Renwick Gallery Renovation

Smithsonian American Art Museum

1661 Pennsylvania Avenue NW
Washington, DC 20006

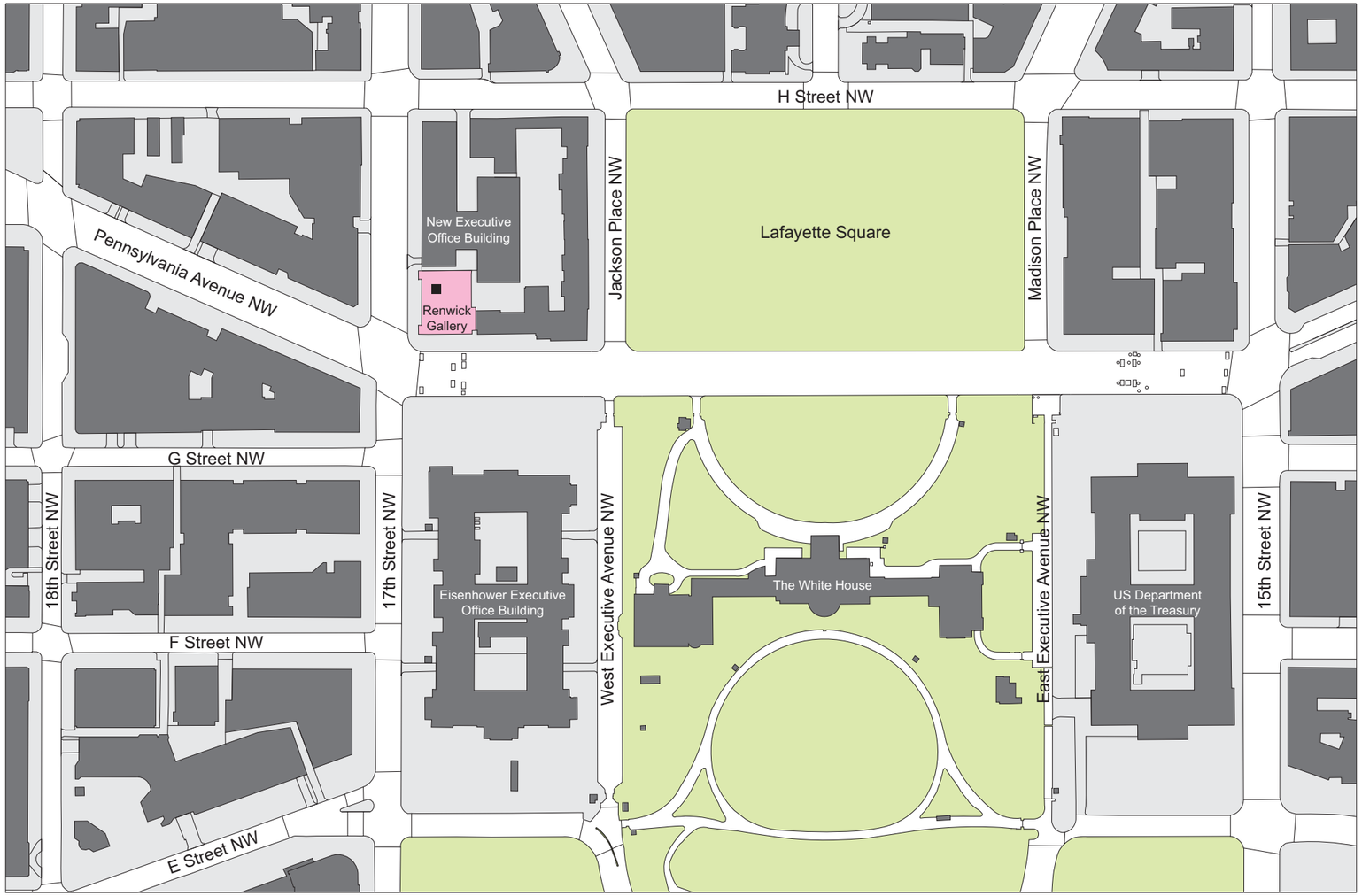
OFEO Project #1057503

National Capital Planning Commission Submittal
Preliminary/Final
August 2, 2013

Smithsonian American Art Museum
Renwick Gallery

Westlake
Reed
Leskosky

***Contents**:*



north

Project Vicinity Plan

0 100 250 500 1000

Project Overview

The Renwick Gallery, constructed as the original Corcoran Gallery of Art beginning in 1859, is a principal structure in the Smithsonian Institution portfolio, based on the era of construction and its historic significance as the first purpose-built art museum in the Nation's Capital. The last major renovation for the structure occurred from 1967-1972, when it was restored as an art gallery after decades of serving other purposes. Through its lifetime, the Renwick Gallery has been substantially altered several times in order to serve its diverse functions, ranging from war offices to gallery to courthouse.

Since the 1967-72 restoration, when the building's first modern systems were installed, incremental improvements have been made, including exterior masonry repair and restoration, interior exhibit gallery improvements and other infrastructure repairs. Most of the existing building systems, dating to the 1967-72 renovation, have reached or surpassed the point of useful service. Additionally, the building does not comply with current life safety codes and standards and has many deficiencies related to compliance with current accessibility requirements.

The purpose of the current planned renovation of the Renwick Gallery is to replace and renovate major infrastructure systems and improve interior conditions to ensure the preservation of the structure and provide safe and sustainable building conditions for efficient operations, presentation and preservation of the collection, and a superior visitor experience.

The infrastructure and support spaces are the primary focus of the renovation, resulting in limited impact to the exterior of the museum. The following notable alterations are planned for the building exterior, and are detailed in the relevant sections of this report:

- A new elevator penthouse will project above the central roof plane, to enable the elevator run to extend to upper mechanical equipment levels, providing safe access for maintenance.
- Exterior windows will be replaced with new high-performance custom units with frame, muntin and glass division characteristics and profiles to match historic design.
- The existing wheelchair ramp at the 17th Street side will be replaced with a new, compliant, concrete ramp with improved railing and lighting.
- The existing exterior egress stair in the alley north of the building will be modified, with improvements addressing the life safety code.

Additional exterior scope items, involving no notable change to the building's appearance, include:

- New roofing will be installed at the majority of roof surfaces, where existing roofing is near its end of service life. (Character-defining slate mansards and decorative metal roof components shall remain as existing, with repairs where necessary.)
- Masonry facades will be repointed and repaired as needed.
- Roof gutters and storm leaders on the north and east facades are deteriorated, and will be replaced in kind. (South and west gutters and leaders were previously rehabilitated and are in good condition.)
- Existing damaged exterior plaster at the base of the building will be restored.
- New water, sewer, and stormwater mains will be installed, with no change to the streetscape anticipated. Coordination with DDOT and DC Water is underway.
- Existing gas, electric, and data service mains will remain. Coordination with Washington Gas, Pepco, and Verizon are underway.

A presentation of the significant exterior scope was given to Agencies staff on 5/21/13, and a subsquent mockup of the proposed elevator penthouse was conducted on 6/12/13. Andrew Lewis, Senior Historic Preservation Specialist with the DC State Historic Preservation Office provided a letter of 'no adverse effect' for the project on 7/31/13.

Due to the unique location of the Gallery, a neighborhood meeting was held to initiate additional coordination with representatives of the National Park Service Liaison to the White House, Blair-Lee House (U.S. Department of State), U.S. Secret Service, DDOT, NCPC, and the Executive Office of the President on 3/25/13. Ongoing work to develop appropriate construction staging, security, and access plans is underway with agencies' input.

Agency and Contact

Smithsonian Institution, Office of Facilities Engineering & Operations
Project Contact: Jane Passman, Tel: 202-633-6549 Fax: 202-633-6233

Roof & Elevator Design Approach

Description of Existing Condition and Character Defining Features:
The roof of the Renwick Gallery building consists of perimeter mansard sections, projecting turrets, flat roof areas and raised pitched roof areas. The perimeter mansards and turrets are historic and are among the principal character defining architectural features of the building. The mansards and turrets are clad with slate and trimmed with decorative metal and roof cresting. The center section of the building was originally open, with light courts in the east and west cores and a lower barrel roof over the central monumental stair hall. Additionally, there were skylights over the second floor gallery spaces and the Grand Salon over interior laylights. These areas have been extensively modified over time, including infill of the light court cores, closing of the skylights and construction of mechanical equipment rooms in the attic spaces. A major building modernization and renovation project completed in 1967 included construction of a new horizontal roof in the center section over the barrel roof to provide interior space for mechanical distribution and access to lighting positions over the monumental stair. Roofing materials over these sections of the building are contemporary assemblies installed in the early 1990s.

Description of Proposed Work:
The flat and low-slope areas of roof are in aged condition, with the roof membrane nearing the end of its service life. These non-architectural roofing areas will be replaced with similar materials, to ensure the ongoing weather-tightness of the building envelope. Existing mechanical equipment and vents on the roof will be replaced with new equipment, reducing the number and height of elements on the roof.

The existing attic will continue to function as a mechanical space within the current structural profile of the roof lines, unlike the concept design proposed in 2011 which included a new mechanical penthouse raising the central roofline. In order to provide maintenance access to the mechanical room in the attic level, the existing elevator shaft in the northern end of the west core is planned to be extended to the attic. This modification will require the construction of a small exterior elevator penthouse that will project above the central flat roof elevation by about eight feet, with the top of the new structure roughly at the same elevation as the ridge of the Grand Salon roof. All available elevator technologies were considered, with the current design providing the lowest profile penthouse of the viable options. The penthouse will be clad with metal panels in a color and sheen similar to the slate on the mansard roofs.

To summarize, the rooftop alterations include:

- New roofing will be installed at the majority of roof surfaces, where existing roofing is near its end of service life.

- Character-defining slate mansards and decorative metal roof components shall remain as existing, with repairs where necessary.

- Roof accessories will be replaced as part of the infrastructure modernization.
  - Mechanical vents and fans will be fewer in number and lower profile.
  - Placements away from the visible roof edges will reduce visibility from street level.

- Mechanical equipment will be housed in existing attic areas. The proposed design is the preferred approach among options studied:
  Replace equipment at existing locations (2nd floor mezzanines) - NOT FEASIBLE
    - Existing mechanical spaces too small for required equipment & maintenance
  Dig out basement to create new basement mechanical room - NOT FEASIBLE
    - Conflicts with security restrictions imposed by neighbors
    - Excessive cost for structural support
    - Reduced space for museum operations
  Build new mechanical penthouse (2011 design proposal) - NOT FEASIBLE
    - Cost not feasible within project budget
    - Extensive roof reconfiguration
    - Modification of historic roof framing
    - Structural & waterproofing complexity
  Mechanical room within existing attic - SELECTED APPROACH
    - Minimizes intervention to roof
    - New attic floor system to accommodate mechanical equipment
    - Provides needed storage space
    - Elevator stop provides accessibility for storage areas & safe access for maintenance
    - Avoids addition of full mechanical penthouse.
    - Minimizes visual and structural impact on roof.

- Elevator extension required to provide accessible safe access to the attic for mechanical equipment maintenance. Proposed design provides minimum penthouse height of feasible elevator technologies:
  Hydraulic - NOT FEASIBLE
    - Existing machine room too small
    - Jack hole excavation very costly and difficult within existing constrained space
    - Increased overhead clearance needed for required travel distance (60 ft)
  Machine Room Less - NOT FEASIBLE
    - Will not fit in existing hoistway
    - Increased overhead clearance required
  Underslung traction - NOT FEASIBLE
    - Would shrink cab from current size
    - Overhead clearance similar to current approach
    - More costly
  Basement traction - SELECTED APPROACH
    - Height of elevator penthouse minimized
    - Maximizes re-use of components, most cost-effective
    - Digital modeling and a physical mockup demonstrated the minimal visual impact of the penthouse from limited vantage points at street level.
    - Height at top of penthouse is similar to Grand Salon roof.

