Smithsonian Institution
National Air and Space Museum

Construct Integrated Bezos Learning Center

United States Commission of Fine Arts:

Revised Concept Phase Project Report Submission

November 7th, 2024

Smithsonian Institution | Perkins&Will

Contents

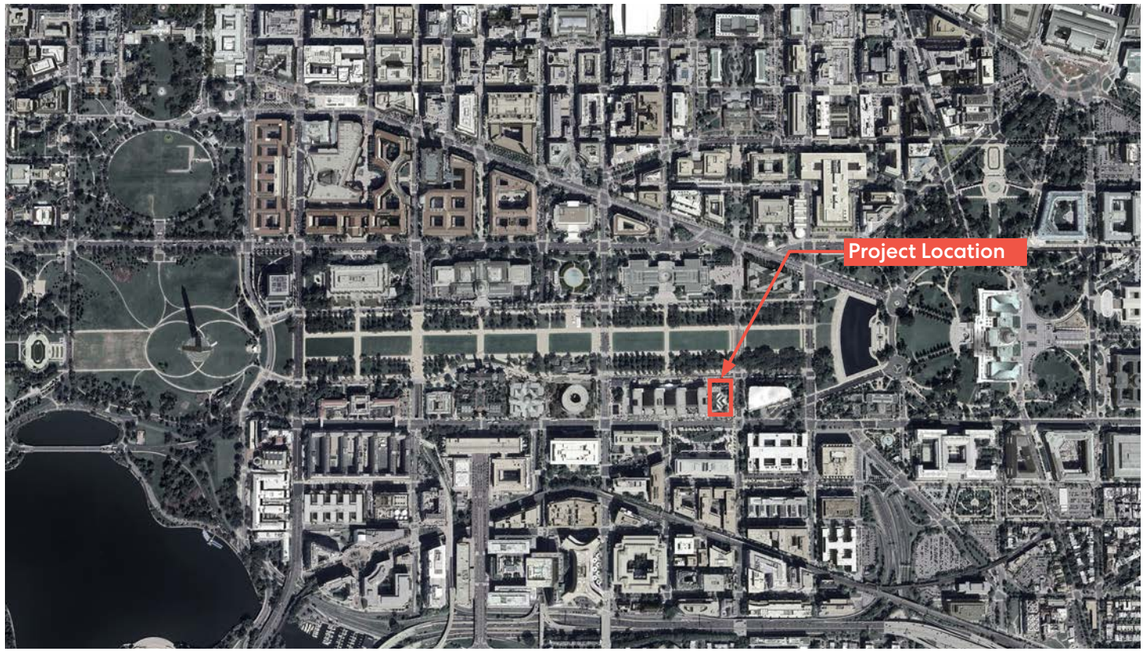
Project Overview

Project Data

Project Name

National Air and Space Museum - National Mall Building (NASM-NMB)
Bezos Learning Center

Vicinity Map



Agency

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Smithsonian Institution (SI)
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Project Location and Site Area

The Bezos Learning Center (BLC) site is a 81,611 SF (2 acre) parcel that is part of the National Air and Space Museum. The site is bounded by Jefferson Drive SW to the north, Independence Avenue on the south, 4th Street SW on the east, and the existing NASM-NMB Building on the west. The immediate site context includes the National Mall, the National Museum of the American Indian, and the Dwight D. Eisenhower Memorial.

Proposed Development

The total area of the new BLC main building and observatory is approximately 58,243 SF (above grade only) and the total site coverage is 23.7%. The Smithsonian's preferred design and alternatives that are being considered are:

- Hardscape Design
- South Elevation Refinements
- Physical Connection to NASM-NMB
- Material Refinements

See Appendix for illustrations of alternatives considered. Smithsonian's "preferred" design option is included in the body of the report. The appendix included both preferred design and alternate design for comparison.

Master Plan Alignment

The BLC fulfills the requirements of the 2013 NASM Master Plan which called for a replacement to the existing restaurant to include a new restaurant, education center, permanent observatory structure and renovations to the basement level.

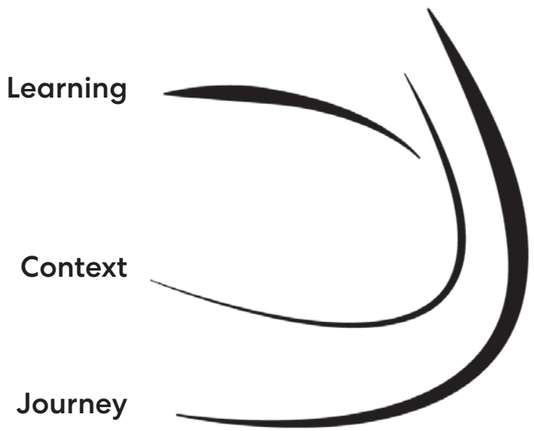
Assigned Employment

SI anticipates relocating approximately 12 employees within the same complex from NASM-NMB to the BLC and this would not be expected to change over a 20 year period.

Construction Schedule

Construction start date: late 2025
Construction finish: mid 2027
Opening: late 2027

Mission and Goals



The Bezos Learning Center (BLC) is the next major evolution of the National Air and Space Museum (NASM) in support of its mission. The BLC will be a pan-institutional entity and will fill a critical need to inspire today's learners - particularly those in under-resourced communities - to pursue STEAM (Science, Technology, Engineering, Art, and Math) careers and become the engineers, astronomers, scientists, and visionaries of our future.

In 2021, the Smithsonian Institution (SI) announced a $200M philanthropic gift from Jeff Bezos in support of exhibition construction within the revitalization of NASM-NMB and the construction and operation of the BLC.

The architectural and engineering (A/E) team of Perkins&Will began work on the design of the BLC on June 1, 2023, after selection by SI through a competition process. The A/E team has engaged with a core team from SI on a bi-weekly basis and conducted discipline-specific workshops and meetings. This valuable input, coupled with feedback from the Commission of Fine Arts (CFA), the National Capital Planning Commission (NCPC), the District of Columbia State Historic Preservation Office (DC SHPO), and the Section 106 Consulting Parties, is reflected in this concept design.

The overarching design approach for the BLC is comprised of three tenets:

Learning: Creating spaces for experiential learning and traditional instruction.

Context: The physical context on the National Mall and connection to NASM requires a deep understanding and sensitivity to our Nation's shared place of learning, remembrance and inspiration.

Journey: A journey of discovery through project-based learning and exposure to the stories in NASM will spark curiosity and inspire further STEAM studies.

The following chapters of the NCPC Preliminary Review outline how each tenet is addressed at this stage of the project's design.

Description of Buildings and Project Scope

Bezos Learning Center

Phoebe Waterman Haas Public Observatory and Astronomy Park

The two projects noted above require an integrated design approach for cost effectiveness and timing efficiency. The BLC is to be located above and adjacent to the existing NASM loading dock in the basement level. The Phoebe Haas Public Observatory and Astronomy Park needs to be integrated with the surrounding East Terrace to create a comprehensive BLC site and landscape design that is conceptually aligned with the BLC architecture, yet respectful of the NASM Revitalization landscape, and in accordance with the design framework in the NASM East End Programmatic Agreement.

Concept Design

This Concept Design establishes the architectural “parti”, which is the inspiration for the design, organization of the program components, and response to context. The conceptual parti is based on two design priorities, the spiral galaxy as inspiration and the Learning Courtyard. The landscape and building plans, architectural massing and expression have evolved in the recent design phase to reinforce the architectural ‘parti’.

Project Scope

The comprehensive project scope includes:

- The Bezos Learning Center on Levels 2 and 3.
- A new restaurant on Level 1 (terrace level), readily accessible to museum visitors.
- A new east vestibule directly connected to NASM on Level 1 and a new south entrance for school groups.
- Upper terrace to support BLC programming.
- A new Phoebe Waterman Haas Astronomy Park at the eastern portion of the site (the east terrace) and the permanent installation of the Phoebe Waterman Haas Public Observatory.
- Aspects of the East Terrace from the NASM Revitalization project which were deferred when the BLC project was initiated, such as site wall cladding and landscape.

Through the course of Concept Design, the following program elements were adjusted:

- The direct connection in the form of a bridge between BLC Level 2 and NASM Level 2 Concourse was eliminated to control public access to the BLC.
- Two, instead of one, security vestibules will be required: one dedicated to the BLC participants approaching from Jefferson Drive and one dedicated to scheduled school bus groups approaching from Independence Avenue. The general public visiting NASM will continue to enter through the existing main north and south NASM entries.
- The separation of BLC circulation from NASM circulation to the greatest extent possible is desirable as is entry to the museum restaurant from the main museum building.

Outreach and Coordination

Public Engagement

The SI, DC SHPO, and the NCPC executed a Programmatic Agreement in March 2022, which oversees the demolition of the restaurant addition and current Section 106 consultation for the BLC. The agreement stipulated a design framework that was considered in the development of the concept design. Additionally, in their role as lead federal agency for Smithsonian projects, NCPC identified the need for a National Environmental Policy Act (NEPA) process with inclusion of an environmental assessment .

NASM East End Programmatic Agreement
Bezos Learning Center Program

- Building Parameters: Two levels above a ground floor restaurant, connected to the NASM at the east end.
- Observatory Program: Consultation to establish a permanent location for the Phoebe Waterman Haas Public Observatory.
- Astronomy Park: Consultation to site the outdoor Phoebe Waterman Haas Astronomy Park on the east terrace.
- Comprehensive East End: Cohesive design of the BLC, Observatory, Astronomy Park with east terrace site features and a revitalized landscape design.

NASM East End Programmatic Agreement
Bezos Learning Center Design Framework

- Respect the formal setting of the National Mall and neighboring museums
- Respond to NASM's architecture and massing with an addition that maintains the form and integrity of the NASM and environment
- Consider the physical connection to the NASM and exterior materials
- Respect contributing vistas of the National Mall Historic District and the building line established by the Plan of the City of Washington

The A/E team with support from a core SI team has conducted six consulting parties meetings throughout the current design phase. Consulting parties meetings were held per Section 106's requirements for consultation process and procedures. The meetings introduced the Area of Potential Effects (APE) and identified the historic resources within the APE, as well as kept all Consulting Parties up to date on the project's design development. The comments generated from consultation are reflected in this preliminary phase design.

The Consulting Parties Meeting were held on the following dates:

1. Consulting Parties Meeting #1 - 08/09/2023
2. Consulting Parties Meeting #2 and NEPA Scoping - 11/01/2023
3. Consulting Parties Meeting #3 - 02/26/2024
4. Consulting Parties Meeting #4 - 07/24/2024
5. Consulting Parties Meeting #4A - 09/20/2024
6. Consulting Parties Meeting #5 - 10/30/2024

Topics of discussion for the Consulting Parties and NEPA Scoping meetings generally consisted of the following:

- Project introduction
- Section 106 and NEPA Process
- Context of Genesis of Form and Space
- Exterior Design Evolution
- View Sheds
- Alternatives
- NASM history and Identification of Historic Resources
- Contributing features
- Project purpose and need
- Area for Potential Effects (APE)
- Exterior Materials

CFA Concept Plan Comments

Plan Comments and Responses

NCPC Concept Plan Comments

The following is a summary of comments from CFA's concept review from the April 18, 2024, Commission meeting. The comments are as noted below with the design team's responses reflected within this revised concet submission addressing each of them:

Comment: They supported the project team's preferred alternative of tapered fins with integrated lighting, which they said would best reinforce this concept, and they suggested further study of the fin system to avoid weather-related staining.

Response: Noted, the project team has included further detailing of the exterior system which helps reinforce the concept while grounding it within the historical context of NASM.

Comment: They also suggested further refinement of the condition of canopies, egress doors, and skylights where the addition adjoins the existing museum in order to maintain the clarity of the original building while avoiding awkward recesses at the ground level.

Response: Concur, the project team has furthered this devleopment on the South Entry and southwest corner massing to provide further clarity of the existing Museum and its East Facade.

Comment: They emphasized the importance of keeping the roof of the building as uncluttered as possible, praising the proposal to recess mechanical equipment into the floor below, and recommending that the skylight above the overlook terrace be kept to a low profile.

Response: Noted, the project team has maintained the cleaniness of the roof plane throughout this design phase, while furthering the clarity of its conceptual framework.

Comment: They also noted the importance of the proposed observatory as the one place on the site where visitors will actually be able to see outer space, connecting the experience of the individual with the vast scale of the museum's mission; they suggested that its design should be developed further to emphasize the small-scale, tactile qualities of its elements and to integrate it better into the landscape design.

Response: Noted, the project team has furthered the integration of the observatory within the landscape

Comment: For the design of the site, the Commission members endorsed the presented alternative that extends the spiraling formal concept outward from the architecture to the perimeter of the site; they recommended that the landscape be developed further to emphasize a sculptural quality beyond the graphic strength of the plan. They commended the landscape design's universal accessibility, particularly of the curving ramp on the north, which will provide an equitable approach to the new addition. However, they recommended treating this approach more powerfully than lining it with ornamental flowering trees, observing that the new pathway will intersect at the site perimeter with the strong double row of street trees along Jefferson Drive and should establish a comparably strong threshold into the museum landscape. For the central court, they advised the careful placement of enough trees and seating to provide seasonal shade and comfort.

Response: Noted, the project team has progressed the design of the Entry Ramp and Learning Courtyard to provide a more powerful approach and destination.

Project Information and Drawings

Design Inspiration

The galaxy that is home to our solar system, the Milky Way, was once thought to be the entire universe. Today, we know our galaxy is one of billions. As the universe continues to expand ever outward, the mysteries to be explored and solved by scientists, astronomers, and students is equally vast. The National Air and Space Museum (NASM) Bezos Learning Center (BLC) provides a profound opportunity to re-imagine STEAM learning in the service of these planetary puzzles. Students and teachers from inside the Capital Beltway and across the country will immerse themselves in a creative learning environment where discovery awaits.

The inspiration for the form of the BLC is a spiral galaxy, whose form reflects two-thirds of the known galaxies, including our own Milky Way. The building's architecture metaphorically places the individual student, educator, and visitor at the core of the galaxy, surrounded by educational experiences and paths of discovery that lead to infinite possibilities for their future in science, innovation, and leadership.

The central circulation spine of NASM, which takes visitors through the legacy of aviation and spaceflight, evolves into an energizing, spiral geometry within the BLC, creating a symbolic destination for the study of the universe. Flexible spaces support project-based, experiential learning for students within the BLC. The spiral trajectory takes shape in the Concourse - a panoramic, multi-story, circulation spine whose geometry extends out into the landscape to create the Learning Courtyard and Phoebe Waterman Haas Astronomy Park. From the Mall, visitors will see the Learning Courtyard framed by the Concourse rising skyward, recalling the form of the galaxy. The design of the exterior enclosure uses texture to create dramatic shadow patterns by day that reinforce the energy and movement within the BLC. At night, these openings will transform into streaks of subtle light, recalling shooting stars in the night sky and act as a beacon for space exploration and discovery.

NASM is one of our nation's greatest treasures. The BLC represents the next major evolution of the museum's mission, continuing the journey set in motion by the Wright brothers almost 120 years ago. Inspired by our Spiral Galaxy, the building design creates an experience for each individual student, educator, and visitor to unlock their potential in science, innovation, and leadership.

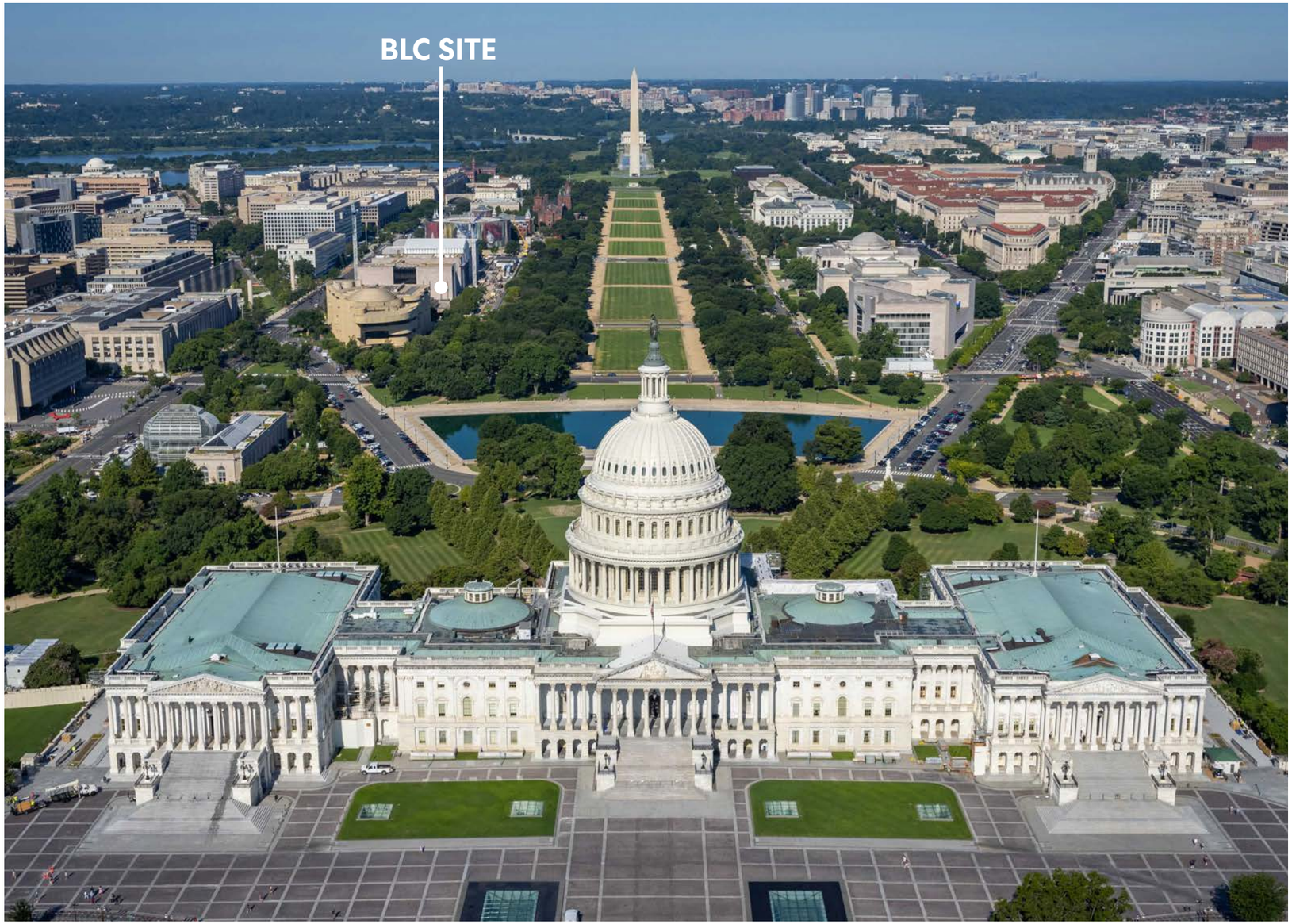
Site Context

NASM Site Location

Site Context

Aerial View of the National Mall looking west

Aerial view of the National Mall (2022) looking west from the US Capitol to the Washington Monument, illustrating the broadening vistas of Maryland Avenue and Pennsylvania Avenue, and the reciprocal views between the Washington Monument and the U.S. Capitol building.



Aerial image of National Mall
Image courtesy of the Architect of the Capitol

Site Context

Existing Site Photographs

NASM east terrace looking west, December 2023.
Photograph courtesy from SI

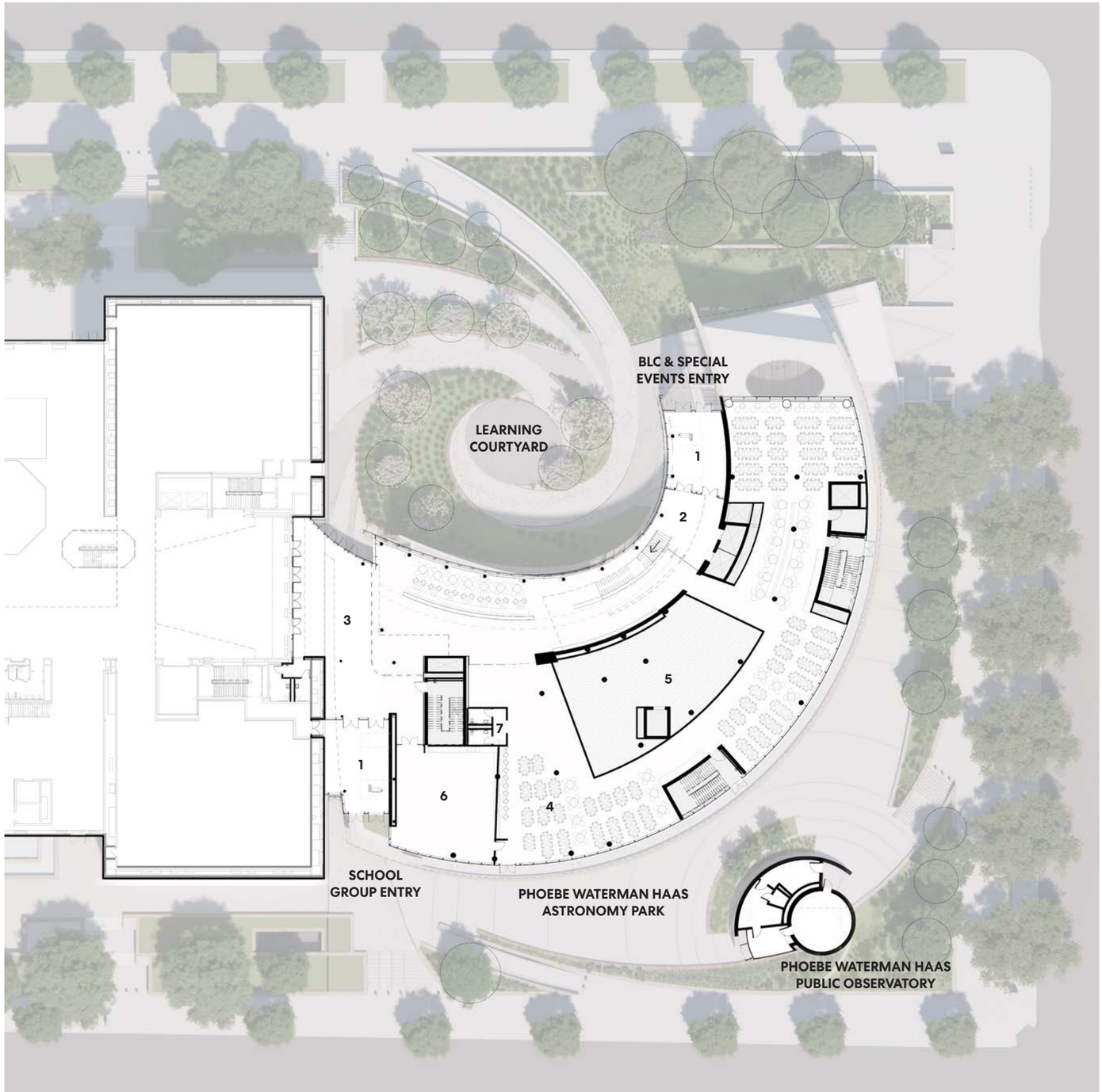
NASM east terrace looking east, March 2023.
Photograph courtesy from SI

Floor Plans

Level 1

Legend

1 Security / Screening
2 BLC Lobby
3 NASM Circulation
4 Dining
5 Servery
6 Multi-Purpose / School Group Seating Area
7 Inclusive Restrooms



Feet

0 25 50 100

North

See Landscape Plan for Paving and Planting Design.

Floor Plans

Level 2

Legend

1 BLC Program and Staff

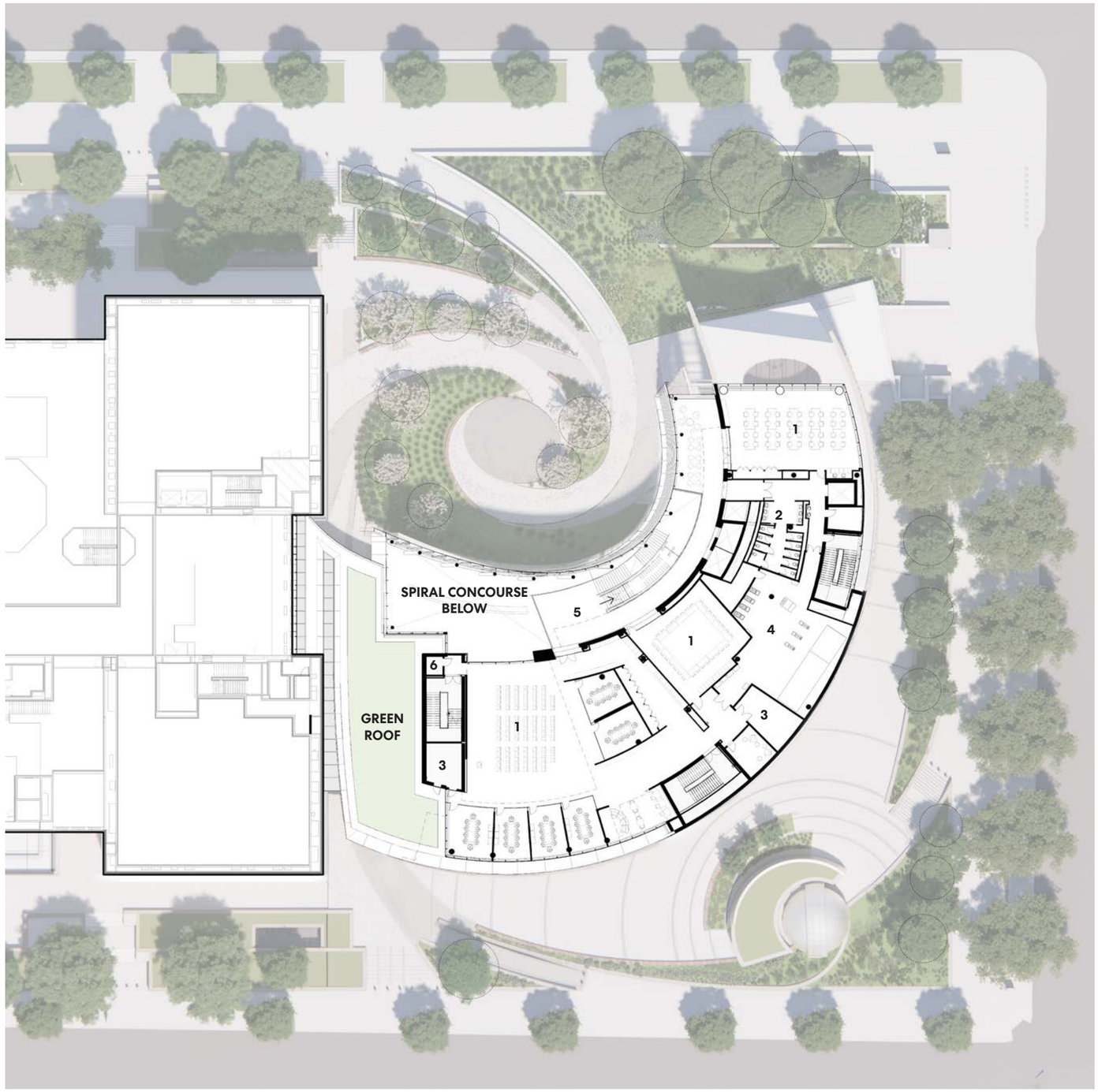
2 Inclusive Restrooms

3 Storage

4 MEP Space

5 Circulation

6 AV Closet



Feet

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North

See Landscape Plan for Paving and Planting Design.

Floor Plans

Level 3

Legend

1 Educational Programming & Special Events Space

2 BLC Staff Office and Support

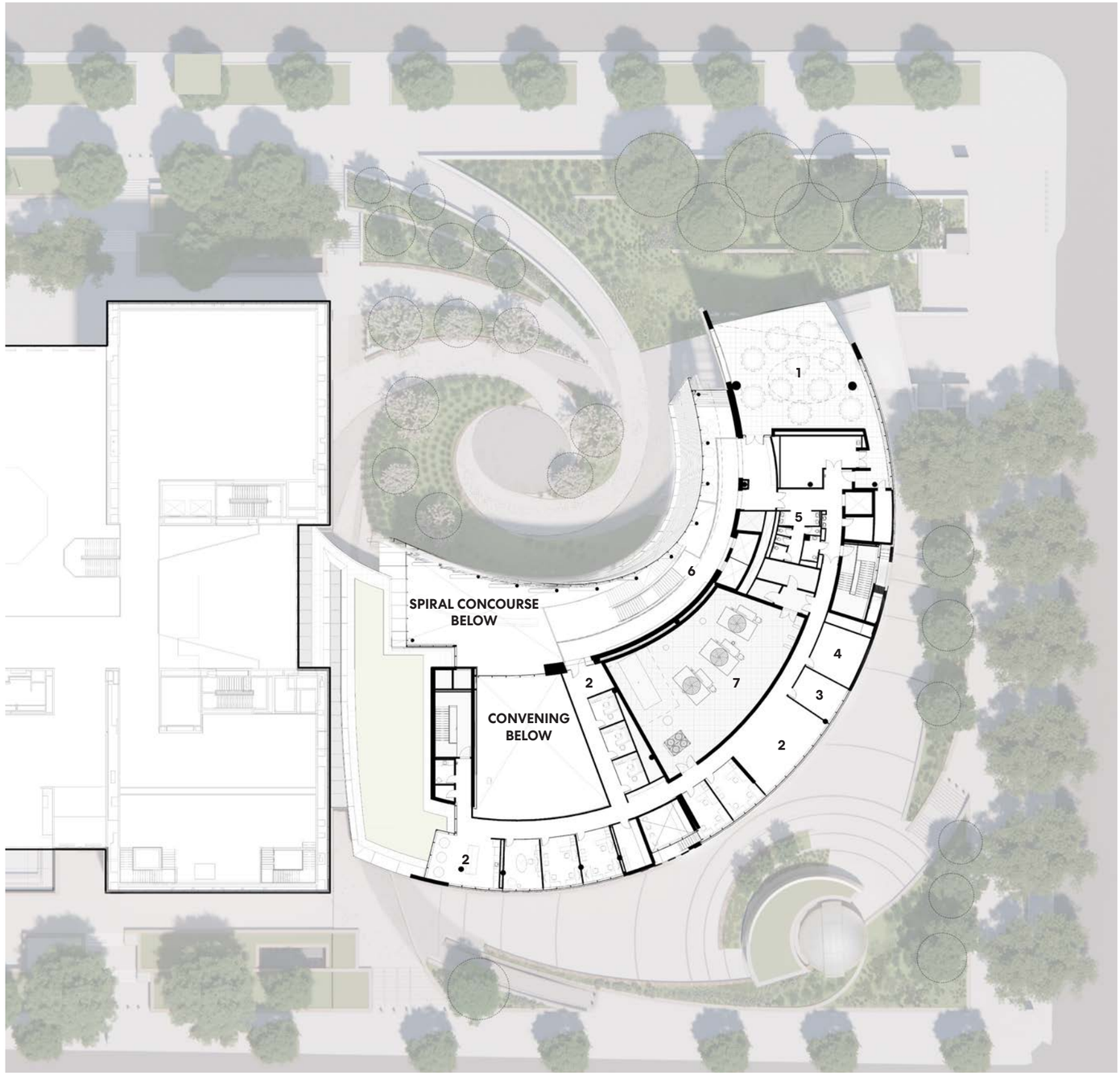
3 Storage

4 IT Room

5 Inclusive Restrooms

6 Circulation

7 MEP Well



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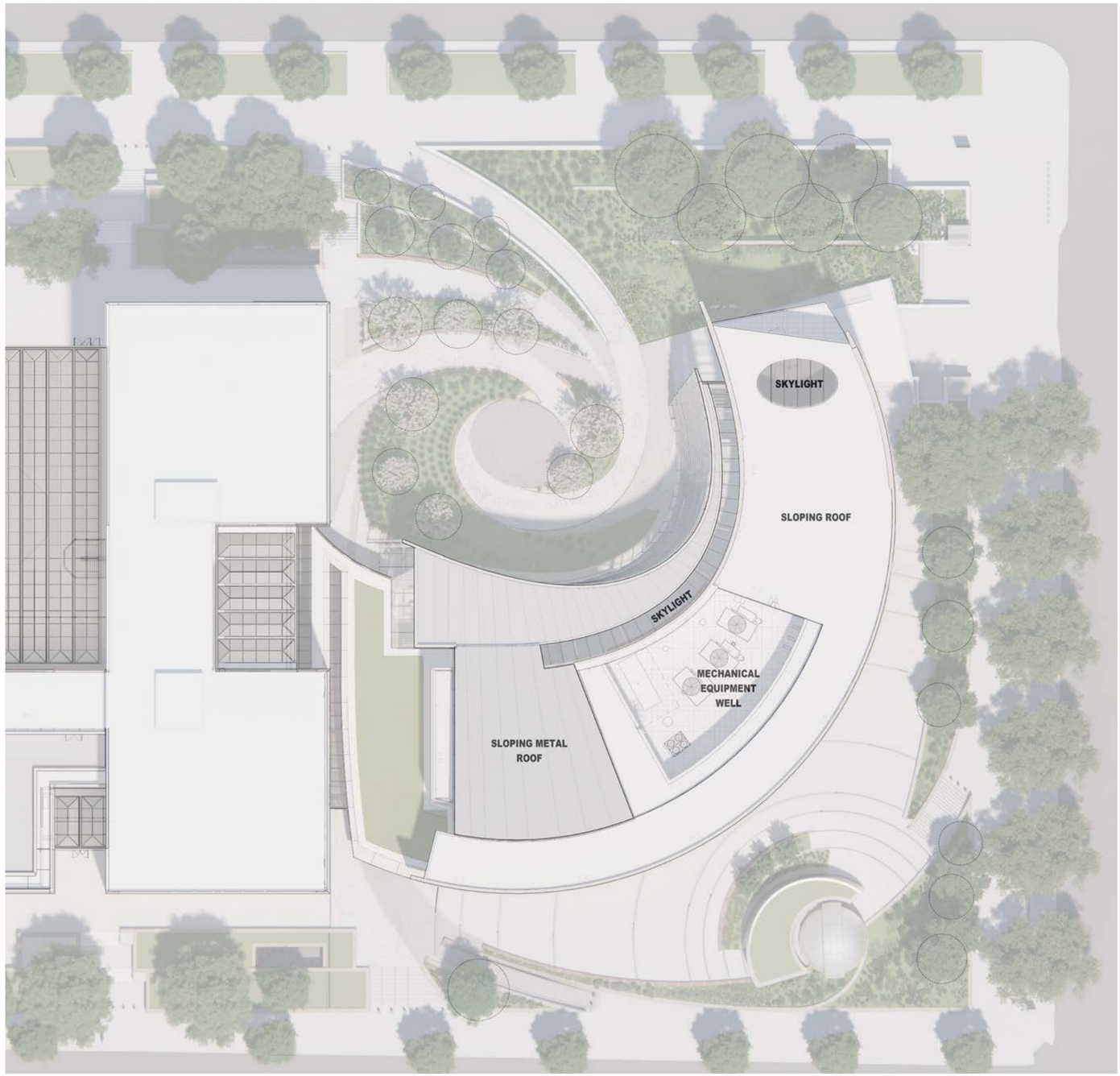
See Landscape Plan for Paving and Planting Design.

