# NIST Building 101
# Historic Structure Report and Condition Assessment

Final Submission
March 15, 2020


Prepared by:

JMAP Project No.: 18035

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**Section K: Appendix**

## INTRODUCTION

The purpose of the Historic Structure Report is to examine the architectural history of this significant Federal building, inventory character defining features, and establish Preservation Zones to inform future maintenance and renovations. This report incorporates the information and research specific to Building 101 on the National Institute of Standards and Technology (NIST) campus in Gaithersburg, Maryland. This report addresses all exterior and interior spaces and features of Building 101.

**Section A: Building Summary** presents some basic facts about the building and presents arguments for its architectural and historical significance. These statements help explain why this building is important and worthy of preservation.

**Section B: Construction History** discusses the building as it was originally built and outlines the major alterations and additions that have taken place since it was constructed. This section includes selected examples of the original drawings and historic photographs as well as a listing of all the building materials used on the exterior and interior of the building and, when available, the source of that material. This section helps explain how the building came to look the way it does today.

**Section C: Inventory of Significant Features** identifies, documents, and clarifies preservation priorities of the historically and architecturally significant extant interior features and spaces of the building. The significant areas and spaces are prioritized by three preservation zone classifications: 1) Restoration Zone; 2) Rehabilitation Zone 1; and 3) Renovation Zone. This report reviewed the significant architectural features of the interior spaces that are included in the two highest priority zone classifications for the public spaces on the first floor and the office spaces on the 6$^{th}$, 7$^{th}$, 8$^{th}$, and 11$^{th}$ floors. Renovation zones were not investigated. Those elements within Restoration and Rehabilitation zones are further detailed by inventory lists which itemize the significant features within the area or space and the related material, finish, and approximate date of those listed features. Photographs document significant features within the inventory.

**Section D: Preservation Challenges and Recommendations** illustrates recurring existing conditions that may adversely affect the building's historic fabric, appearance, or structural integrity. Based upon the findings, a prioritized list of preservation repair items is included in this section of the guide.

**Section E: Previous Studies** includes summaries of selected architectural, structural, material, and engineering studies that have been completed for the building. This section includes relevant information such as scope and findings.

**Section F: Outline Specifications** contains placeholders for outline specification that address preservation concerns, including material and assemblies throughout the building.

**Section G: Glossary** contains definitions of terms used in this guide. These words are italicized in the Front Matter.

**Section H: Condition Drawings** This sections illustrates the scope and location of the conditions found on the building.  The drawings are used as the basis of the cost estimate.

**Section I: Cost Estimate** This section provides a cost estimate to correct the deficiencies found during the condition assessment and provides a summary of all assumptions made developing the estimate.

**Section J: Investigation** contains detailed reports of the marble panel investigation performed by the team's structural engineer, McMullen Associates and mortar analysis by JMA Preservation.

**Section K: Appendix** This section also includes an index of the digital research files, original drawings, historic photographs, and current photographs which can be found on compact disks included with this submission.

The Room Index is located at the beginning of Section C and is duplicated here for the user's convenience.

The Historic Structure Report is intended to be used as a reference document for the NIST Office of Facilities and Property Management and its staff as well as for outside contractors completing work on Building 101.

## PUBLICATION DATA

**Location**
Building 101 is located on the Gaithersburg Campus of the National Institute of Standards & Technology at 100 Bureau Drive, Gaithersburg, Maryland, 20878.

**Ownership**
Building 101 is owned by the U.S. Department of Commerce National Institute of Standards and Technology. (NIST)

**National Register of Historic Places Status**
The National Park Service determined on June 22, 2016 that the entire 579-acre NIST campus is eligible for the National Register of Historic Places as a historic district under National Register Criteria A and C for its historic and architectural importance for the period of significance in the early 1960s.

**Research**
The project team conducted limited archival research to better inform the survey team. A list of repositories where holdings have been consulted follows.

**NIST Research Library**
Vertical File on Gaithersburg Campus
Material Boards and Renderings for Interior Design
Oral History
Written History Documents

**NIST Records Management**
Photographs from the time of construction.

**NIST Digital Archives**
Textural records. Gaithersburg Campus Collection includes photographs, architectural renderings, technical publications, journal articles, and history publications.

**NIST Facilities Drawings Database and Library**
Relevant files include architectural drawings and specifications for the original construction and major maintenance

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# SECTION A:
# BUILDING SUMMARY

## BUILDING SUMMARY

**Building Name**: National Institute of Standards and Technology Building 101

**Building Address:** 100 Bureau Drive Gaithersburg, MD 20878

**Bordering Streets:** North: North Drive
South: South Drive
East: East Drive
West: West Drive

**Construction Type:** Reinforced Concrete Structural Frame

**Building Function:** Building 101 is the central Administration Building for the National Institute of Standards and Technology campus in Gaithersburg, Maryland. The eleven-story central tower houses general office space and laboratories. Low-lying wings house the cafeteria, research library, classrooms, lecture halls, and two large auditoria.

**Building Size**

| | | |
|---|---|---|
| Sub-Basement | 1,962 | SF |
| Basement | 90,234 | SF |
| First Floor | 118,843 | SF |
| Mezzanine A-Wing | 10,231 | SF |
| Second FLoor | 10,307 | SF |
| Second Floor C-Wing | 1,742 | SF |
| Second Floor D-Wing | 1,196 | SF |
| Second Floor E-Wing | 13,007 | SF |
| Third Floor | 10,317 | SF |
| Fourth Floor | 10,317 | SF |
| Fifth Floor | 10,317 | SF |
| Sixth Floor | 10,317 | SF |
| Seventh Floor | 10,317 | SF |
| Eighth Floor | 10,317 | SF |
| Ninth Floor | 10,317 | SF |
| Tenth Floor | 10,317 | SF |
| Eleventh Floor | 10,317 | SF |
| Twelfth Floor (PH) | 2,676 | SF |
| Thirteenth Floor (PH) | 2,734 | SF |
| **Total floor area** | **335,785** | **SF (Gross)** |

**Façade Dimensions:**

| | |
|---|---|
| North Drive: Primary (Wings A) | 331 feet – 0 inches |
| North Drive: Secondary (Wing E) | 122 feet – 6 inches |
| North Drive: Secondary (Wing D) | 132 feet – 6 inches |
| South Drive: Primary (Wing C) | 193 feet – 6 inches |
| South Drive: Secondary (Wing D) | 132 feet – 6 inches |
| South Drive: Secondary (Wing B) | 162 feet – 8 inches |
| South Drive: Secondary (Wing E) | 122 feet – 6 inches |
| East Drive: Primary (Wings A and B) | 295 feet – 6 inches |
| East Drive: Secondary (Wing D) | 112 feet – 0 inches |
| West Drive: Primary (Wing C) | 185 feet – 10 inches |
| West Drive: Secondary (Wing E) | 148 feet – 3-1/2 inches |

**Height** 145 feet

**Stories**: 11

**Floor to Floor Heights**

| | |
|---|---|
| Sub-Basement | 12 feet – 3 inches |
| Basement | 14 feet – 0 inches |
| First Floor | 17 feet – 0 inches |
| Mezzanine | 13 feet – 0 inches |
| Second Floor | 10 feet – 2 inches |
| Third Floor | 10 feet – 2 inches |
| Fourth Floor | 10 feet – 2 inches |
| Fifth Floor | 10 feet – 2 inches |
| Sixth Floor | 10 feet – 2 inches |
| Seventh Floor | 10 feet – 2 inches |
| Eighth Floor | 10 feet – 2 inches |
| Ninth Floor | 10 feet – 2 inches |
| Tenth Floor | 10 feet – 2 inches |
| Eleventh Floor | 13 feet – 0 inches |
| Twelfth Floor (PH) | 10 feet – 4 inches |
| Thirteenth Floor (PH) | 10 feet – 4 inches |

## STATEMENT OF SIGNIFICANCE

Building 101 serves as the Administration Building on the National Institute of Standards and Technology (NIST) campus in Gaithersburg, Maryland. The NIST campus fits into a broad trend of large scientific institutions, both public and private, moving their headquarters from crowded urban sites to spacious suburban campuses. Building 101 is significant as a part of this larger campus but also individually as it reflects changing expectations and design innovations for office building architecture during the mid-twentieth century. It is also significant as an excellent example of the modernist International Style.
The National Bureau of Standards.

In 1901, the United States Congress enacted legislation founding the National Bureau of Standards (NBS). The Bureau would not adopt the name National Institute of Standards and Technology until 1988.[1] The NBS was conceived as a response to the United States' scientific and industrial communities, who recognized a need for more reliable standards of measurement. In 1892, nine years before the creation of NBS, William Mason, a member of the Rensselaer Polytechnic Institute complained in a letter to Science magazine that there were as many as eight "authoritative" values for the US Gallon.[2] The federal government recognized that standardized units of measurement were a necessary part of the scientific method. It therefore tasked NBS creating and proliferating a system of standard, empirical measurements for the benefit of the nation's growing technological and industrial sectors. The Bureau soon produced measurement standards for length, volume, and weight.

During both World Wars, the Bureau's influence grew as it developed new products and techniques to assist with the war effort. The Bureau emerged from WWII as the Federal government's premier research agency in the fields of physics, mathematics, chemistry, and engineering. In the post-war years, Secretary of Commerce Herbert Hoover redefined the Bureau's core mission: to assist recovery of the domestic economy, the Bureau would establish standards of production and quality for commercial goods and materials. By 1950, the Bureau employed 3100 staff across 15 departments and had an annual budget of $20 million.

### Relocation to Gaithersburg

In 1903, the NBS moved into its first headquarters - a newly-completed single structure at the corner of Connecticut Avenue and Van Ness Street in Washington, DC. NBS would occupy this site for the next six decades. By as early as 1934, the Bureau's directors recognized a need for new facilities as it was quickly outgrowing its facilities. That year the NBS submitted plans for a new Administration Building to the Works Progress Administration as part of a request for funds. The funds were never made available and the plans were scrapped.

The Bureau's explosive growth during WWII exacerbated problems of overcrowding and building obsolescence. By the end of the war, the various departments were housed in ninety-three separate buildings on a 69-acre tract of land. The employees of one particular department were spread across seventeen separate buildings. The sprawling headquarters made communication and collaboration slow and difficult. To make matters worse, individual buildings frequently lacked adequate equipment for the Bureau's research requirements, and efforts to modernize were largely unsuccessful. Between 1949 and 1950, Congress allocated $2 million for an update of the mechanically electrical, and heating systems. However, the plans for the update did not take into account ever-increasing demands on the air

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[1] Kristen Peeler, "National Institute of Standards and Technology (NIST)," Maryland Inventory of Historic Properties Form (Crownsville, MD: Maryland Historical Trust, June 2015).
[2] Rexmond C. Cochrane, *Measures for Progress: A History of the National Bureau of Standards* (Washington, DC: US Government Printing Office, 1974), 33-34.

conditioning equipment to control temperature and humidity in laboratories with instruments sensitive to overheating. The electrical upgrade was inadequate from the very start.

Finally, in 1955, NIST made the decision to relocate the headquarters to the suburbs of Washington, DC rather than attempt to redevelop the existing site. Multiple factors encouraged relocation over rehabilitation. Perhaps most pressing was the threat of nuclear attack during the Cold War years. The Federal government determined that it would be necessary to locate the new headquarters at least twenty miles from the White House to protect the Institute from nuclear attack. The existing headquarters were less than five miles away. Regardless of defense concerns, it is likely that the Institute's own preferences and needs would have dictated moving to a less urban site. Electrical interference and mechanical vibrations from neighboring buildings had the potential to impair the Institute's delicate instruments.[3] Relocation to a large tract of land in the suburbs would provide a necessary buffer against neighboring structures and allow NIST to expand more easily in the future.

## Designing the New Campus

Once the NBS made the decision to relocate in 1955, Director Allen Astin delegated the planning process for the new campus to his Associate Director, Robert Walleigh. Walleigh, an engineer by training, had been an NBS employee since 1943.[4] Between 1955 and 1956, Walleigh oversaw the selection of a new site in Gaithersburg, Maryland chosen for its flat topography and convenient distance from Washington, DC. According to Walleigh, it was paramount that existing employees had easy access to the new site. If not, they could easily find work elsewhere. On July 6, 1956, the Federal government filed a Declaration of Taking to acquire 579 acres along what is now Interstate 270.[5] The NBS recommended that the GSA hire Voorhees, Walker, Smith, Smith & Haines Architects of New York (VWSSH), who had extensive experience designing large campuses for leaders in science and technology.[6] The GSA considered several applicants, ultimately hiring VWSSH shortly after acquiring the new site in Gaithersburg.[7]

In 1955, the GSA had estimated a budget of $40 million for construction of a single 1-million square-foot, six-story structure for the new NBS headquarters.[8] The GSA continued to champion this single-block type arrangement as the most economical, even as the NBS clearly preferred a multi-building campus. On August 14, 1958, the GSA facilitated a Relocation Planning Meeting with the NBS, the Public Buildings Service (PBS), and VWSSH. From the meeting minutes, it is apparent that the NBS favored a campus with multiple buildings, while the Bureau of the Budget (now the Office of Management and Budget) preferred a single large structure as a more economical solution. The NBS reported that while it was "not wedded to any type of building or grouping," it had discussed designs similar to the quadrangle of buildings

[3] Walleigh, 49-50.
[4] James F. Schooley, *Responding to National Needs: The NBS Becomes the NIST 1969-1993* (Gaithersburg: US – Department of Commerce, 2000), 40.
[5] Walleigh, 50.
[6] The firm VWSSH was known as Voorhees, Walker, Smith, & Smith when hired in 1956. By 1958, the firm had become Voorhees, Walker, Smith, Smith, & Haines. The firm has gone through several name changes since then, becoming Haines, Lundberg, and Walker in 1968. Today the firm is known as HLW Architects.
HLW Architects, "Highlights of 100 Years."
[7] Ibid., 50-51.
[8] Elio Passaglia, *A Unique Institution: The National Bureau of Standards 1950-1969*, (Gaithersburg: US Department of Commerce, 1999), 477-478.

constructed to house the Atomic Energy Commission in 1955 and "a hexagon or snowflake style with separate spines each similar to NBS Boulder Laboratories," which had been completed in 1954.[9]

While unsure of the exact layout of the buildings, the NBS was certain about the atmosphere they wished to create. In a 1956 letter to the Mayor of Gaithersburg, R. S. Walleigh, Associate Director for Administration, wrote:

> The Bureau (NIST) wishes to develop on its new site a university campus-type atmosphere similar to the one which has been achieved on the present site (in Washington, DC). It has been found that such surroundings are an asset in attracting and retaining scientists and in producing the environment which stimulates scientific productivity.[10]

It is significant that Walleigh referred specifically to the importance of "attracting and retaining scientists." World War II had led to an explosion in scientific research and innovation to support the war effort. This boom in the technology and manufacturing industries continued into the 1950s and 1960s. With so many opportunities for employment, scientists and engineers could afford to be picky, and both private and public research institutions devoted significant resources to state-of-the-art corporate campuses that would both attract new employees and retain the old.[11] The NBS was no exception.

On December 11, 1956, VWSSH toured the recently completed NBS campus in Boulder, Colorado. The following day they met with NBS representatives to discuss their expectations for the new facility. In anticipation of the meeting, NBS employee C. A. Dieman prepared a memo recommending that VWSSH be given "considerable latitude in establishing a style of architecture… consistent with (the Bureau's) position as one of the outstanding Government research laboratories." Dieman also stressed that while the economy of the design was important, it should not be taken so far as to discourage top-notch scientists and engineers from accepting employment with the NBS. Astin and Golovin relayed Dieman's concerns in the December 12 meeting, adding that multiple buildings would be preferable to the monolithic structure that the GSA proposed.[12]

## The Corporate Campus

The Bureau's move to the suburbs followed a pattern already established among large private corporations. Beginning in the 1940s, giants of American technology and industry constructed large corporate research campuses in the suburbs of large urban centers. The movement began as a way to address practical concerns of overcrowding in city centers and the need to attract qualified employees in the post-war economic boom. By the 1950s, the movement had morphed from a largely practical management decision to a clever marketing tool and tangible representation of a new corporate identity. The new NBS campus led by VWSSH, and especially the centrally-located Building 101, adopted lessons learned from the movement's progression to address practical needs while presenting a new modern image for the NBS.

### *VWSSH: Bell Telephone Laboratories (1942) and General Foods (1954)*

The predecessors of VWSSH were pioneers of the suburban corporate campus. Beginning in the 1930s, Voorhees, Gmelin, and Walker, worked with Olmsted Brothers of Brookline, MA, to design Bell Telephone

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[9] NBS Management Planning Division, "Architectural Style," 5.
[10] NBS Management Planning Division, 1.
[11] Mozingo 2011?
[12] National Bureau of Standards Management Planning Division, "Architectural Style," *Summary of Files on Gaithersburg*, (May 1958), 4-5.

Laboratories, the first suburban corporate campus in the United States. The completed campus was a collection of low-lying buildings that housed laboratories, administrative spaces, and various amenities. The interiors employed a revolutionary modular design to ensure Bell could easily adapt to changing technology and programmatic needs. The architects organized each building around a standard six-foot-wide laboratory module with moveable metal partitions. According to a 1944 article in *Life* magazine, laboratory space could be reconfigured in as little as forty-eight hours (Mozingo 59).

While the interior design addressed programmatic needs, the exterior facades and landscaping were designed to court public opinion. As the first of its kind, the Bell campus met with distrust from its suburban neighbors. Care was taken to blend the buildings into their suburban surroundings. The campus was set back from the road within a landscaped park, and no building exceeded three stories in height. The exterior facades were rendered in the traditional Colonial Revival style, which contemporary critics frequently faulted as incongruous with the technologically advanced interior. Despite this criticism, VWSSH - then Voorhees, Walker, Foley, and Smith - repeated its use of the Colonial Revival style about a decade later in their design of the General Foods campus in White Plains New York. In this instance, VWSSH chose the Colonial Revival style because it was in keeping with the overall architectural character of surrounding neighborhoods. As with the Bell Telephone Laboratories, local reception for the new General Foods campus location was lukewarm at best. The architect therefore made a conscious decision to employ the traditional architectural style to placate local resentment.

Corporations also had to contend with the possibility that employees might resign rather than relocate, since the post-war technological boom meant scientists and engineers could have their pick of jobs. At the Bell campus, VWSSH included amenities such as a restaurant, lounge, softball fields, and ample parking. At General Foods, workspaces featured one window for every two employees. At both projects, VWSSH strove to recreate the feeling of a college campus in order to entice scientists and engineers away from universities. To this end, both campuses featured a collection of buildings around a landscaped quadrangle, in imitation of the academic quadrangle common on American university campuses.

By the completion of the General Foods campus in 1954, VWSSH had firmly established the fundamentals of the suburban corporate campus. These included three-story height limits, large setbacks, ample parking, and landscaped green spaces. Future developments would introduce a new dimension to the suburban campus: corporate branding.

***Corporate Campus as Symbol: General Motors (1956)***

Eero Saarinen's design for the General Motors Technical Center in Warren, Michigan, ushered in a new phase of the suburban corporate campus. While the Bell Telephone Laboratories and General Foods campus sought to blend into the neighborhood, the modernist General Motors Technical Center was conceived as a highly visible piece of corporate branding. General Motors gave architect Eero Saarinen considerable latitude in "developing forward looking architectural design." The final product was unapologetically modern and clad in steel-and-glass curtain wall and vibrant glazed brick. The complex retained the campus-like atmosphere of the earlier developments, but Saarinen was not designing solely for the GM employee. His campus was outward-looking, intended to present a carefully curated corporate image to the public at large. *Life* magazine called it "Architecture of the Future," while *Architectural Forum* dubbed it the "Industrial Versailles." Saarinen intended the overall message to be one of modernity and progress, and he was successful. At the Center's 1956 dedication, President Dwight D. Eisenhower called it "a place for leadership furthering new attacks on the technological frontier." This corporate campus was not fading into the background. It was brash and cutting edge, using architecture to communicate corporate ideals.

### *VWSSH at NBS*

In their design of Bell Labs, Vorhees et al had helped establish the "fundamentals of the corporate campus," which were nearly universal elements of the architect-designed corporate campuses beginning in the 1940s. The following characteristics were widely considered necessary to the design of a thoroughly modern research campus that would attract talented research scientists: centrally located green space, flexible laboratory organization, easy automobile access and ample parking, underground utilities, controlled access, three-story buildings, and generous landscape setbacks.[13] With its focus on green space and automobile access, this model lent itself much better to multi-building campuses on large tracts of land than a single large, monolithic structure. When VWSSH presented their design to NBS and GSA on June 1, 1960, the model depicted a multi-building campus with wing-like laboratory buildings connected via enclosed concourses to a central administrative building.[14] The central high-rise structure was designed as the social, cultural, and administrative hub of the campus. The entire composition was expertly rendered in the modernist International Style, rather than the traditional Colonial Revival designs of VWSSH' past campuses. The International Style developed as a celebration of the industrial age and its architectural expression of materials, asymmetry, and sleek style communicated the modern era. The result of this careful design process was a streamlined, modern building that branded the Bureau's dedication to furthering American progress in industry and technology.

## Building 101 Design

As the centerpiece of the 579-acre campus, Building 101 was designed to welcome visitors, attract qualified employees, encourage interdisciplinary collaboration, and communicate the Bureau's core mission and ideals, all while satisfying practical administrative needs and budgetary requirements. VWSSH' revolutionary modular office design allowed them to produce an interior that was economical and easily adapted to changing programmatic needs. To create the inviting, campus-like atmosphere Walleigh and Birnbaum envisioned, VWSSH strategically interspersed ceremonial spaces and necessary amenities among generous circulation corridors and informal meeting areas. They used the International Style to meet the design criteria of GSA and NBS for increased office space and economy of scale.

### *Flexible Design*

Due to the failure of their first headquarters to grow with the Institute, NIST required that the new campus and especially the central Administration Building be readily adaptable to changing programmatic needs. VWSSH had already designed the sort of flexible interior spaces NIST required at the Bell Telephone Laboratories in the 1940s. They implemented the same use of moveable flush metal partitions to create flexible temporary office space in Building 101 to great success. Offices and conferences on floors two through ten of the Office Tower are demarcated exclusively with moveable metal partitions. This allows entire floors to be reconfigured quickly and at little cost to the Institute. Moveable partitions are also used in the first-floor office spaces in Wing A of Building 101. These moveable metal partitions were designed to allow NIST to quickly and efficiently adapt interior spaces to new uses as the Institute grew and evolved, thereby extending the usable lifespan of Building 101 indefinitely. The architects design choice has proven to be not only successful but also long-lived. More than fifty years after first occupying Building 101, NIST is still using the original metal partition walls and facilities management staff prefer the modular system to more permanent stud or masonry divisions.

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[13] Mozingo?
[14] Walleigh, 51-52.

### *Collaborative Space*

From the very beginning, the NBS repeatedly stated that their main objective was to recreate the atmosphere of a university campus at the new headquarters. On one hand, NBS faculty believed that such an atmosphere would encourage the creative discussion and collaboration between members of the various departments. In a 1957 memo of the Laboratory Planning Committee, Dr. Henry Birnbaum, Assistant to the Director, wrote that the NBS required a space "where learning and study are encouraged for their own sake." Specifically, he suggested the creation of "attractive open spaces around the buildings… which may be used for the leisurely exchange of information."[15] Existing corporate campuses had created university-like campuses for similar reasons; as former General Motors President Harlow Curtice noted "such surroundings stimulate creative thinking and are conducive to good work." An equally significant motivation was the need to woo qualified research scientists away from positions at universities. For NBS, in competition with both universities and large private corporations, there was an even greater need to create a campus-like atmosphere that would attract qualified scientists and engineers.

In Building 101, VWSSH accomplished the collaborative, academic atmosphere through clever space planning. The first floor is laid out in an asymmetrical yet balanced quadrangle around a central courtyard. The quadrangle is divided into five wings designated by letters A through E. Wings A through C are arranged counterclockwise around the inner court, with visitors entering the main east entrance located in Wing A. Wing A includes the main lobby as well as the corridor and offices north of the inner court. Wing B includes the corridor, lecture rooms, and classrooms east of the inner court as well as the Green Auditorium. The cafeteria dining rooms and kitchens are found in Wing C, which lies to the west of the inner court. Wings D and E project from the southeast and northwest corners of the quadrangle, respectively. Wing D houses the Red Auditorium, while Wing E is the main research library. This regular layout allows even first-time visitors to move about the public spaces with relative ease.

By locating necessary amenities such as the research library, cafeteria, bank, and barber shop in the centrally-located Building 101, VWS ensured that the various departments could not isolate themselves in their separate buildings. Likewise, VWSSH used careful space planning to ensure that once inside Building 101, employees of different departments could not help but run into one another. As staff and visitors move around the corridors, they are almost always within view of the Inner Court, a paved outdoor space in the center of the building complex. Aluminum-and-glass curtainwall surrounds the court on all four sides, providing sightlines from three major corridors and the cafeteria dining room to the outdoor space. The Inner Court, with its attractive plantings and reflecting pool, invites building occupants outside in fine weather. Its central location encourages a feeling of connectivity among the separate wings of Building 101. It is perhaps in the Inner Court that the architects most skillfully realized their core design objective: to create a space that engenders personal connections and collaborations between employees and visitors alike.

The design of the corridors further encourages impromptu meetings between NBS employees. Wide corridors are flooded with natural light from the large plate glass windows along the exterior elevations and the interior Inner Court. Alcoves with informal seating areas are placed along the corridors to encourage impromptu meetings and discussions between colleagues. The more permanent, formal spaces are scattered around the first floor rather than centralized in one area. This forces staff and visitors to circulate around the entire first floor, further encouraging chance meetings and scholarly exchanges.

[15] Ibid., 2.

### *International Style*

By 1960, the Federal government was facing an extreme shortage of office space. Many existing office buildings fell well behind acceptable standards for government office space. To address this space shortage, the General Services Administration (GSA) undertook more than 700 building projects between 1960 and 1976. Considering this explosion in construction activity, it was necessary to design buildings that were both economical and efficient to construct. The International Style was not cutting-edge architecture by the 1960s when NBS was built in Gaithersburg. Architecture was moving toward Brutalism and the emphatic expression of form in raw concrete. However, Brutalism had not quite infiltrated the design criteria of the Federal government at the time that Building 101 was constructed. It wasn't until 1962, the year the NBS campus was completed, that President John F. Kennedy's Ad Hoc Committee of Federal Office Space published a report that included guiding principles for Federal architecture. These principles encouraged structures that "reflect the dignity, enterprise, vigor, and stability of the American National Government" and "embody the finest architectural thought."[16] Brutalism, with its stable and economical concrete expression met all these principles and was favored by the government by the end of the 1960s after the construction of Marcel Breuer's Robert C. Weaver Building for the Department of Housing and Urban Development in 1968 in Washington.[17] In the early 1960s, the International Style was favored by Federal planners because it was often more economical than more highly ornamental traditional styles. For NBS, the International Style fit the government's increasing preferences for cheaper, modern architecture by satisfying both aesthetic and economical concerns given its rejection of classical ornamentation and its preference for mass-produced pre-fabricated materials.[18]

Building 101 is an excellent example of the International Style, which developed in Europe in the 1920s as one of the "Machine Age" styles of the Modern Movement. The style became especially popular in American commercial and institutional architecture in the 1930s and through the 1960s. In celebration of the "Machine Age," pioneers of the International Style favored mass-produced man-made materials – such as concrete, steel, and glass.[19] The International Style also championed function over form. Design was therefore strictly, and even starkly, minimalist. Structural concrete walls and steel members were proudly on display, instead of incased within more decorative materials. In general, the style eschewed all unnecessary ornamentation, its most obvious break with earlier modernist styles, such as Art Deco and the Stripped Classical style. Instead the International Style relied on rectilinear volumes of varying sizes to create visual interest. There was a particular emphasis on the horizontal dimension and balanced asymmetry. Rectilinear forms with flat roofs, low-lying cantilevers, and large expanses of banded windows were highly characteristic of the style.[20]

Building 101 is laid out with the restrained asymmetry that is a defining characteristic of the modernist International Style. The low-lying wings are arranged in a balanced yet asymmetrical quadrangle with Wings D and E projecting from the southeast and northwest corners respectively. This layout feels regular and logical, fitting for an institution devoted to scientific research, without resorting to the formal rules of classical symmetry. Generous, light-filled corridors create the open plan floors popular in the International

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[16] "Why are there so Many Brutalist Federal Buildings in Washington" https://www.ncpc.gov/news/item/52/

[17] "Robert C. Weaver Federal Building, Washington, D.C." https://www.gsa.gov/historic-buildings/robert-c-weaver-federal-building-washington-dc

[18] General Services Administration, *Growth, Efficiency, and Modernism: GSA Buildings of the 1950s, 60s, and 70s*, (Washington, DC: General Services Administration, 2001), 30-31.

[19] Virginia Savage McAlester, *A Field Guide to American Houses: The Definitive Guide to Identifying and Understanding America's Domestic Architecture,* (New York: Alfred A. Knopf, 2013), 10-12.

[20] John C. Poppeliers and S. Allen Chambers, Jr., *What Style Is It?: A Guide to American Architecture* (Hoboken, NJ: John Wiley & Sons, Inc., 2003), 127-131.

Style while also providing easy circulation for visitors and employees alike. The balanced asymmetry is carried up to the high-rise Office Tower, which lies slightly north of the building's center and features irregularly spaced bays of windows.

VWSSH eschewed any unnecessary ornament in their design, using materials rather than intricate detailing to create visual interest. They mixed a variety of high-quality manmade and natural materials, including terrazzo, glazed brick, stainless steel, limestone, and multiple varieties of marble, granite, and wood paneling. Though the overall lines of the composition are simple and even stark, the interplay of contrasting materials creates a space that that is both beautiful and inviting. The use of monolithic pieces of masonry, metalwork, and woodwork is also a more durable design choice than applied moldings and delicate carvings.

**Conclusion**

The combination of flexible design, collaborative spaces, and a streamlined modernist aesthetic have created an enduring space at the National Institute of Standards and Technology. VWSSH revolutionary modular design and use of moveable metal partitions still allow NIST to reconfigure spaces quickly and economically in response to changing programmatic needs. Perhaps most significantly, the architect's original design intent is readily visible throughout the public spaces and across the exterior façade. Relatively few aesthetic changes have been made in these significant spaces. After more than fifty years of the continuous use, Building 101 remains an aesthetically cohesive and functionally relevant structure on the NIST Gaithersburg campus.

# SECTION B:
# CONSTRUCTION HISTORY

## CONSTRUCTION HISTORY

### Architect

After securing the 579-acre site in Gaithersburg, MD, the National Bureau of Standards recommended VWSSH of New York as the architect for the new campus. The General Services Administration considered proposals from several architectural engineering firms before finally selecting VWSSH.[1] The New York firm had a long-established reputation for designing large laboratory complexes and headquarters for both public and private leaders in science and technology. In 1885, the firm's founder, Cyrus L. W. Eidlitz, accepted a commission to design the Metropolitan Telephone Building in Manhattan. This project first established the firm's commitment to designing aesthetically pleasing and technically innovative buildings for the advancement of science and industry. By 1915, Eidlitz and his partner Andrew C. McKenzie had designed 61 buildings for the nascent telephone industry. In 1922, the firm designed its first of more than 500 laboratory buildings: a chemistry laboratory for Western Electric Company in New York City. Over the next three decades, the firm developed a reputation for designing scientific and technological facilities that were practical, adaptable, and aesthetically beautiful. These included the Barclay-Vesey Building (1926) in New York, the Argonne National Laboratory (1952) in Illinois, and the Goddard Space Flight Center (1961) in Maryland. Most significantly, VWSSH designed the Bell Telephone Laboratories, a groundbreaking scientific research campus in the New Jersey suburbs.[2] In their design of Bell Labs, VWSSH developed a revolutionary modular laboratory system with moveable partitions that they would implement to great success at the NIST Campus and Building 101.

### Architectural Description as Originally Built

After deciding to relocate in 1955, NIST determined that the new headquarters should be in a suburban location a convenient distance from Washington, DC. With the country in the midst of the Cold War, the Federal government required that the new site be at least twenty miles from the White House, given the possibility of nuclear attack. NIST also required a more rural setting to provide a buffer against electrical interference and mechanical vibrations from neighboring buildings. The site would also be automobile-centric, with multiple entrances from major roadways and ample parking lots. The NBS administration envisioned a self-sufficient university-like campus with several smaller buildings instead of one large structure.[3] This would allow the various research departments greater flexibility in designing their individual facilities. A centralized administration building would house the library, lecture halls, and auditoria in addition to administrative office space.

Building 101 was designed to house the administrative departments and amenities necessary to support the operation of the NIST laboratories. The old headquarters in Washington, DC had grown haphazardly during the 1940s due to the war-era boom in scientific research. Temporary buildings were cobbled together as necessary. Departments were housed in whatever space was available, and communication between disciplines was difficult or non-existent.[4] NIST wanted to avoid this disjointed organization as well as the inevitable obsolescence of overly specialized buildings. Building 101 was therefore designed to be a hub for the entire campus. The directors of the Administration, Planning, Chemistry, Engineering, and Physics departments would have office space on the eleventh floor of the office tower. The architect placed necessary amenities – such as the library, cafeteria, and auditoria – in Building 101, forcing employees in the outlying laboratory buildings to mingle with those from other disciplines. Informal

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[1] Robert S. Walleigh, "The Gaithersburg Site," *NIST Special Publication 825: NBS/NIST – A Historical Perspective*, ed. Karma A. Beal (Gaithersburg: NIST, 1991), 50-51.
[2] "Highlights of 100 Years," (New York: HLW Architecture).
[3] Walleigh, 49-50.
[4] Walleigh, 49.

gathering spaces were scattered throughout the first-floor wings to encourage impromptu meetings and conversations between colleagues. Perhaps the architect's most innovative design was the use of moveable metal partition walls throughout the office spaces, a feature that would allow Building 101 to adapt to changing programmatic needs.

VWSSH envisioned Building 101 as the administrative and cultural center of the NIST campus. It is therefore centrally located on the campus and intentionally designed as a visual focal point. At eleven stories tall with a two-story rooftop penthouse, Building 101 towers over the General Purpose Laboratories (GPLs) and support buildings, which are typically one to three stories in height. Building 101 occupies a lot of land bound by the four principal vehicular thoroughfares – North Drive, South Drive, East Drive, and West Drive. Like the GPL buildings, Building 101 is partially clad in beige face brick to distinguish it from the red-brick support buildings. Marble, limestone, and granite cladding enhance the first-floor elevations, further distinguishing Building 101 from the more utilitarian GPL buildings. A single-story brick and glass concourse connects Building 101 to Building 223, also known as the Materials Building.

Building 101 is an excellent example of the modernist International Style. This architectural movement was well-established by the time architects VWSSH began designing the campus in the late 1950s. The International Style first appeared in Europe during the 1920s as a response to the more ornate styles of earlier periods. As such, the style rejected nonessential ornamentation. To create visual interest, practitioners relied on the layering of rectilinear forms and the juxtaposition of asymmetrical window groupings with smooth, unbroken wall planes. A "horizontal feeling" was another defining characteristic of the style. Banded windows and cantilevers emphasized the horizontal dimension over the vertical. The style also developed as a celebration of the industrial age combining man-made materials, such as concrete, glass, and steel, with natural materials. Structural concrete and steel members were frequently displayed as part of the final design, rather than clad in a more decorative material as they would have been in the past.[5]

The International Style – with its clean lines, use of modern materials, and rejection of unnecessary ornamentation – expressed the Institute's dedication to innovation and advances in technology while respecting the need for a pared down, economical design. Throughout the building, there is minimal applied ornament. Instead, VWSSH used asymmetrical grouping of rectilinear forms and the interplay of various materials, including structural steel, plate glass, brick, and marble, to create visual interest. Within the modernist aesthetic, VWSSH utilized spatial organization, circulation, outdoor space, and glass to create the inviting and invigorating academic atmosphere NIST desired.

Building 101 contains fourteen levels: a sub-basement, basement, and floors one through eleven, with a mechanical mezzanine level inserted between floors one and two. The sub-basement contains the elevator and sump pits. The basement originally contained back-of-house spaces, such as storage space, locker rooms, electrical equipment rooms, and maintenance offices. It also housed some more specialized spaces, such as a bank, credit union, photography dark rooms, and medical facilities, including a surgery theater and hydrotherapy room. The library, auditoria, cafeteria, lecture rooms, classrooms, and some staff offices are found on the first floor. The remaining staff offices, conference rooms, and limited laboratory space are found on floors two through eleven of the main office tower, with the Directors' Office suite located on the eleventh floor.

### Exterior

In keeping with the tenets of the International Style, Building 101 imparts a strong sense of horizontality, even in the design of the high-rise office tower. The low-rise wings feature long bands of glass curtain wall, cantilevered awnings, and overhanging roofs, all of which emphasize the horizontal dimension. The

[5] Poppeliers, 127-130.

proportions of the office tower, which is much longer (east-west) than it is tall, further stresses the importance of the horizontal over the vertical.

The core of Building 101 is an 11-story modernist office tower, designated as Wing A, that dwarfs the low-lying laboratory and support buildings. The tower is rectangular in shape with a long east-west axis. The short east and west elevations are windowless and clad in beige brick. The long north and south elevations of the office tower feature regular grids of tall, rectangular windows set within an extruded aluminum frame. Insulated steel porcelain spandrels divide the windows horizontally, exaggerating the office tower's horizontal lines. On the north elevation, the window grid is continuous with windows spaced regularly along the entire length and height of the façade. At the south elevation, two vertical bands of beige face brick divide the windows into three asymmetrical bays. The vertical bands of brick correspond with the locations of interior elevator shafts. The irregular bays also employ the modernist concept of balanced asymmetry and distinguish the primary south elevation from the secondary north façade. At both the north and south elevations, the mezzanine level window frames hold extruded aluminum louvers instead of glass because this floor only houses mechanical equipment. At the first story, wing A extends north of the office tower at the building lobby and first floor offices. The lobby is expressed with aluminum and glass curtain walls while the offices are differentiated with a beige brick cladding. At the roof level, there is a two-story mechanical penthouse with beige brick above dark aluminum cladding. The dark aluminum finish offsets the penthouse from the rest of the tower distinguishing it as a separate block.

Single-story wings extend to the south and west of the central office tower around the Inner Court. Wing B continues the east elevation to the south with a one-story glass and aluminum curtain wall visually supported with marble columns. Wing B wraps eastward to Wing D and westward to Wing C. Wing D is a two-story limestone box with inset beveled marble facades on the east and west elevations of the box. Wing C is visually divided into two sections: the cafeteria facing the courtyard and the dining rooms facing south. The cafeteria section of Wing C is set off with a concrete geometric roof in a scalloped pattern. There is an aluminum and glass curtain wall trimmed with marble facing the courtyard. The south elevation of Wing C is two-stories, with the first story below the grade of the courtyard. Beige face brick at the first story is contrasted with an anodized aluminum brise solieil at the second story giving the first story a recessed visual impact. The west side of Wing C extends to the north with a one-story corridor clad with aluminum and glass curtain wall on both sides. At the west side, beige brick is again used to visually recess the raised basement below the curtain wall. Wing C leads into Wing E, another two-story limestone box. On the primary north elevation, a concrete portico seamlessly extends from an aluminum and glass curtain wall and is supported on marble columns. To the south, the limestone box cantilevers over a black granite-clad raised basement. The south elevation of the box is trimmed in marble to highlight the recessed aluminum, glass, and porcelain paneled curtain wall. To the west of the limestone box on Wing E is a smaller limestone box with aluminum, glass, and porcelain paneled curtain wall. Extending from Wing E to the north is a covered walkway with a concrete geometric roof and square concrete columns. The chevron-patterned roof connects Building 101 with Building 225.

The main entrance to Building 101 is located at the east elevation of Wing A. Additional entrances are found at all elevations except the west: two at the north elevation of Wing A, two at the north elevation of Wing E, one at the east elevation of Wing B, two at the east elevation of Wing D, one at the south elevation of Wing B, and two at the south elevation of Wing C. The main entrances feature granite terraces. There is a large granite terrace at the north side of the library (Wing E). A granite and marble retaining wall lines the east and north elevations of Wings A and B. There is also a loading dock with two additional entrances at the south elevation of Wing B.

At the first-floor level, both the office tower and single-story wings display a variety of exterior cladding materials, including white marble, buff limestone, gray granite, beige brick, and aluminum-and-glass curtainwall systems. Consistent with the International Style, materials express the function of the building spaces as well as designate their relative importance and formality. White marble is the highest-level finish. It designates main entrances and the primary facades of more formal interior spaces. It is most prominent at the main east entry and the principal east façade of the Red Auditorium, the larger of the two auditoria. At the Red Auditorium, beveled white marble panels give prominence to the east and west elevations. This high level of detailing is unusual at a façade that does not provide a primary entrance to the building. It marks the Red Auditorium as an especially high-style formal space. It also demonstrates the automobile-centric layout of the NIST campus, as this highly ornamental façade is more visible from the roadway than from pedestrian walkways. Marble also clads the columns at the curtainwall systems, covered terraces, and courtyard. Limestone is the next highest-level finish and it typically indicates secondary facades of important formal spaces, including the library and Red Auditorium. Brick is the most cost-effective of the exterior masonry claddings and is used to offset primary forms. It is the only masonry cladding used on the upper levels of the office tower. Throughout the campus, the color of the brick used on the building is used to distinguish utilitarian buildings (red brick) from general purpose laboratories and institutional buildings (beige). Aluminum-and-glass curtainwall systems emphasize circulation and collaborative spaces and provide a source of daylighting for corridors, stairwells, entrances, the library, and the cafeteria,

Below is a detailed list of the specific type and location of marble, limestone, granite, and brick used on the exterior:

<u>Vermont Meadow White Select Marble</u>

- Building walls at Wing D, East Elevation
- Building wall at Level 1 of Wing A, East Elevation
- Building walls at Wing C, Court Elevation Looking South
- Building walls at Wing A, Court Elevation Looking North
- Building walls at Wing West and East Court Elevations
- Building walls at Section B-B
- Cladding at exterior columns

<u>Indiana Limestone</u>

- Building walls and Fascia at Wing D, South and East Elevations
- Building walls at Wing E, West Elevation
- Building walls and fascia at Wing D, Court Elevation Looking South
- Building walls at Wing E, Section A-A
- Coping at office tower, East and West Elevations

<u>Western Black, Charcoal Black, or St. Cloud Gray Granite</u>

- Wall base and sill at all exterior elevations
- Large pavers at Entrances and East Vestibule
- Stairs at Entrances
- Pavers and Stairs at Library Covered Terrace

<u>Chelmsford Gray or Light Gray Granite</u>

- Small spacers between large granite pavers at Entrances and East Vestibule

- Pavers at exterior walkways
- Wall and coping at raised planters in inner court
- Wall and floor of reflecting pools in inner court

<u>Bright Red, Red, or Red Variegated Granite</u>

- Benches at Library Covered Terrace

<u>Red Variegated, Swenson Pink, or Sunset Red Granite</u>

- Large pavers at sunken plaza in inner court

<u>Western Black, Veined Ebony Black, or Opalescent Granite</u>

- Gravel fill at exterior raised beds

<u>Beige Face Brick</u>

- Building walls at Basement Level and Level 1 of Wing C, West Elevation; Wing C, South Elevation; Wing E, Court Elevation Looking North; Wing B, South Return
- Building walls at Levels 2 through 11, office tower, East and West Elevations
- Building walls at Rooftop Penthouse

**Interior Spaces and Design**

The interior of Building 101 was designed to accommodate ample flexible office space while also encouraging collaboration and impromptu conversations between employees from different departments. Specialized communal and ceremonial spaces – including the auditoria, cafeteria, and library – occupy the first-floor and mezzanine levels, except in Wing A where the mezzanine contains only mechanical equipment rooms. The second through eleventh floors of the central office building house conference rooms, staff offices, and limited laboratory space. The Director's Office suite is located on the eleventh floor. The building is divided into five wings – identified by the letters A through E - grouped around an inner courtyard.

The first floor is laid out in an asymmetrical yet balanced quadrangle around a central courtyard. The quadrangle is divided into five wings designated by letters A through E. Wings A through C are arranged counterclockwise around the inner courtyard, with visitors entering the main east entrance located in Wing A. Wing A includes the main lobby, office tower, and the corridor and offices north of the inner courtyard. Wing B includes the corridor, lecture rooms, and classrooms east of the inner courtyard as well as the Green Auditorium. The cafeteria dining rooms and kitchens are found in Wing C, which lies to the west of the inner courtyard. Wings D and E project from the southeast and northwest corners of the quadrangle, respectively. Wing D houses the Red Auditorium, while Wing E is the main research library.

**Wing A: Office Tower and Lobby**

Wing A consists of the eleven-story office tower as well as the first-floor lobby and the corridor and offices to the north of the inner court. Staff offices, conference rooms, and labs that do not require specialized facilities occupy the floors two through eleven of the office tower. On the first floor, the lobby and corridors feature terrazzo floors and marble wall panels. The first-floor offices are more finished with vinyl asbestos tile floors and flush metal partitions.

Whereas the first-floor program mostly permanent, the upper floor offices were designed to adapt easily to changing programmatic needs. Moveable flush metal partitions demarcate office space. NIST can remove or rearrange these as necessary to accommodate changes in staff organization or programming. Finishes in the office spaces were modest – including vinyl asbestos tile floors and acoustical ceiling tiles. The Director and Associate Directors' office suite are located on the eleventh floor and fitted with more permanent finishes. The walls in these suites have concrete masonry units finished with plaster as opposed to metal partitions. The original decorative finishes were also more elaborate at the executive suite. These included carpet and grass cloth wall coverings. Walnut wall paneling further distinguishes the Director's Office from those of the Associate Directors. The original carpet and grass cloth are no longer extant, and the walnut paneling has been refinished.

**Wing B: Green Auditorium and Corridor Fourteen**

Wing B lies to the east of the inner court. It houses the Green Auditorium as well as the corridor, classrooms, and lecture halls east of the inner court. The corridor features terrazzo floors, glazed brick wall panels with wood trim, and suspended acoustic tile ceilings. Walnut paneling clads the corridor walls at the entry to the Green Auditorium.

The Green Auditorium is one of the most elaborate spaces in Building 101. The auditorium itself is a 64' – 9" by 57' – 4-1/4" rectangular space with no formal lobby. Beginning 12' – 9'1/2" from the rear (south) wall, the floor drops 4' – 6" over a span of 36' – 9'1/2". The side aisles, forestage, and rear of the auditorium are carpeted. The floor at the seating area is vinyl asbestos tile. The stage is white oak parquet in a checkerboard pattern. Walls are clad in walnut panels. The ceiling is suspended metal lath and plaster in the center of the room with suspended walnut panels at the perimeter. Original carpet, vinyl asbestos tile, ceiling plaster, and auditorium seating have been replaced over the course of multiple renovations. The Green Auditorium is designed to seat 288 people.

Classrooms and lecture halls contain more utilitarian finishes. The floors are vinyl asbestos tile. Walls are vinyl fabric covering over plaster on the bottom half of the wall with mineral acoustic tiles on the upper half. Original furnishings include steel stairs with pipe railings, slate chalkboards, and sliding wood doors. Ceilings are acoustic mineral tile with surface and flush-mounted rectangular and square florescent light fixtures.

**Wing C: Cafeteria and Kitchens**

Wings C lies at the south end of the main block of Building 101. The Cafeteria Dining Room takes up almost a third of the entire Wing. The Dining Room is a large rectangular space 130' – 8" by 56' – 2-1/4". The original floors were vinyl asbestos tile with a repeating pattern at the center and solid field borders on all sides. These have been replaced with vinyl tiles that do not match the original in color or pattern. The main wall finish is vinyl fabric over plaster. Marble and walnut panels are primarily found at the entrances to the Dining Room. Original drawings show that acoustical tiles were to have clad the scalloped concrete ceiling. Presently, the scalloped ceiling is coated in an asbestos containing spray-on plaster. Original cylindrical pendant light fixtures are a significant character defining feature.

The focal point of the dining room is the north wall, an aluminum-and-glass curtainwall system running the full length of the dining room. The curtainwall overlooks the courtyard, giving diners a pleasing view of the outdoor space regardless of their location within the room. The central location of the cafeteria and inner court make both spaces convenient shortcuts for passing from one end of the building to the other. By visually connecting the two spaces through the glass curtain wall, the architects increased the likelihood of impromptu meetings that might encourage discussion and collaboration between NIST employees.

The smaller staff dining room, a multipurpose space, and two more formal private dining rooms lie along the south side of Wing C. The staff dining room and multipurpose space are of similar size and shape. Originally, they were finished with matching repeating pattern vinyl asbestos tile floors and vinyl fabric wall covering. The existing floors are vinyl tiles that do not match the original in color and pattern. The private dining rooms originally featured gold-colored carpet and walls clad in cherry paneling and grass cloth. Original carpet and grass cloth are no longer extant.

Commercial kitchens and food storage are located between the cafeteria dining room to the north and the smaller dining spaces to the south. Original finishes in these spaces were highly utilitarian, including stainless steel doors, ceramic tile wall veneer, and a ceramic tile base.

**Wing D: Red Auditorium**

Wing D is a two-story, rectangular structure that projects from the southeast corner of the main block of Building 101. From the exterior, Wing D appears to be a separate structure with its own distinct architectural character. The rectangular Auditorium Lobby – located in Wing B – projects 21' – 2" from the south façade of Building 101. The Lobby abuts the west elevation of the Red Auditorium, providing the only connection between Wing D and the main building.

Designed to seat 756 people, the Red Auditorium is the larger of the building's two auditoria. The auditorium is a 64' – 9" by 57' – 4-1/4" rectangular space with a formal lobby located in Wing B. Beginning 13' – 5" from the rear (west) wall, the floor drops 5' – 0" over a span of … The aisles, forestage, and rear of the auditorium are carpeted. Flooring at the seating area is vinyl asbestos tile. The stage is white oak parquet in a checkerboard pattern. The north and south walls of the auditorium are exposed molded concrete block in a stacked pattern with a marble base. The rear west walls are clad in walnut panels. The ceiling is suspended metal lath and plaster in the center of the room with a suspended wood slat ceiling around the perimeter. Original carpet, vinyl asbestos floor tiles, ceiling plaster, and auditorium seating have been replaced over the course of multiple renovations.

**Wing E: Library and Museum**

The library is located in the northwest corner of Building 101. The library is a rectangular space 148' – 3-1/2" long (north-south) and 122' – 6" wide (east-west). The interior space is a full two stories in height with a mezzanine level that spans the full width and three quarters of the length of the space. The mezzanine overlooks the north side of the library, where a two-story aluminum curtain wall floods the space with natural light. Offices and private study rooms run along the south elevation. The focal point of the library is a helical terrazzo stair that provides access to the east end of the mezzanine level. A second straight stair with a central landing provides access to the west end. Both stairs have terrazzo treads and risers and a stainless-steel balustrade with a walnut handrail. Library floors are vinyl asbestos tile. Ceilings are striated acoustical tiles.

The Library Lobby lies to the east of the library and provides access to the Library as well as the Museum and the cataloging room. The Museum and cataloging room are rectangular rooms of equal size on either side of the Lobby – the Museum to the north and the cataloging room to the south. Finishes in these spaces include vinyl asbestos floor tiles, walnut paneling, vinyl fabric wall covering, and acoustical ceiling tiles.

**Inner Court**

The inner court features a sunken center plaza with a rectangular reflecting pool at its east end. The sunken plaza is paved with large red granite pavers and smaller gray granite spacers. Courtyard surfaces at grade, raised planting beds, and the reflecting pool are all gray granite. A gray granite footbridge crosses the pool on its short axis. Walls surrounding the court are chiefly aluminum-and-glass curtain wall. Six sets of double-leaf aluminum-and-glass doors provide access to the court: two each at the south elevation of Wing A and the north elevation of Wing C and one each at the west elevation of Wing B and the east elevation of Wing E. The roof cantilevers out at the north and south ends of the inner court. Marble-clad columns support the two cantilevers.

## TIMELINE OF IMPORTANT MILESTONES IN THE BUILDING'S HISTORY

- 1955: The National Bureau of Standards decides to relocate to a newly constructed campus outside of Washington, DC.
- 1956: The federal government acquires a 560-acre site in Gaithersburg, MD. The General Services Administration selects VWSSH architects of New York to design the new campus.
- 1960: VWSSH present their plans and models for the new facility to NBS. Groundbreaking for Phase I of construction takes place.
- 1962: Construction begins on Phase II, which includes the Administration Building, Radiation Physics Laboratory, and multiple service buildings.
- 1965: The Director's Office moves to the newly completed Administration Building,
- November 15, 1966: The campus dedication ceremony is held in the library Inner court.
- 1972: Regrading and Replanting at Main Entrance
- 1975: Restoration of Lecture Room D
- 1979: Modifications to $9^{th}$ and $10^{th}$ floors; new incandescent fixtures in lecture rooms; new stage stair handrail in Red Auditorium
- 1980: Replacement of stairwell #1; installation power operating doors at main entrance; modification to Red Auditorium bathrooms; $5^{th}$ floor office modifications
- 1981: Roof and fascia repairs; new bookcases and cabinets for library; modifications to $7^{th}$ – $10^{th}$ floors
- 1983: Rehabilitation of Library roof
- 1984: Replacement of stainless-steel handrails at entrances
- 1986: Sitewide roofing rehabilitation
- 1988: The National Bureau of Standards changes its name to the National Institute of Standards and Technology.
  Lighting and power modifications in Red Auditorium, Green Auditorium, and Lecture Rooms A-D; renovation of Mail Room.
- 1990: $8^{th}$-floor toilet renovations.
- 1991: Fire door modifications at entrances and on $2^{nd}$, $3^{rd}$, and $6^{th}$ floors
- 1994: Installation of suspended ceiling in Basement B-wing corridor
- 1995: Handicap stage access in Red Auditorium
- 1996: Sprinkler system modifications and fire safety upgrades.
- Late 1990s: Woodwork in Directors' Office Suite refinished
- 2000: Ceiling replacement in Red and Green Auditoriums; updates to first-floor sprinkler system
- 2001: Ceiling modifications in A and B corridor; modifications to $2^{nd}$, $3^{rd}$, $5^{th}$, $6^{th}$, $7^{th}$, and $9^{th}$ floors; dumbwaiter fill in; installation of NIST directional accessibility signage.
- 2009: Building 101 Entrance and Courtyard Paver Repair
- 2010: Inner Court Renovation
- 2013: West Service Area Café modifications
- 2016: Concrete wall repair in basement
- 2017: Green Auditorium Restroom Renovation.
- 2018: Cafeteria Renovation

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| **Original Exterior and Structural Materials** | | | |
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| Element/Item | Location in Building | Supplier | Source/ Headquarters |
| Granite Type 1 – Western Black, Charcoal Black, or St. Cloud Gray, stippled | • Wall base at all elevations | Delano Granite, Cold Spring Granite Co., or Delano Granite | Delano, Minnesota; Cold Spring, Minnesota |
| Granite Type 2 – Chelmsford Gray, Light Gray, or Light Gray, shot ground | • Small spacers between large pavers at North Entrance, South Entrance, East Entrance, and East Vestibule<br>• Walkway Pavers East of Building 101<br>• Landscape Pavers North of Library<br>• Stairs in Inner Court<br>• Small spacers between large pavers at sunken part of Inner Court<br>• Pavers at perimeter of Inner Court<br>• Side and Pavers at Foot Bridge over Reflecting Pool in Inner Court | Fletcher, Swenson, or Mt. Airy | Westford, Massachusetts; Concord, New Hampshire; Mt. Airy, North Carolina |
| Granite Type 3 - Western Black, Charcoal Black, or St. Cloud Gray, shot ground | • Large pavers at North Entrance, South Entrance, East Entrance, and East Vestibule<br>• Stairs at North, South, and East Entrances<br>• Pavers and Stair at Library Covered Terrace<br>• Curb at Paved Landscape North of Library | Delano Granite, Cold Spring Granite Co., or Delano Granite | Delano, Minnesota; Cold Spring, Minnesota |
| Granite Type 4 – Bright Red, Red, or Red Variegated, honed | • Benches at Library Covered Terrace | Cold Spring Granite Co., ditto, or Stony Creek | Cold Spring, Minnesota; Branford, Connecticut |
| Granite Type 5 – Western Black, Veined Ebony | • Fill at raised beds at East and South Entrances | Delano, Cold Spring, ditto | Delano, Minnesota; |

| Original Exterior and Structural Materials | | | |
|---|---|---|---|
| Element/Item | Location in Building | Supplier | Source/ Headquarters |
| Black, Opalescent, crushed granite chips | | | Cold Spring, Minnesota |
| Granite Type 6 – Chelmsford Gray, Light Gray, or Light Gray, honed | • Wall and Coping at Raised Planters in Inner Court<br>• Wall and Floor of Reflecting Pools in Inner Court | Fletcher, Swenson, or Mt. Airy | Westford, Massachusetts; Concord, New Hampshire; Mt. Airy, North Carolina |
| Granite Type 7 – Red Variegated, Swenson Pink, or Sunset Red, shot ground | • Large Pavers at sunken plaza in Inner Court | Stony Creek, Swenson, or Cold Spring | Branford, Connecticut; Concord, New Hampshire; Cold Spring, Minnesota |
| Limestone | • Wall Cladding at Mezzanine: East Elevation column lines B and S; West Elevation column lines CC-XX; South Elevation column lines 1-9; Court Elevation Looking South column lines 1-9; Section A-A column lines CC-XX<br>• Wall Cladding at Level 1: North Elevation west of column line 59; East Elevation column lines B and S; West Elevation column lines CC-XX; South Elevation column lines 1-9; Court Elevation Looking South column lines 1-9<br>• Fascia: East Elevation column lines B-S; South Elevation column lines 1-9; Court Elevation Looking South column lines 1-9<br>• Coping: East Elevation column lines KK-SS; West Elevation | Indiana Limestone Company | Bloomington, Indiana |

| Original Exterior and Structural Materials | | | |
|---|---|---|---|
| Element/Item | Location in Building | Supplier | Source/ Headquarters |
| | column lines KK-SS; Rooftop Penthouse | | |
| Marble Type 1 – Meadow White Select, honed | • Wall Cladding at Level 1: East Elevation column lines B-S and KK-VV; Court Elevation Looking South column lines 30-33 and 45-47; Court Elevation Looking North column lines 35-39; West Court Elevation column lines HH-NN; East Court Elevation column lines KK-NN; Section BB column lines LL-NN<br>• Column Cladding at Level 1: North Elevation column lines 9a-29 and 54-59; East Elevation column lines S-FF; South Elevation column lines 9-30; Court Elevation Looking South column lines 10-11; Court Elevation Looking North column lines 9a-12a, 32-34, and 40-42; East Court Elevation column lines V-KK<br>• Fascia: North Elevation column lines 54-59; West Elevation column lines CC-XX; Section AA column lines CC-XX; Court Elevation Looking North column lines 54-59 | Green Mountain Marble Company | West Rutland, Vermont |
| Brick, Face – Grey PBS No. 36-772 | • Wall Cladding at Basement Level: West Elevation column lines A-CC; South Elevation column lines 13-50; Court Elevation Looking North column lines 48-53; Building Section AA column lines A-C<br>• Wall Cladding at Mezzanine and Level 1: North Elevation column lines 29-53; West Elevation column lines A-B1; | Pacific Building Systems | Woodburn, Oregon |

| Original Exterior and Structural Materials | | | |
|---|---|---|---|
| Element/Item | Location in Building | Supplier | Source/ Headquarters |
| | South Elevation column lines 30-50; Court Elevation Looking North column lines 48-53; Building Section AA column lines A-C<br>• Wall Cladding Levels 2-11; East and West Elevations of Wing A<br>• Wall Cladding at Roof Top Penthouse | | |
| Aluminum Type 1 – Anodized, satin finish | • Curtain Wall Frames u.n.o.<br>• Window Frames u.n.o.<br>• Full Lite Doors and Frames u.n.o.<br>• Enclosure and Fascia at North and South Elevations of Office Tower<br>• Fascia at Court Elevation Looking South column lines 33-45 | | |
| Aluminum Type 2 – Alcoa #2020 Gray | | Alcoa Corporation | Pittsburgh, Pennsylvania |
| Aluminum Type 3 – Alcoa Duranodic Medium (Black) | • Louvers and Siding at Rooftop Penthouse<br>• Louvers at Level 2 of Wing A<br>• Fascia: North Elevation column lines 9a-54; East Elevation column lines S-VV; West Elevation column lines A-CC; South Elevation column lines 9-50; Court Elevation Looking South column lines 9-33 and 45-48; Court Elevation Looking North column lines 9a-54; West Court Elevation column lines V-NN; East Court Elevation V-NN; Building Section A-A column lines A-C | Alcoa Corporation | Pittsburgh, Pennsylvania |

| Original Exterior and Structural Materials | | | |
|---|---|---|---|
| Element/Item | Location in Building | Supplier | Source/ Headquarters |
| Aluminum Type 4 – Alcoa #2140 Gray | • Grilles at Wing D East and West Elevation | Alcoa Corporation | Pittsburgh, Pennsylvania |
| Aluminum Type 5 – Alcoa #2010 Gray | • Metal blades at Curtain Wall at South Elevation Wing C | Alcoa Corporation | Pittsburgh, Pennsylvania |
| Aluminum Type 6? | • Convector enclosure (detail 5-1-14)<br>• Extruded grilles | | |
| Porcelain Insulated Steel Panels – PBS #27886 White | • Enclosure at North and South Elevations of Office Tower<br>• Curtain Wall at East Elevation Wing E<br>• Curtain Wall at South Elevation Wing C<br>• Curtain Wall at Court Elevation Looking South Wing B | Pacific Building Systems | Woodburn, Oregon |
| Stainless Steel Type 1 – No. 4 Satin finish | • Curtain Wall at East Vestibule A102<br>• Railing at exterior stairs<br>• Column cladding at Loading Dock | | |
| Glass Type 1 – Polished Plate, clear, 1/4” | • Reversible Aluminum Windows at North and South Elevations of Office Tower<br>• Curtain Wall at East Vestibule A102<br>• Fixed Aluminum Windows North Elevation Level 1<br>• Curtain Wall at Northwest Entrance<br>• Curtain Wall at East Elevation Wing E<br>• Fixed Window at South Elevation Wing C<br>• Fixed Window above Wing B South Entrance<br>• Curtain Wall at Wing E Court Elevation Looking North | | Mud dauber |

| Original Exterior and Structural Materials | | | |
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| Element/Item | Location in Building | Supplier | Source/ Headquarters |
| | • Fixed Windows at Wing E Court Elevation Looking North<br>• Fixed Windows at North Court Entrances to Wing A | | |
| Glass Type 2 – Polished Plate, clear, 3/8” | • Curtain Wall at North Elevation Wing E<br>• Curtain Wall at South Elevation Wing C<br>• Curtain Wall at South Elevation Wing B<br>• Curtain Wall at Wing B Court Elevation Looking South<br>• Curtain Wall at Wing A Court Elevation Looking North | | |
| Glass Type 3 – Insulated, clear, 1” | • Curtain Wall at Cafeteria Court Elevation Looking North | | |
| Glass Type 4 – Tinted Plate, Solar Gray No. 4, 3/8” | • Curtain Wall at East Elevation Wing C | Pittsburgh Plate Glass Co. | Pittsburgh, Pennsylvania |
| Glass Type 5 – Wired, clear, 1/4” | • Label Doors | | |
| Glass Type 6 – Tempered, clear | • Full Lite Doors at East Vestibule A102 | | |
| Glass Type 7 – Wired, obscure, 1/4” | • Fire Doors??? | | |
| Composition Roofing Type 1 – Built Up, Gravel Slag | • Roof over Level 11 of Office Tower<br>• Roof over Penthouse | | |
| Composition Roofing Type 2 – Built Up, Bluestone Chips | • Roof over Level 1: Wing A, Wing B, Wing C (except for Cafeteria Dining Room), Wing D, and Wing E | | |

| Original Exterior and Structural Materials | | | |
|---|---|---|---|
| Element/Item | Location in Building | Supplier | Source/ Headquarters |
| Composition Roofing Type 3 – Built Up, white marble chips and white mineral sheets | • Roof over Cafeteria Dining Room | | |
| Composition Roofing Type 4 – Traffic Roofing, neoprene rubber composition | • | Dex-O-Tex | Los Angeles, California |
| Flashing Type 1 – Reinforced Fabric | • Below grade | | |
| Flashing Type 2 – Copper | • Exterior wall at Wing A south elevation, mezzanine level<br>• Exterior wall at Penthouse<br>• Parapet at Penthouse Roof | | |
| Flashing Type 3 – Lead-Coated Copper | • Wing A parapet wall | | |

| Original Interior Materials | | | |
|---|---|---|---|
| Element/Item | Location in Building | Supplier | Source/ Headquarters |
| Granite Type 2 – Chelmsford Gray, Light Gray, or Light Gray, shot ground | • Floors at Vestibule (A102 and B139) | Fletcher, Swenson, or Mt. Airy | Westford, Massachusetts; Concord, New Hampshire; Mt. Airy, North Carolina |
| Granite Type 3 - Western Black, | • Floors at Vestibule (A102 and B139) | Delano Granite, Cold Spring | Delano, Minnesota; |

| Original Interior Materials | | | |
|---|---|---|---|
| Element/Item | Location in Building | Supplier | Source/ Headquarters |
| Charcoal Black, or St. Cloud Gray, shot ground | | Granite Co., or Delano Granite | Cold Spring, Minnesota |
| Marble Type 2 – Meadow White Select | • Walls at Main Lobby (A101) and Vestibule (A103), Elevator Lobby (A104), Exhibit Area (B101), Lobby (B138) Cafeteria Dining Room (C101), West Serving Area (C119), Library, Elevator Lobbies (A201, A301, A401, A501, A601, A701, A801, A901, A1001, A1101)<br>• Walls at Corridors 12, 13, 17, 29 | Green Mountain Marble Company | West Rutland, Vermont |
| Marble Type 3 – Cliffdale Brown Beige, polished | • Wall Base in Vestibule (D101) and Red Auditorium (D103) | Carthage Marble Company | Carthage, Missouri |
| Marble Type 4 – Imperial Black, honed | • Main Lobby (A103) | Alabama Marble Co. | Sycalauga, Alabama |
| Brick, Glazed - #625 Gray (stack joints, truss type reinforcement) | • Wall at Exhibit Area (B101)<br>• Wall at Corridors 13, 14, 16, and 17 | Hanley Brick Company | Bradford, Pennsylvania |
| Concrete Masonry Unit – smooth texture, painted (concave 3/8-inch joint) | • Ceiling and Walls at Main Shipping and Receiving (BB50)<br>• Walls and Ceiling at Telephone Closets (A202, A213, A302, A312, A402, A413, A502, A512, A602, A610, A702, A713, A802, A809, A902, A909, A1002, A1012)<br>• Ceiling at Mechanical Equipment Room (CM101) | | |

| Original Interior Materials | | | |
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| Element/Item | Location in Building | Supplier | Source/ Headquarters |
| | • Ceiling at Electric Room (DM101) and Storage (DM103)<br>• Ceiling at Stair 19<br>• Walls at Rooms AB5, AB9-10, AB15-16, AB24-26, AB28, AB33, AB37<br>• Walls at Rooms BB1-2, BB11-12, BB15-18, BB27, BB37-39, BB41-42, BB46-BB47, BB51, CB41, CB44-45, CB56, CB58, EB3, EB12-1, CM101, D107<br>• Walls at Electric Closet (A105, A122, B114, B124, C112, E109-110, EM1, AM102-104, A206, A306, A406, A506, A606, A706, A806, A906, A1006, A1106)<br>• Walls at Telephone Closet (A110, A121, C114, E108, E112, A1102, A1117)<br>• Walls at Corridors 1-7, 10, 11, 19, 31<br>• Walls at Stair 19<br>• Walls at Rooftop Penthouse | | |
| Concrete Masonry Unit, molded – smooth texture natural (flat concave joint matching CMU in color) | • Walls in Red Auditorium (D103) | Way-Lite Company | Chicago, Illinois |
| Concrete, painted | • Ceiling at Rooms AB6, AB10a, AB15-16, AB24-26, AB28, AB37-37b<br>• Ceiling at Rooms BB1-2, BB17, BB27, BB37-39, BB41-42, BB46-47, BB50-52, BB55<br>• Ceiling at Rooms CB15, CB33, CB38, CB41-45, CB53, CB56, CB58 | | |

| Original Interior Materials | | | |
|---|---|---|---|
| Element/Item | Location in Building | Supplier | Source/ Headquarters |
| | • Ceiling at Rooms EB1-3, EB6, EB12-13<br>• Ceiling at Rooms A105, A110, A119-119a, A121-122, AM101-104, A1102, A1117<br>• Ceiling at Rooms B114, B124<br>• Ceiling at Rooms C112, C114<br>• Ceiling at Room D107<br>• Ceiling at Rooms E108-110, E112, EM1<br>• Ceiling at Electric Closets (A206, A306, A406, A506, A606, A706, A806, A906, A1006, A1106)<br>• Ceiling at Corridors 3, 11, 19, 31<br>• Ceiling at Stairs 11, 12, 19<br>• Ceiling at Rooftop Penthouse<br>• Walls at Elevator Pit (ASB1)<br>• Walls at Rooms AB6, AB37a-37b, BB50, BB52, BB55, CB38, EB1-2, EB6)<br>• Walls at Rooms A119-119a, AM101 | | |
| Aluminum Type 2 – Alcoa #2020 Gray | • Radiator Enclosure at Exhibit Area (B101) and Lobby (B138)<br>• Radiator Enclosure at Corridors 12-17 | Alcoa Corporation | Pittsburgh, Pennsylvania |
| Aluminum Type 6 - Anodized w/ fine satin finish | • Interior Window Trim<br>• Curtain Wall<br>• Full-Lite Glazed Doors | | |
| Steel (type – see specs) – baked on enamel | • Doors, window stools, and radiator enclosures u.n.o.<br>• Toilet and shower room enclosures u.n.o.<br>• Wall Base u.n.o. | | |
| Steel (see specs) – painted | • Door Frames u.n.o. | | |

| Original Interior Materials | | | |
|---|---|---|---|
| Element/Item | Location in Building | Supplier | Source/ Headquarters |
| | • Stair Risers, Platform Bases, Stringers, Fascia, Railings, and Soffits | | |
| Steel, Stainless – 120 Belt Finish | • Elevator and Dumbwaiter Doors (1st Floor only)<br>• Ceiling, Doors, and Door Trim at Vestibules (A102 and B139)<br>• Doors and Door Trim at Corridor 12 | | |
| Wood Type 1 – Natural White Oak Parquet Block, prefinished, checkerboard pattern | • Auditorium Stages (B130, D103) | | |
| Wood Type 3 – American Figured Walnut, quartered | • Wall Panels at Lecture Rooms (B102, B105, B117); Closets (B117a-b); Entrance (B125, B129)<br>• Wall and Ceiling Panels at Green Auditorium (B130)<br>• Wall and Ceiling Panels at Entrance Vestibule (D101) and Red Auditorium (D103)<br>• Wall Panels at Library Lobby (E104) and Museum (E105)<br>• Walls Panels at Corridors 13, 17 | | |
| Wood Type 4 – Butternut, flat sliced | | | |
| Wood Type 5 – Butternut, plain sawed | | | |
| Wood Type 6 – American Walnut, quarter sawed | | | |

| Original Interior Materials | | | |
|---|---|---|---|
| Element/Item | Location in Building | Supplier | Source/ Headquarters |
| Wood Type 7 – Cherry, vertical graining, flat sliced | • Wall Paneling at Private Dining Rooms (C110 and C115) | | |
| Acoustical Ceiling Tile – type IIA perforated aluminum, 12” x 24”, white | • Ceiling at Manager’s Office (CB62) Kitchen (CB63)<br>• Ceiling at Cafeteria Counter Serving (C102a), Receiving Pantry (C118) Service Pantry (C121), Dishwashing (C122), Office (C123) | | |
| Acoustical Prefab Unit – type VA mineral plaster, 12” x 12”, “Owens Corning” gray on white | • Ceiling at Rooms AB1-2, AB5, AB7, AB8-10, AB14, AB17, AB20-22, AB29-36<br>• Ceiling at Rooms BB11, BB12, BB16-17, BB19-BB23, BB28-BB29, BB43-45, BB48-49<br>• Ceiling at Rooms CB20, CB26, CB29-31, CB34-36<br>• Ceiling at Rooms EB4-5, EB7, EB9, EB11, EB15<br>• Ceiling in Rooms A111-118, A120, A123-128, A130, A207, A1013<br>• Ceiling in Rooms B102, B103, B105, B106-112, B115, B117<br>• Ceiling at Rooms C119<br>• Ceiling at Rooms D101-102, D104-105, D108-109, DM102<br>• Ceiling at Rooms E101, E103, E105-106, E113, EM5, EM8-19<br>• Ceiling at Elevator Lobbies (A201, A301, A401, A501, A601, A701, A801, A901, A1001)<br>• Ceiling at Offices in Wing A Levels 2-11.<br>• Ceiling at Corridors 1, 2, 4-7, 9, 10, 18, 19, 29, 30 | | |

| Original Interior Materials | | | |
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| Element/Item | Location in Building | Supplier | Source/ Headquarters |
| | • Wall Covering at Multipurpose Studio (BB18), TWX (BB43), Audio Room (CB30) | | |
| Acoustical Tile, striated, 12” x 24” | • Ceiling at Library Lobby (E104), Periodicals (E115), Library Offices (E116-121), Conference Room (E122), Stack Area and Reading Room (E123), Staff Room (EM7), and Mezzanine Stack Area and Reading Room (EM20) | | |
| Acoustical Tile, mineral fissured, 12” x 24” | | | |
| Cement Coat Waterproofing, Metallic | • Floor and Walls of Elevator Pit<br>• Stair Treads and Landings at Elevator Pit | | |
| Acoustic Plaster, Textured | • Ceiling at Vestibule (A101), Main Lobby (A103), and Elevator Lobby (A104)<br>• Ceiling at Exhibit Area (B101), Lobby (B138)<br>• Ceiling at Corridors 12-17<br>• | | |
| Fireproof Plaster – smooth, painted | • Ceiling at Stairs 15 and 15A<br>• Ceiling at Electric Room (DM101) and Storage (DM103) | | |
| Gypsum Plaster – smooth painted | • Ceiling at Rooms AB4, AB11, AB27, BB31-33, BB35, CB1-2, CB5, CB11, CB14, CB19, CB23, CB40, CB46-48, CB51, CB54, EB14<br>• Ceiling at Rooms A106-106a, A108, A132, A1014-1015, A1017, A1105, A1110, A1112, A1114, A1116, A1124, | | |

| Original Interior Materials | | | |
|---|---|---|---|
| Element/Item | Location in Building | Supplier | Source/ Headquarters |
| | • Ceiling at Rooms B102a-102b, B104, B105a-105b, B113, B116, B117a, B118-119, B122, B126, B130, B132, B135-136<br>• Ceiling at Rooms C106-109, C110, C113, C115, C117-118, C120<br>• Ceiling at Auditorium (D103), Electric Room (DM101), Storage (DM103)<br>• Ceiling at Rooms E102, E107, E111, E114, EM4, EM6<br>• Ceiling at Service Closets (A205, A305, A405, A505, A605, A705, A805, A905, A1005)<br>• Ceiling at Vending Areas (A307, A507, A807)<br>• Ceiling at Women's Restrooms (A407, A607, A707, A907, A1007)<br>• Ceiling at Stairs 3-5, 10-12, 20<br>• Ceiling and Walls at Rooms AB23, CB2a, CB52<br>• Walls at Rooms AB1-3, AB7, AB17, AB20-22, AB29-32, AB34-36, BB19-23, BB28, BB44-45, BB48-49, CB10, CB20, CB26, CB29, CB31, CB34-36, EB4-5, EB7, EB11, EB15<br>• Walls at Rooms A106-106a, A111, B102a-102b, B103-104, B105a-105b, B113, B116, B117a-117b, B126-127, C107, DM102, E102, E107, E111, E115, A1014-1015, A1017<br>• Walls at Closets on Level 11<br>Walls at Stairs 5, 10, 15, 15a | | |

| Original Interior Materials | | | |
|---|---|---|---|
| Element/Item | Location in Building | Supplier | Source/ Headquarters |
| Keene's Cement Plaster – smooth hard white painted | • Ceiling at Vestibules and Toilet Rooms (AB8, AB12-13, AB18-19, BB30, BB34, BB46. CB3-4, CB6, CB8, CB39, CB49-50, CB55, EB8, EB10, A107, A109, A129, A131, B121, B123, B134, B137, C104-105, D106, DM104, EM2, EM3, A203-204, A303-304, A403-404, A503-504, A603-604, A703-704, A803-804, A903-904, A1003-1004, A1103-1104, A1125)<br>• Ceiling at Rooms BB4-10, BB13-15, BB24, BB40, CB7, CB9, CB16, CB21-22, CB24-25, CB27-28, CB32, CB57, CB59-61 | | |
| Ceramic Tile, Unglazed Porcelain – 3000 Medley, Browns and Grays | • Floor at Toilet Rooms (AB8, AB12, AB19, BB34, BB36, CB6, CB39, CB55, A107, A133, B123, B137, C105, D106, DM104, EM3, A203, A303, A403, A503, A603, A703, A803, A903, A1003, A1103)<br>• Floor at Toilet Vestibules (AB13, AB18, BB32, BB35, B122, B136, C106) | Mosaic Tile Company | Zanesville, Ohio |
| Ceramic Tile, Unglazed Porcelain – 112 Turquoise | • Floor at Rooms BB4-10, BB13-14, BB24, BB30, BB40<br>• Floor at Rooms CB21-22, CB24-25, CB27-28, CB3 | Mosaic Tile Company | Zanesville, Ohio |
| Ceramic Tile, Unglazed Porcelain – 3000 Medley, Blues | • Floor at Toilets (CB3-4, CB49-50, EB10, A109, A129, B121, B134, C104, EM2, A204, A304, A404, A504, A604, A704, A804, A904, A1004, A1104)<br>• Floor at Toilet Vestibules (A131, C109, | Mosaic Tile Company | Zanesville, Ohio |

| Original Interior Materials | | | |
|---|---|---|---|
| Element/Item | Location in Building | Supplier | Source/ Headquarters |
| Ceramic Tile, Unglazed Porcelain – 183 White | • Floor at Shower Room (CB7) | Mosaic Tile Company | Zanesville, Ohio |
| Ceramic Tile, Unglazed Porcelain – 2” x 2”, 1691 Brown | • Floor at Toilet Room (A1125) | Mosaic Tile Company | Zanesville, Ohio |
| Ceramic Tile, Glazed Interior – satin finish, 6300 White Mosaic | • Walls at Men’s Toilet Rooms and Vestibules (AB8, AB12-13, BB35-36, CB6, CB39, CB55, EB8, A107, A133, B122-123, B136-137, C105-106, D106, DM104, EM3, A203, A303, A403, A503, A603, A703, A803, A903, A1003, A1103) | Mosaic Tile Company | Zanesville, Ohio |
| Ceramic Tile, Glazed Interior – satin finish, 6300 White Splatter | • Walls at Shower Room (CB7) | Mosaic Tile Company | Zanesville, Ohio |
| Ceramic Tile, Glazed Interior – satin finish, 1801 White | • Walls at Women’s Toilet Rooms and Vestibules (AB18-19, BB30, BB32, BB34, CB3-4, CB49-50, A109, A129, A131, B121, B134, C104, C109, EM2, A204, A304, A404, A504, A604, A704, A804, A904, A1004, A1104) | Mosaic Tile Company | Zanesville, Ohio |
| Ceramic Tile, Glazed Interior – satin finish, 1101 Turquoise | • Walls at Rooms BB4-10, BB13-14, BB24, BB40 | Mosaic Tile Company | Zanesville, Ohio |
| Ceramic Tile, Glazed Interior – satin finish, 1821 White, 1” x 2” | • Walls at Toilet Room (A1125) | Mosaic Tile Company | Zanesville, Ohio |

| Original Interior Materials | | | |
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| Element/Item | Location in Building | Supplier | Source/ Headquarters |
| Ceramic Tile, Glazed Interior – satin finish | • Wall and Base at Toilet Rooms<br>• Wall and Base at Photography Dark Rooms, Film Drying Room (BB13), Chem. Mix and Store Room (BB4), and Light Trap Hall (BB5)<br>• Wall and Base at Vestibules (AB13, AB18, BB35, A131, B136, B122, B132, C106, C109)<br>• Wall and Base at Shower Room (CB7) | Mosaic Tile Company | Zanesville, Ohio |
| Ceramic Veneer – matt glaze | • Wall and Wall Base at Cafeteria Counter Serving Areas (C102A and C119A), South Serving Area (C113) | Federal Seaboard Terra Cotta Co. | New York, New York |
| Plywood Wainscot, painted | • Telephone Closets (AB16, AB26, CB44, EB13, A110, E112, A202, A213, A302, A312, A402, A413, A502, A512, A602, A610, A702, A713, A802, A809, A902, A909, A1002, A1012, A1102, A1117) | | |
| Steel Partitions and Wainscot, Flush Metal – baked on enamel | • Offices and Closets u.n.o.<br>• 1st-Floor Administrative Spaces<br>• Library Offices and Study Rooms | | |
| Steel Partition, metal panel construction with recessed joints | • 1st-Floor Administrative Spaces<br>• Library Offices and Study Rooms<br>• Corridor 12 | | |
| Structural Facing Tile Wall and Base, Opaque Ceramic Glazed – satin matt, smooth texture | • Service Closets at Basement, Level 1, and Level 11<br>• Rooms AB4, CB7, CB24, CB28, CB32, CB37, CB40, CB42, CB46-48, CB51, CB53- | Arketex | Brazil, Indiana |

| Original Interior Materials | | | |
|---|---|---|---|
| Element/Item | Location in Building | Supplier | Source/ Headquarters |
| | 54, CB57, CB59-60, CB62, CB65<br>• Rooms C108, C116, C120-123, E114, EM6 | | |
| Structural Facing Tile Walls, Unglazed – smooth texture | • Service Closets (A205, A305, A405, A505, A605, A705, A805, A905, A1005) | Arketex | Brazil, Indiana |
| Structural Facing Tile Base, Unglazed – Red Canyon, smooth Texture | • Cafeteria Counter Serving (C102a)<br>• Service Closets (A205, A305, A405, A505, A605, A705, A805, A905, A1005) | Murray Tile Company, Inc. | Lewisport, Kentucky |
| Wall Covering, Grass Cloth | • Private Dining Rooms (C110 and C115)<br>• Waiting Room (A1013, A1017)<br>• Conference Room (A1108)<br>• Offices (A1109, A1111, A1115, A1126, A1130, A1132, A1136, A1138)<br>• Deputy Director (A1119)<br>• Director (A1121)<br>• Secretary Offices (A1128, A1134, A1140)<br>• Reserved (A1142)<br>• Corridor 29 | Charles R. Gracie<br>Laue Bros.<br>Timbertone<br>Albert Van Luit Company<br>*Specific manufacturer and pattern listed in Color Schedule in Complete Drawing Set (1962) | New York, New York<br>Los Angeles, California |
| Wall Covering, Paper | • Women's Restrooms (BB33, CB5, EB9, A130, B120, B133, A207, A407, A607, A707, A907, A1007, A1107) | Katzenbach and Warren<br>Pageant<br>Renverne<br>Thibaut | New York, New York |

| Original Interior Materials | | | |
|---|---|---|---|
| Element/Item | Location in Building | Supplier | Source/ Headquarters |
| Wall Covering, Vinyl Fabric | | Gilford Inc.<br><br>Moderncote | New York, New York<br><br>New Castle, Indiana |
| Wall Covering, Vinyl Fabric (Naugahyde) | • Coat Rooms (B128, B131)<br>• Vending Areas (C103a, C118)<br>• Vestibule (E101)<br>• Corridors 10, 15, and 19 | Uniroyal Corporation | Naugatuck, Connecticutt |
| Wall Covering, Vinyl Fabric (Vicrtex) | • Lecture Rooms (B102, B105)<br>• Conference Rooms (B106-107, B117)<br>• Vestibule (B108, B116a)<br>• Office (B109, B112)<br>• Reading Room (B110-111)<br>• Classroom (B115)<br>• Women's Restroom and Vestibule (B119-120)<br>• Cafeteria Dining Room (C101)<br>• Red Auditorium (D103)<br>• Cataloging (E103), Library Lobby (E104), and Vestibule (E113)<br>• Stairs 3, 4, 5, 11, 12, and 20 | L. E. Carpenter and Company | New York, New York |
| Wall Covering, Vinyl Fabric (Vin-L-Fab) | • Cafeteria West Serving Area (C119)<br>• Xerox Room (E106), Conference Room (E122), Stack Area and Reading Room (E123)<br>• Passage (EM3) and Study Rooms (EM8, EM18, EM19, EM20) | Thortex | |
| Vinyl Base, Preformed | • Vending Area (A307, A507, A807)<br>• Vestibules (D102, D104, D108, D109) | Johnsonite | Chagrin Falls, Ohio |
| Carpet | • Private Dining Rooms (C110 and C115) | Archibald Holmes and Son; | Philadelphia, Pennsylvania |

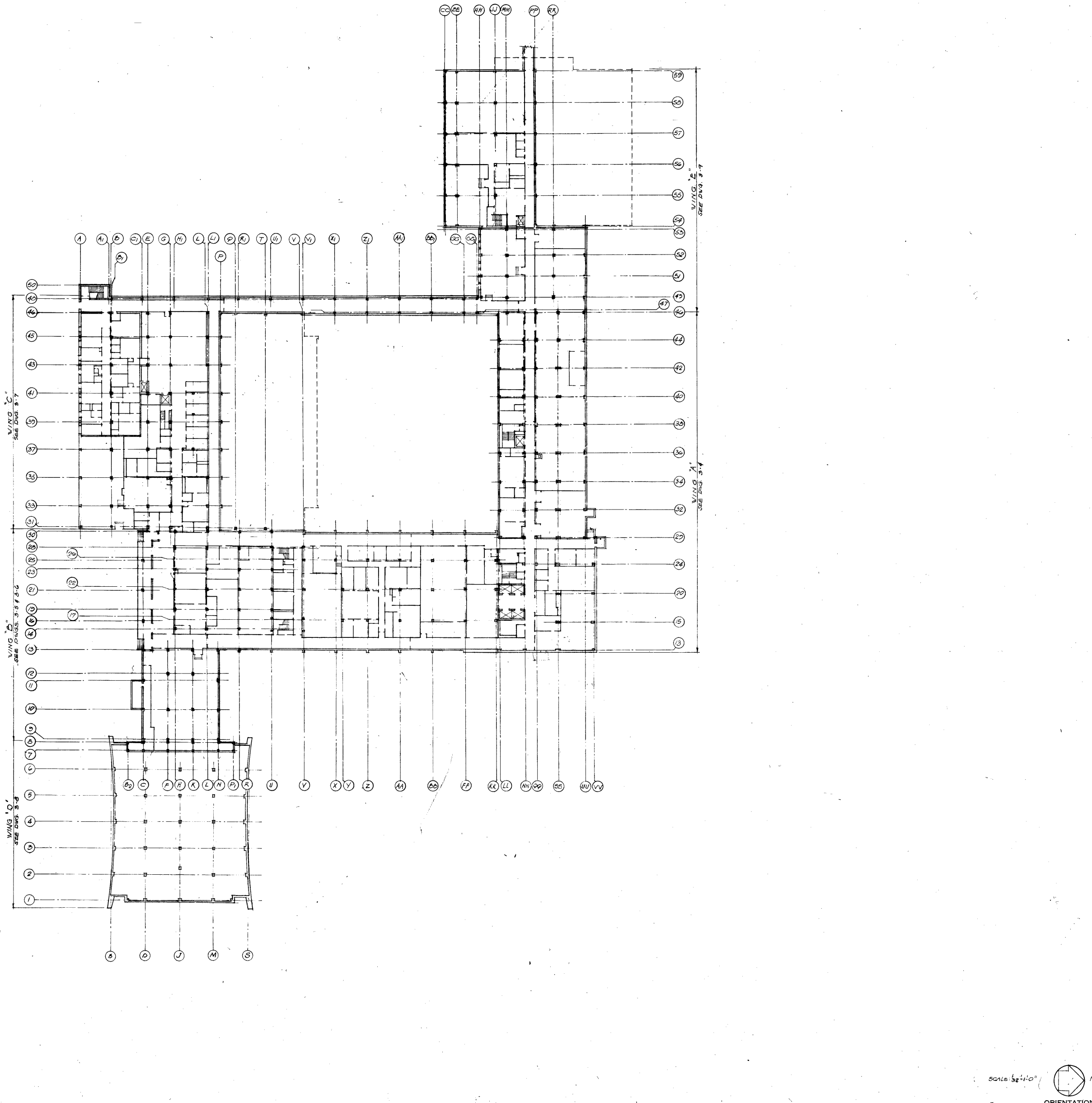
| Original Interior Materials | | | |
|---|---|---|---|
| Element/Item | Location in Building | Supplier | Source/ Headquarters |
| | • Entrances (B125 and B129)<br>• Entrance Vestibule (D101)<br>• Eleventh-Floor Offices, Conference Rooms, and Waiting Room<br>• Elevator Cabs 1-4 | Bigelow Carpet Company<br><br>Ernest Treganowan, Inc.; | Clinton, Massachusetts<br><br>New York, New York |
| Concrete Floor, Monolithic – smooth | • Electrical Closets<br>• Stair 19<br>• Mechanical Equipment Rooms (AB10A, BB53, AB37A, AB37B)<br>• Elevator Pit | | |
| Concrete Floor, Monolithic - painted | • Garden Store and Closet (A119 and A119A), Store Room (AB25), Electrical Equipment Room (AB37)<br>• Corridors 3, 11, and 31<br>• Signal Closet (AB37B)<br>• Mechanical Equipment Rooms (CM101, AB6)<br>• Telephone Closets<br>• Electric Room (DM101)<br>• Storage Room (DM103) | | |
| Concrete Floor, 1" Integral Topping – Smooth | • Main Shipping and Receiving (BB50) | | |
| Cork Tile (9" x 9") | • Floor at Audio Room (CB30) | Armstrong Cork Company | Pittsburgh, Pennsylvania |
| Earth Floor | • Unfinished Area (DB1) | N/A | N/A |
| Laticrete | • Floor at Multi-Purpose Studio (BB18) | Laticrete International, Inc. | Bethany Connecticut |
| Quarry Tile, Abrasive, flush with finish top – Red Canyon, Unglazed | • Floor at service closets and locker rooms.<br>• Floor at Vestibules (CB46 and B135) | Murray Tile Company, Inc. | Lewisport, Kentucky |

| Original Interior Materials | | | |
|---|---|---|---|
| Element/Item | Location in Building | Supplier | Source/ Headquarters |
| | • Floor at Food Storage (CB37), Garbage Refrigeration (CB37), Trash (CB43)<br>• Floor at Dairy Refrigeration (CB37), Freezer (CB59), Meat Room (CB60), and Vegetable Room (CB61)<br>• Floor at Receiving Pantry (C116)<br>• Floor at Cafeteria Counter Serving Areas (C102A and C119A) | | |
| Quarry Tile – Romany Spartan 5066 Blue | • Vestibule (CB46)<br>• Locker Rooms (CB48, CB51) | US Quarry Tile Company | Canton, Ohio |
| Terrazzo Floor and Base (NTMA Plate 130) – Black, Red, Yellow, Cream, and White Chips in Gray Cement | • Corridor 13<br>• Stairs 3, 4, 5, 10-12, and 20 | | |
| Terrazzo Floor and Base (NTMA Plate 141) – Gray and White Chips in Black Cement | • Vestibule (A101), Main Lobby (A103), and Elevator Lobby (A104)<br>• Exhibit Area (B101) and Lobby (B138)<br>• Vending Areas (C103a and C118)<br>• Corridors 13-19 | | |
| Terrazzo Floor and Base (NTMA Plate 141) – Gray and White Chips in White Cement | • Vestibule (E101) | | |
| Terrazzo Floor and Base (NTMA Plate 209) – White, Red, | • Stairs 1 and 2 | | |

| Original Interior Materials | | | |
|---|---|---|---|
| Element/Item | Location in Building | Supplier | Source/ Headquarters |
| and Black Chips in White Cement | | | |
| Terrazzo, Precast stair tread | • Stairs 10, 13, 14, and 19 | | |
| Vinyl Asbestos Tile (9” x 9”) - #3504 Gray | • Rooms AB1-3, AB5, AB9, AB10, AB14, AB17, AB20-23, AB29-36<br>• Rooms BB11-12, BB15-17, BB19-23, BB28-29, BB43-45, BB48-49<br>• Rooms CB52-53<br>• Rooms EB4-5, EB7, EB11, EB15<br>• Corridors 1, 2, 4-6, 7, and 10 | Mastic Tile Corporation of America | Houston, Texas |
| Vinyl Asbestos Tile (9” x 9”) - #3508 Light Brown | • Rooms CB1, CB2-2a, CB8-11, CB14, CB16, CB20, CB26, CB29, CB31, CB34-36<br>• Rooms B126-128, B131<br>• Corridor 9 | Mastic Tile Corporation of America | Houston, Texas |
| Vinyl Asbestos Tile (9” x 9”) - #311 White | • Womens Restroom (EB9) | Mastic Tile Corporation of America | Houston, Texas |
| Vinyl Asbestos Tile (9” x 9”) – Vina-Lux Calcutta v310 Black | • Rooms A106-106a<br>• Room E102, E104-105 | Uvalde Rock Asphalt Co. | San Antonio, Texas |
| Vinyl Asbestos Tile (9” x 9”) – Vina-Lux Sandalwood v331 | • Rooms C113<br>• Rooms E103, E104-107, E111, E113, E123<br>• Rooms EM4-5, EM7-20<br>• Corridor 30 | Uvalde Rock Asphalt Co. | San Antonio, Texas |
| Vinyl Asbestos Tile (9” x 9”) – Vina-Lux Tuxedo v319 White | • Rooms E115-122 | Uvalde Rock Asphalt Co. | San Antonio, Texas |
| Vinyl Asbestos Tile (9” x 9”) – Classic IV White | • Women’s Restrooms (BB33, CB5, A130, B120, B133, | Flintkote Company | Chicago Heights, Illinois |

| Original Interior Materials | | | |
|---|---|---|---|
| Element/Item | Location in Building | Supplier | Source/ Headquarters |
| | A207, A407, A607, A707, A907, A1007, A1107)<br>• Vestibules (B119, B132) | | |
| Vinyl Asbestos Tile (9” x 9”) – Classic IV Gray | • Reserved (A111)<br>• Offices (A112-118, A120, A123-128)<br>• Rooms (B102-113, B115, B116-117b)<br>• Closet (C107)<br>• Stairs 13 and 14 | Flintkote Company | Chicago Heights, Illinois |
| Vinyl Asbestos Tile (9” x 9”) – Classic II Light Brown | • Vestibules (D102, D104, D108-109)<br>• Red Auditorium (D103)<br>• Waiting Room (D105)<br>• Projection Room (DM102)<br>• Elevator Lobby (A1101)<br>• Closets (A1110, A1112, A1114, A1116, A1120, A1122-1124)<br>• Stairs 15 and 15a | Flintkote Company | Chicago Heights, Illinois |
| Vinyl Asbestos Tile (9” x 9”) – Classic X Sage Green | • Elevator Lobbies (A201, A301, A401, A501, A601, A701, A801, A901, A1001)<br>• Vending Areas (A307, A507, A807)<br>• Offices on Levels 2-10<br>• Closet (A1014)<br>• Corridor 29 | Flintkote Company | Chicago Heights, Illinois |
| Vinyl Asbestos Tile (9” x 9”) – Snipe Salmon 903 (Field) and White 92 (Feature) | • Cafeteria Dining Room (C101), East Serving Area (C102), and West Serving Area | Johns-Manville Corporation | New York, New York |
| Vinyl Asbestos Tile (9” x 9”) – Warbler Green 958 (Field) and White 92 (Feature) | • Multi-Purpose Room (C103), Staff Dining Room (C117), | Johns-Manville Corporation | New York, New York |

| Original Interior Materials | | | |
|---|---|---|---|
| Element/Item | Location in Building | Supplier | Source/ Headquarters |
| Vinyl Asbestos Tile (9” x 9”) – Macaw Green 965 | • Auditorium (B130) | Johns-Manville Corporation | New York, New York |
| Louverall Ceiling System | • Elevator Cabs 1-4 | Garden City Plating and Manufacturing Company | Chicago, Illinois |

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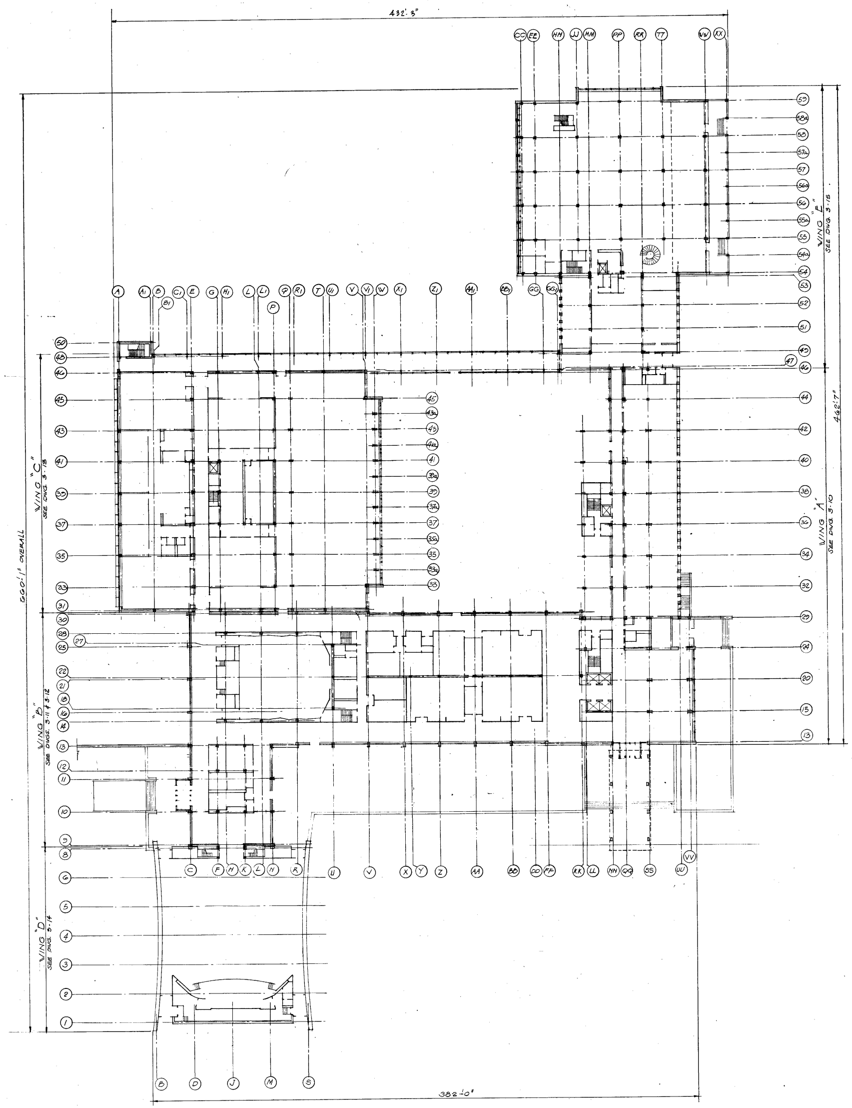
| 2-9-62 | 2-9-62 | | |
| MECHANICAL & ELECTRICAL DIVISION | ARCHITECTURAL & STRUCTURAL DIVISION | | |
| GENERAL SERVICES ADMINISTRATION<br>PUBLIC BUILDINGS SERVICE WASHINGTON, D. C. | | | |
| PROJECT | NATIONAL BUREAU OF STANDARDS NEW FACILITIES | | |
| LOCATION | MONTGOMERY COUNTY, MARYLAND | | |
| PROJ. NO. | 18084 | FILE NO. | |
| DRAWN BY | AB | DATE 12-18-61 | CHECKED BY H.F. |
| DRAWING TITLE | BASEMENT FLOOR PLAN ADMINISTRATION BUILDING | | |
| | ARCHITECTURAL | | |
| DRAWING NO. | 3-1 | | BLDG. NO. 101 |

ARCHITECTS FILE NO. 2225-101-150

BINDING ORDER NO.




