

**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 28 day of December, 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 (ACHP) (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 graduated 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 NCPCH 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
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FOR THE SMITHSONIAN INSTITUTION

By: Nancy J. Bechtol 12/1/17

Nancy Bechtol
Director, Smithsonian Facilities

Date

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REVITALIZATION – EXTERIOR, VESTIBULES, AND SITE WORK**

FOR THE NATIONAL CAPITAL PLANNING COMMISSION

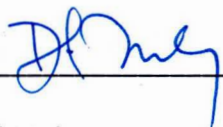
By:  12/7/17

Marcel C. Acosta
Executive Director

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

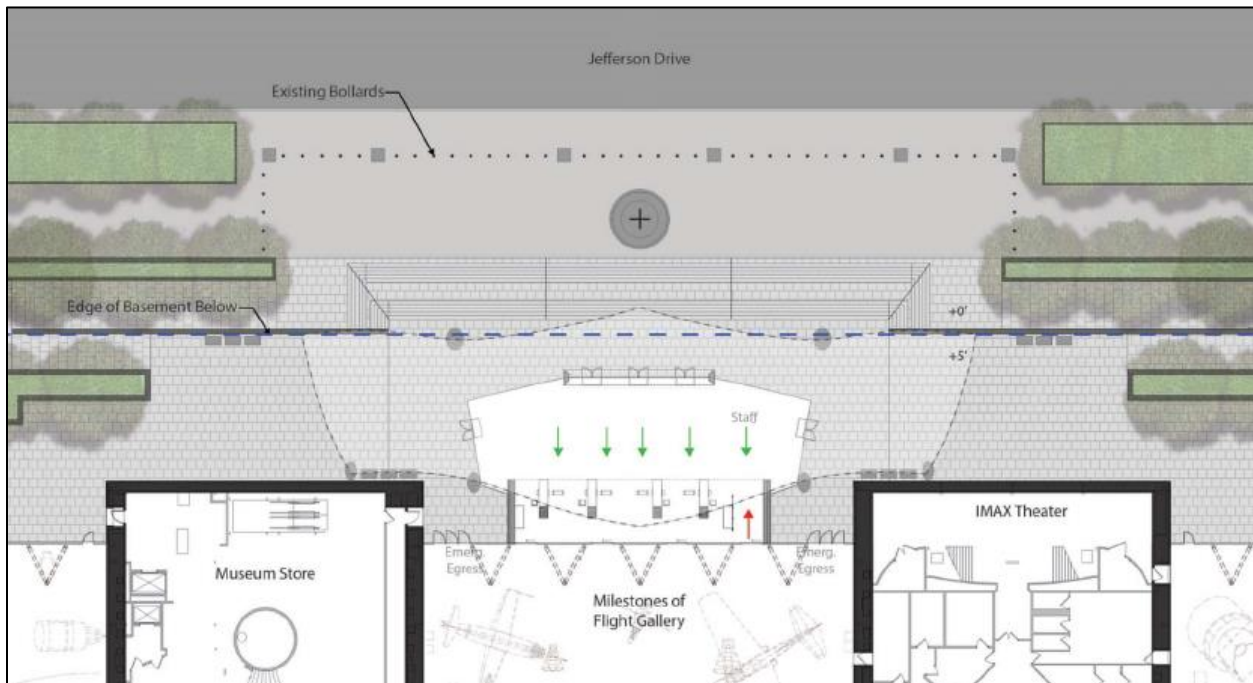
Exhibit A: Undertaking Proposed Elevations and Plans



Existing North Elevation. Quinn Evans Architects.



