Executive Director's Recommendation
Commission Meeting: July 1, 2021

PROJECT
South Mall Campus Historic Core Revitalization
The Castle and Arts and Industries Building
1000 Jefferson Drive, SW
Washington, DC

SUBMITTED BY
Smithsonian Institution

REVIEW AUTHORITY
Federal Projects in the District
per 40 U.S.C. § 8722(b)(1) and (d)

NCPC FILE NUMBER
8282

NCPC MAP FILE NUMBER
1.41(38.00)45333

APPLICANT'S REQUEST
Approval of comments on concept plans

PROPOSED ACTION
Approve comments on concept plans as requested

ACTION ITEM TYPE
Staff Presentation

PROJECT SUMMARY
The Smithsonian Institution (SI) has submitted concept plans for the proposed project called the Revitalization of the Historic Core or “RoHC”. The project scope includes improvements to the Smithsonian Institution Building (SIB), also known as the Castle, and the Arts and Industries Building (AIB). Other major components include new underground facilities, a new central utility plant, new cooling towers, accessibility improvements, garden rehabilitation and new perimeter security. The applicant states there is a need for a comprehensive rehabilitation of the Castle and AIB in order to address physical deterioration, obsolete systems, and non-compliance with construction, accessibility, and life-safety codes. Construction of a central utility plant and enhanced loading dock will link and serve the Castle and AIB buildings. Both buildings are National Historic Landmarks (NHLs), listed in the National Register of Historic Places, and part of the National Mall Historic District. The RoHC is located within SI’s South Mall Campus and the project will implement several components of the South Mall Campus Master Plan, which was approved in 2018.

Much of the project involves rehabilitation of the Castle and AIB, to include updates to windows, doors, venting, and egress. In addition, the proposal includes excavation below and adjacent to the two buildings to provide an enhanced loading facility and a central utility plant that will serve the Castle, AIB, and in the future, the Freer Gallery and Quadrangle. The loading facility will permit appropriate segregation of art and non-collections delivery and the handling of waste and recycling. The central utility plant will allow the disconnection of General Services Administration (GSA) steam and chilled water services which, according to SI, will result in significant cost savings and a reduction in the carbon footprint. Cooling towers for the plant are proposed to be located on the site of the National Museum of Natural History (NMNH), which is across the National Mall to the north. Underpinning, blast mitigation and seismic reinforcement of the Castle and AIB will be
integrated into the construction of these new facilities. Other improvements include restoration of the gardens, new perimeter security and accessibility upgrades.

**KEY INFORMATION**

- The South Mall Campus is located on the National Mall, generally between Independence Avenue, Jefferson Drive, 12th Street and 7th Street, SW in Washington, DC. The campus includes the Smithsonian Institution Building (SIB or the Castle) and Arts and Industries Building (AIB), among others.
- The Commission approved the South Mall Campus Master Plan in 2018. The proposed master plan is a guide for the development of the South Mall Campus over the next 20 to 30 years.
- The revitalization of the Castle and AIB were identified in the master plan, along with the proposed new central utility plant, seismic protection, and perimeter security.
- SIB, also known as “the Castle”, was designed by James Renwick, Jr., and was completed in 1855.
- The last major revitalization of the Castle, including upgrades of heating, cooling and ventilation systems, electrical and plumbing systems, was completed in 1968.
- AIB was designed by Adolf Cluss and Paul Schulze. It was built between 1879 and 1881. AIB is considered by some to be the nation’s best-preserved example of nineteenth century world’s fair or exposition architecture.
- The last revitalization of AIB was completed in 2014. The project included structural enhancements, replacement of the roof and windows, and restoration of the masonry exterior.
- The Castle and AIB are National Historic Landmarks. The Quadrangle Historic District was added to the District of Columbia Inventory of Historic Sites in 2017. The entire campus is within the National Mall Historic District.
- A Programmatic Agreement (PA) was prepared in 2018 that outlines the process for subsequent consultation of individual projects implemented under the master plan, pursuant to Section 106 of the National Historic Preservation Act.
- SI has initiated the Section 106 review process for the RoHC project pursuant to the PA. Three consulting party meetings have been held to date.
- Construction is expected to last through 2027.

**RECOMMENDATION**

The Commission:

*General Comments*

**Supports** the project goals to rehabilitate the Castle and AIB and increase public access and use.
Notes the Revitalization of the Historic Core (RoHC) project includes several components, specifically revitalization of the Castle, revitalization of AIB, a new central utility plant (CUP), and perimeter security improvements, each of which are generally identified in the South Mall Campus Master Plan.

Notes the project does not include new entry pavilions or the removal and replacement of the Haupt Garden.

Finds a significant challenge regarding the RoHC project is the potential cumulative impacts on both National Historic Landmarks due to the number and extent of proposed alterations.

Requests the applicant continue to work with District of Columbia State Historic Preservation Office, the National Park Service, and other consulting parties to first avoid then minimize potential adverse effects.

Advises the applicant that they should update the South Mall Campus Master Plan approved by NCPC in 2018 to reflect recent decisions to simplify or eliminate potential changes to the Quadrangle Building and Haupt Garden.

*Smithsonian Institution Building (SIB or Castle)*

Supports use of the Castle as a visitor center for the Smithsonian Institution.

Supports increasing public access and restoration of the important interior spaces to their historic condition, including the Commons, Schermer Hall, and the Great Hall.

Finds the proposed fourth level connector addition has the potential to cause physical and visual adverse effects to the Castle.

