Smithsonian Institution

Revitalization of the Historic Core (RoHC)

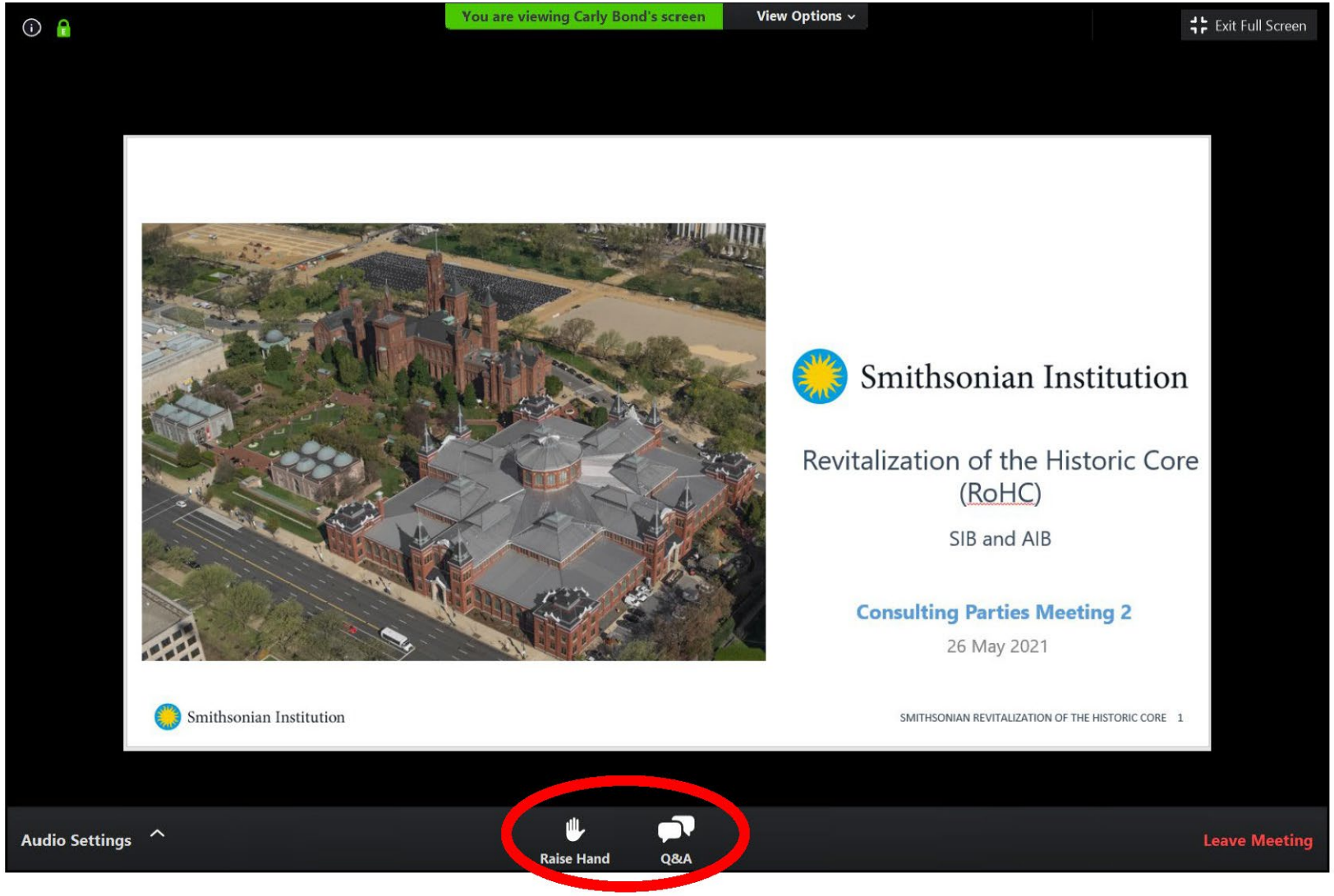
SIB and AIB

Consulting Parties Meeting 2

26 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 Panning, Smithsonian Facilities
Brenda Sanchez, FAIA, Sr. Design Manager, Smithsonian Facilities
Christopher Lethbridge, Architect/Program Manager, Smithsonian Facilities
Anthony Bochicchio, AIA, Architect/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

GOALS
PROJECT AREA
PROJECT SITE
SOUTH MALL CAMPUS PROJECTS
RoHC OVERALL SCOPE
PROGRAM

The goals of the Revitalization of the Historic Core (RoHC):

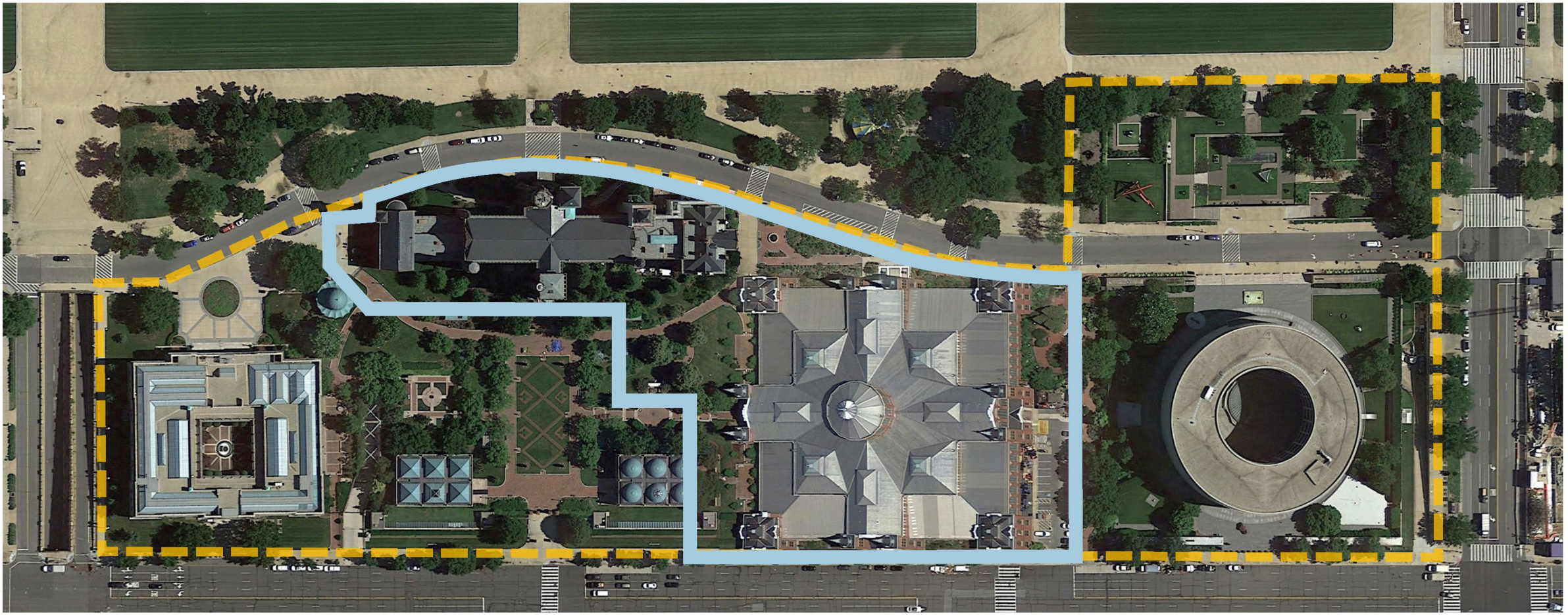
1. **To revitalize the Smithsonian Institution Building (SIB, "The Castle") to provide efficient and accessible space for visitors and staff and restore the building and its principal interior spaces to their period of significance**

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**

PROJECT OVERVIEW PROJECT AREA

PROJECT OVERVIEW PROJECT SITE



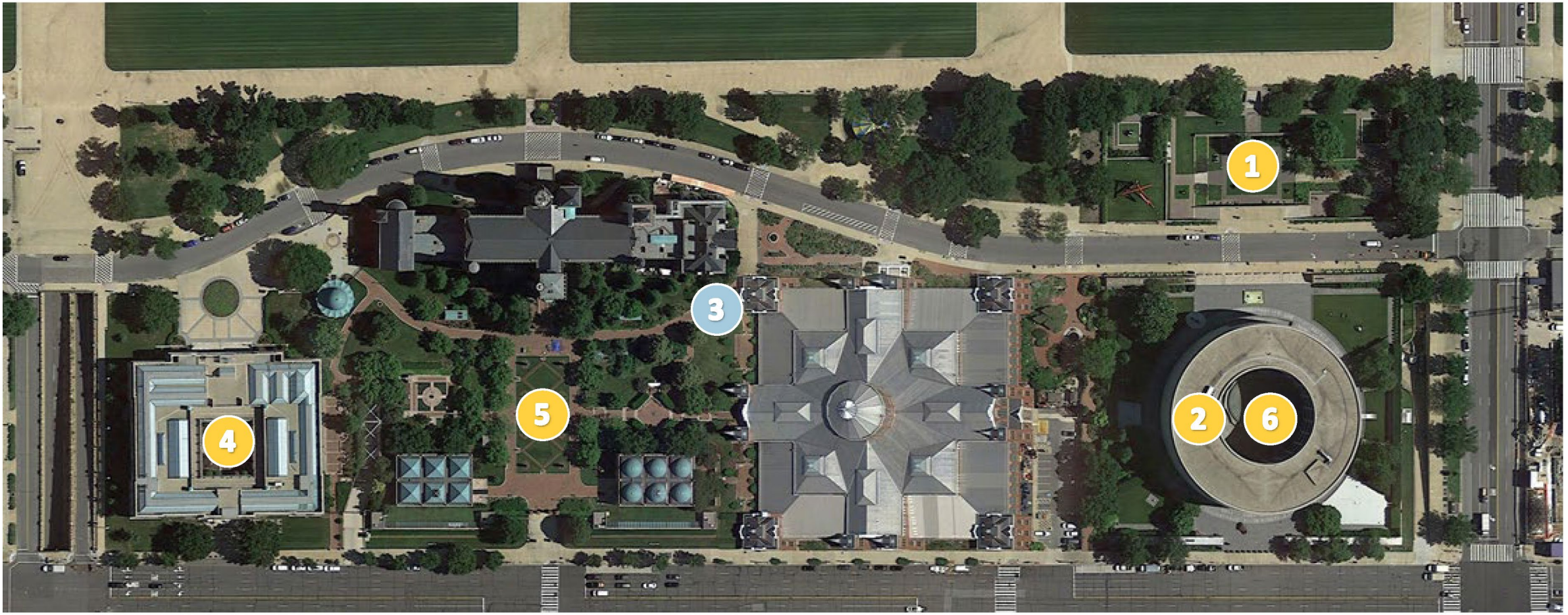
The “Historic Core” is comprised of the Smithsonian Institution Building (the “Castle”) and the Arts and Industries Building. These buildings are the two oldest in the Smithsonian portfolio located on the National Mall.

SMITHSONIAN INSTITUTION HISTORIC CORE

SOUTH MALL CAMPUS

N

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

SMITHSONIAN INSTITUTION HISTORIC CORE

OTHER SOUTH MALL CAMPUS PROJECTS

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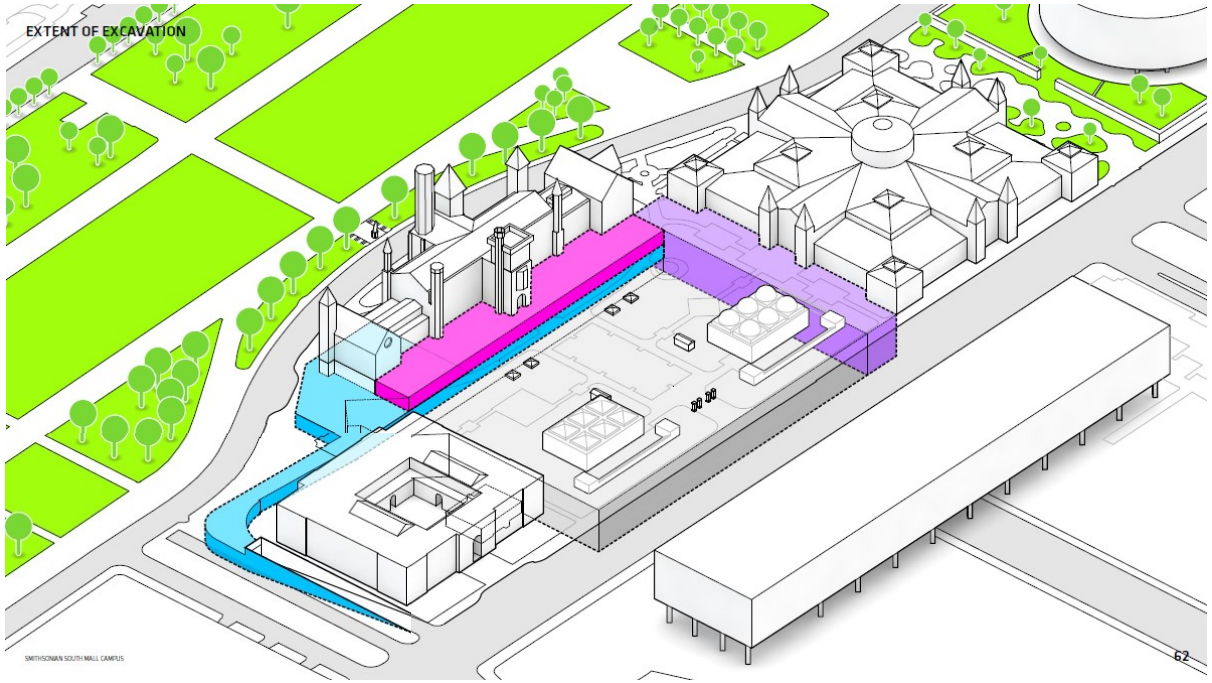
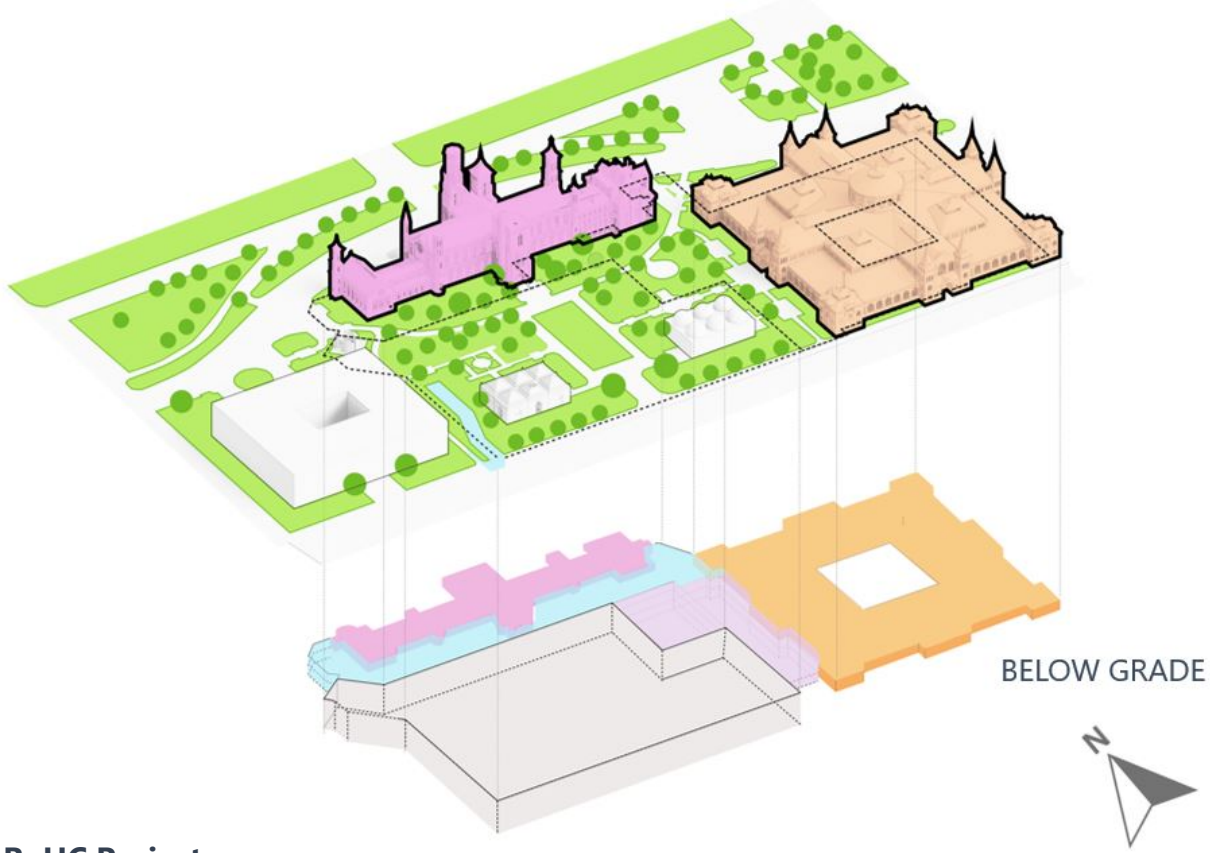
PROJECT OVERVIEW RoHC OVERALL SCOPE

COMPARISON TO THE SOUTH MALL MASTER PLAN – WHATS DIFFERENT?





South Mall Master Plan

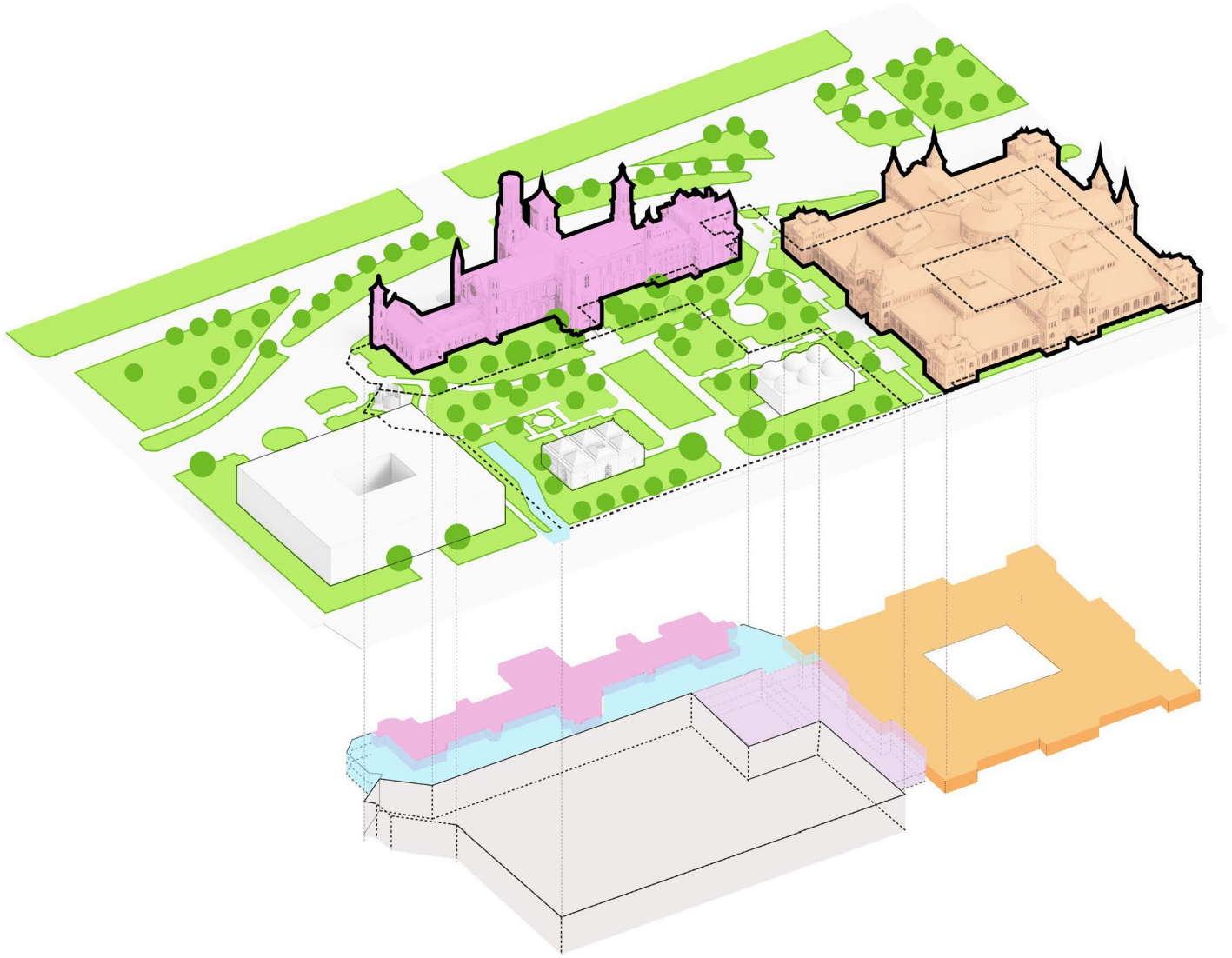
- Blue- New service ramp at the west side of the Freer and new below ground loading dock at the west end of the Castle.
- Pink- Below ground Visitor Center.
- Purple- Central Utility Plant (CUP).

RoHC Project

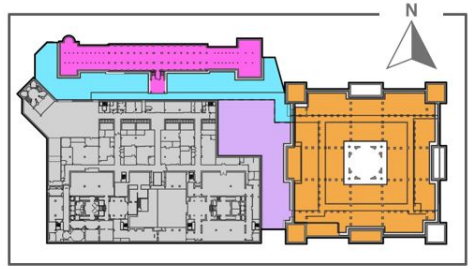
- Existing service ramp remains. Expanded loading dock at west end of the Castle.
- Pink- Lowering of basement floor, Visitor Center in the SIB.
- Orange- Basement under AIB for mechanical systems and support spaces.
- Purple- CUP infills notch of Quad Building.
- CUP layout is still pending, likely 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

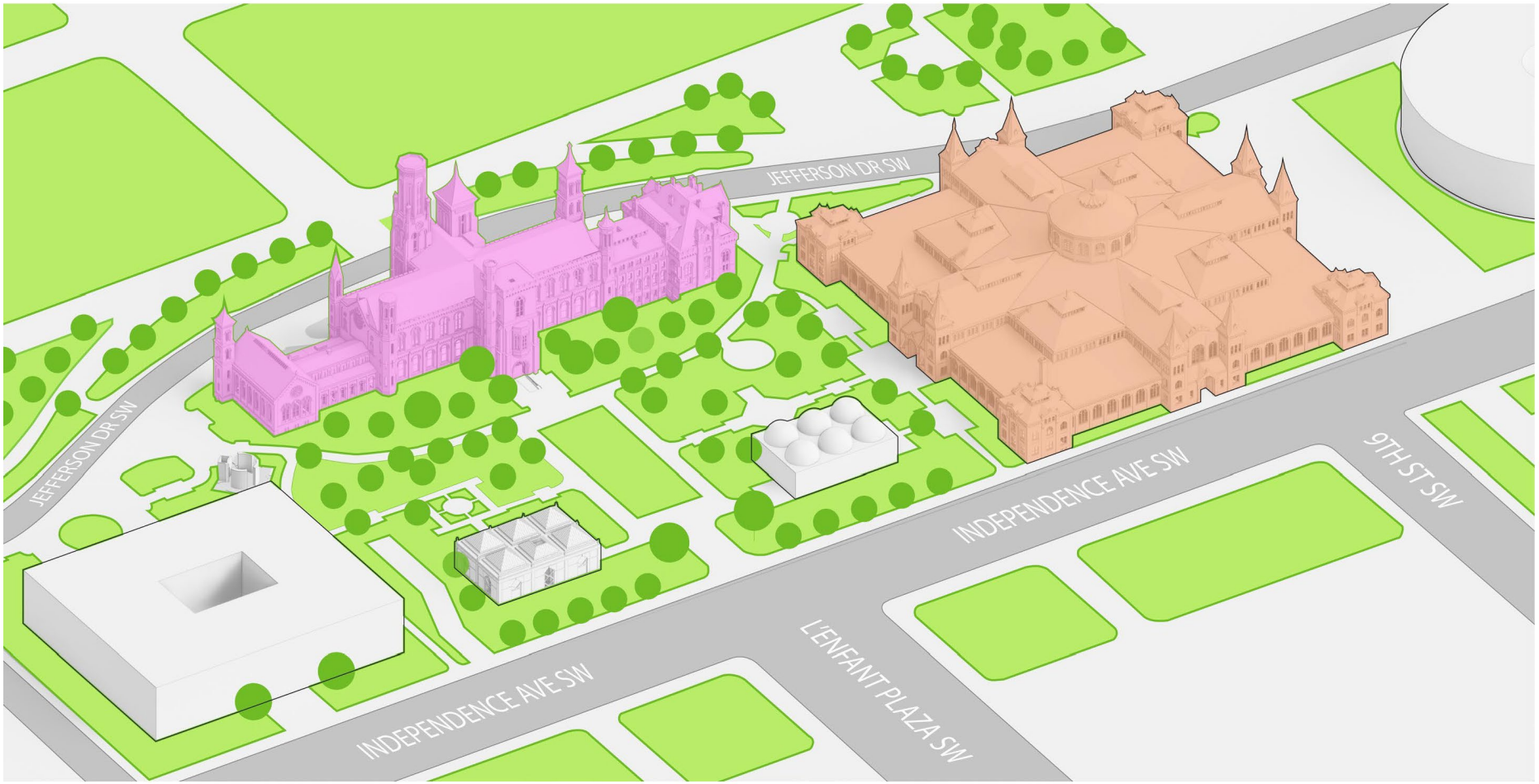


- The below grade construction will create areas for building systems and support spaces that will free up areas in the historic buildings for public uses.
- The Central Utility Plant will initially serve the Historic Core but is sized to eventually serve all buildings in the South Mall Campus.
- CUP 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.



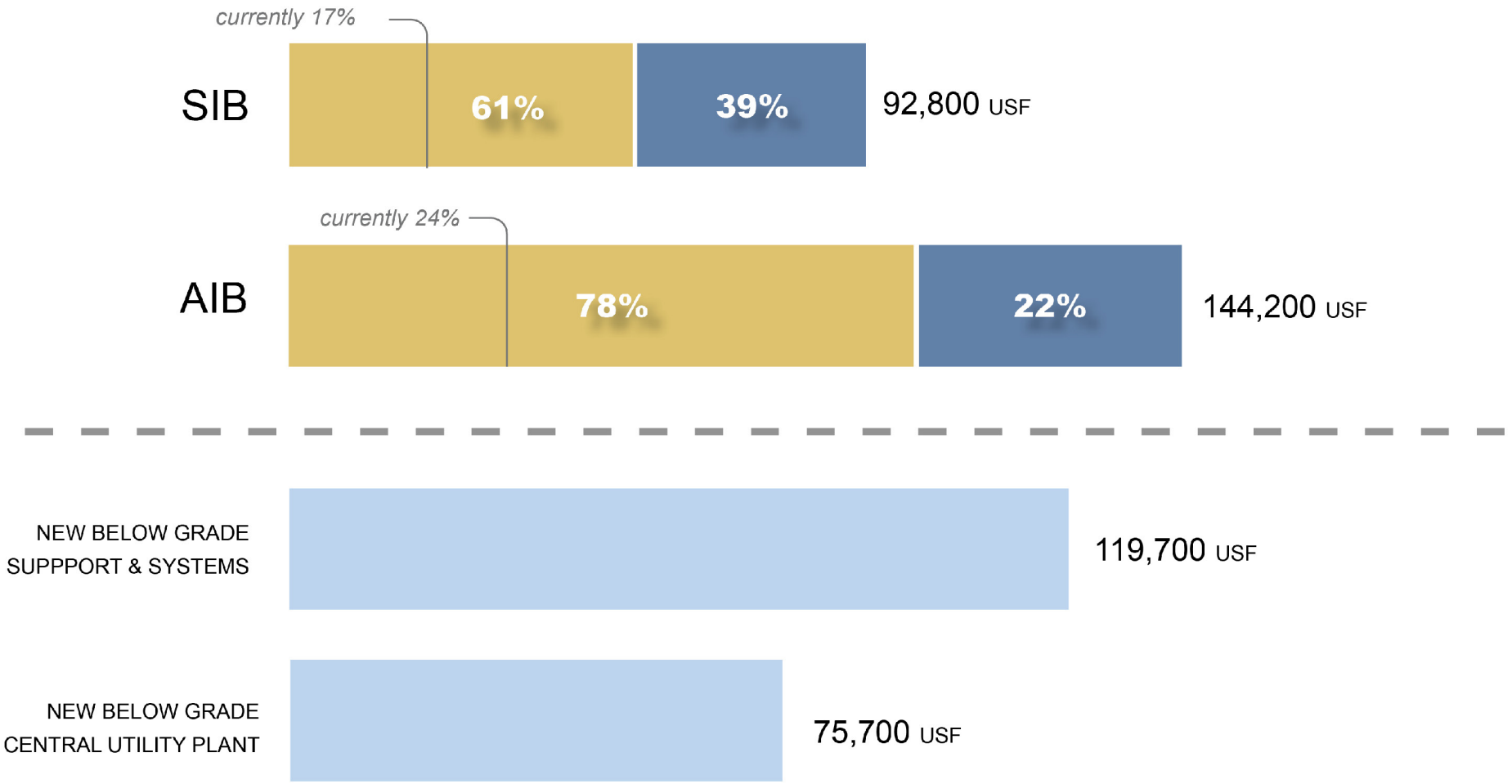
PROJECT OVERVIEW RoHC OVERALL SCOPE

REHABILITATION OF THE HISTORIC SMITHSONIAN INSTITUTION BUILDING AND ARTS & INDUSTRIES BUILDING



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.