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



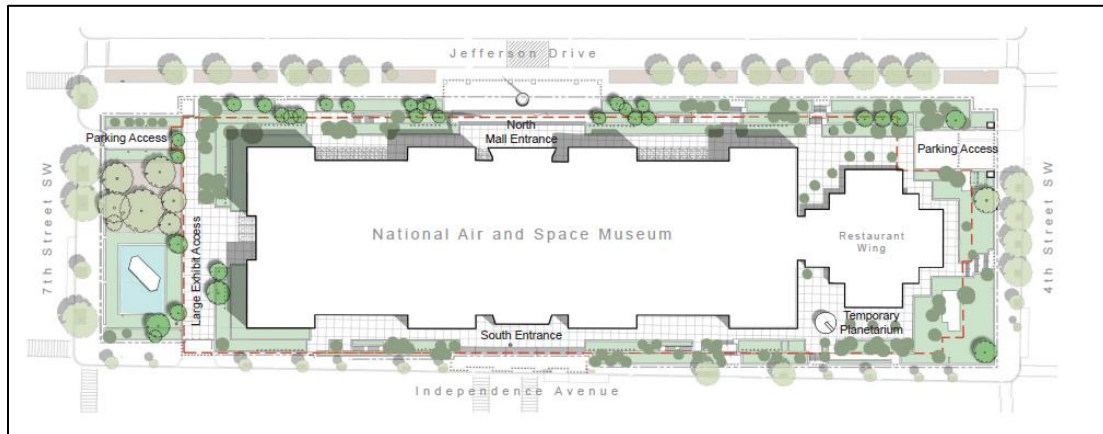
Plan of North Elevation Vestibule. Quinn Evans Architects.



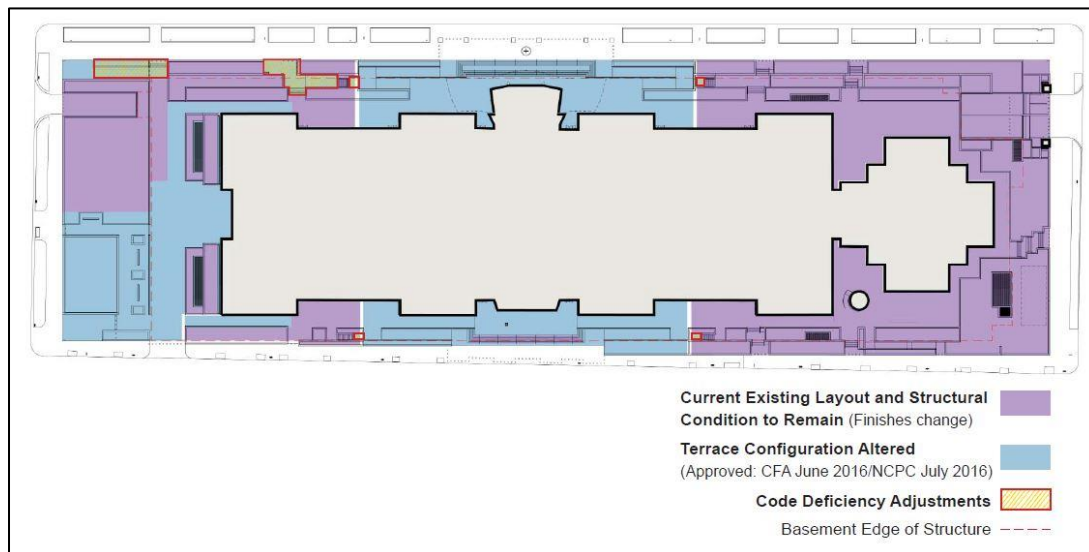
Rendering of North Entrance Vestibule, Colonial Rose Granite. Quinn Evans Architects.