Requests the applicant provide several different renderings of the Castle and proposed connector as viewed from National Mall and Independence Avenue near L’Enfant Plaza, SW, to understand the potential visual impacts of the addition.

Notes the amount of proposed excavation beneath the Castle basement level has not been finalized, and the Programmatic Agreement prepared for the South Mall Campus Master Plan identifies the reduction of campus excavation as a minimization measure.

Requests the applicant continue to refine the proposal to better describe the scope of the need, and if possible, reduce the amount of excavation.

Notes the applicant is pursuing base isolation for the Castle to protect against seismic events, as described in the South Mall Campus Master Plan.
Arts and Industries Building (AIB)

Supports increased public access to AIB’s exhibition and gallery space, consistent with the master plan.

Requests the applicant provide further information about the amount of excavation proposed underneath AIB, as it becomes known.

Central Utility Plant (CUP) and Cooling Towers

Supports system improvements that will decrease energy consumption, increase efficiency, and reduce the carbon footprint.

Requests the applicant provide information about how the proposed CUP will achieve sustainability goals.

Supports a comprehensive approach to stormwater management, and request the applicant coordinate with the District Department of Energy and Environment in development of the stormwater management strategy.

Requests the applicant provide the following information for future review:

- Clarify whether sufficient soil depth will be provided above the CUP to accommodate trees and other plantings.
- Information about any vertical elements, such as vents, egress stairs or other features required by the CUP that would be visible above-grade and which may impact the garden design.
- Views and renderings of the proposed cooling towers as seen from locations on the National Mall and around the National Museum of Natural History, to better understand the potential visual impacts of the installation.

Requests the applicant coordinate with the National Park Service regarding any below-grade construction necessary to connect the proposed cooling towers beneath the National Mall to the South Mall Campus.

Landscape, Perimeter Security and Accessibility

Notes the landscape of the South Mall Campus has evolved over time, and while the landscapes and settings of the Castle and AIB are not identified as contributing resources, they do impact the visitor perception of the buildings.

Recommend prior to the next review the applicant:
• Evaluate opportunities to save, store and replant trees and other plantings after construction has been completed.
• Ensure the gardens will continue to accommodate a variety of native plants as well as those that will help support pollinator health.
• Ensure the design will prevent net loss of tree canopy in accordance with the policies set forth in the *Comprehensive Plan for the National Capital*.

**Notes** that unlike many other museums along the National Mall, the Castle and AIB do not have large setbacks or building yards.

**Finds** the building placement and proximity of adjacent streets creates spatial constraints for the placement of streetscape and perimeter security elements, requiring careful consideration of the impacts to pedestrian access, views of the historic landmarks, and the perceived openness of the campus.

**Requests** the applicant provide as part of the next submission:

• An assessment for NCPC staff of the threats or risks to be addressed by the proposed perimeter security, particularly for the area along Jefferson Drive in front of the Castle and AIB, to better understand the needs.
• A plan and additional information regarding the perimeter security approach along the length of Independence Avenue, to include AIB, the Quadrangle and Freer Gallery which exist as a continuous block.
• Views and renderings of proposed perimeter security and accessibility improvements, particularly along Jefferson Drive in front of the Castle and AIB, and along Independence Avenue in front of AIB, to understand the potential visual impacts of any proposed improvements, given the context and setting of these NHLs.

**Notes** that NCPC has identified Independence Avenue as an important corridor and gateway and will work with the District Department of Transportation and other stakeholders when funding becomes available to undertake a transportation study to improve mobility, curbside use, streetscape, pedestrian use and safety along the Avenue.

**Notes** that the streetscape and perimeter security for the RoHC project may need to respond to the recommendations in the transportation study, or at the very least, consider the larger context of the Avenue if the transportation study is not complete before the project’s implementation.

**Requests** the applicant coordinate with the National Park Service and District Department of Transportation regarding perimeter security and accessibility improvements proposed along Jefferson Drive and Independence Avenue, respectively.
PROJECT REVIEW TIMELINE

<table>
<thead>
<tr>
<th>Previous actions</th>
<th>June 2018 – Approval of South Mall Campus Master Plan</th>
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<tbody>
<tr>
<td>Remaining actions (anticipated)</td>
<td>Review of preliminary site and building plans</td>
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<td>Review of final site and building plans</td>
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PROJECT ANALYSIS

Executive Summary

The Revitalization of the Historic Core (RoHC) project includes several components, specifically revitalization of the Castle, revitalization of AIB, a new central utility plant (CUP) and perimeter security improvements, each of which are generally identified in the South Mall Plan. As the details of each project have been developed, their scope and extent have been further defined. The project does not include new entry pavilions or the removal and replacement of the Haupt Garden. Overall, the RoHC aims to increase public access and provide critical improvements to these two important National Historic Landmarks. As such, staff recommends the Commission supports the project goals to rehabilitate the Castle and AIB and increase public access and use.

However, as this is a large and complex project, and as two National Historic Landmarks are involved, it will be necessary to evaluate all the proposed changes, both individually and as a whole. As such, staff recommends the Commission find a significant challenge regarding the RoHC project is the potential cumulative impacts on both National Historic Landmarks due to the number and extent of proposed alterations. The project is still in the conceptual stage, and therefore additional analysis and studies will be necessary. Additional coordination will also be important. Therefore, staff recommends the Commission request the applicant continue to work with District of Columbia State Historic Preservation Office, the National Park Service, and other consulting parties to first avoid then minimize potential adverse effects.

