National Capital Planning Commission

National Air and Space Museum Building Exterior, Vestibules and Site Improvements

Exterior Cladding Options

Independence at 6th Street, SW

Washington, DC

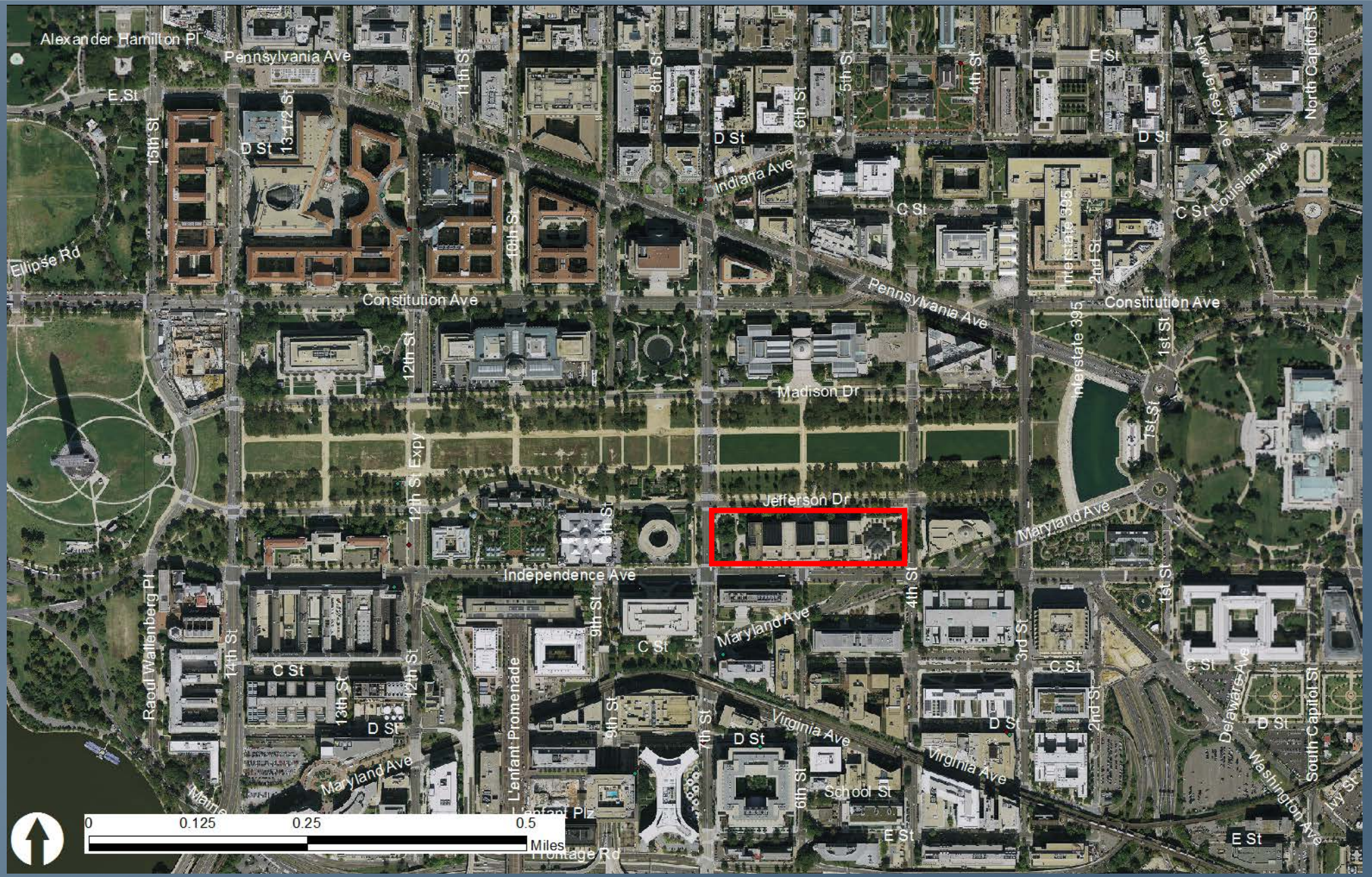
Smithsonian Institution

Information Presentation

April 6, 2017

National Capital Planning Commission

Project Location



National Capital Planning Commission

Review Timeline

July 2014

Information Presentation NASM Comprehensive Facilities Master Plan

July 2016

Concept Design NASM Building Exterior, Vestibules and Site Improvements:

- Revitalization of landscape and portions of perimeter security
- Addition of security vestibules at the north and south entrances
- Incorporation of Photovoltaics

April 2017

Information Presentation NASM Exterior Cladding Options

July 2017

Preliminary Site and Building Plans NASM Building Exterior Vestibules and Site Improvements

Previous Commission Review (July 2016)

Proposed South Vestibule along Independence Avenue

Proposed North Vestibule along Jefferson Drive

Proposed West Terrace – Delta Solar

Previous Commission Review (July 2016)

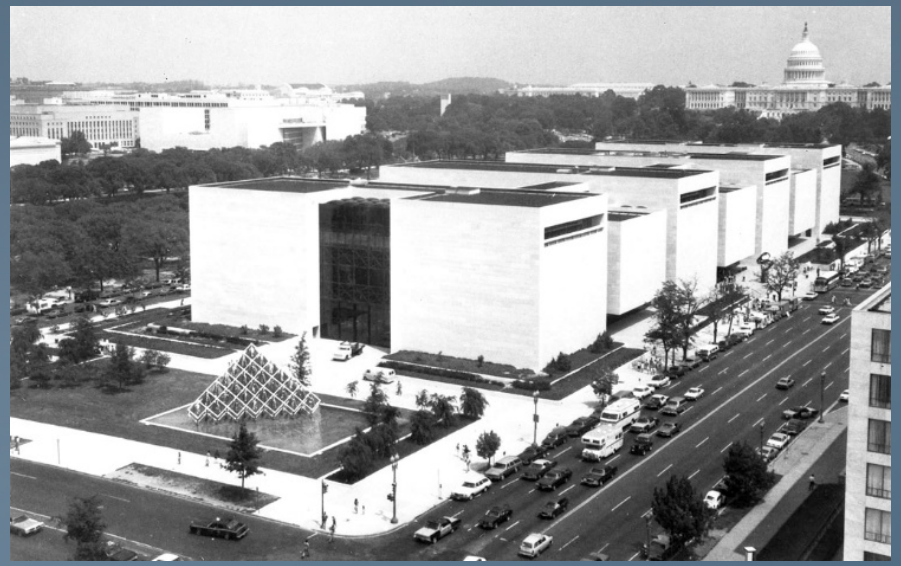
Proposed South Vestibule along Independence Avenue