NORTH
ORIENTATION

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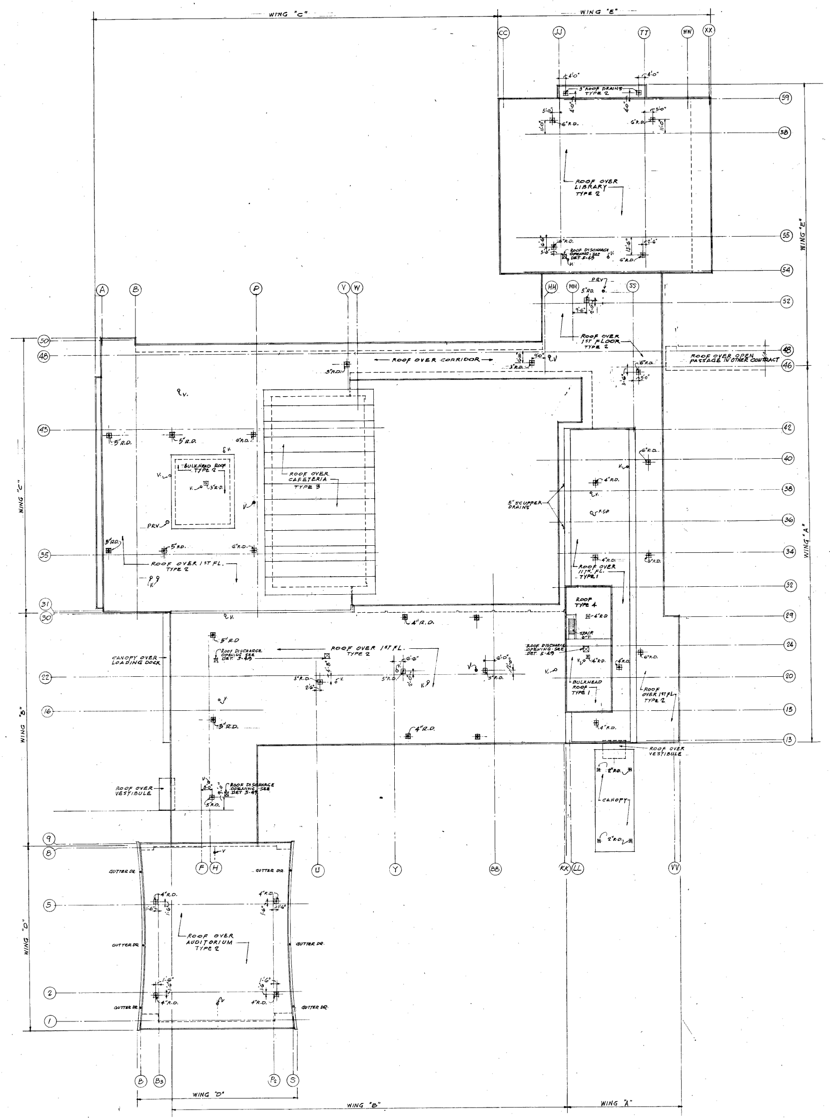
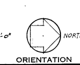
|---|---|---|---|
| VOORHEES WALKER SMITH SMITH & HAINES<br>ARCHITECTS - NEW YORK, N. Y. JOB NO. 2225 | | | |
| WJL 2-9-62<br>MECHANICAL & ELECTRICAL DIVISION | | J.H.M. 2-9-62<br>ARCHITECTURAL & STRUCTURAL DIVISION | |
| GENERAL SERVICES ADMINISTRATION<br>PUBLIC BUILDINGS SERVICE WASHINGTON, D. C. | | | |
| PROJECT | NATIONAL BUREAU OF STANDARDS NEW FACILITIES | | |
| LOCATION | MONTGOMERY COUNTY, MARYLAND | | |
| PROJ. NO. | 18084 | FILE NO. | |
| DRAWN BY | AB DATE 12-18-61 | CHECKED BY | H.F. |
| DRAWING TITLE | FIRST FLOOR PLAN ADMINISTRATION BUILDING | | |
| ARCHITECTURAL | | | |
| DRAWING NO. | 3-2 | BLDG. NO. | 101 |

ARCHITECTS FILE NO. 2225 101-157

BINDING ORDER NO.




SCALE: 1/32" = 1'-0"

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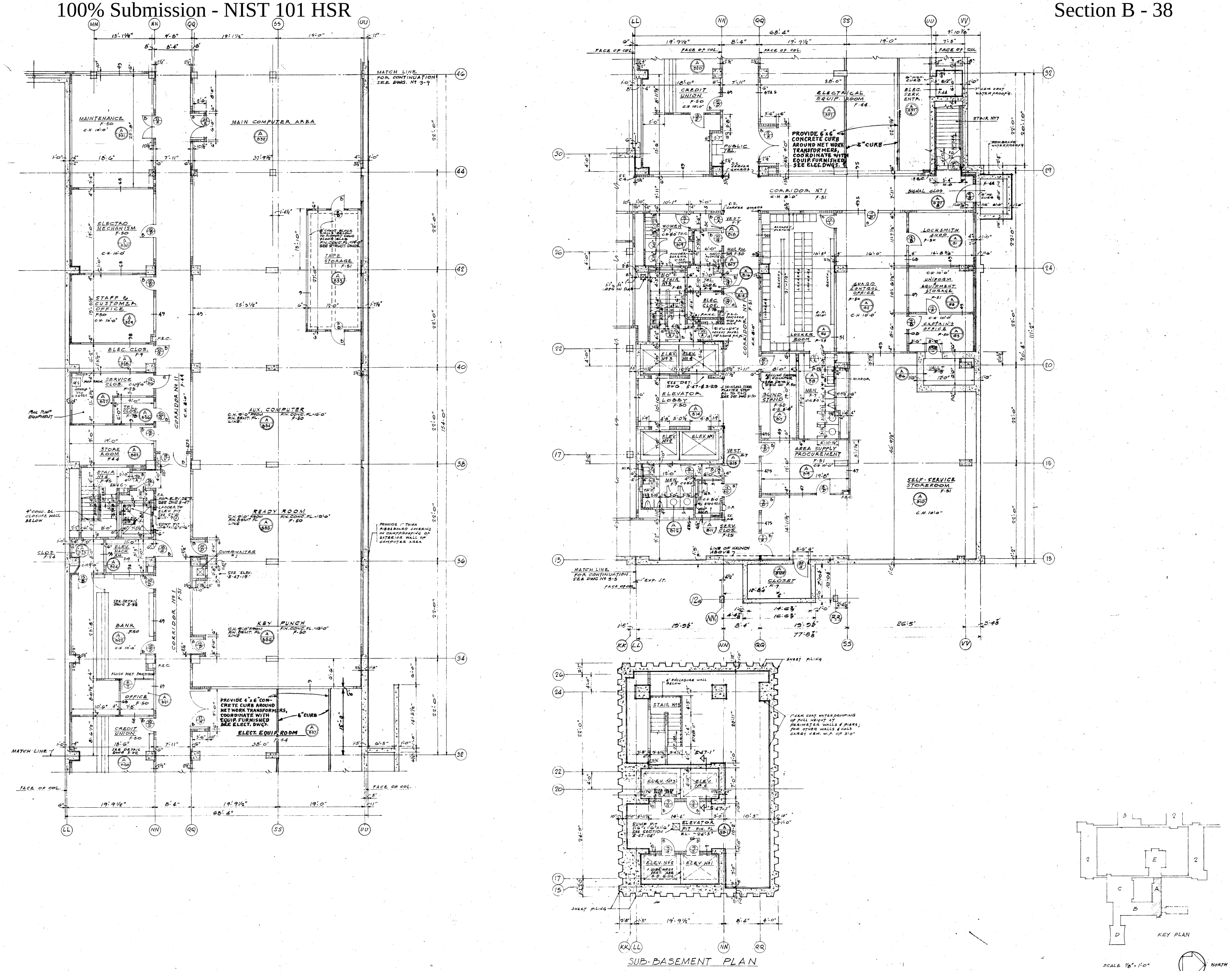
| GENERAL SERVICES ADMINISTRATION<br>PUBLIC BUILDINGS SERVICE WASHINGTON, D. C. | | | | | |
| PROJECT | NATIONAL BUREAU OF STANDARDS NEW FACILITIES | | | | |
| LOCATION | MONTGOMERY COUNTY, MARYLAND | | | | |
| PROJ. NO. | 18084 | | FILE NO. | | |
| DRAWN BY | AB | DATE | 12-18-61 | CHECKED BY | H.F. |
| DRAWING TITLE | ROOF PLAN ADMINISTRATION BUILDING | | | | |
| ARCHITECTURAL | | | | | |
| DRAWING NO. | 3-3 | | | BLDG. NO. | 101. |

ARCHITECTS FILE NO. 2225-101-245

BINDING ORDER NO.

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PUBLIC BUILDINGS SERVICE WASHINGTON, D. C.

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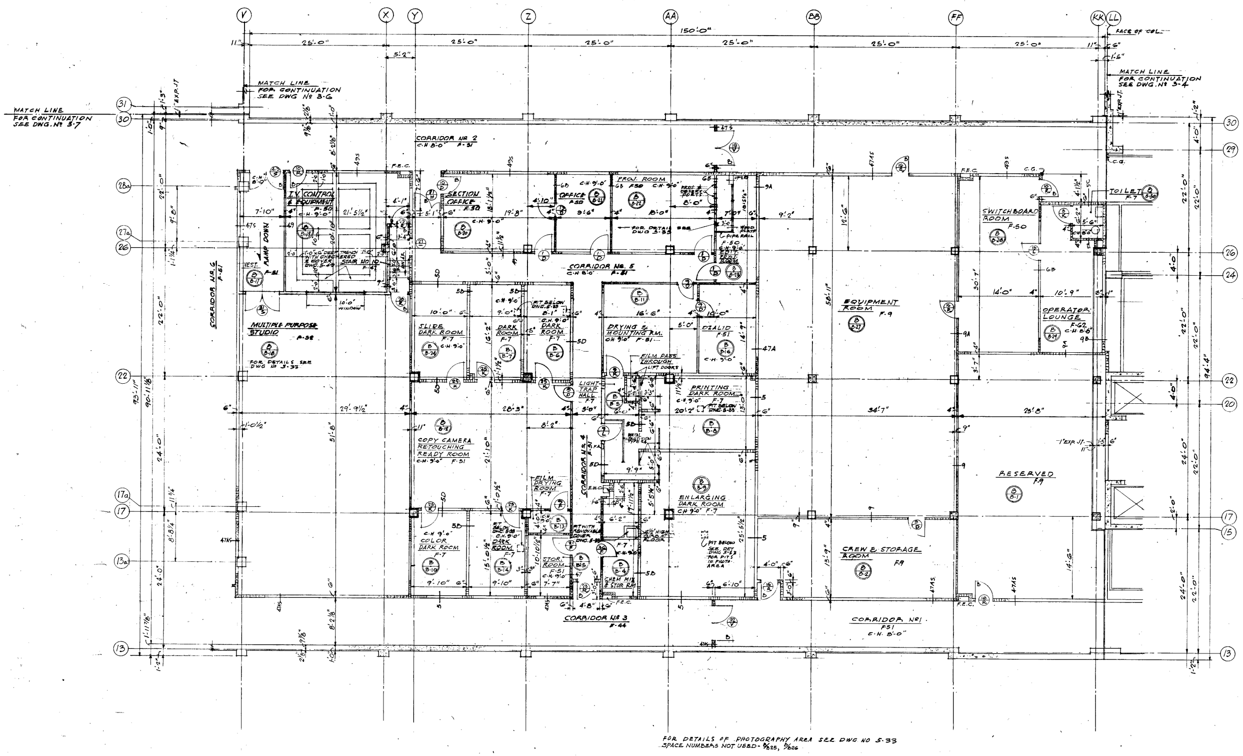
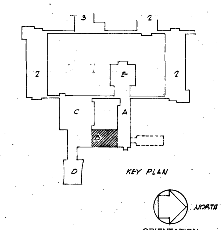
| PROJECT | NATIONAL BUREAU OF STANDARDS NEW FACILITIES | | | | |
| LOCATION | MONTGOMERY COUNTY, MARYLAND | | | | |
| PROJ. NO. | 18084 | | | FILE NO. | |
| DRAWN BY | R.B. | DATE | 12/18/61 | CHECKED BY | A.B |
| DRAWING TITLE | SUB-BASEMENT AND BASEMENT FLOOR PLAN - WING A ADMINISTRATION BUILDING | | | | |
| | ARCHITECTURAL | | | | |
| DRAWING NO. | 3-4 | | | BLDG. NO. | 101 |

ARCHITECTS FILE NO. 2225-101-158 BINDING ORDER NO.

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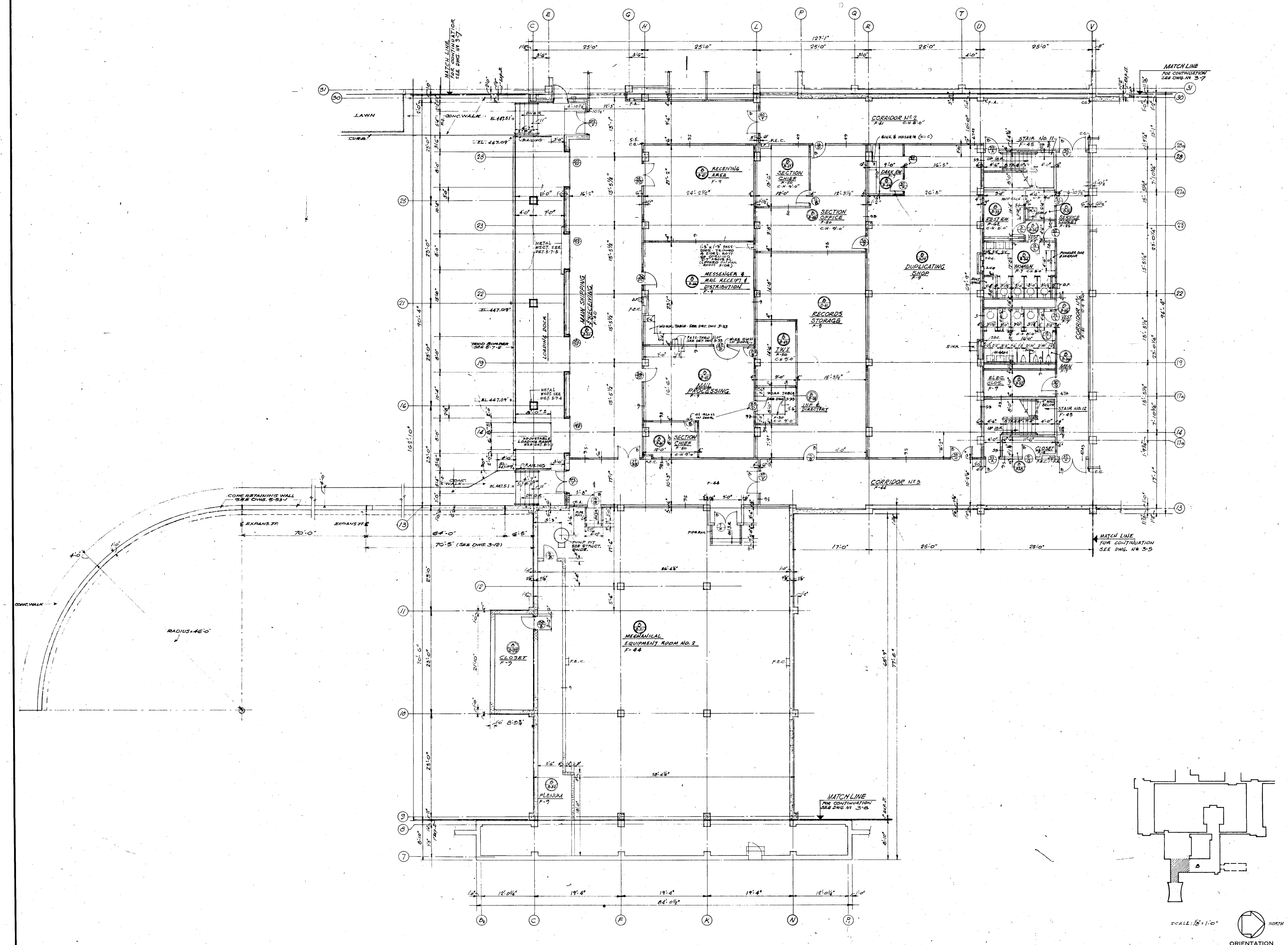
| LOCATION | MONTGOMERY COUNTY, MARYLAND | | |
| PROJ. NO. | 18084 | FILE NO. | |
| DRAWN BY | ARS | DATE 12/18/61 | CHECKED BY A.B. |
| DRAWING TITLE | BASEMENT FLOOR PLAN PART 1 - WING B ADMINISTRATION BUILDING | | |
| | ARCHITECTURAL | | |
| DRAWING NO. | 3-5 | BLDG. NO. | 101 |

ARCHITECTS FILE NO. BINDING ORDER NO.

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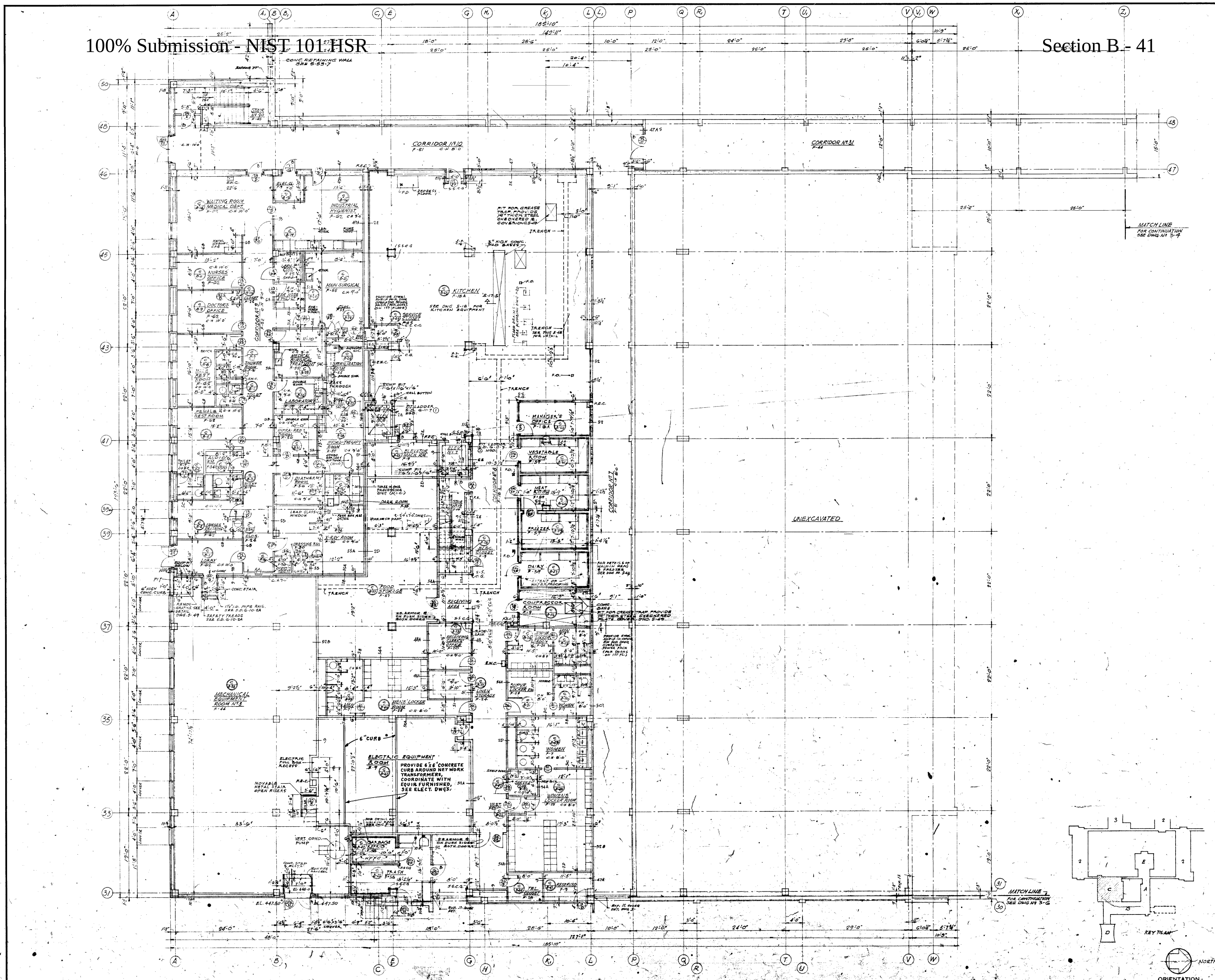
| GENERAL SERVICES ADMINISTRATION<br>PUBLIC BUILDINGS SERVICE | WASHINGTON, D. C. |
| PROJECT | NATIONAL BUREAU OF STANDARDS NEW FACILITIES |
| LOCATION | MONTGOMERY COUNTY, MARYLAND |
| PROJ. NO. | 18084 — FILE NO. |
| DRAWN BY dab | DATE 12/18/61 — CHECKED BY A.B. |
| DRAWING TITLE | BASEMENT FLOOR PLAN PART 2 - WING B ADMINISTRATION BUILDING |
| | ARCHITECTURAL |
| DRAWING NO. 3-6 | BLDG. NO. 101 |

ARCHITECTS FILE NO. 2225-101-160

BINDING ORDER NO.

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PUBLIC BUILDINGS SERVICE - WASHINGTON, D. C.

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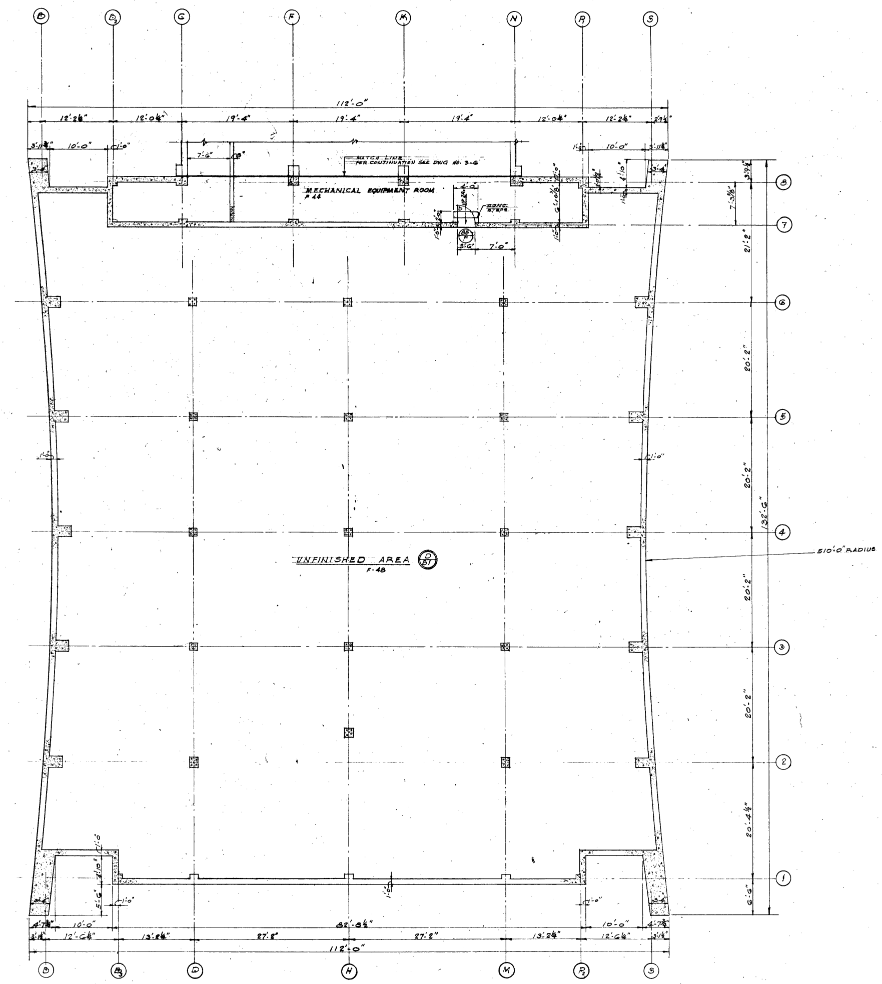
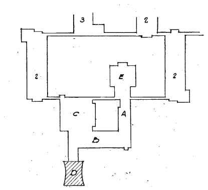
|---|---|---|---|---|---|
| PROJECT | NATIONAL BUREAU OF STANDARDS NEW FACILITIES | | | | |
| LOCATION | MONTGOMERY COUNTY, MARYLAND | | | | |
| PROJ. NO. | 18084 | | | FILE NO. | |
| DRAWN BY | J.P.B. | DATE | 12/18/61 | CHECKED BY | A.B. |
| DRAWING TITLE | BASEMENT FLOOR PLAN WING C ADMINISTRATION BUILDING | | | | |
| | ARCHITECTURAL | | | | |
| DRAWING NO. | 3-7 | | | BLDG. NO. | 101 |

ARCHITECTS FILE NO. 2225-101-161
BINDING ORDER NO.




BASEMENT PLAN

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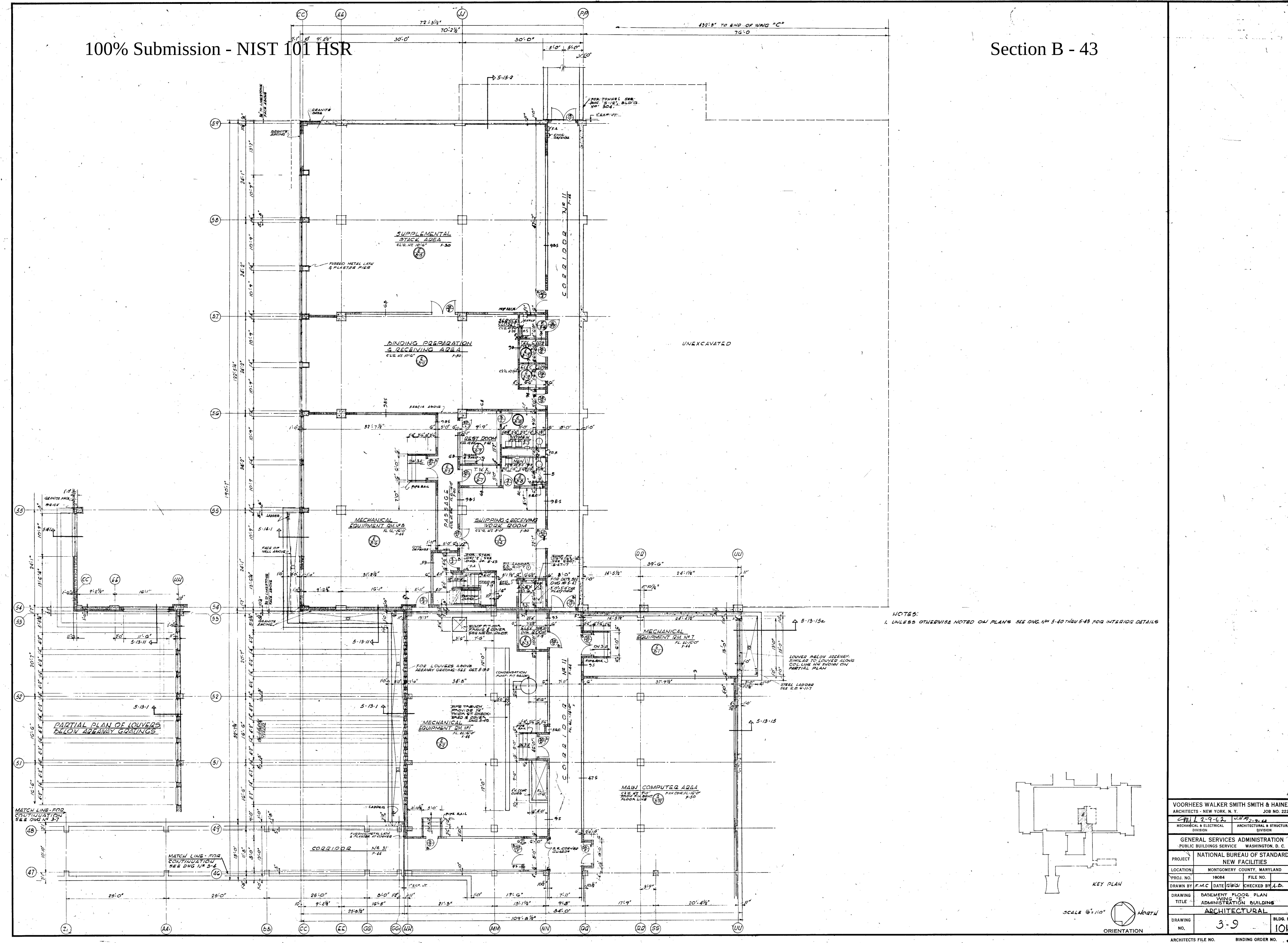
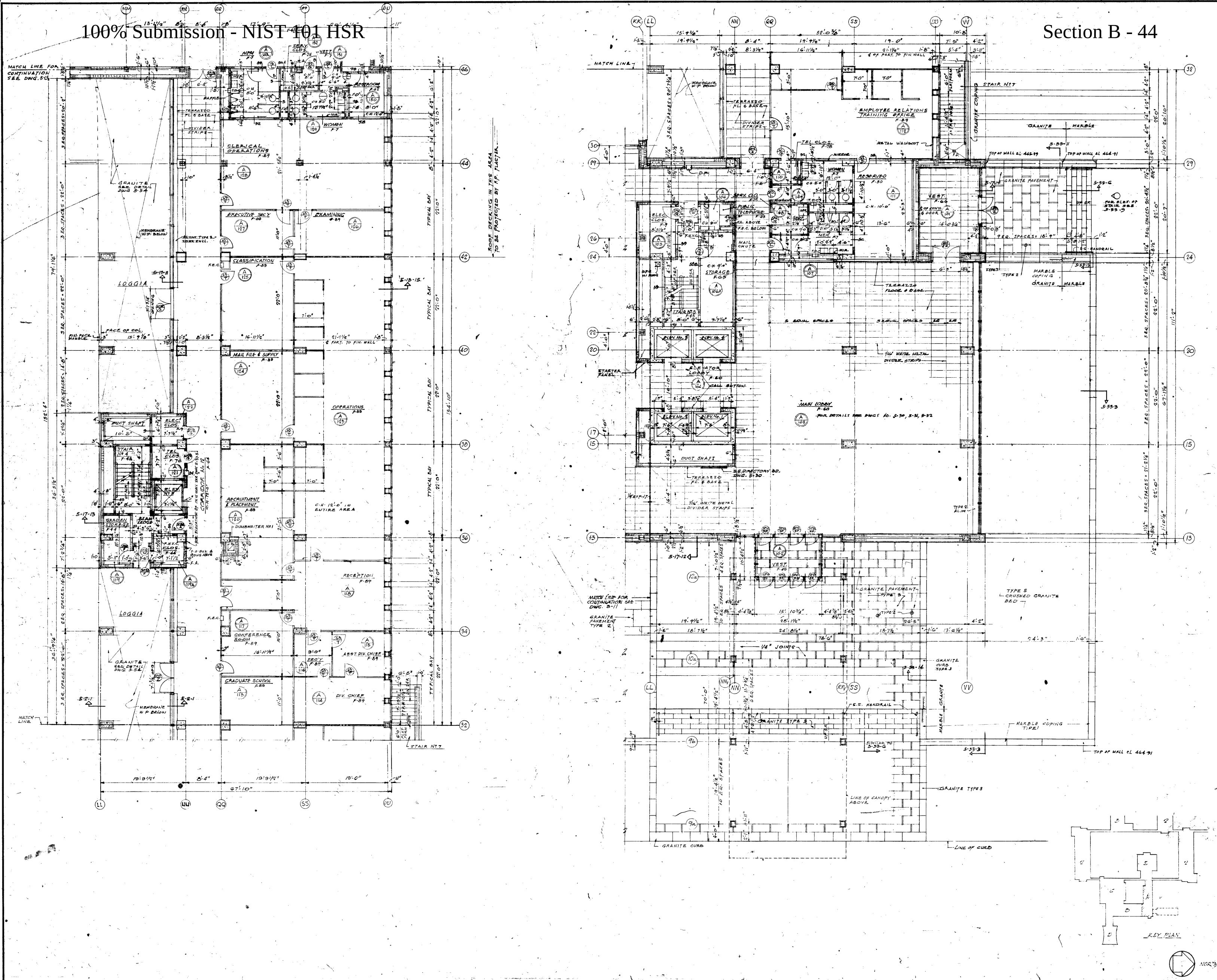
| 2-9-62 — MECHANICAL & ELECTRICAL DIVISION | | J.H.M. 2-9-62 — ARCHITECTURAL & STRUCTURAL DIVISION | |
| GENERAL SERVICES ADMINISTRATION<br>PUBLIC BUILDINGS SERVICE WASHINGTON, D. C. | | | |
| PROJECT | NATIONAL BUREAU OF STANDARDS NEW FACILITIES | | |
| LOCATION | MONTGOMERY COUNTY, MARYLAND | | |
| PROJ. NO. | 18084 | FILE NO. | |
| DRAWN BY | C.P. DATE 12/18/61 | CHECKED BY | A.B. |
| DRAWING TITLE | BASEMENT FLOOR PLAN WING "D" ADMINISTRATION BUILDING | | |
| | ARCHITECTURAL | | |
| DRAWING NO. | 3-8 | BLDG. NO. | 101 |

ARCHITECTS FILE NO. 2225-101-229

BINDING ORDER NO.


SUPPLEMENTAL STACK AREA
BINDING PREPARATION & RECEIVING AREA
UNEXCAVATED
MECHANICAL EQUIPMENT RM Nº 8
SHIPPING & RECEIVING WORK ROOM
REST ROOM
WOMEN
MEN
PASSAGE
CORRIDOR
MECHANICAL EQUIPMENT RM Nº 7
MECHANICAL EQUIPMENT RM Nº 1
MAIN COMPUTER AREA
PARTIAL PLAN OF LOUVERS BELOW AREAWAY GRATINGS
MATCH LINE - FOR CONTINUATION SEE DWG Nº 3-7
MATCH LINE - FOR CONTINUATION SEE DWG Nº 3-4
NOTES:
1. UNLESS OTHERWISE NOTED ON PLANS SEE DWG. Nº 5-40 THRU 5-43 FOR INTERIOR DETAILS
KEY PLAN
SCALE 1/8" = 1'-0"
NORTH
ORIENTATION
VOORHEES WALKER SMITH SMITH & HAINES
ARCHITECTS - NEW YORK, N. Y.
JOB NO. 2225
2-9-62
J.H.M. 2-9-62
MECHANICAL & ELECTRICAL DIVISION
ARCHITECTURAL & STRUCTURAL DIVISION
GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE
WASHINGTON, D. C.
PROJECT
NATIONAL BUREAU OF STANDARDS NEW FACILITIES
LOCATION
MONTGOMERY COUNTY, MARYLAND
PROJ. NO. 18084
FILE NO.
DRAWN BY F.M.C
DATE 12/18/61
CHECKED BY A.B.
DRAWING TITLE
BASEMENT FLOOR PLAN WING "E" ADMINISTRATION BUILDING
ARCHITECTURAL
DRAWING NO. 3-9
BLDG. NO. 101
ARCHITECTS FILE NO. 2225-101-162
BINDING ORDER NO.

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VOORHEES WALKER SMITH SMITH & HAINES
ARCHITECTS - NEW YORK, N. Y. JOB NO. 2225

MJL 2-9-62 | J. H. M 2-9-62

MECHANICAL & ELECTRICAL DIVISION | ARCHITECTURAL & STRUCTURAL DIVISION

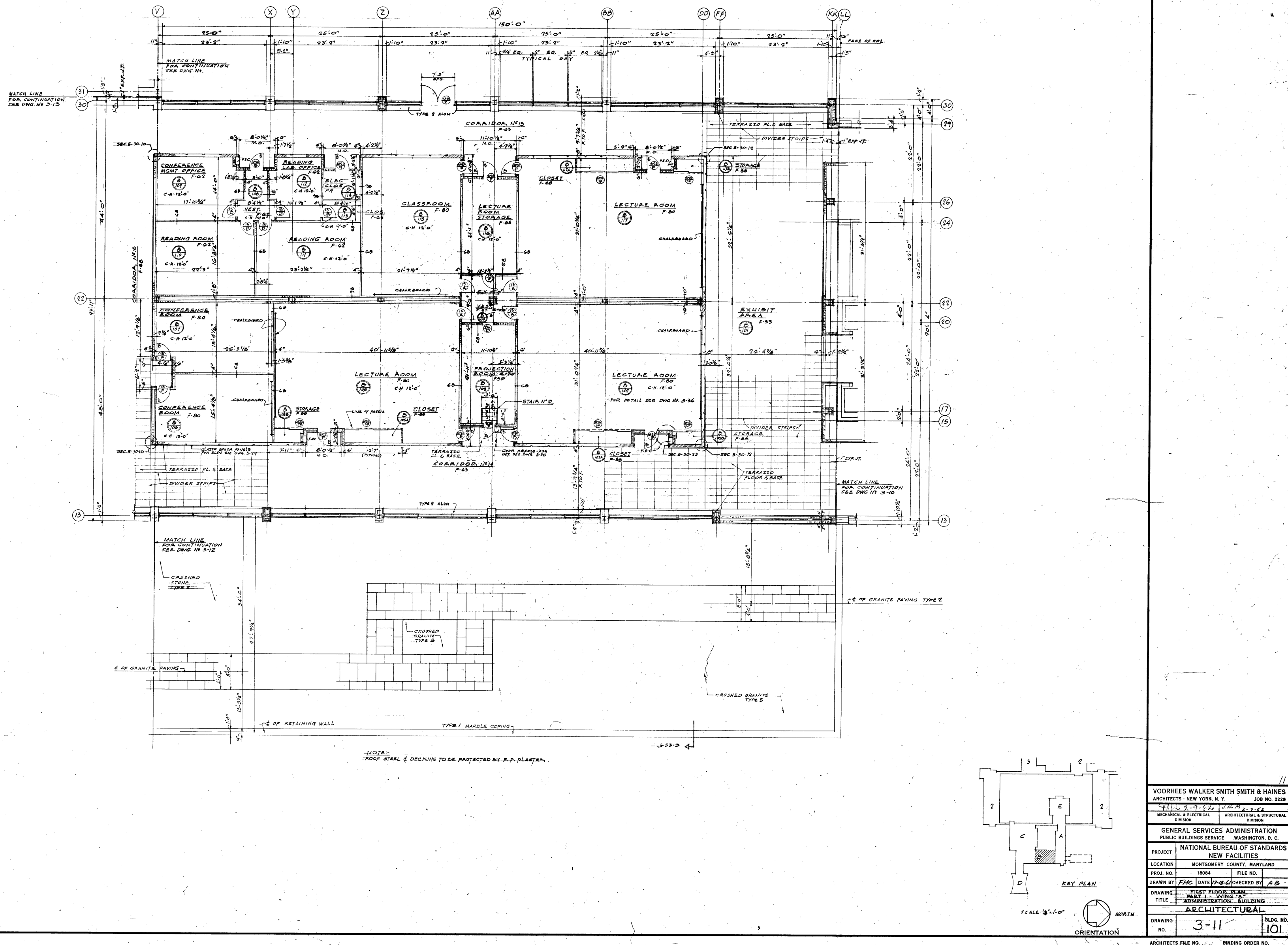
GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE WASHINGTON, D. C.

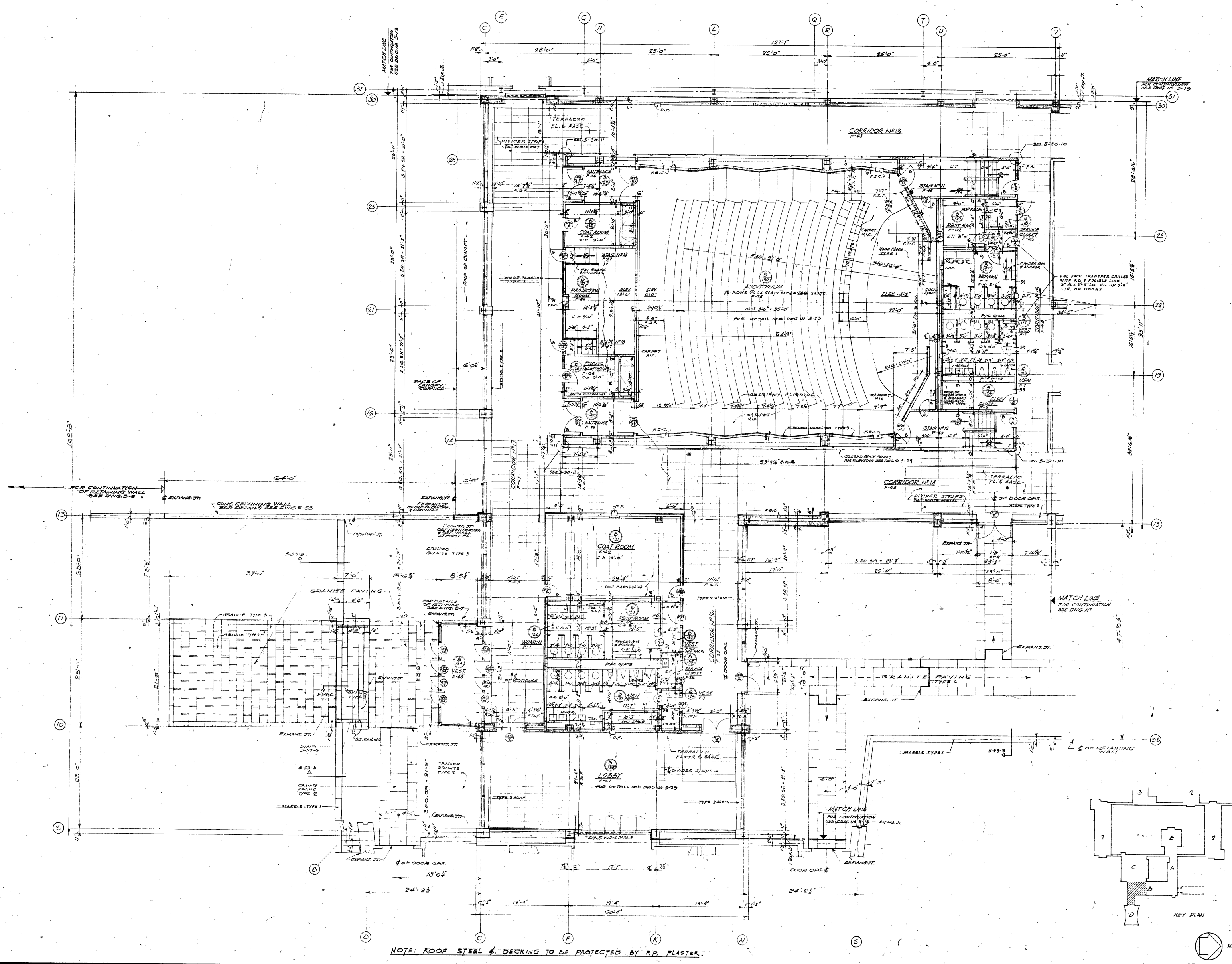
| | | | |
|---|---|---|---|
| PROJECT | NATIONAL BUREAU OF STANDARDS NEW FACILITIES | | |
| LOCATION | MONTGOMERY COUNTY, MARYLAND | | |
| PROJ. NO. | 18084 | FILE NO. | |
| DRAWN BY | JS DATE 12-18-61 | CHECKED BY | AB |
| DRAWING TITLE | FIRST FLOOR PLAN WING "A" ADMINISTRATION BUILDING | | |

ARCHITECTURAL

| | | |
|---|---|---|
| DRAWING NO. | 3-10 | BLDG. NO. 101 |

ARCHITECTS FILE NO. BINDING ORDER NO.


CORRIDOR Nº 15
CONFERENCE MGMT OFFICE
READING LAB OFFICE
CLASSROOM
LECTURE ROOM
READING ROOM
CONFERENCE ROOM
EXHIBIT AREA
STORAGE
CLOSET
PROJECTION BOOTH
STAIR Nº 2
CORRIDOR Nº 16
MATCH LINE FOR CONTINUATION
CRUSHED GRANITE TYPE 5
KEY PLAN
ORIENTATION
NORTH
VOORHEES WALKER SMITH SMITH & HAINES
ARCHITECTS - NEW YORK, N. Y.
GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE WASHINGTON, D. C.
NATIONAL BUREAU OF STANDARDS NEW FACILITIES
MONTGOMERY COUNTY, MARYLAND
FIRST FLOOR PLAN
ADMINISTRATION BUILDING
ARCHITECTURAL
3-11
101




12

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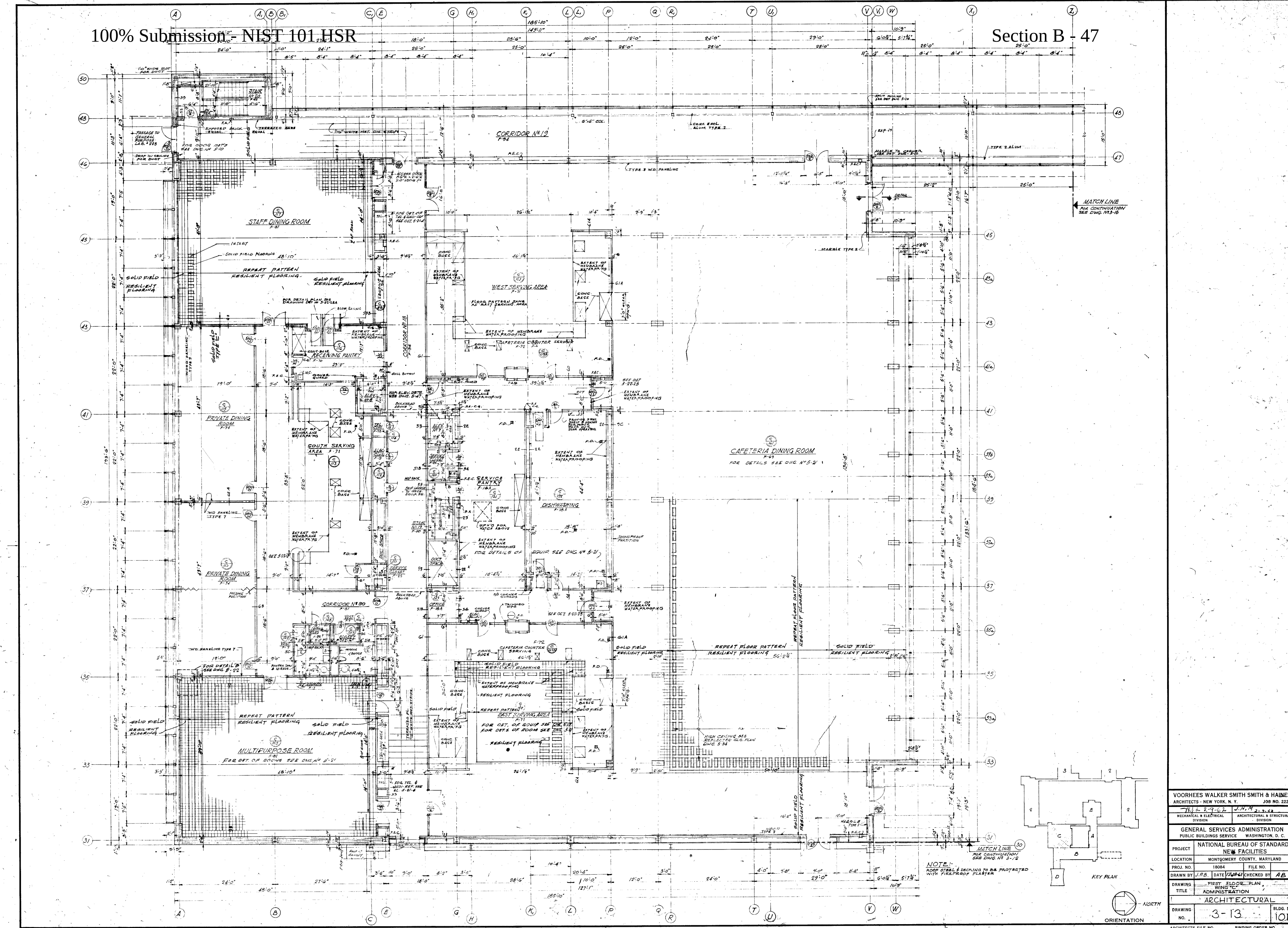
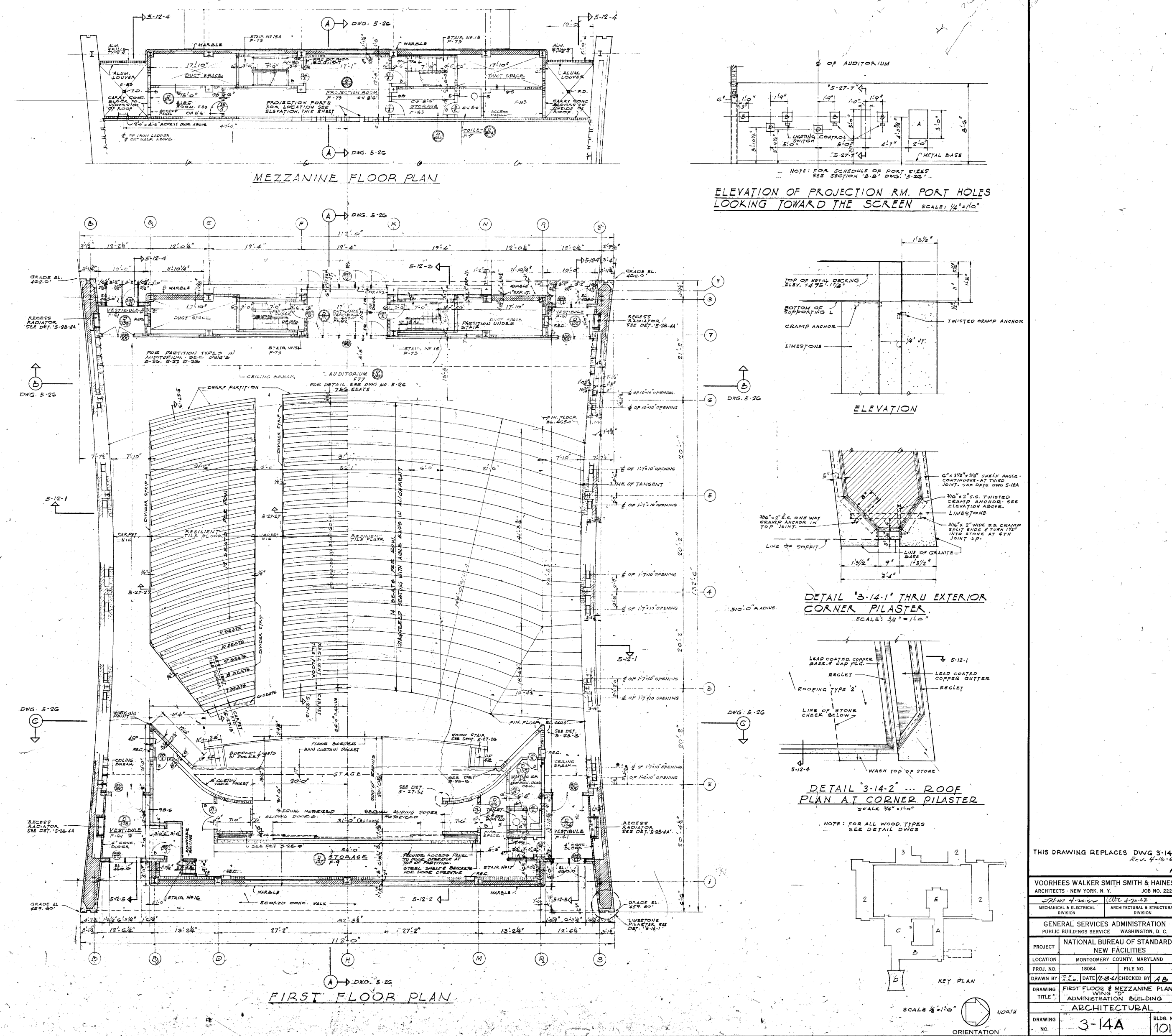
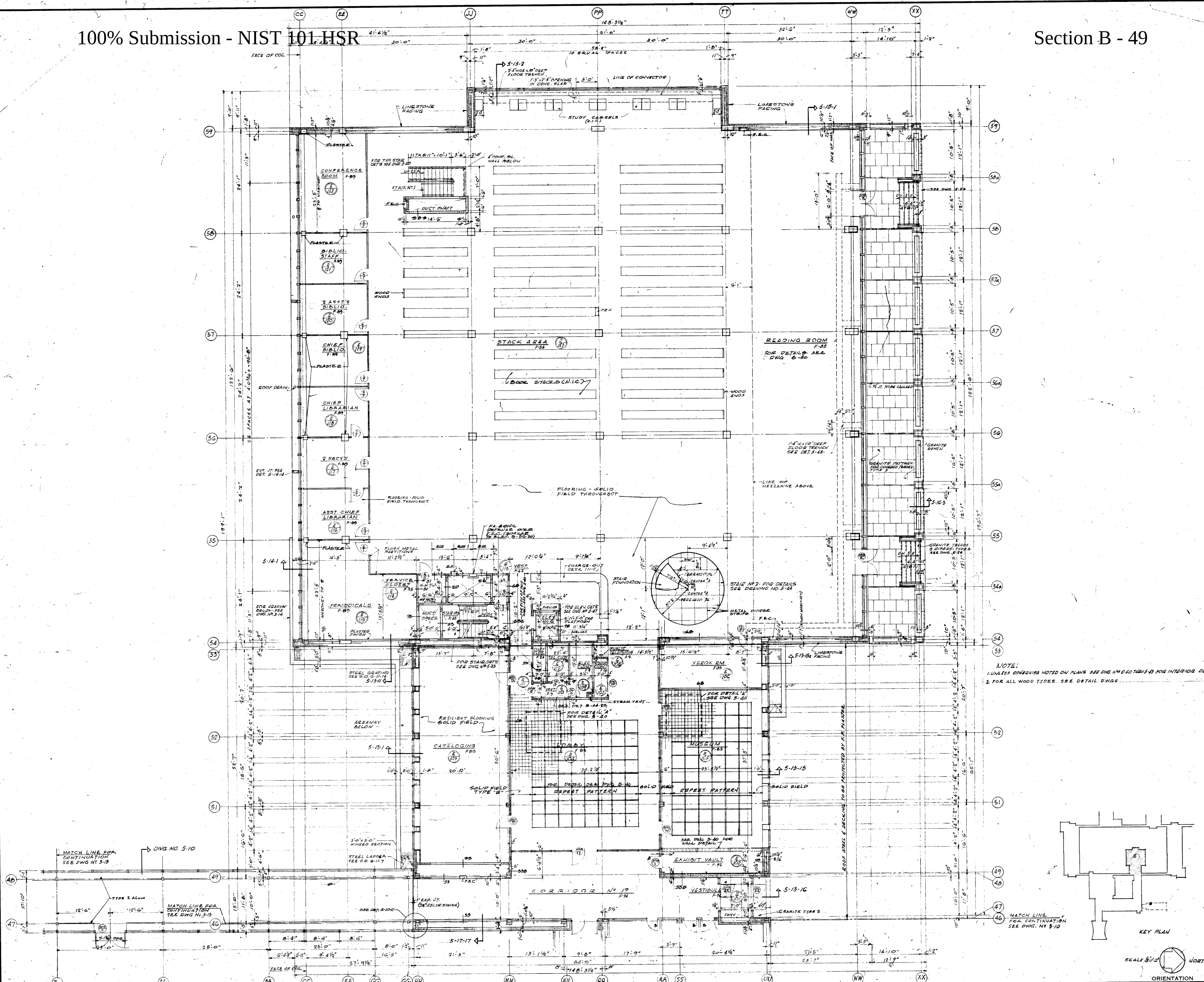
|---|---|---|
| VOORHEES WALKER SMITH SMITH & HAINES<br>ARCHITECTS - NEW YORK, N. Y. JOB NO. 2225 | | |
| MECHANICAL & ELECTRICAL DIVISION: W.L. 2-9-62 | ARCHITECTURAL & STRUCTURAL DIVISION: J.H.M. 2-9-62 | |
| GENERAL SERVICES ADMINISTRATION<br>PUBLIC BUILDINGS SERVICE WASHINGTON, D. C. | | |
| PROJECT | NATIONAL BUREAU OF STANDARDS NEW FACILITIES | |
| LOCATION | MONTGOMERY COUNTY, MARYLAND | |
| PROJ. NO. | 18084 | FILE NO. |
| DRAWN BY | N.R. DATE 12-18-61 | CHECKED BY AB |
| DRAWING TITLE | FIRST FLOOR PLAN<br>PART 2 - WING "B"<br>ADMINISTRATION BUILDING | |
| | ARCHITECTURAL | |
| DRAWING NO. | 3-12 | BLDG. NO. 101 |

ARCHITECTS FILE NO. BINDING ORDER NO.


CORRIDOR Nº 19
STAFF DINING ROOM
WEST SERVING AREA
RECEIVING PANTRY
CORRIDOR Nº 18
PRIVATE DINING ROOM
SOUTH SERVING AREA
SERVICE PANTRY
DISHWASHING
CAFETERIA DINING ROOM
FOR DETAILS SEE DWG Nº 5-21
PRIVATE DINING ROOM
CORRIDOR Nº 30
MULTIPURPOSE ROOM
EAST SERVING AREA
REPEAT PATTERN RESILIENT FLOORING
SOLID FIELD RESILIENT FLOORING
MATCH LINE FOR CONTINUATION SEE DWG. Nº 3-16
MATCH LINE FOR CONTINUATION SEE DWG. Nº 3-12
NOTE: ROOF STEEL & DECKING TO BE PROTECTED WITH FIREPROOF PLASTER
KEY PLAN
NORTH
ORIENTATION
VOORHEES WALKER SMITH SMITH & HAINES
ARCHITECTS - NEW YORK, N. Y.
JOB NO. 2225
MECHANICAL & ELECTRICAL DIVISION
ARCHITECTURAL & STRUCTURAL DIVISION
GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE WASHINGTON, D. C.
PROJECT NATIONAL BUREAU OF STANDARDS NEW FACILITIES
LOCATION MONTGOMERY COUNTY, MARYLAND
PROJ. NO. 18084
FILE NO.
DRAWN BY J.P.B.
DATE 12-18-61
CHECKED BY AB
DRAWING TITLE FIRST FLOOR PLAN WING "C" ADMINISTRATION
ARCHITECTURAL
DRAWING NO. 3-13
BLDG. NO. 101
ARCHITECTS FILE NO.
BINDING ORDER NO.


MEZZANINE FLOOR PLAN
ELEVATION OF PROJECTION RM. PORT HOLES LOOKING TOWARD THE SCREEN SCALE: 1/2"=1'0"
ELEVATION
DETAIL "3-14-1" THRU EXTERIOR CORNER PILASTER. SCALE: 3/4"=1'0"
DETAIL "3-14-2" ... ROOF PLAN AT CORNER PILASTER
NOTE: FOR ALL WOOD TYPES SEE DETAIL DWGS
KEY PLAN
FIRST FLOOR PLAN
SCALE 1/8"=1'0"
ORIENTATION
NORTH
THIS DRAWING REPLACES DWG 3-14 Rev. 4-16-62
VOORHEES WALKER SMITH SMITH & HAINES
ARCHITECTS - NEW YORK, N. Y.
JOB NO. 2225
MECHANICAL & ELECTRICAL DIVISION
ARCHITECTURAL & STRUCTURAL DIVISION
GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE WASHINGTON, D. C.
PROJECT NATIONAL BUREAU OF STANDARDS NEW FACILITIES
LOCATION MONTGOMERY COUNTY, MARYLAND
PROJ. NO. 18084
FILE NO.
DRAWN BY
DATE
CHECKED BY A.B.
DRAWING TITLE: FIRST FLOOR & MEZZANINE PLANS WING "D" ADMINISTRATION BUILDING ARCHITECTURAL
DRAWING NO. 3-14A
BLDG. NO. 101
ARCHITECTS FILE NO.
BINDING ORDER NO.




15

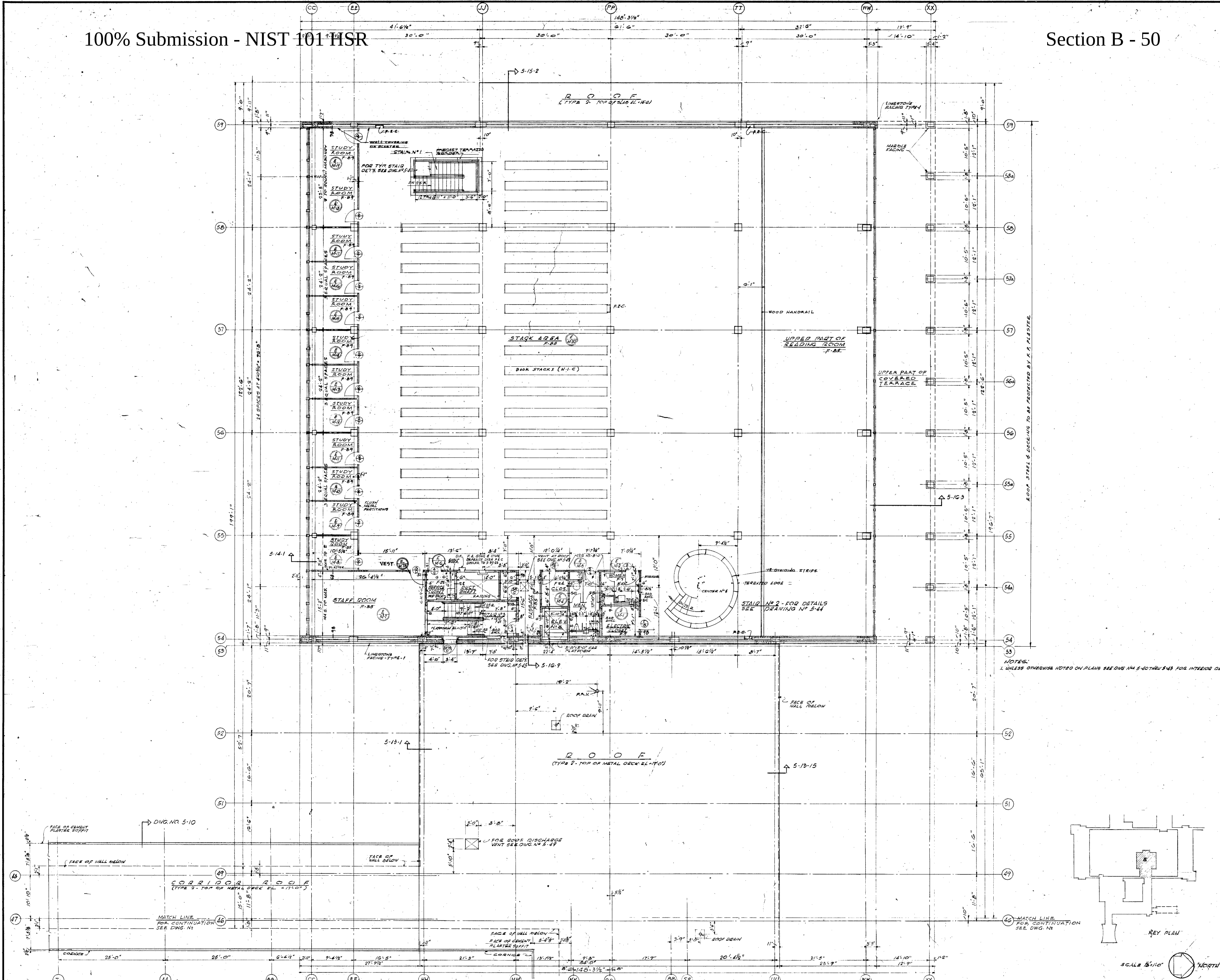
VOORHEES WALKER SMITH SMITH & HAINES
ARCHITECTS - NEW YORK, N. Y. JOB NO. 2225

| | |
|---|---|
| 2-9-62 | 2-9-62 |
| MECHANICAL & ELECTRICAL DIVISION | ARCHITECTURAL & STRUCTURAL DIVISION |

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE WASHINGTON, D. C.

| | | | | | |
|---|---|---|---|---|---|
| PROJECT | NATIONAL BUREAU OF STANDARDS NEW FACILITIES | | | | |
| LOCATION | MONTGOMERY COUNTY, MARYLAND | | | | |
| PROJ. NO. | 18084 | | | FILE NO. | |
| DRAWN BY | JS FMC | DATE | 12-18-61 | CHECKED BY | AB |
| DRAWING TITLE | FIRST FLOOR PLAN WING "E" ADMINISTRATION BUILDING | | | | |
| | ARCHITECTURAL | | | | |
| DRAWING NO. | 3-15 | | | BLDG. NO. | 101 |

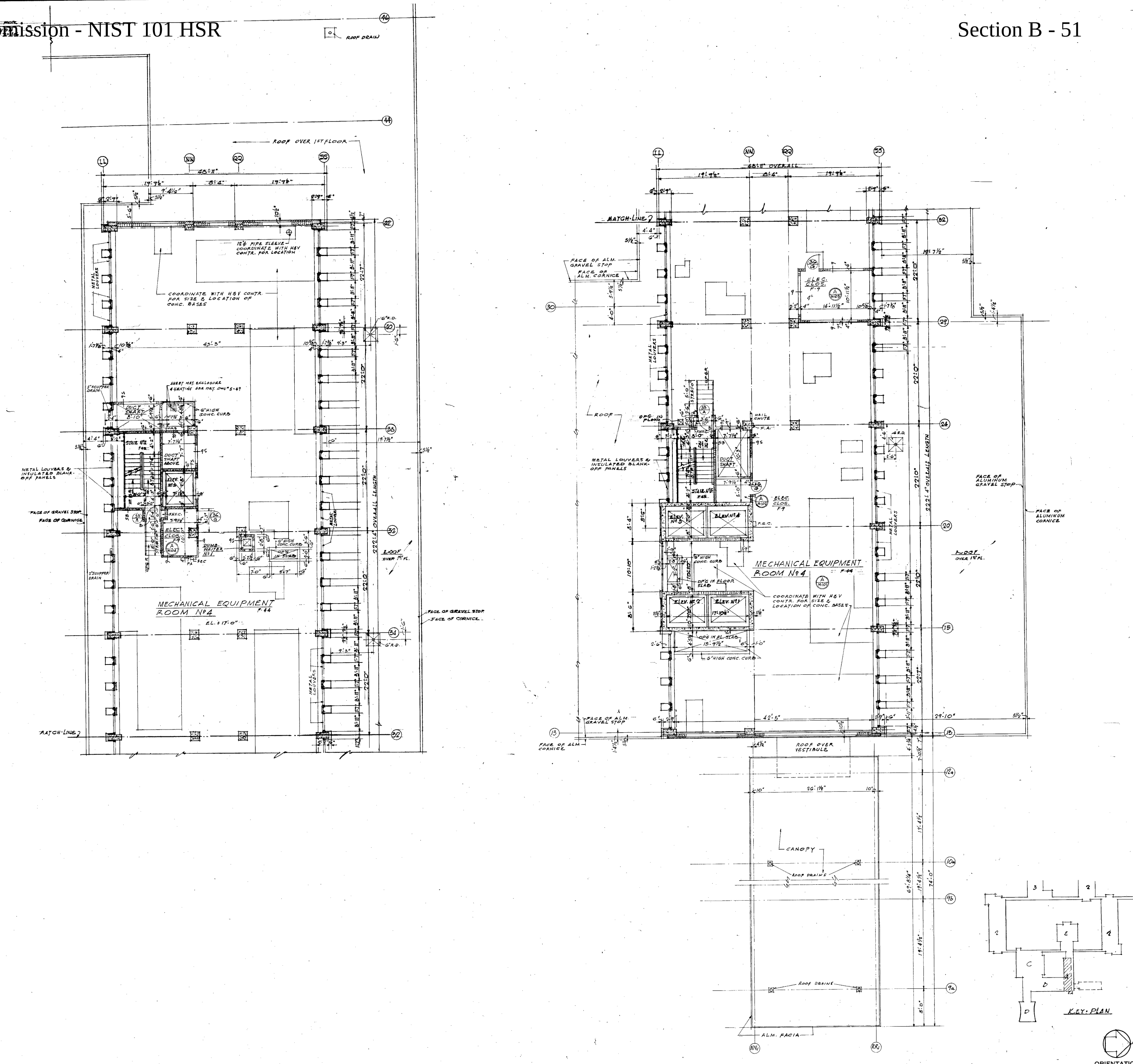
ARCHITECTS FILE NO. 2225-101-168 BINDING ORDER NO.




16

| | |
|---|---|
| VOORHEES WALKER SMITH SMITH & HAINES<br>ARCHITECTS - NEW YORK, N. Y. JOB NO. 2225 | |
| 2-9-62 | J.H.M. 2-9-62 |
| MECHANICAL & ELECTRICAL DIVISION | ARCHITECTURAL & STRUCTURAL DIVISION |
| GENERAL SERVICES ADMINISTRATION<br>PUBLIC BUILDINGS SERVICE WASHINGTON, D. C. | |
| PROJECT | NATIONAL BUREAU OF STANDARDS NEW FACILITIES |
| LOCATION | MONTGOMERY COUNTY, MARYLAND |
| PROJ. NO. | 18084 FILE NO. |
| DRAWN BY | JS FMC DATE 12-18-61 CHECKED BY AB |
| DRAWING TITLE | MEZZANINE FLOOR PLAN WING "E" ADMINISTRATION BUILDING |
| ARCHITECTURAL | |
| DRAWING NO. | 3-16 BLDG. NO. 101 |

ARCHITECTS FILE NO. 2225-101-169 BINDING ORDER NO.




VOORHEES WALKER SMITH SMITH & HAINES
ARCHITECTS - NEW YORK, N. Y. JOB NO. 2225

MECHANICAL & ELECTRICAL DIVISION | ARCHITECTURAL & STRUCTURAL DIVISION

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE WASHINGTON, D. C.

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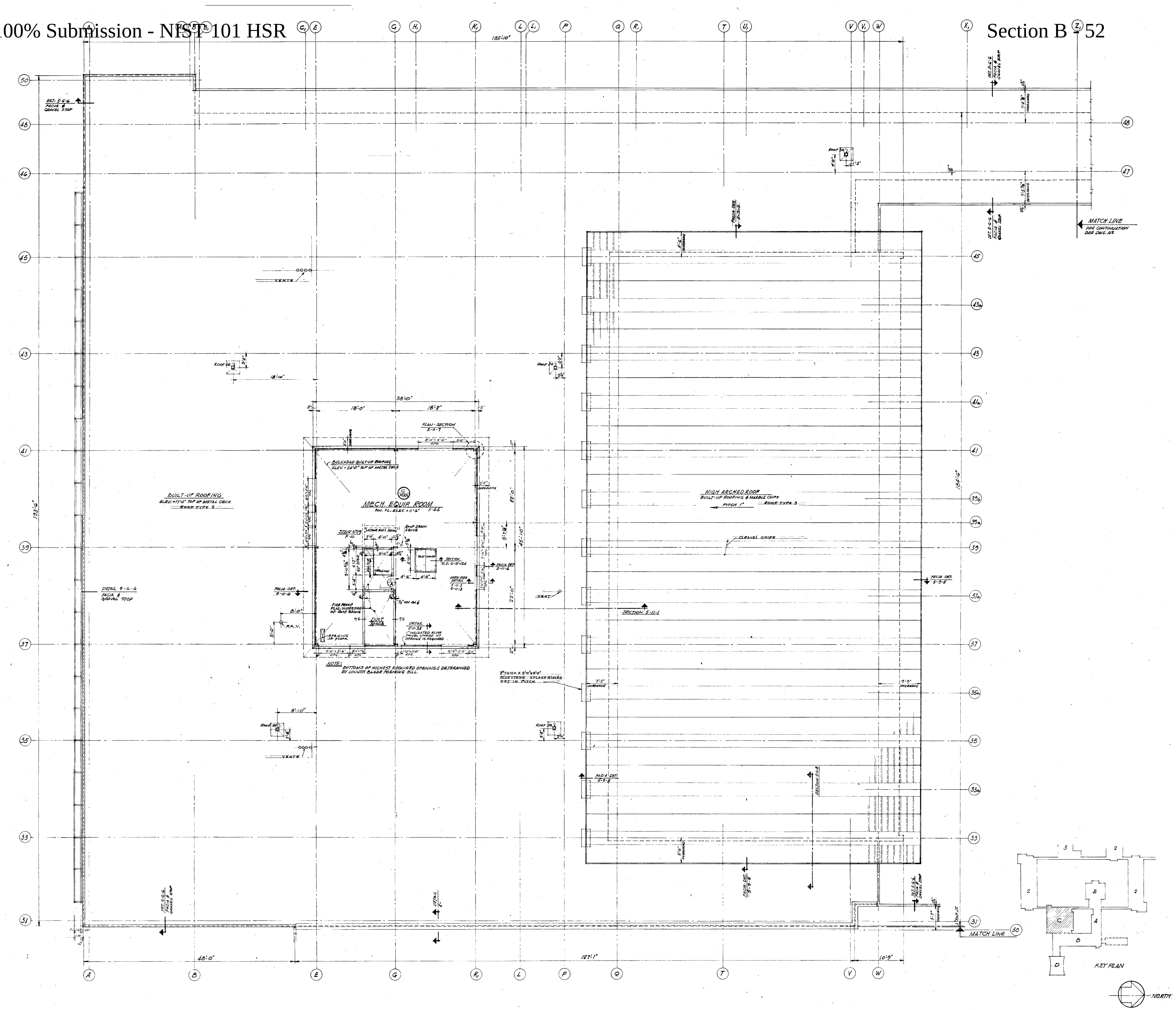
|---|---|
| PROJECT | NATIONAL BUREAU OF STANDARDS NEW FACILITIES |
| LOCATION | MONTGOMERY COUNTY, MARYLAND |
| PROJ. NO. | 18084 |
| DRAWN BY | RBF |
| CHECKED BY | AB |
| DRAWING TITLE | MEZZANINE FLOOR PLAN WING "A" ADMINISTRATION BUILDING |
| | ARCHITECTURAL |
| DRAWING NO. | 3-17 |
| BLDG. NO. | 101 |




18

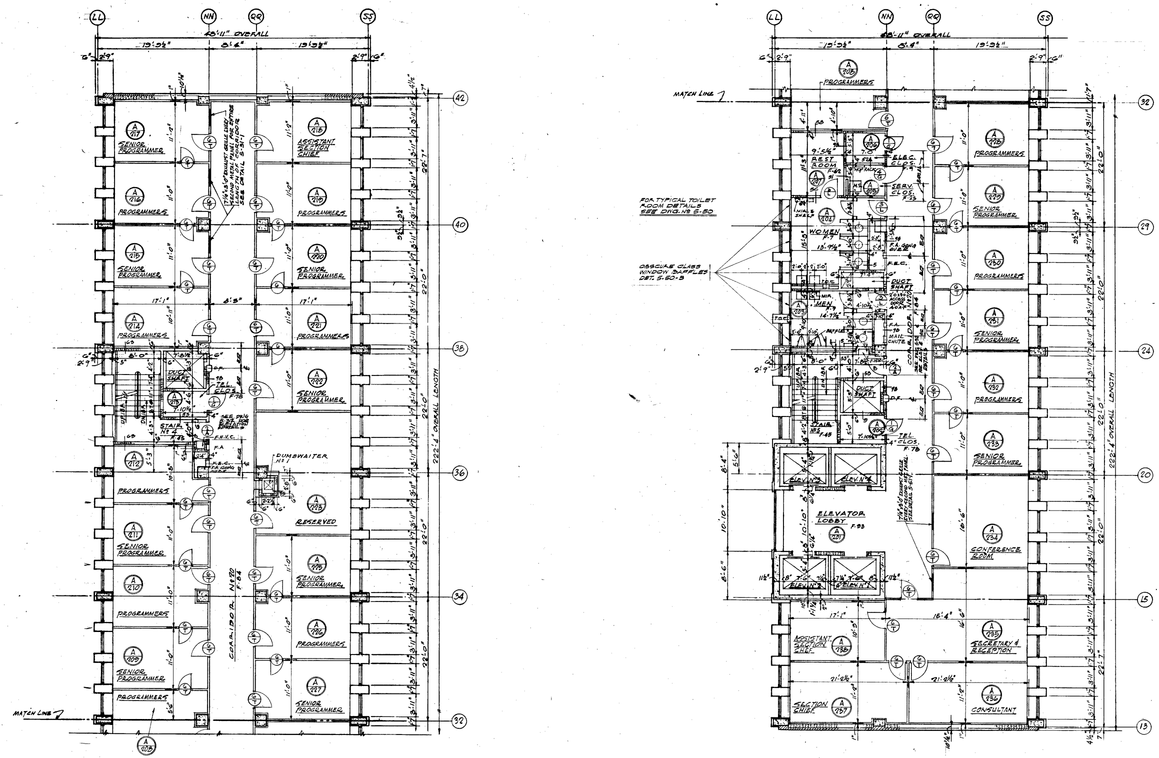
VOORHEES WALKER SMITH SMITH & HAINES
ARCHITECTS - NEW YORK, N. Y. JOB NO. 2225

| 2-9-62 | J.H.M. 2-9-62 |
|---|---|
| MECHANICAL & ELECTRICAL DIVISION | ARCHITECTURAL & STRUCTURAL DIVISION |

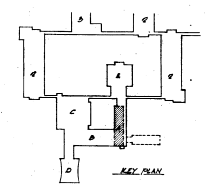
GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE WASHINGTON, D. C.

| | | | |
|---|---|---|---|
| PROJECT | NATIONAL BUREAU OF STANDARDS NEW FACILITIES | | |
| LOCATION | MONTGOMERY COUNTY, MARYLAND | | |
| PROJ. NO. | 18084 | FILE NO. | |
| DRAWN BY J.P.B. | DATE 12-18-6[illegible] | CHECKED BY | H.F. |
| DRAWING TITLE | ROOF PLAN WING "C" ADMINISTRATION BUILDING | | |
| | ARCHITECTURAL | | |
| DRAWING NO. | 3-18 | BLDG. NO. | 101 |

ARCHITECTS FILE NO. BINDING ORDER NO.



NOTE AREAS HAVING SPACE NUMBERS WITH UNDESIGNATED FINISH SHALL HAVE FIN. NO. F-3
SPACE NO A/224 NOT USED



KEY PLAN

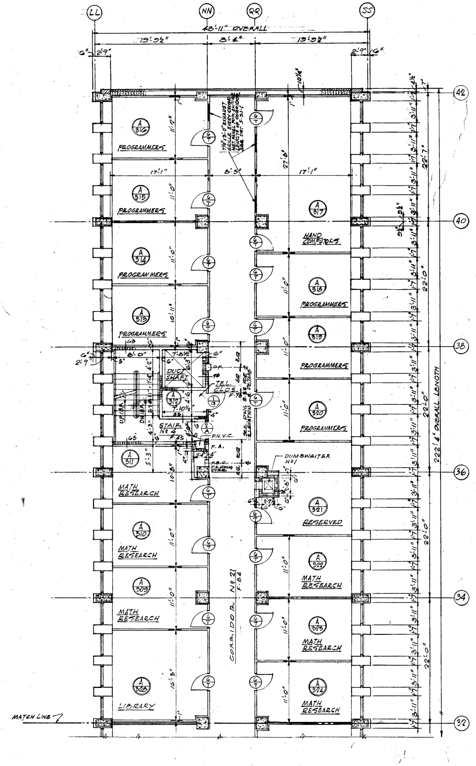
SCALE 1/8" = 1'-0"

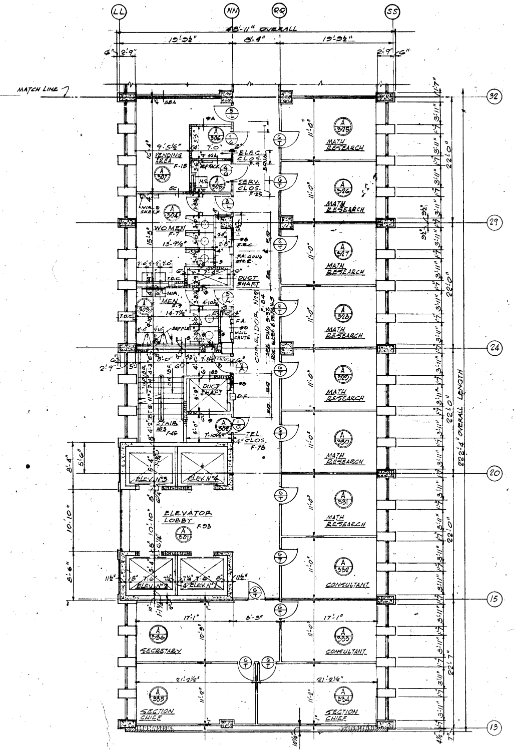
NORTH
ORIENTATION

19

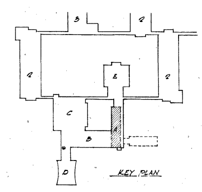
| | | | |
|---|---|---|---|
| VOORHEES WALKER SMITH SMITH & HAINES<br>ARCHITECTS - NEW YORK, N. Y. • JOB NO. 2225 | | | |
| 2-9-62 MECHANICAL & ELECTRICAL DIVISION | | J.H.M. 2-9-62 ARCHITECTURAL & STRUCTURAL DIVISION | |
| GENERAL SERVICES ADMINISTRATION<br>PUBLIC BUILDINGS SERVICE WASHINGTON, D. C. | | | |
| PROJECT | NATIONAL BUREAU OF STANDARDS NEW FACILITIES | | |
| LOCATION | MONTGOMERY COUNTY, MARYLAND | | |
| PROJ. NO. | 18084 | FILE NO. | |
| DRAWN BY | RL DATE 12-18-61 | CHECKED BY | AB |
| DRAWING TITLE | SECOND FLOOR PLAN WING "A" ADMINISTRATION BUILDING | | |
| ARCHITECTURAL | | | |
| DRAWING NO. | 3-19 | BLDG. NO. | 101 |

ARCHITECTS FILE NO. BINDING ORDER NO.





NOTE AREAS HAVING SPACE NUMBERS WITH UNDESIGNATED FINISH SHALL HAVE FIN NO F-3




20

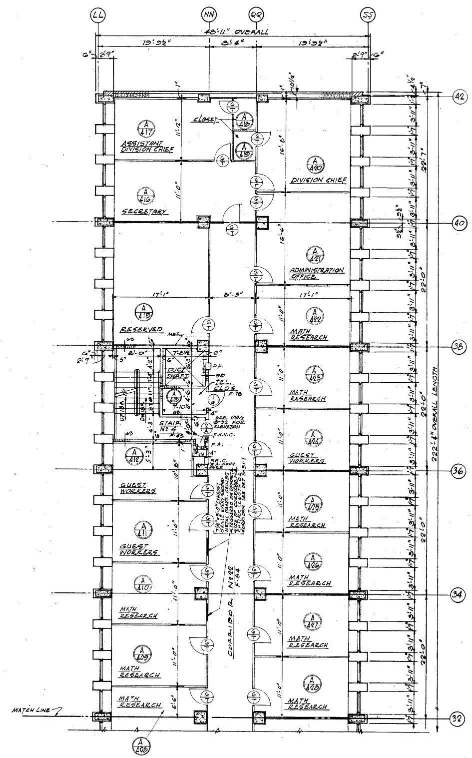
VOORHEES WALKER SMITH SMITH & HAINES
ARCHITECTS - NEW YORK, N. Y. JOB NO. 2225

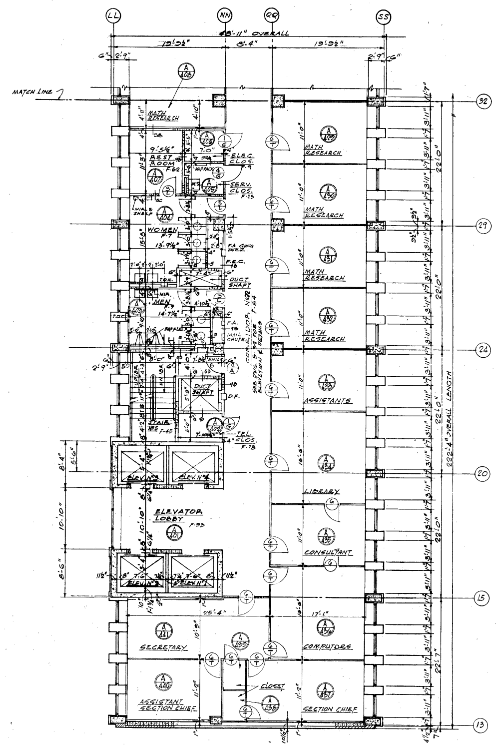
| | |
|---|---|
| 2-9-62 | S.H.M. 2-9-62 |
| MECHANICAL & ELECTRICAL DIVISION | ARCHITECTURAL & STRUCTURAL DIVISION |

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE WASHINGTON, D. C.

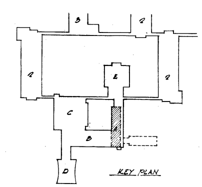
| | | | |
|---|---|---|---|
| PROJECT | NATIONAL BUREAU OF STANDARDS NEW FACILITIES | | |
| LOCATION | MONTGOMERY COUNTY, MARYLAND | | |
| PROJ. NO. | 18084 | FILE NO. | |
| DRAWN BY RBF | DATE 12-18-61 | CHECKED BY | AB |
| DRAWING TITLE | THIRD FLOOR PLAN WING "A" ADMINISTRATION BUILDING | | |
| | ARCHITECTURAL | | |
| DRAWING NO. | 3-20 | BLDG. NO. | 101 |

ARCHITECTS FILE NO. BINDING ORDER NO.

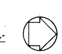




NOTE AREAS HAVING SPACE NUMBERS WITH
UNDESIGNATED FINISH SHALL HAVE FIN NO F-3
SPACE NUMBER NOT USED A/414




SCALE 1/8"=1'-0"




21

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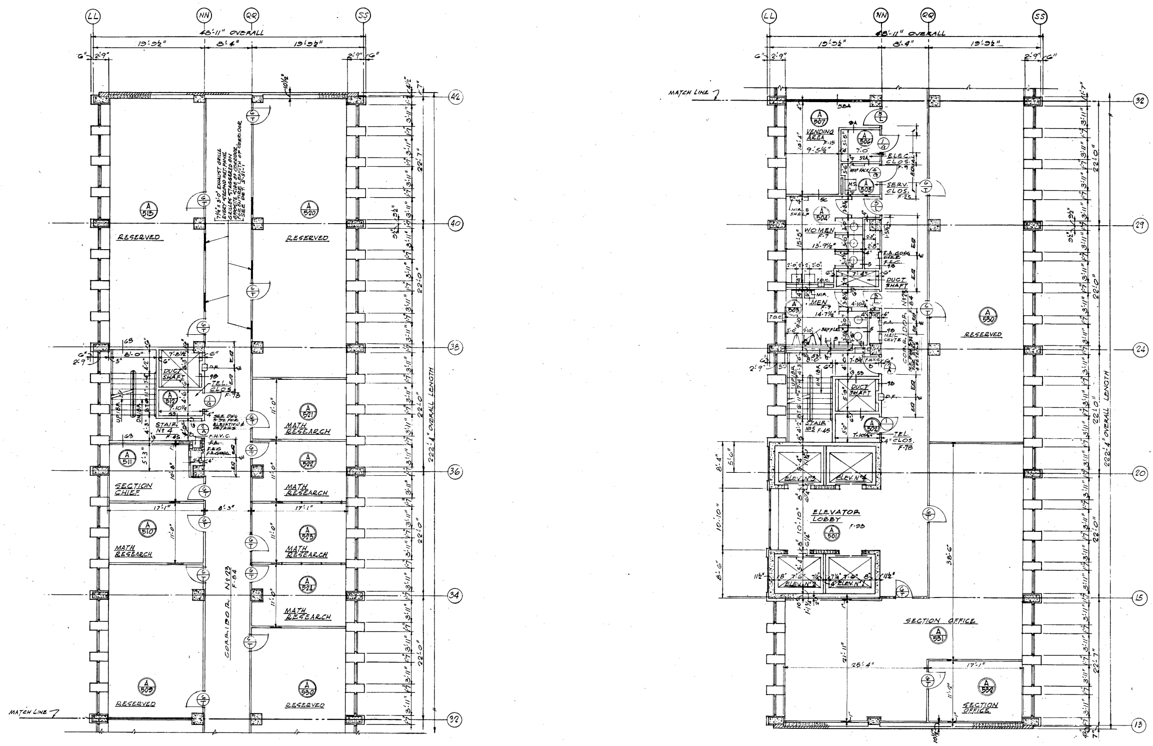
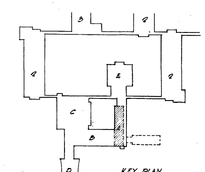
|---|---|---|---|
| VOORHEES WALKER SMITH SMITH & HAINES<br>ARCHITECTS - NEW YORK, N. Y. JOB NO. 2225 | | | |
| MECHANICAL & ELECTRICAL DIVISION 2-9-62 | | ARCHITECTURAL & STRUCTURAL DIVISION J.H.M. 2-9-62 | |
| GENERAL SERVICES ADMINISTRATION<br>PUBLIC BUILDINGS SERVICE WASHINGTON, D. C. | | | |
| PROJECT | NATIONAL BUREAU OF STANDARDS NEW FACILITIES | | |
| LOCATION | MONTGOMERY COUNTY, MARYLAND | | |
| PROJ. NO. | 18084 | FILE NO. | |
| DRAWN BY | A.R.D. DATE 12-18-61 | CHECKED BY | A.B. |
| DRAWING TITLE | FOURTH FLOOR PLAN WING "A" ADMINISTRATION BUILDING | | |
| | ARCHITECTURAL | | |
| DRAWING NO. | 3-21 | BLDG. NO. | 101 |

ARCHITECTS FILE NO. 2225-101-212 BINDING ORDER NO.




NOTE AREAS HAVING SPACE NUMBERS WITH UNDESIGNATED FINISH SHALL HAVE FIN NO F-3
SPACE NUMBERS NOT USED A/508, 514 THRU 519, 525 THRU 529




SCALE 1/8" = 1'-0"

NORTH
ORIENTATION

22

VOORHEES WALKER SMITH SMITH & HAINES
ARCHITECTS - NEW YORK, N. Y. JOB NO. 2225

| | |
|---|---|
| 2-9-62 | J.A.M. 2-9-62 |
| MECHANICAL & ELECTRICAL DIVISION | ARCHITECTURAL & STRUCTURAL DIVISION |

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE WASHINGTON, D. C.

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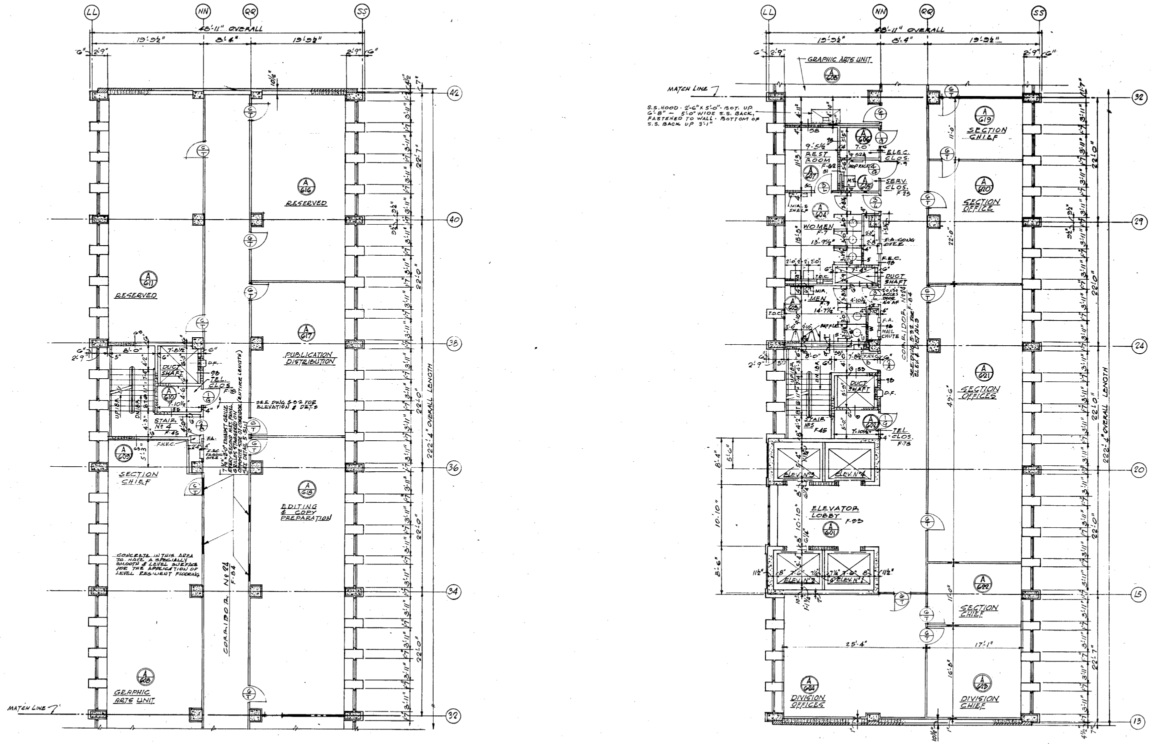
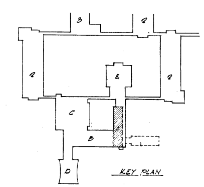
|---|---|---|---|
| PROJECT | NATIONAL BUREAU OF STANDARDS NEW FACILITIES | | |
| LOCATION | MONTGOMERY COUNTY, MARYLAND | | |
| PROJ. NO. | 18084 | FILE NO. | |
| DRAWN BY AB | DATE 12/18/61 | CHECKED BY | AB |
| DRAWING TITLE | FIFTH FLOOR PLAN WING "A" ADMINISTRATION BUILDING | | |
| | ARCHITECTURAL | | |
| DRAWING NO. | 3-22 | BLDG. NO. | 101 |

ARCHITECTS FILE NO. 2225-101-213
BINDING ORDER NO.




NOTE AREAS HAVING SPACE NUMBERS WITH UNDESIGNATED FINISH SHALL HAVE FIN NO F-3
SPACE NUMBERS NOT USED A/612 THRU A/615




SCALE 1/8" = 1'-0"

NORTH
ORIENTATION

23

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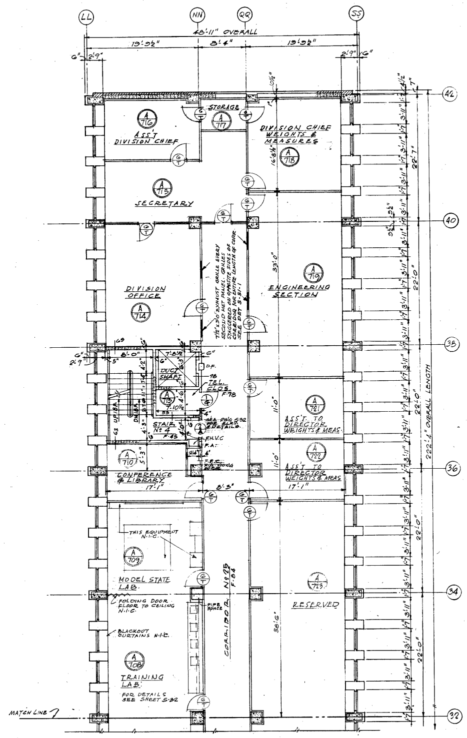
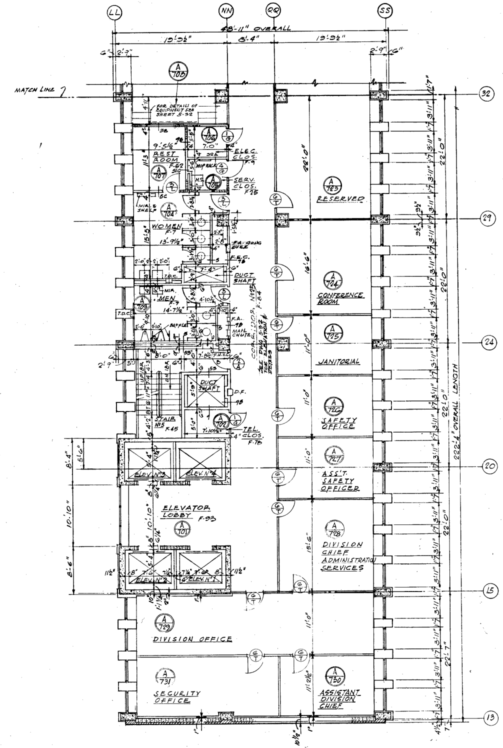
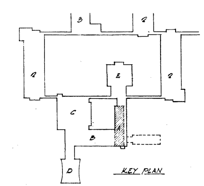
|---|---|
| VOORHEES WALKER SMITH SMITH & HAINES<br>ARCHITECTS - NEW YORK, N. Y. JOB NO. 2225 | |
| SMJL 2-9-62<br>MECHANICAL & ELECTRICAL DIVISION | J.H.M 2-9-62<br>ARCHITECTURAL & STRUCTURAL DIVISION |
| GENERAL SERVICES ADMINISTRATION<br>PUBLIC BUILDINGS SERVICE WASHINGTON, D. C. | |
| PROJECT | NATIONAL BUREAU OF STANDARDS NEW FACILITIES |
| LOCATION | MONTGOMERY COUNTY, MARYLAND |
| PROJ. NO. | 18084 FILE NO. |
| DRAWN BY | AB DATE 12/18/61 CHECKED BY AB |
| DRAWING TITLE | SIXTH FLOOR PLAN WING "A" ADMINISTRATION BUILDING |
| | ARCHITECTURAL |
| DRAWING NO. | 3-23 BLDG. NO. 101 |

ARCHITECTS FILE NO. 2225-101-214 BINDING ORDER NO.