Roof Plan



Feet

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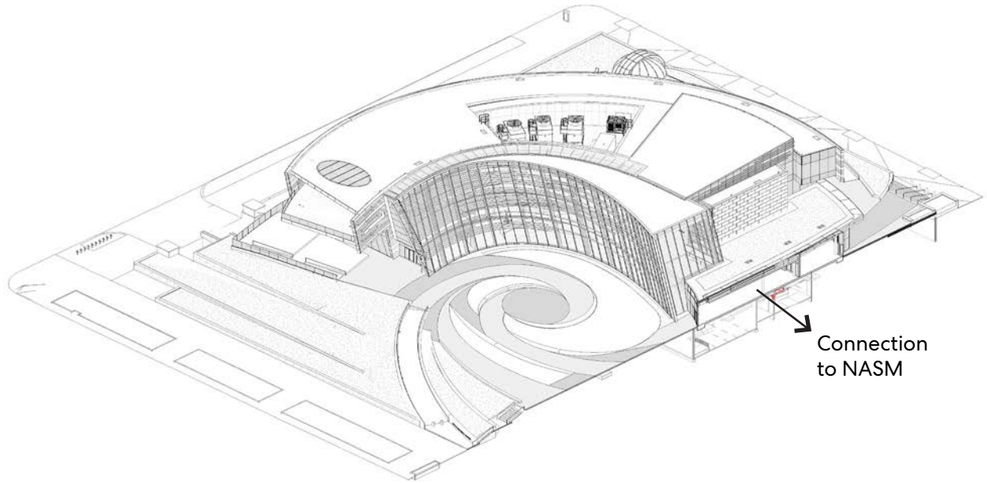
North

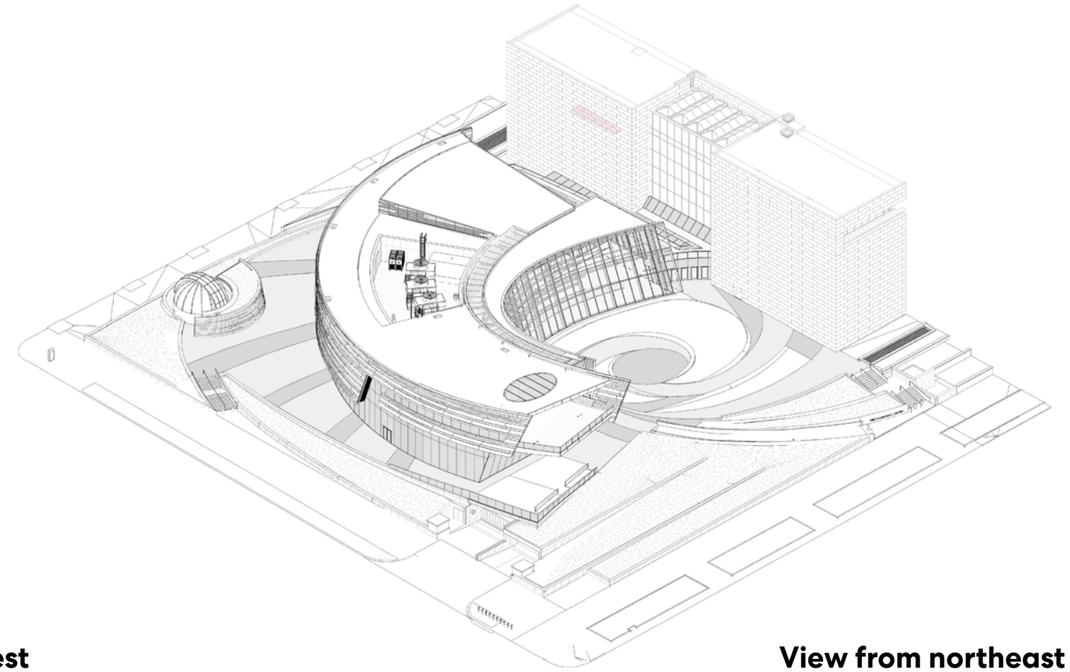
See Landscape Plan for Paving and Planting Design.

Axonometric Views

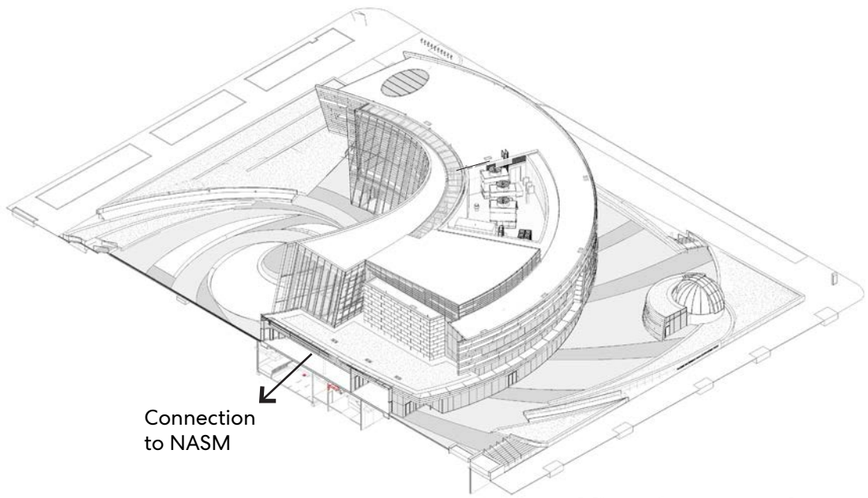
Exterior



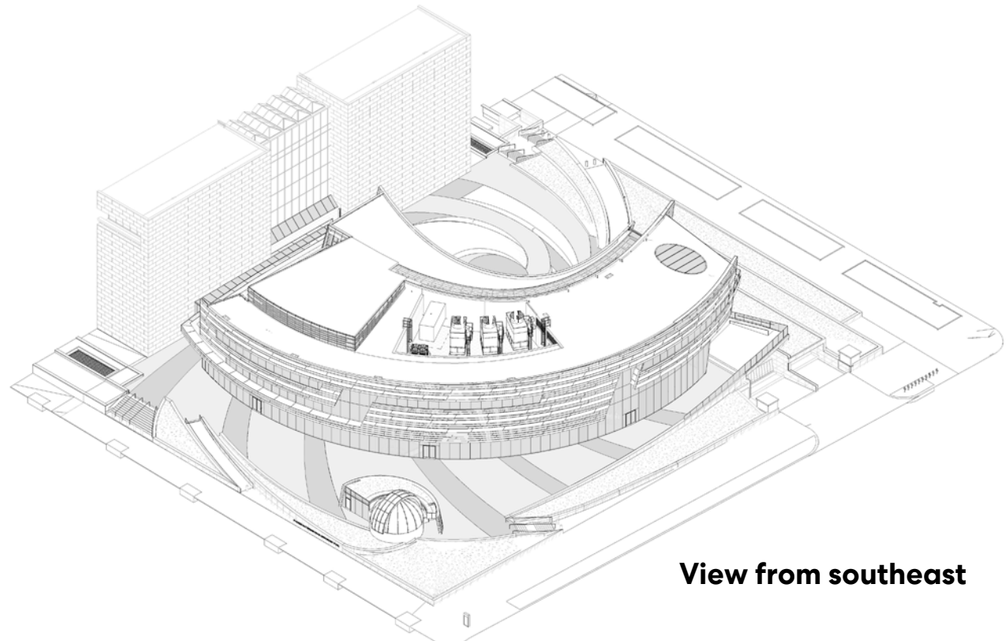
View from northwest



View from northeast



View from southwest

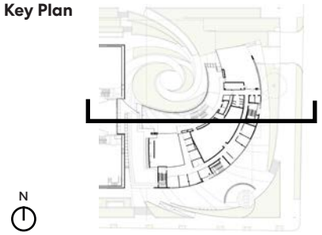


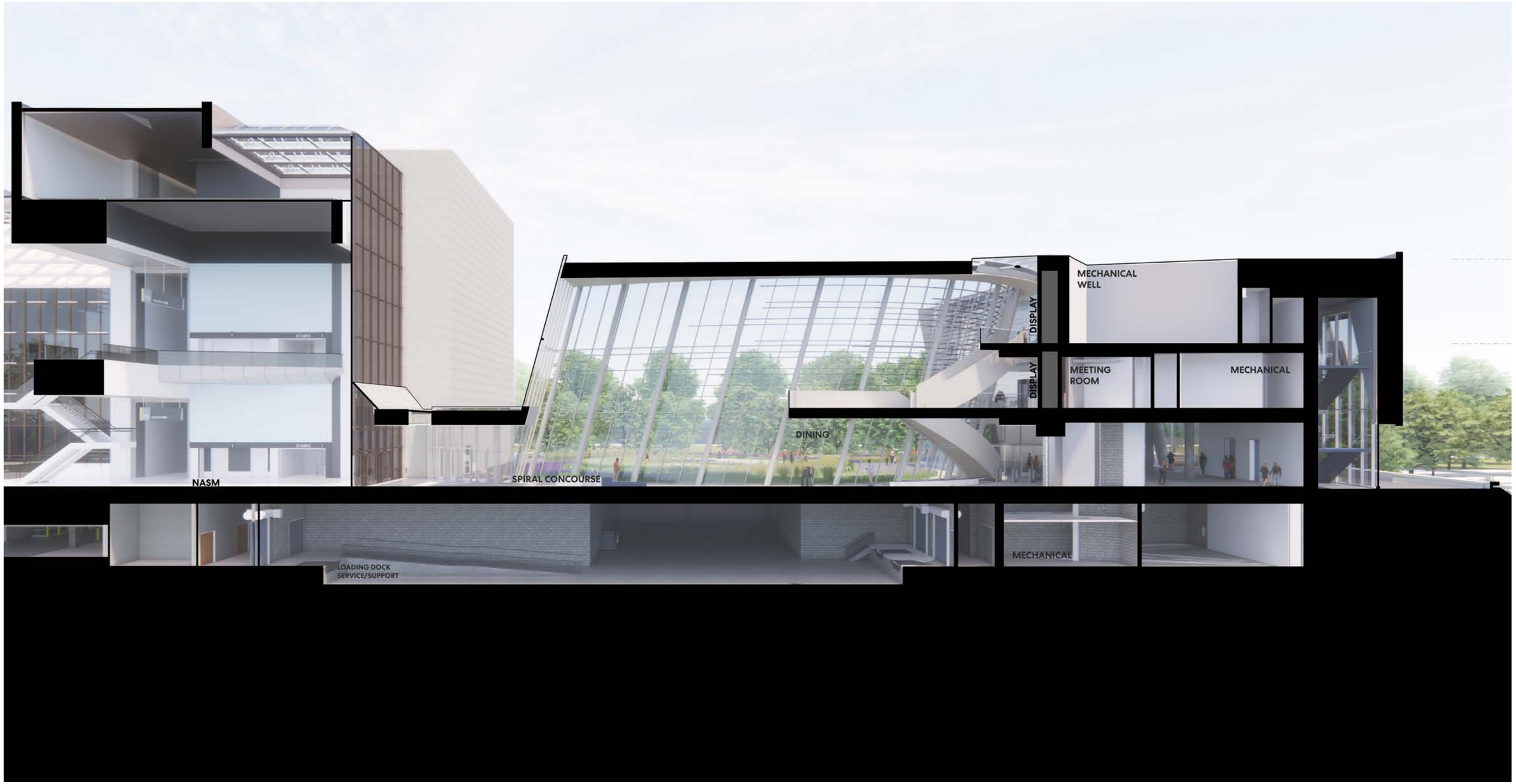
View from southeast

Overall Site Section

BLC East-West Section through Spiral Concourse

Key Plan





Illustrative Aerial View

NASM-NMB and BLC Site

Aerial View

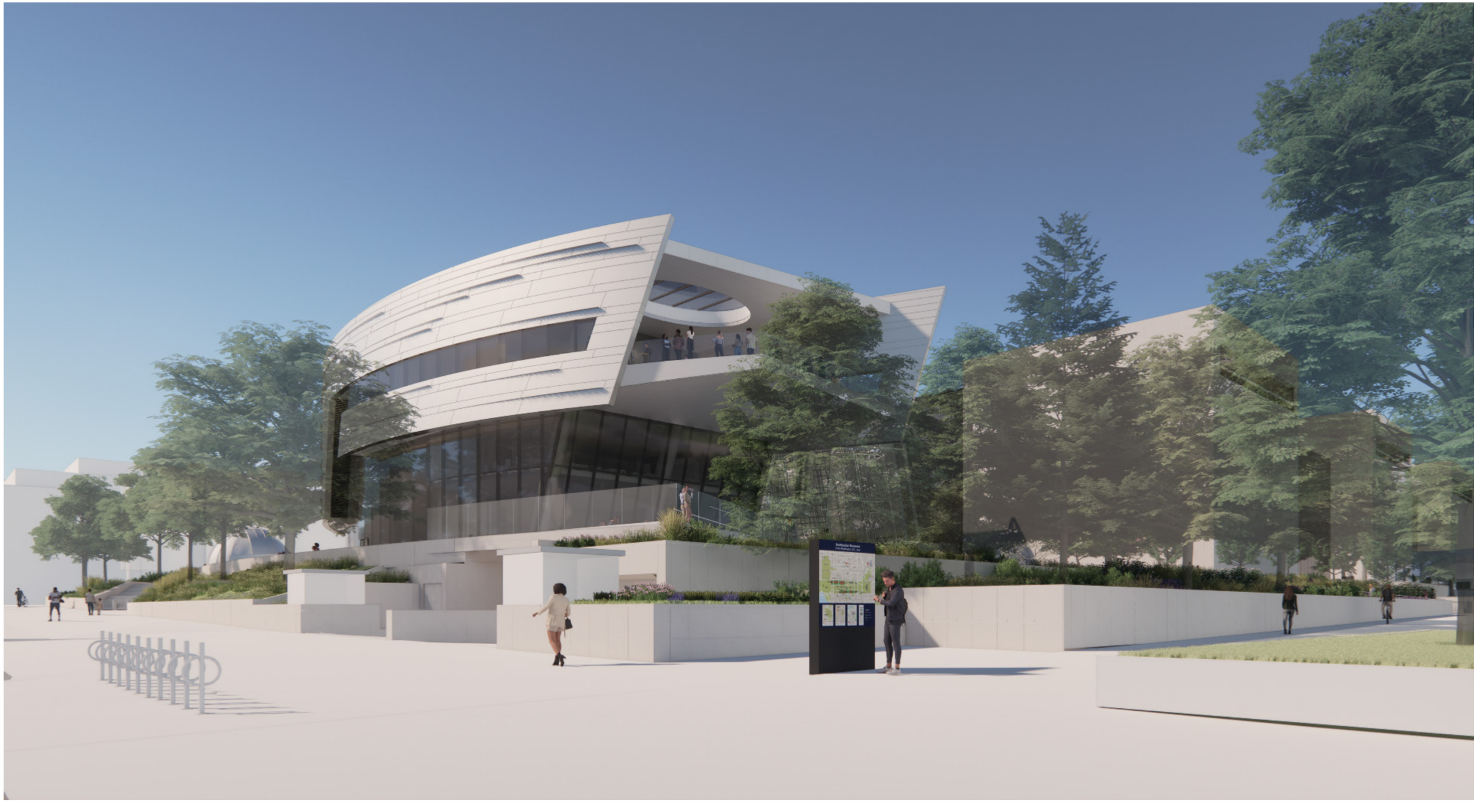
North

Aerial View

North

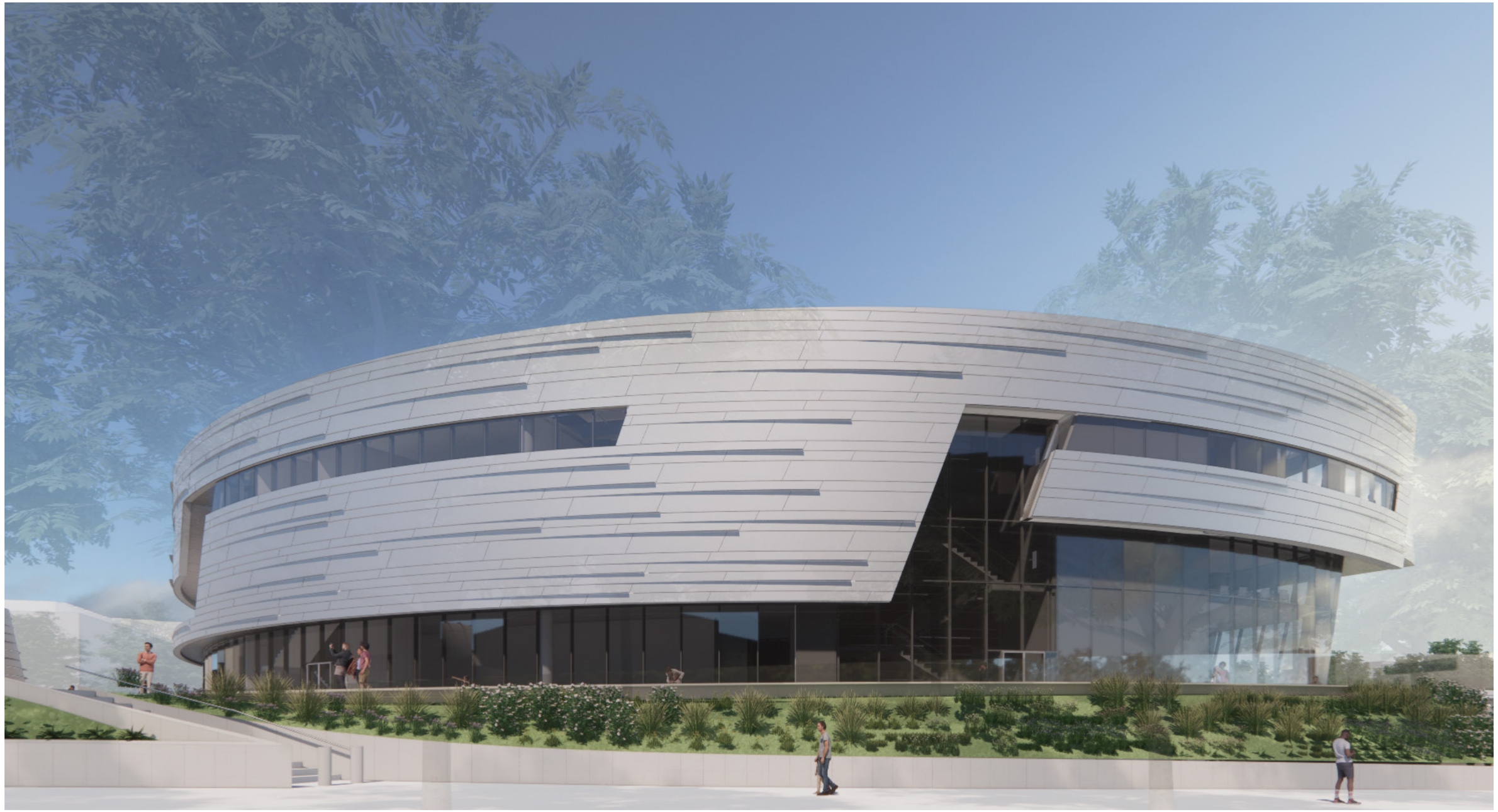
Eye Level View

Northeast



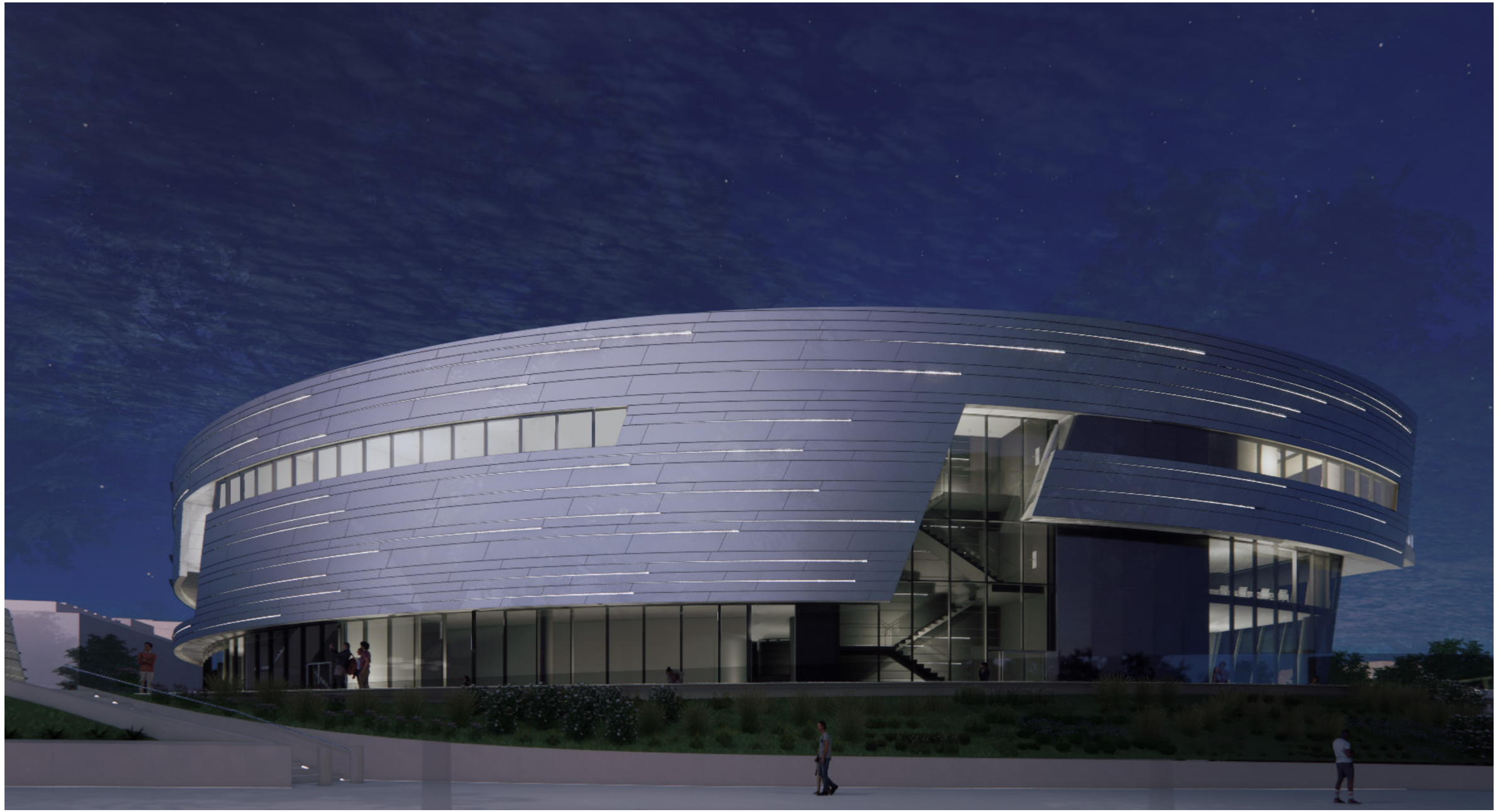
Eye Level View

East



Eye Level View

East - Night



Eye Level View

From Eisenhower Memorial

Eye Level View

From Eisenhower Memorial

Eye Level View

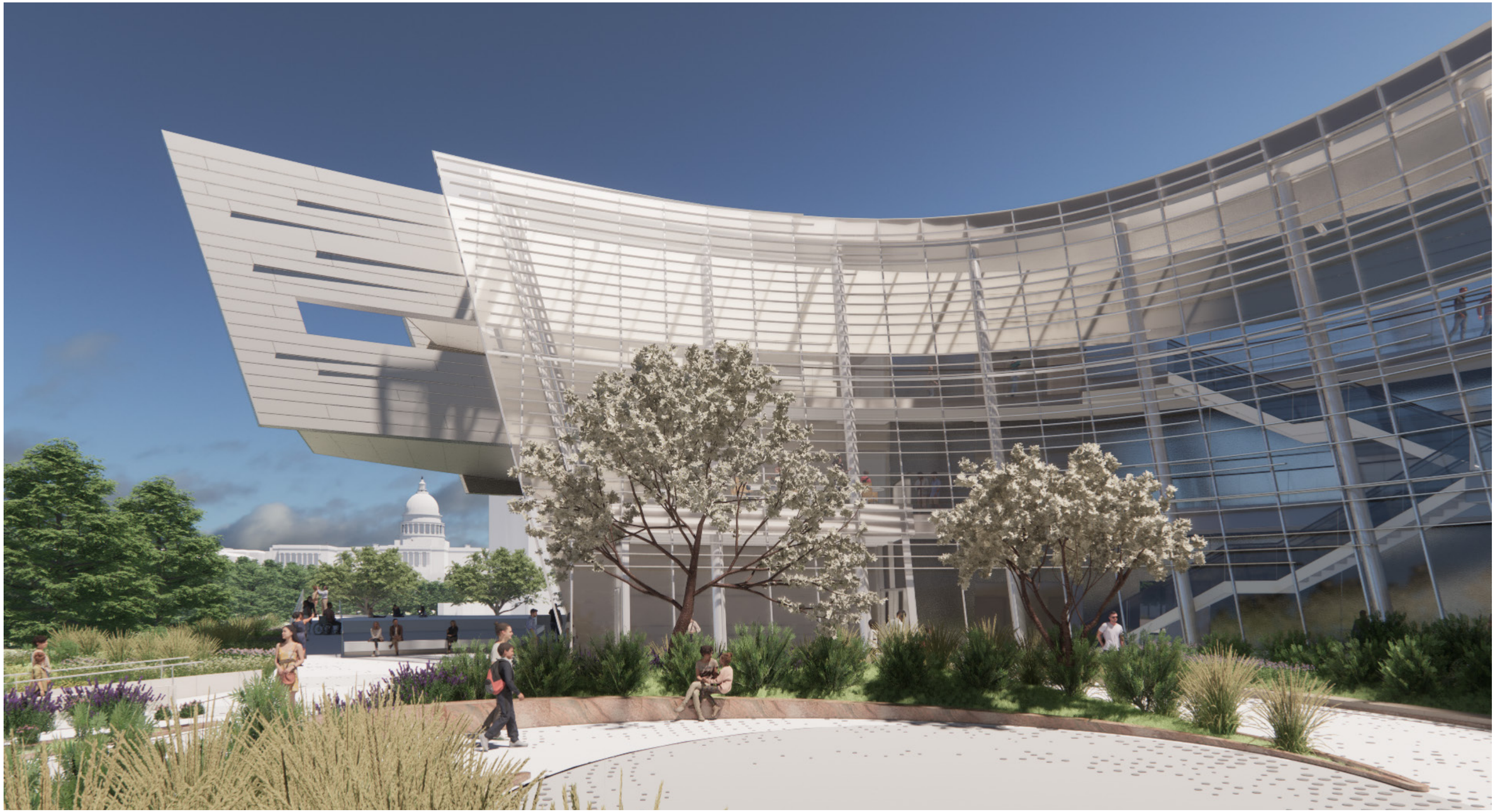
Jefferson Drive

Eye Level View

Learning Courtyard Ramp

Eye Level View

Learning Courtyard



Eye Level View

Phoebe Waterman Haas Astronomy Park Entry

Eye-Level View

Southwest

Facade Development

Concept

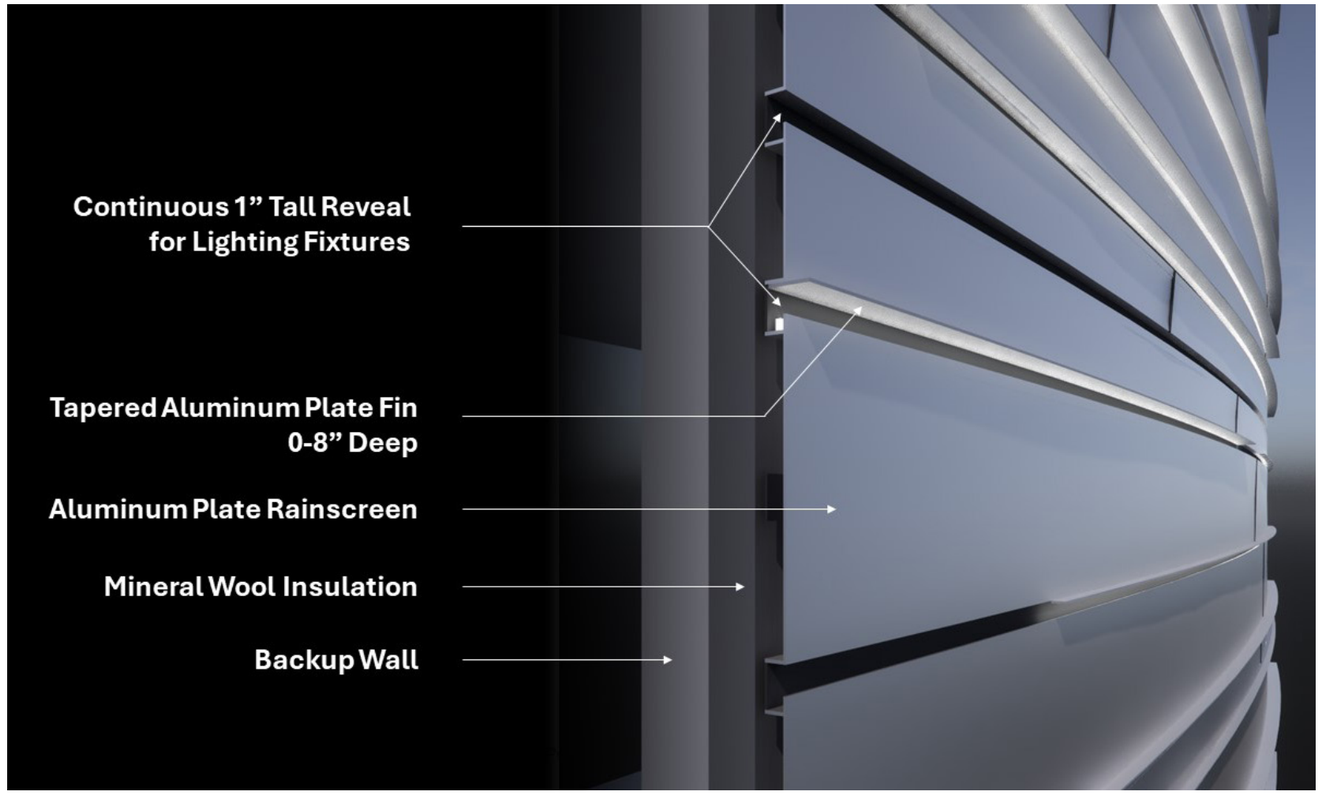
From the textures of stars scattered across the sky to the historical mapping of our cosmos, our perception of the universe is a source of inspiration for Arts, Sciences & Innovation. Similarly, the linear movement and energy of stars streaking across the night sky are inspiration for the exterior enclosure design. A dynamic texture of light and shadow wraps the spiral building form, evoking the linear energy and dotted landscape of the Spiral Galaxy. Reflecting the ephemeral qualities of our cosmos, the skin will be lighter in color, delicately balancing and subtlety contrasting the two larger flanking masses of NASM and NMAI. As day transitions to night, lights embedded within the facade uplight tapering fins, which further reinforce the streaking light pattern and the mission of the BLC as a beacon for space exploration and discovery.

The focus of this phase was to refine the panel joint modules, develop the integrated fin and lighting details, and select material and color selections. These are outlined on the following pages.

