources.~~

Page 4.36: Alternative B – Tennessee Pink Replacement Stone
Implementation of recommendations under Alternative B would have minor short-term **negative** and moderate long-term beneficial impacts to visitor experience at NASM. There would be minor disruptions to visitor experience during construction.

Page 4.37 Alternative C – Alternate Natural Stone with Similar Appearance to Original Cladding
Implementation of Alternative C would have the same effects to visitor experience as Alternative B, minor short-term **negative** and moderate long-term beneficial impacts.

Alternative D – Replacement Cladding of a Manufactured Material
Implementation of Alternative D would have the same effects to visitor experience as Alternatives B and C, minor short-term **negative** and moderate long-term beneficial impacts.

Page 4.27: View 6: from ~~the U.S. Capitol Building facing west toward the National Mall~~ **6th Street facing north toward the NASM South Entrance along Independence Avenue** **No Action** Alternative

Page 4.28: View 6: from ~~the U.S. Capitol Building facing west toward the National Mall~~ **6th Street facing north toward the NASM South Entrance along Independence Avenue** **Action** Alternative.

ATTACHMENT 2: NCPC RESPONSE TO COMMENTS

Revitalization of the National Air and Space Museum Public Review Draft EA Comments

Number	Name	Association	Comments	Response
1a	David Garber	Unaffiliated	Prefers demolishing and rebuilding the entire museum, with an international design competition, which will be less expensive than the proposed renovations according to the August 1, 2016 article published at the Washington City Paper.	<p>Comment noted.</p> <p>For purposes of Section 106 review, the Smithsonian Institution (SI), DC State Historic Preservation Office (DC SHPO) and the National Capital Planning Commission (NCPC) agreed that the NASM building was individually eligible for listing in the National Register, and should be treated as such to maintain its existing character. Building demolition is not part of the purpose and need.</p>
1b			Prefers Saint Clair Limestone from the range of cladding options considered in the EA, including: Tennessee Pink Marble, other natural stones such as Echo Lake granite and Saint Claire limestone, and a manufactured material such as Ultra High Performance Concrete.	<p>Comment noted.</p> <p>The EA considers the effects of natural stones other than Tennessee Pink Marble collectively. A selection process involved external review, public comment, and evaluation according to a range of technical performance and aesthetic criteria.</p> <p>SI analyzed over eighty different stones, and several manufactured materials over the last two years, which resulted in a shortlist of cladding options most compatible with the original design of the building. Selection criteria included aesthetic, historic preservation, technical performance, procurement, and risk.</p> <p>Based on technical performance analysis, SI found that Limestones have durability and maintenance</p>

Number	Name	Association	Comments	Response
				challenges. Limestones are generally less resistant to pollutants, surface mold and algae growth; and require additional cleaning which can lead to surface damage.
2a	Kristin Taddei	Casey Trees	Casey Trees applauds SI for proposing a landscaping plan that improves visitor access to trees, includes new shade trees in the northwest and southwest sections, and protects the grove of trees north of the Delta Solar sculpture.	Comment noted.
2b			It is crucial that the museum’s tree canopy is maintained so there is no net loss in tree canopy after the renovation. The tree canopy that shades the museum today provides comfortable spaces for visitors and essential ecosystem services by managing stormwater and filtering air in bustling downtown DC.	Comment noted. The total tree canopy at maturity will be greater than the existing canopy due to the greater number of shade trees.
2c			Replace the tree canopy lost during construction: The National Air and Space Museum is home to approximately 250 trees. These trees provide a lush, shady space for visitors. To maintain the environmental benefits associated with the museum’s extensive tree canopy, provide adequate tree protection fencing around the grove of trees north of the Delta Solar sculpture, plant shade trees in all planting	The planting design is based on multiple factors aimed to improve plant health and overall canopy coverage. These include soil root volume guidelines developed by the District of Columbia and Casey Trees to ensure the potential for tree growth and health. The raised planter configuration poses challenges related to limited soil volume. Other criteria guiding the design include the need for sufficient sunlight to reach the soil surface to provide a viable ground plane planting; and the accommodation of intuitive

Number	Name	Association	Comments	Response
			beds with at least 1,000 cubic feet of soil, and replace lost trees in at least a 1:1 ratio.	<p>wayfinding by enhancing views to and from the terrace, the Mall, and Independence Avenue, to ensure that NASM is clearly visible and its entrances are identifiable.</p> <p>This approach will eventually result in total canopy exceeding the existing coverage at the site. Use of plant species selected specifically for adaptability to the site and improvement of plant growth medium will add to the longevity and health of the plants on site. Street trees will be protected during construction and replaced with approved trees if damaged.</p> <p>SI will ensure that all shade tree planting beds have a minimum 1,000 cubic feet of soil, while understory tree soil volume includes a minimum of 600 cubic feet per tree. A tree survey was conducted and an inventory of trees is maintained by Smithsonian Gardens. The landscape plan includes approximately 117 new trees. Approximately 162 trees would be removed, and 4 will be preserved. SI's certified arborist will work to reduce potential tree root impacts around the grove of trees located north of the delta solar sculpture.</p>
2d			Create a larger planting bed near the north entrance: Expand the 5'3" planting bed in the north entrance section into the space designated as a 12' walkway to its south. This will still allow SI to increase the number of walkways from two to three, while providing	<p>The landscape design has been developed to balance the provision of increased shade and access to plantings for visitors with the needs for visibility and wayfinding.</p> <p>The NASM has seven million visitors per year. The 12-foot wide walkway has been designed to accommodate</p>

Number	Name	Association	Comments	Response
			<p>additional space to plant trees that will offer shade to visitors and passersby.</p>	<p>the amount of visitors. Additional soil volume will be provided under the walkways.</p> <p>The walkways and planters are needed to address improved access and increased plant health. Opportunities for permeable paving are limited because the majority of the site is over structure, and because of the requirements to support maintenance vehicles and movement of large airplanes and space objects.</p>
2e			<p>Plant a diverse tree palette: Increase tree diversity that exists at the museum today. With approximately 25 tree species on site, the museum is close to achieving the 10-20-30 rule for tree diversity: include only 10% of any one species, 20% of any one genus, and 30% of any family of trees.</p>	<p>See response to 2c.</p> <p>The tree palette has been developed to: provide diversity, including native and pollinator vegetation, ensure ecological health, and express and reinforce an aesthetic in support of the museum’s mission for the building and grounds, providing a rhythmic progression of planting and offsets.</p> <p>The planting design includes the addition of trees representing 13 species, 9 genus and 8 families.</p>
2f			<p>Consider working with Casey Trees to establish a planting plan or reference our <i>Urban Tree Selection Guide</i> to identify trees ideal for achieving the 10-20-30 rule.</p>	<p>See response to 2e above.</p> <p>The <i>Urban Tree Selection Guide</i> was one of the references used inform development of the planting plan.</p>

Number	Name	Association	Comments	Response
3a	James Sebastian	District Department of Transportation (DDOT)	As proposed, the building revitalization does not impact the transportation network or public space.	Comment noted.
3b			DDOT recommends that the perimeter security be evaluated for possible streetscape improvements to better comply with District and ADA regulations.	<p>Comment noted.</p> <p>Perimeter security was part of the overall <i>Mall-Wide Perimeter Security Plan</i>, which was approved by NCPC in 2004. The existing perimeter security will be retained along Independence Avenue, Jefferson Drive, and 4th Street. The only portion of the perimeter security that is addressed by the current project is the corner of Independence Avenue and 7th Street, SW. In this location, the proposed Delta Solar fountain will be integrated into the perimeter security. New bollards will connect the proposed fountain to the existing perimeter security walls around the site.</p>
3c			DDOT would also like to explore adding a Capital Bikeshare station to the perimeter of the site.	Smithsonian will work with DDOT to explore options for racks or spaces for owned, dockless, and docked bicycles after the terrace construction is complete.
4a	Jackie Cobb	Unaffiliated	<p>Supports the proposed landscape design that would:</p> <p>Include soil volume adequate for shade trees.</p> <p>Protect the grove of trees north of the Delta Solar sculpture.</p>	<p>Comment noted.</p> <p>See response to comment 2c.</p>

Number	Name	Association	Comments	Response
			<p>Include new shade trees in the Northeast and Southwest sections.</p> <p>Improve visitor access to trees.</p>	
4b			Replace shade trees in at least a 1:1 ratio.	See response to comment 2c.
4c			Plant shade trees in all planting beds where there is at least 1,000 cubic feet of soil.	See answer to comment 2c.
4d			Expand the 5'3" planting bed in the North Entrance section (below) into the space designated as a 12' walkway to its south.	See answer to comment 2d.
4e			Increase or maintain the level of tree diversity that exists at the National Air & Space Museum today.	See answer to comment 2e.

