



NATIONAL AIR AND SPACE MUSEUM

Mall Building Revitalization

April 7, 2017 NEPA/Section 106 Public Meeting & Cladding Mockup



Smithsonian
Institution

Purpose of Today's Meeting

- Combined NEPA/ Section 106 Consulting Parties Meeting #3
- Present a summary of the EA, Assessment of Effects and Draft MOA now available for comment
- Record public input and address questions related to above
- View mockup and comment on aesthetic and historic preservation issues related to cladding alternatives



Agenda

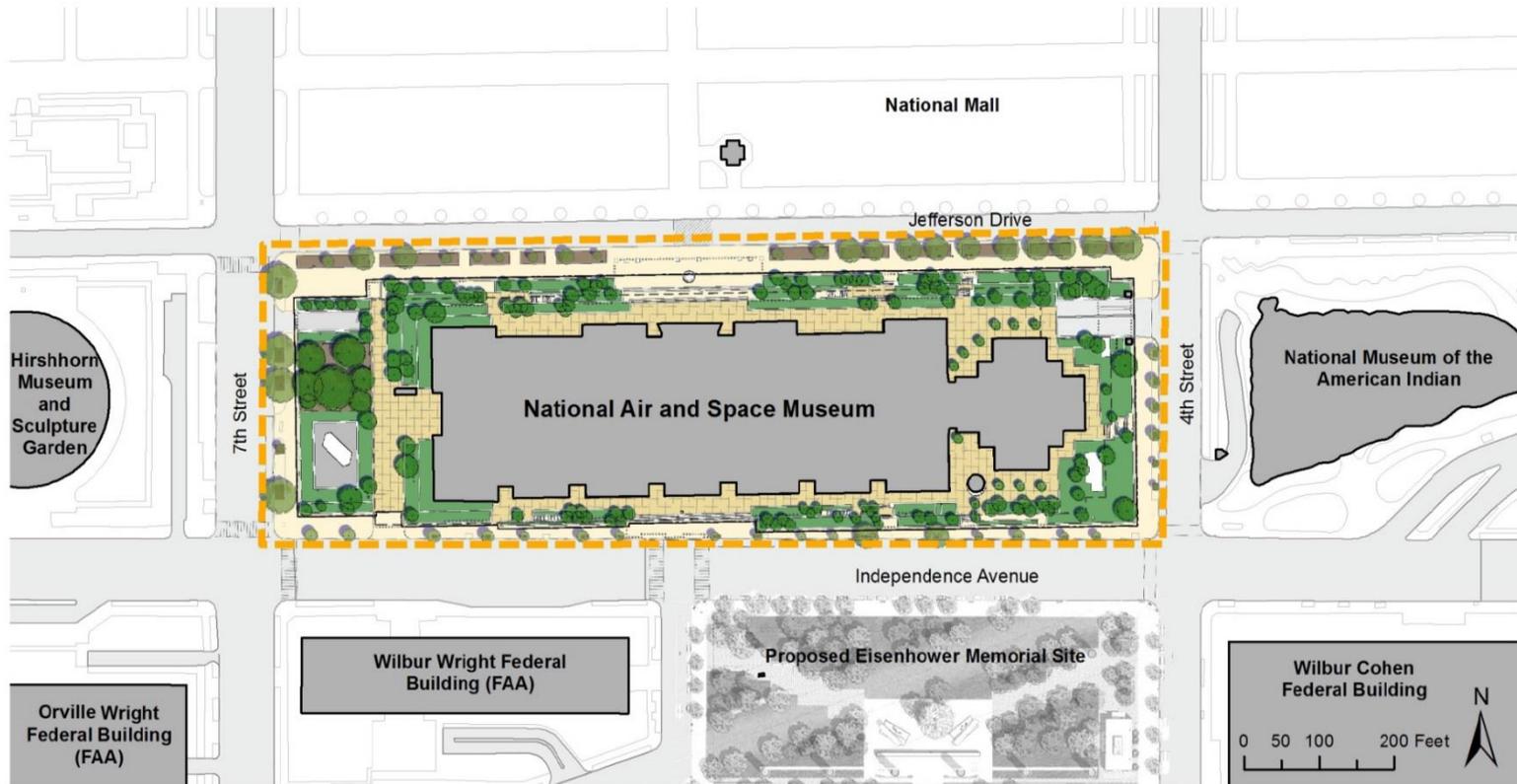
1. Welcome, Sign-in, Introductions:
Ann Trowbridge, SI and Vivian Lee, NCPC
2. Presentation Summary of EA, Section 106 & Cladding Mockup:
Ann Trowbridge and Sharon Park, SI
3. Questions and Answers
4. 11:45 AM: Walk to NASM to observe and comment on
cladding mockup