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

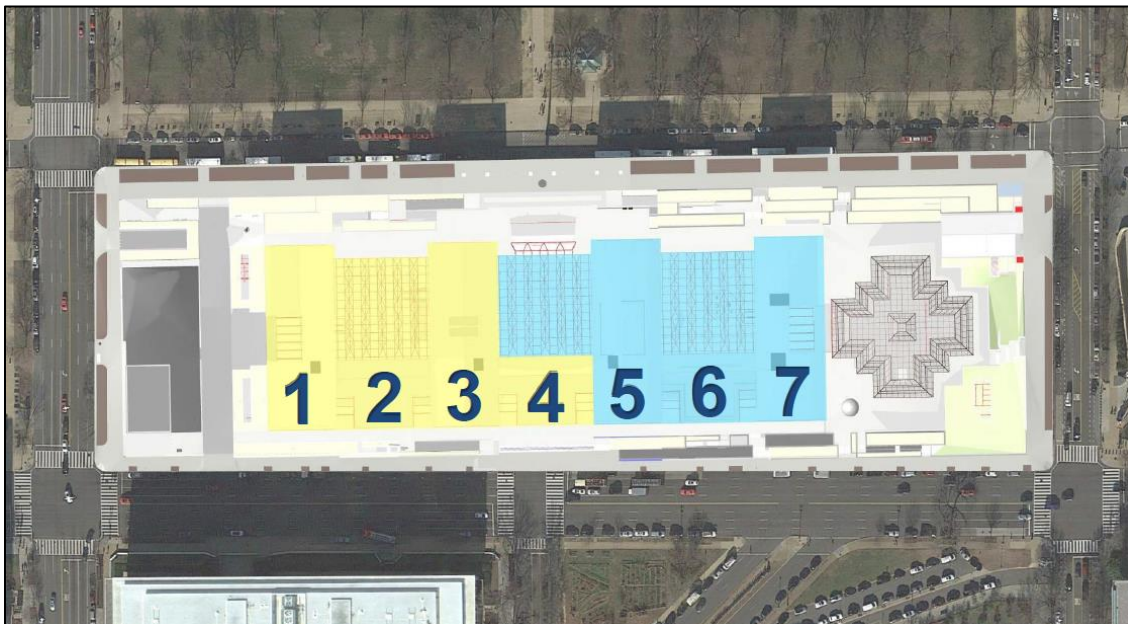


Exhibit C: List of Invitees to Scoping and Consulting Parties Meetings

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

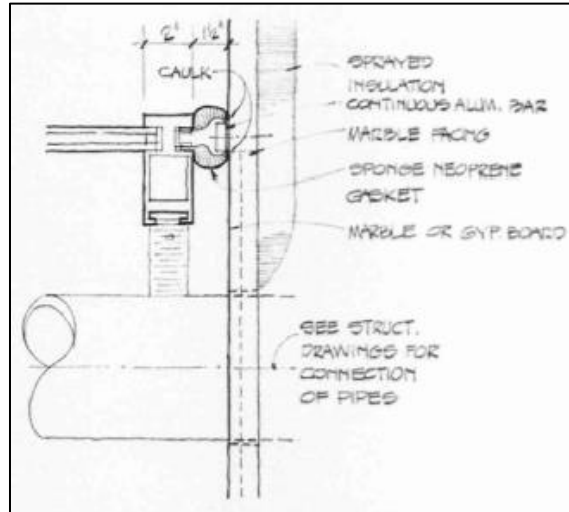
McDonough Bolyard Peck – Risk Analysts and Engineering Consultant
3040 Williams Drive, Suite 300
Fairfax, VA 22031

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

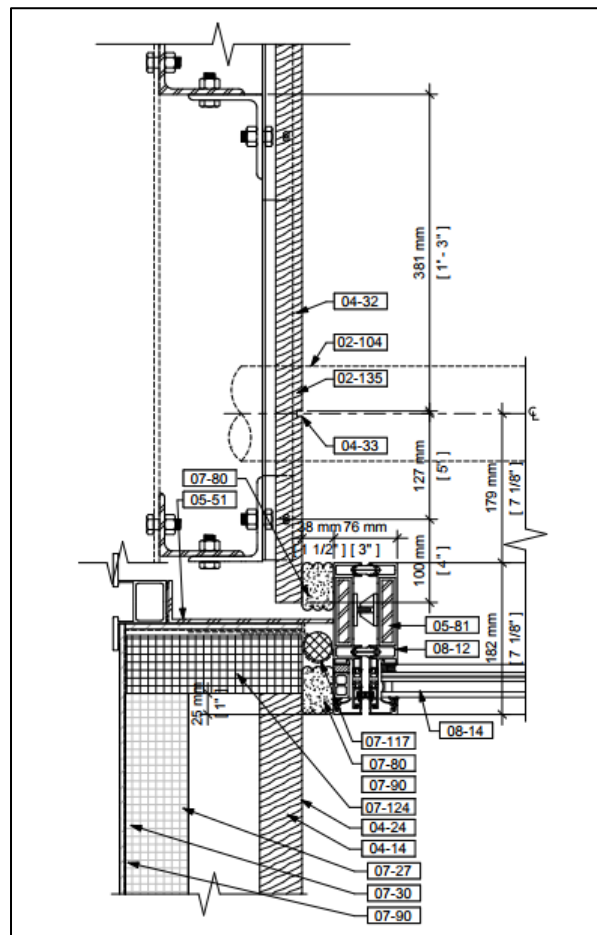
Studio Modh Architecture – Stone Aesthetics Analysts
1000 Dean Street, No. 436
Brooklyn, NY 11238