Staff notes the NCPC Submission Guidelines request applicants reevaluate master plans every five years. The South Mall Campus Master Plan was approved in 2018, and therefore a review should be considered before 2023. Given the potential implication of the RoHC for future projects in the South Mall, staff recommends the Commission advises the applicant that they should update the South Mall Campus Master Plan approved by NCPC in 2018 to reflect recent decisions to simplify or eliminate potential changes to the Quadrangle Building and Haupt Garden.
Analysis

The Castle Revitalization

The primary program goals of the Castle revitalization include increased public access to the significant historic spaces, including the Commons, Schermer Hall and Great Hall; providing public meeting space in the Upper Great Hall; activating the basement level with public function; and providing an enhanced visitor center on the first and basement levels. The SI administration will also remain housed in the East Wing and East Range of the Castle, where they have traditionally been located. Overall, SI expects the Castle will go from 17 percent public space to 61 percent public space as a result of the revitalization project.

Overall, staff believes the use of the Castle as the main visitor center is an appropriate location to introduce visitors to the Smithsonian. Therefore, staff recommends the Commission support use of the Castle as a visitor center for the Smithsonian Institution, and further, support increasing public access and restoration of the important interior spaces to their historic condition, including the Commons, Schermer Hall, and the Great Hall.

Masonry and Building Envelope

This project will require a variety of improvements to the building envelope and systems. Regarding the envelope, the masonry will include cleaned and restored to reduce staining. Flashing will be provided at horizontal surfaces to reduce water absorption and infiltration. Damaged masonry will be repaired or replaced as necessary, and mortar will also be repaired or replaced.

Roofing

Areas of failing roofing will be replaced with new roofing similar in appearance. Roof drainage will also be improved and capacity increased to better accommodate heavy rainfall events. In particular, existing slate roofing will be replaced with new slate roofing. Existing lead-coated copper roofing will be replaced with new zinc-tin-coated cooper roofing. Insulation will be added where possible.

Window Replacement

The project will also include window replacement. According to the applicant, most of the existing windows were installed in the 1980s-1990s. New windows will be installed to meet thermal performance criteria and security criteria. Historic windows will be retained in place in the West Range Clerestory and the North Apse of the Commons. Window designs developed by James Renwick will be referenced as a basis for the overall design.

Updated Mechanical Systems

The project seeks to 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. The overall goal is to minimize visual impacts of such changes, particularly as viewed from the ground. Currently, there are existing louvered penthouses on the roof of the Main Building, the East Range and the West Range, as well as a louvered cupola on the East Wing. However, these do not provide sufficient capacity to properly serve the building. As such the applicant is proposing to utilize existing roof features, including louvered penthouses and the cupola, to provide air intake and exhaust locations. Existing elements will be altered to increase the louver area but limit visual impact of the changes.

New Fourth Floor Connector

The applicant proposes to add a new hallway “connector” at the roof of the East Range. Currently, egress from the fourth floor of the East Wing includes one interior stair and an emergency pathway across the East Range roof. This egress is not compliant with current code requirements, and therefore without improvements, the fourth floor cannot be occupied. According to the applicant, two means of egress are required by code. SI safety requires the egress path to be enclosed, in lieu of an open-air pathway across the roof. The applicant evaluated whether an additional interior stair could be added in the East Range. However, it was determined this interior stair would have significant impacts to historic spaces in the building, including Adolf Cluss-designed historic rooms.

As such, the proposal includes a roof connector that links the East Wing to the main building, located on the East Range. The new hallway would require removal of an existing roof monitor. The new connector would draw from the design of the monitor, though it would be taller in height to accommodate pedestrian movement. Glass hyphens connecting the more solid hallway mass could be used to minimize visual impacts of the addition on the facades of the Main Building and East Wing.

Staff understands the need for additional egress from the East Wing. However, the new addition is a substantial alteration. Therefore, staff recommends the Commission finds the proposed fourth level connector addition has the potential to cause physical and visual adverse effects to the Castle. In particular, it remains unclear how views of the Castle may be altered as seen from the National Mall. As such, staff recommends the Commission request the applicant provide several different renderings of the Castle and proposed connector as viewed from National Mall and Independence Avenue near L’Enfant Plaza, SW, to understand the potential visual impacts of the addition.

Areaways

Existing areaways around the Castle provide light into basement windows. Currently, many are partially or fully obscured by landscaping. The existing basement level of Castle is approximately six feet below grade. The basement currently has low ceilings and numerous mechanical and other systems that obscure the historic brick arches and vaults.

The project proposes to lower the basement floor to increase the functionality of the space. The basement will then become publicly-accessible in support of the visitor center. All mechanical
systems and other service areas will be relocated to a “B1” level beneath the basement. This work, in addition to the proposed seismic upgrades, will require the areaways around the exterior of the building be removed and reconstructed.

From a historic preservation perspective, the project seeks to minimize changes to the exterior, particularly as viewed from the ground level. Overall, the design will regularize the existing areaways to simplify the design of the seismic joint at the base of the building. This joint is what will separate the building from the ground plane, so each can move independently, thereby providing seismic protection to the Castle. The applicant also seeks to increase natural light to the occupied basement spaces utilizing existing window openings and creating new openings where appropriate.

The areaway design will combine and regularize the existing areaways along the south side of the building. The areaways will be screened from view by vegetation and not be visible from the public paths in the Haupt Garden. New windows will be added to the basement level to provide natural light to new functions in the basement. The floor of the areaway is the roof of the new B1 level below grade. The applicant is currently exploring different options for the areaways, including a single retaining wall, or a stepped wall. The stepped wall may allow more light but will require a larger footprint. Railings will be required for fall protection. Additional studies will be necessary to evaluate the daylighting impacts of the design, as well as the types of seismic joints that could be used.