Project Location



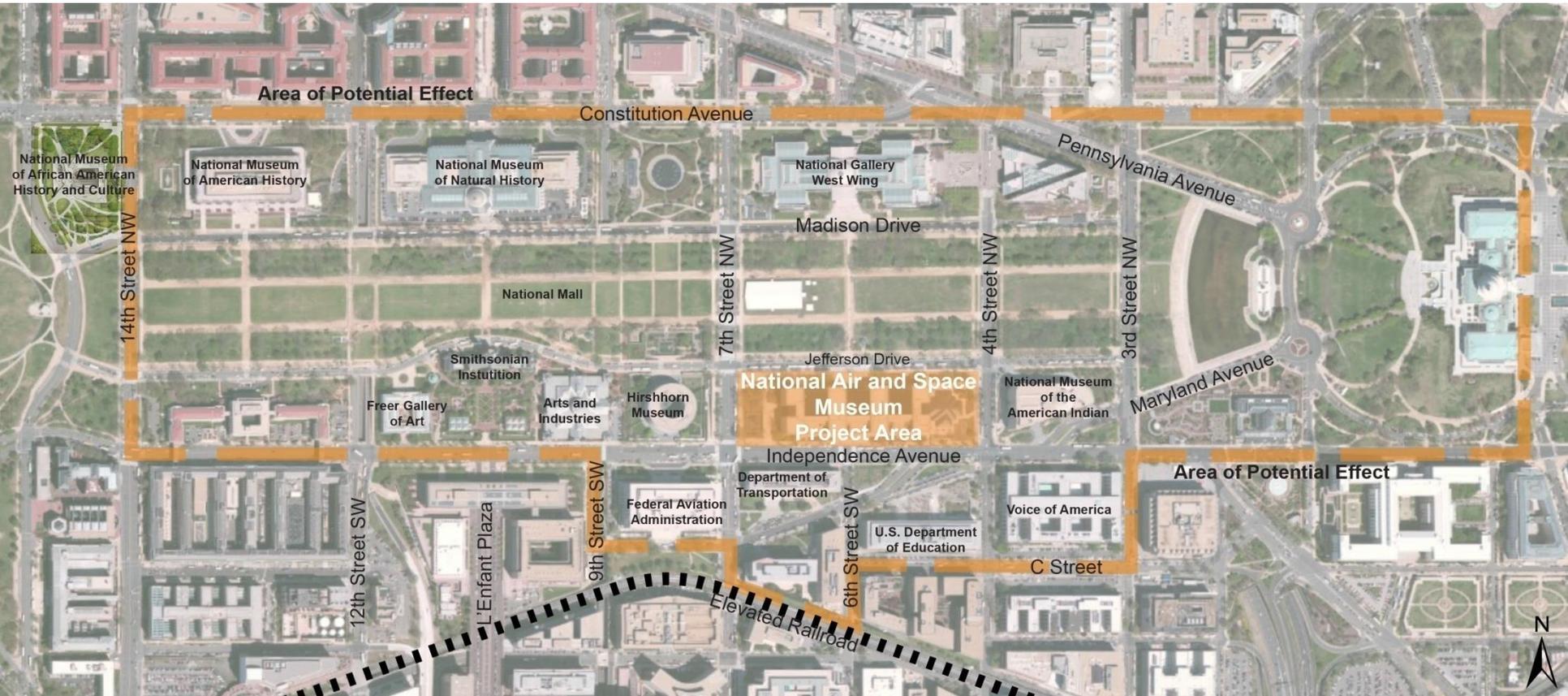
**National Air and
Space Museum**

Existing Site Context



 National Air and Space Museum Project Area

Area of Potential Effect



NASM Mall Building Background



- **1958** – planned location authorized by President Eisenhower
- **1971** – Congress appropriated \$41 million for building's construction
- **1972-1973** – design by Hellmuth, Obata & Kassabaum (HOK)
- **1976** – opened to the public on July 1 as part of Nation's Bicentennial
- **1995-1997** – last previous major work on stone façade
- **1997-2001** – skylight & window wall replacement

NASM Mall Building Background

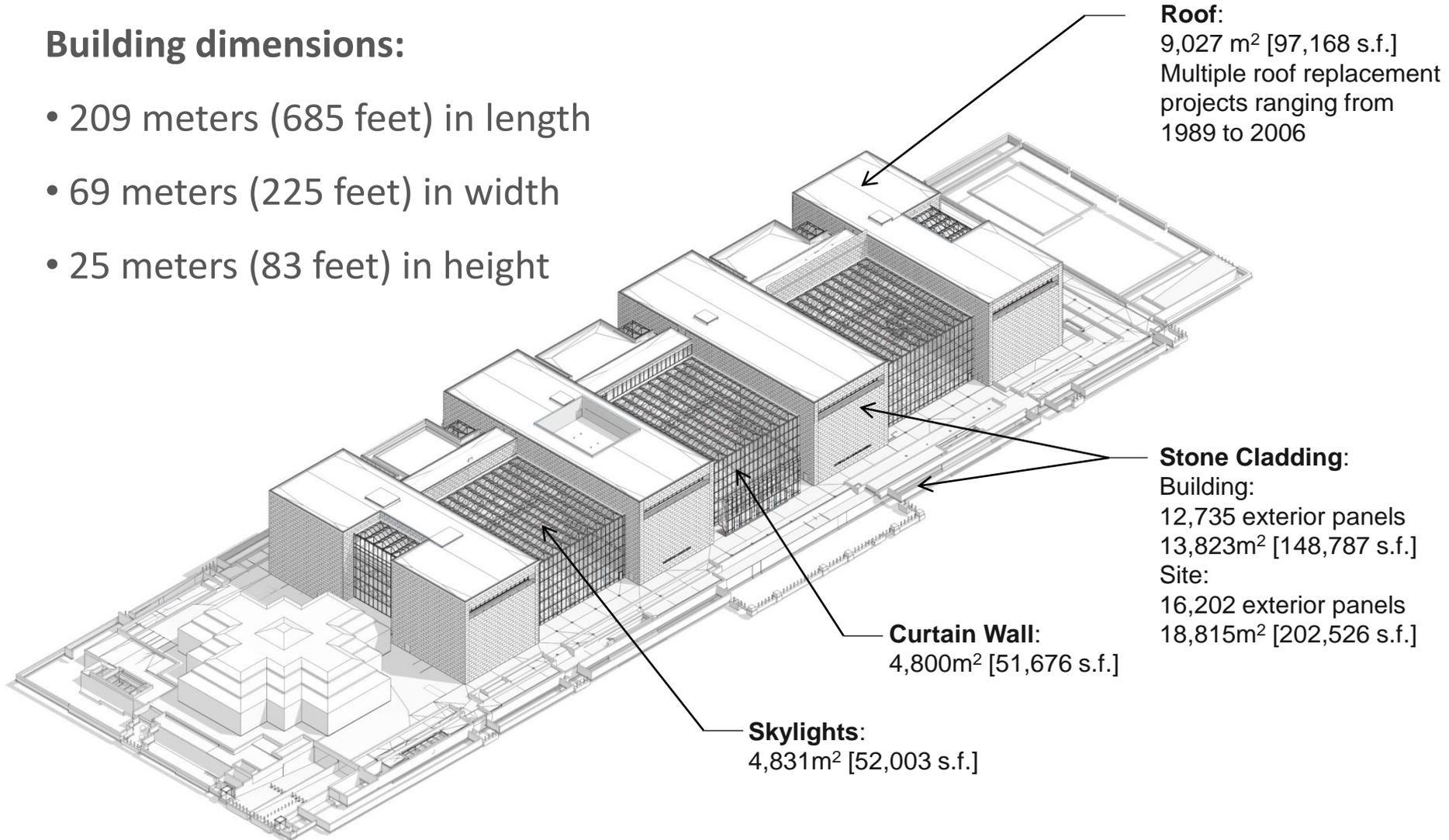


- **Contributes to** the National Mall National Register Historic District
- **Entry on Axis with** National Gallery of Art West Building and has same exterior cladding
- **Stone façade** is exclusive weather barrier
- **Mechanical systems** date to the building's construction

NASM Mall Building Background

Building dimensions:

- 209 meters (685 feet) in length
- 69 meters (225 feet) in width
- 25 meters (83 feet) in height



Roof:
9,027 m² [97,168 s.f.]
Multiple roof replacement projects ranging from 1989 to 2006

Stone Cladding:
Building:
12,735 exterior panels
13,823m² [148,787 s.f.]
Site:
16,202 exterior panels
18,815m² [202,526 s.f.]