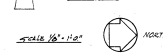



NOTE- AREAS HAVING SPACE NUMBERS WITH UNDESIGNATED FINISH SHALL HAVE FIN NO F-3
SPACE NUMBERS NOT USED- A/711, 712, 720




SCALE 1/8" = 1'-0"




24

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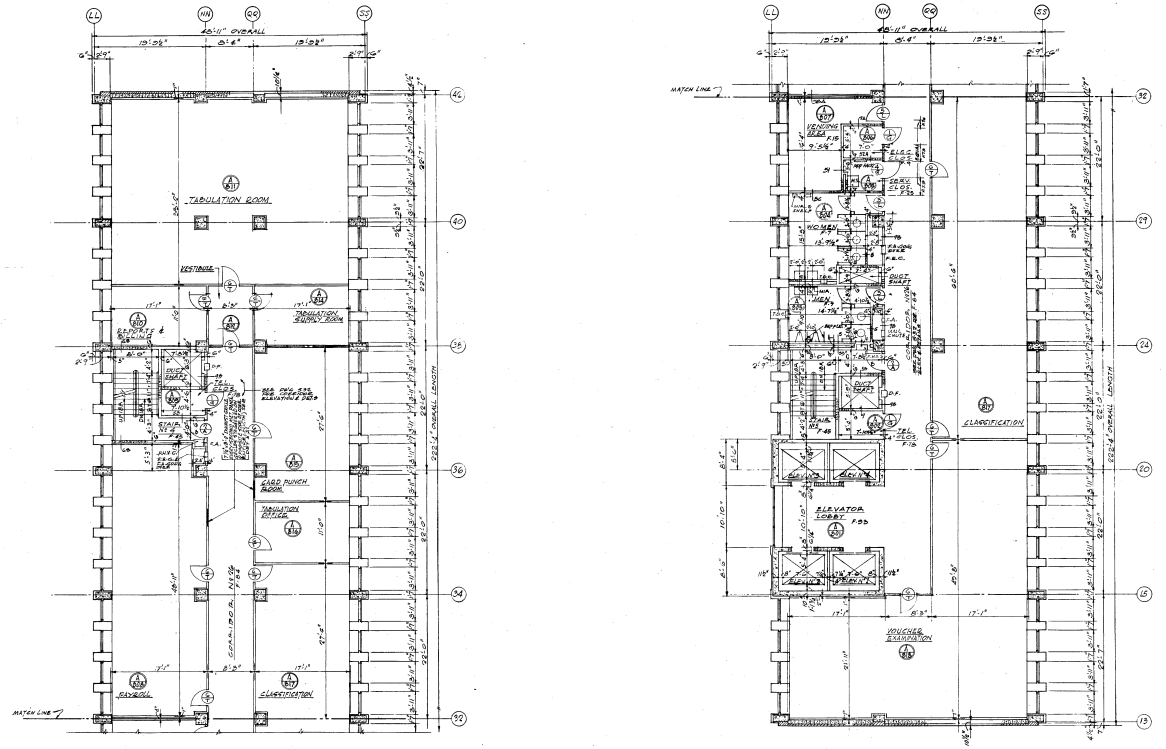
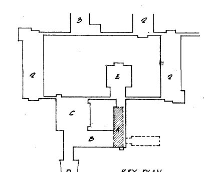
|---|---|
| VOORHEES WALKER SMITH SMITH & HAINES<br>ARCHITECTS - NEW YORK, N. Y. JOB NO. 2225 | |
| [signature] 2-9-62<br>MECHANICAL & ELECTRICAL DIVISION | J.H.M 2-9-62<br>ARCHITECTURAL & STRUCTURAL DIVISION |
| GENERAL SERVICES ADMINISTRATION<br>PUBLIC BUILDINGS SERVICE WASHINGTON, D. C. | |
| PROJECT | NATIONAL BUREAU OF STANDARDS NEW FACILITIES |
| LOCATION | MONTGOMERY COUNTY, MARYLAND |
| PROJ. NO. | 18084 FILE NO. |
| DRAWN BY | AS DATE 12/18/61 CHECKED BY HF |
| DRAWING TITLE | SEVENTH FLOOR PLAN WING "A" ADMINISTRATION BUILDING |
| | ARCHITECTURAL |
| DRAWING NO. | 3-24 BLDG. NO. 101 |

ARCHITECTS FILE NO. 2225-101-215 BINDING ORDER NO.




NOTE AREAS HAVING SPACE NUMBERS WITH UNDESIGNATED FINISH SHALL HAVE FIN. NO. F-3
SPACE NUMBERS NOT USED A/813




SCALE 1/8" = 1'-0"

NORTH
ORIENTATION

25

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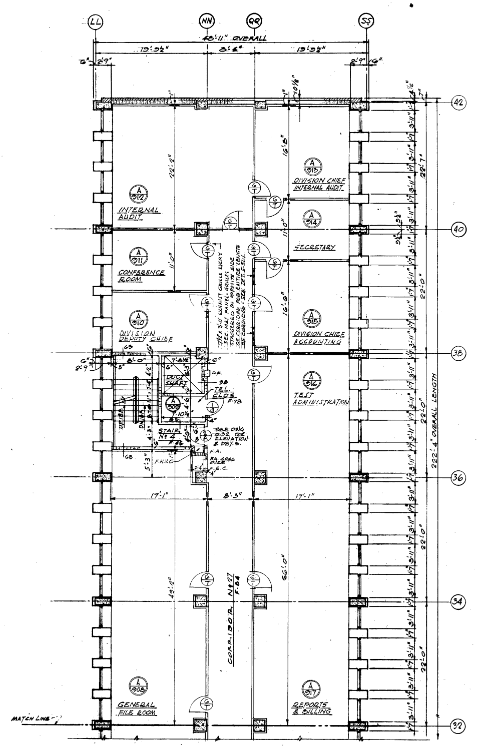
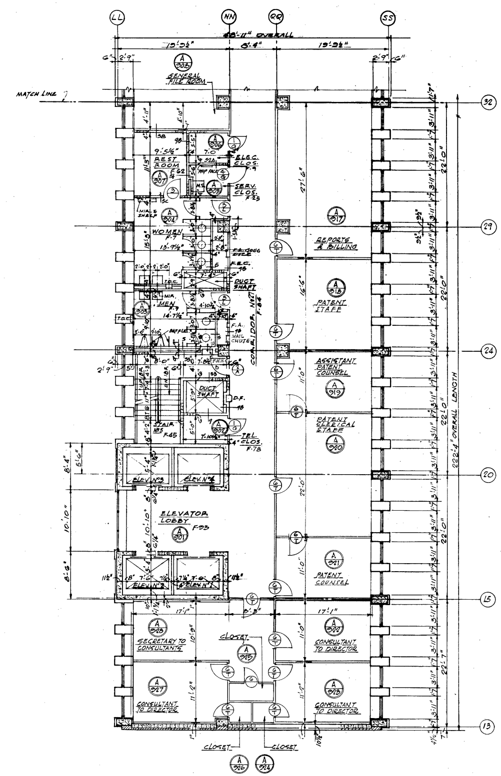
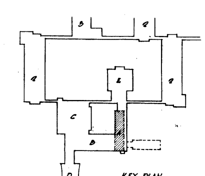
|---|---|---|---|
| VOORHEES WALKER SMITH SMITH & HAINES<br>ARCHITECTS - NEW YORK, N. Y. JOB NO. 2225 | | | |
| 2-9-62 MECHANICAL & ELECTRICAL DIVISION | | J.H.M. 2-9-62 ARCHITECTURAL & STRUCTURAL DIVISION | |
| GENERAL SERVICES ADMINISTRATION<br>PUBLIC BUILDINGS SERVICE WASHINGTON, D. C. | | | |
| PROJECT | NATIONAL BUREAU OF STANDARDS NEW FACILITIES | | |
| LOCATION | MONTGOMERY COUNTY, MARYLAND | | |
| PROJ. NO. | 18084 | FILE NO. | |
| DRAWN BY | AS DATE 12/18/61 | CHECKED BY | HF |
| DRAWING TITLE | EIGHTH FLOOR PLAN WING "A" ADMINISTRATION BUILDING | | |
| ARCHITECTURAL | | | |
| DRAWING NO. | 3-25 | BLDG. NO. | 101 |

ARCHITECTS FILE NO 2225-101-216 BINDING ORDER NO.




NOTE AREAS HAVING SPACE NUMBERS WITH UNDESIGNATED FINISH SHALL HAVE FIN NO F-3




SCALE 1/8"=1'-0"

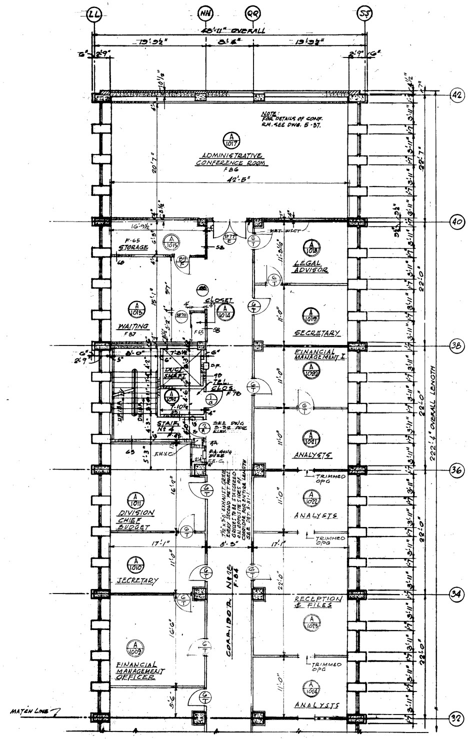
NORTH ORIENTATION

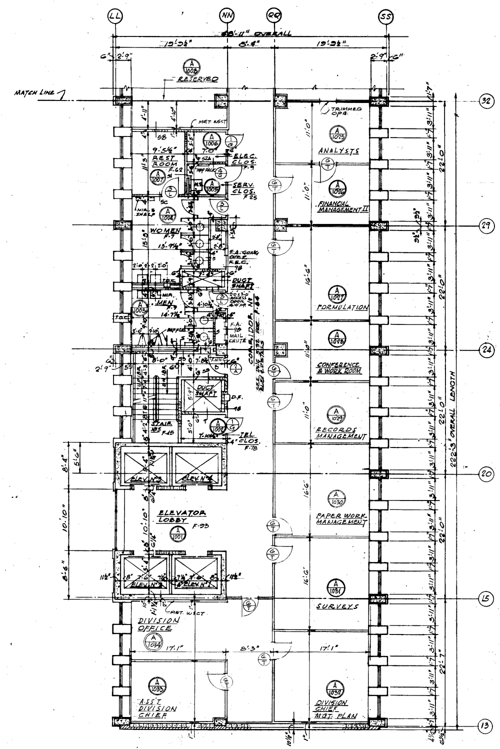
26

| | |
|---|---|
| VOORHEES WALKER SMITH SMITH & HAINES<br>ARCHITECTS - NEW YORK, N. Y. JOB NO. 2225 | |
| 2-9-62 | J.H.M. 2-9-62 |
| MECHANICAL & ELECTRICAL DIVISION | ARCHITECTURAL & STRUCTURAL DIVISION |
| GENERAL SERVICES ADMINISTRATION<br>PUBLIC BUILDINGS SERVICE WASHINGTON, D. C. | |
| PROJECT | NATIONAL BUREAU OF STANDARDS NEW FACILITIES |
| LOCATION | MONTGOMERY COUNTY, MARYLAND |
| PROJ. NO. | 18084 — FILE NO. |
| DRAWN BY | AB — DATE 12/18/61 — CHECKED BY HF |
| DRAWING TITLE | NINTH FLOOR PLAN WING "A" ADMINISTRATION BUILDING |
| | ARCHITECTURAL |
| DRAWING NO. | 3-26 — BLDG. NO. 101 |

ARCHITECTS FILE NO. 2225-101-217

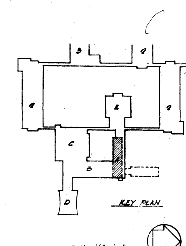
BINDING ORDER NO.




NOTE AREAS HAVING SPACE NUMBERS WITH UNDESIGNATED FINISH SHALL HAVE FIN NO F-3

SPACE NUMBERS NOT USED - A/1016




SCALE 1/8" = 1'-0"

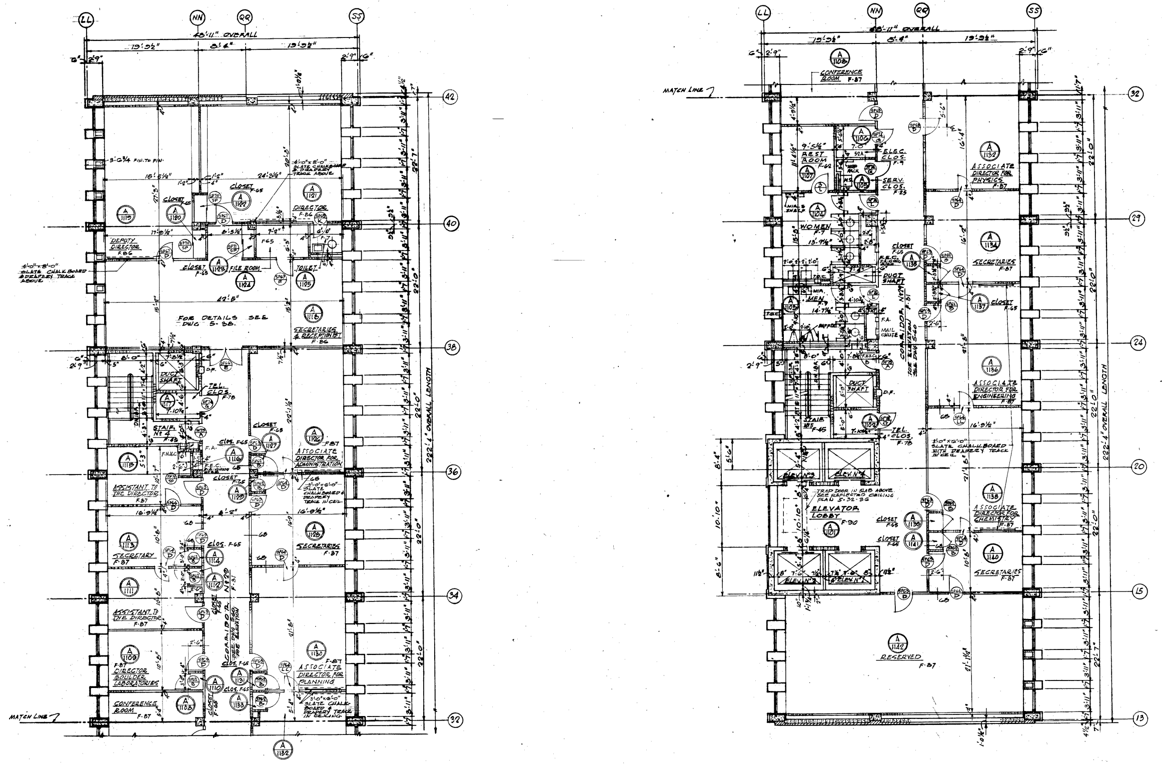
NORTH

ORIENTATION

27

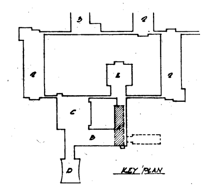
| | |
|---|---|
| VOORHEES WALKER SMITH SMITH & HAINES<br>ARCHITECTS - NEW YORK, N. Y. JOB NO. 2225 | |
| 2-9-62<br>MECHANICAL & ELECTRICAL DIVISION | J.H.M 2-9-62<br>ARCHITECTURAL & STRUCTURAL DIVISION |
| GENERAL SERVICES ADMINISTRATION<br>PUBLIC BUILDINGS SERVICE WASHINGTON, D. C. | |
| PROJECT | NATIONAL BUREAU OF STANDARDS NEW FACILITIES |
| LOCATION | MONTGOMERY COUNTY, MARYLAND |
| PROJ. NO. | 18084 FILE NO. |
| DRAWN BY | FC DATE 12/18/61 CHECKED BY AB |
| DRAWING TITLE | TENTH FLOOR PLAN WING "A" ADMINISTRATION BUILDING |
| | ARCHITECTURAL |
| DRAWING NO. | 3-27 BLDG. NO. 101 |

ARCHITECTS FILE NO. 2225-101-218 BINDING ORDER NO.



NOTE:

ALL WOOD PANELING, WOOD TRIM, WOOD DOORS ON THIS FLOOR SHALL BE WALNUT - WOOD TYPE 3




SCALE 1/8" = 1'-0"

NORTH

ORIENTATION

28

VOORHEES WALKER SMITH SMITH & HAINES
ARCHITECTS - NEW YORK, N. Y. JOB NO. 2225

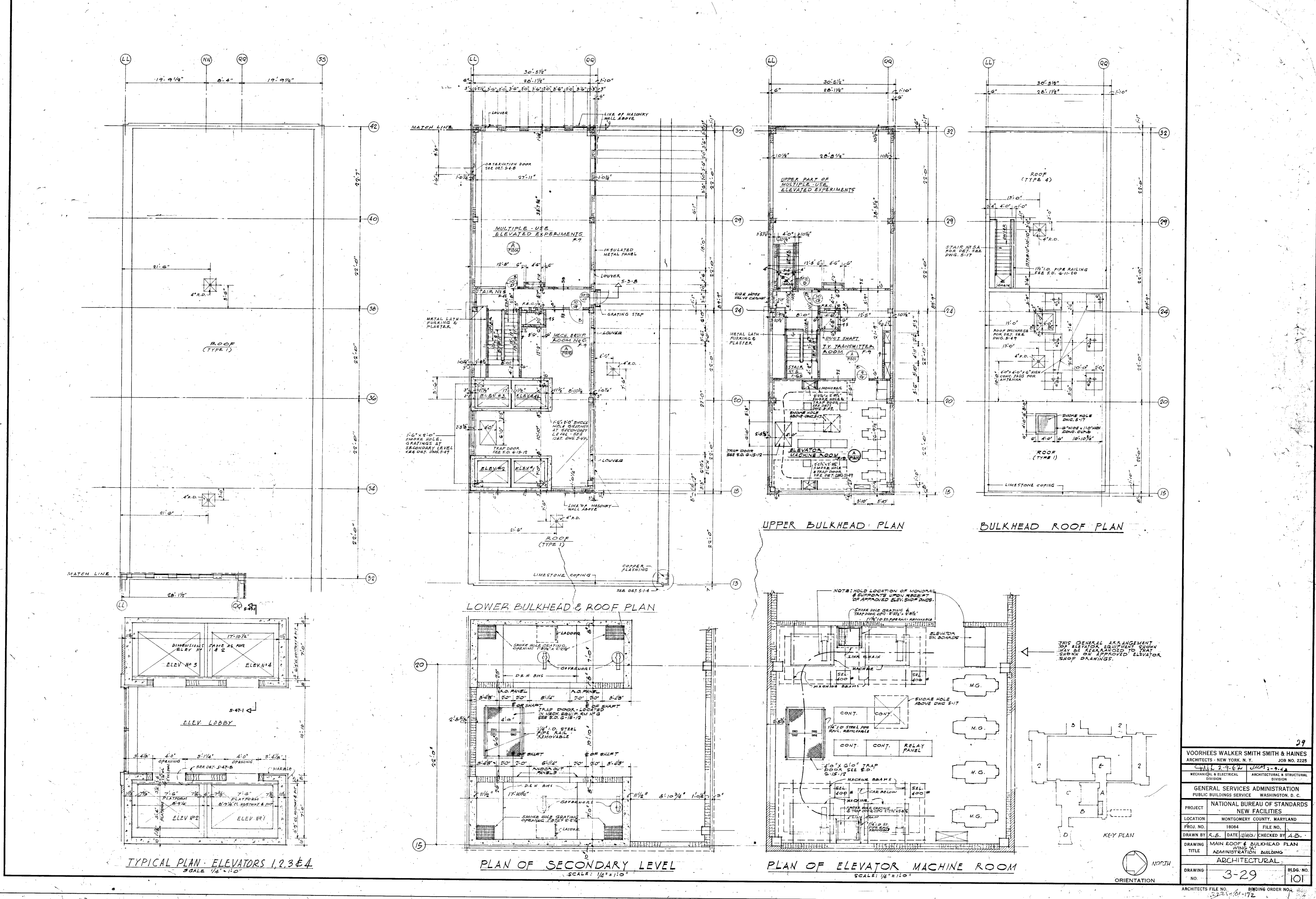
| | |
|---|---|
| 2-9-62 | J.H.M. 2-9-62 |
| MECHANICAL & ELECTRICAL DIVISION | ARCHITECTURAL & STRUCTURAL DIVISION |

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE WASHINGTON, D. C.

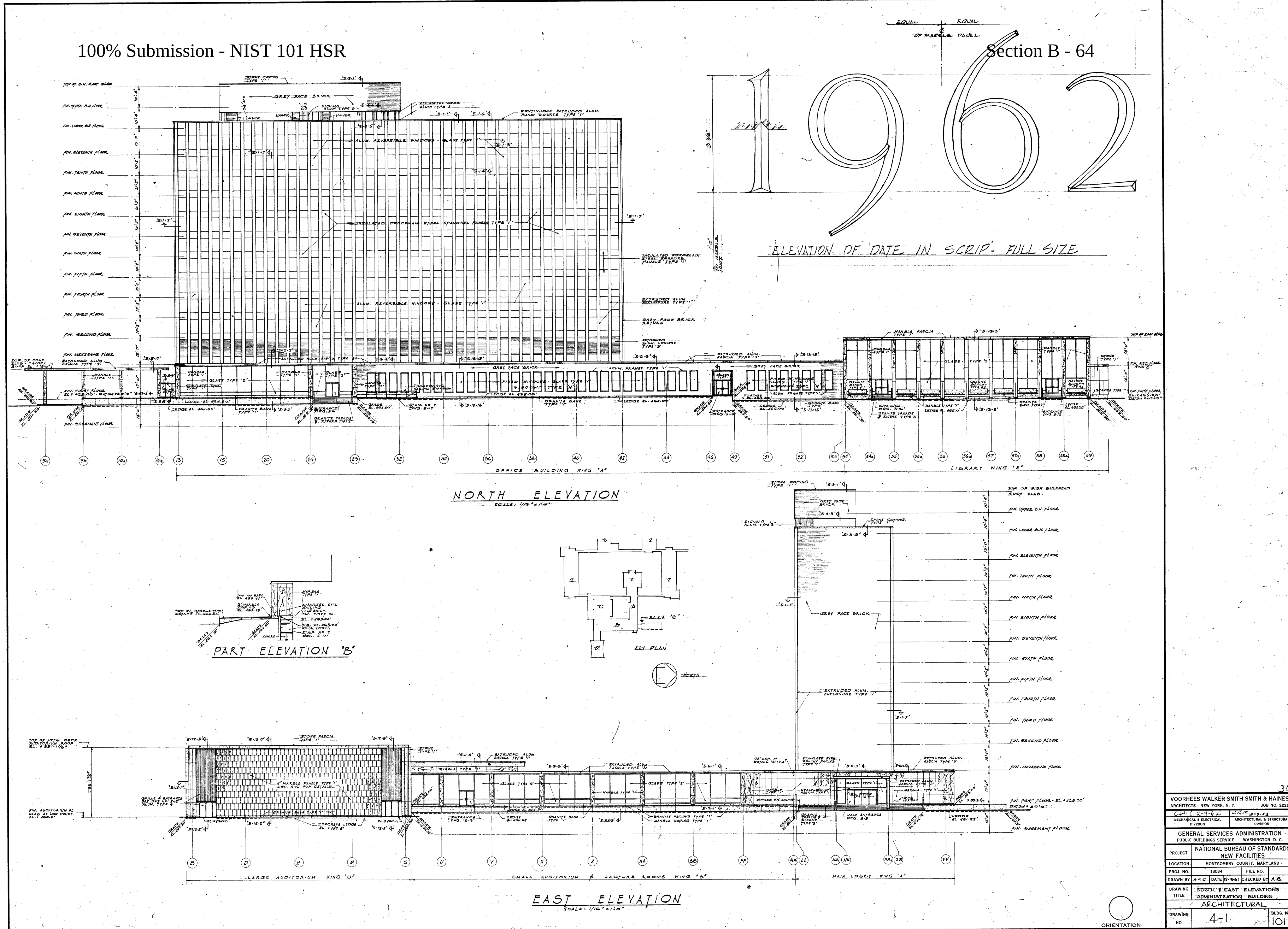
| | | | | | |
|---|---|---|---|---|---|
| PROJECT | NATIONAL BUREAU OF STANDARDS NEW FACILITIES | | | | |
| LOCATION | MONTGOMERY COUNTY, MARYLAND | | | | |
| PROJ. NO. | 18084 | | FILE NO. | | |
| DRAWN BY | AB | DATE | 12/18/61 | CHECKED BY | HF |
| DRAWING TITLE | ELEVENTH FLOOR PLAN WING "A" ADMINISTRATION BUILDING | | | | |
| | ARCHITECTURAL | | | | |
| DRAWING NO. | 3-28 | | | BLDG. NO. | 101 |

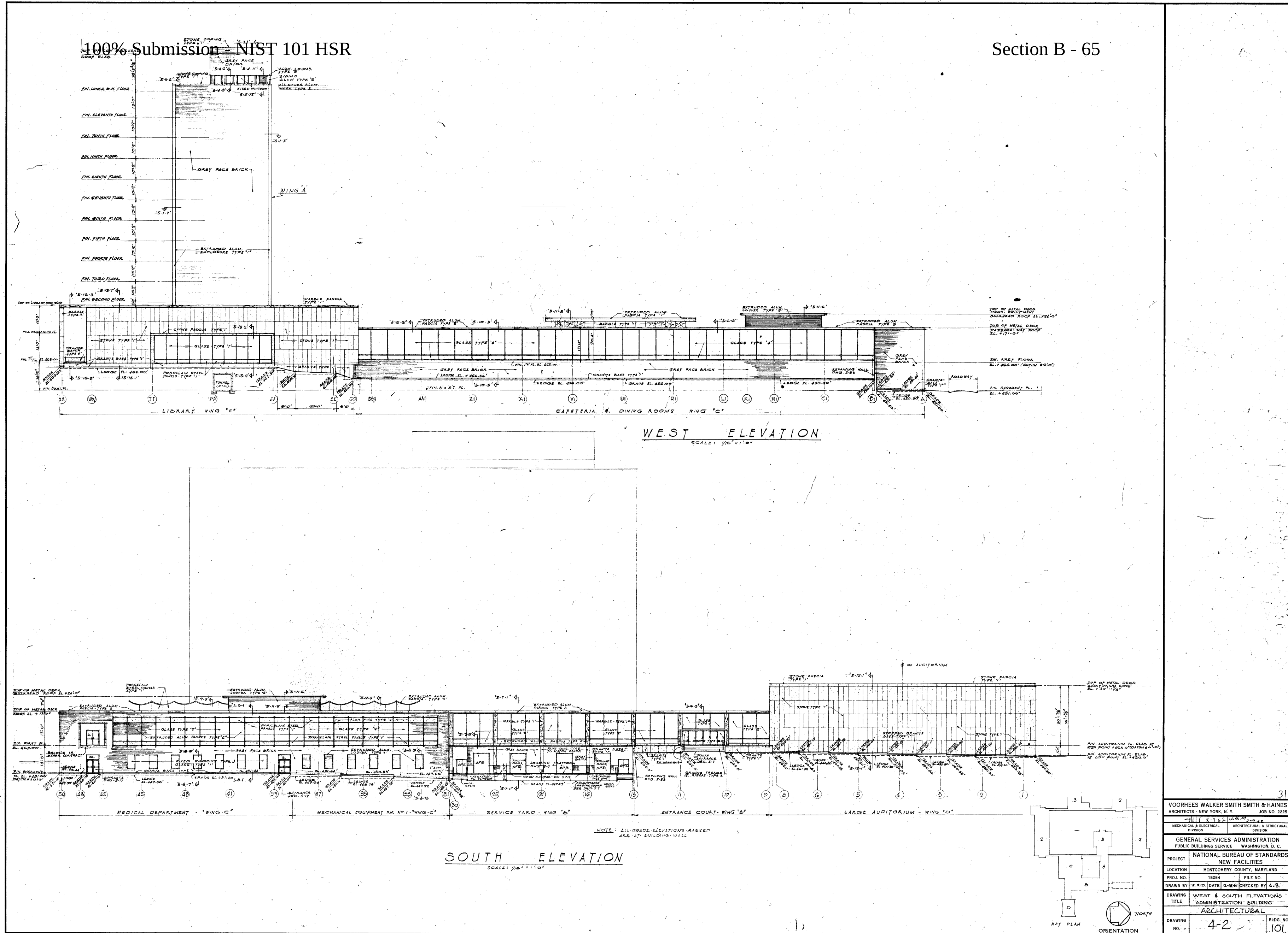
ARCHITECTS FILE NO. 2225-101-219

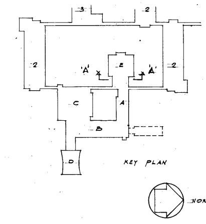
BINDING ORDER NO.

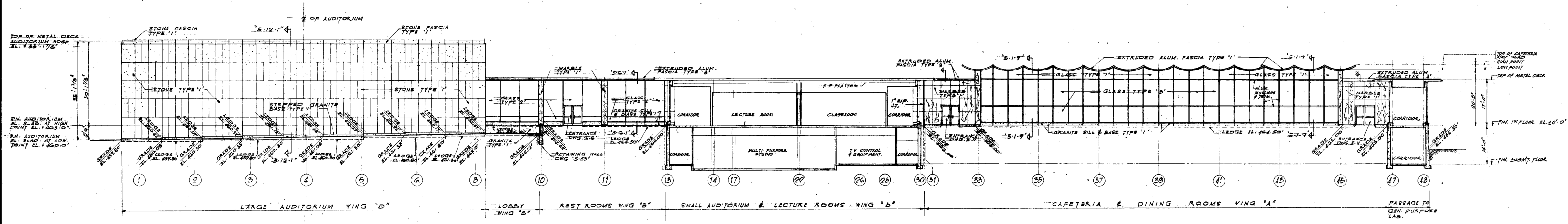


LOWER BULKHEAD & ROOF PLAN
UPPER BULKHEAD PLAN
BULKHEAD ROOF PLAN
TYPICAL PLAN · ELEVATORS 1,2,3 & 4
SCALE 1/4" = 1'-0"
PLAN OF SECONDARY LEVEL
SCALE: 1/4" = 1'-0"
PLAN OF ELEVATOR MACHINE ROOM
SCALE: 1/4" = 1'-0"
KEY PLAN
ORIENTATION
NORTH
VOORHEES WALKER SMITH SMITH & HAINES
ARCHITECTS · NEW YORK, N. Y.
JOB NO. 2225
GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE WASHINGTON, D. C.
NATIONAL BUREAU OF STANDARDS NEW FACILITIES
MONTGOMERY COUNTY, MARYLAND
MAIN ROOF & BULKHEAD PLAN WING "A" ADMINISTRATION BUILDING
ARCHITECTURAL
3-29
101


1962
ELEVATION OF 'DATE IN SCRIP' - FULL SIZE
OFFICE BUILDING WING "A"
LIBRARY WING "E"
NORTH ELEVATION
SCALE: 1/16" = 1'-0"
PART ELEVATION 'B'
KEY PLAN
NORTH
LARGE AUDITORIUM WING "D"
SMALL AUDITORIUM & LECTURE ROOMS WING "B"
MAIN LOBBY WING "A"
EAST ELEVATION
SCALE: 1/16" = 1'-0"
ORIENTATION
VOORHEES WALKER SMITH SMITH & HAINES
ARCHITECTS - NEW YORK, N. Y.
JOB NO. 2225
MECHANICAL & ELECTRICAL DIVISION
ARCHITECTURAL & STRUCTURAL DIVISION
GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE WASHINGTON, D. C.
PROJECT
NATIONAL BUREAU OF STANDARDS
NEW FACILITIES
LOCATION
MONTGOMERY COUNTY, MARYLAND
PROJ. NO.
18084
FILE NO.
DRAWN BY
DATE
CHECKED BY
DRAWING TITLE
NORTH & EAST ELEVATIONS
ADMINISTRATION BUILDING
ARCHITECTURAL
DRAWING NO.
4-1
BLDG. NO.
101
ARCHITECTS FILE NO.
2225-101-173
BINDING ORDER NO.

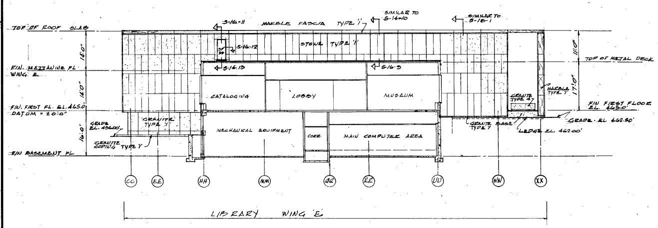

WEST ELEVATION
SCALE: 1/16" = 1'-0"
LIBRARY WING "E"
CAFETERIA & DINING ROOMS WING "C"
SOUTH ELEVATION
SCALE: 1/16" = 1'-0"
MEDICAL DEPARTMENT - "WING C"
MECHANICAL EQUIPMENT RM. No. 1 - "WING C"
SERVICE YARD - WING "B"
ENTRANCE COURT - WING "B"
LARGE AUDITORIUM - WING "D"
NOTE: ALL GRADE ELEVATIONS MARKED ARE AT BUILDING WALL
KEY PLAN
ORIENTATION
NORTH
VOORHEES WALKER SMITH SMITH & HAINES
ARCHITECTS - NEW YORK, N. Y.
JOB NO. 2225
MECHANICAL & ELECTRICAL DIVISION
ARCHITECTURAL & STRUCTURAL DIVISION
GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE WASHINGTON, D. C.
PROJECT
NATIONAL BUREAU OF STANDARDS NEW FACILITIES
LOCATION
MONTGOMERY COUNTY, MARYLAND
PROJ. NO. 18084
FILE NO.
DRAWN BY
DATE
CHECKED BY
DRAWING TITLE
WEST & SOUTH ELEVATIONS ADMINISTRATION BUILDING
ARCHITECTURAL
DRAWING NO. 4-2
BLDG. NO. 101
ARCHITECTS FILE NO.
BINDING ORDER NO.



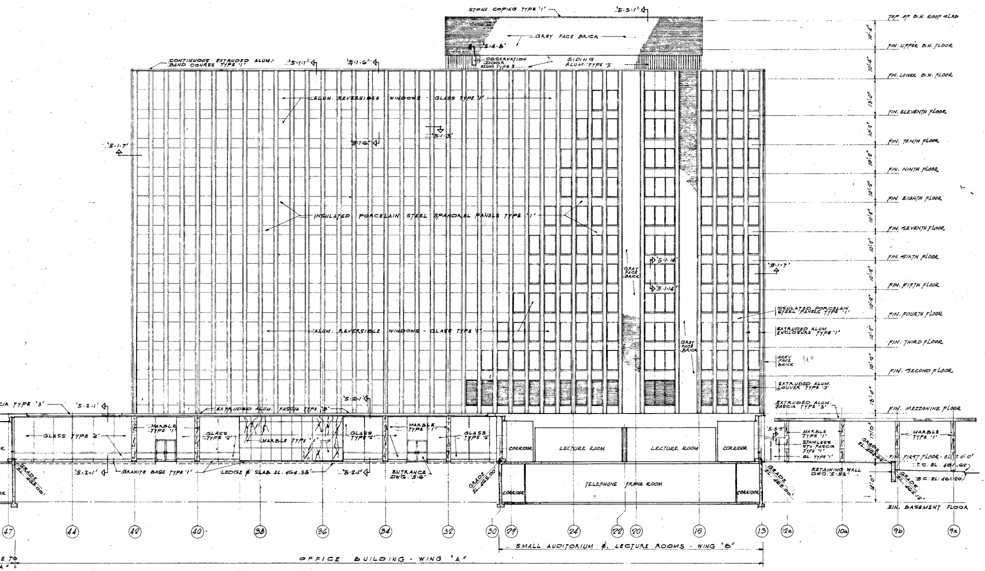
COURT ELEVATION - LOOKING SOUTH

SCALE: 1/16" = 1'-0"



SECTION 'A-A'

SCALE 1/16" = 1'-0"



COURT ELEVATION - LOOKING NORTH

SCALE: 1/16" = 1'-0"

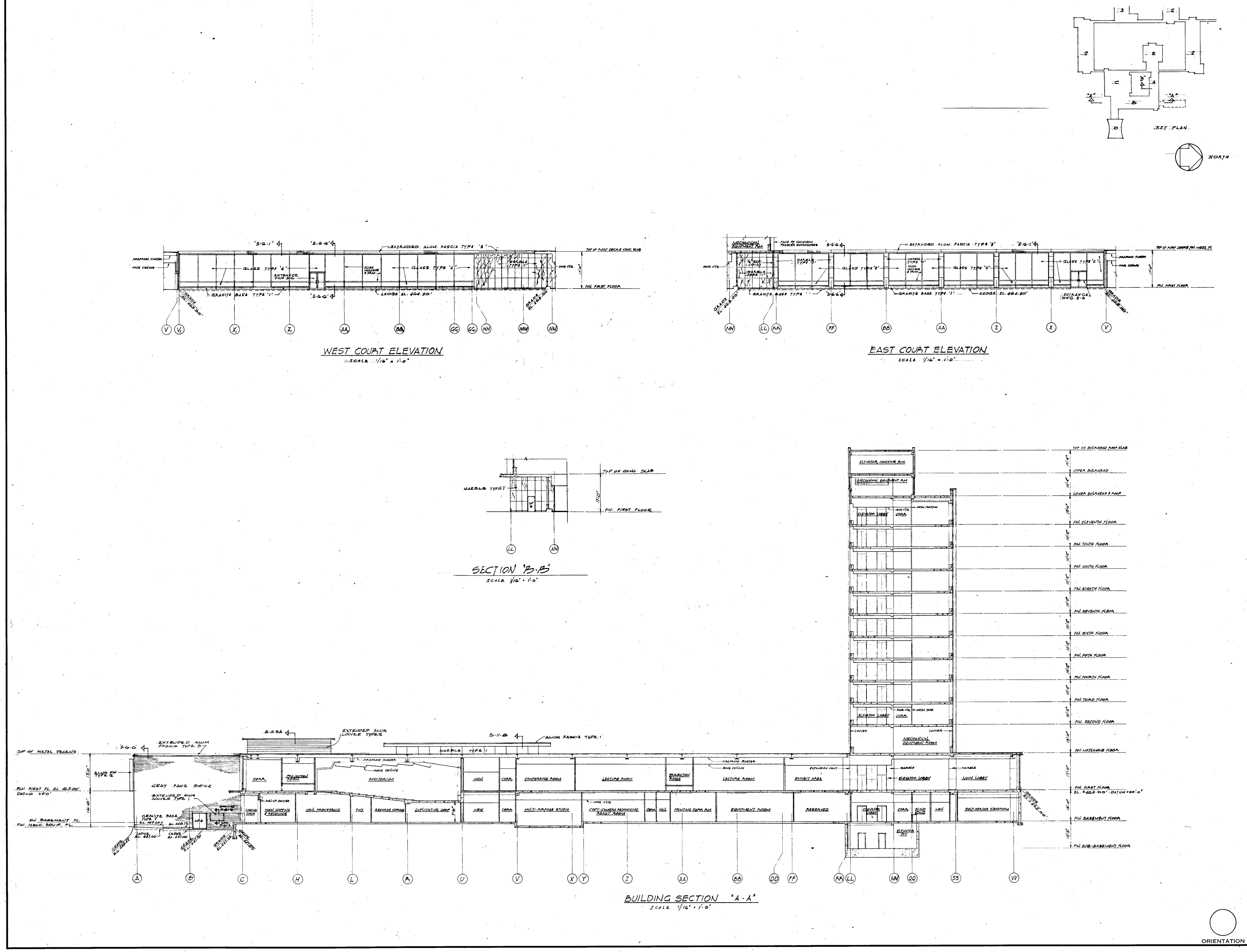
ORIENTATION

32

| | |
|---|---|
| VOORHEES WALKER SMITH SMITH & HAINES ARCHITECTS - NEW YORK, N. Y. | JOB NO. 2225 |
| MECHANICAL & ELECTRICAL DIVISION | ARCHITECTURAL & STRUCTURAL DIVISION |
| GENERAL SERVICES ADMINISTRATION PUBLIC BUILDINGS SERVICE WASHINGTON, D. C. | |
| PROJECT | NATIONAL BUREAU OF STANDARDS NEW FACILITIES |
| LOCATION | MONTGOMERY COUNTY, MARYLAND |
| PROJ. NO. 18064 | FILE NO. |
| DRAWN BY | DATE 12-8-61 CHECKED BY A.B. |
| DRAWING TITLE | COURT ELEVATIONS NORTH & SOUTH ADMINISTRATION BUILDING |
| | ARCHITECTURAL |
| DRAWING NO. 4-3 | BLDG. NO. 101 |

ARCHITECTS FILE NO. 2225-101-175

BINDING ORDER NO.




33

| | |
|---|---|
| VOORHEES WALKER SMITH SMITH & HAINES<br>ARCHITECTS - NEW YORK, N. Y. JOB NO. 2225 | |
| 2-9-62<br>MECHANICAL & ELECTRICAL DIVISION | J.A.M. 2-9-62<br>ARCHITECTURAL & STRUCTURAL DIVISION |
| GENERAL SERVICES ADMINISTRATION<br>PUBLIC BUILDINGS SERVICE WASHINGTON, D. C. | |
| PROJECT | NATIONAL BUREAU OF STANDARDS NEW FACILITIES |
| LOCATION | MONTGOMERY COUNTY, MARYLAND |
| PROJ. NO. | 18084 — FILE NO. |
| DRAWN BY | A.B.F. — DATE 12-18-61 — CHECKED BY A. B. |
| DRAWING TITLE | COURT ELEVATIONS - EAST & NORTH. SOUTH SECTION ADMINISTRATION BUILDING |
| | ARCHITECTURAL |
| DRAWING NO. | 4-4 — BLDG. NO. 101 |

ARCHITECTS FILE NO. 2225-101-247

BINDING ORDER NO.

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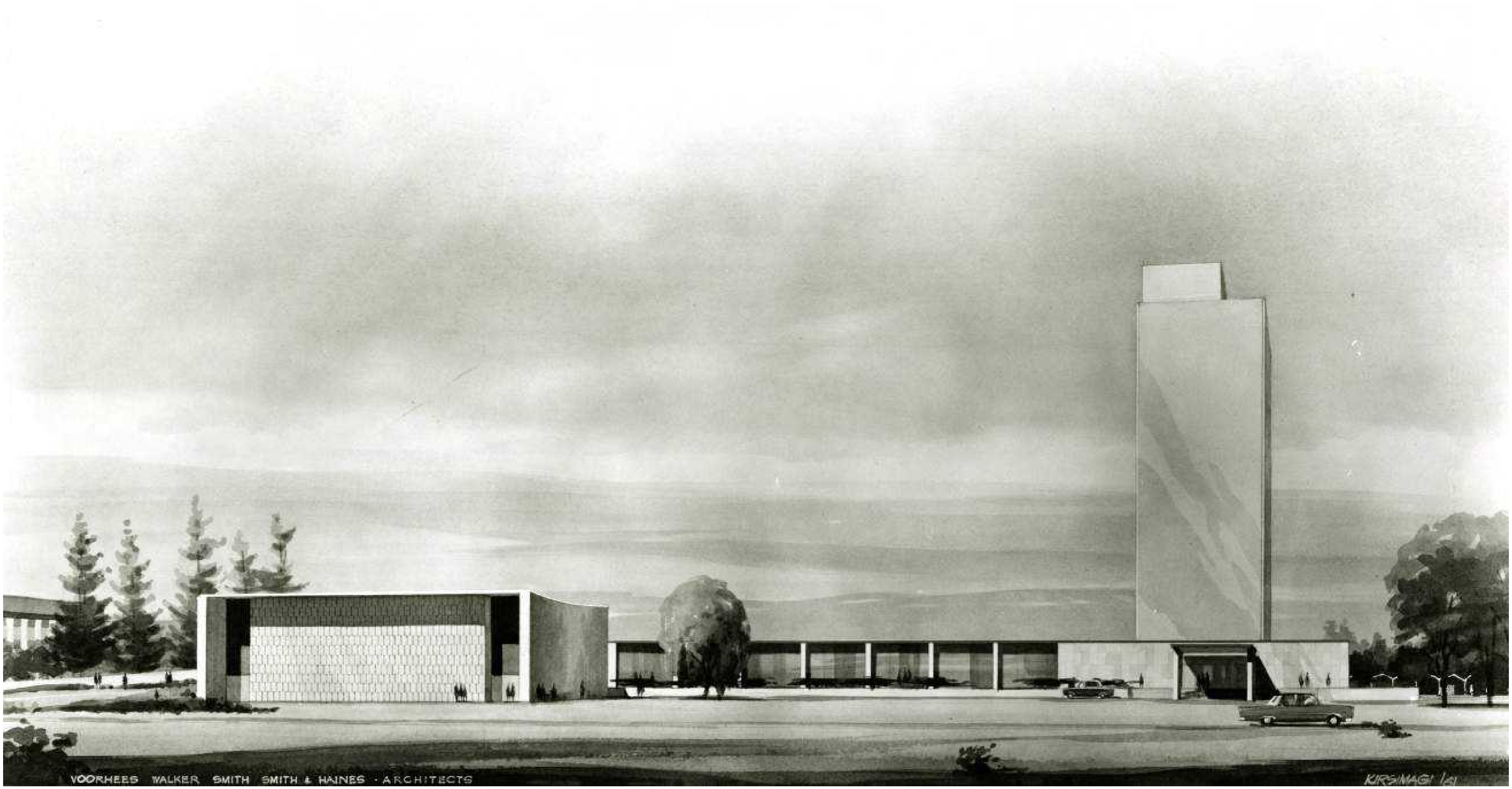
NBS Campus (Gaithersburg) Administration Building - architect's drawings.
NIST Digital Archives - Gaithersburg Campus, Architectural Drawings. June 27, 1962.




NBS Campus (Gaithersburg) Administration Building - architect's drawings.
NIST Digital Archives - Gaithersburg Campus Collection, Architectural Drawings.
June 27, 1962.

NBS Campus (Gaithersburg) Administration Building
NIST Digital Archives - Gaithersburg Campus collection. December 27, 1962.

Building 101 Looking Southeast - June 25, 1963
NIST Library Vertical Files - Gaithersburg Campus. Blake Construction Co. General Contractors Progress Photos - Phase II, Book I - Construction No. 41.

Building 101 Looking Southeast - February 18, 1964
NIST Library Vertical Files - Gaithersburg Campus.  Blake Construction Co. General Contractors Progress Photos - Phase II, Book IV - Construction No. 74.

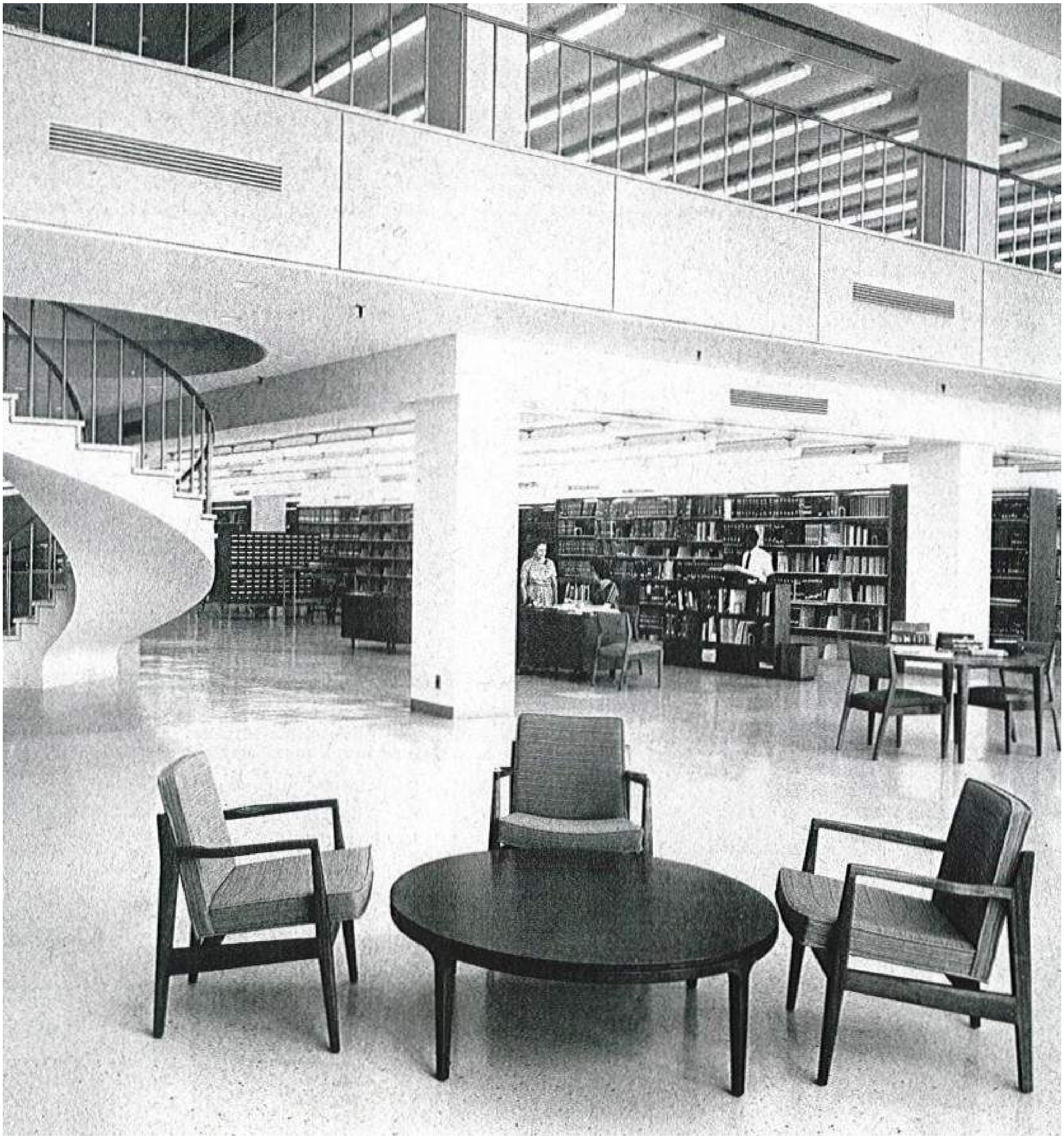
Building 101 Looking Southeast to Wing A - May 22, 1964
NIST Library Vertical Files - Gaithersburg Campus. Blake Construction Co. General Contractors Progress Photos - Phase II, Book IV - Construction No. 88.

Building 101 Wing A Looking Southwest - September 23, 1963
NIST Library Vertical Files - Gaithersburg Campus. Blake Construction Co. General Contractors Progress Photos - Phase II, Book I - Construction No. 53.

Building 101 Looking South Wing C - May 22, 1964
NIST Library Vertical Files - Gaithersburg Campus. Blake Construction Co. General Contractors Progress Photos - Phase II, Book IV - Construction No. 85.

Building 101 Spiral Stair in Library - August 21, 1963
NIST Library Vertical Files - Gaithersburg Campus. Blake Construction Co. General Contractors Progress Photos - Phase II, Book I - Construction No. 46.

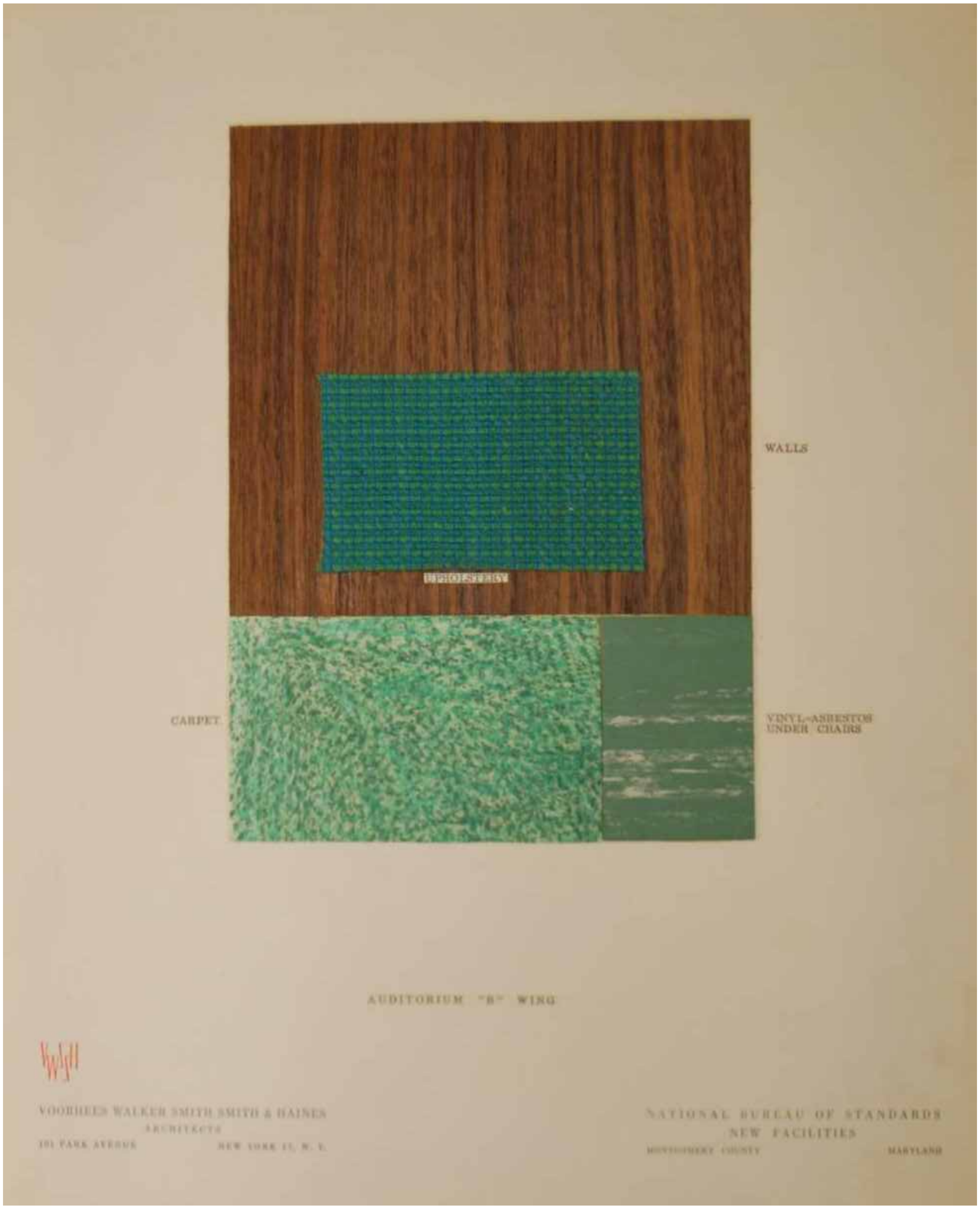
Building 101 3rd Floor West - July 17, 1964
NIST Library Vertical Files - Gaithersburg Campus. Blake Construction Co. General Contractors Progress Photos - Phase II, Book V - Construction No. 96.



Building 101 Library Looking South - November 1966

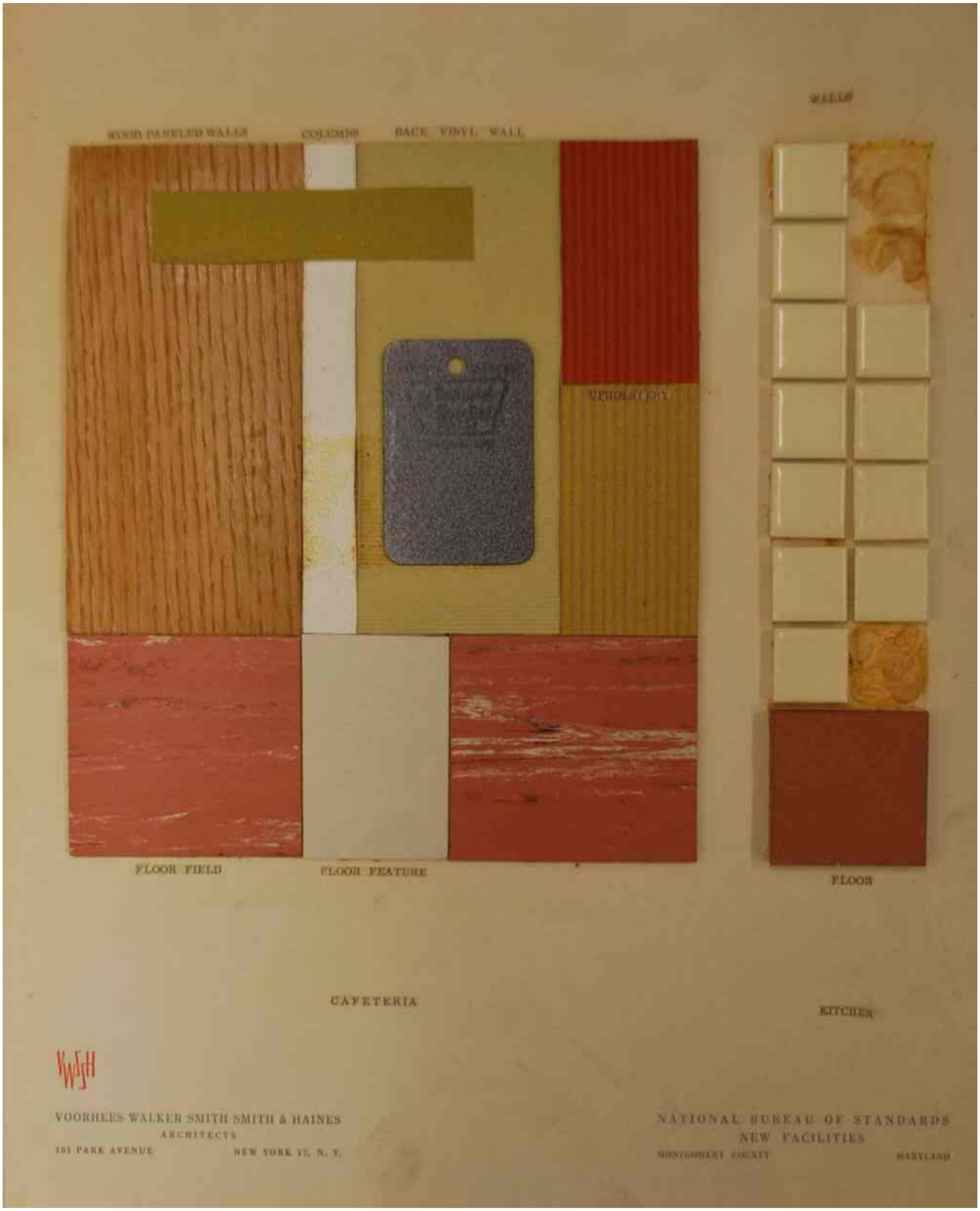
NIST Library Vertical Files - Gaithersburg Campus. "The New NBS Laboratory Complex." National Bureau of Standards Technical News Bulletin Dedication Issue. November 1966. Page 229.

Administration Building.
NIST Digital Archives - Gaithersburg Campus. June 27, 1962.

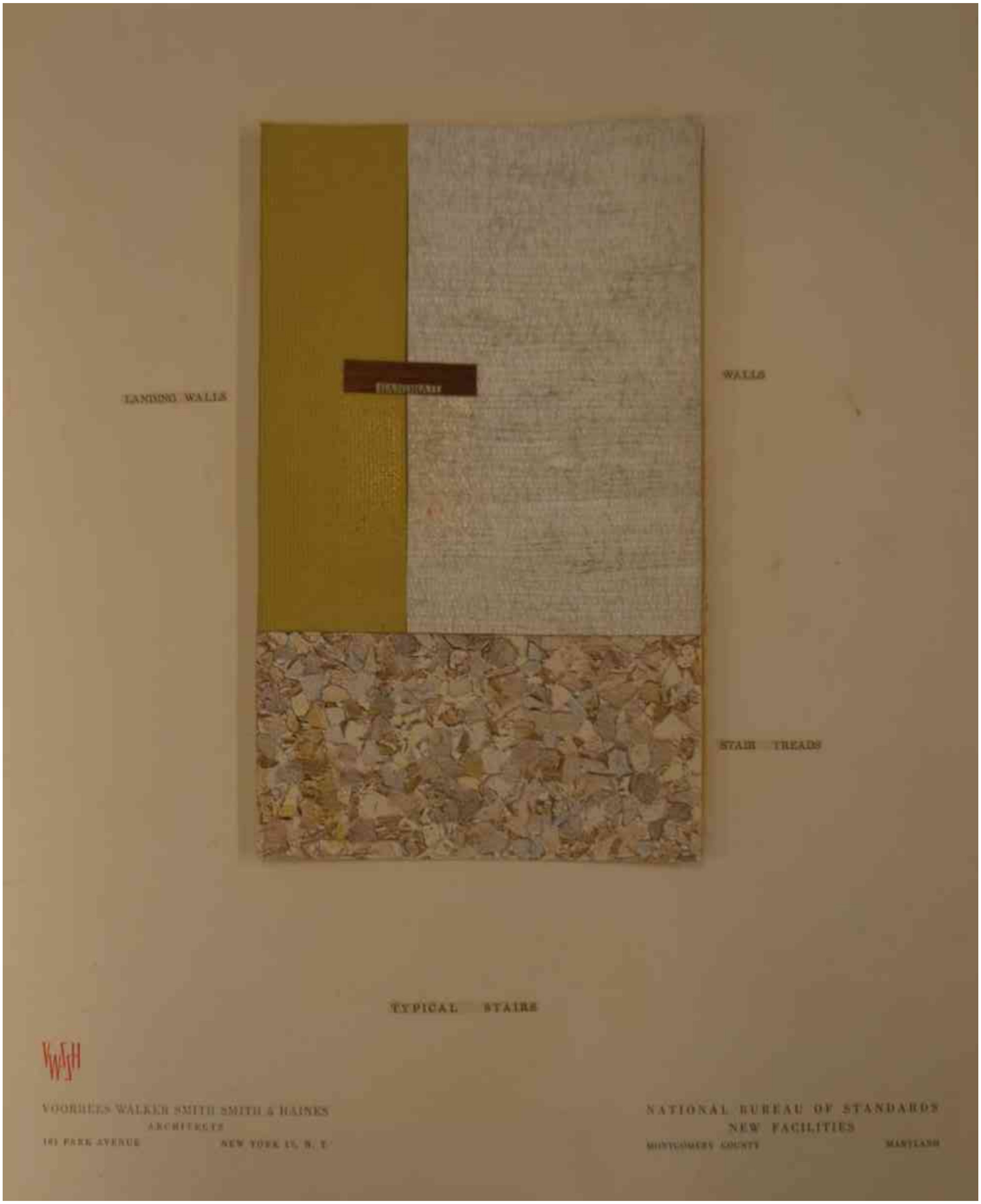



Auditorium "B" Wing.
NIST Library Archives - Material Boards. Voorhees Walker Smith Smith & Haines.
National Bureau of Standards New Facilities.

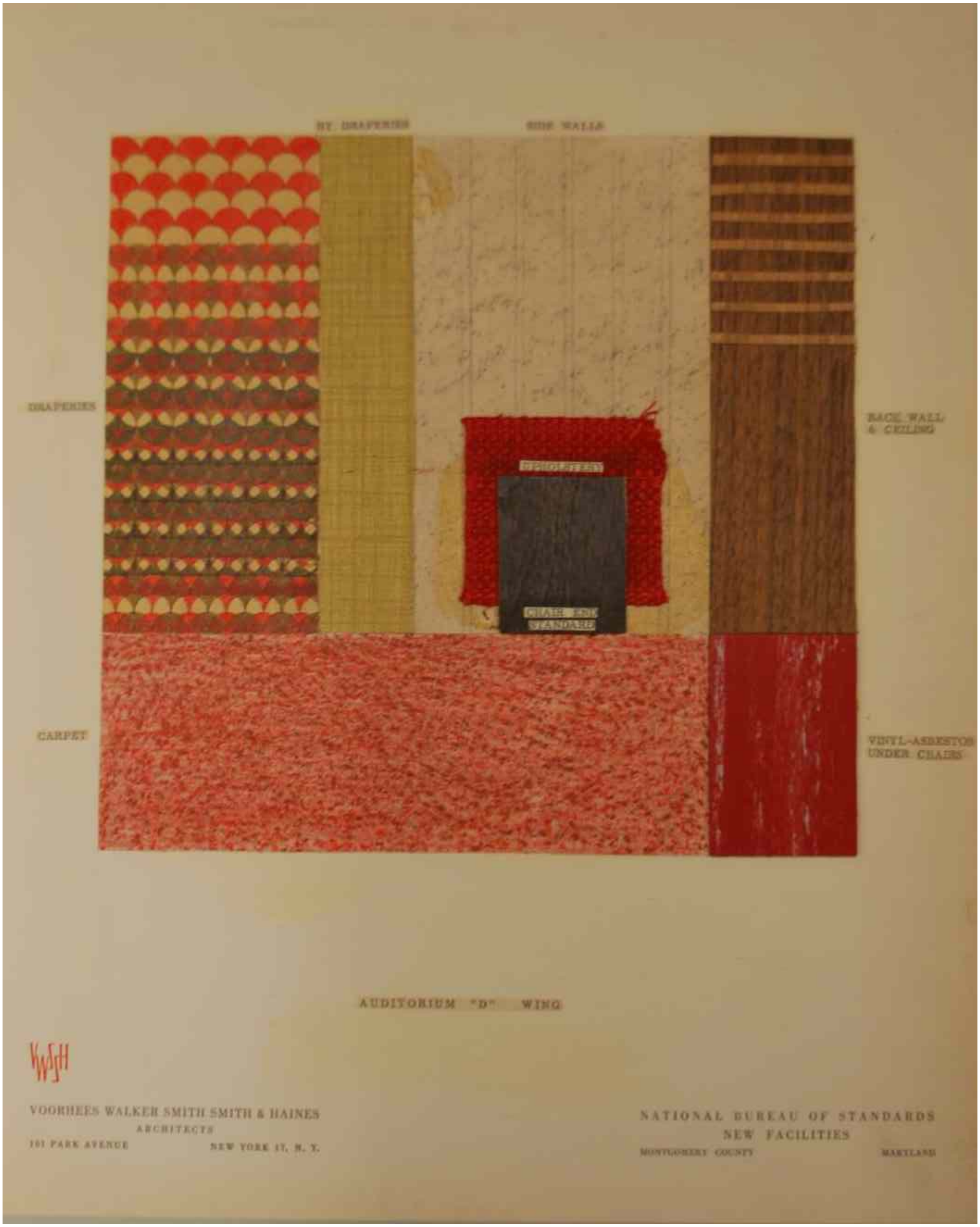

Library Lobby Museum Cataloguing.
NIST Library Archives - Material Boards. Voorhees Walker Smith Smith & Haines.
National Bureau of Standards New Facilities.




Cafeteria.
NIST Library Archives - Material Boards. Voorhees Walker Smith Smith & Haines.
National Bureau of Standards New Facilities.




Typical Stairs.
NIST Library Archives - Material Boards. Voorhees Walker Smith Smith & Haines.
National Bureau of Standards New Facilities.




Auditorium "D" Wing.
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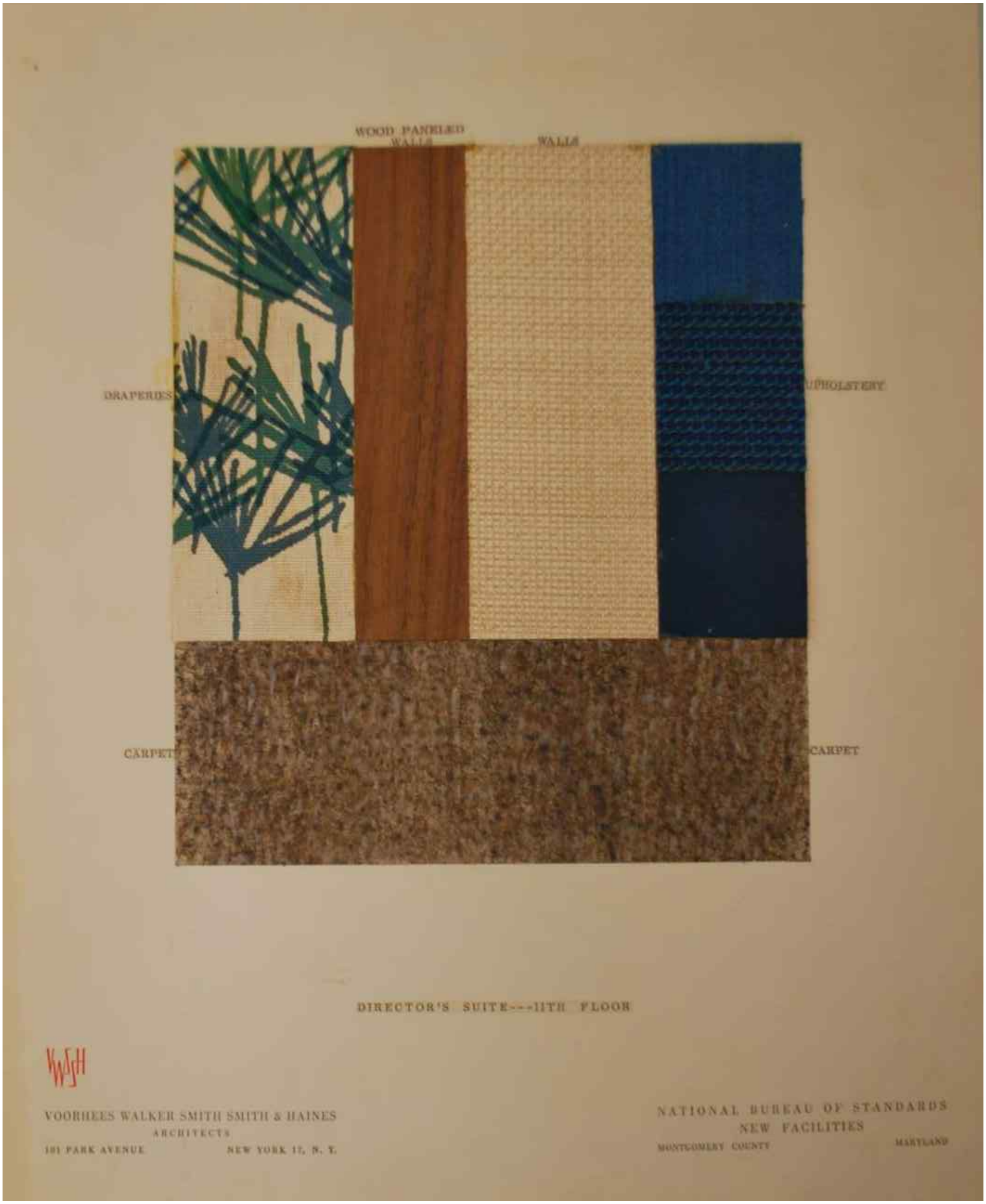
National Bureau of Standards New Facilities.




Director's Suite - - - 11th Floor
NIST Library Archives - Material Boards. Voorhees Walker Smith Smith & Haines.
National Bureau of Standards New Facilities.


Associate Director's Office - Scheme "D".
NIST Library Archives - Material Boards. Voorhees Walker Smith Smith & Haines.
National Bureau of Standards New Facilities.

# SECTION C:
# HISTORIC BUILDING ZONE PLANS/
# INVENTORY OF SIGNIFICANT
# FEATURES & MATERIALS

## HISTORIC BUILDING ZONE CLASSIFICATIONS

Three preservation zone classifications have been overlaid on the interior spaces of Building 101 to identify, document, and clarify preservation priorities of the historically and architecturally significant extant features and spaces of the building. The three preservation zone classifications are: 1) Restoration Zone; 2) Rehabilitation Zone and 3) Renovation Zone. The preservation zone classifications are depicted by different colors on the floor plan drawings.

This report reviewed the significant architectural features of the interior spaces that were included in the two highest priority zone classifications. Renovation zones were not investigated. The elements within Restoration and Rehabilitation zones are further detailed by inventory lists which itemize the significant features within the area or space and the related material, finish, and approximate date of those listed features. Photographs document significant features within the inventory.

This classification system provides guidance to NIST management and staff when determining what magnitude of intervention and disruption of historic fabric is appropriate in a given space during maintenance and renovation activities. It also informs design decisions for sensitive alterations and additions within the historic building.

### Preservation Zones – Definitions

Restoration Zone (red)

Spaces identified as Restoration Zones are public or private spaces with a high level of integrity and architectural finish, possessing architectural and/or historical significance, and containing significant architectural features.

These areas have unique or distinctive architectural features, such as original materials or details, representative examples of highly skilled craftsmanship, or the work of a notable architect or builder. They may also be of significance due to their association with persons or events of preeminent importance.

Architectural features in these spaces should be preserved. If any work is done in these zones as part of repair or alteration project, the significant architectural features are to be restored to their original appearance.

Treatment Guidelines for Restoration Zone

The overall volume and architectural features should be maintained and preserved as a highest priority. Treatment or intervention in a Restoration Zone should be very carefully planned and designed so that any alteration (for example, installation of new or upgraded building systems such as ductwork, piping, conduit, etc.) will result in little or no visible impact, and little or no loss of historic fabric. Where repair or restoration of architectural features is required, that work should conform to current technical standards.

All work in Restoration Zones should be reviewed and approved by NIST's Federal Preservation Officer.

Rehabilitation Zone (yellow)

Spaces identified as Rehabilitation Zone areas are public or private spaces with a moderate to high level of integrity and architectural finish, possessing architectural and/or historical significance, and containing significant architectural features that should be preserved or restored as part of any repair or alteration project.

These spaces contain significant architectural features and original materials, but are less ornate than the Restoration Zone in overall character.

Architectural features in these spaces should be preserved. If any work is done in these zones as part of repair or alteration project, the significant architectural features are to be restored to their original appearance to the greatest extent possible.

Treatment Guidelines for Rehabilitation Zone 1

Spaces in this category may be rehabilitated to meet modern functional needs, but every effort should be made to retain and preserve the significant architectural features. New materials may be introduced, but this should be done in as sensitive a manner as possible to assure retention of architectural character of these spaces. Visual intrusions should be avoided. Where repair or preservation of existing features is required, that work should conform to current technical standards.

All work in Rehabilitation Zones should be reviewed and approved by NIST's Federal Preservation Officer.

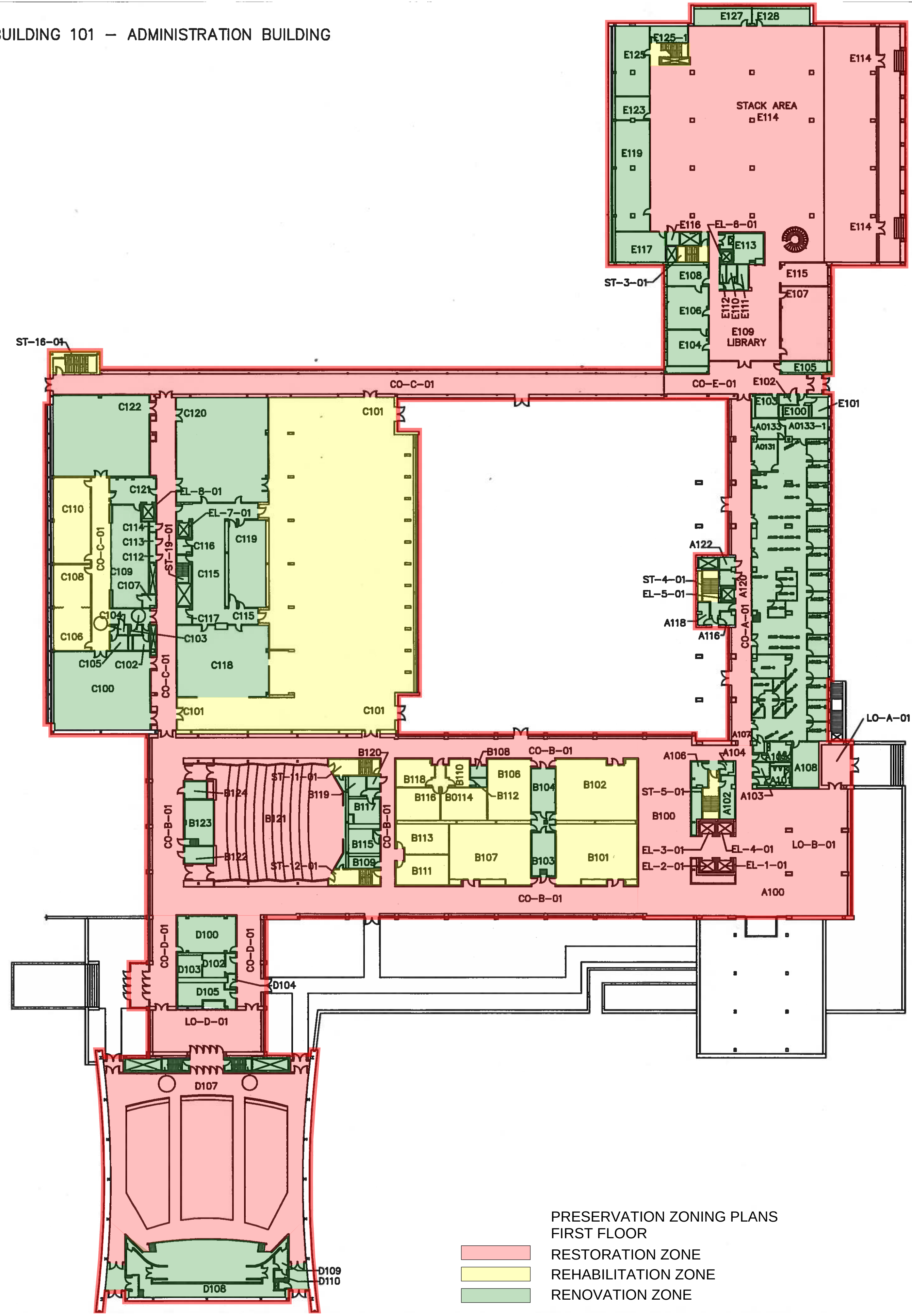
Renovation Zone (green)

Spaces identified as Renovation Zones are areas of minimal architectural or historical significance containing few or no architectural features that will need to be preserved or restored as part of a repair or alteration project. Renovation Zones may contain isolated elements of historic and architectural significance that should be preserved and maintained.

Treatment Guidelines for Renovation Zone

Renovation Zone spaces are often not publicly accessible and contain few significant architectural details therefore, the retention and preservation of architectural features is of minimal importance. Use of contemporary design elements is recommended as a means of preserving the overall continuity of these areas of the building. Although substantial redesign of these areas is acceptable, alterations should temper the intrusive quality of projects such as installation of mechanical and electrical systems through careful coordination of new work with existing architectural features and finishes to the greatest extent feasible. Where repair or preservation of existing features is required, such work should conform to current technical standards.

# BUILDING 101 – ADMINISTRATION BUILDING



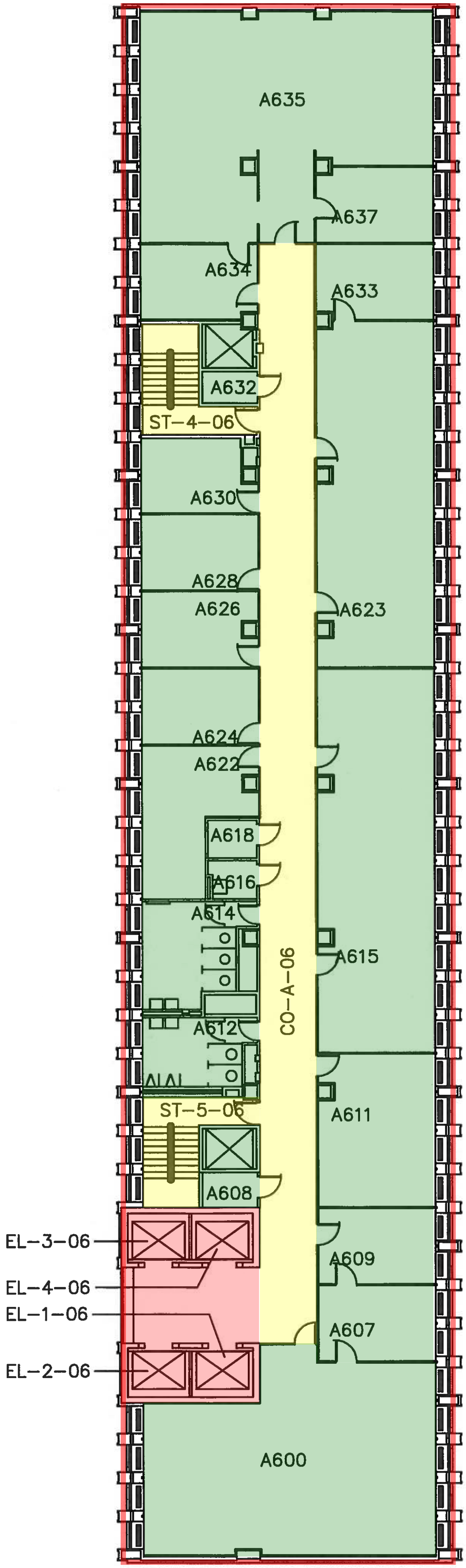

PRESERVATION ZONING PLANS
FIRST FLOOR

RESTORATION ZONE

REHABILITATION ZONE

RENOVATION ZONE

BUILDING 101 – ADMINISTRATION BUILDING



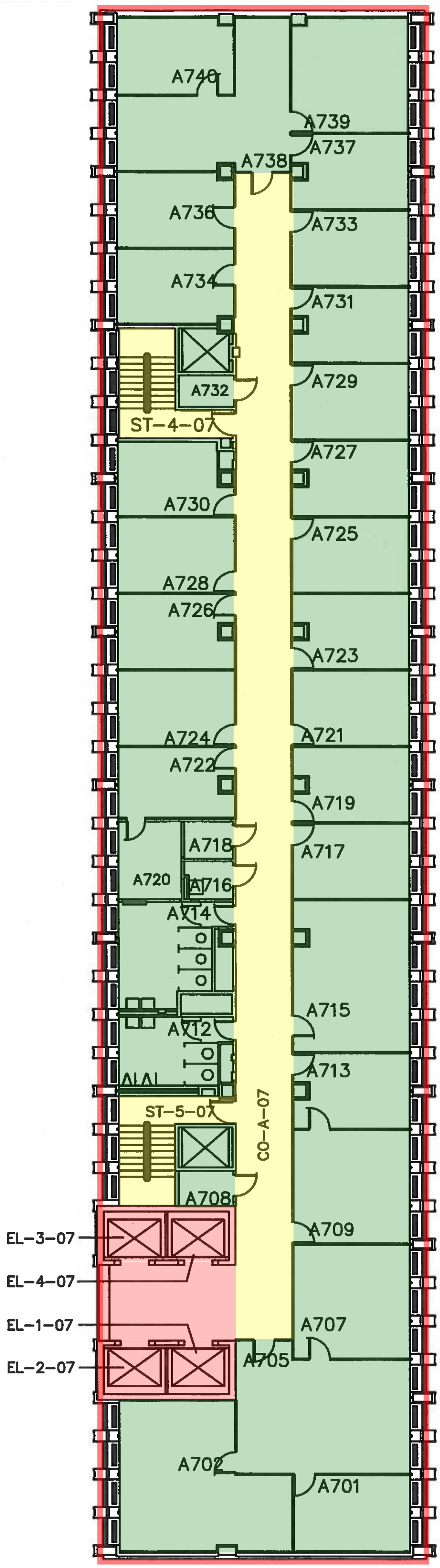

PRESERVATION ZONING PLANS
SIXTH FLOOR

RESTORATION ZONE

REHABILITATION ZONE

RENOVATION ZONE

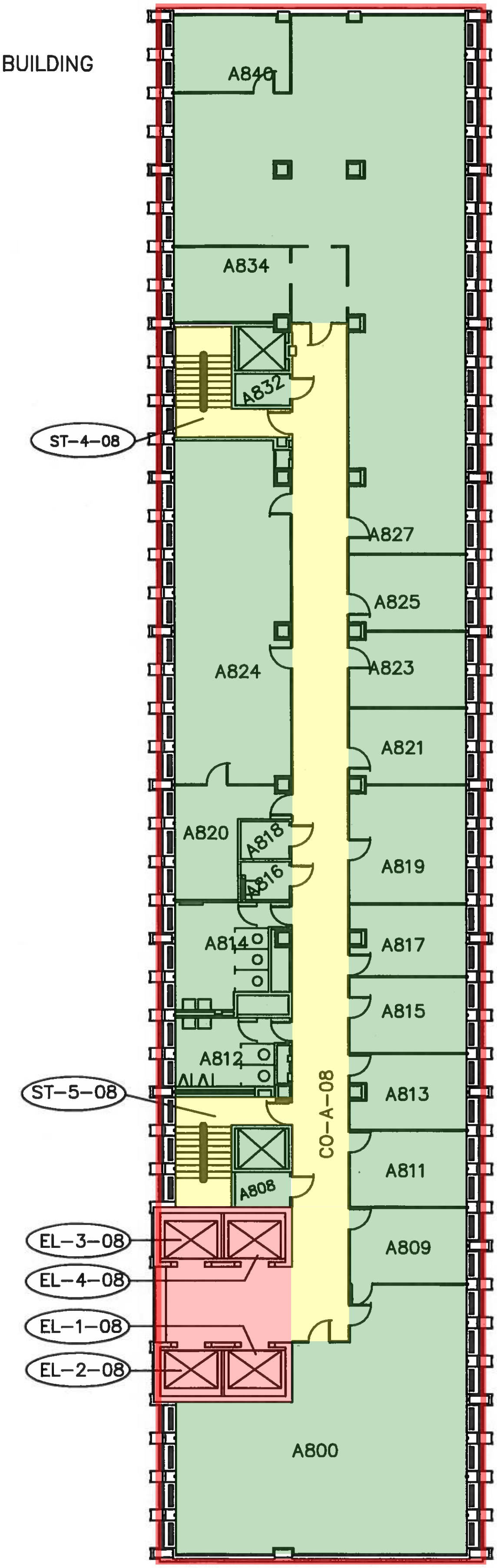
BUILDING 101 — ADMINISTRATION BUILDING




PRESERVATION ZONING PLANS
SEVENTH FLOOR

RESTORATION ZONE
REHABILITATION ZONE
RENOVATION ZONE

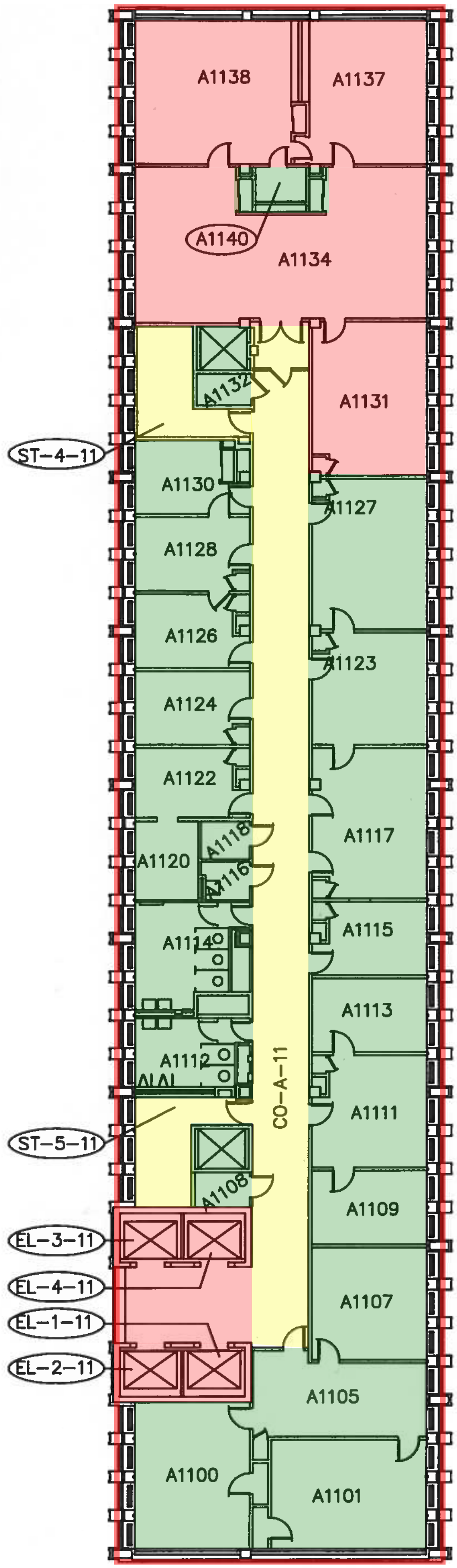
BUILDING 101 – ADMINISTRATION BUILDING




PRESERVATION ZONING PLANS
EIGHTH FLOOR

RESTORATION ZONE
REHABILITATION ZONE
RENOVATION ZONE

BUILDING 101 — ADMINISTRATION BUILDING




PRESERVATION ZONING PLANS
ELEVENTH FLOOR

RESTORATION ZONE
REHABILITATION ZONE
RENOVATION ZONE

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## METHODOLOGY

The Inventory of Significant Features and Materials for Building 101 was completed by John Milner Associates Preservation (JMAP). In February 2019, the team began a comprehensive survey of interior and exterior spaces to establish the Restoration Zone and Rehabilitation Zones for the building.

The project team noted and photographed contributing features, finishes, and possible alterations to the floor plan and features. It is important to note that some historically significant features listed in the inventory may not be original to the building. For example, due to deterioration, these features may have replaced original fabric and match the original features in configuration, materials, and finish. Some modifications to the building may be considered historically significant because they represent a modification to the building over time that has become a significant part of its evolution and use.

The following inventory is organized by historic building zone classification and then by exterior elevation followed by interior rooms in the building. The zone for each room or space is indicated at the top of the page. The significant features in each room are listed in a table format, including general photographs of the room or space and any significant details or elements and sub-elements.

The inventory sheets for each room are organized in the following manner:

> **General Description**—This section provides a brief overview of the elevation or room providing location, general history and describing major alterations to each space.
>
> **Feature Description**—This section provides a listing of each contributing feature of the elevation or room. The features are then described in more detail with information about material, finish, and date and a corresponding photograph is presented in the right-hand column.

Unique interior spaces, such as the auditoria and library, are inventoried separately. Room types that repeat throughout the building, such as corridors and offices, have general inventory sheets that describe the typical features and finishes of these spaces along with any anomalies unique to only a portion of that room type. Corridors are divided up according to which wing they occupy. Corridors in Wings A, B, and C are distinct enough to merit individual classification. There are no corridors in the surveyed portions of Wings D and E. Within Wing A, corridors are further divided according to floor level. Floors 1 through 10 are grouped together given they have similar features and finishes. The finishes for office on the 11th Floor are distinct enough to merit their own classification. Offices are only located in Wing A, and like corridors, are divided according to floor-level. Floors 1 through 10 are grouped together, while 11th floor offices are described as a distinct room type. Classrooms and lecture halls are only located on the 1st Floor of Wing B. These two room types are grouped together given nearly identical features and finishes, and the fact that only one classroom is still used for its original purposes. Where there were variations in any of the building's typical spaces, the inventory notes the anomaly with a photograph.

In addition to utilizing the research and information found in and associated with the existing Historic Structure Report, the project team conducted archival research to inform the building survey. The research was used to verify the team's findings in the field, to determine which elements represent original construction, and which elements are architecturally and historically significant. The following "research collection" can be found in the electronic files attached with this report. The documents have been organized by repository and then further organized by topic.

A list of repositories, consulted in conjunction with this project, follows.

**NIST Research Library - Gaithersburg**
Vertical File on Gaithersburg Campus
Material Boards and Renderings for Interior Design
Oral History
Written History Documents

**NIST Records Management - Gaithersburg**
Photographs from the time of construction.

**NIST Digital Archives**
Textural records. Gaithersburg Campus Collection includes photographs, architectural renderings, technical publications, journal articles, and history publications.

**NIST Facilities Drawings Database and Library - Gaithersburg**
Relevant files include architectural drawings and specifications for the original construction and major maintenance

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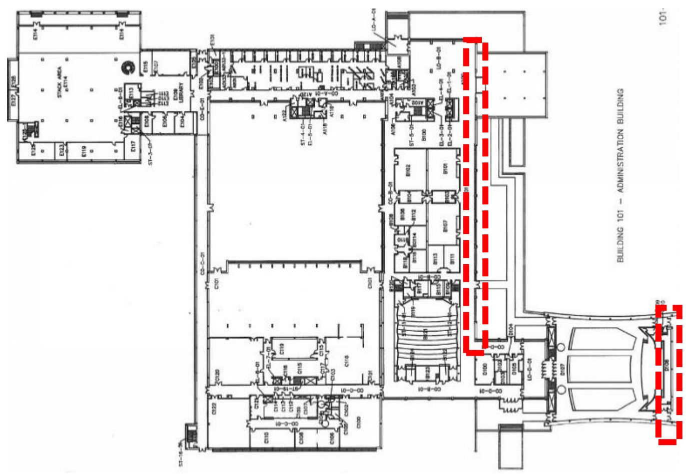
## East Elevation

The east elevation is the principal elevation of Building 101. This elevation faces the drop-off area and parking lots, so that it is the first view of the building that most visitors experience. The main formal entrance is located at the north end of the east elevation in Wing A, with a canopy leading from the drop-off driveway to the east entrance vestibule. The east elevation of the office tower rises over the east entrance with its stark beige brick facade.

The east elevation of the classroom core in Wing B features a glass and aluminum curtain wall that provides natural light and sightlines into the corridor.

The east elevation of the Red Auditorium (Wing D) is the most visually striking of the exterior elevations. It features an expanse of beveled marble panels. The highly ornamental Red Auditorium façade is more visible from vehicular drives than from any of the pedestrian walkways, highlighting the auto-centric focus of the NIST Gaithersburg campus.

Location Plan (NTS)



## East Elevation

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Marble – VT. Meadow White | Honed | 1966 |
| Base | Granite – Black (Type I) | Stippled | 1966 |
| Fascia | Duranodic Aluminum | Medium Black Finish | 1966 |

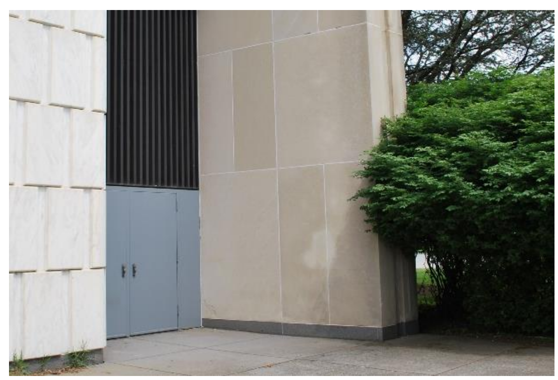
The façade at the east entrance is clad in marble. Large rectangular marble panels are oriented vertically in a stacked bond pattern. Marble is the highest-level exterior finish. It is chiefly used at formal entrances and as a cladding material for large formal spaces.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Marble – VT. Meadow White | Honed | 1966 |
| Base | Granite – Black (Type I) | Stippled | 1966 |
| Fascia | Limestone | Honed | 1966 |

The east façade of the Red Auditorium (Wing D) is clad in beveled marble panels. This is the most ornate exterior treatment found at Building 101. It identifies the Red Auditorium as a unique and significant formal space within the building.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Limestone – IN. Buff | Honed | 1966 |
| Base | Granite – Black (Type I) | Stippled | 1966 |

Indiana limestone is the secondary cladding material on the east façade of the Red Auditorium (Wing D). It clads the reveal at either end of the recessed east façade. Rectangular limestone panels are oriented vertically and laid in a stacked bond pattern. The panels alternate between two thinner rectangular panels and one larger square panel in a checkerboard pattern.



| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Brick - Beige | Smooth | 1966 |
| Base | Granite – Black (Type I) | Stippled | 1966 |

Beige brick cladding is the lowest-level exterior finish and typically designates utilitarian spaces and offices. The east façade of the Office Tower (Wing A) is clad in beige brick with no punched openings.

## East Elevation

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Curtain Wall | Anodized Aluminum/ Glass | Clear Satin Finish/ Clear | 1966 |
| Base | Granite – Black (Type I) | Stippled | 1966 |
| Fascia | Duranodic Aluminum | Medium Black Finish | 1966 |

Curtain wall is the typical exterior cladding at corridors and lobbies. At the east corridor of Wing B, tripartite bays of aluminum-and-glass curtain wall span between marble-clad concrete columns. Each tripartite bay features six lites – three large vertical lites above and three smaller horizontal lites below.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Entrance Vestibule | Stainless Steel/ Glass | No. 4 Satin Finish/ Clear | 1966 |

A rectangular entrance vestibule extends from the east façade of Wing A and the east lobby. The vestibule framing is steel clad in stainless steel. The existing doors are not original. Construction drawings show that originally doors were full-lite with simple pull bar hardware. Automatic sliding doors were first installed in 1980. It is not known if these doors date to that period or to a later alteration.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| East Entrance Plaza – Pavers and Stairs | Granite – Black (Type III) | Shot Ground | 1966 |
| East Entrance Plaza - Spacers | Granite – Gray (Type II) | Shot Ground | 1966 |
| Handrails | Stainless Steel | No. 4 Satin Finish | 1984 |

A two-level entrance plaza leads from the drop-off area to the east entrance vestibule. The plaza is paved with large black granite pavers and smaller gray granite spacers. Granite stairs lead from the lower level of the plaza to the upper plaza. The handrails at all formal entrances were replaced in 1984.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Canopy | Concrete | Painted | 1966 |
| Columns | Marble – VT. Meadow White/ Stainless Steel/ Granite – Black (Type I) | Honed/ No. 4 Satin Finish/ Stippled | 1966 |
| Fascia | Duranodic Aluminum | Medium Black Finish | 1966 |

A concrete canopy extends over the east entrance plaza to the passenger drop-off area. Eight columns clad in marble and stainless steel with a granite base support the flat concrete canopy. Four columns rest on the lower level of the entrance plaza and four on the upper level.

## East Elevation

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Double-Leaf | Anodized Aluminum | Alcoa #2140 Gray | 1966 |
| Frame | Anodized Aluminum | Alcoa #2140 Gray | 1966 |
| Hardware | Aluminum | Satin | 1966 |

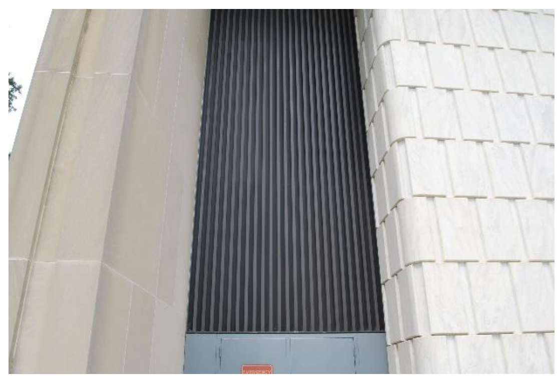
This door type is found at the north and south end of the east elevation of the Red Auditorium. Flush aluminum panels flank the doors on either side. A center mullion separates the two doors. Original hardware includes a dead bolt and pull lever.

PHOTO

*Aluminum hardware*

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Grille | Anodized Aluminum | Alcoa #2140 Gray | 1966 |

Vertical aluminum mullions extend from the top of the aluminum doors to the soffit on the east elevation of the Red Auditorium (Wing D). Aluminum sheet of the same type and finish covers the opening behind the aluminum grille.



| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Access Panel | Cast Bronze | Natural Patina | 1966 |

A rectangular bronze access panel covers each hose bib location. The face of each panel door features an embossed cross hatch pattern. Raised block letters spell out “WATER” in all capitals.

## East Elevation

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Retaining Wall | Granite – Gray (Type VI) | Honed | 1966 |
| Coping | Marble – VT. Meadow White | Honed | 1966 |

Granite retaining walls create the raised planting beds on either side of the east entrance plaza. The retaining walls and raised beds were altered to accommodate a wheelchair ramp in 1972. At the same time, the original gravel fill was replaced with soil, sod, and plantings.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Flag Pole | Aluminum | Satin | 1966 |
| Upper Base | Granite – Gray (Type II) | Shotground | 1966 |
| Lower Base | Granite – Black (Type III) | Shotground | 1966 |

A flagpole is located at the south end of the oblong lawn east of Building 101. The flagpole base consists on a circular plinth of gray granite on top of a larger circular plinth of black granite. The following words are inscribed around the outer edge of the gray granite plinth in all capitals: “Let us raise a standard to which the wise and the honest can repair.” A citation is inscribed in sentence case: Address by George Washington to the Constitutional Convention 1787.