Proposed North Vestibule along Jefferson Drive

Proposed West Terrace – Delta Solar

Background

North Façade along Jefferson Drive

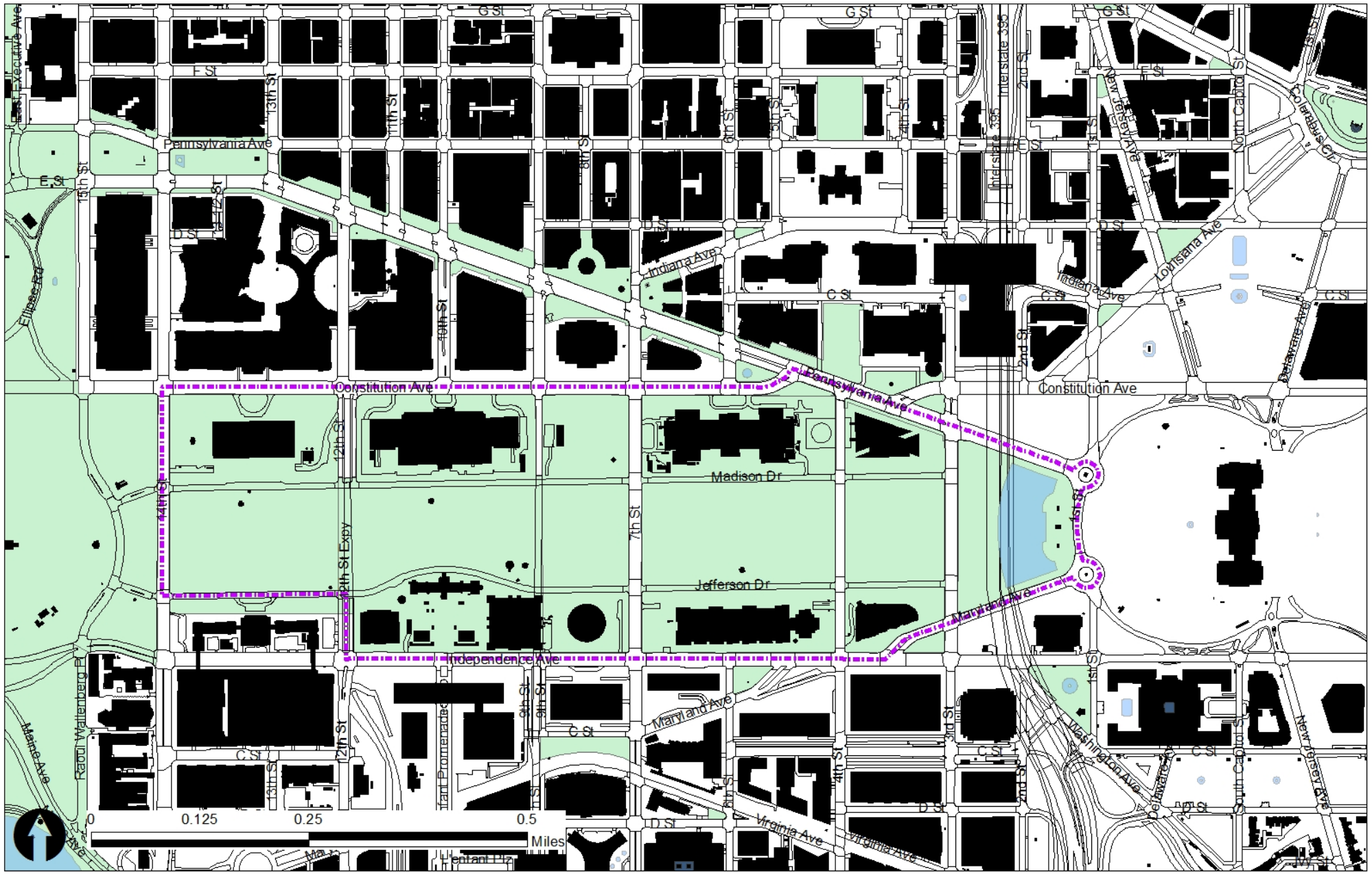


South Façade along Independence Avenue

President Gerald Ford during the NASM Ribbon Cutting Ceremony on July 1, 1976

National Capital Planning Commission

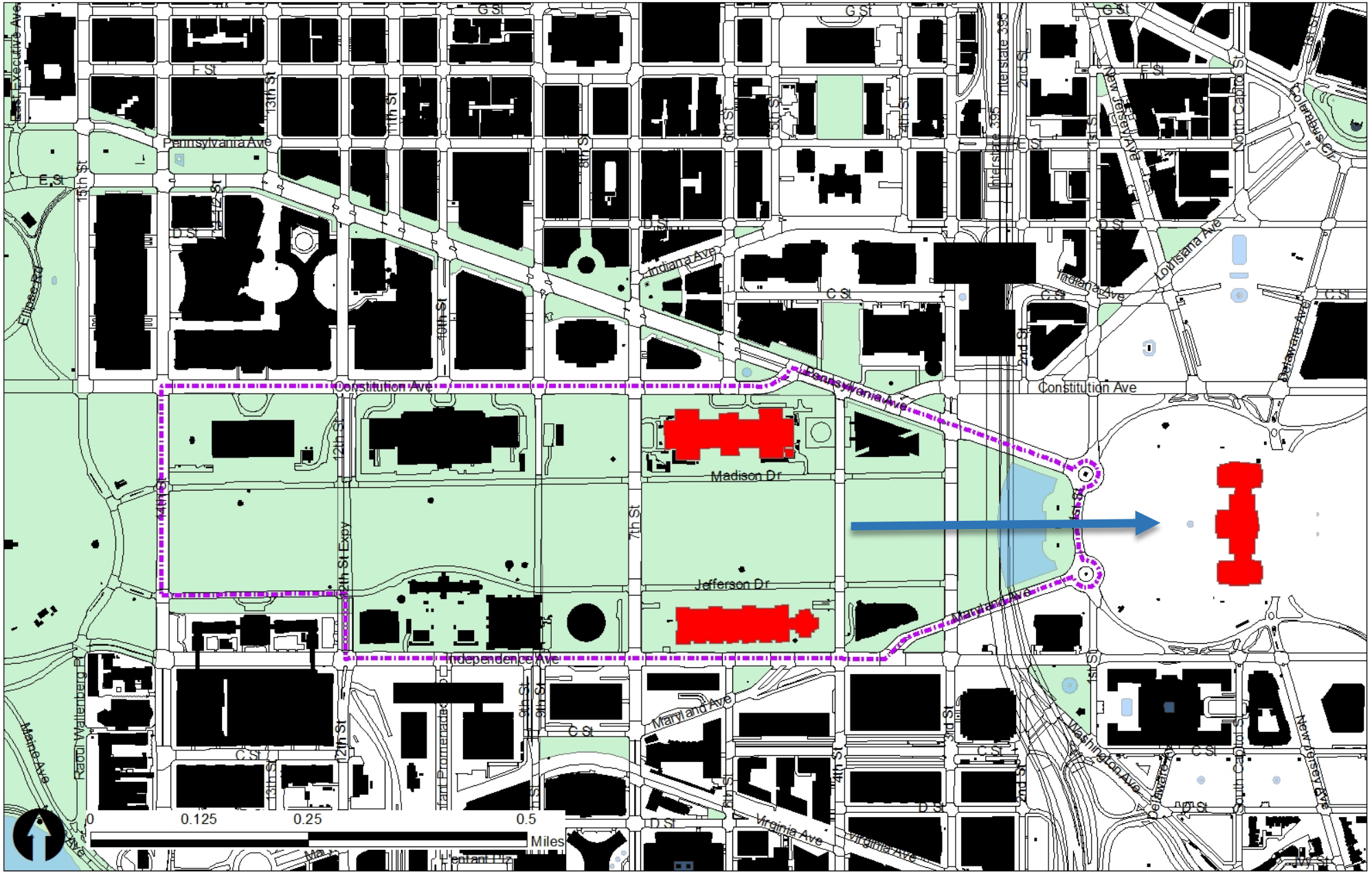
Relationship with the National Mall: Symmetry



