Revitalization of the Historic Core (RoHC)
Underground Construction, Cooling Towers, Gardens and Grounds

Consulting Parties Meeting 2
27 May 2021
Welcome!

The meeting will begin momentarily.

How to Use Zoom Webinar:

• Zoom webinar will not permit access to your camera.

• Please submit comments/questions in writing through the Q&A function.

• Written comments/questions can be submitted at any time and will be answered or discussed at designated points during the meeting by the panelists.

• Click "Raise Hand" if you would like to speak your comments/questions at designated points with the panelists. A moderator will grant temporary access to your device's microphone.
PANEL OF SPEAKERS

MODERATOR
Carly Bond, Historic Preservation Specialist, Smithsonian Facilities

PRESENTERS / PANELISTS
Sharon Park, FAIA, Assoc. Director of Historic Preservation, Smithsonian Facilities
Ann Trowbridge, AIA, Associate Director for Planning, Smithsonian Facilities
Brenda Sanchez, FAIA, Sr. Design Manager, Smithsonian Facilities
Christopher Lethbridge, Architect/Program Manager, Smithsonian Facilities
Marisa Scalera, Landscape Architect, Smithsonian Gardens
Anthony Bochicchio, AIA, Architect/Sen. Project Director, EYP-Loring, LLC
Faye Harwell, FASLA, Director/Landscape Architect, RHI (Rhodeside-Harwell)
Kirk Mettam, PE, Senior Principal, Silman
Hallah Abodaff, PE, MEP Project Manager, EYP-Loring, LLC
Michael Galway, PE, Sr. Mechanical Engineer, EYP-Loring, LLC
PROJECT OVERVIEW
PROJECT OVERVIEW

GOALS
PROJECT AREA
PROJECT SITE
SOUTH MALL CAMPUS PROJECTS
RoHC OVERALL SCOPE
PROGRAM
The goals of the Revitalization of the Historic Core (RoHC):

1. To revitalize the Smithsonian Institution Building (SIB, “The Castle”) to provide efficient and accessible space for visitors and staff and restore the building and its principal interior spaces to their period of significance.

2. To revitalize the Arts and Industries Building (AIB) as a non-collecting venue for public exhibitions, programs, and events.

3. To construct a new below grade Central Utilities Plant to serve the buildings of the South Mall Campus.
The “Historic Core” is comprised of the Smithsonian Institution Building (the “Castle”) and the Arts and Industries Building. These buildings are the two oldest in the Smithsonian portfolio located on the National Mall.
PROJECT OVERVIEW   SOUTH MALL CAMPUS PROJECTS

Projects Underway or in Current SI Capital Plan
1. Hirshhorn Sculpture Garden Revitalization
2. Hirshhorn Museum Envelope Repair Project
3. Revitalization of the Historic Core
4. Freer Gallery of Art Improve Accessibility
5. Haupt Garden Roof In-Kind Replacement
6. Hirshhorn Museum Major Revitalization
PROJECT OVERVIEW  RoHC OVERALL SCOPE

COMPARISON TO THE SOUTH MALL MASTER PLAN – WHATS DIFFERENT?

South Mall Master Plan

• Blue- New service ramp at the west side of the Freer and new below ground loading dock at the west end of the Castle.
• Pink- Below ground Visitor Center.
• Purple- Central Utility Plant (CUP).

RoHC Project

• Existing service ramp remains. Expanded loading dock at west end of the Castle.
• Pink- Lowering of basement floor, Visitor Center in the SIB.
• Orange- Basement under AIB for mechanical systems and support spaces.
• Purple- CUP infills notch of Quad Building.
• CUP layout is still pending, likely will be 2-3 stories below grade.
• Possibility of a public connection from the SIB to the Quad on the B2 level.
PROJECT OVERVIEW  RoHC OVERALL SCOPE

MODIFICATIONS TO THE SMITHSONIAN INSTITUTION BUILDING AND ARTS & INDUSTRIES BUILDING, BASEMENT LEVEL EXPANSION AND CENTRAL UTILITY PLANT