**MEMORANDUM OF AGREEMENT
AMONG
THE SMITHSONIAN INSTITUTION,
THE NATIONAL CAPITAL PLANNING COMMISSION,
THE DISTRICT OF COLUMBIA STATE HISTORIC PRESERVATION OFFICER
AND
THE ADVISORY COUNCIL ON HISTORIC PRESERVATION
REGARDING
THE NATIONAL AIR AND SPACE MUSEUM NATIONAL MALL BUILDING
REVITALIZATION – EXTERIOR, VESTIBULES, AND SITE WORK**

This Memorandum of Agreement (“MOA”) is made as of this ___ day of _____, 2017, by and among the Smithsonian Institution (SI), the National Capital Planning Commission (NCPC), the District of Columbia State Historic Preservation Officer (DC SHPO), and the Advisory Council on Historic Preservation (AHP) (referred to collectively herein as the “Parties” or “Signatories” or individually as a “Party” or “Signatory”), pursuant to Section 106 of the National Historic Preservation Act (“NHPA”), 54 U.S.C. §§ 306108, and its implementing regulations 36 CFR Part 800 (“Section 106”) regarding the National Air and Space Museum National Mall Building Revitalization – Exterior, Vestibules, and Site Work in Washington, DC (Undertaking); and

WHEREAS, the National Air and Space Museum (NASM), located on the National Mall, along Independence Avenue at Sixth Street SW, Washington, DC, was designed by Gyo Obata (b. 1923), of Hellmuth Obata & Kassabaum (HOK) in a modern architectural style and built between 1972 and 1976. The NASM opened on July 1, 1976, for the United States Bicentennial celebration; and

WHEREAS, the NASM is a contributing building to the National Mall Historic District, which was listed in the National Register of Historic Places on October 15, 1966 (documented May 19, 1981), and updated in December 2016. The National Mall Historic District was also listed in the District of Columbia Inventory of Historic Sites on November 8, 1964; and

WHEREAS, the NASM’s simple design responds to the surrounding context of the National Mall and consists of four monumental Tennessee Pink Marble (limestone) clad blocks, separated by three recessed glass atriums on the north side; and alternating large and small stone clad blocks on the south side separated by smaller bays of recessed glass. The stone cladding is one of the main character defining features and comprises 65 percent of the overall building façade, while the glazing represents 35 percent. The NASM’s massing, height, exterior cladding, and entrance axis were informed by the West Building of the National Gallery of Art, located directly to the north across the National Mall and built in 1941; and

WHEREAS, building deficiencies have resulted from the limited original construction budget and four-year construction schedule. A non-traditional exterior wall system was constructed, composed of thin (1-1/4 inch thick) stone panels with spray-foam insulation directly applied on the back of the stone, supported on a light steel frame instead of using thicker stone supported on a masonry wall system. Over time, this exterior wall assembly has created thermal issues and exhibits major stone failure. As a result, the existing Tennessee Pink Marble (limestone) stone is experiencing significant warping and displacement and must be completely replaced. Other original reductions to quality included the installation of acrylic skylights instead of glass, which were replaced with glass in 2001; and concrete terrace pavers instead of granite, which were replaced in the 1980s due to performance issues. In

addition, the heating, ventilation and air conditioning systems (HVAC) have reached the end of their usable life, and due to the integration of the exterior cladding with the mechanical system, it is necessary to undertake these upgrades together; and

WHEREAS, all paving, soil, and planter systems need to be removed to replace the terrace roof waterproof membrane to address leaks into the underground parking garage level; and

WHEREAS, the grounds of the NASM feature three outdoor sculptures that evoke the museum's theme. The sculptures were installed around the time of the museum opening. *Ad Astra* ("To the Stars") by Richard A. Lippold, was commissioned for the opening of the museum in 1976 and is centrally located at the north entrance to the museum. *Delta Solar* by Alejandro Otero, dedicated on June 29, 1977, as a gift from the government of Venezuela in commemoration of the U.S. Bicentennial, is located on the west end of the site near Independence and 7th Street, SW, currently set in a shallow basin that has not had an active water feature since 1995. Lastly, *Continuum* by Charles O. Perry, was commissioned by the Smithsonian in 1976 and is located off-center with the museum's south entrance; and

WHEREAS, the NASM building houses a nationally and internationally significant collection of artifacts documenting the history of flight and space travel, and the removal and replacement of the existing bronze tinted glazing and skylights installed in 1994-2000 is required to protect the collection from excessive light exposure and degradation; and

WHEREAS, the NASM is one of the top five most visited museum facilities in the world, attracting on average seven million people annually. The NASM's existing security screening vestibules need to be upgraded to provide adequate queuing space, meet security screening requirements, and provide a buffer between exterior and interior environments that results in acceptable fluctuations in temperature and humidity levels for the protection of the museum's collection; and

WHEREAS, to address the building deficiencies listed above, protect the collection, and enhance visitor experience with greater accessibility, the Undertaking entails the renovation of the existing NASM building and grounds. Specific components of the Undertaking include: 1) removal of the original Tennessee Pink Marble (limestone) exterior cladding; 2) replacement of the building exterior and terrace walls stone cladding with Colonial Rose Granite; 3) replacement of the glazed curtain walls and skylights; 4) replacement of terrace roof waterproof membrane (garage roof), and main building roof; 5) improvements to museum grounds, including a new landscape plan, sculpture relocation, terrace paving replacement, and portions of perimeter security upgrades along 7th Street; 6) revisions to the west end and central portions of the terrace, including the north and south entrances; 7) construction of a security pavilion at the north entrance; 8) and the addition of accessible walkways at the museum's entrances (Exhibit A); and

WHEREAS, the Undertaking also includes a canopy on the museum's south entrance as a desirable option if future funding permits; and

WHEREAS, pursuant to Section 106 federal agencies must take into account the effects of their undertakings on any district, site, building, structure or object that is included in or eligible for inclusion in the National Register of Historic Places, and afford the ACHP a reasonable opportunity to comment; and

WHEREAS, pursuant to Public Law 108-72, 117 Stat. 888 (August 15, 2003), for projects in the District of Columbia that are subject to review and approval by the NCPC, the SI is deemed to be a federal agency for purposes of compliance with Section 106; and

WHEREAS, NCPC has approval authority over federal projects located within the District of Columbia pursuant to the National Capital Planning Act of 1952, 40 U.S.C. § 8722(b)(1) and (d); and

WHEREAS, the revitalization of the NASM has been established as an undertaking subject to the Section 106 process in accordance with 36 CFR § 800.3(a) and as defined in 36 CFR § 800.16(y); and

WHEREAS, the SI and NCPC have agreed that SI will be the lead agency pursuant to 36 CFR § 800.2(a)(2) for the Undertaking to fulfill their collective Section 106 responsibilities; and

WHEREAS, the SI has consulted with the DC SHPO pursuant to the NHPA and its implementing regulations 36 CFR Part 800; and

WHEREAS, the SI initiated Section 106 consultation with the DC SHPO by letters dated September 3, and September 5, 2014; and

WHEREAS, the Undertaking will be implemented in multiple phases to allow as much of the museum as is practical to remain open to the public during the revitalization in accordance with Exhibit B; and

WHEREAS, the SI has engaged with Consulting Parties, as defined in 36 CFR § 800.2(c) and 36 CFR § 800.8(a)(2), as individuals and organizations concerned with the possible effects of an undertaking on historic properties. The SI has consulted with the Commission of Fine Arts (CFA), NCPC, District Department of Transportation (DDOT), General Services Administration (GSA), Hellmuth, Obata & Kassabaum (HOK), District of Columbia Preservation League (DCPL), National Gallery of Art (NGA), Casey Trees, Architect of the Capitol (AOC), National Park Service (NPS), and the National Trust for Historic Preservation, as included in Exhibit C; and

WHEREAS, the SI and Consulting Parties defined the Area of Potential Effects (APE) on historic resources related to the NASM to include the National Mall and U.S. Capitol Grounds, with additional vistas south of Independence Avenue between 9th Street and 3rd Street, SW (Exhibit D); and

WHEREAS, the SI has conducted extensive study over a period of two years of over eighty cladding options, including Tennessee Pink Marble (limestone), other natural stones, and manufactured materials. Selection criteria in narrowing the cladding options included aesthetics, historic preservation practice, technical performance, procurement and risk; technical analysis included an evaluation of considered materials in performance on the NASM's existing steel frame structure to result in a building with a 100 year lifespan; and

WHEREAS, SI has developed technical reports that establish the conditions of the original stone cladding, causes for the deficiencies that developed, evaluations of the existing steel frame construction, recommendations for a durable stone cladding, and evaluations of the stones considered, which were distributed to the Signatories on June 15, 2017; and

WHEREAS, the SI has considered recommendations from the DC SHPO, review agencies, and Consulting Parties, and has selected Colonial Rose granite to replace the existing Tennessee Pink Marble cladding.

The cladding evaluations and expert peer review group ([Exhibit E](#)) determined granite as the most durable type of stone cladding for the building's structure, with Colonial Rose offering a similar aesthetic appearance to the existing stone; and

WHEREAS, on March 31, 2017, the SI and NCPC released the *Revitalization of the National Air and Space Museum Draft Environmental Assessment* (EA) pursuant to the National Environmental Policy Act (NEPA) for a 30-day public comment period. The Draft EA analyzed the potential impacts that the undertaking may have on the natural and man-made environment. NCPC, as the lead federal agency for NEPA compliance, will prepare and execute a Finding of No Significant Impact (FONSI) in winter 2018 following its final Commission approval of the project; and

WHEREAS, the SI provided for public involvement in this MOA in accordance with 36 CFR § 800.8(a)(1) by coordinating Section 106 review with public review and consultation via the Draft EA under the NEPA process; and

WHEREAS, the SI and NCPC have provided opportunities for public comments at a joint NEPA Scoping and Section 106 consultation meeting on November 12, 2014, followed by Section 106 consulting parties meetings on February 22, 2016; April 7, 2017; June 8, 2017; and October 24, 2017; and

WHEREAS, CFA, in meetings before the public, approved a concept plan for the undertaking on June 18, 2015; a revised concept plan on June 16, 2016; an updated concept plan on June 15, 2017; and a revised concept design on October 19, 2017; and

WHEREAS, NCPC, in meetings before the public, reviewed and commented on a concept design for the undertaking on July 7, 2015; a revised concept on July 13, 2017; and a revised concept design on November 2, 2017; and

WHEREAS, the SI and NCPC, in consultation with the DC SHPO have determined that the Undertaking will have an adverse effect on historic resources, pursuant to 36 CFR § 800.5, on the NASM and the National Mall Historic District, as outlined in an assessment of the effects on historic resources ([Exhibit G](#)). Adverse effects include, and are not limited to, replacing the Tennessee Pink Marble (limestone) exterior cladding with Colonial Rose Granite and changing the NASM's direct visual relationship with the National Gallery of Art; introducing accessible walkways; constructing a new security pavilion; and cumulative adverse effects to the terrace and setting; and

WHEREAS, the SI recognizes the adverse effects, and is committed to retaining the NASM's character defining features, to maintain the NASM's status as a contributing building to the National Mall Historic District, and potential individual eligibility for the National Register of Historic Places; and

WHEREAS, in accordance with 36 CFR § 800.6(a)(1), the SI has notified the ACHP of the adverse effect determination and provided the documentation specified in 36 CFR § 800.11(e), and the ACHP has chosen to participate in the consultation pursuant to 36 CFR § 800.6(a)(1)(iii); and

WHEREAS, changes to the project plans may occur after the execution of this Agreement and therefore a process for additional consultation is set forth in Stipulation 7 to take into account the effects such changes may have on historic properties; and

NOW, THEREFORE, the Signatories agree that the Undertaking shall be implemented in accordance with the following stipulations in order to take into account the adverse effects of this undertaking on historic properties.