Facade Development

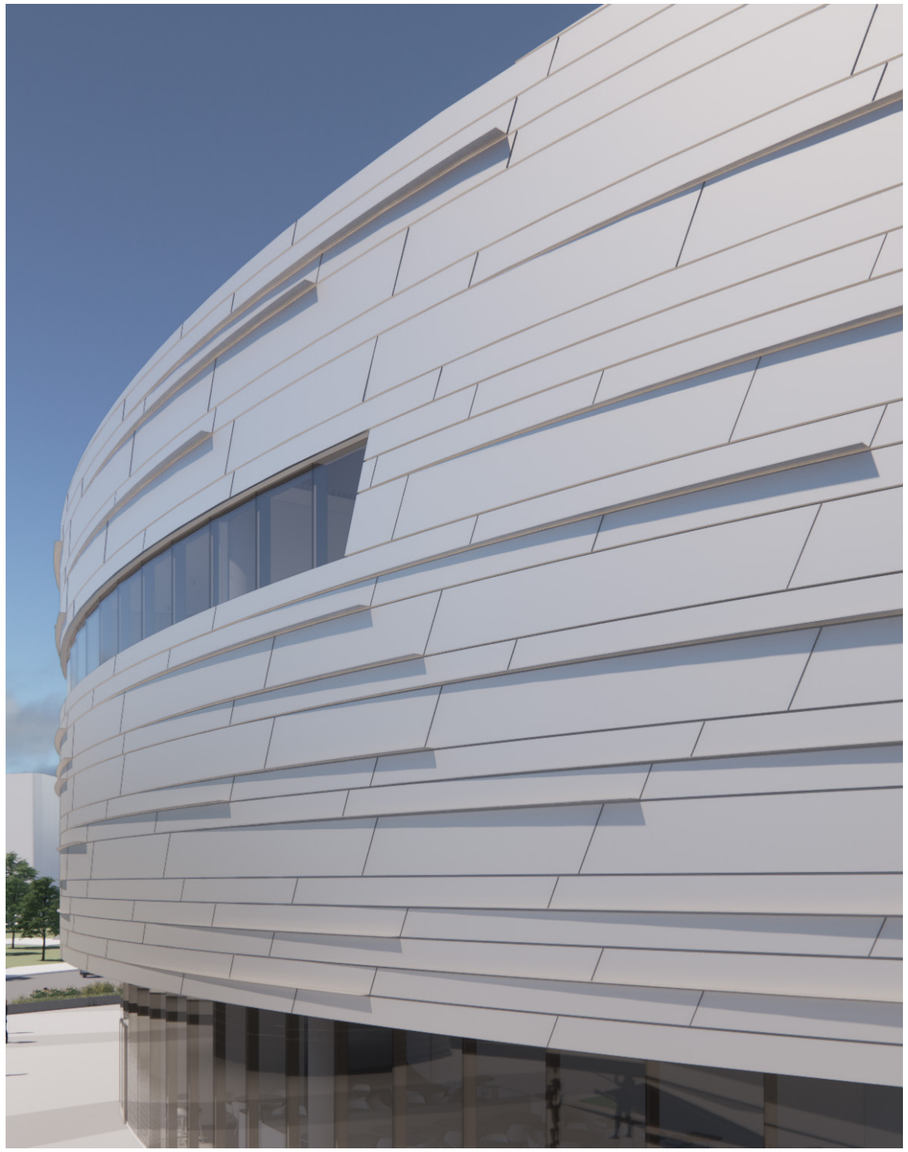
Physical Mock Up

The design team built a full scale mock-up of a portion of the facade in Perkins&Will's Chicago studio. The intent of the mock-up was to test the lighting conditions of the tapering fin strategy. The lighting consultant proposed different fixtures to test, and the team selected an LED strip light that could evenly uplight the fin without causing excessive light spill. The design intent is to capture the sense of energy in the Spiral Galaxy through these measures. These photos show the mock-up being tested of varying different light types to help aid in the fixture selection and architectural detail.



Facade Development

Enlarged Views

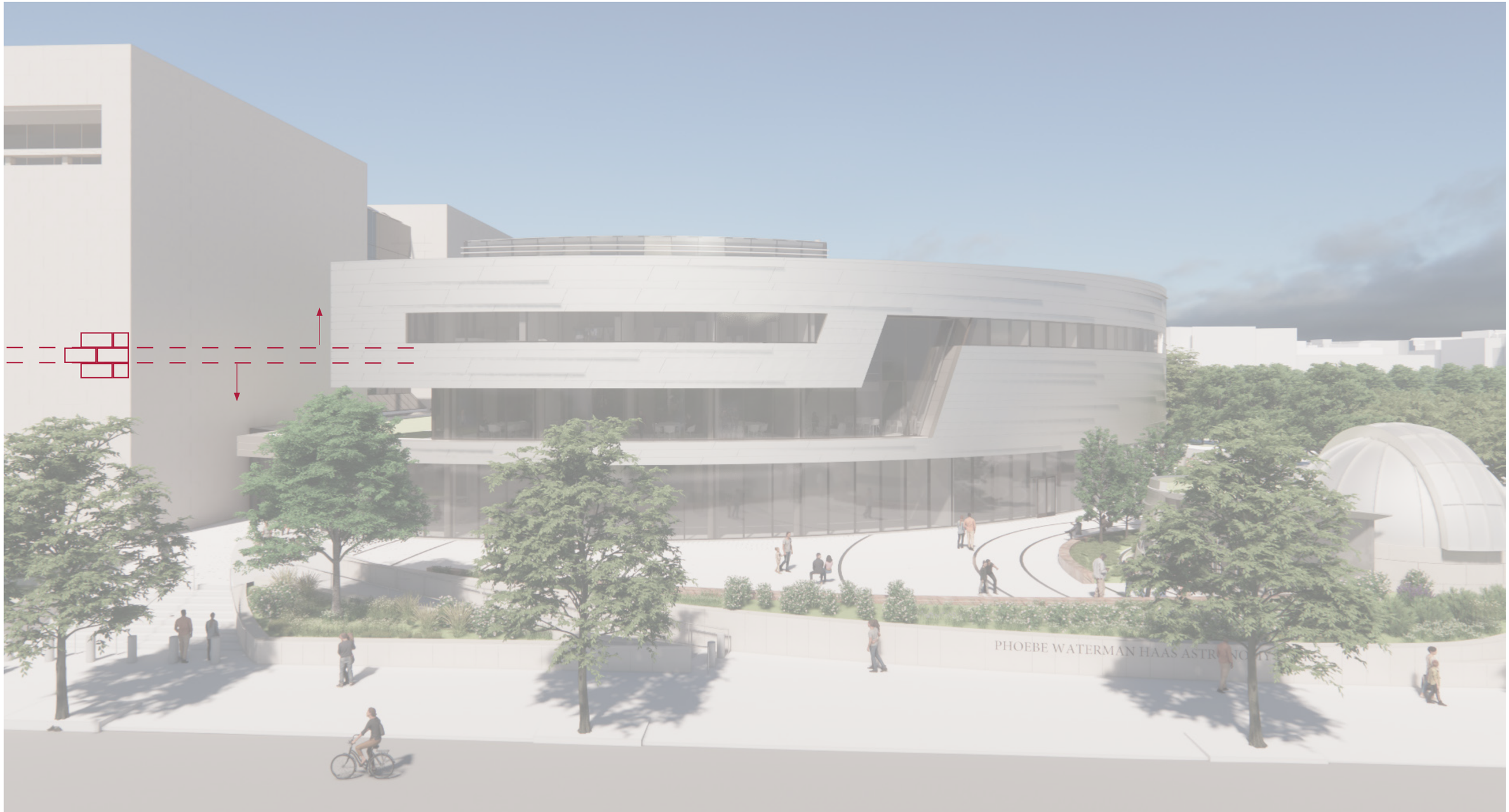


Day

Night

Facade Development

Panel Rationalization

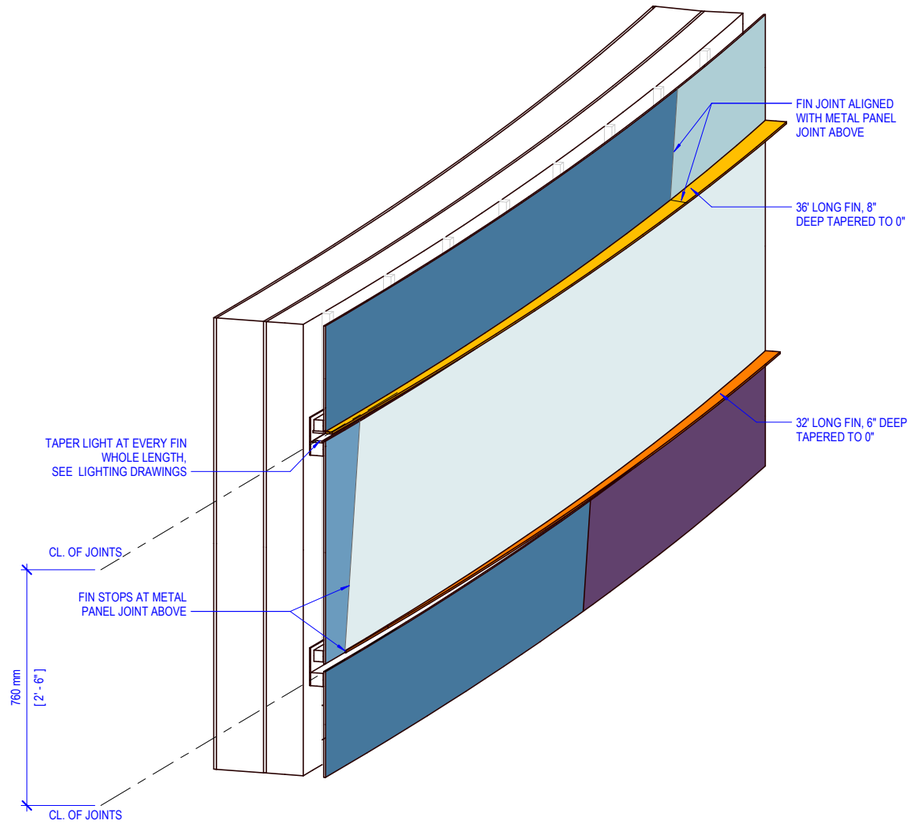


Facade Development

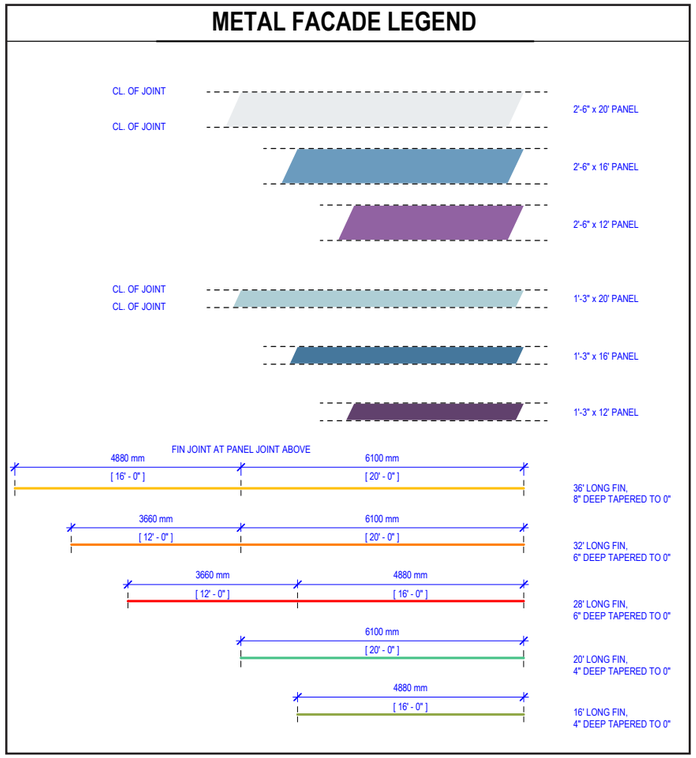
Panel Rationalization

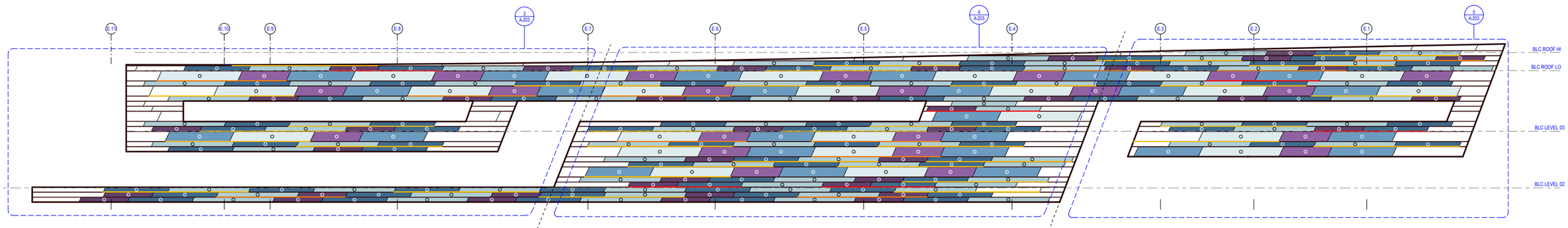
A key refinement in this phase was the rationalization and calibration of the metal panel facade.

The panels follow a 1'-3" module, which derives from NASM's 2'-6" stone panel joints. Six standard panel sizes - three thick, three thin - are randomized across the facade. This simplified system ensures material efficiency and allows the design to flex based on requirements. These sizes correspond with tapered fins and integrated lighting as seen in the system axon on this page. The diagrammatic elevations included on this page illustrate the logic of how these panels are laid out on the facade.



Metal Panel Facade Axon





Metal Panel Facade Unrolled Elevation

Spiral Concourse Optimization

Overview

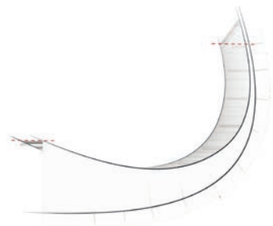
In this design phase, the team worked to optimize the geometry of the overall massing and simplify the glass modulation of the Spiral Concourse.

Through a collaborative process of analysis and design refinement, the Concourse massing geometry was changed from a double-curved volume to a single-curve volume with a slant. The next step was reducing the glass roof from full-width to an 8-foot wide continuous skylight, ensuring the space will still receive abundant daylighting while reducing the overall glazed area. The glass wall geometry was “unrolled”; the resulting surface no longer necessitates curved glass panels. Instead, flat glass is used at a consistent spacing (about 5’-0”) with standardized mullion sizing. The solar fins have been thoughtfully refined and detailed, and a bird-safe frit treatment will be used on the glass.

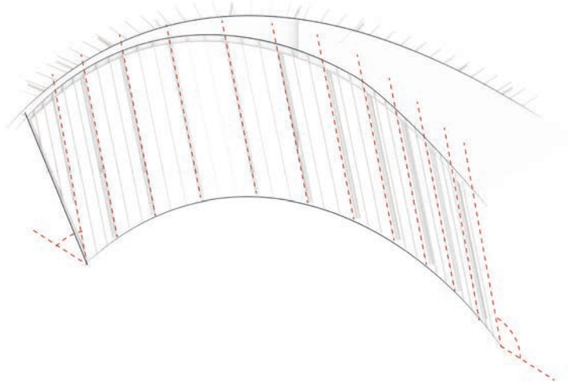
The resulting interior space is more dynamic and exciting as a result of these refinements, as the transparent, sloping surface sweeps in and out across the Concourse and further emphasizes the dynamic energy of the Spiral Galaxy concept.

Unrolled Surface Study

Flat Glass with Standardized Mullions



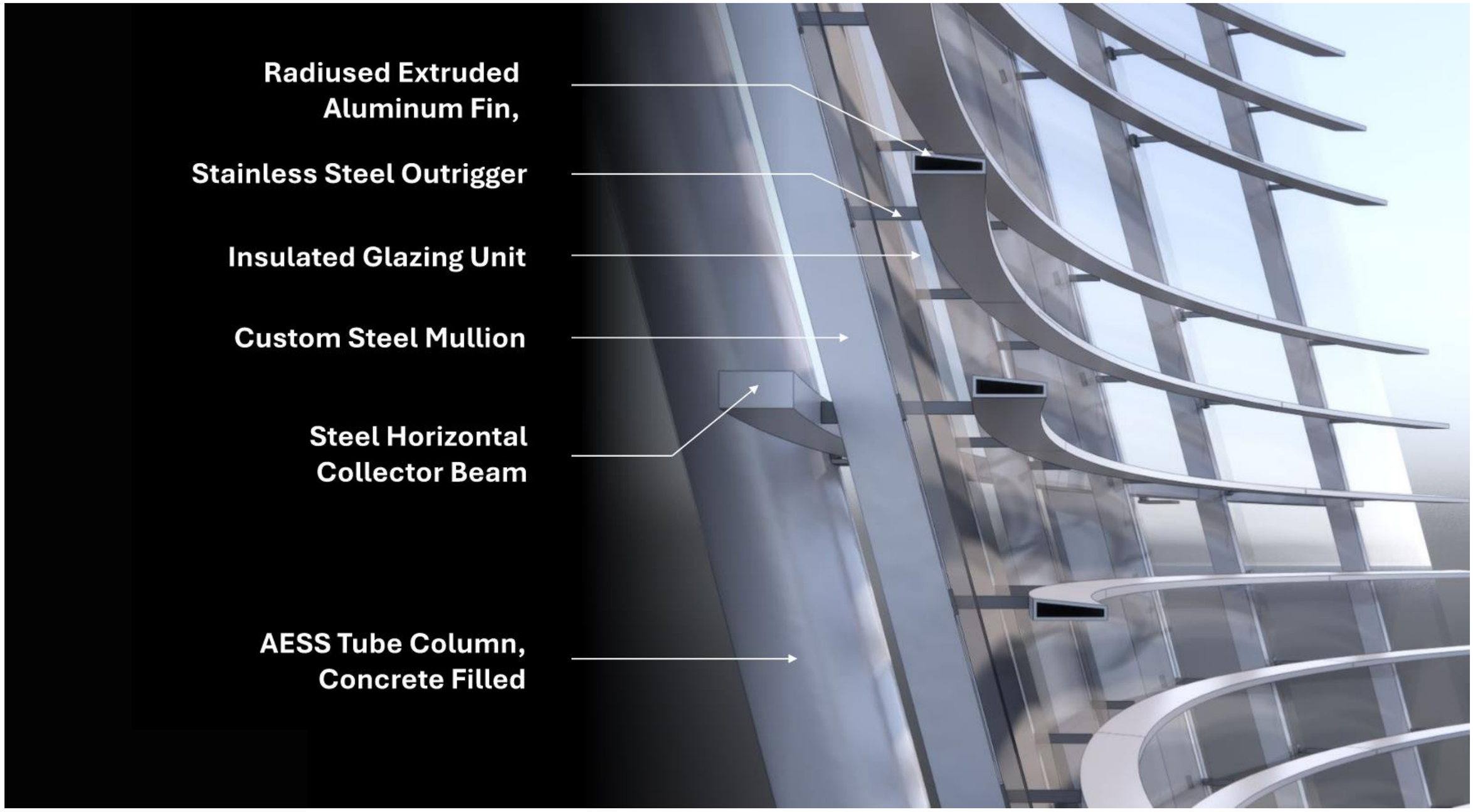
Plan Diagram - Single Curve



The breakthrough came when the team “unrolled” the transparent surface. This removed curved glass and optimized the entire system.

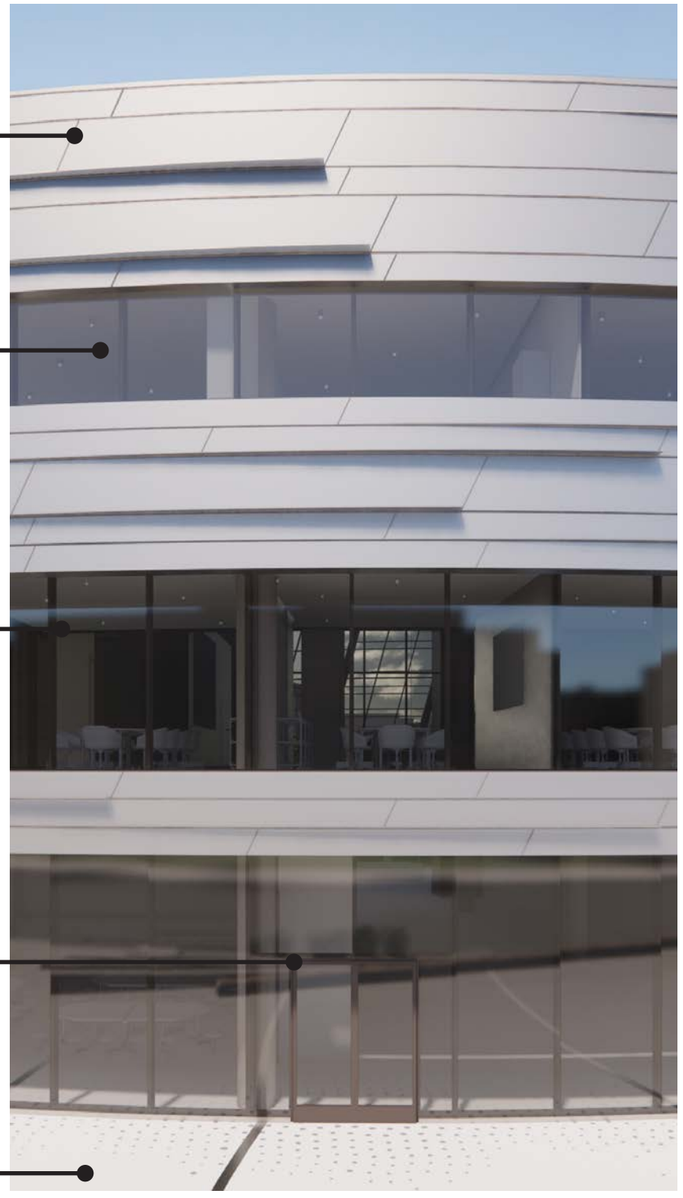
Section Perspective

Spiral Concourse System Detail



Facade Development - Materiality

South Elevation - Rendering



ALUMINUM PLATE AND FINS

Preferred Color:
Titanium

DARK GLASS

Preferred Assembly:
Interpane GL-02 Make-up

SILICONE-GLAZED MULLIONS

Preferred Color:
Brown Sugar

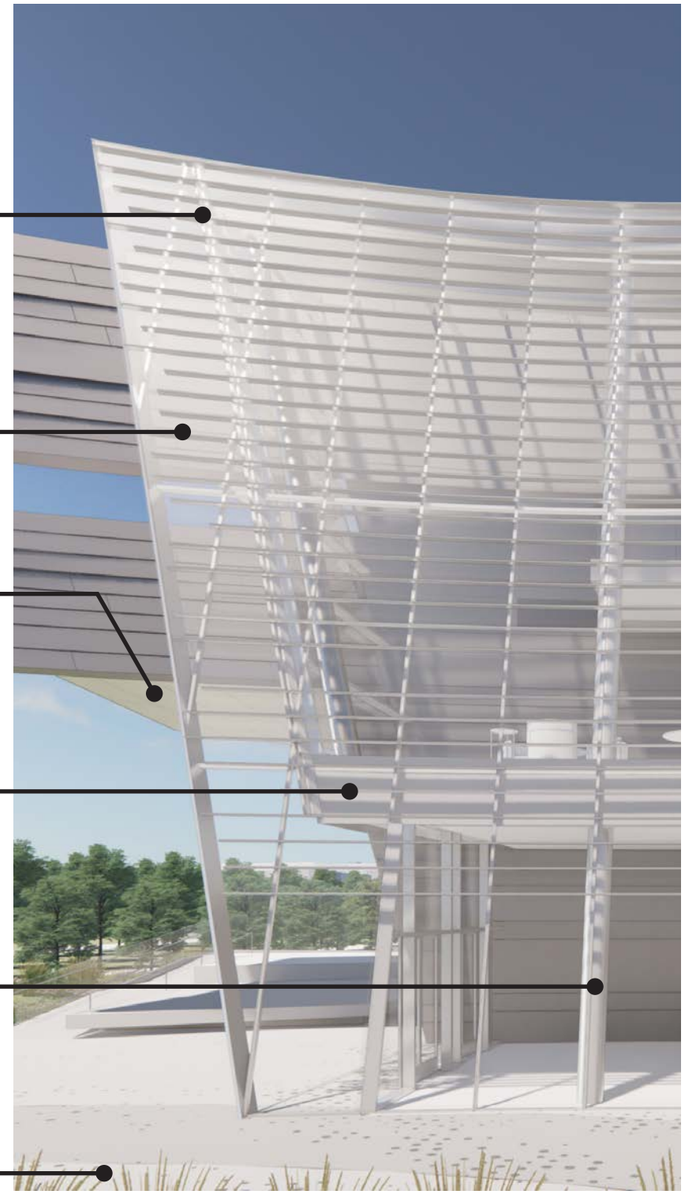
EXTERIOR DOOR FRAMES

Preferred Color:
Brown Sugar

HARDSCAPE

Preferred:
Field concrete, Accent A, Accent B

North Elevation - Rendering



EXTRUDED ALUMINUM FINS

Preferred Color:
On the Rocks

CLEAR GLASS WITH BIRD FRIT

Preferred Assembly:
Viracon GL-01 Make-up

ALUMINUM SOFFIT

Preferred Color:
Titanium

SHADOWBOX

Preferred Color:
On the Rocks

STEEL COLUMNS AND MULLIONS

Preferred Color:
On the Rocks

HARDSCAPE

Preferred:
Field concrete, Accent A, Accent B

Facade Development - Materiality

On September 20, 2024, the design team presented exterior material options to the External Agencies during Consulting Parties Meeting 4a. The preferred finishes shown on the right were the resultant of the meeting as the materials were compared against the background of NASM-NMB.

See Appendix for list of Alternatives

ALUMINUM PLATE AND EXTRUDED ALUMINUM FINS

Titanium
PPG
ADS17203N
PREFERRED

ALUMINUM SOFFIT

Titanium
PPG
ADS17203N
PREFERRED

SILICONE-GLAZED MULLIONS

Brown Sugar
Benjamin Moore
2112-20
PREFERRED DARK

On the Rocks
Sherwin Williams
7671
PREFERRED LIGHT

CLEAR GLASS WITH BIRD FRIT

VE24-85 (GL-01)
Viracon

DARK GLASS

Make-up #2 (GL-02)
Interpane

EXTERIOR DOOR FRAMES

Brown Sugar
Benjamin Moore
2112-20
PREFERRED DARK

On the Rocks
Sherwin Williams
7671
PREFERRED LIGHT

STEEL COLUMNS AND MULLIONS

On the Rocks
Sherwin Williams
7671
PREFERRED LIGHT

HARDSCAPE

Field Concrete

Accent A: Sandblast (Light)

Accent B: Sandblast

Inlaid Metal Strip

STONE

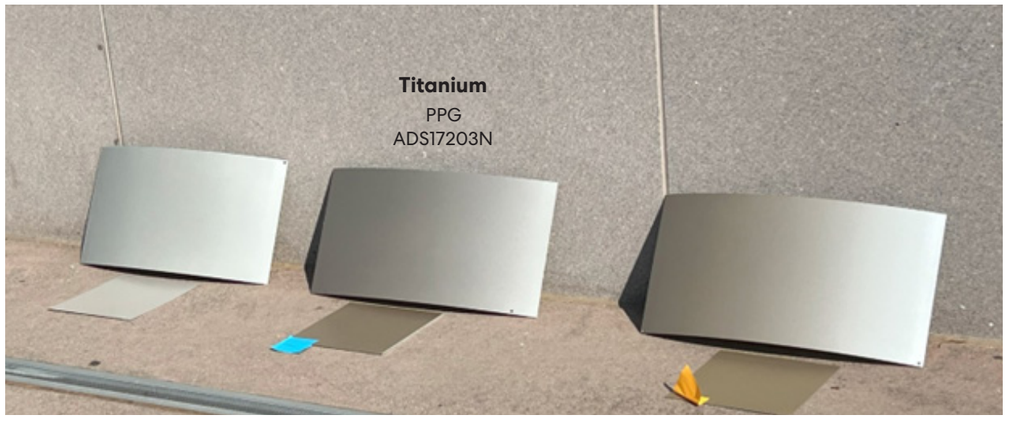
Walls: Colonial Rose

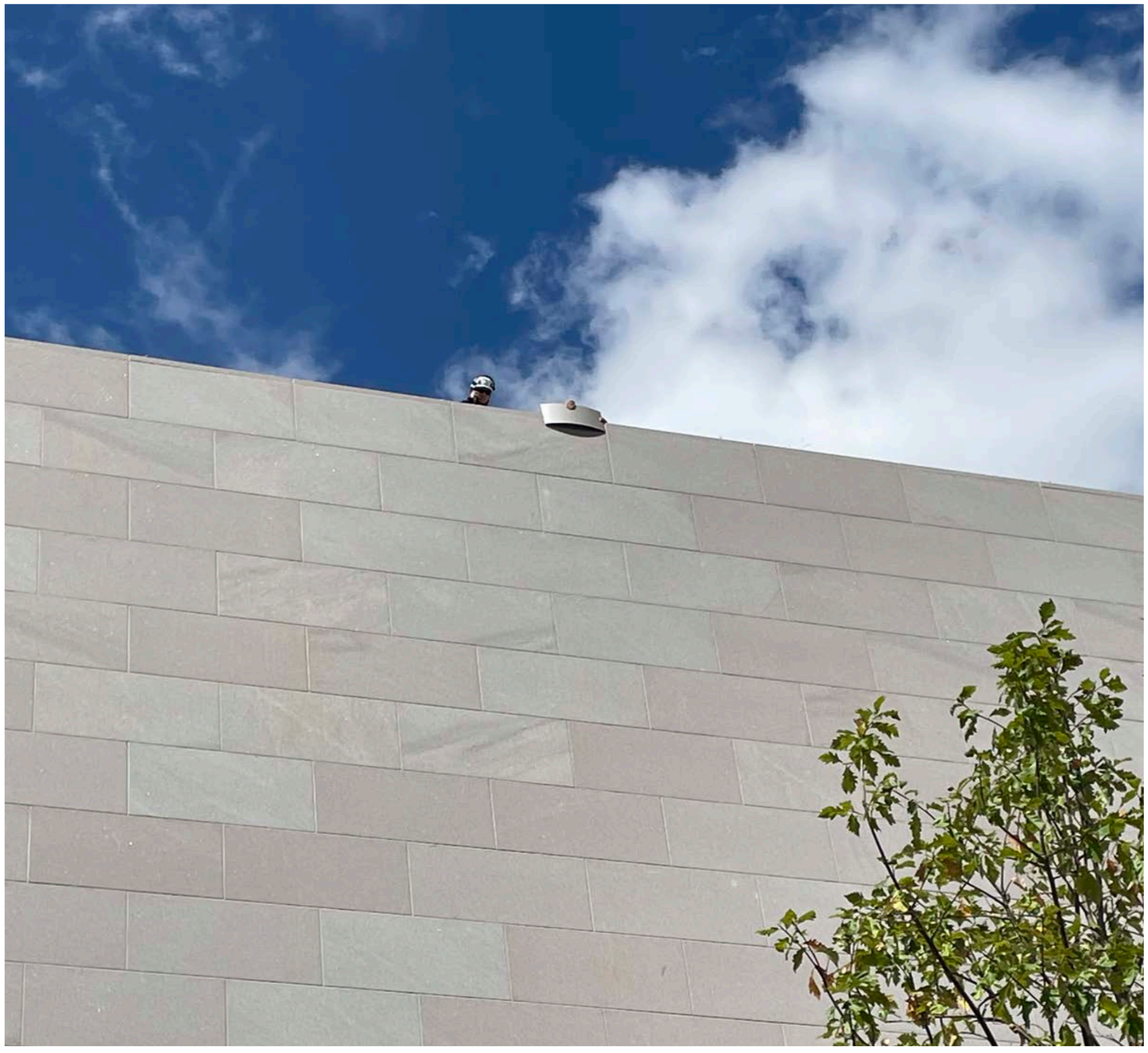
Seating: Rainbow
PREFERRED

Facade Development - Materiality

The design team presented three options for the Aluminum Plate finish on curved panels and ‘Titanium’ was the preferred color option. The image on the right was taken during a bi-meeting on August 20, 2024 and shows the ‘Titanium’ panel hung from the top of NASM. The design team will continue to pursue variations based off the ‘Titanium’ selection.

See Appendix for list of Alternatives





Interior View

Spiral Concourse looking East

Interior View

Spiral Concourse looking East

BLC to NASM Connection

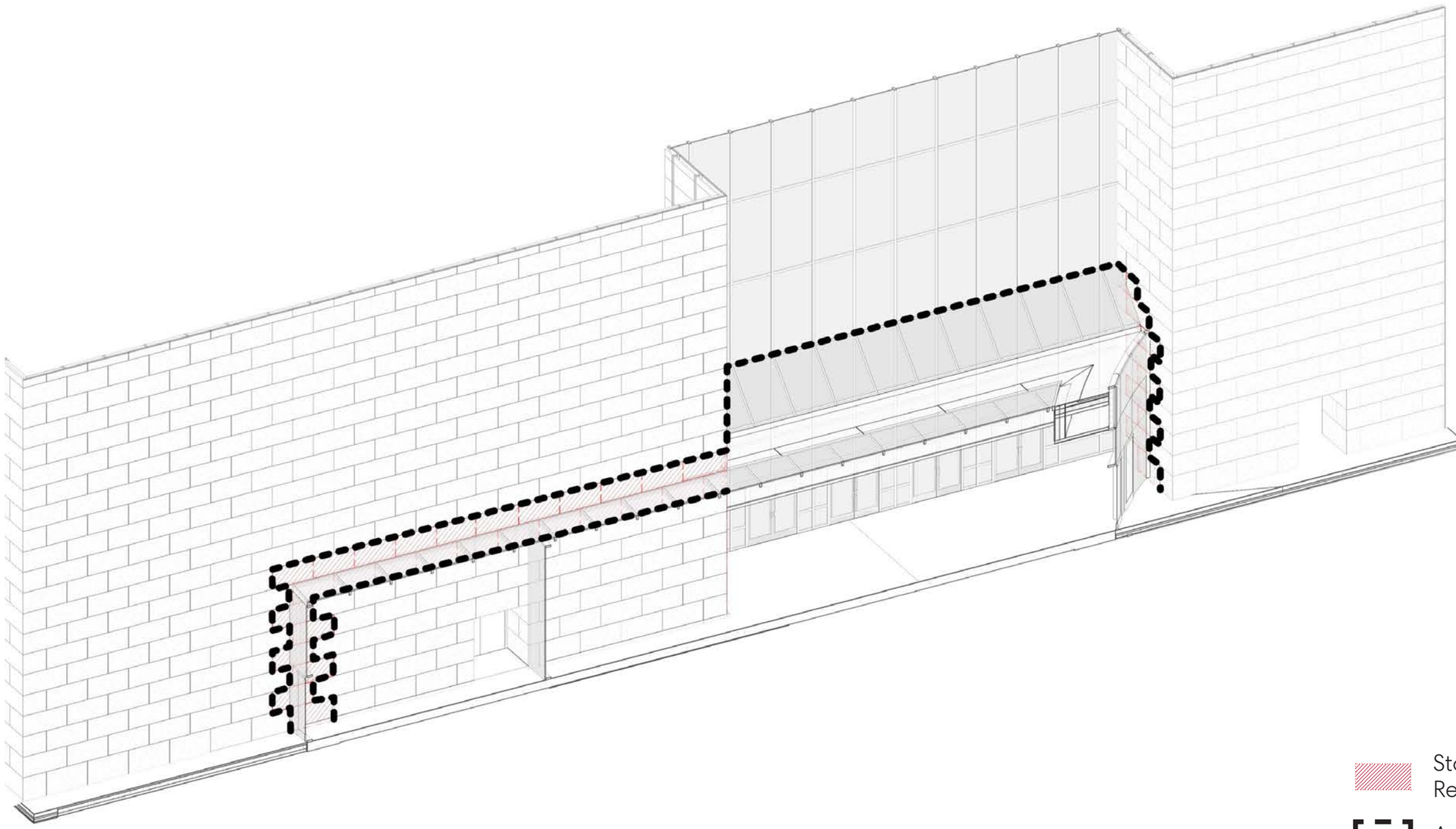
Interior View from NASM looking East

Interior View

BLC to NASM Connection looking South

Interior View

BLC to NASM Connection East Facade



Stone to be Temporarily Removed and Replaced

Area of Impact

Phoebe Waterman Haas Public Observatory & Astronomy Park

Summary

The south-facing Phoebe Waterman Haas Astronomy Park and Phoebe Waterman Haas Public Observatory are sited to offer the best views of the sky. The position of the Observatory at the intersection of 4th Street and Independence Avenue will be a prominent marker for NASM.