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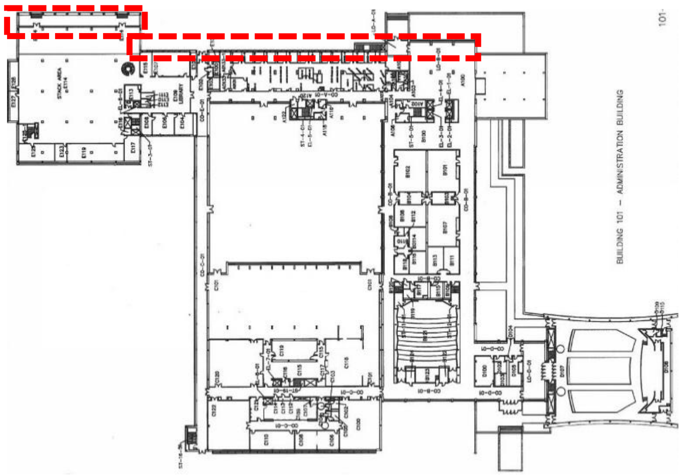
## North Elevation

The principal façade of the north elevation is the covered terrace and main entrance for the research library (Wing E). This façade features a full-height curtain wall system with two sets of double-leaf doors: one at its east end and one at its west. Eight marble-clad columns support the terrace canopy. The north elevation for Wing A features glass-and-aluminum curtain wall at the main lobby and north entrance vestibule. Beige brick cladding with punched window openings corresponds with office space along the north side of Wing A. The north elevation of the office tower is a multi-story facade with repeating aluminum columns and single-light fenestration with porcelain spandrels. The secondary north façade of the Red Auditorium (Wing D) is clad in limestone panels that alternate in a single over double arrangement within the stacked bond.

The north elevation also features an original arcade with a concrete and plaster geometric canopy that leads to the north entrance between wings A and E. The north side of the library has a paved terrace disrupted by gravel beds. The terrace paving has been reduced in size since its installation during original construction. Gravel fill in perimeter planters have been replaced with mulch and plantings.

Location Plan (NTS)




## North Elevation

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Brick – Beige | Smooth | 1966 |
| Base | Granite – Black (Type I) | Stippled | 1966 |

Beige brick cladding is the lowest-level exterior finish and typically designates utilitarian spaces and offices. On the north elevation, it indicates interior office space along the north side of Wing A and museum space in Wing E.

PHOTO

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Limestone – IN. Buff | Honed | 1966 |
| Base | Granite – Black (Type I) | Stippled | 1966 |

Limestone is the second-highest exterior finish and typically clads the secondary facades of large, formal spaces. Limestone panels clad the secondary elevations of the Red Auditorium (Wing D) and library (Wing E). Rectangular limestone panels are oriented vertically and laid in a stacked bond pattern alternating between two thinner rectangular panels and one larger square panel in a checkerboard pattern.

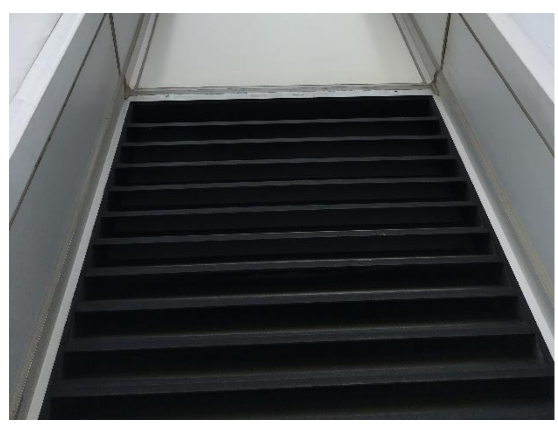
| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Marble – VT. Meadow White | Honed | 1966 |
| Base | Granite – Black (Type I) | Stippled | 1966 |

Marble is the highest-level exterior finish and typically clads the primary facades of large formal spaces and principle entrances. On the north façade, marble cladding is found at the north entrance to Wing A and the principle façade of the research library. It clads structural columns between curtain wall spans as well as the columns at the library terrace.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Curtain Wall | Anodized Aluminum/ Glass | Clear Satin Finish/ Clear | 1966 |
| Base | Granite – Black (Type I) | Stippled | 1966 |

Curtain wall is the typical exterior cladding at corridors and lobbies. Banded glazing is arranged with large vertically oriented lites above smaller horizontally oriented lites below. This configuration occurs at the main lobby as well as the north entrance vestibule, both located in Wing A.

## North Elevation

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Curtain Wall | Anodized Aluminum/ Glass | Clear Satin Finish/ Clear | 1966 |  |
| Base | Granite – Black (Type I) | Stippled | 1966 | |
| Curtain wall on the north elevation of Wing E floods the library stacks and reading area with natural light. Two-story banded glazing is arranged with large vertically oriented lites above smaller square lites below. The aluminum rail between the two courses of lites also serves as the lintel for the double-leaf door leading into the library. | | | | |
| Window - Fixed | Anodized Aluminum/ Glass | Clear Satin Finish/ Clear | 1966 |  |
| Fixed aluminum windows occur at office spaces in Wing A and museum spaces in Wing E. The aluminum frame stands proud of the brick façade on all four sides. In Building 101, punched openings are used at interior spaces that require a greater degree of control over daylighting. | | | | |
| Curtain Wall – Extruded Frame | Anodized Aluminum | Clear Satin Finish | 1966 |  |
| Curtain Wall – Spandrel Panel | Porcelain-Insulated Steel | Glazed – PBS #27886 White | 1966 | |
| Curtain Wall – Reversible Window | Anodized Aluminum/ Glass | Clear Satin Finish/ Clear | 1966 | |
| The north elevation of the office tower is clad in an aluminum curtain wall with protruding aluminum columns. The aluminum columns separate bays of windows along the horizontal axis. Porcelain insulated steel panels separate windows and louvered openings along the vertical axis. | | | | |
| Opening – Louvered | Duranodic Aluminum | Medium Black Finish | 1966 |  |
| The punched openings at the second-floor level of the office tower are louvered rather than glazed. Louvers are used in place of glazing because the the entire second floor houses machine and equipment rooms. Duranodic describes a proprietary treatment of the Aluminum Corporation of America that is similar to anodizing. | | | | |

North Elevation

<table>
<tr><th>FEATURE</th><th>MATERIAL</th><th>FINISH</th><th>DATE</th><th>PHOTO</th></tr>
<tr><td>Door – Double-Leaf</td><td>Anodized Aluminum/ Glass</td><td>Clear Satin Finish/ Clear</td><td>1966</td><td rowspan="4"></td></tr>
<tr><td>Frame</td><td>Anodized Aluminum</td><td>Clear Satin Finish</td><td>1966</td></tr>
<tr><td>Hardware</td><td>Aluminum</td><td>Satin Finish</td><td>1966</td></tr>
<tr><td colspan="4">This is the original exterior door. On the north elevation, this door type only remains at the north entrance vestibule. Original hardware includes pull plates on the exterior and push bars on the interior.</td></tr>
<tr><td>Door – Double-Leaf</td><td>Hollow Metal</td><td>Painted</td><td>1966</td><td rowspan="5"></td></tr>
<tr><td>Louvered Transom</td><td>Stainless Steel</td><td>No. 4 Satin Finish</td><td>1966</td></tr>
<tr><td>Frame</td><td>Steel</td><td>Painted</td><td>1966</td></tr>
<tr><td>Hardware</td><td>Aluminum</td><td>Satin Finish</td><td>1966</td></tr>
<tr><td colspan="4">Hollow metal doors lead from the north areaway into the basement level of Wing A. Exterior hardware includes a door knob and dead bolt.</td></tr>
<tr><td>Access Panel</td><td>Cast Bronze</td><td>Natural Patina</td><td>1966</td><td rowspan="2"></td></tr>
<tr><td colspan="4">A rectangular bronze access panel covers each hose bib location. The face of each panel door features an embossed cross hatch pattern. Raised block letters spell out “WATER” in all capitals. Bronze panels are corroding and staining surrounding marble bluish green and gray.</td></tr>
</table>

## North Elevation

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Portico - Ceiling | Concrete | Cement Stucco | 1966 |
| Portico - Columns | Marble – VT. Meadow White | Honed | 1966 |
| Portico - Floor | Granite – Black (Type III) | Shot Ground | 1966 |
| Portico – Fascia | Marble – VT. Meadow White | Honed | 1966 |
| Bench | Granite – Red | Polished | 1966 |
| Stairs | Granite – Black (Type III) | Shot Ground | 1966 |

PHOTO

A portico runs the full length of the north library façade. Eleven rectangular columns support the roof. Fascia and cladding at columns are white Vermont marble. Large square granite pavers are laid in a staggered grid pattern. Large red granite "benches" span the area between each of the eleven columns, except where the granite steps lead up double-leaf doors at the east and west ends of the portico. Granite benches also span the space between the first and last columns and the north façade. The portico floor is raised above grade level with granite steps leading to the library entrances and a white marble fascia.

Date and provenance of light fixtures are unknown. Square, surface-mounted fixtures appear to post-date round recessed fixtures. It is not known if round recessed fixtures are original.

## North Elevation

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| North Entrance Plaza – Pavers and Stairs | Granite – Black (Type III) | Shot Ground | 1966 |  |
| North Entrance Plaza - Spacers | Granite – Gray (Type II) | Shot Ground | 1966 | |
| Handrail | Stainless Steel | No. 4 Satin Finish | 1984 | |

The north entrance plaza is paved with large black granite pavers and smaller gray granite spacers. The stairs leading up to the plaza are black granite of the same type as the large granite pavers. All original stainless steel handrails at the exterior entrances were replaced in 1984.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Stair | Concrete | Unfinished | 1966 |  |
| Handrail | Stainless Steel | No. 4 Satin Finish | TBD | |
| Retaining Wall | Brick – Beige | Smooth | 1966 | |
| Coping | Granite – Gray (Type VI) | Honed | 1966 | |
| Railing | Steel | Painted | 1966 | |

A concrete stair leads down to the basement level of Wing A. The concrete stair treads have nonslip, grooved aluminum nosing. It is not known if the stainless steel handrails were replaced in 1984 along with the handrails at public building entrances. A concrete retaining wall clad in beige brick creates the areaway on the north side of Wing A.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Retaining Wall | Granite – Gray (Type VI) | Honed | 1966 |  |
| Coping | Marble – VT. Meadow White | Honed | 1966 | |

Granite retaining walls contain raised planting beds on either side of the north entrance.

## North Elevation

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Library Terrace | Granite – Gray (Type II) | Shot Ground | 1966 |
| Curb | Granite – Black (Type III) | Shot Ground | 1966 |
| Bench | Wood/ Granite – Red | Treated/ Honed | 1966 |

A paved court lies to the north of the library (Wing E). The area is paved with large gray granite pavers in a staggered grid pattern. Three red granite benches are staggered along the north side of the paved area. The paved area has been reduced. Gravel fill has been removed from perimeter planters and replaced with mulch and planting. The benches are in their original configuration.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Arcade – Ceiling | Concrete | Painted | 1966 |
| Arcade – Floor | Concrete | Painted | 1966 |
| Lighting – Surface-Mounted | Cast Aluminum/ Opal Glass | Satin Finish/ Semi-Translucent | 1966 |

A geometric arcade connects the north entrance to Wing A with Building 225. Two rows of rectangular concrete columns support a precast concrete canopy in a chevron shape. The concrete columns and canopy ceiling are painted white. There are paired surface-mounted lights at each valley of the roof adjacent to the supporting columns.

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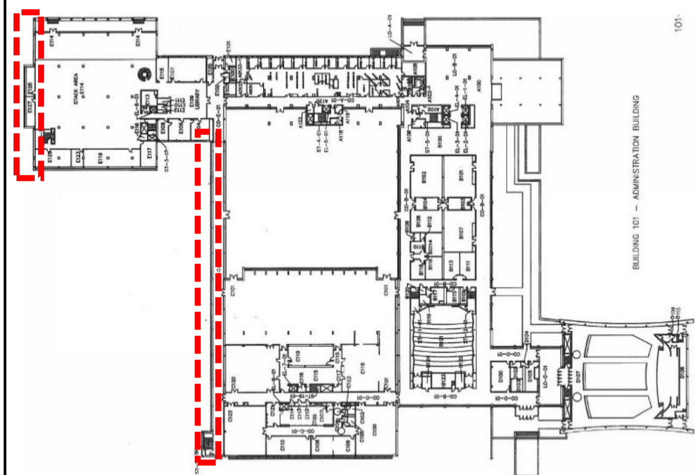
## West Elevation

The west elevation is the least visible to visitors. It therefore has more simplified materials and detailing compared with the other elevations. In particular, there is very little marble cladding. There are also no entrances along the west elevation. The principal façade is the west façade of the Library (Wing E). This façade features limestone and granite cladding with a marble fascia. The entire west façade of the projecting center bay features is aluminum-and-glass curtain wall. The secondary façade is the west façade of Wing C. This features an aluminum-and-glass curtain wall system at the first-floor level and beige brick cladding with no openings on the basement level.

The west elevation of the office tower is identical to the east elevation. It features beige brick cladding without punched openings.

Location Plan (NTS)



## West Elevation

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Limestone – IN. Standard Buff | Honed | 1966 |
| Base | Granite – Black (Type I) | Stippled | 1966 |
| Fascia | Marble – VT. Meadow White | Honed | 1966 |

Limestone ashlar clads the library's west elevation. Rectangular limestone panels are oriented vertically and laid in a stacked bond pattern. The panels alternate between two thinner rectangular panels and one larger square panel in a checkerboard pattern.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Brick – Beige | Smooth | 1966 |
| Base | Granite – Black (Type I) | Stippled | 1966 |

Beige brick cladding is the lowest-level exterior finish and typically designates utilitarian spaces and offices. Beige brick clads the west elevation of Wing C at the basement level and the west elevation of the office tower.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Curtain Wall | Anodized Aluminum/ Glass | Clear Satin Finish/ Clear | 1966 |
| Insulated Panel | Porcelain-Insulated Steel | Glazed – PBS #27886 White | 1966 |
| Base | Granite – Black (Type I) | Stippled | 1966 |
| Fascia | Duranodic Aluminum | Medium Black Finish | 1966 |

The projecting center bay of the library façade features an aluminum-and-glass curtain wall system. The large plate glass windows light the reading carrells situated to the west of the main stack area. Porcelain-insulated stainless-steel panels are set within the curtain wall frame below the row of glazing.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Curtain Wall | Anodized Aluminum/ Glass | Clear Satin Finish/ Clear | 1966 |

Curtain wall is the typical exterior cladding at corridors and lobbies. An aluminum-and-glass curtain wall system spans the length of the west façade of Wing C at the first-floor level. The large plate glass windows light the corridor connecting Wing C with Wings A and E.

## South Elevation

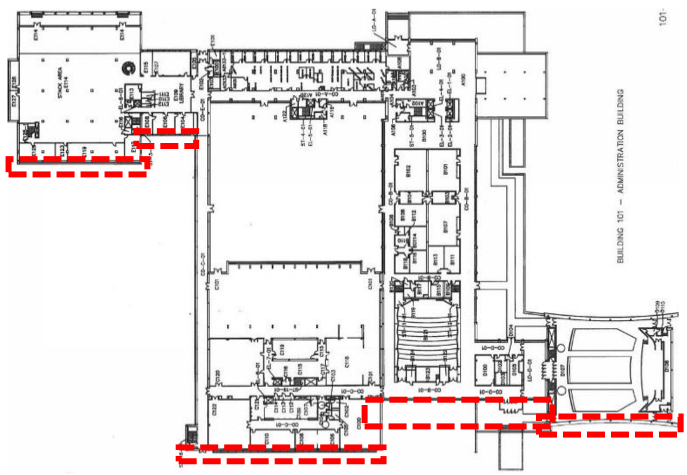
The south elevation spans the Red Auditorium (Wing D), the Green Auditorium (Wing B), The cafeteria and loading dock (Wing C), and the library (Wing E).

The principal façade of the south elevation is the south entrance plaza and vestibule for Wing B. This façade features spans of aluminum-and-glass curtain wall between marble-clad columns. The south entrance vestibule projects from one bay of the curtainwall. Granite steps lead up to the granite-paved entrance plaza immediately in front of the entrance vestibule.

The limestone-clad south elevation of the Red Auditorium (Wing D) is east of the south entrance. To the west of the south entrance lies the concrete loading dock that services the back-of-house spaces in Wings B and C. The south facade of Wing C is clad in beige brick at the basement-level, indicating this Wing's more utilitarian use compared with Wings B, D, and E. At the first-floor level, Wing C features a span of curtain wall behind an aluminum brise-soleil. The south facade of the library features a cantilevered curtain-wall bay framed in limestone and marble trim over a black granite base.

For description of the south office tower features, see Court – South Elevation section.

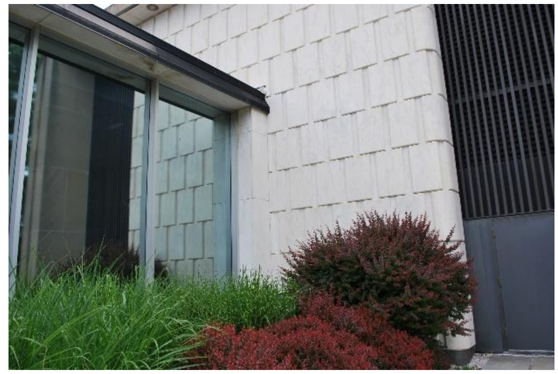
Location Plan (NTS)



## South Elevation

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Marble – VT. Meadow White | Honed | 1966 |
| Base | Granite – Black (Type I) | Stippled | 1966 |
| Fascia | Limestone – IN. Buff | Honed | 1966 |

Marble is used sparingly on the south façade. Its most prominent use is cladding for the masonry columns between spans of curtainwall at the south entrance of Wing B. It is also used as the upper and lower fascia of the projecting bay at the south façade of the Library (Wing E).



| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Limestone – IN. Buff | Honed | 1966 |
| Base | Granite – Black (Type I) | Stippled | 1966 |

Limestone is the second-highest exterior finish and typically clads the secondary facades of large, formal spaces. Limestone panels clad the secondary south elevation of the Red Auditorium (Wing D). Rectangular limestone panels are oriented vertically and laid in a stacked bond pattern alternating between two thinner rectangular panels and one larger square panel in a checkerboard pattern.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Brick - Beige | Smooth | 1966 |
| Base | Granite – Black (Type I) | Stippled | 1966 |

Beige brick cladding on exterior facades indicates utilitarian and less public interior spaces, such as offices. Beige brick clads the south loading dock and the south elevation of Wing C, which houses offices and back-of-house spaces that serve the cafeteria. Brick cladding is also found at the south elevation of Wing E at the original library cataloging room.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Curtain Wall | Anodized Aluminum/ Glass | Clear Satin Finish/ Clear | 1966 |
| Base | Granite – Black (Type I) | Stippled | 1966 |
| Fascia | Duranodic Aluminum | Medium Black Finish | 1966 |

Curtain wall is the typical exterior cladding at corridors and lobbies. At the south corridor of Wing B, marble-clad columns divide tripartite bays of aluminum-and-glass curtain wall. Each tripartite bay features six lites – three large vertical lites above and three smaller horizontal lights below.

## South Elevation

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Curtain Wall | Anodized Aluminum/ Glass | Clear Satin Finish/ Clear | 1966 |  |
| Fins | Aluminum | Alcoa #2020 Gray | 1966 | |
| Brise Soleil | Aluminum | Alcoa #2010 Gray | 1966 | |
| Insulated Panel | Porcelain-Insulated Steel | Glazed – PBS #27886 White | 1966 | |
| Fascia | Duranodic Aluminum | Medium Black Finish | 1966 | |

This curtain wall type is only found on the south façade of Wing C. It lights original private dining rooms, staff dining room, and multipurpose room – now conference rooms, the Heritage Room, and the Portrait Room respectively. The fins and horizontal "blades" create a brise soleil that prevents excessive daylighting, which is a concern given the curtain wall's southern exposure.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Curtain Wall | Anodized Aluminum/ Glass | Clear Satin Finish/ Clear | 1966 |  |
| Fascia | Marble – VT. Meadow White | Honed | 1966 | |
| Trim | Limestone – IND. Buff | Honed | 1966 | |
| Insulated Panel | Porcelain-Insulated Steel | Glazed – PBS #27886 White | 1966 | |
| Base | Granite – Black (Type I) | Stippled | 1966 | |

The south façade of the library (Wing E) features a cantilevered curtain-wall system set within a frame of marble and limestone trim. This curtain wall lights library staff offices on the first floor and study rooms on the mezzanine level. The upper and lower fascia of the projecting bay are white Vermont marble. The trim at either end of the projecting bay is Indiana limestone. Porcelain-insulated panels are inserted above the mezzanine-level glazing, below the first-floor glazing, and between the two levels of glazing.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Window - Fixed | Anodized Aluminum/ Glass | Clear Satin Finish/ Clear | 1966 |  |

This window type is found at the original Library cataloging room. The aluminum frame stands proud of the brick façade on all four sides. In Building 101, punched openings are used at interior spaces that require a greater degree of control over daylighting.

## South Elevation

<table>
<tr><th>FEATURE</th><th>MATERIAL</th><th>FINISH</th><th>DATE</th><th>PHOTO</th></tr>
<tr><td>Window - Fixed</td><td>Anodized Aluminum/ Glass</td><td>Clear Satin Finish/ Clear</td><td>1966</td><td rowspan="2"></td></tr>
<tr><td colspan="4">This window type only occurs on the south Library façade at the basement level. The aluminum frame is recessed within granite cladding. The protruding aluminum sill is integral to the frame. In Building 101, punched openings are used at interior spaces that require a greater degree of control over daylighting.</td></tr>
<tr><td>Window - Fixed</td><td>Anodized Aluminum/ Glass</td><td>Clear Satin Finish/ Clear</td><td>1966</td><td rowspan="2"></td></tr>
<tr><td colspan="4">This window type occurs at office space in Wing C and Wing E. The aluminum frame is recessed within brick cladding. The protruding aluminum sill is integral to the frame. In Building 101, punched openings are used at interior spaces that require a greater degree of control over daylighting.</td></tr>
<tr><td>Opening – Louvered</td><td>Anodized Aluminum</td><td>Clear Satin Finish</td><td>1966</td><td rowspan="2"></td></tr>
<tr><td colspan="4">Louvers indicate that interior space at this location houses mechanical equipment. The aluminum frame is recessed within brick cladding. The protruding aluminum sill is integral to the frame.</td></tr>
<tr><td>Opening – Louvered</td><td>Anodized Aluminum</td><td>Clear Satin Finish</td><td>1966</td><td rowspan="2"></td></tr>
<tr><td colspan="4">Louvers indicate that interior space at this location houses mechanical equipment. This louvered opening is adjacent to the south loading dock. The aluminum frame is recessed within brick cladding. The protruding aluminum sill is integral to the frame.</td></tr>
</table>

## South Elevation

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Opening – Louvered | Anodized Aluminum | Clear Satin Finish | 1966 |

Louvers indicate that interior space at this location houses mechanical equipment. These louvered openings are found at the basement level of Wing E. Each grouping of three louvered openings aligns with a window above on the first floor.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| South Entrance Vestibule | Stainless Steel/ Glass | No. 4 Satin Finish/ Clear | 1966 |

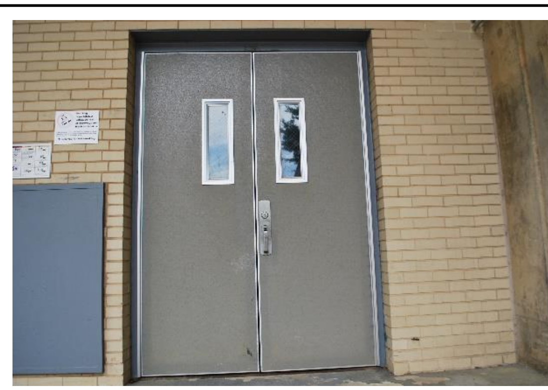
The south entrance vestibule extends from the south façade of Wing B. The vestibule framing is steel clad in stainless steel. The existing doors are not original. Construction drawings show that originally doors were full-lite with simple pull bar hardware.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| South Entrance Plaza – Pavers and Stairs | Granite – Black (Type III) | Shot Ground | 1966 |
| South Entrance Plaza - Spacers | Granite – Gray (Type II) | Shot Ground | 1966 |
| Handrails | Stainless Steel | No. 4 Satin Finish | 1984 |

A two-level entrance plaza leads from the pedestrian path to the south entrance vestibule. The plaza is paved with large black granite pavers and smaller gray granite spacers. Granite stairs lead from the lower level of the plaza up to the upper plaza and the entrance vestibule. The handrails at all formal entrances were replaced in 1984. The footprint of the lower plaza has been reduced roughly half from its original size.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Doors – Double-Leaf | Hollow Metal/ Glass | Painted/ Wire | 1966 |

Two doors of this type lead from the south loading dock into back-of-house spaces on the basement level of Wing C. The door frame is painted steel. Aluminum trim frames the painted steel doors as well as the wire-glass lites. Original hardware includes a dead bolt and lever handle with a thumb latch.



## South Elevation

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Door – Double-Leaf | Hollow Metal | Painted | 1966 |  |
| Hardware | Aluminum | Satin Finish | 1966 | |

One door of this type leads from the south loading dock to back-of-house space on the basement level of Wing C. The door frame is painted steel. Original hardware includes a dead bolt and door knob.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Door – Double-Leaf | Anodized Aluminum/ Glass | Clear Satin Finish/ Clear | 1966 |  |
| Hardware | Aluminum | Satin Finish | 1966 | |

These full-lite aluminum doors are the original exterior door type. Original hardware includes dead bolts and pull bars on the exterior and a simple push bar on the interior. The door frame is aluminum with a painted steel lintel plate above. This door type is found at the basement level of Wing C.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Door – Single-Leaf | Hollow Metal | Painted | 1966 |  |
| Hardware | Aluminum | Satin Finish | 1966 | |

The door frame is painted carbon steel. Original hardware includes a dead bolt and door knob. A plexiglass panel is fastened to the bottom half of the door to protect against impacts with equipment and deliveries. This door type is found at the loading dock.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Garage Door – Rolling | Aluminum | Anodized | 1966 |  |

The door frame is painted carbon steel. Two garage door openings have been closed up with painted steel panels. A single-leaf pedestrian door has been inserted into one of the paneled openings. The date of these alterations is unknown.

## South Elevation

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
| --- | --- | --- | --- | --- |
| Light | Cast Aluminum/ Opal Glass | Satin Finish/ Semi-Translucent | 1966 |  |
| This is an original light fixture. It is located above the original full-lite aluminum doors on the south façade of Wing C. | | | | |
| Access Panel | Cast Bronze | Natural Patina | 1966 |  |
| A rectangular bronze access panel covers each hose bib location. The face of each panel door features an embossed cross hatch pattern. Raised block letters spell out “WATER” in all capitals. | | | | |
| Retaining Wall | Granite – Gray (Type VI) | Honed | 1966 |  |
| Coping | Marble – VT. Meadow White | Honed | 1966 | |
| Granite retaining walls create the raised planting beds on either side of the south entrance plaza. | | | | |
| Retaining Wall | Concrete | Grooved | 1966 |  |
| A large concrete retaining wall creates the cut-through to allow vehicular access to the basement-level loading dock on the south side of Wing B. | | | | |

## South Elevation

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Retaining Wall | Concrete | Grooved | 1966 |  |

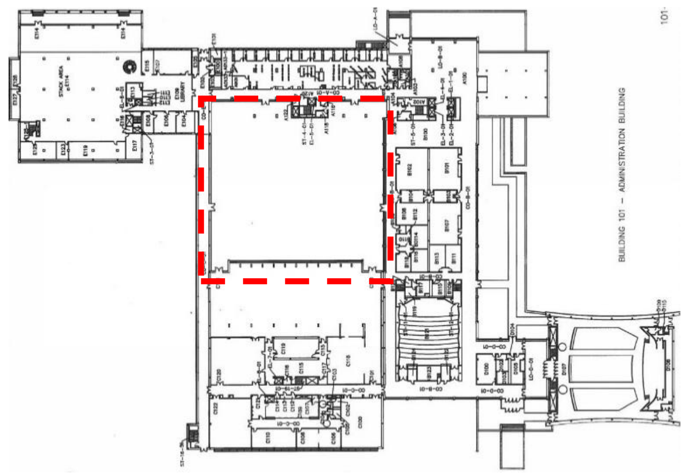
A smaller concrete retaining wall is located at the west end of Wing C.

## Inner Court

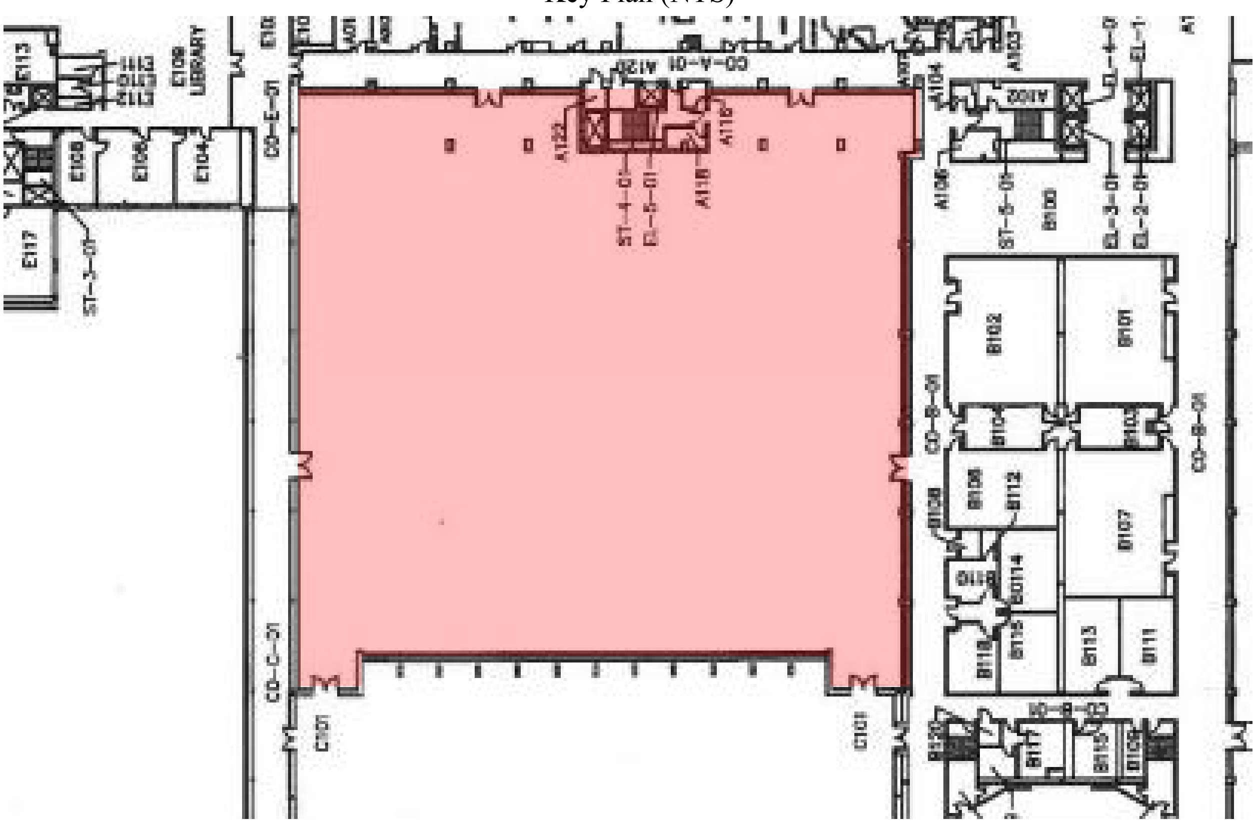
The court is the centerpiece of Building 101. It features a sunken central plaza with a rectangular reflecting pool and simple foot bridge. Original granite benches are grouped together at the north end of the plaza to encourage social exchanges among NIST employees. Granite planters surround the plaza on all sides. Lush plantings creating a natural, bucolic environment intended to draw people out of the building and into courtyard.

Large expanses of curtain wall surround the court on all four sides. Curtain wall allows for uninterrupted sightlines between the various interior spaces and inner court. This transparency encourages impromptu meetings and potentially collaborations between NIST employees.

Location Plan (NTS)



Key Plan (NTS)



# Inner Court

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Perimeter Paving | Granite – Gray (Type II) | Shot Ground | 1966 |  |

The perimeter of the inner court is paved with rectangular gray pavers with a shot ground finish. Pavers are laid in a stacked grid pattern with uninterrupted joint lines on both axes.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Sunken Plaza – Pavers | Granite – Red (Type VII) | Shot Ground | 1966 |  |
| Sunken Plaza – Spacers | Granite – Red (Type VII) | Shot Ground | 1966 | |

The central plaza of the inner court is sunken below the perimeter and is paved with large square red granite pavers in a staggered checkerboard pattern. Narrow rectangular spacers of gray granite are set between every other paver.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Steps | Granite – Gray (Type II) | Shot Ground | 1966 |  |

Two shallow granite steps lead from the perimeter paving on the east and west sides of the sunken plaza. The steps are south of center and are lined up with double-leaf doors on the east and west court elevations.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Planters | Granite – Gray (Type VI) | Honed | 1966 |  |

Planter beds surround the sunken plaza where steps are not present. Planter beds are level with perimeter paving. Granite retaining walls contain the planters at the sunken plaza and steps.

## Inner Court

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Pool | Granite – Gray (Type VI) | Honed | 1966 |
| Foot Bridge | Concrete/ Granite – Gray (Type II) | Shot Ground | 1966 |

The rectangular pool is located just east of center within the sunken plaza. A simple foot bridge spans the pool just south of the pool's center line. This emphasizes the principle of balanced asymmetry used throughout the design of Building 101. Both the pool and the foot bridge are paved with gray granite, in contrast to the pink granite that is the principal paving for the sunken plaza.

PHOTO

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Drainage Tile | Granite – Red (Type VII) | Shot Ground | 1966 |

The four drainage tiles set within the sunken plaza are made of the same pink granite used for the large pavers.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Sundial | Concrete/ Bronze | Exposed Aggregate/ Natural Patina | 1966 |

The NBS Commemorative Sundial was installed in the inner court upon the completion the Gaithersburg Campus in 1966. It commemorates the Bureau's firth three Directors. At its installation, it was on of the most complex in the world – at noon each day giving not only the time but the date, season of the year, time of sunrise and sunset, and height of the sun above the horizon. It remains at its original location at the north end of the sunken plaza.

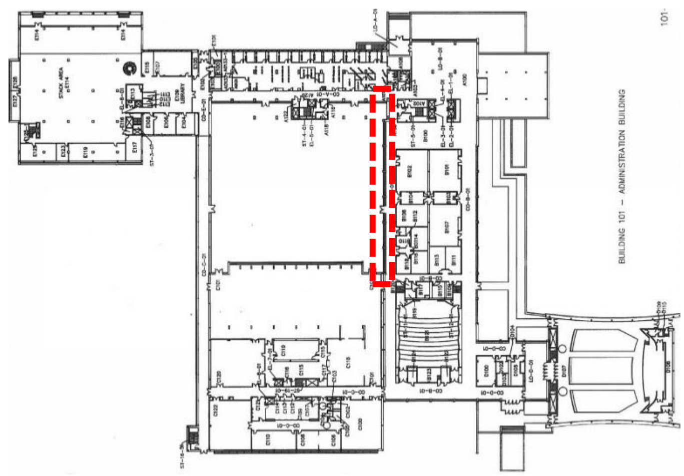
## Inner Court

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Bench | Granite/ Wood | Honed/ Treated | 1966 |  |
| Each bench consists of wooden slats laid across three rectangular granite feet. They are arranged in two groupings – one pair at the east end of the sunken plaza and a group of three at the west end. The benches are in their original configurations. | | | | |

## Court Elevation – East Elevation (Looking East)

The east court elevation features a 5-bay span of aluminum-and-glass curtain wall. Two spans of marble-clad wall with no openings flank the curtain-wall system. A projecting concrete canopy partially shades the curtain wall. A set of double-leaf doors are set in the second bay of curtain wall from the south - slightly south of the elevation's center line. The doors are aligned with granite steps leading down to the sunken plaza, which maintains the feeling of balanced asymmetry seen throughout the building.

Location Plan (NTS)



East Elevation

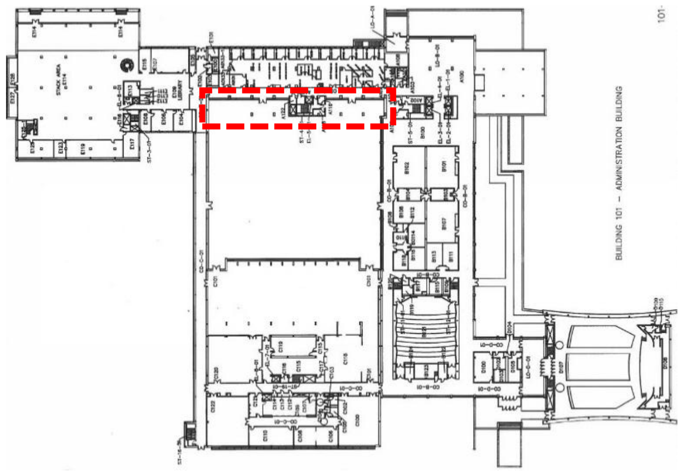
## Court Elevation – East Elevation (Looking East)

<table>
<tr><th>FEATURE</th><th>MATERIAL</th><th>FINISH</th><th>DATE</th><th>PHOTO</th></tr>
<tr><td>Wall</td><td>Marble – VT. Meadow White</td><td>Honed</td><td>1966</td><td rowspan="3"></td></tr>
<tr><td>Base</td><td>Granite – Black (Type I)</td><td>Stippled</td><td>1966</td></tr>
<tr><td colspan="4">Marble clads the two end bays as well as the columns between each bay of curtain wall. Marble is the highest-level exterior finish. It is chiefly used at formal entrances and as a cladding material for large formal spaces. Its use in this location identifies the inner court as a significant formal space.</td></tr>
<tr><td>Curtain Wall</td><td>Anodized Aluminum/ Glass</td><td>Clear Satin Finish/ Clear</td><td>1966</td><td rowspan="5"></td></tr>
<tr><td>Base</td><td>Granite – Black (Type I)</td><td>Stippled</td><td>1966</td></tr>
<tr><td>Canopy Soffit</td><td>Concrete</td><td>Painted</td><td>1966</td></tr>
<tr><td>Fascia</td><td>Duranodic Aluminum</td><td>Medium Black Finish</td><td>1966</td></tr>
<tr><td colspan="4">Tripartite bays of aluminum-and-glass curtain wall span between marble-clad masonry columns. Each tripartite bay features six lites – three large vertical lites above and three smaller horizontal lites below. Curtain wall allows for uninterrupted sightlines between the corridor and inner court. This transparency encourages impromptu meetings between NIST employees.</td></tr>
<tr><td>Door – Double-Leaf</td><td>Anodized Aluminum/ Glass</td><td>Clear Satin Finish/ Clear</td><td>1966</td><td rowspan="4"></td></tr>
<tr><td>Frame</td><td>Anodized Aluminum</td><td>Clear Satin Finish</td><td>1966</td></tr>
<tr><td>Hardware</td><td>Aluminum</td><td>Satin Finish</td><td>1966</td></tr>
<tr><td colspan="4">This is the original exterior door. One set of doors is centered in the second bay of the curtain wall from the south end. The doors are slightly south of the elevation's center line and aligned with steps leading to the sunken plaza, maintaining the balanced asymmetry seen throughout the building.</td></tr>
<tr><td>Access Panel</td><td>Bronze</td><td>Dark Patina</td><td>1966</td><td rowspan="2"></td></tr>
<tr><td colspan="4">A rectangular bronze access panel covers each hose bib location. The face of each panel door features an embossed cross hatch pattern. Raised block letters spell out "WATER" in all capitals. Bronze panels are corroding and staining surrounding marble bluish green and gray.</td></tr>
</table>

## Court Elevation – North Elevation (Looking North)

The north elevation of the inner court includes a covered terrace with marble cladding and curtain walls. The south elevation of the office tower rises above the north court elevation. It is a multi-story facade with repeating aluminum columns and single-light fenestration with porcelain spandrels. Two columns of beige brick cladding interrupt the repeating aluminum curtain-wall system and express the location of the interior elevator shafts. Aluminum curtain-wall at the elevator lobbies feature a different fenestration pattern from the rest of the façade. This treatment realizes two of the main aesthetic ideals of the International Style: the belief that form should express underlying function and the emphasis placed on balanced asymmetry.

Location Plan (NTS)




North Elevation

## Court Elevation – North Elevation (Looking North)

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Marble – VT. Meadow White | Honed | 1966 |
| Base | Granite – Black (Type I) | Stippled | 1966 |

The center protruding bay of the north court elevation is clad in marble. Large rectangular marble panels are oriented vertically in a stacked bond pattern. Marble is the highest-level exterior finish. It is chiefly used at formal entrances and as a cladding material for large formal spaces. Its use in this location identifies the inner court as a significant formal space.

PHOTO

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Brick – Beige | Smooth | 1966 |

On the south elevation of the office tower, two columns of beige brick cladding flank a bay of tripartite aluminum windows. The tripartite windows light the main elevator lobby on floors 2 through 11. The columns of brick cladding correspond with the location of the interior elevator shafts.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Curtain Wall – Extruded Frame | Anodized Aluminum | Clear Satin Finish | 1966 |
| Curtain Wall – Spandrel Panel | Porcelain-Insulated Steel | Glazed – PBS #27886 White | 1966 |
| Curtain Wall – Reversible Window | Anodized Aluminum/ Glass | Clear Satin Finish/ Clear | 1966 |
| Curtain Wall – Fascia | Anodized Aluminum | Clear Satin Finish | 1966 |

The north elevation of the office tower is clad in an aluminum curtain wall with protruding aluminum columns. The aluminum columns separate bays of windows along the horizontal axis. Porcelain insulated steel panels separate windows and louvered openings along the vertical axis. The curtain wall fenestration pattern changes at the location of interior elevator lobbies.

## Court Elevation – North Elevation (Looking North)

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Curtain Wall | Anodized Aluminum/ Glass | Clear Satin Finish/ Clear | 1966 |
| Base | Granite – Black (Type I) | Stippled | 1966 |

Exterior walls on either side of the marble-clad center bay are aluminum-and-glass curtain wall. Large rectangular lites are arranged vertically over smaller rectangular lites arranged horizontally. There is a large square transom lite over the double-leaf door. Curtain wall allows for uninterrupted sightlines between the corridor and inner court. This transparency encourages impromptu meetings between NIST employees.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Opening – Louvered | Duranodic Aluminum | Medium Black Finish | 1966 |

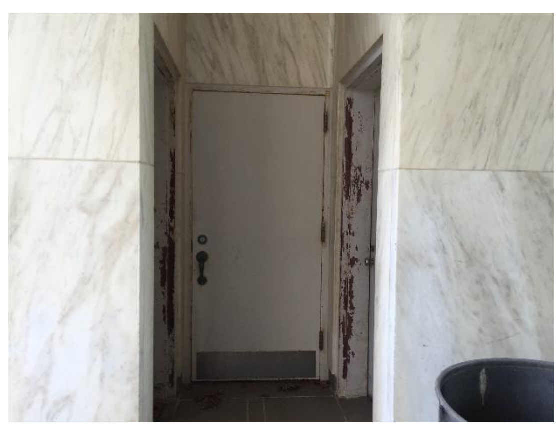
The punched openings at the second-floor level of the office tower are louvered rather than glazed. Louvers are used in place of glazing because the the entire second floor houses machine and equipment rooms. Duranodic describes a proprietary treatment of the Aluminum Corporation of America that is similar to anodizing.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Double-Leaf | Anodized Aluminum/ | Clear Satin Finish/ Clear | 1966 |
| Frame | Anodized Aluminum | Clear Satin Finish | 1966 |
| Hardware | Aluminum | Satin Finish | 1966 |

This is the original exterior door. There are two on the north court elevation– one on either side of the marble-clad center bay. Original hardware includes pull plates on the exterior and push bars on the interior.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Single-Leaf | Hollow Metal | Painted | 1966 |

This is the stair door leading from stairwell No. 5 into the courtyard. Original hardware includes a dead bolt and pull bar handle on the exterior and a panic bar on the interior.



## Court Elevation – North Elevation (Looking North)

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Door – Single-Leaf | Hollow Metal | Painted | 1966 |  |

Hollow metal doors at the two equipment rooms have a louvered panel set in the bottom half of each door. There are two doors of this type – one leading into each of the equipment rooms to the north and south of the stair door. Original hardware includes a dead bolt and door knobs.

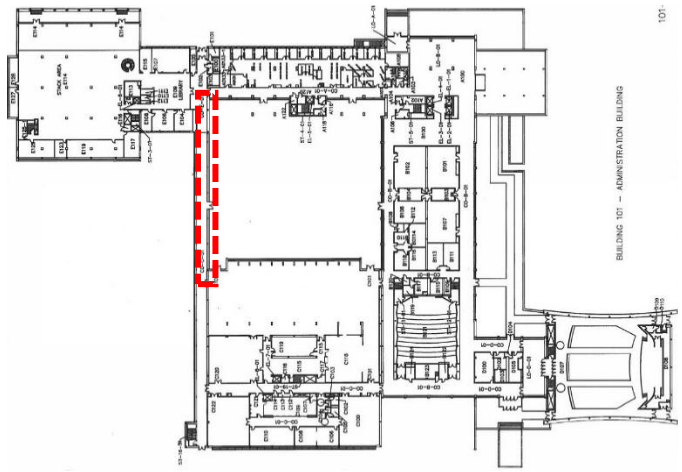
| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Canopy | Concrete | Painted | 1966 |  |
| Columns | Marble – VT. Meadow White | Honed | 1966 | |
| Fascia | Duranodic Aluminum | Medium Black Finish | 1966 | |

A concrete canopy covers the two recessed spaces on either side of the marble-clad center bay. Marble-clad concrete columns support both canopies. The east canopy spans the entire distance between the protruding center bay and the east court elevation. The west canopy only spans half the distance between the center bay and the west court elevation.

## Court Elevation – West Elevation (Looking West)

The west court elevation is the least ornate of the court elevations. Its principle feature is a long expanse of aluminum-and-glass curtain wall. This curtain-wall system lacks the intervening marble-clad columns, so that it is less ornamental than similar curtain walls on the north and east court elevations. This further establishes interior Wing C corridors as more utilitarian and less high-style than Wing B corridors. A projecting concrete canopy partially shades the curtain wall. Two spans of marble-clad wall flank the curtain-wall system. A set of double-leaf doors are set slightly south of the elevation's center line. The doors are aligned with granite steps leading down to the sunken plaza, which maintains the feeling of balanced asymmetry seen throughout the building.

Location Plan (NTS)



West Elevation

## Court Elevation – West Elevation (Looking West)

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Wall | Marble – VT. Meadow White | Honed | 1966 |  |
| Base | Granite – Black (Type I) | Stippled | 1966 | |

Marble clads the walls flanking the aluminum-and-glass curtain wall. Marble is the highest-level exterior finish. It is chiefly used at formal entrances and as a cladding material for large formal spaces. Its use in this location identifies the inner court as a significant formal space.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Curtain Wall | Anodized Aluminum/ Glass | Clear Satin Finish/ Clear | 1966 |  |
| Base | Granite – Black (Type I) | Stippled | 1966 | |
| Canopy Soffit | Concrete | Painted | 1966 | |
| Fascia | Duranodic Aluminum | Medium Black Finish | 1966 | |

Curtain wall spans most of the façade. Large rectangular lites are arranged vertically over smaller rectangular lites arranged horizontally. There is a large square transom lite over the double-leaf door. Curtain wall allows for uninterrupted sightlines between the corridor and inner court. This transparency encourages impromptu meetings between NIST employees.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Door – Double-Leaf | Anodized Aluminum/ Glass | Clear Satin Finish/ Clear | 1966 |  |
| Frame | Anodized Aluminum | Clear Satin Finish | 1966 | |
| Hardware | Aluminum | Satin Finish | 1966 | |

This is the original exterior door. One set of double-leaf doors are slightly south of the elevation's center line and aligned with steps leading to the sunken plaza. This maintains the balanced asymmetry seen throughout the building.

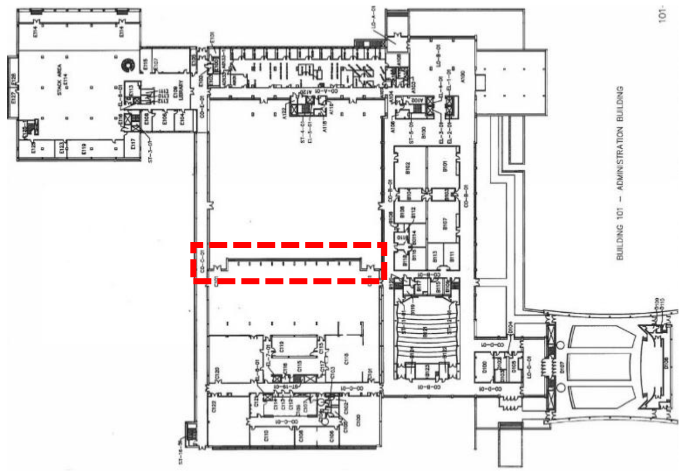
| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Access Panel | Bronze | Dark Patina | 1966 |  |

A rectangular bronze access panel covers each hose bib location. The face of each panel door features an embossed cross hatch pattern. Raised block letters spell out "WATER" in all capitals. Bronze panels are corroding and staining surrounding marble bluish green and gray.

## Court Elevation – South Elevation (Looking South)

The south elevation is the principal elevation surrounding the inner court. It features a scalloped roof system in direct contrast with the overall rectilinear design of Building 101. This characteristic provides a unique and visually interesting backdrop for the inner court. It draws attention to the cafeteria space within Wing E, underlining the significance of the open, communal dining area in the spatial hierarchy of Building 101. The elevation also features a long expanse of aluminum-and-glass curtain wall, which provides uninterrupted sightlines between the cafeteria and inner court, with the intention of facilitating social and professional interaction between building inhabitants.

Location Plan (NTS)



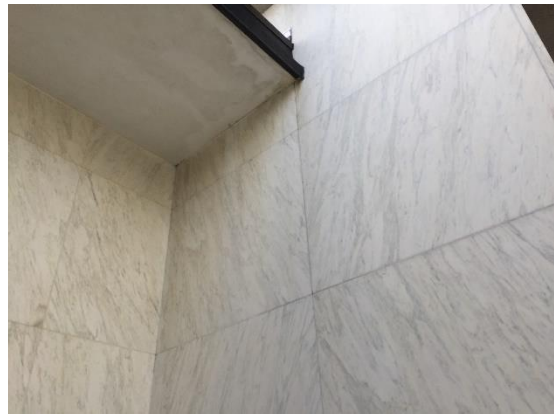
South Elevation

## Court Elevation – South Elevation (Looking South)

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Marble – VT. Meadow White | Honed | 1966 |
| Base | Granite – Black (Type I) | Stippled | 1966 |

Walls at either end of the central curtain wall are clad in white marble. Marble is the highest-level exterior finish. It is chiefly used at formal entrances and as a cladding material for large formal spaces. Its use in this location identifies the inner court as a significant formal space.

PHOTO



| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Curtain Wall | Anodized Aluminum/ Glass | Clear Satin Finish/ Clear | 1966 |
| Base | Granite – Black (Type I) | Stippled | 1966 |
| Canopy Soffit | Concrete | Painted | 1966 |
| Fascia | Duranodic Aluminum | Medium Black Finish | 1966 |

Aluminum-and-glass curtainwall spans most of the south court elevation. It features three rows of 24 lites each. The upper row of lites are curved along their upper edge to accommodate the curves of the scalloped roof line.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Double-Leaf | Anodized Aluminum/ Glass | Clear Satin Finish/ Clear | 1966 |
| Hardware | Aluminum | Satin Finish | 1966 |

This is the original exterior door. On the south court elevation, this door type flanks the curtain wall system leading into the cafeteria dining space. Original hardware includes pull plates on the exterior and push bars on the interior.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Access Panel | Bronze | Dark Patina | 1966 |

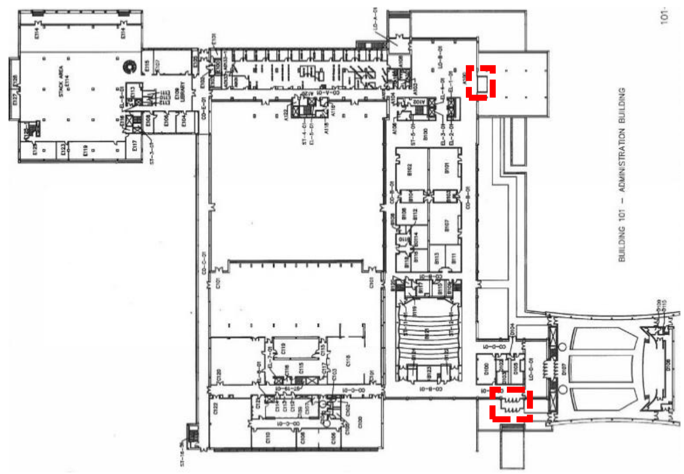
A rectangular bronze access panel covers each hose bib location. The face of each panel door features an embossed cross hatch pattern. Raised block letters spell out “WATER” in all capitals. Bronze panels are corroding and staining surrounding marble bluish green and gray.

## Entrance Vestibules

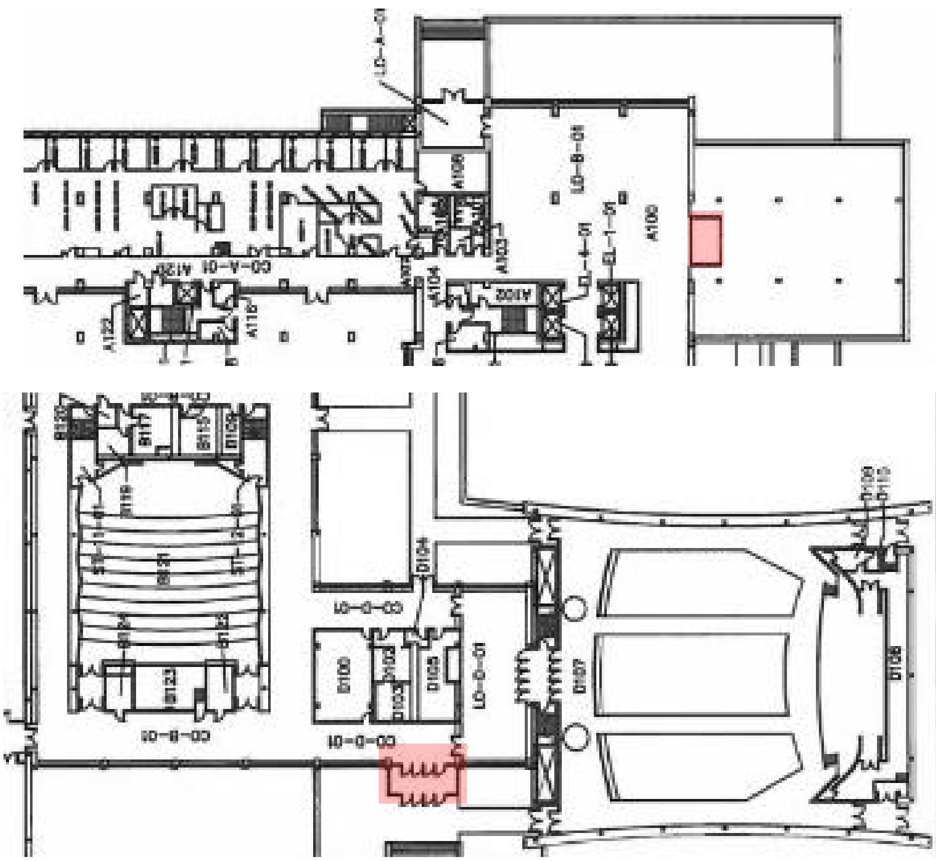
Entrance vestibules are located at the east entrance to the East Lobby (A100) and the south entrance to corridor CO-D-01 in Wing B. These are the two principle formal entrances to Building 101. Most visitors use the main entrance at A100. The south entrance serves as the formal entrance for the Red Auditorium in Wing D. Each vestibule is a projecting, single-story space enclosed with stainless-steel-and-glass curtain wall. The flat roof structure is also clad in stainless steel. Vestibules retain a high degree of architectural integrity, except that the original doors at both assemblies have been replaced.

The existing doors at both vestibules are not original. Construction drawings show that originally doors were full-lite, single-leaf swinging doors with simple pull bar hardware. The date and provenance of existing light fixtures is unknown.

Location Plan (NTS)



Key Plan (NTS)



## Entrance Vestibules

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Ceiling | Stainless Steel | No. 4 Satin Finish | 1966 |  |

The ceiling is clad in panels of stainless-steel sheet metal. Seams between the metal panels are exposed. There are no vents or diffusers mounted within the ceilings.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Curtain Wall | Stainless Steel/ Glass | No. 4 Satin Finish/ Clear | 1966 |  |
| Diffuser | Stainless Steel/ Glass | No. 4 Satin Finish/ Clear | 1966 | |

The muntins and frames of the curtain walls are clad in stainless steel. This differs from other curtain-wall assemblies in Building 101, which feature aluminum cladding. Stainless steel air ducts with diffusers run between muntins at the base of the curtain walls.

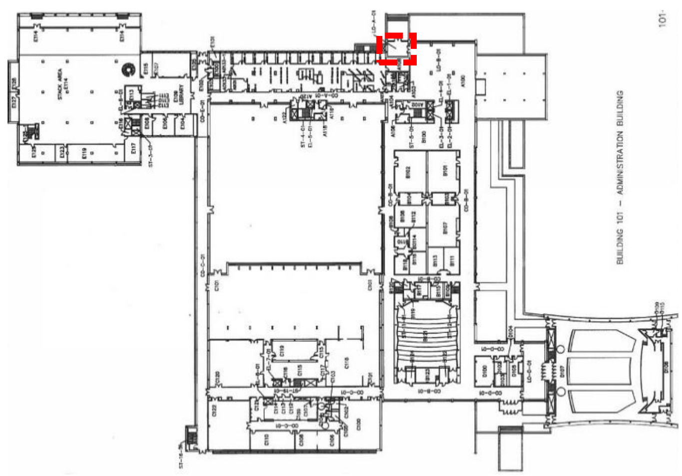
| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Pavers | Granite – Black (Type III) | Shot Ground | 1966 |  |
| Spacers | Granite – Gray (Type II) | Shot Ground | 1966 | |

The granite floors in the vestibules is a continuation of the granite paving at the east and south entrance plazas. Large rectangular pavers of black granite alternate with smaller gray granite spacers. In the east entrance vestibule, wall-to-wall carpet covers the granite pavers.

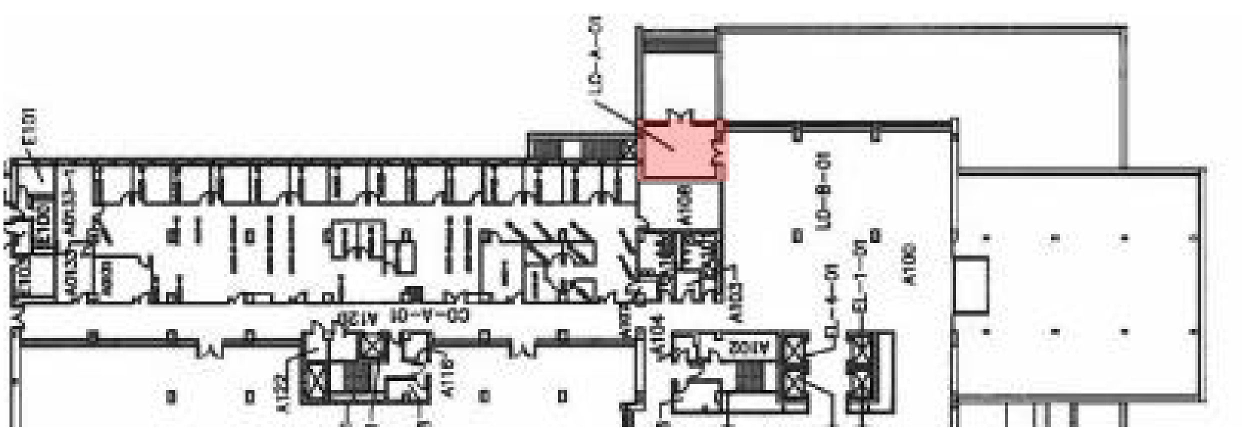
## North Lobby: LO-A-01

The North Lobby lies to the northwest of the East Lobby. It provides access to the East Lobby – the principle entrance – via the secondary North Entrance Plaza. Finishes are identical to the East Lobby. This includes marble walls, terrazzo floors, and aluminum-and-glass curtain wall.

Location Plan (NTS)



Key Plan (NTS)



## North Lobby: LO-A-01

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Ceiling | Acoustic Tile | Smooth | 2001 |

The ceiling consists of smooth acoustic tiles set within an exposed metal grid. Original construction drawings indicate that the ceiling in this location as to be acoustic plaster on metal lath. The acoustic tile ceiling sits at the original ceiling height as depicted in interior elevations in the original drawing set. Therefore, it is unlikely that an earlier plaster ceiling still exists beneath the suspended acoustic tile ceiling. The existing ceiling dates to corridor ceiling modifications that took place sometime during or after 2001.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Marble – VT. Meadow White | Polished | 1966 |
| Base | Terrazzo | Polished | 1966 |

Large panels of polished white Vermont marble clad the walls. This is the same marble that clads exterior elevations. The marble panels extend all the way to the suspended ceiling with no intervening molding at the connection. The recessed coved base is terrazzo and is continuous with the terrazzo floor.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Curtain Wall | Anodized Aluminum/ Glass | Clear Satin Finish/ Clear | 1966 |
| Base | Terrazzo | Polished | 1966 |

The north wall of the lobby is entirely aluminum-and-glass curtain wall. It is identical to a single bay of the north curtain wall in the East Lobby, except for a set of double-leaf doors centered in the curtain-wall span.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Double-Leaf w/ Transom | Anodized Aluminum/ Glass | Clear Satin/ Clear | 1966 |
| Frame | Anodized Aluminum | Clear Satin | 1966 |
| Hardware | Aluminum | Satin | 1966 |

A set of double-leaf doors lead into the East Lobby. An aluminum push bar visually divides the single lite at each door. The push bar is attached at either end to the aluminum stiles and does not bisect the single lite. The doors have been retrofitted as an ADA-compliant automatic entrance. The glass transom extends above the height of the ceiling.

## North Lobby: LO-A-01

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Floor | Terrazzo | Polished | 1966 |  |
| Dividing Strip | 1/16” White Metal | Polished | 1966 | |
| Terrazzo is white and gray aggregate set in black cement. This terrazzo type occurs only in first-floor corridors and lobbies. Wall-to-wall carpet currently covers the terrazzo floor. | | | | |
| Grille | Steel | Painted | 1966 |  |
| An HVAC grille is centered in the south wall. | | | | |

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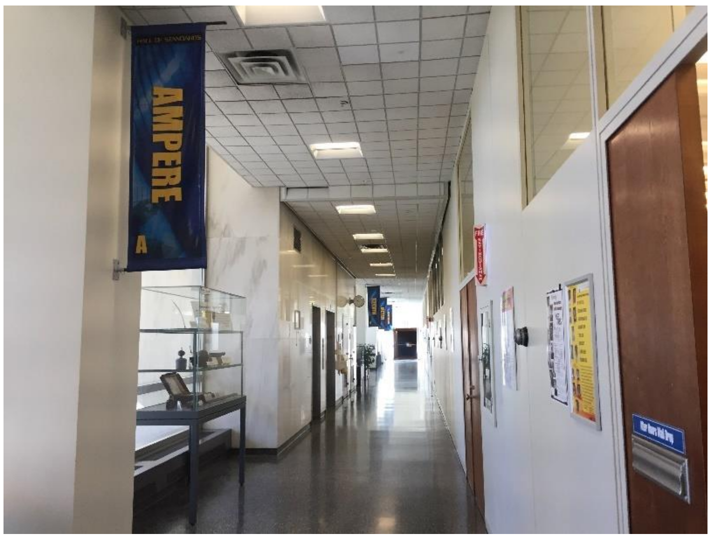
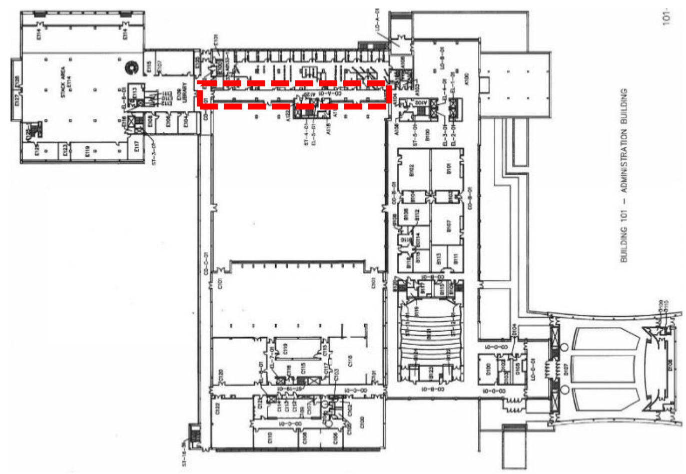
## Hall of Standards: CO-A-01

The Hall of Standards is located in Wing A to the north of the Central Court. Aluminum and glass curtain walls provide sight lines to the landscaped court and flood the corridor with natural light. A central marble-clad core contains the secondary stair tower, elevator, and two utility closets. The corridor runs east to west, connecting the east lobby in Wing A to the Library in Wing E. The first-floor administrative offices run along the north side of the corridor. The corridor takes its name – the Hall of Standards – from moveable exhibits displaying historic standards of measurement.

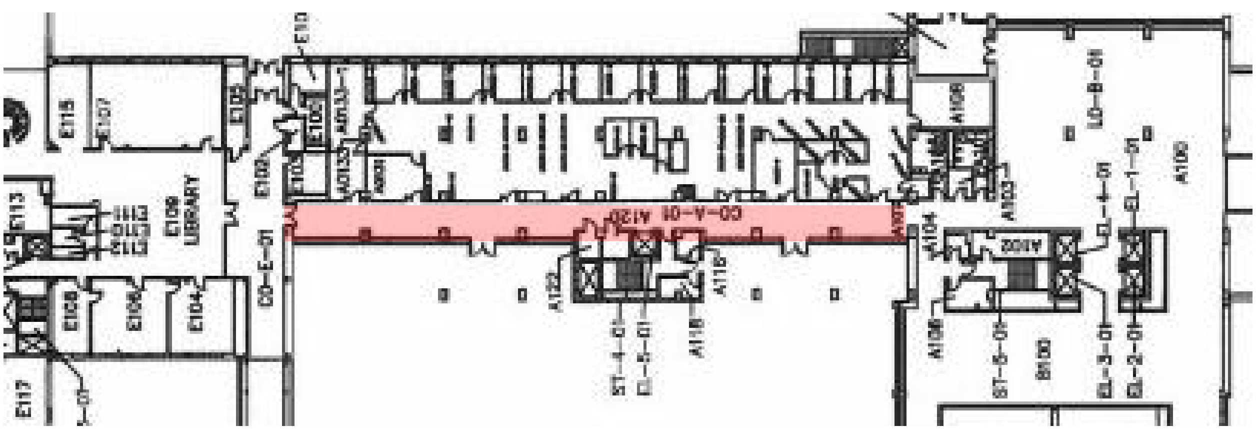
The corridor has remained mostly unchanged since 1966. The acoustic ceiling tiles and original light fixtures were replaced with new in 2001. This has been the most significant alteration. Original finishes include marble and plaster walls; terrazzo floors; stainless steel doors; and a moveable steel partition wall featuring walnut veneer doors and fixed transom windows.




Location Plan (NTS)



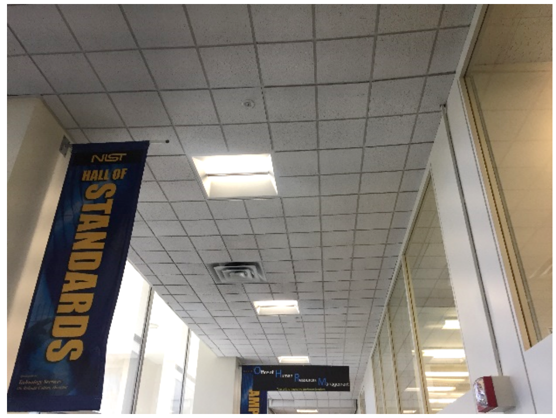
Key Plan (NTS)



## Hall of Standards: CO-A-01

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Ceiling | Acoustic Tile | Smooth | 2001 |

Original corridor ceilings were 12” x 12” prefabricated acoustic mineral plaster tiles. The existing acoustic tile ceiling was installed after 2001. It has an exposed metal grid.




| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Marble – VT. Meadow White | Polished | 1966 |
| Base | Terrazzo | Polished | 1966 |

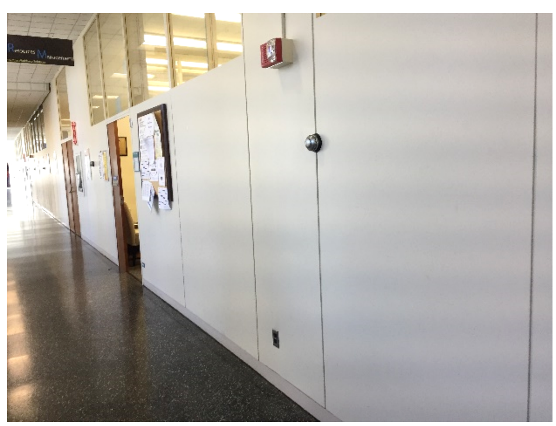
White Vermont marble clades the walls at the east and west ends of the corridor as well as the central stair core.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Plaster | Painted | 1966 |
| Base | Terrazzo | Polished | 1966 |

Square columns along the south side of the corridor are plastered and painted.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Steel Panel with Recessed Joints | Vinyl Coating | 1966 |
| Base | Steel | Vinyl Coating | 1966 |

The north wall is a moveable partition wall made of separate steel panels connected at recessed joints. The walls and base have a factory-applied vinyl coating. The partition wall appears to be in the same configuration as in the original construction drawings.



## Hall of Standards: CO-A-01

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Curtain Wall | Anodized Aluminum/ Glass | Clear Satin/ Clear | 1966 |
| Door – Double-Leaf | Anodized Aluminum/ Glass | Clear Satin/ Clear | 1966 |
| Hardware | Aluminum | Satin | 1966 |

PHOTO

Aluminum and glass curtain wall systems extend from masonry columns at the east and west ends to the central stair core. Large rectangular lites are arranged vertically over smaller rectangular lites arranged horizontally. Double-leaf, full-lite doors are centered in both the east and west spans of curtain wall. A push bar visually divides the single lite at each door. The push bar is attached at either end to the stiles and does not bisect the lite.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Single-Leaf | Wood w/ American Walnut Veneer | Stained Lacquer | 1966 |
| Frame | Steel | Painted | 1966 |
| Hardware – Knob | Aluminum | Satin | 1966 |
| Hardware – Hinges | Stainless Steel | Satin | 1966 |

Office doors are single-leaf clad in walnut veneer. A wood panel with matching veneer is inserted to the left of the door. Original hardware includes aluminum door knobs and stainless-steel modernist hinges. A lock set and lever handle have replaced original knobs at most doors.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Single-Leaf | Stainless Steel | No. 4 Satin | 1966 |
| Frame | Stainless Steel | No. 4 Satin | 1966 |
| Hardware – Knob | Aluminum | Satin | 1966 |
| Hardware – Hinges | Stainless Steel | Satin | 1966 |


A stainless-steel door leads into the stairwell. Raised lettering spells out STAIRS in all capitals. Original hardware includes aluminum door knobs and stainless-steel modernist hinges. A lock set and lever handle have replaced original knobs at stair door.

## Hall of Standards: CO-A-01

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Single-Leaf Louvered | Stainless Steel | No. 4 Satin | 1966 |
| Frame | Stainless Steel | No. 4 Satin | 1966 |
| Hardware – Knob | Aluminum | Satin | 1966 |
| Hardware – Hinges | Stainless Steel | Satin | 1966 |

Utility closet doors are stainless steel with a louvered vent. Original hardware includes aluminum door knobs and stainless-steel modernist hinges.

PHOTO

*Modernist stainless-steel hinge*

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Elevator | Stainless Steel | No. 4 Satin | 1966 |
| Frame | Stainless Steel | No. 4 Satin | 1966 |

A single elevator is located in the central stair core. The elevator door and frames are stainless steel with a satin finish.

# Hall of Standards: CO-A-01

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Window – Fixed | Steel/ Glass | Vinyl Coating/ Clear | 1966 |

Several large fixed transom windows are set within the steel partition wall.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Opening | Stainless Steel | No. 4 Satin | 1966 |

A stainless-steel frame opening leads into the stair door alcove.  A similar stainless-steel frame opening leads from the east lobby into the Hall of Standards.


| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Floor | Terrazzo | Polished | 1966 |
| Dividing Strip | 1/16” White Metal | Polished | 1966 |

Terrazzo is white and gray aggregate set in black cement.  This terrazzo type occurs only in first-floor corridors and lobbies.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Radiator Cabinet | Steel | Painted | 1966 |

Low radiator cabinets run along the base of both curtain-wall spans.

## Hall of Standards: CO-A-01

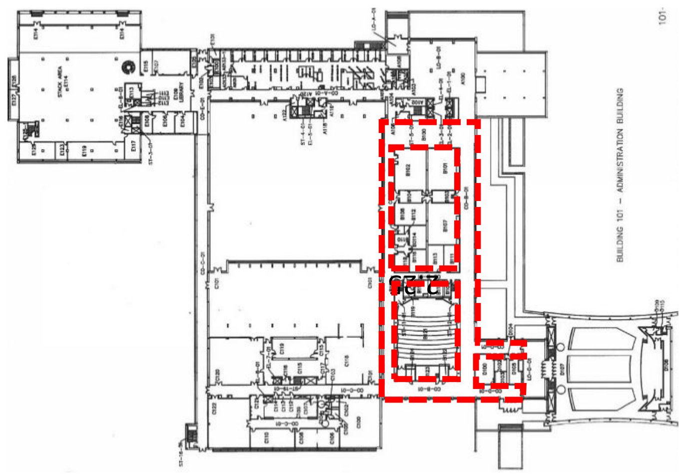
| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Water Fountain | Ceramic/ Chrome | Glazed/ Polished | 1966 |   |
| Ceramic water fountains are original. The manufacturer is Crane. | | | | |
| Thermostat | Stainless Steel | No. 4 Satin | 1966 |  |
| An original thermostat is mounted to the steel partition wall. The manufacturer is Honeywell. | | | | |

## Wing B and D Corridors and Exhibit Hall: CO-B-01, CO-D-01 and B100

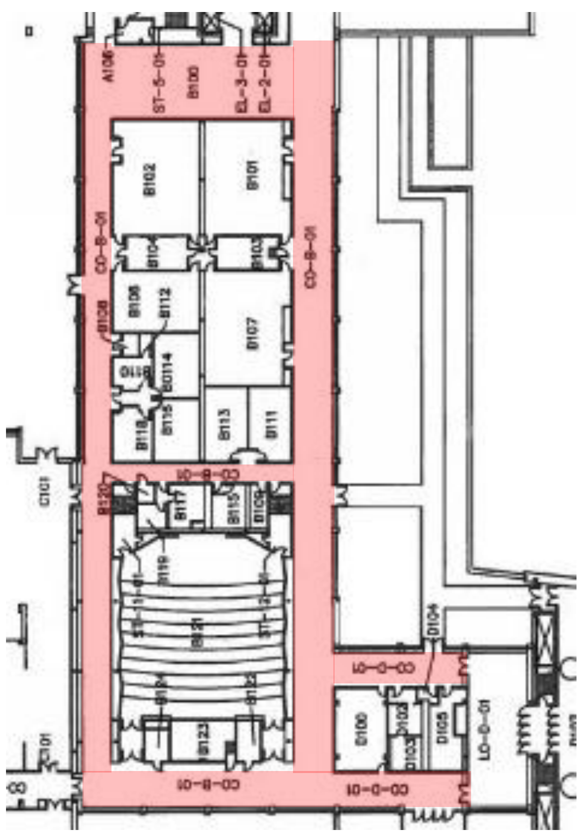
Corridors in Wing B allow circulation among the east lobby, the west entrance vestibule, the formal auditoria, and the first-floor lecture halls and classrooms. The Wing B corridors are designed as an extension of these public and formal spaces. The corridors are wide with high ceilings. All exterior walls are aluminum-and-glass curtain wall, so that the halls are flooded with natural light. The corridors feature elevated finishes, including marble, walnut paneling, glazed brick, terrazzo, and stainless steel.

There is a large open exhibit hall (B100) at the north end of Wing B. It is continuous with Wing B corridors and has identical finishes.

Location Plan (NTS)



Key Plan (NTS)



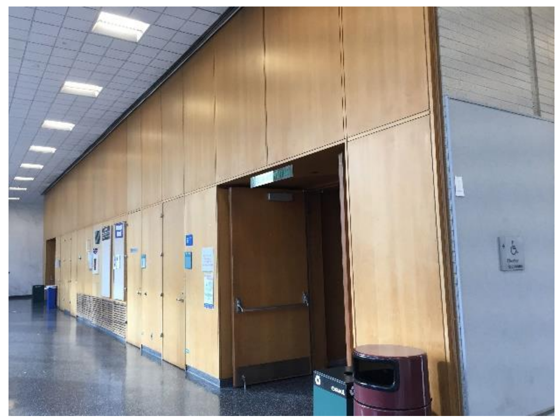
## Wing B and D Corridors and Exhibit Hall: CO-B-01, CO-D-01, and B100

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Ceiling | Acoustic Tile | Smooth | 2001 |

Original corridor ceilings were 12” x 12” prefabricated acoustic mineral plaster tiles. The existing acoustic tile ceiling was installed after 2001. It has an exposed metal grid.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Plywood w/ American Walnut Veneer | Stained Lacquer | 1966 |
| Base | Terrazzo | Polished | 1966 |

Walnut paneling designates entrances to the Green Auditorium, lecture rooms, and classrooms. The entire wall at the Green Auditorium is clad in walnut veneer panels. Entrances to lecture rooms and classrooms are through paneled alcoves.

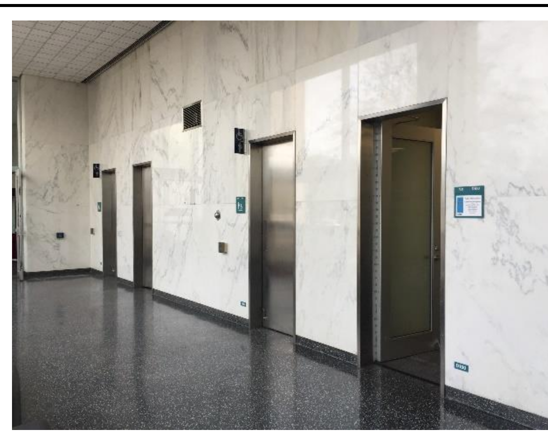


| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Brick | Glazed | 1966 |
| Base | Terrazzo | Polished | 1966 |

Corridor walls at classrooms and lecture rooms are clad in panels of glazed brick. Paneled alcoves at offices and classrooms divide glazed brick panels into regular spans. Bricks are laid in a stacked bond, with two recessed stacks each one brick wide dividing the panel into three columns. Glazing is a light gray color with black specks.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Marble – VT. Meadow White | Polished | 1966 |
| Base | Terrazzo | Polished | 1966 |

White Vermont marble clads walls at the entrance to the cafeteria and the two corridors leading to the Red Auditorium in Wing D. Marble also clads walls between spans of curtain wall.



## Wing B and D Corridors and Exhibit Hall: CO-B-01, CO-D-01, and B100

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Plaster | Painted | 1966 |
| Base | Terrazzo | Polished | 1966 |

The corridor to the north of the Green Auditorium has painted plaster walls. This corridor is much more utilitarian than the other corridors in Wing B. It provides access to the two stairwells behind the Green Auditorium, two janitor’s closets, and two small conference rooms.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Curtain Wall | Anodized Aluminum/ Glass | Clear Satin/ Clear | 1966 |

All exterior walls are aluminum-and-glass curtain wall. Tripartite bays of aluminum-and-glass curtain wall span between marble-clad concrete columns. Each tripartite bay features six lites – three large vertical lites above and three smaller horizontal lights below.

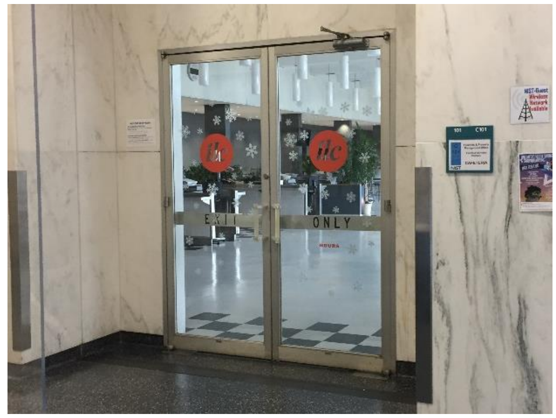
| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Double-Leaf | Aluminum/ Glass | Clear Satin/ Clear | 1966 |
| Frame | Aluminum | Clear Satin | 1966 |

There are two doors of this type. They lead from the corridor into the Red Auditorium Lobby. Doors are full lite. A panic bar visually divides the single lite on the lobby side. It is attached at either end to the two aluminum stiles. There are lever handles on the corridor side and a face-mounted closer on the lobby side. Original hardware has been replaced as part of the retrofit. Each door has a large square transom window that extends from the lintel to the ceiling.

## Wing B and D Corridors and Exhibit Hall: CO-B-01, CO-D-01, and B100

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Double-Leaf | Aluminum/ Glass | Clear Satin/ Clear | 1966 |
| Frame | Aluminum | Clear Satin | 1966 |
| Hardware | Aluminum/ Acrylic | Satin/ Semi-translucent | 1966 |

This door type leads into the Cafeteria. Doors are full lite. A push bar visually divides the single lite on the Cafeteria side. It is attached at either end to the two aluminum stiles. Pull bar handles are plastic molded into a simple cylinder shape. One door has a face-mounted closer on the corridor side.

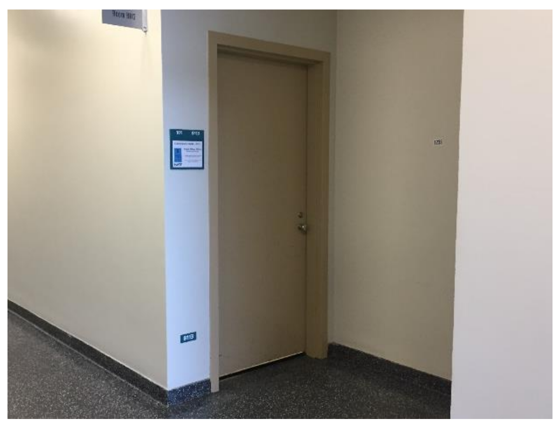




*Acrylic pull bars*

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Single-Leaf | Hollow Metal | Painted | 1966 |
| Frame | Steel | Painted | 1966 |
| Hardware | Aluminum | Satin | 1966 |

Simple hollow metal doors lead into two small conference rooms. Original hardware includes door knobs and deadbolts.



| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Single-Leaf | Hollow Metal | Painted | 1966 |
| Frame | Steel | Painted | 1966 |
| Hardware | Aluminum | Satin | 1966 |

Hollow metal fire doors lead into the two stairwells to the north of the Green Auditorium. The single square lite is set with wire glass.

## Wing B and D Corridors and Exhibit Hall: CO-B-01, CO-D-01, and B100

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Single-Leaf | Hollow Metal | Painted | 1966 |
| Frame | Steel | Painted | 1966 |
| Hardware | Aluminum | Satin | 1966 |

Hollow metal doors with louvered vents are found at janitor’s closets in the small corridor to the north of the Green Auditorium.

PHOTO

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Single-Leaf | Stainless Steel | No. 4 Satin Finish | 1966 |
| Frame | Stainless Steel | No. 4 Satin Finish | 1966 |
| Hardware | Stainless Steel | Satin | 1966 |

Single-leaf stainless-steel doors are found at restrooms and a janitor’s closet in the corridor leading to the Red Auditorium. Restroom doors have a flush push plate on the corridor side and a simple pull bar handle on the restroom side. Janitor’s closet doors are fitted with a door knob and deadbolt.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Single-Leaf | Wood w/ American Walnut Veneer | Stained Lacquer Finish | 1966 |
| Frame | Walnut | Stained Lacquer Finish | 1966 |
| Hardware – Knob | Aluminum | Satin | 1966 |
| Hardware – Hinge | Stainless Steel | Satin | 1966 |

Classroom and lecture room doors are single-leaf with walnut veneer. Each door has four stylized modernist butt hinges. The original hardware set is an aluminum door knob and deadbolt. Some have been altered to a pull bar/push plate and dead bolt. Doors have a face-mounted closer on the room side.

*Modernist stainless-steel hinge*

## Wing B and D Corridors and Exhibit Hall: CO-B-01, CO-D-01, and B100

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Floor | Terrazzo | Polished | 1966 |
| Dividing Strip | 1/16” White Metal | N/A | 1966 |

Terrazzo is white and gray aggregate set in black cement.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Grille | American Walnut | Stained Lacquer | 1966 |

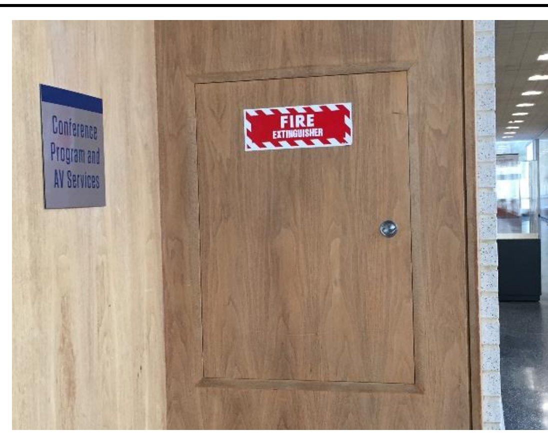
Wood grilles are found in the wood-paneled wall along the south edge of the Green Auditorium.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Radiator Cabinet | Steel | Painted | 1966 |

Low radiator cabinets run along the base of both curtain-wall spans.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Fire Extinguisher Cabinet | Plywood w/ American Walnut Veneer | Stained Lacquer | 1966 |

Walnut fire extinguisher cabinets are recessed into the wood paneling at the entrances to lecture halls and classrooms. Original lettering has been removed and replaced with high-visibility signage.



## Wing B and D Corridors and Exhibit Hall: CO-B-01, CO-D-01, and B100

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Thermostat | Stainless Steel | No. 4 Satin | 1966 |  |

Original thermostats are mounted to corridor walls.  The manufacturer is Honeywell.

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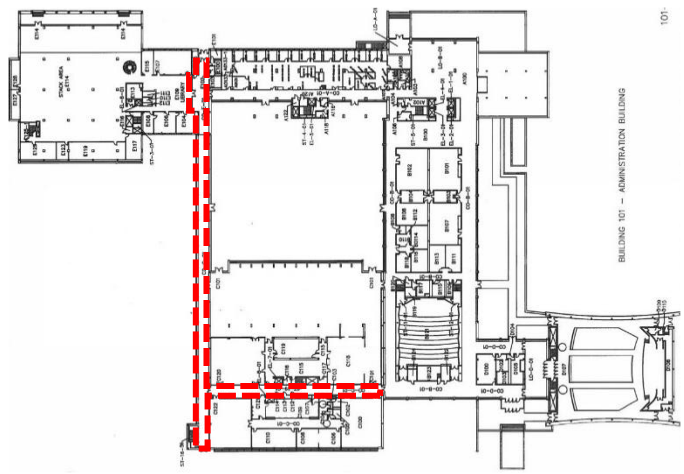
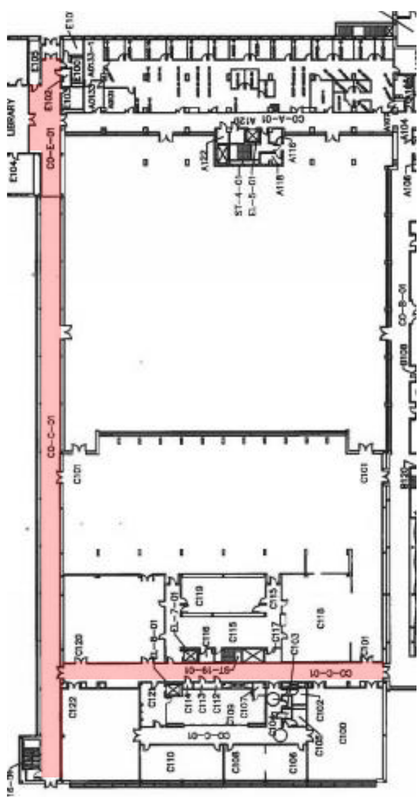
## Wing C and E Corridors: CO-C-01, CO-E-01

The corridors in Wing C are used almost exclusively by NIST employees. At its south end, CO-C-01 provides access to Building 223, one of the General Purpose Laboratory buildings. The two Wing C corridors also provide circulation between the library, cafeteria, and courtyard. However, visitors to Building 101 are more likely to enter these spaces through the more formal corridors in Wings A and B, both of which communicate directly with the main east lobby. Since the Wing C Corridors are less visible to the general public, they have much more modest finishes than corridors A and B. Specifically, there is no marble, walnut paneling, or glazed brick in Wing C corridors. Corridors in Wing C feature plaster walls, aluminum-and-glass curtain wall, and walnut doors.

Location Plan (NTS)



Key Plan (NTS)



## Wing C and E Corridors: CO-C-01, CO-E-01

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Ceiling | Acoustic Tile | Smooth | 2001 |  |

Original corridor ceilings were 12” x 12” prefab acoustic mineral plaster tiles. The existing acoustic tile ceiling was installed after 2001. It has an exposed metal grid.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Wall | Plaster | Painted | 1966 |  |
| Base | Terrazzo | Polished | 1966 | |

Interior walls are plastered. Plaster walls in the corridor to the south of the cafeteria are painted. This corridor mostly services conference rooms and back of house spaces, in addition to the cafeteria.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Wall | Plaster | Vinyl Fabric | 1966 |  |
| Base | Terrazzo | Polished | 1966 | |

Interior walls are plastered. Plaster walls in the corridor to the west of the inner court are finished with vinyl fabric. This corridor provides access to the library, courtyard, and Building 223.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Curtain Wall | Anodized Aluminum/ Glass | Clear Satin/ Clear | 1966 |  |

The corridor to the west of the inner court has curtain wall on both sides, allowing for panoramic views of both the inner court and the west lawn. The curtain-wall system is arranged in two rows of lites. Large rectangular lites are arranged vertically over smaller rectangular lites arranged horizontally. There is a large square transom lite over the double-leaf door in the east wall.

## Wing C and E Corridors: CO-C-01, CO-E-01

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | American Walnut/ Glass | Stained Lacquer/ Frosted | 1966 |

The wall at the museum lobby is glass panels set within a walnut frame. The glass panels are frosted and etched with symbols and documents relevant to the history of NIST. Glass panels were original clear.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Double-Leaf | Wood w/ American Walnut Veneer | Stained Lacquer | 1966 |
| Frame | American Walnut | Stained Lacquer | 1966 |
| Hardware – Hinges | Stainless Steel | Satin | 1966 |

Walnut doors lead into the Portrait Room, the Heritage Room, and the museum lobby. Doors to the Portrait Room and Heritage Room have been retrofitted as ADA-compliant automatic doors. Original hardware has been replaced as part of the retrofit, except for original modernist hinges that remain.

*Modernist stainless-steel hinge*

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Double-Leaf | Anodized Aluminum/ Glass | Clear Satin/ Clear | 1966 |
| Frame | Anodized Aluminum | Clear Satin | 1966 |
| Hardware | Aluminum | Satin | 1966 |

Double-leaf, full-lite doors lead into the inner court. This is the original exterior door. An aluminum push bar visually divides the single lite at each door. The push bar is attached at either end to the aluminum stiles and does not bisect the single lite.

## Wing C and E Corridors: CO-C-01, CO-E-01

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Double-Leaf | Anodized Aluminum/ Glass | Clear Satin/ Clear | 1966 |
| Frame | Anodized Aluminum | Clear Satin | 1966 |
| Hardware | Aluminum/ Acrylic | Satin/ Semi-translucent | 1966 |

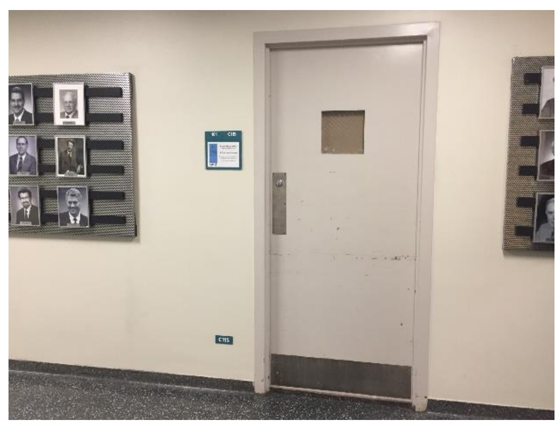
This door type leads into the cafeteria. They are almost identical to the original exterior doors. n aluminum push bar visually divides the single lite at each door. The push bar is attached at either end to the aluminum stiles and does not bisect the single lite. The interior doors feature two acrylic pull bars, in contrast to the aluminum pull bars found on exterior doors.

PHOTO


*Acrylic pull bars*

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Single-Leaf | Hollow Metal/ Glass | Painted/ Clear | 1966 |
| Frame | Steel | Painted | 1966 |
| Hardware | Aluminum | Satin | 1966 |

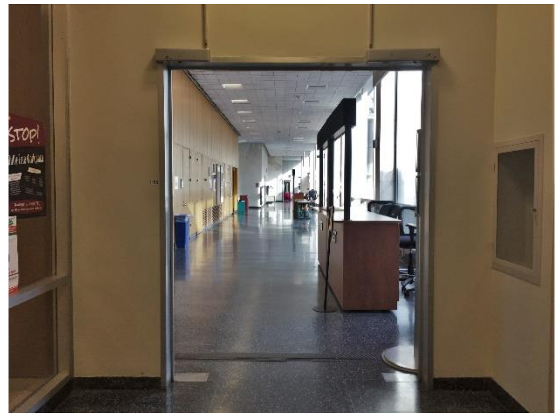
This door type leads into the former butler's pantry, which is now used for storage. The glazed opening would have allowed individual entering the butler's pantry to avoid opening the door into a cafeteria worker carrying food or dishes.



| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Single-leaf | Hollow Metal | Painted | 1966 |
| Frame | Steel | Painted | 1966 |
| Hardware | Aluminum | Satin | 1966 |

Hollow metal doors with louvers are found at utility and janitor's closets.

## Wing C and E Corridors: CO-C-01, CO-E-01

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Opening | Stainless Steel | No. 4 Satin | 1966 |  |
| This opening leads from the Wing C Corridor into the Wing B Corridors. The presence of closers and threshold plates indicates there was once a double-leaf door here. | | | | |
| Floor | Terrazzo | Polished | 1966 |  |
| Dividing Strip | 1/16” White Metal | Polished | 1966 | |
| The principal floor material is terrazzo consisting of white and gray aggregate in black cement. There are also small patches of carpeting outside some of the door openings in the corridor to the west of the cafeteria. | | | | |
| Expansion Joint | Steel | Non-Slip Texture | 1966 |  |
| An expansion joint is located at the north end of the Wing C Corridor outside the museum lobby. The joint is covered with a non-slip steel plate. | | | | |
| Radiator Cabinet | Steel | Painted | 1966 |  |
| Radiators run the full length of the bottom of the exterior curtain walls. | | | | |

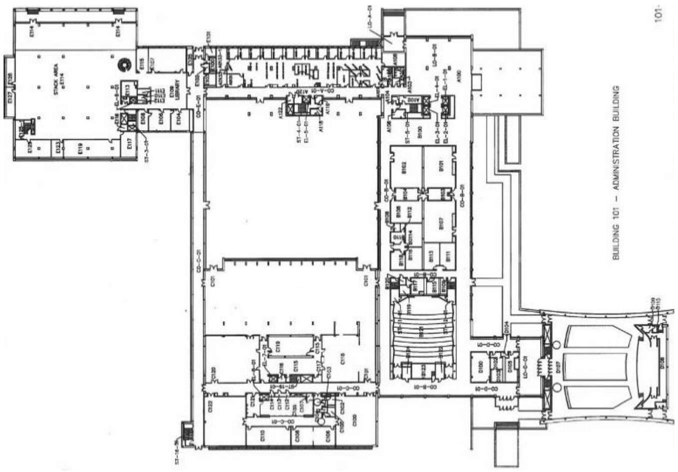
## Wing C and E Corridors: CO-C-01, CO-E-01

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Fire Extinguisher Cabinet | Steel/ Glass | Painted/ Wire | 1966 |  |

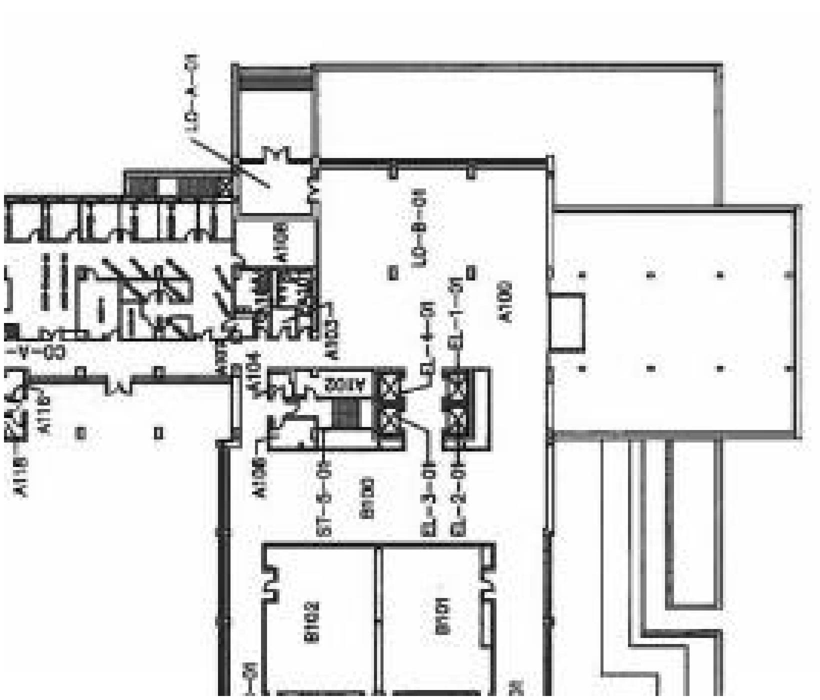
Fire extinguisher cabinets are recessed into the plaster wall.  The door is painted steel with wire-glass glazing.