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

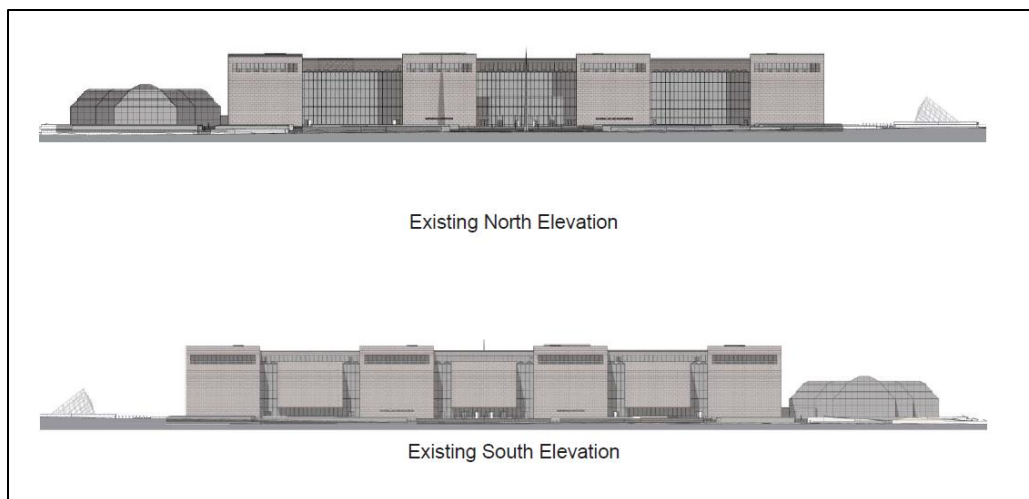
The National Air and Space Museum Revitalization Assessment of Effects on Historic Resources

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.

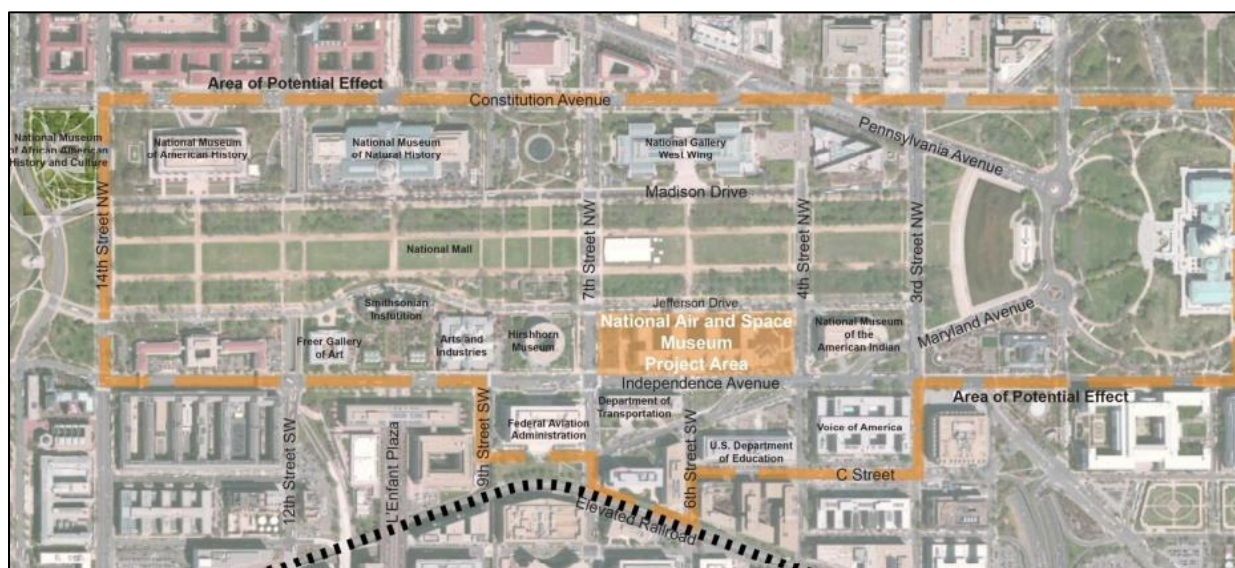
The SI is planning an undertaking to address specific deficiencies related to the building systems and envelope, and to protect the collection, to include replacing the NASM's exterior wall cladding, curtain walls, skylights and roof systems, heating, ventilation, and air conditioning equipment, plumbing 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 1/4" 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.