- The below grade construction will create areas for building systems and support spaces that will free up areas in the historic buildings for public uses.
- The Central Utility Plant will initially serve the Historic Core but is sized to eventually serve all buildings in the South Mall Campus.
- CUP layout is still pending, likely will be 2-3 stories below grade.
- Possibility of a public connection from the SIB to the Quad on the B2 level.
Rehabilitation of the historic buildings will address historic preservation issues, provide increased visitor access and use, and create interior environmental conditions that are appropriate for the programmed uses.
A primary objective of the RoHC project is to utilize the buildings as much as possible for public activities.

The new below grade construction is critical to “freeing up” space in the historic buildings.
UNDERGROUND CONSTRUCTION
EXISTING CONDITIONS
FUTURE PROGRAM
• Underground Construction
UNDERGROUND CONSTRUCTION  EXISTING CONDITIONS

SITE ADJACENCY DIAGRAM

SMITHSONIAN INSTITUTION BUILDING

FREER GALLERY OF ART

SACKLER

NMAFA

ARTS AND INDUSTRIES BUILDING

HIRSHHORN MUSEUM

SMITHSONIAN INSTITUTION HISTORIC CORE

OTHER SI SOUTH MALL CAMPUS BUILDINGS

ROHC PROJECT SITE BOUNDARY
UNDERGROUND CONSTRUCTION   FUTURE PROGRAM

UNDERRGROUND CONSTRUCTION - CONCEPT

Design Objectives
• Preservation- Maximize the use of historic spaces for public and SI staff.
• Design- Locate mechanical spaces and equipment to meet current codes, provide energy efficiency, and support building operations and maintenance.

Background
• Excavation beneath the Castle will be limited to the consolidated loading facility..., to increase the ceiling height of the Castle basement level, and excavation below the basement level to accommodate utility distribution, footings, and seismic measures – Programmatic Agreement, Stipulation 5.A.

Past Studies
• Prior studies showed equipment and program space below the water table, requiring enhanced waterproofing.
• Some level of risk is inherent when placing mechanical, plumbing and life safety equipment below the water table.

Concept Design
• Locates all the equipment and program areas except the cistern/thermal storage above the water table.
• Reduces slurry wall construction at AIB connection.
• AIB basement is a double-sided corridor leaving more program space for AIB mechanical rooms.
• Consolidating new construction below levels already being impacted.
• Provides additional support for the SIB base isolators adjacent to the SIB extension on the B2 level.
• Accommodates additional program that was required once the independent SIB and AIB planning studies were merged.
UNDERGROUND CONSTRUCTION FUTURE PROGRAM

UNDERGROUND CONSTRUCTION – OVERALL B1 PLAN

- SIB B1
- BASEMENT LEVEL EXPANSION (OUTSIDE HISTORIC BUILDING FOOTPRINT)
- LOADING DOCK EXPANSION
- CONNECTOR ROAD
- LOADING DOCK
- CUP (DESIGNED FOR ENTIRE SOUTH MALL CAMPUS)
- AIB B1
UNDERGROUND CONSTRUCTION FUTURE PROGRAM

UNDERGROUND CONSTRUCTION - OVERALL B2 PLAN

RELOCATED FROM B3

CUP
(DESIGNED FOR ENTIRE SOUTH MALL CAMPUS)
UNDERGROUND CONSTRUCTION - OVERALL B3 PLAN

RELOCATED TO B2

CISTERN
UNDERGROUND CONSTRUCTION - BASEMENT AND B1 FLOOR LEVELS

SOUTH MALL MASTER PLAN EXISTING

Basement with utility distribution in the ceiling

SOUTH MALL MASTER PLAN PROPOSED

Basement with lowered floor & new utility routing below the slab

RoHC PROJECT

Basement with lowered floor

Utility zone for AHU's & equipment routing

SIB Extension & Connector Road for Service & Support
UNDERGROUND CONSTRUCTION – SECTION THROUGH SIB B1, B2 AND EXTENSION/CONNECTOR ROAD

- The new SIB Extension/Connector Road will be located between the SIB and the Quad Building.
- Floor Levels will match the Existing Quad Building.
The new Central Utility Plant (CUP) will be located between the AIB and the Quad Building.