*New Basement Egress Doors*

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. The new basement-level program, including visitor center spaces, will require additional egress doors to comply with code. The number and locations of the new doors is not yet known. The applicant notes that past projects have converted windows on the building to doors, and this strategy is expected to be used for any new doors.

*Seismic Protection*

According to the submission, the masonry construction of the Castle and the unreinforced masonry towers place the building at risk in the event of a seismic event. Previous SI analysis recommended seismic isolation paired with modest wall strengthening to achieve significant risk mitigation with the greatest sensitivity to the historic character of the building. The South Mall Campus Master Plan identified base isolation as the preferred approach for seismic protection, and the RoHC project will incorporate base isolation systems into the building foundation.

Base isolation is a means of uncoupling the movement of the structure (in this case, the Castle), from the movement of the ground, to minimize the damage during an earthquake. This is achieved by creating a separation between the superstructure and the foundations (also known as a seismic joint). The existing masonry walls and piers will be supported on new isolators sitting on the new foundations. This approach is preferred by SI due to the importance of the Castle as a historic
building and iconic symbol. Because the seismic work occurs at the foundations, the detrimental impacts on historic fabric are expected to be reduced compared to structural reinforcement within the building.

The project aims to minimize the visual impact of the seismic joint at grade around the base of the building. In this case, the seismic joint will be about six inches. The applicant will explore a number of ways to design the joint system, conceal the covers, and locate the joints in ways that are sensitive to the historic fabric.

**Underground Work**

As noted previously, the project includes lowering the Castle basement floor to create new public spaces as part of the enhanced visitor center. In addition, a new B1 level will be added beneath the basement to support mechanical systems. No habitable spaces are proposed in this new B1 level. To the south, between the Castle and the Quadrangle, a new expanded loading dock, connector road, and support spaces are also proposed below grade. The Programmatic Agreement (PA) prepared as part of the South Mall Campus Master Plan states that 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 (Stipulation 5.A).

The basement of the Castle has been significantly modified over time, resulting in multiple floor elevations. In addition, the routing of mechanical and other building systems through the basement has created challenges for access and functionality. Equipment occupies valuable historic spaces in many parts of the Castle, and limited access to equipment results in challenging maintenance and reduced efficiency. Further, the routing of these systems has both obscured and damaged the 1855 brick groin vaults. Piecemeal renovations over time have not yielded a comprehensive building-wide design. Finally, the existing systems are not designed to provide the appropriate environmental controls for the proposed program, including the expanded visitor center.

The goals of this component of the project include providing sufficient space to allow the systems to properly serve the proposed program, including meeting space and the visitor center; locating mechanical spaces and equipment to meet current codes, providing energy efficiency; and supporting building operations and maintenance. Equipment will be located in attic and the level B1 mechanical floor to minimize impacts to historic fabric and to free up public and other potentially accessible spaces.

For the basement, the historic materials will be exposed and visible to the public. Restrooms and other visitor service functions will be located in the basement to avoid impacts to the Great Hall. This will help the Great Hall function as the “front door” to the Smithsonian and the visitor center.

Staff notes the amount of proposed excavation beneath the Castle basement level has not been finalized. The reduction on campus excavation is also identified as a minimization measure within the PA. As such, staff recommends the **Commission requests the applicant continue to refine**
the proposal to better describe the scope of the need, and if possible, reduce the amount of excavation.

**Arts and Industries Building Revitalization**

As originally envisioned, AIB has an open plan, allowing a visitor to create their own path through the building. Galleries were later added to provide much-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. Like the Castle revitalization, one of the main goals of the project is to increase public access to the building. Currently, 24 percent of the building is publicly accessible. The project will increase that to 78 percent. A new basement level is proposed to create space for mechanical/electrical equipment and support space for Smithsonian staff. This will allow the historic spaces on the first and second floors to be utilized primarily for public functions.

The project also includes restoration of the floors and wall finishes in the four primary Halls. Non-historic systems and materials that were inserted will be removed. New systems and technology will be integrated to support the programming needs. Mechanical equipment and restrooms will be removed from three of the Courts. Surviving elements of the historic galleries will be retained and missing elements will be reconstructed where appropriate. The floor infill within the Ranges will also be removed. Upgrades to the exterior walls for wind, seismic, and blast protection are also proposed. Additional analysis will be necessary, but because of the innate structural ability offered by the building’s shape, base isolation will not be required.

Providing precision climate control, particularly exhibit-quality environmental requirements throughout the building, would require significant changes to the historic building envelope. Therefore, 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. Like the Castle, this will require targeted improvements to the building envelope and interiors. Excavation beneath AIB is also proposed to accommodate mechanical systems and other kinds of support spaces. These kinds of uses would not be compatible with the open spaces of the historic building.

Overall, staff believe the goal of increasing public access and use of AIB is laudable, and consistent with the South Mall Campus Master Plan. As such, staff recommends the **Commission support increased public access to AIB’s exhibition and gallery space, consistent with the master plan.** While the project remains at a concept stage, the amount of excavation proposed beneath AIB is still not clear. As such, staff recommends the **Commission request the applicant provide further information about the amount of excavation proposed underneath AIB, as it becomes known.**

**Mechanical Systems – Louvers**

The mechanical systems in the building need to be upgraded to meet the new program needs. As such, air intake and exhaust requirement will be address. The proposed design strategy locates all the mechanical louvers on the south side of the building, away from the primary National Mall
entrance, with the goal of minimizing any changes visible from the ground. The building currently has louvers in historic window openings for air intake/exhaust. The proposal uses the same design strategy, however the louvers will be grouped in the SE and SW Courts.