PROJECT OVERVIEW PROGRAM



- 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.

PUBLIC
SI
SUPPORT & SYSTEMS

SMITHSONIAN INSTITUTION BUILDING
"THE CASTLE"

SMITHSONIAN INSTITUTION BUILDING (SIB)

HISTORY

EXISTING CONDITIONS

- Preservation Zoning

FUTURE PROGRAM

- General Program Goals

KEY DESIGN ISSUES

- Masonry and Building Envelope
- Roofing
- Window Replacement
- Mechanical Systems
- East Range 4th Floor Corridor
- Areaways
- New Basement Egress Doors
- Seismic Base Isolation
- Underground Construction

DESIGN INTENT FOR KEY SPACES

- Basement
- Great Hall
- Commons

SMITHSONIAN INSTITUTION BUILDING (SIB) HISTORY

SMITHSONIAN INSTITUTION BUILDING (SIB) HISTORY

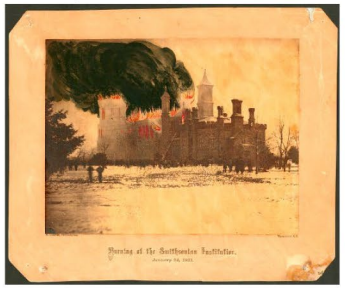
1847
The cornerstone of the building is laid on May 1. Exterior of the East Wing and the East Range is completed by December 31.

1849
The East Wing and East Range are completed and occupied.

1850
The West Wing and the West Range are completed and occupied.

1855
The Great Hall is opened to the public.

1865
A fire destroys the Upper Great Hall and the primary towers.



1871
The floor of the Commons (West Wing) is raised to provide headroom for a basement laboratory.

1872
East Wing and East Range repurposed to serve solely as administrative space.

1881
National Museum Building is completed with collections and specimens transferred from the SIB.

1884
The East Wing and East Range are upgraded and enlarged with "fireproof" construction.

1911 Opening of new National Museum building- transfer of natural history specimens from the SIB.

(CONT.)

Primary Period of Significance 1847-1910

SMITHSONIAN INSTITUTION BUILDING (SIB) HISTORY

(CONT.)

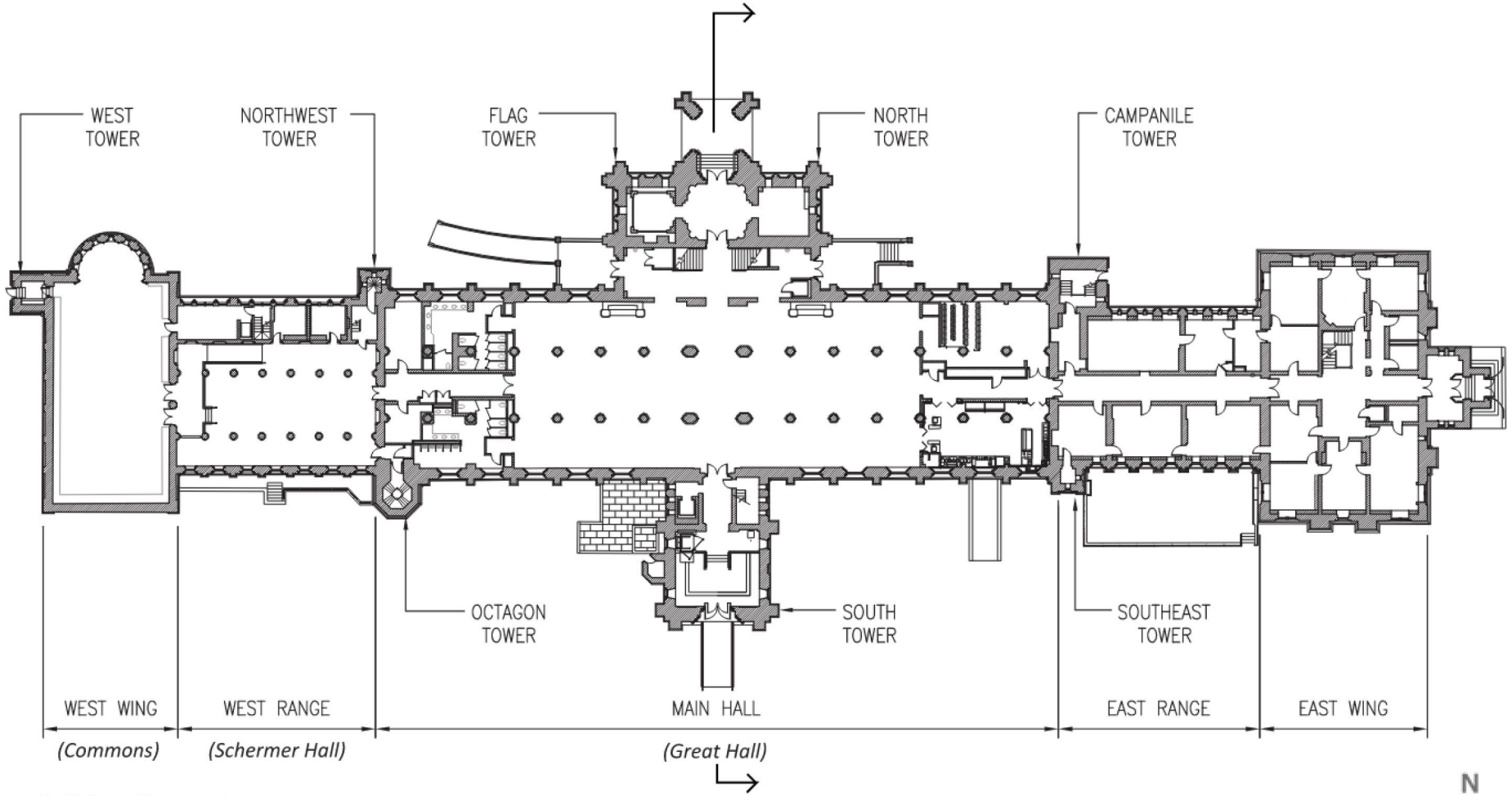
1914
Renovation of the Great Hall includes removal of the galleries.

1940
Renovation of the Great Hall insertion of office and storage space at the east and west ends.

1964
The National Museum of History and Technology opens- transfer of all remaining exhibits from the Castle.

1970
The Upper Great Hall is divided with the insertion of a 4th floor and converted to use as offices.

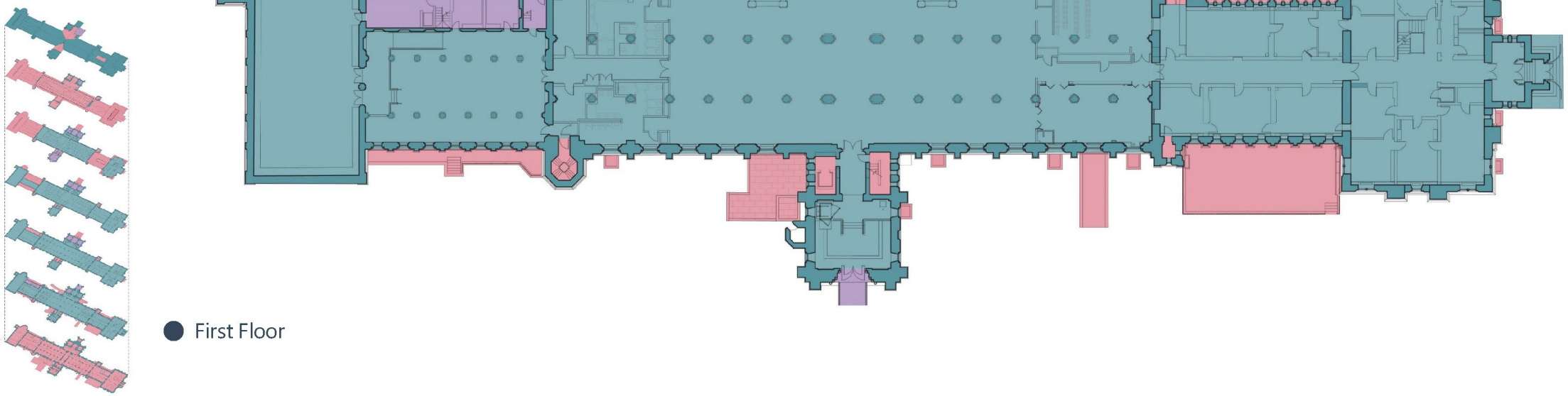
SMITHSONIAN INSTITUTION BUILDING (SIB) HISTORY



Building Nomenclature

SMITHSONIAN INSTITUTION BUILDING (SIB) EXISTING CONDITIONS

PRESERVATION ZONE DIAGRAMS



First Floor

A Historic Structures Report evaluated the building and mapped the exterior and interior into three preservation zones based on the level of sensitivity. Most of the Castle is Priority 1, the most sensitive.

PRIORITY 1
PRIORITY 2
PRIORITY 3

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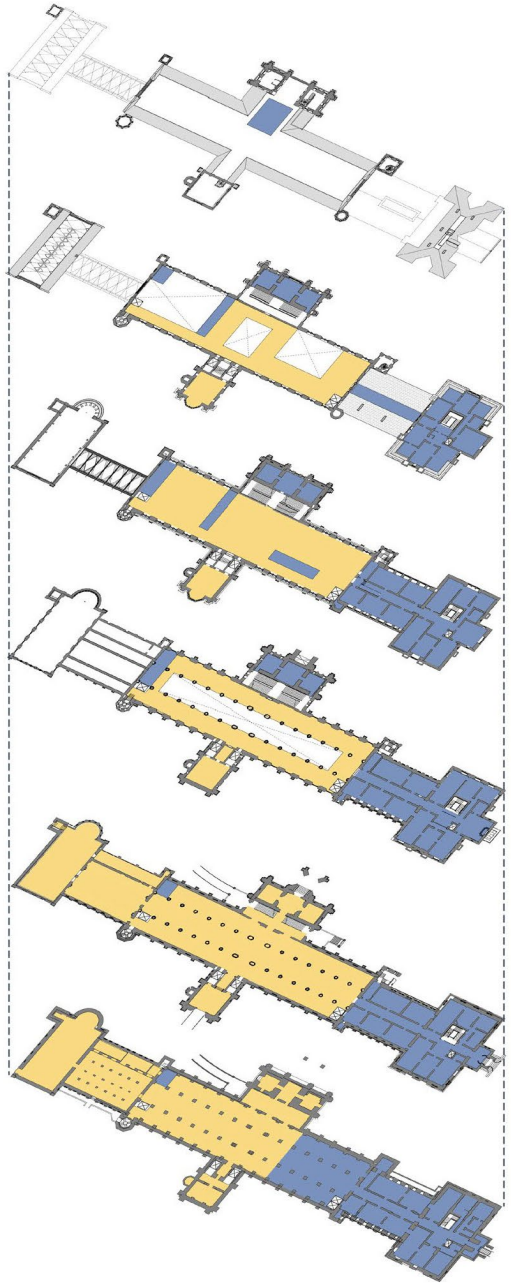
SMITHSONIAN INSTITUTION BUILDING (SIB) FUTURE PROGRAM

GENERAL PROGRAM GOALS

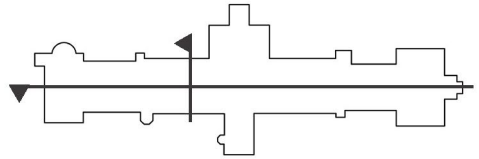


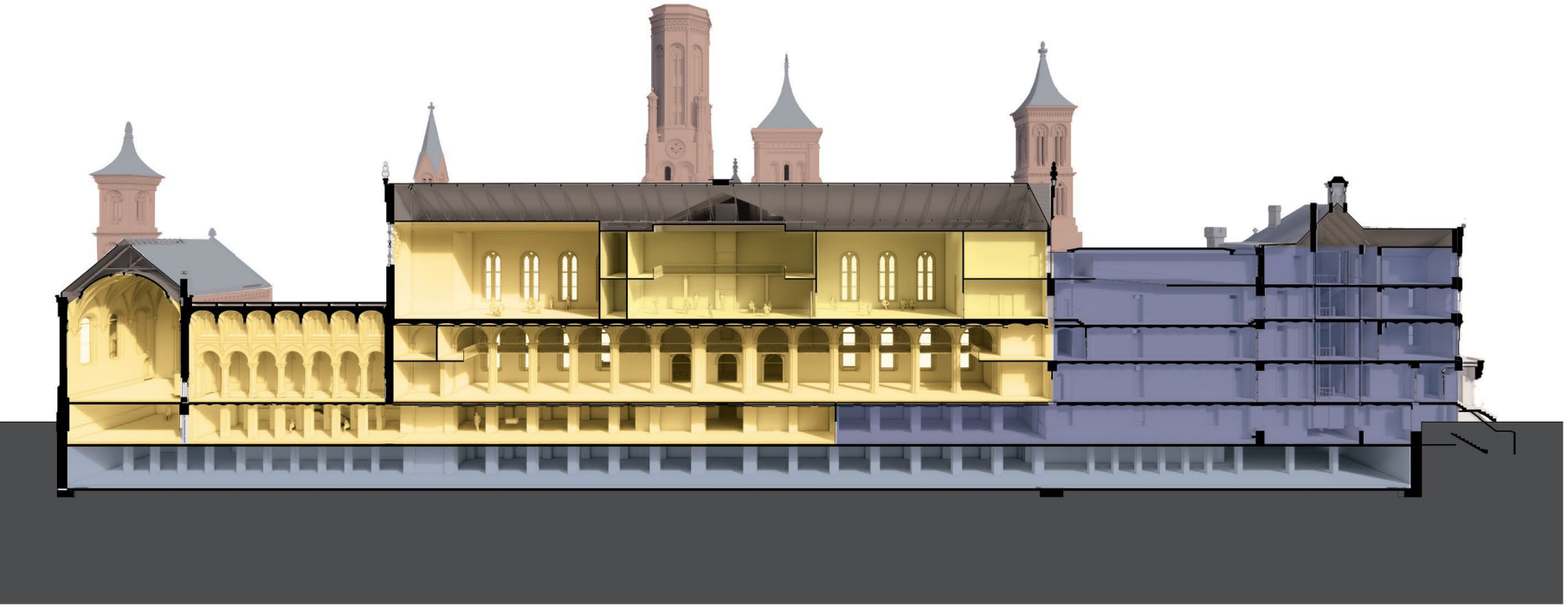
Design Objectives

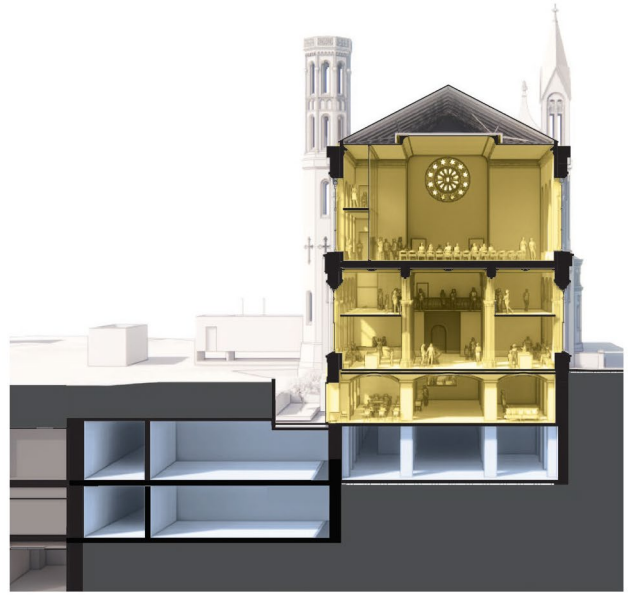
- Public use of Great Hall, Schermer Hall, Commons .
- Public Meeting space in Upper Great Hall.
- Activate the basement with public functions.
- Continue to house SI administration in East Wing/Range.
- Enhanced Visitor Center on 1st floor and in basement.

PUBLIC
SI

SMITHSONIAN INSTITUTION BUILDING (SIB) FUTURE PROGRAM







PUBLIC
SI
SUPPORT & SYSTEMS

Longitudinal and transverse sections through the building illustrate the areas devoted to Public functions and Smithsonian Institution activities. The East Wing and East Range (shown in blue) have traditionally housed leadership offices for the Institution and will continue to do so.

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

MASONRY AND BUILDING ENVELOPE

Design Objectives
- Preservation- Retain and conserve historic building fabric to the greatest degree possible.
- Design - extend the life of the building envelope (masonry and roofing systems) by repairing failing elements and increasing energy performance.

Background
- The Smithsonian Institution has executed a series of exterior masonry repair projects over the last five years.
- A stockpile of Seneca sandstone, salvaged from demolished structures, is available for use as replacement stones or Dutchmen for this project.

Past Studies
- Complete Façade Assessment and Stabilization Implementation Plan (2018) provides a comprehensive review of the façade elements in need of repair.

Concept Design

Masonry
- Extend the life of masonry with appropriate, repairs and replacement.
- Reduce water absorption and infiltration to reduce deterioration.
- Remove staining to improve overall appearance.
- Improve access to facilitate regular observation and maintenance.

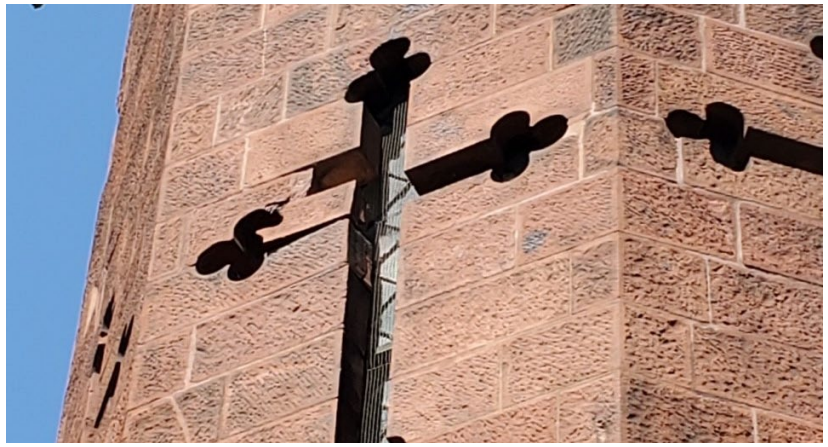
Roofs
- Replace failing roofing and underlayment to prevent water infiltration.
- Improve drainage to accommodate heavy rainfall events.
- Increase thermal performance with additional insulation (where possible).

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

MASONRY AND BUILDING ENVELOPE

Biological Growth Staining Concentrated at Horizontal Projections

Masonry Damage Below Horizontal Projections



Loose Stone on Octagon Tower (Has Since Been Removed)

Project Scope

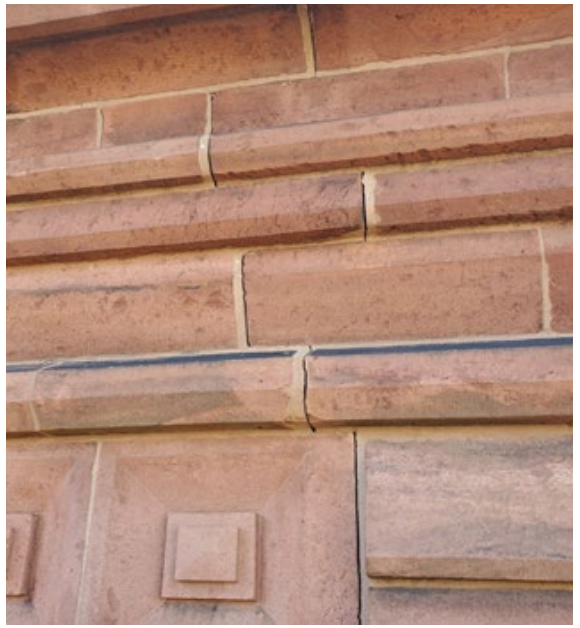
- Clean masonry to reduce staining (biological growth and manganese).
- Masonry restoration.
- Provide flashing at horizontal surfaces to reduce water absorption and infiltration.
- Plan for future access to masonry around the building to allow regular observation and maintenance.

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

MASONRY AND BUILDING ENVELOPE

Previous Repairs on Masonry, Including Sealant in Joints and Surface-Applied Mortar Repairs

Typical Damaged Stone



Existing Cracked Masonry

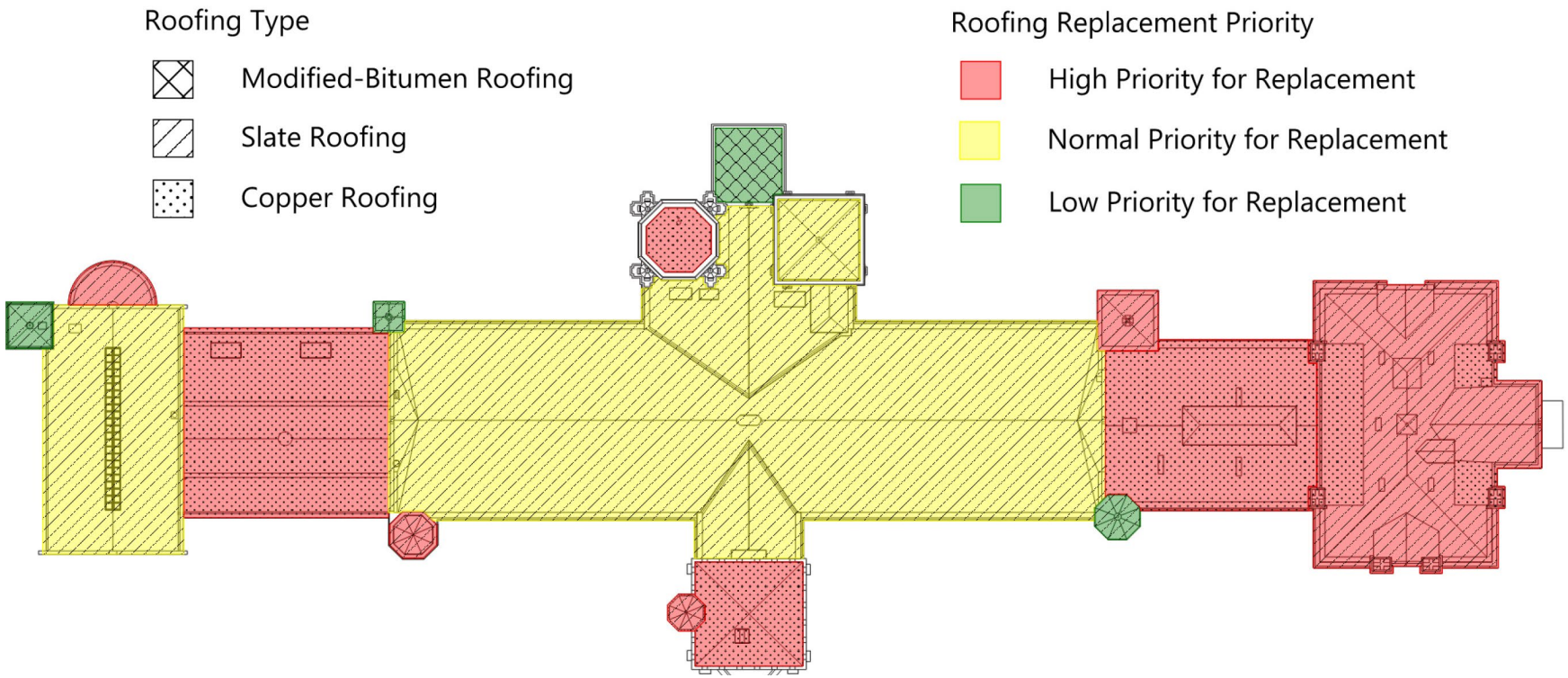
Off-Site Seneca Sandstone Stockpile

Project Scope

- Repair damaged masonry, including whole unit replacement, Dutchman repair, and crack repair.
- Remove and replace failed previous repairs.
- Repair cracks in mortar and masonry units, including stabilizing masonry as required.
- Repoint exterior and interior joints with eroded or missing mortar.

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

ROOFING



Typical Copper Roofing

Typical Slate Roofing

Project Scope

- Replace failing roofing with new roofing similar in appearance.
- Improve roof drainage and increase capacity to better accommodate heavy rainfall events.
- Coordinate with other project objectives to identify synergies with roofing replacement.

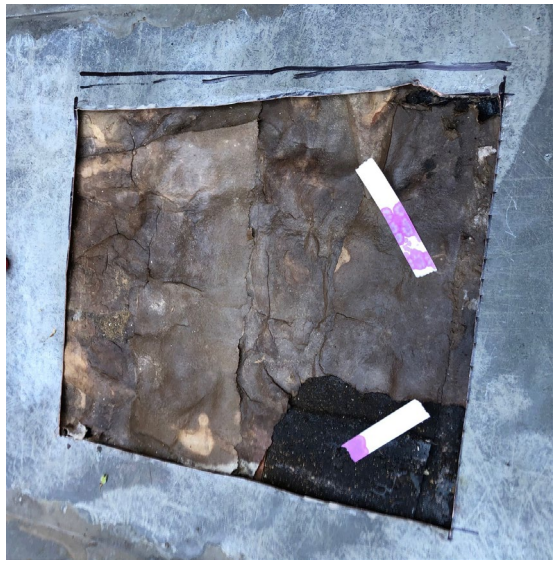
SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

ROOFING

Typical Broken, Missing, or Loose Slate Shingles

Typical Deterioration of Slate Shingles

Typical Thin Solder at Seams in Copper Seams



Water Below Copper Roofing, Typical

Project Scope

- Provide new underlayments and metal flashing at all replacement roofing.
- Replace existing lead-coated copper roofing with new zinc-tin-coated copper roofing.
- Replace existing slate roofing with new slate roofing.
- Add insulation above the roof deck where possible.

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

WINDOW REPLACEMENT

Example blast window from AIB

Example blast window from AIB

Design Objectives

- Preservation- Window designs are to be appropriate for the period of significance for the building.
- Design- Window designs developed by James Renwick will be referenced as a basis for the overall design.
- Retain surviving historic windows, typically older than 1900.
- Salvage representative samples of windows from 1930s.

Background

- Most of the existing windows were installed in the 1980s-1990s.
- New windows will need to meet thermal performance criteria and security criteria.

Past Studies

- SIB Historic Structure Report (2009) provides a comprehensive analysis of the chronology of the glazed assemblies as well as the condition assessment and treatment recommendations.
- Windows will be designed to meet security and protection requirements similar to other buildings in this area of the Mall.