The CUP will initially serve the SIB and AIB but is designed to serve all the buildings in the South Mall Campus.

Floor Levels will match the Existing Quad Building.

The lowest level of the CUP will be no lower than the Quad Building.
COOLING TOWERS
COOLING TOWERS

STRATEGIES FOR REDUCING COOLING TOWER LOADS

SOUTH CAMPUS INVESTIGATION

PROPOSED LOCATION
- NMNH Site
- Connection Options- Direct Bore and Existing Tunnel
Design Objectives
- Preservation- Locate the cooling towers to minimize the negative effects on the buildings and gardens. Screen the new towers as much as possible.
- Design- Improve energy efficiency and reliability for the building systems on the South Mall Campus.
- Utilize alternative heat discharge opportunities to minimize the number of cooling tower cells.
- Design the system to supply the entire South Mall Campus.

Background
- The South Mall Campus is currently connected to the GSA steam plant. This supply is not energy efficient and can go off-line unannounced, placing the South Mall Campus buildings and collections at risk.

Past Studies
- Program Studies (2019, 2020) anticipated equipment either inside the Central Utility Plant or to the east of the AIB.

Concept Design
- The cooling towers proposed location is the SW corner of the National Museum of Natural History Site, mirroring an existing cooling tower at the SE corner of the site.
- The new cooling towers will be screened with construction that matches the existing cooling towers.
- The new cooling towers will need to be connected to the South Mall Campus Central Utility Plant (CUP). Two options are being studied- reuse of the existing steam pipe tunnel that crosses the Mall or direct boring below grade.
**Cooling Towers Strategies for Reducing Cooling Tower Loads**

<table>
<thead>
<tr>
<th>Cooling Tower Enclosure Size (Nominal Tons)</th>
<th>Enclosure Length</th>
<th>Enclosure Width</th>
<th>Enclosure Area</th>
<th>Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Only Cooling Towers (5000 - 0)</td>
<td>166</td>
<td>50</td>
<td>8300</td>
<td>100%</td>
</tr>
<tr>
<td>Towers with 55 Heat Reject. (5000 - 500)</td>
<td>144</td>
<td>50</td>
<td>7200</td>
<td>87%</td>
</tr>
<tr>
<td>Towers with Thermal Ice Storage (5000 - 1000)</td>
<td>125</td>
<td>50</td>
<td>6250</td>
<td>75%</td>
</tr>
<tr>
<td>Towers with 55 and Ice (5000 - 1500)</td>
<td>104</td>
<td>50</td>
<td>5200</td>
<td>63%</td>
</tr>
<tr>
<td>Towers with 750 Wells (5000 - 1500)</td>
<td>104</td>
<td>50</td>
<td>5200</td>
<td>63%</td>
</tr>
<tr>
<td>Towers with 55, Ice, and 250 Wells (5000 - 2000)</td>
<td>83</td>
<td>50</td>
<td>4150</td>
<td>50%</td>
</tr>
<tr>
<td>Towers with 55, Ice, and 750 Wells (5000 - 3000)</td>
<td>59</td>
<td>50</td>
<td>2950</td>
<td>36%</td>
</tr>
<tr>
<td>Towers with 100% Geothermal</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>
Design Objectives

- Minimize the visual impact of the cooling towers.
- Multiple locations within the South Mall Campus were evaluated.
Above Grade Option on East Side of AIB

Below Grade Option on East Side of AIB

Design Objectives

- Potential above grade and below grade locations on South Campus were studied.
- Both would have a negative effect to the Ripley Garden.
- The above grade option would have a negative effect on the adjacent buildings would be constructed over the 9th Street tunnel.
- The below grade option would place the equipment under the AIB.
Design Objectives