Curtain Wall:
4,800m² [51,676 s.f.]

Skylights:
4,831m² [52,003 s.f.]

Project Scope and Goals

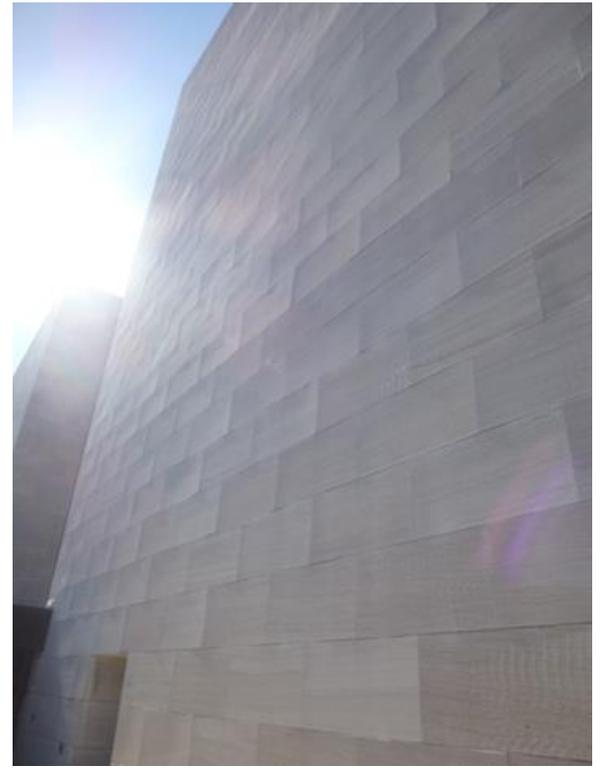


- Replace building systems to provide a safe and appropriate environment for visitors, staff, and artifacts.
- Reduce carbon emissions and energy consumption.
- Improve access, queuing and security screening conditions by revitalizing the terraces, entrances and improve overall visitor experience.

Project Components

- Cladding and Glazing Replacement
- Terrace and Perimeter Security Improvement
- Expanded Vestibules and Canopies
- Solar Panels Addition
- New Building Systems
- Exhibit Gallery and Amenities Improvements

Cladding Existing Conditions



Cladding Material Alternatives

Tennessee
Marble:
Match
Original



Different
Stone
With
Similar
Character-
istics

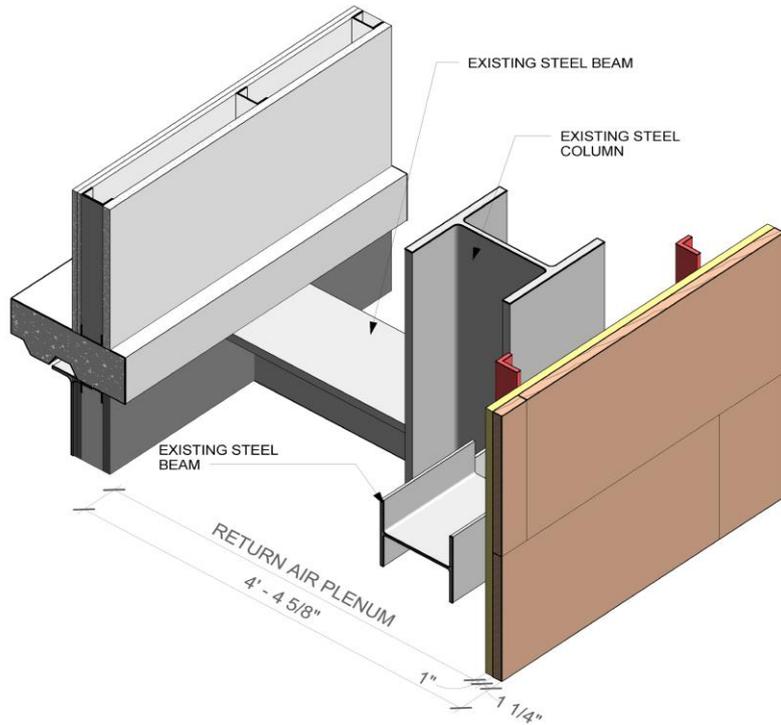


Ultra High
Perfor-
mance
(UHPC)
Concrete
Panels



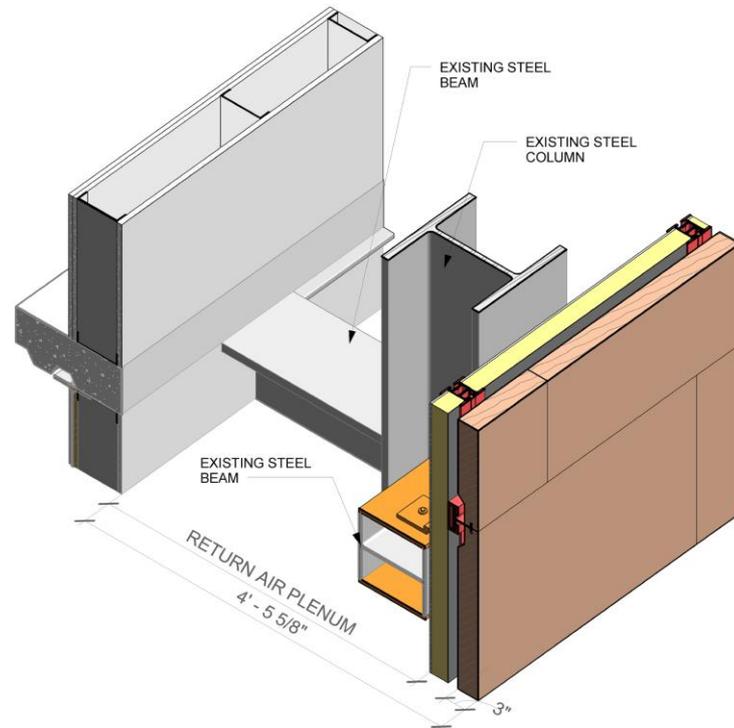
Ceramic or
Titanium:
Considered
and
Dismissed





Existing Wall Section

- Thin stone is the only weather barrier
- Thin insulation sprayed directly on stone
- Stone is one face of return air plenum



Proposed Wall Section

- tone or UHPC cladding
- Increased insulation
- Separate protected weather barrier inside wall
- Cladding not part of air plenum

Summary of EA Alternatives & Analysis

Alternative A -- NO ACTION

- No Major Capital Improvements
- Continued Deterioration of Cladding with granite patching of damaged panels
- Collections preservation environment would deteriorate
- Visitor experience would deteriorate from the need to protect from damaged stone, poor accessibility and inadequate security screening experience