**Mechanical Systems – Areaways**

The applicant also proposes to create additional intake and exhaust louvers for AIB basement equipment rooms and central utility plant. These are necessary to meet the needs of the upgraded mechanical systems. Like the other building improvements, the design goal is to minimize changes to the historic building fabric as well as minimize visual impacts. The areaways would be located against the building and will require curbing and steel grates.

**New Egress and Exit Doors**

The project includes the addition of new egress doors at each of the four corner Pavilions. The applicant’s life safety studies indicate that fire stairs are required to safely egress the second floor (mezzanine) and the upper floors of the Pavilions. These stairs are also required to provide egress from the new basement. The stairs must also discharge directly to the exterior. As such, new fire stairs will be located in the first bay adjacent to the NE, SE, and SW Pavilions. For each, a new egress door to the exterior is located below grade to avoid damaging the existing windows and decorative brickwork. The doors will exit into new areaways with steps up to grade.

At the NW Pavilion, the new fire stairs are 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. Like the other exits, the egress door to the exterior is located below grade to avoid damaging the window and decorative brickwork.

The main entry to AIB is located at the North Tower, facing the National Mall. Visitor projections anticipate 6,000 visitors on a busy day. Therefore, separating the incoming visitor traffic from those exiting will be necessary to prevent confusion and possible issues in the security screening process. As such, the applicant proposes to modify the existing windows on the east and west elevations of the North Tower to serve as exit door locations. The door will be located at grade, and ramps will be created at the exterior to connect the exit doors to the sidewalk. The new doors are intended to facilitate the security screening process provide separate entry and egress pathways at the main entrance.

**New Central Utility Plant and Cooling Towers**

The project includes a new Central Utility Plant (CUP) that will be located between the Quadrangle Building and AIB. The CUP will allow the disconnection of General Services Administration (GSA) steam and chilled water services which, according to SI, will result in significant cost savings and reduction in carbon footprint. Overall, staff recommends the Commission express support for systems improvements that will decrease energy consumption, increase efficiency, and reduce the carbon footprint. Further details about how the carbon footprint will
be reduced would be beneficial. As such, staff recommends the Commission request the applicant provide information about how the proposed CUP will achieve sustainability goals.

As initially proposed in the South Mall Campus Master Plan, the CUP will initially serve the Castle and AIB but will be designed to serve all buildings within the South Mall Campus. The CUP will have two levels below grade. A third level is identified as a potential cistern for stormwater management purposes. The proposed floor levels of the CUP will match the existing Quadrangle floor levels, and the CUP will not extend deeper than the Quadrangle. As the project is still in development, staff recommends the Commission support a comprehensive approach to stormwater management, and request the applicant coordinate with the District Department of Energy and Environment in development of the stormwater management strategy.

New cooling towers are required as part of the CUP facilities. These towers serve to exchange heat with the outside environment and are generally open to the sky. The applicant is currently exploring the size and footprint of the proposed towers, which could require an area as large as 166 feet long by 50 feet deep. Given their size and existing site constraints of the South Mall Campus, the design team explored several options, including located the towers between AIB and the Hirshhorn Museum building. This option would result in impacts to the Ripley Garden, and likely the AIB and Hirshhorn. It would also disrupt pedestrian and bicycle access through the space. The location could possibly conflict the Master Plan’s goal of providing future east-west connectivity between AIB and the Hirshhorn Museum.

As a result, the applicant has identified a preferred location at the site of the National Museum of Natural History. The cooling towers are proposed be located on the southwest corner of the property, mirroring existing cooling towers which are found on the southeast corner. The towers are proposed to be screened in a way that matches the existing cooling towers. Today, the site is a parking area which is located below the adjacent elevation of the National Mall. Landscaping screens the area from view.

The potential visual impacts of the proposed cooling towers remain to be determined. As such, staff recommends the Commission request the applicant provide the following information for future review:

- Clarify whether sufficient soil depth will be provided above the CUP to accommodate trees and other plantings.
- Information about any vertical elements, such as vents, egress stairs or other features required by the CUP that would be visible above-grade and which may impact the garden design.
- Views and renderings of the proposed cooling towers as seen from locations on the National Mall and around the National Museum of Natural History, to better understand the potential visual impacts of the installation.

The new cooling towers will need to be connected to the South Mall Campus CUP. Two options are currently being studied, including reuse of the existing tunnel that crosses the National Mall or a direct boring below-grade. At this time, the applicant has indicated that a new direct connection
may be preferrable as the existing tunnel may not have enough space for both infrastructure and maintenance access. Given the potential for impacts to below-grade infrastructure with NPS jurisdiction, as well as archaeological resources, staff recommends the Commission request the applicant coordinate with the National Park Service regarding any below-grade construction necessary to connect the proposed cooling towers beneath the National Mall to the South Mall Campus.

Landscape, Perimeter Security and Accessibility

The landscape of the South Mall campus is one that has evolved dramatically since it was first established in the 19th Century. Although the Castle and AIB are both 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 their respective buildings. For the National Mall Historic District, the gardens are documented as part of the landscape setting of the buildings and objects, they are not counted as contributing resources. Anticipated changes to the landscape to support the project are intended to be minimal with an emphasis on rehabilitation of the site, while accommodating new program elements and related improvements. These components include those previously described, such as excavation for underground features, new areaway, building egress, and accessibility improvements.