The design of the Observatory is an extension of the spiral galaxy parti of the landscape and architecture of the BLC. The Observatory dome sits as an object, rising from the spiraling Independence Avenue landscape terrace. The curving plane forming the Secondary Chamber of the Observatory matches the BLC exterior envelope, invoking the sense of dynamism and movement of our galaxy.

The Main Chamber will house the relocated 1960's Boller and Chivens 16" telescope within a 26' diameter prefabricated galvalume dome that includes electrically operated slit opening shutters with a draw bridge style door. Entry to the Main Chamber is on the west side of the Observatory, with queuing among the educational installations of the Astronomy Park. From the Entry Vestibule, visitors continue into the unconditioned Main Chamber to experience viewing the daytime and nighttime sky. The vestibule will be equipped with appropriate artificial lighting, including red lights, in order to aid the visitors' adaptation to the subsequent darker room. Thresholds between these spaces will be an adequate width to ensure easy transport of equipment.

The Main Chamber will accommodate groups of approximately 20 learners accompanied by NASM astronomy educators, who will have the option to utilize wall mounted televisions or a computer docking station. While using the telescope, learners can view relevant digital or printed materials displayed in the Main Chamber. Though the Main Chamber will be unconditioned, built-in fans will ensure proper ventilation for both the visitors and sensitive equipment. The exit is positioned for a linear flow of visitor traffic.

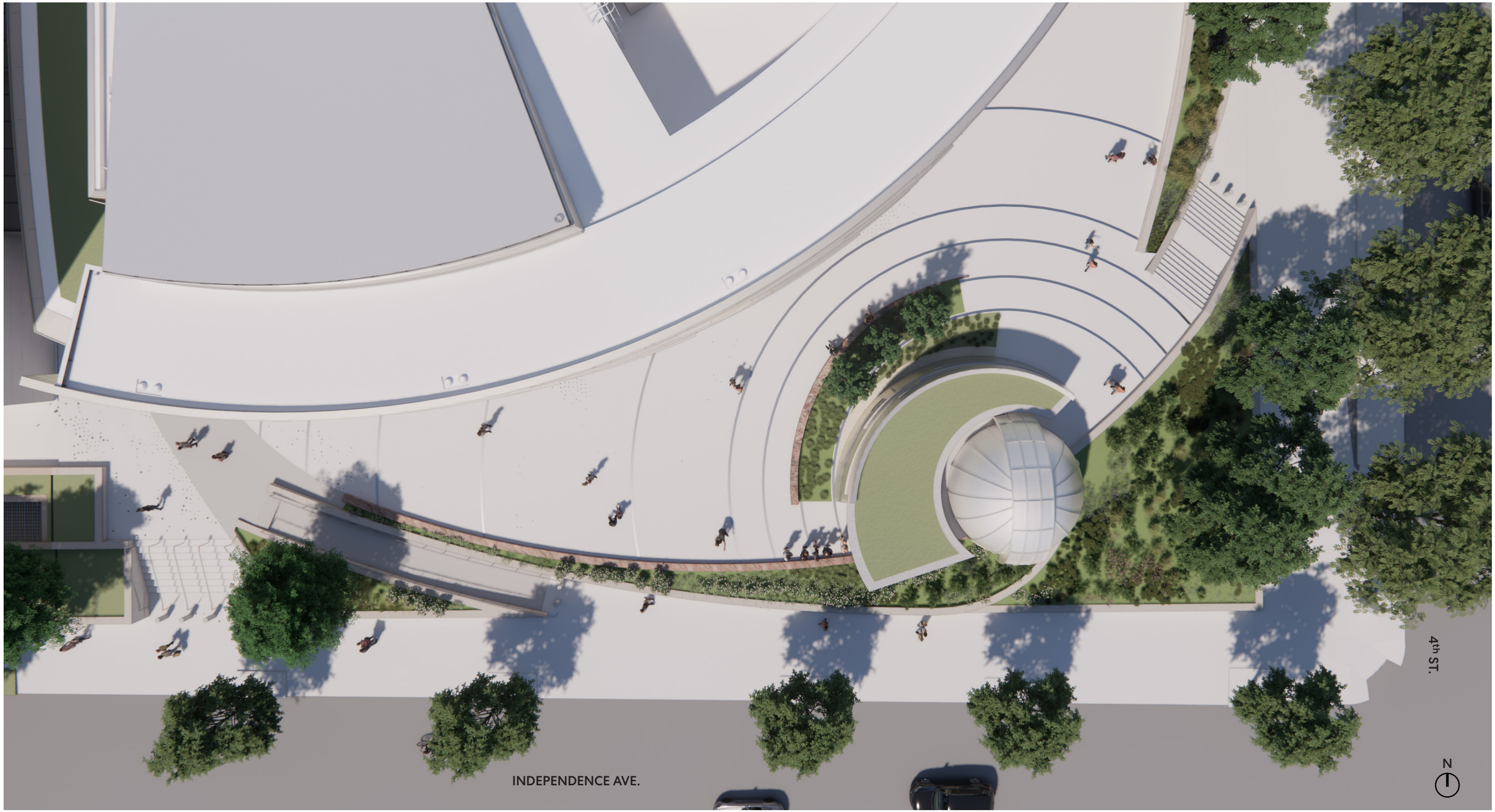
The Secondary Chamber consists of the supporting program spaces for staff access only and is climate controlled. The floor plan on the following page illustrates the office with staff toilet and adjacent storage room. The staff also have direct access to Storage for educational programming and for ease of moving portable telescopes.

Educational installations will engage learners through self-directed, interactive experiences with accompanying interpretive graphics that assist in fostering critical thinking. These interactions will connect to concepts presented in NASM, such as light - using prisms, time - featuring a sundial, and space - represented by physical, tactile planets. These installations will be designed for a diverse range of ages and abilities and motivate passersby to explore and engage.

The Phoebe Waterman Haas Astronomy Park is the "front porch" experience for NASM. The landscaping will be considerate of astronomy activity while still offering shade where possible. Together, the Astronomy Park and Observatory will give visitors the unique opportunity to explore the universe through astronomy at NASM's doorstep.

Phoebe Waterman Haas Public Observatory

Site Plan

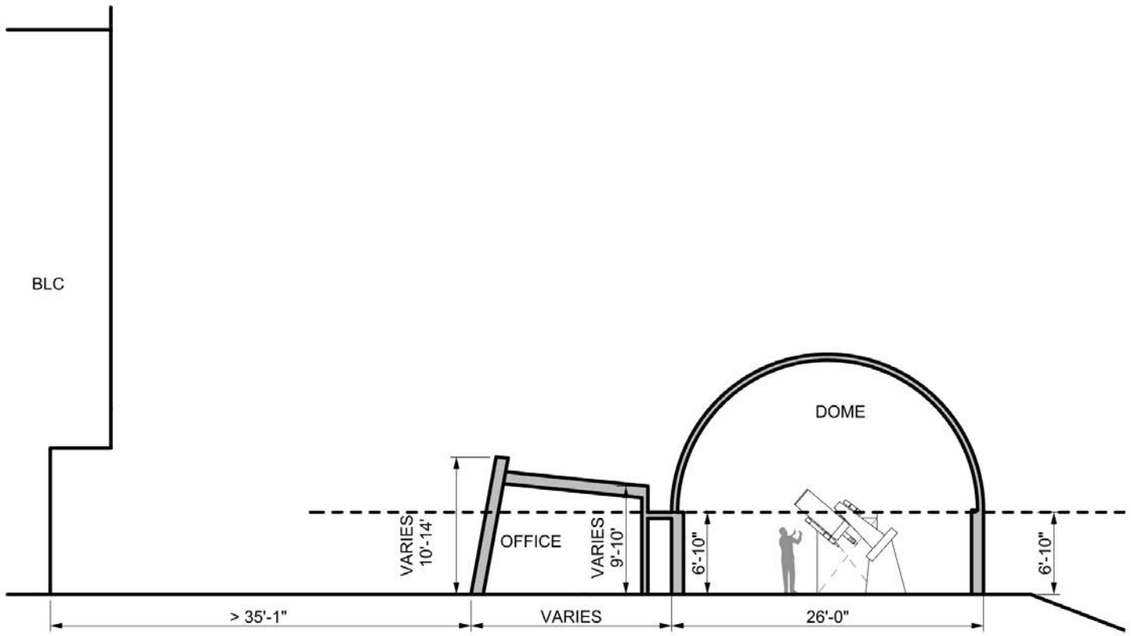


Phoebe Waterman Haas Public Observatory

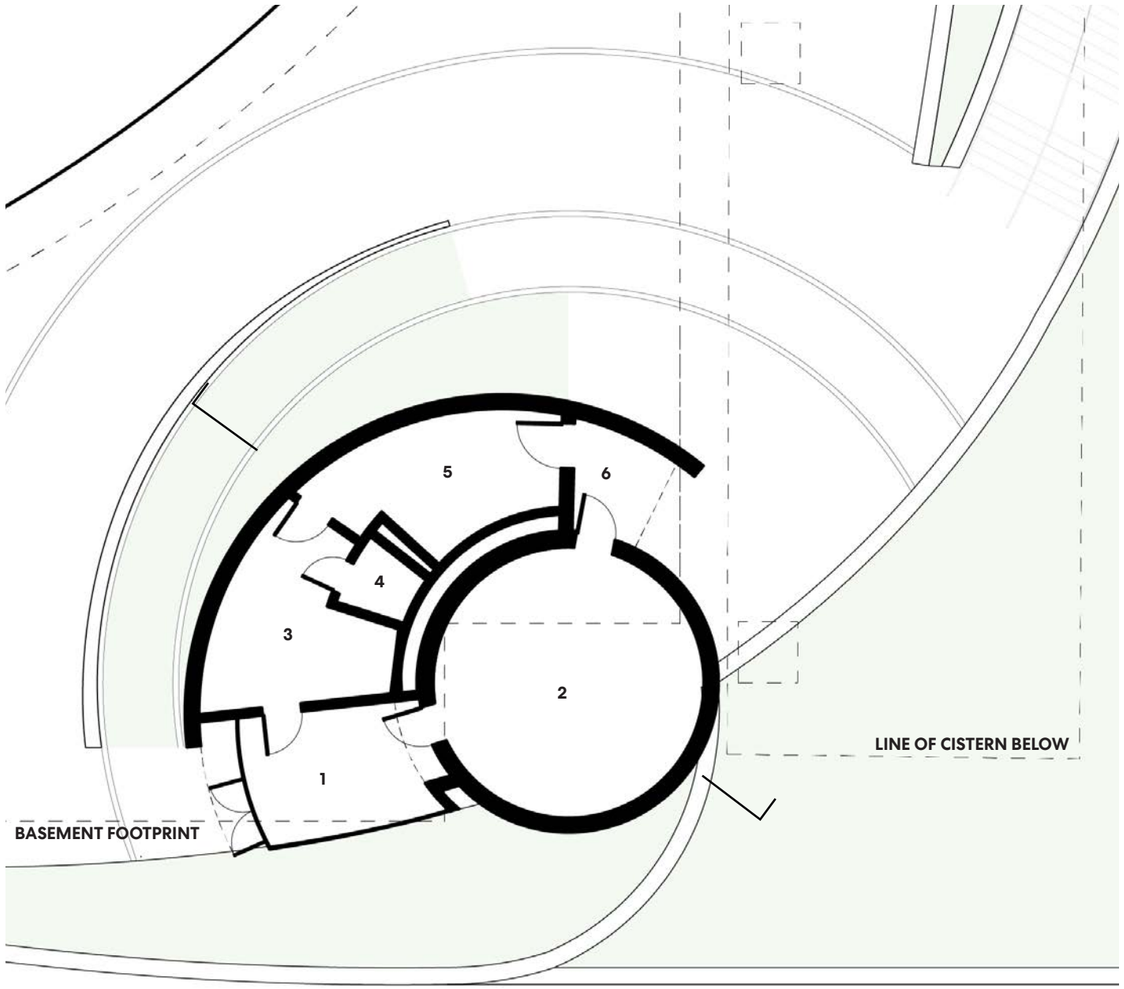
Enlarged Drawings

Legend

1 Entry
2 Dome
3 Office
4 Toilet
5 Storage
6 Exit



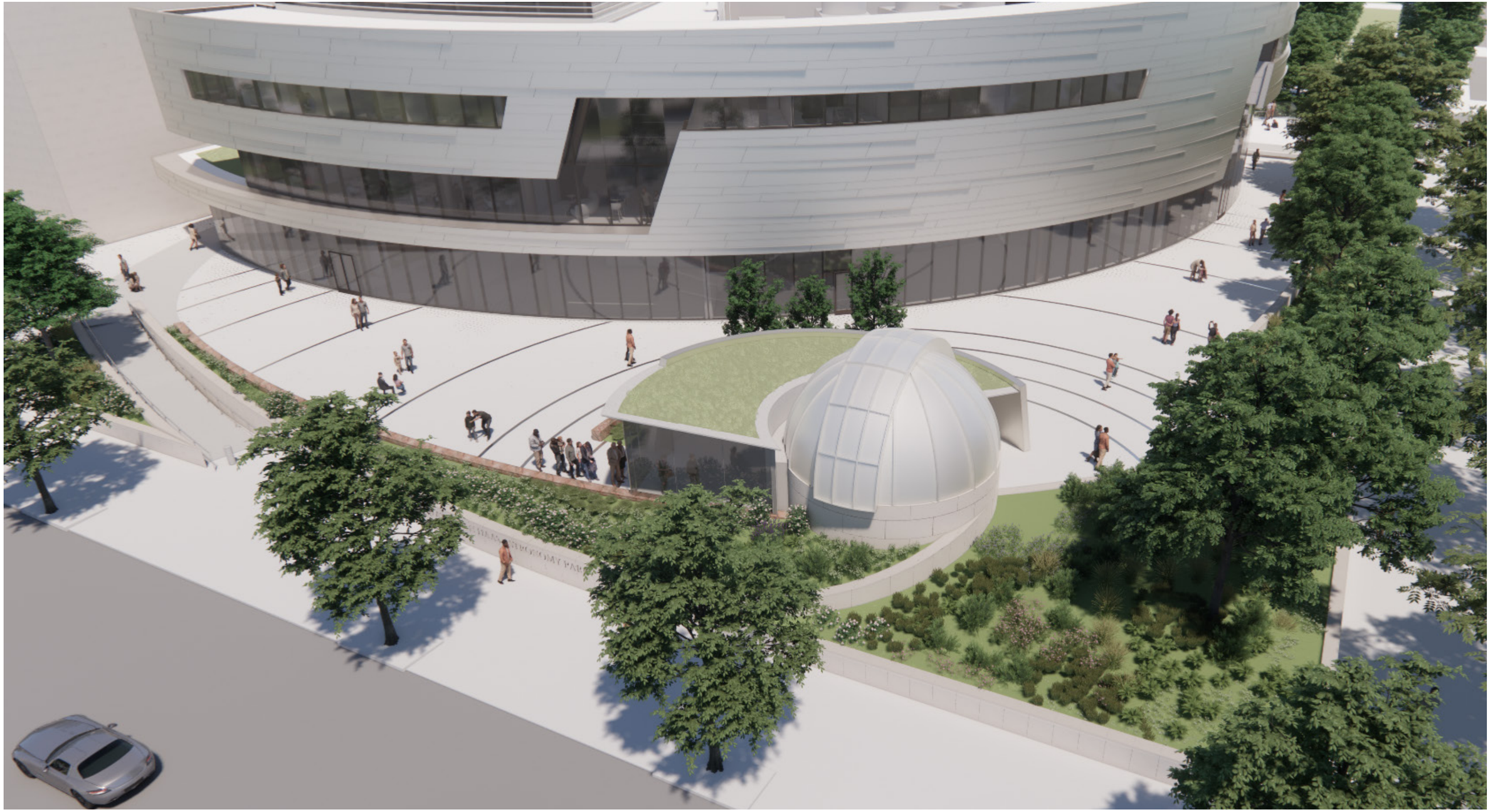
Section



Plan

Phoebe Waterman Haas Public Observatory

Southeast Aerial View

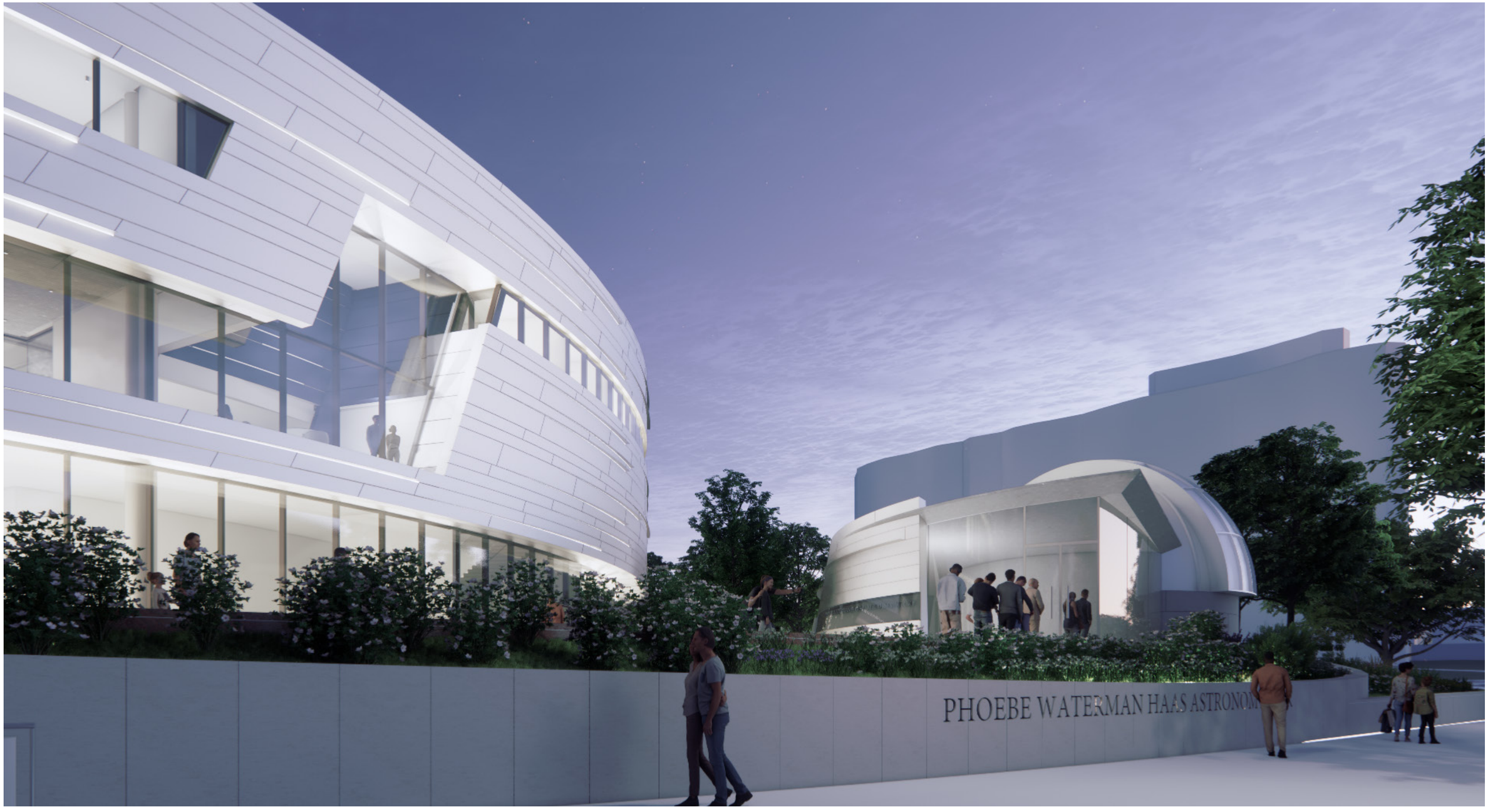


Phoebe Waterman Haas Public Observatory

Southeast Eye Level View

Phoebe Waterman Haas Public Observatory

South Eye Level View



Landscape Design

Introduction

The Bezos Learning Center (BLC) open space concept evolved within the NASM's revitalized landscape framework.

That landscape derives its organizational structure from the original Gyo Obata Site Plan proposed in the 1970s, wherein a series of rectangular terraces surrounded the NASM-NMB to frame and define a centralized approach to the main museum entrances on Jefferson Drive and Independence Avenue. Those terraces reinforced the building's symmetry and strong axial parti, with mirror configurations along the north and south frontage and almost identical east and west gardens extending to 7th Street and 4th Street, respectively. The original plan predated the Americans with Disabilities Act and did not consider the need for universal accessibility; instead, the steps impart a ceremonial character to the landscape at every approach. Moreover, by bringing the terraced planting beds to the building wall, the opportunity to circumnavigate the museum at its facade or conduct outdoor space programming except at the building entries was moot.

While the NASM-NMB's length and scale made slope and grade changes imperceptible along the sidewalk, the east garden's terraced planters and cascading steps showed the height difference between the public right of way and NASM's first floor. The building plinth's elevation above 4th Street made the east garden a logical location for the restaurant pavilion added in 1988. The resulting redesign to connect the restaurant pavilion addition with the surrounding urban fabric modified these grand steps. On 4th Street, planters were reconfigured to incorporate ramps for universal access from Independence Avenue. The redesign also removed planters restricting perambulation within the site.

The museum has demolished the restaurant pavilion but retained the perimeter planters as part of the accepted revitalization plan, remaining as historical context for the redesigned landscape.

The spiral concept that shapes the BLC architectural form is inspired by the structure of a spiral galaxy with its surrounding halos of stars, gas, and dust, all converging toward a central core. By introducing an organic, outwardly expanding landscape scheme with two program areas: the north-facing Learning Courtyard fronting Jefferson Drive and the south-facing Astronomy Park, which offers the Observatory and telescope array the best views of the night sky. The design promotes visual and spatial continuity between interior and exterior spaces on the main floor and at Level 2 to planted roofs and canopy vegetation, including canopies of trees on the National Mall.

Visitors specifically coming to the BLC as well as scheduled student groups to NASM will enter and exit through these outdoor spaces, prioritizing exterior circulation and continuous perambulation around the BLC to connect the Learning Courtyard and Phoebe Waterman Haas Astronomy Park. These spaces extend to the surrounding urban fabric in outwardly spiralling movements through revitalized planting areas.

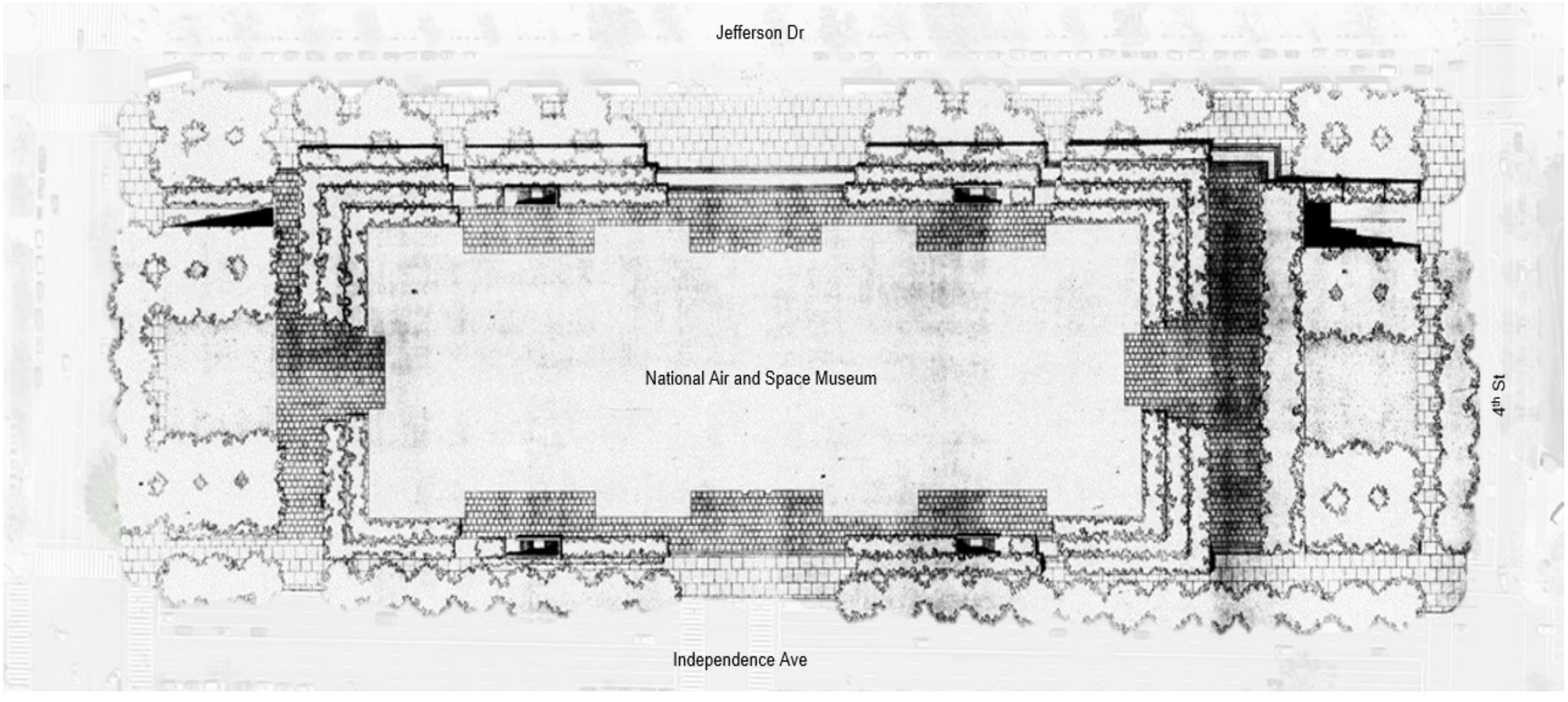
The design of the terrace landscape has progressed with the introduction of small shade trees and additional seating areas within the Learning Courtyard and Astronomy Park. The seating area within the Learning Courtyard spirals from the center reinforcing the architectural 'parti' and shaping the extents of vegetation and hardscape throughout. The addition of a planting bed and seating area adjacent to the observatory allow the introduction of small shade trees to the southern edge of the plaza providing necessary shade for Astronomy Park visitors.

The hardscape is made up of a two-tone concrete finish, forming spiral bands with divider strips. On the southeast corner there is a set of concetric rings emanating from the center of the observatory providing further opportunities for educational programming within Astronomy Park. The two-tone finish establishes the conceptual framework for the site, with a scattered etching pattern existing within. The varied textures and patterns of the sandblast etching mirror the movement of galaxies, creating a dynamic and visually captivating experience for all users.

Landscape Historical Context

1972 Site Plan

The 1972 Gyo Obata site plan shows the strong axial and nearly symmetrical organization of the original NASM landscape, which comprised terraced planters and sloped turf areas. Their hierarchy purposefully directs foot traffic to the centrally located main entries to the museum. It offered an alternate spatial experience and a softer landscape when exiting the site.



Previous Site Conditions

Restaurant Addition Landscape Plan

East stairs

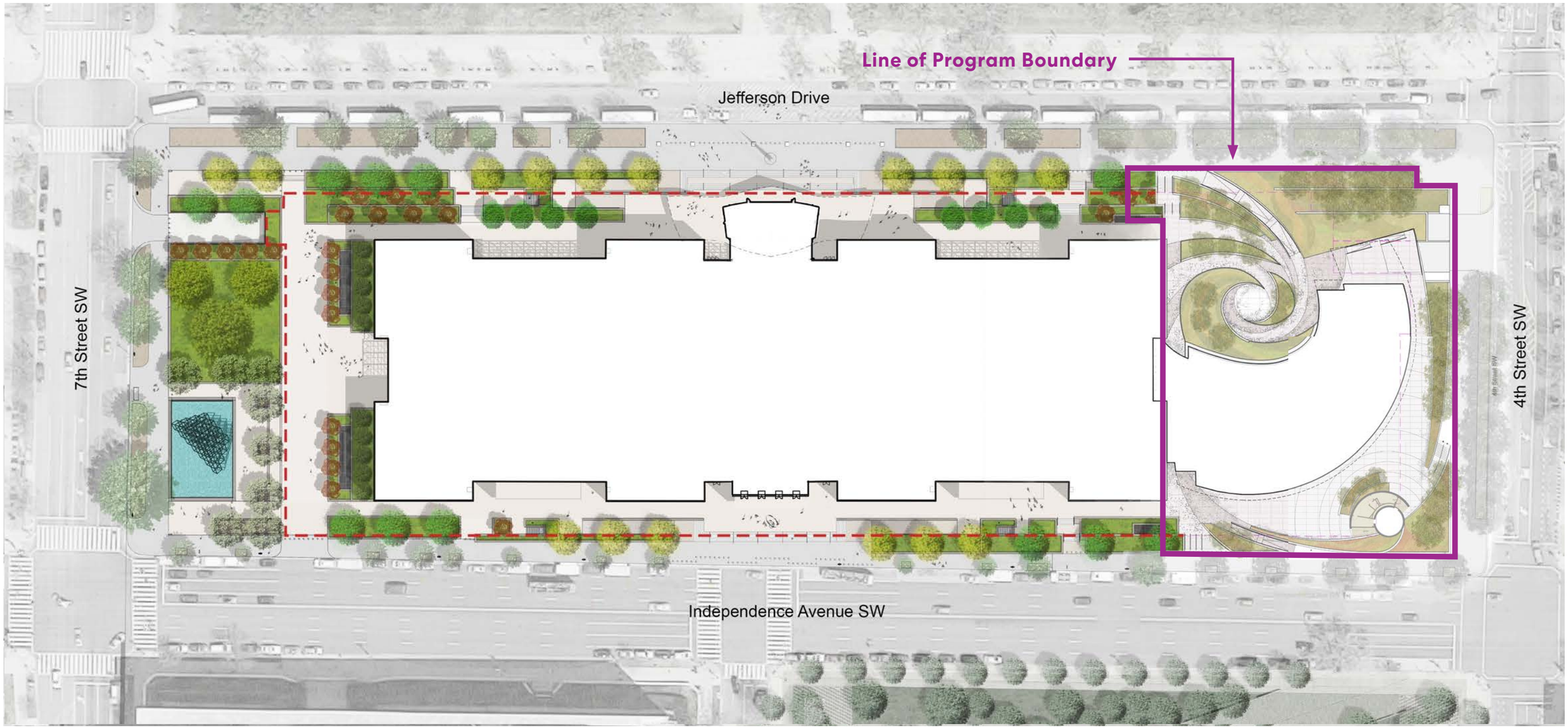
East area well

Observatory

Landscape Design

Overall Site Plan

The spiral landscape extends the Learning Courtyard north to Jefferson Drive and the National Mall; the Phoebe Waterman Haas Astronomy Park opens south to Independence Avenue, connecting to Dwight D. Eisenhower Memorial and the NMAI landscape.