- Elevator penthouse will be clad with composite metal panels having a color and reflectivity similar to the existing slate roofing.

Existing Roof Conditions

Photo #5: View Looking West
(Photo Date: July 29, 2012)

Photo #6: View Looking East
(Photo Date: July 29, 2012)

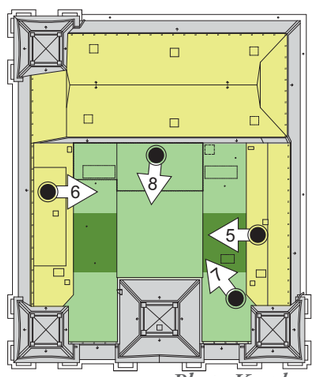


Photo Keyplan

Photo #7: View Looking North-west

Photo #8: View Looking South

Roof Plan: Existing & Proposed

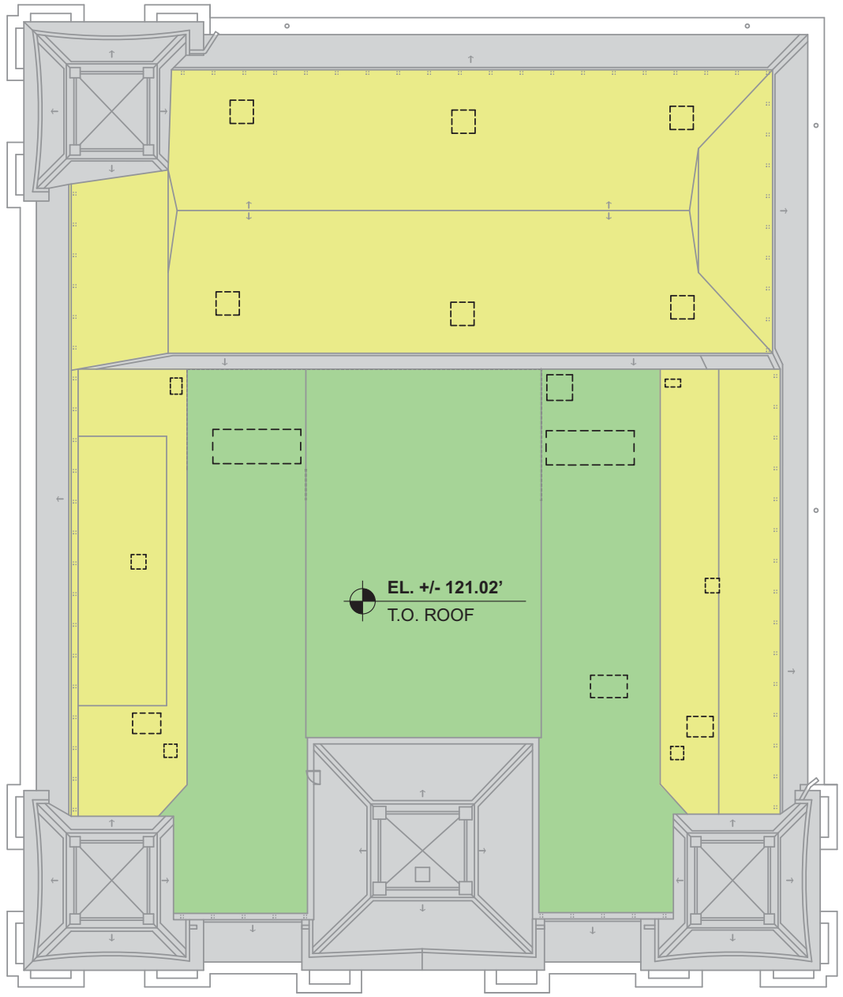
HISTORIC ROOF ELEMENTS (c.1861)
- original roof configuration
- historic slate and tin roofing
- roofing to be repaired as needed

MODIFIED HISTORIC ROOF (c.1861 - 1967)
- original roof framing with modifications
- non-historic roofing materials
- roofing to be fully replaced

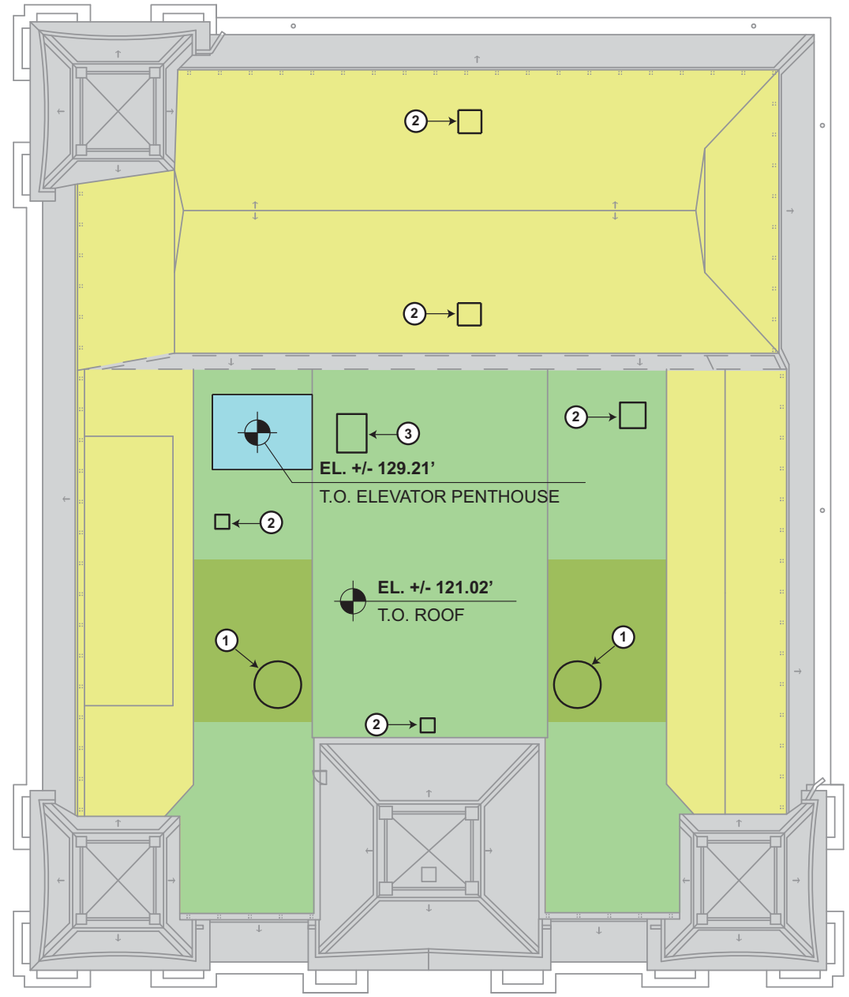
NON-HISTORIC ROOFING STRUCTURE (c.1967)
- roof framing and configuration added c. 1967
- non-historic roofing materials
- roofing to be fully replaced

ROOF AREA TO BE REPLACED
- framing to be removed and rebuilt for access
- no change to roof profile
- roofing to be fully replaced

PROPOSED ELEVATOR PENTHOUSE



1 ROOF PLAN (EXISTING)



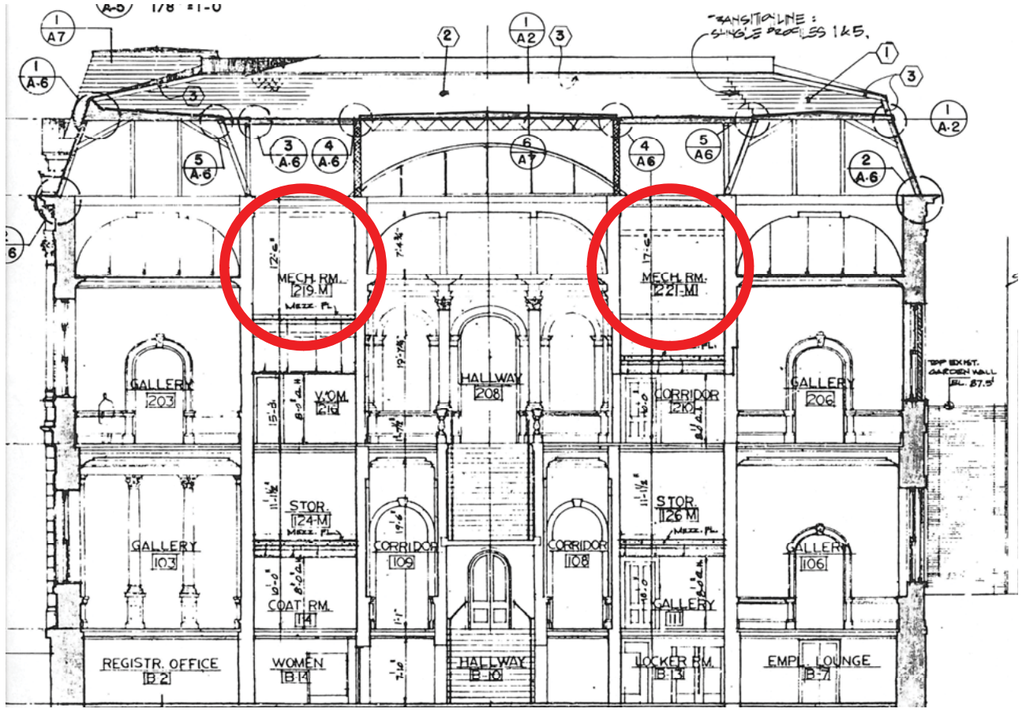
2 ROOF PLAN (PROPOSED)