The National Mall Historic District

National Capital Planning Commission

Relationship with the National Mall: Symmetry



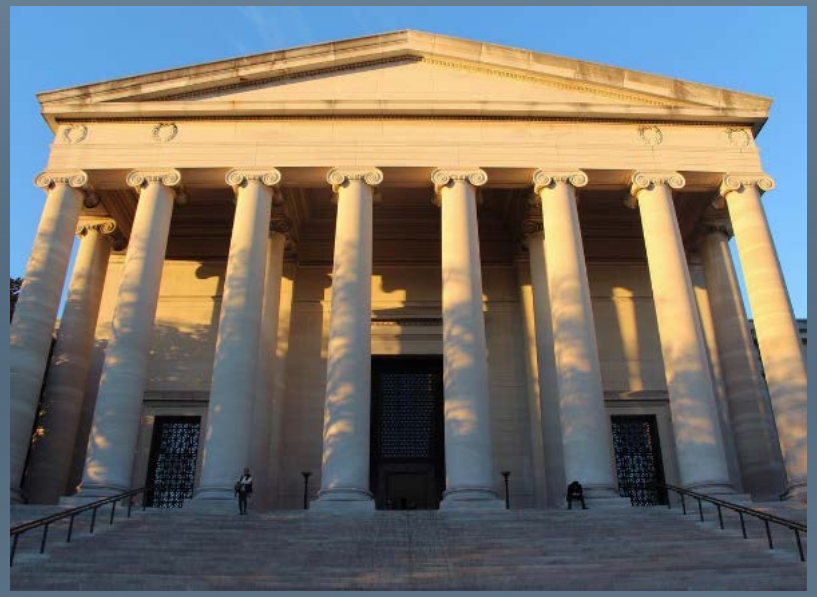
National Capital Planning Commission

Relationship with the National Mall: Massing

Existing view looking east toward the U.S. Capitol Building from the Washington Monument

National Capital Planning Commission

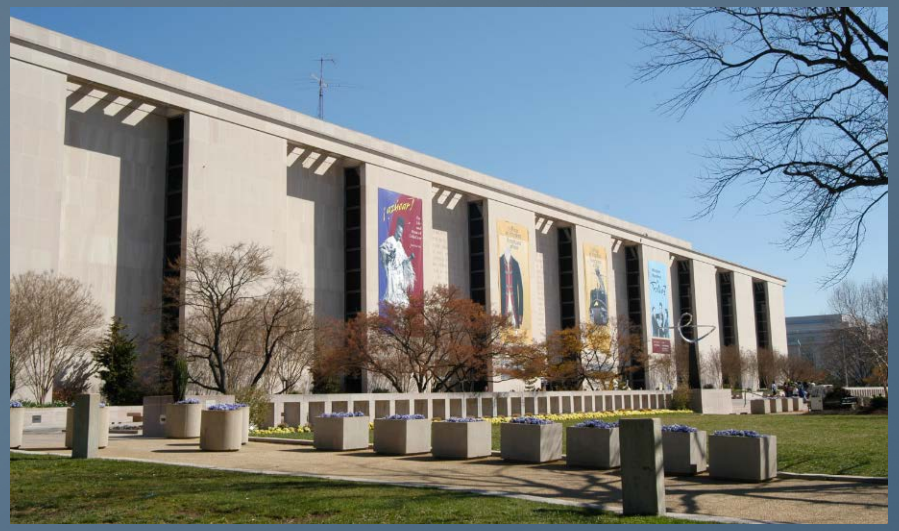
Relationship with the National Mall: Exterior Cladding



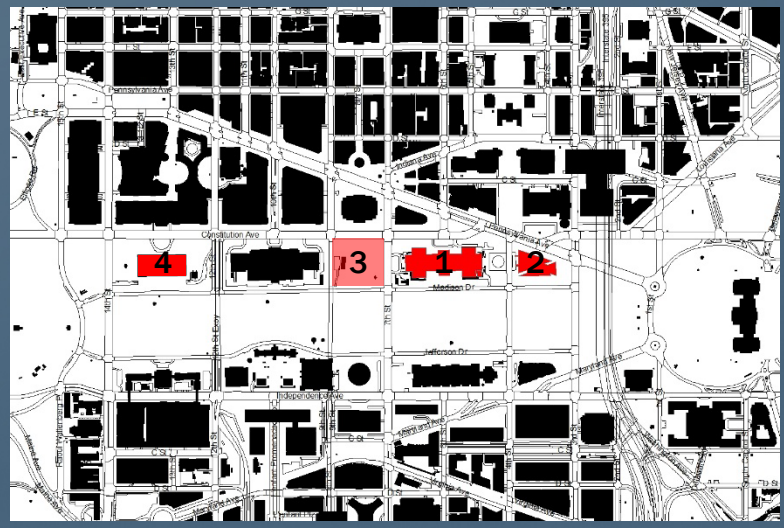
1. National Gallery of Art West Building, designed by John Russell Pope, opened in 1941