Alternative B - Tennessee Pink Replacement Stone



- Matches existing exterior cladding
- Matches existing interior wall cladding that will remain

Alternative C – Replacement Cladding of Natural Stone



- Durable limestone or granite to match existing in color and/or horizontal veining pattern
- 2 options for this alternative are included in the mockup: St. Clair Limestone and Echo Lake Granite

Alternative D – Replacement Cladding of Manufactured Material



- Ultra High Performance Concrete (UHPC)
- Reuse some existing Tennessee Pink as fine aggregate in the UHPC

Replace-in-kind: 2 ½ -3" Tennessee Pink



National Museum of American History
(1964)



National Gallery of Art
West (1937-1941); East (1978)



National Air and Space Museum (1976)

Pros:

- Matches existing exterior cladding in kind (warm color tone and fine linear veining pattern modulates scale of monolithic façade) and intended to match NGA West Building
- Matches existing interior wall cladding that will remain
- High density limestone meets durability requirements with thickness at 3" and properly detailed wall section
- Stone has 100+ year longevity

Cons:

- Requires add'l quarry start-up
- Significant wastage in fabrication of large, thick panels due to nature of stone beds

Cladding Material Alternatives



ST CLAIR LIMESTONE

Pros:

- Fine, linear veining pattern comparable to TN Pink
- High density, durable limestone (100+ year stone longevity)

Cons:

- Light gray color tone does not match existing pink tone

Other limestone considered (Silver Shadow) found to be too soft for use at building base



ECHO LAKE GRANITE

Pros:

- Pink tone (when dry) comparable to TN Pink
- High density, durable granite (100+ year stone longevity)

Cons:

- Fine, linear veining pattern not present (very busy swirling texture that is less compatible with interior Tennessee Pink)
- Darkens considerably when wet



ULTRA HIGH PERFORMANCE CONCRETE (UHPC)

Pros:

- Color and tone customizable
- High density and durable
- Can incorporate recycled aggregate salvaged from existing cladding

Cons:

- Manufactured material relatively new – longevity promising but as yet unproven
- Man-made appearance may not be compatible with monumental, iconic buildings on the National Mall

Other man-made materials considered: Engineered (sintered) stone; metals such as titanium. Longevity of these newer materials as yet unproven.

Common to All Build Alternatives



Glazing:

- 2001 Curtain Walls replaced with new system for improved environment, blast resistance and increased visible light transmission

Skylights and Roof:

- Existing replaced with new systems for improved environment and performance
- New skylights reduce light transmission for improved protection of collections
- 1300 photovoltaic panels at roof

Common to All Build Alternatives

PV panels at Roof and South Canopy



Common to All Build Alternatives

North & South Entrance Vestibules



Vestibule Design A (preferred)

- Expresses Museum Mission
- Provides extended shade for visitors outside
- Contrasts with existing building
- Screens visitors outside of main building space
- Provides improved visitor experience of security and Milestones Gallery

Common to All Build Alternatives

North & South Entrance Vestibules

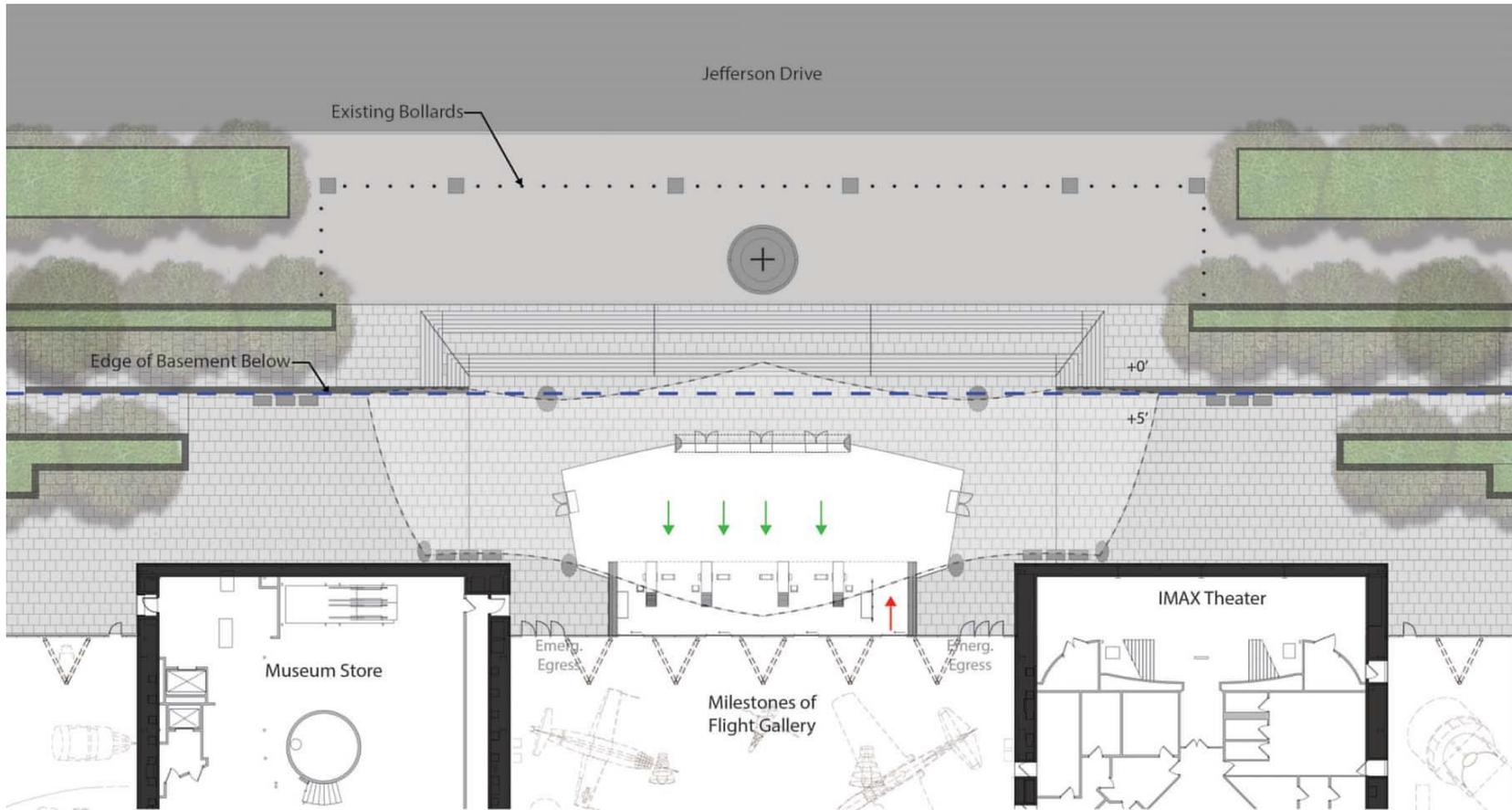


Vestibule Design B

- Less expressive, more neutral appearance
- Does not provide shade for visitors waiting outside
- Blends in with existing building, but more transparent glazing
- Screens visitors outside of main building space
- Provides improved visitor experience of security and Milestones Gallery