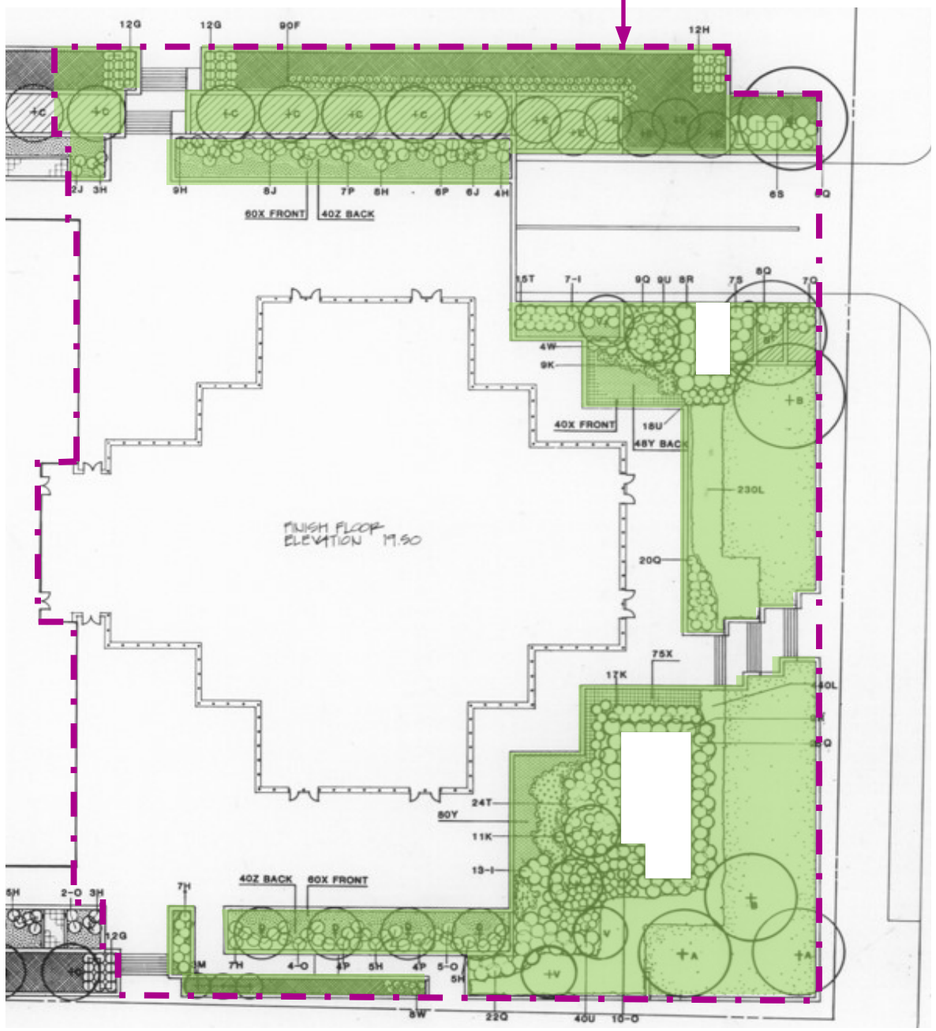


Landscape Design

Green Space Comparison

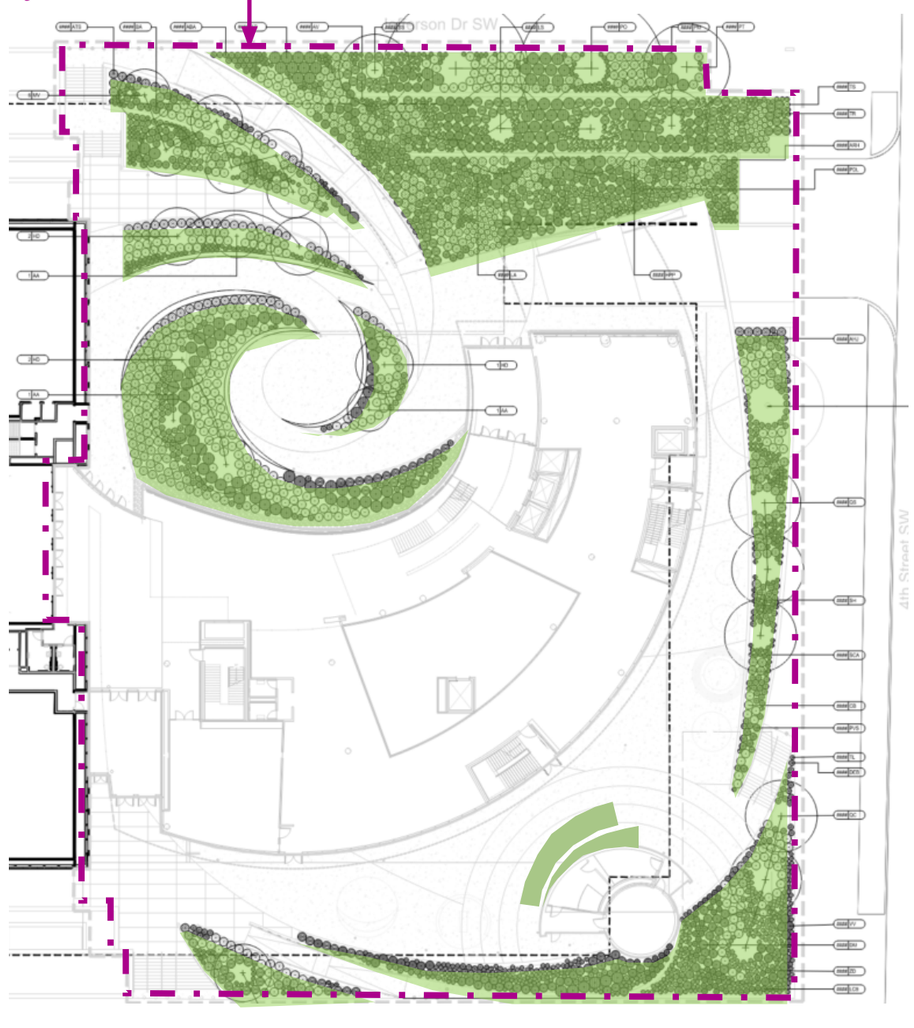
Revitalization (31% Green Area)

The Revilization landscape accounted for 31% of the Program Boundary area.



Proposed (29.25% Green Area)

The proposed BLC Landscape redistributes the denisty of green space along the southeast corner to accomodate for the Pheobe Hass Waterman Observatory and Astronomy Park.

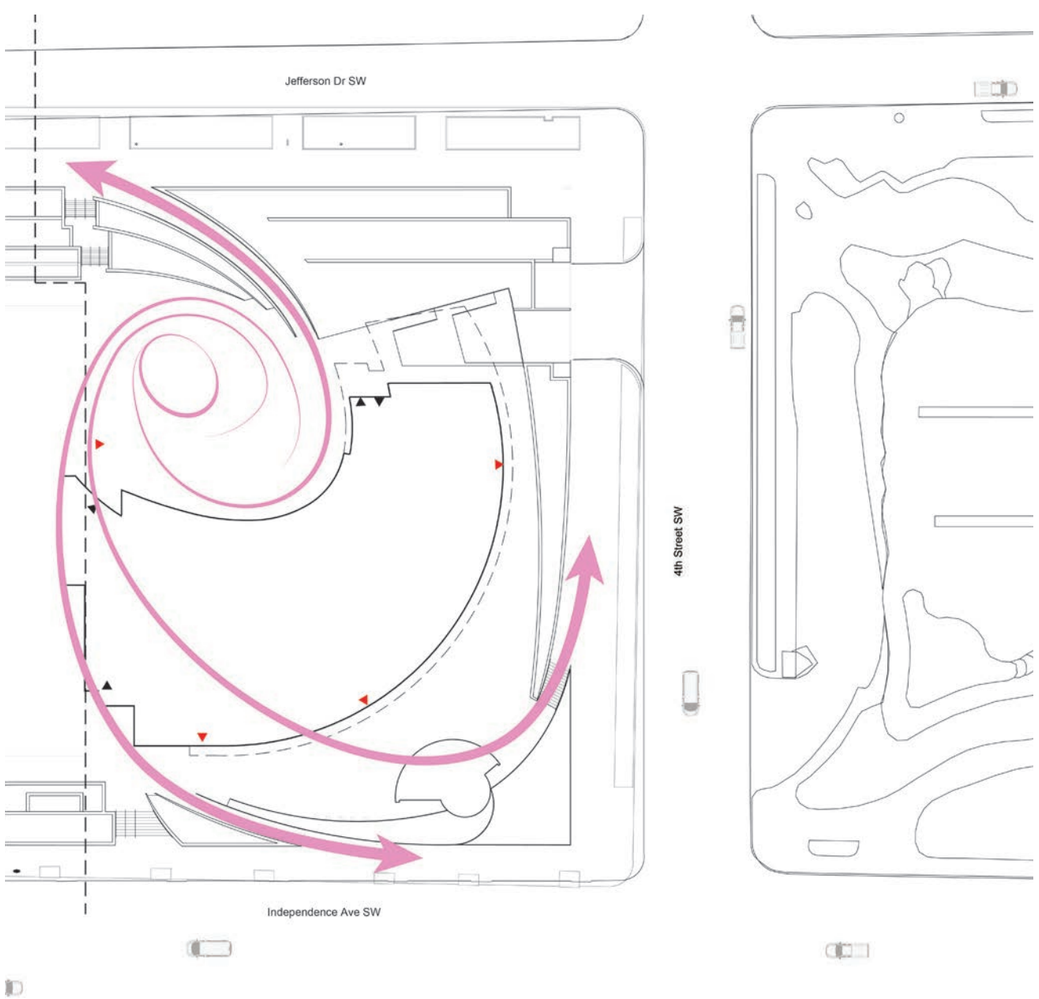


Landscape Design

Spiral Organization

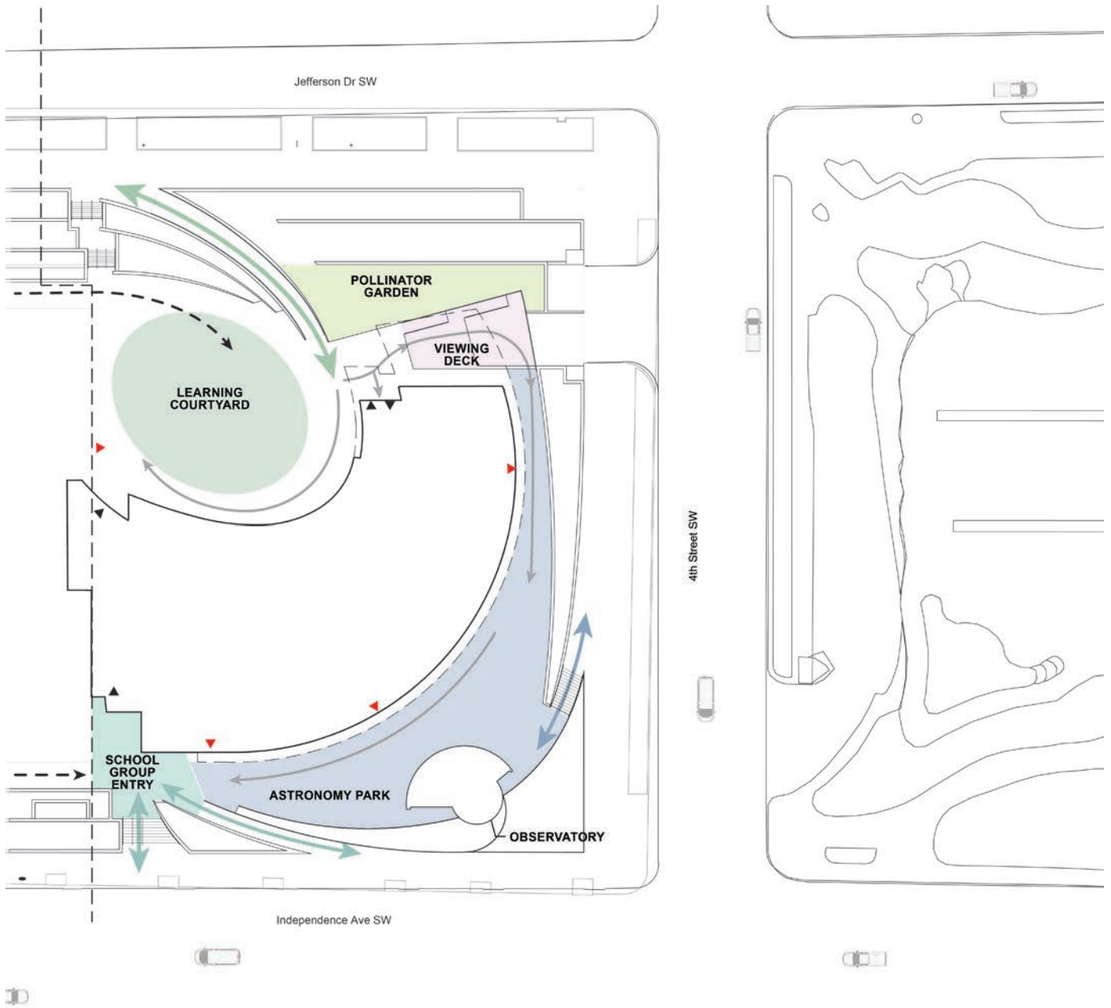
Spatial Organization

The galactic spiral derived from the Learning Courtyard vortex element informs architectural and open space configurations to extend into and over the revitalized landscape.



Circulation

The galactic spiral defines circulation, the ability to perambulate outdoor program areas, and the BLC's architectural form.



Landscape Design

Enlarged Site Plan

The spiral concept shapes the paving design, ramps, new plantings, and program elements, including the green roofs over the parking ramp/loading dock and on Level 2. Extending the spiral voids north and south to overlay the revitalized landscape opens the Learning Courtyard and Phoebe Waterman Haas Astronomy Park to broader public participation in open space programming per the Smithsonian Institution's mission to share knowledge. The planting concept builds upon the Cullina palette to recall American landscapes where stargazing and space exploration grab young imaginations.

NASM Revitalization Planting Palette

Incorporating the NASM Revitalization planting concept, a thoughtfully chosen palette of primarily native perennial, prairie plants, and trees foster biodiversity and support a wide array of pollinators. This approach establishes a visual and ecological connection with the broader national prairie landscape of the Mall, promoting harmonious integration with the site.

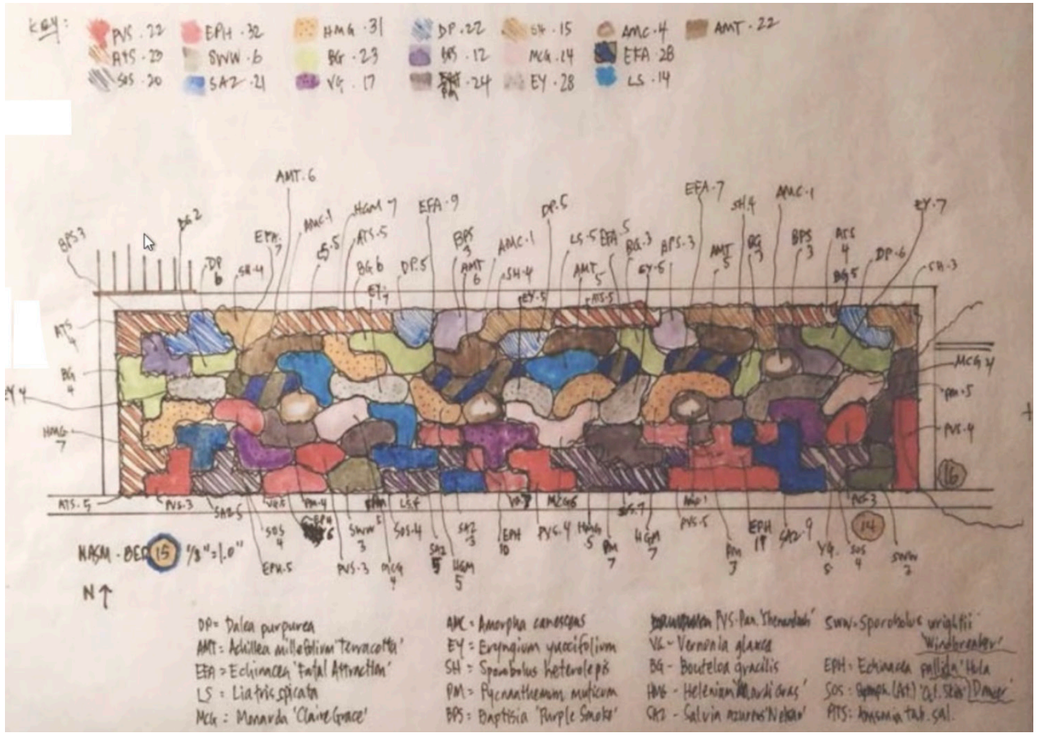
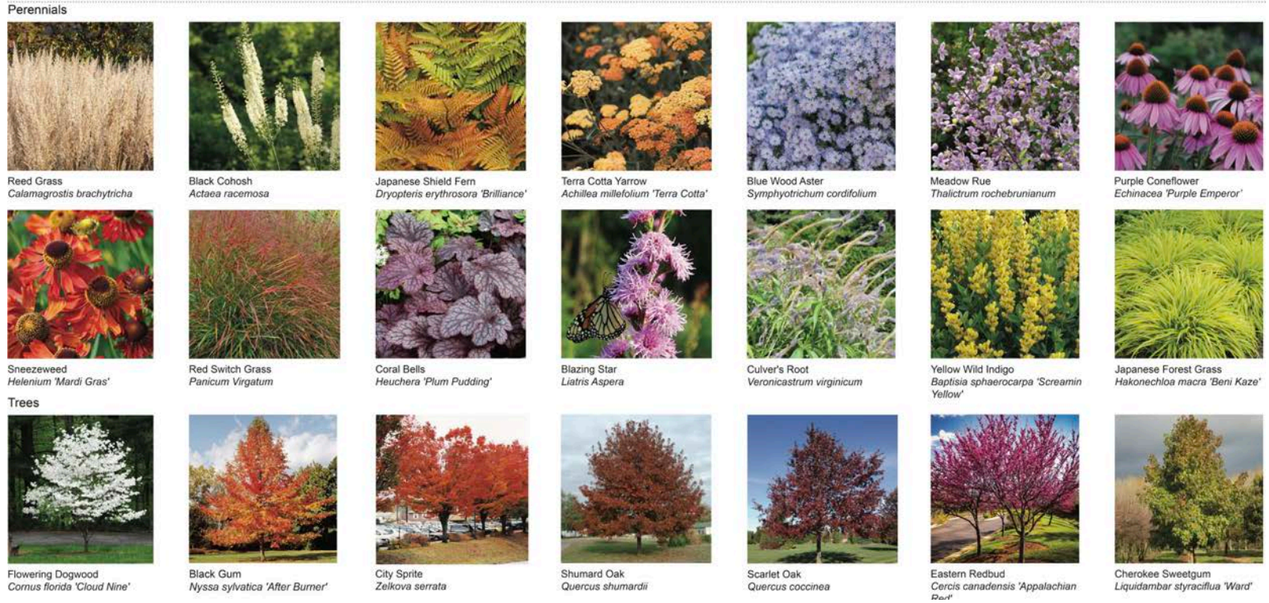
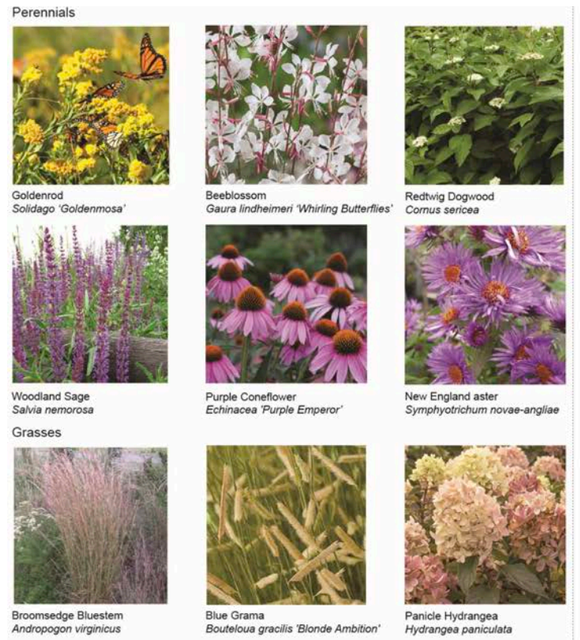


Image of Patrick Cullina sketch for planting concepts, December 2023
Image courtesy of SI

NASM Revitalization Perennials



Prairie Plants

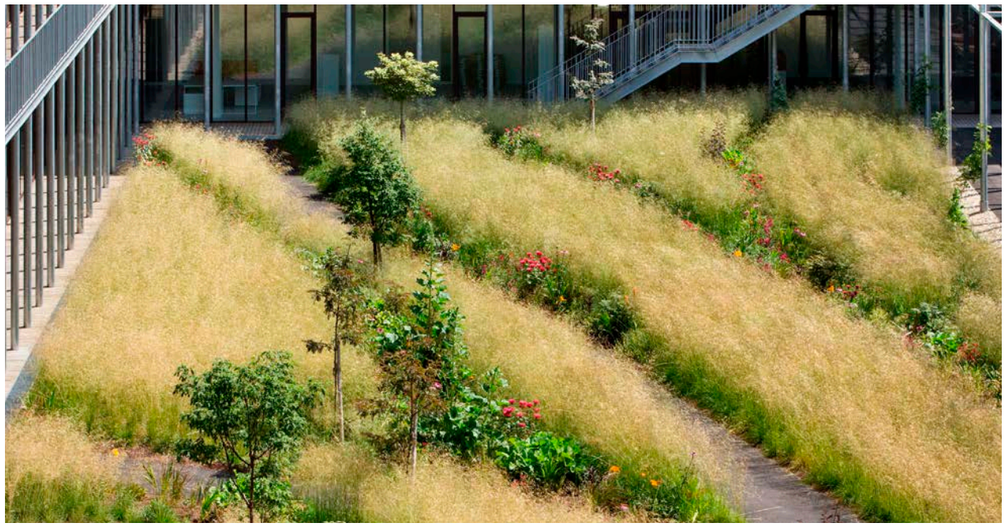


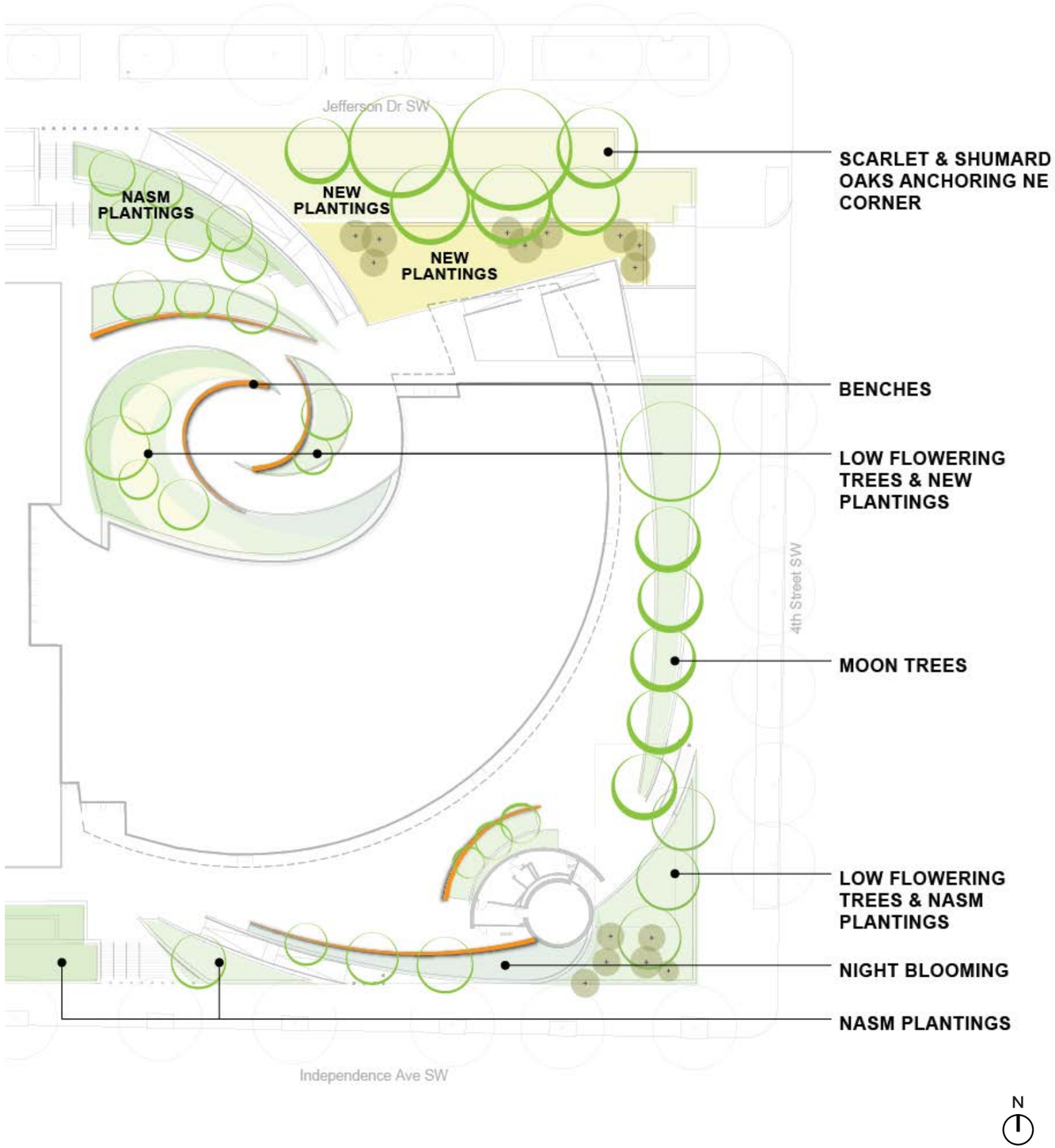
Night-Blooming Plants

Landscape Planting Concept

Ties to the National Landscape

Drawing inspiration from the broader national landscape and regional environments along Route 66, known for the country's darkest skies and numerous observatories, the planting concept incorporates this vision within the Cullina palette, using native species and fine grading techniques.





North - Aerial

Moon Trees


Sweet Gum
Liquidambar styraciflua


Douglas Fir
Pseudotsuga menziesii


Loblolly Pine
Pinus taeda


Sycamore Tree
Platanus occidentalis


Red Wood
Sequoia sempervirens

Perennials / Grasses


Black Cohosh
Actaea racemosa


Meadow Rue
Thalictrum rochebrunianum


Coral Bells
Heuchera 'Plum Pudding'


Reed Grass
Calamagrostis brachytricha


Blue Wood Aster
Symphyotrichum cordifolium


Giant Hyssop
Agastache 'black adder'


Ohio Goldenrod
Solidago ohioensis


Aruncus
Aruncus 'horatio'


Baptisia
Baptisia 'alba false indigo'


Red Switch Grass
Panicum virgatum shenandoah


Purple Coneflower
Echinacea 'Purple Emperor'


Thimbleweed
Anemone virginiana


Blunt Mountain Mint
Pycnanthemum muticum


Butterfly Weed
Asclepias tuberosa


Purple Prairie Clover
Dalea purpurea


Coneflower
Echinacea 'Evan Saul'

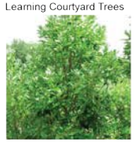

Coneflower
Echinacea pallida 'Hulu Dancer'

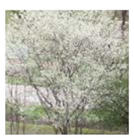

Wild Bergamot
Monarda fistulosa


Wild Quinine
Parthenium integrifolium


Yellow Wild Indigo
Baptisia sphaerocarpa 'Screamin Yellow'

Learning Courtyard Trees


Moonglow
Magnolia virginiana


Common Serviceberry
Amelanchier arborea


Silverbell Magnifbra
Halesia diptera


Japanese Shield Fern
Dryopteris erythrosora 'brilliance'


Dropseed
Sporobolus heterolepis

Southeast - Aerial

Trees

Scarlet Oak
Quercus coccinea

Red Maple
Acer rubrum

Night Blooming

Culver's Root
Veronicastrum virginicum

Toad Lily
Tricyrtis 'Sinonome'

Smooth Hydrangea
Hydrangea arborescens

Night Blooming

Evening Rain Lily
Zephyranthus-drummondii

Casa Blanca Lily
Lilium 'Casa Blanca'

Devil's Trumpet
Datura metel

Mock Orange
Philadelphus coronarius

Evening Primrose
Oenothera biennis

Four O' Clock
Mirabilis jalapa

Night Scented Stock
Matthiola longipetala

Foamflower
Tiarella

Chocolate Daisy
Berlandiera lyrata

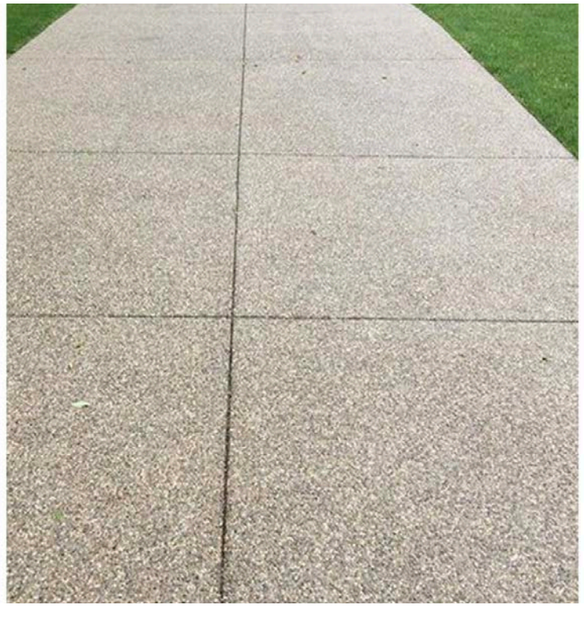
Angel's Trumpet
Brugmansia spp.

Hardscape Materials

The Terrace Level paving is to be cast-in-place concrete with color to match the current paving at NASM-NMB installed as part of the Revitalization Plan. The existing materials as implemented in the Revitalization plan include granite at the north and south entries, concrete throughout the remaining site walkways and public space, and benches in the west grove. Color and aggregate selections are utilized to define galactic spirals as the landscape design progresses, reinforcing the architectural design. Paving joints shall be scored or formed by non-corrosive metal divider strips. A distinctive granite paving material is used to highlight key features in the center of the Learning Courtyard.

The Revitalization hardscape features granite at the north and south entries, with aggregate concrete used for the remaining areas of the NASM site. Benches will also be placed in the west grove. The stone cladding for NASM-NMB is 'Colonial Rose' granite, and this project proposes using blocks of this granite, in a 'Rainbow' finish, for curbs and seat walls. These walls will vary in height from 0 to 18 inches and in width from 4 to 18 inches. Exterior lighting for egress and safety will follow the strategies used at NASM-NMB and designed to reinforce the spiral galaxy concept.

Monolithic Concrete Paving



Granite - Wall Material

Colonial Rose, Rub & Sand FInish

Granite Block - Bench Material

Rainbow, Honed FInish
images above illustrate expected variations of the natural granite

Granite Paving

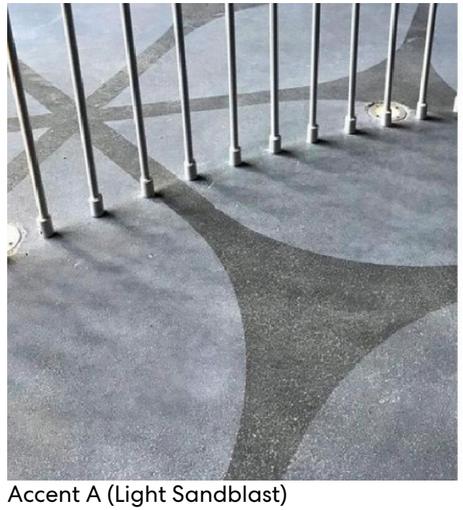
Mesabi Black, Honed FInish

Hardscape Tone & Etching

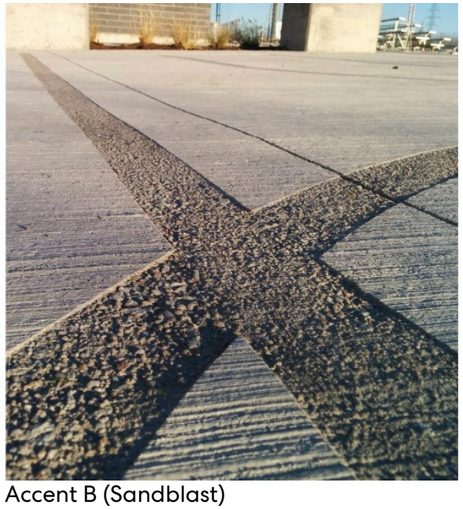
The two-tone concrete finish enhances the galaxy concept by adding depth and dimension to the landscape. The contrasting tones mimic the varied textures and colors of celestial bodies and are applied in a way that mirrors the movement of galaxies, creating a dynamic and visually captivating experience for users.

The etching pattern for the terrace design is achieved by a sandblast-etching method through a high-strength topping concrete that generates a subtle, textural differentiation to the NASM's current monochrome concrete finish. The degree to which sandblasted areas will seem darker than the trowel-finish concrete will be a function of the etching process; in the precedent images, rougher etching provides more tonal contrast. As seen in precedent images, the paving control joints do not detract from the etched pattern when overlaid.