1 AIR INTAKE

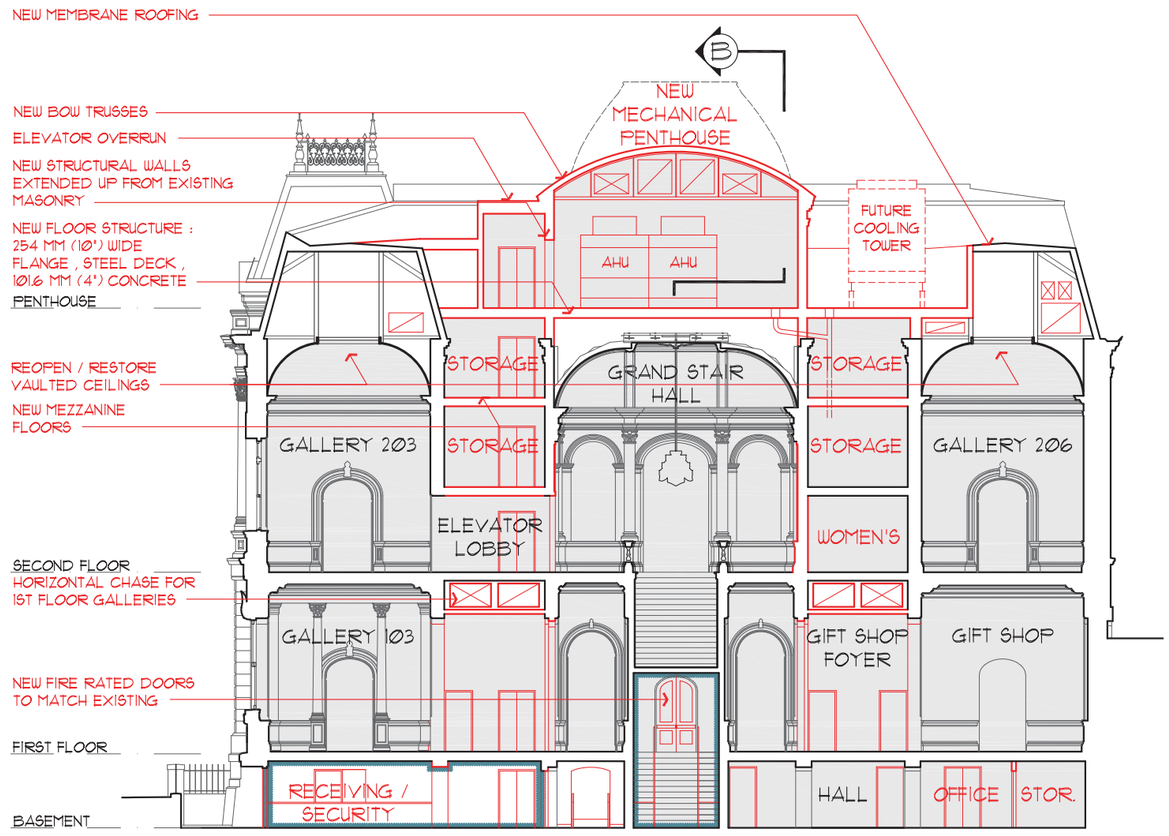
2 EXHAUST FAN

3 CONDENSING UNIT

Building Sections: Existing & 2011 Proposal

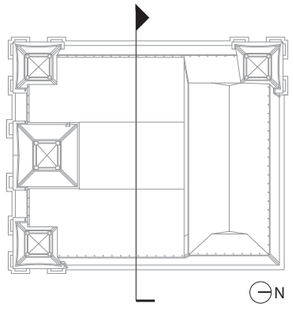


Existing Showing Mechanical Spaces



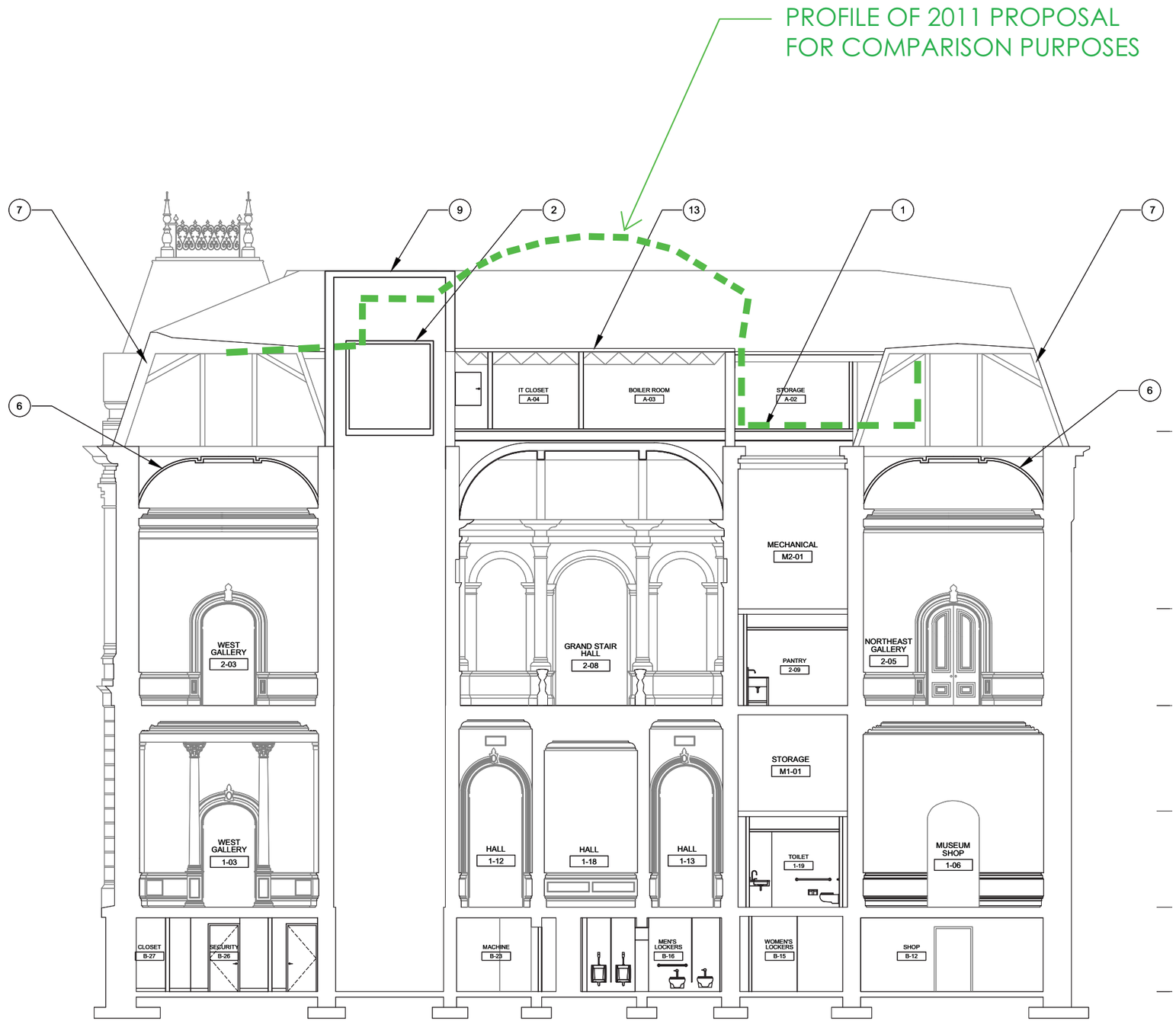
2011 Proposal with Mechanical Penthouse
(from Concept Design Preferred Alternative Report)

architrave p.c., architects

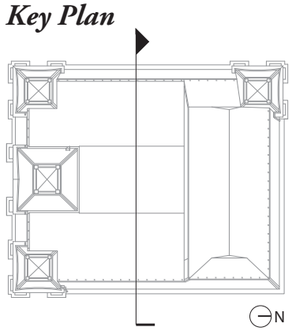


Key Plan

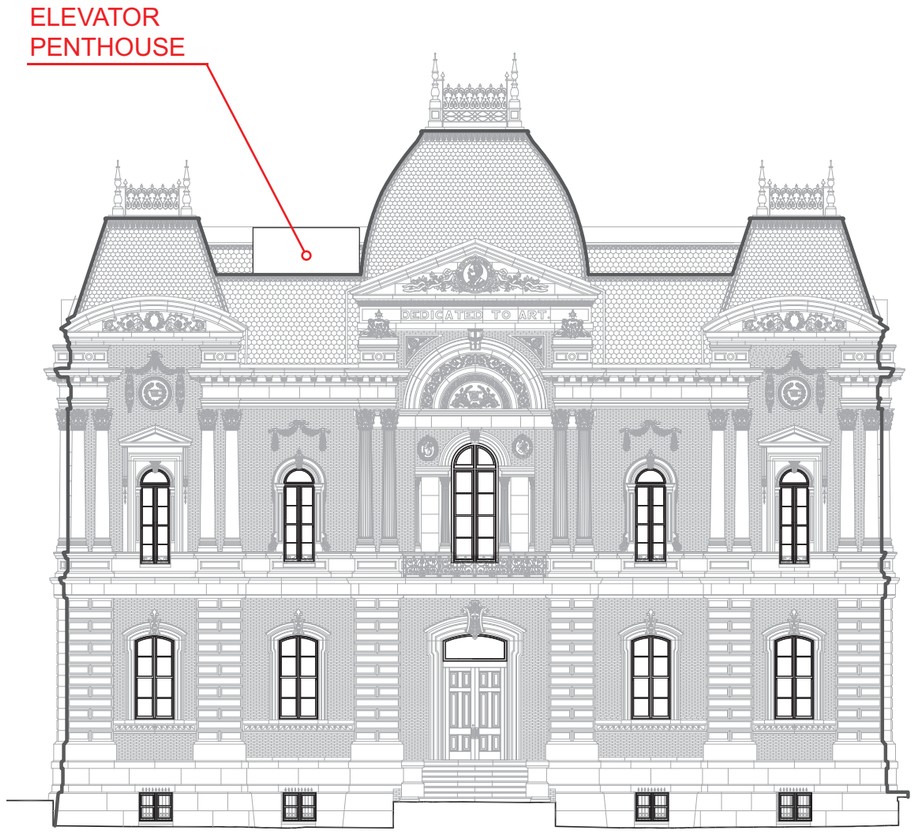
Building Sections: Current Design with Elevator Penthouse