Common to All Build Alternatives

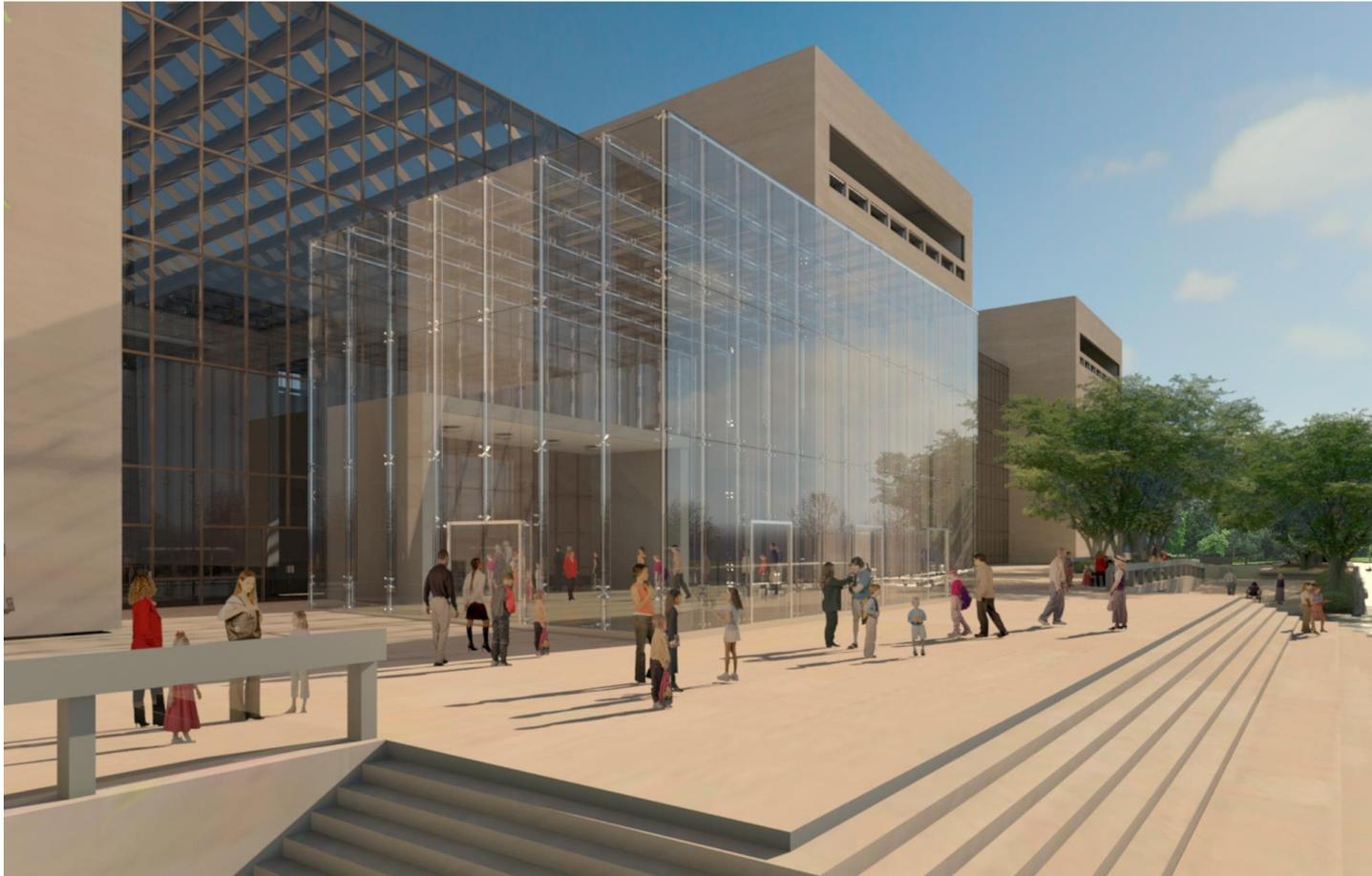
North Vestibule Design 'A' Plan



North Vestibule & Canopy Design 'A'



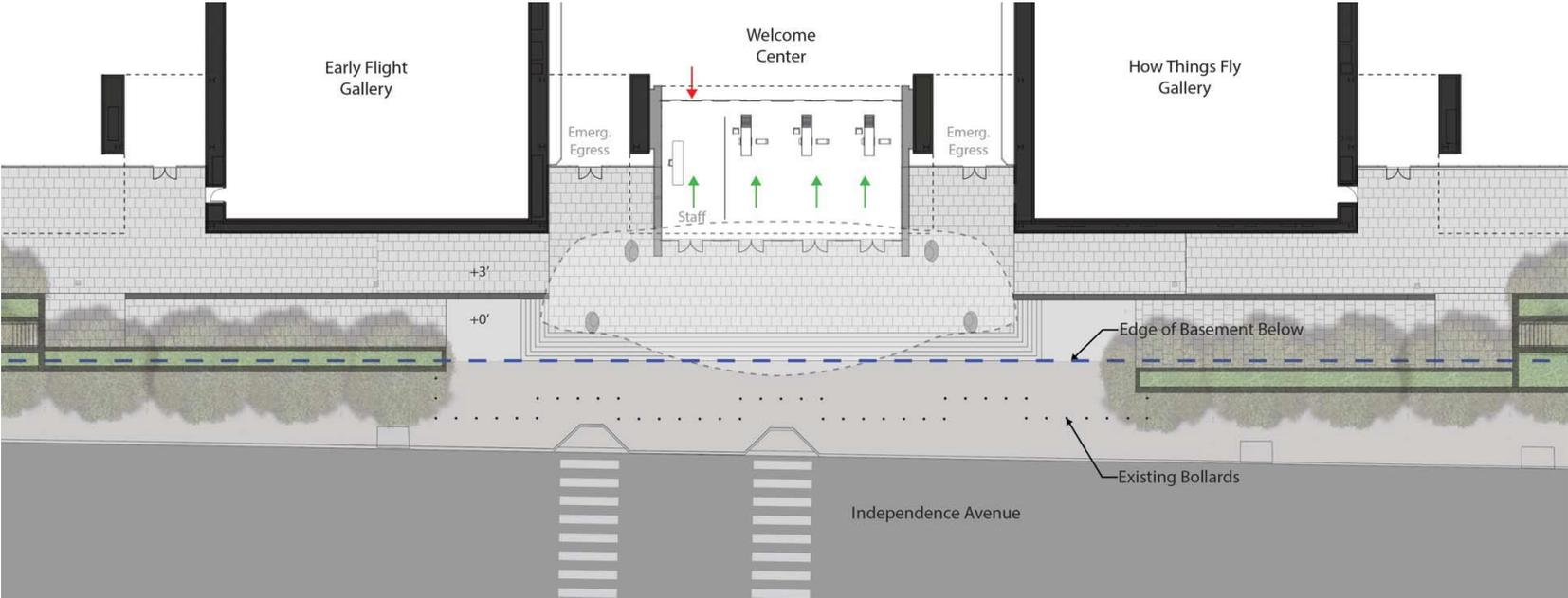
North Vestibule Design 'B'