Public Elevator Cab

Location Plan (NTS)



Key Plan (NTS)



Public Elevator Cab

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
| --- | --- | --- | --- | --- |
| | | | | |
| | | | | |
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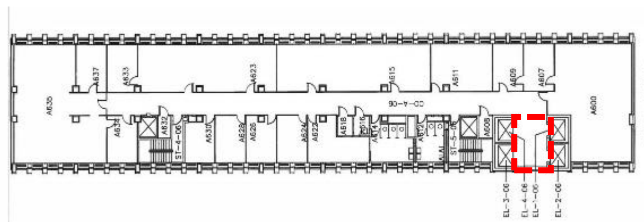
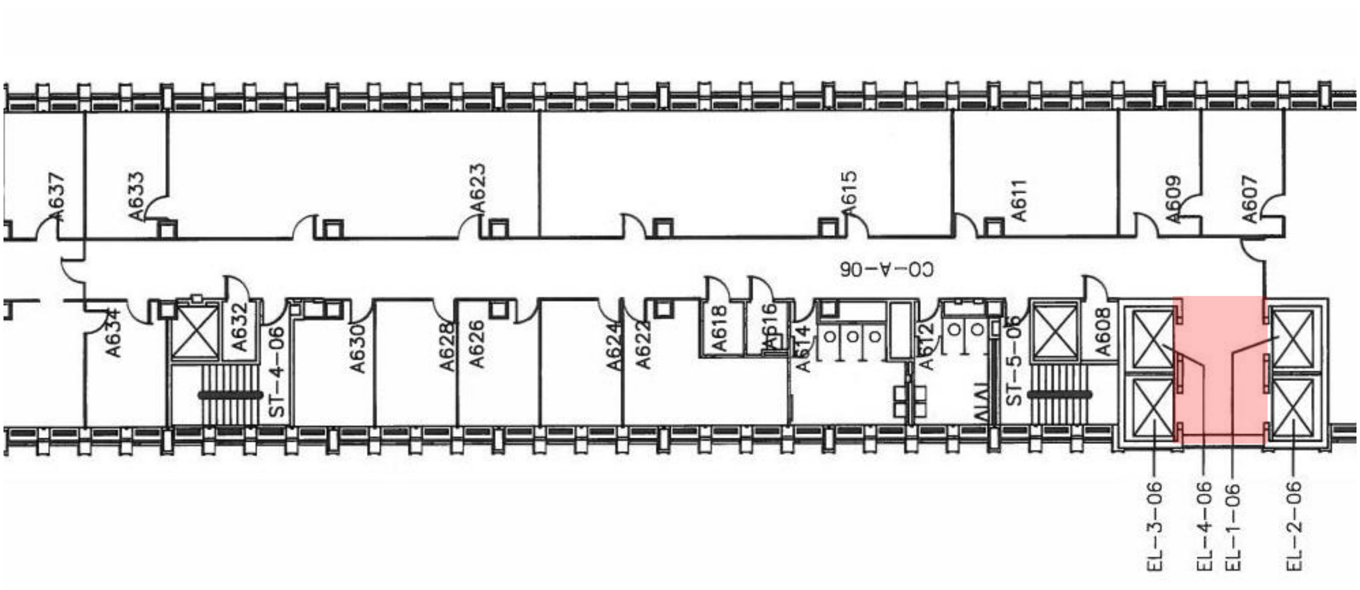
## Elevator Lobby, Second – Eleventh Floors

Elevator lobbies are located at the east end of all upper level corridors. The lobbies feature high-level finishes – most notably marble wall panels – that set them apart from the utilitarian corridors. A tripartite window at the south end of each lobby floods the space with natural light. Elevator doors and cabs are original.

Location Plan (NTS)



Key Plan (NTS)



## Elevator Lobby, Second – Eleventh Floors

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Ceiling | Acoustic Tile | Smooth | 2001 |  |
| This is the typical ceiling in interior corridors and lobbies. The ceiling height has been lowered. | | | | |
| Ceiling | Acoustic Tile | Smooth | N/A |  |
| This ceiling type is only found in the sixth-floor elevator lobby. Acoustic tiles are smooth and set within an exposed metal grid. It is not known when these ceilings were installed. The ceiling height has been lowered. | | | | |
| Ceiling | TBD | TBD | TBD |  |
| This ceiling type is only found in the $11^{th}$-Floor corridor at the elevator lobby. | | | | |
| Ceiling | Plaster | Painted | 1966 |  |
| The soffit above windows is painted plaster. | | | | |

## Elevator Lobby, Second – Eleventh Floors

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Marble – VT. White Meadow | Polished | 1966 |

Walls at the elevator lobbies are clad in large panels of white Vermont marble.  Marble panels are continuous from floor to ceiling with no crown or base moldings.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Window – Reversible | Anodized Aluminum/ Glass | Clear Satin/ Clear | 1966 |

Three rectangular windows are set in the south wall of the elevator lobby on each level.  The heads of the windows extend above ceiling height.  Originally, ceiling heights were higher in all upper-level corridors.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Elevator | Stainless Steel | No. 4 Satin | 1966 |

There are four elevators in each of the elevator lobbies – two on the east wall and two on the west.  A stainless-steel transom extends above each elevator door to the acoustic drop ceiling.  Floor numbers are mounted to the inside of each elevator door jamb.  A floor indicator display is mounted to each of the transoms.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Floor | Vinyl Asbestos Tile | N/A | 1966 |

The original corridor floor is a solid field of brown vinyl asbestos tiles.

Elevator Lobby, Second – Eleventh Floors

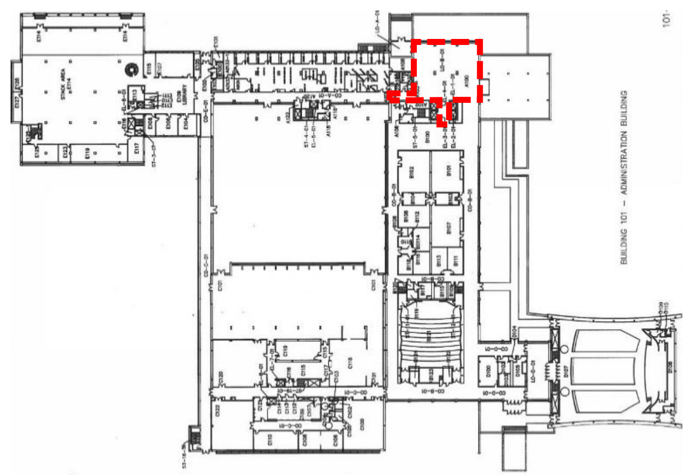
| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Radiator Cabinet | Steel | Painted | 1966 |  |

Radiator cabinets are found under the tripartite windows at the south end of each elevator lobby.

## East Lobby: A100 and Elevator Lobby

Located at the east end of Wing A, the east lobby is the principal entrance lobby in Building 101. The main point of entry into the lobby is through the east vestibule. Entry is also possible through the smaller north lobby. The East Lobby provides internal access to the Hall of Standards and the main elevator lobby in Wing A. The lobby also communicates directly with corridors 13 and 14 in Wing B. In addition to circulation space, the East Lobby provides seating and exhibit space. Large curtain walls along the east and north walls flood the lobby with natural light. Many of the original finishes remain within the space, except for the original plaster ceiling and light fixtures, which were replaced in 2001.


Location Plan (NTS)

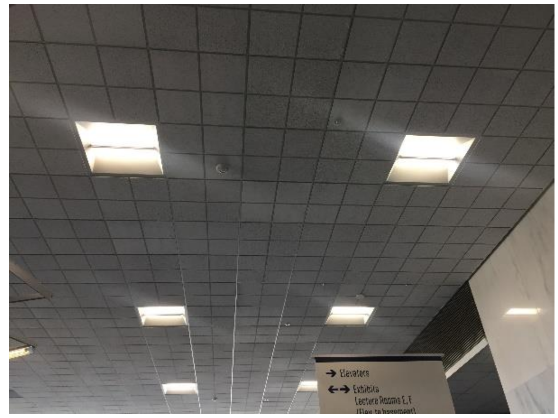


Key Plan (NTS)

## East Lobby: A100 and Elevator Lobby

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Ceiling | Acoustic Tile | Smooth | 2001 |

The ceiling consists of smooth acoustic tiles set within an exposed metal grid. Original construction drawings indicate that the ceiling in this location was to be acoustic plaster on metal lath. The acoustic tile ceiling sits at the original ceiling height as depicted in interior elevations in the original drawing set. Therefore, it is unlikely that an earlier plaster ceiling still exists beneath the suspended acoustic tile ceiling. The existing ceiling dates to corridor ceiling modifications that took place sometime during or after 2001.

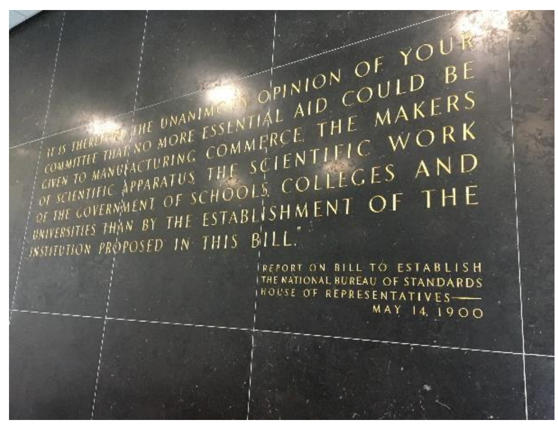


| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Marble – VT. Meadow White | Polished | 1966 |
| Base | Terrazzo | Polished | 1966 |

Large panels of polished white Vermont marble clad the walls. This is the same marble that clads exterior elevations. The marble panels extend all the way to the suspended ceiling with no intervening molding at the connection. The recessed coved base is terrazzo and is continuous with the terrazzo floor.

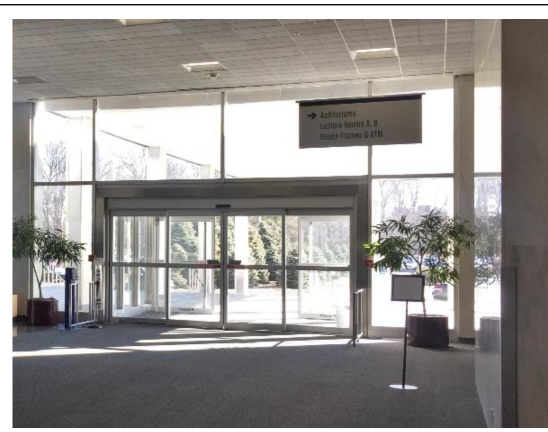
| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Marble – AL. Imperial Black | Honed | 1966 |
| Inscription | Marble – AL. Imperial Black | Gilded | 1966 |

Black marble clads the west wall of the East Lobby. An inscription is incised into three of the square marble tiles. The incised letters are gilded.




| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Curtain Wall | Anodized Aluminum/ Glass | Clear Satin Finish/ Clear | 1966 |

The automatic sliding door assembly is not original to the building. Two rectangular lites flank the bank of sliding doors. Four lites span the area above the doors. The automatic sliding doors were installed in 1980.



## East Lobby: A100 and Elevator Lobby

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Curtain Wall | Anodized Aluminum/ Glass | Clear Satin Finish/ Clear | 1966 |

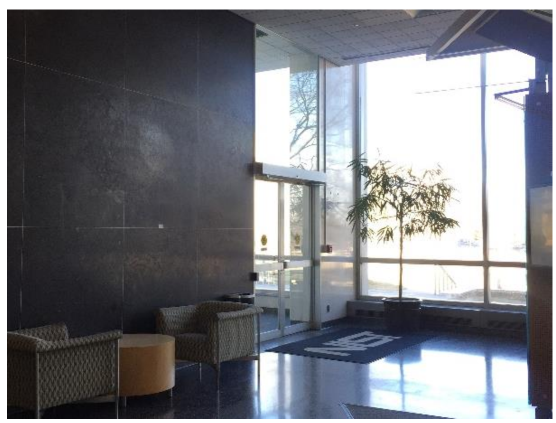
The north wall of the east lobby is an aluminum-and-glass curtain-wall system. Three tripartite bays of aluminum-and-glass curtain wall span between marble-clad masonry columns. Each tripartite bay features six lites – three large vertical lites above and three smaller horizontal lights below. The marble-clad columns project into the interior space.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Single-Leaf | Stainless Steel | No. 4 Satin | 1966 |
| Frame | Stainless Steel | No. 4 Satin | 1966 |
| Hardware – Knob | Aluminum | Satin | 1966 |
| Hardware – Hinges | Stainless Steel | Satin | 1966 |

Stainless-steel doors provide access to the men's and women's restrooms at the west end of the East Lobby. Original hardware includes aluminum door knobs and stainless-steel modernist hinges.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Double-Leaf w/ Transom | Anodized Aluminum/ Glass | Clear Satin/ Clear | 1966 |
| Frame | Anodized Aluminum | Clear Satin Finish/ Clear | 1966 |

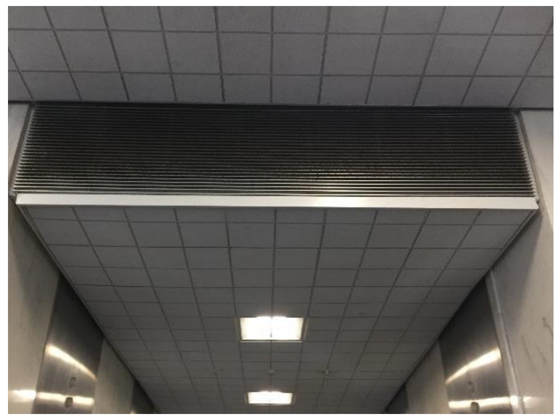
A set of double-leaf doors lead into the North Lobby. An aluminum push bar visually divides the single lite at each door. The push bar is attached at either end to the aluminum stiles and does not bisect the single lite. The doors have been retrofitted as an ADA-compliant automatic entrance. Original hardware on the east lobby side has been removed as part of the retrofit. The glass transom extends above the height of the ceiling.



| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Elevator | Stainless Steel | No. 4 Satin Finish | 1966 |

A stainless-steel transom extends above each elevator door to the acoustic tile ceiling. Floor numbers are mounted to the inside of each elevator door jamb. A floor indicator display is mounted to each of the transoms.

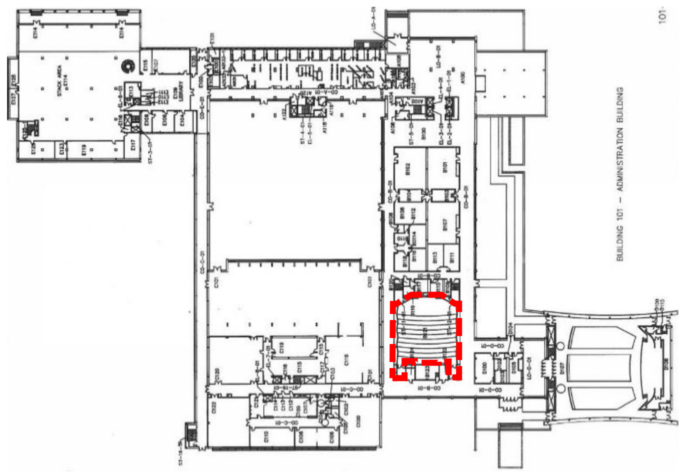
## East Lobby: A100 and Elevator Lobby

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Floor | Terrazzo | Polished | 1966 |  |
| Dividing Strip | 1/16” White Metal | Polished | 1966 | |
| Terrazzo is white and gray aggregate set in black cement.  This terrazzo type occurs only in first-floor corridors and lobbies. | | | | |
| Grille | Extruded Aluminum | Clear Anodized – Satin Finish | 1966 |  |
| An extruded aluminum grille is set in the soffit above the opening into the elevator lobby. | | | | |
| Fire Extinguisher Cabinet | Stainless Steel | No. 4 Satin | 1966 |  |
| An original stainless-steel fire extinguisher cabinet is recessed within the south wall of the east lobby.  Red plastic letters spell out “FIRE EXTINGUISHER” in all capitals. | | | | |
| Mail Drop | Stainless Steel | No. 4 Satin | 1966 |  |
| An original stainless-steel mail drop is recessed within the south wall of the east lobby.  “MAIL” is inscribed above the mail slot in all capitals. | | | | |

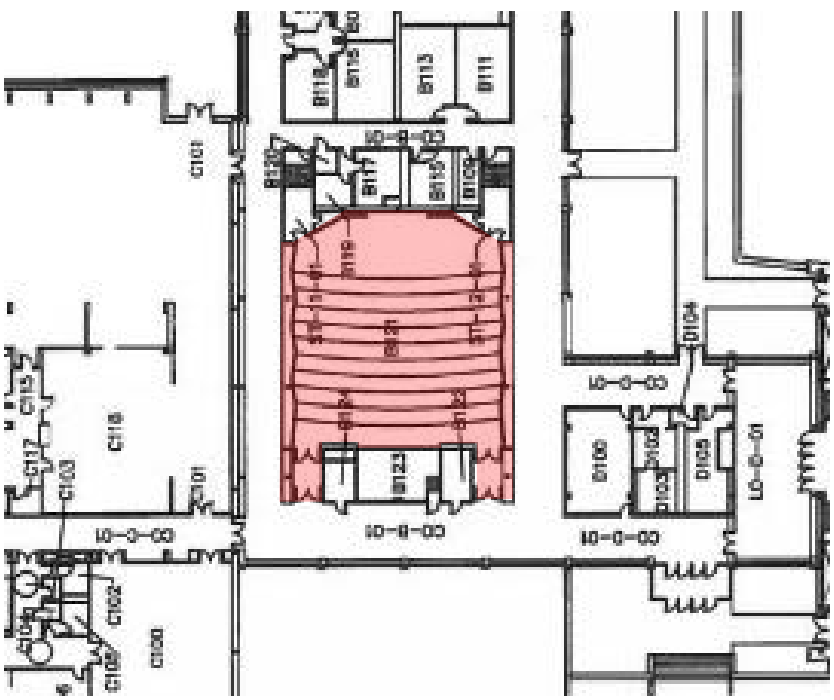
## Green Auditorium: B121

The Green Auditorium is located in the southern end of Wing B. The auditorium features stepped seating that descends from grade level at the south end of the auditorium to the stage area at the north end. The stage is not elevated above the floor level. Two small vestibules are located to the south of the auditorium. These serve as the two formal entrances into the space. Two additional entrances flank the stage at the north end of the auditorium. These open into stairwells that provide access to a grade-level corridor above and the basement below. The plaster ceiling and light fixtures were replaced in-kind in 2000. Original finishes include walnut clad doors and walnut wall panels with a Cliffdale marble base. Auditorium seating and the stage surface are not original.

Location Plan (NTS)



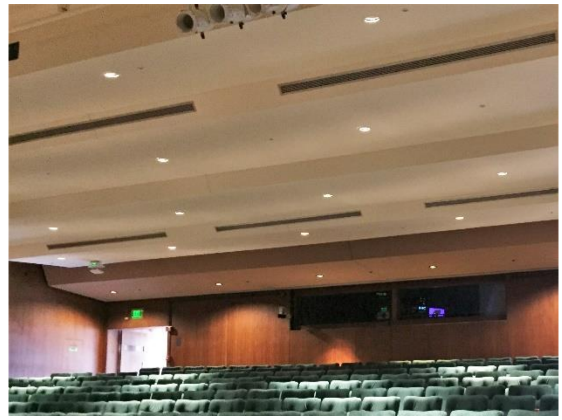
Key Plan (NTS)



## Green Auditorium: B121

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Ceiling | Plaster | Painted | 2000 |
| Ceiling | Plywood | Painted | 2000 |

A stepped acoustical plaster ceiling is suspended above the auditorium seating. This ceiling was replaced in-kind in 2000. Around the auditorium perimeter, a plywood ceiling is recessed above the height of the plaster ceiling. Original drawings indicate the ceiling at the room perimeter was to be perforated plywood panels with American walnut veneer. Existing ceiling panels are solid with a painted finish. These likely date to the replacement of the suspended plaster ceiling.



| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Ceiling | Wood | Stained Lacquer | 2000 |

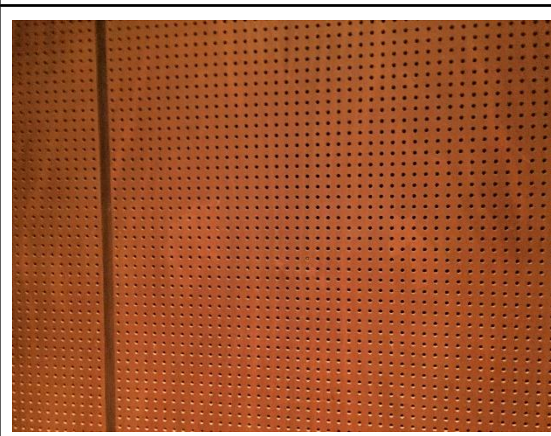
There is currently modern wood cladding on the flat ceiling above the stage area. Original drawings indicate this ceiling was to be perforated plywood panels with American walnut veneer. The original ceiling was likely replaced during renovations in 2000.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Plywood w/ American Walnut Veneer | Stained Lacquer | 1966 |
| Base | Marble – MO. Cliffdale | Polished | 1966 |

Walls are clad in plywood panels with American walnut veneer. The wall base is brown Cliffdale marble tiles with a simple rectangular profile. The marble base is cracked in some locations.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Plywood w/ American Walnut Veneer | Perforated w/ Stained Lacquer Finish | 1966 |
| Base | Marble – MO. Cliffdale | Polished | 1966 |

The rear (south) wall of the auditorium is clad in perforated walnut veneer. Perforation is an acoustical treatment for sound dampening at this location. The wall base is brown Cliffdale marble tiles with a simple rectangular profile. The marble base is cracked in some locations.



## Green Auditorium: B121

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Door – Double-Leaf | Wood w/ American Walnut Veneer | Stained Lacquer | 1966 |  |
| Frame | American Walnut | Stained Lacquer | 1966 | |
| Hardware – Pull and Push Bar | Aluminum | Satin | 1966 | |
| Hardware – Hinges | Stainless Steel | Satin | 1966 | |

This door type provides access between the formal vestibules and the rear of the auditorium. Narrow glazed openings allow individual provide sightlines into the auditorium while minimizing the light pollution from the vestibule or corridor. Original hardware includes a pull bar on the vestibule side, a kick plate and raised push plate on the auditorium side, and stylized modernist hinges. There is no closer and no threshold.

*Push plate*

*Pull bar*

*Modernist stainless-steel hinge*

## Green Auditorium: B121

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Double Leaf | Wood w/ American Walnut Veneer | Stained Lacquer | 1966 |
| Frame | American Walnut | Stained Lacquer | 1966 |
| Hardware – Pull and Push Bar | Aluminum | Satin | 1966 |
| Hardware – Hinges | Stainless Steel | Satin | 1966 |

The doors between the corridor and vestibule have no glazed openings. Hardware includes a face-mounted closer, panic bar, and kick plate on the vestibule side; a deadbolt and thumb latch on the corridor side; and stylized modernist hinges.  The aluminum threshold has a grooved, non-slip texture.

PHOTO

*Aluminum dead bolt with pull lever*

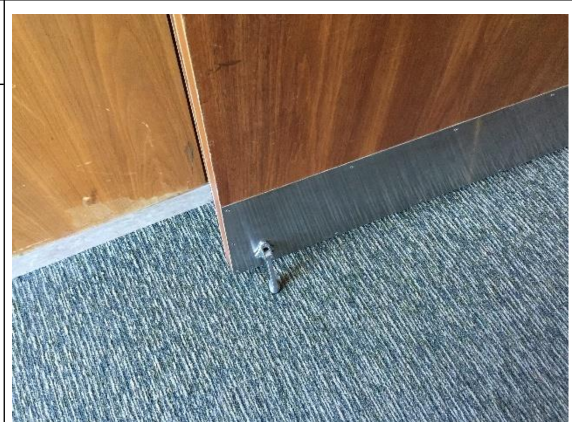

*Push bar*

*Modernist stainless-steel hinge*

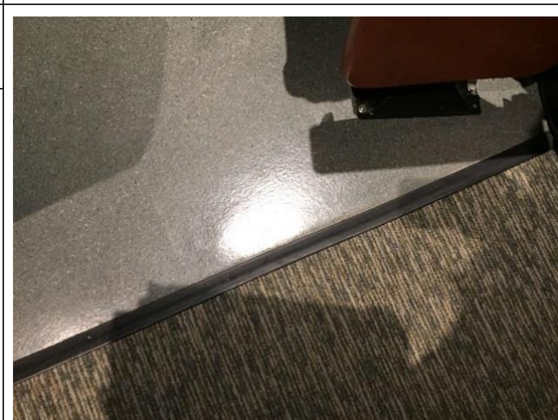
## Green Auditorium: B121

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Door – Single-Leaf | Hollow Metal w/ American Walnut Veneer | Stained Lacquer | 1966 |  |
| Frame | Steel w/ American Walnut Veneer | Stained Lacquer | 1966 | |
| Hardware – Pull and Push Bar | Aluminum | Satin | 1966 | |
| Hardware – Hinges | Stainless Steel | Satin | 1966 |  *Pull handle* |

Hollow metal fire doors are clad in walnut veneer so that they blend in with walnut wall panels.  There are two such fire doors, one on either side of the stage area.  Each fire door opens directly into a stairwell with access to the basement and first floor.  Hardware includes a panic bar and push plate on the auditorium side, a simple pull handle and dead bolt on the stairwell side, and a concealed closer.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Floor | Carpet | N/A | 2000 |  |

The side aisles, forestage, and standing room were originally carpeted, as were the two vestibules.  The carpet was likely last replaced during renovations in 2000.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Floor | Resilient Tile | N/A | 2000 |  |

Resilient tile flooring is found at the seating area.  This was list last replaced during renovations in 2000.  Originally, this area had solid field vinyl asbestos tile flooring.

## Green Auditorium: B121

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Window – Fixed | American Walnut/ Glass | Stained Lacquer/ Clear | 1966 | |

A glazed opening allows sightlines from the projection room into the auditorium.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Fire Extinguisher Cabinet | Plywood w/ American Walnut Veneer | Stained Lacquer | 1966 |

There are four fire extinguisher cabinets - two recessed into the east wall and two into the west. The cabinet door is clad in walnut veneer to match adjacent walls. The wood grain is continuous across the wall panels and doors. Raised metal letters spell out fire extinguisher in all capitals. Some letters have fallen off, and a modern green sign is now adhered to each door face. A simple metal ring pull opens the door.


| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Speaker Grille | American Walnut | Stained Lacquer | 1966 |

Walnut speaker grilles flank the stage area.

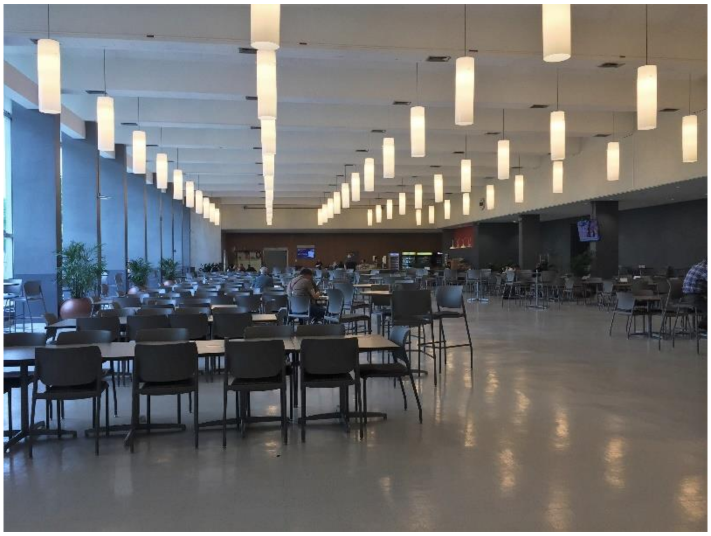
| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Grille | Extruded Aluminum | Clear Satin Finish | 1966 |

There are three aluminum grilles just above the marble base on both the east and west walls. Another aluminum grille is centered in the south wall just above the marble base.

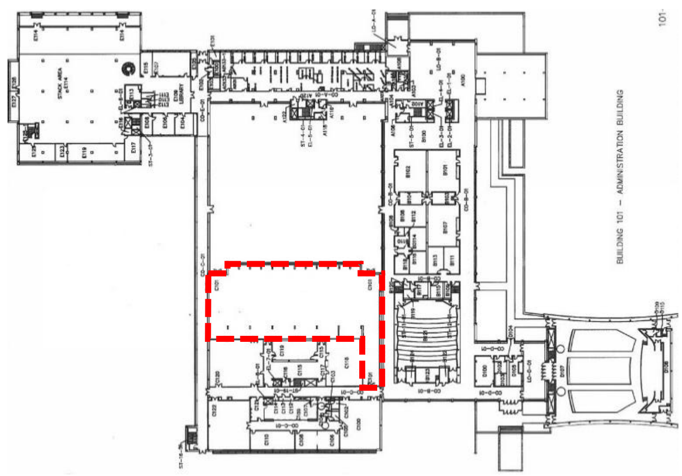
## Cafeteria: C101

The cafeteria is a large, open, single-story space located in Wing C south of the inner court. The most striking feature is the north wall, which is almost entirely a single span of aluminum-and-glass curtain wall. The curtain wall floods the space with natural light and provides views of the inner court from almost anywhere in the room. This design feature is intended to connect the two spaces visually and to encourage leisurely, impromptu meetings and conversations among NIST employees.

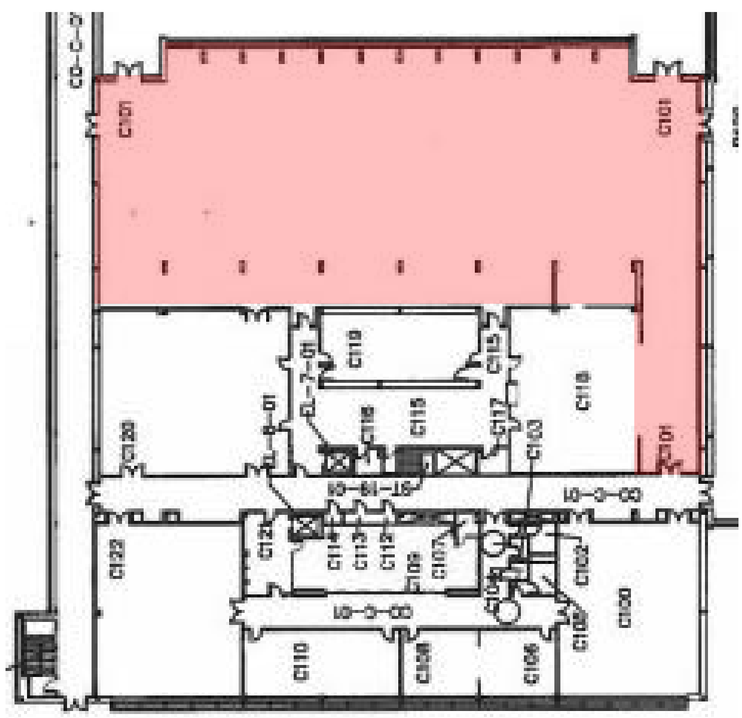
The cafeteria has been altered several times since its 1966 construction. Most notably, the west serving area has been enclosed and adapted into a lecture room. The east serving area retains its original use but almost none of its original finishes. It is not included in the restoration zone. The cafeteria dining area itself retains several original finishes, including marble and walnut paneling and original modernist pendant light fixtures, which were recently refurbished. There are currently plans to insert a mezzanine level within the cafeteria to provide additional seating. This will require alterations to some of the light fixtures.



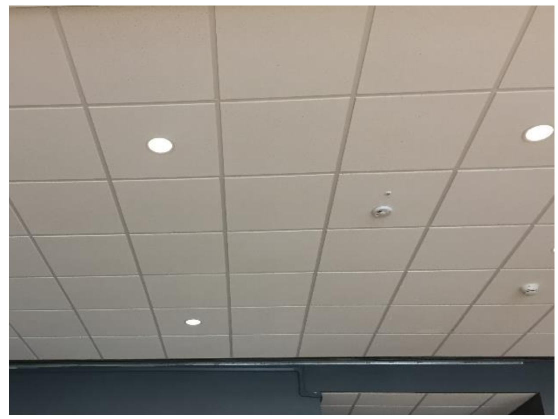
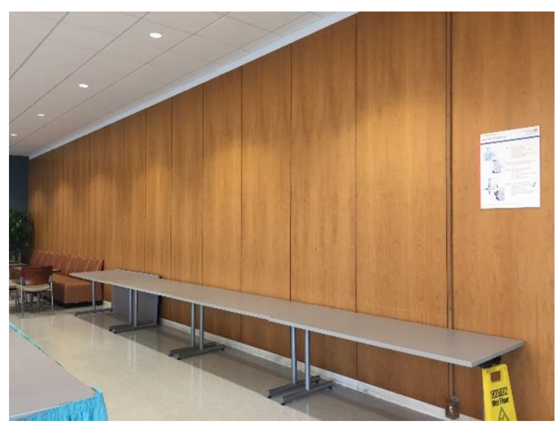
Location Plan (NTS)



Key Plan (NTS)



## Cafeteria: C101

<table>
<tr><th>FEATURE</th><th>MATERIAL</th><th>FINISH</th><th>DATE</th><th>PHOTO</th></tr>
<tr><td>Ceiling - Scalloped</td><td>Concrete</td><td>Textured Acoustic Coating</td><td>1966</td><td rowspan="2"></td></tr>
<tr><td colspan="4">The ceiling over the main dining area is scalloped, expressing the geometry of the exterior roof system in the building interior. Rectangular concrete soffits suspend from the bottom of each concrete curve. Aluminum ductwork runs within each concrete soffit. Original drawings included plans for metal-lath-and-plaster panels in a shallow “V” shape to be attached to the ridge between individual scallops. These panels would have been clad in fissure mineral acoustic tiles. Instead, the concrete ceiling has been treated wholesale with a textured acoustic coating, obscuring the concrete’s original rubbed finish.</td></tr>
<tr><td>Ceiling</td><td>Acoustic Tile</td><td>Smooth</td><td>2001</td><td rowspan="2"></td></tr>
<tr><td colspan="4">Ceilings over the entries, serving area, and cashier counters are flat and much lower than the scalloped ceiling at the main dining area. These ceilings were originally perforated aluminum acoustic tiles. Current ceilings are smooth mineral fiber acoustic tiles set within an exposed metal grid. This ceiling was likely replaced at the same time as first-floor corridor ceilings.</td></tr>
<tr><td>Wall</td><td>Marble – VT. Meadow White</td><td>Polished</td><td>1966</td><td rowspan="2"></td></tr>
<tr><td colspan="4">Walls at the inner court entrances are clad in white Vermont marble. The extensive use of such a high-level finish elevates the cafeteria above a merely utilitarian space. This is particularly significant considering there were originally three more formal private dining rooms just south of the communal cafeteria. The use of high-level finishes within the public cafeteria indicates that it too was a significant space within the original design.</td></tr>
<tr><td>Wall</td><td>Plywood w/ American Walnut Veneer</td><td>Stained Lacquer</td><td>1966</td><td rowspan="3"></td></tr>
<tr><td>Base</td><td>Marble – VT. Meadow White</td><td>Polished</td><td>1966</td></tr>
<tr><td colspan="4">Walnut paneling clads the east and west walls of the cafeteria. The extensive use of such a high-level finish elevates the cafeteria above a merely utilitarian space. This is particularly significant considering there were originally three more formal private dining rooms just south of the communal cafeteria. The use of high-level finishes within the public cafeteria indicates that it too was a significant space within the original design.</td></tr>
</table>

## Cafeteria: C101

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Anodized Aluminum/ Glass | Clear Satin/ Clear | 1966 |
| Base | Marble – VT. Meadow White | Polished | 1966 |

A smaller interior curtain-wall system is found at the southwest interior entrance from the Wing C corridor.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Plaster | Painted | 1966 |
| Base | Marble – VT. Meadow White | Polished | 1966 |

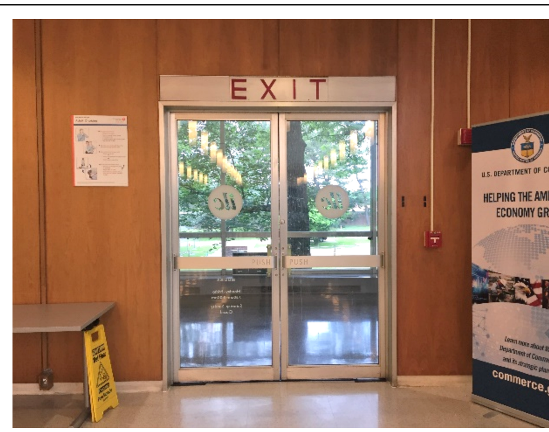
The south wall of the dining area and west wall of the serving area are plastered and painted. All columns throughout the space are also plastered and painted. Originally these surfaces were covered with vinyl fabric.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Curtain Wall | Anodized Aluminum/ Glass | Clear Satin Finish/ Clear | 1966 |

Most of the north wall is a continuous span of aluminum-and-glass curtain wall. This curtain wall provides clear views of the inner court from almost anywhere in the main dining area. This high level of visibility between these two central, communal spaces was intended to encourage impromptu meetings between NIST employees. It also floods the space with natural light.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door | Anodized Aluminum/ Glass | Clear Satin/ Clear | 1966 |
| Frame | Anodized Aluminum | Clear Satin | 1966 |
| Hardware | Aluminum/ Acrylic | Satin/ Semi-translucent | 1966 |

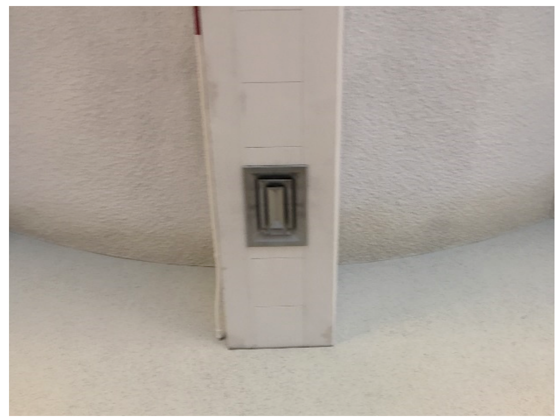
This is the original interior and exterior door. An aluminum push bar visually divides the single lite at each door. The push bar is attached at either end to the aluminum stiles and does not bisect the single lite.



## Cafeteria: C101

<table>
<tr><th>FEATURE</th><th>MATERIAL</th><th>FINISH</th><th>DATE</th><th>PHOTO</th></tr>
<tr><td>Door</td><td>Stainless Steel</td><td>No. 4 Satin</td><td>1966</td><td rowspan="4"></td></tr>
<tr><td>Frame</td><td>Stainless Steel</td><td>No. 4 Satin</td><td>1966</td></tr>
<tr><td>Hardware</td><td>Stainless Steel</td><td>Satin</td><td>1966</td></tr>
<tr><td colspan="4">This is the original door leading into back-of-house spaces. The door is free-swinging with no latching mechanism. The only hardware is a simple pivot hinge.</td></tr>
<tr><td>Floor</td><td>Vinyl Tile</td><td>N/A</td><td>2001</td><td rowspan="2"></td></tr>
<tr><td colspan="4">Floors were original vinyl asbestos tile in a repeating grid pattern. They have been replaced with white and black vinyl tiles. The main field of the floor is white vinyl tile with black tiles forming a checkerboard pattern at the perimeter. The existing floor likely dates to the ceiling replacement in 2001.</td></tr>
<tr><td>Lighting</td><td>Solid Brass/ Cast Acrylic</td><td>US-26D Dull Chromium/ Surface Polished</td><td>1966</td><td rowspan="2"></td></tr>
<tr><td colspan="4">These are the original light fixtures in the main dining area. The fixture body and canopy are solid brass with a dull chromium finish. The cylindrical shade is polished acrylic. The fixtures were recently refurbished.</td></tr>
<tr><td>Grille</td><td>Extruded Anodized Aluminum</td><td>Clear Satin</td><td>1966</td><td rowspan="2"></td></tr>
<tr><td colspan="4">Extruded aluminum grilles are flush-mounted along the perimeter of the acoustic tile ceilings.</td></tr>
</table>

## Cafeteria: C101

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Radiator Cabinet | Steel | Painted | 1966 |  |
| Radiator cabinets run the length of the north curtain wall. | | | | |
| Diffuser | Anodized Aluminum | Clear Satin | 1966 |  |
| Aluminum diffusers are spaced regularly along the aluminum ductwork within the concrete soffits at the scalloped ceiling. | | | | |

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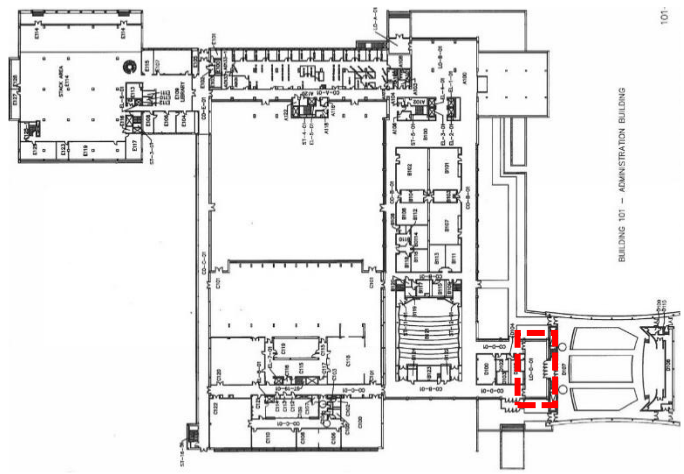
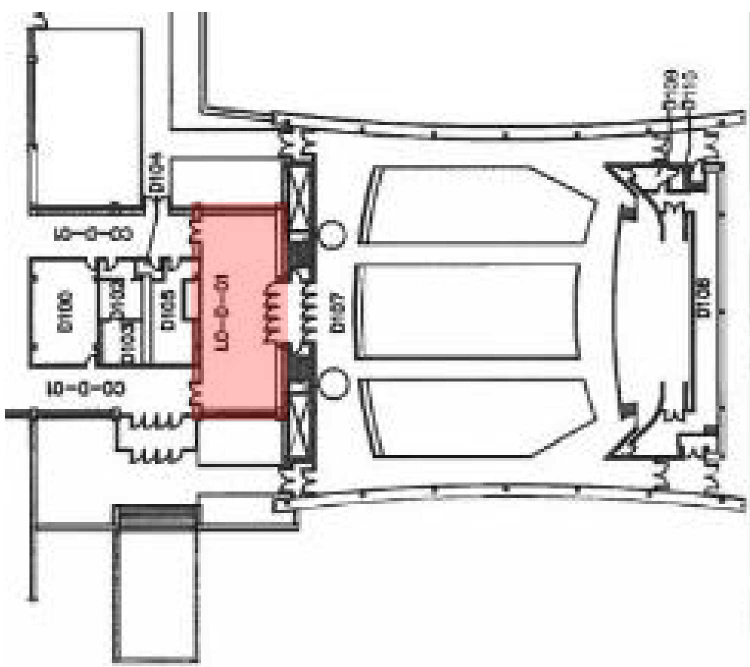
## Red Auditorium Lobby: LO-D-01

The lobby is located in Wing B to the west of the Red Auditorium. Visitors enter the lobby from the Wing-B corridors through double-leaf doors at the north and south ends of the west wall. A bank of five single-leaf doors centered in the east wall provide access into the Red Auditorium. Aluminum-and-glass curtain walls at the north and south ends of the lobby flood the space with natural light. Original finishes include white Vermont marble, walnut veneer, and black terrazzo.

Location Plan (NTS)



Key Plan (NTS)



## Red Auditorium Lobby: LO-D-01

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Ceiling | Acoustic Tile | Smooth | 2001 |

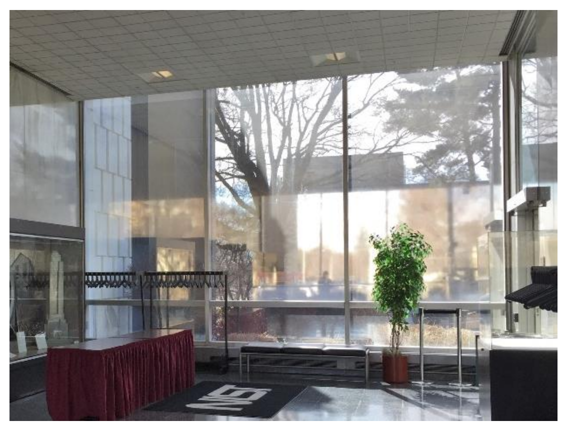
The ceiling in the Red Auditorium Lobby was originally acoustic tile. The existing ceiling dates to the corridor ceiling updates in 2001.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Marble – VT. Meadow White | Polished | 1966 |
| Base | Terrazzo | Polished | 1966 |

Large panels of polished white Vermont marble clad the walls. This is the same marble that clads exterior elevations. The marble panels extend all the way to the suspended ceiling with no intervening molding at the connection. The recessed coved base is terrazzo and is continuous with the terrazzo floor.


| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Curtain Wall | Anodized Aluminum/ Glass | Clear Satin Finish/ Clear | 1966 |

The north and south walls are aluminum-and-glass curtain wall. Large rectangular lites are arranged vertically over smaller rectangular lites arranged horizontally.



| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Floor | Terrazzo | Polished | 1966 |
| Dividing Strip | 1/16” White Metal | Polished | 1966 |

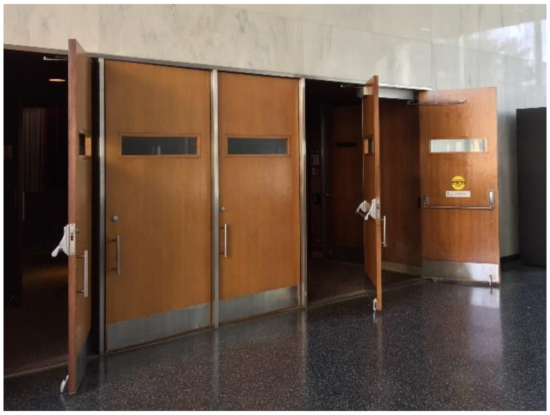
Terrazzo is white and gray aggregate set in black cement. This terrazzo type occurs only in first-floor corridors and lobbies.

## Red Auditorium Lobby: LO-D-01

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Single-Leaf | Wood w/ American Walnut Veneer/ Glass | Stained Lacquer/ Clear | 1966 |
| Frame | Stainless Steel | No. 4 Satin | 1966 |
| Hardware | Stainless Steel | Satin | 1966 |

A bank of five single-lite doors leads from the lobby into the vestibule and from the vestibule into the auditorium. All doors feature a kickplate and original modernist hinges. Hardware differs between the lobby doors and the auditorium doors. A spring latch secures the lobby doors, so these require a lockset with a thumb latch and panic bar. The auditorium doors cannot be latched and feature a simple modernist pull bar and push plate. Each bank of doors has a continuous aluminum threshold with a grooved, non-slip texture.

PHOTO



*Aluminum pull bar*

*Aluminum push bar*

*Modernist stainless-steel hinge*

## Red Auditorium Lobby: LO-D-01

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Double-Leaf | Anodized Aluminum/ Glass | Clear Satin Finish/ Clear | 1966 |
| Frame | Anodized Aluminum | Clear Satin Finish/ Clear | 1966 |

Double-leaf doors lead from the corridor CO-D-01 into the lobby. An aluminum push bar visually divides the single lite at each door. The push bar is attached at either end to the aluminum stiles and does not bisect the single lite. The doors have been retrofitted to be ADA-compliant automatic entrances. Original hardware has been replaced as part of the retrofit. The glass transom extends above the height of the ceiling.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Radiator Cabinet | Steel | Painted | 1966 |

Low radiator cabinets run along the base of the aluminum-and-glass curtain walls at the north and south ends of the l3obby.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Water Fountain | Ceramic/ Chrome | Glazed/ Polished | 1966 |

Ceramic water fountains are original. The manufacturer is Crane.

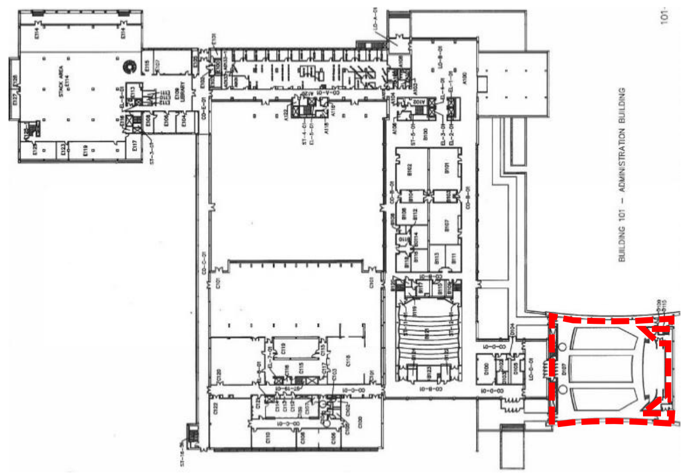

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Thermostat | Stainless Steel | No. 4 Satin | 1966 |

An original thermostat is mounted to the marble wall. The manufacturer is Honeywell.

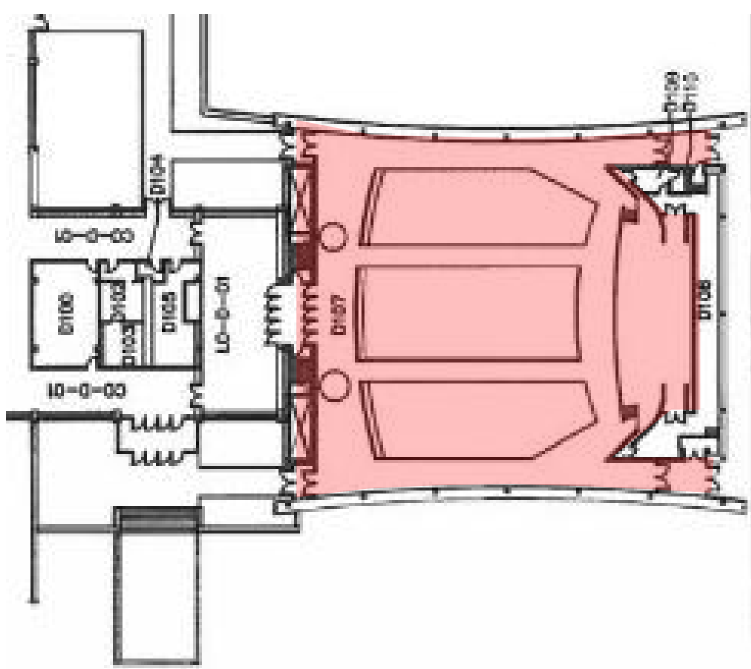
## Red Auditorium: D107

The Red Auditorium occupies the entirety of Wing D. It is the larger of the two auditoriums. In contrast to the smaller Green Auditorium, the Red Auditorium features an elevated stage area is recessed into the east wall. The auditorium also has a true backstage area, which is accessed through two doorways, one on either side of the stage. The sloped seating area descends from grade-level at the rear (west) of the auditorium down to the forestage area. The acoustical plaster ceiling was replaced in kind in 2000. Apart from the seating and plaster ceiling, renovations have retained most of the original finishes, including suspended wood slat ceilings, formed concrete block, walnut acoustical panels, and stainless-steel doors.

Location Plan (NTS)



Key Plan (NTS)



## Red Auditorium: D107

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Ceiling | Plaster | Painted | 2000 |
| Ceiling | Wood Strip | Perforated | 1966 |

A perforated wood strip ceiling runs around the perimeter of the space. The wider slats strips are butternut. Thinner strips of walnut are placed behind the gaps in the butternut strips so that they are not visible from the ground. A suspended, stepped plaster ceiling hangs below the slat ceiling above the seating area. The existing plaster ceiling is in its original configuration.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Ceiling | Wood Plank | Stained Lacquer | 2000 |

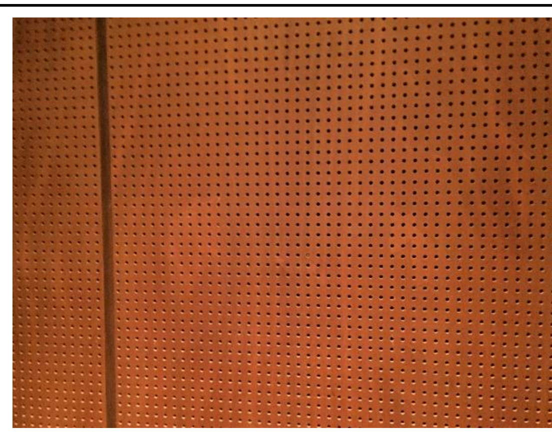
The ceiling above the stage area is flush wood strip without perforations. The spacing of the wood planks do not match original drawings. This ceiling was likely installed during renovations in 2000.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Formed Concrete Block | Textured | 1966 |
| Base | Marble – MO. Cliffdale | Polished | 1966 |

The north and south walls of the auditorium are formed acoustical concrete block. The concrete blocks are laid in a stack bond pattern. Every other stack is built of convex blocks that stand proud of the wall plane. The wall base is brown Cliffdale marble tiles with a simple rectangular profile.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Plywood w/ American Walnut Veneer | Perforated w/ Stained Lacquer Finish | 1966 |
| Base | Marble – MO. Cliffdale | Polished | 1966 |

The rear (west) wall of the auditorium is clad in acoustic perforated walnut panels.



## Red Auditorium: D107

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Plaster | Vinyl Wall Covering | 1966 |
| Base | Marble – MO. Cliffdale | Polished | 1966 |

Plaster walls flanking the stage are clad in vinyl fabric. The vinyl covering is pulling away from the plaster wall in areas.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Butternut and American Walnut | Stained Lacquer | 1966 |

Wood strips clad portions of the east and west walls of the auditorium. The wider slats, principle strips are butternut. Thinner strips of walnut are placed behind the gaps in the butternut strips so that they are not easily visible.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Double-Leaf | Stainless Steel | No. 4 Satin | 1966 |
| Frame | Stainless Steel | No. 4 Satin | 1966 |
| Hardware | Stainless Steel | Satin | 1966 |

Double doors flank the stage at the east end and the main entrance at the west end of the auditorium. Doors are stainless steel with a satin finish. The door frame and surround are also stainless steel. Original hardware includes raised push plates on the auditorium side and simple pull bars on the opposite side. Double doors on the west end of the auditorium open directly outside. Original red lettering spells out "EXIT" above the west doors. These have been retrofitted with modern signage and a face-mounted automatic closer.

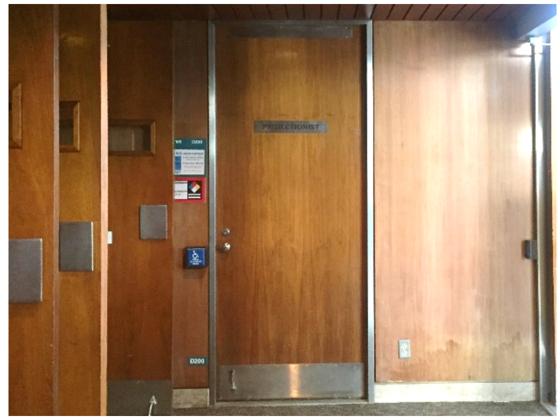
*Stainless-steel push plate*

## Red Auditorium: D107

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Single-Leaf | Wood w/ American Walnut Veneer | Stained Lacquer | 1966 |
| Frame | Stainless Steel | No. 4 Satin | 1966 |
| Hardware – Knobs | Aluminum | Satin | 1966 |
| Hardware – Hinges | Stainless Steel | Satin | 1966 |

Single-leaf walnut doors lead from the auditorium vestibule into flanking stairwells leading up to the mezzanine-level projection room. Original hardware includes a door knob, deadbolt, kickplate, and modernist butt hinges. One door has a stainless-steel faceplate reading PROJECTIONIST in all capitals.

PHOTO



*Modernist stainless-steel hinge*

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Single-Lite | Wood w/ American Walnut Veneer/ Blass | Stained Lacquer/ Clear | 1966 |
| Frame | Stainless Steel | No. 4 Satin | 1966 |
| Hardware | Stainless Steel | Satin | 1966 |

A bank of six single-lite doors leads from the lobby into the vestibule and from the vestibule into the auditorium. All doors feature a kickplate and original modernist hinges. Hardware differs between the lobby doors and the auditorium doors. A spring latch secures the lobby doors, so these require a lockset with a thumb latch and panic bar. The auditorium doors cannot be latched and feature a simple modernist pull bar and push plate. Each bank of doors has a continuous, textured aluminum threshold.

*Raised push plate*

## Red Auditorium: D107

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Double-Leaf | Hollow Metal | Painted | 1966 |
| Frame | Steel | Painted | 1966 |
| Hardware | Aluminum | Satin | 1966 |

Double-leaf hollow metal doors at the left and right ends of the stage provide backstage access. Original hardware includes a doorknob, deadbolt, face-mounted closer, and utilitarian pivot hinges.

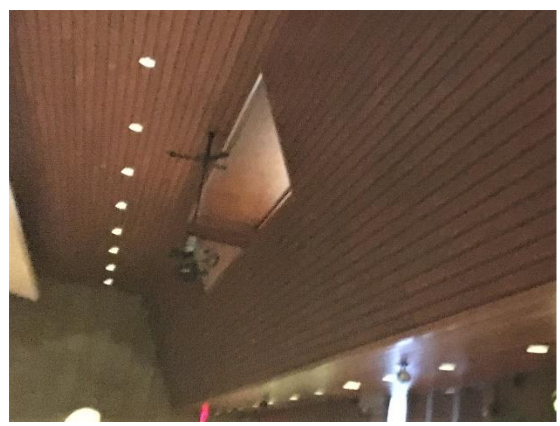
PHOTO

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Stacked Sliding | Wood w/ American Walnut Veneer | Stained Lacquer | 1966 |

Large stacked doors slide across the back of the proscenium opening to conceal the projection screen. When the screen is needed, doors retract to the to either side of the screen. Doors slide along three parallel metal grooves in the stage floor. There are three leaves on each side, for six in total.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Window – Fixed | American Walnut/ Glass | Stained Lacquer/ Clear | 1966 |

A fixed glazed opening provides sightlines from the mezzanine-level projection room into the auditorium.



| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Floor | Carpet | N/A | 2000 |

The aisles, forestage area, and standing room area were originally carpet. Carpet was most recently replaced during renovations in 2000.

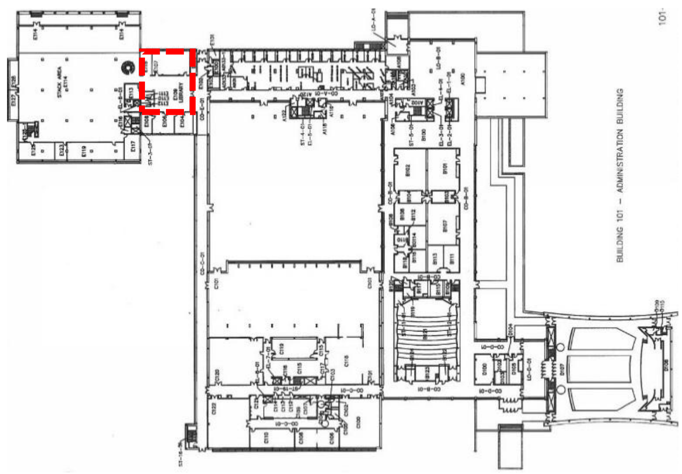
## Red Auditorium: D107

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Floor | Vinyl | N/A | 2000 |  |
| Vinyl asbestos tiles originally covered the floor at the auditorium seating. The existing vinyl flooring is a continuous sheet. It likely dates to renovations in 2000. | | | | |
| Stage | Oak Plank | Stained Lacquer | 1966 |  |
| The stage floor is finished with oak planks. | | | | |
| Fire Extinguisher Cabinet | Steel/ Glass | Painted/ Wire | 1966 |  |
| Fire extinguisher cabinets are recessed into walls near the northeast and southeast entrances. These cabinets are the same as those found in stairwells and most corridors. They are significantly more utilitarian than those found in the Green Auditorium. | | | | |
| Grille | Extruded Anodized Aluminum | Clear Satin | 1966 |  |
| Aluminum grilles occur between the molded concrete block walls and the marble base. They are also found above the hollow metal doors at stage right and stage left. | | | | |

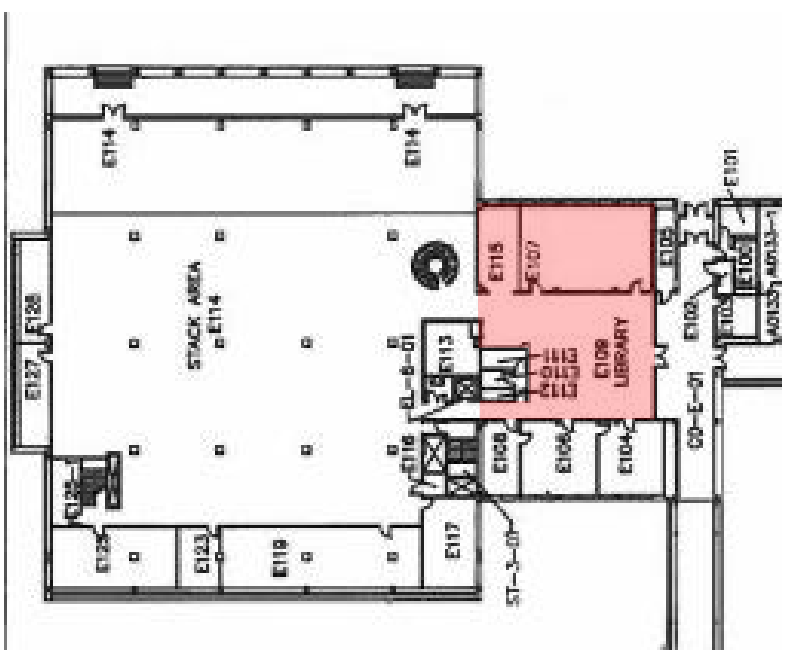
## Museum: E107, E109, and E115

The museum occupies three rooms to the east of the library: the museum lobby and two exhibit rooms to the north of the lobby. Originally the museum only occupied the larger of the two exhibit rooms (E107). This room features elevated finishes, such as walnut paneling and a decorative vinyl flooring pattern, and houses multiple custom-designed display cases. Room E109 was originally used exclusively as a lobby area for the library and museum. Room E115 originally housed Xerox equipment. Both of these rooms now house exhibits. An additional opening has been constructed in the south wall of E115 to make it accessible via the museum lobby.

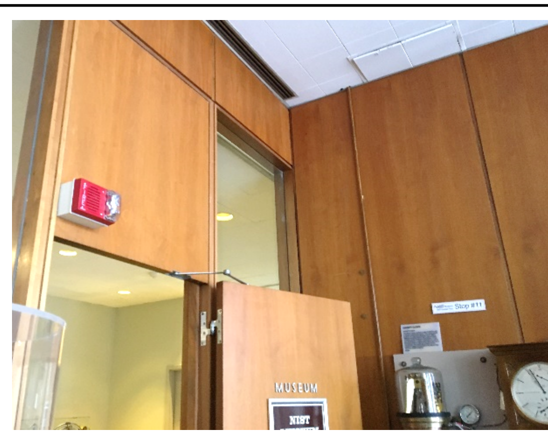
Location Plan (NTS)



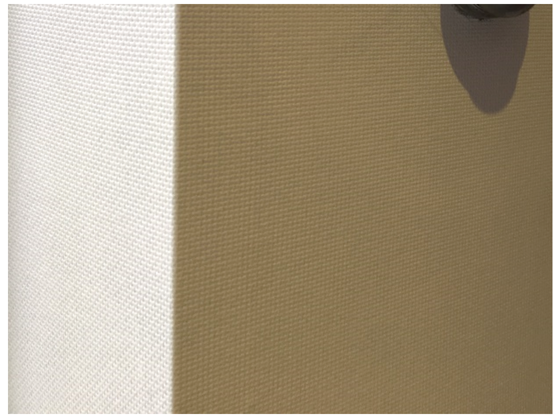
Key Plan (NTS)



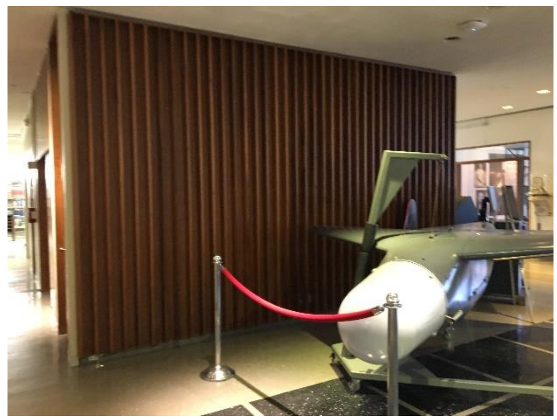
## Museum: E107, E109, and E115

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Ceiling | Acoustic Tile | Striated | 1966 |  |
| Ceilings in the museum lobby (E109) are 12”x24” acoustic tiles set within a concealed grid. Tiles are striated along their length. The library and museum lobby are the only two spaces that retain this original ceiling tile. Ceilings in the main exhibit room (E107) have been altered. | | | | |
| Ceiling | Acoustic Tile | Striated | 1966 |  |
| Ceilings in the main exhibit room (E107) are 12”x12” acoustic tiles set within a concealed grid. It is assumed this is the original ceiling, but this is not confirmed. | | | | |
| Ceiling | Acoustic Tile | Textured | N/A |  |
| This is not the original ceiling in room E115. It is not known when this ceiling was altered. | | | | |
| Wall | Plywood w/ American Walnut Veneer | Stained Lacquer | 1966 |  |
| Base | Vinyl | N/A | 1966 | |
| Walls in the museum lobby and larger exhibit room are paneled with American Walnut. This designates these areas as more formal than the smaller exhibit room, which was originally housed Xerox equipment. | | | | |

## Museum: E107, E109, and E115

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Wall | Plaster | Vinyl Wall Covering | 1966 |  |
| Base | Steel | Baked Enamel | 1966 | |

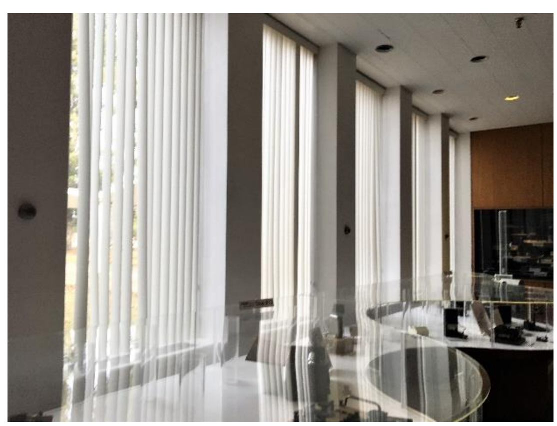
The north wall of the main exhibit room (E107) is plastered and finished with a vinyl covering.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Wall | American Walnut | Stained Lacquer | 1966 |  |
| Base | Vinyl | N/A | 1966 | |

The west wall of the museum lobby is covered with strips of American walnut laid vertically.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Wall | American Walnut/ Glass | Stained Lacquer/ Frosted | 1966 |  |
| Base | Vinyl | N/A | 1966 | |

The east wall of the museum lobby (E109) is glass panels set within a walnut frame. The glass panels are frosted and etched with symbols and documents relevant to the history of NIST. Glass panels were originally clear.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Window - Fixed | Anodized Aluminum/ Glass | Clear Satin Finish/ Clear | 1966 |  |

There are six fixed windows along the north wall of the larger exhibit room and one fixed window in the north wall of the smaller exhibit room. The sides and soffit of each window opening are plastered and painted. Windows are fitted with vertical metal blinds to control levels of daylighting in the exhibit spaces.

## Museum: E107, E109, and E115

<table>
<tr><th>FEATURE</th><th>MATERIAL</th><th>FINISH</th><th>DATE</th><th>PHOTO</th></tr>
<tr><td>Window – Fixed</td><td>American Walnut/ Glass</td><td>Stained Lacquer/ Clear</td><td>1966</td><td rowspan="2"></td></tr>
<tr><td colspan="4">The wall between the museum lobby and the larger exhibit room features several large glazed openings.  This allows daylight into the museum lobby, which otherwise could only be lit with artificial light.  It also visually connects the two spaces.</td></tr>
<tr><td>Door – Single-Leaf</td><td>Wood w/ American Walnut Veneer</td><td>Stained Lacquer</td><td>1966</td><td rowspan="6"><br><br>Modernist stainless-steel hinge</td></tr>
<tr><td>Frame</td><td>American Walnut</td><td>Stained Lacquer</td><td>1966</td></tr>
<tr><td>Hardware – Knob</td><td>Aluminum</td><td>Satin</td><td>1966</td></tr>
<tr><td>Hardware – Hinges</td><td>Stainless Steel</td><td>Satin</td><td>1966</td></tr>
<tr><td colspan="4">Doors leading into the larger exhibit room are clad in walnut veneer.  There is a full height wood transom panel above each door.  Original hardware includes stylized modernist butt hinges and aluminum door knobs.  Door knobs have been replaced on some doors.</td></tr>
</table>

## Museum: E107, E109, and E115

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Double-Leaf | Wood w/ American Walnut Veneer | Stained Lacquer | 1966 |
| Frame | American Walnut | Stained Lacquer | 1966 |
| Hardware – Knob | Aluminum | Satin | 1966 |
| Hardware – Hinges | Stainless Steel | Satin | 1966 |

PHOTO

A double-leaf walnut door leads from CO-E-01 into the museum lobby. Original hardware includes stylized modernist butt hinges and aluminum door knobs. Door knobs have been replaced on some doors.

*Modernist stainless-steel hinge*

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Floor | Vinyl Asbestos Tile | N/A | 1966 |

The floors in the museum lobby and larger exhibit room is black and tan vinyl asbestos tile laid out in a grid pattern. Thin strips of tan tile separate large squares of black tile. There is a border of tan tiles around the perimeter of both rooms.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Floor | Wood | Stained Lacquer | Unknown |

The floor in the smaller exhibit rooms is narrow wood plank. This floor is not original. It is not known when it was installed.

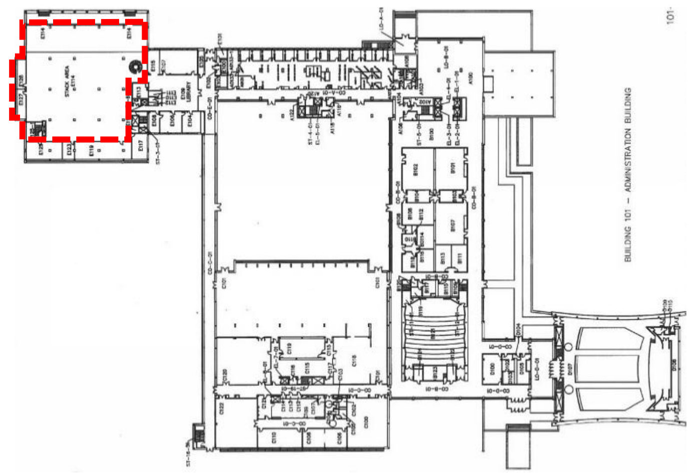
## Museum: E107, E109, and E115

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Display Case | Wood w/ American Walnut Veneer/ Glass | Stained Lacquer/ Clear | 1966 |  |
| A large, rectangular display case is built into the east wall of the museum lobby. It features three glazed openings set within walnut frames. | | | | |
| Display Case | Wood w/ American Walnut Veneer/ Glass | Stained Lacquer/ Clear | 1966 |  |
| There are two free-standing round display cases in the larger exhibit room. Walnut mullions divide each case into three equal parts. Curved glazing protects objects within the cases. Each of the cylindrical cases rests upon a cylindrical base clad in walnut veneer. | | | | |
| Thermostat | Stainless Steel | No. 4 Satin | 1966 |  |
| Original thermostats are found in the museum lobby (E109) and main exhibit space (E107). The manufacturer is Honeywell. | | | | |

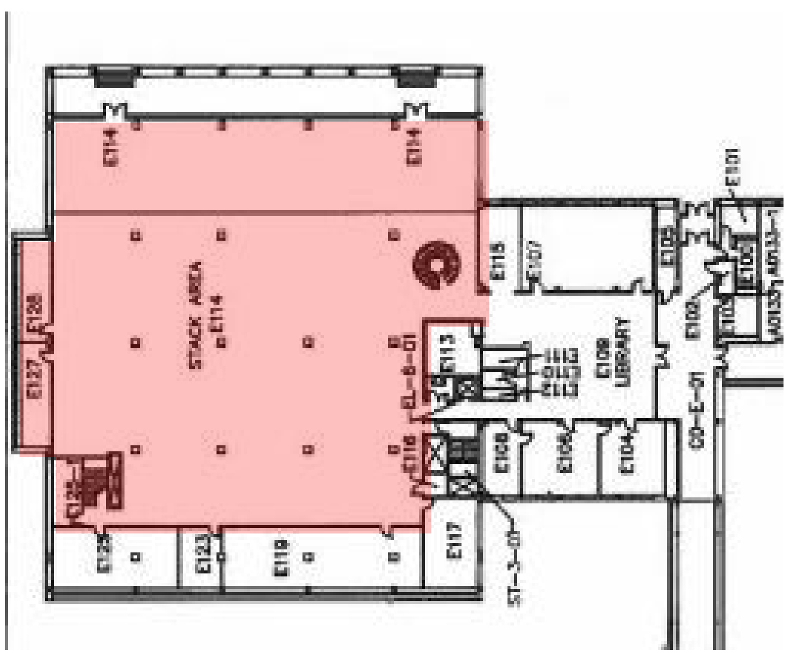
## Library: E114

The research library is among the most architecturally significant interior spaces in Building 101 and retains a high degree of architectural integrity.  Many of the original finishes remain in the space, and replacements are typically in kind.  The library is a two-story space with a mezzanine level running the full length of the room east to west and approximately two-thirds of the width north to south.  The mezzanine overlooks the full-height reading area that runs along the north side of the Library.  The north wall features a full-height aluminum curtain-wall that floods the library interior with natural light.  A monumental, self-supporting spiral stair provides access to the mezzanine at the east end of the library.  A simple straight stair with a half landing provides mezzanine access at the west end.  Finishes include plaster walls, vinyl floor tiles, terrazzo, stainless steel, and American figured walnut.

Location Plan (NTS)



Key Plan (NTS)



## Library: E114

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Ceiling | Acoustical Tile | Striated | 1966 |
| Diffuser | Extruded Aluminum | Clear Satin | 1966 |

Striated acoustic ceiling tiles are suspended from a concealed grid. Linear diffusers occur at spans of curtain wall along the north wall. This is one of a very few interior spaces that retain their original acoustic ceiling tiles.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Ceiling | Plaster | Painted | 1966 |
| Diffuser | Extruded Aluminum | Clear Satin | 1966 |

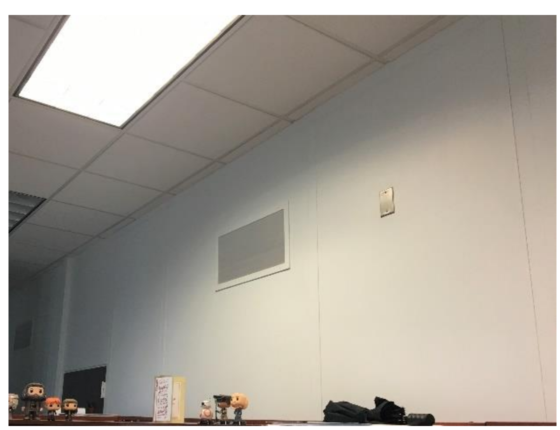
Three linear runs of plaster ceiling occur above the stacks on the first-floor and mezzanine levels. These plaster sections run along east to west in line with the square structural columns. Linear aluminum diffusers are centered within the plaster tacks between columns. Plaster ceilings also occur on the first-floor level above the carrel area in the protruding bay at the west end of the library. Ten rectangular areas of acoustical tiles are spaced evenly along the plaster ceiling.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Walls | Plaster | Vinyl Fabric | 1966 |
| Base | Vinyl | N/A | 1966 |

Originally all plaster walls were clad in a textured vinyl fabric. In some areas, vinyl fabric has been painted over.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Flush Metal Partitions | Steel | Baked Enamel | 1966 |
| Door | Steel | Baked Enamel | 1966 |

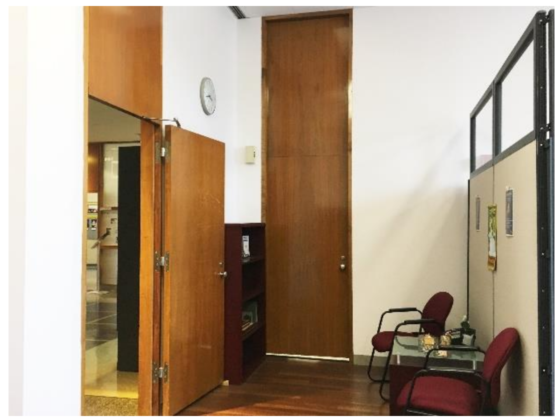
Flush metal partitions divide the offices and conference rooms along the south side of the library from the stacks area and subdivide them from one another one another. Partitions are full-height and movable.



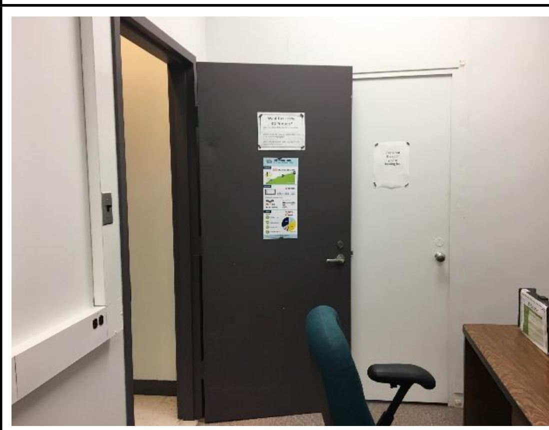
Library: E114

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Curtain Wall | Anodized Aluminum/ Glass | Fine Satin Finish/ Clear | 1966 |  |

The north wall is entirely aluminum-and-glass curtain wall. Lites are divided into two rows, with smaller square lites below and larger rectangular lites above. The curtain wall extends above the suspended acoustical tile ceiling so that the top rail of the aluminum frame is not visible. There are two sets of double-leaf doors – one at either end of the curtain-wall span. The original doors have been replaced with modern ADA-compliant automatic doors.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Door – Single-Leaf | Wood w/ American Walnut Veneer | Stained Lacquer | 1966 |  |
| Frame | American Walnut Veneer | Stained Lacquer | 1966 | |
| Hardware – Knob | Aluminum | Satin | 1966 |  |
| Hardware – Hinges | Stainless Steel | Satin | 1966 | *Modernist stainless-steel hinge* |

Single-leaf walnut doors are found on the first floor of the library. Original hardware includes modernist hinges and aluminum door knobs. A walnut panel above the door extends to the height of the ceiling.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Door – Single-Leaf | Hollow Metal | Painted | 1966 |  |
| Frame | Steel | Painted | 1966 | |
| Hardware | Aluminum | Satin | 1966 | |

This is the typical office door. Original hardware is an aluminum door knob. Lever handles have replaced these at some doors. Some office doors have a single glazed opening above the height of the door knob.

## Library: E114

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Single-Leaf | Hollow Metal | Painted | 1966 |
| Frame | Steel | Painted | 1966 |
| Hardware | Aluminum | Satin | 1966 |

Hollow metal doors with louvers occur at electrical, mechanical, and janitor’s closets. Original hardware is an aluminum door knob. Lever handles have replaced these at some doors.

PHOTO

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Floor | Vinyl Asbestos Tile | N/A | 1966 |

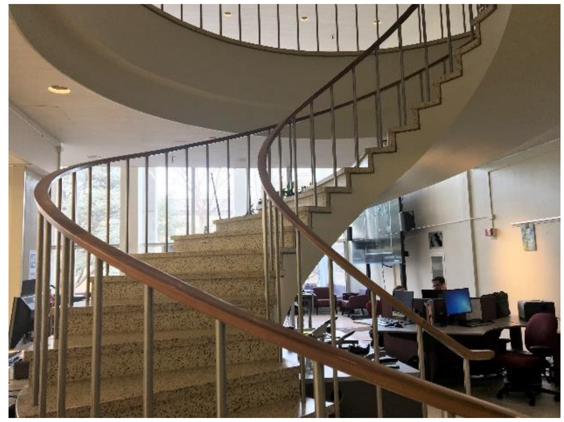
The original flooring is a solid field of vinyl asbestos tile in a light gray color. Patches of replacement tile do not match the original in color or pattern.

## Library: E114

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Stair – Structure | Poured Concrete | N/A | 1966 |
| Stair – Soffit and Stringer | Plaster | Painted | 1966 |
| Stair – Treads and Risers | Terrazzo | TBD | 1966 |
| Stair – Balusters | 1” Stainless Steel | No. 4 Satin Finish | 1966 |
| Stair – Handrail | American Walnut | Stained Lacquer | 1966 |

A significant character defining features is the self-supporting spiral stair case located at the east end of the library. The poured concrete structure is clad with pre-fabricated terrazzo treads and risers. The soffit and open stringer are plastered and painted. Round stainless-steel balusters 1” in diameter support the curved walnut handrail.

PHOTO

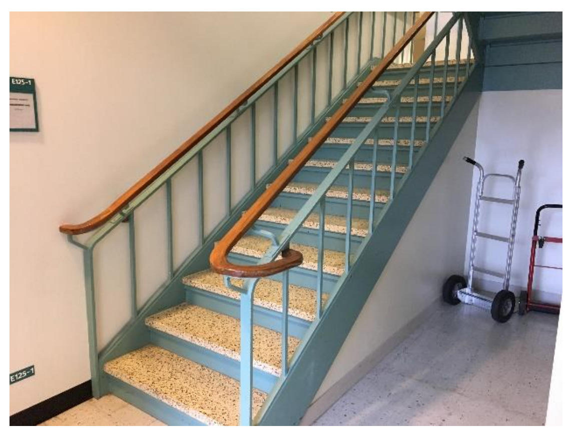


Monumental spiral stair (2019)

Unfinished concrete stair (1962)

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Stair – Structure | Concrete Block | Plastered and Painted | 1966 |
| Stair – Treads | Terrazzo | Polished | 1966 |
| Stair – Landing | Terrazzo | Polished | 1966 |
| Stair - Balusters, Risers, and Stringer | Steel | Painted | 1966 |
| Stair - Handrail | American Walnut | Stained Lacquer | 1966 |

A simpler, more utilitarian stair provides access to the mezzanine at the west end of the Library. The stair has two straight flights with an intermediate landing. The closed stringer, riser, and balusters are painted carbon steel. Like the monumental spiral stair, this stair features terrazzo treads and an American walnut handrail.



## Library: E114

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Mezzanine – Soffit Panels | Plaster | Painted | 1966 |
| Trim | Stainless Steel | No. 4 Satin Finish | 1966 |
| Balusters | 1” Stainless Steel | No. 4 Satin Finish | 1966 |
| Handrail | American Walnut | Stained Lacquer | 1966 |

The mezzanine level runs the full length of the Library east to west and approximately two-thirds the width north so south. The face of the mezzanine is finished with plaster panels. An extruded aluminum air diffuser is centered in every third plaster panel. The stainless-steel balusters and American walnut handrail match those of the monumental spiral stair.

PHOTO

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Fire Extinguisher Cabinet | Steel/ Glass | Painted/ Wire | 1966 |

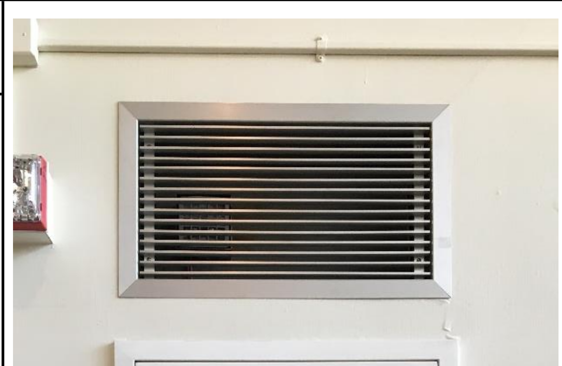
Fire extinguisher cabinets are recessed into the plaster wall. The door is painted steel with wire-glass glazing.


| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Water Fountain | Ceramic/ Chrome | Glazed/ Polished | 1966 |

Ceramic water fountains are original. The manufacturer is Crane.


| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Diffuser | Extruded Aluminum | Clear Satin | 1966 |

The aluminum frame is proud of the plaster wall.



Library: E114

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Diffuser | Extruded Aluminum | Clear Satin | 1966 |  |
| The aluminum frame is proud of the plaster wall. | | | | |

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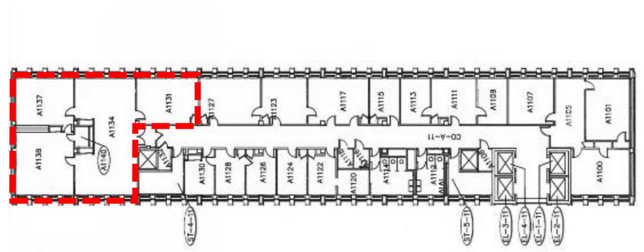
## Directors' Office Suite: A1131, A1134, A1137, and A1138

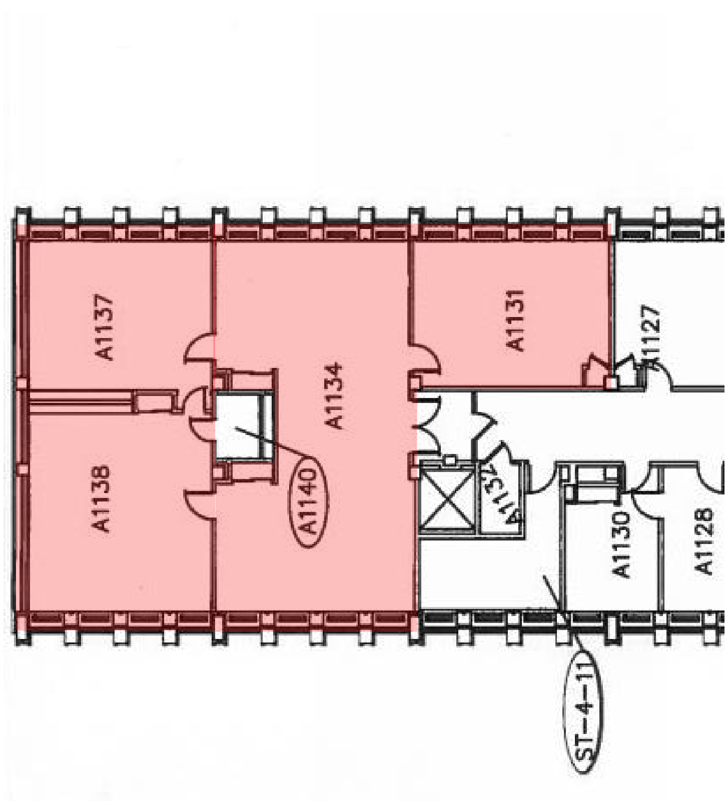
The Director's office suite occupies the west end of the Eleventh Floor of Wing A. The suite includes a large reception area, a conference room, and offices for the Director and Executive Director, each with a private bathroom. The suite is entered through a small vestibule. The layout of the space is notably different from that shown in original construction drawings. However, a furniture plan dating to 1964 shows the existing layout, indicating the change to layout happened prior to construction. Original finishes include walnut paneling and doors and aluminum doors and windows. Most other finishes – including carpet, acoustic ceiling tiles, and light fixtures – have been replaced.

An aluminum-and-glass door with transom and sidelights has been installed at the end of the corridor to create a small entrance vestibule for the suite. This division is not original, and this sheet does not include finishes in the vestibule area.

Location Plan (NTS)



Key Plan (NTS)



## Directors’ Office Suite: A1131, A1134, A1137, and A1138

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Ceiling | Acoustic Tile | Smooth | c. 1999 |  |

Ceilings in the Directors’ suite were originally 12” by 12” prefab mineral plaster acoustic tiles. Ceilings were most recently replaced during updates to the space in the late 1990s.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Wall | Plaster | Painted | 1966 |  |
| Base | Steel | Baked Enamel | 1966 | |

Exterior walls are plastered and painted. The wall base is steel with simple rectangular profile. The original finish is baked enamel, but bases have been painted.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Wall | Plaster | Vinyl Fabric | c. 1999 |  |
| Base | Steel | Baked Enamel | 1966 | |

Dividing walls in the Directors’ suite are concrete masonry unit construction finished with plaster and vinyl fabric wall covering. This distinguished the Directors’ suite from other office spaces, which typically have moveable metal partitions as dividing walls. Walls are currently covered in a vinyl fabric that may date to renovations in the late 1990s. The original wall covering was grass cloth. The wall base is steel with simple rectangular profile. The original finish is baked enamel, but bases have been painted.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Wall | Plywood w/ American Walnut Veneer | Stained Lacquer | 1966 |  |
| Base | Steel | Baked Enamel | 1966 | |

Certain walls in the Director’s office, Executive Director’s office, and reception area are clad in walnut paneling. The existing cherry stained finish dates to the late 1990s. The original finish was more natural walnut color, as can be seen on original finish boards in the library archives. The wall base is steel with simple rectangular profile. The original finish is baked enamel, but bases have been painted.

## Directors' Office Suite: A1131, A1134, A1137, and A1138

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Floor | Carpet | N/A | c. 1999 |

Floors in the offices, conference room, and reception area were originally carpeted. The existing carpet most likely dates to renovations in the late 1990s.

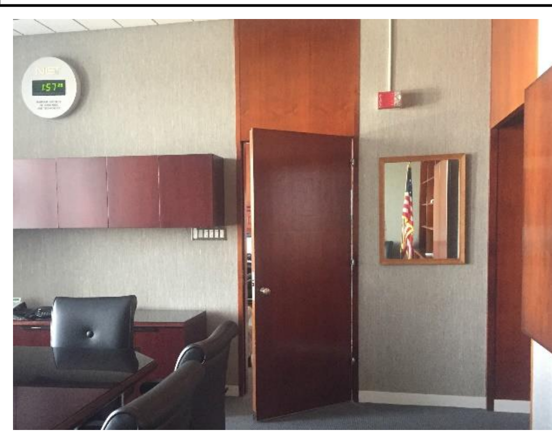
| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Double-Leaf | Wood w/ American Walnut Veneer | Stained Lacquer | 1966 |
| Frame | American Walnut | Stained Lacquer | 1966 |
| Hardware – Knob | Aluminum | Satin | 1966 |
| Hardware – Hinges | Stainless Steel | Satin | 1966 |

Double-leaf swinging doors lead from the vestibule into the reception area. Doors are clad in walnut veneer to match the walnut paneling. They were also refinished during the late 1990s. Original hardware includes modernist hinges and an aluminum door knob. The face-mounted closer is not original. A louvered walnut transom above the doors originally allowed for ventilation between the reception area and corridor before the construction of the vestibule and the lowering of the corridor ceiling.

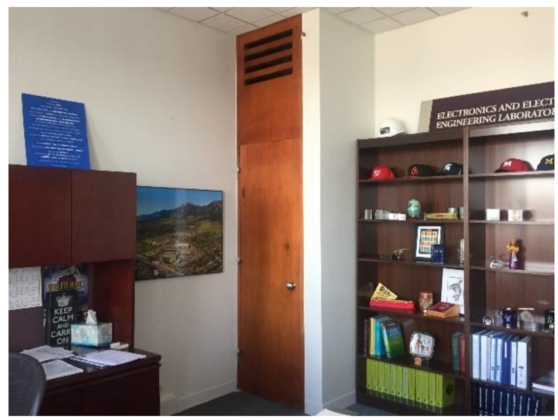
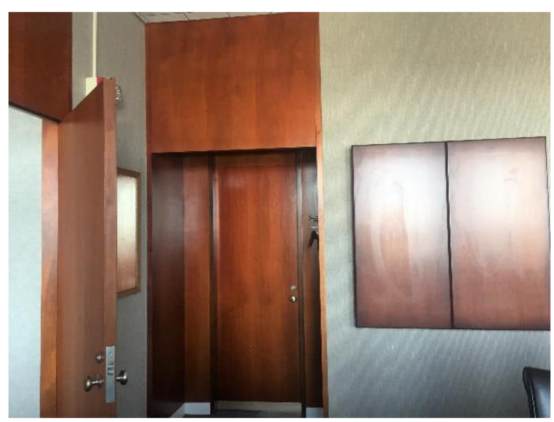
*Modernist stainless-steel hinge*

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Single-Leaf | Wood w/ American Walnut Veneer | Stained Lacquer | 1966 |
| Frame | American Walnut | Stained Lacquer | 1966 |
| Hardware – Knob | Aluminum | Satin | 1966 |
| Hardware – Hinges | Stainless Steel | Satin | 1966 |

Single-leaf walnut doors lead into the offices and conference room. Original hardware includes modernist hinges and aluminum door knobs. A walnut panel above the door extends to the height of the ceiling.



## Directors' Office Suite: A1131, A1134, A1137, and A1138

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Door – Sliding | Wood w/ American Walnut Veneer | Stained Lacquer | 1966 |  |
| Frame | American Walnut | Stained Lacquer | 1966 | |
| A double-leaf sliding doors close off what was likely a closet originally. The space now functions as a kitchenette. A walnut panel above the doors extends to the height of the ceiling. | | | | |
| Door – Single-Leaf | Wood w/ American Walnut Veneer | Stained Lacquer | 1966 |  |
| Frame | American Walnut | Stained Lacquer | 1966 | |
| Hardware – Knob | Aluminum | Satin | 1966 | |
| Hardware – Hinges | Stainless Steel | Satin | 1966 | |
| Original closet doors in the two offices feature original modernist hinges and aluminum door knobs. A louvered walnut transom extends to the height of the ceiling. | | | | |
| Door – Single-Leaf | Wood w/ American Walnut Veneer | Stained Lacquer | 1966 |  |
| Frame | American Walnut | Stained Lacquer | 1966 | |
| Hardware – Knob | Aluminum | Satin | 1966 | |
| Hardware – Hinges | Stainless Steel | Satin | 1966 | |
| A single-leaf connects the Director's office and the adjacent conference room. On the conference room side, the door is recessed in a walnut-paneled alcove. A walnut panel above the alcove extends to the ceiling height. On the office side, the door is flush with the wall. A walnut panel extends above the door to the ceiling height. | | | | |

## Directors' Office Suite: A1131, A1134, A1137, and A1138

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Window – Reversible | Anodized Aluminum/ Glass | Clear Satin/ Clear | 1966 |  |
| Windows are single-lite. Metal blinds are not integral and are not original. The interior opening is plastered and painted. | | | | |
| Radiator Cabinet | Steel | Painted | 1966 |  |
| There is a radiator cabinet in each window opening. | | | | |
| Built-in Casework | Wood w/ American Walnut Veneer | Stained Lacquer | 1966 |  |
| Diffuser | Extruded Aluminum | Clear Satin Finish | 1966 | |
| The offices and conference room feature built-in walnut casework. There is an extruded aluminum grille set within the crown trim of the casework. All wood casework and trim in the Director's office suite were refinished in the late 1990s. An aluminum diffuser is mounted within the upper panel of the casework. The original finish was more natural walnut color, as can be seen on original finish boards in the library archives. | | | | |

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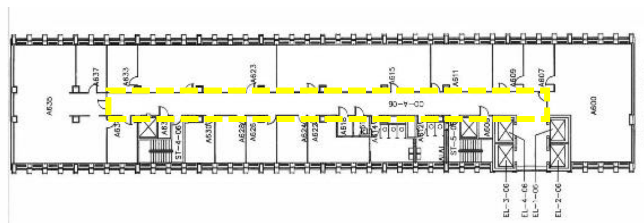
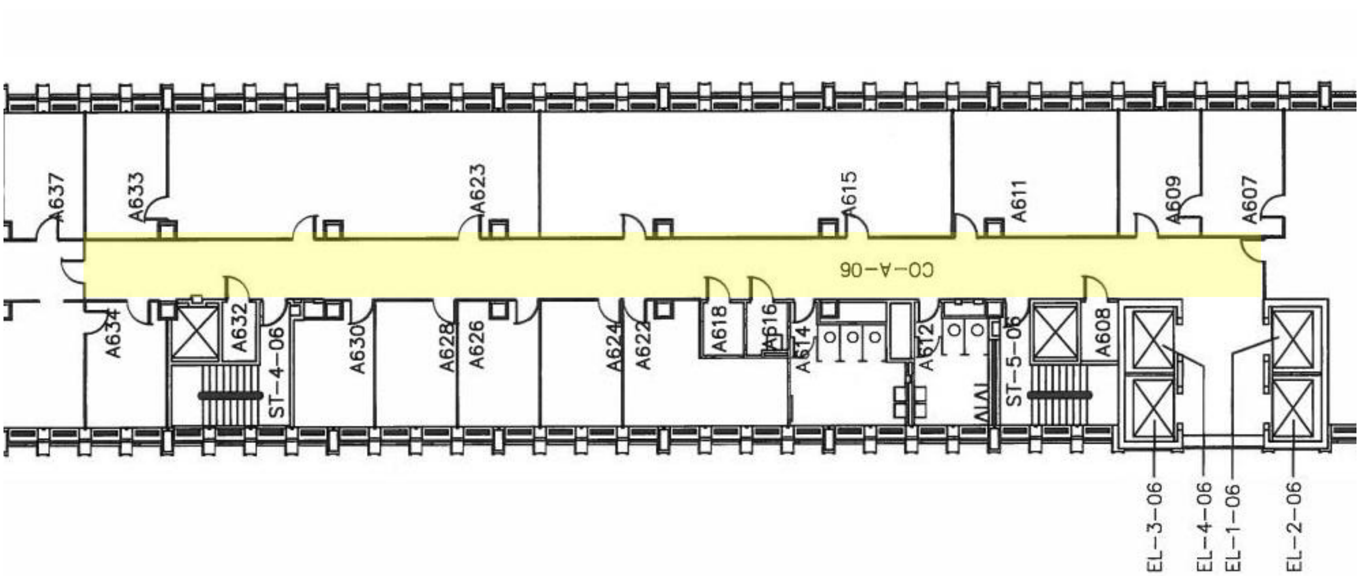
## Corridors, Second – Tenth Floors: CO-A-02, CO-A-03, CO-A-04, CO-A-05, CO-A-06, CO-A-07, CO-A-08, CO-A-09, and CO-A-10

Corridors on the second through tenth Floors of the Office Tower were designed as minimalist, practical spaces that could easily adapt to changing programmatic needs. The corridors run from east to west, with a large office suite and elevator lobby at the east end and a second large office suite at the west end. Smaller offices, utility closets, and restrooms are located along both sides of the corridors. Corridor walls are moveable partitions made up of flush steel panels. The moveable partitions allow for easy rearrangement of offices and relocation of doorways as needed. Finishes are utilitarian and hardwearing; they include vinyl asbestos floor tiles, hollow metal doors, and acoustic ceiling tiles. Corridors retain much of their original fixtures with a few exceptions. On most floors, the suspended ceilings and light fixtures were replaced around 2010. The ceiling height has also been lowered, so that louver transoms over doors are no longer visible.


Location Plan (NTS)



Key Plan (NTS)



Corridors, Second – Tenth Floors: CO-A-02, CO-A-03, CO-A-04, CO-A-05, CO-A-06, CO-A-07, CO-A-08, CO-A-09, and CO-A-10

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Ceiling | Acoustic Tile | Smooth | 2001 |

This is the typical ceiling in interior corridors. Acoustic tiles are smooth and set within an exposed grid. The ceiling height has been lowered. Originally it was above the height of louvered transoms above the doors that allowed additional air circulation between the office and corridors. These are now only visible inside the offices.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Ceiling | Acoustic Tile | Smooth | N/A |

This ceiling type is only found in the sixth-floor corridor. Acoustic tiles are smooth and set within an exposed metal grid. It is not known when these ceilings were installed. The ceiling height has been lowered. Originally it was above the height of louvered transoms above the doors that allowed additional air circulation between the office and corridors. These are now only visible inside the offices.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Steel Flush Metal Panel | Vinyl Coating | 1966 |
| Base | Steel | Vinyl Coating | 1966 |

Corridor walls are moveable partitions made of flush steel panels. Both the walls and base have a factory applied vinyl coating. Corridor ceilings have been lowered so that louver transoms are no longer visible.

Corridors, Second – Tenth Floors: CO-A-02, CO-A-03, CO-A-04, CO-A-05, CO-A-06, CO-A-07, CO-A-08, CO-A-09, and CO-A-10

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Single-Leaf | Steel | Painted | 1966 |
| Frame | Steel | Painted | 1966 |
| Hardware | Aluminum | Satin | 1966 |

This door assembly leads into the large office suite at the east end of the sixth-floor corridor. It is probable that this door assembly originally existed at this location on the second through the tenth floors. It now only exists on the sixth floor. It has been replaced with a centered aluminum-and-glass door with sidelites and transom on all other floors. Original aluminum knobs have been replaced with lever handles.

PHOTO

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Single-Leaf | Steel | Painted | 1966 |
| Frame | Steel | Painted | 1966 |
| Hardware | Aluminum | Satin | 1966 |

Typical office doors are single-leaf with no glazed or louvered openings. Original hardware includes aluminum door knobs, deadbolts, and butt hinges. Some door knobs have been replaced with lever handles. Office doors have a steel louver transom above the height of the suspended corridor ceiling.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Single-Leaf | Steel | Painted | 1966 |
| Frame | Steel | Painted | 1966 |
| Hardware | Aluminum | Satin | 1966 |

Doors to restrooms and janitor and utility closets have steel louvers set below the door's midline. Original hardware includes aluminum door knobs, deadbolts, and butt hinges. Door knobs have been replaced with lever handles on some doors.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Single-Lite | Steel | Painted | 1966 |
| Frame | Steel | Painted | 1966 |
| Hardware | Aluminum | Satin | 1966 |

Some office doors have a single glazed opening. This is the most common office door type on the 6th Floor. Original hardware includes aluminum door knobs, deadbolts, and butt hinges. Door knobs have been replaced with lever handles on some doors.