- Building cooling towers across the National Mall at Southwest corner of NMNH site.
- Location resolves difficult site constraints on South Campus.
- Reduces visual and noise negative impacts to Haupt Garden, Ripley Garden, and the historic buildings.
- Design of the new cooling tower enclosure would mimic the existing enclosure at the southeast corner of the site.
**COOLING TOWERS  PROPOSED LOCATION**

**CONNECTION OPTIONS**
**DIRECT BORE AND EXISTING TUNNEL**

1. New cooling tower plant to serve South Campus
2. Direct bore for condenser water routing from Cooling Towers to SIB
3. Existing steam tunnel. Potential route for condenser water piping - Cooling Towers to SIB

**Design Objectives**

- Connect to the South Campus CUP under the National Mall. This can be done in an existing steam tunnel or with a new direct bore.
BREAK FOR QUESTIONS
GARDENS AND GROUNDS
HISTORY
EXISTING CONDITIONS
KEY DESIGN ISSUES
• Area of Potential Disturbance
• Goals and Drivers - Rehabilitation
• Perimeter Security
• Accessibility Improvements
• New Egress

SOUTH OF SMITHSONIAN INSTITUTION BUILDING
• Evolution
• Rehabilitation of Character Defining Features of the Haupt Garden
• Vegetation
• African Art Museum Pavilion Fountain Garden
GARDENS AND GROUNDS

HISTORY

Landscape Evolution

• The landscape of the Smithsonian Institution Historic Core is one that has evolved dramatically since it was first established in the 19th Century.

Historic Designations

• Although the Smithsonian Institution Building, the Arts and Industries Building, and the Freer Gallery of Art are all individually listed in the National Register of Historic Places, the accompanying gardens are not so-designated and do not fall within the period of significance attributed to the listed buildings.

• For the National Mall Historic District, the gardens of the Smithsonian Institution Historic Core are documented as part of the landscape setting of the buildings and objects, they are not counted as contributing resources.

• The Smithsonian Quadrangle Historic District was added to the DC Inventory of Historic Sites in 2017. The Quadrangle was determined individually ineligible by the US Department of the Interior.

Concept Design

• Anticipated changes to the landscape to support the RoHC project are proposed to be minimal with an emphasis on rehabilitation of site character and accommodating new program and improvements.
GARDENS AND GROUNDS  HISTORY

LANDSCAPE EVOLUTION

Castle and South Yard, Facing Northwest (circa 1885)

National Museum, Facing East from South Yard (1880)

AIB South Elevation (1975)

East Garden and AIB with the Downing Urn (1975)

Victorian Garden and AIB, Facing Southeast (1980)

Smithsonian Castle, Facing West (1975)
GARDENS AND GROUNDS EXISTING CONDITIONS
GARDENS AND GROUNDS  EXISTING CONDITIONS

Castle and Haupt Garden, Facing Northeast

AIB and Ripley Garden, Facing Southwest

Downing Urn in the Haupt Garden, Facing South

Haupt Garden and AIB, Facing Southeast

Smithsonian Castle, Facing West
GARDENS AND GROUNDS  KEY DESIGN ISSUES

AREA OF POTENTIAL DISTURBANCE
GARDENS AND GROUNDS  KEY DESIGN ISSUES

GOALS AND DRIVERS - REHABILITATION

NOTE: ANY AFFECTED HARDSCAPE AND VEGETATION TO BE REPLACED IN KIND TO THE EXTENT PRACTICABLE

AFRICAN PAVILION GARDEN ELEMENTS TO BE SALVAGED AND REINSTALLED

LEGEND
- CUP MECHANICAL AREAWAY
- SJM AREAWAY
- ACCESSIBILITY IMPROVEMENTS
- PROPOSED BUILDING EGRESS
- AIB PARKING AND TRUCK ACCESS
- RIPLEY GARDEN EXPANSION AND INTEGRATED SMITHSONIAN GARDENS WORK AREA
- AREA OF POTENTIAL DISTURBANCE