South Vestibule Design 'A'



South Vestibule Design 'A'



South Vestibule Design 'A'



South Vestibule Design 'B'



South Vestibule Design 'B'

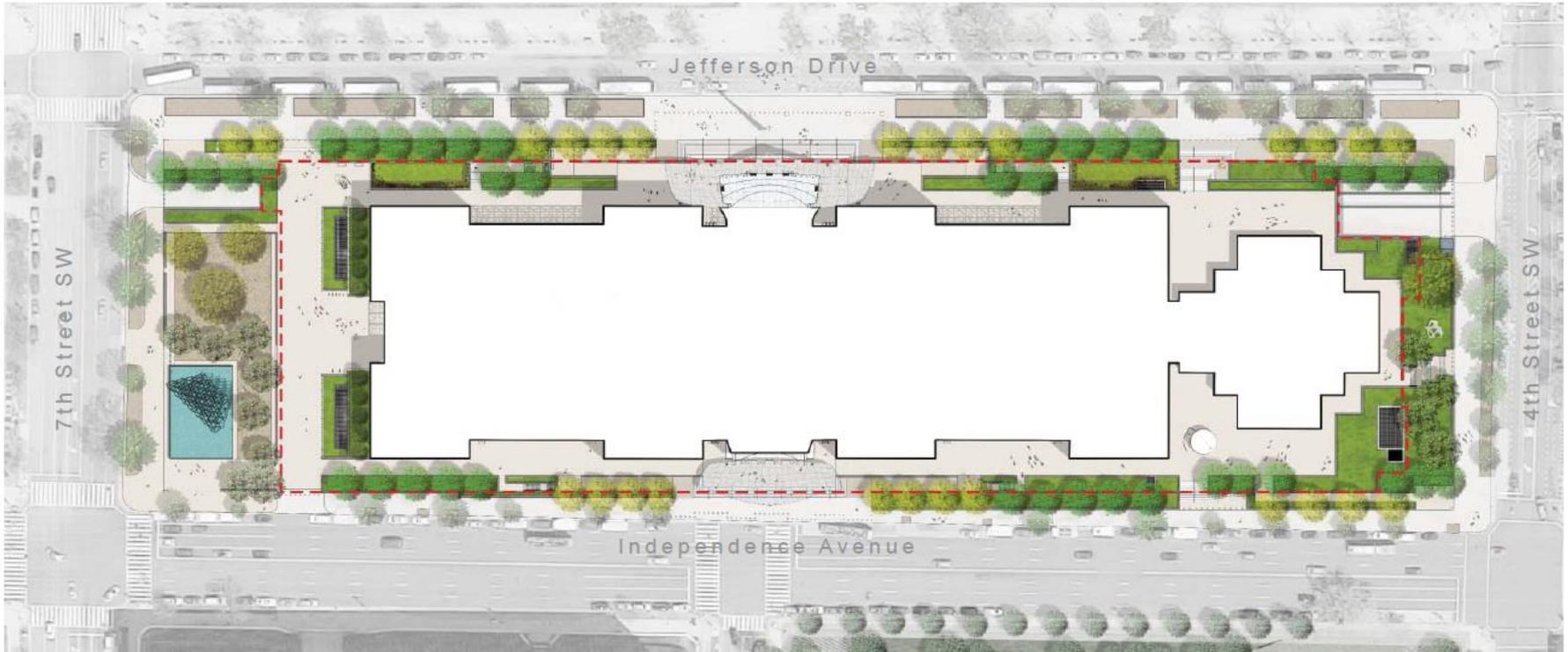


Common to All Build Alternatives: Terraces and Landscape

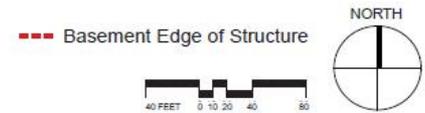


Proposed Site Plan

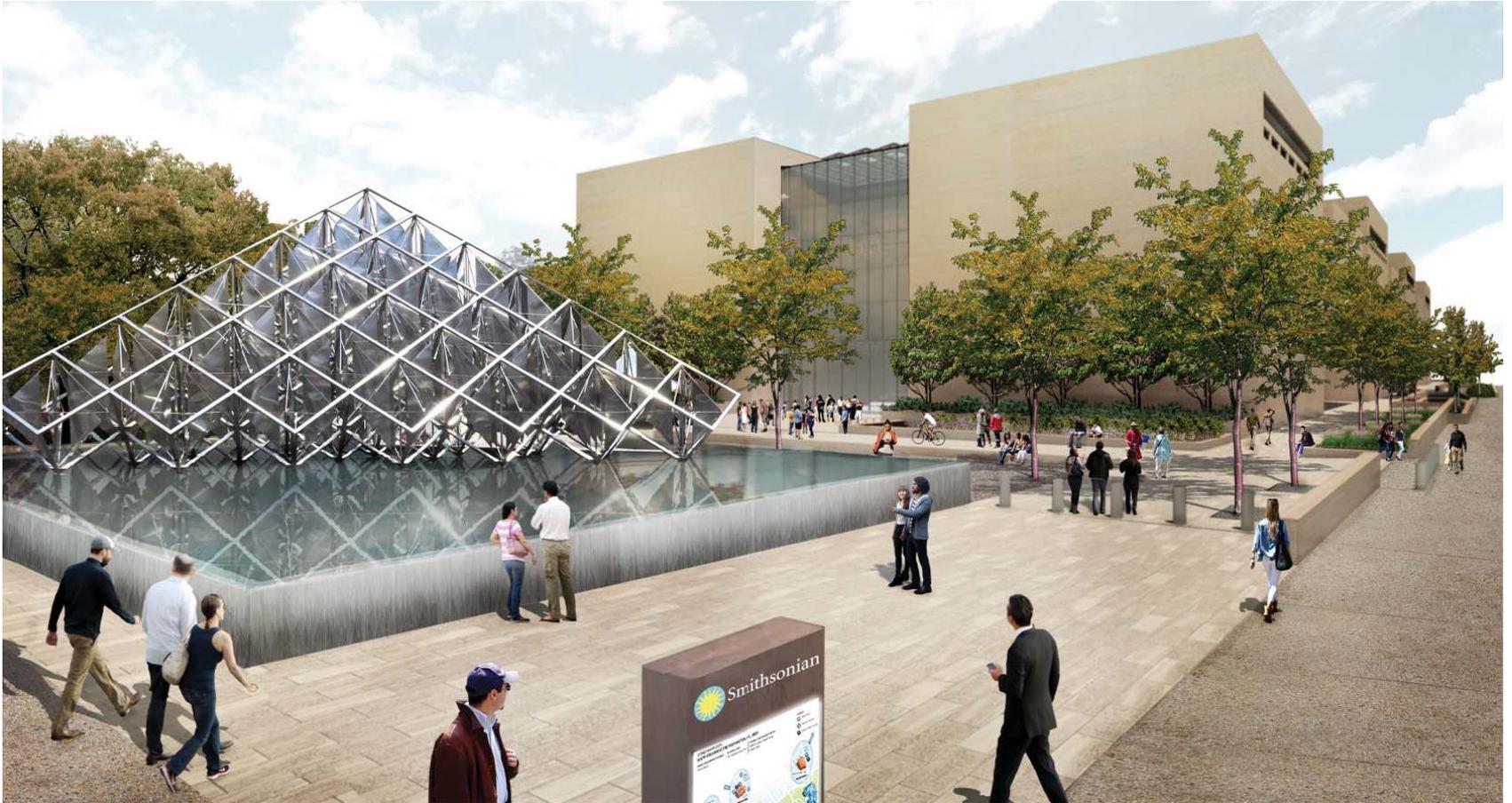
(Concept Design July 2016)



Scheme A Site Plan



Common to All Build Alternatives View from Southwest



Common to All Build Alternatives View from Northwest



Common to All Build Alternatives View from Northeast



Common to All Build Alternatives View from Southeast



Common to All Build Alternatives Museum-Themed Gardens & Plantings



Culver's Root
Veronicastrum virginicum 'album'



Oakleaf Hydrangea
Hydrangea quercifolia 'Pee Wee'



Snowdrop
Galanthus nivalis



Sunflower
Helianthus x multiflorus 'Sunshine Daydream'



Surprise lily
Lycoris squamigera



Dwarf Fountain Grass
Pennisetum alopecuroides 'Hameln'



Foamflower
Tiarella cordifolia



Bloodtwig Dogwood
Cornus sanguinea 'Midwinter Fire'



Feather Reed Grass
Calamagrostis x acutiflora 'Karl Foerster'



Dwarf Fothergilla
Fothergilla gardenii



Hosta
Hosta 'Prairie Sky'



Bluestar Amsonia
Amsonia hubrichtii

LIFT-OFF

EARTH

MOON

SUN

Environmental Consequences Analysis (Summarized in Matrix Handout from EA)

Key Findings:

- All Cladding Alternatives have Moderate Negative Impacts and Moderate Beneficial Impacts to Historic Resources (EA)
- All Alternative Claddings except Tennessee Pink have adverse effects, with Alternative D UHPC having the most (strong) adverse effect on Historic Resources
- Impacts to other resources (Visitor Experience, Sustainability, Circulation etc.) tend to be similar among Alternatives and are mostly minor, short term, or beneficial

Assessment of Effects

Key Findings:

- The project will have an adverse effect on the building and the Historic District, due to altering the exterior stone cladding