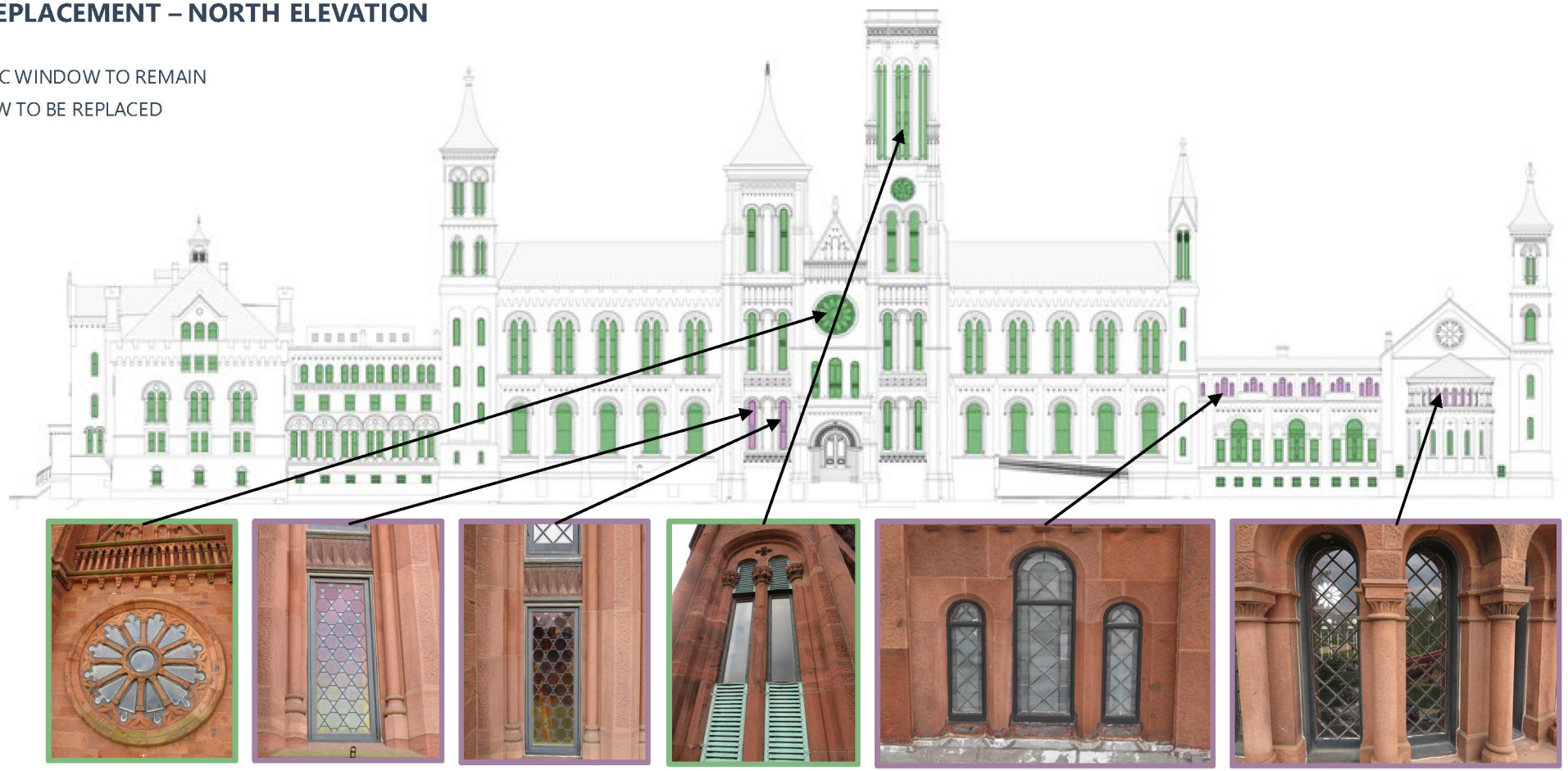
Concept Design

- Replace newer windows, 1987-1992, with new windows based on Renwick design.
- Retain historic windows in place in two locations - West Range Clerestory and North Apse of the Commons.
- Upgrade windows for compliance with energy codes and security design criteria.

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

WINDOW REPLACEMENT – NORTH ELEVATION

HISTORIC WINDOW TO REMAIN
WINDOW TO BE REPLACED



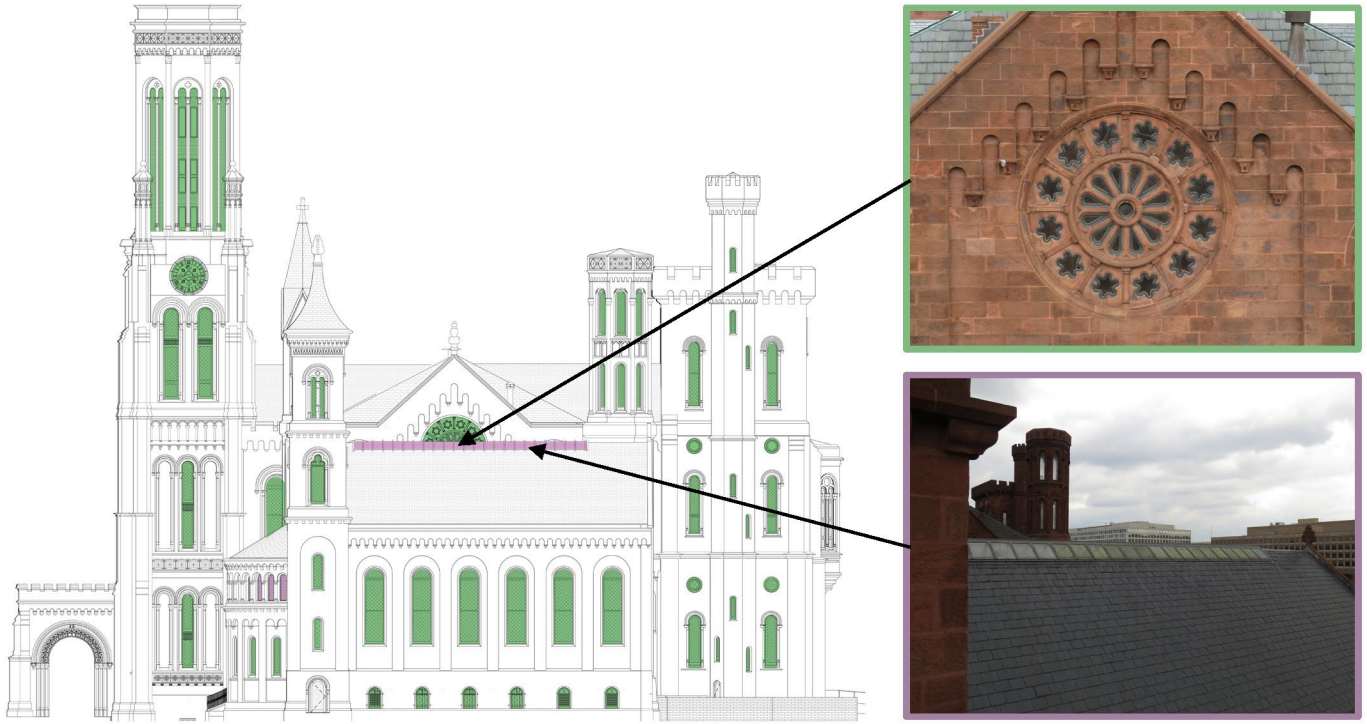
Project Scope

- Windows in green are scheduled to be replaced. The majority of these were replaced between 1987 and 1992.
- Wall strengthening associated with the seismic design and security upgrades will be done on the interior to avoid an adverse effect on the exterior of the building.
- SI will retain a representative example of the limited early windows at the West Range and North Tower.

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

WINDOW REPLACEMENT – WEST ELEVATION

HISTORIC WINDOW TO REMAIN
WINDOW TO BE REPLACED



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BREAK FOR QUESTIONS

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

MECHANICAL SYSTEMS

Design Objectives
- Preservation- Minimize changes to the exterior that are visible from the ground.
- Design- Provide the amount of outside air and exhaust required to provide interior environments that are appropriate for the proposed program, including meeting spaces and the Visitor Center.

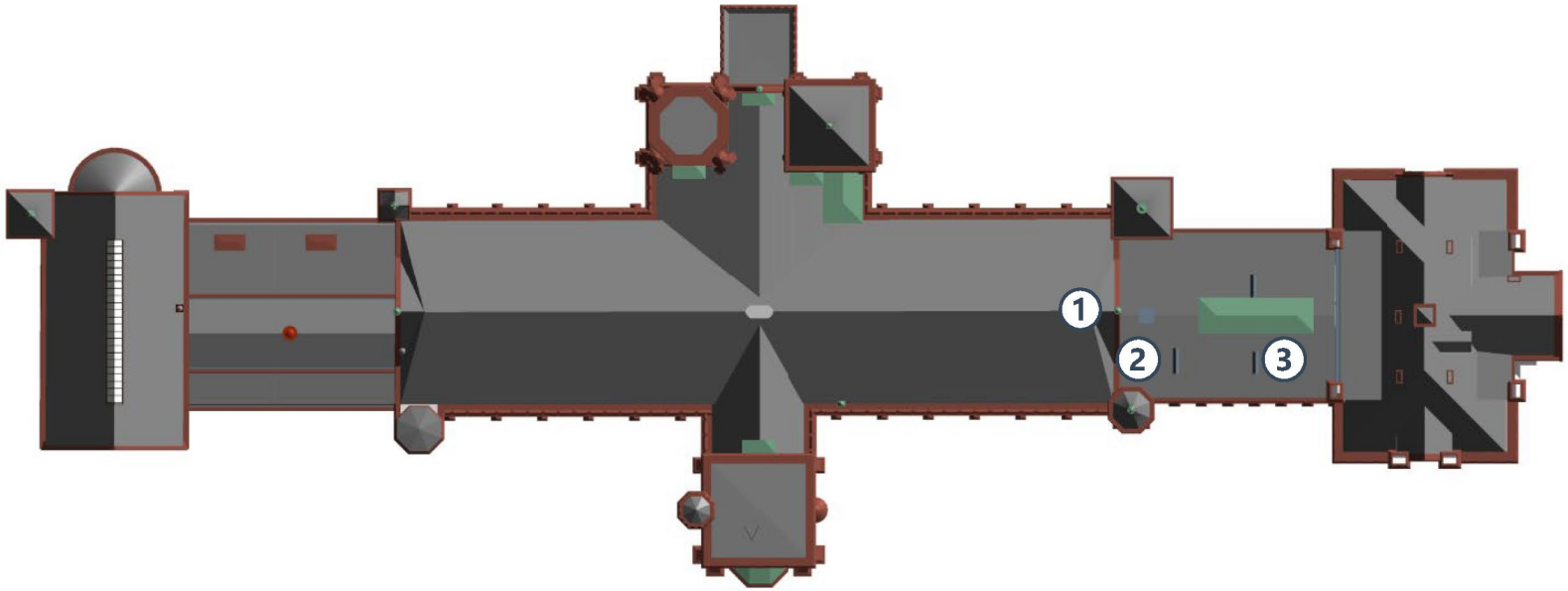
Background
- There are existing louvered penthouses on the roof of the Main Building, the East Range and the West Range. There is a louvered cupola on the East Wing. These do not provide sufficient capacity to properly serve the building.

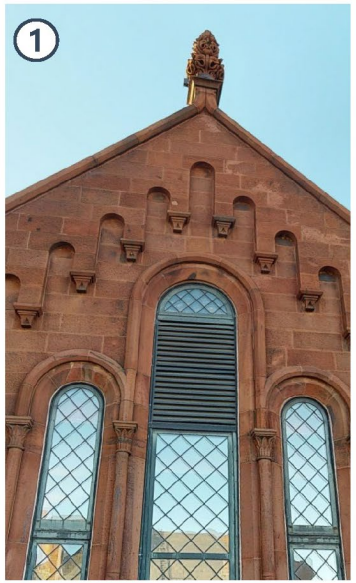
Past Studies
- Past studies - MEP Systems Assessment for Failure Risk Mitigation, GWWO, May 2018.

Concept Design
- Utilize existing roof features- louvered penthouses and cupola- to provide air intake and exhaust.
- Modify the existing elements to increase the louver area but limit visual impact of the changes.

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

MECHANICAL SYSTEMS - EXISTING CONDITIONS



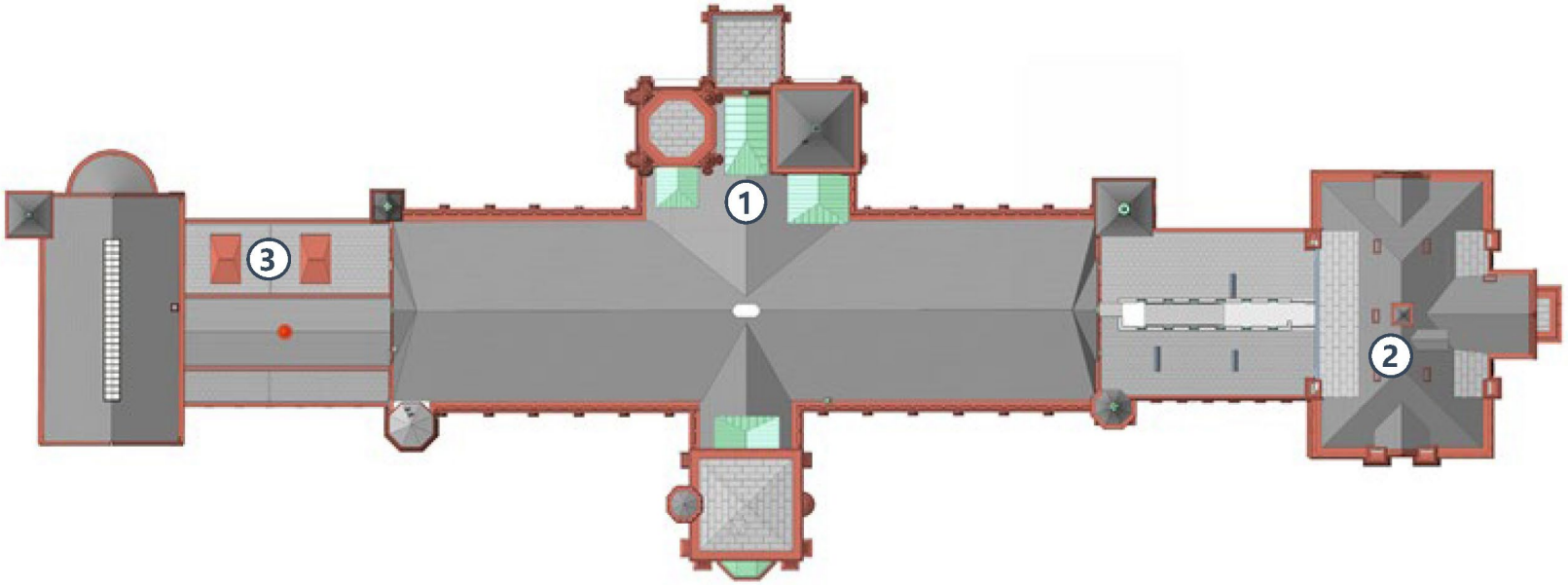


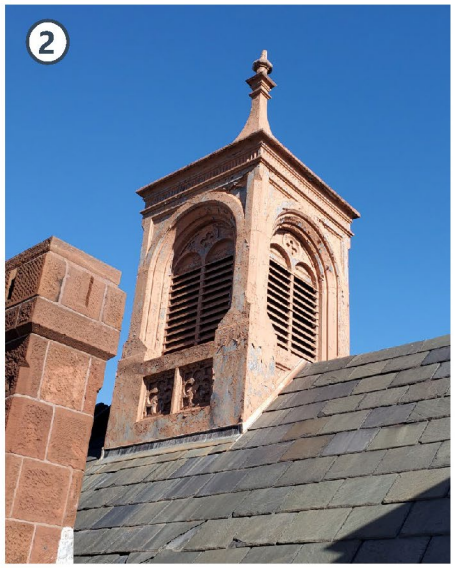
Project Scope

1. Remove existing louvers on East Façade of Main Hall to allow for restoration of historic windows.
2. Remove existing louvered penthouse on East Range Roof.
3. Remove existing mechanical penthouses unsuitable for reuse, such as the dangerous confined space East Range Mechanical Penthouse.

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

MECHANICAL SYSTEMS - PROPOSED OUTSIDE AIR AND EXHAUST



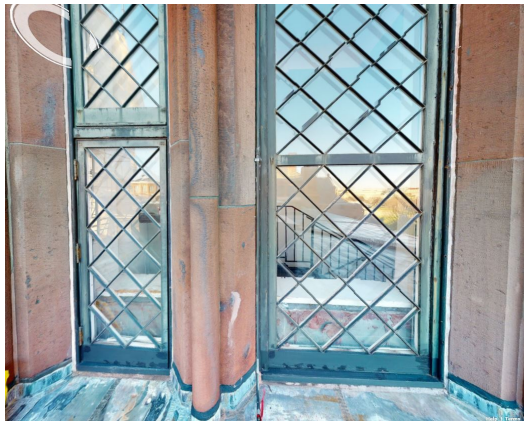


Project Scope

1. Maximize areas of louvered penthouses concealed behind towers and pediments by expanding them without increasing their visibility to serve Main Hall and East Range.
2. Make use of existing historic cupola and associated intakes and exhausts to serve the East Wing.
3. Expand existing louvered penthouses South to maximize their useable area without increasing visibility to serve the West Range and West Wing.

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

EAST RANGE 4TH FLOOR CORRIDOR



Design Objectives

- Preservation- New construction visible from the exterior will be compatible with the existing building in materials, massing and detailing.
- Design- Provide a second means of egress from the 4th floor of the East Wing
- Minimize the profile of the connector by limiting the height.
- Minimize the negative effect of the changes to the east elevation of the Main Building and the west elevation of the East Wing. Where the new construction intersects with the historic walls minimize the removal or modification of the historic materials.

Background

- The existing egress from the 4th floor of the East Wing, one interior stair and an emergency pathway across the East Range roof, is not compliant with current code.
- Without improvements the 4th floor cannot be occupied.

Past Studies

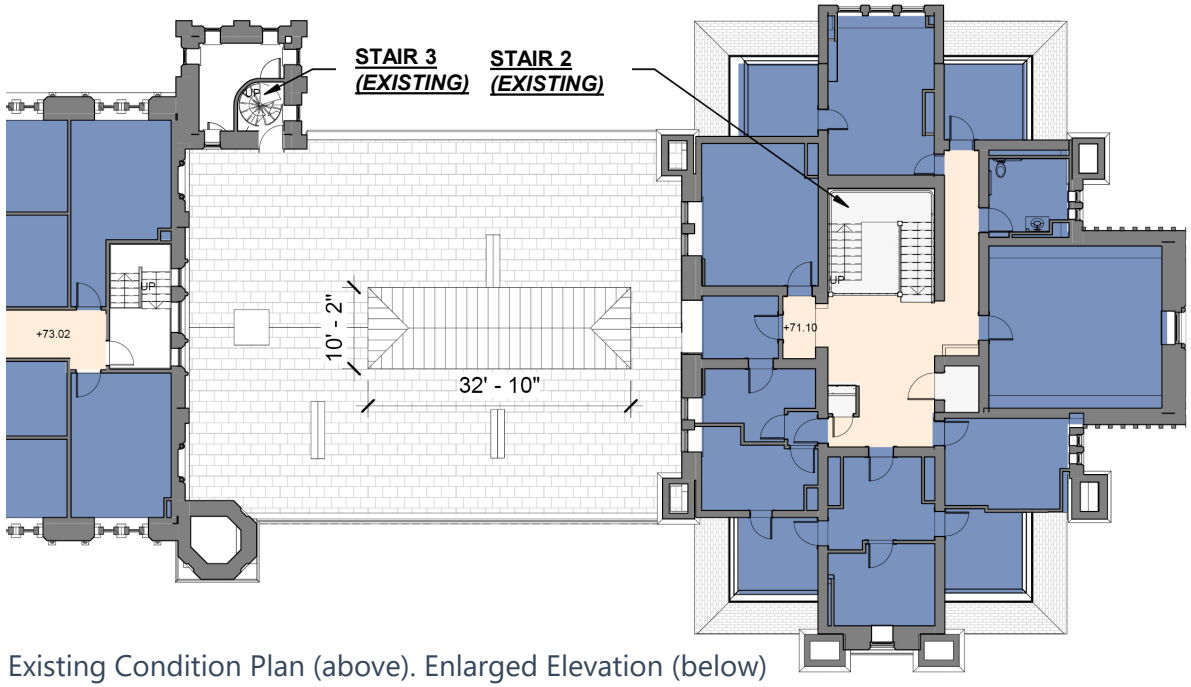
- Previous studies did not address the life safety egress issues of the 4th floor of the East Wing.

Concept Design

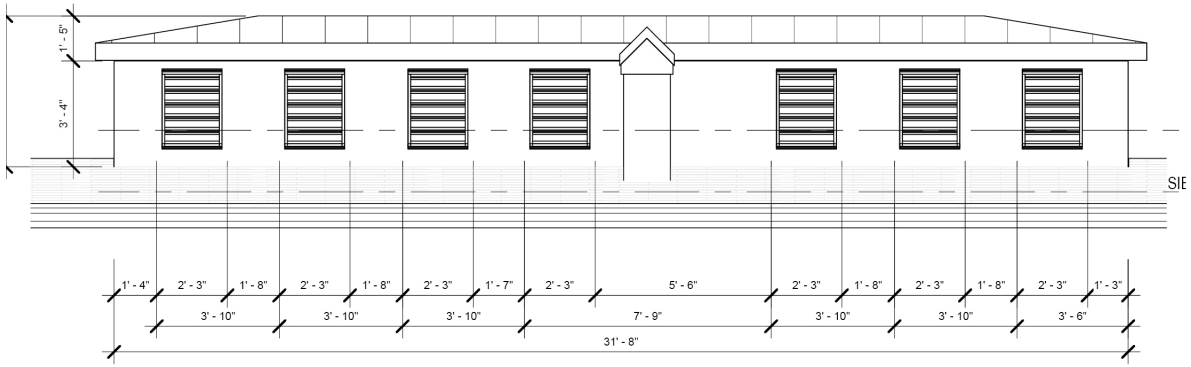
- Two means of egress are required by code from the 4th floor of the East Wing.
- SI safety requires the egress path to be enclosed.
- An interior option was also considered for adding a stair in the East Range; this option required converting historic space on floors B-4 to a stairwell and adding an exterior egress door on the north side of the SIB.
- The 4th floor roof connector minimizes the negative affect to the building overall and limits the disturbance to historically significant spaces on the interior.

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

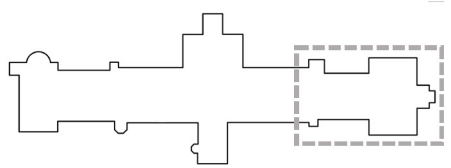
EAST RANGE 4TH FLOOR CORRIDOR



Existing Condition Plan (above). Enlarged Elevation (below)

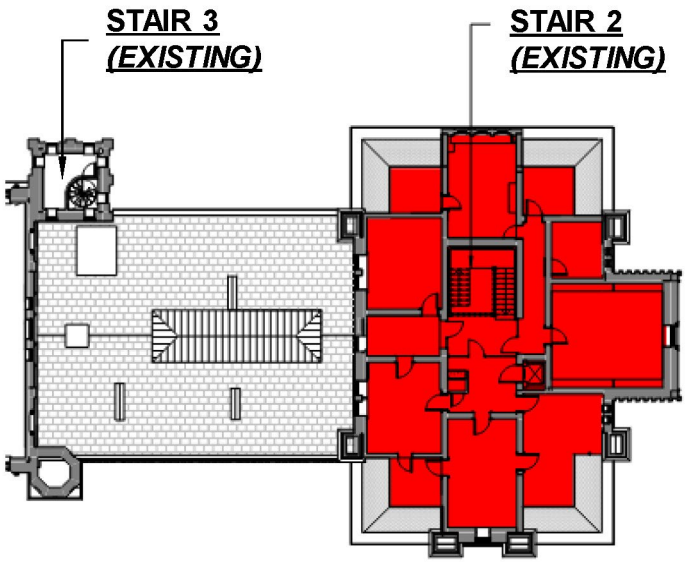


Current Egress Path and Existing Mechanical Penthouse

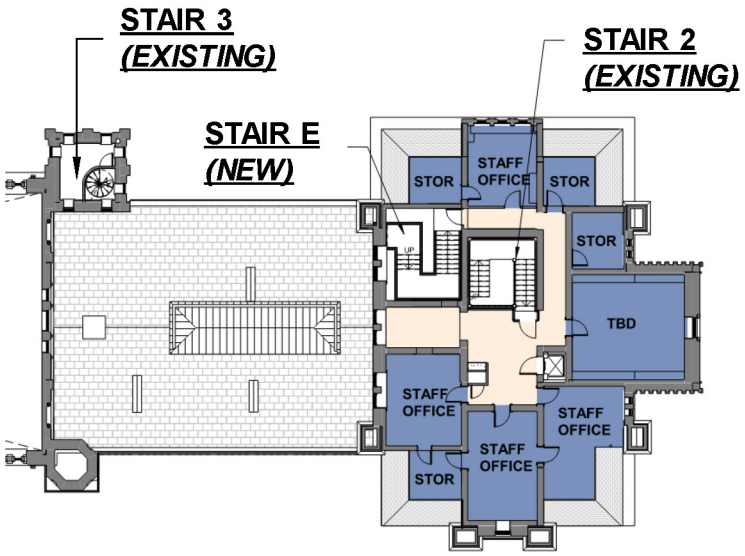


SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

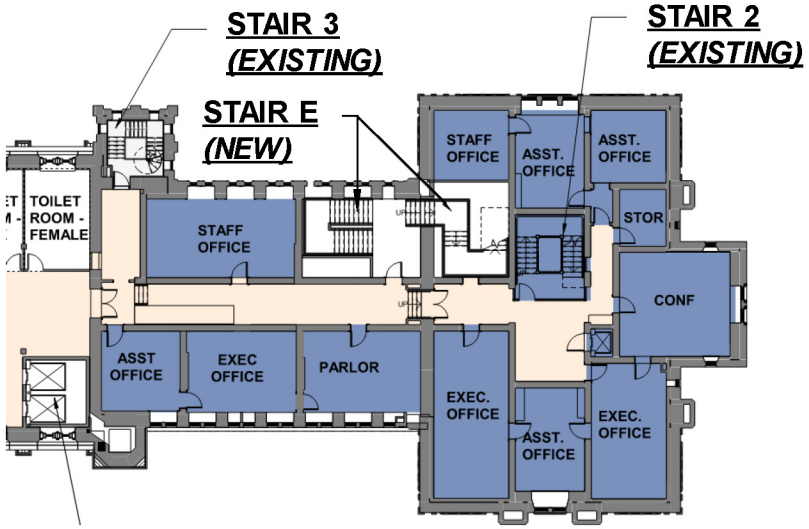
EAST RANGE 4TH FLOOR CORRIDOR



4th Floor, Existing Condition Plan. Red indicates the portion of the floor that cannot be occupied by code without an additional means of egress.



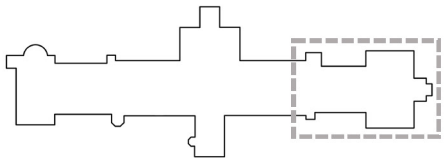
4th Floor, Internal Stair Analysis. Stair E is a new insertion that would impact a historic room.



3rd Floor, Internal Stair Analysis. Stair E is a new insertion that would impact a historic room on this level and each other level down to the Basement.