2. National Gallery of Art East Building, designed by I. M. Pei, opened in 1978

3. National Gallery of Art Sculpture Garden, designed by Laurie D. Olin, opened in 1999

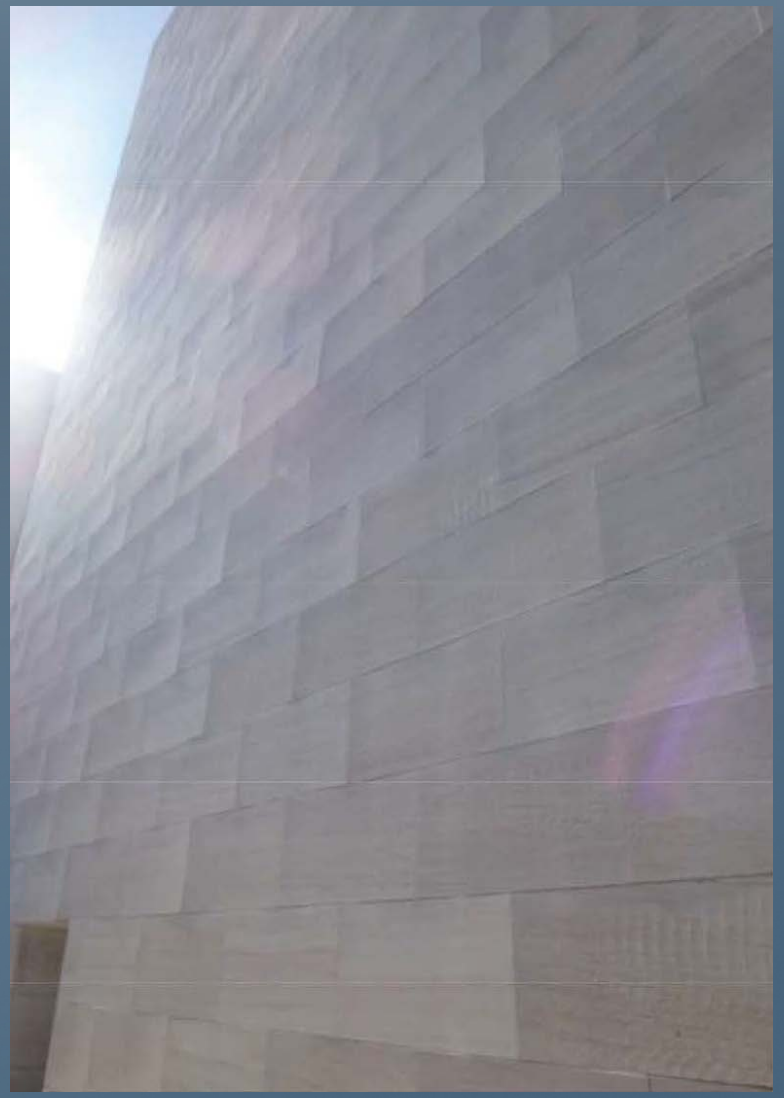


4. National Museum of American History, designed by McKim, Mead and White, opened in 1964



Existing Conditions

Interior-exterior stone cladding relationship



Existing warped and cracked Tennessee Pink

Next Steps

Draft EA Released for 30-day public comment period - ***March 31 to May 1, 2017***

Joint NEPA/ Section 106 public meeting
Friday, April 7
10:00 am
Smithsonian Facilities

On-site Cladding Mockup Review Opportunity No. 1
Thursday, April 6
5:30 pm

On-site Cladding Mockup Review Opportunity No. 2
Friday, April 7
11:00 am

Analyze Public and Agency Comments

Memorandum of Agreement

Finding of No Significant Impact

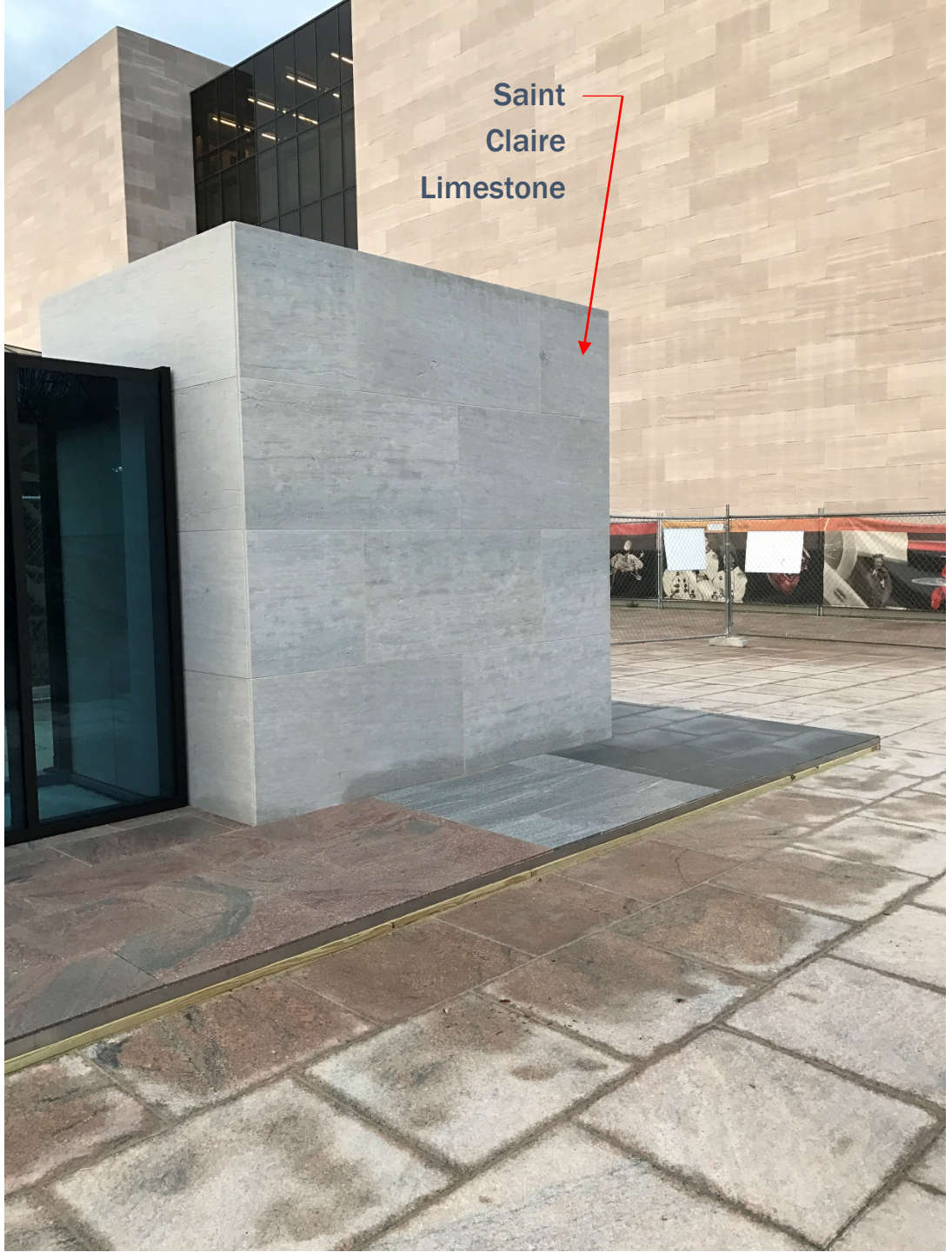

Ultra High Performance Concrete
Echo Lake Granite
Tennessee Pink Limestone
Saint Claire Limestone