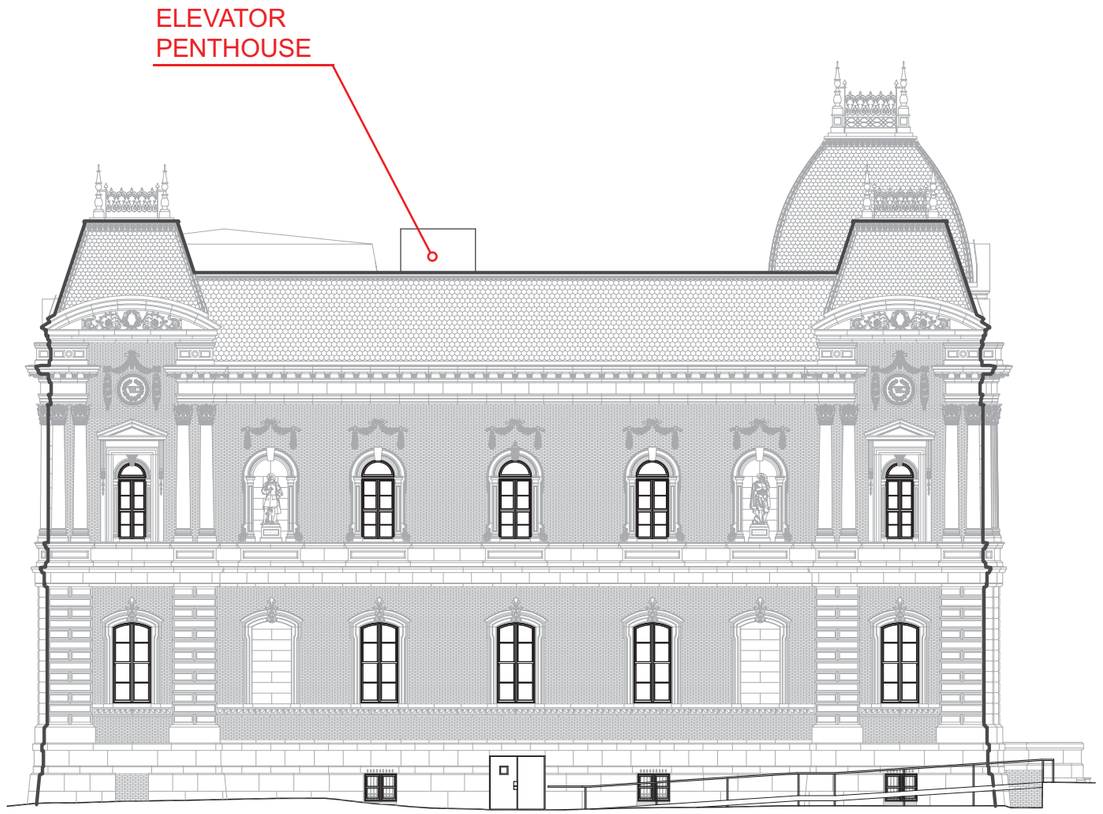
Key Plan



Exterior Elevation Drawings: Proposed South & West Elevations

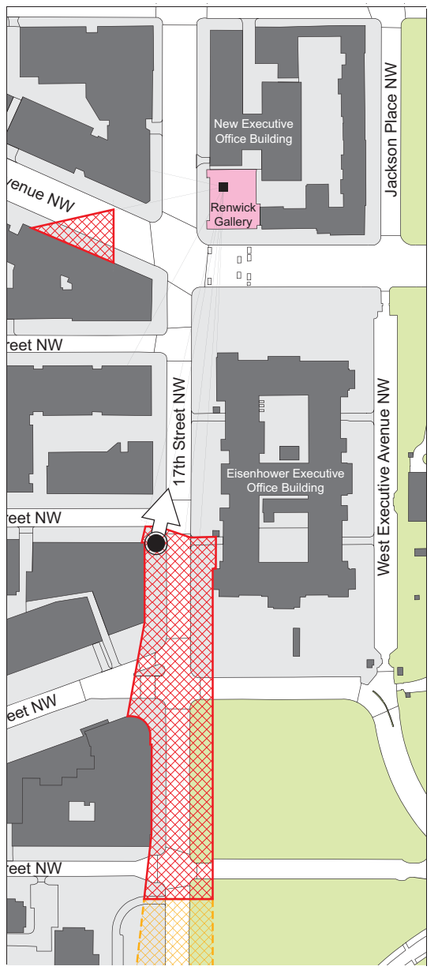


Proposed South Elevation showing Penthouse

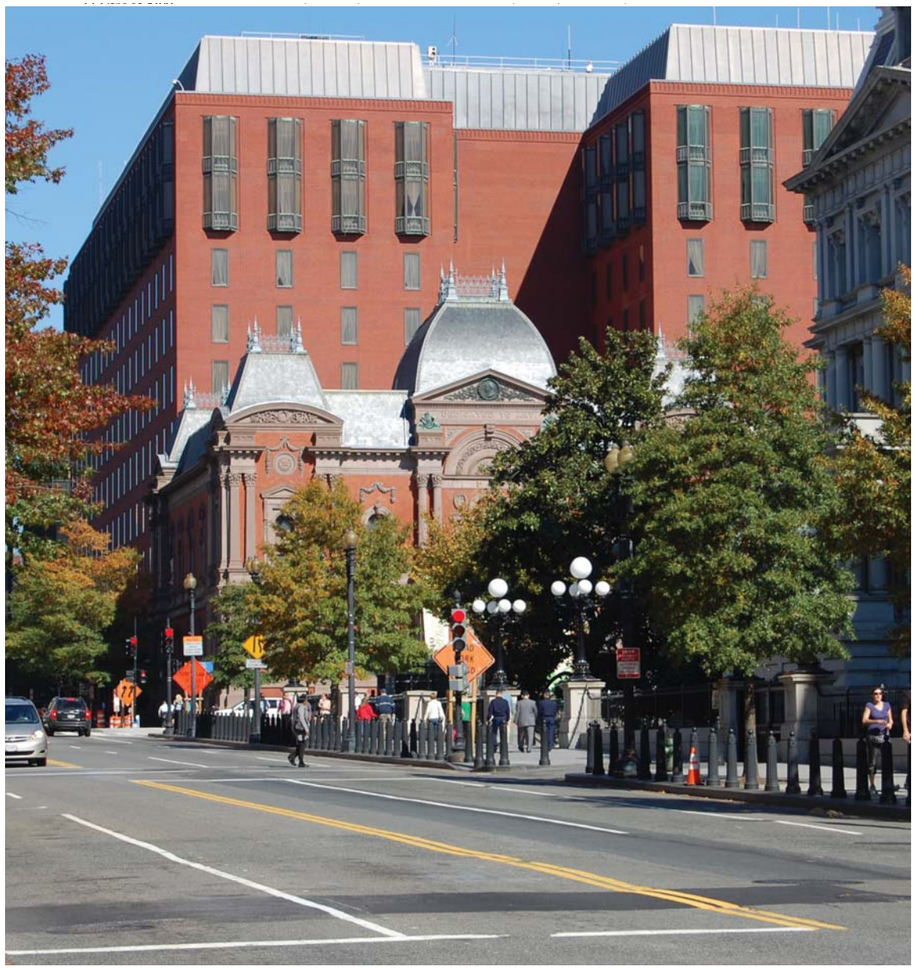


Proposed West Elevation showing Penthouse

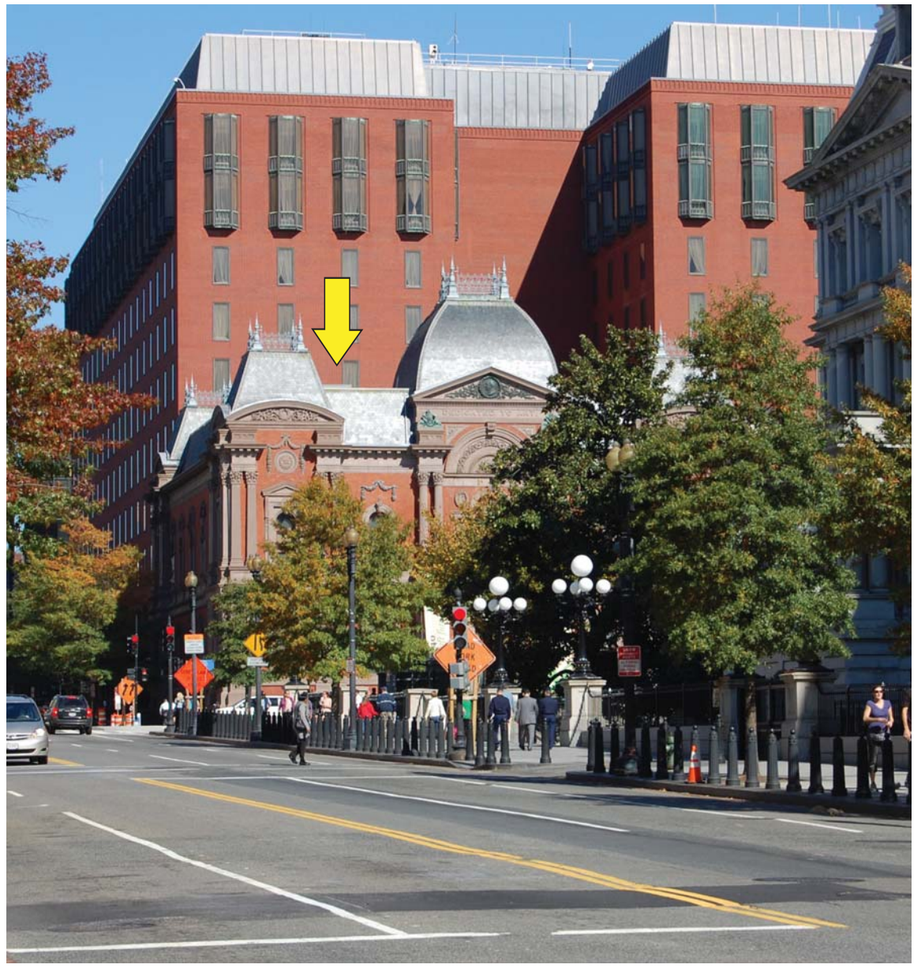
Existing and Modeled Views from 17th Street



Location Keyplan



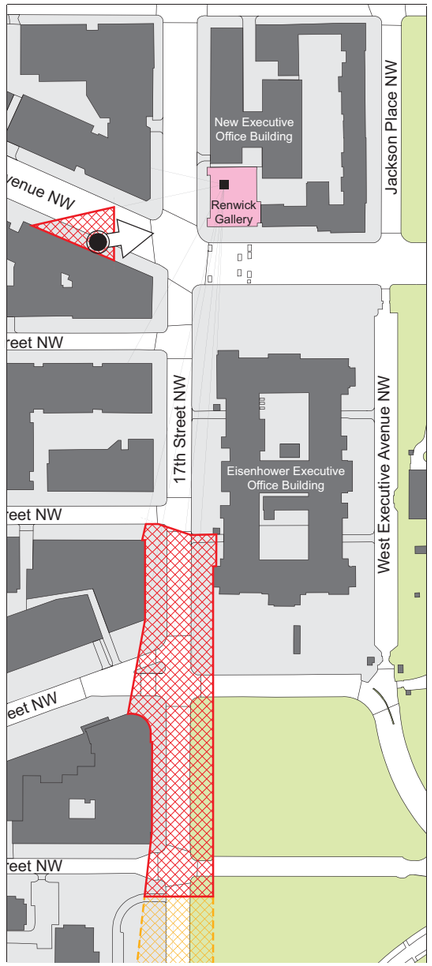
View of Existing Building from 17th Street
(Photo Date: October 22, 2012)



View of Proposed Construction from 17th Street

Note: Red shaded zones represent locations where potential sightlines exist, per digital modeling of views, while yellow areas are locations of potential obstructed partial views are possible. Actual view areas were seen in the mockup to be more limited. (See mockup photographs on following pages.)

Existing and Modeled Views from Pennsylvania Avenue



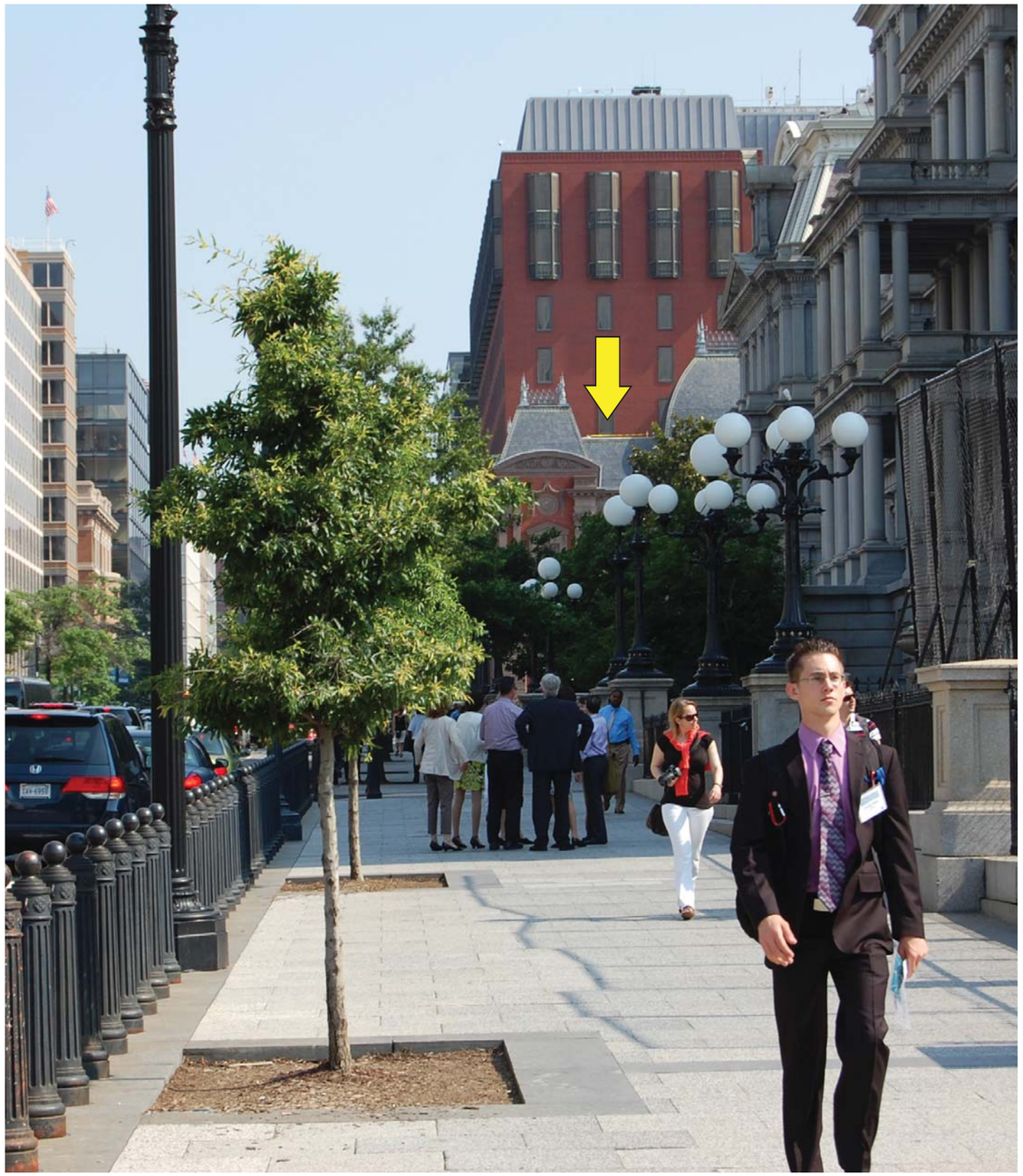
Location Keyplan

View of Existing Building from Pennsylvania Ave.
(Photo Date: October 22, 2012)

View of Proposed Construction from Pennsylvania Ave.