The applicant intends to replace the existing vegetation in the spirit of the existing character while accommodating new below-grade improvements. Tree plantings adjacent to the Castle will be coordinated for improved façade maintenance. SI has also indicated they will coordinate with NPS on the eventual siting of the Downing Urn. As the landscape design further develops, staff suggest the Commission recommend prior to the next review the applicant:

- Evaluate opportunities to save, store and replant trees and other plantings after construction has been completed.
- Ensure the gardens will continue to accommodate a variety of native plants as well as those that will help support pollinator health.
- Ensure the garden design will prevent net loss of tree canopy in accordance with the policies set forth in the Comprehensive Plan for the National Capital.

Perimeter Security

Another project component includes the addition of perimeter security to areas around the Castle and AIB. Perimeter security has been contemplated for the campus for many years, going back to the Mall-Wide Concept Design developed in 2004. The South Mall Campus Master Plan also indicated the need for such improvements. The need focused on protecting gathering areas where substantial number of visitors may gather, particularly near entrances. The project goal is to enhance perimeter security along Jefferson Drive and Independence Avenue within the RoHC project area. The project uses the contextual and unified approach recommended by the 2004 Mall-Wide Concept Design. A variety of perimeter security measures will be integrated within the site’s existing features and concealed to the greatest extent possible.
Staff notes the landscape of the South Mall Campus has evolved over time, and while the landscapes and settings of the Castle and AIB are not identified as contributing resources, they do impact the visitor perception of the buildings, particularly as viewed from the National Mall. The campus should remain as visually open and inviting as possible for visitors. This is particularly important at the entrance of the Castle. Further, unlike many other museums along the National Mall, the Castle and AIB do not have large setbacks or building yards. As such, staff recommends the Commission find the building placement and proximity of adjacent streets creates spatial constraints for the placement of streetscape and perimeter security elements, requiring careful consideration of the impacts to pedestrian access, views of the historic landmarks, and the perceived openness of the campus.

Additional information will be necessary to evaluate the proposal, including a better understanding of the need as well as the current design. Therefore, staff recommends the Commission request the applicant provide as part of the next submission:

- An assessment for NCPC staff of the threats or risks to be addressed by the proposed perimeter security, particularly for the area along Jefferson Drive in front of the Castle and AIB, to better understand the needs.
- A plan and additional information regarding the perimeter security approach along the length of Independence Avenue, to include AIB, the Quadrangle and Freer Gallery which exist as a continuous block.
- Views and renderings of proposed perimeter security and accessibility improvements, particularly along Jefferson Drive in front of the Castle and AIB, and along Independence Avenue in front of AIB, to understand the potential visual impacts of any proposed improvements, given the context and setting of these NHLs.

**Accessibility Improvements**

Finally, the project includes improvements to enhance accessibility at the Castle and AIB with the goal of providing universal access to the buildings. The applicant seeks to retain the historic fabric to the extent practicable and integrate accessibility improvements into the landscape and buildings in a sensitive manner. Changes are proposed at the north and south entrance of the Castle, as well as the north and south entrances of AIB. The south entrance improvements at AIB would include new ramps that would be placed in the sidewalk zone.

Overall, staff understands the need to provide universal accessibility to the Castle and AIB. This should be accomplished in balance with historic preservation impacts and in consultation with the relevant agencies. As such, staff recommends the Commission request the applicant coordinate with the National Park Service and District Department of Transportation regarding perimeter security and accessibility improvements proposed along Jefferson Drive and Independence Avenue, respectively. In particular, the south side of AIB warrants further analysis and coordination given the building is located close to Independence Avenue, and the sidewalk width is limited to 17.2 feet. The proposed ramps would further limit the sidewalk width. This, in conjunction with the proposed perimeter security may impact pedestrian flow.
Finally, staff notes that NCPC has identified Independence Avenue as an important corridor and gateway, and will work with the District Department of Transportation and other stakeholders when funding becomes available to undertake a transportation study to improve mobility, curbside use, streetscape, pedestrian use and safety, and connectivity. The streetscape and perimeter security for this particular aspect of the RoHC project may need to respond to the recommendations in the transportation study, or at the very least, consider the larger context of the Avenue if the transportation study is not complete before the project’s implementation.

CONFORMANCE TO EXISTING PLANS, POLICIES AND RELATED GUIDANCE

Comprehensive Plan for the National Capital

Staff reviewed policies from the Urban Design, Historic Preservation, Parks and Open Space, and Visitors & Commemoration Elements. The analysis and recommendations described above are intended to support consistency with the Comprehensive Plan.

National Historic Preservation Act

Both the Smithsonian Institution and NCPC have independent responsibilities to comply with Section 106 of the National Historic Preservation Act (NHPA). To fulfill the Section 106 requirements for the South Mall Master Plan, a Programmatic Agreement (PA) was prepared in 2018. Both SI and NCPC are signatories to the PA.