Ultra High Performance Concrete

Echo Lake Granite

Tennessee Pink Limestone

Saint Claire Limestone



Ultra High Performance Concrete

Echo Lake Granite

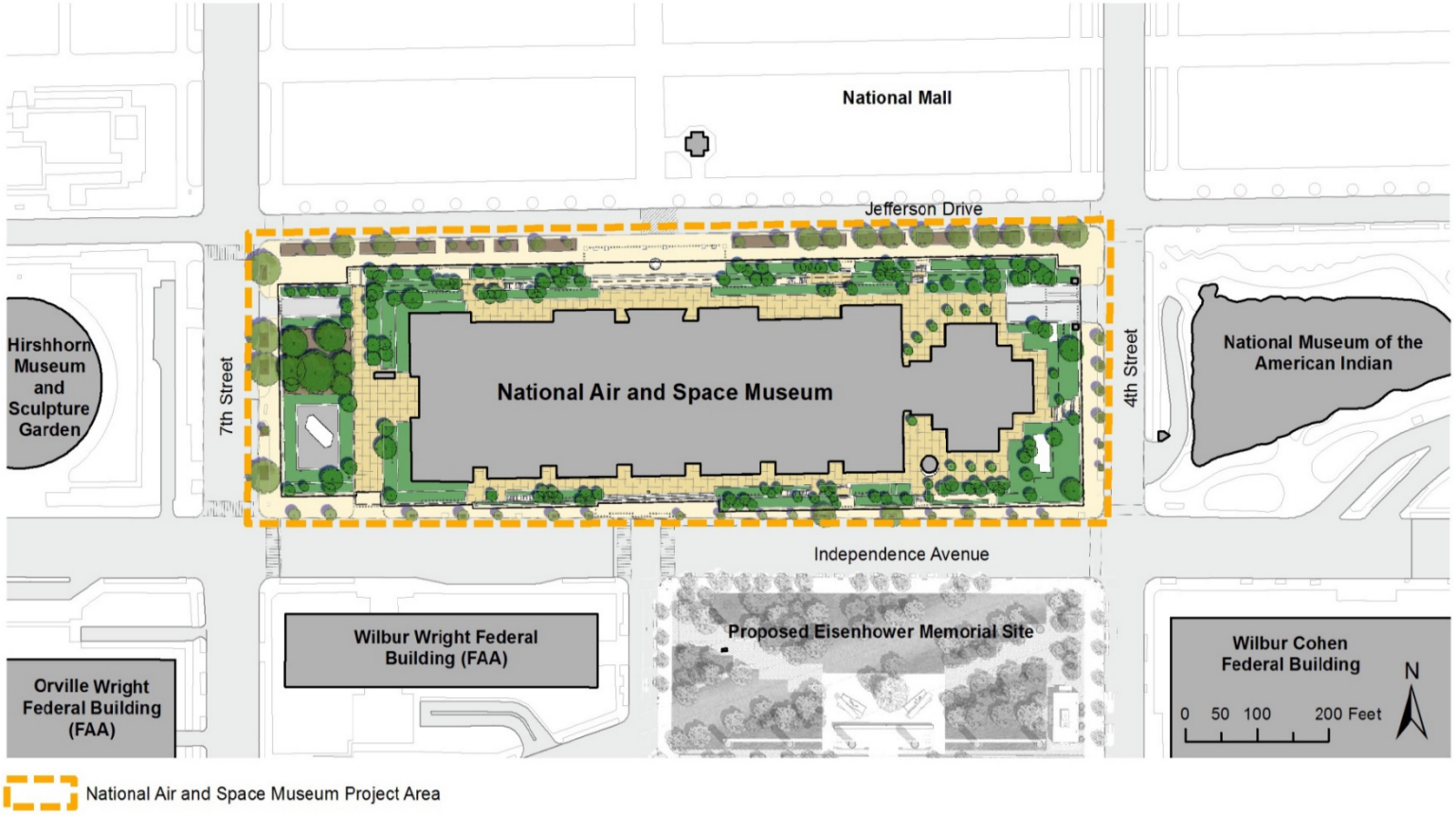
Tennessee Pink Limestone

Saint Claire Limestone

NATIONAL AIR AND SPACE MUSEUM
Mall Building Revitalization
April 6, 2017 NCPC Briefing on Cladding Options

Smithsonian Institution

Existing Site Context



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

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

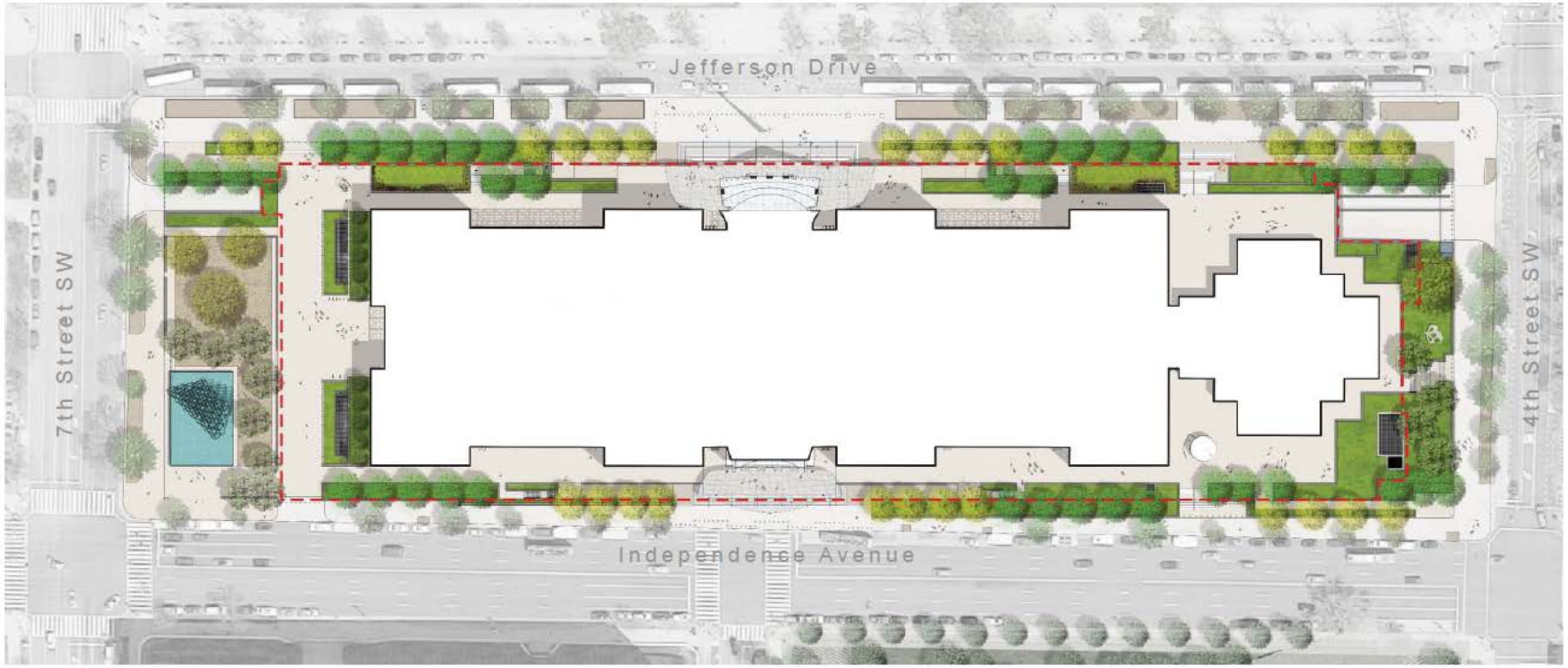
- Cladding and Glazing Replacement
- Terrace and Perimeter Security Improvement
- Expanded Vestibules and Canopies
- Solar Panels Addition

And inside—

- New Building Systems
- Exhibit Gallery and Amenities Improvements

Proposed Site Plan

(Concept Design July 2016)