## Corridors, Second – Tenth Floors: CO-A-02, CO-A-03, CO-A-04, CO-A-05, CO-A-06, CO-A-07, CO-A-08, CO-A-09, and CO-A-10

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Door – Single-Leaf | Hollow Metal/ Glass | Painted/ Wire | 1966 |  |
| Frame | Steel | Painted | 1966 | |



This is the standard stairwell door. There are two on every upper-floor corridor. Original hardware was likely a stainless-steel door knob, but the door has been retrofitted with a lever handle. Stairwell doors have a single lite of wire glass.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Door – Double-Leaf | Steel | Painted | 1966 |  |
| Frame | Steel | Painted | 1966 | |
| Hardware | Aluminum | Satin | 1966 | |

This door type was only found on the 6th Floor. The left leaf is the same as the typical office door. Original hardware includes aluminum door knobs, deadbolts, and butt hinges. Door knobs have been replaced with lever handles on some doors.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Floor | Vinyl Asbestos Tile | N/A | 1966 |  |

The original corridor floor is a solid field of brown vinyl asbestos tiles.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Water Fountain | Ceramic/ Chrome | Glazed/ Polished | 1966 |  |



Ceramic water fountains are original. The manufacturer is Crane.

Corridors, Second – Tenth Floors: CO-A-02, CO-A-03, CO-A-04, CO-A-05, CO-A-06, CO-A-07, CO-A-08, CO-A-09, and CO-A-10

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Mail Chute | Stainless Steel | No. 4 Satin | 1966 |  |

A stainless-steel mail chute is located at the west end of each of the upper-level corridors. “MAIL” is inscribed on a stainless-steel panel in all capitals.

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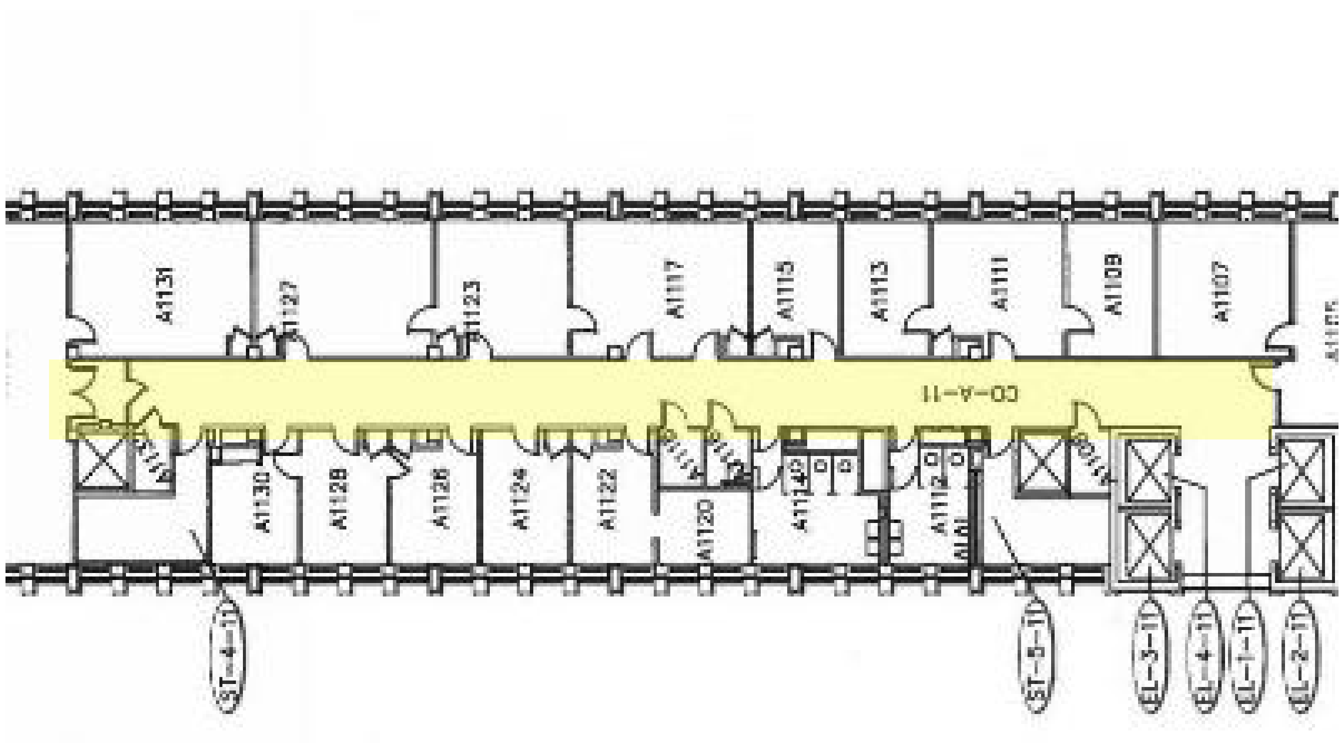
## 11th-Floor Corridor

Since the Executive Office Suite is found on the eleventh, the corridor features higher level finishes than corridors on second through tenth floors. Most notably, dividing walls are concrete-masonry-unit construction finished with plaster, in contrast to the moveable metal partitions used on floors two through ten. The layout is almost identical to the lower floors. At its east end, the long single corridor terminates in a large office area. The Directors' office suite is at the west end of the corridor. A modern aluminum-and-glass partition with a single-leaf door creates a small entrance vestibule for the Directors' office suite. This division of space is not original. Offices on the eleventh floor are larger, so that there are fewer office doors leading off of the corridor. Doors and transom panels are walnut veneer, a significant change from the hollow metal doors found on floors two through ten.

Location Plan (NTS)

Key Plan (NTS)



# 11th-Floor Corridor

| FEATURE | MATERIAL | FINISH | DATE |
| --- | --- | --- | --- |
| Ceiling | Acoustic Tile | Smooth | c. 2010 |

This is the typical ceiling in interior corridors. Acoustic tiles are smooth and set within an exposed grid. The ceiling height has been lowered. Originally it was above the height of louvered transoms above the doors that allowed additional air circulation between the office and corridors. These are now only visible inside the offices.

| FEATURE | MATERIAL | FINISH | DATE |
| --- | --- | --- | --- |
| Wall | Plaster | Vinyl Fabric | 1966 |
| Base | Walnut | Stained Lacquer | 1966 |

The wall base wood with a simple rectangular profile.


| FEATURE | MATERIAL | FINISH | DATE |
| --- | --- | --- | --- |
| Floor | Vinyl Tile | N/A | c. 2001 |

Floors were originally vinyl asbestos tile. Existing floors are vinyl tile with a faux marble pattern. It is not known when these floors were installed. They may date to ceiling modifications in the 2000s.

## 11th-Floor Corridor

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Single-Leaf | Walnut Veneer | Stained Lacquer | 1966 |
| Frame | Walnut | Stained Lacquer | 1966 |
| Hardware – Knobs | Aluminum | Satin | 1966 |
| Hardware – Hinges | Stainless Steel | Satin | 1966 |

Office doors are single-leaf with no glazed or louvered openings. Original hardware includes aluminum door knobs, deadbolts, and modernist butt hinges. Modern lever handles have replaced door knobs in some instances. Office doors have a wood louver transom above the height of the suspended ceiling. The louver transom is not visible from the corridor.

PHOTO

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Single-Leaf | Walnut Veneer | Stained Lacquer | 1966 |
| Frame | Walnut | Stained Lacquer | 1966 |
| Hardware – Knobs | Aluminum | Satin | 1966 |
| Hardware – Hinges | Stainless Steel | Satin | 1966 |

Doors to restrooms and janitor's and utility closets have wood louvers set below the door's midline. Closet door hardware includes aluminum door knobs, deadbolts, and modernist butt hinges. Restroom door hardware includes a push plate, pull bar handle, and kickplate. Restroom doors have a face-mounted closer on the restroom side. These doors are not automatic ADA accessible doors.

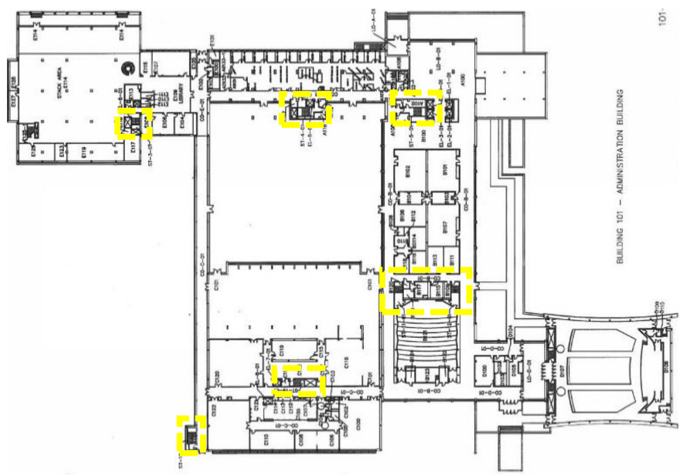
## 11th-Floor Corridor

<table>
<tr><th>FEATURE</th><th>MATERIAL</th><th>FINISH</th><th>DATE</th><th>PHOTO</th></tr>
<tr><td>Door – Single-Leaf</td><td>Walnut Veneer/ Glass</td><td>Stained Lacquer / Wire</td><td>1966</td><td rowspan="4">
</td></tr>
<tr><td>Frame</td><td>Walnut</td><td>Stained Lacquer</td><td>1966</td></tr>
<tr><td>Hardware</td><td>Aluminum</td><td>Satin</td><td>1966</td></tr>
<tr><td colspan="4">Stair doors have a single square lite set with wire glass.  The lever handle does not appear to be original. Hinges likely are original.</td></tr>
<tr><td>Mail Drop</td><td>Stainless Steel/ Glass</td><td>No. 4 Satin/ Clear</td><td>1966</td><td rowspan="2"></td></tr>
<tr><td colspan="4">An original mail drop is found at the west end of the corridor.  The chute aluminum with clear glazing set within an aluminum frame.  Mail is inserted into a slot in the top of a stainless-steel panel mounted above the glazing. MAIL is inscribed into the face of the panel in all capitals.</td></tr>
<tr><td>Water Fountain</td><td>Ceramic/ Chrome</td><td>Glazed/ Polished</td><td>1966</td><td rowspan="2">
</td></tr>
<tr><td colspan="4">A single water fountain is located at the west end of the corridor.  The fixture was manufactured by Crane.</td></tr>
</table>

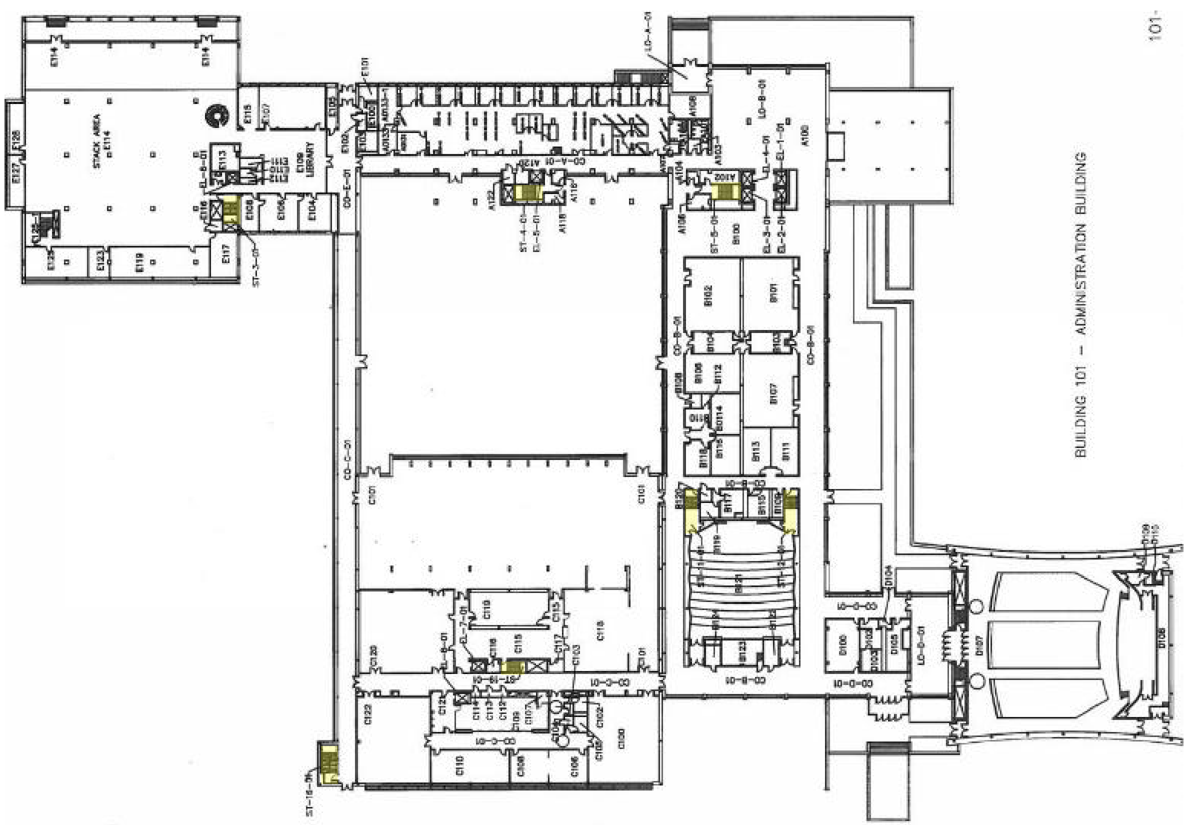
## Stairwells: ST-3, ST-4, ST5, ST-11, ST-12, ST-16, and ST-19

The two main stairwells are located in Wing A – one at the east end near the elevator lobby and one in the center of the office tower. These stairwells run all the way from the basement level to the 11th floor of the office tower. There are two stairwells in Wing C that run from the basement to the 1st floor. The enclosed stairwell in the library runs from the basement up to the mezzanine level. Two stairwells at the north end of the Green Auditorium in Wing B allow circulation from the corridor, which is at grade, to the front of the Green Auditorium, which is below grade. Regardless of their configurations, stairwells are united by a common material palette. In particular, a specific terrazzo pattern is used to distinguish the stairwells from the first-floor corridors.

Location Plan (NTS)



Key Plan (NTS)



## Stairwells: ST-3, ST-4, ST5, ST-11, ST-12, ST-16, and ST-19

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Ceiling | Plaster | Painted | 1966 |  |

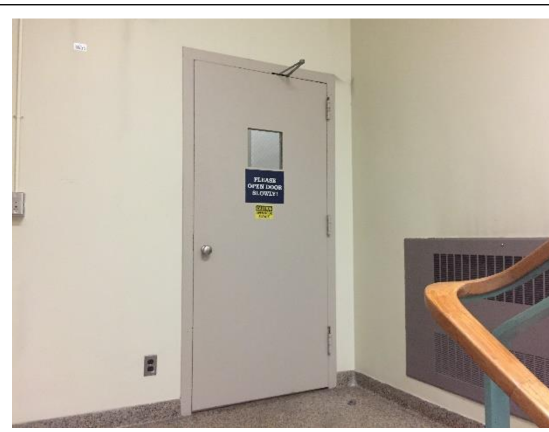
Ceilings in all stairwells are painted plaster. This occasionally, but not always, includes stringers and soffits of the stairs themselves.

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Walls | Plaster | Vinyl Fabric | 1966 |  |
| Base | Terrazzo | Polished | 1966 | |
| Base | Steel | Painted | 1966 | |

The typical wall finish above the basement-level is a vinyl fabric wall covering.

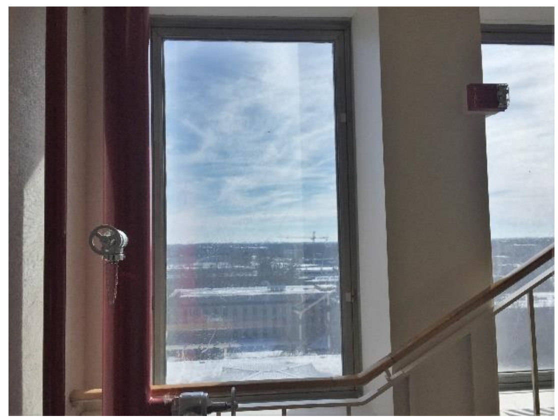
| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Walls | Plaster | Painted | 1966 |  |
| Base | Terrazzo | Polished | 1966 | |
| Base | Steel | Painted | 1966 | |

All stairwells have painted plaster walls at the basement level. At Stair 3, all walls are painted plaster.

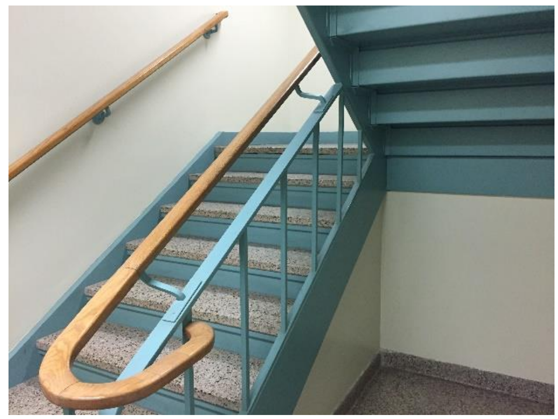
| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Door – Single-Leaf | Hollow Metal/ Wire Glass | Painted/ Clear | 1966 |  |
| Frame | Steel | Painted | 1966 | |
| Hardware | Aluminum | Satin | 1966 | |

The typical stair door is a hollow metal fire door with a single wire-glass lite. The only exception is the 11th floor of the office tower, where the stair door is clad in walnut veneer. (See Survey Sheet for eleventh-floor corridor). Original hardware includes aluminum door knobs. Door knobs have been replaced in some locations.

## Stairwells: ST-3, ST-4, ST5, ST-11, ST-12, ST-16, and ST-19

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Door | Hollow Metal | Painted | 1966 |   |
| Frame | Steel | Painted | 1966 | |
| Hardware | Aluminum | Satin | 1966 | |
| Exterior stair doors do not have a wire-glass light. They are also fitted with a panic bar on the interior face instead of door knobs. | | | | |
| Window - Reversible | Anodized Aluminum/ Glass | Clear Satin/ Clear | 1966 |  |
| Only the two stairwells in the office tower have windows. Windows are single-lite. The interior opening is plastered and painted. | | | | |
| Floor | Terrazzo | Polished | 1966 |  |
| In stairwells, the terrazzo consists of black, red, yellow, cream, and white chips in gray cement. This terrazzo distinguishes stairwells from the 1st-floor corridors. | | | | |
| Radiator Cover | Steel | Painted | 1966 |  |

## Stairwells: ST-3, ST-4, ST5, ST-11, ST-12, ST-16, and ST-19

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Air Register | Steel | Painted | 1966 |  |
| This type of wall register is only found in Stair 3. | | | | |
| Railing | Oak/ Steel | Clear Lacquer/ Painted | 1966 |  |
| The handrail is oak with a clear lacquered finish. Steel arms attach the wood handrail to a steel railing with steel balusters. At the foot of the bottom flight and the head of the top flight, the wood handrail doubles back and terminates at one of the steel balusters. | | | | |
| Handrail | Oak/ Steel | Clear Lacquer/ Painted | 1966 |  |
| The handrail is oak with a clear lacquered finish. The oak handrail is mounted on a steel rail with three evenly-spaced arms that attach to the wall at circular steel plates. | | | | |
| Fire Extinguisher Cabinet | Steel/ Glass | Painted/ Wire | 1966 |  |
| Fire extinguisher cabinets in stairwells are painted steel with wire glass glazing. Some cabinets are missing their glazing entirely. | | | | |

## Lecture Rooms and Classrooms: B101, B102, 106, B107, B110, B111, B113, B114, B116, B118

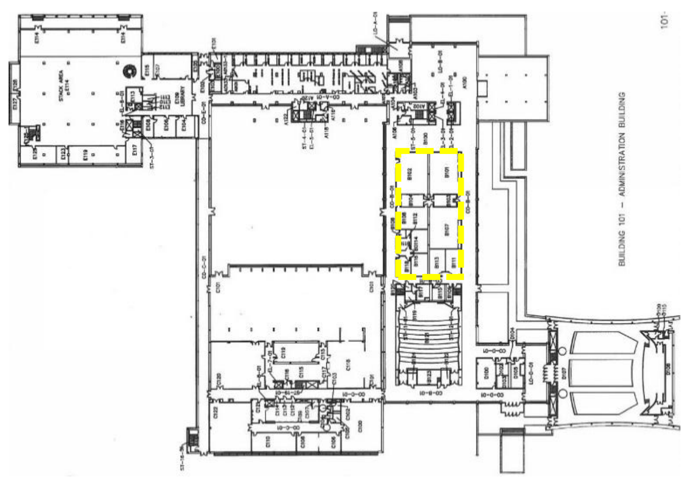
Lecture rooms and classrooms are concentrated in a single block at the north end of Wing B. Rooms B101, B102, and B107 are designated as lecture rooms while smaller Room B106 was a originally a classroom. B103 served as a projector room for lecture room B101 and B107. Room B104 served as a storage room. All of these rooms could be access from the main corridor or through a connecting hall in the center of the block of rooms. The four main rooms are still used as classrooms or lecture halls but the projection room and storage room have been turned into office.

Rooms B110, B114, B116, and B118 are concentrated at the southwest corner of the education block. These rooms remain in their original configuration served as reading rooms and offices. Today, these rooms are all offices.

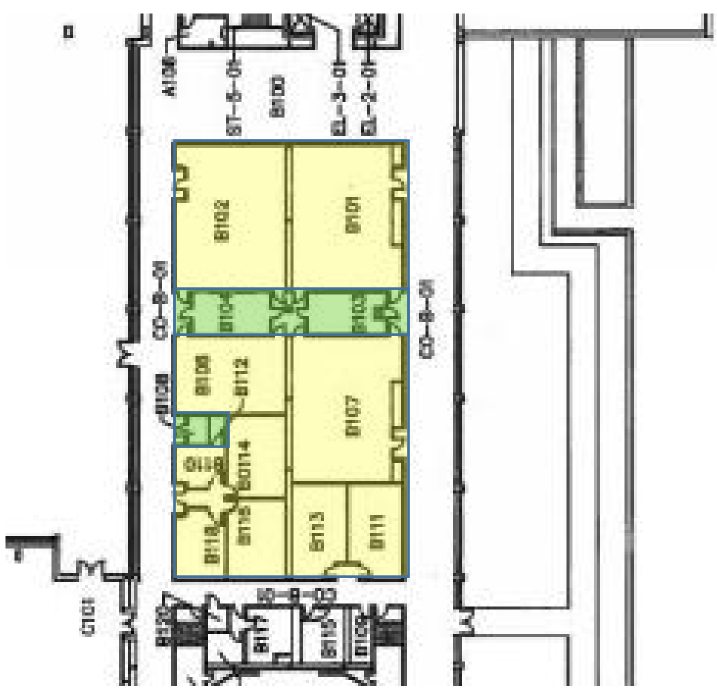
Rooms B113 and B114 were conference rooms at the southeast corner of the education block.

Various renovations to these spaces took place during the 1970s and 1980s. Though finishes have changed, the room layouts have remained constant. The few remaining original finishes are plaster walls, slate chalk boards, and walnut veneer panels and doors.

Location Plan (NTS)



Key Plan (NTS)



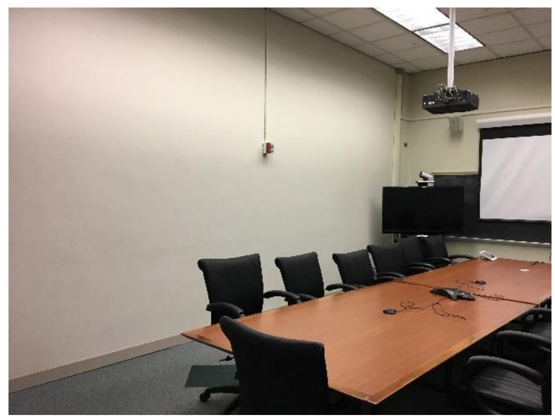
Lecture Rooms and Classrooms: B101, B102, 106, B107, B110, B111, B113, B114, B116, B118

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Ceiling | Acoustic Tile | Smooth | 2019 |

The existing ceilings are in the process of being updated to match the corridor ceilings. Square mineral fiber acoustic tiles are suspended in an exposed metal grid. The original ceilings were mineral fiber acoustical tiles interspersed with 4'x 4' light fixtures.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Plaster | Painted | 1966 |
| Base | Steel | Painted | 1966 |

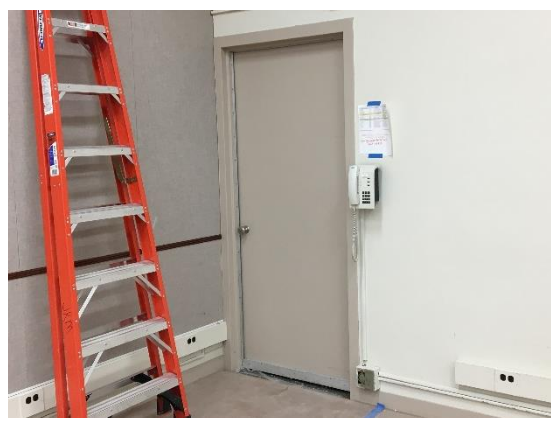
Plaster walls were originally covered in vinyl fabric. The vinyl remains in many of the rooms but has been painted over in some places. The original base was painted metal.



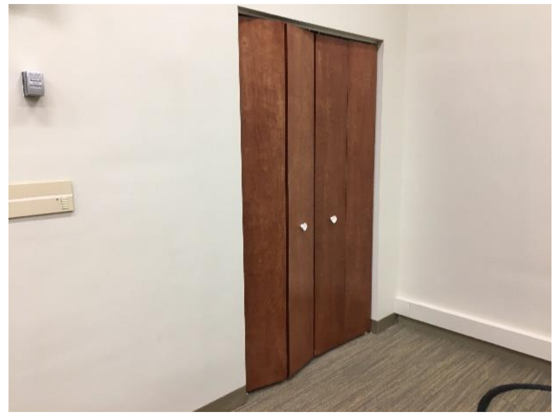
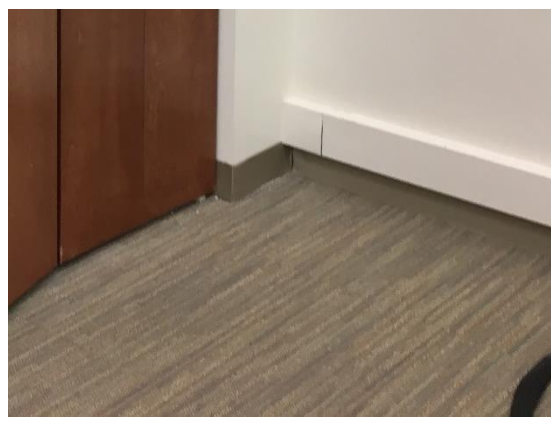
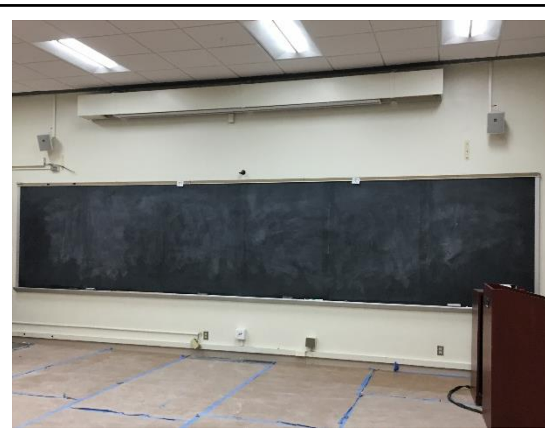
| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Wall | Plywood w/ American Walnut Veneer | Stained Lacquer | 1966 |

Walnut paneling is found on the shared wall between lecture halls B101 and B102 and the west wall of B107. There is no wood paneling in classroom B106.

## Lecture Rooms and Classrooms: B101, B102, 106, B107, B110, B111, B113, B114, B116, B118

<table>
<tr><th>FEATURE</th><th>MATERIAL</th><th>FINISH</th><th>DATE</th><th>PHOTO</th></tr>
<tr><td>Door – Single-Leaf</td><td>Wood w/ American Walnut Veneer</td><td>Stained Lacquer</td><td>1966</td><td rowspan="4"><br><br>Modernist stainless-steel hinge</td></tr>
<tr><td>Frame</td><td>Steel</td><td>Painted</td><td>1966</td></tr>
<tr><td>Hinges</td><td>Stainless Steel</td><td>Satin</td><td>1966</td></tr>
<tr><td colspan="4">The typical door into the education block from the east and west corridors is a wood-veneer door with special stainless-steel hinges. The original doors had aluminum knobs but these have been replaced with aluminum door pulls and push plates. The wood door is missing from corridor access to the southwest office block.</td></tr>
<tr><td>Door – Single-Leaf</td><td>Hollow Metal</td><td>Painted</td><td>1966</td><td rowspan="4"></td></tr>
<tr><td>Frame</td><td>Steel</td><td>Painted</td><td>1966</td></tr>
<tr><td>Hardware</td><td>Aluminum</td><td>Polished</td><td>1966</td></tr>
<tr><td colspan="4">Hollow metal doors lead from lecture rooms B101, B102, B106 and B107 into the connecting corridor. These doors are also present in the southwest office block and the southeast conference rooms. The hardware includes flat hinges and aluminum door knobs.</td></tr>
<tr><td>Door – Sliding</td><td>Wood w/ American Walnut Veneer</td><td>Stained Lacquer</td><td>1966</td><td rowspan="3"></td></tr>
<tr><td>Frame</td><td>Steel</td><td>Painted</td><td>1966</td></tr>
<tr><td colspan="4">This closet door type occurs in Room B102.These sliding doors would have been originally used in Rooms B101 and B107 and been replaced by modern accordion doors.</td></tr>
</table>

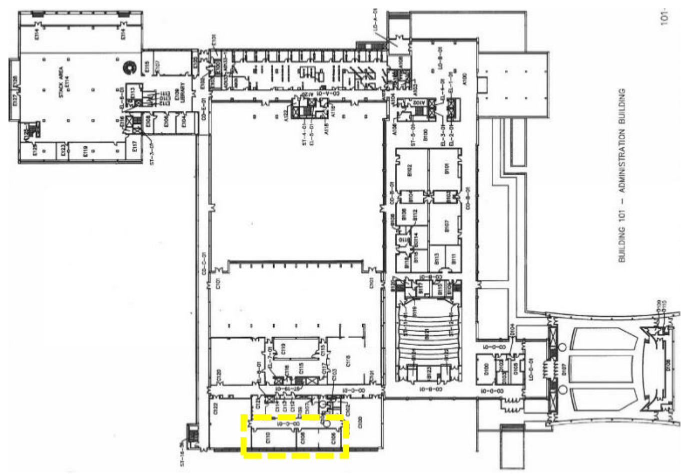
## Lecture Rooms and Classrooms: B101, B102, 106, B107, B110, B111, B113, B114, B116, B118

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Door – Accordion | Wood w/ American Walnut Veneer | Stained Lacquer | 1966 |  |
| Frame | Steel | Painted | 1966 | |
| This closet door type occurs in Room 102. | | | | |
| Window | Oak/ Glass | Clear Lacquer/ Clear | 1966 |  |
| Lecture Room B101 and B107 have a glazed opening from the projection room to the lecture room. | | | | |
| Floor | Vinyl Asbestos Tile | N/A | 2019 |  |
| The carpet is not original. All carpet has been or is to be replaced in 2019. In at least one room, the original VAT remains under the carpet and this was the original floor finish. | | | | |
| Chalkboard | Slate | N/A | 1966 |  |
| Original slate chalkboards in rooms B101, B106, B107, B111 and B113 remain. | | | | |

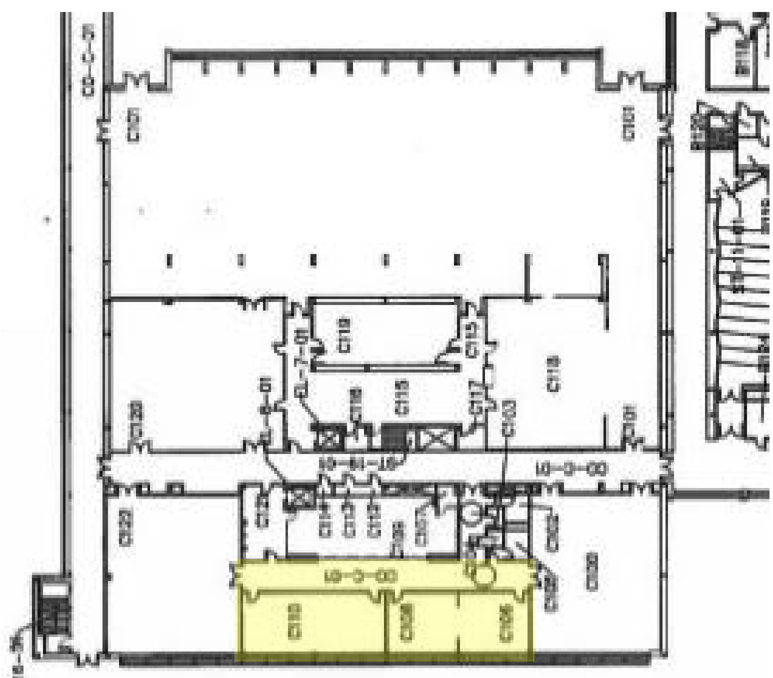
## Private Dining Rooms and Corridor: C106, C108, C110, and CO-C-01

There are two small private dining rooms located at the sound end of Wing C. Rooms C106 and C108 are separated by a folding partition wall that is typically left in the open position. Room C110 has no such divider. Both spaces have been updated to accommodate modern conference technology. This includes projection equipment mounted to the ceilings and retractable projection screens mounted to the east and west walls. The acoustic tile ceilings have been replaced with new. Original grass cloth has been removed, and walls are now smooth painted plaster. The only original decorative finishes to remain are walnut veneer doors and cherry veneer paneling.

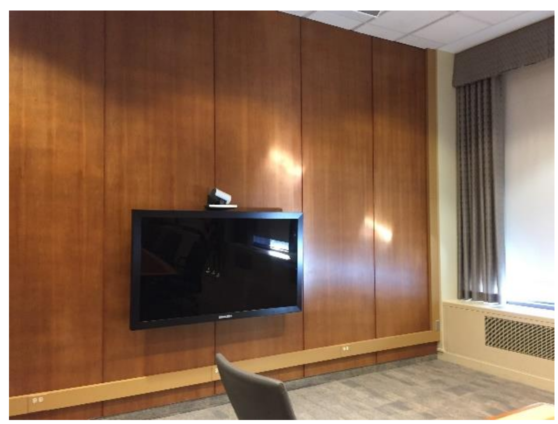
Location Plan (NTS)



Key Plan (NTS)



## Private Dining Rooms and Corridor: C106, C108, C110, and CO-C-01

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Ceiling | Acoustic Tile | Smooth | 2001 |  |
| Acoustic tiles are smooth and set within an exposed grid. These ceilings are the same as those in first-floor corridors and were likely replaced around the same time. | | | | |
| Wall | Plaster | Painted | 1966 |  |
| Base | Steel | Baked Enamel | 1966 | |
| Plaster walls were originally finished with grass cloth. This has been removed and replaced with a smooth painted surface. The original wall base is steel with a baked enamel finish. In most locations carpet returns over the wall base. Where exposed, the wall base has been painted. | | | | |
| Wall | Plywood – Cherry Veneer | Stained Lacquer | 1966 |  |
| Base | Steel | Baked Enamel | 1966 | |
| The east and west walls of the two spaces are clad in cherry veneer paneling. The original wall base is steel with a baked enamel finish. In most locations carpet returns over the wall base. Where exposed, the wall base has been painted. | | | | |
| Folding Partition | Plywood – Cherry Veneer | Stained Lacquer | 1966 |  |
| A moveable folding partition can be opened to separate Rooms C106 and C108. The partition is clad in Cherry Veneer. It slides along extruded aluminum channels in the ceiling and floor. | | | | |

## Private Dining Rooms and Corridor: C106, C108, C110, and CO-C-01

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Door – Single-Leaf | Wood w/ American Walnut Veneer | Stained Lacquer | 1966 |
| Frame | American Walnut | Stained Lacquer | 1966 |
| Hardware – Knob | Aluminum | Satin Finish | 1966 |
| Hardware – Hinge | Stainless Steel | Satin Finish | 1966 |

Original hardware includes aluminum doorknob and modernist stainless-steel hinges. Knobs have been replaced with aluminum push and pull hardware. Doors in C110 have been replaced with modern full-lite doors. The original walnut transom panels remain even where doors have been replaced.

*Modernist stainless-steel hinge*

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Window – Fixed | Anodized Aluminum/ Glass | Clear Satin Finish/ Clear | 1966 |

Two tripartite windows are set in the south wall of each space. Window blinds and dressings are not original.

| FEATURE | MATERIAL | FINISH | DATE |
|---|---|---|---|
| Floor | Carpet | N/A | 2001 |

Floors were originally carpeted. The carpet was likely replaced in 2001 when alterations were made to the ceilings.

## Private Dining Rooms and Corridor: C106, C108, C110, and CO-C-01

| FEATURE | MATERIAL | FINISH | DATE | PHOTO |
|---|---|---|---|---|
| Radiator Cover | Steel | Painted | 1966 |  |
| Radiator cabinets run along the south wall beneath the tripartite windows. | | | | |

# SECTION D: PRESERVATION CHALLENGES & RECOMMENDATIONS

## PRESERVATION CHALLENGES AND RECOMMENDATIONS

This section summarizes existing conditions in Building 101 that represent preservation challenges. JMA Preservation's architectural conservators teamed up with McMullan Consulting Engineers to review the existing conditions of the historic building materials as well as any structural deficiencies. Each team conducted a visual survey of the historic materials and performed selective sounding with a silicone mallet. The team performed a probe at three marble panel locations (east entrance, library portico, and courtyard columns) where the panels were removed from the structure and conditions observed. Questions related to these probes led to further investigation of : 1) marble panels at the concrete perimeter wall at the east entrance; 2) and 3) pavers and cheek wall construction at the north entrance; 4) marble panels at the library's patio fascia, and 5) concrete soffit at the loading dock. JMA Preservation analyzed mortar using acid digestion on mortar collected from the marble panels to determine the relative composition. The conditions found during the entire assessment vary from minor to major impact on the significant architectural features of the building. Further information on the probes and the mortar analysis can be found in Section J of this report.

Features and materials which date to the original construction period provide the building with its character, and contribute both to its sense of history and the overall architectural experience. They are accordingly referred to as "character-defining features." Features and materials which are not considered significant are those that were installed after the 1962-1966 construction or those that are neither consistent with, nor sympathetic to, their precedents.

The treatment of significant features and materials, whether it be for maintenance, repair, removal, or replacement, should be carefully considered during the planning process and should focus on the preservation of the original building fabric. The treatments for features and materials that are not significant can have more flexibility because the alteration or replacement of these features and materials will not affect the building's original fabric or character.

During the survey for the Inventory of Significant Features and Materials in Section C, the project team identified the following character-defining features for consideration:

- Exterior Masonry: Marble, Limestone, Granite, and Brick
- Retaining Walls: Concrete, Granite and Marble
- Entrance Terraces: Granite Pavers
- Courtyard Bridge: Concrete
- Arcade: Concrete
- Landscaping
- Doors and Hardware
- Windows and Hardware
- Interior Finishes: Marble, Terrazzo, Tile
- Ceiling Tiles
- Plaster
- Architectural Metals: Aluminum, Stainless Steel, and Bronze
- Architectural Woodwork: Railings, Cabinetry, Veneer

There are two main challenges in protecting the character-defining features of an architecturally significant building: 1) the treatment of the materials themselves, and 2) inappropriate alterations or replacements that affect the original design intent.  The building materials are in relatively good condition.  Typical treatment recommendations include partial repairs for broken original materials, replacement for materials that have served beyond their life expectancy, and maintenance to remediate water infiltration or refinish degraded materials.

The following section outlines specific conditions for the two main preservation challenges at Building 101.  Treatment recommendations and priority levels are provided for each condition.  High-priority items are those that are best treated within the next two years as conditions will continue to deteriorate and could cause more costly damage if not addressed. Medium-priority items are those that are best treated within two to five years. Conditions of these items will continue to deteriorate and, if not corrected within that period, will lead to more serious damage and costly repair of historic fabric. Low-priority items are those features that are cosmetic in nature and affect the aesthetic of the building. These items can be addressed on a more long-term basis without compromising the safety of those using the building and should be evaluated on a five- to ten-year cycle.  At the end of this section is a photographic catalog of the identified conditions.

**Materials Conditions and Treatment**

<u>Exterior Masonry – Joints</u>

While the exterior masonry is in overall good condition, the most concerning conditions are the wholesale failure of masonry-to-masonry mortar joints. Existing mortars are typically too hard and contribute to spalling and cracking of exterior masonry, especially at marble elevations.

See Section J, Item II for the full mortar analysis report.

*Recommendations:*

*Priority: High*

- *Repoint failed masonry-to-masonry mortar joints with a softer Type N cement-lime mortar that matches the original in color and texture.  Incorporate repointing into long-term maintenance cycle.*
- *Renew sealant joints where sealant is used appropriately between two dissimilar materials.*

<u>Exterior Masonry – Cleaning</u>

Moderate soiling and staining are universal conditions for all exterior masonry.  Limestone exhibits severe soiling, especially on north-facing elevations, mostly related to biological growth.  Green copper staining is found on marble elevations below bronze access panels.

*Recommendations:*

*Priority: Low*

- *General cleaning is recommended for all masonry types at all elevations. Removal of heavy soiling is recommended at north-facing limestone elevations, especially at Wing D. Copper staining is minimal and is not harming the stone.*
- *If NIST decides to remove copper stains, an alkaline poultice specifically designed for copper stain removal from masonry is recommended.*
- *Acidic cleaners are allowed on glazed brick and granite, but only alkaline and neutral cleaners are appropriate for limestone and marble.*

## Exterior Masonry – Brick

The brick exterior masonry walls are in overall good condition. The most common problem found was step-cracking through bricks and joints occurring near façade corners. This was found mostly on walls that lacked vertical expansion joints. The step-cracking at the corners happens due to the internal stresses caused by thermal expansion and contraction of the brick material. These stresses travel across the wall until they find an expansion joint which absorbs the stresses. When there are no expansion joints, the stresses cannot be absorbed and cause the wall to move at the ends. This movement causes the step cracking. Where there are expansion joints, the thermal expansion has caused the joint material to pop out and become non-functional. Overall, cracking is minimal and seems to have stopped. It would not be practical to add expansion joints to the walls in this application. The best and most economical solution would be to patch all brick cracks and joints with a softer mortar and monitor these locations to see if cracks reappear.

Bricks above louver openings were constructed with cored bricks. These bricks act as lintels for these openings and should be solid. The cores had been previously filled with mortar, which was found to be de-bonded and falling out. These cores should be cleaned and refilled with mortar. Some bricks above window openings in the library access hallway seemed to be popping out. This could possibly be related to steel angle lintels corroding behind the brick. The bricks above window openings should be removed and this condition be reevaluated.

One potential problem observed during the survey was the brick wall façade in the 13-story building. Visually, the brick in this façade seemed to be discolored in a horizontal pattern mostly along floor levels. This could be a sign of shelf angle supports corroding behind the brick. Also, no horizontal soft joints could be seen from the ground. A more in-depth survey is needed here in order to accurately evaluate this condition.

*Recommendations:*

*Priority: Low*

- *Patch or replace cracked bricks, replace missing bricks, and repoint joints with mortar. Monitor to see if cracks reappear.*

- *Clean all old mortar from inside cored brick lintels. Fill with new mortar to provide solid lintels at louver openings.*
- *Perform probe to remove displaced bricks from above window openings and observe hidden conditions. Determine future scope of work from findings.*

*Priority: Medium*

- *Perform a closeup visual survey of the brick façade above ground level for the 13-story building. May need to remove some bricks to inspect shelf angle supports.*

<u>Exterior Masonry – Marble and Limestone</u>

Damage, including spalls, cracks, and erosion are uncommon and limited to specific locations. Large spalls above head height pose a threat to life safety as they may come dislodged and fall on passers-by. Scratches and spalls are especially common around the base of the building near landscaped areas or building corners. Landscaping equipment that comes in contact with building elements can nick or scratch masonry. High-pressure washing has also left visible gouges where it has eroded marble and limestone. Pressure-washing above 400 psi is not recommended for historic masonry.

*Recommendations:*

*Priority: High*

- *Repair spalls and cracks. Prioritize work at locations that pose a life-safety threat or allow water infiltration.*

*Priority: Medium*

- *Remove any vegetation within two feet of exterior masonry.*
- *Limit maintenance or landscaping activities that might harm exterior masonry. Make maintenance and landscaping crews aware of activities that may damage masonry. Require workplans that provide protocols for preventing unnecessary damage.*

<u>Exterior Masonry – Marble Panels</u>

The biggest concern regarding the marble cladding is bowing of the panels. Upon inspection, the structural team found that the two-inch marble panels were bowing outwards approximately 1/4 to 3/8 of an inch with the bowing most pronounced at the lower panels. Bowing was much less on the three-inch panels. This amount of bowing is small and does not require removal of panels across the building.

Panel connections were found to be structurally sound with exception to some corroded nails that attach the marble split tie anchors to the face of concrete columns. The team also found chipping and cracking of the marble panels at some of the corners, and several of the panels at the library had diagonal cracks. This is likely due to a lack of soft joints in the marble cladding, causing unwanted internal stresses from the thermal expansion of the stones.

At the library portico, the steel angle supporting the marble panels under the portico floor slab is badly corroded. Water from the patio above is penetrating the granite pavers through joints/cracks and running down the concrete slab behind the steel angles, causing them to corrode over time. While the structural configuration is sufficient, the steel angles require replacement with stainless steel to prevent further displacement. While not investigated, the south elevation of the library has a similar fascia configuration which will need replacement of the angle with stainless steel.

See Section J, Item I and III for full reports.

*Recommendations:*

*Priority: High*

- *Remove panels from the façade that are attached to the masonry backup to allow evaluation of these anchors. Remove at least one full vertical course of panels. (Completed)*
- *Remove all panels attached to the perimeter concrete columns to evaluate the condition of the nailed split tail concrete anchors. Reattach the removed panels with an alternate connection detail. (Completed)*
- *Remove all marble panels below the library portico floor slab to expose the steel angle. (Completed)*
- *Evaluate the steel angle and determine the extent of corrosion. Consider replacing the steel angle with stainless steel depending on the results of the investigation.(Completed)*
- *Clean out the cavities and provide a positive drainage outlet at column marbles.*
- *Replace the Portland cement with a softer, lime-based mortar for all marble panel joints.*
- *Install a soft joint between the top of the marble panels and the soffit above at all marble locations.*

*Priority: Medium*

- *Remove chipped and cracked marble pieces and repair with matching material.*
- *Areas of marble panels that are currently experiencing displacement, cracked joints, or other visible signs of distress such as corroded support angles but have a lower exposure to the public <u>OR</u> areas that have a high exposure to the public should plan to be removed and reset within the next five (5) years. These include:*
    - *Stones above the "1962" stone adjacent to the East entrance.*
    - *Stones at the Library fascias on the north and south elevations.*
    - *Stones at walls and pilasters in Courtyard not included in High Priority*

*Priority: Low*

- *Areas of marble panels are not currently experiencing visible displacement and also a low exposure to the public should plan to be removed and reset within the next ten (10) years. These include:*

- *Wall panels not directly adjacent to walkways.*
- *Any remaining marble stone panels*

Retaining Wall – Concrete (Loading Dock)

The concrete retaining wall located next to the loading dock is in overall good condition. Many locations on the wall that looked discolored and possibly deteriorating were sounded with a mallet and no spalling was found. The discoloring is most likely dirt and dust particles accumulated over the years. However, some cracking and spalling of the concrete was found in the wall portions closer to the loading dock. Cracks that have no spalling should be routed and filled with mortar. Spalling concrete should be removed and area should be patched. If rebar is visible after removing spalled concrete, expose it by removing at least ¾ inches of concrete around bar and check for corrosion. If corrosion is present, the condition should be further investigated by an engineer. Otherwise clean rebar and patch with appropriate concrete patching material.

Two expansion joints were found in this retaining wall. The expansion joint material at both locations were hardened. Hard joints are not functional and should be removed. After removing all failed material from the expansion joints, install new backer rod and sealant for a soft joint.

At the loading dock entrance, the concrete soffit above appeared to be spalling. The soffit could not be reached for sounding. This location should be surveyed further, and a test hole should be opened in the soffit for inspection. Also, the top step of the concrete stairs is spalling. Spalling concrete should be removed, and location should be patched.

*Recommendations:*

*Priority: Medium*

- *Route and fill cracks with mortar.*
- *Remove all spalling concrete and patch.*
- *Remove all old expansion joint material and install new backer rod and sealant for soft joints.*
- *Sound at concrete soffit, open a test hole, and reevaluate. (Completed)*

Retaining Wall – Granite and Marble

The stone retaining walls at the east and north elevations elevation adjacent to the main entrance appear to be failing. Several wall sections were displaced out, indicating either overturning or sliding failure. McMullan conducted a water leaks and exterior condition investigation in 2007. Findings from this investigation revealed that there is corrosion and debris inside the storm drain system, poor drainage and grading behind the wall, blocked weeps along the wall and an overall under-designed wall structure.

The same recommendations from the 2007 report apply here. We recommend that the existing wall be removed and replaced with a footing below it. The wall and footing should be redesigned by a structural engineer. We also recommend new grading and a new drainage system behind the wall to minimize hydrostatic pressure.

*Recommendations:*

*Priority: Medium*

- *Remove existing wall support and replace with new wall support, designed by a structural engineer.*
- *Add new drainage system behind wall.*
- *Regrade soil behind wall.*
- *Retain existing marble coping and granite facing, as possible.*

Courtyard Bridge – Concrete

The concrete bridge located at the courtyard pool appears to be sagging. This condition assessment is based only on visual observation. Concrete at the bottom of the bridge was sounded and no spalling was found. A gauge should be installed at the midspan of the bridge and the sagging deflection should be monitored and recorded for a year. A new assessment should be made based on the results.

*Recommendations:*

*Priority: Medium*

- *Install gauge at midspan of bridge and monitor for one year.*
- *Assess condition again based on results.*

Arcade

The Arcade walkway is in overall good condition. The structure of the walkway appears to be sound with no signs of significant structural defects. A couple minor spalls were found on the concrete base of the walkway. Spalling concrete should be removed and the area should be patched. If rebar is visible after removing spalled concrete, expose it by removing at least ¾ inches of concrete around bar and check for corrosion. If corrosion is present, the condition should be further investigated by an engineer. Otherwise patch with appropriate concrete patching material. No structural issues were found in the concrete pavement.

The concrete ramp that connects to the walkway had broken curbs on both sides. The curbs should be removed entirely on both sides and re-poured.

*Recommendations:*

*Priority: Low*

- *Remove spalled concrete from base of walkway and patch with compatible mortar.*
- *Remove broken curb at ramp and re-pour new concrete curb.*

Entrance Terraces – Granite Pavers

The most pressing concern at entrance pavers is displacement. In several locations, pavers have settled unevenly. This poses a trip hazard and threat to life safety for building inhabitants. This displacement may be related to the original installation techniques, erosion, or other site conditions. Forms of incidental damage – such as cracks and spalls – are localized and minor. Occasional replacement stones are a poor match to existing materials.

Mortar has been removed from all paver joints and replaced with sealant. Sealant is not appropriate in this location as it is less vapor permeable than the surrounding stone pavers. This will force moisture to evaporate through the stone pavers rather than through the joints. The movement of moisture through the stone can lead to efflorescence, erosion, and delamination. If the pavers are on a concrete bed, the joints should be pointed with an appropriate mortar. If the pavers are on a sand bed, the joints should be filled with sand. Drawings found in the NIST repository from 2009 indicate the east entrance pavers are set on a concrete slab (See Section K: Index for Digital Files).

Ferrous rust stains are also common at the edges of stone pavers. It appears that a grinder was used to cut mortar joints and left behind metal particles that gradually corroded and stained the stone.

The probe at the north pavers revealed the setting bed has two layers, the bottom layer containing pea gravel, and the thinner top layer appeared to be sand and cement. It is plausible that the pavers were reset at some time, perhaps by removing top loose material from the original setting bed and then resetting the stones in a thin leveling bed on top of the original one. It is not known if either or both of these are original. The exposed top surface of the concrete slab is heavily scaled, creating a rough surface and exposing the large aggregate. There is no waterproofing or drainage layer present on top of the slab. Water infiltration appears to be the major problem here due to the open joints and heavy salting in the wintertime. The vertical displacement has two possible causes, both related to water infiltration: scaling of the concrete slab or frost heaving. Both of these mechanisms have associated volume change and therefore can displace the pavers.

*Recommendations:*

*Priority: High*

- *Remove and temporarily replace sealants in all joints with a traffic grade, non-staining sealant.*
- *Remove sunken pavers, regrade and compact soil, reset paver.*

*Priority: Medium*

- *Demolish the plaza, salvaging the pavers for re-installation*
- *Replace the underlying slab on grade and setting bed with more appropriate and modern materials. Including:*
  - *Air entrained concrete slab on grade.*
  - *Damp proofing or other surface sealant on the slab.*
  - *Drain board layer*
  - *Setting bed*
  - *Stainless steel clips to restrain lateral movement at unrestrained edges*

    - *Isolation joint at cheek walls*
- *If damage has occurred to more than 50% of any paver, replace in kind.*
- *Reinstall granite pavers with mortared joints to provide more maintenance free surface.*

*Priority: Low*

- *Repair cracks and spalls.  Do not repair hairline cracks or minor snips*
- *Clean ferrous stains with acidic rust remover.*

<u>Landscaping and Sitework</u>

Landscaping is frequently too close to the structure.  When trees and shrubs grow too close to the structure, water running off the plants are deposited onto the building, resulting in erosion and other moisture-related conditions.  The roots of trees and large shrubs can also put pressure on the building foundations, potentially leading to structural problems over time.

Groundhogs have dug an extensive network of tunnels along the west elevation of Wing C.  The tunnels are extensive enough to interfere with building foundations.  They expose portions of the foundations that were always intended to be below grade.  They also pose a threat to life safety if passers-by trip over or fall into the significant holes.  Infestations of birds and insects are a relatively minor concern but still merit attention.

*Recommendations:*

*Priority: High*

- *Remove ground hogs and back fill tunnels.*

*Priority: Medium*

- *Remove or trim any trees, shrubs, or other plants that grow within two feet of the building façade.*

*Priority: Low*

- *Remove insect nests as they appear.*
- *Remove bird nests.  Explore bird proofing options and install if deemed appropriate.*

<u>Windows and Doors</u>

Gaskets, sealant, and weather-stripping at window and door assemblies have reached the end of their useful life.  Both gaskets and sealant will require wholesale replacement to prevent water and air leakage in the building envelope.

Sometime after construction, an insulating film was applied to all exterior windows to insulate against radiant heat gain and the damaging effects of UV rays on interior finishes.  This film has failed 100%.  It is not performing as intended, and it detracts significantly from the intended design of the building façade. While this film has failed, a similar treatment is necessary to improve the performance of the original window assemblies.

At punched openings, most steel window and door lintels are beginning to corrode.  If left unchecked, corroding lintels will expand, leading to spalling and cracking of surrounding masonry.

*Recommendations:*

*Priority: Medium*

- *Replace failed gaskets, sealant, and weather-stripping at all window and door assemblies.*
- *Remove failed film at all window assemblies.  Replace with appropriate film to improve performance of window assemblies as a barrier against radiant heat gain and damaging UV light.*
- *Remove corrosion from corroding steel lintels.  Prepare surface and provide and corrosion-inhibiting coating system.  Paint.*

<u>Interior Finishes – Marble, Terrazzo, and Tile</u>

Interior marble, terrazzo, and tile are in very good condition.  Grout joints at marble wall panels have failed 100% and need to be re-grouted.  Cracks and spalls are not a major concern at marble wall panels. Cracks are much more common at the marble wall base in the two Auditoria.  Superficial scratches are common and are most likely the result of collisions with carts and maintenance equipment.  Mild soiling, staining, and adhesive residue are common at all marble wall paneling.

Cracks and spalls are common at expansion joints in the terrazzo floors.  They are also common at other isolated locations that may indicate a point of movement in the floor slab.  In some locations, poorly-matched epoxy fill has been used to repair spalls.

The original ceramic, quarry, and structural tiles exist in most bathrooms and janitor's closets.  Cracking is common at ceramic and quarry tiles.  Structural tiles exhibit very little damage, mostly limited to surface spalls.

All the floors, with the exception of the corridors and bathrooms, were finished with vinyl asbestos tile (VAT) or carpet.  The VAT is in good condition but it has been periodically replaced with new material that does not match the old in texture or color.

*Recommendations:*

*Priority: Medium*

- *Re-grout marble wall panels and base; reset displaced panels.*
- *Repair cracks and spalls in marble.*

- *Repair snips and spalls in terrazzo floor with color-matched terrazzo patch instead of epoxy.*

*Priority: Low*

- *Clean interior marble to remove soiling, staining, and adhesive residue.*
- *Buff out superficial scratches on marble wall panels.*
- *Remove poorly-matched epoxy patch from terrazzo floors. Replace with color-matched terrazzo patch.*
- *Remove cracked ceramic/quarry tiles and replace in kind.*
- *Remove mismatched VAT and replace with new vinyl tiles of matching color and size.*

<u>Ceiling Tiles</u>

Acoustical ceiling tiles are present in all office and the library. Conditions for ceiling tiles are relatively minor but include water damage, broken tiles, and missing tiles. Water infiltration is the biggest concern and all areas with damaged tiles should be replaced only after the leaks have been remediated. Replacement tiles should match the original in style, size texture, and color.

*Recommendations:*

*Priority: High*

- *Remediate leaks in areas of water infiltration.*

*Priority: Low*

- *Replace missing or broken tiles to match the original in kind.*

<u>Plaster</u>

Plaster walls and ceilings are in very good condition. Most plaster walls are covered in a textured vinyl wall covering, an extremely durable finish that protects the plaster from damage and wear. The most pressing concern for plaster walls and ceilings is water infiltration around windows where sealant and gaskets have failed. Paint loss at plaster soffits in the library suggest problems with water infiltration or high relative humidity. In the East lobby, acoustic ceiling tiles have replaced the original plaster ceiling.

*Recommendations:*

*Priority: High*

- *Determine source of leaks and make necessary repairs to prevent future water infiltration.*

*Priority: Medium*

- *Remove damaged plaster, patch, and sand smooth so that patch is flush with surrounding plaster. Prepare, prime, and repaint to match existing, or provide vinyl fabric wall covering that matches existing.*

Architectural Metals – Aluminum, Stainless Steel, and Bronze

White metals – mostly aluminum and stainless steel – are a character defining feature of both the interior and exterior. Most windows, curtainwall systems, and glazed doors have aluminum frames. The exception is the east entrance vestibule, which is stainless steel and glass. Unglazed, interior metal doors are stainless steel, as are the metal column covers at the east entrance. The only bronze elements are decorative access panels on exterior walls. Architectural metals are in overall good condition. Corrosion is uncommon and appears to be related to corrosive salts used on exterior paving and corrosive cleaning chemicals used on the interior. Stainless steel typically does not corrode, but there is significant corrosion at the bottoms of some interior doors. This is likely related to corrosive cleaning chemicals. All exterior bronze access panels have corroded, resulting in green copper staining on marble wall cladding. Minor dents and dings are fairly common but do not threaten the integrity of the metal elements.

*Recommendations:*

*Priority: Medium*

- *Remove corrosion and apply a protective coating.*

*Priority: Low*

- *Review and update maintenance procedures to prevent avoidable collision damage to metal elements. In particular, ensure that all deliveries pass through the loading dock area to prevent damage to exterior doors at pedestrian entrances.*

Architectural Woodwork

Architectural woodwork includes walnut paneling and doors in the corridors, library, auditoria, cafeteria, and 11$^{th}$ floor offices, especially the Director's Suite. In corridors, UV exposure through curtain walls have significantly faded the finish on walnut paneling and doors. Residue from cleaning chemicals have further damaged the original finish, especially at the bottom half of doors and paneling. On the 11$^{th}$ floor, paneling and doors have been refinished with a dark cherry-colored stain that does not match the historic finish. Scratches are common, especially around door knobs. In a very few locations, veneer is missing, likely as a result of collisions with carts and maintenance equipment.

*Recommendations:*

*Priority: Medium*

- *Repair areas of missing or damaged veneer.*

- *Restore historic finish at all walnut doors and paneling. Reference NIST material boards for original finish sample for matching.*
- *Put in place a cyclical maintenance plan to protect and renew the historic finish over time.*

<u>Signage</u>

Original historic signage consists of individual letters fixed directly to the wall surface without an intervening placard. Any symbols – such as no smoking signs – were also individual elements mounted directly to the wall surface. Some signage has been removed completely so that only the ghost mark remains. This occurred exclusively where original signage designated a room name and/or number. These have been removed to avoid confusion with modern signs that designate the current room name and/or number if it differs from the historic. Where original signage remains, it is typically missing multiple letters and/or symbols. Where necessary, additional modern signage has been installed alongside historic signage. The most obvious example of this is the installation of more highly visible modern fire extinguisher signs alongside historic signage in the Auditoria. This was done to comply with modern fire codes without removing historic material.

Historic signage is a significant character defining feature and merits preservation. However, modern signage is often required to comply codes or to provide adequate wayfinding for visitors to the building.

*Recommendations:*

*Priority: Medium*

- *Retain and preserve all existing historic signage.*
- *Using ghost marks and existing historic signage as a model, replicate historic signage that has been removed.*
- *Provide modern signage as needed to comply with modern building codes and to provide adequate wayfinding.*

<u>Utilitarian Spaces with Significant Original Finishes</u>

All bathrooms except for the Green Auditorium bathrooms retain most or all of their original finishes. These include quarry tile floors, ceramic tile walls, painted steel stall dividers, porcelain fixtures, and nickel-plated hardware. Janitor’s closets also retain original finishes, including quarry tile floors, structural facing tile walls, porcelain fixtures, and nickel-plated hardware. These spaces still possess a high degree of architectural integrity, which would typically qualify them for preservation. However, these are also utilitarian spaces that need to adapt to changing needs so that Building 101 remains a viable, usable structure.

*Recommendations:*

*Priority: Medium*

- *Retain one men's restroom, women's restroom, and janitor's closet in their original condition to provide a physical record of the building's evolution over time. These representative spaces will also provide a model for the future restoration of other restrooms and janitor's closets, should that ever occur.*

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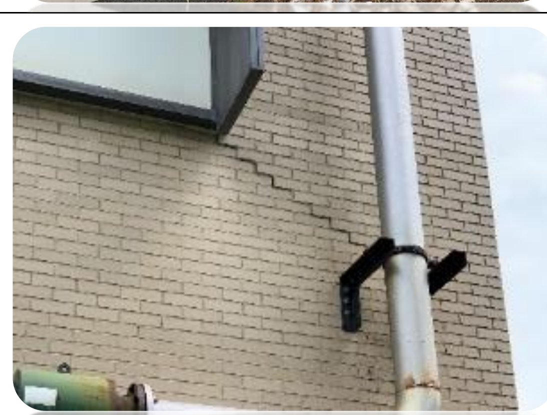
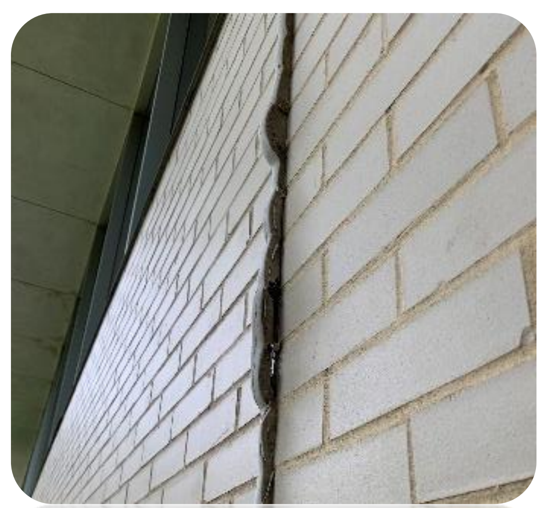
## Exterior Masonry

| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
|---|---|---|---|
| Exterior Masonry | Failed Mortar Joints | Repoint mortar joints 100% with a compatible mortar that matches the original in color and texture. |  |
| Priority: High | | | |
| Marble Panels | Inappropriate Mortar | When repointing, use a compatible mortar that is soft enough to act as a sacrificial element. |  |
| Priority: Low | | | |
| Exterior Masonry | Sealant in Masonry-to-Masonry Joints | Remove sealant from masonry-to-masonry joints and repoint with a compatible mortar that matches the original in color and texture. |  |
| Priority: High | | | |
| Exterior Masonry | Sealant in Masonry Crack | Remove sealant from masonry cracks. Repair crack with crack injection mortar or patch. |  |
| Priority: High | | | |

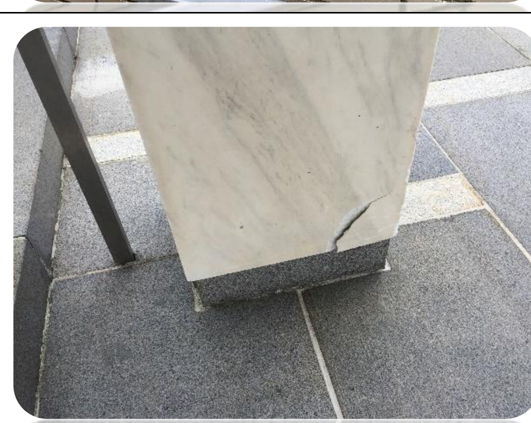
## Exterior Masonry

| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
|---|---|---|---|
| Exterior Masonry | Heavy Soiling | Clean with a biocide and low-pressure wash. More aggressive methods – such as misting and microabrasives – may be necessary if gentler methods do not clean successfully. |  |
| Priority: Low | | | |
| Exterior Masonry | General Soiling | Clean with a gentle neutral or alkaline detergent and a low-pressure wash. |  |
| Priority: Low | | | |
| Exterior Masonry | Copper Staining | Clean with an alkaline poultice specifically formulated for removing copper stains from masonry. |  |
| Priority: Low | | | |
| Brick Walls | Step cracking – most likely due to horizontal thermal movement compounded by lack of expansion joints. | Patch brick (or replace) cracks & joints with mortar and monitor. |  |
| Priority: Low | | | |

## Exterior Masonry

| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
|---|---|---|---|
| Brick Walls | Step cracking – most likely due to horizontal thermal movement compounded by lack of expansion joints. | Patch brick (or replace) cracks & joints with mortar and monitor. |  |
| Priority: Low | | | |
| Brick Walls | Step cracking – most likely due to horizontal thermal movement compounded by lack of expansion joints. | Patch brick (or replace) cracks & joints with mortar and monitor. |  |
| Priority:Low | | | |
| Brick Walls | Step cracking – most likely due to horizontal thermal movement compounded by lack of expansion joints. | Patch brick (or replace) cracks & joints with mortar and monitor. |  |
| Priority: Low | | | |
| Brick Walls | Vertical expansion joint has popped out due to brick wall thermal movement. | Remove old expansion joint material. Install new backer rod and sealant for a soft expansion joint. |  |
| Priority: High | | | |

## Exterior Masonry

| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
|---|---|---|---|
| Brick Walls | Brick discoloration and possible horizontal cracking along 13-story façade. Discoloration could be due to shelf angle corrosion or dirt. Possible cracking could be due to lack of horizontal soft joints. | Clean façade, perform closeup visual survey above ground level, remove bricks and evaluate. |  |
| Priority: Medium | | | |
| Brick Wall Louver lintels | Brick lintels above louvers are cored. Old mortar is loose and falling off. | Remove failed mortar, Refill with mortar that matches existing. |  |
| Priority: Low | | | |
| Brick Walls | Many bricks have popped out and displaced around the building. | At each location, remove displaced brick pieces, clean joints, and install new brick. |  |
| Priority: Low | | | |
| Marble Panels | Spall | Repair masonry spall. |  |
| Priority: High | | | |

## Exterior Masonry

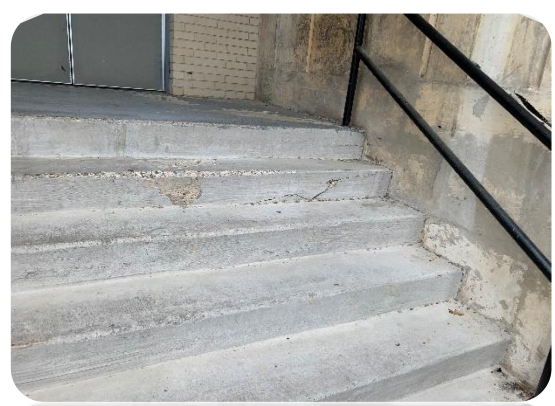
| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
|---|---|---|---|
| Exterior Masonry | Crack | Repair crack with crack injection grout. |  |
| Priority: High | | | |
| Exterior Masonry | Scratches | Scratches do not require any repair.<br>Create work plans designed to limit new damage to stone during maintenance and landscaping activities.<br>Train landscaping/maintenance crews to avoid damaging stone. |  |
| Priority: Low | | | |
| Exterior Masonry | Erosion | Correct source of water runoff that is contributing to erosion. |  |
| Priority: Medium | | | |
| Marble Panels | Displacement | Clean out cavities and provide a postive drainage outlet at marble columns. Repoint with softer mortar. |  |
| Priority: High | | | |

## Exterior Masonry

| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
|---|---|---|---|
| Marble Panels | Corroded Anchors | Replace corroded anchors. |  |
| Priority: High | | | |
| Marble Panels | Steel angle supports for marble panels along library colonnade base are badly corroded. | Remove all marble panels along this angle and evaluate existing conditions. |  |
| | | Examine extent of corrosion for steel angles. | |
| | | Provide structural repair design including replacing steel angle with stainless steel angle. (Approximately 84FT) | |
| Priority: High | | | |

## Retaining Walls

| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
|---|---|---|---|
| Concrete Retaining Wall | Vertical crack on wall. The concrete was sound, and there were no signs of corrosion. | Route and fill crack with mortar (approximately 10FT). |  |
| Priority: Medium | | | |

<table>
<tr><th colspan="4">Retaining Walls</th></tr>
<tr><td colspan="4"></td></tr>
<tr><th>ELEMENT</th><th>CONDITION</th><th>RECOMMENDATION</th><th>PHOTO</th></tr>
<tr><td>Concrete Retaining Wall</td><td>Vertical expansion joints have hardened.</td><td>Remove old expansion joint material. Install new backer rod and sealant for a soft expansion joint (approximately 50FT).</td><td rowspan="2">
</td></tr>
<tr><td colspan="3">Priority: Medium</td></tr>
<tr><td rowspan="3">Concrete Retaining Wall</td><td rowspan="3">Previous concrete patches are spalling off.</td><td>Remove delaminated patch/concrete and patch (approximately 25SF).</td><td rowspan="4"></td></tr>
<tr><td>If rebar is visible after removing spalled concrete, expose it by removing at least ¾ inches of concrete around bar and check for corrosion.</td></tr>
<tr><td>If corrosion is present, the condition should be further investigated by an engineer. Otherwise patch with appropriate concrete patching material.</td></tr>
<tr><td colspan="3">Priority: Medium</td></tr>
<tr><td rowspan="3">Concrete Retaining Wall</td><td rowspan="3">Exposed Rebar</td><td>Remove failed concrete next too and behind exposed rebar.</td><td rowspan="4"></td></tr>
<tr><td>Remove corrosion and provide a corrosion-resistant coating system.</td></tr>
<tr><td>Patch concrete with compatible patching material that matches the original in color and texture.</td></tr>
<tr><td colspan="3">Priority: Medium</td></tr>
<tr><td>Stairs at Loading Dock</td><td>Top step is spalling.</td><td>Remove delaminated concrete and patch (approximately 6SF).</td><td rowspan="2"></td></tr>
<tr><td colspan="3">Priority: Low</td></tr>
</table>

## Retaining Walls

| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
|---|---|---|---|
| Loading Dock | Stucco soffit at loading dock appears to be spalling. Unable to reach the soffit to perform delamination sounding. | Perform delamination sounding. Make a test opening and reevaluate. |  |
| Priority: High | | | |
| Concrete Retaining Walls | Vertical expansion joint has hardened. Minor concrete spalling around joint. | Replace old expansion joint material with new backer rod and sealant for soft joint (approximately 10FT).<br>Remove delaminated concrete and patch (approximately 5SF). If rebar is visible after removing spalled concrete, expose it by removing at least ¾ inches of concrete around bar and check for corrosion.<br>If corrosion is present, the condition should be further investigated by an engineer. Otherwise patch with appropriate concrete patching material |  |
| Priority: Medium | | | |
| Stone Retaining Walls | Many sections along retaining wall have displaced. Per 2017 water leak survey, drainage behind wall seems to be clogged, causing excess hydrostatic pressure. Also, wall footing is underdesigned for overturning. | Per recommendation on 2017 water leaks survey report, existing wall should be removed and replaced with a footing below it. We also recommend a new drainage system and new grading behind the wall. Retain original stone coping and panels. |  |
| Priority: Medium | | | |

## Retaining Walls

| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
|---|---|---|---|
| Stone Retaining Walls | Granite stone piece is loose. | Remove loose piece and reattach with epoxy. |  |
| Priority: Low | | | |
| Stone Retaining Walls | Granite panel is cracked in half. | Repair or replace granite panel. |  |
| Priority: Low | | | |
| Stone Retaining Walls | Marble coping panel is cracked. | Repair or replace marble piece. |  |
| Priority: Low | | | |
| Stone Retaining Walls | Open and failed joints. | Repoint mortar joints along entire wall. |  |
| Priority: Low | | | |

## Retaining Walls

| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
|---|---|---|---|
| Entrance Retaining Walls | Entrance steps sidewall granite mortar joints are open. Some granite panels are displaced. | Removed displaced panels and reset. Repoint mortar joints along entire wall. |  |
| Priority: Low | | | |

## Courtyard Bridge

| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
|---|---|---|---|
| Concrete Bridge | Concrete bridge at courtyard pool appears to be sagging. Concrete was sounded and no spalling was found. | Install gauge and monitor sagging deflection for one year. |  |
| Priority: Medium | | | |

## Arcade

| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
|---|---|---|---|
| Arcade | Minor corrosion. | Remove concrete at corrosion location and reevaluate. Repatch (approximately 1SF). |  |
| Priority: Medium | | | |

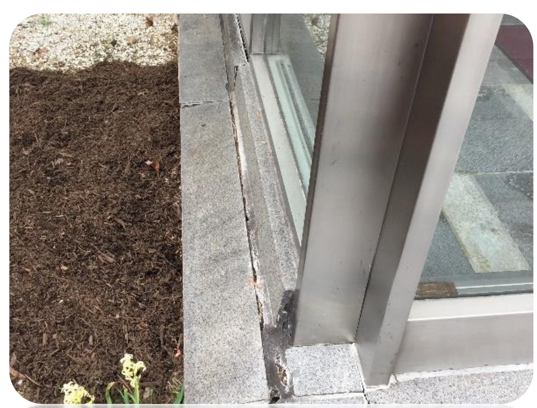
## Arcade

| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
| --- | --- | --- | --- |
| Arcade | Concrete spall. | Remove delaminated concrete and patch (approximately 25 SF). |  |
| | | If rebar is visible after removing spalled concrete, expose it by removing at least ¾ inches of concrete around bar and check for corrosion. | |
| | | If corrosion is present, the condition should be further investigated by an engineer. Otherwise patch with appropriate concrete patching material. | |
| Priority: Medium | | | |
| Arcade | Broken concrete curb on both sides. | Demo and replace with new concrete curb (approximately 24CF). |  |
| Priority: Low | | | |

## Entrance Terraces - Pavers

| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
| --- | --- | --- | --- |
| Pavers | Granite paver displaced due to soil erosion. | Remove stone, regrade and compact soil, and reset stone. |  |
| Priority: High | | | |

## Entrance Terraces - Pavers

| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
|---|---|---|---|
| Pavers | Granite paver is cracked. | Remove stone, regrade and compact soil, repair of replace stone. |  |
| Priority: Low | | | |
| Pavers | Crack | Cracks do not require repair. |  |
| Priority: Low | | | |
| Pavers | Spall | Minor spalls do not require repair.<br>Large spalls should receive a dutchman repair. |  |
| Priority: Low | | | |
| Pavers | Displacement | Remove displaced paver, correct for displacement, and reset. |  |
| Priority: High | | | |

## Entrance Terraces - Pavers

| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
|---|---|---|---|
| Pavers | Sealant in Joints | Remove sealant from joints in granite pavement.<br>Repoint with a compatible mortar. |  |
| Priority: High | | | |
| Pavers | Rust Stains | Clean rust stains with an acidic rust remover. |  |
| Priority: Low | | | |
| Pavers | Inappropriate Replacement | Existing replacements that are a poor match do not require replacement if they are in sound condition.<br>Replacement is appropriate when more than 50% of a stone is damaged.<br>When necessary, replace damaged stones with new or salvage stone that matches the original in color, texture, size, shape, and profile. |  |
| Priority: Low | | | |

## Landscaping and Site Work

| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
|---|---|---|---|
| Pests | Ground Hog Tunnels | Remove ground hogs.  Back fill holes and tunnels. |  |
| Priority: High | | | |
| Pests | Nesting Birds | Explore possible methods of bird proofing to determine a compatible system.  A compatible system will successfully deter birds without damaging building elements or detracting significantly from the original design intent.  Do not install incompatible systems. |  |
| Priority: Low | | | |
| Pests | Nesting Insects | Use a low-pressure wash to remove dirt dauber nests as they appear.<br>More sensitive means are needed to remove bees and hornets nests. |  |
| Priority: Low | | | |
| Landscaping | Landscaping Too Close to Building | Remove or trim landscaping that grows within two feet of the building façade. |  |
| Priority: Medium | | | |

## Windows and Doors

| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
|---|---|---|---|
| Brick Wall Window lintels | Brick cracking above windows. Steel lintes behind bricks possibly corroding, which could be causing the cracks. | Remove bricks and evaluate. |  |
| Priority: Medium | | | |
| Windows and Doors | Sealant Failure | Remove failed sealant and replace with new. |  |
| Priority: Medium | | | |
| Windows and Doors | Weather-stripping Failure | Remove failed weather-stripping and replace with new. |  |
| Priority: Medium | | | |
| Doors and Windows | Gasket Failure | Replace failed gaskets in kind. |  |
| Priority: Medium | | | |

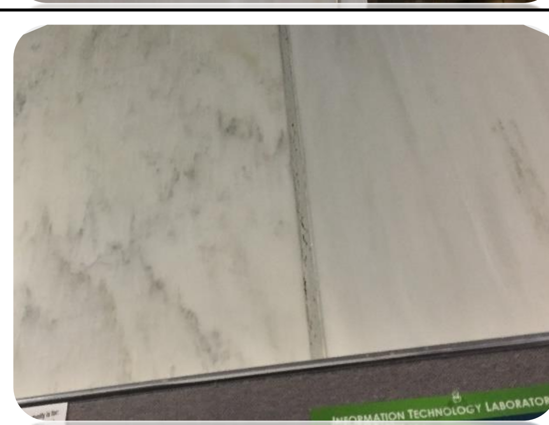
## Windows and Doors

| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
|---|---|---|---|
| Windows and Doors | Corroded Lintel | Remove corrosion. |  |
| | | Prepare surface. Provide a corrosion-resistant coating. | |
| | | Prime and repaint. | |
| Priority: Medium | | | |
| Windows and Doors | Film Failure | Remove failed film at all exterior glazing and replace with new. |  |
| Priority: Medium | | | |

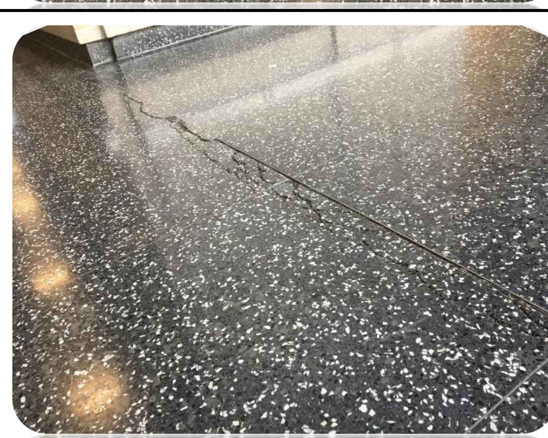
## Interior Finishes: Marble, Terrazzo, and Tile

| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
|---|---|---|---|
| Interior Marble | Nicks and Scratches | Scratches do not require any repair. |  |
| | | Create protocols designed to prevent damage from collisions with carts and maintenance equipment. | |
| Priority: Low | | | |

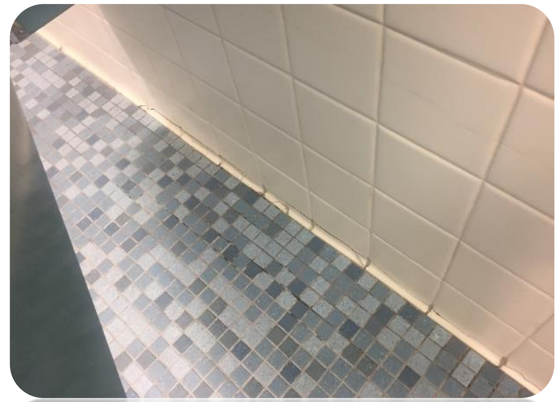
## Interior Finishes: Marble, Terrazzo, and Tile

| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
|---|---|---|---|
| Interior Marble | Crack | Repair crack with crack injection mortar. |  |
| Priority: Medium | | | |
| Interior Marble | Spall | Minor spalls do not require any repair.<br>Create protocols designed to prevent damage from collisions with carts and maintenance equipment. |  |
| Priority: Medium | | | |
| Interior Marble | Joint Failure | Repoint all interior marble joints with a compatible grout that matches the original in color and texture. |  |
| Priority: Medium | | | |
| Interior Marble | Displacement | Determine if movement at failed sealant joint is active. Correct source of movement if still active.<br>Remove failed sealant and replace with new. Sealant is appropriate at this specific location |  |
| Priority: Medium | | | |

## Interior Finishes: Marble, Terrazzo, and Tile

| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
|---|---|---|---|
| Interior Marble | Soiling | Clean interior marble with mild, non-ionic detergent and water. |  |
| Priority: Low | | | |
| Interior Marble | Staining | Clean stains that remain after general cleaning with neutral or alkaline latex poultice material. |  |
| Priority: Low | | | |
| Terrazzo | Inappropriate Repair | Remove inappropriate epoxy patch.<br>Patch with terrazzo patch that matches original in color and texture. |  |
| Priority: Low | | | |
| Terrazzo | Spall | Patch with terrazzo patch that matches original in color and texture. |  |
| Priority: Medium | | | |

## Interior Finishes: Marble, Terrazzo, and Tile

| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
|---|---|---|---|
| Tile | Crack | Replace cracked tiles in kind. |  |
| Priority: Low | | | |
| Tile | Spall | Replace spalled tiles in kind. |  |
| Priority: Low | | | |
| Interior Finishes | Inappropriate Replacement | Existing replacements that are a poor match do not require replacement if they are in sound condition. |  |
| | | When necessary, replace damaged stones with new or salvage stone that matches the original in color, texture, size, shape, and profile. | |
| Priority: Low | | | |

## Ceiling Tiles

| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
|---|---|---|---|
| Ceiling Tiles | Water Damage | Investigate and correct sources of water infiltration or high relative humidity. |  |
| | | After correcting source of water leak, remove damaged ceiling tiles and replace in kind. | |
| Priority: Medium | | | |
| Interior Finishes | Missing Element | Replace missing element in kind. |  |
| Priority: Medium | | | |

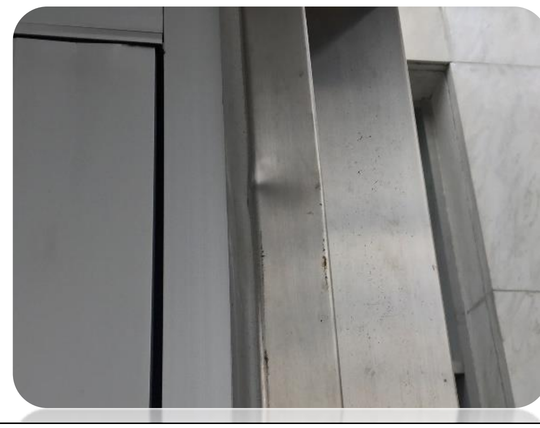
## Plaster

| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
|---|---|---|---|
| Plaster Wall Vinyl Covering | Delamination | Reattach delaminated vinyl wall covering. |  |
| Priority: Low | | | |

## Plaster

| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
|---|---|---|---|
| Plaster Wall Vinyl Covering | Staining | Clean stained vinyl wall fabric with a mild, non-ionic detergent and water. |  |
| Priority: Low | | | |
| Plaster | Water Damage | Investigate and correct sources of water infiltration.<br>After correcting source of water leak, remove damaged plaster.<br>Patch with new plaster. Sand so that patch is smooth and flush with adjacent plaster. Paint or provide vinyl wall covering to match adjacent wall or ceiling. |  |
| Priority: Medium | | | |
| Plaster | Paint Loss | Investigate and correct sources of water infiltration or high relative humidity.<br>After correcting source of water leak, remove damaged plaster.<br>Patch with new plaster. Sand so that patch is smooth and flush with adjacent plaster. Paint. |  |
| Priority: Medium | | | |

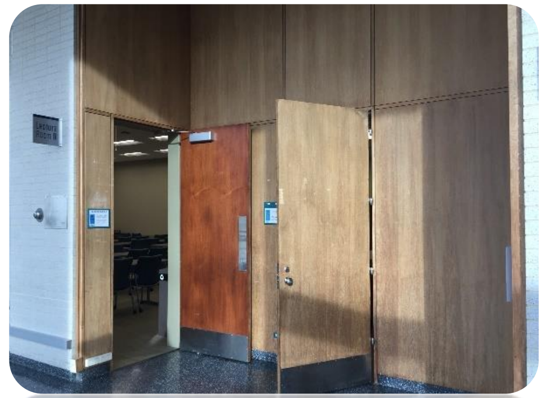
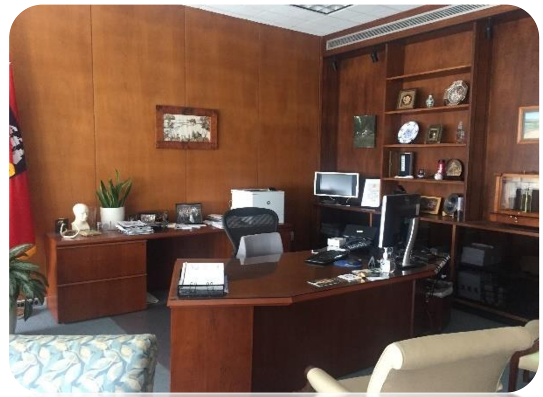
## Architectural Metal

<table>
<tr><th>ELEMENT</th><th>CONDITION</th><th>RECOMMENDATION</th><th>PHOTO</th></tr>
<tr><td rowspan="2">Architectural Metals</td><td rowspan="2">Corrosion</td><td>Remove corrosion and apply protective coating.</td><td rowspan="3"></td></tr>
<tr><td>When salting exterior pavement, avoid allowing salt to come in contact with ornamental metals. Rinse salts from all surfaces once temperatures are above freezing and rising.</td></tr>
<tr><td colspan="3">Priority: Low</td></tr>
<tr><td rowspan="3">Architetural Metals</td><td rowspan="3">Dents and Dings</td><td>Minor dents and dings to not require repair.</td><td rowspan="4"></td></tr>
<tr><td>Create workplans to limit damage to ornamental metals during maintenance and landscaping activities.</td></tr>
<tr><td>Ensure that all deliveries go through the loading dock to avoid unnecessary damage to ornamental metals at pedestrian entrances.</td></tr>
<tr><td colspan="3">Priority: Low</td></tr>
</table>

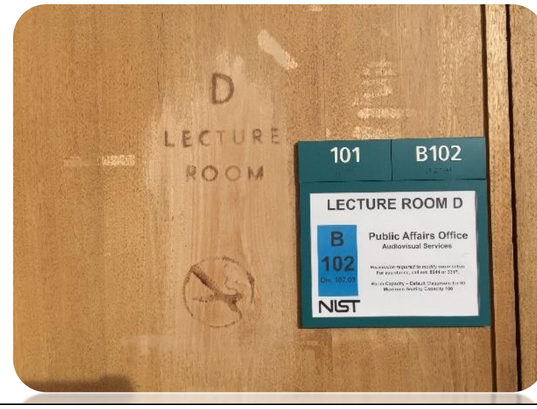
## Architectural Woodwork

<table>
<tr><th>ELEMENT</th><th>CONDITION</th><th>RECOMMENDATION</th><th>PHOTO</th></tr>
<tr><td>Doors</td><td>Veneer Loss</td><td>Provide dutchman repair with walnut veneer that matches the original in color and texture.</td><td rowspan="2"></td></tr>
<tr><td colspan="3">Priority: Low</td></tr>
</table>

## Architectural Woodwork

| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
|---|---|---|---|
| Paneling | Faded Finish | Using original material boards as a guide, restore original finish. |  |
| Priority: Medium | | | |
| Paneling | Inappropriate Finish | Using original material boards as a guide, restore original finish. |  |
| Priority: Medium | | | |
| Paneling | Residue | Clean veneer.<br>Create maintenance protocols that prevent damage to wood veneer from cleaning chemicals and floor refinishing products. |  |
| Priority: Low | | | |
| Architectural Woodwork | Nicks and Scratches | Minor nicks and scratches do not require repair. |  |
| Priority: Low | | | |

## Signage

| ELEMENT | CONDITION | RECOMMENDATION | PHOTO |
|---|---|---|---|
| Historic Signage | Missing | Replicate original signage and reinstall alongside modern signage. Use ghost marks and historic signage that still exist to inform replication. |  |
| Priority: Medium | | | |
| Historic Signage | Partially Missing | Replicate and reinstall missing elements. Use ghost marks and historic signage that still exist to inform replication. |  |
| Priority: Medium | | | |

| Preservation Challenges | | | | | Condition Drawings | |
|---|---|---|---|---|---|---|
| **Exterior Element** | **Condition** | **High Priority** | **Medium Priority** | **Low Priority** | **Key Notes** | **General Notes** |
| Masonry | Joint Failure | X | | | 1 | B |
| Masonry | General Soiling | | | X | | A |
| Stone | Heavy Soiling | | | X | 14 | |
| Stone | Copper Staining | | | X | 10A | |
| Brick | Cracks | | | X | 3B | |
| Brick | Expansion Joint Replacement | X | | | | C |
| Brick | Lintel Repairs | | | X | 6A | |
| Brick | Structural Probes | | X | | | |
| Stone | Erosion | | | X | | |
| Stone | Scratches | | | X | | |
| Stone | Spalls & Cracks | X | | | 4,5 | |
| Marble Panels | Corroding Anchors/Angles | | X | | 12B | |
| Marble Panels | Reset at Public Areas | | X | | 12B-High | |
| Marble Panels | Reset at Non-Public Areas | | | X | 12B-Low | |
| Marble Panels | Inappropriate Mortar | X | | | 1 | B |
| Marble Panels | Missing Sealant Joint | X | | | | E |
| Marble Panels | Improve Drainage/Weeps | X | | | 12A | |
| Retaining Wall - Concrete | Cracks | | X | | 3A | |
| Retaining Wall - Concrete | Spalls | | X | | 5 | |
| Retaining Wall - Concrete | Expansion Joint | | X | | | F |
| Retaining Wall - Stone | Spalls and Cracks | | | X | 4 | |
| Retaining Wall - Stone | Rebuild/ Address Drainage | | X | | 12B | G |
| Courtyard Bridge | Monitor | | X | | | |
| Arcade Concrete | Patch | | | X | 5 | |
| Arcade Concrete | Replace Curb | | | X | 5 | |
| Entrance Pavers | Joint Failure | X | | | 12C | |
| Entrance Pavers | Sunken Pavers | X | | | 12C | |
| Entrance Pavers | Rebuild/ Address Drainage | | X | | 12C | |
| Entrance Pavers | Cracks | | | X | 3A | |
| Entrance Pavers | Spalls | | | X | 4 | |
| Entrance Pavers | Replacement | | | X | 12C | |
| Entrance Pavers | Rust Stains | | | X | 10B | |
| Landscaping and Site Work | Vegetation Too Close | | X | | | H |
| Landscaping and Site Work | Ground Hogs | X | | | | I |
| Landscaping and Site Work | Insects | | | X | 17A | |
| Landscaping and Site Work | Birds | | | X | 17B | |
| Windows and Doors | Gasket Failure | | X | | | D |
| Windows and Doors | Sealant Failure | | X | | | C |
| Windows and Doors | Weather-Stripping Failure | X | | | | D |
| Windows and Doors | Corroding Lintel | | X | | 6A | |

| Preservation Challenges | | | | |
|---|---|---|---|---|
| **Interior Element** | **Condition** | **High Priority** | **Medium Priority** | **Low Priority** |
| Windows and Doors | Film Failure | | X | |
| Marble | Joint Failure | X | | |
| Marble | Soiling | | | X |
| Marble | Staining | | | X |
| Marble | Nicks and Scratches | | | X |
| Marble | Cracks | | X | |
| Marble | Displacement | | X | |
| Marble | Spalls | | | X |
| Terrazzo | Inappropriate Repair | | | X |
| Terrazzo | Spalls | | X | |
| Tile | Cracks | | | X |
| Vinyl Asbestos Tiles | Inappropriate Repair | | | X |
| Ceiling Tiles | Water Damage | X | | |
| Ceiling Tiles | Replacement | | | X |
| Plaster | Water Damage | X | X | |
| Plaster | Patch | | X | |
| Architectural Metals | Corrosion | | X | |
| Architectural Metals | Dents and Dings | | | X |
| Architectural Woodwork | Veneer Loss | | X | |
| Architectural Woodwork | Faded Finish | | X | |
| Architectural Woodwork | Nicks and Scratches | | | X |
| Architectural Woodwork | Residue | | | X |
| Architectural Woodwork | Inappropriate Finish | | X | |
| Historic Signage | Preserve | | X | |
| Historic Signage | Replicate | | X | |
| Facilities | Modernization | | | X |

# SECTION E:
# PREVIOUS STUDIES

## PREVIOUS STUDIES

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**Preservation Assessments**

*Historic Assessment National Institute of Standards and Technology Gaithersburg, MD, June 12, 2015*
*Metropolitan Architects & Planners and R. Christopher Goodwin & Associates, Inc.*

*Maryland Historical Trust Maryland Inventory of Historic Properties Form and Determination of Eligibility Form, June 12, 2015*

*Maryland Historic Trust Determination Letter, October 29, 2015*

*National Park Service Determination of Eligibility Notification, Jun 22, 2016*

<u>Summary</u>

In June 2015, NIST commissioned an historic assessment of their campus to achieve the following goals:

- To develop a historic overview of NIST;
- To develop the background and administrative history of NIST;
- To identify the historical themes, time periods,and people signifcant to the history of NIST;
- To document resources located at the NIST Gaithersburg campus;
- To identify the range of properties associated with signifcant themes and time periods; and,
- To evaluate the signifcance and integrity of properties applying the National Register Criteria for Evaluation (36 CFR 60.4[a-d]) within the appropriate historic context.

When the report was completed, NIST submitted a Maryland Inventory of Historic Properties Form (MIHP) and Determination of Eligibility Form (DOE) to Maryland Historical Trust (MHT) to establish the historic character of the NIST Gaithersburg campus. The DOE proposed that NIST has integrity for a historic district under Criterion A for its association with events that have made important contributions to the broad patterns of history under the theme of Science and Technology and under Criterion C as a recognizable entity that embodies the characteristics of Postwar Research Campus design (National Register of Historic Places Criteria for Evaluation 36 CFR 60.4[a-d]). The proposed district only included 13 buildings and the designed landscape completed between 1965 and 1966 out of a possible 74 buildings, structures, objects, and landscapes.

In October 2015, MHT determined that the entire 578-acre NIST campus is eligible for listing on the National Register and rejected NIST Federal Preservation Officer’s request to carve out a smaller district within the campus. In June 2016, the National Park Service concurred with MHT defining the period of significance as the initial period of campus construction from 1961-1969.

**Master Plans**

*Campus Master Plan, 2009*
*Mancini Duffy Architecture Design*
*NIST Space Utilization Study, 2013*
*Metropolitan Architects and Planners, Inc.*

*NIST Administrative Space Strategic Plan, 2014*
*OKKS Studios*

*NIST Research Facilities Strategic Plan, 2014*
*Metropolitan Architects and Planners, Inc.*

*NIST Traffic and Gates Study for Gaithersburg Campus, 2015*
*Gorove/Slade*

*NIST Building 245 Feasibility Study Planning Alternative Development Options, 2015*
*OKKS Studios*

*NIST Cafeteria and Food Service Operations Evaluation and Recommendations*

*NIST Building 101 Lower Levels Planning Study, 2017*
*OKKS Studios*

*NIST Gate A Visitor Screening Study, 2017*
*Metropolitan Artchitects, and Planners, Inc.*

*NIST Gaithersburg Master Plan, May 2018*
*Metropolitan Architects and Planners, Inc.*

Summary

The 2009 campus master planning effort focused on integrating NIST's priority laboratory and support needs into the campus fabric, circulation system, and infrastructure framework. A Programmatic Environmental Assessment was completed simultaneously with the master plan and resulted in a finding of No Significant Impact. The plan focused on new buildings (320, 207, 318, and 208) and additions to existing buildings (202, 205, 235, 301, 302).

Three studies attempted to understand how much space is available on the campus, how much space is needed for future operations, and what the needs are for administrative space versus research space. The 2013 Space Utilization Study documented all the space on the Gaithersburg campus and its use to provide a planning tool. The findings indicated the space has efficient utilization with 86% of laboratories and office space within the DoC utilization standards. Findings also suggested that organizations are fragmented across the campus and some labs are not used for their intended purposes. Both things compromise research missions and point to outdated infrastructure. The 2014 Administrative Space Strategic Plan Study found that approximately 295, 000 assignable square feet of space is needed and of that 142-168,000 assignable square feet is needed for administrative space alone. Recommendations included implementing shared offices, open workstations, standardized floor plans for Building 101 tower, and standard office furniture. The 2014 Research Facilities Strategic Plan found that 45% of the laboratories were functionally compliant or in the process of modernizing while 55% of the laboratories required upgrades. The study recommended a new "precision laboratory" facility and the gradual modernization of the special and general purpose laboratories over a multi-year program.

The Traffic and Gates Study, the Building 245 Feasibility Study, the Cafeteria Evaluation, the Building 101 Lower Levels Planning Study and the Gate A Visitor Screening Study were all implemented to explore renovation and expansion of current buildings and circulation. In each case renovations and additions were recommended to support the campus goals.