STIPULATIONS

The SI shall ensure that the following measures are carried out:

1. MINIMIZATION MEASURES

The measures listed below will be incorporated into the design of the NASM revitalization project to minimize adverse effects:

- a. The three existing outdoor sculptures will remain on the NASM site at approximately their current configurations. *Ad Astra* will remain centered on axis with the north entrance, but will move to the north toward the sidewalk area along Jefferson Drive to allow more room for the proposed north security pavilion. *Delta Solar* will shift closer to 7th Street and Independence Avenue, SW to allow its base to serve as an integrated perimeter security and water feature, and improve its visibility. *Continuum* will retain its current off-center location near the south entrance (Exhibit A).
- b. To reference the Delta Solar's original composition and maintain the reflection of the sculpture in water, the final design will include a water feature, which will be operational for the majority of the year. The width and length of the proposed plinth will match the dimensions of the current shallow basin. New identification signage will be planned and implemented in the immediate vicinity of the sculpture. SI will include the new identification signage for informational purposes in the final submission packages for NCPC and CFA final reviews.
- c. Tennessee Pink Marble was originally used to clad the building and terrace planters. The planter beds, retaining walls, and perimeter security walls within the terrace will be clad with Colonial Rose Granite, the same cladding material selected for the façade, to maintain this visual relationship and original design intent.
- d. While Colonial Rose Granite has a warm pink color comparable to the existing Tennessee Pink Marble cladding, and is durable; it is also a more homogenous stone, lacking the wide range of color variation and horizontal striations that characterize Tennessee Pink Marble (limestone). SI will specify a significant percentage of stone panels with color and tonal variation in the design specifications to avoid a monolithic stone facade. In Summer 2018, SI will consult with the Signatories on an aesthetic and performance mock-up of the layout of the Colonial Rose Granite, to ensure color variation and veining to variegate the monolithic bays of the building similar to the original appearance.
- e. The non-original bronze tinted glass curtain walls will be removed and replaced with blast resistant glazing with a comparable tint and frit pattern to control visible light transmittance to ensure protection of the museum's collection. The frit pattern at the atrium curtain walls will have a gradated opacity, and begin 12' above the terrace level, to limit visibility of the frit

pattern. The replacement glazing will maintain visibility of the gallery interiors to and from the Mall, consistent with the original design intent, and will create a more natural daylight setting within the atriums. A full scale glazing mock-up was completed in August 2017, and reviewed by the Signatories and review agencies on August 28, 2017. The glazing performance mock-up will be constructed in Summer 2018 and the Signatories will be invited to review and comment.

- f. The existing Tennessee Pink Marble cladding continues inside into the building atriums with a coplanar relationship, separated by the glazed curtain walls. The proposed exterior wall thickness will expand approximately three inches to accommodate fireproofing, insulation, and thicker stone panels (2-inch), while the original stone cladding at the interior atrium will remain. The coplanar condition between the exterior walls and the original stone cladding at the atrium interiors along Jefferson Drive will be maintained by modifying certain structural components (Exhibit F).
- g. A select portion of salvageable Tennessee Pink Marble (limestone) will be saved for re-use in a SI collection area for any future work on the original stone panels at the interior of the atriums. Salvageable material is required to be unwarped, refinished, and otherwise in good condition. The end result of close-up inspection and disassembly may result in a limited amount of salvageable material. The SI will notify the Signatories of the status of salvageable material in accordance with Stipulation 3. Salvaged exterior Tennessee Pink will be reused for interior atrium galleries and Concourse finishes, including replacement wall cladding panels, baseboards, interior stone bench seating, and as the aggregate in the terrazzo flooring.

2. MITIGATION MEASURES

The measures listed below will be implemented to mitigate adverse effects associated with the NASM revitalization project:

a. Historic American Building Survey Documentation. Within 6 months of the execution of this MOA or prior to any construction or installation of construction related structures, such as trailers, on the site, SI shall use Historic American Building Survey/Historic American Engineering Record/Historic American Landscape Survey (HABS/HAER/HALS) Level III standards to document the NASM building and its setting with photographs of the exterior and major interior spaces. Photographic documentation shall also include the site sculptures known as *Ad Astra*, *Continuum*, and *Delta Solar* in their original locations. Documentation will be submitted for inclusion in the HABS/HAER/HALS collection. SI will submit the recordation to other repositories as directed in consultation with the DC SHPO. SI will also request additional color photographs to document the existing condition of the exterior stone, and will also photograph the building at the time of project completion to create a complete documentation record of the revitalization project.

b. NASM Determination of Eligibility. Within two (2) years of the date on the signed MOA, SI will complete a draft Determination of Eligibility for individually listing the NASM in the National Register of Historic Places. The Determination shall be carried out in consultation with the DC SHPO. The Determination will include a landscape assessment, history of the design and landscape alterations, and photographic documentation. Within two (2) years of the

completion of the revitalization project, SI will update the Determination of Eligibility and resubmit the document to the DC SHPO.

c. National Register Nomination for the National Museum of Natural History. Within three (3) years of the date on the signed MOA, the SI will complete an Individual National Register Nomination for the National Museum of Natural History, another SI property also located at 10th Street and Constitution Avenue NW within the National Mall Historic District. The Nomination shall be carried out in consultation with the DC SHPO.

d. Landscape Planting Plan. Planting materials on the property will be designed to minimize visual impact on the building and to maintain the open sky views from the interior atriums as originally conceived. The natural character and park-like setting of the west lawn and grove of trees north of the *Delta Solar* will be maintained.

e. Oral History of the NASM Building. Within three (3) years of the date on the signed MOA, SI will conduct and document oral and/or written interviews on the original design and construction of the NASM with former project architects, contractors, SI staff and others to collect stories, first-hand accounts and other remembrances of the NASM's history, design and construction, to be incorporated into the Smithsonian Institution Archives. SI will notify the Signatories of the parties interviewed in accordance with Stipulation 3.

f. Retention and Rehabilitation of Historic Fabric at the NASM Interior. SI will maintain and salvage historic fabric for reuse on the interior, and will notify the Signatories of the progress and completion of the following actions in accordance with Stipulation 3:

i. Rehabilitation of the Octagonal Stairs – Later infill at the base of the stairs will be removed to restore the octagonal stairs to their historic configuration.

ii. Concourse, Octagonal Stairs and Missile Pit Railings – All railings and glazing will be replaced in-kind to meet code requirements. The handrail profile and detailing will be maintained, and the original oil rubbed bronze finish approximated. The tint of the existing glazing will be maintained.

iii. Mural Railings – The historic railings protecting the murals at the South Lobby will be restored, including the original oil rubbed bronze finish.

g. Exhibits Regarding the NASM Building. The SI shall prepare interpretive exhibits regarding the NASM building history, construction, and the design of the revitalization project through the following steps:

i. The SI will develop an exhibit to educate the public about the NASM building's historical and architectural significance within the National Mall Historic District, as well as its original design intent, value engineering process, its role in the United States Bicentennial celebration, exterior sculpture placement, existing conditions, and cladding analysis. The exhibit will include information gathered per Stipulations 2.b and 2.d, and photographs of the building before and after revitalization per Stipulation 2.a, cladding and glazing mock-ups.

a. The SI will prepare an exhibit to be installed within the NASM and accessible to the public, to be in place at the start of construction. The exhibit will provide summary information on the revitalization project, design development, and related topics per Stipulation 2.f.i. The nature of the exhibit will be flexible to be relocated around the NASM as construction is carried out. The exhibit will remain in the NASM until the project is completed, and for one (1) calendar year after the project's completion.

b. The SI will prepare an online/web-based exhibit resource per Stipulation 2.f.i, to be complete one (1) year after the completion of the revitalization project. The web-based exhibit will be available on the SI's Office of Architectural History and Historic Preservation and the National Air and Space Museum's websites for the duration of the MOA. After the expiration of the MOA, the exhibit resource will be incorporated into the Smithsonian Institution Archives.

h. Public Space Improvements. The SI will explore opportunities to improve the publicly accessible spaces around the NASM building. The proposed site improvements will consider landscape, Smithsonian vendor venues (food carts) and associated signage, benches, flexible seating, and racks or spaces for owned, dockless, and docked bicycles. Sidewalks damaged by construction activities will be replaced as required, based on location, to conform to the National Park Service and District Department of Transportation standards. Any proposed improvements in the sidewalk zones will be designed in accordance with the current version of the District of Columbia's Public Space Regulations included in DDOT's *Public Realm Design Manual*; and the current version of the *Mall Streetscape Manual* construction details and specifications. Public space improvements in the sidewalk zones will be planned and implemented after the terrace reconstruction is complete and the construction trailers are removed.

i. Restoration of the Smithsonian Institution Building's Rose Windows. The SI will restore the four (4) monumental rose windows on the Smithsonian Institution Building (Castle), a National Historic Landmark. The rose windows are located on the north and west facades of the central portion of the building, and the west wing. The work will include the restoration of the sandstone tracery, surrounds, and recreation of the historic glazing. The restoration work will be complete within eight (8) years of the date on the signed MOA, as the work is subject to federal appropriations and may be conducted in phases. An assessment of the conditions of the windows will be prepared and distributed to the Signatories per Stipulation 3.

j. Establishment of a Preservation Forum. Within six months of the last signature on this Agreement, the SI shall consult with SHPO and NCPC and develop a list of organizations and individuals that may have an interest in providing input on current and future Smithsonian projects that have potential to affect historic properties, learning more about historic properties under the SI's jurisdiction, and engaging in a dialogue on related topics. The goals of this "Preservation Forum" include, but are not necessarily limited to, enhancing the visibility of, and building support for heritage preservation of current and future landmarks; proactively identifying potential ways to avoid adverse effects on historic properties wherever possible; and strengthening outreach to a broader community to promote Smithsonian preservation achievements, and discussion of current historic preservation practice. The SI shall convene a meeting of the Preservation Forum on at least an annual basis, shall develop draft agendas well

in advance of the meetings and, in order to ensure meaningful discussions, shall solicit and include agenda topics recommended by the interested parties on the final agendas. The SI shall consider and make good faith efforts to respond to, and incorporate Preservation Forum comments in project planning. The Smithsonian may open the Forum to other stakeholders to discuss projects at buildings on and in the immediate vicinity of the National Mall.