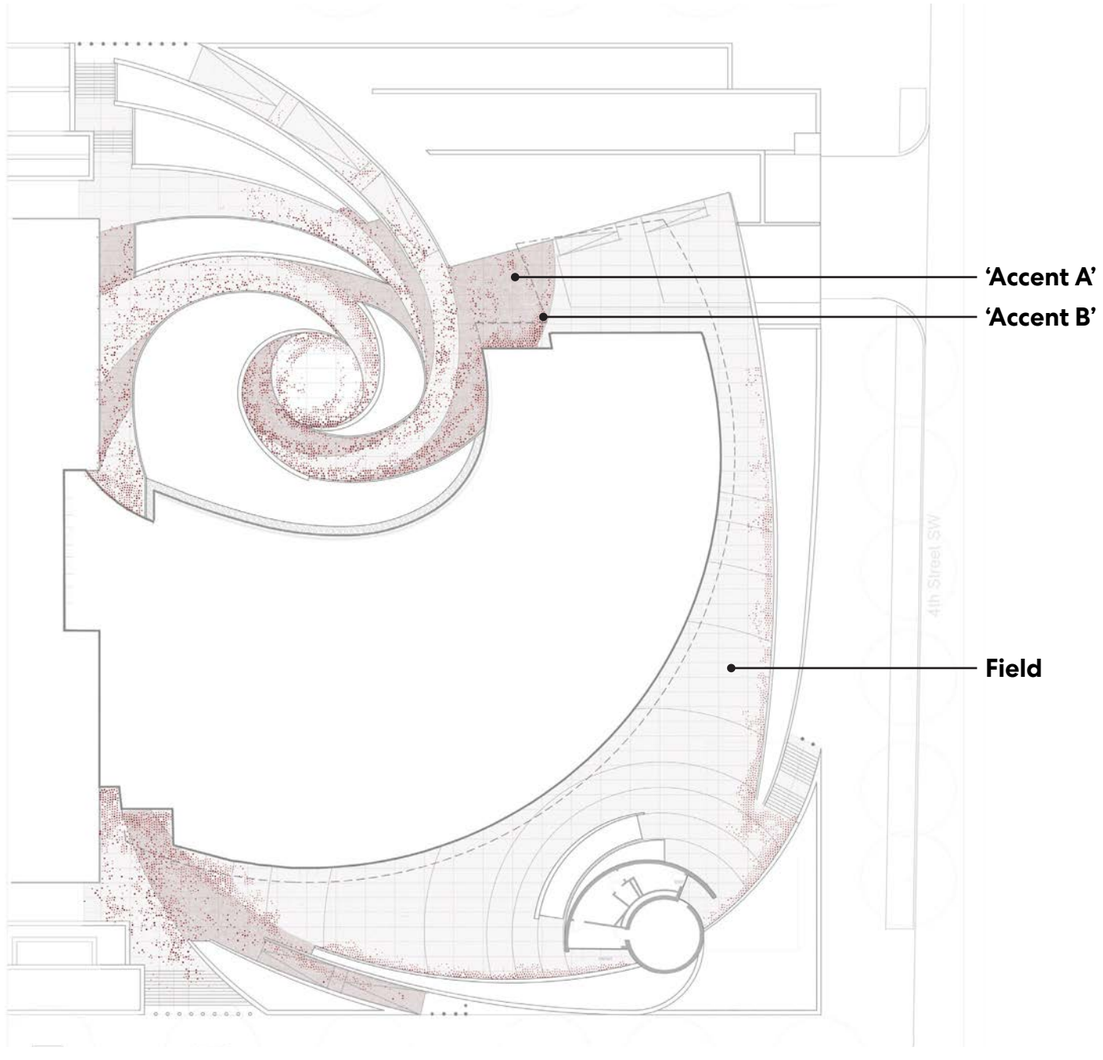
Field - Match Existing Paver



Accent A (Light Sandblast)



Accent B (Sandblast)



Environmental and Historical Considerations

Historic Preservation

Section 106 Process Overview

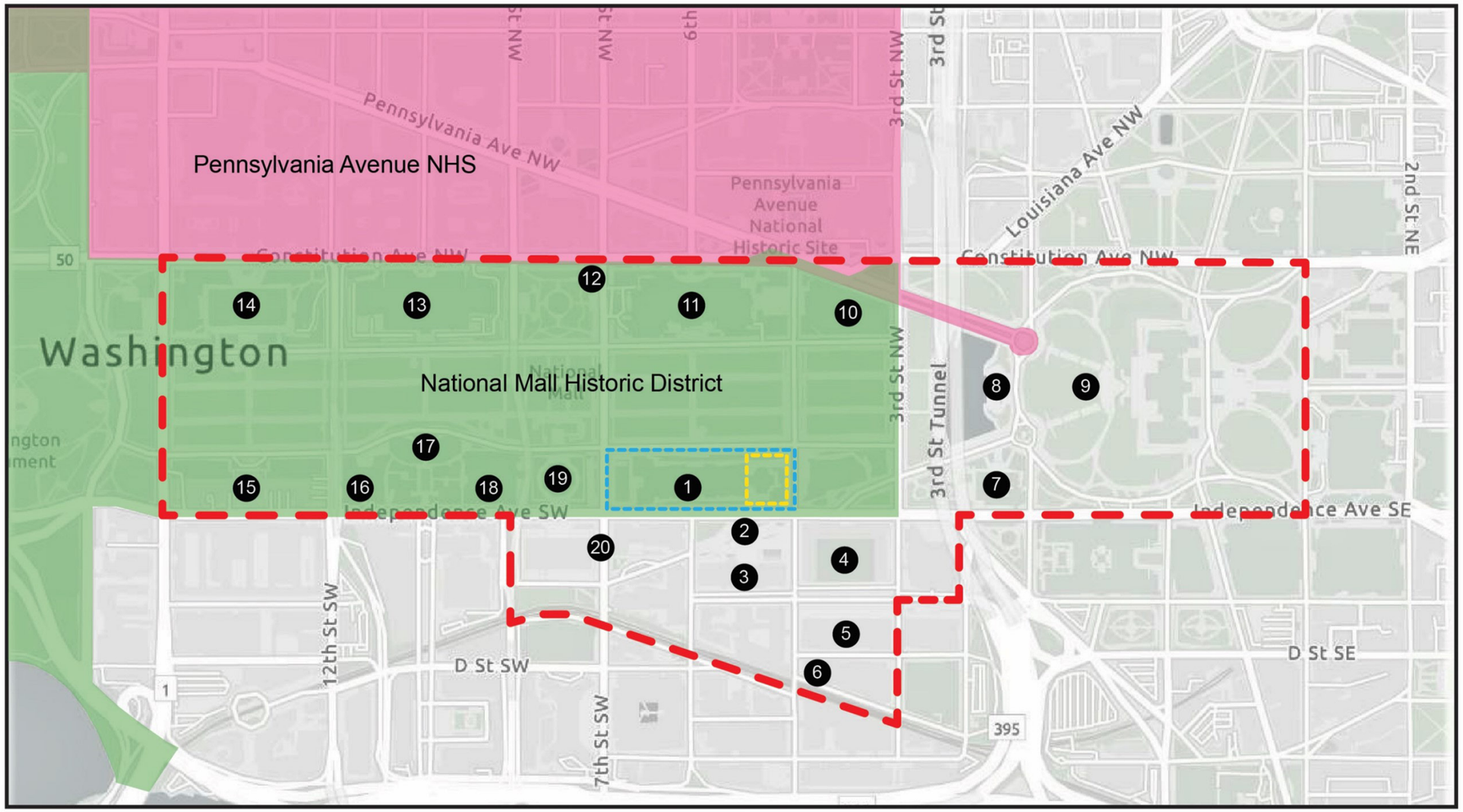
Section 106 of the National Historic Preservation Act (NHPA):

- NASM contributes to the National Mall Historic District
- Section 106 requires federal agencies to consider the effects of their projects on historic properties and seek ways to avoid, minimize, or mitigate any adverse effects
- Section 106 requires consultation to seek, discuss, and consider the views of “consulting parties” who are invited to participate in the process
- Approximately 90 consulting parties or organizations were invited to participate
- Refer to Assessment of Effects Report

NASM View Looking SW from NE, Historic American Building Survey, 2017.

Historic Preservation

Area of Potential Effect



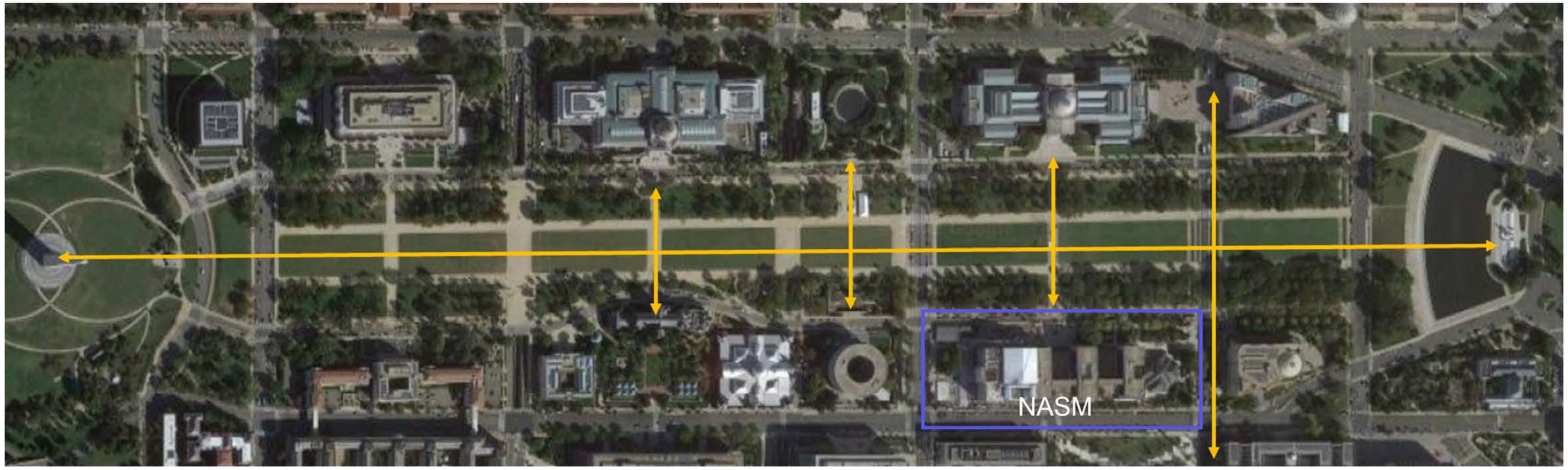
Key					
NASM Site / Project Area		5	Mary E Switzer Federal Building	14	National Museum of American History
Area of Potential Effects		6	Terminal Refrigerating & Warehousing Co.	15	US Dept of Agriculture
National Mall Historic District		7	US Botanic Gardens	16	Freer Gallery
Pennsylvania Avenue NHS		8	Ulysses S Grant Memorial	17	Smithsonian Castle
1	National Air & Space Museum (NR Eligible)	9	US Capitol and Grounds	18	Arts & Industries Building
2	Dwight D Eisenhower Memorial	10	National Gallery of Art East Wing (NR Eligible)	19	Hirshhorn Museum (NR Eligible)
3	Lyndon B Johnson Dept of Education	11	National Gallery of Art West Wing	20	Orville & Wilbur Wright Federal Buildings (NR Eligible)
4	Social Security Administration	12	Bulfinch Gatehouses and Gateposts		
		13	Natural History Museum	*	Plan of the City of Washington (Not Shown)

Historic Preservation

National Mall Historic District

Contributing Views and Visual Relationships

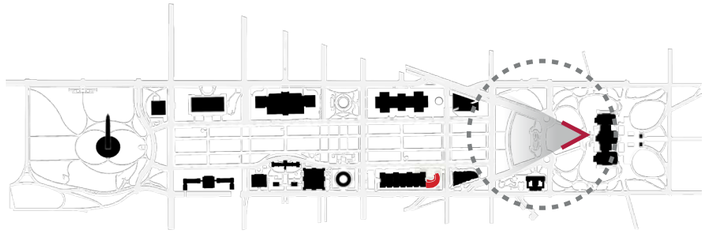
- Reciprocal view east-west between the Washington Monument to the Capitol
- North-south vista along 4th Street
- North-south vista along 6th Street, between NASM and the National Gallery West Building
- North-south vista along 8th Street, toward the National Archives
- North-south vista along 10th Street, between National Museum of Natural History and the Smithsonian Institution Building
- Visual relationships include views to the elms and the buildings along the Mall from the pedestrian walks and central grass panels

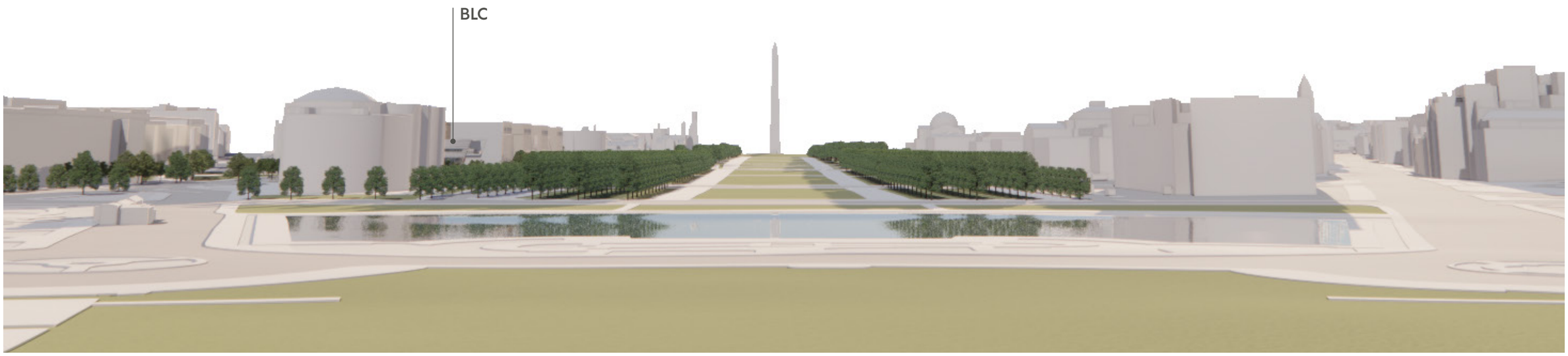


Contributing Viewsheds

Capitol Steps

This northeast view from the Capitol steps highlights the pavilion-like nature of the BLC relative to its larger context. The much lower height, setbacks, and surrounding open areas of the BLC allow the building to be deferential to its more prominent and primary NASM and NMAI neighbors.



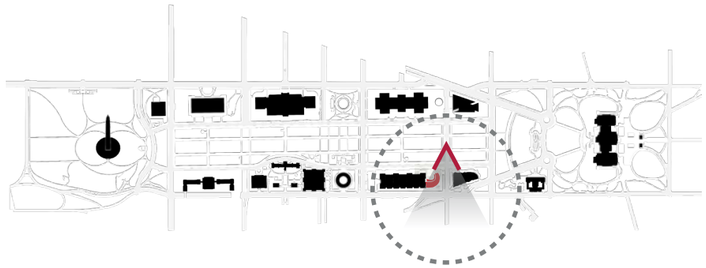


Contributing Viewsheds

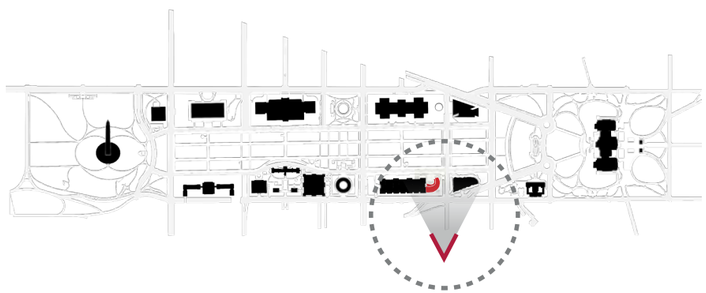
4th Street

The view from 4th Street looking south reveals how the additional thirty foot setback from the 4th Street corridor mirrors the NMAI setback, visually widening the corridor as it approaches the National Mall. The Learning Courtyard provides an open space connection to the major public realm of the National Mall to the north across Jefferson Drive.

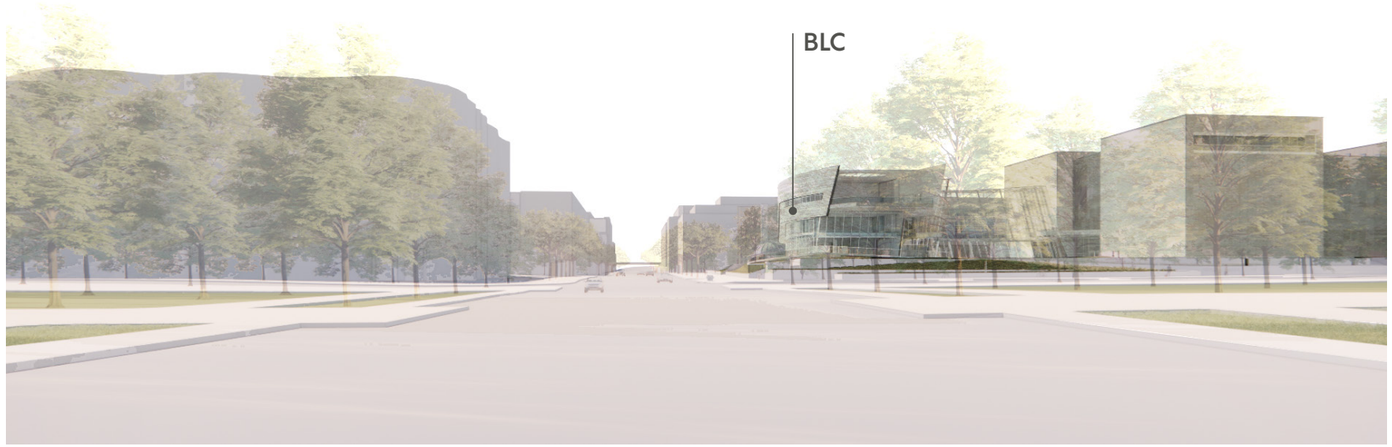
The view from 4th Street looking north reflects how the green space within the additional thirty foot setback and the Phoebe Waterman Haas Astronomy Park located south of the BLC provide another open space connection to the more prominent Eisenhower Memorial across Independence Avenue.

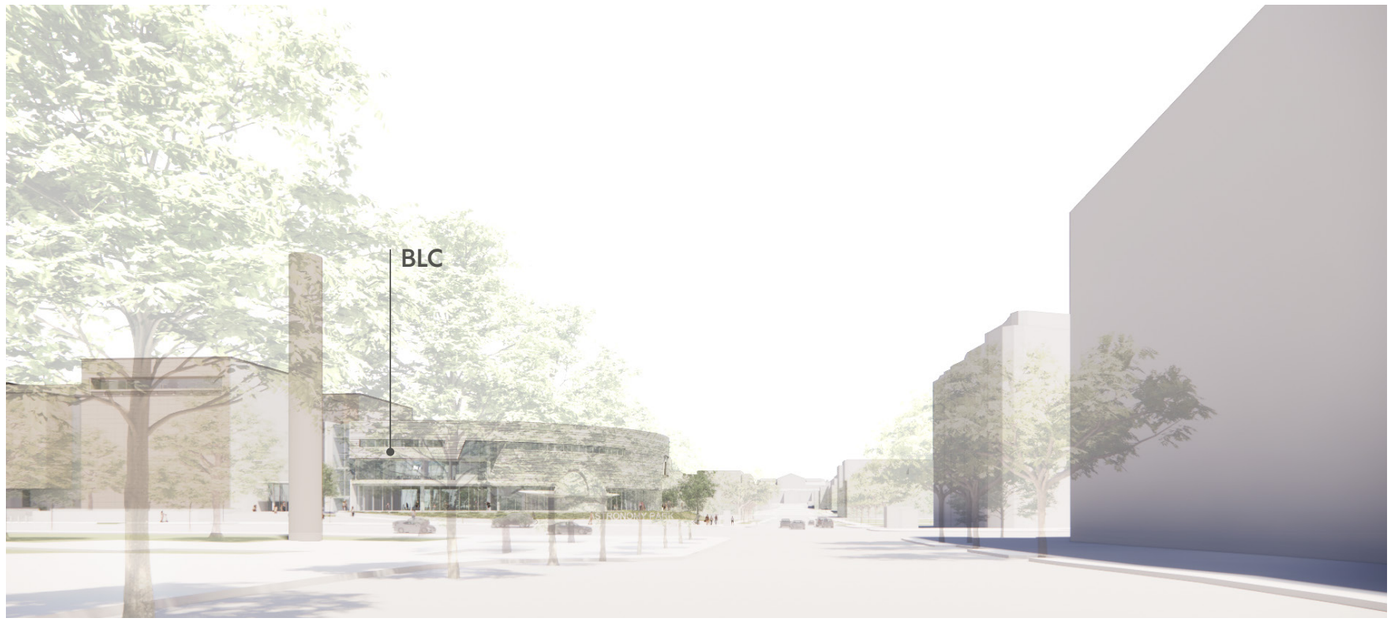


4th Street South



4th Street North

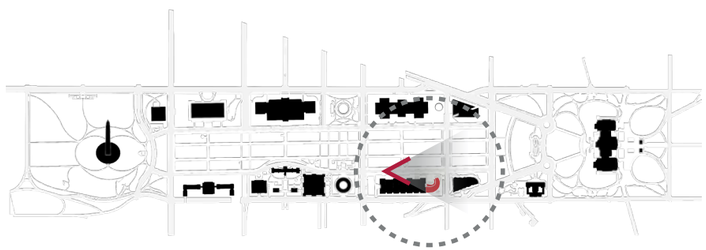




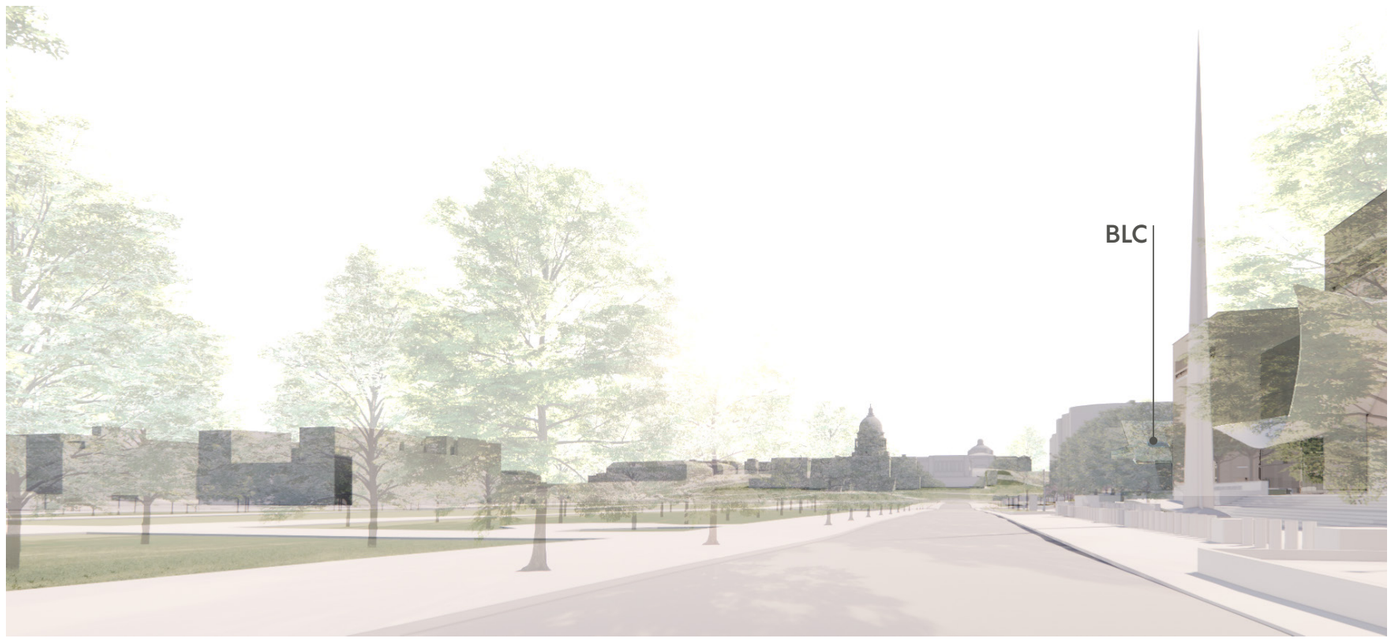
Contributing Viewsheds

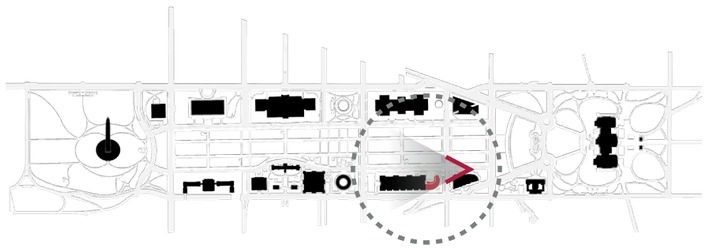
Jefferson Drive

The views looking east and west along Jefferson Drive show the relationship of the BLC as lowered and setback from NASM, its primary neighbor.
In both views, the new exterior canopy at NASM's north vestibule is visually dominant in the streetscape, signaling this point as the main entrance.



Jefferson Drive East



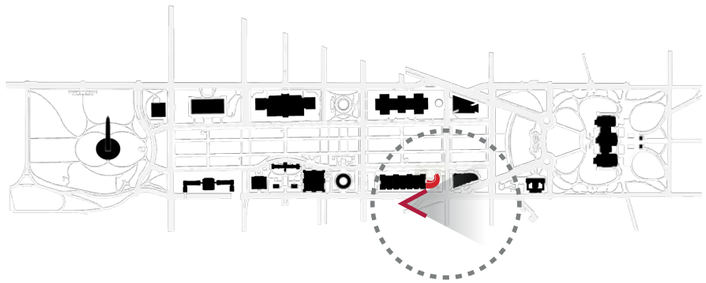


Jefferson Drive West

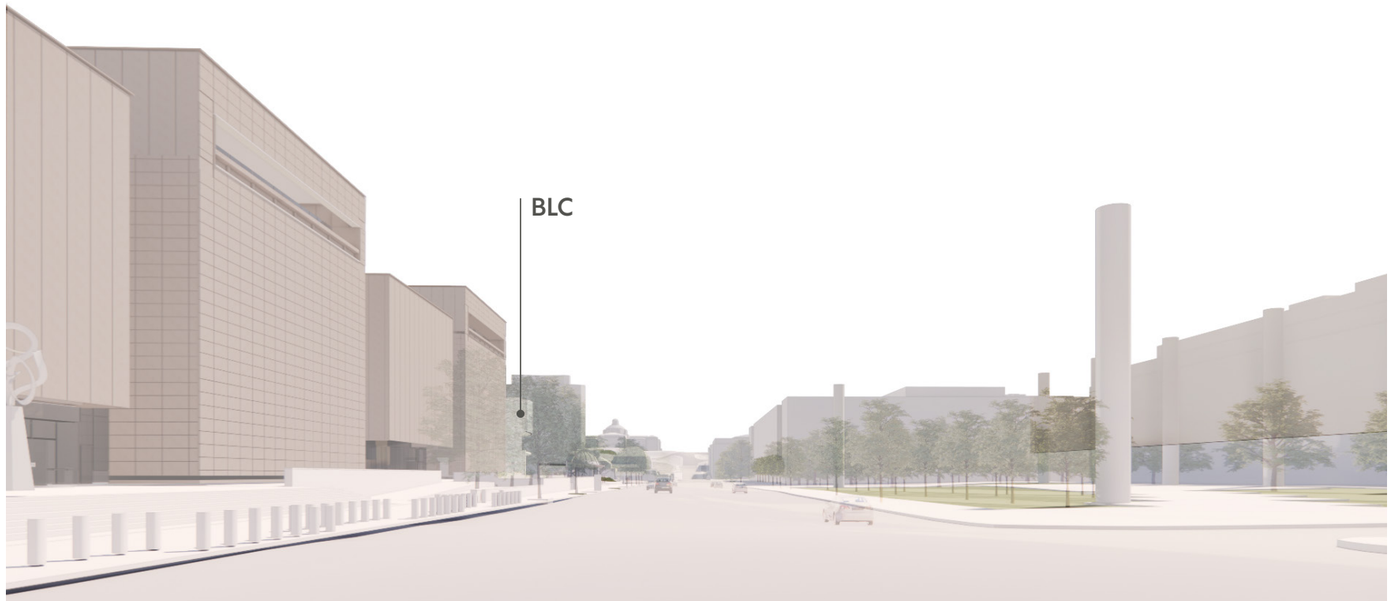
Contributing Viewsheds

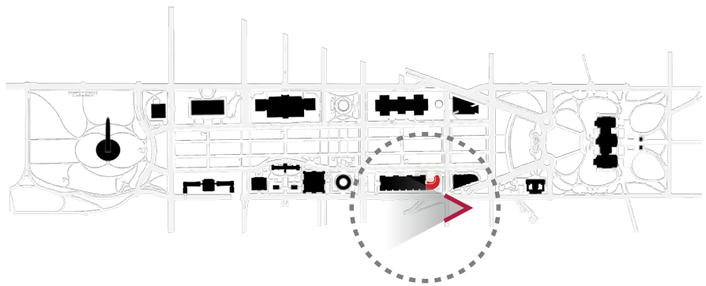
Independence Ave

The west view highlights the distinct nature of the spiral form of the BLC as it bends away from the 4th Street and Independence intersection allowing the open space of the Phoebe Waterman Haas Astronomy Park to occupy the corner as it flows around the building.

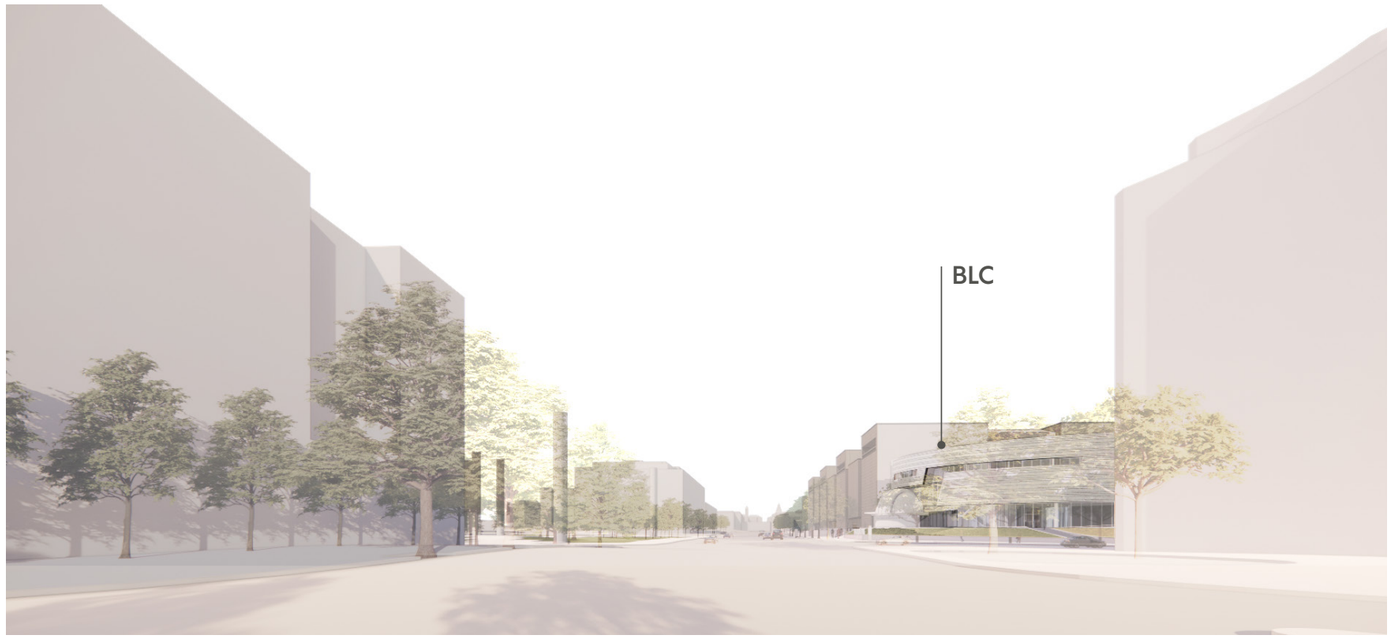


Independence Ave East



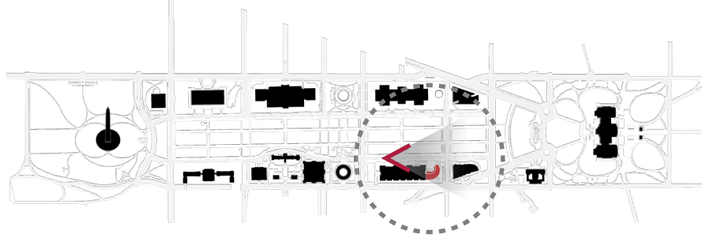


Independence Ave West

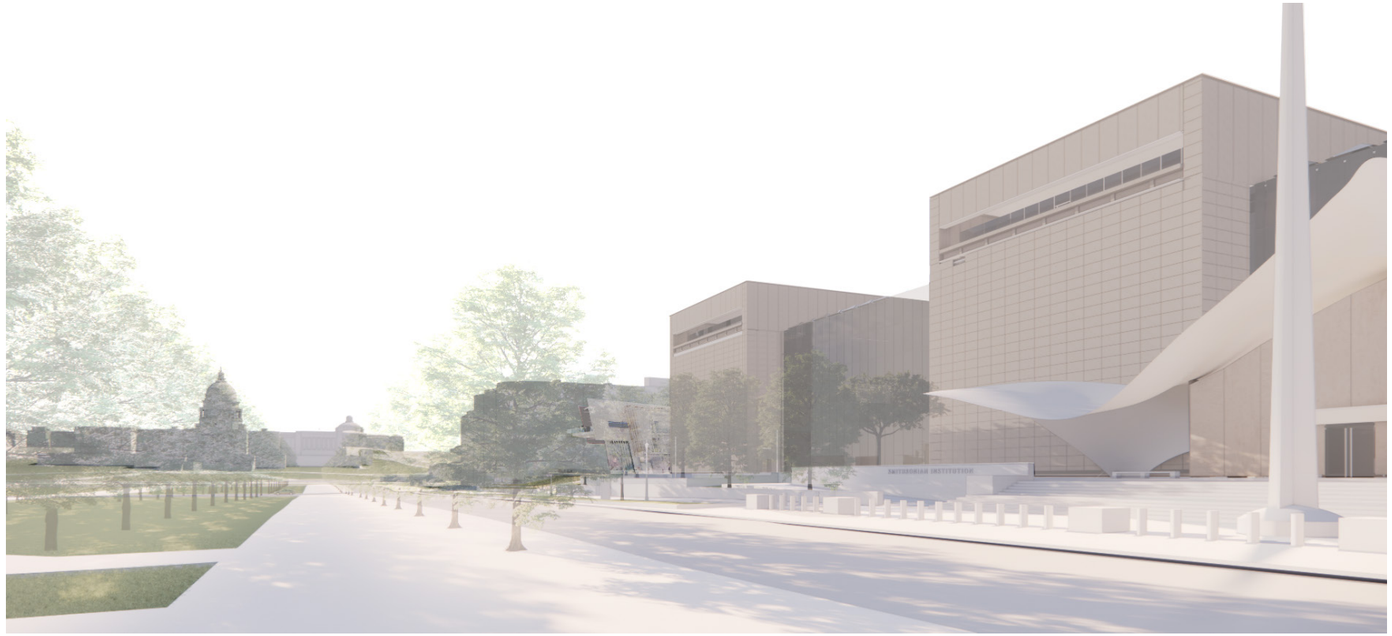


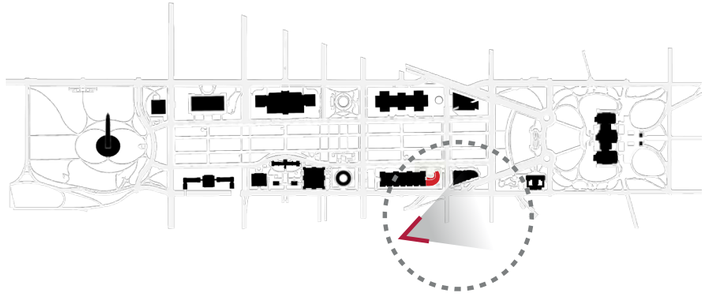
Contributing Viewsheds

The pedestrian level view at the new exterior canopy at NASM's north vestibule reinforces this point as the main entrance and the BLC as secondary. The pedestrian view looking east reveals the relationship of the BLC to its larger context including the Capitol.