The recommendations from these previous reports were evaluated and augmented in the 2018 NIST Gaithersburg Master Plan. The master plan provides for the modernization of aging, inefficient building and accommodates growth over a 20-year period. The plan included approximately 1.4 million gross square feet of new facilities and renovations to 15 buildings. This plan concentrates new research buildings in the central campus core following a regular pattern linked by an interior pedestrian concourse. New specialty laboratories are placed outside the core, and the existing special purpose laboratories are planned for additions and renovations. Other campus recommendations include:

- Upgraded Campus Utilities
- Advanced Research Facilities
- Renovated Special Purpose Laboratories
- Secure Visitor Entry
- Gradual Growth
- Modernized General Purpose Laboratories
- Specialty Research Buildings
- Adaptive Reuse
- Connected Buildings
- Enhanced Conference and Visitor Facilities
- Historic Preservation
- Consolidated Shipping and Receiving
- Pedestrian Circulation
- Coordinated Parking Strategy
- Energy Conservation Emphasis
- Natural and Sustainable Campus
- Flexible, Incremental Growth and Change

For Building 101, the 2018 Master Plan recommends an addition of approximately 50,000 square feet, adjacent to the main lobby. The ground floor will accommodate an auditorium and three conference rooms, to enhance the conference center use. The lower level will provide storage and stack space for the library and museum. The new space will also accommodate a modern library and office space. The foot print is intended to complete the pinwheel design reference of the original architecture.

The latest Master Plan suggests implementing a Programmatic Agreement with Maryland Historical Trust and the Advisory Council on Historic Preservation as part of Section 106of the National Historic Preservation Act of 1966 since the campus has been determined eligible on the National Register of Historic Places. The agreement would streamline the Section 106 process by identifying standards for categories of routine projects and the review procedures for new construction and rehabilitation. The Plan further recommends the development of an internal Design Review Board at NIST to support the execution of NIST cultural resource management.

## Historic Structure Reports

*Historic Structure Report of Radio Building (Building 1) in Boulder, CO, July 2018*
*studiotrope Design Collective and AECOM*

Summary

NIST determined that Building 1 of the Boulder Campus is eligible for listing in the National Register of Historic Places under Criteria A and C for its associations with broad patterns of history of the National Bureau of Science and as a good example of the International Style and post-Worlk war II research campus model (National Register of Historic Places Criteria for Evaluation 36 CFR 60.4[a-d].)

This HSR was prepared to provide documentary, graphic, and physical information about the history of Building 1 and its existing condition. The goal of this report was to provide NIST with a guide for future improvements to Building 1. This HSR documents the history, construction, and evolution of the building; its historic significance; and its current condition. It also provides historic preservation objectives, selected treatments as defined by the Secretary of the Interior's Standards for the Treatment of Historic Properties (Standards) (National Park Service [NPS] 2017), and recommendations for work.

All extant original exterior elements of Building 1 contribute to its character and its eligibility for listing in the NRHP. On the interior, character-defining features are concentrated in the Front of the House, which, as the original public entrance to the campus and the location of the building's common areas, possesses all the building's architectural ornamentation while the rest of the building is more utilitarian in design. To support the scientific mission of the NBS and the CRPL, alterations to the interior of Building 1 began soon after the building was constructed and have continued throughout the building's history. The historic integrity of the laboratory and office spaces in the Spine and wings has been compromised by these alterations, and the only character-defining features that remain intact in the interior of the Spine and wings are the configuration of the double-loaded corridors.

Building 1 is generally in good condition, including the building envelope, exterior architectural finishes, and weather protection components (joints, windows, and roofing systems), as well as the interior architectural finishes (floors, doors, and ceilings). A few places have been observed to be in fair and poor condition, including portions of the roof, the original windows, exterior doors and hardware, and some concrete finishes. Damages to the concrete include spalling, staining, cracks, and exposed corroding reinforcing bars. Due to the age of the building, numerous mechanical and plumbing features were found to be non-compliant with current codes.

**NIST Asset Report for Building 101**

*Requirement Detail Report, 2015*
*VFA Inc.*

Summary

NIST Asset Report lists maintenance and repair items for buildings systems for Building 101. Requirements are organized according to seven categories: (1) Building Integrity – Beyond Rated Life; (2) Building Integrity – Reliability; (3) Code Compliance – Life Safety; (4) Environmental – Air/Water Quality; (5) Functionality – Aesthetics; (6) Operations – Energy; and (7) Operations – Maintenance. The original condition assessment took place in May of 2013. Each requirement item includes a description and photographs of the condition, locations affected, an estimated cost for the recommended action, and a projected timeframe for completing the action. The asset report does not include follow-up information for completed actions, such as actual completion date and actual cost. It is unknown how many of these actions have been completed.

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**Structural Engineering Assessments**

*Temporary Shoring Study for the Red Auditorium, Building 101, May 28, 1992*
*McMullan and Associates, Inc.*

Summary

An earlier report by McMullan & Associates, Inc., dated January 14, 1992, found that significant deterioration of the Red Auditorium floor system could result in structural failure and required immediate attention. The temporary shoring study discusses alternatives for additional supports for the floor slab until permanent repairs could take place. The report offers four alternatives for redundant shoring systems: (1) small dimensional timber in combination with large dimensional timber; (2) large dimensional timber; (3) structural steel posts; and (4) steel framing in combination with structural steel. The study determined that scheme 3 was the most feasible. Regardless of which scheme was to be implemented, the report indicated that permanent repairs should take place within five years.

Shoring work was ultimately completed. This 5-year temporary shoring is still in place. Permanent repairs have not occurred.

*Post Earthquake Rapid Visual Review of the Building 101 Auditorium, August 31, 2011; #3423.0007.01-1-Rpt.*
*McMullan and Associates, Inc.*

Summary

Following the 2011 earthquake that affected Virginia and Maryland, McMullan & Associates, Inc, completed a rapid visual review of Building 101 Wing D. The report examines various areas of concern that NIST raised following the earthquake. These included cracked mortar joints at exterior marble

cladding, vertical cracks in CMU walls in the backstage area, and deflection of the plaster soffit above the east exterior elevation. Following a visual inspection, McMullan determined that cracked mortar joints and deflection of the plaster soffit were not of immediate concern, though these areas would eventually require repair. Specifically, beveled panels on the east and west facades should be monitored for loose stones. If loose stones were found, these areas were to be netted to catch falling pieces or barricaded to prevent pedestrian access. Vertical cracks in interior CMU walls in the backstage areas were of the greatest concern. McMullan's investigation concluded that these walls were not reinforced, had no control joints, and were not properly braced at the top. McMullan expressed concern that the wall might not be able to withstand lateral loads during a future earthquake even and recommended limiting access to this location. McMullan recommended an evaluation of the wall design and alterations to bring the construction into compliance with modern codes during any future renovations.

*Building 101 Basement Wall Investigation, Building 101, June 15, 2015; Project No. 3423-18-01*
*McMullan and Associates, Inc.*

<u>Summary</u>

In 2015, McMullan and Associates completed an assessment of concrete walls along the basement corridor adjacent to the unexcavated area below the Cafeteria. These concrete walls exhibited areas of spalling and cracking. McMullan completed three types of analysis: visual observations, Ground Penetrating Radar (GPR), and sampling of concrete cores. Visual observations established the extent and location of damage to interior concrete walls. GPR was used to confirm size and placement of steel reinforcement bars and to determine depth of concrete cover across the walls. Petrographic analysis of concrete cores determined that carbonation of the concrete paste extends to the depth of steel reinforcement in several locations. Carbonation lowers the pH of the concrete paste, which can result in carbonation-induced corrosion. Since no evidence of active groundwater was found on the exterior side of the concrete walls, McMullan concluded that carbonation-induced corrosion is the principal cause of spalling and cracking of interior concrete.

McMullan and Associates recommended taking additional core samples throughout the basement to determine the extent of carbonation. At areas of carbonation with no visible signs of damage, McMullan recommended three possible repairs: (1) removal and replacement of carbonated concrete with new; (2) re-alkalization of existing concrete; and (3) installation of a Cathodic Protection System. At areas of visible damage, McMullan recommended removing and replacing spalled concrete and filling cracks with a structural epoxy.

*Building 101 Leak Remediation Study, Gaithersburg, MD, November 6, 2017; Project Number 3681-08*
*McMullan and Associates Inc.*

<u>Summary</u>

Structural engineers McMullan & Associates and Civil Engineers A. Morton Thomas & Associates investigated sources of water infiltration into the basement on the northeast side of Building 101. Specifically the study documented existing conditions of basement waterproofing, site drainage systems, and overall topography of the site adjacent to the east main entrance. Investigations determined that existing grade of the raised planting beds at the east entrance was insufficient to shed rain water away from the building foundations. Test pits dug along the building foundations confirmed that water was ponding about three feet below grade and not freely draining. Corrosion of iron pipe drains and build-up of debris exacerbated the drainage problem. The investigation also that foundation waterproofing terminated below grade level, allowing rainwater to migrate over and possibly behind the membrane.

The study discusses the following recommendation in detail: replacement of foundation waterproofing and drainage, installation of new PVC drains to replace corroded iron pipe drains in the raised planting area; and reconstruction of existing granite retaining walls with new concrete backup walls and footings. The study provides a cost estimate and suggested repair details for the proposed new work. The study also recommended additional probes at the east entrance plaza paving were also recommended to understand conditions at this location. The

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**Window and Induction Unit Study**

*NIST Building 101 Window and Induction Unit Study, Gaithersburg, MD, December 30, 2014*
*OKKS Studios and Henry Adams, LLC, Consulting Engineers*

<u>Summary</u>

The 2014 study investigated options for Building 101's mechanical and window system in order to extend the facility's service life, improve the building's energy performance, and meet executive mandates for Federal facilities. There are fifteen air handling units in five separate mechanical rooms servicing different portions of Building 101. There are ten distinct window types of varying sizes and approximately 1000 individual window assemblies that require replacement.

This report includes separate recommended options for improvements to central mechanical plants, replacement of existing terminal mechanical units, replacement of windows and improved envelope insulation for each portion of the building. The following represent options for A-Wing:

- Renovation Scheme A-1; Mechanical refurbishment with window replacement phased Horizontally.
- Renovation Scheme A-1b; Mechanical refurbishment with curtain wall replacement phased Horizontally.
- Renovation Scheme A-2; Mechanical replacement with window replacement phased Horizontally.
- Renovation Scheme A-2b; Mechanical replacement with curtain wall replacement phased to occur horizontally.
- Renovation Scheme A-3; Mechanical replacement with curtain wall replacement phased Vertically.
- Renovation Scheme A-4; New mechanical penthouse with curtain wall replacement.

In contrast to the A-Wing, the B, C and D wings are relatively lightly populated, and the need for complex strategies to accommodate tenant relocations is not a priority. The possible combinations of the different options for the replacement of mechanical systems and for the replacement of envelope systems are therefore more straightforward.

- Mechanical Renovation Option M.BCD.1: Outlines mechanical plant refurbishment and replacement of mechanical terminal units with replacement of the existing window systems.
- Mechanical Renovation Option M.BCD.2: Outlines construction of a new mechanical penthouse tied to the existing distribution system and replacement of mechanical terminal units with replacement of the existing window systems.

As with the B, C and D wings, the E-Wing is relatively lightly populated, and the need for complex strategies to accommodate tenant relocations is not a priority. The possible combinations of different options for the replacement of mechanical systems and for the replacement of envelope systems are therefore more straightforward.

- Mechanical Renovation Option M.E.1: Outlines mechanical plant refurbishment and replacement of mechanical terminal units with replacement of the existing window systems.
- Mechanical Renovation Option M.E.2: Outlines construction of a new exterior mechanical room tied to the existing distribution system and replacement of mechanical terminal units with replacement of the existing window systems.

The existing building organization, the distribution of existing building tenants, and arrangement of existing building mechanical systems all suggest that to properly evaluate a complete renovation of Building 101 the work be considered as involving three distinct but related projects, each with its own challenges- mechanical and facade renovations to the A-Wing, which will affect the greatest proportion of the building's tenants, mechanical and façade renovations to the B, C and D-Wings, which are all comparatively lightly occupied but which nevertheless perform functions critical to NIST operations, and mechanical and facade renovations to the E-Wing, which will affect the second largest number of tenants and which must also consider mechanical upgrades to address the requirements for storing archival materials. The report presents the merits of these options as cost estimates for each scheme.

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# SECTION F:
# OUTLINE SPECIFICATIONS

## PRESERVATION OUTLINE SPECIFICATIONS

Section 01 3591 Historic Treatment Procedures

Section 02 4296 Historic Removal and Dismantling

Section 03 0130 Historic Cast-In-Place Concrete Restoration

Section 04 0310 Historic Masonry Cleaning

- Marble (Interior, Exterior)
- Limestone
- Granite
- Brick (Interior, Exterior)

Section 04 0342 Historic Masonry Restoration

- Marble (Interior, Exterior)
- Limestone
- Granite
- Brick (Interior, Exterior)
- Retaining Walls

Section 04 0343 Historic Masonry Repointing

- Marble (Interior, Exterior)
- Limestone
- Granite
- Brick (Interior, Exterior)

Section 05 0385 Historic Architectural Formed Metal Cleaning and Restoration

- Anodized Aluminum
- Bronze
- Stainless Steel

Section 06 0312 Historic Architectural Woodwork Restoration

- Oak
- Walnut
- Cherry Veneer
- Walnut Veneer

Section 07 6200 Sheet Metal Flashing and Trim

Section 07 9200 Joint Sealants

Section 08 0351 Historic Aluminum Window Restoration

| | |
|---|---|
| Section 08 0352 | Historic Wood Door Restoration<br>• Walnut Veneer<br>• Aluminum Hardware |
| Section 08 1119 | Historic Stainless-Steel Doors and Frame<br>• Stainless Steel Hardware |
| Section 08 4413 | Historic Glazed Aluminum Curtain Wall Restoration |
| Section 09 0320 | Historic Flat Plaster Restoration |
| Section 09 2400 | Historic Cement Plastering Restoration<br>• Stucco |
| Section 09 0313 | Historic Ceramic Tile Restoration<br>• Quarry Tile<br>• Glazed Wall Tile |
| Section 09 5123 | Historic Acoustical Tile Ceiling Restoration |
| Section 09 6519 | Historic Resilient Tile Flooring Restoration<br>• Vinyl Composition Tile |
| Section 09 6613 | Historic Terrazzo Flooring Restoration |
| Section 09 0190 | Maintenance Repainting |
| Section 32 1373 | Historic Unit Paving Restoration and Cleaning |

# SECTION G: GLOSSARY

## GLOSSARY

**Anodized Aluminum** – aluminum given a protective and/or decorative coating through anodization, an electrolytic passivation process.

**Brise Soleil** – literally meaning “breaks sunlight,” a term for an architectural device that protects a building from excessive sun exposure. These are typically perforated screens or louvers constructed to shade elevations with a large proportion of glazed openings.

Duranodic – proprietary treatment of the Aluminum Corporation of America that is similar to anodizing.

**Coping** – in wall construction, a protective cap over the wall’s horizontal top surface. Copings may be metal, masonry, or wood and are typically sloped or beveled to shed water.

**Curtain Wall** – an exterior wall assembly that hangs from the floor slabs of a multi-story building. Curtain wall assemblies typically consist of large glass panels set in a metal frame. Infill panels can also be metal or masonry. The assembly differs from a typical exterior wall in that it is not load bearing. Curtains walls support only their own weight and any loads imposed on them. These loads are transferred back to the primary structure of the building at the floor slabs.

**Fascia** – a flat, horizontal member covering the joint between the top of a wall and projecting rafters or between the vertical and horizontal structural members of a screen assembly.

**Screen-** any construction designed merely to separate, protect, seclude, or conceal but not to support.

**Soffit** – the underside of any part of a building, such as an arch, beam, bridge, or stairs.

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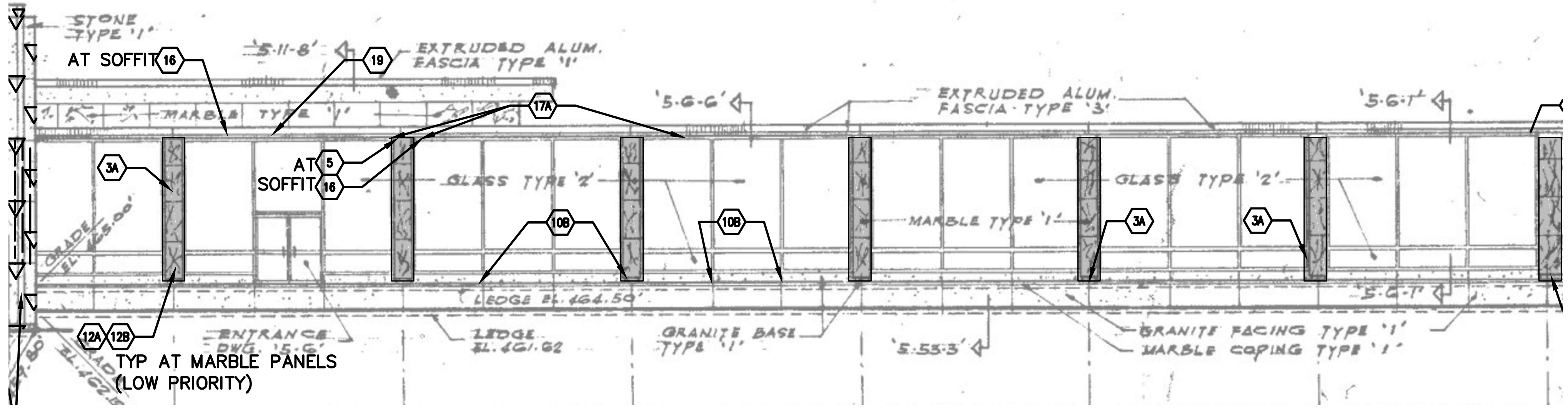
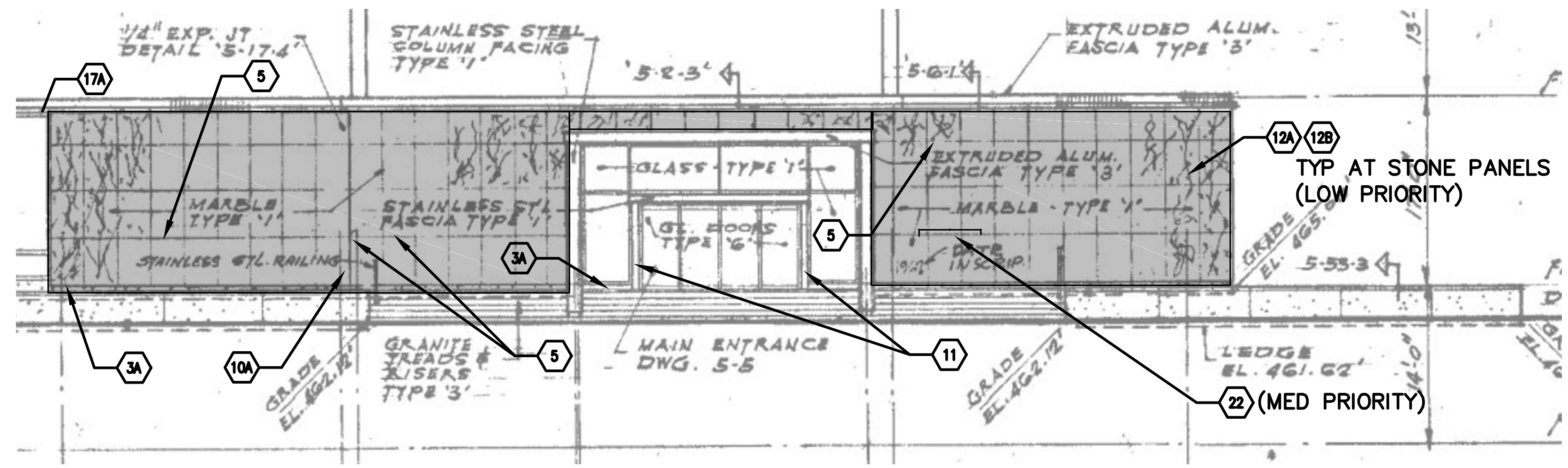
# SECTION H:
# CONDITION DRAWINGS




EAST ELEVATION – WING B




EAST ELEVATION – WING A

0 4 8 16

1/16"=1'-0"

## KEY NOTES

1. WHERE HATCHED, REPOINT PERCENTAGE SHOWN IN LIEU OF 100% REPOINTING. 10% 30%
2. REMOVE BIOLOGICAL GROWTH WITH ARCHITECTURAL BIOCIDE.
- 3A. REPAIR CRACK WITH INJECTION GROUT. ASSUME FULL HEIGHT OF STONE AT EACH LOCATION.
- 3B. STITCH BRICK CRACKS WITH STEEL RODS AND REPLACE CRACKED BRICKS.
- 3C. NO ACTION AT CRACKED PAVER.
- 4. REPAIR SPALL WITH STONE DUTCHMAN THAT MATCHES EXISTING IN COLOR, TEXTURE, GRAIN, AND PROFILE. ASSUME 8" X 8" EACH.
- 5. REPAIR SPALL WITH PATCHING MORTAR THAT MATCHES EXISTING MASONRY IN COLOR, TEXTURE, AND PROFILE. ASSUME 6" X 6" EACH.
- 6A. PREPARE, PRIME, AND REPAINT CORRODED STEEL.
- 6B. CLEAN POLISHED METAL TO REMOVE CORROSION.
- 7. REMOVE VEGETATION CONTRIBUTING TO EROSION.
- 8. PIN STONE AT AREA OF INCIPIENT SPALL USING THREADED STAINLESS-STEEL ROD.
- 9. REMOVE GYPSUM CRUST. ASSUME 1 SQUARE FOOT EACH.
- 10A. CLEAN COPPER STAIN ON MASONRY WITH POULTICE. APPLY POULTICE AT EACH LOCATION INDICATED OVER FULL FACE OF STONE FROM JOINT TO JOINT. ASSUME UP TO 2 APPLICATIONS AT EACH INSTANCE.
- 10B. REMOVE RUST STAIN. ASSUME 2 SQUARE FEET EACH.
- 11. REMOVE MASTIC/PAINT WITH MASTIC/PAINT REMOVER. ASSUME 1 SQUARE FOOT EACH.
- 12A. CLEAN OUT DRAINAGE PORTS AT BOWING MARBLE PANEL.
- 12B. REMOVE STONE AND RESET.
- 12C. REMOVE DISPLACED PAVERS. REGRADE AND RESET.
- 13. CLEAN EFFLORESCENCE.
- 14. CLEAN HEAVY SOILING WITH ALKALINE CHEMICAL CLEANERS AND COLD WATER WASH NOT TO EXCEED 400 PSI.
- 15. REMOVE ABANDONED METAL FASTENER. PATCH HOLE WITH PATCHING MORTAR THAT MATCHES EXISTING MASONRY IN COLOR, TEXTURE, AND PROFILE.
- 16. REMOVE FAILED AREA OF CEMENT STUCCO. PATCH WITH CEMENT STUCCO TO MATCH EXISTING. ASSUME 2 SQUARE FEET EACH.
- 17A. REMOVE INSECT NEST.
- 17B. REMOVE BIRD NEST.
- 18. REMOVE CALCIUM CRUST.
- 19. SEAL GAPS IN FLASHING.
- 20. REPAIR WARPED FLASHING.
- 21. REBUILD CONCRETE STAIRS
- 22. REMOVE MARBLE PANELS FOR REINSTALLATION. REPLACE SHELF ANGLE WITH STAINLESS STEEL. REINSTALL PANELS.

## GENERAL NOTES

A. CLEAN ALL EXTERIOR MASONRY WITH WARM WATER PRESSURE WASH NOT TO EXCEED 400 PSI.
B. REPOINT MASONRY 100% INCLUDING PAVED ENTRANCE TERRACES UNLESS INDICATED OTHERWISE BY NOTE 1.
C. REPLACE EXTERIOR SEALANT JOINTS 100%.
D. REPLACE WEATHER STRIPPING AND GASKETS AT WINDOWS AND CURTAIN WALLS 100%.
E. REPLACE MORTAR JOINTS BETWEEN MARBLE PANELS AND CONCRETE SOFFIT WITH SOFT JOINT AT EACH COLUMN.
F. REPLACE SOFT JOINTS IN CONCRETE RETAINING WALLS 100%.
G. REMOVE DEBRIS FROM RETAINING WALL DRAINS 100%.
H. TRIM/REMOVE VEGETATION WITHIN 2 FEET OF THE BUILDING.
I. REMOVE GROUNDHOGS FROM WEST LAWN AND BACKFILL TUNNELS.
J. REMOVE RUST STAINS FROM GRANITE PAVING 100%.

JOHN MILNER ASSOCIATES
preservation
a division of MTFA Architecture

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703-524-6616 Fax: 524-6618 mtfa.net

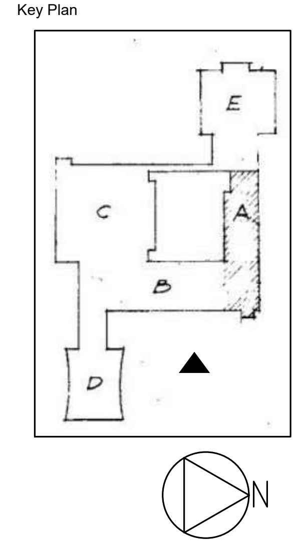
**NIST**
**Building 101**

**100 Bureau Drive**
**Gaithersburg, MD 20899**

Job # 18035

Date: Issue:
NOT FOR CONSTRUCTION

Key Plan

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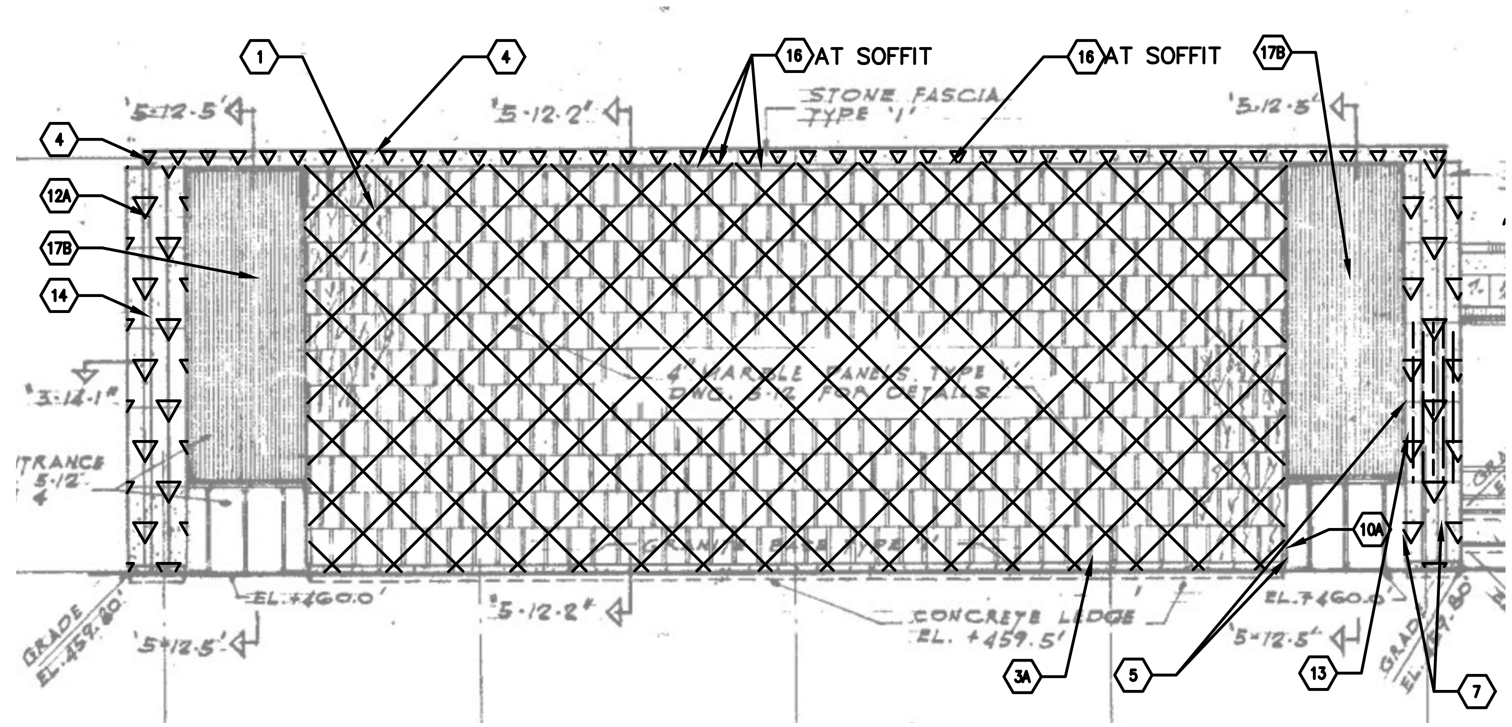
Sheet Title:
**East Elevation - Wings A and B**



Sheet #
**A101**




EAST ELEVATION – WING D

0 4 8 16

1/16"=1'-0"

## KEY NOTES

1. WHERE HATCHED, REPOINT PERCENTAGE SHOWN IN LIEU OF 100% REPOINTING.
   10% 30%
2. REMOVE BIOLOGICAL GROWTH WITH ARCHITECTURAL BIOCIDE.
3A. REPAIR CRACK WITH INJECTION GROUT. ASSUME FULL HEIGHT OF STONE AT EACH LOCATION.
3B. STITCH BRICK CRACKS WITH STEEL RODS AND REPLACE CRACKED BRICKS.
3C. NO ACTION AT CRACKED PAVER.
4. REPAIR SPALL WITH STONE DUTCHMAN THAT MATCHES EXISTING IN COLOR, TEXTURE, GRAIN, AND PROFILE. ASSUME 8" X 8" EACH.
5. REPAIR SPALL WITH PATCHING MORTAR THAT MATCHES EXISTING MASONRY IN COLOR, TEXTURE, AND PROFILE. ASSUME 6" X 6" EACH.
6A. PREPARE, PRIME, AND REPAINT CORRODED STEEL.
6B. CLEAN POLISHED METAL TO REMOVE CORROSION.
7. REMOVE VEGETATION CONTRIBUTING TO EROSION.
8. PIN STONE AT AREA OF INCIPIENT SPALL USING THREADED STAINLESS-STEEL ROD.
9. REMOVE GYPSUM CRUST. ASSUME 1 SQUARE FOOT EACH.
10A. CLEAN COPPER STAIN ON MASONRY WITH POULTICE. APPLY POULTICE AT EACH LOCATION INDICATED OVER FULL FACE OF STONE FROM JOINT TO JOINT. ASSUME UP TO 2 APPLICATIONS AT EACH INSTANCE.
10B. REMOVE RUST STAIN. ASSUME 2 SQUARE FEET EACH.
11. REMOVE MASTIC/PAINT WITH MASTIC/PAINT REMOVER. ASSUME 1 SQUARE FOOT EACH.
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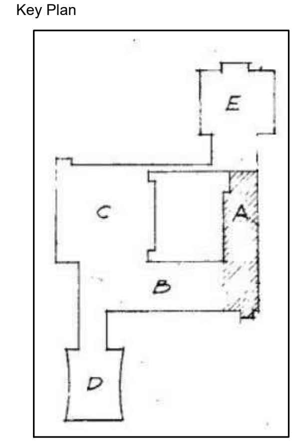
# NIST
## Building 101

100 Bureau Drive
Gaithersburg, MD 20899

Job # 18035

Date: Issue:
NOT FOR CONSTRUCTION

Key Plan

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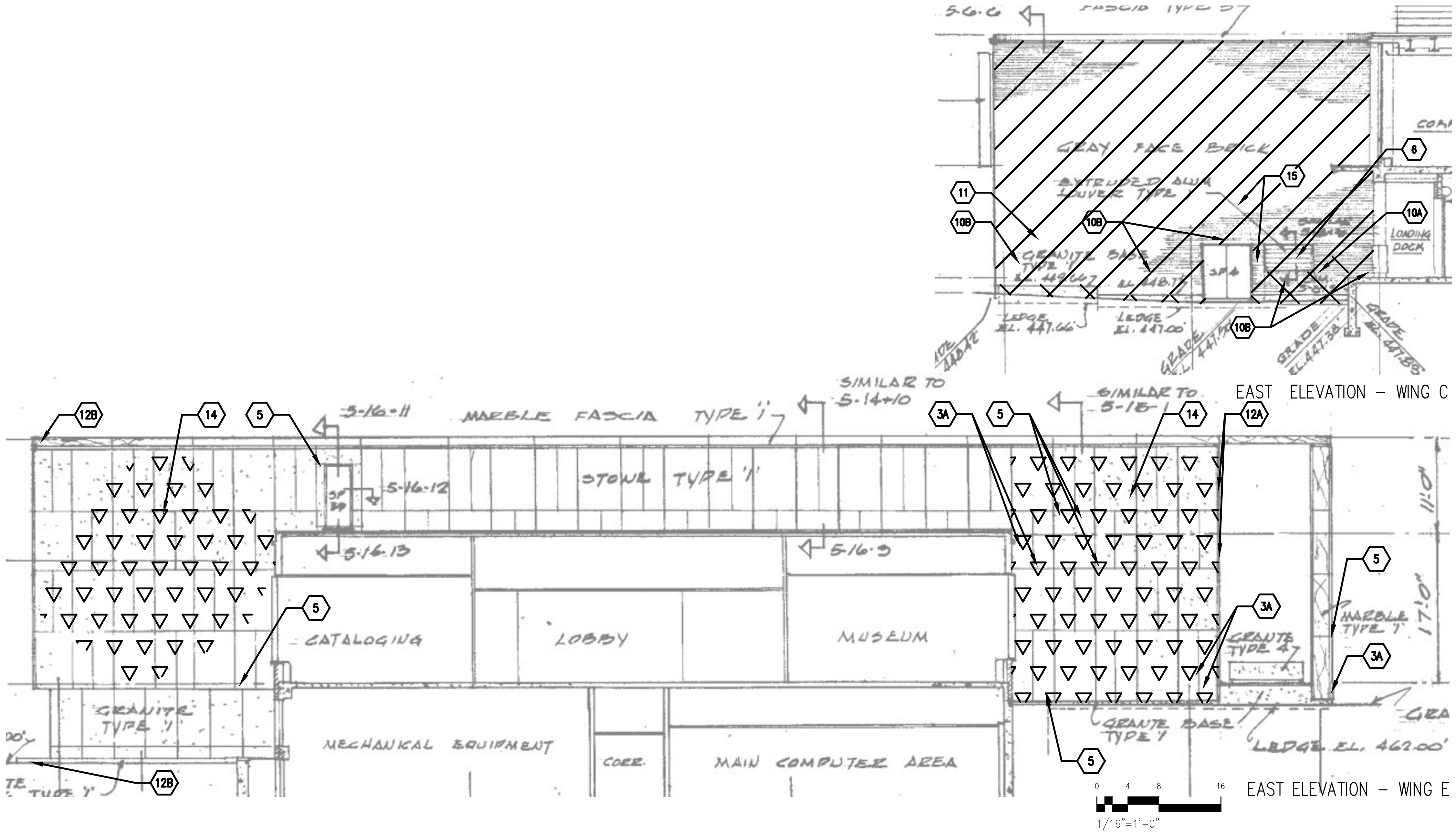
Sheet Title:
**East Elevation - Wing D**



Sheet #
**A102**




## KEY NOTES

1. WHERE HATCHED, REPOINT PERCENTAGE SHOWN IN LIEU OF 100% REPOINTING. 10% 30%
2. REMOVE BIOLOGICAL GROWTH WITH ARCHITECTURAL BIOCIDE.
3A. REPAIR CRACK WITH INJECTION GROUT. ASSUME FULL HEIGHT OF STONE AT EACH LOCATION.
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7. REMOVE VEGETATION CONTRIBUTING TO EROSION.
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9. REMOVE GYPSUM CRUST. ASSUME 1 SQUARE FOOT EACH.
10A. CLEAN COPPER STAIN ON MASONRY WITH POULTICE. APPLY POULTICE AT EACH LOCATION INDICATED OVER FULL FACE OF STONE FROM JOINT TO JOINT. ASSUME UP TO 2 APPLICATIONS AT EACH INSTANCE.
10B. REMOVE RUST STAIN. ASSUME 2 SQUARE FEET EACH.
11. REMOVE MASTIC/PAINT WITH MASTIC/PAINT REMOVER. ASSUME 1 SQUARE FOOT EACH.
12A. CLEAN OUT DRAINAGE PORTS AT BOWING MARBLE PANEL.
12B. REMOVE STONE AND RESET.
12C. REMOVE DISPLACED PAVERS. REGRADE AND RESET.
13. CLEAN EFFLORESCENCE.
14. CLEAN HEAVY SOILING WITH ALKALINE CHEMICAL CLEANERS AND COLD WATER WASH NOT TO EXCEED 400 PSI.
15. REMOVE ABANDONED METAL FASTENER. PATCH HOLE WITH PATCHING MORTAR THAT MATCHES EXISTING MASONRY IN COLOR, TEXTURE, AND PROFILE.
16. REMOVE FAILED AREA OF CEMENT STUCCO. PATCH WITH CEMENT STUCCO TO MATCH EXISTING. ASSUME 2 SQUARE FEET EACH.
17A. REMOVE INSECT NEST.
17B. REMOVE BIRD NEST.
18. REMOVE CALCIUM CRUST.
19. SEAL GAPS IN FLASHING.
20. REPAIR WARPED FLASHING.
21. REBUILD CONCRETE STAIRS
22. REMOVE MARBLE PANELS FOR REINSTALLATION. REPLACE SHELF ANGLE WITH STAINLESS STEEL. REINSTALL PANELS.

## GENERAL NOTES

A. CLEAN ALL EXTERIOR MASONRY WITH WARM WATER PRESSURE WASH NOT TO EXCEED 400 PSI.
B. REPOINT MASONRY 100% INCLUDING PAVED ENTRANCE TERRACES UNLESS INDICATED OTHERWISE BY NOTE 1.
C. REPLACE EXTERIOR SEALANT JOINTS 100%.
D. REPLACE WEATHER STRIPPING AND GASKETS AT WINDOWS AND CURTAIN WALLS 100%.
E. REPLACE MORTAR JOINTS BETWEEN MARBLE PANELS AND CONCRETE SOFFIT WITH SOFT JOINT AT EACH COLUMN.
F. REPLACE SOFT JOINTS IN CONCRETE RETAINING WALLS 100%.
G. REMOVE DEBRIS FROM RETAINING WALL DRAINS 100%.
H. TRIM/REMOVE VEGETATION WITHIN 2 FEET OF THE BUILDING.
I. REMOVE GROUNDHOGS FROM WEST LAWN AND BACKFILL TUNNELS.
J. REMOVE RUST STAINS FROM GRANITE PAVING 100%.

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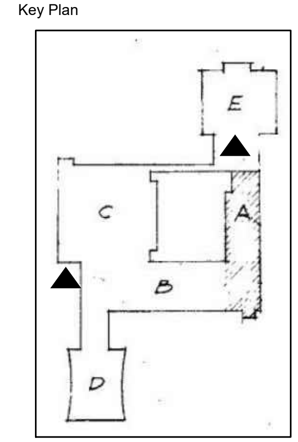
**NIST**
**Building 101**

**100 Bureau Drive**
**Gaithersburg, MD 20899**

Job # 18035

Date: Issue:
NOT FOR CONSTRUCTION

Key Plan

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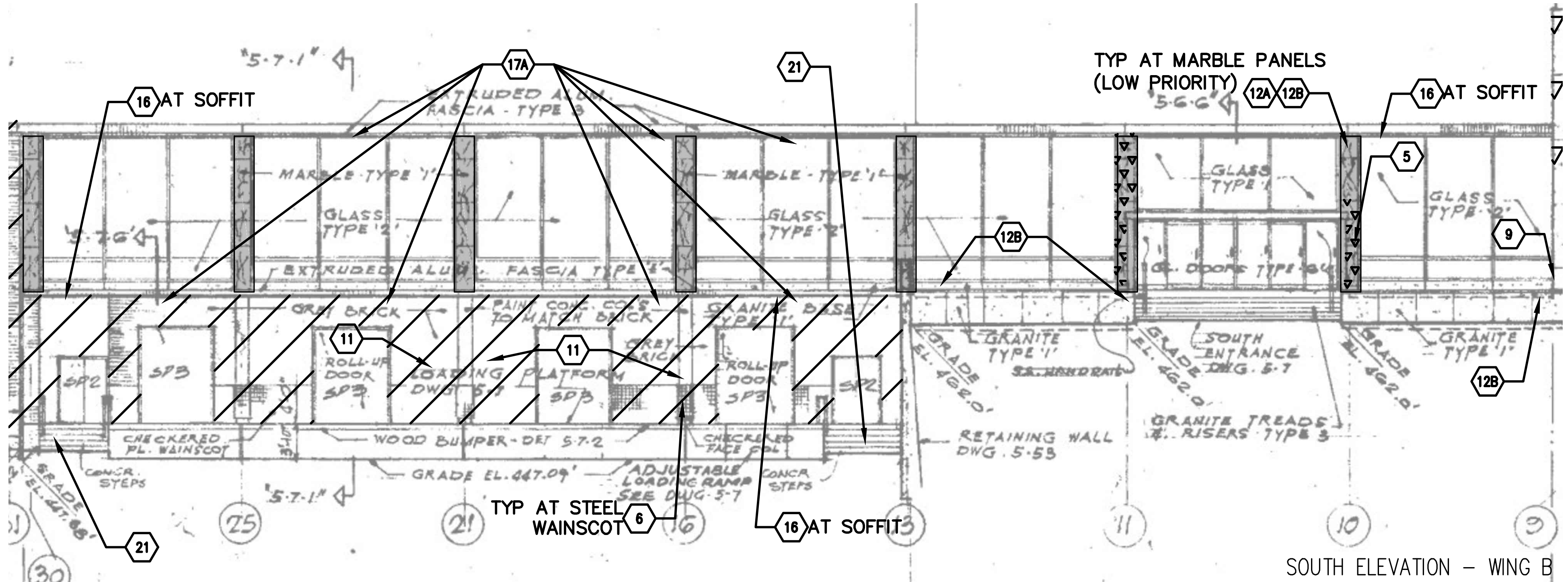
Drawn: Meredith Wilson
Checked: XXX

Scale: 1/16" = 1'-0"

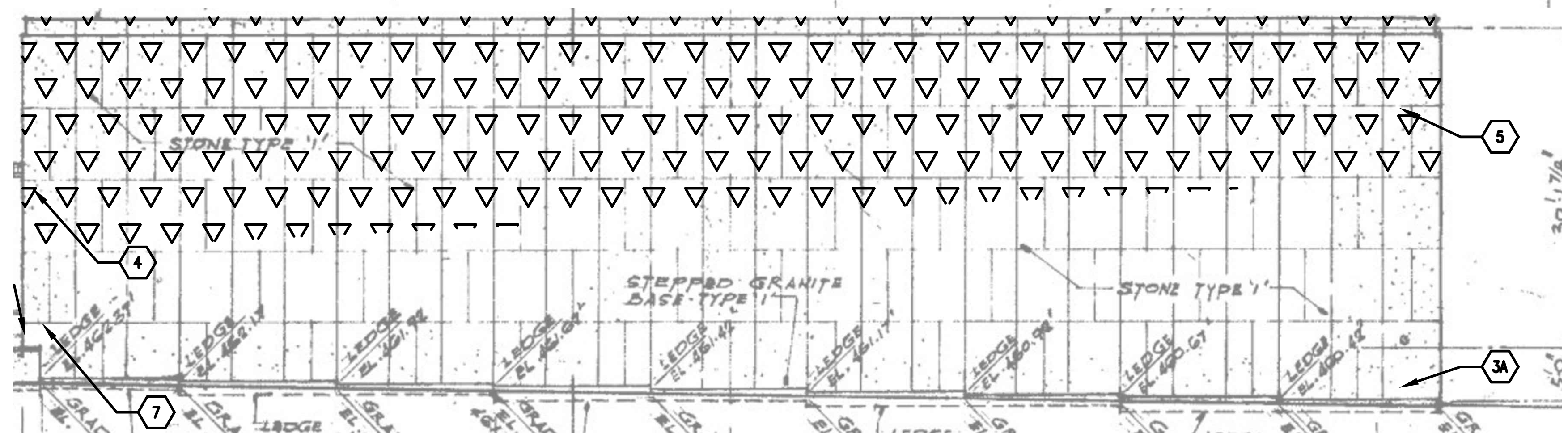
Sheet Title:
**East Elevation - Wings C and E**



Sheet #
**A103**




SOUTH ELEVATION – WING B




0 4 8 16

1/16"=1'-0"

SOUTH ELEVATION – WING D

## KEY NOTES

1. WHERE HATCHED, REPOINT PERCENTAGE SHOWN IN LIEU OF 100% REPOINTING. 10% 30%
2. REMOVE BIOLOGICAL GROWTH WITH ARCHITECTURAL BIOCIDE.
3A. REPAIR CRACK WITH INJECTION GROUT. ASSUME FULL HEIGHT OF STONE AT EACH LOCATION.
3B. STITCH BRICK CRACKS WITH STEEL RODS AND REPLACE CRACKED BRICKS.
3C. NO ACTION AT CRACKED PAVER.
4. REPAIR SPALL WITH STONE DUTCHMAN THAT MATCHES EXISTING IN COLOR, TEXTURE, GRAIN, AND PROFILE. ASSUME 8" X 8" EACH.
5. REPAIR SPALL WITH PATCHING MORTAR THAT MATCHES EXISTING MASONRY IN COLOR, TEXTURE, AND PROFILE. ASSUME 6" X 6" EACH.
6A. PREPARE, PRIME, AND REPAINT CORRODED STEEL.
6B. CLEAN POLISHED METAL TO REMOVE CORROSION.
7. REMOVE VEGETATION CONTRIBUTING TO EROSION.
8. PIN STONE AT AREA OF INCIPIENT SPALL USING THREADED STAINLESS-STEEL ROD.
9. REMOVE GYPSUM CRUST. ASSUME 1 SQUARE FOOT EACH.
10A. CLEAN COPPER STAIN ON MASONRY WITH POULTICE. APPLY POULTICE AT EACH LOCATION INDICATED OVER FULL FACE OF STONE FROM JOINT TO JOINT. ASSUME UP TO 2 APPLICATIONS AT EACH INSTANCE.
10B. REMOVE RUST STAIN. ASSUME 2 SQUARE FEET EACH.
11. REMOVE MASTIC/PAINT WITH MASTIC/PAINT REMOVER. ASSUME 1 SQUARE FOOT EACH.
12A. CLEAN OUT DRAINAGE PORTS AT BOWING MARBLE PANEL.
12B. REMOVE STONE AND RESET.
12C. REMOVE DISPLACED PAVERS. REGRADE AND RESET.
13. CLEAN EFFLORESCENCE.
14. CLEAN HEAVY SOILING WITH ALKALINE CHEMICAL CLEANERS AND COLD WATER WASH NOT TO EXCEED 400 PSI.
15. REMOVE ABANDONED METAL FASTENER. PATCH HOLE WITH PATCHING MORTAR THAT MATCHES EXISTING MASONRY IN COLOR, TEXTURE, AND PROFILE.
16. REMOVE FAILED AREA OF CEMENT STUCCO. PATCH WITH CEMENT STUCCO TO MATCH EXISTING. ASSUME 2 SQUARE FEET EACH.
17A. REMOVE INSECT NEST.
17B. REMOVE BIRD NEST.
18. REMOVE CALCIUM CRUST.
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20. REPAIR WARPED FLASHING.
21. REBUILD CONCRETE STAIRS
22. REMOVE MARBLE PANELS FOR REINSTALLATION. REPLACE SHELF ANGLE WITH STAINLESS STEEL. REINSTALL PANELS.

## GENERAL NOTES

A. CLEAN ALL EXTERIOR MASONRY WITH WARM WATER PRESSURE WASH NOT TO EXCEED 400 PSI.
B. REPOINT MASONRY 100% INCLUDING PAVED ENTRANCE TERRACES UNLESS INDICATED OTHERWISE BY NOTE 1.
C. REPLACE EXTERIOR SEALANT JOINTS 100%.
D. REPLACE WEATHER STRIPPING AND GASKETS AT WINDOWS AND CURTAIN WALLS 100%.
E. REPLACE MORTAR JOINTS BETWEEN MARBLE PANELS AND CONCRETE SOFFIT WITH SOFT JOINT AT EACH COLUMN.
F. REPLACE SOFT JOINTS IN CONCRETE RETAINING WALLS 100%.
G. REMOVE DEBRIS FROM RETAINING WALL DRAINS 100%.
H. TRIM/REMOVE VEGETATION WITHIN 2 FEET OF THE BUILDING.
I. REMOVE GROUNDHOGS FROM WEST LAWN AND BACKFILL TUNNELS.
J. REMOVE RUST STAINS FROM GRANITE PAVING 100%.


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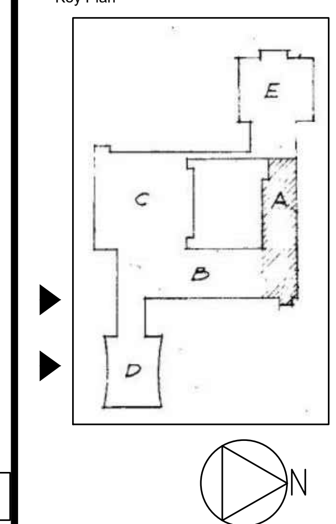
**Building 101**
**100 Bureau Drive**
**Gaithersburg, MD 20899**

Job # 18035

Date: Issue:
NOT FOR CONSTRUCTION

Key Plan

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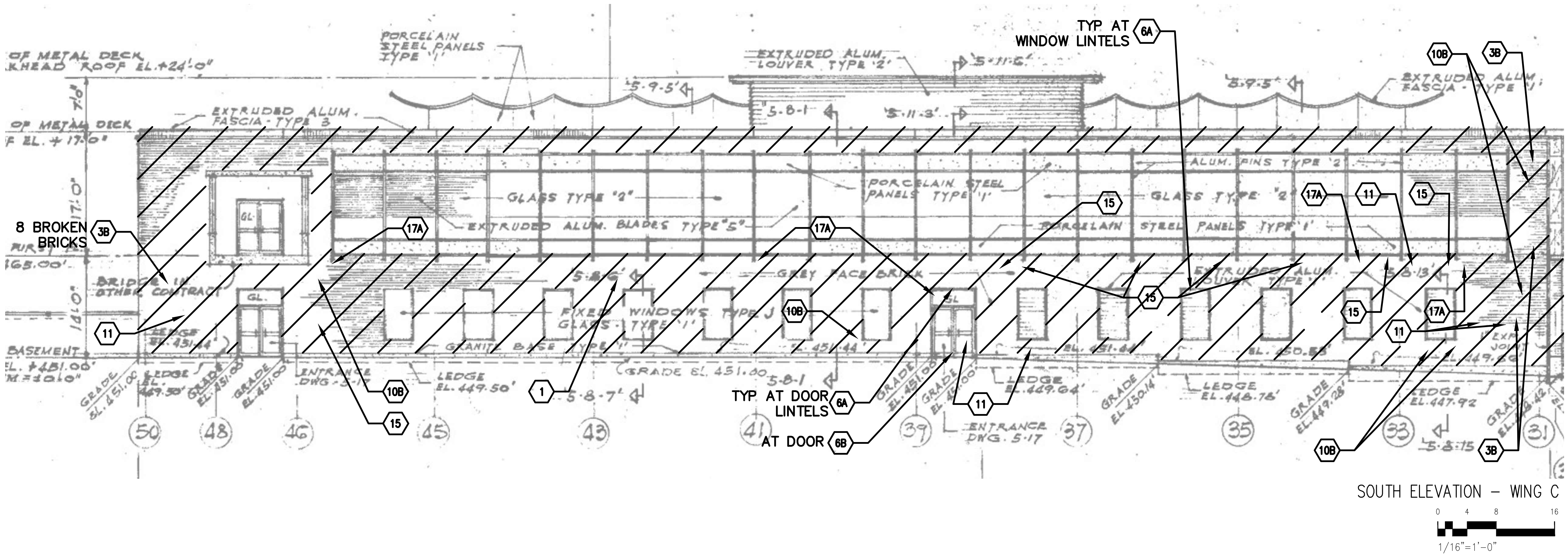
Drawn: Meredith Wilson
Checked: XXX
Scale: 1/16" = 1'-0"

Sheet Title:
**South Elevation - Wings B and D**



Sheet #
**A104**




SOUTH ELEVATION – WING C

## KEY NOTES

1. WHERE HATCHED, REPOINT PERCENTAGE SHOWN IN LIEU OF 100% REPOINTING. 10% 30%
2. REMOVE BIOLOGICAL GROWTH WITH ARCHITECTURAL BIOCIDE.

3A. REPAIR CRACK WITH INJECTION GROUT. ASSUME FULL HEIGHT OF STONE AT EACH LOCATION.

3B. STITCH BRICK CRACKS WITH STEEL RODS AND REPLACE CRACKED BRICKS.

3C. NO ACTION AT CRACKED PAVER.

4. REPAIR SPALL WITH STONE DUTCHMAN THAT MATCHES EXISTING IN COLOR, TEXTURE, GRAIN, AND PROFILE. ASSUME 8" X 8" EACH.
5. REPAIR SPALL WITH PATCHING MORTAR THAT MATCHES EXISTING MASONRY IN COLOR, TEXTURE, AND PROFILE. ASSUME 6" X 6" EACH.

6A. PREPARE, PRIME, AND REPAINT CORRODED STEEL.

6B. CLEAN POLISHED METAL TO REMOVE CORROSION.

7. REMOVE VEGETATION CONTRIBUTING TO EROSION.
8. PIN STONE AT AREA OF INCIPIENT SPALL USING THREADED STAINLESS–STEEL ROD.
9. REMOVE GYPSUM CRUST. ASSUME 1 SQUARE FOOT EACH.

10A. CLEAN COPPER STAIN ON MASONRY WITH POULTICE. APPLY POULTICE AT EACH LOCATION INDICATED OVER FULL FACE OF STONE FROM JOINT TO JOINT. ASSUME UP TO 2 APPLICATIONS AT EACH INSTANCE.

10B. REMOVE RUST STAIN. ASSUME 2 SQUARE FEET EACH.

11. REMOVE MASTIC/PAINT WITH MASTIC/PAINT REMOVER. ASSUME 1 SQUARE FOOT EACH.

12A. CLEAN OUT DRAINAGE PORTS AT BOWING MARBLE PANEL.

12B. REMOVE STONE AND RESET.

12C. REMOVE DISPLACED PAVERS. REGRADE AND RESET.

13. CLEAN EFFLORESCENCE.
14. CLEAN HEAVY SOILING WITH ALKALINE CHEMICAL CLEANERS AND COLD WATER WASH NOT TO EXCEED 400 PSI.
15. REMOVE ABANDONED METAL FASTENER. PATCH HOLE WITH PATCHING MORTAR THAT MATCHES EXISTING MASONRY IN COLOR, TEXTURE, AND PROFILE.
16. REMOVE FAILED AREA OF CEMENT STUCCO. PATCH WITH CEMENT STUCCO TO MATCH EXISTING. ASSUME 2 SQUARE FEET EACH.

17A. REMOVE INSECT NEST.

17B. REMOVE BIRD NEST.

18. REMOVE CALCIUM CRUST.
19. SEAL GAPS IN FLASHING.
20. REPAIR WARPED FLASHING.
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## GENERAL NOTES

A. CLEAN ALL EXTERIOR MASONRY WITH WARM WATER PRESSURE WASH NOT TO EXCEED 400 PSI.

B. REPOINT MASONRY 100% INCLUDING PAVED ENTRANCE TERRACES UNLESS INDICATED OTHERWISE BY NOTE 1.

C. REPLACE EXTERIOR SEALANT JOINTS 100%.

D. REPLACE WEATHER STRIPPING AND GASKETS AT WINDOWS AND CURTAIN WALLS 100%.

E. REPLACE MORTAR JOINTS BETWEEN MARBLE PANELS AND CONCRETE SOFFIT WITH SOFT JOINT AT EACH COLUMN.

F. REPLACE SOFT JOINTS IN CONCRETE RETAINING WALLS 100%.

G. REMOVE DEBRIS FROM RETAINING WALL DRAINS 100%.

H. TRIM/REMOVE VEGETATION WITHIN 2 FEET OF THE BUILDING.

I. REMOVE GROUNDHOGS FROM WEST LAWN AND BACKFILL TUNNELS.

J. REMOVE RUST STAINS FROM GRANITE PAVING 100%.

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**NIST**

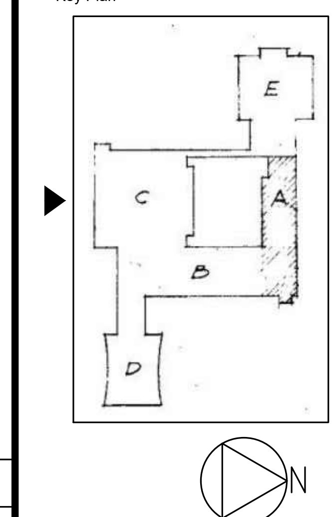
**Building 101**

**100 Bureau Drive**
**Gaithersburg, MD 20899**

Job # 18035

Date: Issue:
NOT FOR CONSTRUCTION

Key Plan

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Drawn: Meredith Wilson
Checked: XXX

Scale: 1/16" = 1'-0"

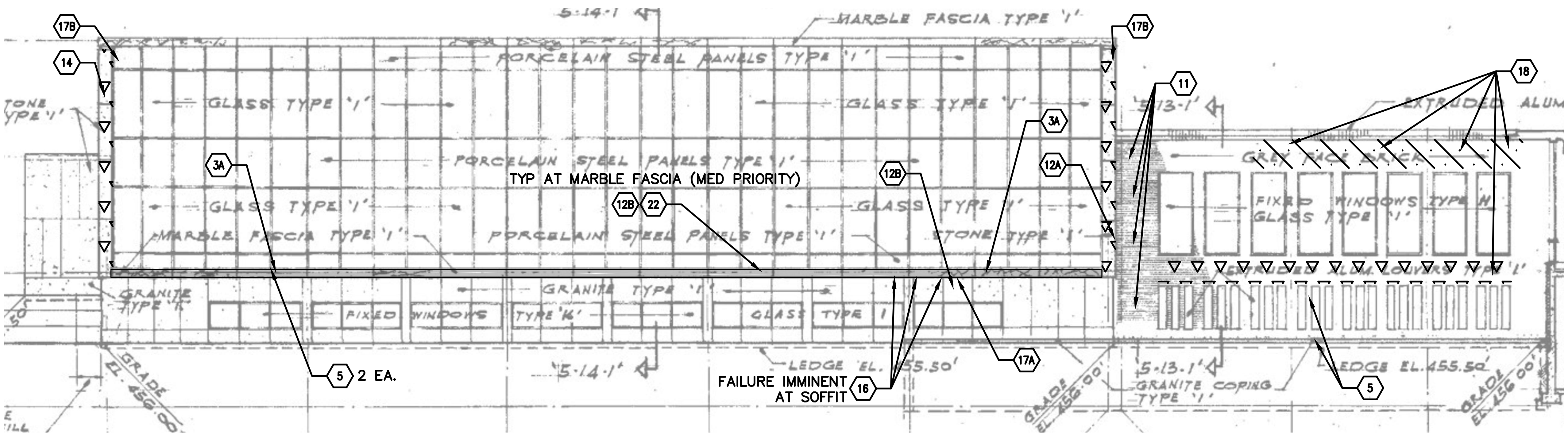
Sheet Title:

**East Elevation - Wing C**



Sheet #

**A105**




SOUTH ELEVATION – WING E

0 4 8 16

1/16"=1'-0"

## KEY NOTES

1. WHERE HATCHED, REPOINT PERCENTAGE SHOWN IN LIEU OF 100% REPOINTING. 10% 30%
2. REMOVE BIOLOGICAL GROWTH WITH ARCHITECTURAL BIOCIDE.
3A. REPAIR CRACK WITH INJECTION GROUT. ASSUME FULL HEIGHT OF STONE AT EACH LOCATION.
3B. STITCH BRICK CRACKS WITH STEEL RODS AND REPLACE CRACKED BRICKS.
3C. NO ACTION AT CRACKED PAVER.
4. REPAIR SPALL WITH STONE DUTCHMAN THAT MATCHES EXISTING IN COLOR, TEXTURE, GRAIN, AND PROFILE. ASSUME 8" X 8" EACH.
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7. REMOVE VEGETATION CONTRIBUTING TO EROSION.
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11. REMOVE MASTIC/PAINT WITH MASTIC/PAINT REMOVER. ASSUME 1 SQUARE FOOT EACH.
12A. CLEAN OUT DRAINAGE PORTS AT BOWING MARBLE PANEL.
12B. REMOVE STONE AND RESET.
12C. REMOVE DISPLACED PAVERS. REGRADE AND RESET.
13. CLEAN EFFLORESCENCE.
14. CLEAN HEAVY SOILING WITH ALKALINE CHEMICAL CLEANERS AND COLD WATER WASH NOT TO EXCEED 400 PSI.
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17A. REMOVE INSECT NEST.
17B. REMOVE BIRD NEST.
18. REMOVE CALCIUM CRUST.
19. SEAL GAPS IN FLASHING.
20. REPAIR WARPED FLASHING.
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22. REMOVE MARBLE PANELS FOR REINSTALLATION. REPLACE SHELF ANGLE WITH STAINLESS STEEL. REINSTALL PANELS.

## GENERAL NOTES

A. CLEAN ALL EXTERIOR MASONRY WITH WARM WATER PRESSURE WASH NOT TO EXCEED 400 PSI.
B. REPOINT MASONRY 100% INCLUDING PAVED ENTRANCE TERRACES UNLESS INDICATED OTHERWISE BY NOTE 1.
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F. REPLACE SOFT JOINTS IN CONCRETE RETAINING WALLS 100%.
G. REMOVE DEBRIS FROM RETAINING WALL DRAINS 100%.
H. TRIM/REMOVE VEGETATION WITHIN 2 FEET OF THE BUILDING.
I. REMOVE GROUNDHOGS FROM WEST LAWN AND BACKFILL TUNNELS.
J. REMOVE RUST STAINS FROM GRANITE PAVING 100%.

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**NIST**
**Building 101**

**100 Bureau Drive**
**Gaithersburg, MD 20899**

Job # 18035

Date: Issue:
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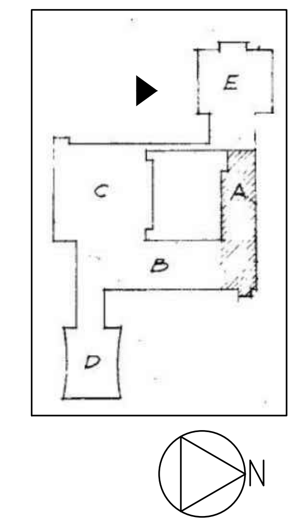
Key Plan

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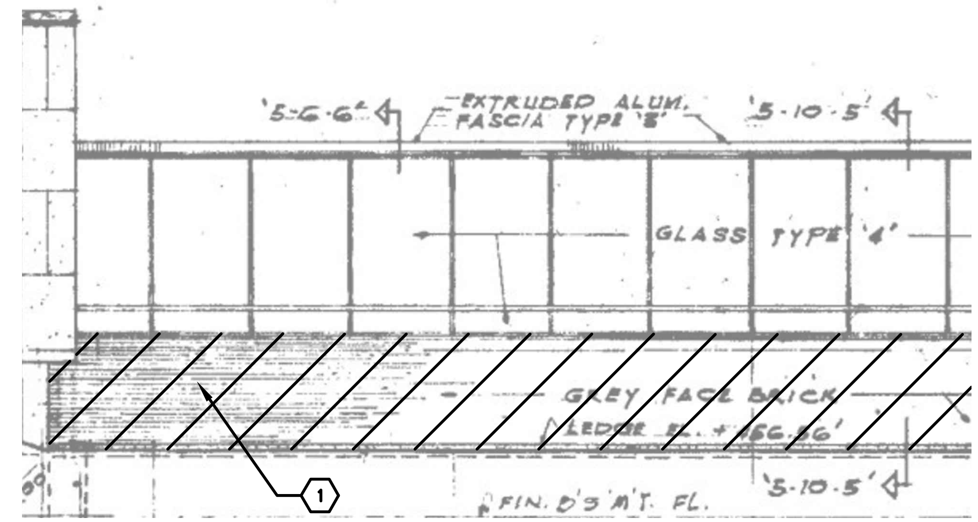
Drawn: Meredith Wilson
Checked: XXX
Scale: 1/16" = 1'-0"

Sheet Title: **South Elevation - Wing E**

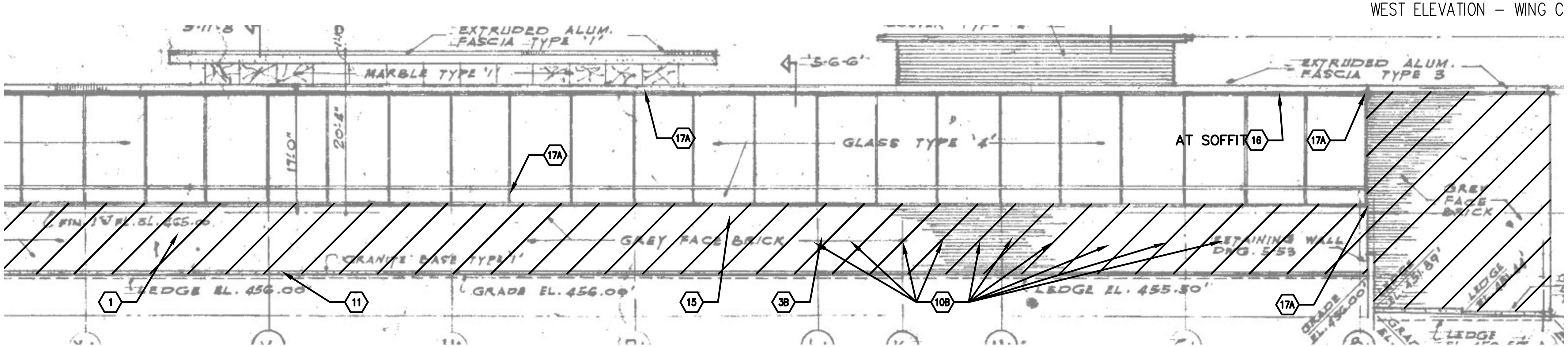


Sheet #

**A106**




WEST ELEVATION – WING C




WEST ELEVATION – WING C

0 4 8 16

1/16"=1'-0"

## KEY NOTES

⟨1⟩ WHERE HATCHED, REPOINT PERCENTAGE SHOWN IN LIEU OF 100% REPOINTING.
10% 30%

⟨2⟩ REMOVE BIOLOGICAL GROWTH WITH ARCHITECTURAL BIOCIDE.

⟨3A⟩ REPAIR CRACK WITH INJECTION GROUT. ASSUME FULL HEIGHT OF STONE AT EACH LOCATION.

⟨3B⟩ STITCH BRICK CRACKS WITH STEEL RODS AND REPLACE CRACKED BRICKS.

⟨3C⟩ NO ACTION AT CRACKED PAVER.

⟨4⟩ REPAIR SPALL WITH STONE DUTCHMAN THAT MATCHES EXISTING IN COLOR, TEXTURE, GRAIN, AND PROFILE. ASSUME 8" X 8" EACH.

⟨5⟩ REPAIR SPALL WITH PATCHING MORTAR THAT MATCHES EXISTING MASONRY IN COLOR, TEXTURE, AND PROFILE. ASSUME 6" X 6" EACH.

⟨6A⟩ PREPARE, PRIME, AND REPAINT CORRODED STEEL.

⟨6B⟩ CLEAN POLISHED METAL TO REMOVE CORROSION.

⟨7⟩ REMOVE VEGETATION CONTRIBUTING TO EROSION.

⟨8⟩ PIN STONE AT AREA OF INCIPIENT SPALL USING THREADED STAINLESS–STEEL ROD.

⟨9⟩ REMOVE GYPSUM CRUST. ASSUME 1 SQUARE FOOT EACH.

⟨10A⟩ CLEAN COPPER STAIN ON MASONRY WITH POULTICE. APPLY POULTICE AT EACH LOCATION INDICATED OVER FULL FACE OF STONE FROM JOINT TO JOINT. ASSUME UP TO 2 APPLICATIONS AT EACH INSTANCE.

⟨10B⟩ REMOVE RUST STAIN. ASSUME 2 SQUARE FEET EACH.

⟨11⟩ REMOVE MASTIC/PAINT WITH MASTIC/PAINT REMOVER. ASSUME 1 SQUARE FOOT EACH.

⟨12A⟩ CLEAN OUT DRAINAGE PORTS AT BOWING MARBLE PANEL.

⟨2B⟩ REMOVE STONE AND RESET.

⟨12C⟩ REMOVE DISPLACED PAVERS. REGRADE AND RESET.

⟨13⟩ CLEAN EFFLORESCENCE.

⟨14⟩ CLEAN HEAVY SOILING WITH ALKALINE CHEMICAL CLEANERS AND COLD WATER WASH NOT TO EXCEED 400 PSI.

⟨15⟩ REMOVE ABANDONED METAL FASTENER. PATCH HOLE WITH PATCHING MORTAR THAT MATCHES EXISTING MASONRY IN COLOR, TEXTURE, AND PROFILE.

⟨16⟩ REMOVE FAILED AREA OF CEMENT STUCCO. PATCH WITH CEMENT STUCCO TO MATCH EXISTING. ASSUME 2 SQUARE FEET EACH.

⟨17A⟩ REMOVE INSECT NEST.

⟨17B⟩ REMOVE BIRD NEST.

⟨18⟩ REMOVE CALCIUM CRUST.

⟨19⟩ SEAL GAPS IN FLASHING.

⟨20⟩ REPAIR WARPED FLASHING.

⟨21⟩ REBUILD CONCRETE STAIRS

⟨22⟩ REMOVE MARBLE PANELS FOR REINSTALLATION. REPLACE SHELF ANGLE WITH STAINLESS STEEL. REINSTALL PANELS.

## GENERAL NOTES

A. CLEAN ALL EXTERIOR MASONRY WITH WARM WATER PRESSURE WASH NOT TO EXCEED 400 PSI.

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E. REPLACE MORTAR JOINTS BETWEEN MARBLE PANELS AND CONCRETE SOFFIT WITH SOFT JOINT AT EACH COLUMN.

F. REPLACE SOFT JOINTS IN CONCRETE RETAINING WALLS 100%.

G. REMOVE DEBRIS FROM RETAINING WALL DRAINS 100%.

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Date: Issue:
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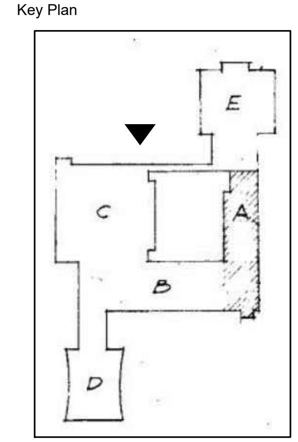
Key Plan

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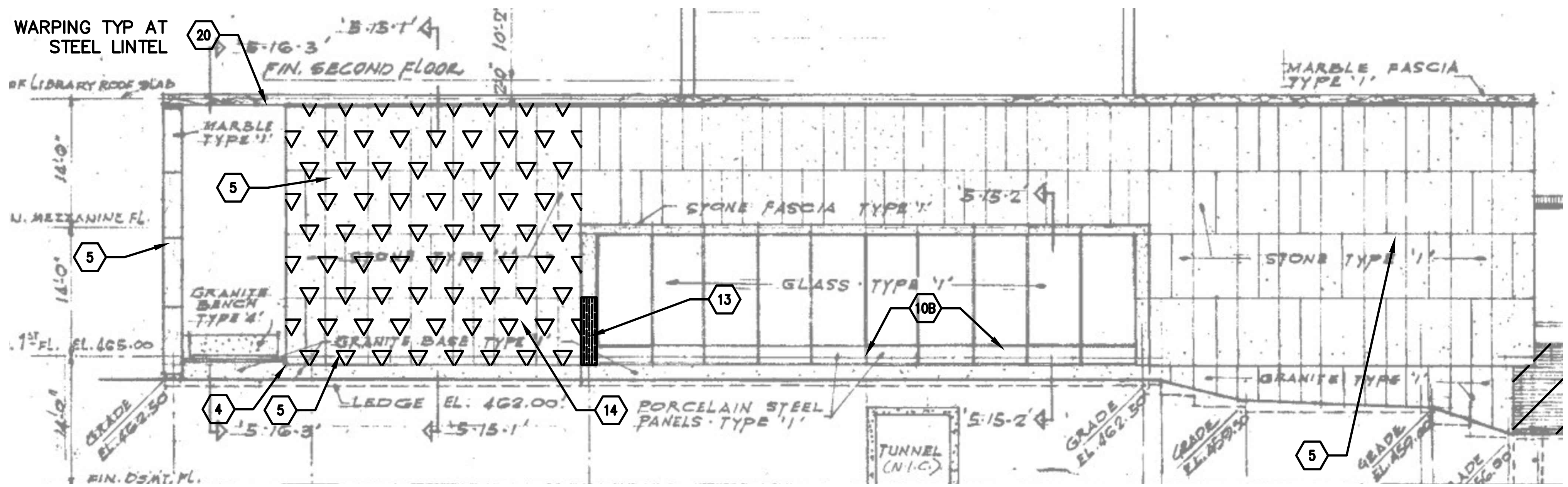
Drawn: Meredith Wilson
Checked: XXX
Scale: 1/16" = 1'-0"

Sheet Title:
**West Elevation - Wing C**



Sheet #
**A107**




WEST ELEVATION – WING E

0 4 8 16

1/16"=1'–0"

## KEY NOTES

1. WHERE HATCHED, REPOINT PERCENTAGE SHOWN IN LIEU OF 100% REPOINTING. 10% 30%
2. REMOVE BIOLOGICAL GROWTH WITH ARCHITECTURAL BIOCIDE.
- 3A. REPAIR CRACK WITH INJECTION GROUT. ASSUME FULL HEIGHT OF STONE AT EACH LOCATION.
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- 10B. REMOVE RUST STAIN. ASSUME 2 SQUARE FEET EACH.
11. REMOVE MASTIC/PAINT WITH MASTIC/PAINT REMOVER. ASSUME 1 SQUARE FOOT EACH.
- 12A. CLEAN OUT DRAINAGE PORTS AT BOWING MARBLE PANEL.
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## GENERAL NOTES

A. CLEAN ALL EXTERIOR MASONRY WITH WARM WATER PRESSURE WASH NOT TO EXCEED 400 PSI.

B. REPOINT MASONRY 100% INCLUDING PAVED ENTRANCE TERRACES UNLESS INDICATED OTHERWISE BY NOTE 1.

C. REPLACE EXTERIOR SEALANT JOINTS 100%.

D. REPLACE WEATHER STRIPPING AND GASKETS AT WINDOWS AND CURTAIN WALLS 100%.

E. REPLACE MORTAR JOINTS BETWEEN MARBLE PANELS AND CONCRETE SOFFIT WITH SOFT JOINT AT EACH COLUMN.

F. REPLACE SOFT JOINTS IN CONCRETE RETAINING WALLS 100%.

G. REMOVE DEBRIS FROM RETAINING WALL DRAINS 100%.

H. TRIM/REMOVE VEGETATION WITHIN 2 FEET OF THE BUILDING.

I. REMOVE GROUNDHOGS FROM WEST LAWN AND BACKFILL TUNNELS.

J. REMOVE RUST STAINS FROM GRANITE PAVING 100%.

JOHN MILNER ASSOCIATES
preservation
a division of MTFA Architecture

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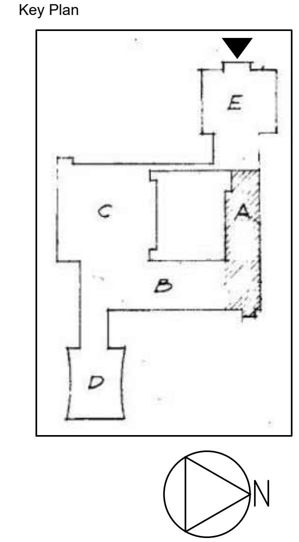
**NIST**
**Building 101**

**100 Bureau Drive**
**Gaithersburg, MD 20899**

Job # 18035

Date: Issue:
NOT FOR CONSTRUCTION

Key Plan

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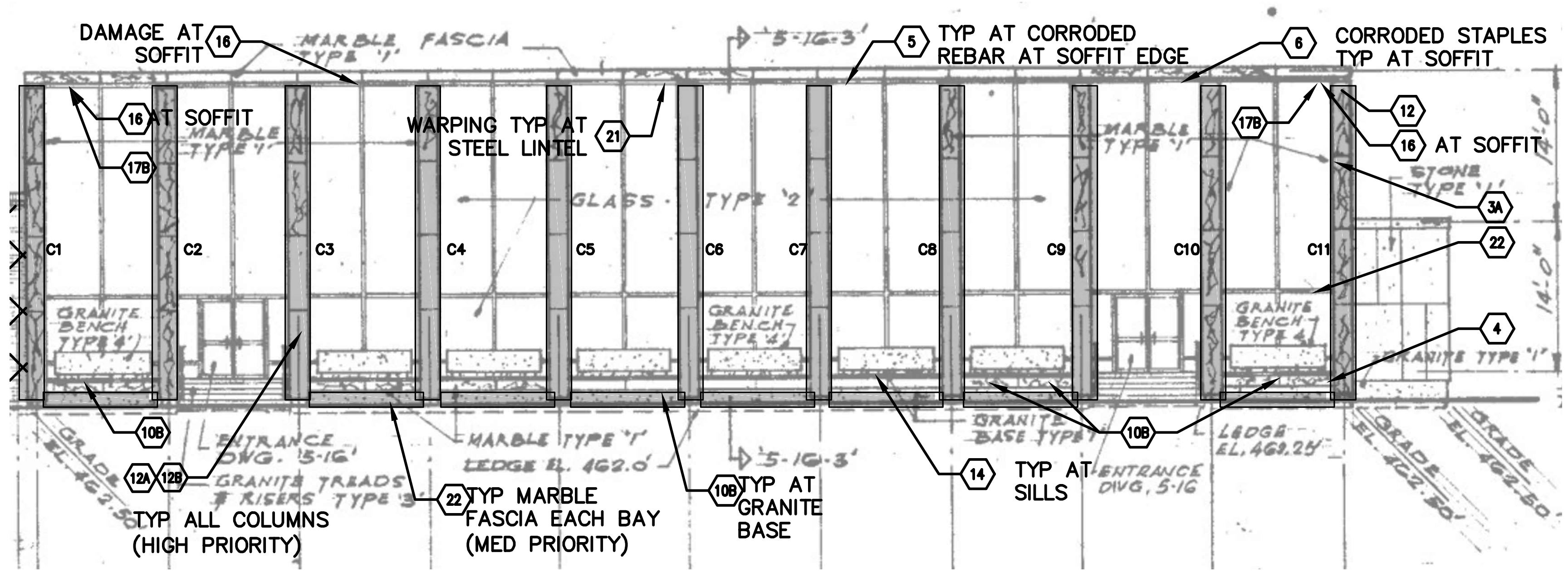
Scale: 1/16" = 1'-0"

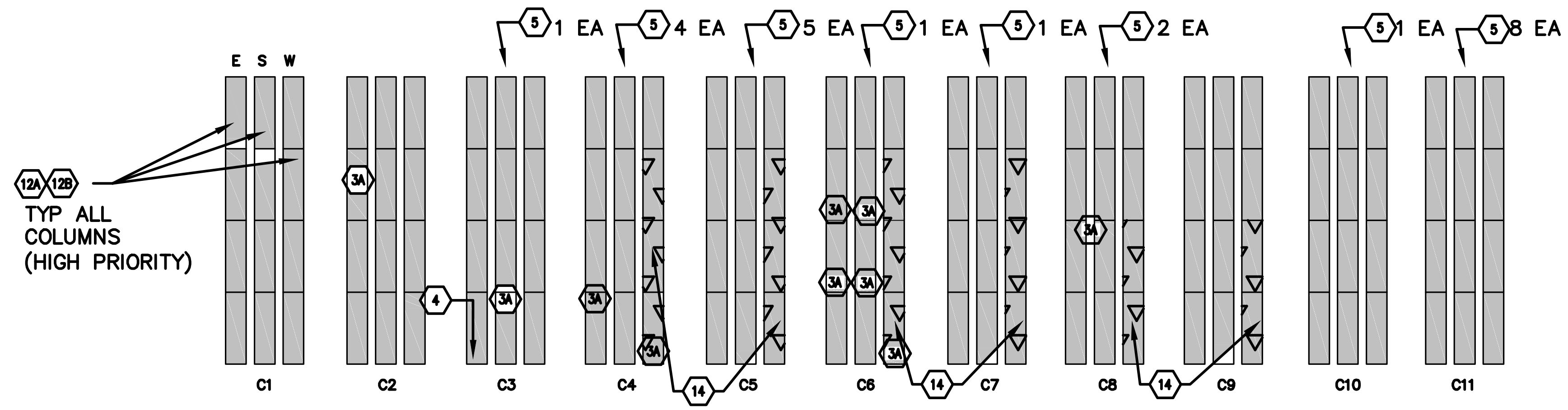
Sheet Title:
**West Elevation - Wing E**



Sheet #
**A108**




NORTH ELEVATION – WING E




SOUTH, EAST, AND WEST FACES OF COLUMNS

0 4 8 16
1/16"=1'-0"

## KEY NOTES

1. WHERE HATCHED, REPOINT PERCENTAGE SHOWN IN LIEU OF 100% REPOINTING. 10% 30%
2. REMOVE BIOLOGICAL GROWTH WITH ARCHITECTURAL BIOCIDE.
3A. REPAIR CRACK WITH INJECTION GROUT. ASSUME FULL HEIGHT OF STONE AT EACH LOCATION.
3B. STITCH BRICK CRACKS WITH STEEL RODS AND REPLACE CRACKED BRICKS.
3C. NO ACTION AT CRACKED PAVER.
4. REPAIR SPALL WITH STONE DUTCHMAN THAT MATCHES EXISTING IN COLOR, TEXTURE, GRAIN, AND PROFILE. ASSUME 8" X 8" EACH.
5. REPAIR SPALL WITH PATCHING MORTAR THAT MATCHES EXISTING MASONRY IN COLOR, TEXTURE, AND PROFILE. ASSUME 6" X 6" EACH.
6A. PREPARE, PRIME, AND REPAINT CORRODED STEEL.
6B. CLEAN POLISHED METAL TO REMOVE CORROSION.
7. REMOVE VEGETATION CONTRIBUTING TO EROSION.
8. PIN STONE AT AREA OF INCIPIENT SPALL USING THREADED STAINLESS-STEEL ROD.
9. REMOVE GYPSUM CRUST. ASSUME 1 SQUARE FOOT EACH.
10A. CLEAN COPPER STAIN ON MASONRY WITH POULTICE. APPLY POULTICE AT EACH LOCATION INDICATED OVER FULL FACE OF STONE FROM JOINT TO JOINT. ASSUME UP TO 2 APPLICATIONS AT EACH INSTANCE.
10B. REMOVE RUST STAIN. ASSUME 2 SQUARE FEET EACH.
11. REMOVE MASTIC/PAINT WITH MASTIC/PAINT REMOVER. ASSUME 1 SQUARE FOOT EACH.
12A. CLEAN OUT DRAINAGE PORTS AT BOWING MARBLE PANEL.
12B. REMOVE STONE AND RESET.
12C. REMOVE DISPLACED PAVERS. REGRADE AND RESET.
13. CLEAN EFFLORESCENCE.
14. CLEAN HEAVY SOILING WITH ALKALINE CHEMICAL CLEANERS AND COLD WATER WASH NOT TO EXCEED 400 PSI.
15. REMOVE ABANDONED METAL FASTENER. PATCH HOLE WITH PATCHING MORTAR THAT MATCHES EXISTING MASONRY IN COLOR, TEXTURE, AND PROFILE.
16. REMOVE FAILED AREA OF CEMENT STUCCO. PATCH WITH CEMENT STUCCO TO MATCH EXISTING. ASSUME 2 SQUARE FEET EACH.
17A. REMOVE INSECT NEST.
17B. REMOVE BIRD NEST.
18. REMOVE CALCIUM CRUST.
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20. REPAIR WARPED FLASHING.
21. REBUILD CONCRETE STAIRS
22. REMOVE MARBLE PANELS FOR REINSTALLATION. REPLACE SHELF ANGLE WITH STAINLESS STEEL. REINSTALL PANELS.

## GENERAL NOTES

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D. REPLACE WEATHER STRIPPING AND GASKETS AT WINDOWS AND CURTAIN WALLS 100%.
E. REPLACE MORTAR JOINTS BETWEEN MARBLE PANELS AND CONCRETE SOFFIT WITH SOFT JOINT AT EACH COLUMN.
F. REPLACE SOFT JOINTS IN CONCRETE RETAINING WALLS 100%.
G. REMOVE DEBRIS FROM RETAINING WALL DRAINS 100%.
H. TRIM/REMOVE VEGETATION WITHIN 2 FEET OF THE BUILDING.
I. REMOVE GROUNDHOGS FROM WEST LAWN AND BACKFILL TUNNELS.
J. REMOVE RUST STAINS FROM GRANITE PAVING 100%.


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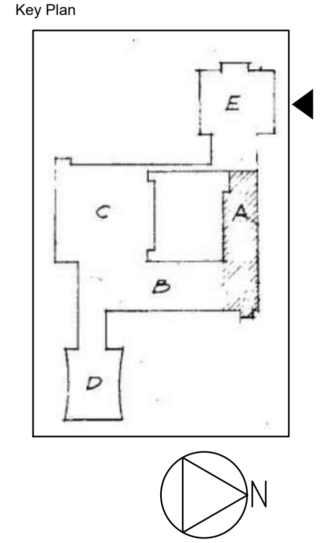
Key Plan

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Drawn: Meredith Wilson
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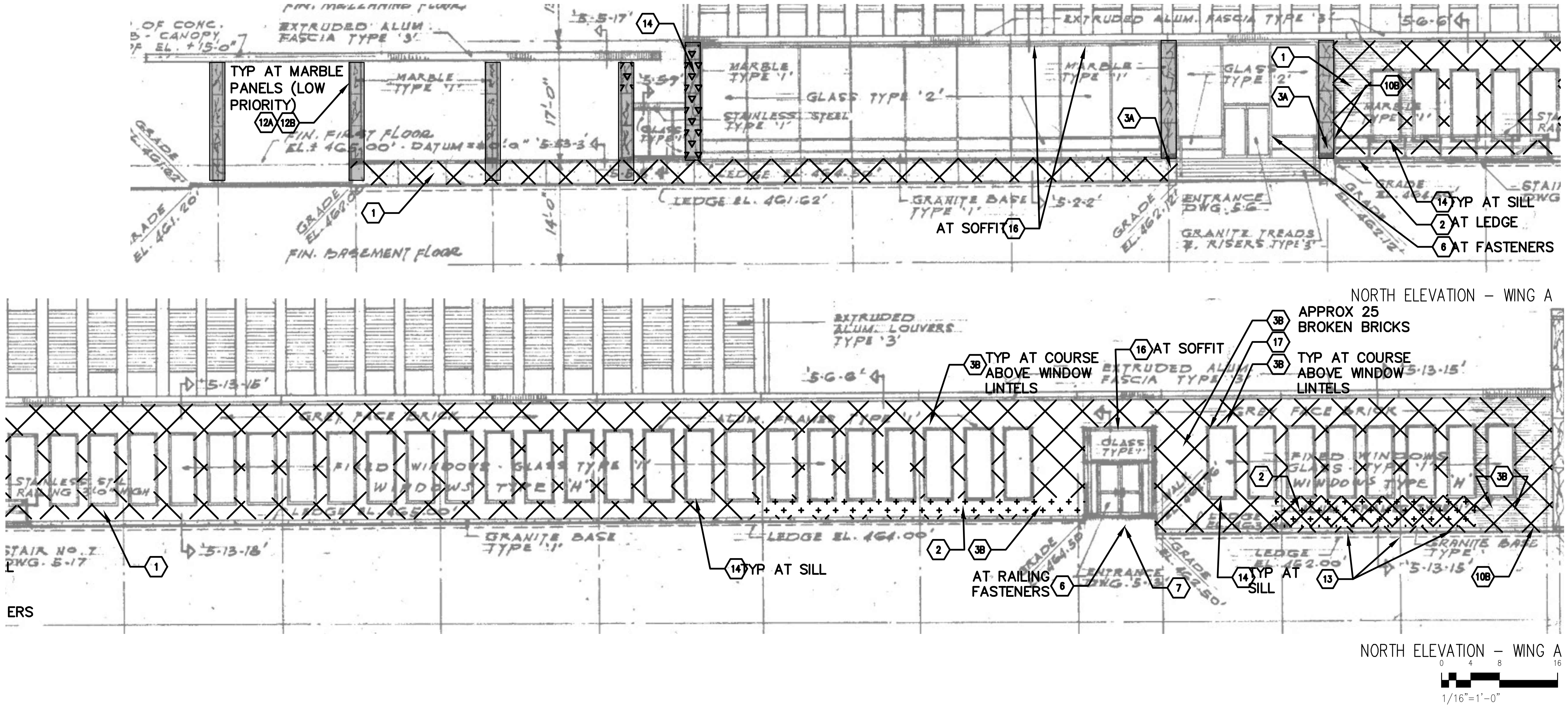
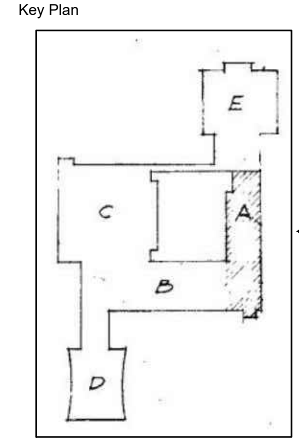
Scale: 1/16" = 1'-0"

Sheet Title:
**East Elevation - Wings A and B**



Sheet #
**A109**




## KEY NOTES

1. WHERE HATCHED, REPOINT PERCENTAGE SHOWN IN LIEU OF 100% REPOINTING.
   10% 30%
2. REMOVE BIOLOGICAL GROWTH WITH ARCHITECTURAL BIOCIDE.
- 3A. REPAIR CRACK WITH INJECTION GROUT. ASSUME FULL HEIGHT OF STONE AT EACH LOCATION.
- 3B. STITCH BRICK CRACKS WITH STEEL RODS AND REPLACE CRACKED BRICKS.
- 3C. NO ACTION AT CRACKED PAVER.
4. REPAIR SPALL WITH STONE DUTCHMAN THAT MATCHES EXISTING IN COLOR, TEXTURE, GRAIN, AND PROFILE. ASSUME 8" X 8" EACH.
5. REPAIR SPALL WITH PATCHING MORTAR THAT MATCHES EXISTING MASONRY IN COLOR, TEXTURE, AND PROFILE. ASSUME 6" X 6" EACH.
- 6A. PREPARE, PRIME, AND REPAINT CORRODED STEEL.
- 6B. CLEAN POLISHED METAL TO REMOVE CORROSION.
7. REMOVE VEGETATION CONTRIBUTING TO EROSION.
8. PIN STONE AT AREA OF INCIPIENT SPALL USING THREADED STAINLESS-STEEL ROD.
9. REMOVE GYPSUM CRUST. ASSUME 1 SQUARE FOOT EACH.
- 10A. CLEAN COPPER STAIN ON MASONRY WITH POULTICE. APPLY POULTICE AT EACH LOCATION INDICATED OVER FULL FACE OF STONE FROM JOINT TO JOINT. ASSUME UP TO 2 APPLICATIONS AT EACH INSTANCE.
- 10B. REMOVE RUST STAIN. ASSUME 2 SQUARE FEET EACH.
11. REMOVE MASTIC/PAINT WITH MASTIC/PAINT REMOVER. ASSUME 1 SQUARE FOOT EACH.
- 12A. CLEAN OUT DRAINAGE PORTS AT BOWING MARBLE PANEL.
- 12B. REMOVE STONE AND RESET.
- 12C. REMOVE DISPLACED PAVERS. REGRADE AND RESET.
13. CLEAN EFFLORESCENCE.
14. CLEAN HEAVY SOILING WITH ALKALINE CHEMICAL CLEANERS AND COLD WATER WASH NOT TO EXCEED 400 PSI.
15. REMOVE ABANDONED METAL FASTENER. PATCH HOLE WITH PATCHING MORTAR THAT MATCHES EXISTING MASONRY IN COLOR, TEXTURE, AND PROFILE.
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- 17A. REMOVE INSECT NEST.
- 17B. REMOVE BIRD NEST.
18. REMOVE CALCIUM CRUST.
19. SEAL GAPS IN FLASHING.
20. REPAIR WARPED FLASHING.
21. REBUILD CONCRETE STAIRS
22. REMOVE MARBLE PANELS FOR REINSTALLATION. REPLACE SHELF ANGLE WITH STAINLESS STEEL. REINSTALL PANELS.

## GENERAL NOTES

A. CLEAN ALL EXTERIOR MASONRY WITH WARM WATER PRESSURE WASH NOT TO EXCEED 400 PSI.

B. REPOINT MASONRY 100% INCLUDING PAVED ENTRANCE TERRACES UNLESS INDICATED OTHERWISE BY NOTE 1.

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E. REPLACE MORTAR JOINTS BETWEEN MARBLE PANELS AND CONCRETE SOFFIT WITH SOFT JOINT AT EACH COLUMN.

F. REPLACE SOFT JOINTS IN CONCRETE RETAINING WALLS 100%.

G. REMOVE DEBRIS FROM RETAINING WALL DRAINS 100%.

H. TRIM/REMOVE VEGETATION WITHIN 2 FEET OF THE BUILDING.

I. REMOVE GROUNDHOGS FROM WEST LAWN AND BACKFILL TUNNELS.

J. REMOVE RUST STAINS FROM GRANITE PAVING 100%.

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**NIST**

**Building 101**

**100 Bureau Drive**
**Gaithersburg, MD 20899**

Job # 18035

Date: Issue:
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-

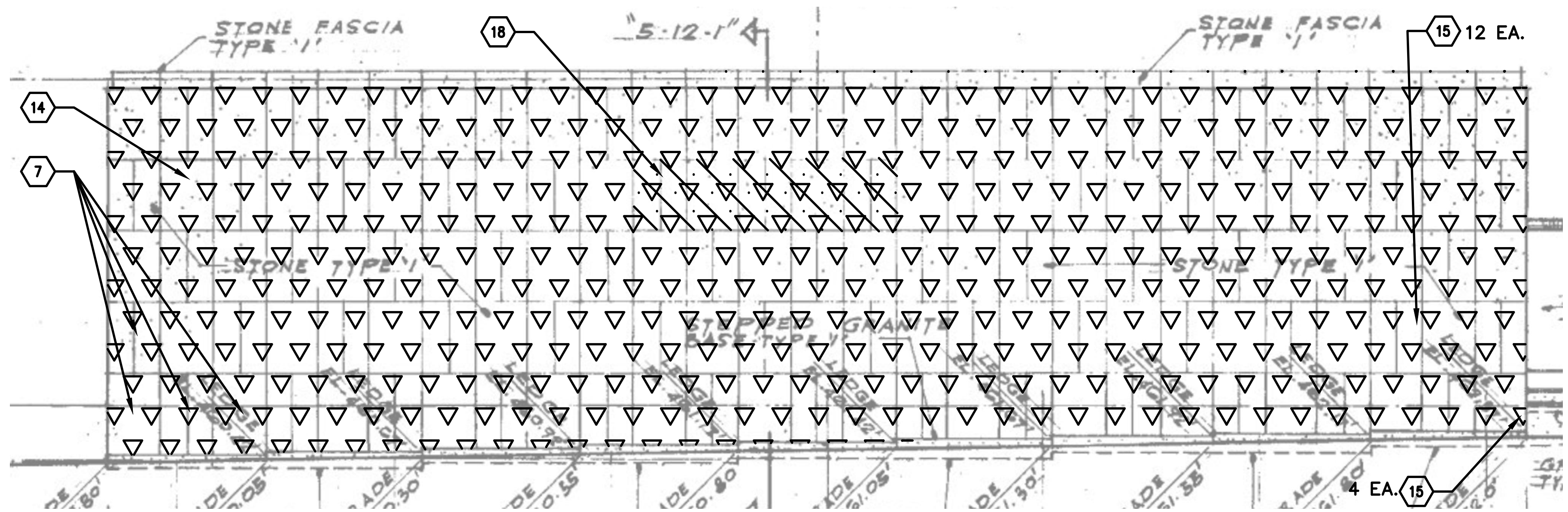
Drawn: Checked:
Meredith Wilson XXX

Scale: 1/16" = 1'-0"

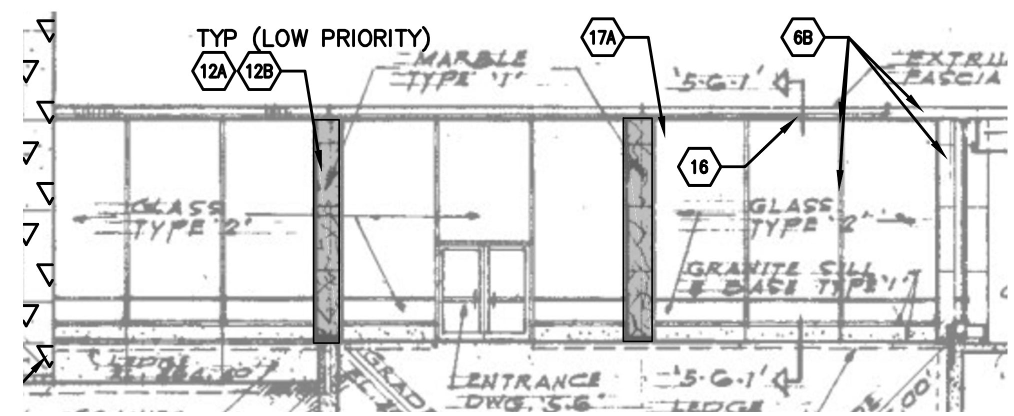
Sheet Title:
**North Elevation - Wing A**



Sheet #
**A110**




NORTH ELEVATION – WING D




NORTH ELEVATION – WING B

0 4 8 16

1/16"=1'-0"

## KEY NOTES

1. WHERE HATCHED, REPOINT PERCENTAGE SHOWN IN LIEU OF 100% REPOINTING. 10% 30%
2. REMOVE BIOLOGICAL GROWTH WITH ARCHITECTURAL BIOCIDE.
3A. REPAIR CRACK WITH INJECTION GROUT. ASSUME FULL HEIGHT OF STONE AT EACH LOCATION.
3B. STITCH BRICK CRACKS WITH STEEL RODS AND REPLACE CRACKED BRICKS.
3C. NO ACTION AT CRACKED PAVER.
4. REPAIR SPALL WITH STONE DUTCHMAN THAT MATCHES EXISTING IN COLOR, TEXTURE, GRAIN, AND PROFILE. ASSUME 8" X 8" EACH.
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6B. CLEAN POLISHED METAL TO REMOVE CORROSION.
7. REMOVE VEGETATION CONTRIBUTING TO EROSION.
8. PIN STONE AT AREA OF INCIPIENT SPALL USING THREADED STAINLESS–STEEL ROD.
9. REMOVE GYPSUM CRUST. ASSUME 1 SQUARE FOOT EACH.
10A. CLEAN COPPER STAIN ON MASONRY WITH POULTICE. APPLY POULTICE AT EACH LOCATION INDICATED OVER FULL FACE OF STONE FROM JOINT TO JOINT. ASSUME UP TO 2 APPLICATIONS AT EACH INSTANCE.
10B. REMOVE RUST STAIN. ASSUME 2 SQUARE FEET EACH.
11. REMOVE MASTIC/PAINT WITH MASTIC/PAINT REMOVER. ASSUME 1 SQUARE FOOT EACH.
12A. CLEAN OUT DRAINAGE PORTS AT BOWING MARBLE PANEL.
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12C. REMOVE DISPLACED PAVERS. REGRADE AND RESET.
13. CLEAN EFFLORESCENCE.
14. CLEAN HEAVY SOILING WITH ALKALINE CHEMICAL CLEANERS AND COLD WATER WASH NOT TO EXCEED 400 PSI.
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## GENERAL NOTES

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G. REMOVE DEBRIS FROM RETAINING WALL DRAINS 100%.
H. TRIM/REMOVE VEGETATION WITHIN 2 FEET OF THE BUILDING.
I. REMOVE GROUNDHOGS FROM WEST LAWN AND BACKFILL TUNNELS.
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**Building 101**

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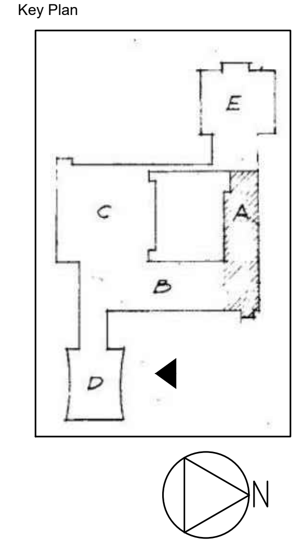
**Gaithersburg, MD 20899**

Job # 18035

Date: Issue:
NOT FOR CONSTRUCTION

Key Plan




-

Drawn: Meredith Wilson
Checked: XXX
Scale: 1/16" = 1'-0"

Sheet Title:
**North Elevation - Wings B and D**



Sheet #
**A111**

## KEY NOTES

1. WHERE HATCHED, REPOINT PERCENTAGE SHOWN IN LIEU OF 100% REPOINTING. 10% 30%
2. REMOVE BIOLOGICAL GROWTH WITH ARCHITECTURAL BIOCIDE.