Scheme A Site Plan

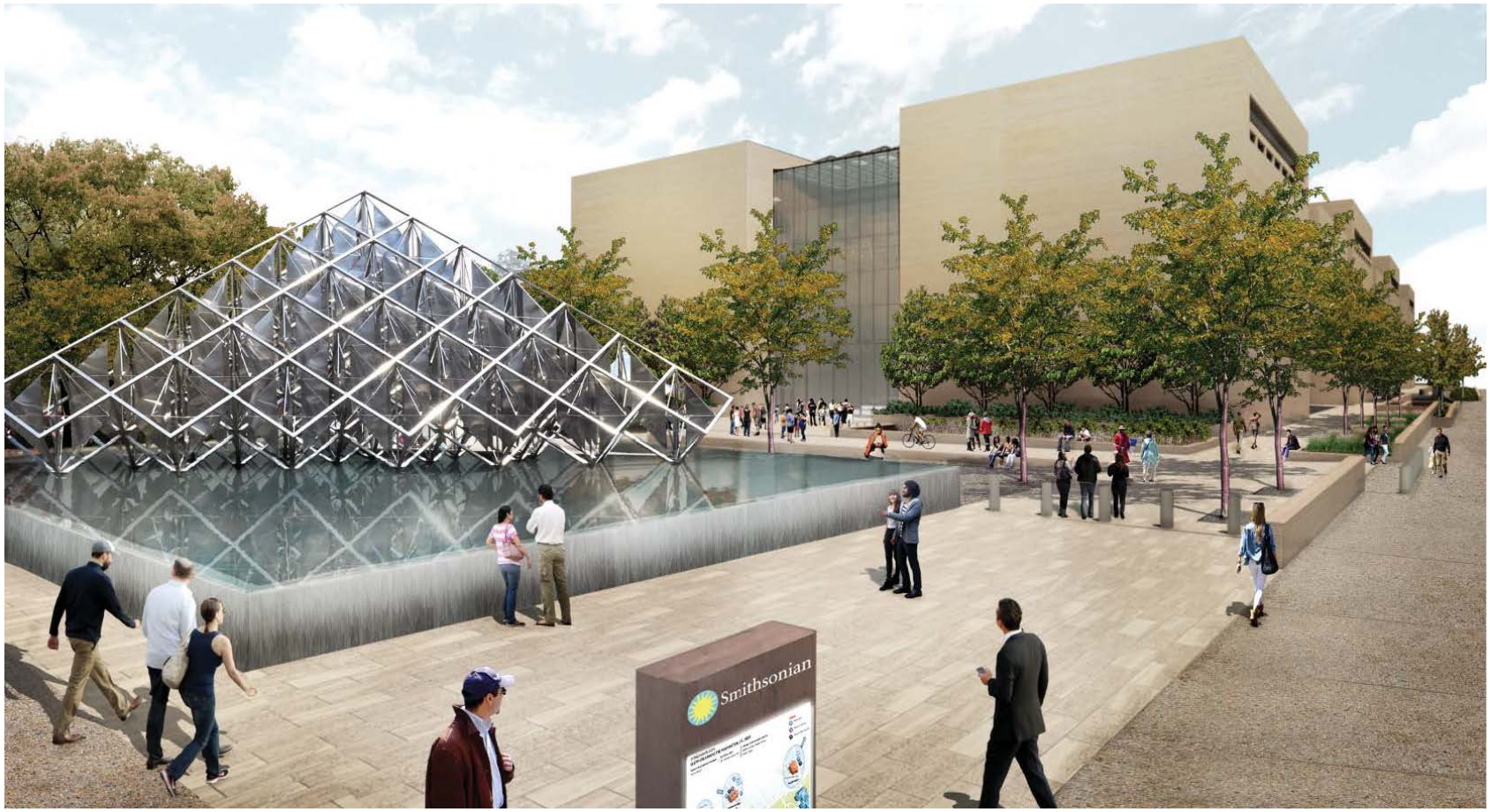
Terraces and Landscape (Concept Design July 2016)

North Vestibule & Canopy (Concept Design July 2016)

South Vestibule & Canopy (Concept Design July 2016)

View from Southwest

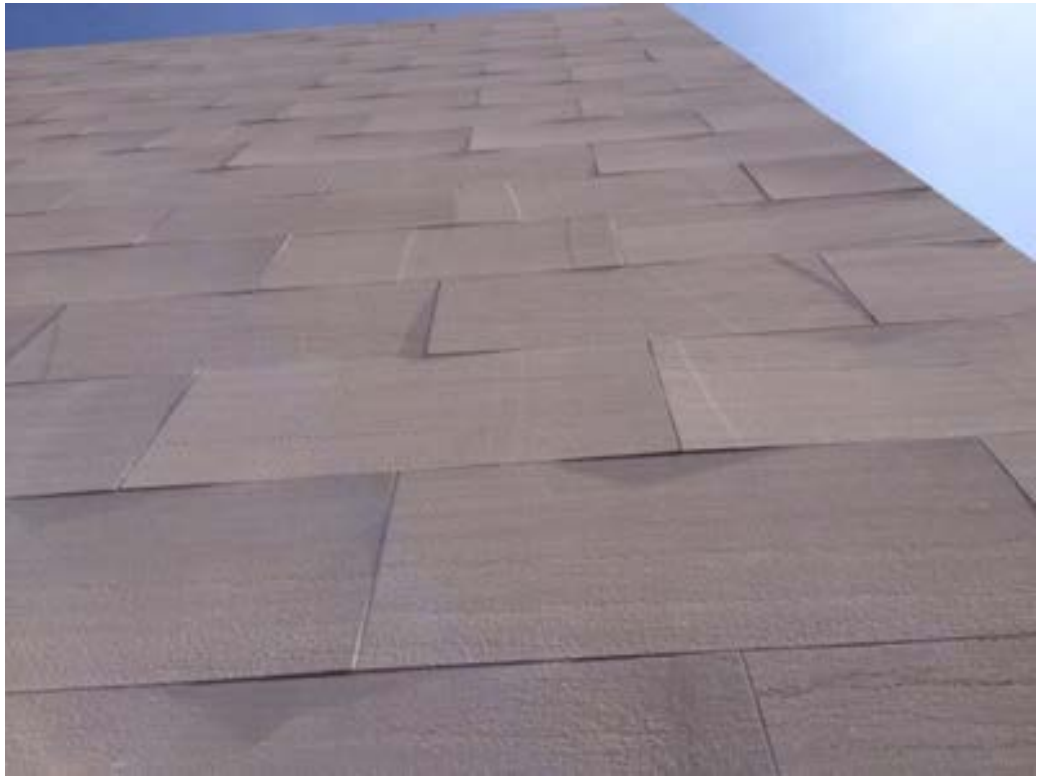
(Concept Design July 2016)