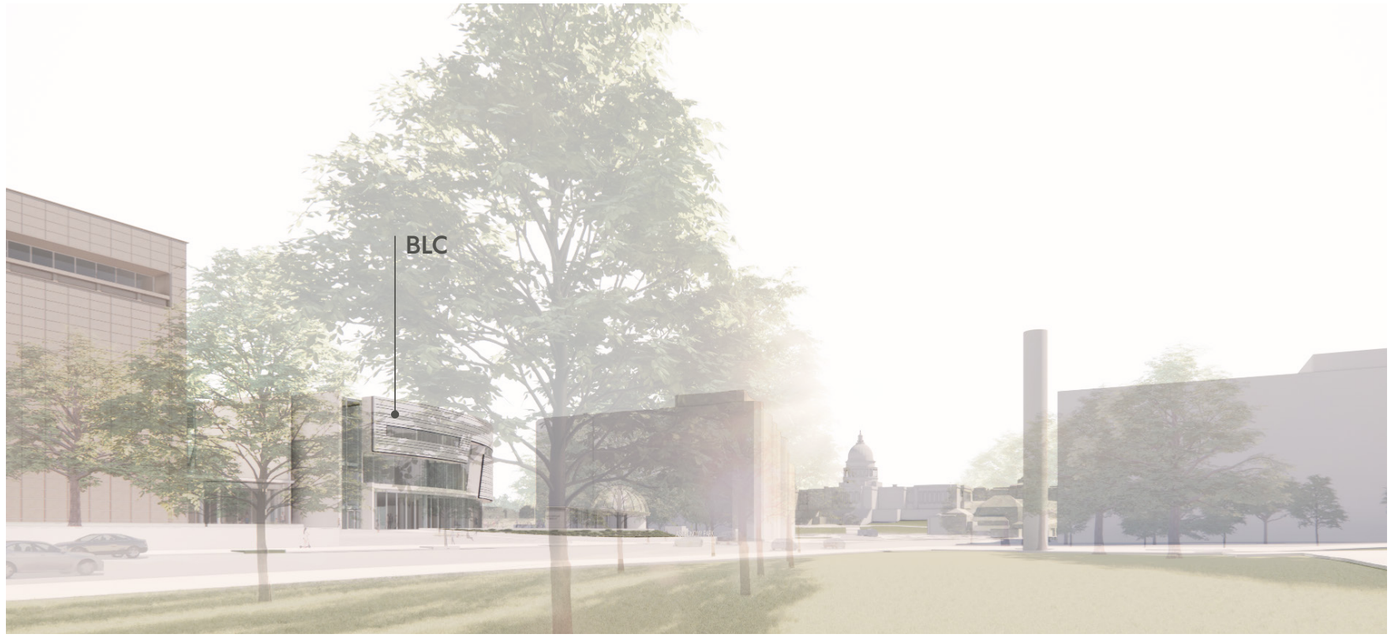


Jefferson Drive access from NASM entry





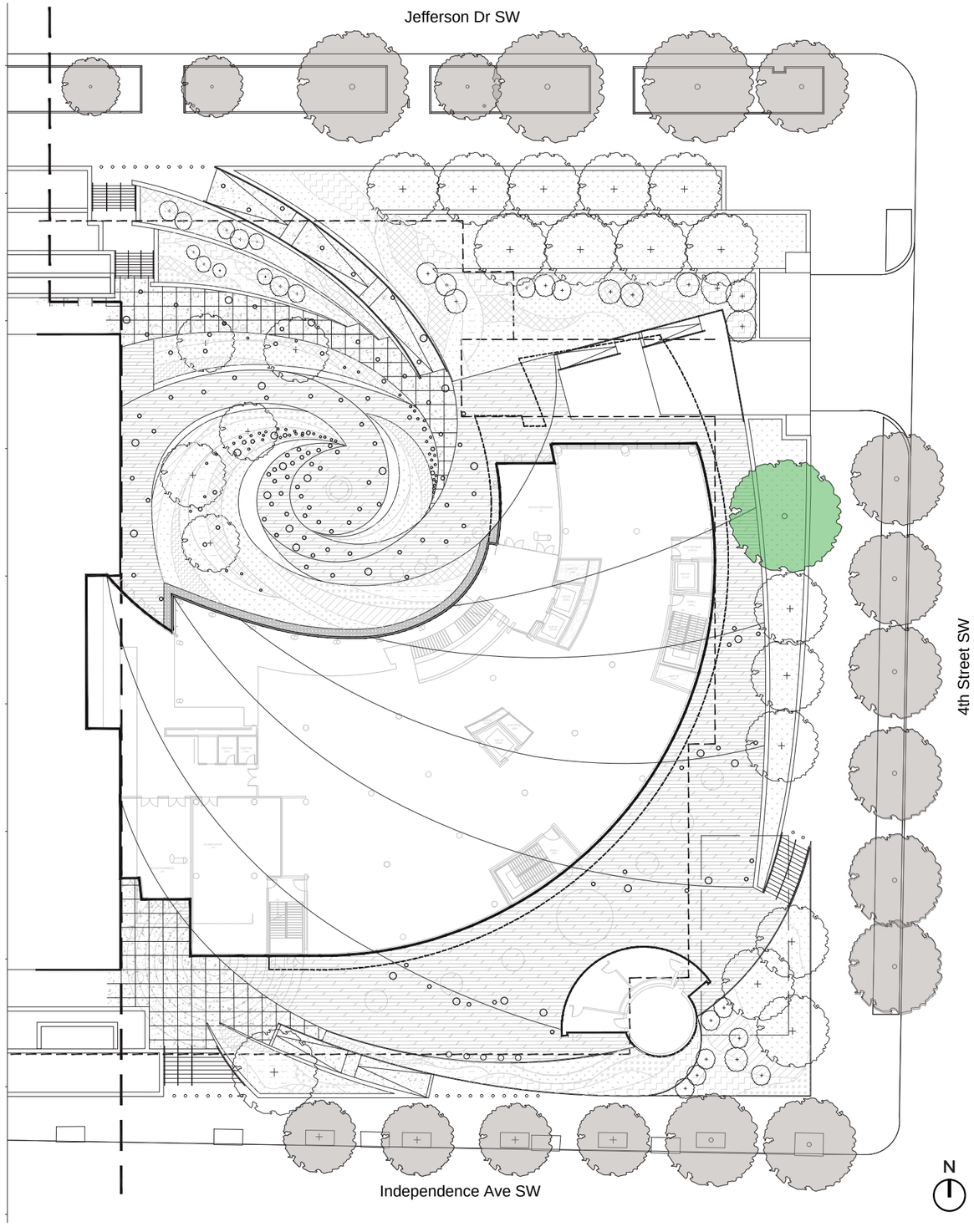
Independence Ave West



Natural Resources

Existing Tree Preservation

The site does not contain sensitive environmental resources and there is are no anticipated adverse effects on natural resources with the construction of the BLC. The site plan design will allow for the preservation of an existing Pin Oak tree on the east side of the site. In addition, street trees will be preserved and protected during the construction phase.



Feet

0 20 40 80

Existing Pin Oak Tree to be protected

Existing Public Space Street Tree to remain and be protected

Vulnerability & Resilience

Flood Mitigation

Resiliency measures against the risk of flooding were established and implemented by the NASM Revitalization project. This information is for reference only. The following is from the NASM Final Construction Documents: Basis of Design Report, Volume 1, SF Project No. 1206101, dated 31 January 2018, pages 4.13 – 4.14:

“The site design incorporates the target of maintaining facility resiliency against the risk of floods.” Per Executive Order 13690, the site perimeter is designed to withstand the flood water elevation that is equivalent to a 100 year flood plain, plus an additional three feet of clearance. This establishes a target elevation of 15’-6” above sea level that must be accommodated in the design of perimeter site walls and flood gates where needed.

Automated hydraulic flood gates are being installed at the top of the northeast ramp to the Parking Garage and Loading Dock due to the exposure to the 100-year flood plain, with further risk represented in the flood water target of a 100 year flood plain plus three feet.

Life safety and emergency systems in the BLC will be placed on elevated slabs or be protected with curbs, with sump pumps provided in critical areas. Equipment located in the Basement will be located in Mechanical Equipment Rooms that are 4’-0” above the Loading Dock drive aisle elevation.

Redundancy

Heating water and chilled water plants will be provided with N+1 redundant equipment. Equipment located on the Loading Dock Level will be located in Mechanical Equipment Rooms that are 4’-0” above the Loading Dock.

One example is the potential chilled water and heating water cross-connections to NASM systems - if the equipment in one building is down, the cross - connection in piping can be opened to allow for additional cooling and heating capacity.

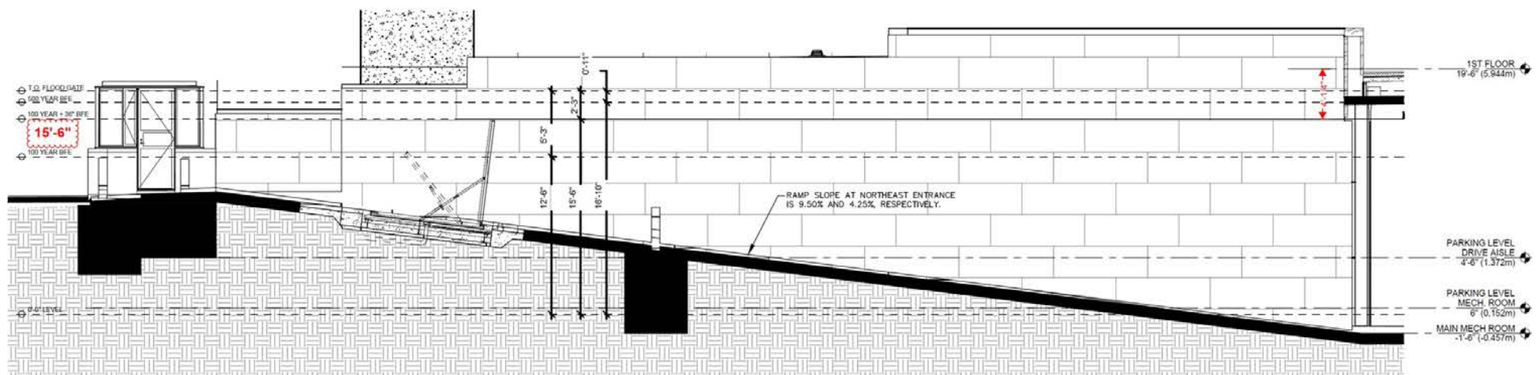


Figure 2. Flood Gate and Ramp Section from Revitalization Project

Appendix

Alternatives - Hardscape Design

In this phase the design team progressed the hardscape design to further integrate the notion of the spiral galaxy while balancing with the concentric orbits of the Astronomy Park exhibits on the Southwest corner. The hardscape as noted previously is made up of a two-tone concrete finish forming the spiral arms with an added depth and varied texture and tone to mimic the celestial bodies creating a dynamic and visually captivating experience

Preferred Option

Alternatives - South Elevation Refinements

Option 2: Preferred

Alternatives - South Elevation Refinements

Option 01: Preferred

Option 02

Option 03

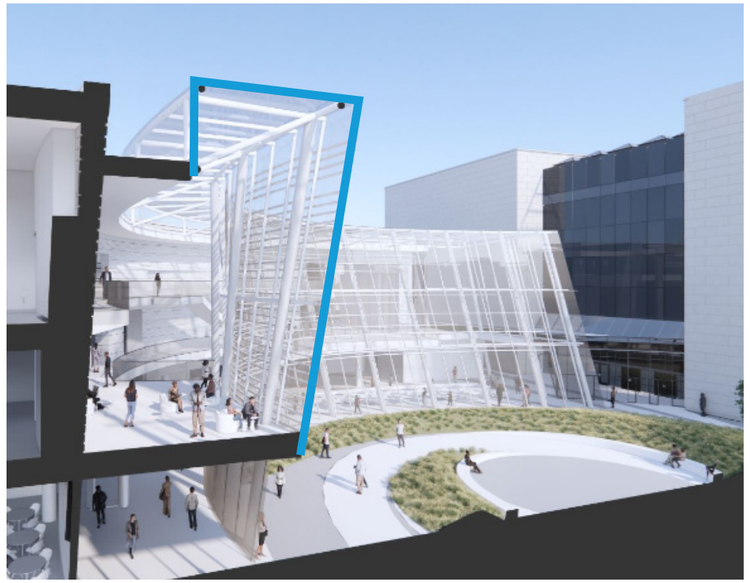
Alternatives - Building Composition

Spiral Concourse Optimization

The previous design scheme had a full-width, glass roof, a glass clerestory, double-curvature massing geometry, and resulting curved glass panels. In the this design phase, the team worked to optimize the geometry of the overall massing and simplify the glass modulation of the Spiral Concourse.

Through a collaborative process of analysis and design refinement, the Concourse massing geometry was changed from a double-curved volume to a single-curve volume with a slant. The next step was reducing the glass roof from full-width to an 8-foot wide continuous skylight, ensuring the space will still receive abundant daylighting while reducing the overall glazed area. The glass wall geometry was “unrolled”; the resulting surface no longer necessitates curved glass panels. Instead, flat glass is used at a consistent spacing (about 5’-0”) with standardized mullion sizing, greatly simplifying the overall complexity of the system. The solar fins have been thoughtfully refined and detailed, and a bird-safe frit treatment will be used on the glass.

The resulting interior space is more dynamic and exciting as a result of these refinements, as the transparent, sloping surface sweeps in and out across the Concourse and further emphasizes the dynamic energy of the Spiral Galaxy concept.



Concept (Previous)

Features:

- Full-width, glass roof
- Double-curved geometry
- Vertical clerestory at southern exposure
- Curved glass panels

Option 2: Preferred

Features:

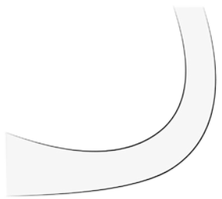
- Linear skylight and solid roof
- Single-curved geometry
- No clerestory
- Flat glass panels

Alternatives - Building Composition

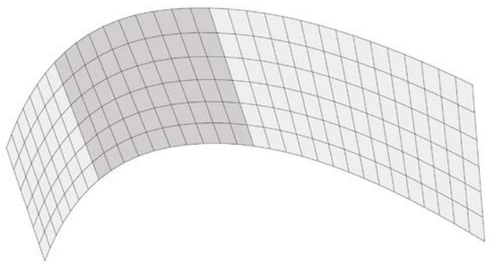
Spiral Concourse Optimization

Curved Glass Study

Cold Bent - Panel Bendability Analysis



Plan Diagram - Double Curved

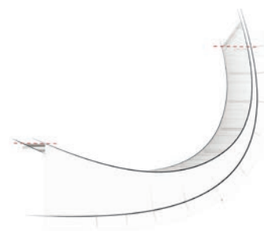


This study identified out-of-plane deflection for curved panels where they might exceed the desirable limit.

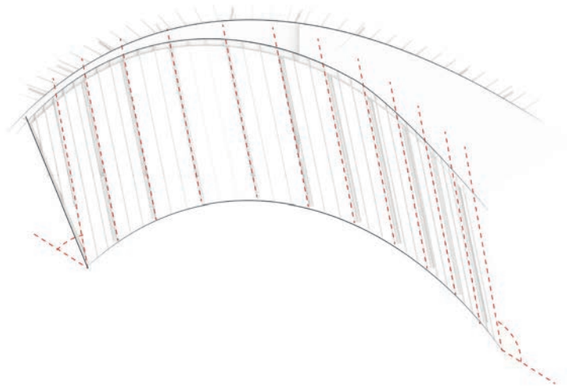
Concept (Previous)

Unrolled Surface Study

Flat Glass with Standardized Mullions



Plan Diagram - Single Curve



The breakthrough came when the team “unrolled” the transparent surface. This removed curved glass and optimized the entire system.

Preferred Option

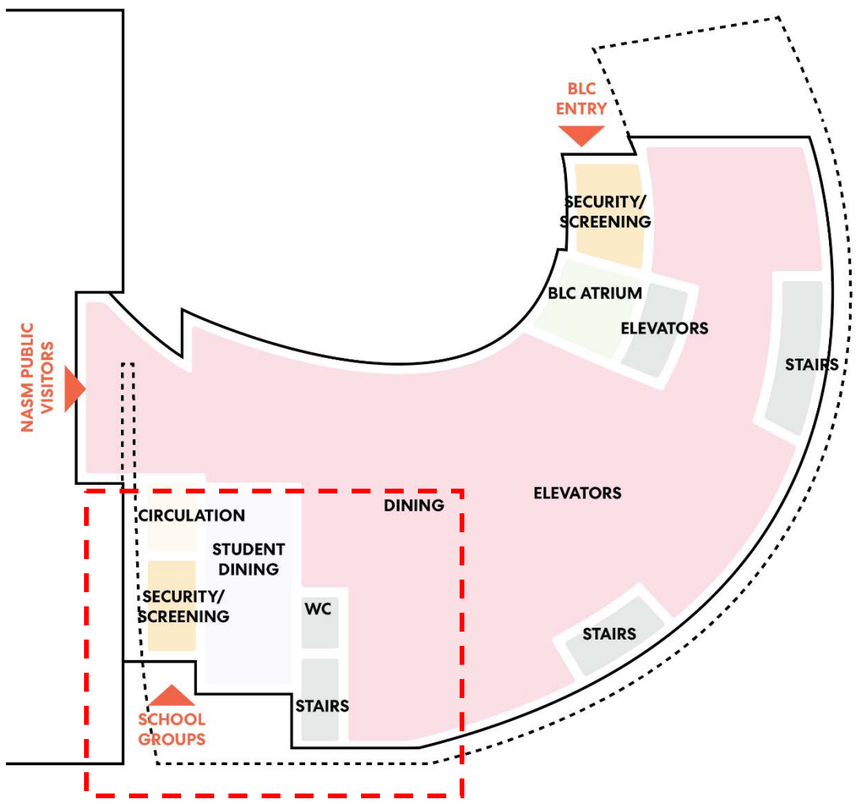
Alternatives - Building Composition

Spiral Concourse Optimization

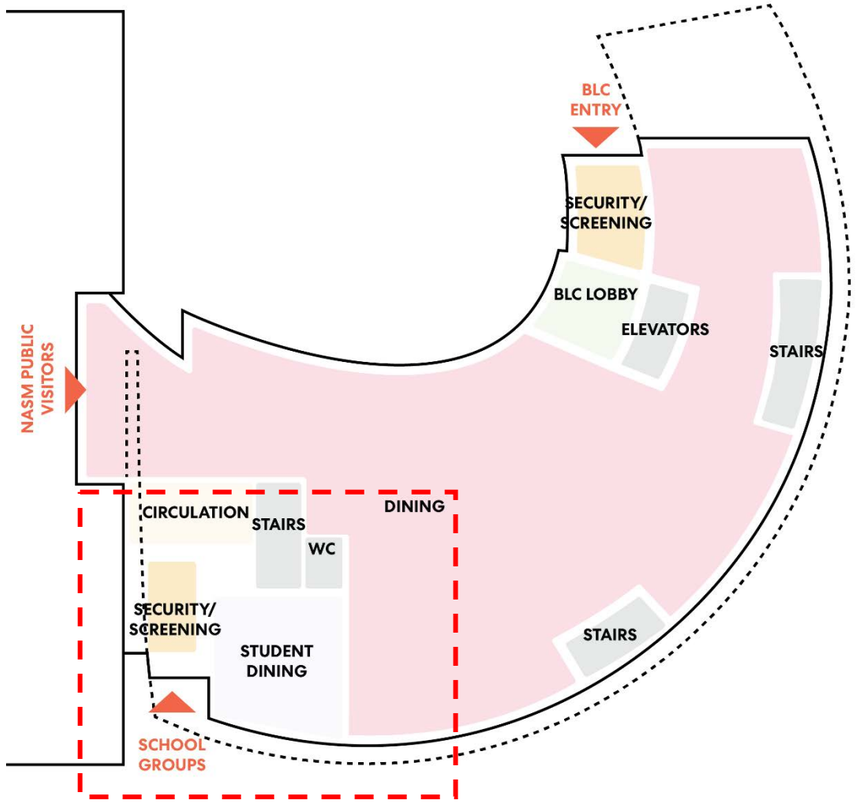
Preferred Option

Alternatives - Physical Connection to NASM

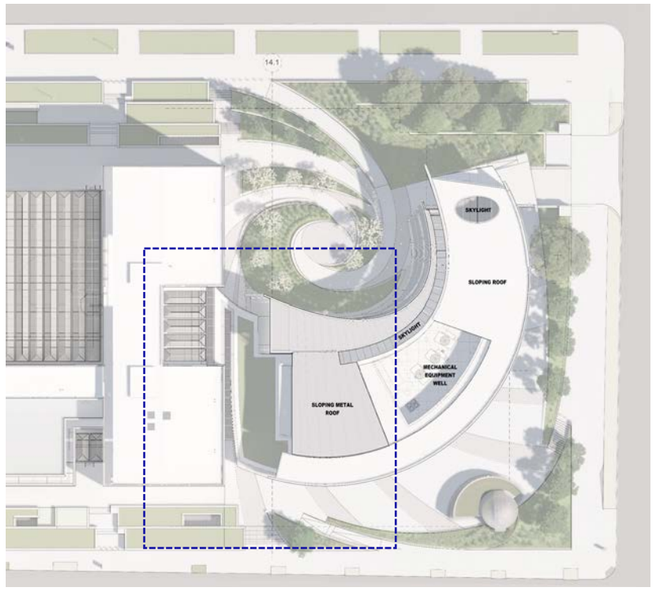
Previous



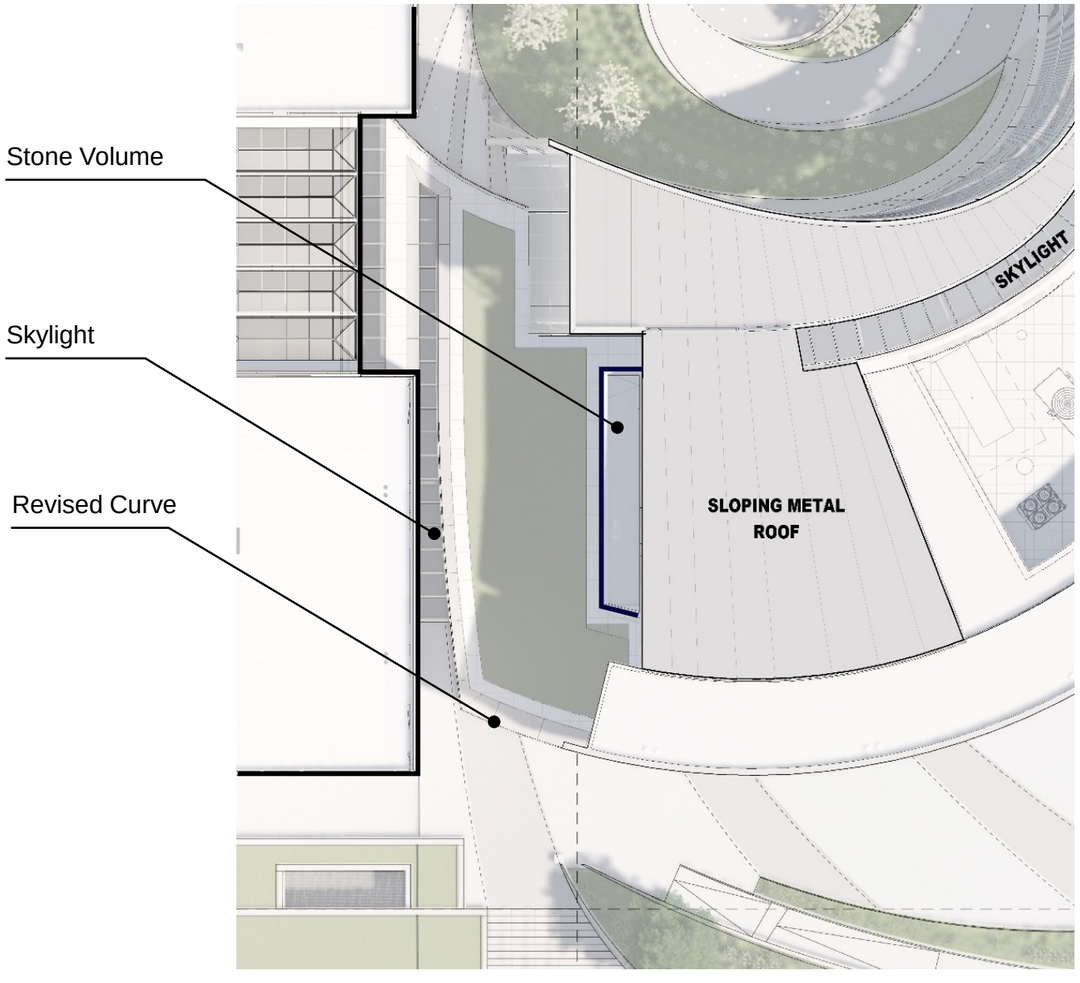
Update



Alternatives - Physical Connection to NASM

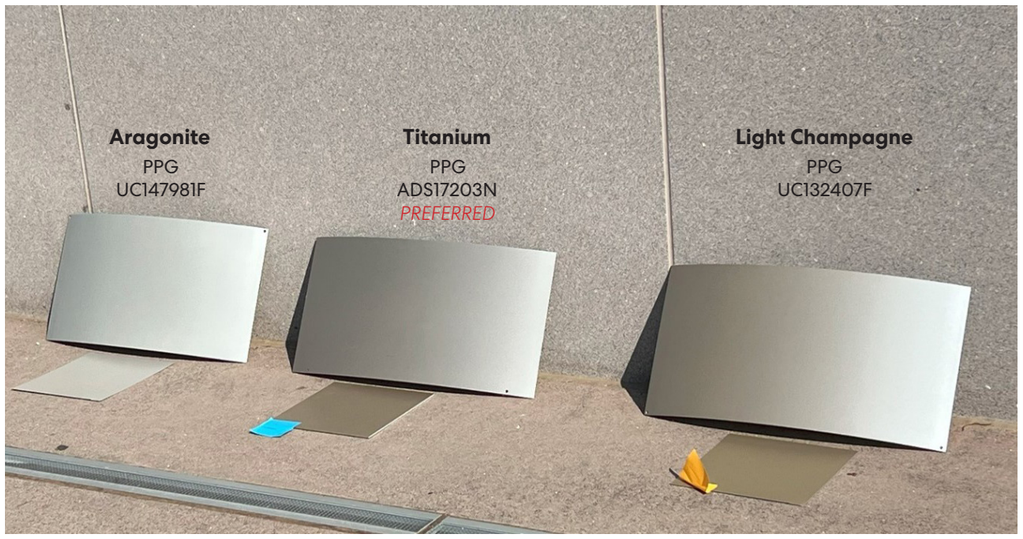


Site Plan Reference



Alternatives - Material Refinements

As noted previously all materials and alternates were presented on September 20th, 2024 at Consulting Parties 4a Meeting. The preferred finishes from the results of the discussion are shown on the right,



Exterior Material Key

ALUMINUM PLATE AND EXTRUDED ALUMINUM FINS

Light Champagne
PPG
UC132407F

Aragonite
PPG
UC147981F

Titanium
PPG
ADS17203N
PREFERRED

Gray Marble
PPG
1002-4

ALUMINUM SOFFIT

Titanium
PPG
ADS17203N
PREFERRED

Gray Marble
PPG
1002-4

SILICONE-GLAZED MULLIONS

Brown Sugar
Benjamin Moore
2112-20
PREFERRED DARK

Gibraltar Gray
PPG
1002-6

On the Rocks
Sherwin Williams
7671
PREFERRED LIGHT

Fall Chill
PPG
1003-1

CLEAR GLASS WITH BIRD FRIT

VE24-85 (GL-01)
Viracon

DARK GLASS

Make-up #2 (GL-02)
Interpane

EXTERIOR DOOR FRAMES

Brown Sugar
Benjamin Moore
2112-20
PREFERRED DARK

Onyx
PPG
1011-7

On the Rocks
Sherwin Williams
7671
PREFERRED LIGHT

Fall Chill
PPG
1003-1

STEEL COLUMNS AND MULLIONS

On the Rocks
Sherwin Williams
7671
PREFERRED LIGHT

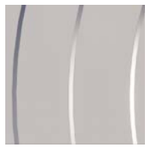
Fall Chill
PPG
1003-1

HARDSCAPE

Field Concrete

Accent A: Sandblast (Light)

Accent B: Sandblast

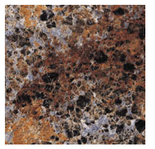


Inlaid Metal Strip

STONE

Walls: Colonial Rose

Seating: Rainbow
PREFERRED



Seating: Agate

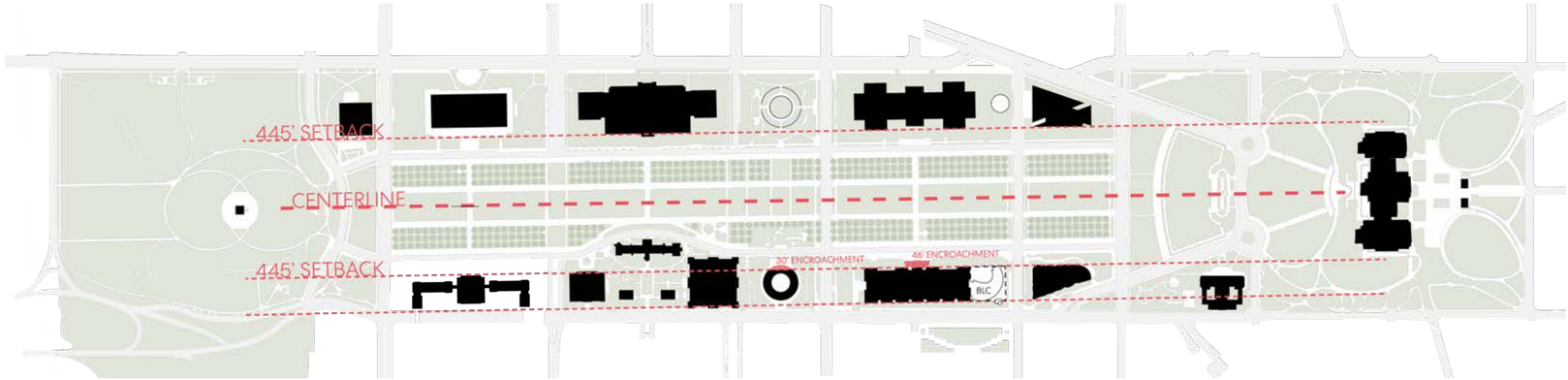
Site Context

Contextual Framework

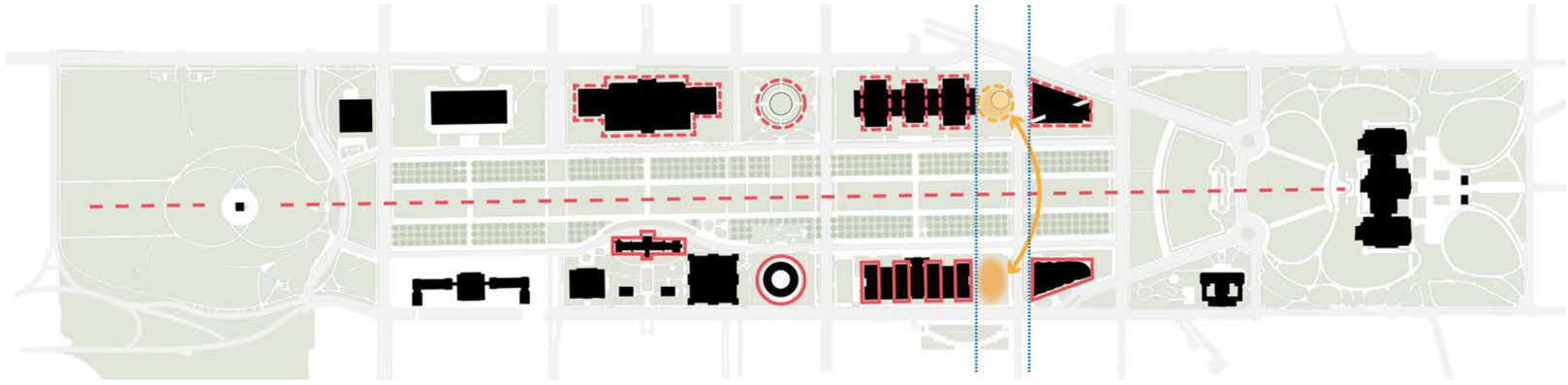
The site is defined on the north side by the face of the National Air and Space Museum (NASM) along the 445'-0" setback as prescribed by the McMillan Plan. It is aligned with the southern face of NASM-NMB and is cornered by the historic Maryland Avenue vista.

The Mall planning framework as set out by the McMillan Plan includes a formal reflection of its building developments on either side of the east/west centerline between the Capitol building and the Washington Monument. In 1976 Gyo Obata's design for the National Air and Space Museum was reflected and is in alignment with the National Gallery of Art, fitting like two pieces of a puzzle. The site is situated across the Mall from I.M. Pei's cascading waterfall and entry plaza to the National Gallery of Art West Building. This sets forth a language of reciprocal open space and building mass fronting the Mall.

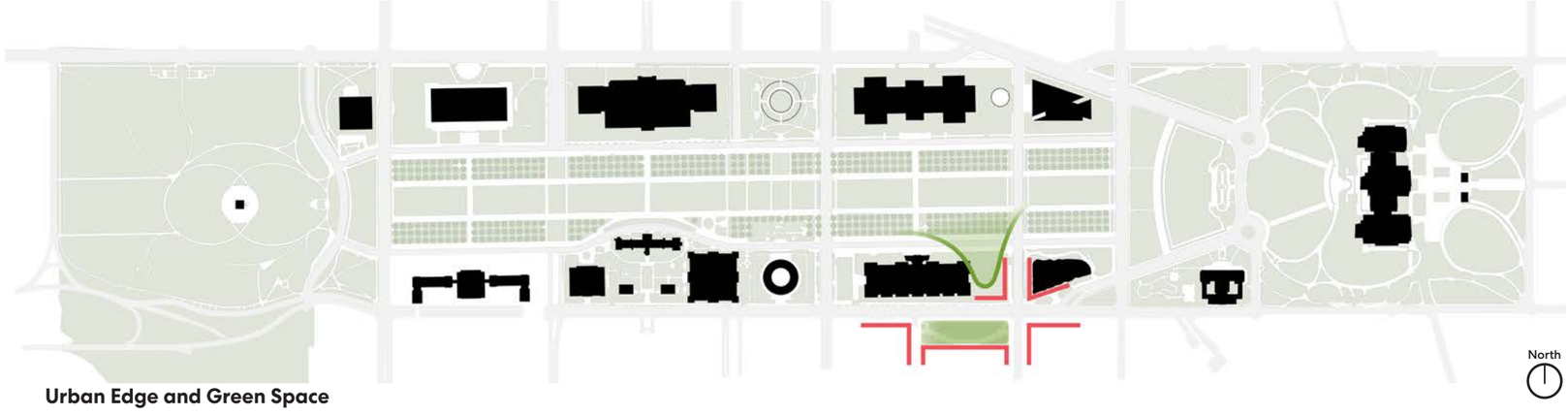
To the south the site is fronted by an urban environment and the Dwight D. Eisenhower Memorial across Independence Avenue. With the presence in between two major public realms, The National Mall and the Dwight D. Eisenhower Memorial, the site is a connection between the two.