3. MONITORING AND REPORTING

Each year, by the anniversary date of the last signature on this MOA until it expires or is terminated, the SI shall provide the Signatories a summary report detailing work undertaken pursuant to its terms. Such report shall include any scheduling changes proposed, any problems encountered, and any disputes and objections received in the SI's efforts to carry out the terms of this MOA. Failure to provide such summary report may be considered noncompliance with the terms of the MOA pursuant to the Amendments and Non-Compliance stipulation of this MOA.

4. APPLICABLE CODES AND STANDARDS

The Undertaking shall be planned, developed, and executed by SI in consideration of the recommended approaches contained in the Secretary of the Interior's Standards for the Treatment of Historic Properties ("Secretary's Treatment Standards"), and other prevailing applicable codes.

5. QUALIFICATIONS

SI shall ensure that all historic preservation and/or archaeological work performed on its behalf pursuant to this MOA shall be accomplished by, or under the direct supervision of a person or persons who meet(s) or exceed(s) the pertinent qualifications in the Secretary's Professional Standards (Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines [As Amended and Annotated], formerly located at 36 CFR Part 61 in those areas in which the qualifications are applicable for the specific work performed.

6. ANTI-DEFICIENCY ACT

The SI's obligations under this MOA are subject to the availability of appropriated funds, and the stipulations of this MOA are subject to the provisions of the Anti-Deficiency Act. The SI shall make reasonable and good faith efforts to secure the necessary funds to implement its obligations under this MOA. If compliance with the Anti-Deficiency Act alters or impairs the SI's ability to implement its obligations under this MOA, the SI shall consult in accordance with the Amendments and Non-Compliance stipulations, and if necessary, the Termination stipulations.

7. DESIGN CONSULTATION

The SI shall continue to consult with the Signatories regarding any design changes to the project's exterior scope and any specific interior scope items included in this Agreement; additions to, or omissions from the plans shown in Exhibit A, including any changes to the museum's exterior or site design; and any modifications recommended by NCPD and/or CFA after final approval. Consultation shall be carried out as follows:

- a. SI shall review any proposed changes and make a determination as to whether the revised design may result in new adverse effects that have not already been resolved and/or the intensification of known adverse effects to historic properties.
- b. SI shall forward, via electronic format, its determination in Stipulation 7.a and the revised design to the Signatories for a fourteen (14) calendar day review and comment period.

- c. If SI determines that no new adverse effects may result or no known adverse effects to historic properties would be intensified and a Signatory objects in writing within the fourteen (14) calendar day review period, SI shall notify the Signatories to consult with the objecting party to seek ways to resolve the objection. If SI determines that the objection cannot be resolved, SI shall follow the procedures in the Dispute Resolution clause of this Agreement.
- d. If SI determines that a new adverse effect may result or a known adverse effect to a historic property would be intensified, SI shall immediately advise the Signatories, and provide an opportunity to revise the design documentation to avoid, minimize, or mitigate the new or intensified adverse effect. If SI determines that unavoidable adverse effects to historic properties may result or be intensified, SI shall consult with the Signatories to determine whether the final design documentation warrants an Amendment to this MOA to identify additional measures that will be carried out to avoid, minimize or mitigate any new or intensified adverse effects.
- e. If the Agreement is amended, SI will notify the Consulting Parties, and provide or post the Amendment.

8. DISPUTE RESOLUTION

Should any Signatory to this MOA object at any time to any action proposed or the manner in which the terms of this MOA are implemented, SI shall consult with such party to resolve the objection. If a resolution cannot be reached, the SI shall forward all documentation relevant to the dispute to the ACHP including the SI's proposed response to the objection. Within 45 days after receipt of all pertinent documentation, the ACHP shall exercise one of the following options:

- a. Advise the SI that the ACHP concurs in the SI's proposed response to the objection;
- b. Provide the SI with recommendations, which the SI shall take into account in reaching a final decision regarding its response to the objection; or
- c. Notify the SI that the objection will be referred for comment pursuant to 36 CFR 800.7(c), and proceed for comment. The resulting comment shall be taken into account by the SI in accordance with 36 CFR 800.7(c)(4) with reference to the dispute.

The SI shall take into account any ACHP recommendation or comment provided in accordance with this stipulation with reference only to the subject of this objection; the SI's responsibility to carry out all actions under this MOA that are not subjects of the objection shall remain unchanged.

Should the ACHP not exercise one of the above options within 45 days after receipt of all documentation, the SI may assume the ACHP's concurrence in its proposed response to the objection.

9. AMENDMENTS AND NON-COMPLIANCE

This MOA may be amended when such an amendment is agreed to in writing by all Signatories. The amendment will be effective on the date a copy signed by all the Signatories is filed with the ACHP. The original amendment will be filed with the ACHP. If the Signatories cannot agree to appropriate terms to

amend the MOA, any Signatory may terminate the MOA in accordance with the Termination stipulation of the MOA.

10. TERMINATION

If any Signatory to this MOA determines that its terms cannot or are not being properly implemented, that Signatory shall immediately consult with the other signatories to attempt to develop an amendment per Stipulation 9 above. If within thirty (30) days (or another time period agreed to by all Signatories) an amendment cannot be reached, any Signatory may terminate the MOA upon written notification to the other Signatories.

Once the MOA is terminated, and prior to work continuing on the undertaking, SI must either (a) execute a MOA pursuant to 36 CFR § 800.6 or (b) reinitiate Section 106 consultation on the unfinished components of the Undertaking pursuant to 36 CFR Part 800. SI shall notify the Signatories as to the course of action it will pursue.

11. ELECTRONIC COPIES

Within one week of the last signature on this MOA, the SI shall provide each Signatory with one legible, color, electronic copy of the fully executed MOA and all of its attachments fully integrated into one, single document. Internet links shall not be used as a means to provide copies of attachments since web-based information often changes. If the electronic copy is too large to send by e-mail, the SI shall provide each signatory with a copy of this MOA on a compact disc.

12. POST-DESIGN REVIEW ARCHAEOLOGICAL DISCOVERIES

a. Should cultural resources be unexpectedly identified during the implementation of the Undertaking or any actions taken pursuant to this MOA, SI shall ensure that reasonable efforts are made to avoid, minimize or mitigate adverse effects to such properties, and shall consult SHPO to resolve any unavoidable adverse effects pursuant to 36 CFR § 800.6. SI and SHPO shall resolve any disputes over the evaluation or treatment of previously unidentified resources using the processes outlined in Stipulation 8 (Dispute Resolution) of this MOA.

b. Treatment of Human Remains - In the event that human remains, burials, or funerary objects are discovered during construction of the Undertaking or any action taken pursuant to this MOA, SI shall immediately halt subsurface construction disturbance in the area of the discovery and in the surrounding area where additional remains can reasonably be expected to occur. SI shall immediately notify SHPO and the District of Columbia Chief Medical Examiner (CME) of the discovery under DC Code Section 5-1406 and other applicable laws and regulations.

i. If CME determines that the human remains are not subject to a criminal investigation by federal or local authorities, SI shall comply with the applicable federal or local laws and regulations governing the discovery and disposition of human remains and consider the ACHP's Policy Statement Regarding Treatment of Burial Sites, Human Remains, and Funerary Objects (2007).

ii. For actions involving Native American human remains or burials, SI shall comply with applicable laws in accordance with provisions of the Native American Graves Protection and Repatriation Act, as amended (Public Law 101-601, 25 USC 3001 et seq.) and regulations of the Secretary of the Interior at 43 CFR Part 10. Should human remains or such objects be found, DOS shall notify SHPO pursuant to 43 CFR Section 10.4(d).

13. DURATION

This MOA will expire if its terms are not carried out within fifteen (15) years from the date of its execution. Prior to such time, SI may consult with the other Signatories to reconsider the terms of the MOA and amend it in accordance with Stipulation 9.

Execution of this MOA by the Signatories, the filing of the MOA with the ACHP pursuant to 36 CFR § 800.6(b)(iv) and the implementation of its terms evidences that the SI has taken into account the effects of the revitalization of the NASM on historic properties and has provided the ACHP a reasonable opportunity to comment.