The Smithsonian Institution has initiated the Section 106 process for this project pursuant to the PA. Three consulting parties have been held to-date, on January 13, 2021 and May 26, 2021 and May 27, 2021. The Smithsonian has also engaged with the NCPC, CFA, DC SHPO, NPS, and the Advisory Council on Historic Preservation as required by the South Mall Master Plan Programmatic Agreement. SI also maintains a project website:

https://www.sifacilities.si.edu/historic-core

National Environmental Policy Act

NCPC is the lead agency for compliance with the National Environmental Policy Act (NEPA). The project components of the RoHC were identified in the Environmental Impact Statement (EIS) prepared as part of the South Mall Master Plan. At concept review, no NEPA is required, however staff will continue to evaluate the proposal to determine if any supplemental analysis is necessary.
CONSULTATION

Coordinating Committee

The Coordinating Committee reviewed the project at their June 9, 2021 meeting. Without objection, the Committee forwarded the proposed comments on concept plans to the Commission with the statement that the proposal has been coordinated with all participating agencies. Participating agencies included the National Park Service, General Services Administration, Washington Metropolitan Area Transit Authority, the District of Columbia State Historic Preservation Officer (DCSHPO), the District Department of Transportation, and the District Department of Energy and the Environment (DOEE). The DCSHPO stated they are coordinating on the project subject to the terms of the 2018 Programmatic Agreement prepared pursuant to Section 106 of the NHPA for the South Mall Campus Master Plan, of which RoHC is a part. The DOEE encouraged the applicant to contact them to initiate reviews and confirmed with NCPC that the applicant intends to pursue this project in full, not in phases.

U.S. Commission of Fine Arts

The U.S. Commission of Fine Arts approved the concept design with comments at their June 17, 2021 meeting. A copy of the letter is attached.

ONLINE REFERENCE

The following supporting documents for this project are available online at www.ncpc.gov:

- Submission Package
- Project Summary

POWERPOINT (ATTACHED)
Revitalization of the Historic Core (ROHC)
Smithsonian Castle, Arts and Industries Building, and
New Central Utility Plant

1000 Jefferson Drive, SW, Washington DC

Approval of Comments on Concept Plans

Smithsonian Institution
Site Location
Existing Conditions
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 Site and Boundaries

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
Comparison to South Mall Plan

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.
Major Project Components

- 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

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 – Increase Public Access

- 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.
Smithsonian Institution Building (SIB or Castle)
SIB Preservation Zones

PRESERVATION ZONE DIAGRAMS

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.
SIB Future Program

**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

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**GENERAL PROGRAM GOALS**

- Attic
- Fourth Floor
- Third Floor
- Second Floor
- First Floor
- Basement

Smithsonian Institution
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.
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**

**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).
Masonry and Building Envelope

**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
Roofing Repair/Replacement

**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
Window Replacement

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
- 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.
Mechanical Systems – Intake/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.
New 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.
New East Range 4th Floor Corridor

Plan of Existing Condition

Plan of Proposed Condition

- STAIR 1 (EXISTING)
- STAIR 2 (EXISTING)
- EXISTING MECHANICAL ROOF MONITOR

- STAIR 3 (EXISTING)
- EXISTING MECHANICAL ROOF MONITOR
- STAIR 2 (EXISTING)

- OFFICES 2445 SF

- EXTENT OF EXISTING ROOF MONITOR
- DEMOLISHED ROOF ELEMENTS
New East Range 4th Floor Corridor

Traditional Massing Connector Study

Modern Massing Connector Study
New 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

View of Existing Condition from Northeast at Grade

View of Proposed Condition from Northeast at Grade

Smithsonian Institution
SIB 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.
Proposed Areaways

AREWAYS - PROPOSED

A NEW WINDOWS
B EXISTING EGRESS DOOR (5)
C 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'
Proposed Areaway Options

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.
## New Basement Egress Doors

<table>
<thead>
<tr>
<th>Design Objectives</th>
<th>Background</th>
<th>Past Studies</th>
<th>Concept Design</th>
</tr>
</thead>
</table>
| • 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 | • 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. | • Previous studies did not specifically address this issue. | • 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. |
New Basement Egress Doors

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.
SIB Seismic 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.
Seismic Base Isolation – Design Issues

SEISMIC BASE ISOLATION

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.
SIB Underground Construction

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.
SIB Underground Construction

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
SIB Underground Construction

**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
SIB Basement – Design Intent

**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
SIB Great Hall – Design Intent

**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
SIB Design Intent - 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
ARTS AND INDUSTRIES BUILDING
AIB History
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.
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.
AIB Program

EXISTING VS. FUTURE

THIRD FLOOR: 6,200 USF
SECOND FLOOR: 50,800 USF
FIRST FLOOR: 92,000 USF
BASEMENT: 83,000 USF

EXISTING USABLE SPACE
FUTURE USABLE SPACE
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.
AIB Climate Control Diagrams

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
AIB Mechanical 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.
AIB Mechanical Louvers

**MECHANICAL SYSTEMS – LOUVERS**
**PROPOSED OUTSIDE AIR INTAKE/EXHAUST**

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**Project Scope**

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

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.
AIB - New Egress Doors

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
AIB – New Egress Door

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.
AIB – 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
AIB – New Exit Doors

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.
AIB – New Exit Doors

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
AIB – New Exit Doors

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
AIB – New Exit Doors
AIB – Design Intent

NORTH HALL

Rendering of Potential Space Use

Existing Condition

Historical Context (1903)

Existing First Floor

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.
AIB – Design Intent

**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.
AIB – Design Intent

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.
AIB – Design Intent

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.
UNDERGROUND CONSTRUCTION
Overview of Underground Adjacencies
Underground 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 – B2
Underground Construction – B3

UNDERGROUND CONSTRUCTION - OVERALL B3 PLAN

CISTERN

RELOCATED TO B2
• The new SIB Extension/Connector Road will be located between the SIB and the Quad Building.
• Floor Levels will match the Existing Quad Building.
Underground Construction – Site Section through CUP

- 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 Overview

**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 Overview – Size/Extents Analysis

**COOLING TOWERS STRATEGIES FOR REDUCING COOLING TOWER LOADS**

![Diagram of cooling towers with size and extent analysis](image)

<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 SS Heat Reject. (5000 - 5000)</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 SS 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 SS, Ice, and 250 Wells (5000 - 2000)</td>
<td>83</td>
<td>50</td>
<td>4150</td>
<td>50%</td>
</tr>
<tr>
<td>Towers with SS, 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>
Cooling Towers – Siting Evaluation

Design Objectives

- Minimize the visual impact of the cooling towers.
- Multiple locations within the South Mall Campus were evaluated.
Cooling Towers – Siting Evaluation

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.
Cooling Towers – Proposed Location (NMNH)

National Museum of Natural History Site Showing Potential Cooling Tower Location

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.