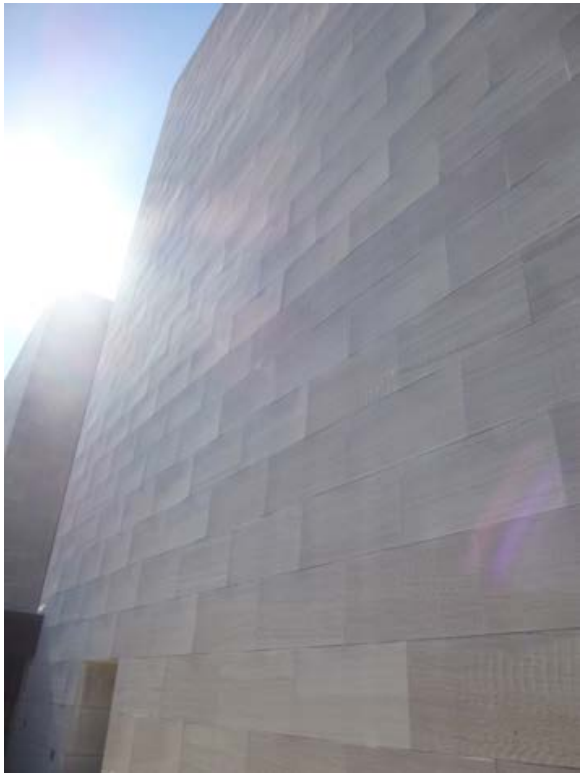


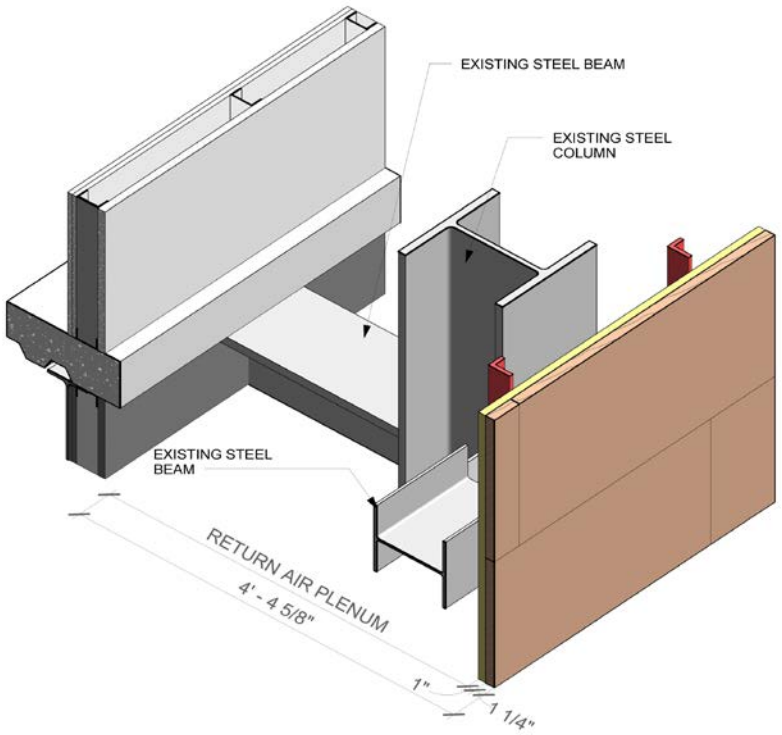
1300 Rooftop PV Panels

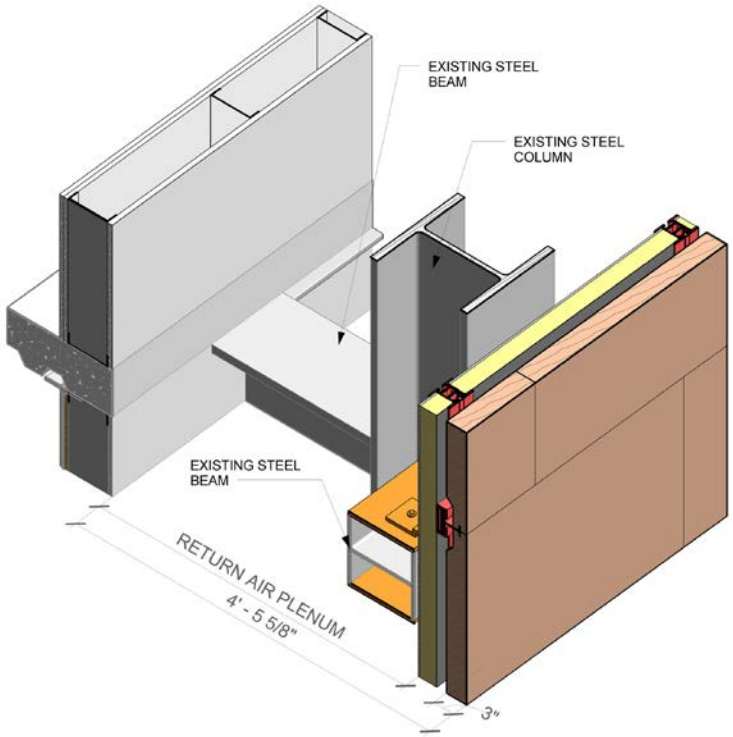
(Concept Design July 2016)

Cladding Existing Conditions









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

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

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

(Formal name is Holston Limestone)

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

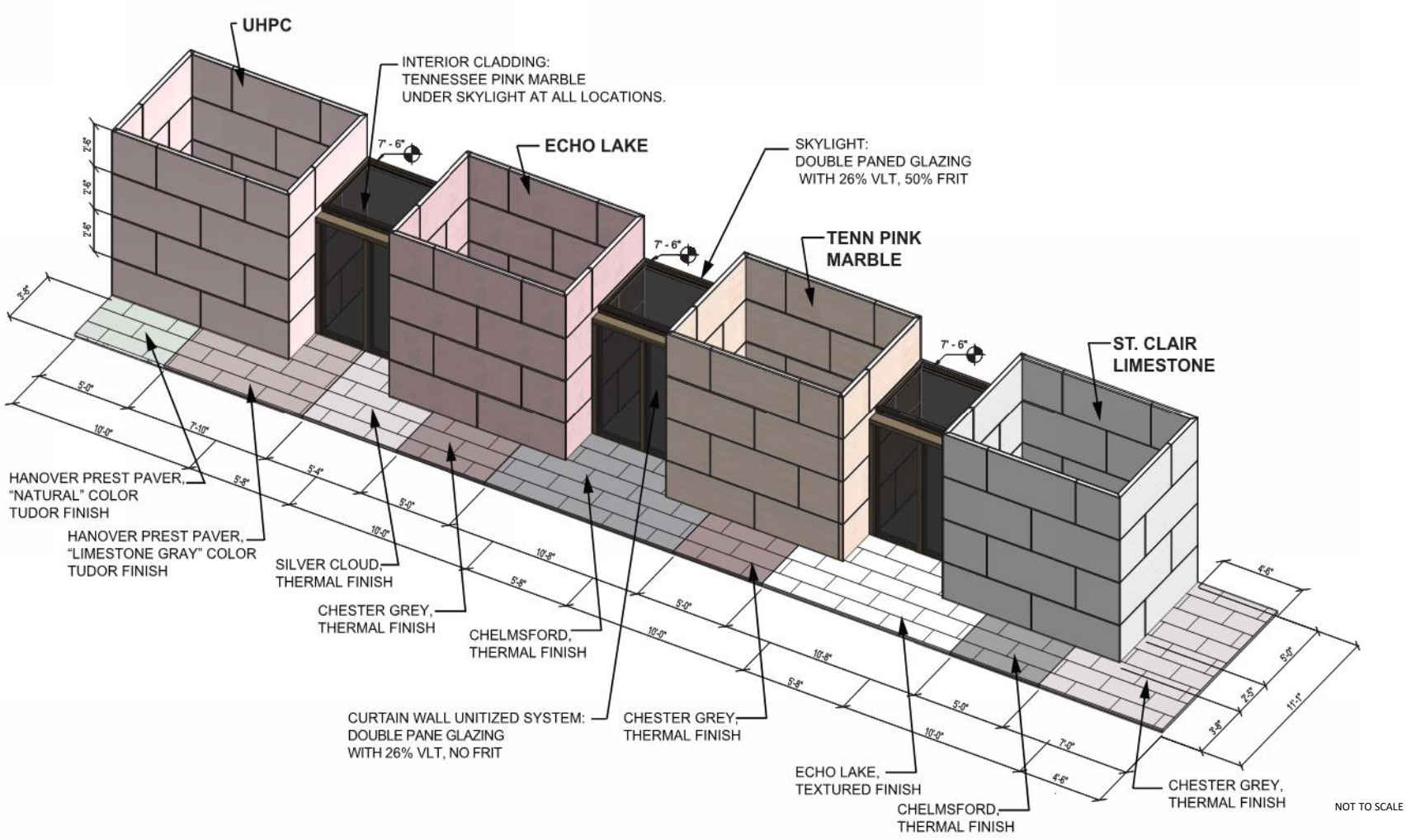
ULTRA HIGH PERFORMANCE CONCRETE (UHPC)