SIGNATURES AND ATTACHMENTS FOLLOW ON SEPARATE PAGES

EXHIBITS

Exhibit A: Undertaking Proposed Elevations and Plans

Exhibit B: Projected Construction Phasing Plan

Exhibit C: List of Invitees to Scoping and Consulting Parties Meetings

Exhibit D: Area of Potential Effects

Exhibit E: Stone Feasibility and Risk Analysis Expert Peer Review Group

Exhibit F: Proposed Atrium Wall Section

Exhibit G: Assessment of Effects on Historic Resources

SIGNATURE PAGE
MEMORANDUM OF AGREEMENT
REGARDING
THE NATIONAL AIR AND SPACE MUSEUM NATIONAL MALL BUILDING
REVITALIZATION – EXTERIOR, VESTIBULES, AND SITE WORK

FOR THE SMITHSONIAN INSTITUTION

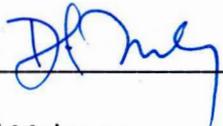
By: Nancy J. Bechtol 12/1/17

Nancy Bechtol
Director, Smithsonian Facilities

Date

**SIGNATURE PAGE
MEMORANDUM OF AGREEMENT
REGARDING
THE NATIONAL AIR AND SPACE MUSEUM NATIONAL MALL BUILDING
REVITALIZATION – EXTERIOR, VESTIBULES, AND SITE WORK**

FOR THE DISTRICT OF COLUMBIA STATE HISTORIC PRESERVATION OFFICER

By:  _____ 12/4/2017

David Maloney
State Historic Preservation Officer, District of Columbia

Date

SIGNATURE PAGE
MEMORANDUM OF AGREEMENT
REGARDING
THE NATIONAL AIR AND SPACE MUSEUM NATIONAL MALL BUILDING
REVITALIZATION – EXTERIOR, VESTIBULES, AND SITE WORK

FOR THE ADVISORY COUNCIL ON HISTORIC PRESERVATION

By: John M. Fowler 12/28/17

John M. Fowler
Executive Director

Date

EXHIBITS

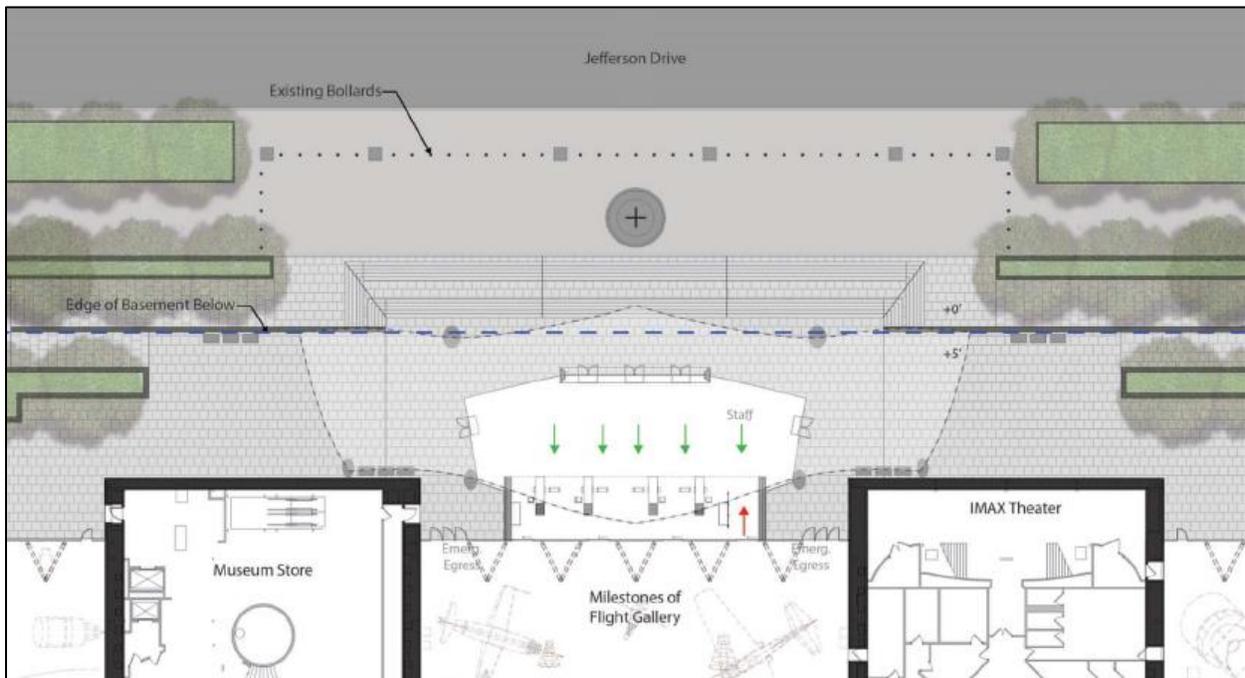
Exhibit A: Undertaking Proposed Elevations and Plans



Existing North Elevation. Quinn Evans Architects.



Rendering of Proposed North Elevation, Colonial Rose Granite. Quinn Evans Architects.



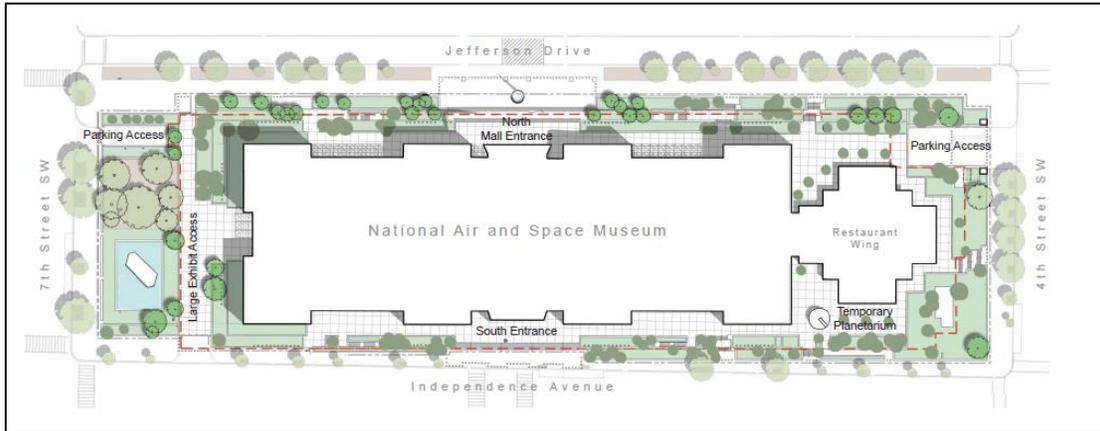
Plan of North Elevation Vestibule. Quinn Evans Architects.



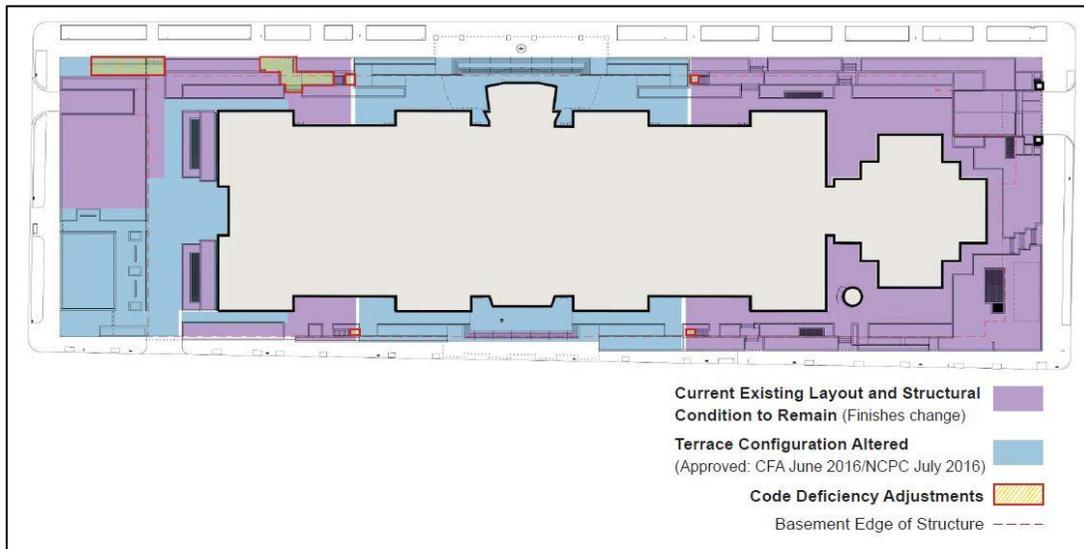
Rendering of North Entrance Vestibule, Colonial Rose Granite. Quinn Evans Architects.



Rendering of South Façade and Entrance, Quinn Evans Architects



Existing Site Plan. Quinn Evans Architects.



Proposed Site Plan. Quinn Evans Architects



Rendering of North Entrance Accessible Approach, Colonial Rose Granite. Quinn Evans Architects.



Colonial Rose Granite Mock-up, Sandblast Finish, June 2017.



Colonial Rose Granite Mock-up, Sandblast Finish, June 2017.

Exhibit B: Projected Construction Phasing Plan

The NASM revitalization will be phased in order to allow as much of the Museum as is practical to remain open to the public during the complete course of construction. Certain artifacts and exhibits are too large to move, and will be protected in place during construction. Construction will begin at the west portion of the building and progress east, with two of the three atrium galleries remaining open to the public as much as feasibly possible.