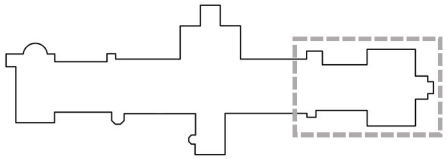
Project Scope

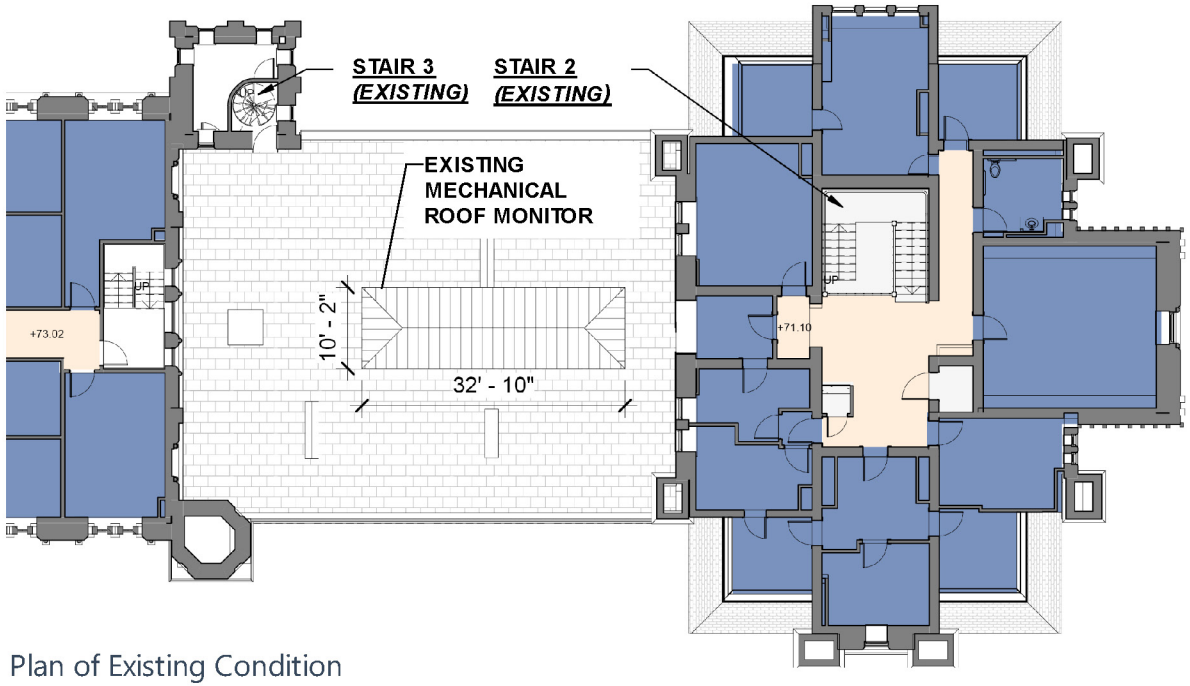
- 4th floor of the East Wing has one means of egress. A second means of egress is required for occupancy.
- The existing stairs in the building have the capacity to accommodate the East Wing 4th floor population.
- Adding stairs in the East Wing or East Range would reduce program space and negatively impact historic interior spaces.
- The rooms impacted by Stair E are Adolf Cluss designed historic rooms.



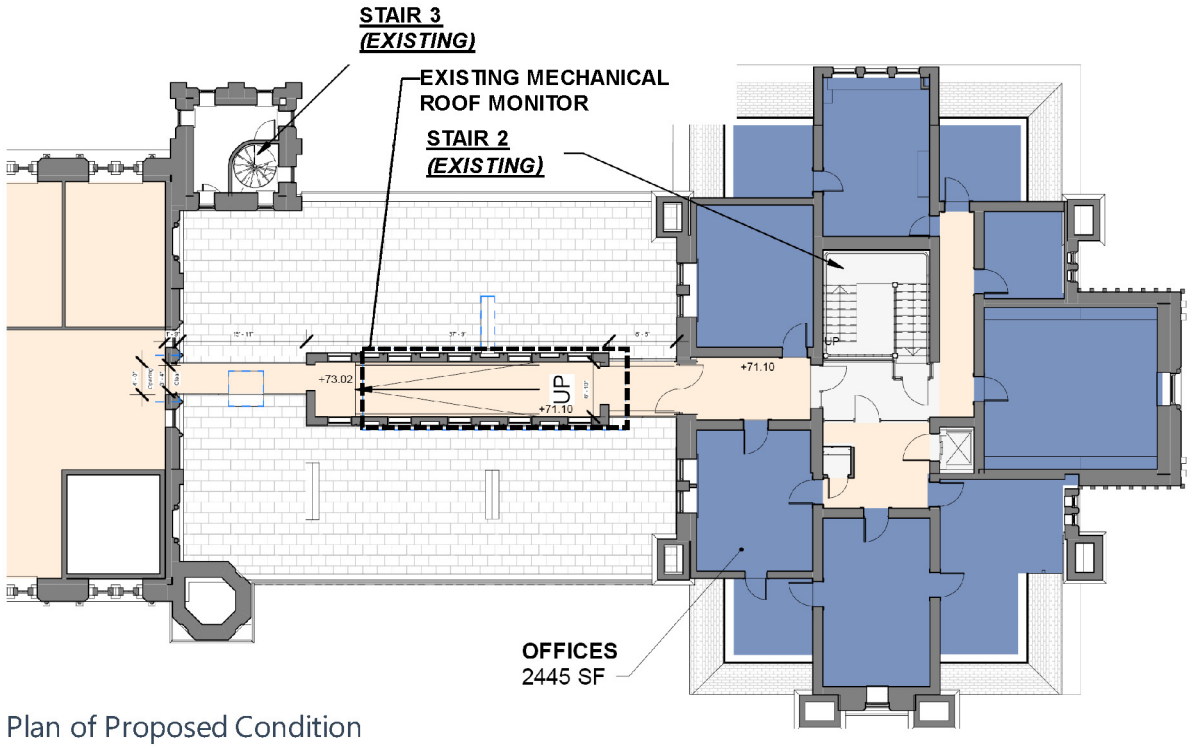
SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

EAST RANGE 4TH FLOOR CORRIDOR





Plan of Existing Condition



Plan of Proposed Condition

EXTENT OF EXISTING ROOF MONITOR

DEMOLISHED ROOF ELEMENTS

N

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

EAST RANGE 4TH FLOOR CORRIDOR

Traditional Massing Connector Study

Modern Massing Connector Study

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

EAST RANGE 4TH FLOOR CORRIDOR

View from Southeast of Existing Condition

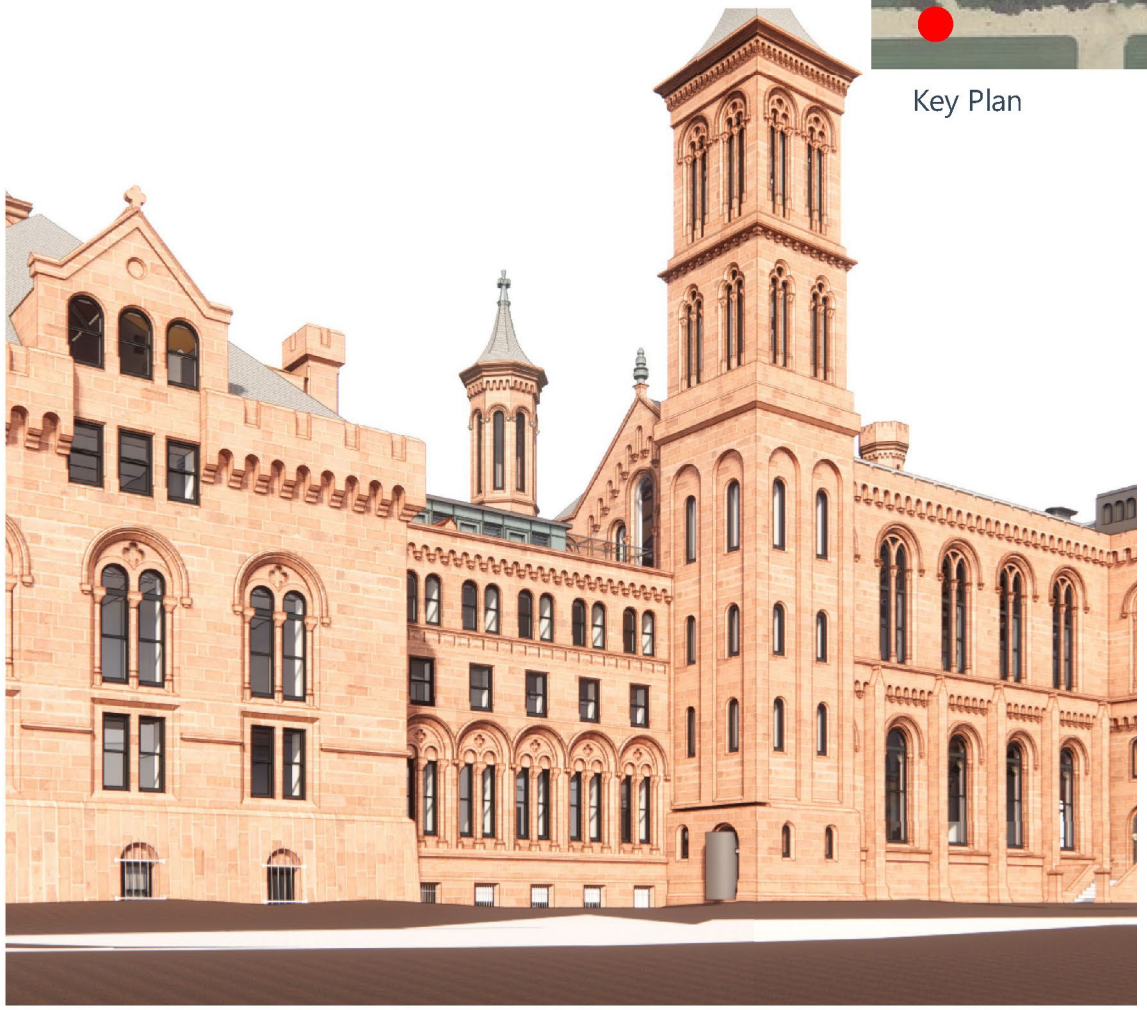
View from Southeast of Proposed Condition

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

EAST RANGE 4TH FLOOR CORRIDOR

Key Plan

View of Existing Condition from Northeast at Grade



View of Proposed Condition from Northeast at Grade

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

AREAWAYS

Design Objectives
- Preservation- Minimize changes to the exterior that are visible from the ground.
- Design- Regularize the existing areaways to simplify the design of the seismic joint at the base of the building.
- Increase natural light to occupied basement spaces utilizing existing window openings and creating new where appropriate.

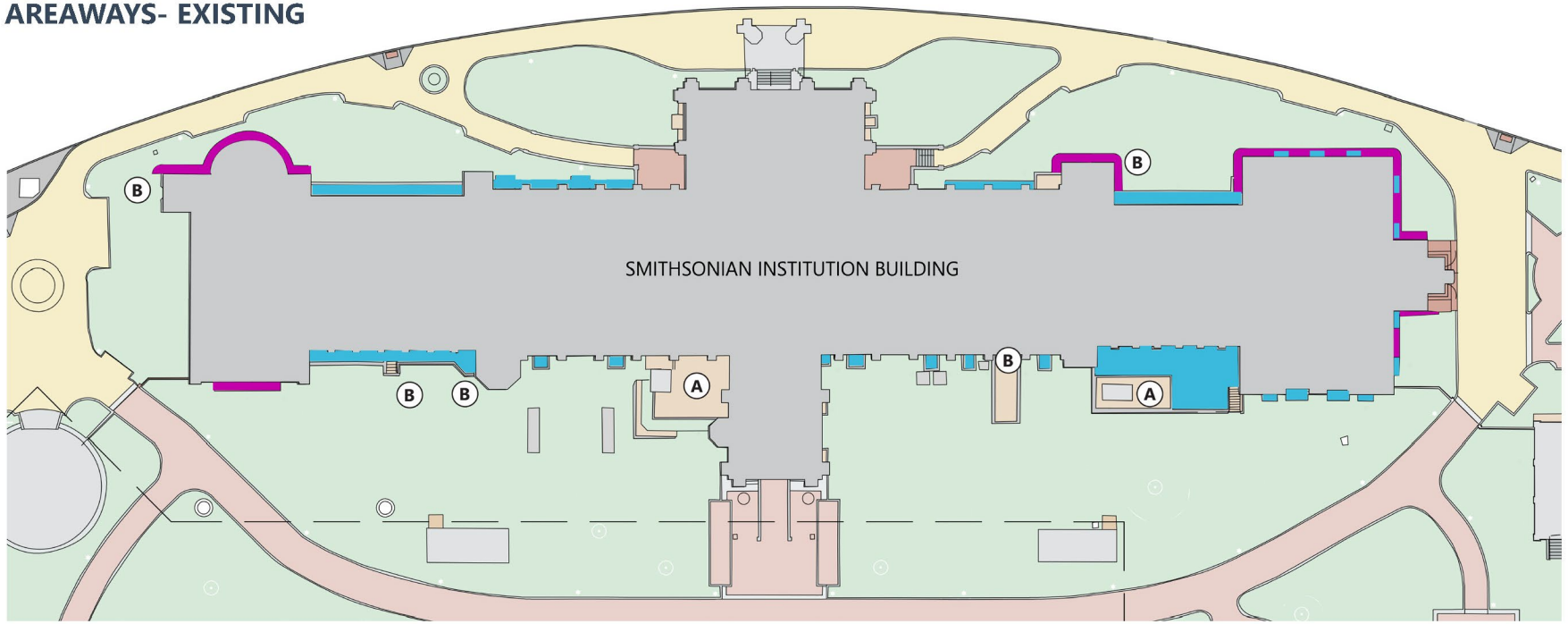
Background
- There are existing areaways around the SIB that provide light into basement windows. Currently, many are partially or fully obscured by landscaping.
- The existing basement level of SIB is approximately 6ft below grade.
- The basement currently has low ceilings and significant MEP distribution that obscures the historic brick arches and vaults.

Past Studies
- Previous studies did not specifically address this issue.

Concept Design
- The design lowers the basement floor to increase the functionality of the space, limiting the impact of the existing windows.
- All the areaways around the exterior of the building will need to be removed and reconstructed, regardless of when they were constructed, in order to complete the seismic base isolation scope and the insertion of the new below grade structures.
- The seismic/base isolation work moves the mechanical and system service areas to the B1 level and allows the SI to rethink the programmatic use of the existing basement.
- Incorporating natural light into the basement spaces activates the space and creates a welcoming zone for staff and visitors.

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

AREAWAYS- EXISTING

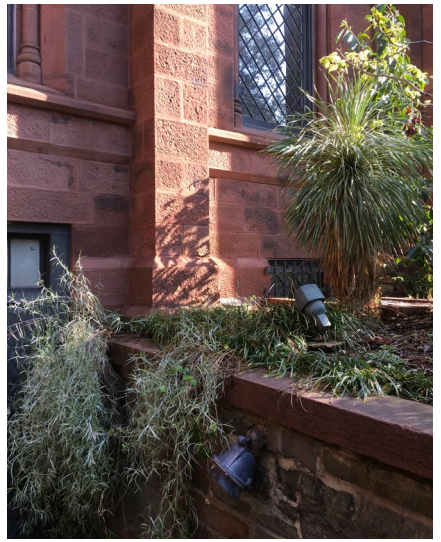


Ⓐ MECHANICAL & SI GARDENS AREA
Ⓑ EXISTING EGRESS DOOR (5)
FUTURE AREAWAY (RECESSED WELL)
FUTURE APRON (AT GRADE ELEMENT)

Existing linear feet of areaways = 393'
Existing linear feet of apron = 220'

North Areaway

Mechanical and SI Gardens South Areaway

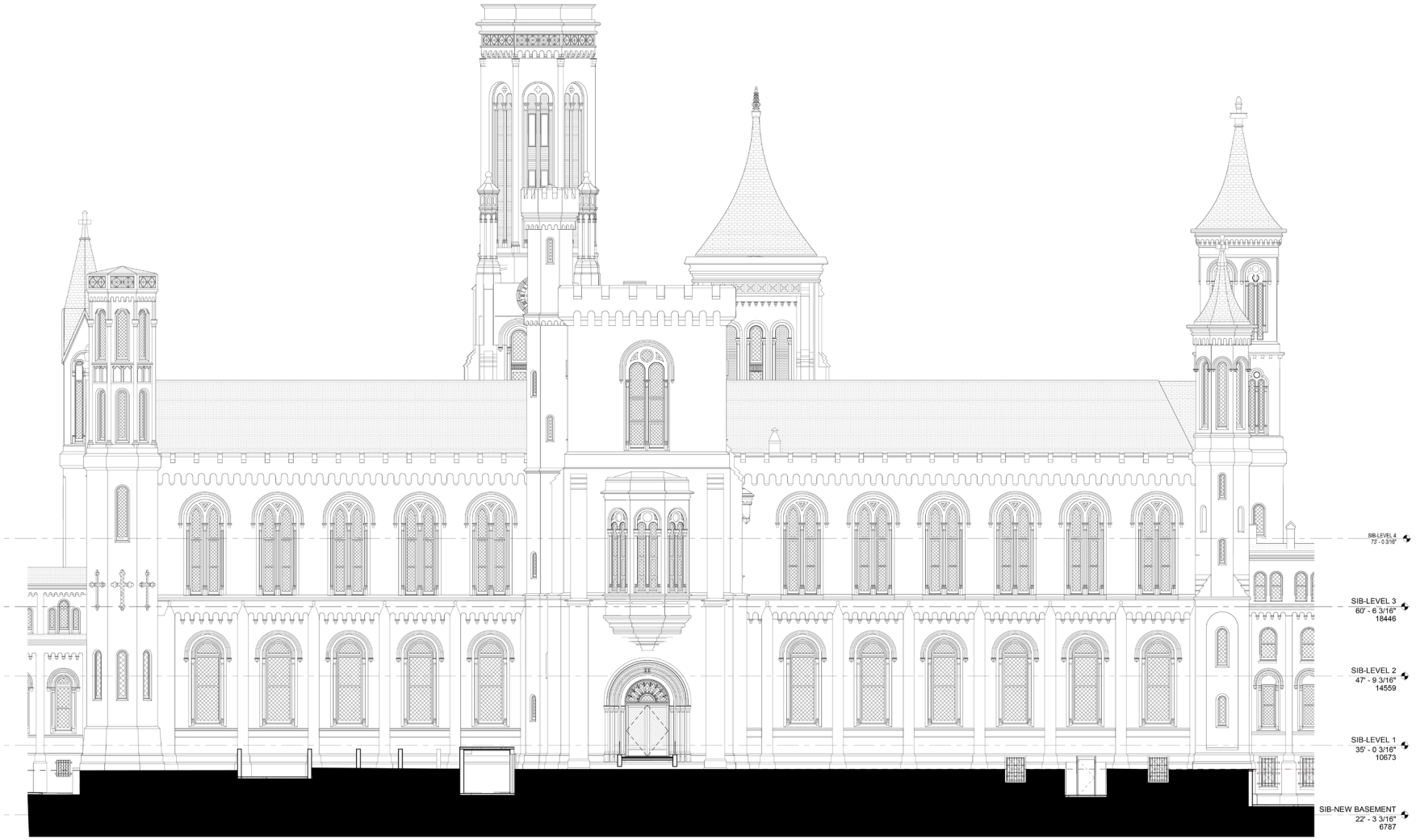


South Areaway

Window in South Areaway Converted to a Door

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

AREAWAYS – EXISTING



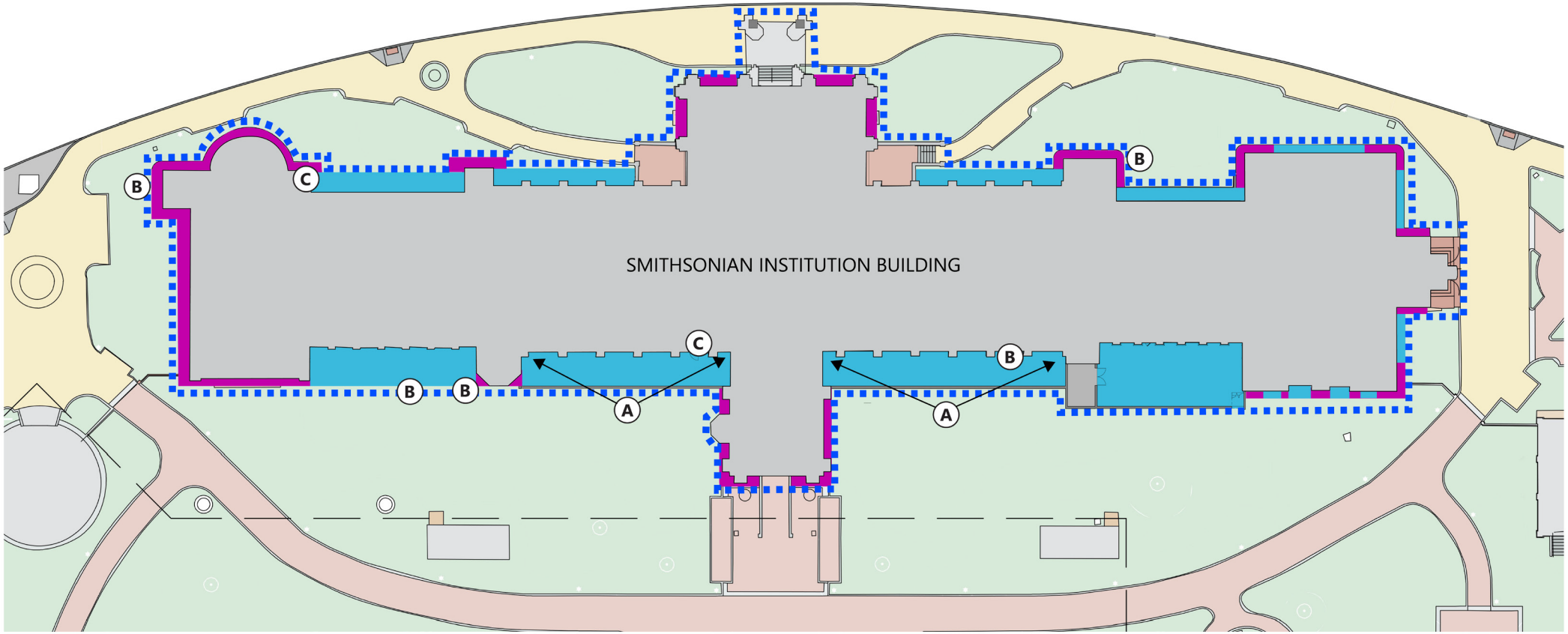
South Elevation of Great Hall Showing Existing Areaways

South Elevation of East Range from Haupt Garden

South Elevation of SIB from Haupt Garden

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

AREAWAYS - PROPOSED



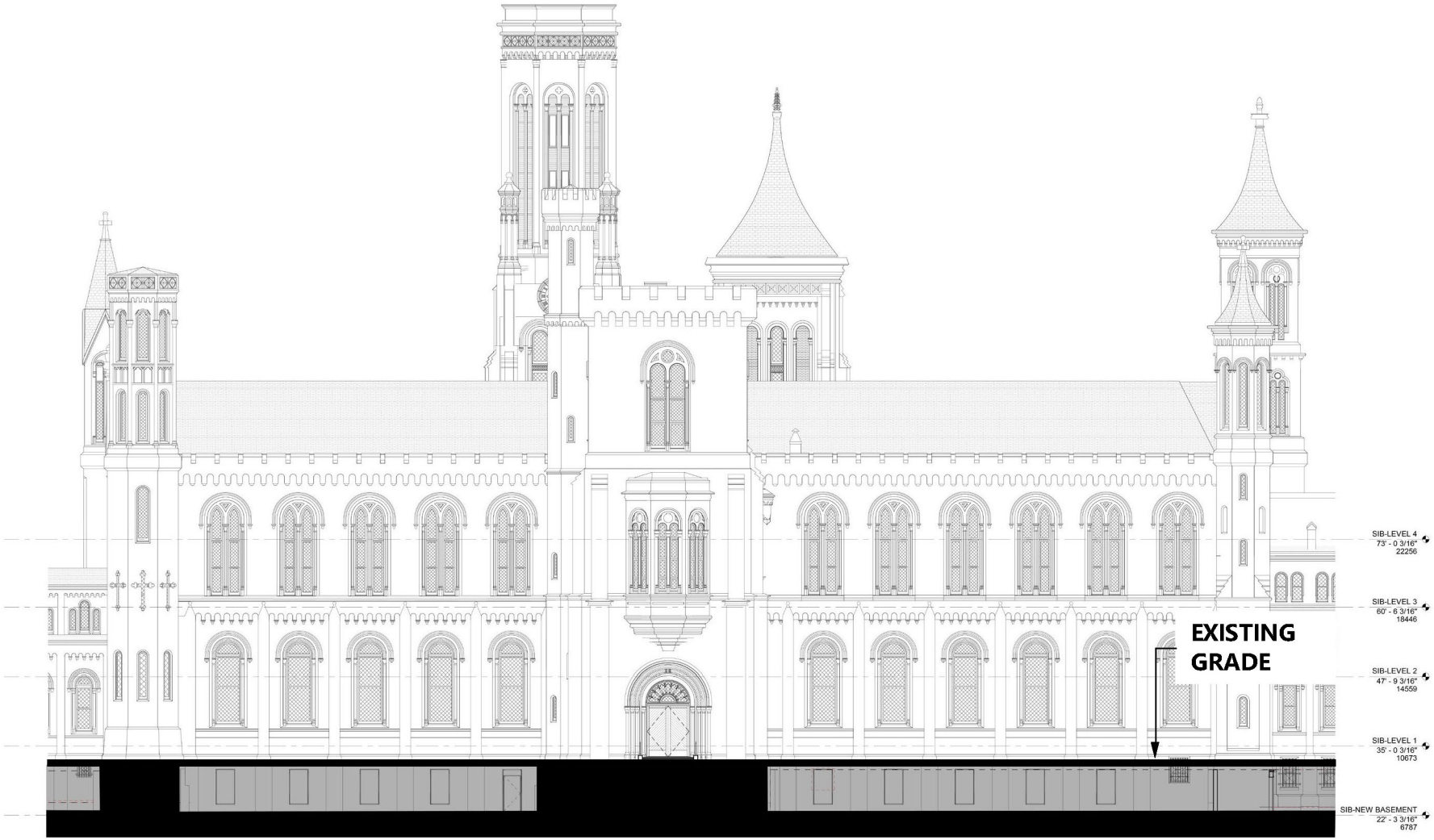
Ⓐ NEW WINDOWS
Ⓑ EXISTING EGRESS DOOR (5)
Ⓒ NEW EGRESS DOOR ON EXTERIOR (2)
FUTURE AREAWAY (RECESSED WELL)
FUTURE APRON (AT GRADE ELEMENT)
PRELIMINARY SEISMIC JOINT LOCATION

Future linear feet of areaways = 575'
Future linear feet of apron = 640'

N

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

AREAWAYS - PROPOSED



South Elevation of Great Hall Showing Proposed Areaways

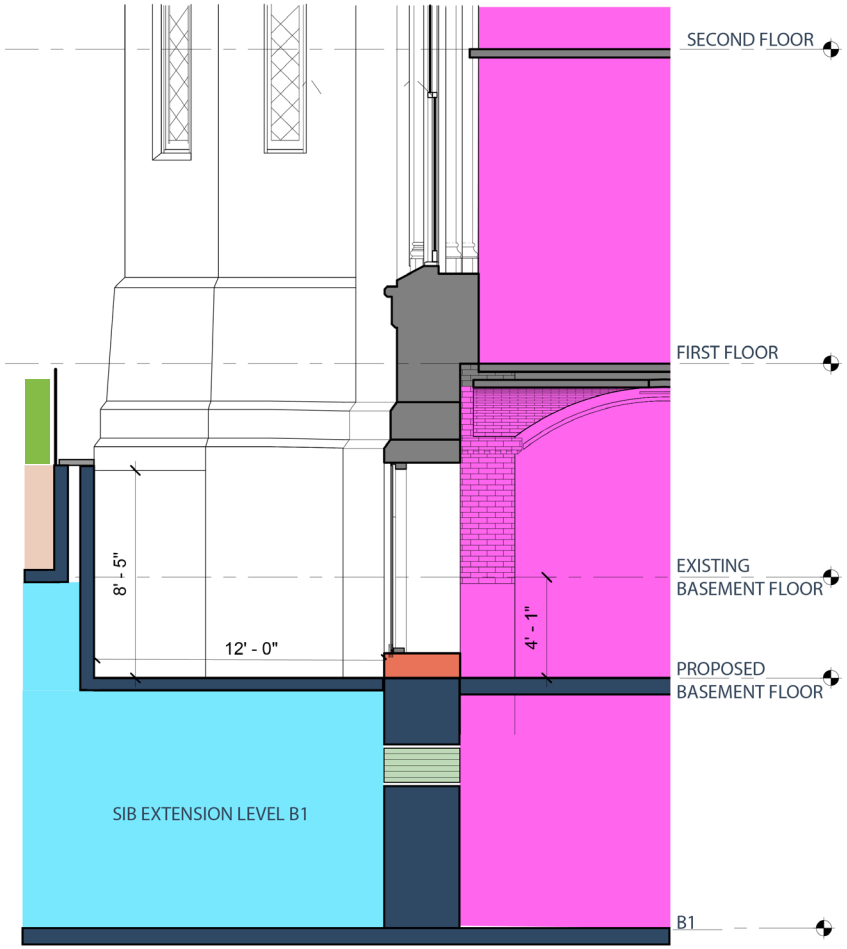
Project Scope

- Areaways combine and regularize the existing areaways along the south side of the building.
- The areaways are screened from view by vegetation and will be obscured from public paths in the Haupt Garden.
- New windows would be added to the basement level to provide natural light to new functions in the basement.
- Width of the proposed basement windows are narrower than the width of the windows on the upper floors of this elevation.