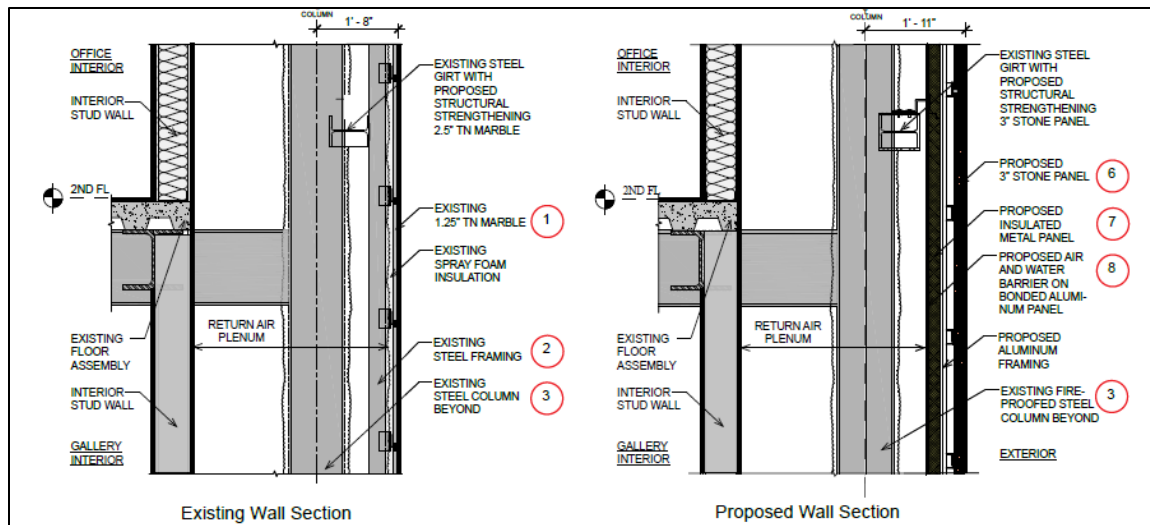


Tennessee Pink marble (limestone) hysteresis, 2016.

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.