Projected Phase 1: Western half of the Museum - Zones 1, 2, 3, and 4 South



Projected Phase 2: Eastern half of the Museum – Zones 4 North, 5, 6, and 7



Exhibit C: List of Invitees to Scoping and Consulting Parties Meetings

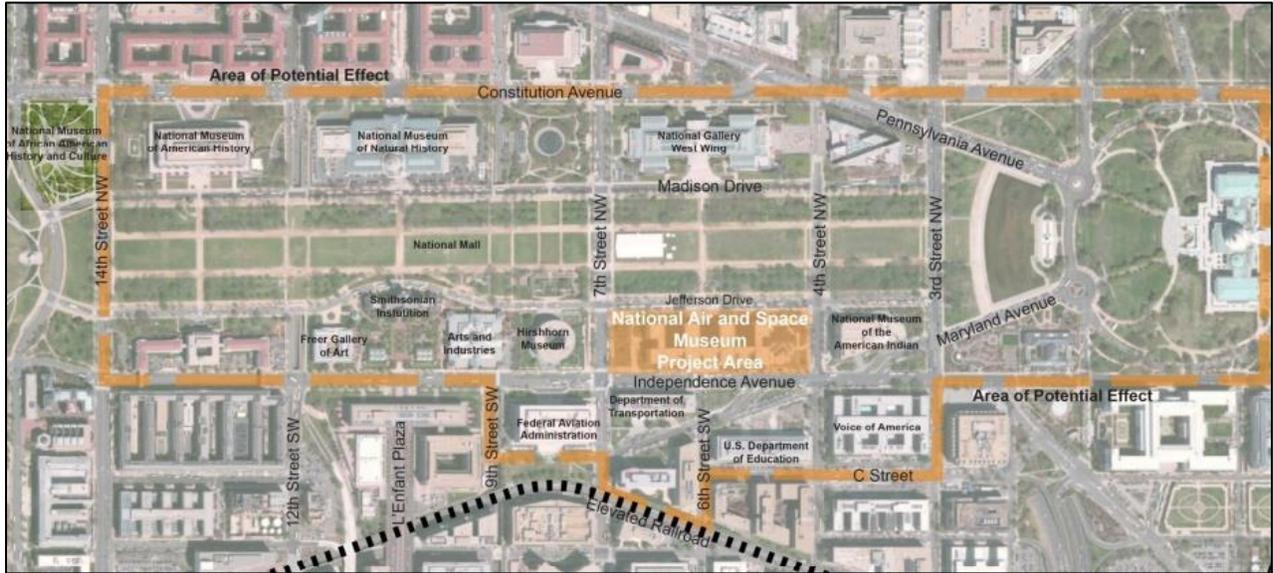
Invitees

National Capital Planning Commission
Commission of Fine Arts
Washington, DC State Historic Preservation
Office
National Park Service
Washington, DC Office Planning
District Department of Transportation
District Department of Energy and Environment
Department of Public Works
Washington Metropolitan Area Transit
Authority
DC Fire and Emergency Medical Services
Department
DC Water and Sewer Authority
U.S. Environment Protection Agency
Potomac Electric Power Company
Washington Gas
National Gallery of Art
Dwight D. Eisenhower Memorial Commission
General Services Administration
United States Fish and Wildlife Service
National Trust for Historic Preservation
Advisory Council on Historic Preservation
ANC 2C, ANC 6D
Committee of 100 on the Federal City
U.S. Capitol Historical Society
DC Preservation League
The Guild of Professional Tour Guides of
Washington, DC
National Coalition to Save Our Mall
National Museum of the American Indian
Hirshhorn Museum and Sculpture Garden
Architect of the Capitol
Hellmuth, Obata & Kassabaum
Department of Education
Trust for the National Mall
DC Chapter of DOCOMOMO
American Institute of Architects, DC Chapter
District of Columbia City Council
Southwest Neighborhood Assembly
Voice of America
Chesapeake Bay Field Office

Consulting Parties

National Capital Planning Commission
DC State Historic Preservation Office
Advisory Council on Historic Preservation
Commission of Fine Arts
District Department of Transportation
General Services Administration
Hellmuth, Obata & Kassabaum
Casey Trees
National Gallery of Art
Architect of the Capitol
National Trust for Historic Preservation

Exhibit D: Area of Potential Effects



Area of Potential Effects.

Exhibit E: Stone Feasibility and Risk Analysis Expert Peer Review Group

The following consultants participated as part of the expert peer review group in the evaluation of materials considered for the NASM's stone cladding:

Haley Aldrich – Quarry and Procurement Analysts
7601 Lewinsville Road, Suite 101
McLean, VA 22102

Jacobs Engineering Group – Project Management and Engineers
1100 North Glebe Road, Suite 500
Arlington, VA 22201

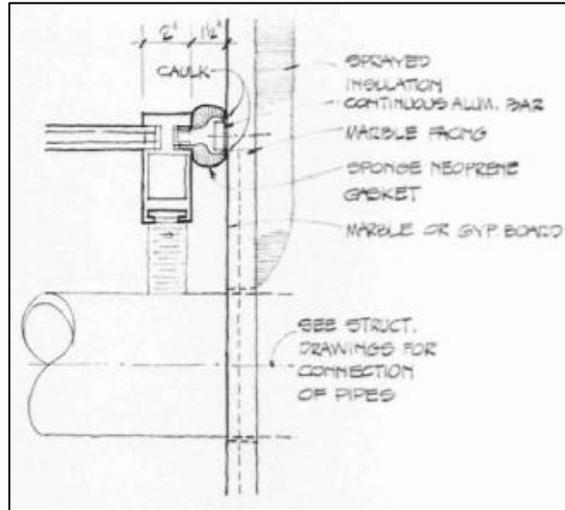
McDonough Bolyard Peck – Risk Analysts and Engineering Consultant
3040 Williams Drive, Suite 300
Fairfax, VA 22031

Quarra Stone Company – Procurement Analysts
333 Atlas Avenue
Madison, WI 53714

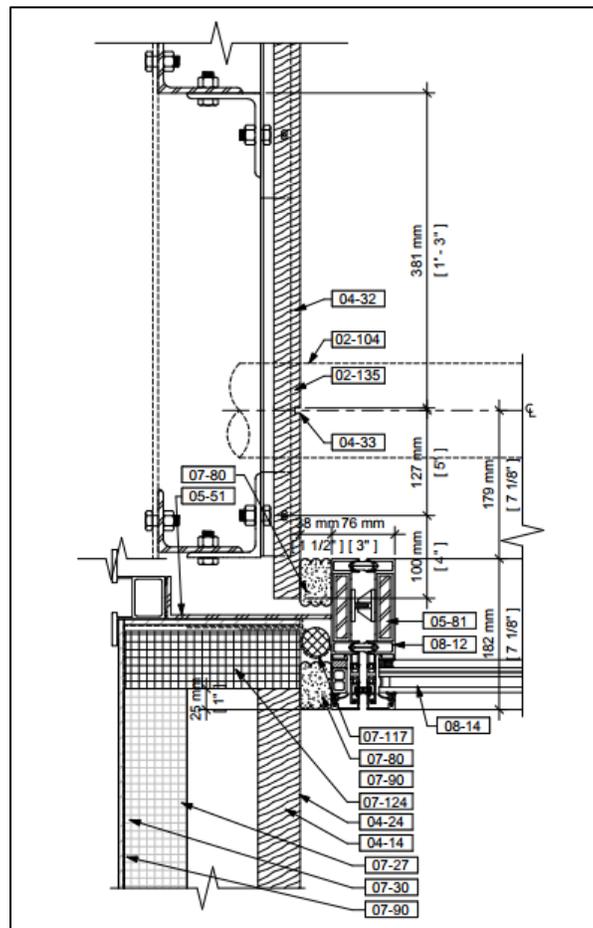
Studio Modh Architecture – Stone Aesthetics Analysts
1000 Dean Street, No. 436
Brooklyn, NY 11238

Wiss, Janney, Elstner Associates, Inc. – Structural Engineers/Architects
330 Pfingsten Road
Northbrook, IL 60062

Exhibit F: Proposed Atrium Wall Section



Original Atrium Wall Section. HOK Architects.



Proposed Atrium Wall Section, Depicting Co-Planar Condition Between Historic Stone at the Interior and New Stone Cladding. Quinn Evans Architects.

Exhibit G: Assessment of Effects on Historic Resources

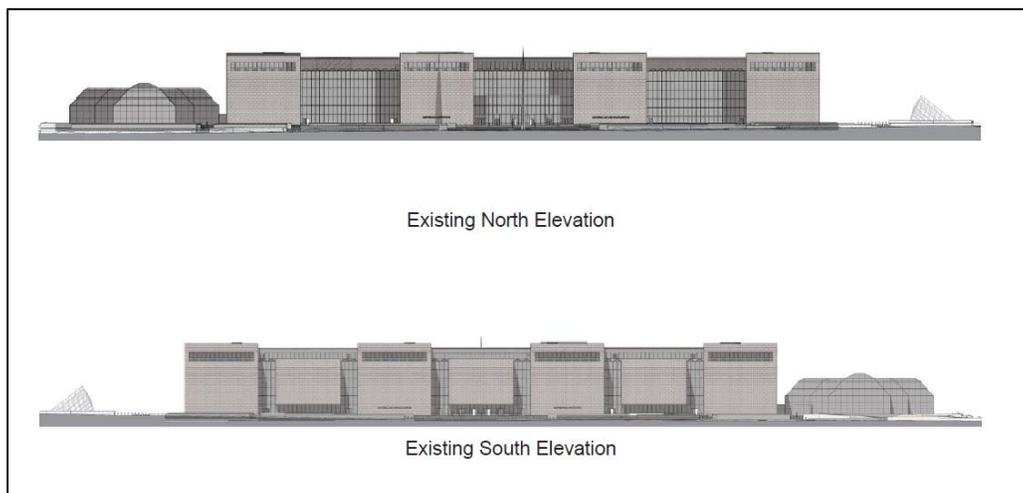
**The National Air and Space Museum Revitalization
Assessment of Effects on Historic Resources**

Introduction

The National Air and Space Museum (NASM) was designed by Hellmuth, Obata & Kassabum (HOK), with Gyo Obata as the principal designer in 1972. The Museum opened to the public in 1976. The NASM is a contributing building to the National Mall Historic District listed in the National Register of Historic Places and the District of Columbia Inventory of Historic Sites. For purposes of Section 106 review of this undertaking, the Smithsonian Institution (SI), DC State Historic Preservation Office (DC SHPO) and the National Capital Planning Commission (NCPC) have agreed that the NASM is individually eligible for listing in the National Register, and shall be treated as such to maintain its existing character.