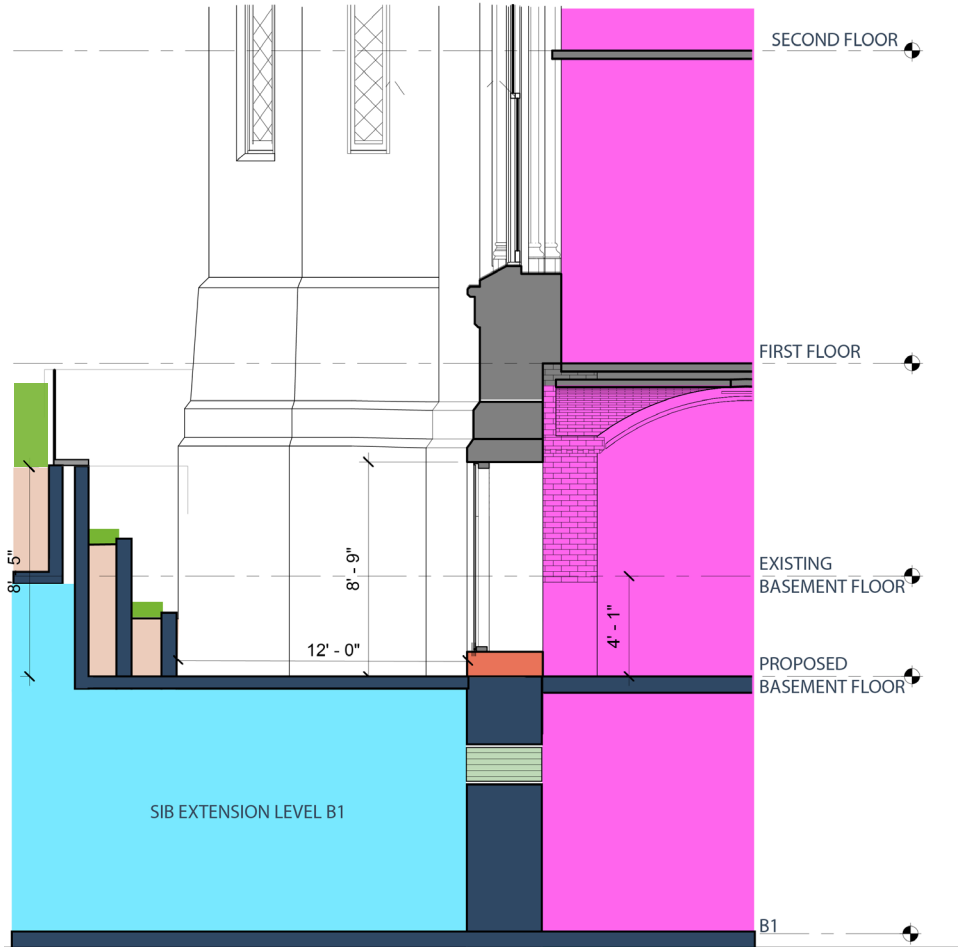
Landscape at West Range screening existing areaways

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

AREAWAYS – PROPOSED SECTIONS



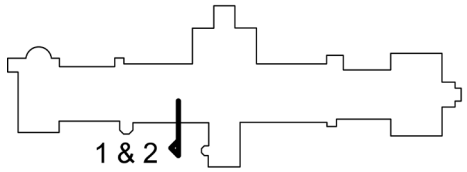
Areaway Option 1



Areaway Option 2

Project Scope

- The floor of the areaway is the roof of the new B1 level below grade.
- Areaway retaining wall flush or stepped.
- Railings for fall protection.
- Daylight studies will be done to show the impact of natural light in the basement.
- Seismic joint is conceptually incorporated into the areaway wall – there are a variety of ways to integrate and conceal the joint that will be studied in future phases.



SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

NEW BASEMENT EGRESS DOORS

Design Objectives
- Preservation- Minimize changes to the historic building fabric. Where changes are designed minimize the visual impact from the area around the base of the building.
- Design- Create egress doors for life safety based on the increased building population.
- Utilize existing doors as a design prototype.

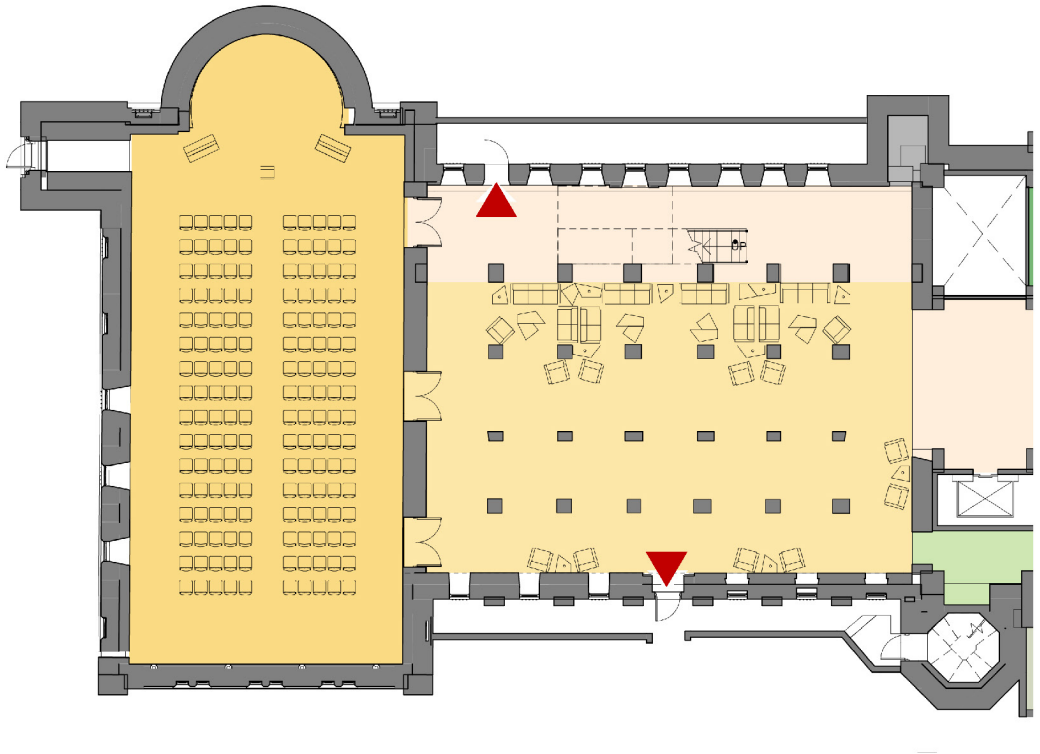
Background
- There are three existing doors from the basement to the exterior, all located on the south elevation. These connect to existing areaways with stairs or ramps to grade.

Past Studies
- Previous studies did not specifically address this issue.

Concept Design
- The program for the basement, including meeting space and Visitor services, will require additional egress doors to comply with code.
- Past projects have converted windows on the building to doors. We anticipate following the same strategy for new egress doors on the SIB.

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

NEW BASEMENT EGRESS DOORS



Window in South Areaway

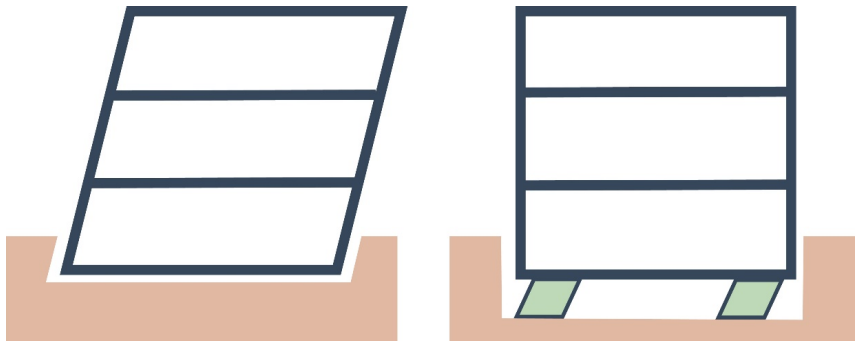
Window in South Areaway Converted to a Door

Project Scope

- Several egress doors will be required at the basement level of the SIB. Exact locations are still pending.
- Windows on the building have been converted to doors through past projects. We anticipate following the same strategy for any new egress doors on the SIB.
- Treatment of the exterior wall will be reviewed at the next submission.

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

SEISMIC BASE ISOLATION



WITHOUT BASE ISOLATION

WITH BASE ISOLATION

Design Objectives

- Preservation-Minimize the visual impact of the seismic joint cover at grade around the base of the building.
- Incorporate base isolation systems in the building foundations to comply with code, improve life safety, and safeguard the historic building.

Background

- The masonry construction of the Castle and the profile (unreinforced masonry towers) place the building at risk in the event of a seismic event.
- The Castle was damaged during the Mineral, VA earthquake on 23 August 2011.
- Seismic design compliance is required by code. Compliance is focused in life safety issues for people in and around the building. It is also important in preserving the Castle.

Past Studies

- Prior (2014) report recommends seismic isolation paired with modest wall strengthening methods achieve significant risk mitigation with the greatest sensitivity to the historic character of the building.

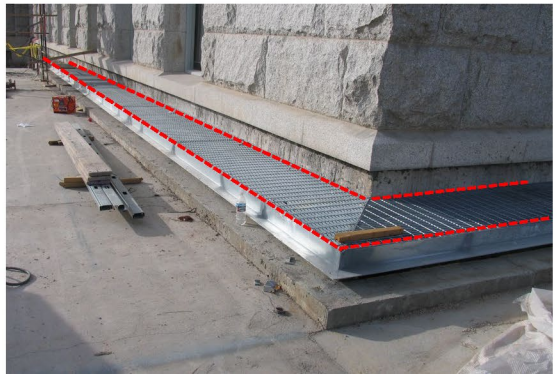
Concept Design

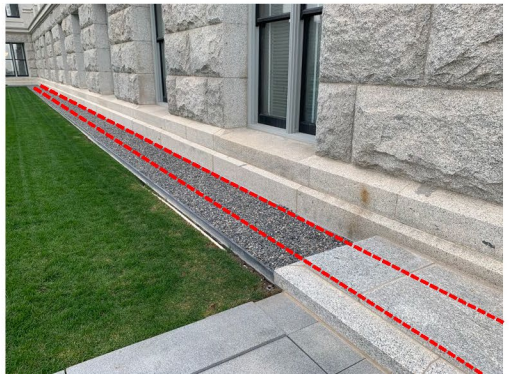
- Base isolation is a means of uncoupling the acceleration of the superstructure from the ground motion, to minimize the damage during an earthquake. This is achieved by creating a plane of separation between the superstructure and the foundations.
- It is a method of choice for historic preservation due to the sensitivity to the historic character. The work occurs at the foundations where the detrimental impact on historic fabric will be limited.
- At the Smithsonian Castle, existing masonry walls and piers would be supported on new isolators sitting on the new foundations.
- There are a variety of ways to design the seismic joint system, conceal the covers, and locate the joints in ways that are sensitive to the historic fabric.

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

SEISMIC BASE ISOLATION

Utah Capitol Building, Salt Lake City

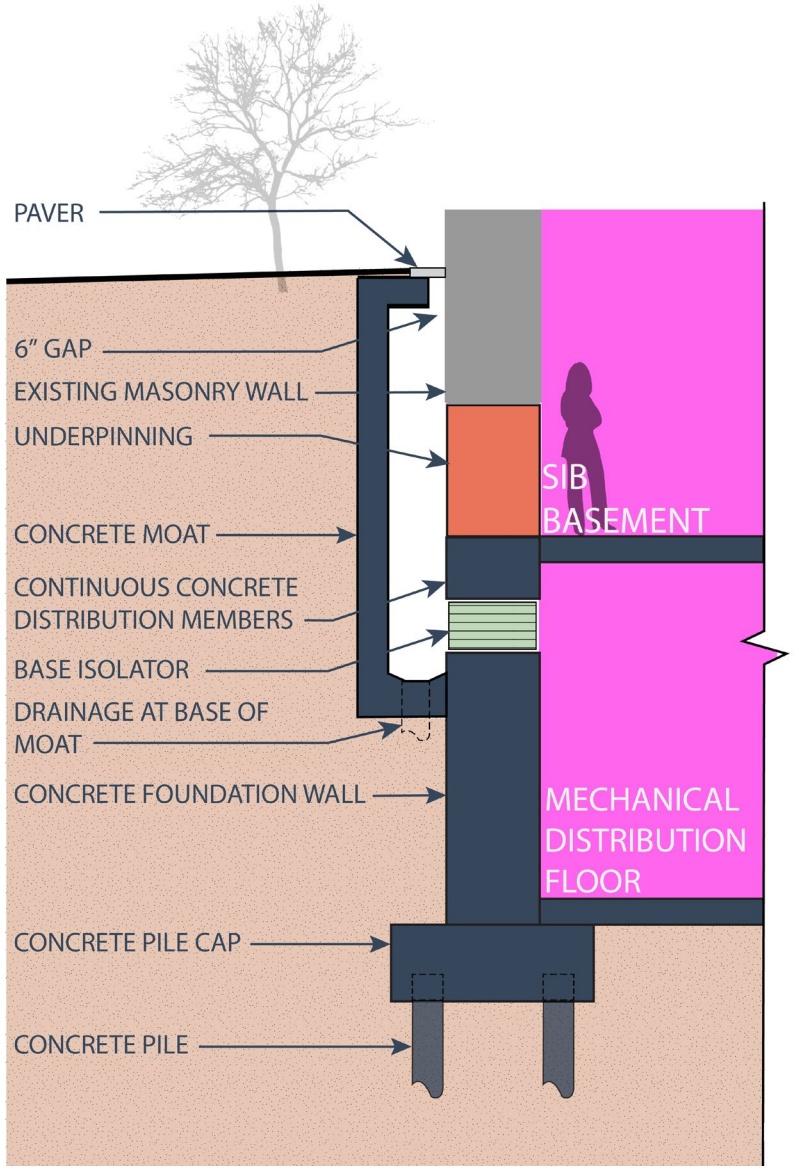




Integrated Seismic Joint Cover Examples

Project Scope

- Seismic joint cover will be visible at grade, but there are a variety of options to minimize the visual impact and incorporate it into the site conditions.
- Many joint cover examples shown are for areas of the country that experience a large amount of seismic movement.
- The RoHC project will only require a 6-inch seismic joint.



Section Through Foundation Showing Base Isolation Strategy

SEISMIC JOINT

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

SEISMIC BASE ISOLATION

Salt Lake City County Building

Integrated Seismic Joint Cover Examples

SEISMIC JOINT

Project Scope

- Seismic joint cover will be visible at grade, but there are a variety of options to minimize the visual impact and incorporate it into the site conditions.
- Many joint cover examples shown are for areas of the country that experience a large amount of seismic movement.
- The RoHC project will only require a 6-inch seismic joint.

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

UNDERGROUND CONSTRUCTION - BASEMENT AND B1 FLOOR LEVELS

Design Objectives

- Preservation- Maximize the use of historic spaces for public and SI staff.
- Design- Provide sufficient space to allow the systems design to properly serve the proposed program, including meeting space and the Visitor Center.
- Locate mechanical spaces and equipment to meet current codes, provide energy efficiency, and support building operations and maintenance.

Background

Basement

- Historically there was no public program space in the basement.
- Significant modifications over time have resulted in multiple floor elevations.
- Significant systems routing has "hidden" and damaged the 1855 brick groin vaults.

Mechanical Floor

- Piecemeal renovations throughout the Castle have resulted in compromises, not a comprehensive building-wide design. Systems are not designed to provide the appropriate environmental controls for the proposed program, including meeting space and the Visitor Center.
- Equipment occupies valuable historic spaces in basement, 1st, and 2nd floors.
- Limited access to equipment results in challenging maintenance and reduced efficiency.

Past Studies

- Lower basement floor to accommodate public use.
- Locate mechanical equipment in attic and in basement extension (outside the basement footprint).
- Create mechanical crawlspace below basement floor to route ductwork, piping, and conduit.

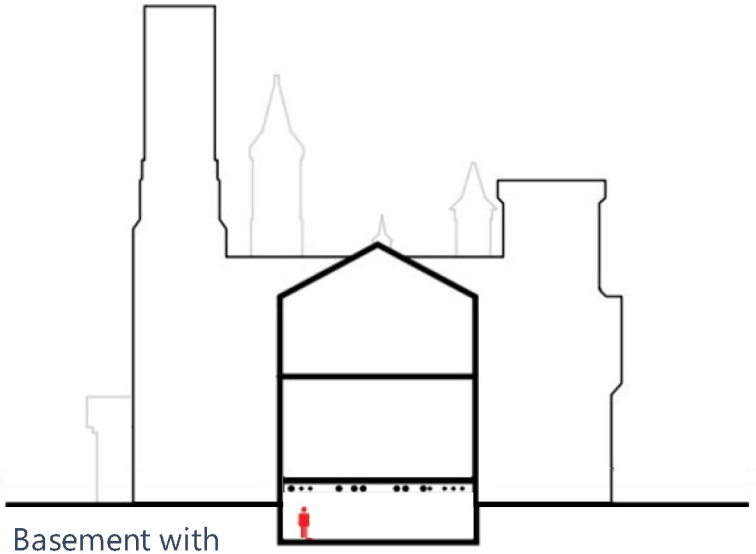
Concept Design

- Lower basement floor to accommodate public use.
- Full height mechanical floor below basement.
- Locate equipment in attic and level B1 mechanical floor (under SIB).
- Limits crossing seismic isolation joint with ductwork, piping, conduit.
- Floor aligns with SIB extension and Quad level B1- simplifies access for construction and maintenance.

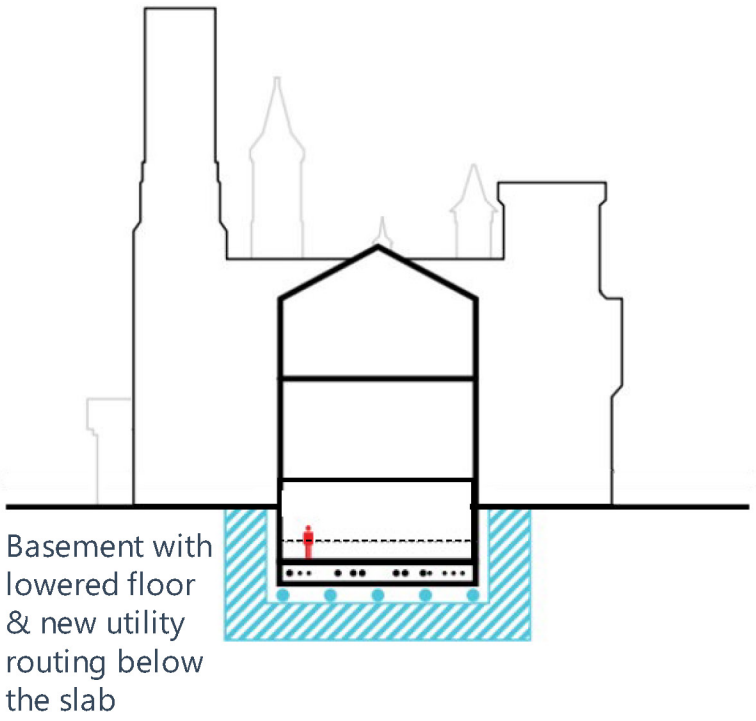
SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

UNDERGROUND CONSTRUCTION - BASEMENT AND B1 FLOOR LEVELS

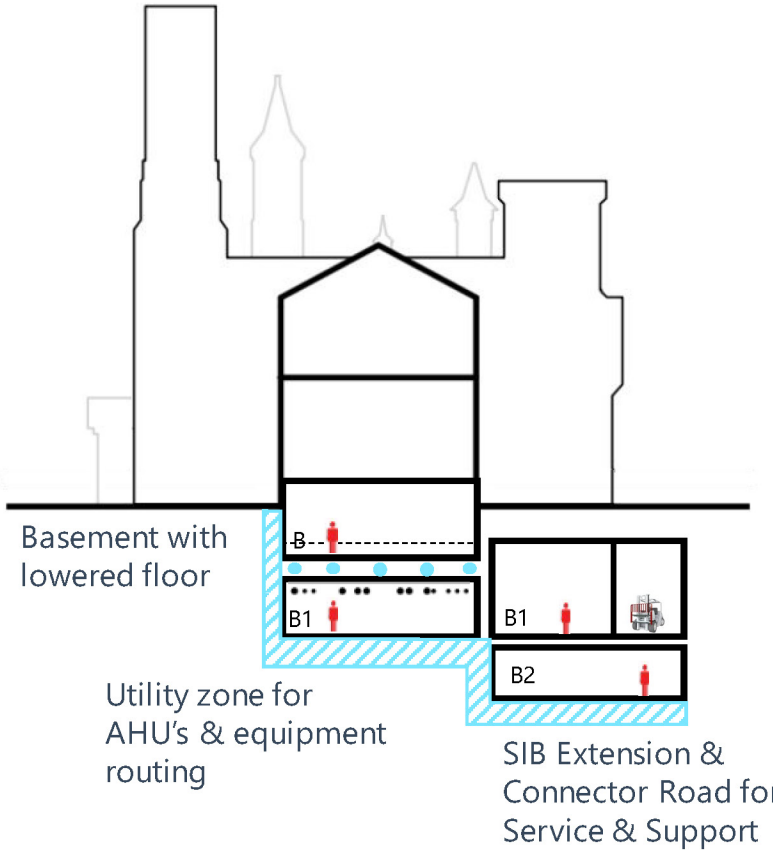
SOUTH MALL MASTER PLAN EXISTING



SOUTH MALL MASTER PLAN PROPOSED

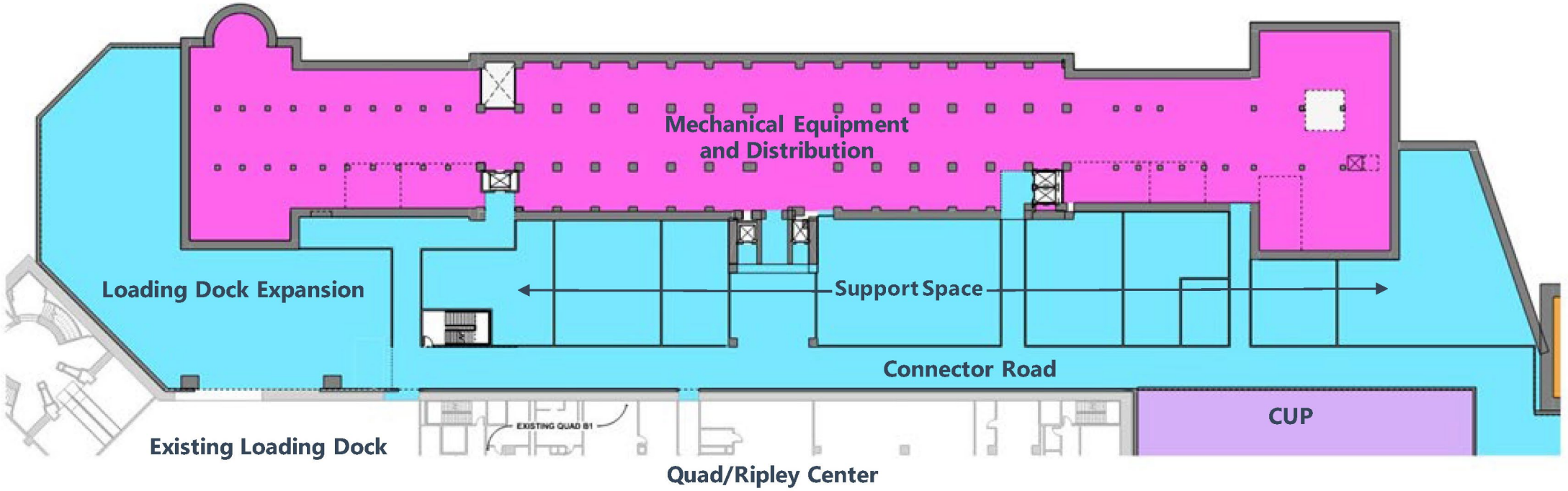


RoHC PROJECT



SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

UNDERGROUND CONSTRUCTION - LEVEL B1 MECHANICAL FLOOR

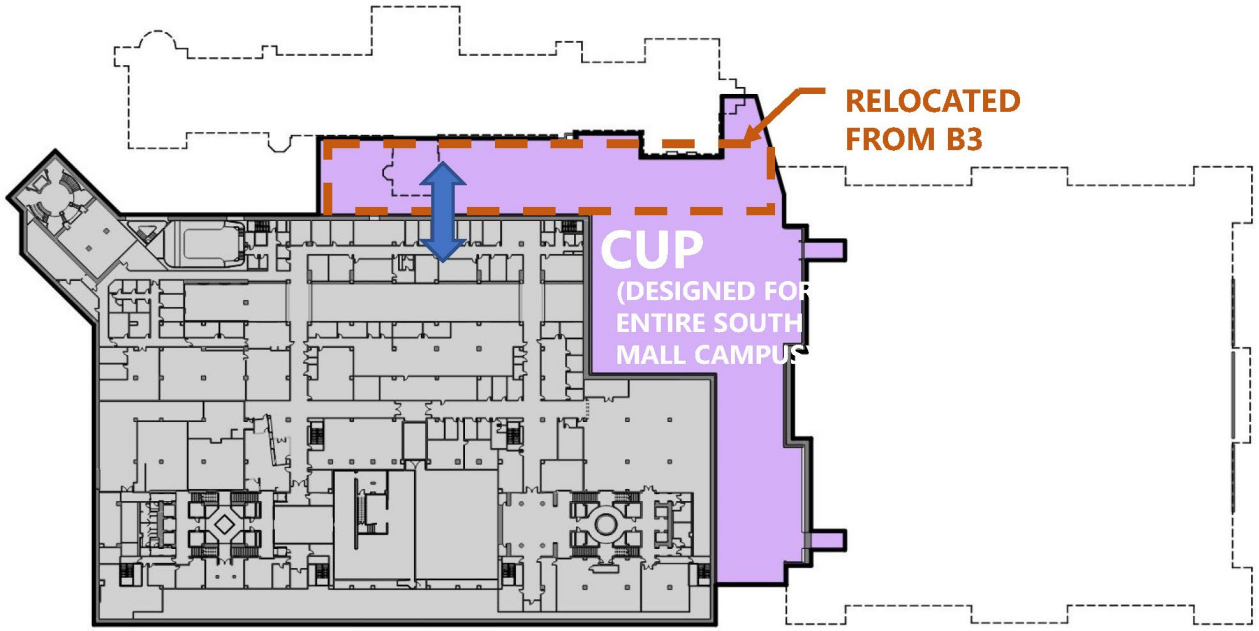


Project Scope

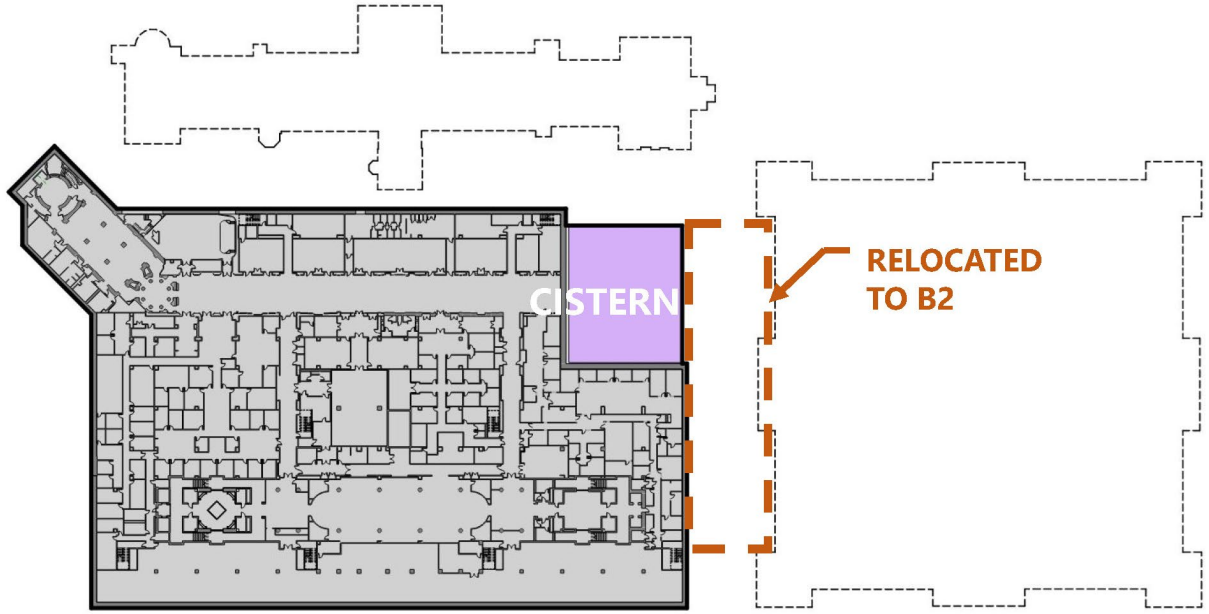
- Full height mechanical floor below SIB Basement.
- Limits crossing seismic isolation joint with ductwork, piping, conduit.
- Floor aligns with SIB extension and Quad level B1- simplifies access for construction and maintenance.