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

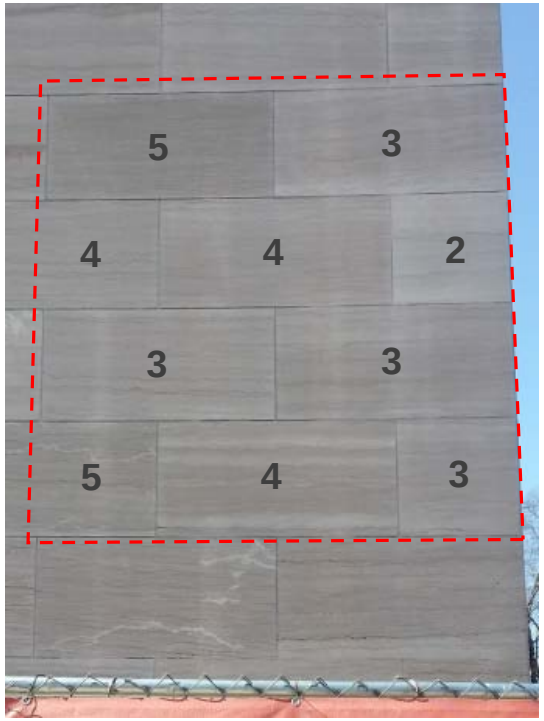
Other man-made materials considered: Engineered (sintered) stone; metals such as titanium. Longevity of these newer materials as yet unproven.

Cladding Material Mockup

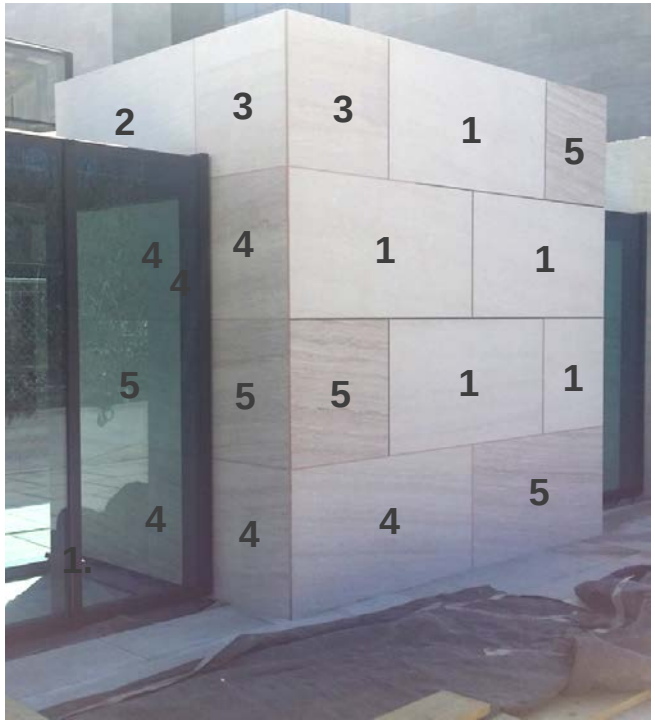


Tennessee Pink Color Variations

Existing TN Marble
East Elevation



TN Marble Mockup
North & East Elevations



TN Marble Mockup
South & West Elevations

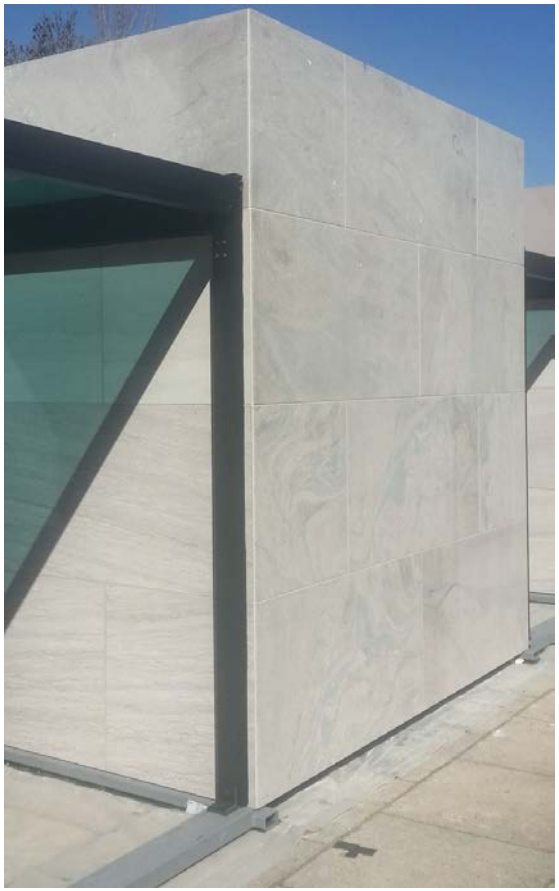
TENNESSE MARBLE COLOR RANGE KEY

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

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
NCPC Site Visit + Informational Briefing	April 6
CFA Site Visit /Informational Briefing Updated Concept Review-Cladding	April 20 or May 18 May 18
NCPC Preliminary Design Review	July, 13
NCPC Final Design Review	July 13 or Sept. 7
CFA Final Design Review	July 20 or Sept 20