The NASM's prominent character defining features consist of four monumental blocks clad in Tennessee Pink marble (limestone) panels separated by three recessed glass bays on the north side, and alternating large and small marble clad blocks on the south side separated by smaller bays of recessed glass. The alteration of solid and void on the north side was placed and proportioned to correspond to projections and recesses of the National Gallery of Art West Building across the Mall, which is also clad in Tennessee Pink marble corresponding to the adjacent East Wing Building. The NASM is situated on an elevated paved terrace, with a series of walled and stepped terraces with planters, stairs and ramps that also contribute to the character of the museum complex.

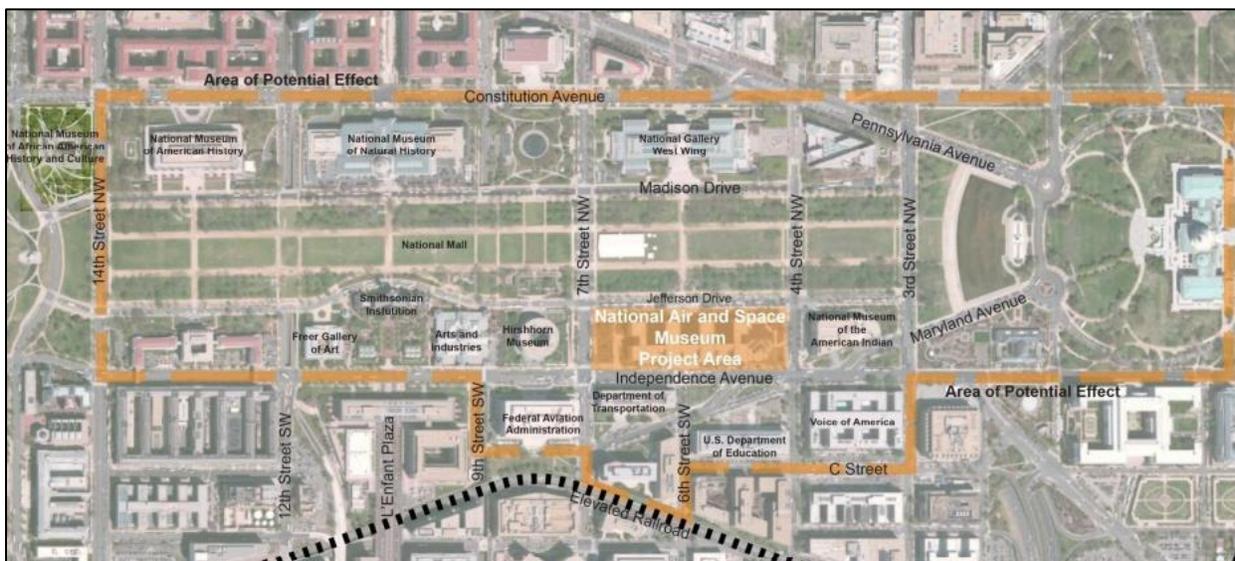
The SI is planning an undertaking to address specific deficiencies related to the building systems and envelope, and to protect the collection, to include replacing the NASM's exterior wall cladding, curtain walls, skylights and roof systems, heating, ventilation, and air conditioning equipment, plumbing and fire protection systems. The project will also address related work including the revitalization of the landscape, addition of a vestibule at the north entrance for security screening and improvement of visitor experience, and reductions to carbon emissions and energy consumption. The existing Tennessee Pink marble (limestone) cladding is experiencing significant warping, and the material cannot be reused. The exterior cladding is integrated with the mechanical air distribution system, and it is necessary to undertake these upgrades simultaneously. The last major work on the stone façade was completed in 1995-1997, and the skylights and exterior glazing were replaced in 1994-2000.



Existing Building Elevations, Quinn Evans Architects.

The purpose of this document is to assess the adverse effects of the project on the existing building and the National Mall Historic District in accordance with 36 CFR § 800.5(a) and in consultation with the DC SHPO.

This report finds that the undertaking will have an adverse effect on the building and the National Mall Historic District, due to altering the exterior stone cladding which is one of the most notable character defining features of the museum and an element that establishes a strong visual connection to the similarly clad National Gallery of Art buildings across the National Mall. In addition, adverse effects will result from changing other features of the property's setting that contribute to its historic significance, including alterations to the terrace, and introducing accessible walkways and new security pavilion. This document describes different aspects of the proposed project and assesses the effects, including the cumulative adverse effect that results from all of the proposed changes to the building and site. The proposed work was evaluated within the below Area of Potential Effects.



Area of Potential Effects, Quinn Evans Architects.

Envelope Replacement - Cladding

The NASM's stone cladding consists of Tennessee Pink marble (limestone) panels measuring 2'6" by 5' in dimension. The marble barrier wall system is comprised of 1 ¼" thick panels with backer rod and sealant, and spray applied foam insulation on the back of the stone, with a vertical plenum in the wall cavity for air flow. The foam insulation backing inhibits air and water flow, and combined with the existing non-traditional wall construction, has resulted in extensive warping and cracking of the stone panels. The irreversible condition of the stone panels and the exterior wall construction do not provide adequate resistance to water penetration and air infiltration. For these reasons, the stone cladding must be replaced.

The SI has extensively assessed over 80 different stone cladding and manufactured material options with the assistance from an assembled team of expert consultants. The replacement cladding material must meet certain criteria such as strength, procurement of sufficient quantity and quality of material, adherence to the original design concept, blast resistance, suitability to the NASM's existing steel frame structure, and to provide the longest service life possible. The assessment of cladding options evaluated

in-kind replacement and the use of other materials for consistency with the appearance of the Tennessee Pink marble to maintain the existing character of the building and to avoid or minimize adverse effects. Use of a granite was determined as the best choice for the building's structure, and to meet the required criteria listed above. Colonial Rose granite has been selected as the proposed stone cladding for the building.

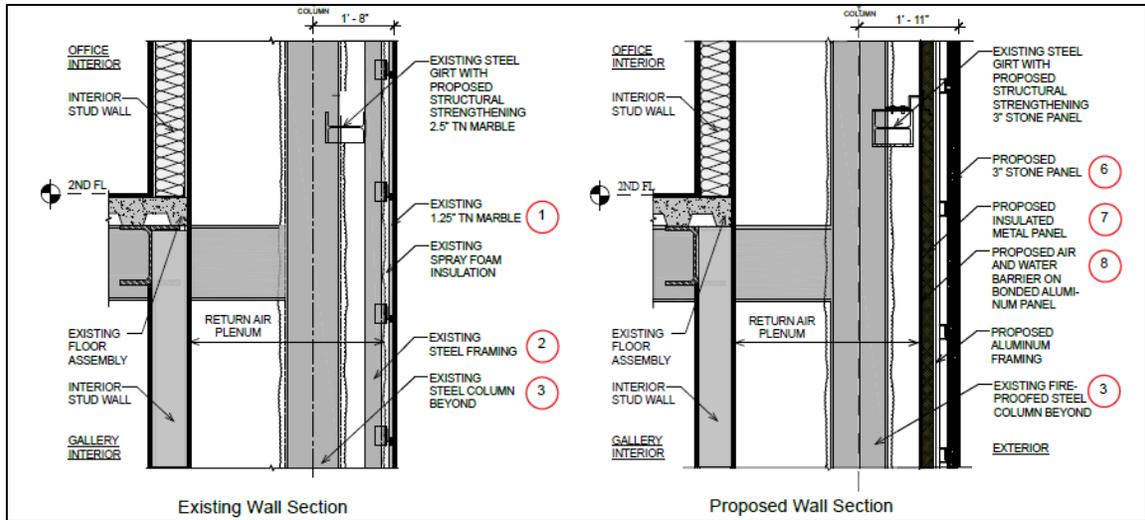


Tennessee Pink marble (limestone) hysteresis, 2016.

Tennessee Pink marble (limestone) is a light to medium pink stone with distinctive horizontal striations. Certain aspects of Colonial Rose match the Tennessee Pink aesthetically, such as an overall warm pink tone, panel to panel variation, and horizontally oriented veining. Compared to the existing stone, the Colonial Rose granite lends a more gray tone and different pattern from its "rope" veining. The change in the appearance of the stone cladding will result in an adverse effect on the building. The NASM and the National Gallery of Art's West Building and East Wing were constructed of Tennessee Pink, and the selection of the Colonial Rose granite also results in an adverse effect on the Historic District in visually separating the connection between these three buildings.

The Tennessee Pink marble seamlessly continues into the interior of the atriums on the stone clad volumes of the building. The existing Tennessee Pink stone panels on the interior are in good condition and will remain. There will be an adverse effect from the contrast between the existing and the Colonial Rose granite cladding where the two stones are visible together within the atriums along Jefferson Drive. This adverse effect will be minimized by maintaining the coplanar relationship between the exterior and interior stone.

The replacement granite will be a minimum of 2" thick to provide the best balance of strength and weight. The exterior walls will expand approximately three inches to accommodate fireproofing, insulation and the thicker stone panels. The new exterior stone panels and historic interior stone panels will remain coplanar by altering structural components, therefore this adverse effect has been minimized.



Wall Section, Quinn Evans Architects. Please note that the red circles refer to a photo key from submission material to the Commission of Fine Arts dated June 2016.

Envelope Replacement - Glazing

The original gray-bronze tinted glass curtain walls and acrylic skylights were replaced in 1994-2000 due to performance issues with solar heat gain, leaking, and excessive exposure to the museum’s collection from ultraviolet rays. Even with the existing dark bronze tinted skylight glazing with a visible light transmittance (VLT) of 8%, and the dark bronze tinted curtain walls with 22% VLT, there is still evidence of ongoing deterioration from excessive light on the museum’s collection. The dark appearance of the existing glazing lessened the views of the gallery interiors from the National Mall and to the sky above from within the galleries.



Original Curtain Wall Glazing, 1976.