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

UNDERGROUND CONSTRUCTION - LEVEL B2 SERVICE & SUPPORT FLOOR



Plan of B2 Level (Left)



Plan of B3 Level (Right)

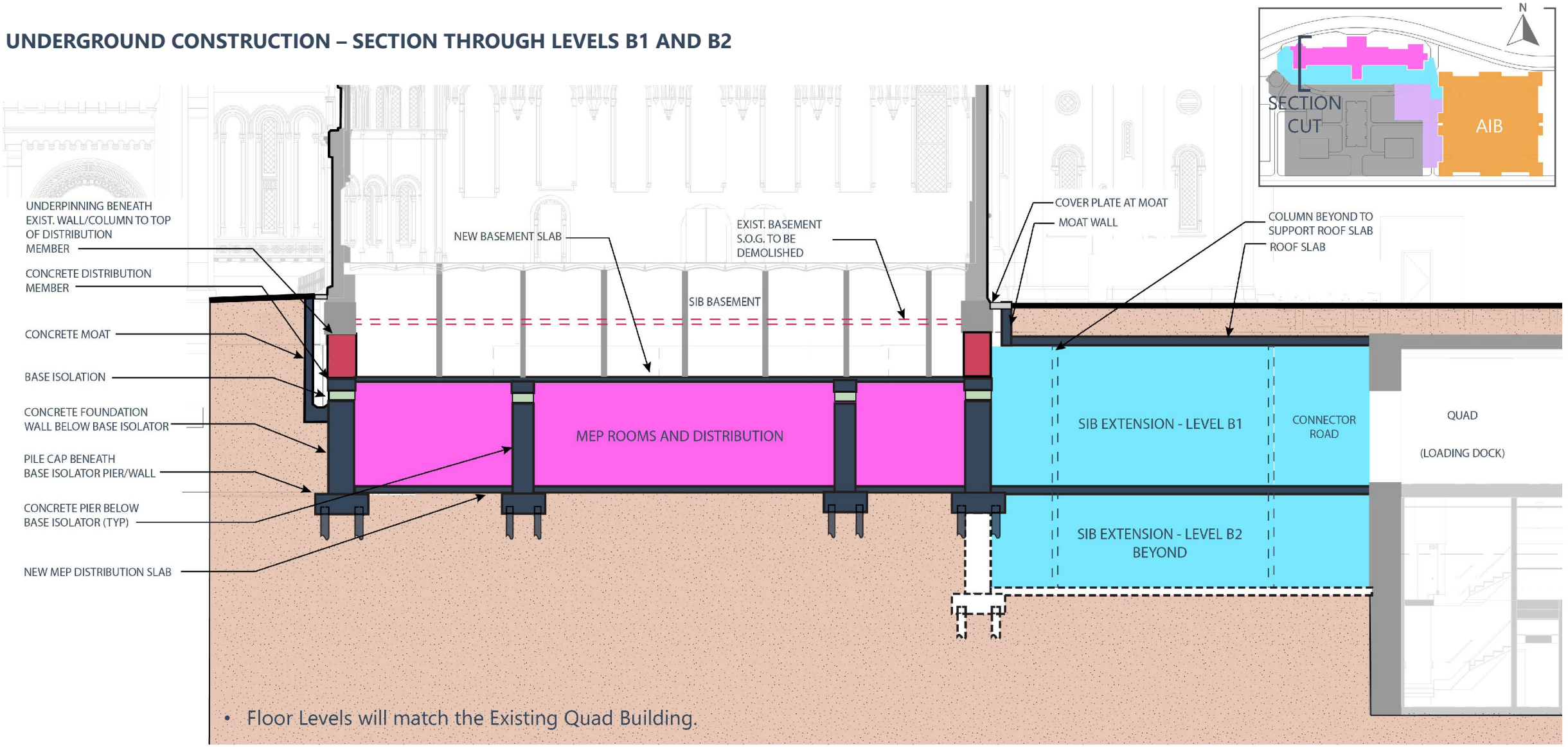
Project Scope

- Floor aligns with Quad level B2.
- Moves functional program from B3 below water table to B2 SIB Extension.
- Provides potential Public Connection from SIB to Quad/Ripley Center.

N

SMITHSONIAN INSTITUTION BUILDING (SIB) KEY DESIGN ISSUES

UNDERGROUND CONSTRUCTION – SECTION THROUGH LEVELS B1 AND B2

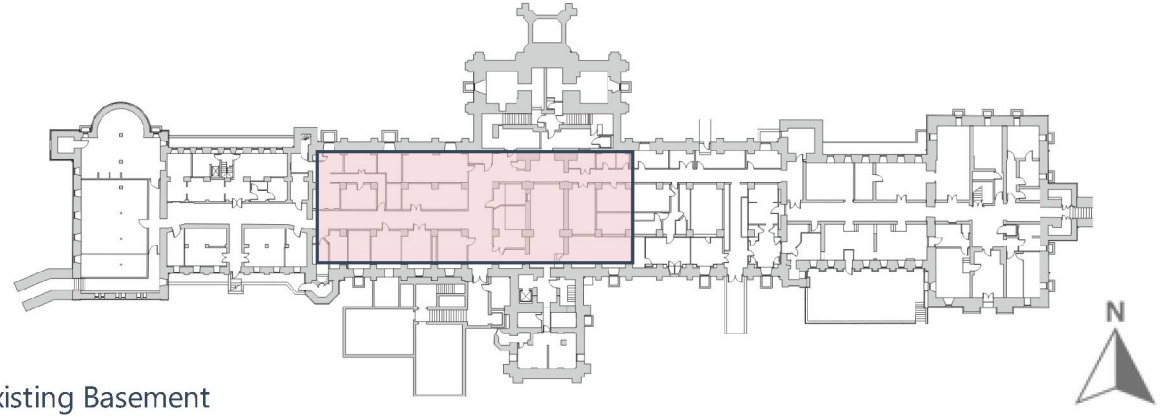


- Floor Levels will match the Existing Quad Building.

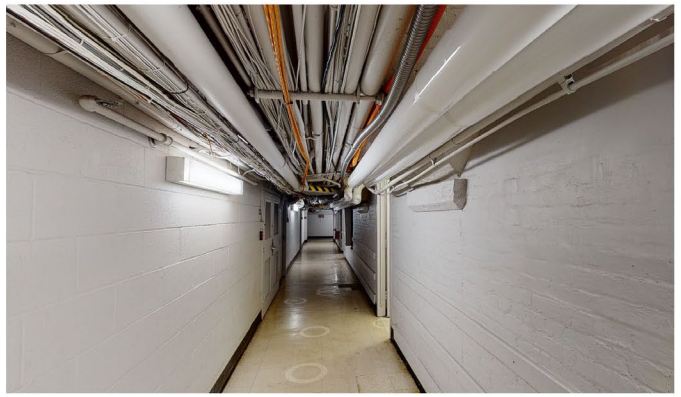
SMITHSONIAN INSTITUTION BUILDING (SIB) DESIGN INTENT FOR KEY SPACES

BASEMENT

Rendering of Potential Space Use



Existing Basement



Existing Condition

Historical Context (1900)

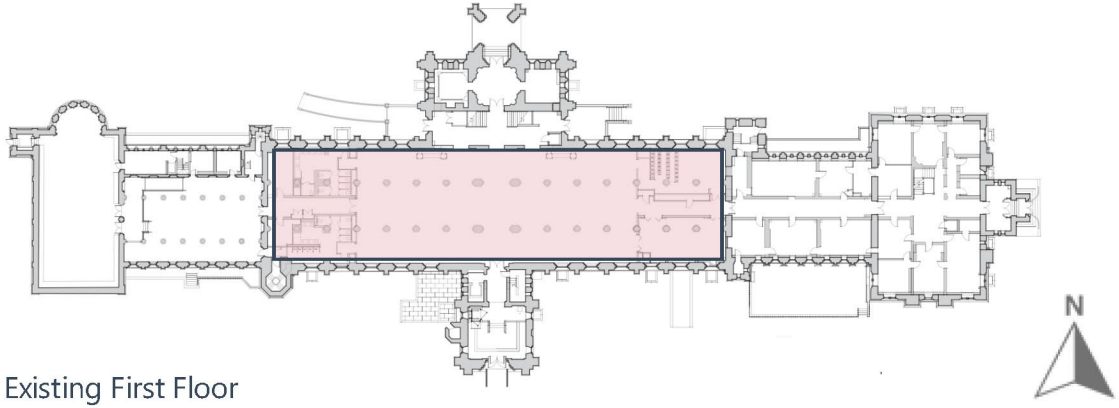
Project Scope

- Lower floor to facilitate public functions.
- Celebrate the historic materials and construction.
- Locate rest rooms and visitor services functions to avoid impact to Great Hall.

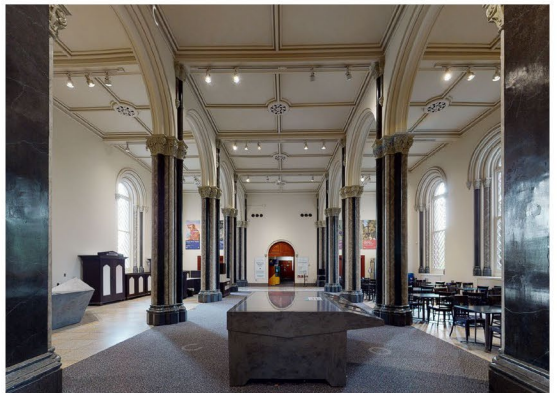
SMITHSONIAN INSTITUTION BUILDING (SIB) DESIGN INTENT FOR KEY SPACES

GREAT HALL

Rendering of Potential Space Use



Existing First Floor



Existing Condition

Historical Context (1867)

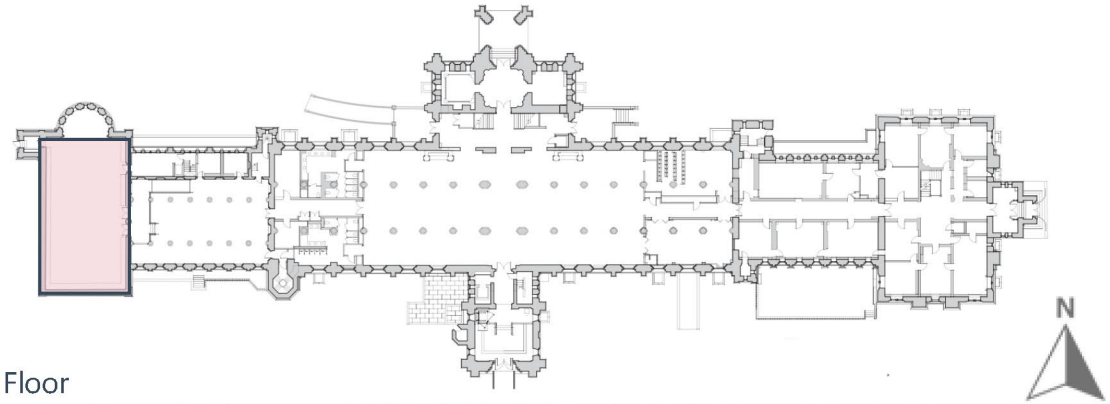
Project Scope

- Reclaim the historic footprint by recapturing end bays .
- Reconstruct historic mezzanines/galleries- increasing available space for exhibits and functions.
- Emphasize that this is the “Front door” of the Smithsonian and Visitor Center.

SMITHSONIAN INSTITUTION BUILDING (SIB) DESIGN INTENT FOR KEY SPACES

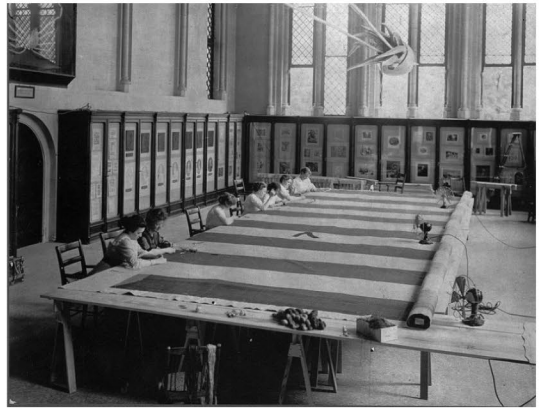
COMMONS

Rendering of Potential Space Use



Existing First Floor

Existing Condition



Historical Context (1914)

Project Scope

- Lower floor to 1851 level eliminating the need for ramps in Schermer Hall.
- Preserve and restore the space.
- Provide technology for use as exhibit space and public functions.

BREAK FOR QUESTIONS

ARTS AND INDUSTRIES BUILDING

ARTS & INDUSTRIES BUILDING (AIB)

HISTORY

EXISTING CONDITIONS

- Preservation Zone Diagrams
- Previous Exterior Work

FUTURE PROGRAM

- Existing Vs Future
- General Program Goals
- Historical Context
- Climate Control Diagrams

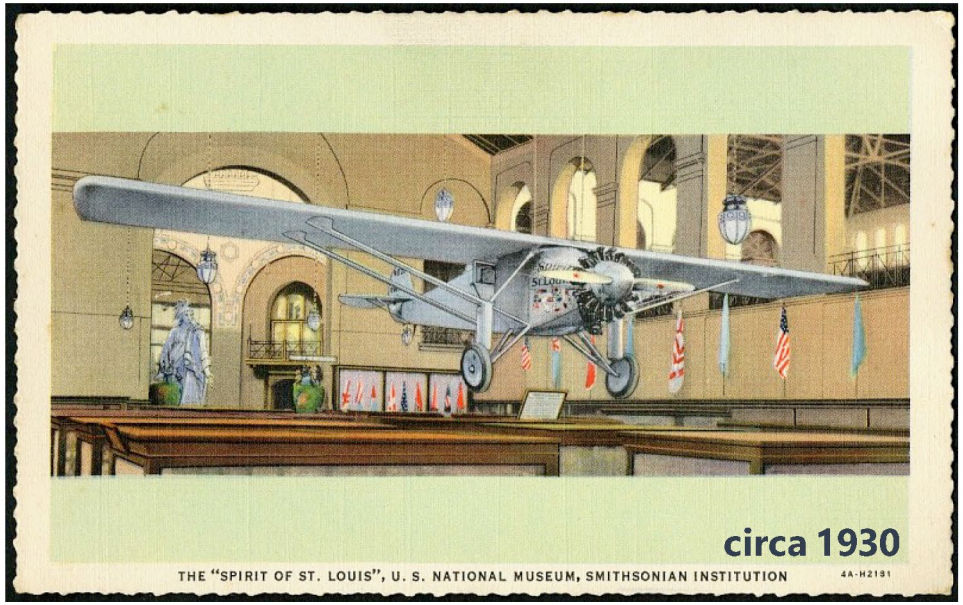
KEY DESIGN ISSUES

- Mechanical Systems- Louvers
- Mechanical Systems- Areaways
- New Egress Doors on Southwest and East Facades
- New Egress Door at Northwest Annex
- New Exit Doors at North Tower

DESIGN INTENT FOR KEY SPACES

- North Hall
- Special Exhibition
- NW Court - Marketplace
- Range

ARTS & INDUSTRIES BUILDING (AIB) HISTORY



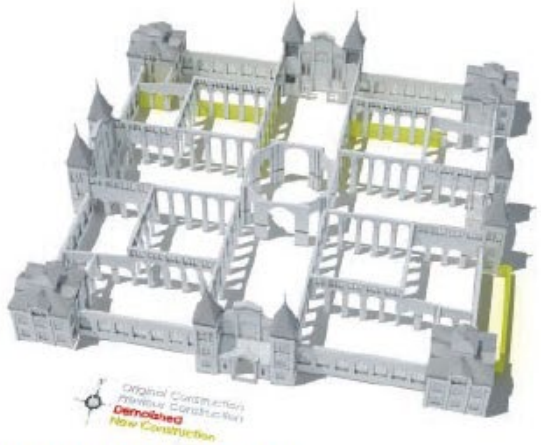
ARTS & INDUSTRIES BUILDING (AIB) HISTORY

1881-1896
Period of Significance – A Museum for the Public

1896-1902
Period of Significance – Growth of Collections

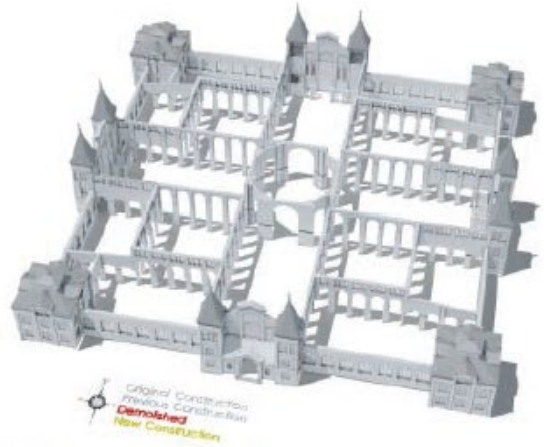
1902-

1881 Ground Floor Plan



1902 Ground Floor Plan

1976 Ground Floor Plan



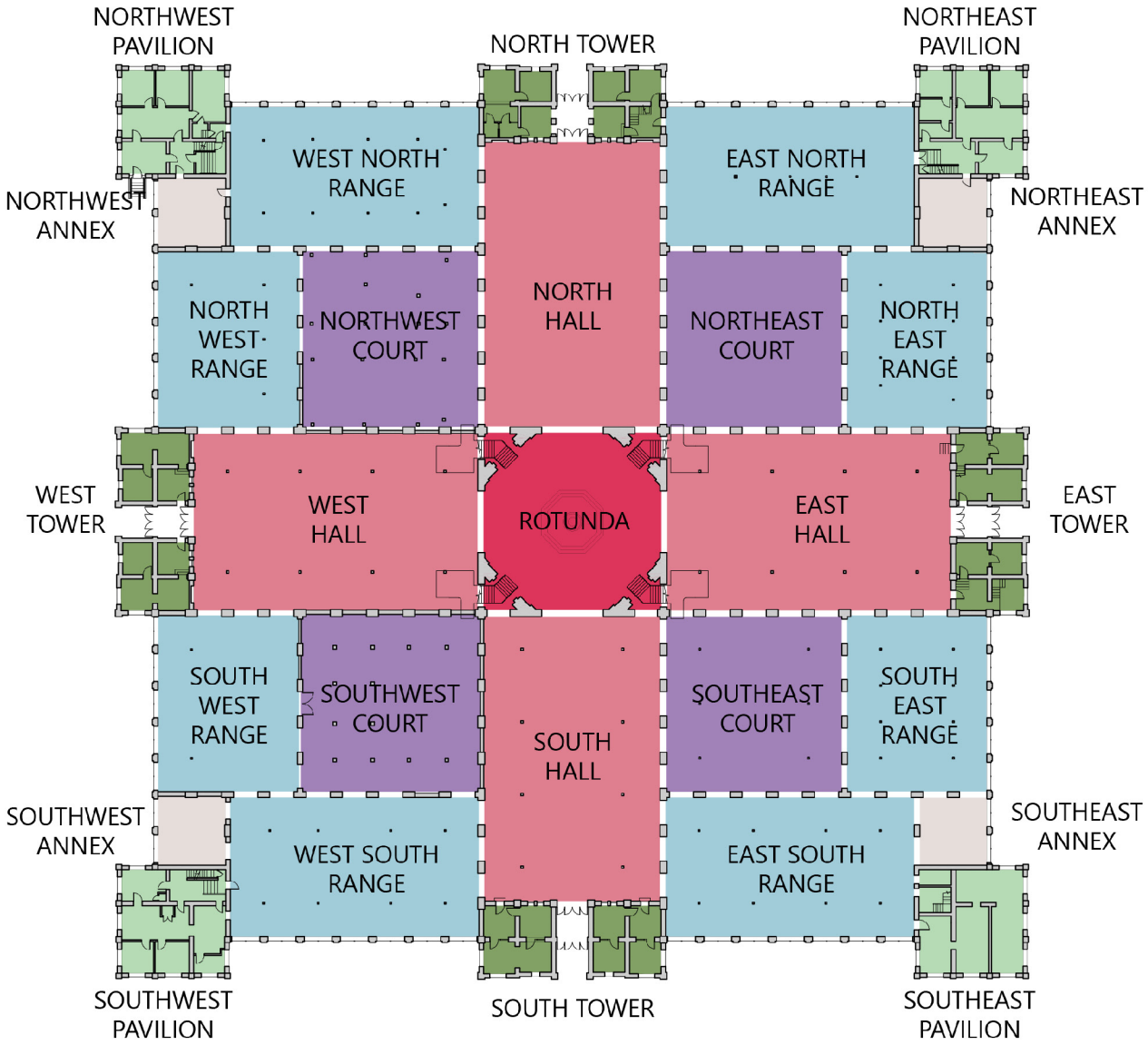
1881 Second Floor Plan

1902 Second Floor Plan & Galleries

1976 Second Floor Plan & Galleries

As originally envisioned the Arts and Industries Building (AIB) had an open plan, allowing a visitor to create their own path through the building. The galleries were added to provide critically needed exhibit space. In the later 20th century modifications were focused on creating office space, resulting in the loss of many of the grand, open spaces.

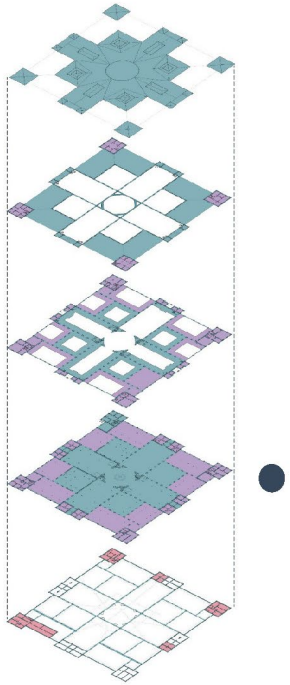
ARTS & INDUSTRIES BUILDING (AIB) HISTORY

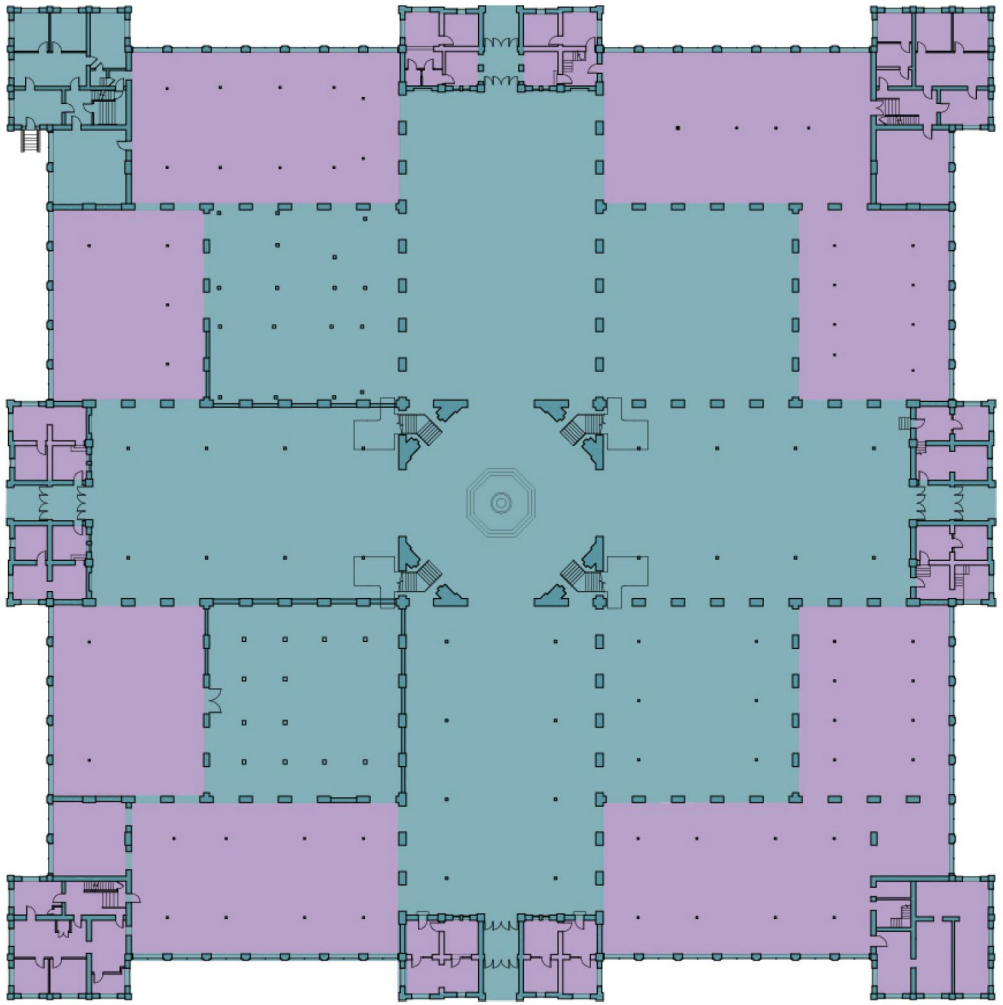


Building Nomenclature

ARTS & INDUSTRIES BUILDING (AIB) EXISTING CONDITIONS

PRESERVATION ZONE DIAGRAMS





First Floor

A Historic Structures Report evaluated the building and mapped the exterior and interior into three preservation zones based on the level of sensitivity. Most of the Arts and Industries Building is Priority 1, the most sensitive.