Smithsonian Institution
Cooling Towers – Connection Options

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.
GARDENS AND GROUNDS
Gardens Background

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.
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)
Landscape – Existing Conditions
Landscape – Areas of Potential Disturbance
Landscape – Goals and Drivers
Proposed Perimeter Security

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

RoHC Perimeter Security Concept
Perimeter Security - History

2004 Perimeter Security Concept Study
Perimeter Security – Jefferson Drive and Independence Ave
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.
SIB North Entrance Improvements

ACCESSIBILITY IMPROVEMENTS - SIB NORTH ENTRANCE EXISTING CONDITIONS
SIB North Entrance – Access Sequence
SIB North Entrance – Proposed Concept

ACCESSIBILITY IMPROVEMENTS - SIB NORTH ENTRANCE PROPOSED CONCEPT

ELEVATION

PLAN

CONCRETE PATH <5%
AREA WALK, TYP
SANDSTONE WALL
STONE LANDING

CONCRETE PATH <5%
AREA WALK, TYP
SANDSTONE WALL
STONE LANDING

APRON, TYP
BOLLARDS, TYP
CONCRETE RAMP <5%
STONE LANDING

NORTH DOOR
FFE 10.63 (3.25)

PLANTING AREA
SECURITY FENCE, TYP
HARDENED BENCHES

UNR
9.1

CONCRETE PATH <5%
HARDENED VISITOR CENTER SIGN
CONCRETE SIDEWALK
HARDENED LIGHT POLE, TYP

HARDENED LIGHT POLE, TYP
SECURITY FENCE, TYP
HARDENED BENCHES, TYP

INDEPENDENCE AVENUE

SCALE IN FEET
0 10 20 30

SCALE IN METERS
0 5 10 15 20 25 30
Haupt Garden Rehabilitation

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
Haupt Garden Vegetation

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
Dear Mr. Gover:

In its public meeting of 17 June conducted by videoconference, the Commission of Fine Arts reviewed a concept design submission from the Smithsonian Institution for the renovation of and additions to the properties in its historic core—the Smithsonian Institution Building (the Castle) and the Arts and Industries Building, located at 1000 and 900 Jefferson Drive, SW—and associated underground and site improvements. Expressing appreciation for the thorough presentation of this comprehensive renovation project, the Commission approved the concept submission with the following comments.

The Commission members acknowledged the need for this substantial undertaking proceeding from the South Mall Campus Master Plan of 2015 in order to bring this complex of historic buildings and landscapes to contemporary standards of access, structural and seismic safety, environmental performance, and visitor experience. They commented that the interventions, particularly on the exterior, should not detract from the existing character of the buildings, both of which are National Historic Landmarks. For the Castle, they raised concerns about the design of rooftop mechanical structures in the center part of the building, and they requested more detail about the design and visual impact of these proposed additions. While they acknowledged the necessity of providing a second means of egress from the upper level of the East Wing, they strongly questioned the design of the large connecting monitor structure on the roof of the East Range as proposed, which they said may have too great a visual impact on the building overall; they noted that the glazed connection would not be transparent as presented but would create an intrusion on the composition of three lancet windows in the east-facing gable of the Main Hall. Therefore, they suggested further study to minimize the size of this connector, possibly cladding it entirely in copper, or to find a location within the existing building to accommodate the necessary egress. They endorsed the concept of enlarging the areaways to allow light into a renovated basement level intended for public use, and they requested further consideration of how the new areaway walls would be finished, both in the building yard and above the building’s new foundations.

Regarding the Arts and Industries Building, the Commission members expressed general support for the proposal to make the four main entrances accessible and to insert additional egress doors in the existing building envelope; however, they noted that the design of the ramps and landing at the south side of the building facing Independence Avenue would create an undesirably constrained condition in the public sidewalk, and they recommended refining the design to limit the impact of the ramps on public space while still creating a welcoming entrance. They suggested that the composition of other elements, such as streetlights and trees, may help to make an appropriate frame for this entrance. For the landscape generally, they requested further study of the proposed redesign around both buildings, particularly regarding the integration of egress paths, access ramps, perimeter security, and areaways as they contribute to the comprehensive
setting for the buildings, and they also recommended further study of the design for reconstructing the fountain garden area within the Enid Haupt Garden. Regarding the proposal to locate the project’s cooling tower plant at the National Museum of Natural History across the Mall, they requested more information about the design which is necessary for conceptual approval, recommending that this environmental strategy needs to be considered more carefully in the context of sustainable planning for the Mall.

The Commission looks forward to further review of this project in a revised concept submission that addresses these concerns. Please consult with the staff which, as always, is available to assist you.

Sincerely,

[Signature]

Thomas E. Luebke, FAIA
Secretary

Kevin Gover
Under Secretary for Museums and Culture
Smithsonian Institution
P.O. Box 37012
Washington, DC  20013-7012

cc:  Matt Chalifoux, EYP/Loring
     Faye Harwell, Rhodeside & Harwell