Note: Red shaded zones represent locations where potential sightlines exist, per digital modeling of views, while yellow areas are locations of potential obstructed partial views are possible. Actual view areas were seen in the mockup to be more limited. (See mockup photographs on following pages.)

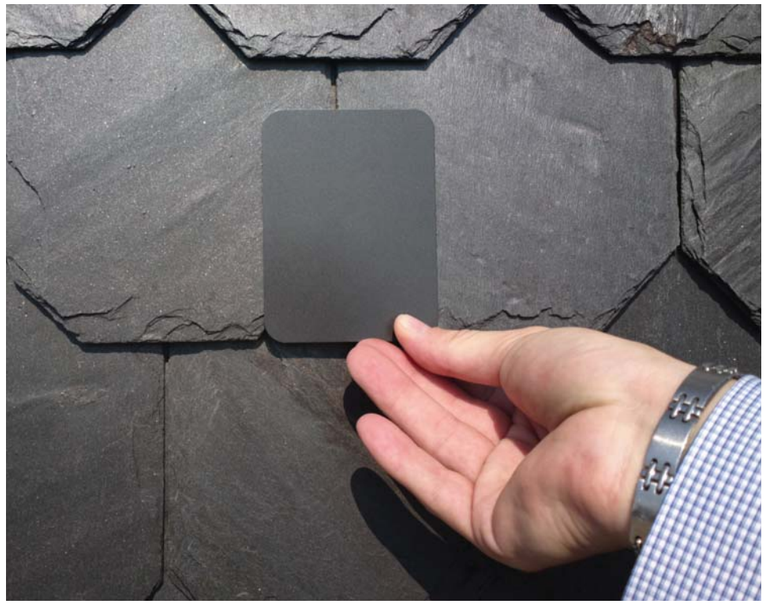
Mock-up Photos



View of mockup from south

View of mockup from west

Material in Shade or Overcast Light compared to existing slate roof



Material in Direct Sun compared to existing slate roof

Material in Angled Sun compared to existing slate roof

Alucobond Graphite Mica Gloss Level - 30 (coil-coated aluminum panels)

Windows: Background & Description

Historical Background and Character Defining Features:
The original windows at the first floor were pairs of two-over-two double hung operable windows with segmental arched tops in each masonry opening. The second floor windows, installed after initial construction when the building was occupied by the Office of the Quartermaster General, were pairs of two-over-two double hung operable windows with rectangular tops in each masonry opening. These openings were intended to be solid stone sculpture niches and not intended to be glazed openings. This second floor condition was subsequently reversed when the building was reassigned for the Corcoran Gallery use in 1869, with the windows removed and stone infill panels restored. When the structure was turned over to the U.S. Court of Claims in 1902, the second floor window locations were reversed and infilled with one-over-one double hung operable windows with an arched glazed transom. At this same time (1902), the first floor windows were replaced with one-over-one double hung operable windows, a change from the original configuration. Additionally, a new areaway was excavated and new windows incorporated to provide light to the cellar spaces. The first and second floor windows were replaced during an exterior restoration project in 1986, replicating the 1902 configurations with fixed (non-operable) units. This is the current condition.

The condition of the building today represents aspects of several of the changes to the facades over time. The window openings coincide with the 1861 and 1902 uses of the building, and have been incorporated into the function of the current museum. The current windows are not historic in configuration or material composition, as they were replaced in the 1980s as well as during prior eras. The era of significance for the proposed replacement windows is the 1861 era configuration (window sash, frame design) within the current wall opening locations.

Description of Proposed Work:
A total of 34 existing window units are proposed to be replaced with new high-performance windows. Aluminum frame windows with steel reinforcing are specified, due to the capability of providing blast protection, coupled with needed thermal performance, durability, and low maintenance.

All new windows will be non-operable, with offset sashes to mimic the shadow lines of the original double hung windows. Frame and muntin profiles will closely match the 1861 era windows. New windows for the first floor shall be configured like the original paired two-over-two double hung units arch-top windows, while the second floor windows will be configured like the original paired two-over-two double hung units, with radiused transoms.

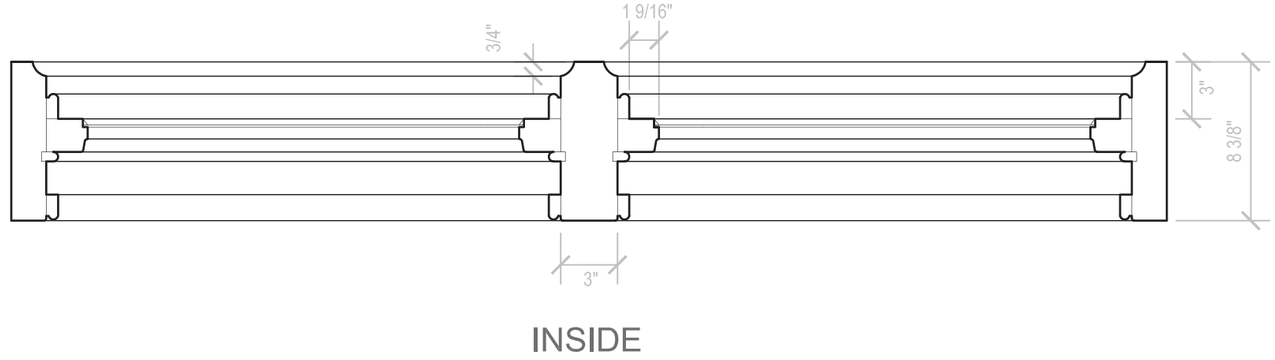
To summarize, the window replacement entails:

- Window configurations and profiles will be restored to resemble the period of historic significance (1861-era), a closer reflection of the original design.
    - Extensive research into archival materials was conducted to determine historic window configuration.
    - Existing windows, installed in 1980s, are not historically accurate.
- Very high performance windows needed to ensure efficiency, safety and tightly controlled interior climate conditions necessary for art conservation.
    - High thermal performance needed to maintain temperatures & humidity control for museum conservation purposes and to meet energy goals.
    - Blast criteria incorporated for safety of staff and patrons, due to sensitive location (proximity to White House, Blair-Lee House, and Executive Office Buildings).
- Custom aluminum frame windows provide the most appropriate option to meet blast and thermal criteria, along with historic appearance.
    - Exceptional design flexibility for custom profiles.
    - Ability to meet thermal criteria, with long term stability.
    - Steel reinforcing can be incorporated within frame profile to provide blast protection.
    - Of the various frame material options studied (including wood, fiberglass, steel) aluminum windows offers the highest overall performance characteristics.
    - The Smithsonian Arts & Industries Building provides a precedent for aluminum windows currently being installed to provide historically configured, high performance blast windows.

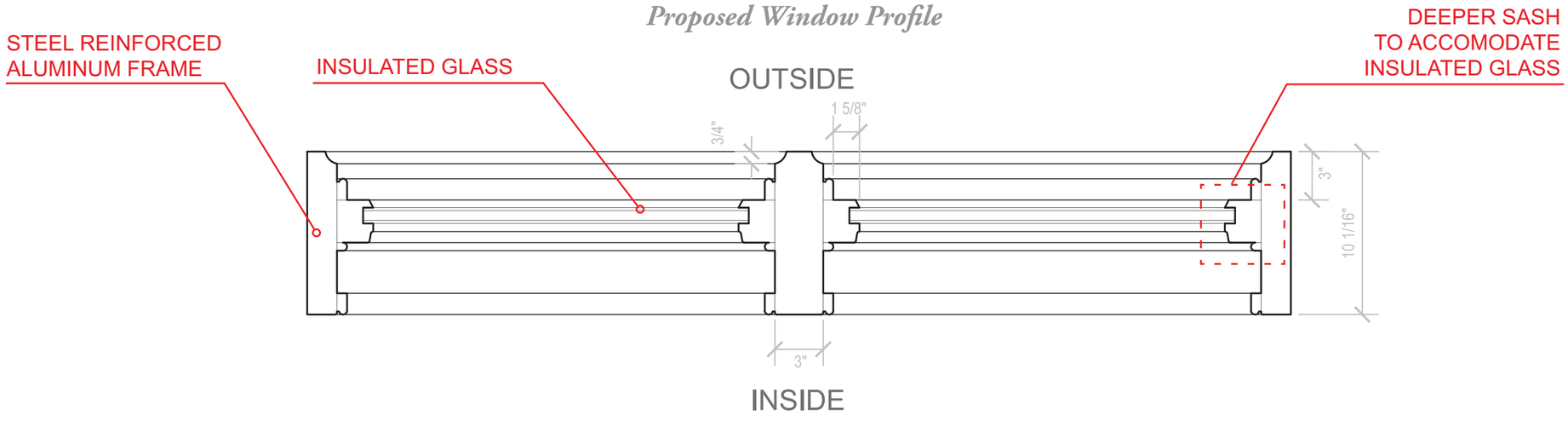
Historic Photograph of Renwick Building During Construction, approx. 1863
(Photograph provided courtesy of the Architect of the Capitol Archives - File no. AOC #10693)

View of Historic Window at Palm Court
(Photo date: March 19, 2013)