SCALE IN FEET
0 10 20 30 40 50

SCALE IN METERS
0 10 20 30 40 50
GARDENS AND GROUNDS  KEY DESIGN ISSUES

PERIMETER SECURITY

Background

• 2004 Mall-Wide Perimeter Security Concept Design developed by Beyer Blinder Belle.
• 2018 South Mall Campus Master Plan recommended following guidance from 2004.
• Smithsonian Institution and A/E Team collaborating to establish requirements and scope of perimeter security for the RoHC project.

Design Objectives

• Enhance Perimeter Security along Jefferson Drive and Independence Ave within RoHC project area.
• Follow Contextual and Unified Approach as recommended by the 2004 Mall-Wide Perimeter Security Concept Design.
• Integrate and conceal perimeter security measures within the site's existing features and landscape to the extent possible.
• Envision design approach as an extension applied Mall-Wide.
SMITHSONIAN REVITALIZATION OF THE HISTORIC CORE

GARDENS AND GROUNDS

KEY DESIGN ISSUES

PERIMETER SECURITY

2004 Perimeter Security Concept Study

Smithsonian Institution
GARDEN AND GROUNDS  KEY DESIGN ISSUES

PERIMETER SECURITY

JEFFERSON DRIVE PERIMETER SECURITY CONCEPT

INDEPENDENCE AVENUE PERIMETER SECURITY CONCEPT

LEGEND

- DECORATIVE CUSTOM BOLLARDS
- RETRACTABLE BOLLARDS
- DECORATIVE HARDENED FENCE PANELS
- HARDENED WALL
- HARDENED LIGHT STANDARD
- HARDENED DECORATIVE URN PLANTER
- HARDENED PEDESTRIAN SEATING

SCALE IN FEET

0  20  40  60  80  100

SCALE IN METERS

0  5  10  15  20  25

Smithsonian Institution
GARDENS AND GROUNDS  KEY DESIGN ISSUES

ACCESSIBILITY IMPROVEMENTS

Background

- Since the 1970s, the Smithsonian Institution has made updates and additions to their facilities to comply with modern accessibility standards.
- In the 1980s, a ramp to the Castle North Tower's west side was installed to improve accessibility. More recently, an accessible ramp was added to the South Tower entrance.
- In the early 1990s, modifications to the North and West Entrances of the AIB were made for accessibility; at the North Entrance, this included the addition of a concrete ramp and handrails.

Design Objectives

- Enhance accessibility at the SIB and AIB to provide universal access to the buildings.
- Retain the historic fabric to the extent practicable and integrate accessibility improvements into the landscape and buildings.
KEY DESIGN ISSUES

ACCESSIBILITY IMPROVEMENTS - SIB NORTH TOWER EAST ENTRANCE EVOLUTION

East Entrance (1920)

West Entrance (1867)
GARDENS AND GROUNDS  KEY DESIGN ISSUES

ACCESSIBILITY IMPROVEMENTS - SIB NORTH ENTRANCE EXISTING CONDITIONS
GARDENS AND GROUNDS  KEY DESIGN ISSUES

ACCESSIBILITY IMPROVEMENTS - SIB NORTH ENTRANCE ENTRY/EXIT SEQUENCE

[Diagram showing accessibility improvements with labels for security screening and exhibit areas, with green and red paths for entrance and exit.]
GARDENS AND GROUNDS  KEY DESIGN ISSUES