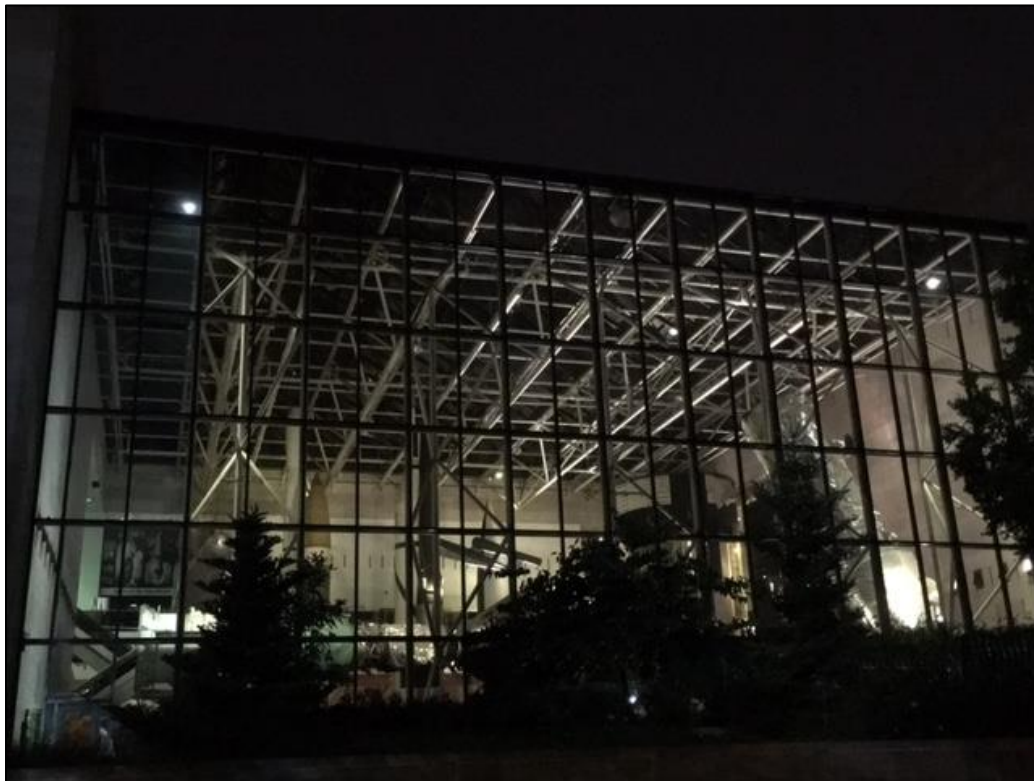
Envelope Replacement - Glazing

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.

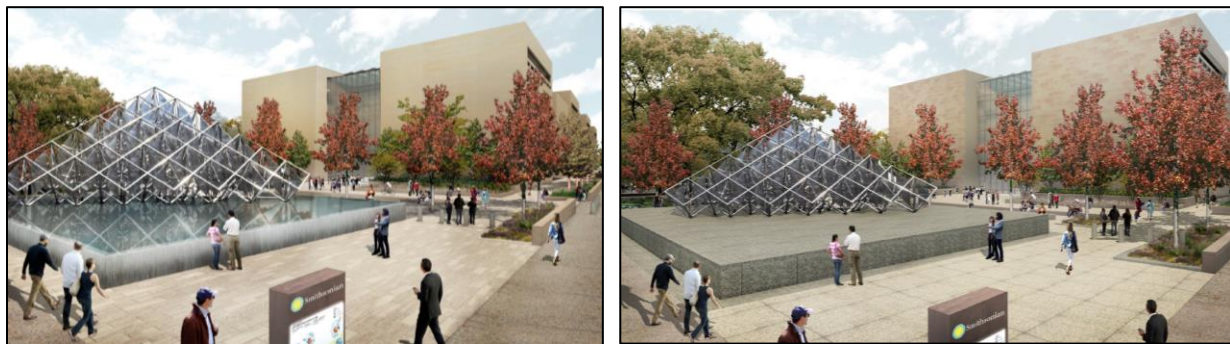
The site features three outdoor sculptures: *Ad Astra* by Richard A. Lippold, installed at the north entrance in 1976; *Continuum* by Charles O. Perry, installed at the south entrance aligned with 6th Street SW; and *Delta Solar* designed by Alejandro Otero, installed at the west lawn in 1977, set within 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.