Historic Window Profile

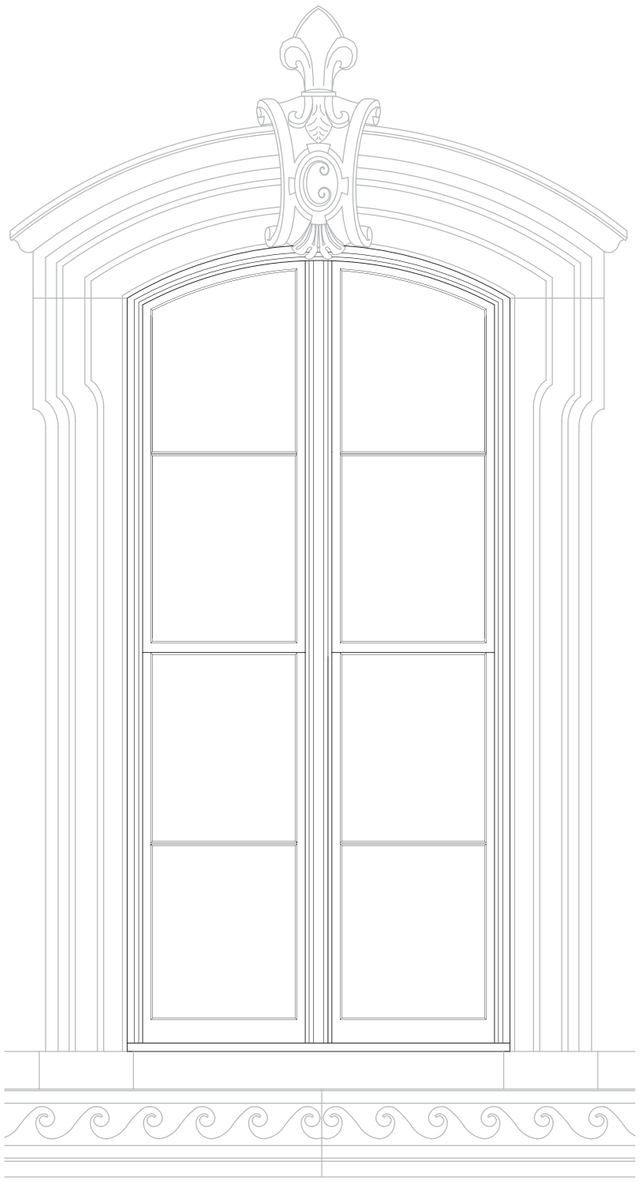


Proposed Window Profile



Window Configurations: Historic, Current, & Proposed

Existing Window

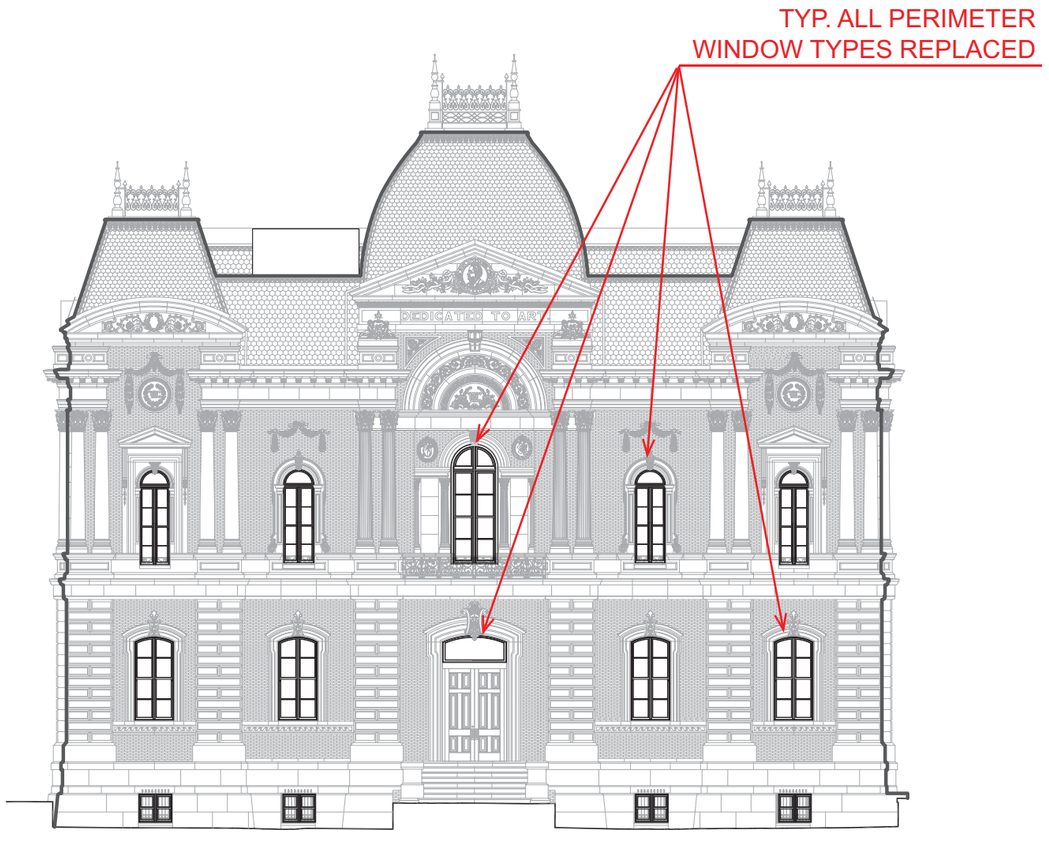


Proposed Window:
Elevation & Horizontal Section

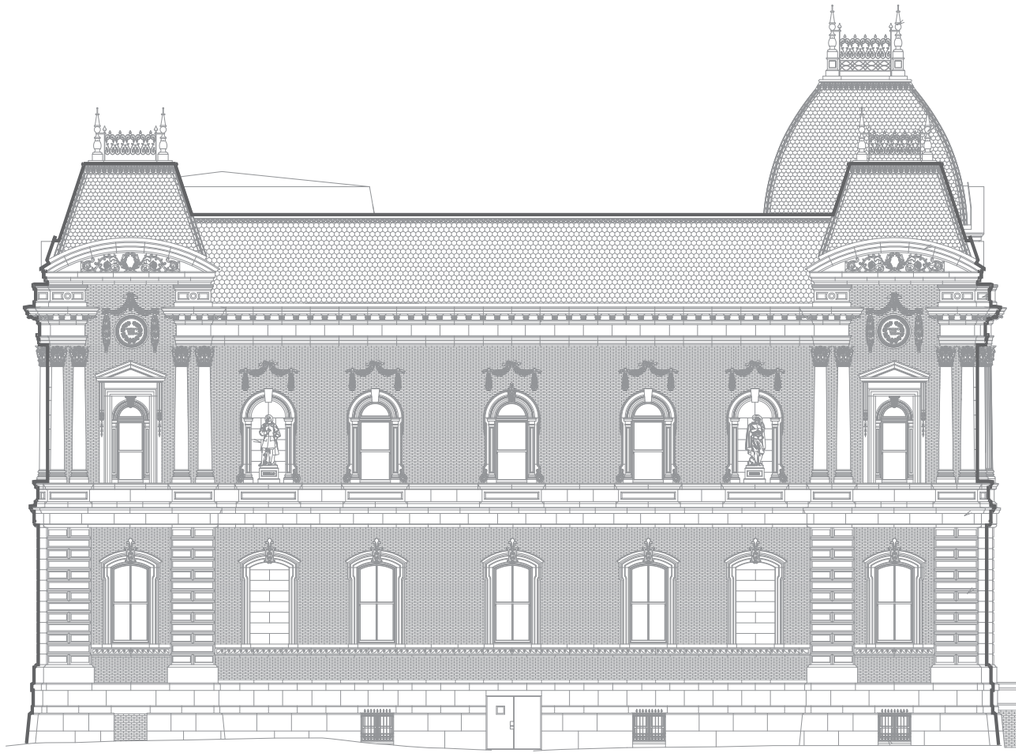
Proposed Window:
Frame color to match stone

Exterior Elevations: South

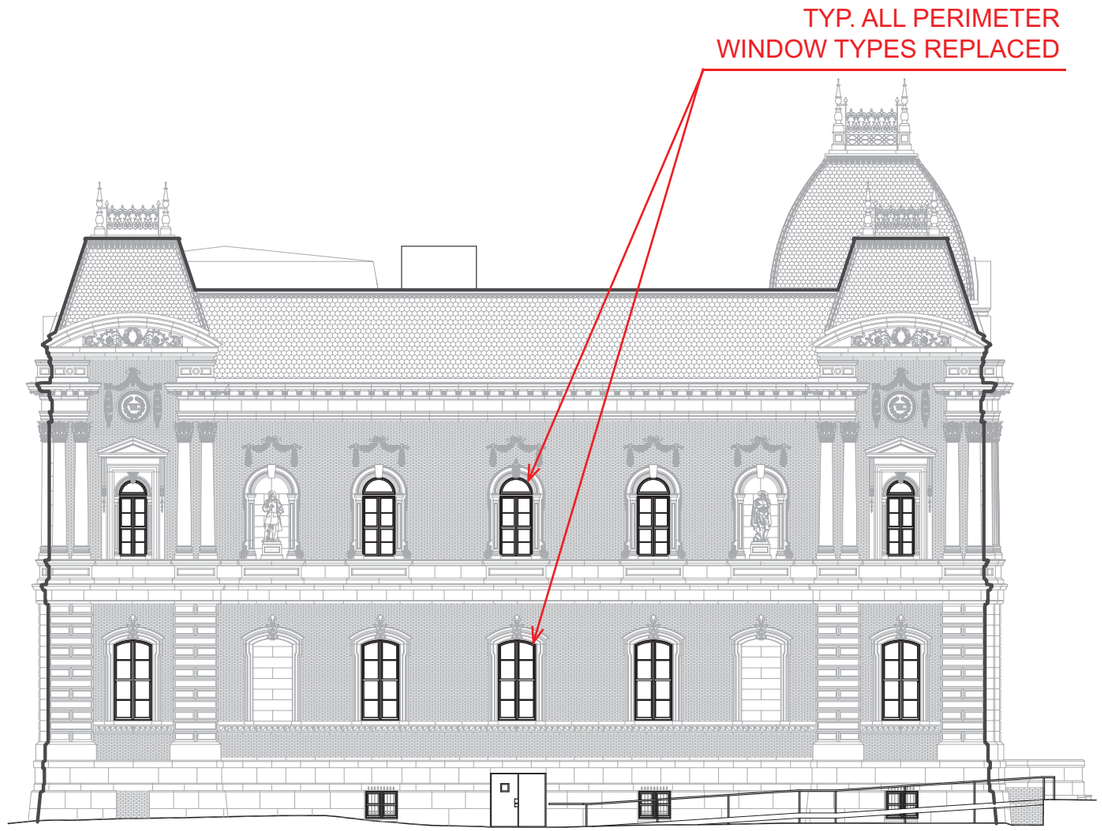
Existing South Elevation showing
Non-Historic Window Configuration



Proposed South Elevation showing
Windows based on 1861 Configuration



Existing West Elevation showing
Non-Historic Window Configuration



Proposed West Elevation showing
Windows based on 1861 Configuration

Areaway Repairs, Ramp & Lighting

Description of Existing Conditions:
Several improvements are planned for the exterior areaway, particularly at the 17th Street side of the Renwick Gallery. The west doorway in the moat serves as the accessible public entry, as well as the primary entrance for staff and service use. This entrance is accessed by an existing steel pan and concrete ramp, which brings visitors from sidewalk grade to the basement level. The areaway reflects the incremental improvements and repairs that have occurred since the 1967-1972 major renovation, resulting in a piecemeal appearance of accumulated repairs. Issues include:

- The areaway slab consists of a multicolor patchwork of concrete of varying vintage, with inconsistent grading.
- Stormwater piping is in need of replacement to cure problems with frequent stoppages.
- The existing wheelchair ramp is non-compliant with current codes.
- The building finish along the moat is stucco, which is severely deteriorated, showing extensive cracking and delamination.
- Existing lighting fixtures and conduit at the moat level are in badly degraded condition, both functionally and aesthetically.