The proposed glazing in the north atriums, south atriums, and third floor zones above the east and west atriums, is an insulated glass unit composed of a gray tinted outer pane with a low-E coating, clear middle pane, and a clear laminated inner pane. A silkscreened ceramic black dot frit is applied in either a variable or constant density level depending on area and limitations needed on daylight. The frit pattern begins 10' above the terrace grade to further minimize visibility. The proposed glazing assembly overall maintains visibility of the collection from the exterior at night, and offers improved views within the atriums, brightness perception, and daylight color quality over the existing condition, all in keeping with the original design intent, and therefore does not constitute an adverse effect.



View of Atrium at Night, Glazing Mock-up at Far Left Bays, 2017.

Vestibule and Terrace Alterations

NASM has two public entrances at the center of the building on Jefferson Drive and Independence Avenue, which enter into the north and south lobbies. Due to the high volume of 7 million Museum visitors on average per year, there is a need to provide improvements to visitor comfort, access and security. A vestibule at the highly trafficked north entrance will provide shelter for queuing to enter the Museum and security screening areas, improved security screening, and a buffer zone between the exterior environment and the stable interior conditions to better preserve the collection.

The proposed size and location of the vestibule is scaled to the corresponding bay of the building, and will not obstruct views from the interior of the building in the atriums which maintains the original design intent. The design of the vestibule proposes a tensile inspired structure with curvilinear forms which invoke a feel of flight and recalls the mission of the Museum. The vestibule will not require the removal of historic fabric to construct, and could be a readily reversible addition.



Rendering of North Elevation and Entrance Vestibule with Colonial Rose Granite, Quinn Evans Architects.

Although the design of the proposed vestibule supports the mission of the Museum in function and arrangement, it has an adverse effect on the appearance of the building, due to disrupting the clean geometric horizontality of the building's form and massing. The vestibule and required shifting of the entrance stairs north would extend beyond the McMillan line, and results in an adverse effect on the National Mall Historic District.

The site features three outdoor sculptures: *Ad Astra* by Richard A. Lippold, installed at the north entrance in 1976; *Continuum* by Charles O. Perry, installed at the south entrance aligned with 6th Street SW; and *Delta Solar* designed by Alejandro Otero, installed at the west lawn in 1977, set within a shallow pool. The site sculptures are all contributing features to the NASM's setting, and all will remain on the NASM site. The proposed vestibule at the north entrance requires the relocation of the *Ad Astra* sculpture. The sculpture will remain centered on axis with the north entrance, but will shift north of the reconfigured entrance stair. This change will not result in an adverse effect to the sculpture or its setting.

The original location of the *Continuum* sculpture, slightly off-center with the south entrance, will be maintained, preserving its setting and relationship with the south façade. *Delta Solar* will be shifted

west and elevated on a dark gray stone plinth, to be incorporated into the site's perimeter security, and will result in an adverse effect in changing the sculpture's setting and its relationship to the west lawn. The adverse effect on *Delta Solar* will be minimized by featuring a water scrim element at the proposed plinth, which is reminiscent of the sculpture's original setting within a shallow basin.



South Elevation Rendering with Colonial Rose Granite, Quinn Evans Architects.

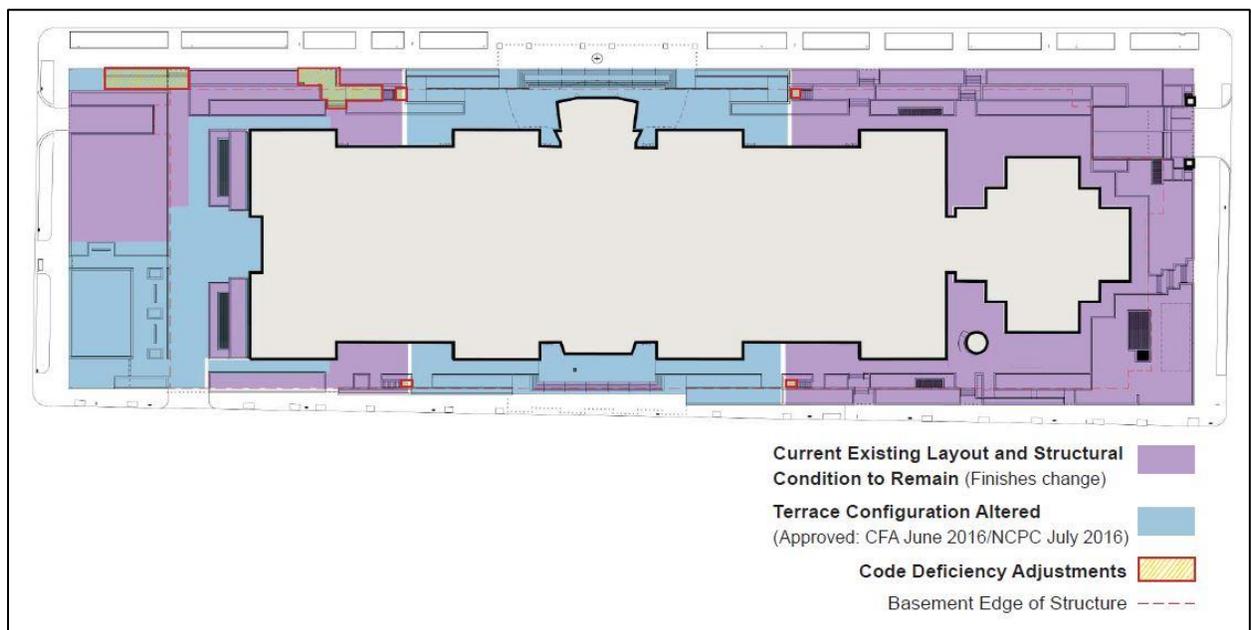


Proposed *Delta Solar* Plinth Renderings, Quinn Evans Architects.

The NASM's site consists of a granite paved terrace which surrounds the majority of the building at its base, which is elevated above-grade. A series of stepped walled terraces with planters, and an east and west lawn extend from the sidewalk level to the elevated terrace. The planter beds and retaining walls are clad in Tennessee Pink marble, and the existing pavers are Stony Creek granite installed in 1985 which replaced the original precast concrete pavers. The terrace is accessed by a series of monumental granite stairs and ramps, some original to the site. Site alterations designed by HOK were completed in 1988, and the ramp at the northwest corner of the site and additional retaining walls were altered in 1991.

The existing planting bed walls and retaining walls range between 36" to approximately 60" in height which varies to address sloped conditions. The current configuration of the planters will remain at the northwest, northeast, and southwest portions of the site, which preserves the majority of the integrity of the NASM's setting. The terrace site walls are clad in Tennessee Pink marble to match the façade. The terrace site walls will be reclad in Colonial Rose granite to maintain this visual continuity and original design intent, and minimizes adverse effects to the site.

The project will provide accessible walkways at the primary entrances. Accessible walkways are currently limited to two locations removed from the primary entrances. Symmetrical accessible walkways are planned at the north and south entrances, and will feature high walls with engraved signage. The walkways are designed for universal access and are under 5% in slope.



Existing and Proposed Site Plans, Quinn Evans Architects.

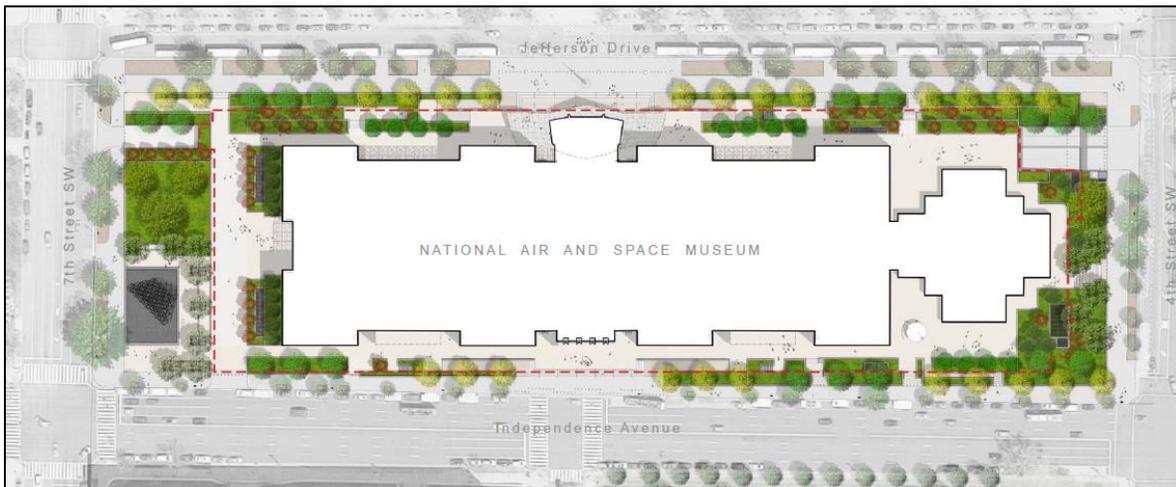
The terrace paving is non-original granite, and the material will be replaced with a mix of with natural stone paving at the museum entrances and around the Delta Solar plinth, and monolithic exposed

aggregate concrete paving on the remaining portions of the terrace. The cumulative effect of the landscape, changes to the settings of the site sculpture, and terrace alterations consists of an adverse effect to the site. This cumulative adverse effect has been minimized by integrating the walkways into the landscaping and terrace, installing neutral terrace paving, and limiting the changes to select areas of the monumental site. The introduction of engraved signage at the accessible walkway walls at the main entrances is in keeping with similar signage found on buildings on the National Mall and does not have an adverse effect on the building or the district.



Proposed Accessible Walkway and Engraved Signage, North Elevation, Quinn Evans Architects.

The planting plan will provide shade trees, and has been designed to reinforce the visual connectivity between the building and the Mall, and the building and sidewalk. The plantings will enable views of the building from the Mall and from the interior of the building out to the Mall, which is consistent with the original landscape design intent and will serve to minimize the cumulative adverse effects on the site. A portion of the west lawn and grove of trees north of *Delta Solar* will be maintained to also minimize cumulative adverse effects on the site.



Proposed Planting Plan, Quinn Evans Architects.