- Adverse effects will result from changing several other features of the property's setting that contribute to its historic significance, including alterations to the terraces, relocating original sculptures and introducing significant new vestibules
- The project will have cumulative adverse effects from the proposed changes to the building and site

Draft Memorandum of Agreement

Minimization Measures:

- The *Continuum* sculpture (to be moved to accommodate south canopy) will remain on the NASM site, located in consultation with agencies
- Planting materials on the property will be designed to minimize visual impact on the building and views from the interior atriums as originally conceived.
- The grove of trees north of the *Delta Solar* will be maintained.
- Photovoltaics will be limited to placement on the roof, and will be situated to be non-visible from public thoroughfares
- The planter beds and retaining walls within the plaza will be constructed of the same cladding material selected for the façade to maintain their visual relationship and original design intent

Draft Memorandum of Agreement

Mitigation Measures for All Build Alternatives:

- SI shall use (HABS/HAER/HALS) Level III standards to document the NASM building and its setting with exterior and interior photographs prior to construction
- SI will complete an Individual National Register Nomination for NASM in consultation with DC HPO
- A select portion of salvageable Tennessee Pink marble from the exterior of the building will be saved for re-use for any future work on the marble panels at the interior

Added Mitigation Measures if cladding is not TN Pink):

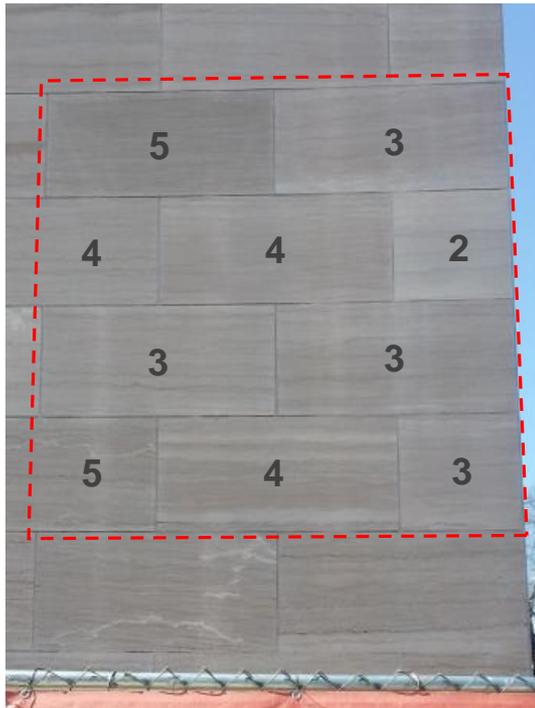
- SI will develop a technical report documenting cladding history and decision
- SI will complete an Individual National Register Nomination for the National Museum of Natural History