Description of Proposed Work:
A goal of the current renovation is to improve the condition of the areaway, both to enhance the experience of visitors using the accessible entrance and to ensure safety and proper drainage. The west and north moat areas will be renovated, including:

- Removal of the areaway slab to enable the replacement of subsurface utilities and stormwater drains. New concrete color will be specified to match the aged concrete at the south moats in front of the building (which will remain as existing).
- While the existing wheelchair ramp is in good condition, it will be removed to enable the demolition of the areaway slab, and to allow for an aesthetically improved and code compliant ramp to be constructed. The new railing will have vertical balusters to better coordinate with the historic railing at the sidewalk level, and will be painted black to match.
- The exterior plaster stucco at the moat level building façade will be fully renovated to repair cracking and spalling.
- Areaway lighting fixtures and conduit will be replaced, to improve aesthetics and functionality. Historic light fixtures at the front entrance of the building will remain as existing.

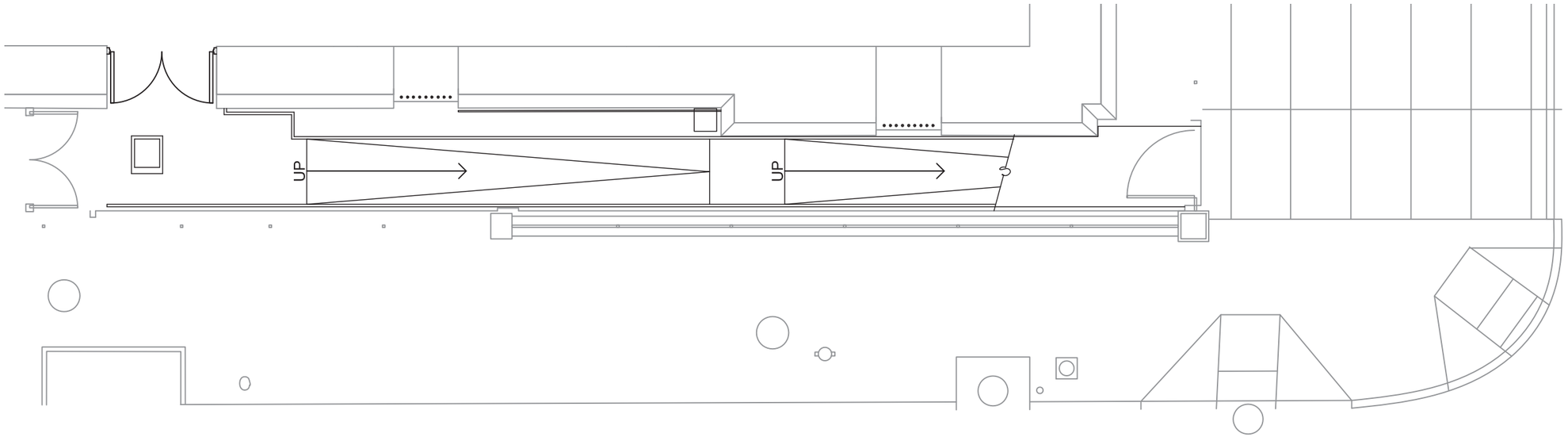
Deteriorated cementitious stucco at areaway