Contextual Alignment - McMillan Line



Open Space Reflection



Urban Edge and Green Space

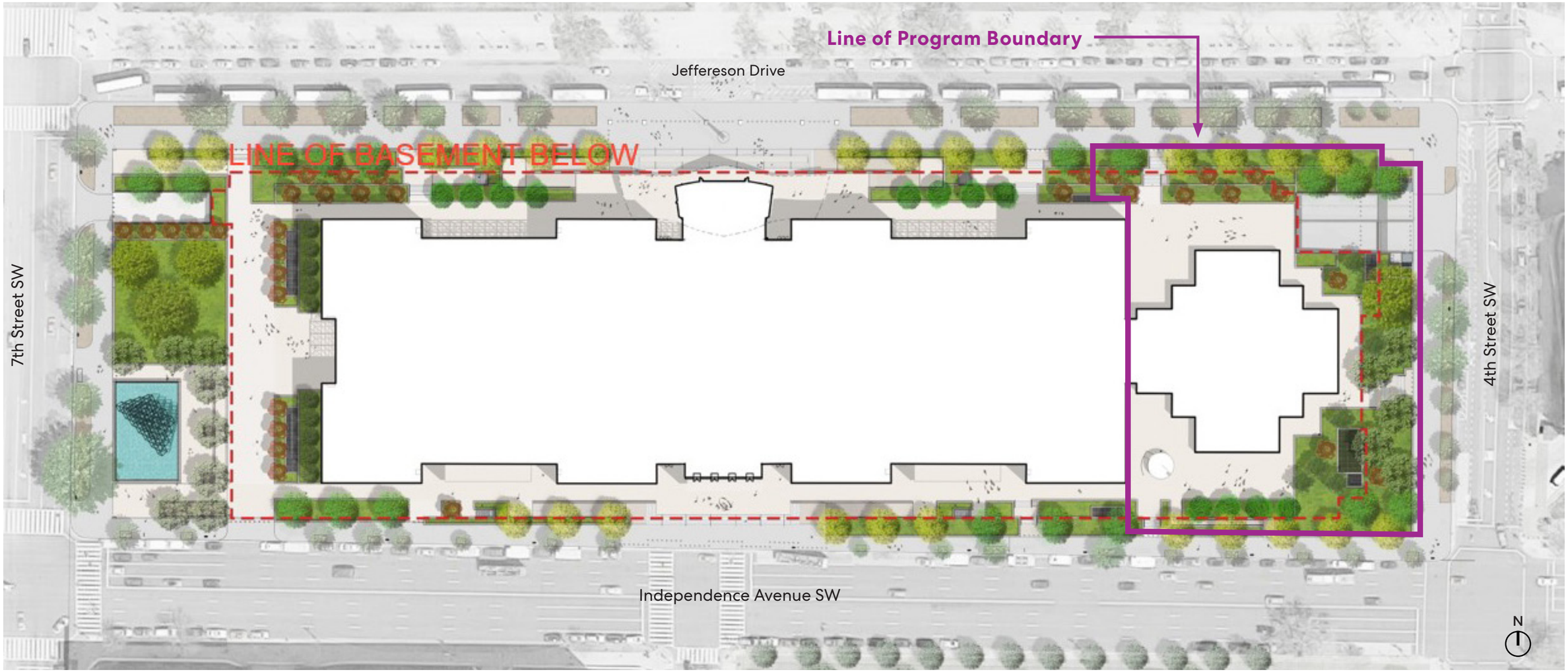
Landscape Historical Context

Site Aerial, 1980

This image predates the construction of the Obata restaurant pavilion and the NMAI to show a bird's eye view of the NASM 4th Street SW landscape.

Revitalization Landscape Plan

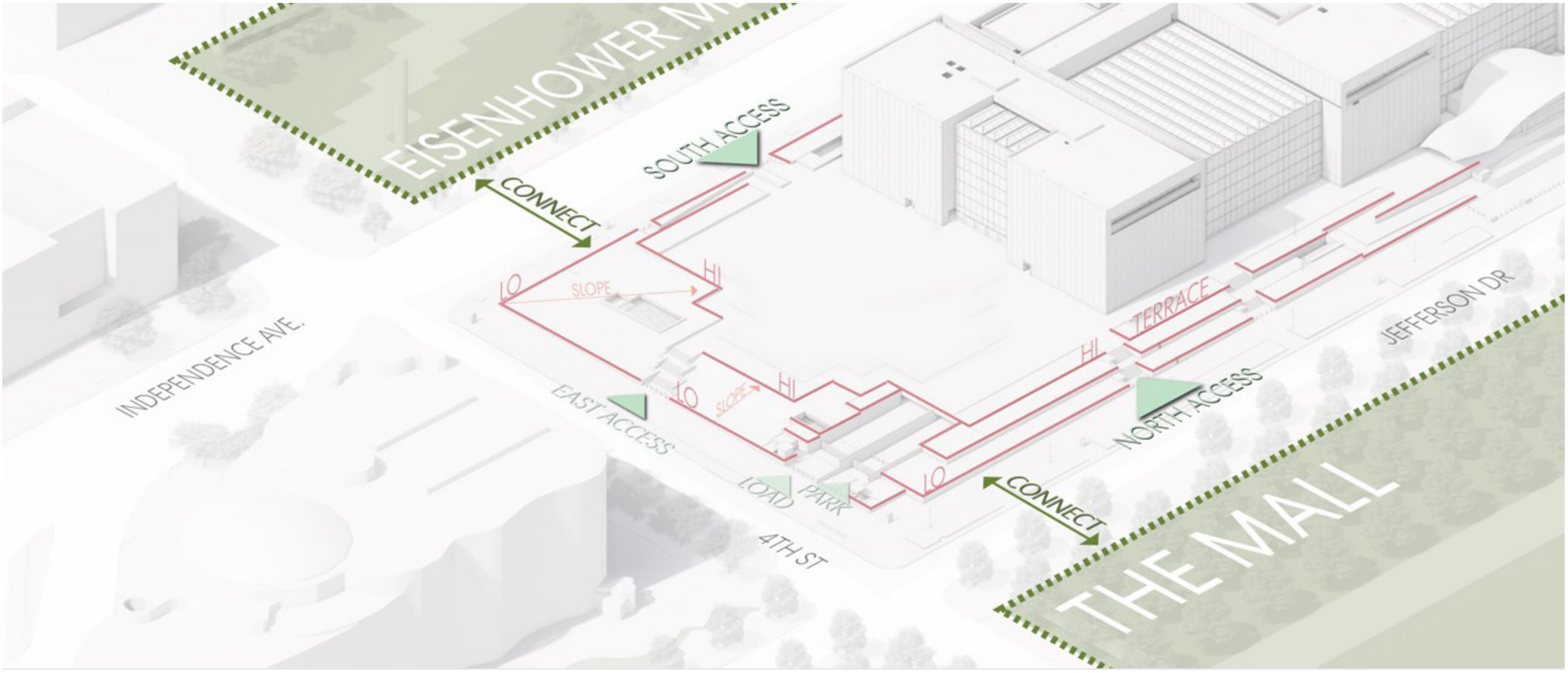
The landscape architecture design team at AECOM, with consultation from horticulturist and landscape designer Patrick Cullina who focused on perennial and smaller scaled plantings, reconceived the landscape design for the NASM Revitalization to diversify plantings, add native trees, shrubs, and herbaceous understory, and introduce pollinator species within refurbished planters. The design also restores tree canopy to the NASM site, with tree spacing to provide sufficient sunlight for the planting understory.



Existing Site Conditions

North-East Axonometric

The Revitalization Landscape Plan retains the east garden's planting tiers, whose design Gyo Obata modified to construct the restaurant addition.

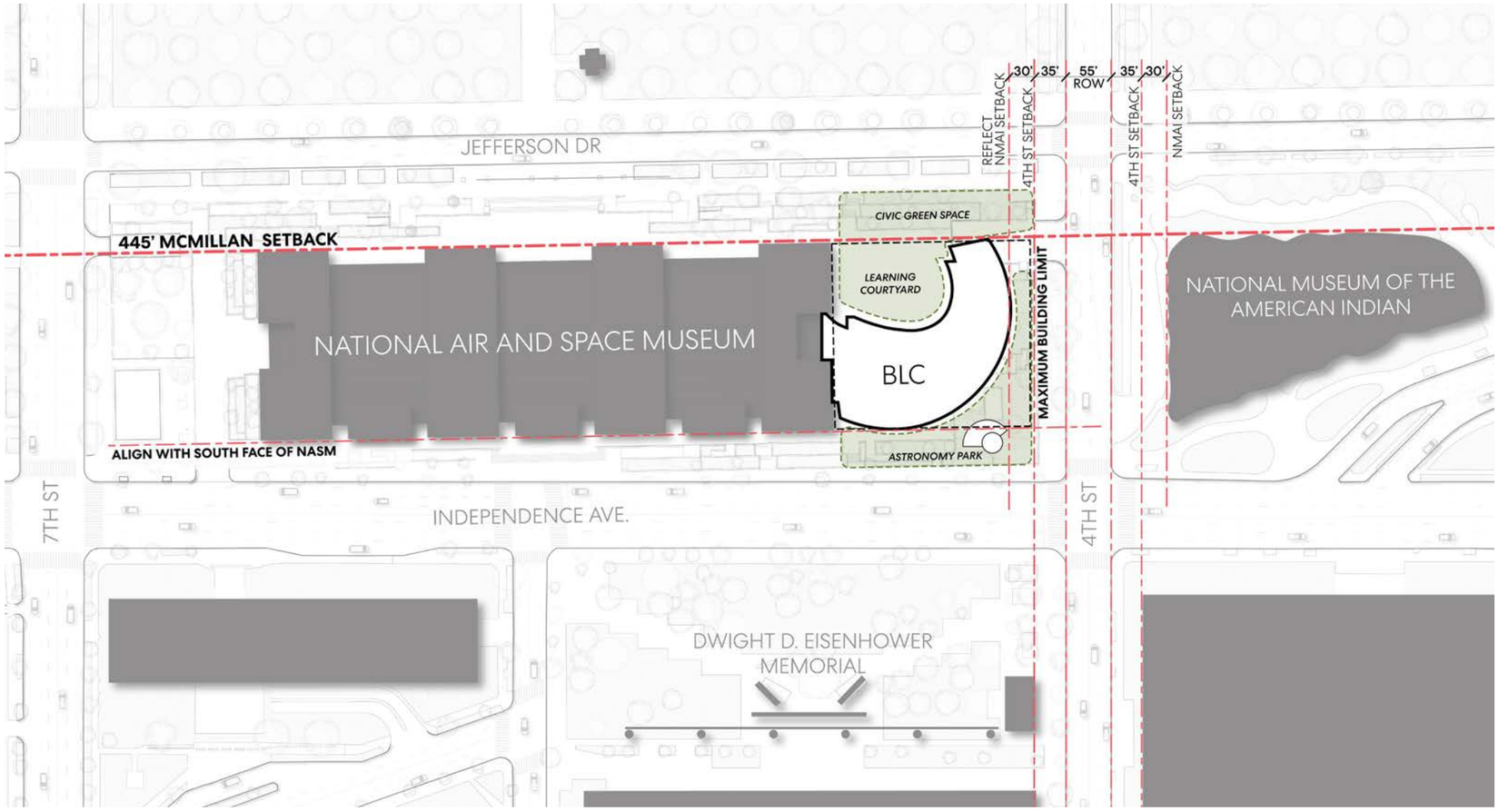


Site Plan Diagram

Contextual Framework

The northern and southern edge of the National Air and Space Museum (NASM) defines the setback extents for the BLC. The BLC includes exterior programs along each respective northern and southern edge. This adjacency of public programs to the National Mall and the Dwight D. Eisenhower memorial facilitate a threaded connection between the two major public realms.

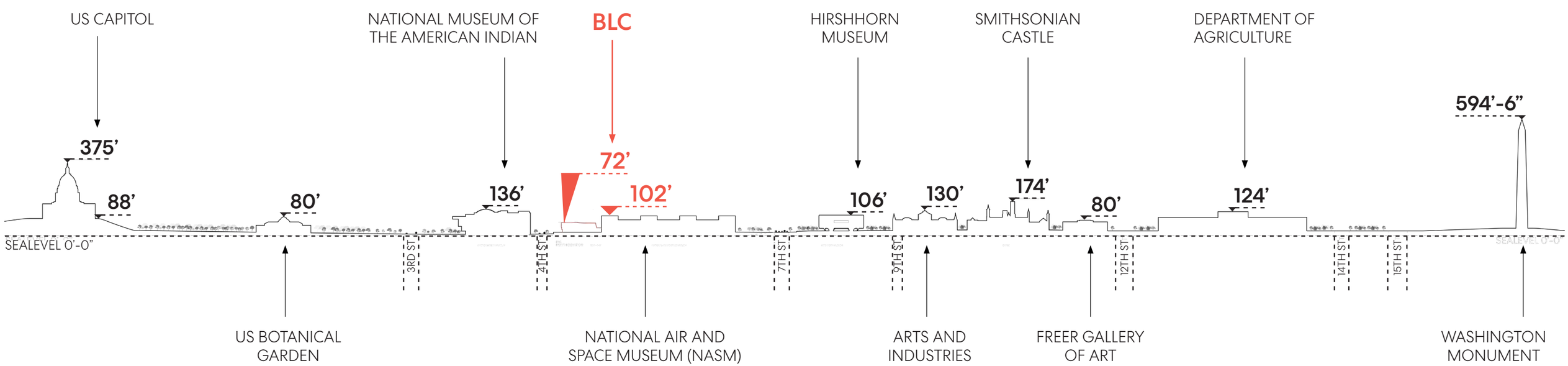
The eastern edge of the site is defined by the reflection of the additional 30' setback from the 4th Street corridor established by the National Museum of the American Indian (NMAI) and the National Gallery of Art's East and West Buildings.



The National Mall Section

Contextual Framework

The BLC is framed between NMAI and the NASM. The top of the NASM is identified as a maximum vertical constraint, as the museum shall always be the primary building relative to the BLC.



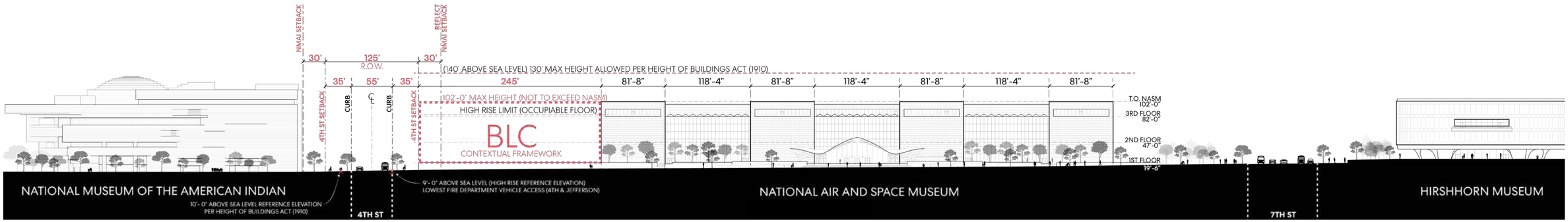
*** All building heights are measured from mean sea level**

Feet
0 100 200 400

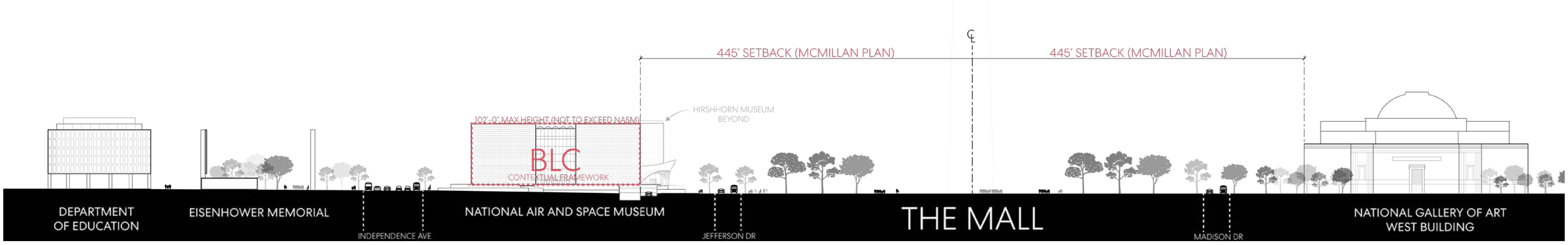
Elevation

Contextual Framework

The maximum vertical constraint is set by the height of the NASM. The concept design of the BLC is well within the maximum project limit. The eastern edge of the site is to reflect the NMAI's additional setback from the 4th Street SW corridor (30'-0").



From Jefferson Drive to South



From 4th Street to West

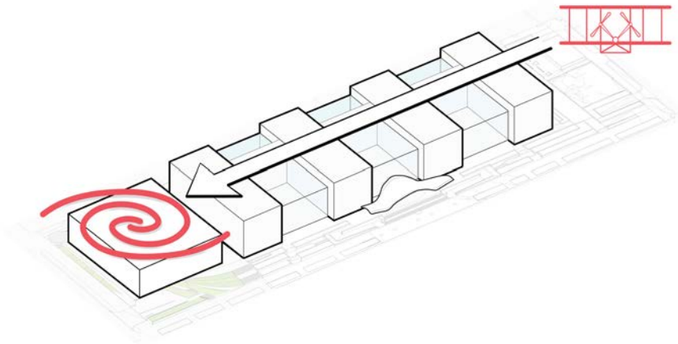
Architectural Design Approach

The spiral organizing parti of the BLC originates from the central circulation spine of NASM, creating a symbolic destination for the study of the universe. The spiral 'force lines' of this parti both draw people into the site and building and metaphorically represent the diffusion of knowledge from the BLC out into the world. Through the course of Concept Design, the SI, external agency staff, and the broader Consulting Parties group have encouraged the design team to further emphasize the energy of the spiral galaxy in the design progression of the two dimensional planning and three dimensional expression of the integrated landscape and building. Highlights of the design progression follow.

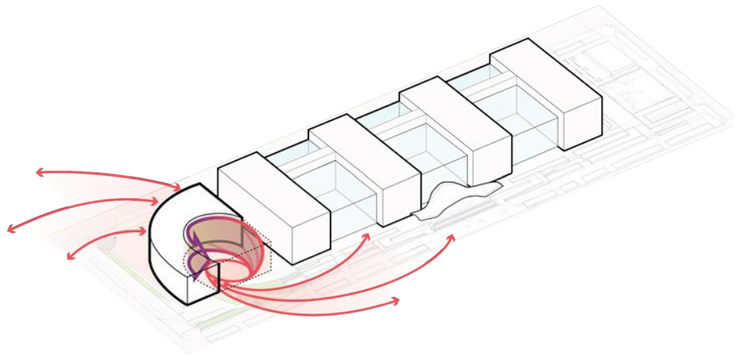
The site design reinforces the spiral energy through sweeping circulation patterns connecting the Learning Courtyard and Phoebe Waterman Haas Astronomy Park. The courtyard has evolved to be a green space with a gathering space for BLC programming, metaphorically representing the core of the galaxy. An elevated, shaded viewing platform has been created, floating over the loading dock ramp and mitigating its visual impact from the northeast. This platform offers views of the Mall as well as the east wall of NASM-NMB, for the potential to accommodate viewing large scale audio-visual projections. Refer to the Landscape chapter for a detailed description of the site design.

The Phoebe Waterman Haas Astronomy Park has been sized to accommodate educational programming needs. The Phoebe Waterman Haas Public Observatory location has been refined relative to the basement and underground cistern locations and the outwardly expanding force lines of the landscape terraces.

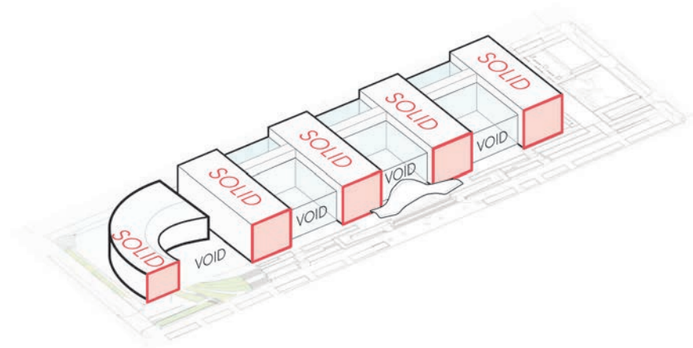
The BLC identity is purposefully not an extrusion of NASM, but rather a pavilion-like form surrounded by landscape. The architectural parti draws from the different solid to void patterns of the NASM's north and south elevations. The physical connection from BLC to NASM-NMB is a one-story link, the width of the eastern glazed facade of NASM-NMB. The southern entrance to the BLC has grown in width to accommodate security and egress from NASM-NMB. This entrance volume will lightly touch the stone of NASM-NMB with a glazed skylight, allowing the stone wall to be an interior surface at this location.



Spiral Galaxy



Learning Courtyard



Solid/Void

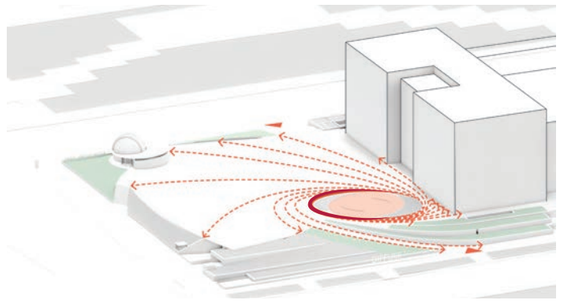
Architectural Design Approach (continued)

The BLC entry at the northeast corner of the building improves the desired separation of BLC circulation and NASM visitor circulation to the restaurant. The circulation to and from NASM is ample and intuitive on Level 1. The multi-story circulation spine, called the Spiral Concourse, is incorporated with Dining on Level 1. The future development of this space will provide for a clear circulation path between the BLC Lobby and NASM for BLC attendees to access NASM.

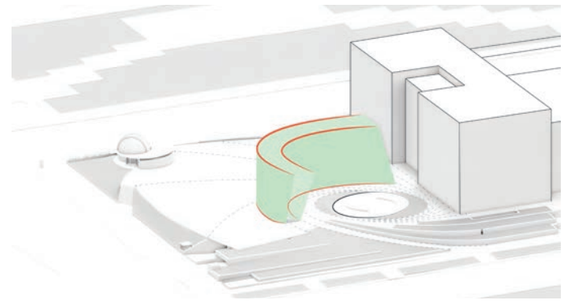
The plans for Levels 2 and 3 have been refined to reinforce the spiral geometry and are organized by a display wall on both levels facing the Spiral Concourse. Entering the BLC at Level 2 via a grand stair and elevator, learners arrive at the Convening Space with awe-inspiring views to the National Mall and NASM-NMB. This large, flexible space can accommodate a variety of group sizes and activities and is surrounded by Breakout Spaces for team project work. A view to the Dwight D. Eisenhower Memorial is also a feature from the Convening Space and adjacent Hang Out space. The key interior volumes of the Convening Space and Spiral Concourse, presented in renderings, are included in this report.

The energy and dynamic movement of the galaxy is expressed not only two-dimensionally but also volumetrically. This trajectory takes shape in the Spiral Concourse, a panoramic, multi-story, circulation spine whose geometry extends out into the landscape to create the Learning Courtyard. To evoke the energy and dynamic movement of the galaxy, three-dimensional radial lines are expressed in the canted walls and soaring height of the Spiral Concourse. Both the Spiral Concourse and solid mass of Levels 2 and 3 sweep upward toward the Mall. These floors float above the glazed volume of Level 1, extending towards the Mall to create the Event Terrace.

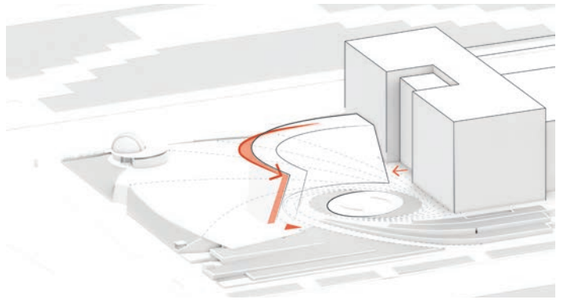
Similar to the newly constructed canopy at NASM's north visitor entry vestibule, the geometry of the BLC sits in contrast to the NASM building form. However, there are no other formal design relationships or concepts that have been established between the north entry addition and the BLC.



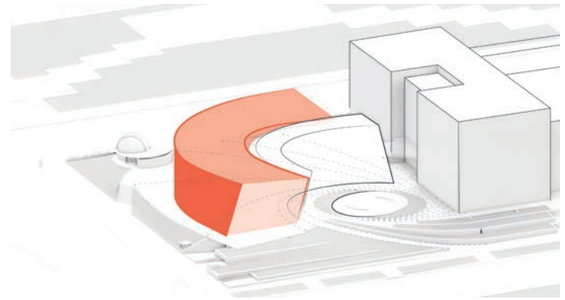
Spiral Galaxy



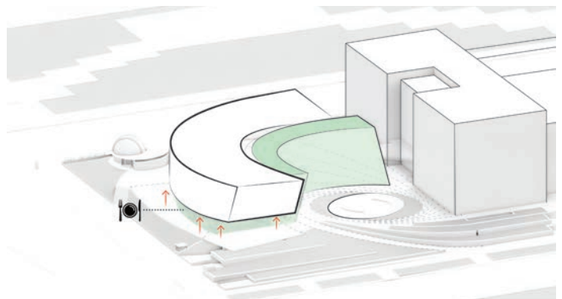
Diffusion of Knowledge



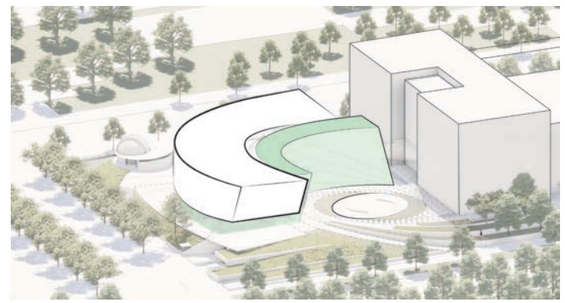
Circulation Spine



BLC Program Bar



Lifting the Pavilion



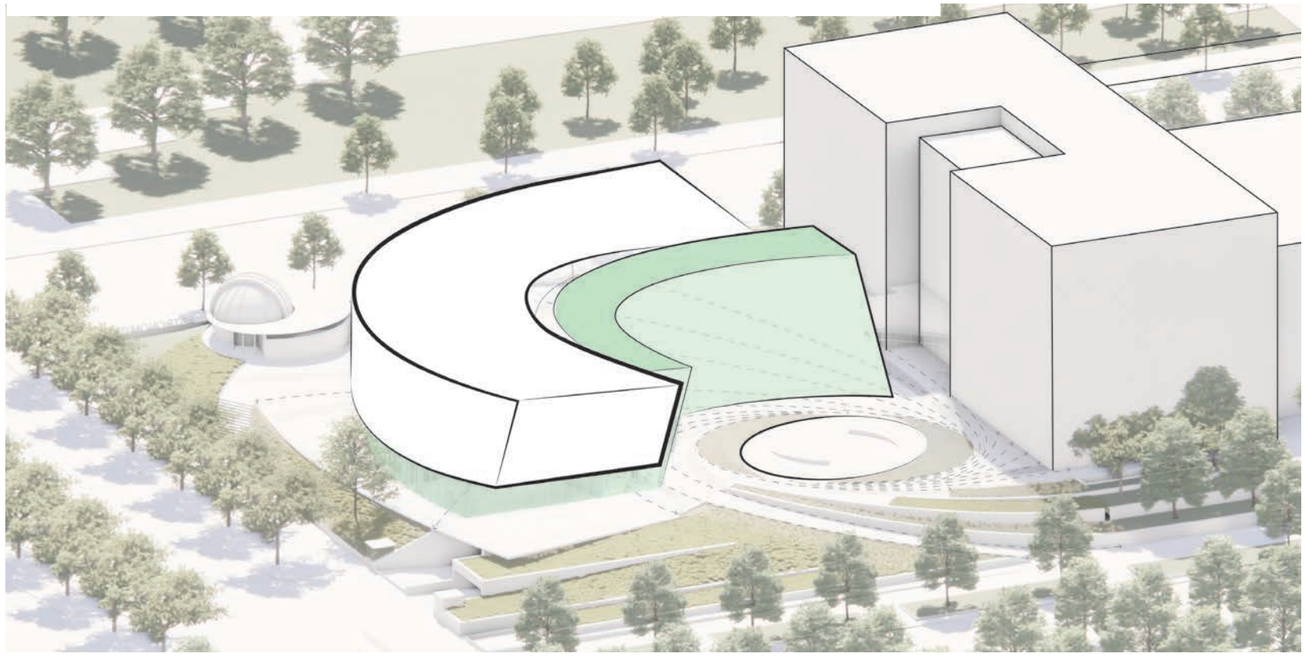
Pavilion in the Garden

Pavilion in the Garden

Certain aspects of the NASM restaurant addition, constructed in 1988 and demolished in 2023, have inspired the development of BLC concept and its relationship to the NASM. These Include:

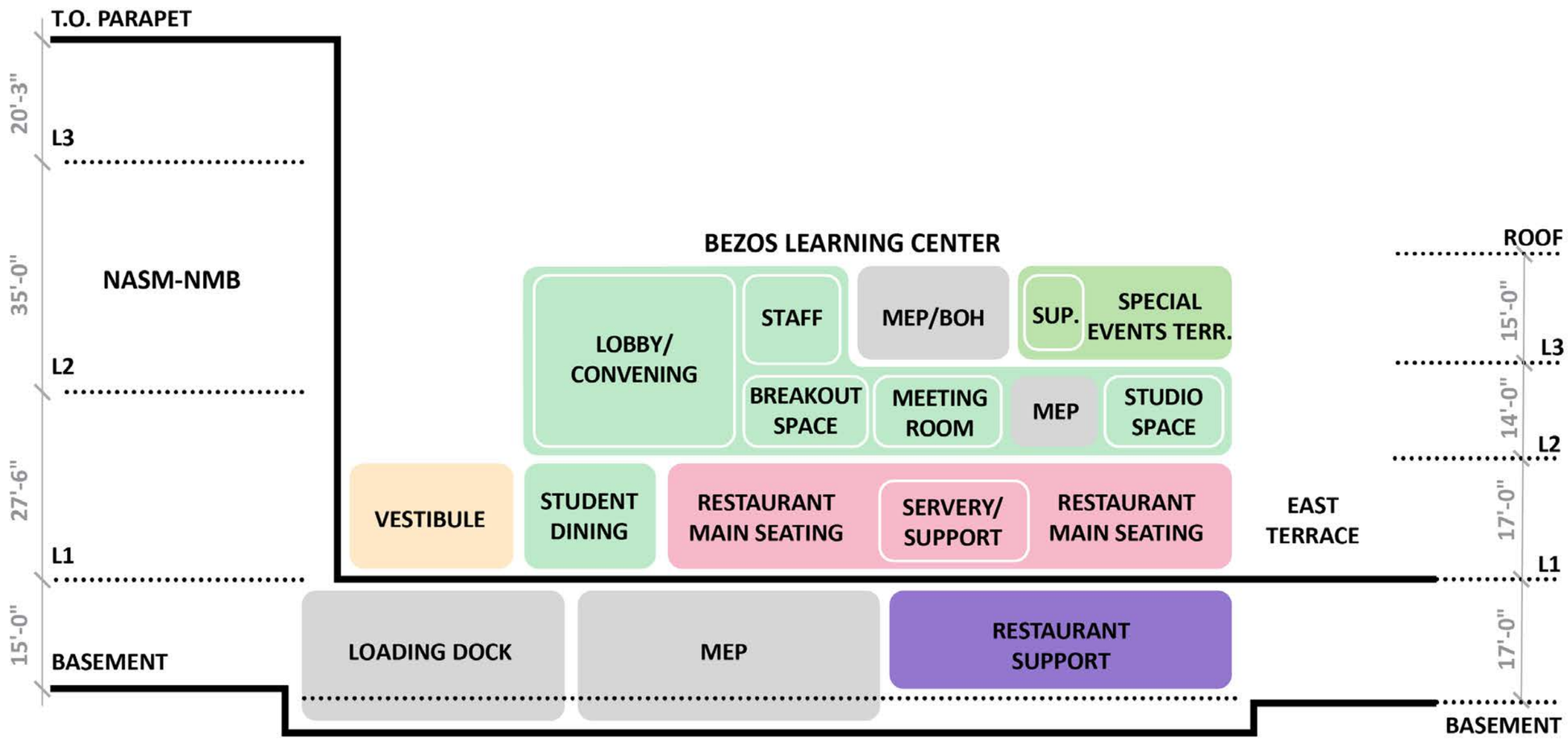
- Pavilion form in a garden setting
- Minimal connection to the NASM at the east curtain wall
- Geometric building massing in deference to the NASM building geometry

Restaurant addition and planted area at the east end of the NASM site
Historic American Building Survey, 2017



Program

Stacking Program



End of Document

Perkins&Will