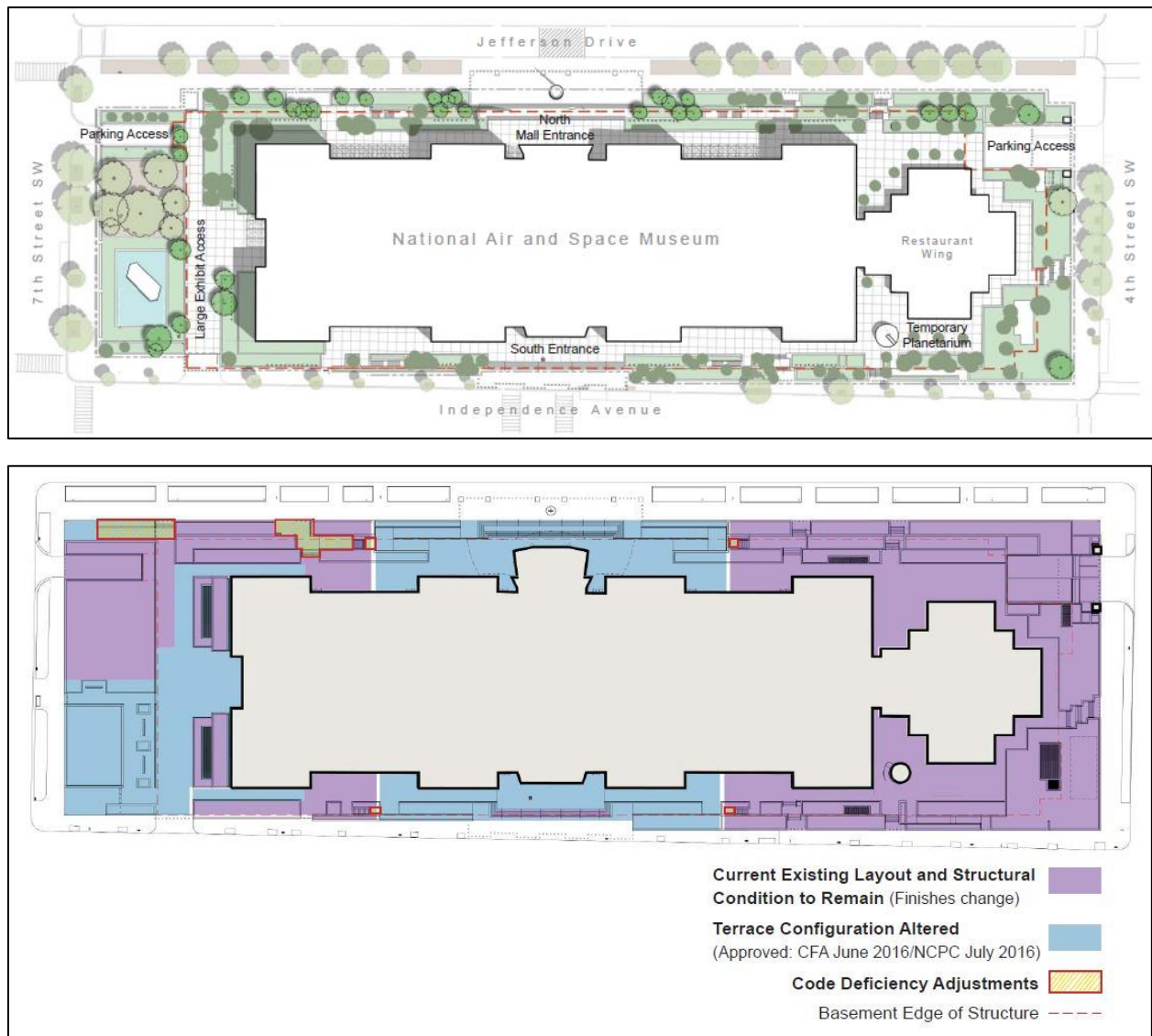


Proposed *Delta Solar* Plinth Renderings, Quinn Evans Architects.

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.

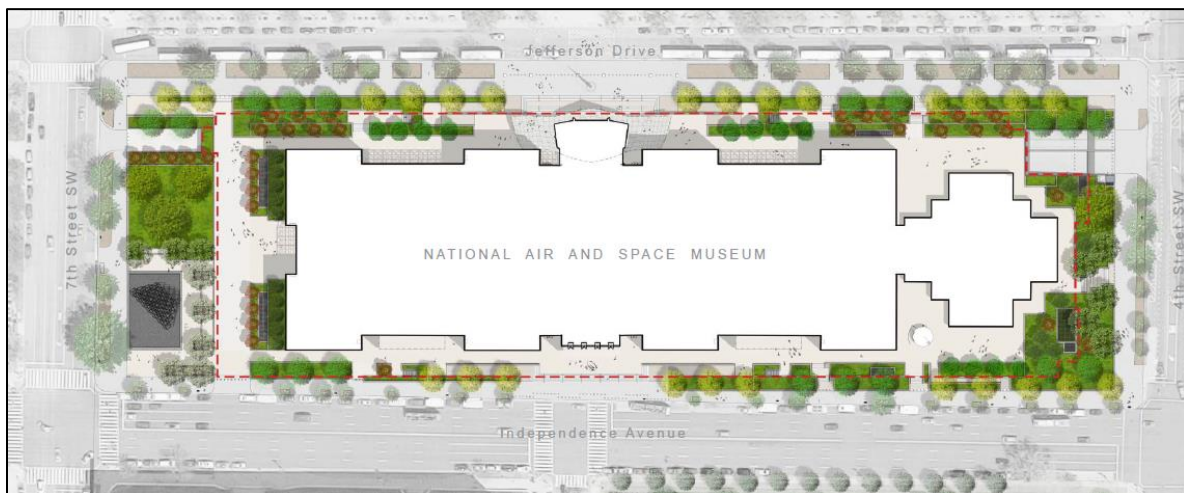
The terrace paving is non-original granite, and the material will be replaced with a mix of with natural stone paving at the museum entrances and around the Delta Solar plinth, and monolithic exposed

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 constitutes 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.