Deteriorated moat slab

Wheelchair Ramp: Existing Conditions

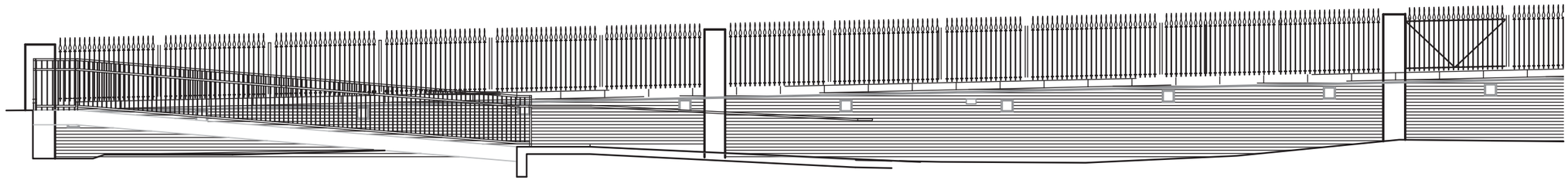
Photo of Existing Ramp

Photo of Existing Ramp Railing

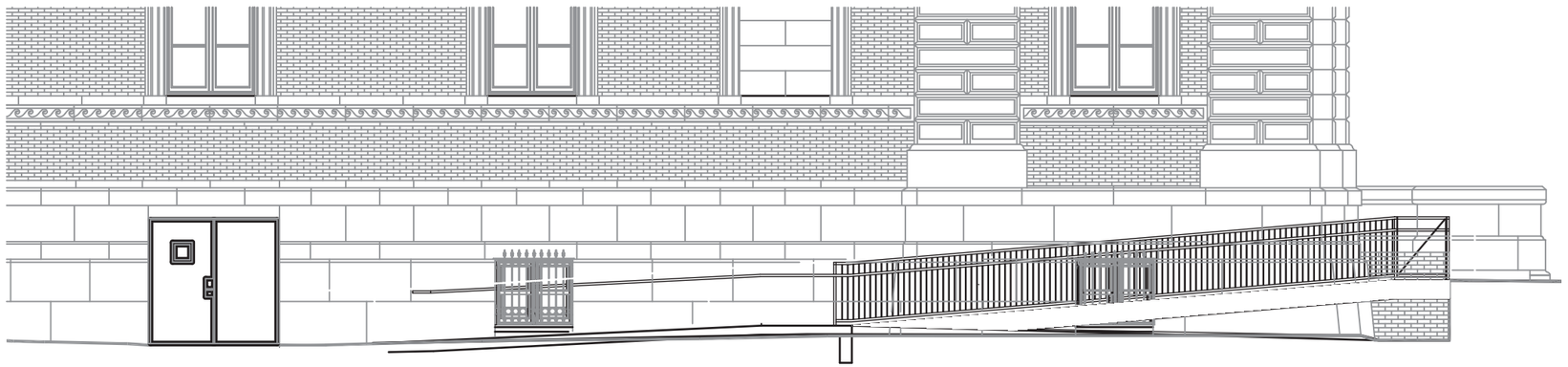


Plan of Existing Ramp

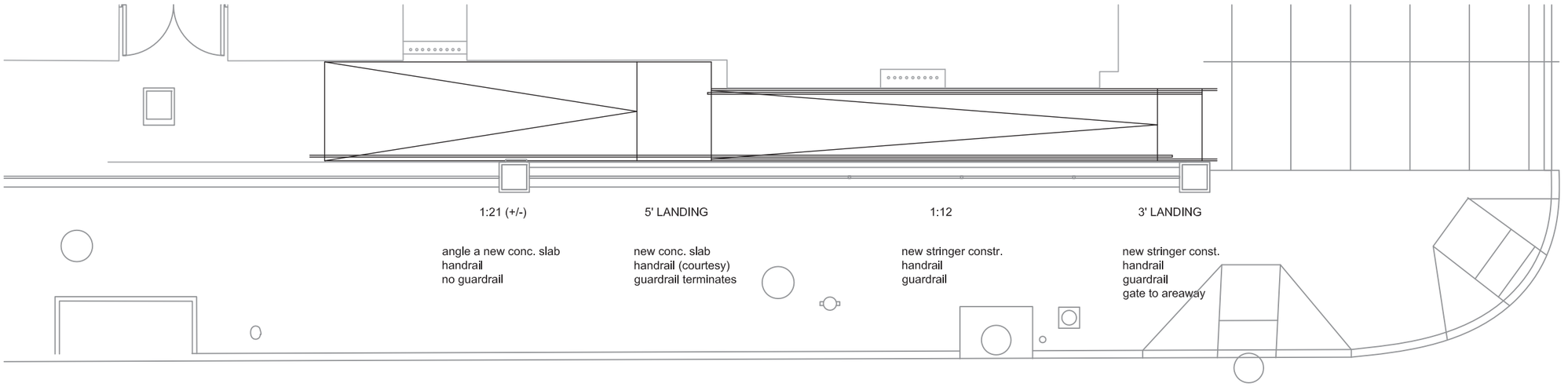
Wheelchair Ramp: Proposed Design



Proposed Section looking West



Proposed Section looking East



Proposed Plan of New Ramp

Existing ornamental lights lights at front entry to remain

Lighting fixtures and conduit at ramp to be replaced

Lighting fixtures and conduit throughout moat to be replaced

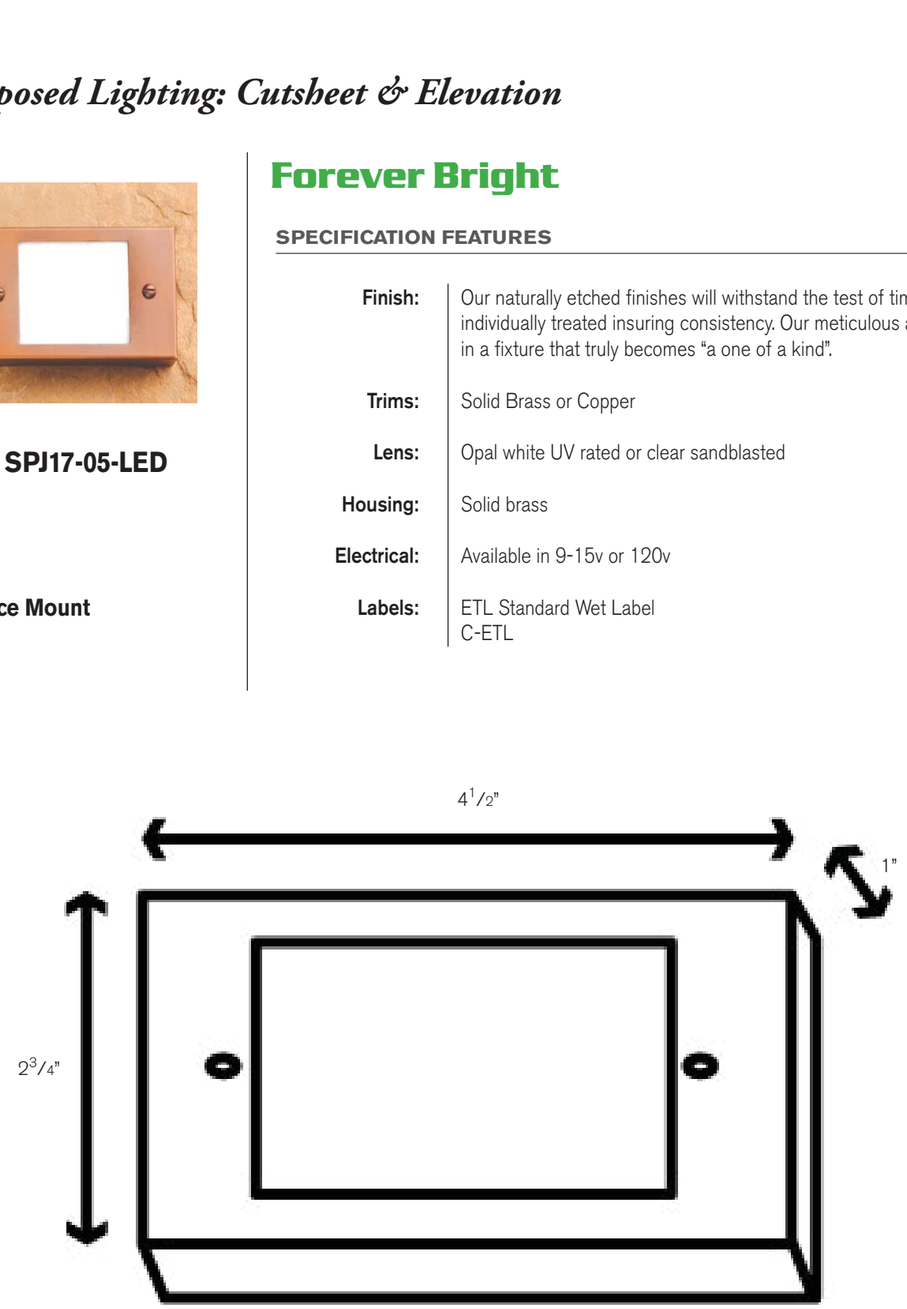
Model: **SPJ17-05-LED**

Surface Mount

Forever Bright

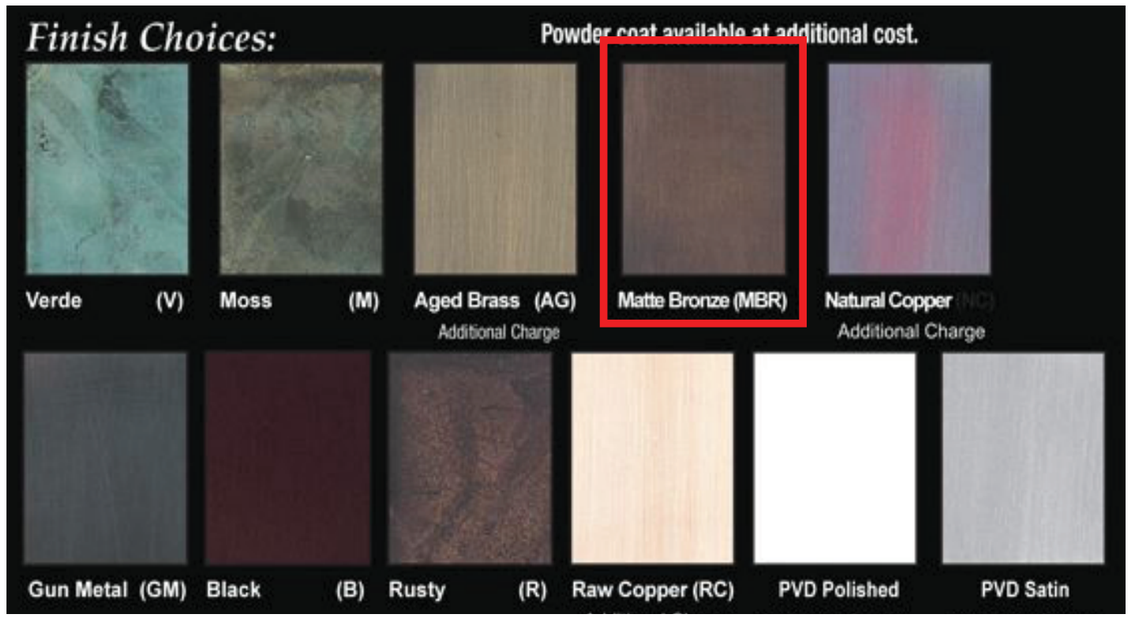
SPECIFICATION FEATURES

Finish:	Our naturally etched finishes will withstand the test of time. All finishes are individually treated insuring consistency. Our meticulous application results in a fixture that truly becomes “a one of a kind”.
Trims:	Solid Brass or Copper
Lens:	Opal white UV rated or clear sandblasted
Housing:	Solid brass
Electrical:	Available in 9-15v or 120v
Labels:	ETL Standard Wet Label C-ETL



Cutsheet for proposed new areaway light fixtures

Proposed new areaway light fixtures



Proposed finish for new areaway light fixtures

Existing Exterior Egress Stair

Description of Existing Conditions:
An existing exterior stair is situated in the rear areaway between the Renwick Gallery and the Executive Office Building. This stair serves for emergency egress from the first and second floor gallery spaces of the museum. The existing stair was built during the 1967-72 building renovation, and consequently does not meet present day life safety codes. Issues include:

- Weather protection is now required, to avoid accumulation of snow and ice on stair surfaces.
- Treads and landings are constructed of open steel grate, whereas current codes require solid walking surfaces.
- Railings are not to present codes for height, and do not meet maximum opening size requirements.

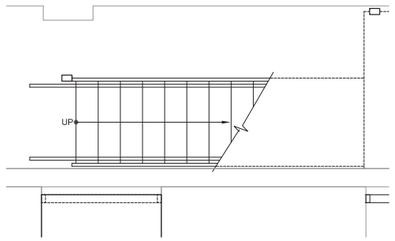
Description of Proposed Work:
The existing exterior egress stair will be modified to incorporate code upgrades, and to enable access to an adjacent cooling tower platform. The following notable design changes will be incorporated to address known life safety deficiencies:

- A roof canopy will be incorporated to provide weather protection.
- Treads and landings will be plated with solid surface galvanized steel.
- Code-compliant 42” high guardrails with balusters or mesh closure will be incorporated.

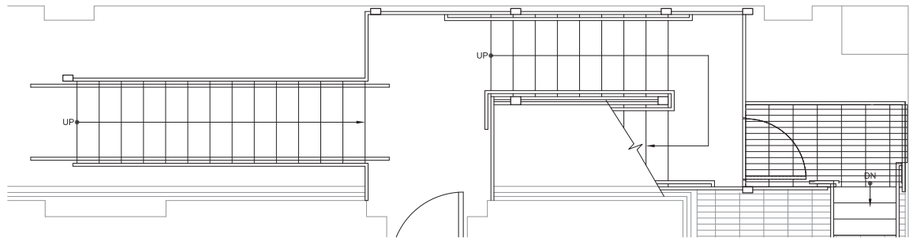
View of non-compliant stair treads

View of existing stair from west end of alley

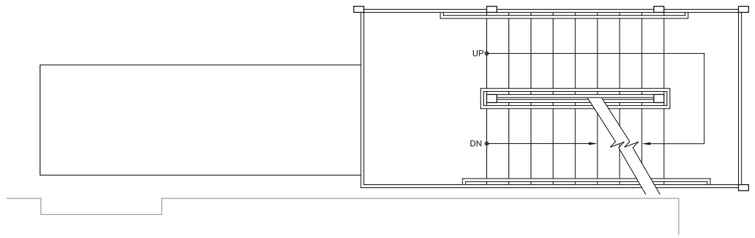
Exterior Egress Stair: Proposed Design



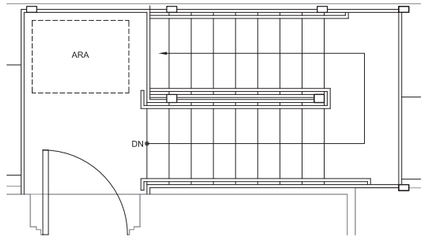
1 A-101 A-407 ENLARGED STAIR PLAN- BASEMENT



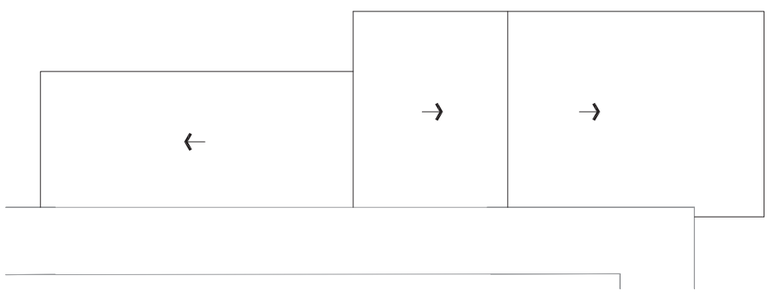
2 A-102 A-407 ENLARGED STAIR PLAN- 1ST FLOOR



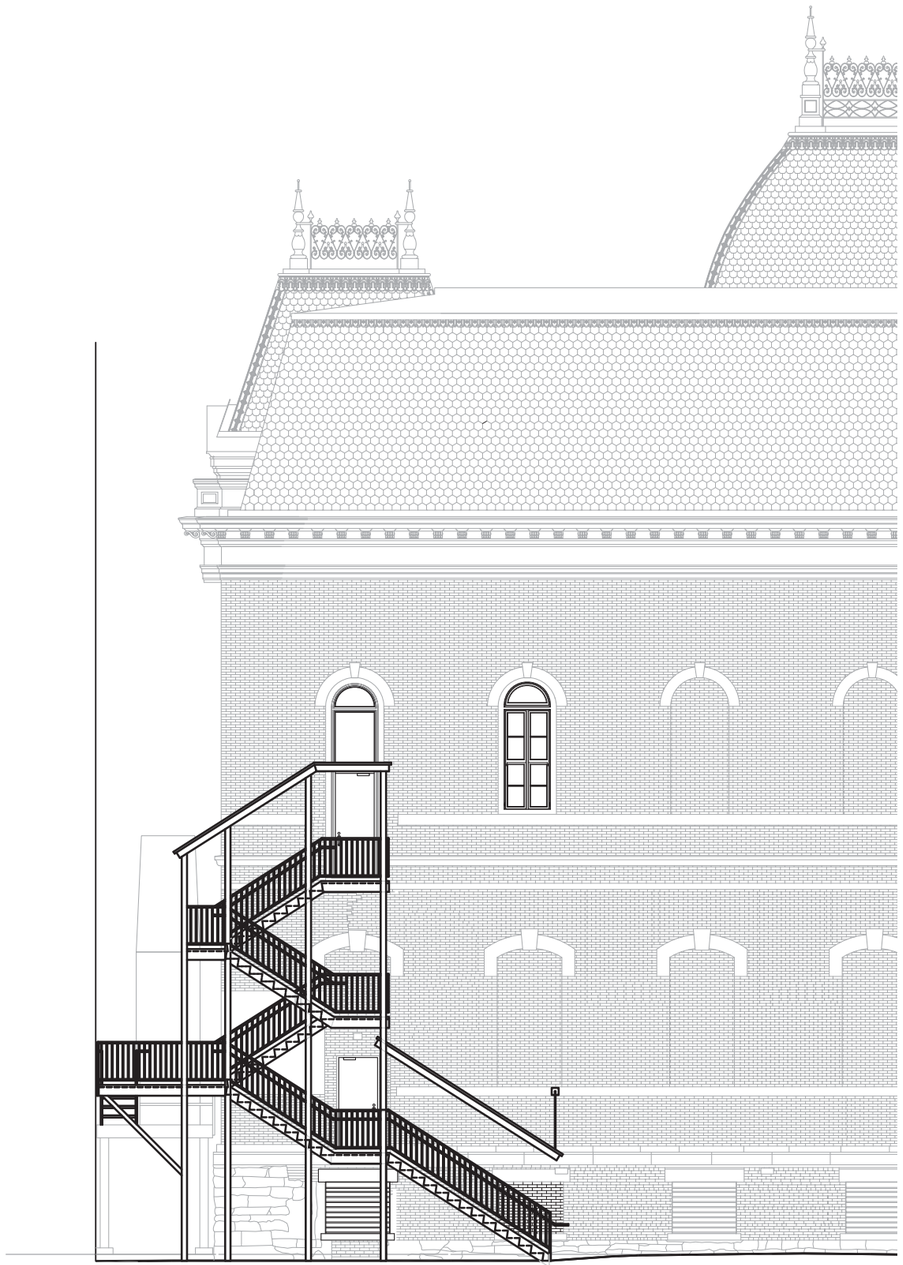
3 A-103 A-407 ENLARGED STAIR PLAN- 1ST MEZZ



4 A-104 A-407 ENLARGED STAIR PLAN- 2ND FLOOR



5 A-105 A-407 ENLARGED STAIR PLAN- 2ND MEZZ



1 A-203 A-203 NORTH ELEVATION