PRIORITY 1
PRIORITY 2
PRIORITY 3

N

ARTS & INDUSTRIES BUILDING (AIB) EXISTING CONDITIONS

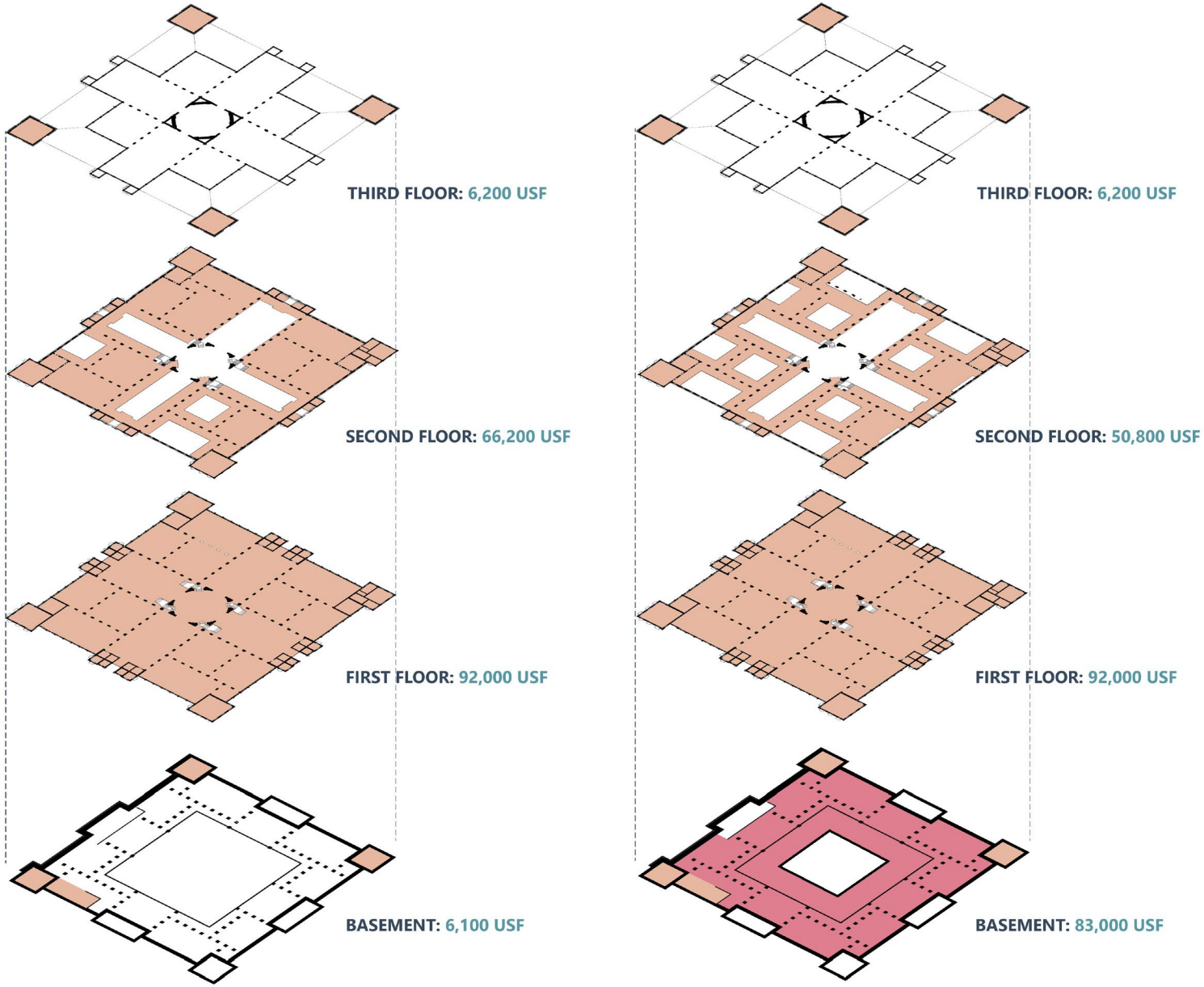
PREVIOUS EXTERIOR WORK

Exterior work in progress, 2014

Completed exterior work

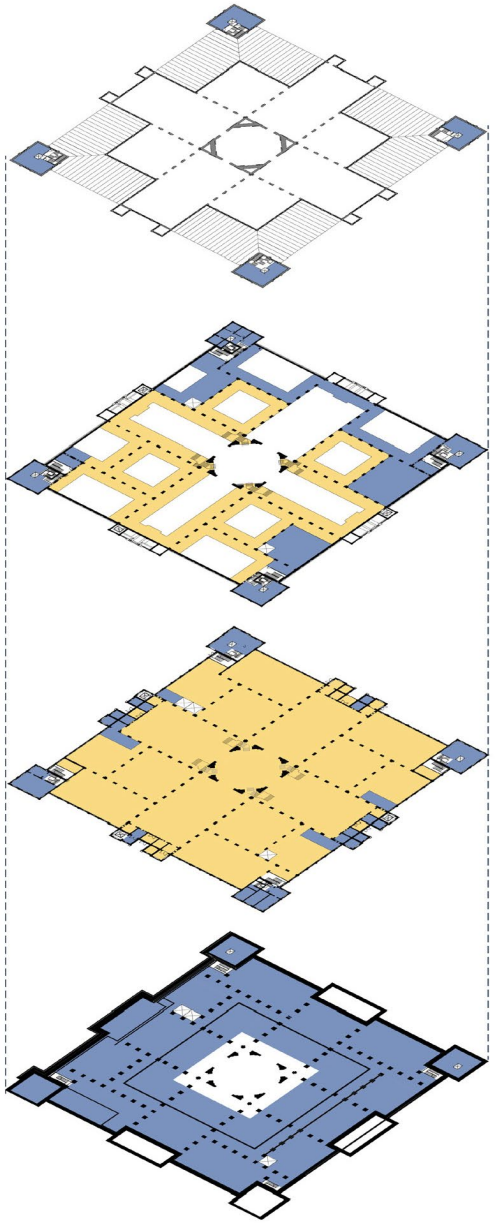
ARTS & INDUSTRIES BUILDING (AIB) FUTURE PROGRAM

EXISTING VS. FUTURE



ARTS & INDUSTRIES BUILDING (AIB) FUTURE PROGRAM

GENERAL PROGRAM GOALS



The new basement level will create space for mechanical/electrical equipment and support space for Smithsonian staff. This will allow the historic spaces on the 1st and 2nd floors to be utilized primarily for public functions.

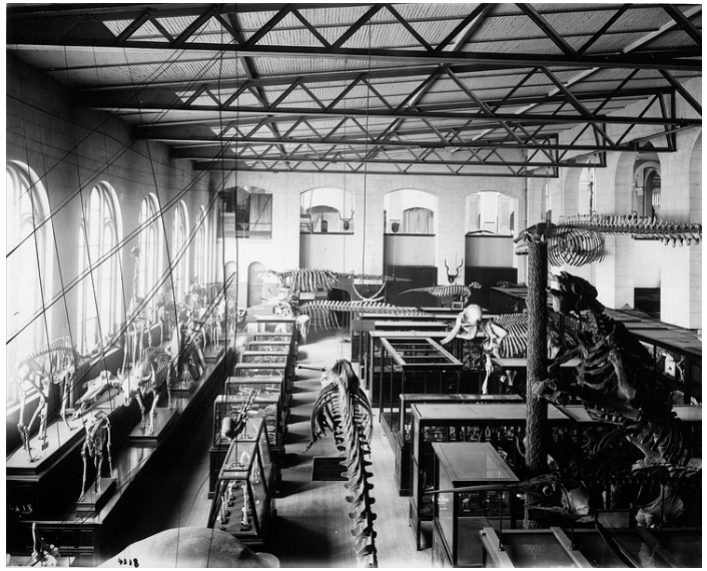
PUBLIC
SI

ARTS & INDUSTRIES BUILDING (AIB) FUTURE PROGRAM

HISTORICAL CONTEXT

Hall – Historical Context (1903)

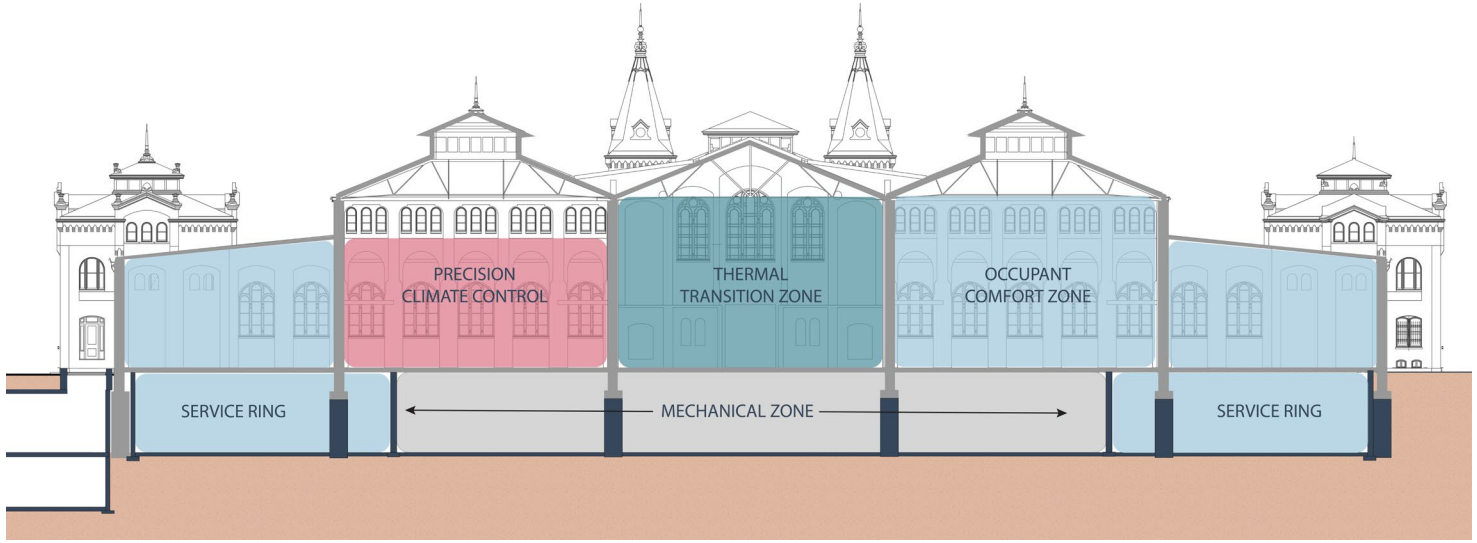
Court – Historical Context (1903)



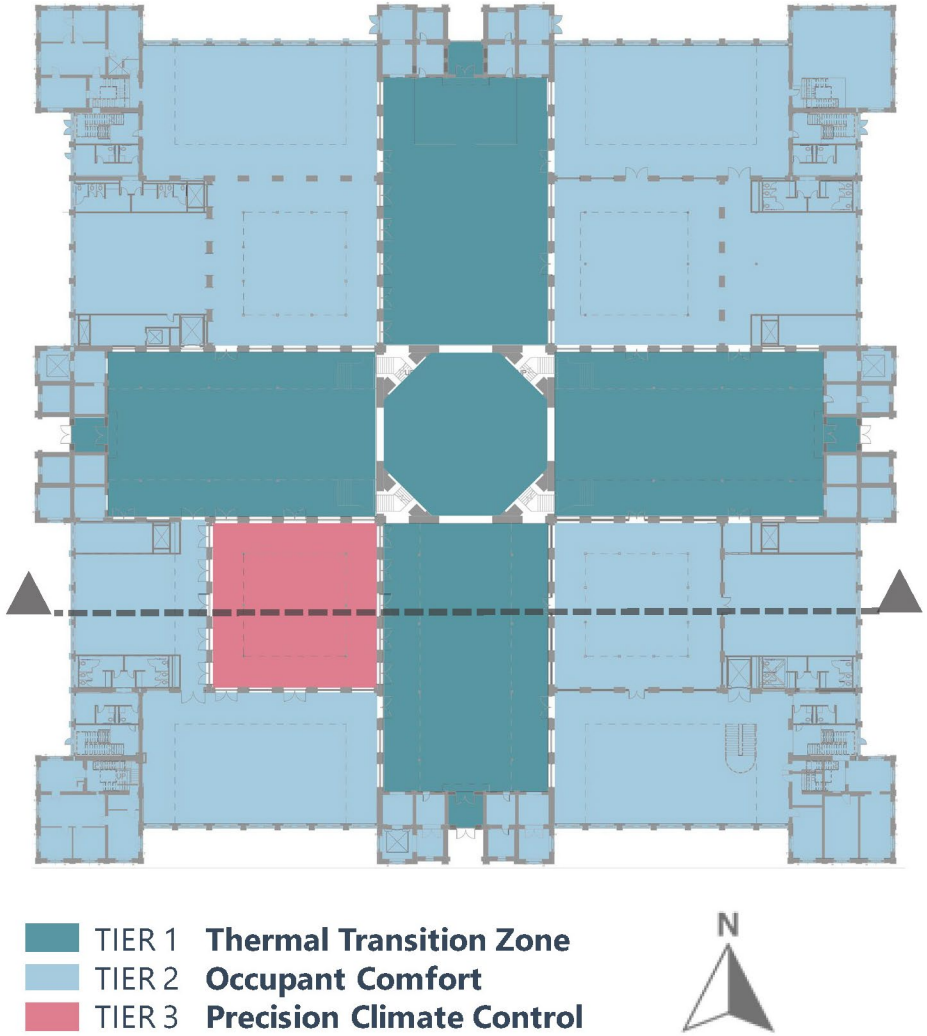
Range – Historical Context (1880)

ARTS & INDUSTRIES BUILDING (AIB) FUTURE PROGRAM

CLIMATE CONTROL DIAGRAMS



Diagrammatic Section



Zoning

- Providing precision climate control ("exhibit environmental requirements") throughout the building would require significant changes to the historic building envelope.
- A limited zone of precision climate control will be created to accommodate special objects or exhibit loans.
- Thermal transition zones in the Halls will be utilized to save energy and eliminate condensation risk at the exterior building envelope.

ARTS & INDUSTRIES BUILDING (AIB) KEY DESIGN ISSUES

MECHANICAL SYSTEMS - LOUVERS

Design Objectives
- Preservation- Minimize changes to the exterior that are visible from the ground.
- Design- Utilize existing window openings in Court clerestories as louvered openings for intake and exhaust.

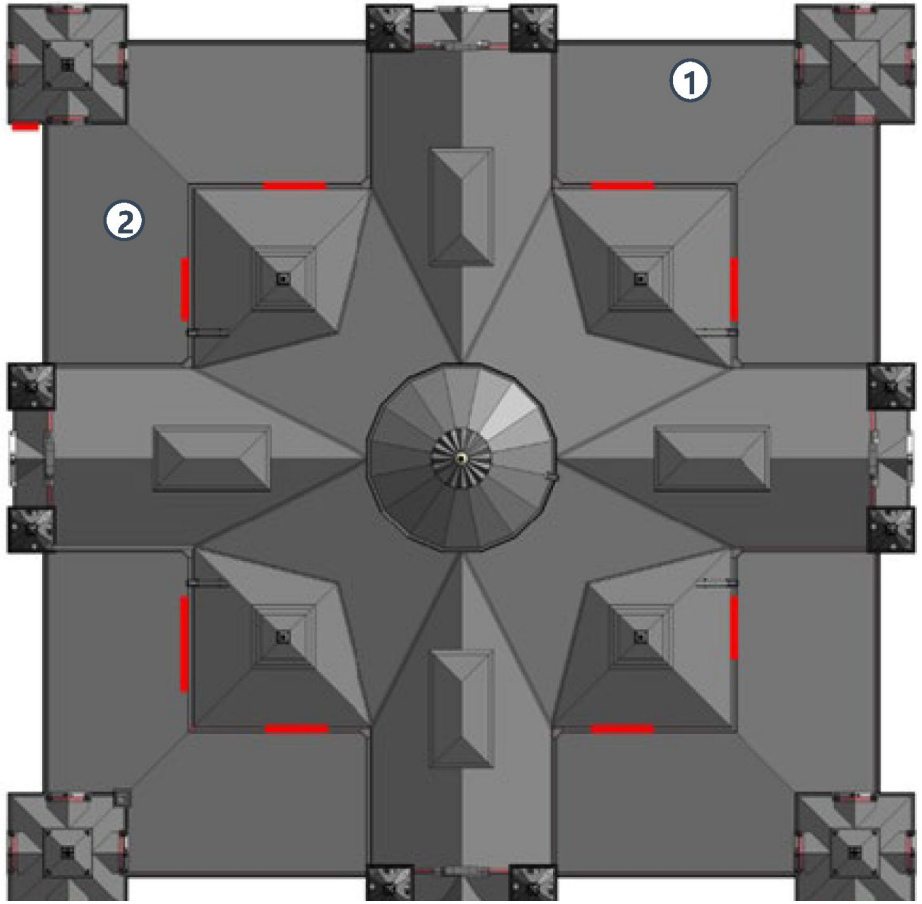
Background
- Mechanical systems in the building need to be upgraded to meet new program requirements.

Past Studies
- Previous studies did not specifically address this issue.

Concept Design
- Strategy locates all the mechanical louvers on the south side of the building, away from the primary Mall entrance.

ARTS & INDUSTRIES BUILDING (AIB) KEY DESIGN ISSUES

MECHANICAL SYSTEMS – LOUVERS
EXISTING CONDITIONS



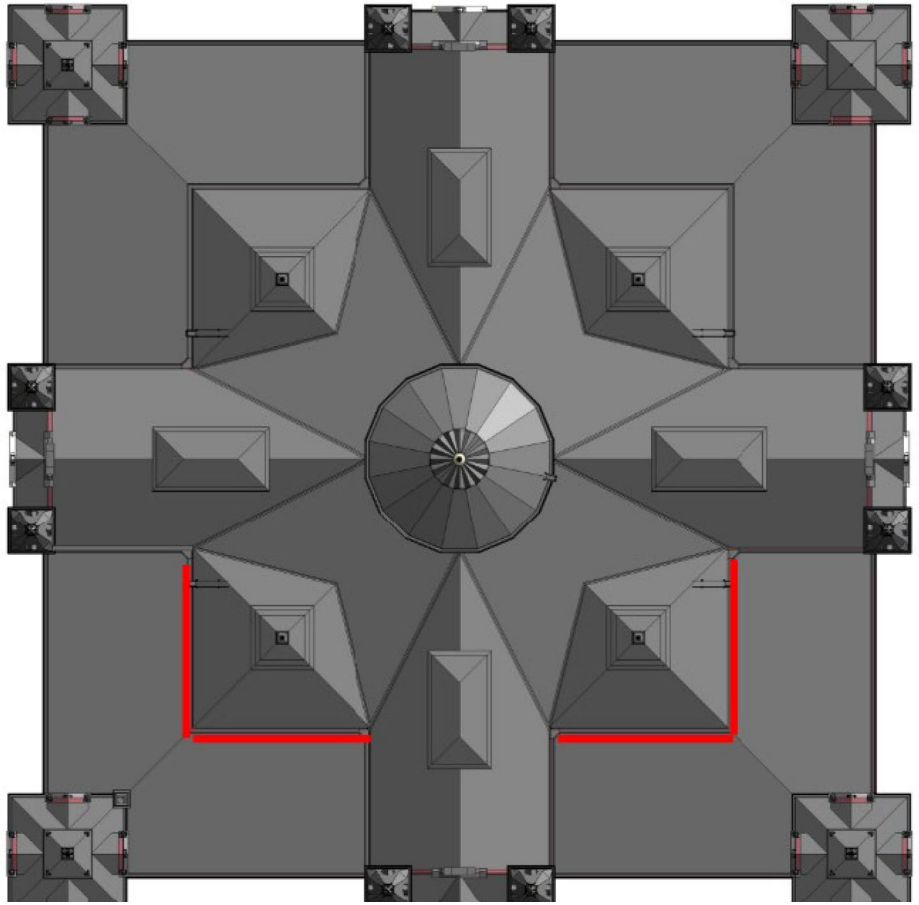
Project Scope

- The building has louvers in historic window openings for air intake/exhaust (indicated in red).

N

ARTS & INDUSTRIES BUILDING (AIB) KEY DESIGN ISSUES

MECHANICAL SYSTEMS – LOUVERS
PROPOSED OUTSIDE AIR INTAKE/EXHAUST



Project Scope

- We will be using the same strategy, but the louvers will be grouped in the SE and SW Courts (indicated in red).

N

ARTS & INDUSTRIES BUILDING (AIB) KEY DESIGN ISSUES

MECHANICAL SYSTEMS - AREAWAYS

Design Objectives
- Preservation- Minimize changes to the historic building fabric. Where changes are required minimize the visual impact from the area around the building.

Background
- Mechanical systems in the building need to be upgraded to meet new program requirements.

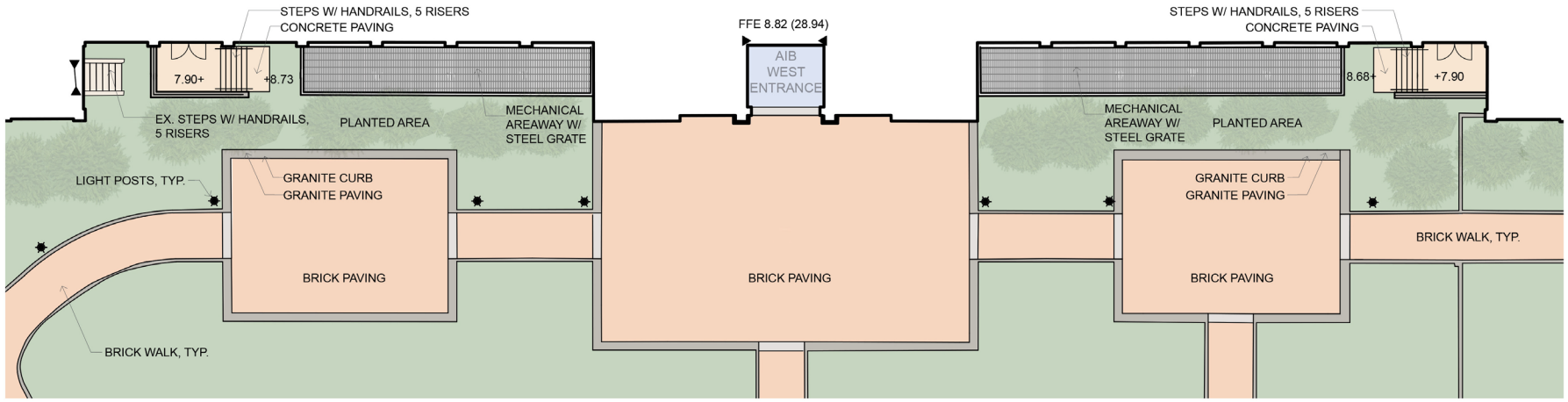
Past Studies
- Previous studies did not specifically address this issue.

Concept Design
- Create intake and exhaust louvers for the CUP and the AIB. basement equipment rooms
- Minimize the visual impact to the AIB exterior.

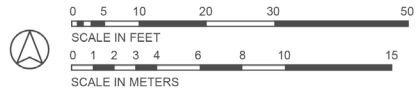
ARTS & INDUSTRIES BUILDING (AIB) KEY DESIGN ISSUES

MECHANICAL SYSTEMS - AREAWAYS
PROPOSED OUTSIDE AIR INTAKE/EXHAUST

ELEVATION LOOKING EAST



PLAN



ARTS & INDUSTRIES BUILDING (AIB) KEY DESIGN ISSUES

NEW EGRESS DOORS AT SOUTHWEST AND EAST FACADES

Design Objectives
- Preservation- Minimize changes to the historic building fabric. Where changes are required minimize the visual impact from the area around the building.
- Create new egress doors in the east and west elevations as part of new fire-rated stairs.
- Minimize the negative effect of the door openings on the exterior masonry.

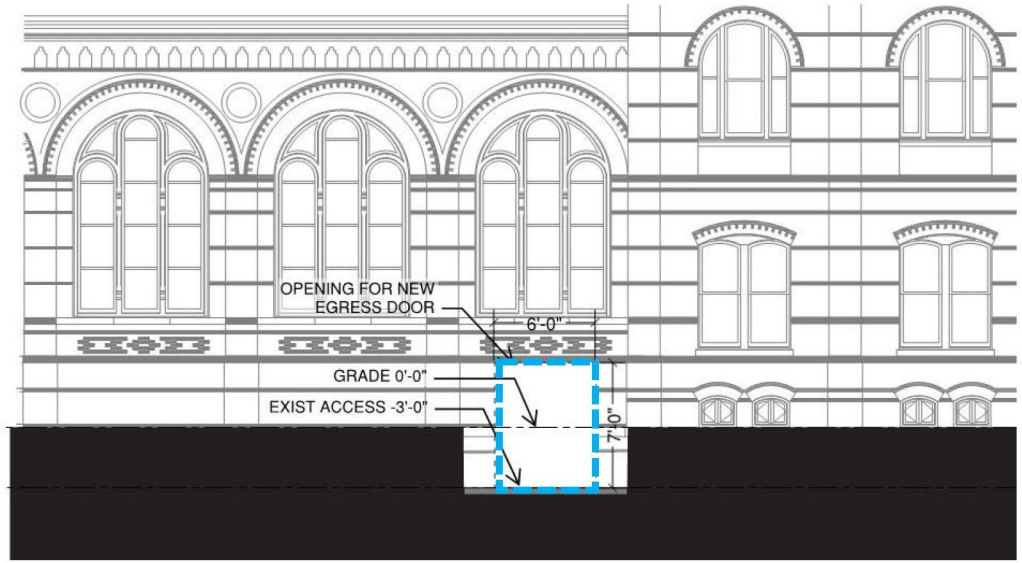
Background
- Life safety studies indicate that fire stairs are required to safely egress the 2nd floor (mezzanine) and the upper floors of the Pavilions.
- These stairs are also required to provide egress from the new basement.
- To comply with code these stairs must discharge directly to the exterior.

Past Studies
- Program Study (2019) included this arrangement at the North Tower entry.

Concept Design
- The new fire stairs have been located in the first bay adjacent to the NE, SE, and SW Pavilions.
- The egress door to the exterior is located below grade to avoid damaging the window and decorative brickwork.
- The doors discharge into new areaways with steps up to grade.
- The door and areaway at the NE corner will require modifications to the Ripley Garden.

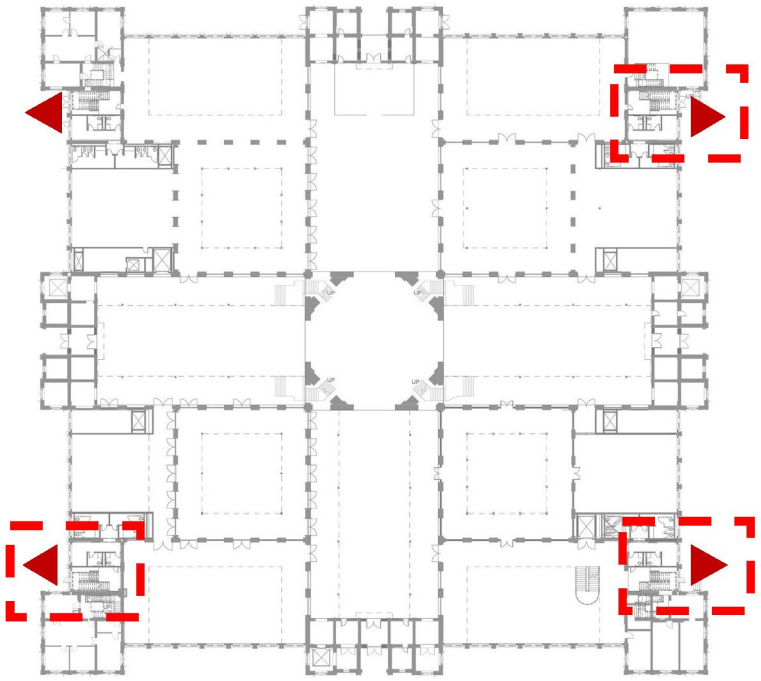
ARTS & INDUSTRIES BUILDING (AIB) KEY DESIGN ISSUES

NEW EGRESS DOORS AT SOUTHWEST AND EAST FACADES



Partial Exterior Elevation at Southwest Annex

Existing Condition



Key Plan of New Egress Door

Project Scope

- Create code compliant egress with new stairs and exterior doors adjacent to the four Pavilions.
- Create the door openings below the decorative banding.