Cladding Mockups Description (See Handout)

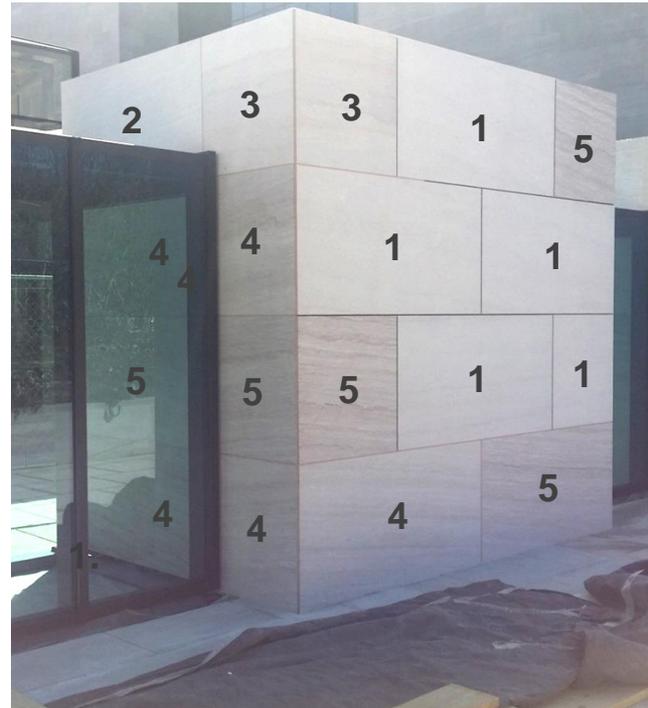


Tennessee Pink Color Variations

**Existing TN Marble
East Elevation**



**TN Marble Mockup
North & East Elevations**



**TN Marble Mockup
South & West Elevations**



TENNESSE MARBLE COLOR RANGE KEY

1. Light Pink

2. Medium Pink

3. Dark Pink

4. Light Cedar

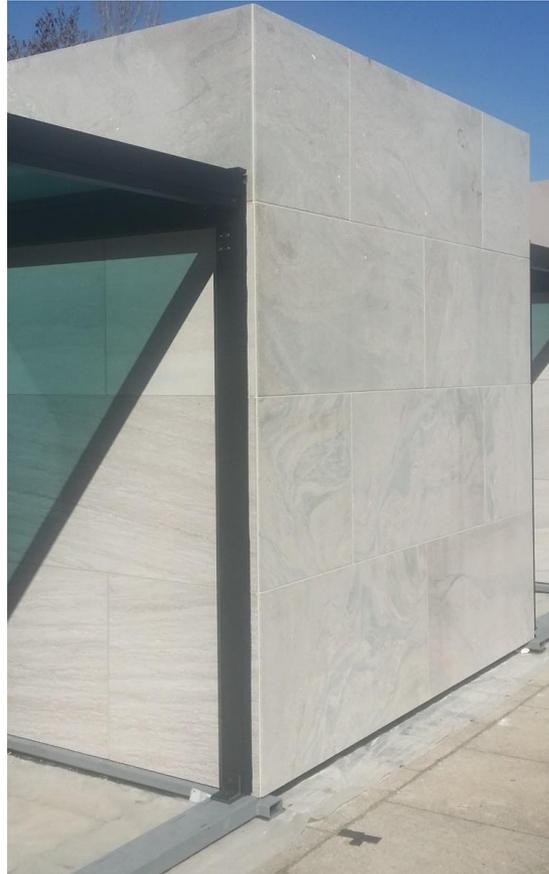
5. Medium Cedar

Cladding Material Alternatives

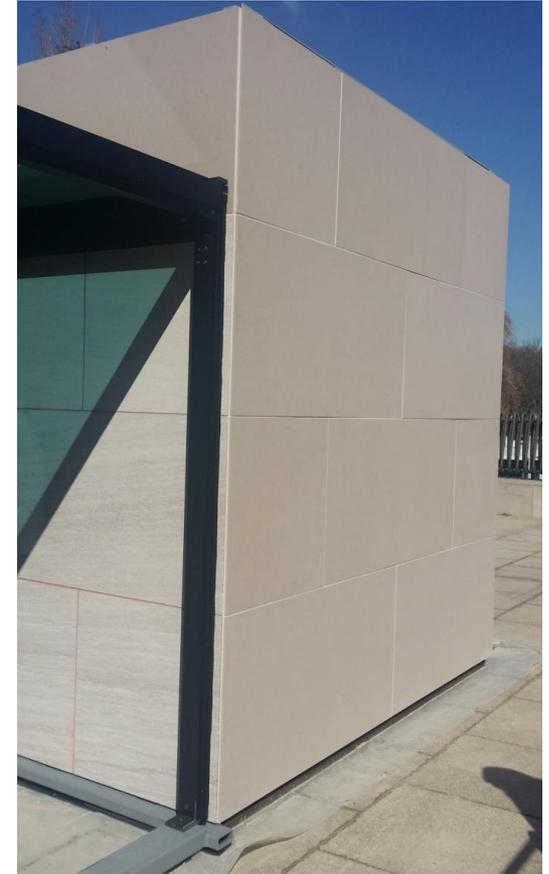
**St Clair Mockup
South & East Elevations**



**Echo Lake Mockup
South & West Elevations**



**UHPC Mockup
South & West Elevations**



How to Access the EA and Comment

- Go to NCPC.gov website to download and comment <https://www.ncpc.gov/project/airandspace/>
- The EA is also available in hard copy to review at NCPC, SI Cap Gallery 5th Floor Library and DC Southwest Library
- Complete a comment card at today's meeting and provide to Vivian Lee of NCPC or Jane Passman of SI
- **DEADLINE FOR COMMENTS IS MONDAY, MAY 1**

Public Process Schedule – Next Steps

Milestone	Date
Environmental Assessment Public Review and Comment Period	March 31- May 1
Public Cladding Mockup Reviews NE corner of NASM terrace	April 6, 5:30-6:30 pm April 7, 11:00-11:30 am
EA/Section 106 Public Meeting at Capital Gallery Suite 5001, 600 Maryland Avenue SW	April 7, 10:00 -11:00 am
Analyze Public Comments, Determine Smithsonian Preferred Alternative	Late April - Early May
Complete Memorandum of Agreement, Finding of No Significant Impact	May
CFA Site Visit /Informational Briefing Updated Concept Review-Cladding	April 20 May or June
NCPC Preliminary Design Review	July
NCPC and CFA Final Design Reviews	Sept or Oct

Discussion, Questions and Answers