ACCESSIBILITY IMPROVEMENTS - SIB NORTH ENTRANCE PROPOSED CONCEPT

ELEVATION

PLAN
GARDENS AND GROUNDS  KEY DESIGN ISSUES

ACCESSIBILITY IMPROVEMENTS - SIB SOUTH ENTRANCE EXISTING CONDITIONS
GARDENS AND GROUNDS  KEY DESIGN ISSUES

ACCESSIBILITY IMPROVEMENTS - SIB SOUTH ENTRANCE PROPOSED CONCEPT
GARDENS AND GROUNDS  KEY DESIGN ISSUES

ACCESSIBILITY IMPROVEMENTS - AIB NORTH ENTRANCE EXISTING CONDITIONS
KEY DESIGN ISSUES

ACCESSIBILITY IMPROVEMENTS - AIB NORTH ENTRANCE ENTRY/EXIT SEQUENCE
GARDENS AND GROUNDS  KEY DESIGN ISSUES

ACCESSIBILITY IMPROVEMENTS - AIB NORTH ENTRANCE PROPOSED CONCEPT
GARDENS AND GROUNDS  KEY DESIGN ISSUES

ACCESSIBILITY IMPROVEMENTS - AIB SOUTH ENTRANCE EXISTING CONDITIONS
GARDENS AND GROUNDS  KEY DESIGN ISSUES

ACCESSIBILITY IMPROVEMENTS - AIB SOUTH ENTRANCE PROPOSED CONCEPT
GARDENS AND GROUNDS KEY DESIGN ISSUES

NEW EGRESS - AIB WEST EXISTING CONDITIONS
GARDENS AND GROUNDS  KEY DESIGN ISSUES

NEW EGRESS - AIB WEST PROPOSED CONCEPT
KEY DESIGN ISSUES

NEW EGRESS - AIB EAST EXISTING CONDITIONS

Key Plan of New Egress Door
GARDENS AND GROUNDS  SOUTH OF SMITHSONIAN INSTITUTION BUILDING

EVOLUTION

South Yard (circa 1885)

South Yard (1960s)

Victorian Garden (1977)

Quadrangle Construction (1986)
GARDENS AND GROUNDS  SOUTH OF SMITHSONIAN INSTITUTION BUILDING

REHABILITATION OF CHARACTER DEFINING FEATURES OF THE HAUPT GARDEN

- Plantings to be replaced in kind to the extent practicable given new on-structure condition
- Downing urn to be returned to this, or nearby location, in coordination with NPS
- Fountain garden to be rehabilitated
- Paving to be rehabilitated, typ.

LEGEND
- Area of potential disturbance
- Quadrangle historic district
- Haupt garden

Smithsonian Institution
Design Objectives

- Replace existing vegetation in the spirit of the existing character while accommodating new below-grade improvements
- Coordinate tree plantings adjacent to the Castle for improved façade maintenance.
- Coordinate with NPS on the eventual siting of the Downing Urn
Design Objectives

- Carefully document Fountain Garden hardscape and water features; salvage and rehabilitate after insertion of CUP
- Replace existing vegetation in the spirit of the existing character while accommodating new below-grade improvements
SCHEDULE AND NEXT STEPS
SCHEDULE AND COST ESTIMATE  PROJECT TIMELINE

Written comments are welcome through June 28, 2021 to BondC@si.edu.

Section 106 Initiation - October 2020
Section 106 Consulting Parties Meeting #1 - January 2021
Section 106 Consulting Parties Meeting #2 - May/June 2021
Concept Design Review- CFA & NCPC - June/July 2021
Continued Consultation with External Stakeholders - July 2021- 2022
AIB Futures Exhibit - November 2021- July 2022
Consulting Parties Meeting #3 - Winter 2021- 2022
SIB Move-Out - Summer 2022

Step 1
Initiate the Process
- Define the Undertaking
- Initiate Section 106
- Identify Consulting Parties
- Involve the Public

Step 2
Identify Historic Properties
- Define Area of Potential Effects (APE)
- Identify Historic/Cultural Resources

Step 3
Assess Adverse Effects
- Assess Effects on Historic Resources
- Apply Criteria of Adverse Effect

Step 4
Resolve Adverse Effects
- Avoid, Minimize, and/or Mitigate Adverse Effects
- Notify ACHP of Adverse Effects
- Create Resolution Document (MOA/PA)

Consultation with Consulting Parties