ARTS & INDUSTRIES BUILDING (AIB) KEY DESIGN ISSUES

NEW EGRESS DOOR AT NORTHWEST ANNEX

Design Objectives
- Preservation- Minimize changes to the historic building fabric. Where changes are required minimize the visual impact from the area around the building.
- Create new egress door on the west elevation adjacent to the NW Pavilion as part of new fire-rated stairs.
- Minimize the negative effect of the door opening on the exterior masonry.

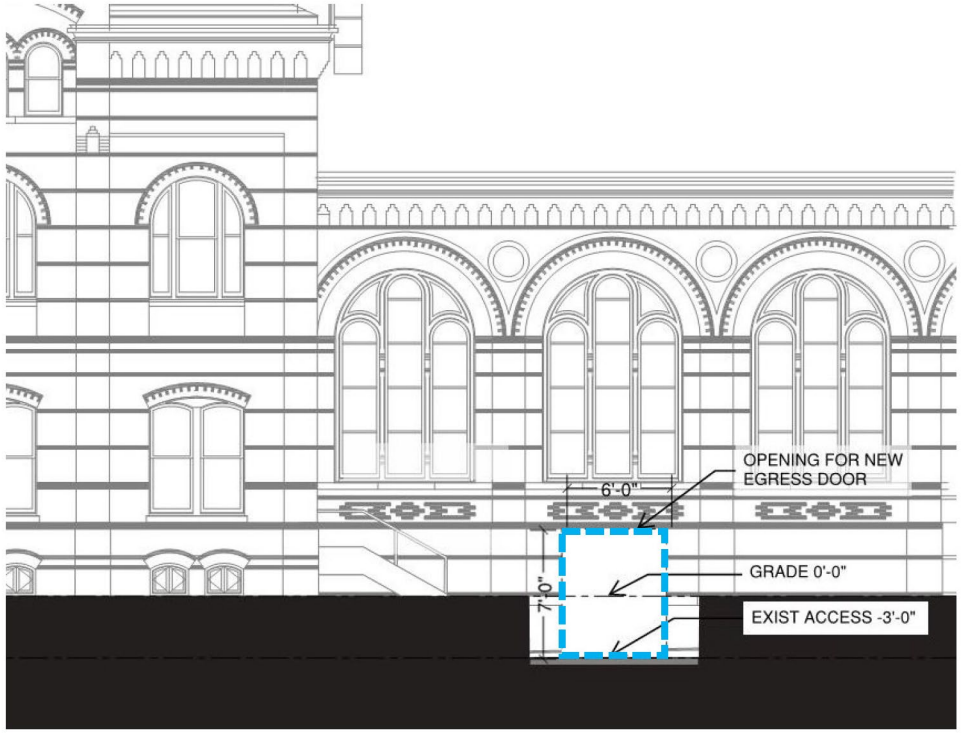
Background
- Life safety studies indicate that fire stairs are required to safely egress the 2nd floor (mezzanine) and the upper floors of the Pavilions.
- These stairs are also required to provide egress from the new basement.
- To comply with code these stairs must discharge directly to the exterior.

Past Studies
- Program Study (2019) included this arrangement at the North Tower entry.

Concept Design
- The new fire stairs at the NW corner are located in the second bay from the Pavilion. This is driven by the retention of the historic stair in the NW Pavilion and to avoid the historic limestone steps on the south elevation of the Pavilion.
- The egress door to the exterior is located below grade to avoid damaging the window and decorative brickwork.
- The door discharges into a new areaway with steps up to grade.

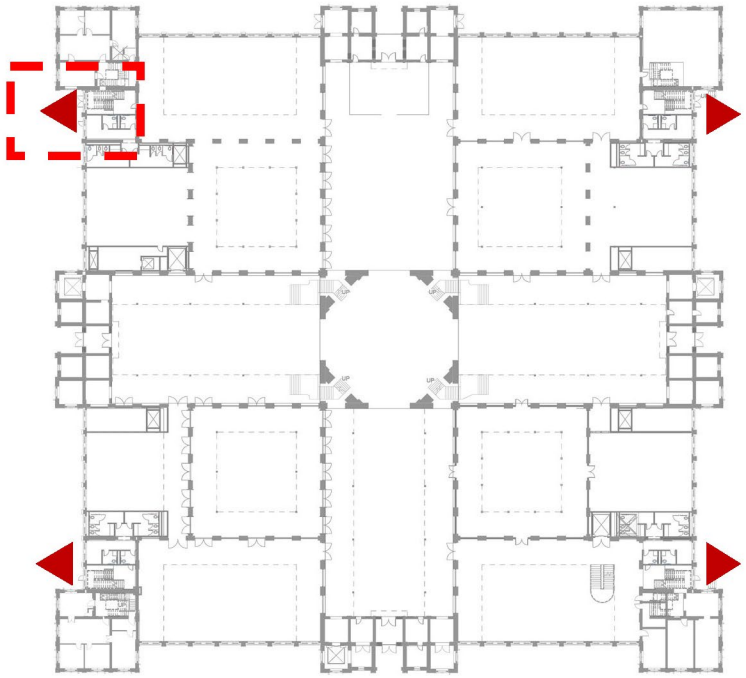
ARTS & INDUSTRIES BUILDING (AIB) KEY DESIGN ISSUES

NEW EGRESS DOOR AT NORTHWEST ANNEX



Partial Exterior Elevation at Northwest Annex

Existing Door, NW Pavilion



Key Plan of New Egress Door

Project Scope

- Create code compliant egress with new stairs and exterior doors adjacent to the four Pavilions.
- Create the door openings below the decorative banding.

ARTS & INDUSTRIES BUILDING (AIB) KEY DESIGN ISSUES

NEW EXIT DOORS AT NORTH TOWER

Design Objectives
- Preservation- Minimize changes to the historic building fabric. Where changes are required minimize the visual impact from the area around the building.
- Design- To facilitate the security screening process provide separate entry and egress pathways at the main entrance at the North Tower.

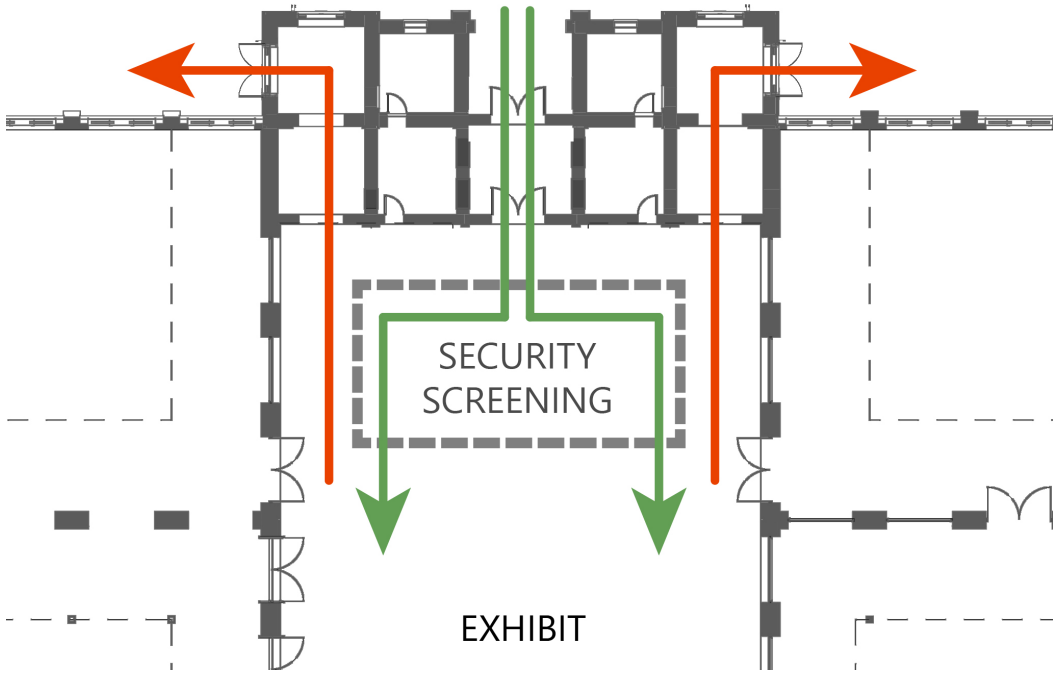
Background
- The main entry to the building will be at the North Tower, facing the Mall.
- Visitor projections anticipate 6,000 visitors on a busy day, with as many as 3,000 during a peak period.
- Separating the incoming visitor traffic from those exiting will prevent confusion and possible problems in the security screening process.

Past Studies
- Program Study (2019) included this arrangement at the North Tower entry.

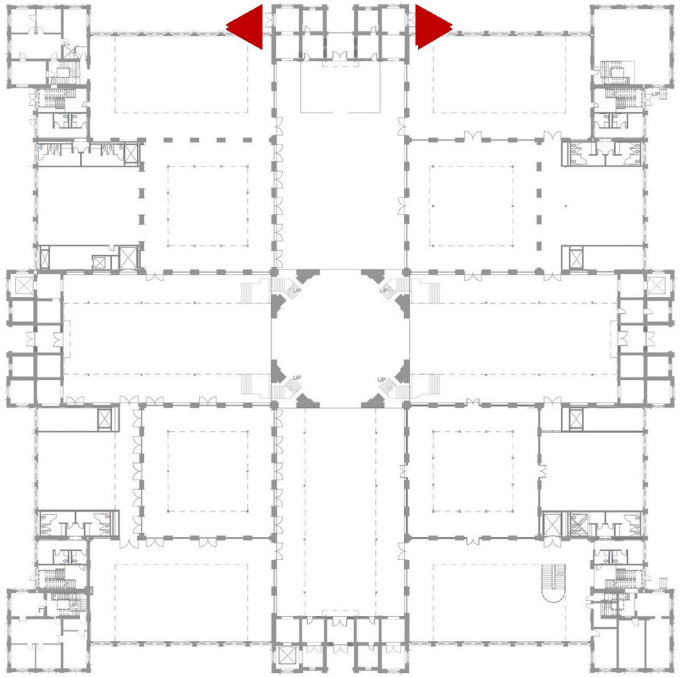
Concept Design
- Existing windows on the east and west elevations of the North Tower will be modified to serve as exit door locations. The door will be at grade.
- The plan of the North Tower will be modified to create a pathway to the exit doors.
- Ramps will be created at the exterior to connect the exit doors to the sidewalk.

ARTS & INDUSTRIES BUILDING (AIB) KEY DESIGN ISSUES

NEW EXIT DOORS AT NORTH TOWER



Enlarged Plan of New Entry-Exit Sequence



Key Plan of New Exit Doors

Modifications to Insert New Exit Door

- New Entry-Exit Sequence to accommodate Public Circulation & Security.

ENTRANCE PATH

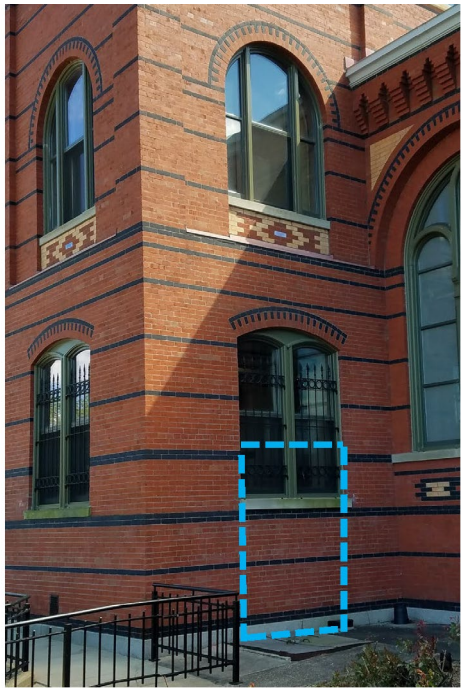
EXIT PATH

N

ARTS & INDUSTRIES BUILDING (AIB) KEY DESIGN ISSUES

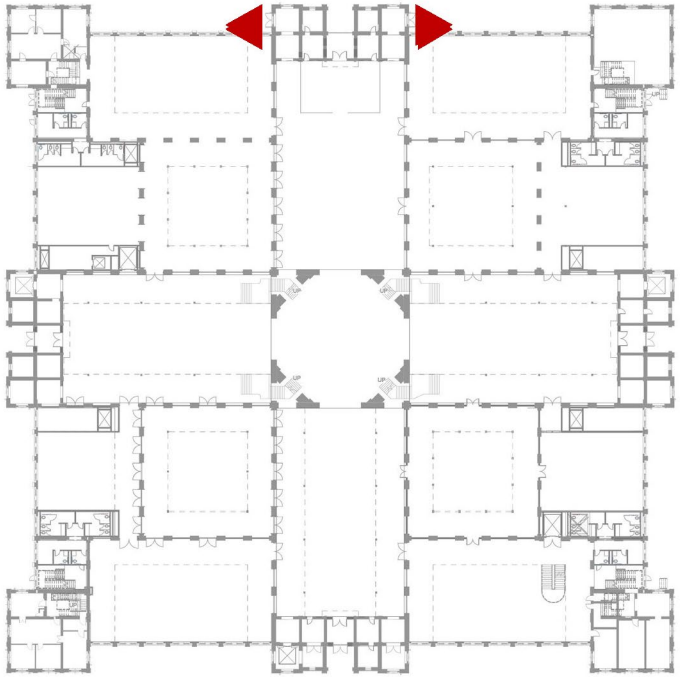
NEW EXIT DOORS AT NORTH TOWER

Existing Condition – North Tower



Insert New Exit Door

Existing Door Precedent, NW Pavilion



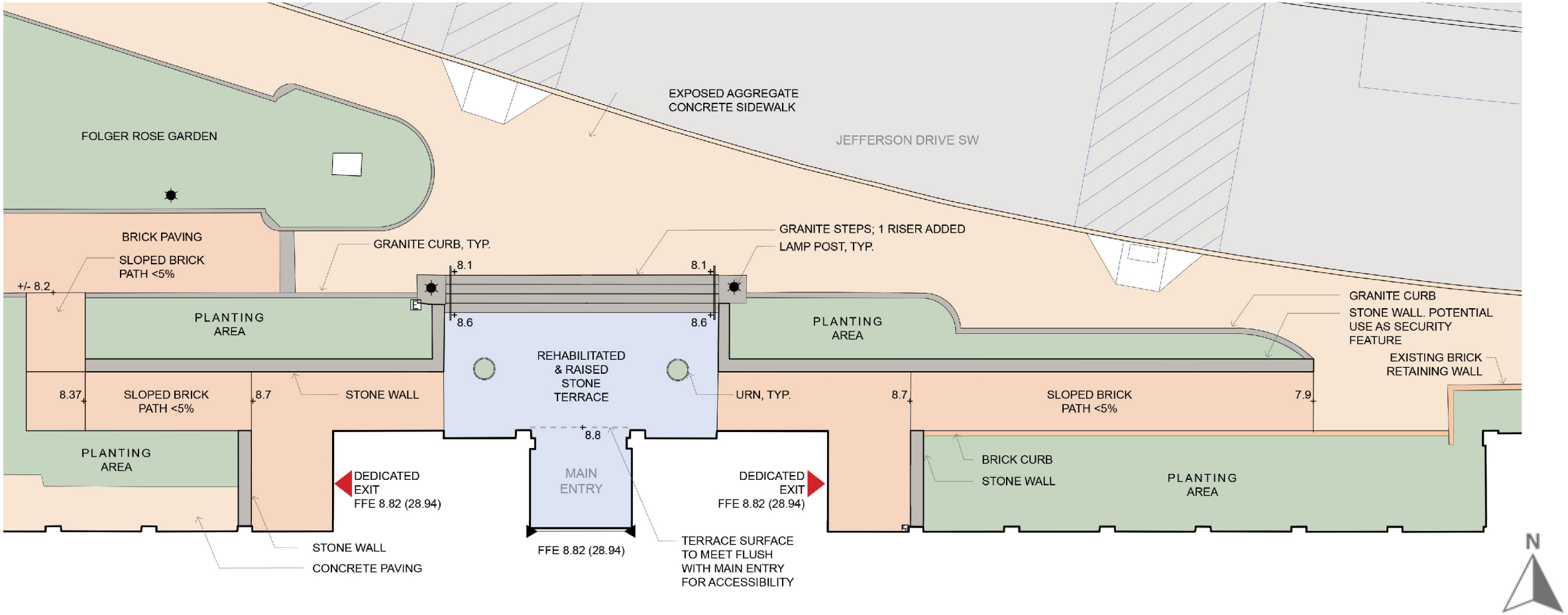
Key Plan of New Exit Doors

Modifications to Insert New Exit Door

- Remove existing window (installed as part of the exterior rehabilitation).
- Remove existing sill.
- Remove and salvage brick below window opening.
- Install new exit door (modeled on existing historic exterior doors).
- Install new transom window, shortened version of existing.

ARTS & INDUSTRIES BUILDING (AIB) KEY DESIGN ISSUES

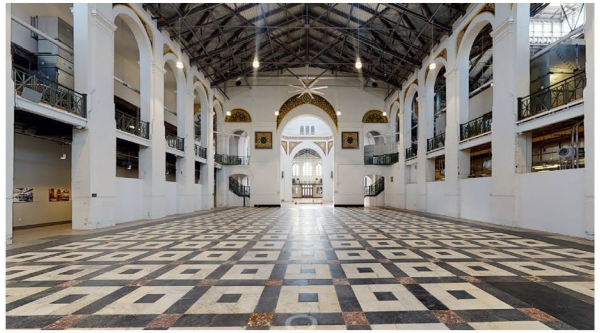
NEW EXIT DOORS AT NORTH TOWER



ARTS & INDUSTRIES BUILDING (AIB) DESIGN INTENT FOR KEY SPACES

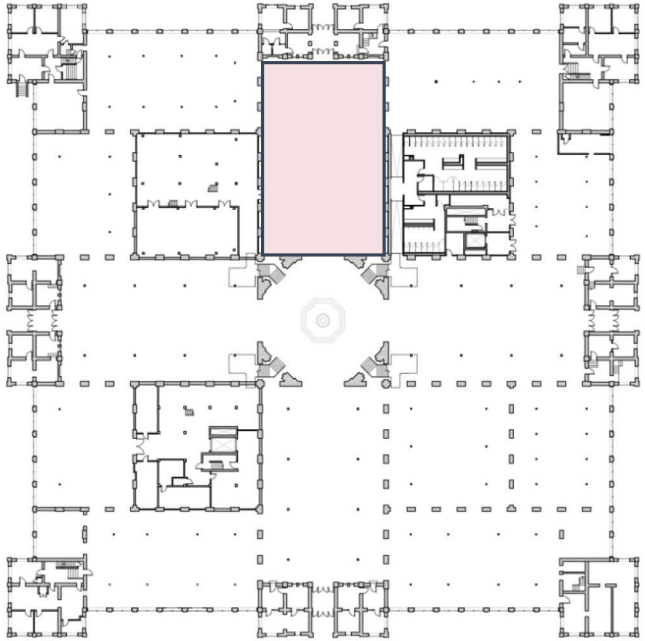
NORTH HALL

Rendering of Potential Space Use



Existing Condition

Historical Context (1903)



Existing First Floor

N

Project Scope

- Restore the floors and wall finishes in the four primary Halls.
- Remove inserted systems and materials that visually compete with the historic materials and features.
- Provide systems and technology that are visually compatible and that provide flexibility for a range of future uses.

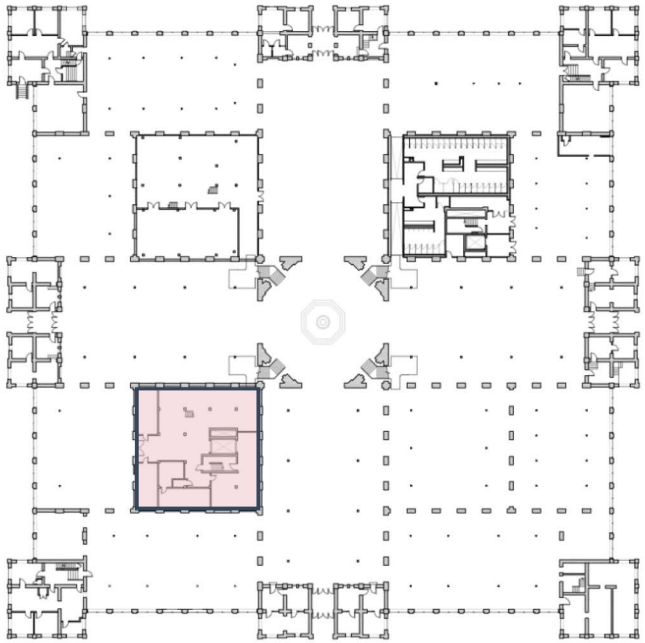
ARTS & INDUSTRIES BUILDING (AIB) DESIGN INTENT FOR KEY SPACES

SPECIAL EXHIBITION

Rendering of Potential Space Use

Existing Condition

Historical Context (1903)



Existing First Floor

Project Scope

- Remove mechanical equipment and rest rooms in three of the Courts. All four Courts to be public functions.
- Retain the surviving elements of the historic galleries and reconstruct missing elements.

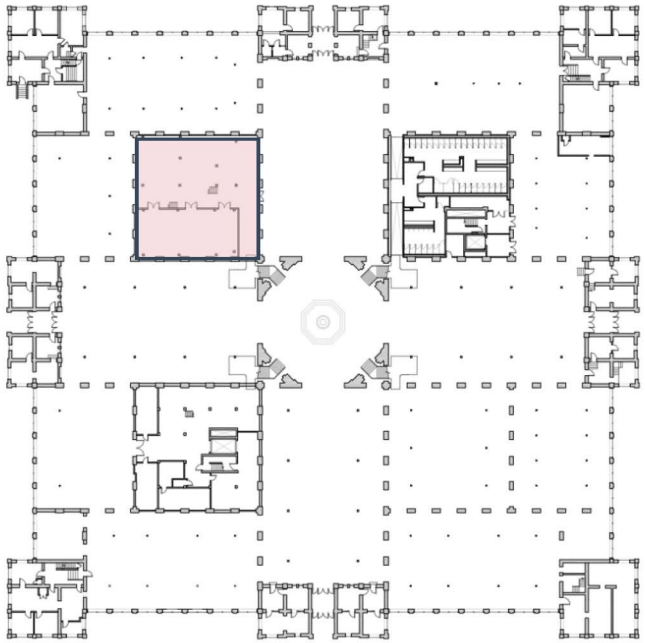
ARTS & INDUSTRIES BUILDING (AIB) DESIGN INTENT FOR KEY SPACES

NW COURT - MARKETPLACE

Rendering of Potential Space Use

Existing Condition

Historical Context (1903)



Existing First Floor

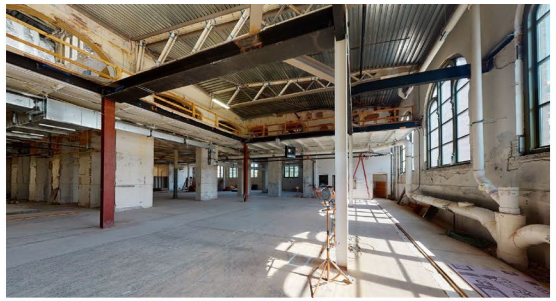
Project Scope

- Remove mechanical equipment and rest rooms in three of the Courts. All four Courts to be public functions.
- Retain the surviving elements of the historic galleries and reconstruct missing elements.

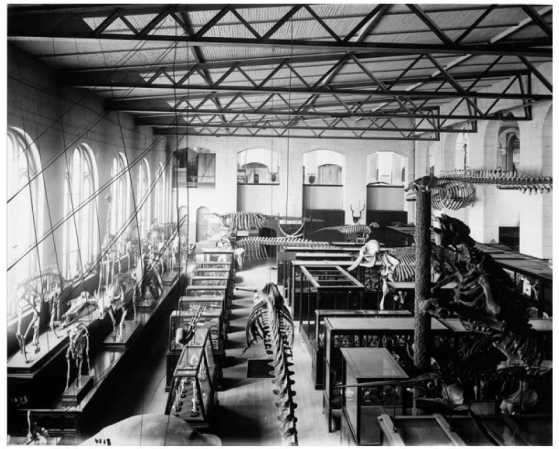
ARTS & INDUSTRIES BUILDING (AIB) DESIGN INTENT FOR KEY SPACES

RANGE

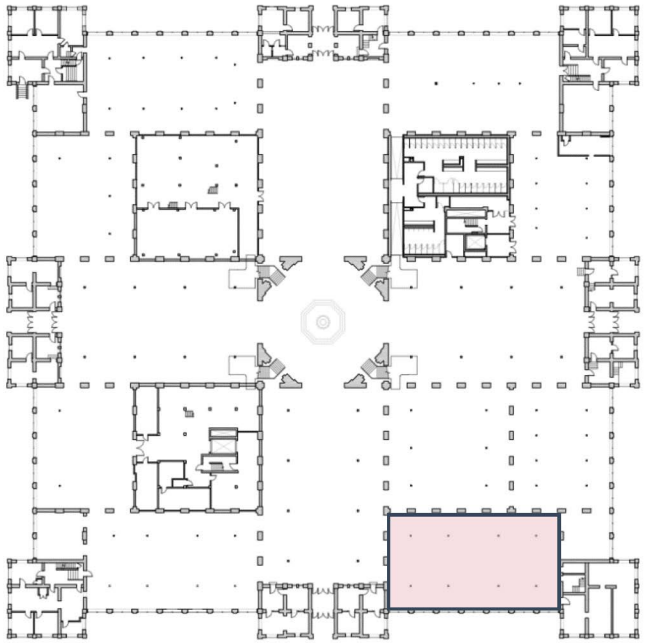
Rendering of Potential Space Use



Existing Condition



Historical Context (1880)



Existing First Floor

Project Scope

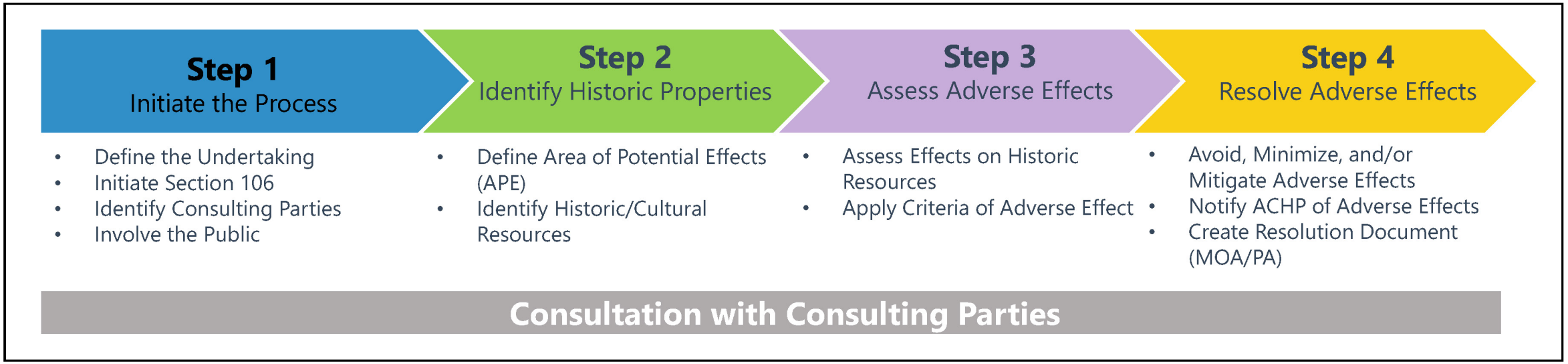
- Remove floor infill at Ranges to maximize the benefit of the arched windows.
- Retain the surviving elements of the historic galleries and reconstruct missing elements.

SCHEDULE AND NEXT STEPS

SCHEDULE AND COST ESTIMATE PROJECT TIMELINE

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

Schedule 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*



Smithsonian Institution