3A. REPAIR CRACK WITH INJECTION GROUT. ASSUME FULL HEIGHT OF STONE AT EACH LOCATION.

3B. STITCH BRICK CRACKS WITH STEEL RODS AND REPLACE CRACKED BRICKS.

3C. NO ACTION AT CRACKED PAVER.

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6A. PREPARE, PRIME, AND REPAINT CORRODED STEEL.

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8. PIN STONE AT AREA OF INCIPIENT SPALL USING THREADED STAINLESS-STEEL ROD.
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10A. CLEAN COPPER STAIN ON MASONRY WITH POULTICE. APPLY POULTICE AT EACH LOCATION INDICATED OVER FULL FACE OF STONE FROM JOINT TO JOINT. ASSUME UP TO 2 APPLICATIONS AT EACH INSTANCE.

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10B. REMOVE RUST STAIN. ASSUME 2 SQUARE FEET EACH.

11. REMOVE MASTIC/PAINT WITH MASTIC/PAINT REMOVER. ASSUME 1 SQUARE FOOT EACH.

12A. CLEAN OUT DRAINAGE PORTS AT BOWING MARBLE PANEL.

12B. REMOVE DISPLACED STONE AND RESET.

12C. REMOVE DISPLACED PAVERS. REGRADE AND RESET.

13. CLEAN EFFLORESCENCE.

14. CLEAN HEAVY SOILING WITH ALKALINE CHEMICAL CLEANERS AND COLD WATER WASH NOT TO EXCEED 400 PSI.

15. REMOVE ABANDONED METAL FASTENER. PATCH HOLE WITH PATCHING MORTAR THAT MATCHES EXISTING MASONRY IN COLOR, TEXTURE, AND PROFILE.

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17A. REMOVE INSECT NEST.

17B. REMOVE BIRD NEST.

18. REMOVE CALCIUM CRUST.

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20. REPAIR WARPED FLASHING.

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## GENERAL NOTES

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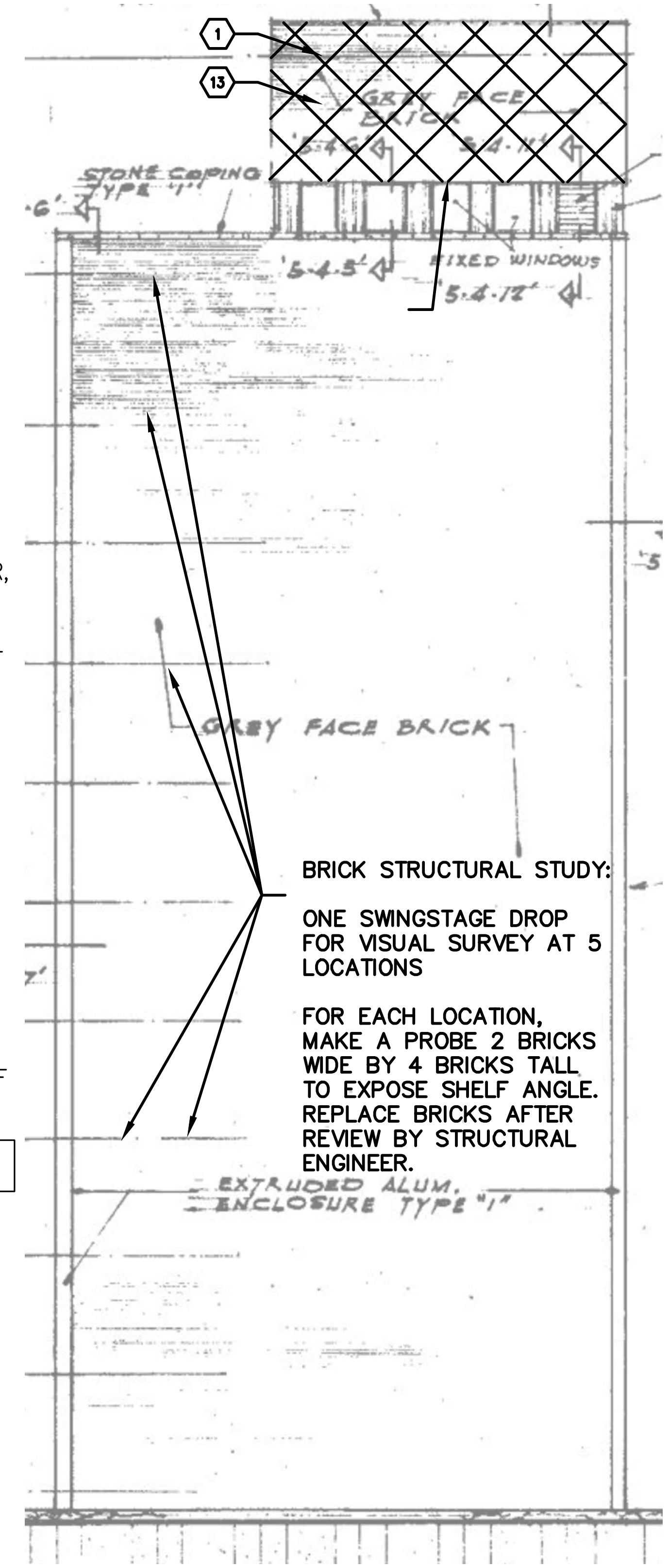
F. REPLACE SOFT JOINTS IN CONCRETE RETAINING WALLS 100%

G. REMOVE DEBRIS FROM RETAINING WALL DRAINS 100%

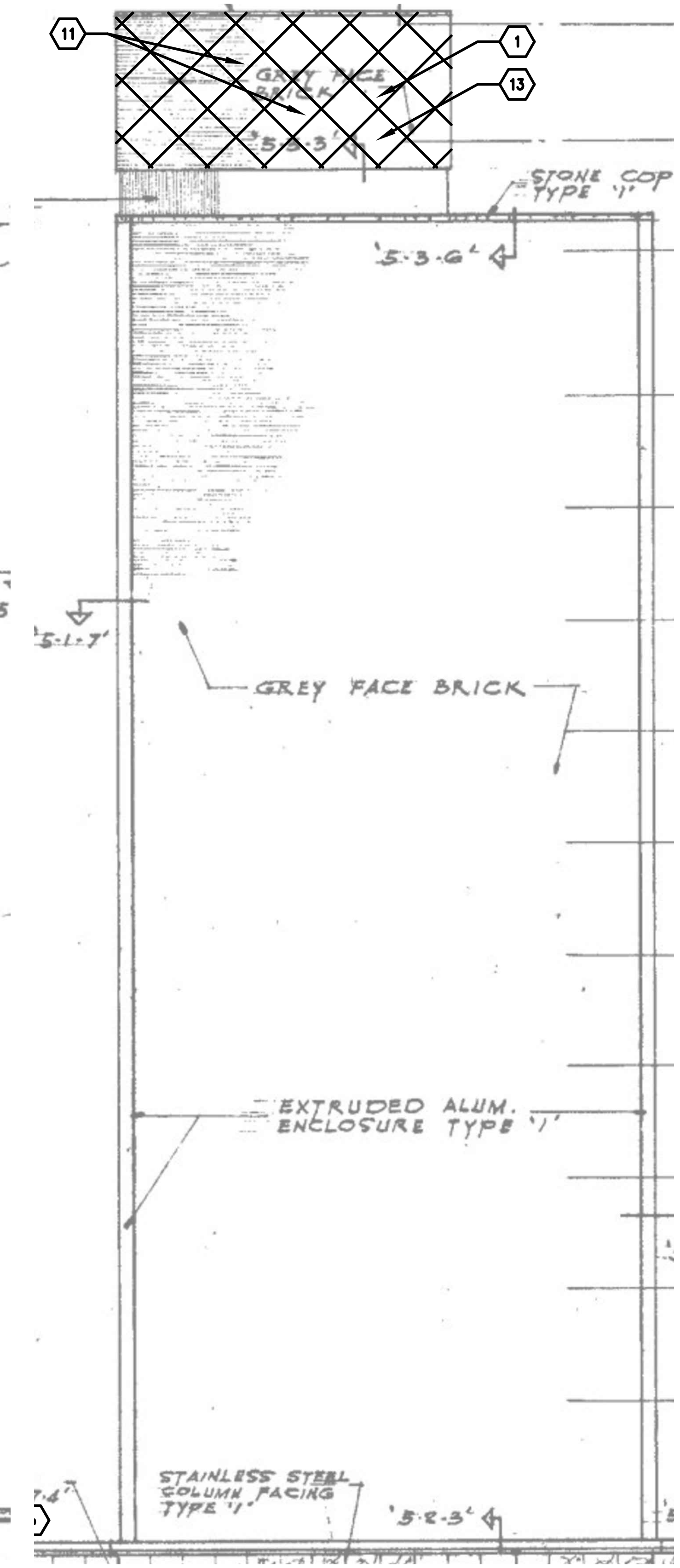
H. TRIM/REMOVE ANY VEGETATION THAT IS WITHIN 2 FEET OF THE BUILDING FACADE.

I. REMOVE GROUNDHOGS FROM WEST LAWN AND BACKFILL TUNNELS.

J. REMOVE RUST STAINS FROM GRANITE PAVING 100%.




OFFICE TOWER – WEST ELEVATION




OFFICE TOWER – EAST ELEVATION

0 4 8 16
1/16"=1'-0"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Job # 18035

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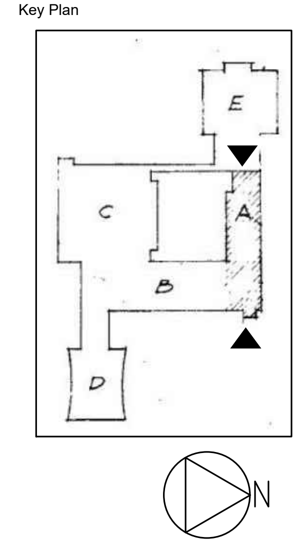
Key Plan

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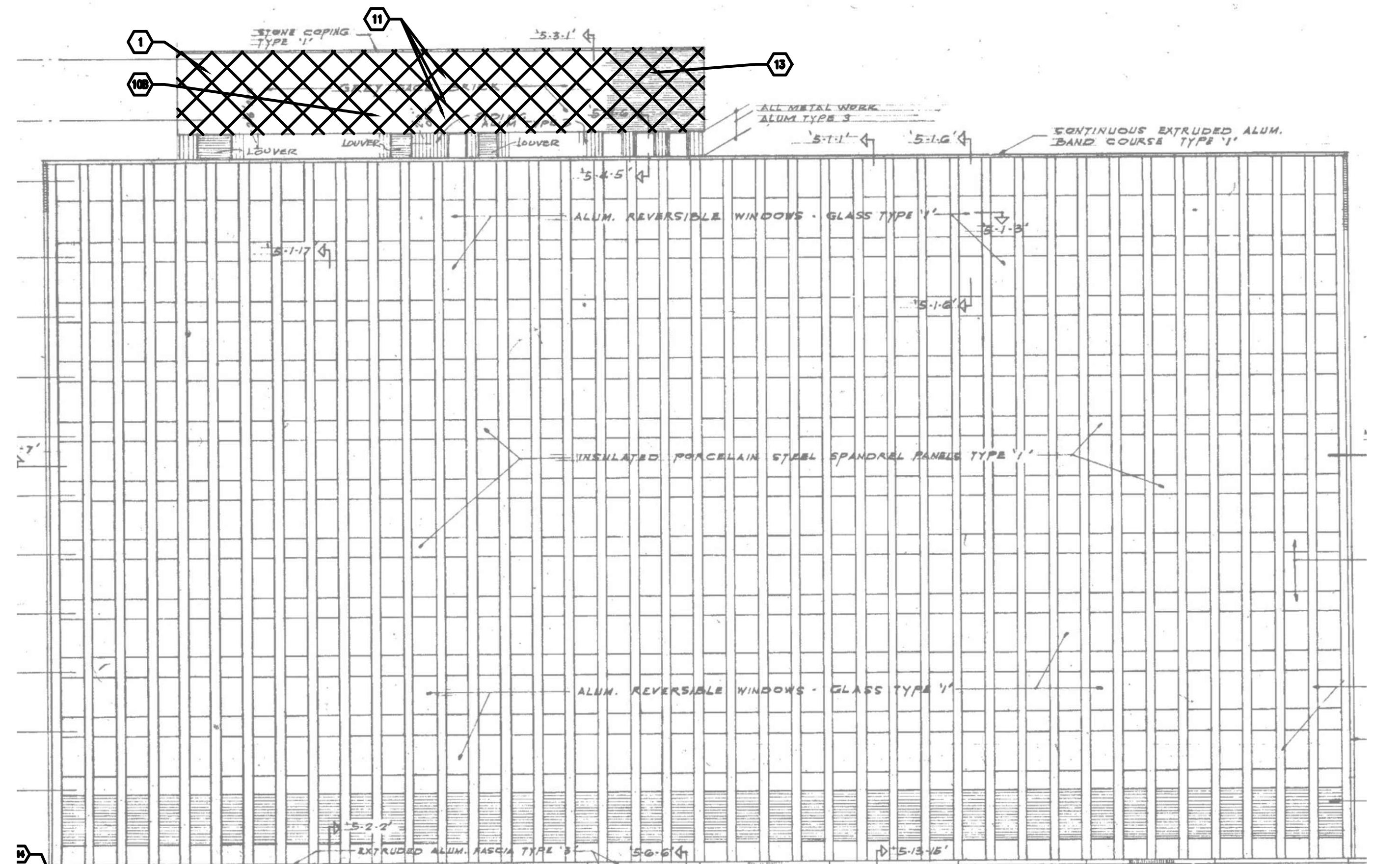
Drawn: Meredith Wilson
Checked: XXX
Scale: 1/16" = 1'-0"

Sheet Title:
**Office Tower - East and West Elevations**



Sheet #
**A112**




OFFICE TOWER – NORTH ELEVATION

0 8 16 32

1/32"=1'-0"

## KEY NOTES

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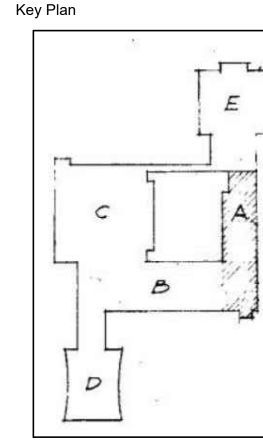
NOT FOR CONSTRUCTION

Key Plan

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Drawn: Meredith Wilson
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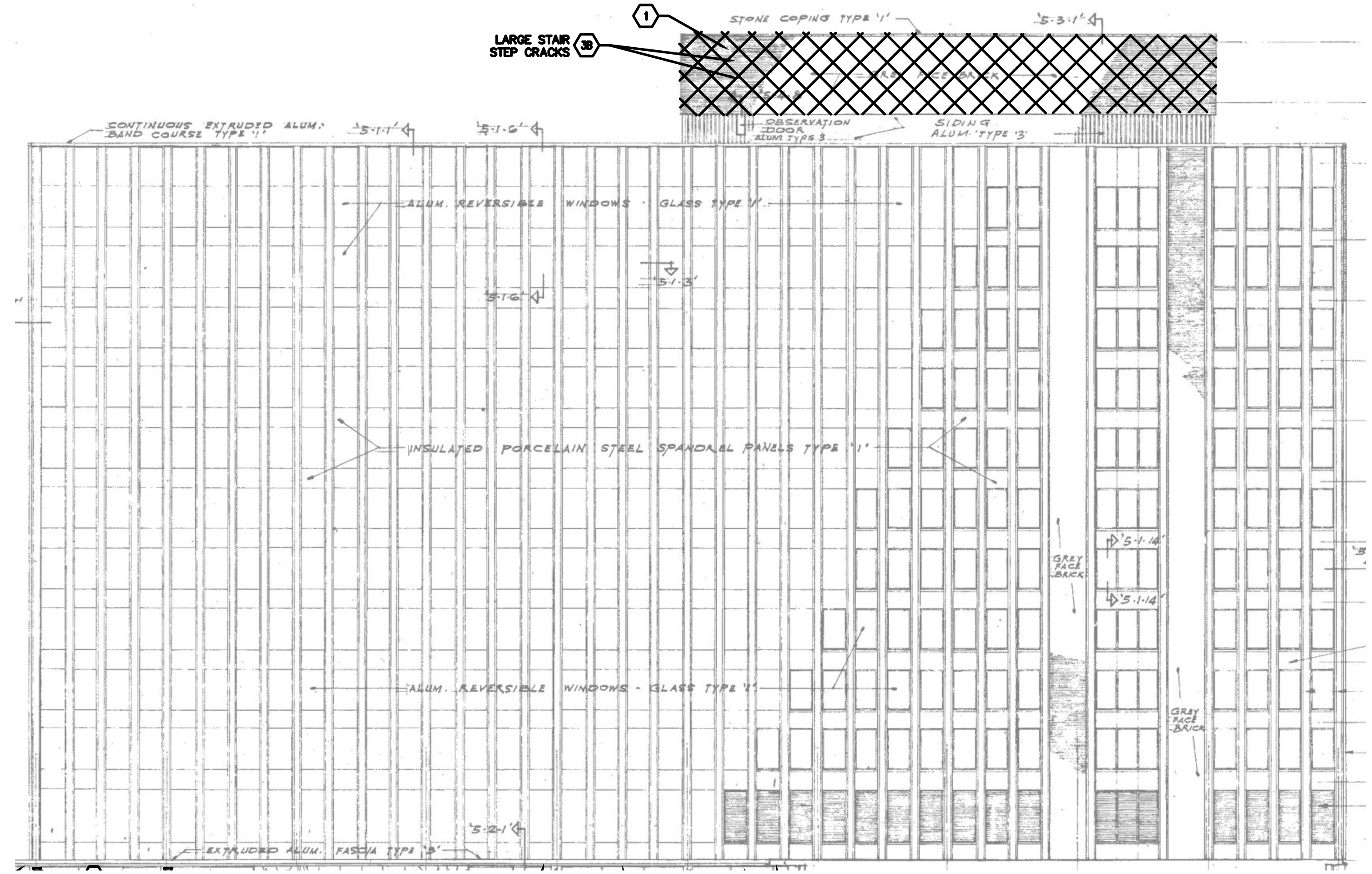
Scale: 1/32" = 1'-0"

Sheet Title:
**Office Tower - North Elevation**



Sheet #
**A113**




OFFICE TOWER – COURT ELEVATION LOOKING NORTH

0 8 16 32

1/32"=1'-0"

## KEY NOTES

1. WHERE HATCHED, REPOINT PERCENTAGE SHOWN IN LIEU OF 100% REPOINTING. 10% 30%
2. REMOVE BIOLOGICAL GROWTH WITH ARCHITECTURAL BIOCIDE.
3A. REPAIR CRACK WITH INJECTION GROUT. ASSUME FULL HEIGHT OF STONE AT EACH LOCATION.
3B. STITCH BRICK CRACKS WITH STEEL RODS AND REPLACE CRACKED BRICKS.
3C. NO ACTION AT CRACKED PAVER.
4. REPAIR SPALL WITH STONE DUTCHMAN THAT MATCHES EXISTING IN COLOR, TEXTURE, GRAIN, AND PROFILE. ASSUME 8" X 8" EACH.
5. REPAIR SPALL WITH PATCHING MORTAR THAT MATCHES EXISTING MASONRY IN COLOR, TEXTURE, AND PROFILE. ASSUME 6" X 6" EACH.
6A. PREPARE, PRIME, AND REPAINT CORRODED STEEL.
6B. CLEAN POLISHED METAL TO REMOVE CORROSION.
7. REMOVE VEGETATION CONTRIBUTING TO EROSION.
8. PIN STONE AT AREA OF INCIPIENT SPALL USING THREADED STAINLESS-STEEL ROD.
9. REMOVE GYPSUM CRUST. ASSUME 1 SQUARE FOOT EACH.
10A. CLEAN COPPER STAIN ON MASONRY WITH POULTICE. APPLY POULTICE AT EACH LOCATION INDICATED OVER FULL FACE OF STONE FROM JOINT TO JOINT. ASSUME UP TO 2 APPLICATIONS AT EACH INSTANCE.
10B. REMOVE RUST STAIN. ASSUME 2 SQUARE FEET EACH.
11. REMOVE MASTIC/PAINT WITH MASTIC/PAINT REMOVER. ASSUME 1 SQUARE FOOT EACH.
12A. CLEAN OUT DRAINAGE PORTS AT BOWING MARBLE PANEL.
12B. REMOVE STONE AND RESET.
12C. REMOVE DISPLACED PAVERS. REGRADE AND RESET.
13. CLEAN EFFLORESCENCE.
14. CLEAN HEAVY SOILING WITH ALKALINE CHEMICAL CLEANERS AND COLD WATER WASH NOT TO EXCEED 400 PSI.
15. REMOVE ABANDONED METAL FASTENER. PATCH HOLE WITH PATCHING MORTAR THAT MATCHES EXISTING MASONRY IN COLOR, TEXTURE, AND PROFILE.
16. REMOVE FAILED AREA OF CEMENT STUCCO. PATCH WITH CEMENT STUCCO TO MATCH EXISTING. ASSUME 2 SQUARE FEET EACH.
17A. REMOVE INSECT NEST.
17B. REMOVE BIRD NEST.
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## GENERAL NOTES

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E. REPLACE MORTAR JOINTS BETWEEN MARBLE PANELS AND CONCRETE SOFFIT WITH SOFT JOINT AT EACH COLUMN.
F. REPLACE SOFT JOINTS IN CONCRETE RETAINING WALLS 100%.
G. REMOVE DEBRIS FROM RETAINING WALL DRAINS 100%.
H. TRIM/REMOVE VEGETATION WITHIN 2 FEET OF THE BUILDING.
I. REMOVE GROUNDHOGS FROM WEST LAWN AND BACKFILL TUNNELS.
J. REMOVE RUST STAINS FROM GRANITE PAVING 100%.

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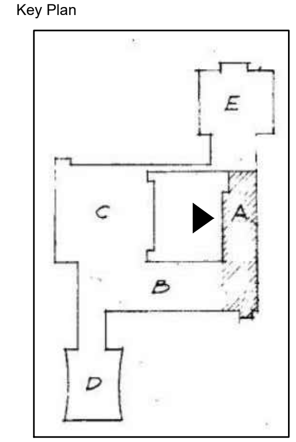
**NIST**
**Building 101**

**100 Bureau Drive**
**Gaithersburg, MD 20899**

Job # 18035

Date: Issue:
NOT FOR CONSTRUCTION

Key Plan

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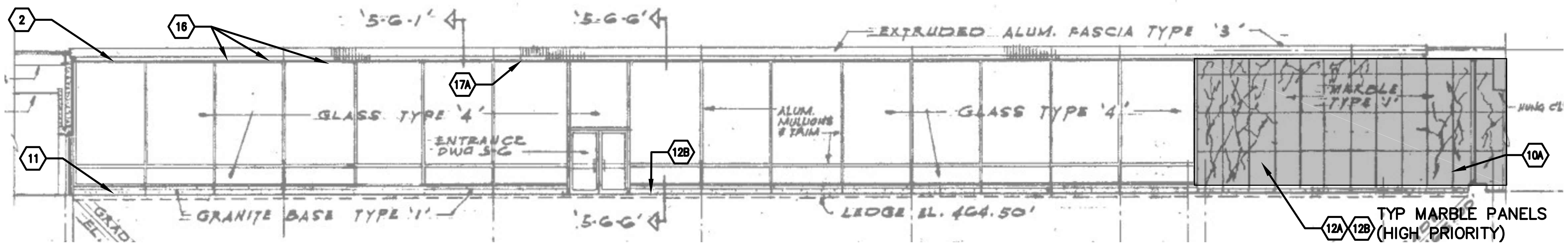
Drawn: Meredith Wilson
Checked: XXX
Scale: 1/32" = 1'-0"

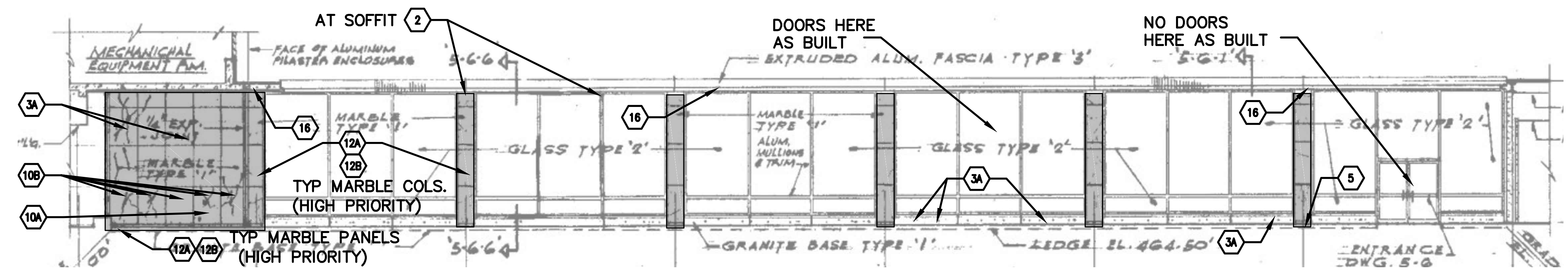
Sheet Title:
**Office Tower - Court Elevation Looking North**



Sheet #
**A114**




EAST COURT ELEVATION – LOOKING EAST




EAST COURT ELEVATION – LOOKING EAST

0 4 8 16

1/16"=1'-0"

## KEY NOTES

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- 3A REPAIR CRACK WITH INJECTION GROUT. ASSUME FULL HEIGHT OF STONE AT EACH LOCATION.
- 3B STITCH BRICK CRACKS WITH STEEL RODS AND REPLACE CRACKED BRICKS.
- 3C NO ACTION AT CRACKED PAVER.
- 4 REPAIR SPALL WITH STONE DUTCHMAN THAT MATCHES EXISTING IN COLOR, TEXTURE, GRAIN, AND PROFILE. ASSUME 8" X 8" EACH.
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- 6A PREPARE, PRIME, AND REPAINT CORRODED STEEL.
- 6B CLEAN POLISHED METAL TO REMOVE CORROSION.
- 7 REMOVE VEGETATION CONTRIBUTING TO EROSION.
- 8 PIN STONE AT AREA OF INCIPIENT SPALL USING THREADED STAINLESS-STEEL ROD.
- 9 REMOVE GYPSUM CRUST. ASSUME 1 SQUARE FOOT EACH.
- 10A CLEAN COPPER STAIN ON MASONRY WITH POULTICE. APPLY POULTICE AT EACH LOCATION INDICATED OVER FULL FACE OF STONE FROM JOINT TO JOINT. ASSUME UP TO 2 APPLICATIONS AT EACH INSTANCE.
- 10B REMOVE RUST STAIN. ASSUME 2 SQUARE FEET EACH.
- 11 REMOVE MASTIC/PAINT WITH MASTIC/PAINT REMOVER. ASSUME 1 SQUARE FOOT EACH.
- 12A CLEAN OUT DRAINAGE PORTS AT BOWING MARBLE PANEL.
- 12B REMOVE STONE AND RESET.
- 12C REMOVE DISPLACED PAVERS. REGRADE AND RESET.
- 13 CLEAN EFFLORESCENCE.
- 14 CLEAN HEAVY SOILING WITH ALKALINE CHEMICAL CLEANERS AND COLD WATER WASH NOT TO EXCEED 400 PSI.
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## GENERAL NOTES

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E. REPLACE MORTAR JOINTS BETWEEN MARBLE PANELS AND CONCRETE SOFFIT WITH SOFT JOINT AT EACH COLUMN.

F. REPLACE SOFT JOINTS IN CONCRETE RETAINING WALLS 100%.

G. REMOVE DEBRIS FROM RETAINING WALL DRAINS 100%.

H. TRIM/REMOVE VEGETATION WITHIN 2 FEET OF THE BUILDING.

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J. REMOVE RUST STAINS FROM GRANITE PAVING 100%.


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Job # 18035

Date: Issue:
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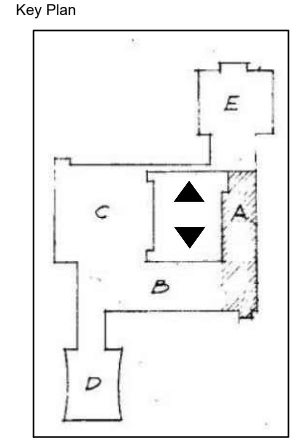
Key Plan

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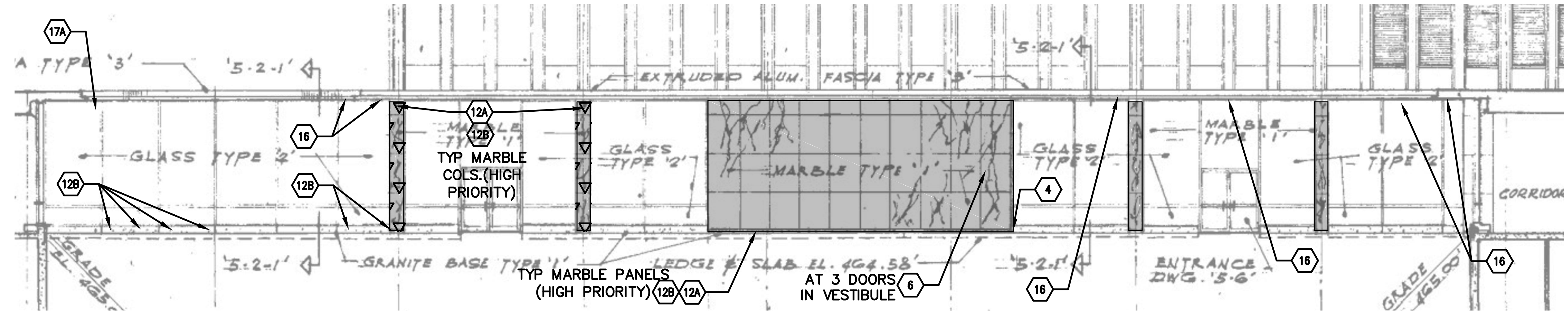
Scale: 1/16" = 1'-0"

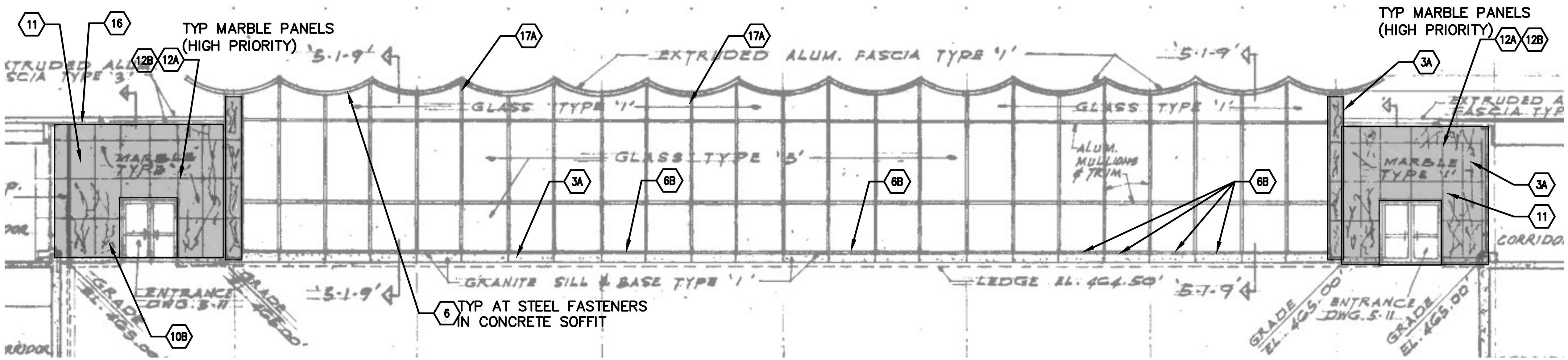
Sheet Title:
**East and West Court Elevations**



Sheet #
**A115**




SOUTH COURT ELEVATION – LOOKING SOUTH




SOUTH COURT ELEVATION – LOOKING SOUTH

0 4 8 16

1/16"=1'-0"

## KEY NOTES

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**NIST**
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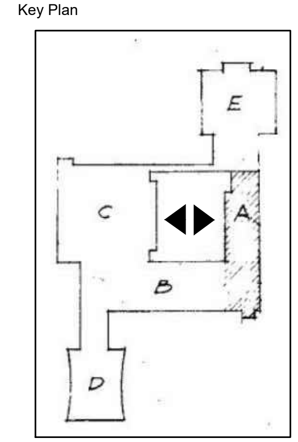
Job # 18035

Date: Issue:
NOT FOR CONSTRUCTION

Key Plan

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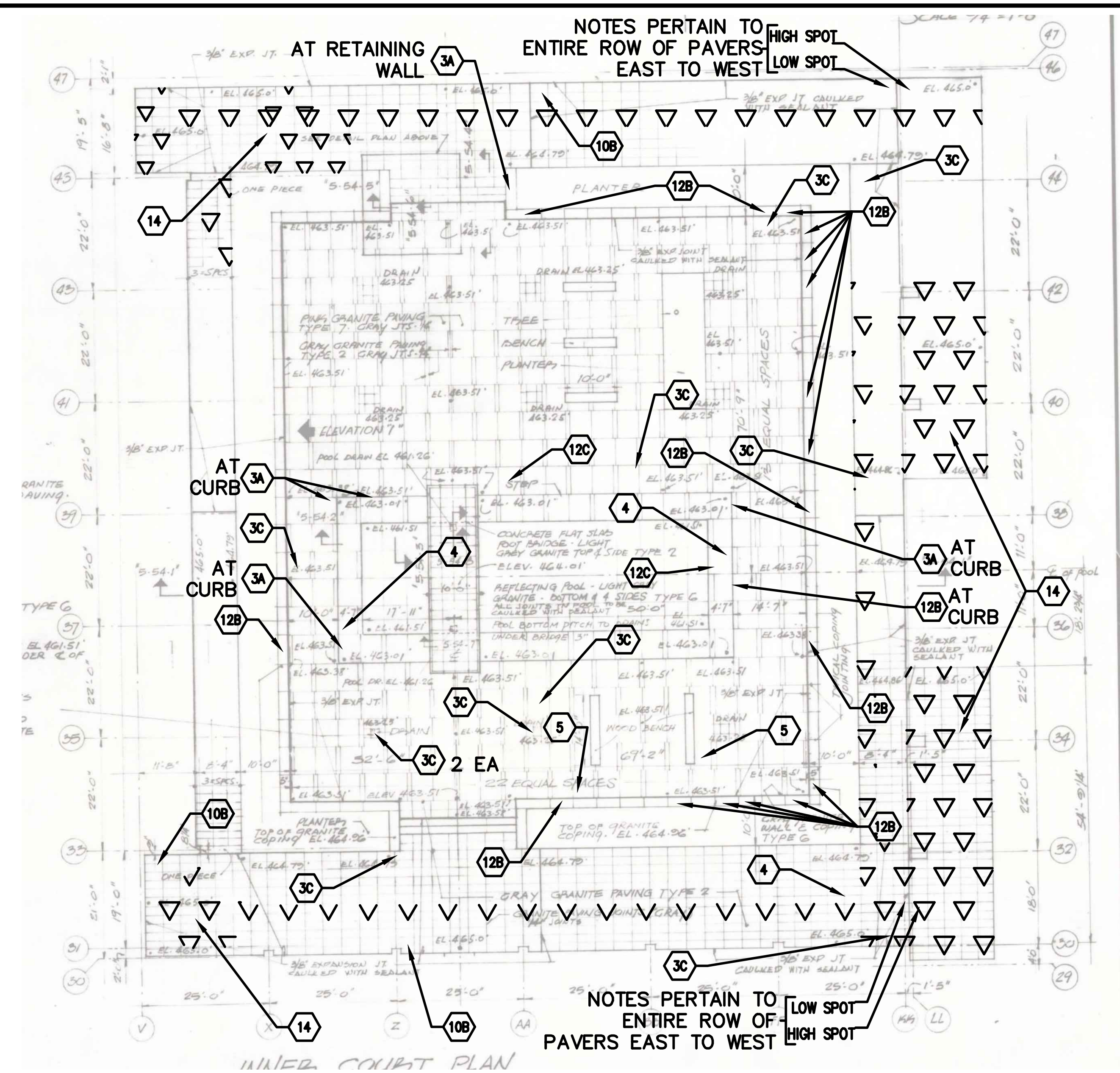
Drawn: Meredith Wilson
Checked: XXX
Scale: 1/16" = 1'-0"

Sheet Title:
**North and South Court Elevations**



Sheet #
**A116**




INNER COURT PLAN 0 8 16 32
1/32"=1'-0"

## KEY NOTES

(1) WHERE HATCHED, REPOINT PERCENTAGE SHOWN IN LIEU OF 100% REPOINTING.
10% 30%

(2) REMOVE BIOLOGICAL GROWTH WITH ARCHITECTURAL BIOCIDE.

(3A) REPAIR CRACK WITH INJECTION GROUT. ASSUME FULL HEIGHT OF STONE AT EACH LOCATION.

(3B) STITCH BRICK CRACKS WITH STEEL RODS AND REPLACE CRACKED BRICKS.

(3C) NO ACTION AT CRACKED PAVER.

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(6A) PREPARE, PRIME, AND REPAINT CORRODED STEEL.

(6B) CLEAN POLISHED METAL TO REMOVE CORROSION.

(7) REMOVE VEGETATION CONTRIBUTING TO EROSION.

(8) PIN STONE AT AREA OF INCIPIENT SPALL USING THREADED STAINLESS-STEEL ROD.

(9) REMOVE GYPSUM CRUST. ASSUME 1 SQUARE FOOT EACH.

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(10B) REMOVE RUST STAIN. ASSUME 2 SQUARE FEET EACH.

(11) REMOVE MASTIC/PAINT WITH MASTIC/PAINT REMOVER. ASSUME 1 SQUARE FOOT EACH.

(12A) CLEAN OUT DRAINAGE PORTS AT BOWING MARBLE PANEL.

(12B) REMOVE STONE AND RESET.

(12C) REMOVE DISPLACED PAVERS. REGRADE AND RESET.

(13) CLEAN EFFLORESCENCE.

(14) CLEAN HEAVY SOILING WITH ALKALINE CHEMICAL CLEANERS AND COLD WATER WASH NOT TO EXCEED 400 PSI.

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(18) REMOVE CALCIUM CRUST.

(19) SEAL GAPS IN FLASHING.

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## GENERAL NOTES

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**NIST**
**Building 101**

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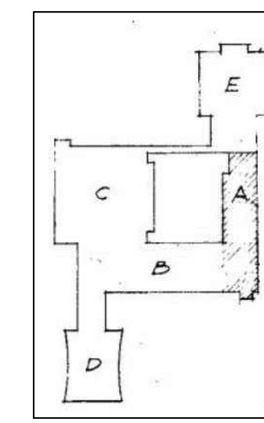
**Gaithersburg, MD 20899**

Job # 18035

Date: Issue:
NOT FOR CONSTRUCTION

Key Plan

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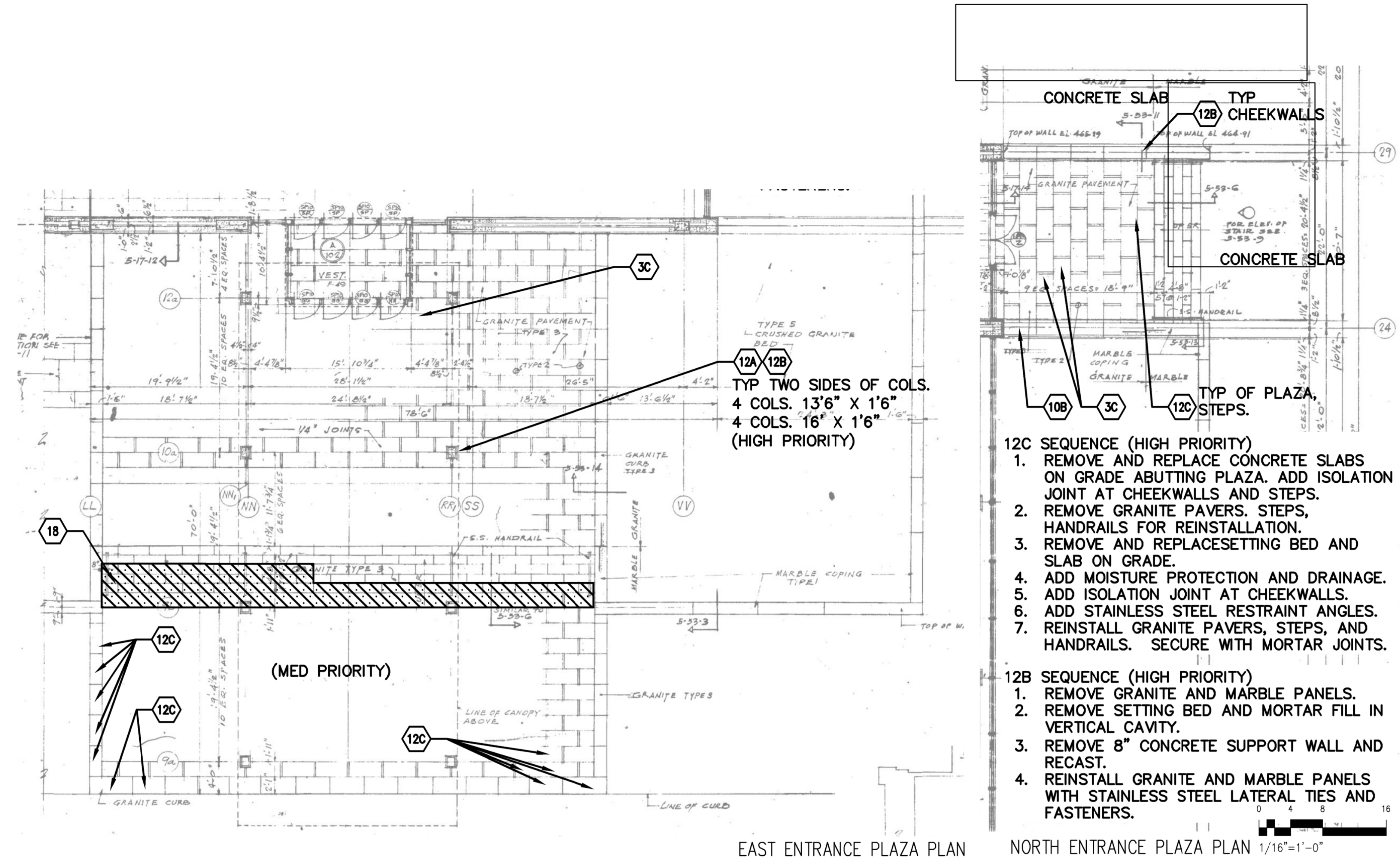
Drawn: Meredith Wilson
Checked: XXX
Scale: 1/32" = 1'-0"

Sheet Title:
**Inner Court Paving Plan**



Sheet #
**A117**

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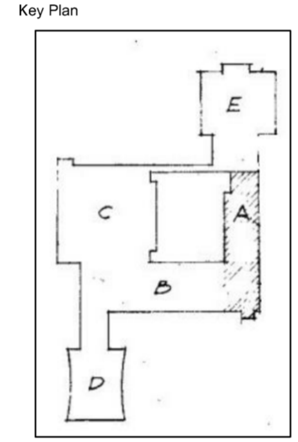


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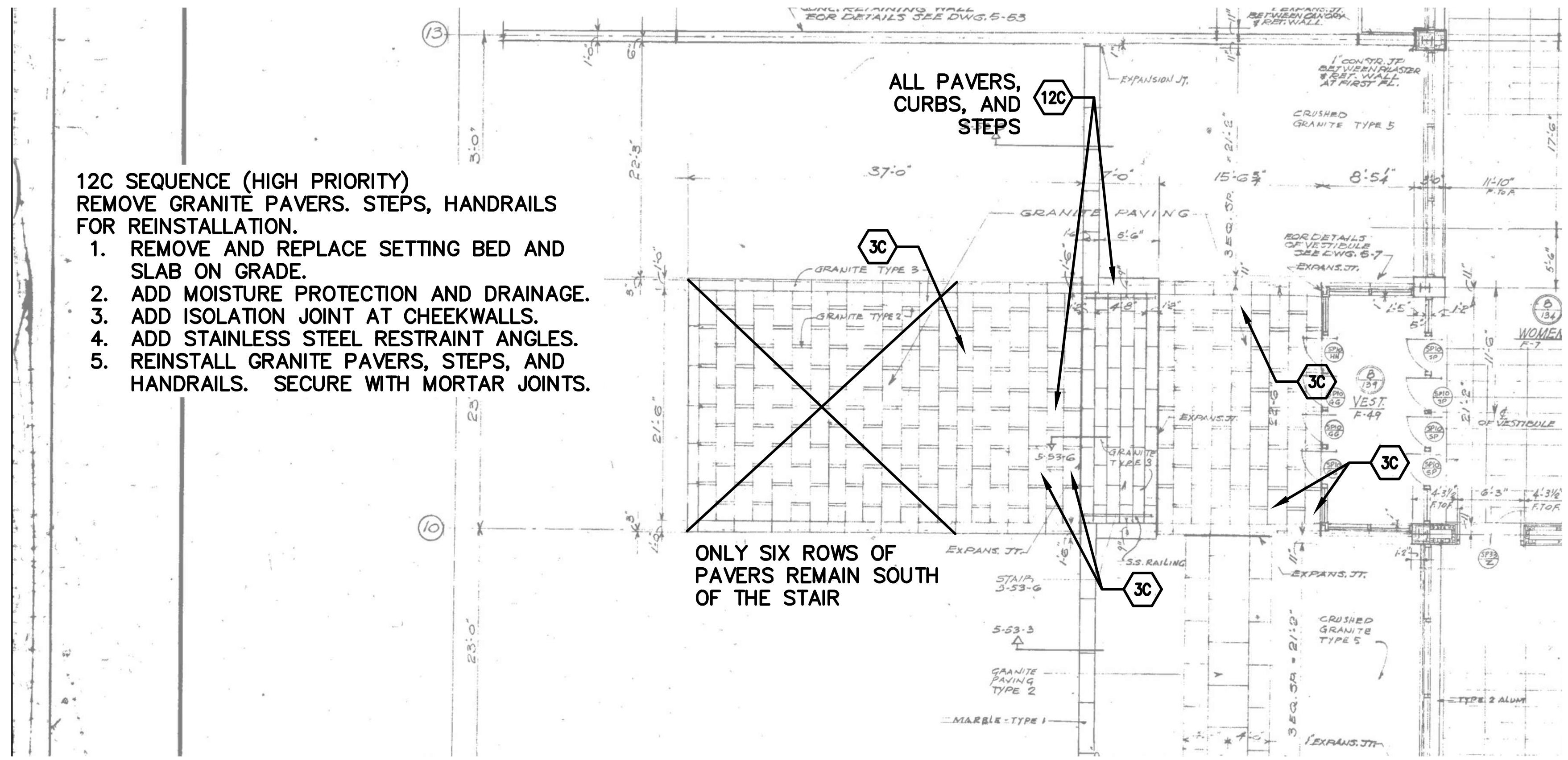
Drawn: Meredith Wilson
Checked: XXX
Scale: 1/16" = 1'-0"

Sheet Title:
**East and North Entrance Plaza Plan**



Sheet #
**A119**




SOUTH ENTRANCE PLAZA PLAN

0 4 8 16

1/16"=1'-0"

## KEY NOTES

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10% 30%

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(7) REMOVE VEGETATION CONTRIBUTING TO EROSION.

(8) PIN STONE AT AREA OF INCIPIENT SPALL USING THREADED STAINLESS-STEEL ROD.

(9) REMOVE GYPSUM CRUST. ASSUME 1 SQUARE FOOT EACH.

(10A) CLEAN COPPER STAIN ON MASONRY WITH POULTICE. APPLY POULTICE AT EACH LOCATION INDICATED OVER FULL FACE OF STONE FROM JOINT TO JOINT. ASSUME UP TO 2 APPLICATIONS AT EACH INSTANCE.

(10B) REMOVE RUST STAIN. ASSUME 2 SQUARE FEET EACH.

(11) REMOVE MASTIC/PAINT WITH MASTIC/PAINT REMOVER. ASSUME 1 SQUARE FOOT EACH.

(12A) CLEAN OUT DRAINAGE PORTS AT BOWING MARBLE PANEL.

(12B) REMOVE STONE AND RESET.

(12C) REMOVE DISPLACED PAVERS. REGRADE AND RESET.

(13) CLEAN EFFLORESCENCE.

(14) CLEAN HEAVY SOILING WITH ALKALINE CHEMICAL CLEANERS AND COLD WATER WASH NOT TO EXCEED 400 PSI.

(15) REMOVE ABANDONED METAL FASTENER. PATCH HOLE WITH PATCHING MORTAR THAT MATCHES EXISTING MASONRY IN COLOR, TEXTURE, AND PROFILE.

(16) REMOVE FAILED AREA OF CEMENT STUCCO. PATCH WITH CEMENT STUCCO TO MATCH EXISTING. ASSUME 2 SQUARE FEET EACH.

(17A) REMOVE INSECT NEST.

(17B) REMOVE BIRD NEST.

(18) REMOVE CALCIUM CRUST.

(19) SEAL GAPS IN FLASHING.

(20) REPAIR WARPED FLASHING.

(21) REBUILD CONCRETE STAIRS

(22) REMOVE MARBLE PANELS FOR REINSTALLATION. REPLACE SHELF ANGLE WITH STAINLESS STEEL. REINSTALL PANELS.

## GENERAL NOTES

A. CLEAN ALL EXTERIOR MASONRY WITH WARM WATER PRESSURE WASH NOT TO EXCEED 400 PSI.

B. REPOINT MASONRY 100% INCLUDING PAVED ENTRANCE TERRACES UNLESS INDICATED OTHERWISE BY NOTE 1.

C. REPLACE EXTERIOR SEALANT JOINTS 100%.

D. REPLACE WEATHER STRIPPING AND GASKETS AT WINDOWS AND CURTAIN WALLS 100%.

E. REPLACE MORTAR JOINTS BETWEEN MARBLE PANELS AND CONCRETE SOFFIT WITH SOFT JOINT AT EACH COLUMN.

F. REPLACE SOFT JOINTS IN CONCRETE RETAINING WALLS 100%.

G. REMOVE DEBRIS FROM RETAINING WALL DRAINS 100%.

H. TRIM/REMOVE VEGETATION WITHIN 2 FEET OF THE BUILDING.

I. REMOVE GROUNDHOGS FROM WEST LAWN AND BACKFILL TUNNELS.

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**NIST**
**Building 101**

**100 Bureau Drive**
**Gaithersburg, MD 20899**

Job # 18035

Date: Issue:
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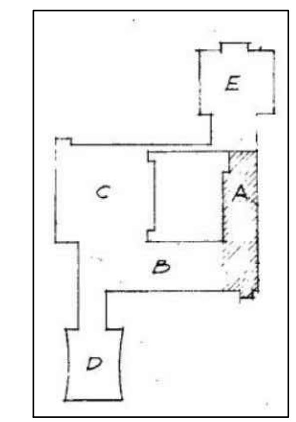
Key Plan

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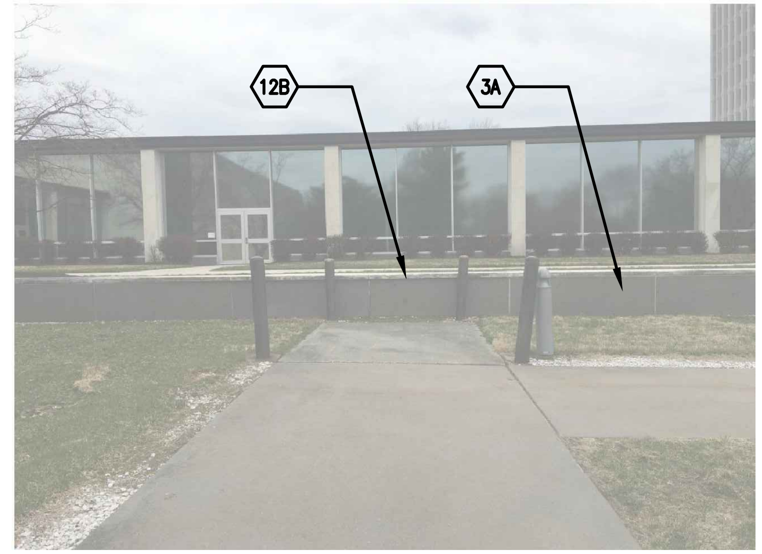
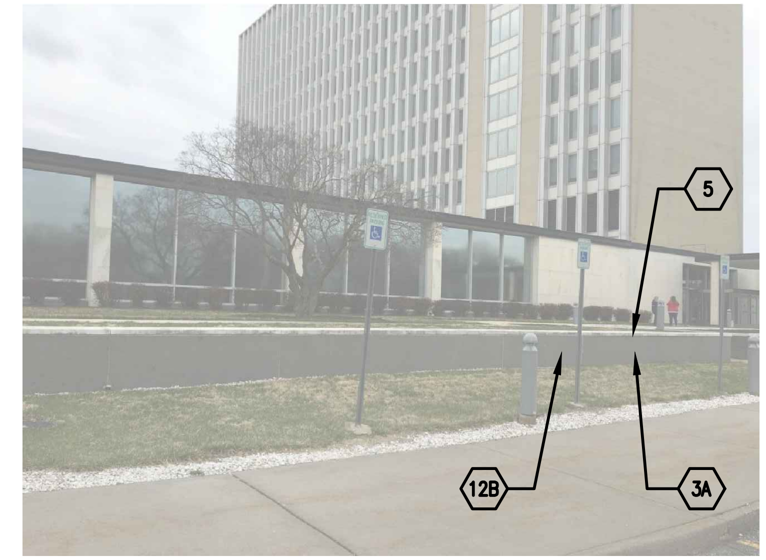
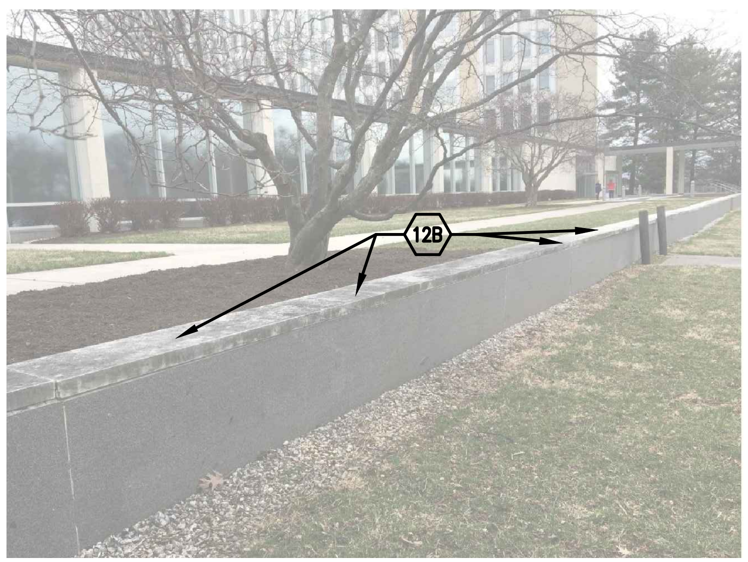
Sheet Title:
**South Entrance Plaza Plan**

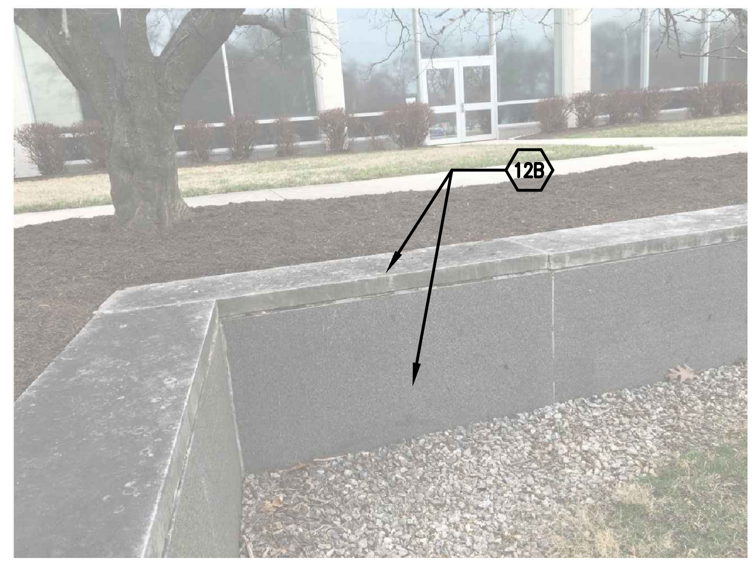


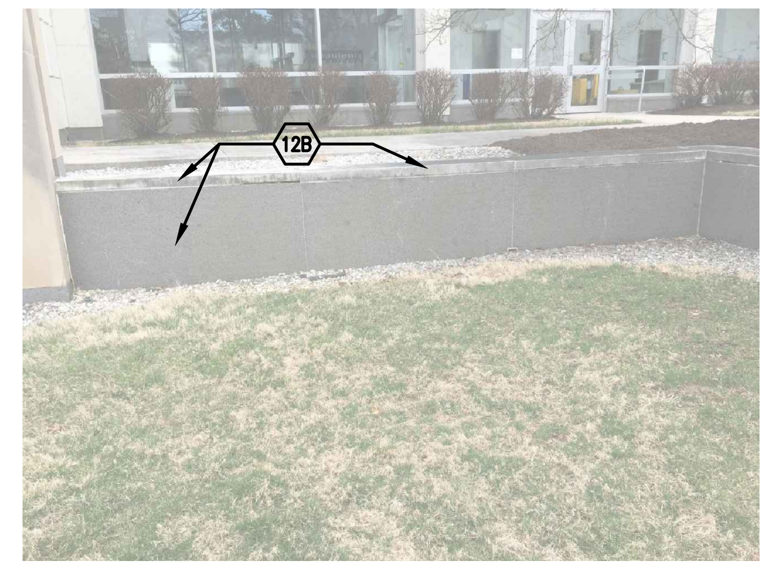
Sheet #
**A120**




## KEY NOTES

1. WHERE HATCHED, REPOINT PERCENTAGE SHOWN IN LIEU OF 100% REPOINTING.
   10%   30%
2. REMOVE BIOLOGICAL GROWTH WITH ARCHITECTURAL BIOCIDE.

3A. REPAIR CRACK WITH INJECTION GROUT. ASSUME FULL HEIGHT OF STONE AT EACH LOCATION.

3B. STITCH BRICK CRACKS WITH STEEL RODS AND REPLACE CRACKED BRICKS.

3C. NO ACTION AT CRACKED PAVER.

4. REPAIR SPALL WITH STONE DUTCHMAN THAT MATCHES EXISTING IN COLOR, TEXTURE, GRAIN, AND PROFILE. ASSUME 8" X 8" EACH.

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6A. PREPARE, PRIME, AND REPAINT CORRODED STEEL.

6B. CLEAN POLISHED METAL TO REMOVE CORROSION.

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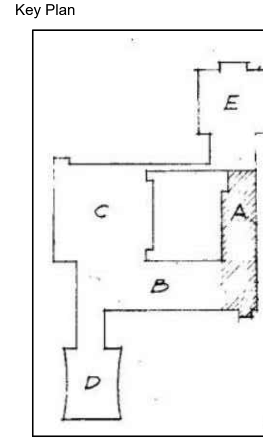


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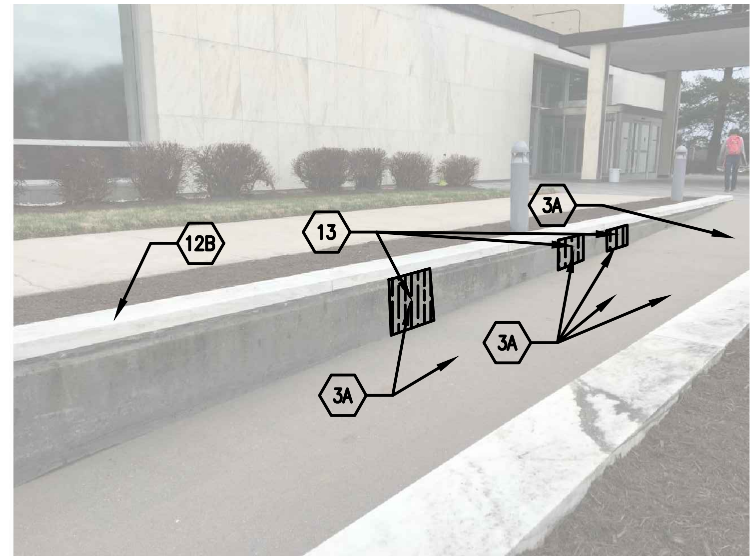
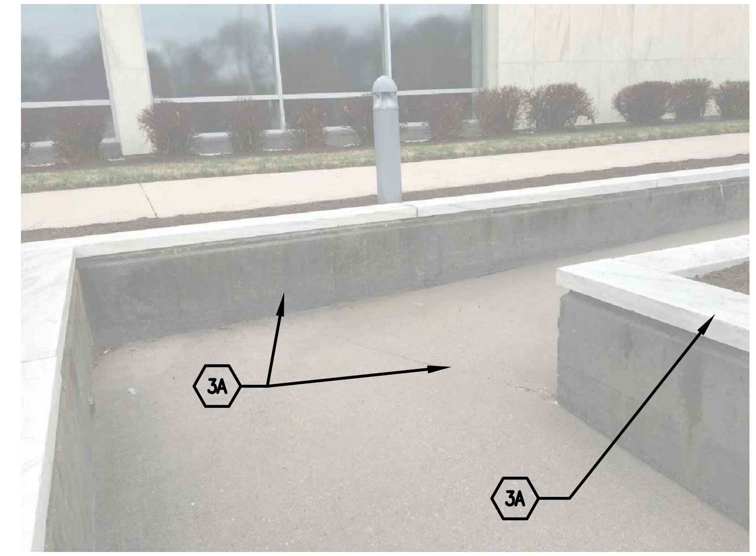
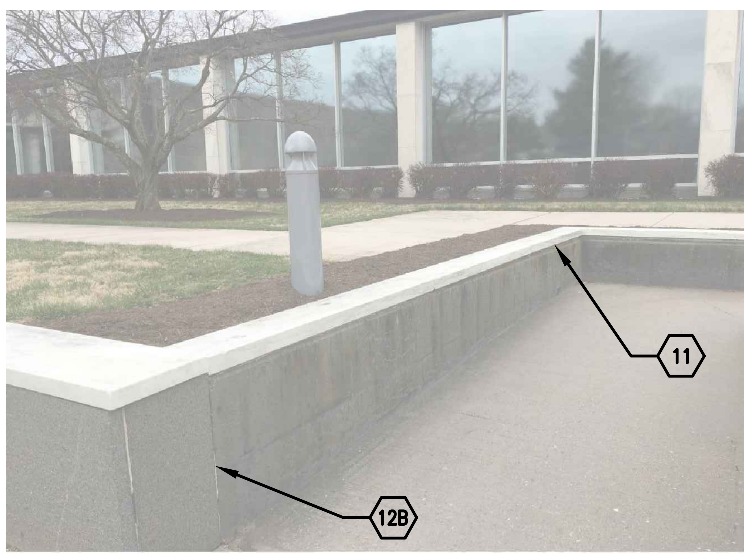
Sheet Title:
**East Retaining Walls**

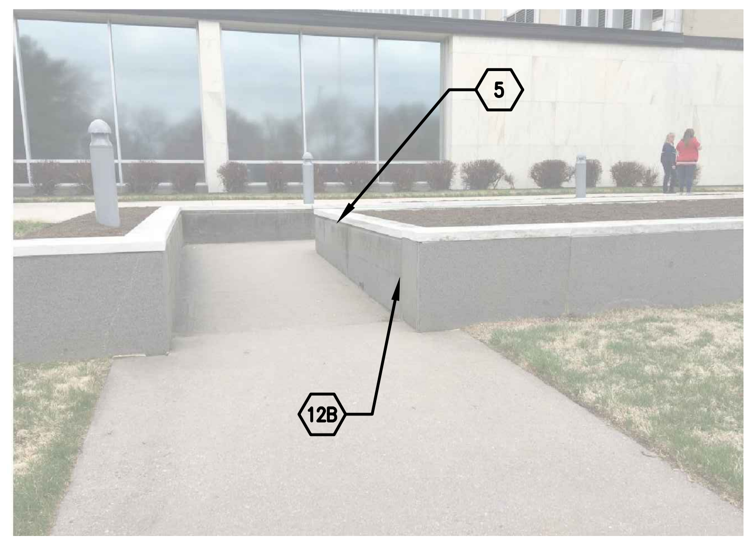


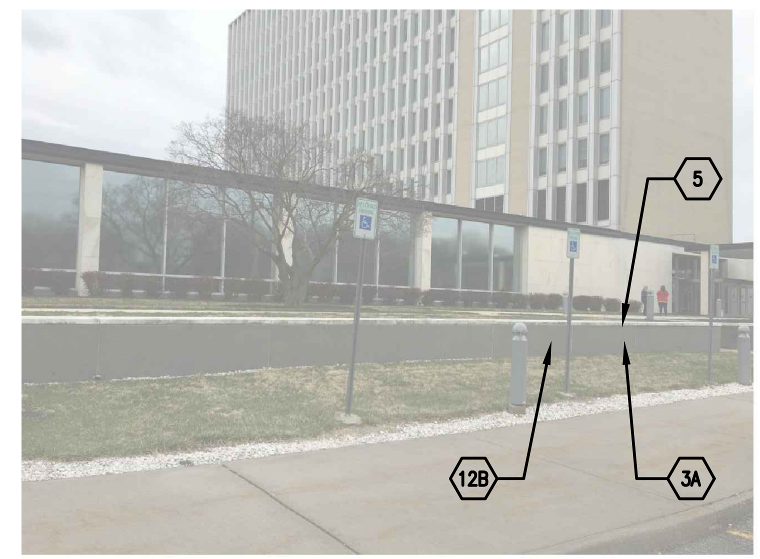
Sheet #
**A121**

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Job # 18035

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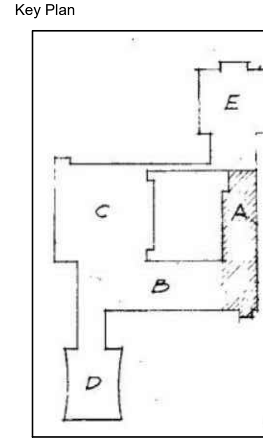
Key Plan

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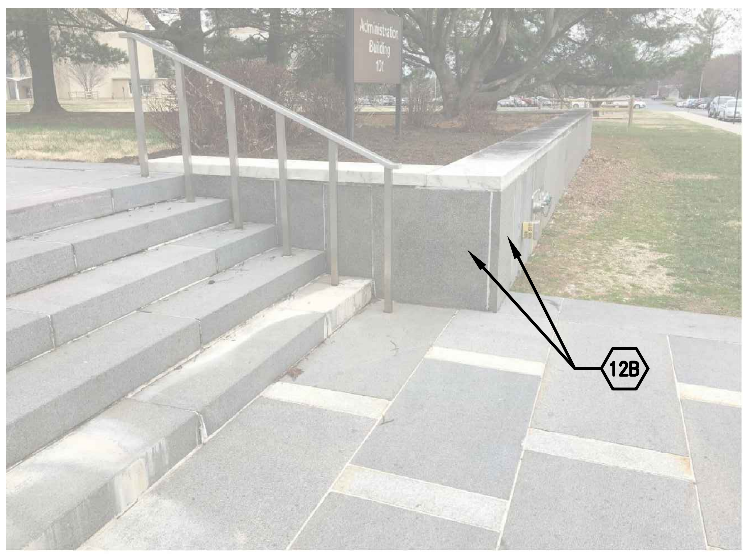
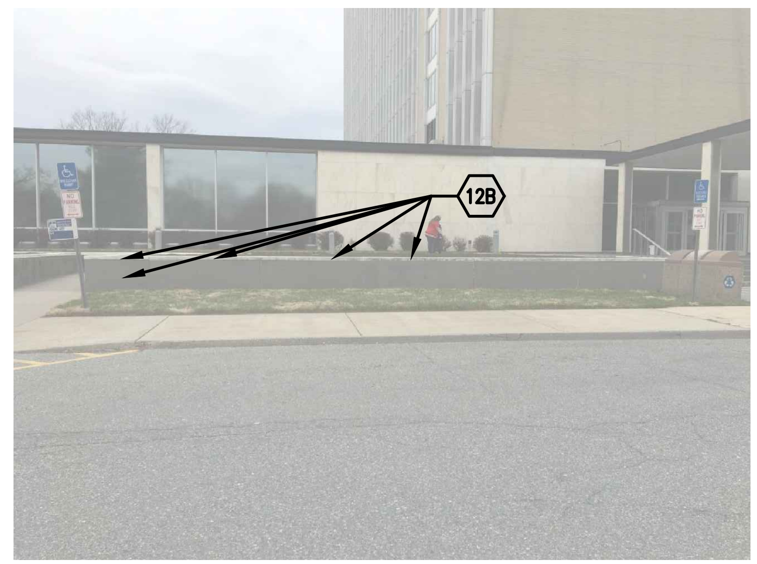
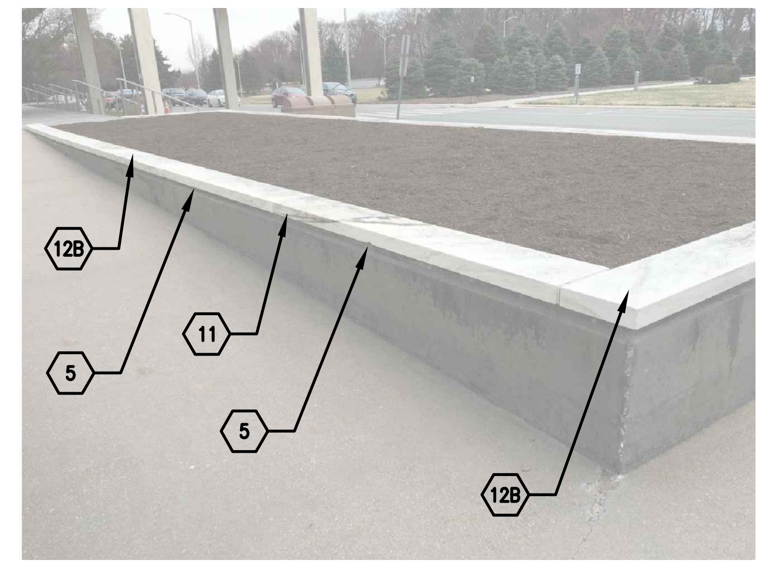
Sheet Title:
**East Retaining Walls**



Sheet #
**A122**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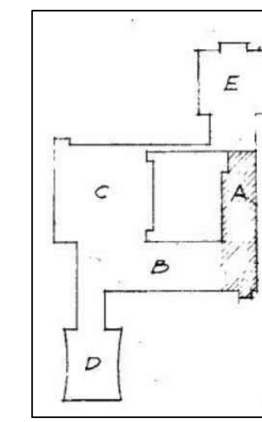
Key Plan

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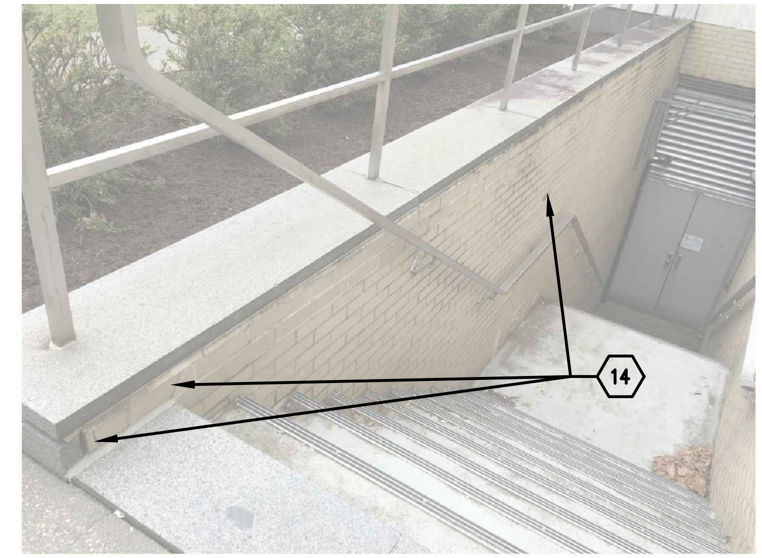
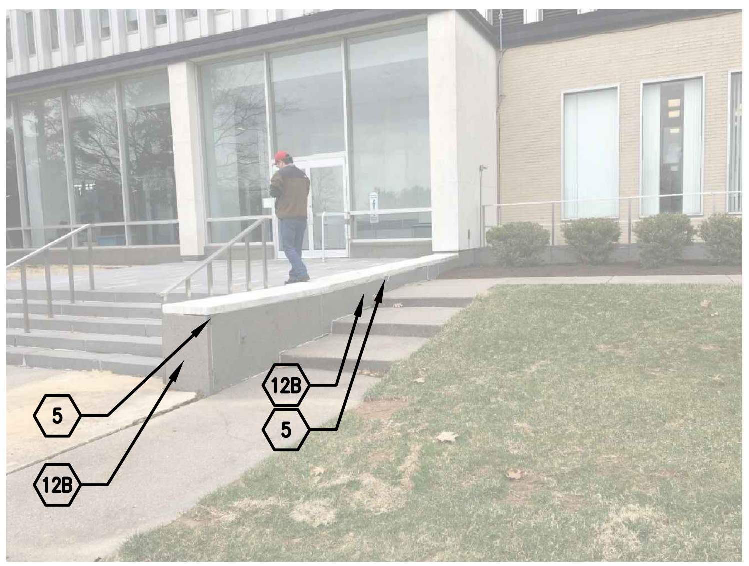
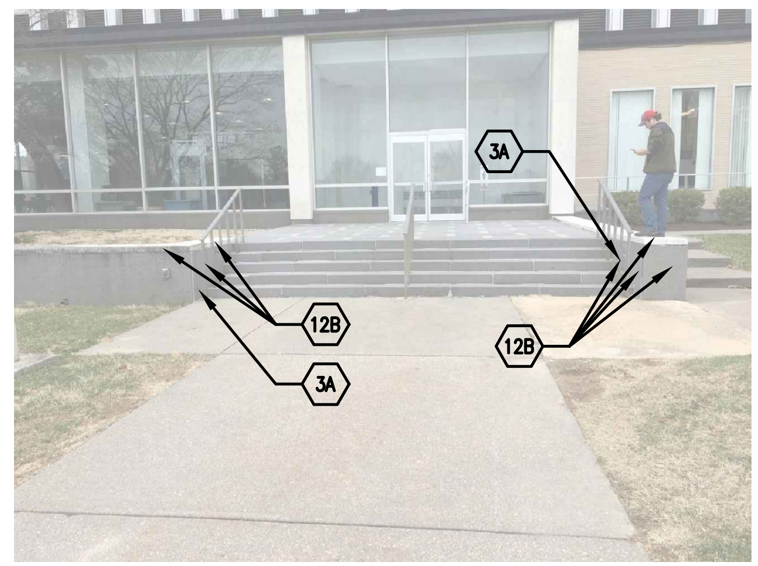
Sheet Title:
**East Retaining Walls**

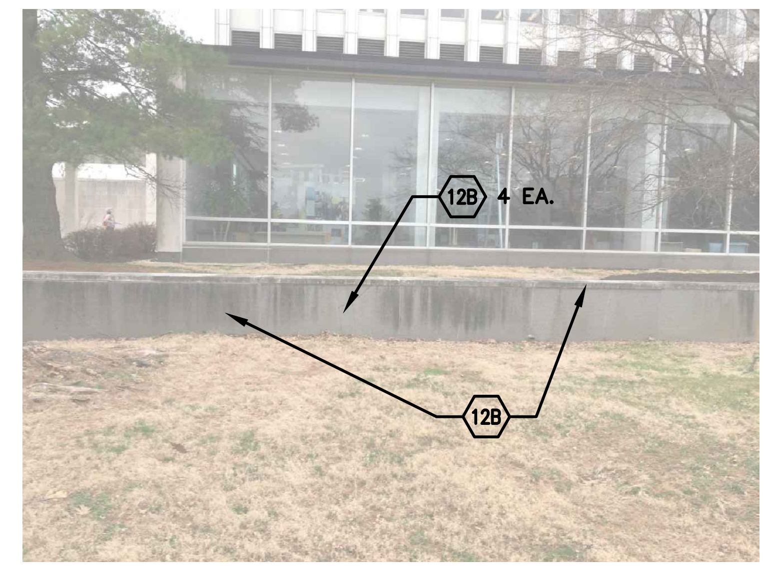


Sheet #
**A123**

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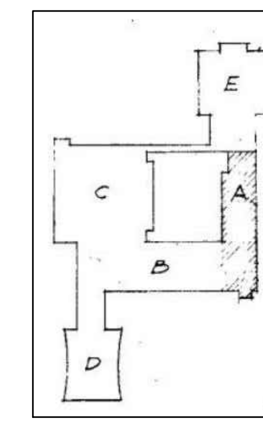


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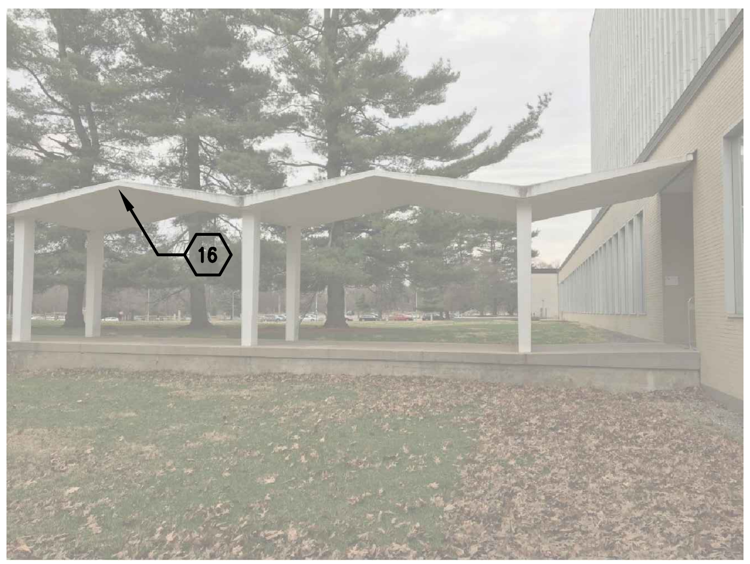
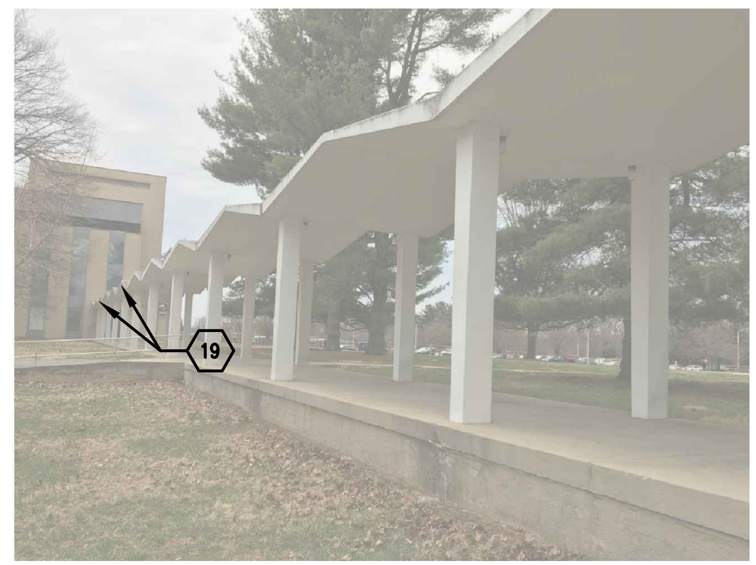
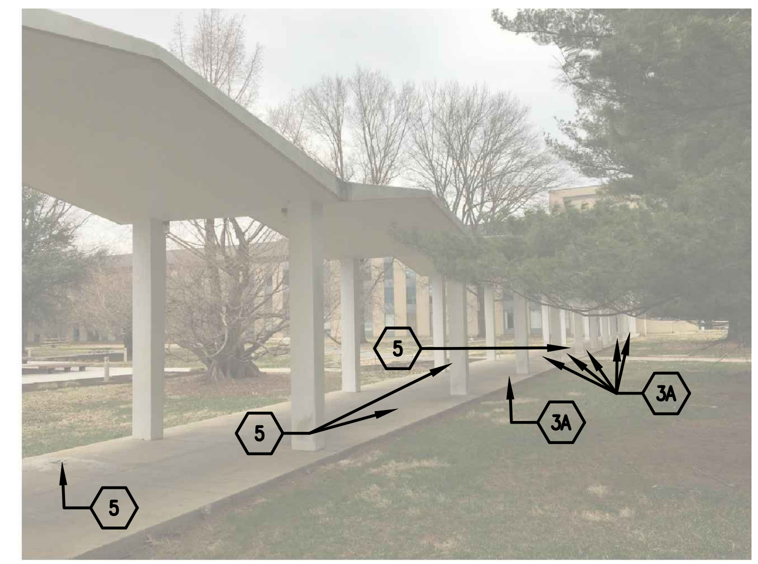
Sheet Title:
**North Retaining Walls**



Sheet #
**A124**


## KEY NOTES

1. WHERE HATCHED, REPOINT PERCENTAGE SHOWN IN LIEU OF 100% REPOINTING.
   10% 30%
2. REMOVE BIOLOGICAL GROWTH WITH ARCHITECTURAL BIOCIDE.
- 3A. REPAIR CRACK WITH INJECTION GROUT. ASSUME FULL HEIGHT OF STONE AT EACH LOCATION.
- 3B. STITCH BRICK CRACKS WITH STEEL RODS AND REPLACE CRACKED BRICKS.
- 3C. NO ACTION AT CRACKED PAVER.
- 4. REPAIR SPALL WITH STONE DUTCHMAN THAT MATCHES EXISTING IN COLOR, TEXTURE, GRAIN, AND PROFILE. ASSUME 8" X 8" EACH.
- 5. REPAIR SPALL WITH PATCHING MORTAR THAT MATCHES EXISTING MASONRY IN COLOR, TEXTURE, AND PROFILE. ASSUME 6" X 6" EACH.
- 6A. PREPARE, PRIME, AND REPAINT CORRODED STEEL.
- 6B. CLEAN POLISHED METAL TO REMOVE CORROSION.
- 7. REMOVE VEGETATION CONTRIBUTING TO EROSION.
- 8. PIN STONE AT AREA OF INCIPIENT SPALL USING THREADED STAINLESS-STEEL ROD.
- 9. REMOVE GYPSUM CRUST. ASSUME 1 SQUARE FOOT EACH.
- 10A. CLEAN COPPER STAIN ON MASONRY WITH POULTICE. APPLY POULTICE AT EACH LOCATION INDICATED OVER FULL FACE OF STONE FROM JOINT TO JOINT. ASSUME UP TO 2 APPLICATIONS AT EACH INSTANCE.
- 10B. REMOVE RUST STAIN. ASSUME 2 SQUARE FEET EACH.
- 11. REMOVE MASTIC/PAINT WITH MASTIC/PAINT REMOVER. ASSUME 1 SQUARE FOOT EACH.
- 12A. CLEAN OUT DRAINAGE PORTS AT BOWING MARBLE PANEL.
- 12B. REMOVE STONE AND RESET.
- 12C. REMOVE DISPLACED PAVERS. REGRADE AND RESET.
- 13. CLEAN EFFLORESCENCE.
- 14. CLEAN HEAVY SOILING WITH ALKALINE CHEMICAL CLEANERS AND COLD WATER WASH NOT TO EXCEED 400 PSI.
- 15. REMOVE ABANDONED METAL FASTENER. PATCH HOLE WITH PATCHING MORTAR THAT MATCHES EXISTING MASONRY IN COLOR, TEXTURE, AND PROFILE.
- 16. REMOVE FAILED AREA OF CEMENT STUCCO. PATCH WITH CEMENT STUCCO TO MATCH EXISTING. ASSUME 2 SQUARE FEET EACH.
- 17A. REMOVE INSECT NEST.
- 17B. REMOVE BIRD NEST.
- 18. REMOVE CALCIUM CRUST.
- 19. SEAL GAPS IN FLASHING.
- 20. REPAIR WARPED FLASHING.
- 21. REBUILD CONCRETE STAIRS
- 22. REMOVE MARBLE PANELS FOR REINSTALLATION. REPLACE SHELF ANGLE WITH STAINLESS STEEL. REINSTALL PANELS.

## GENERAL NOTES

A. CLEAN ALL EXTERIOR MASONRY WITH WARM WATER PRESSURE WASH NOT TO EXCEED 400 PSI.
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C. REPLACE EXTERIOR SEALANT JOINTS 100%.
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G. REMOVE DEBRIS FROM RETAINING WALL DRAINS 100%.
H. TRIM/REMOVE VEGETATION WITHIN 2 FEET OF THE BUILDING.
I. REMOVE GROUNDHOGS FROM WEST LAWN AND BACKFILL TUNNELS.
J. REMOVE RUST STAINS FROM GRANITE PAVING 100%.

JOHN MILNER ASSOCIATES
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a division of MTFA Architecture

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703-524-6616 Fax: 524-6618 mtfa.net

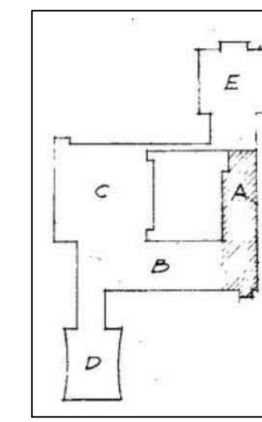
**NIST**
**Building 101**

**100 Bureau Drive**
**Gaithersburg, MD 20899**

Job # 18035

Date: Issue:
NOT FOR CONSTRUCTION

Key Plan

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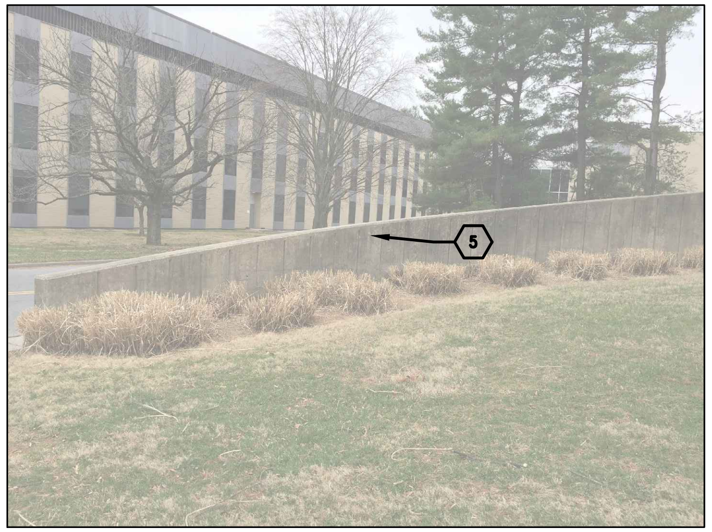
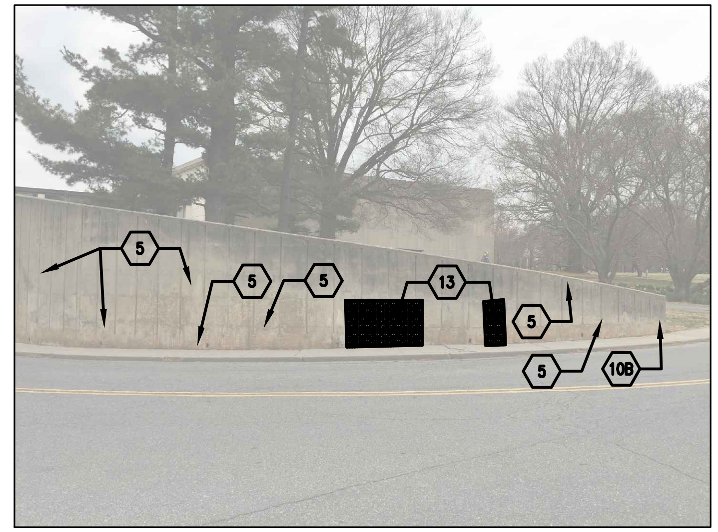
Drawn: Meredith Wilson
Checked: XXX
Scale: NTS

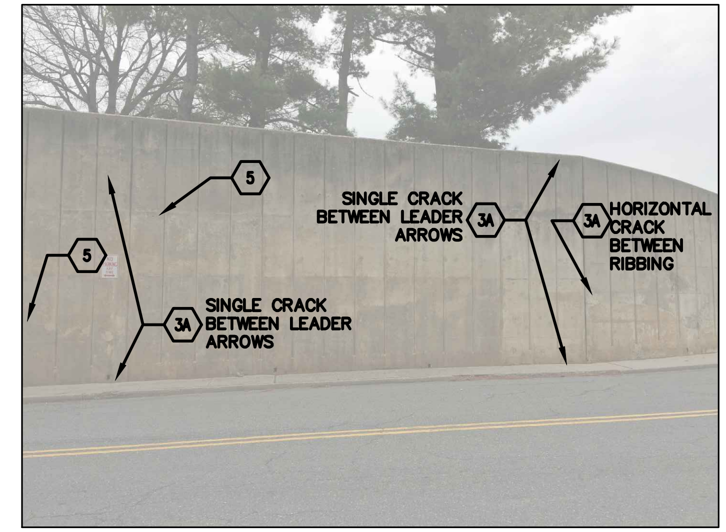
Sheet Title:
**Geometric Walkway**

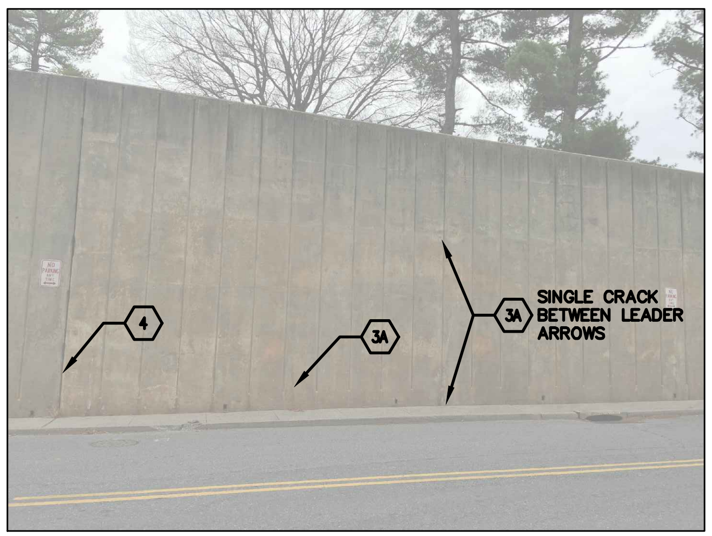


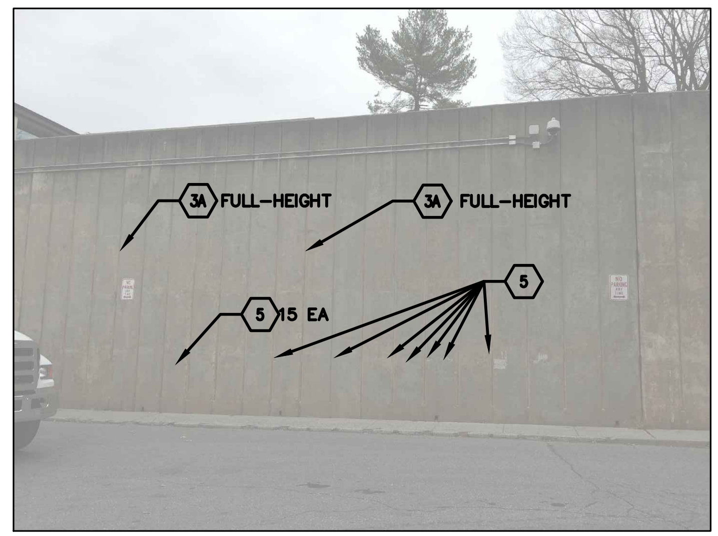
Sheet #
**A125**

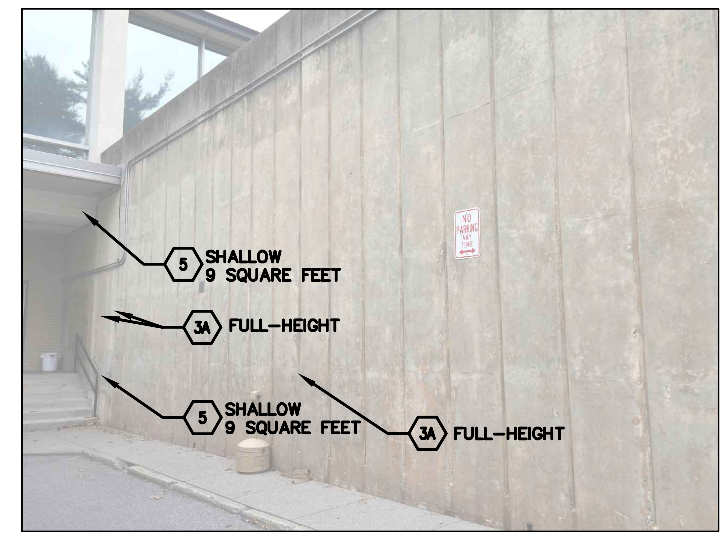
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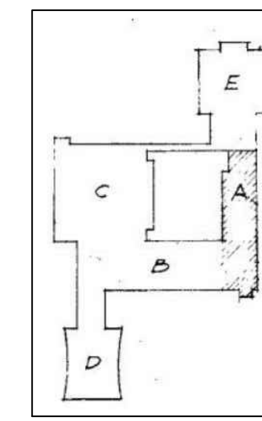


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Drawn: Meredith Wilson
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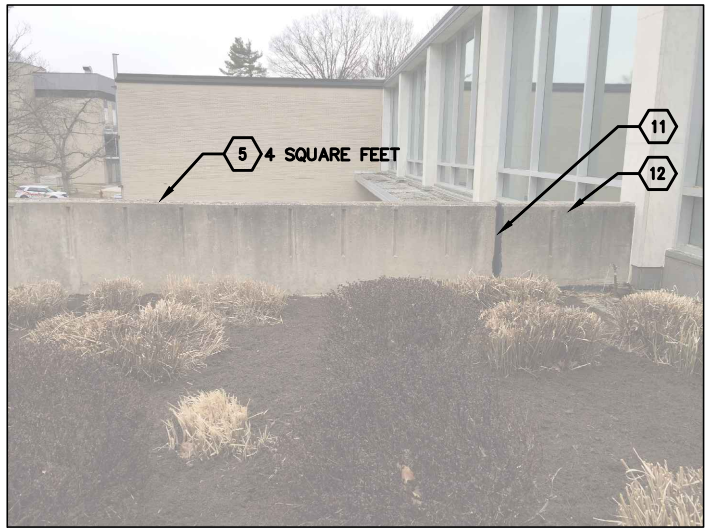
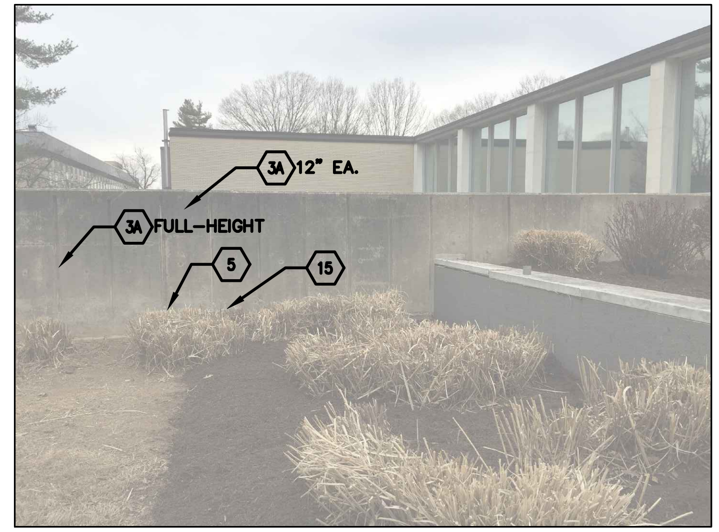
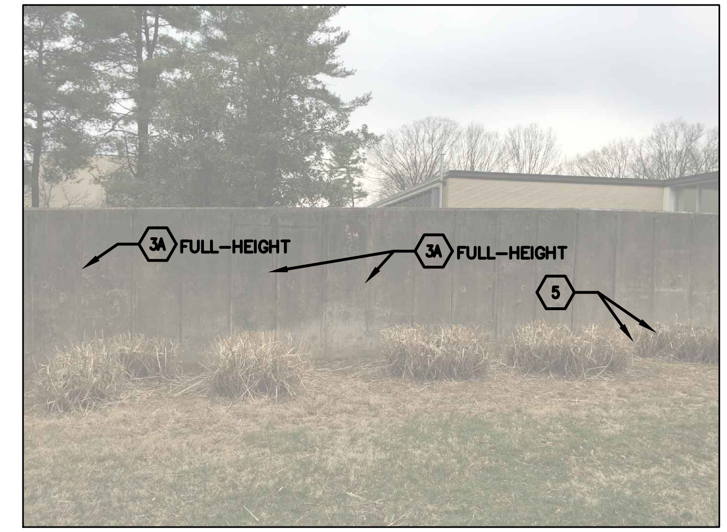
Sheet Title:
**South Retaining Wall**

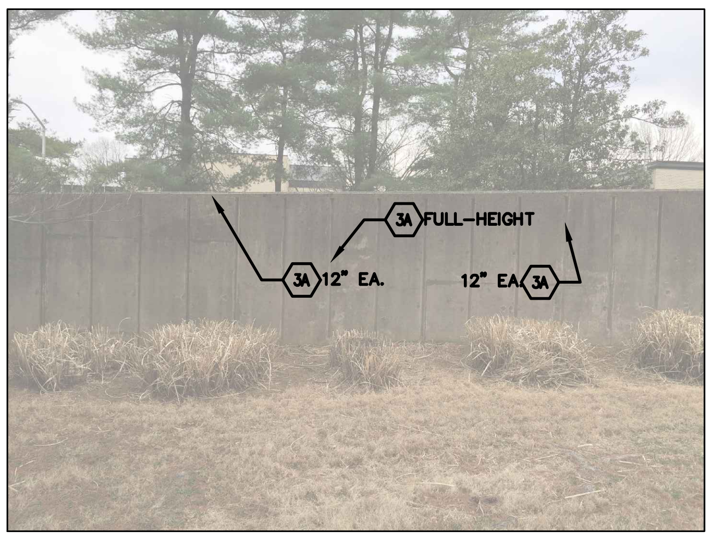


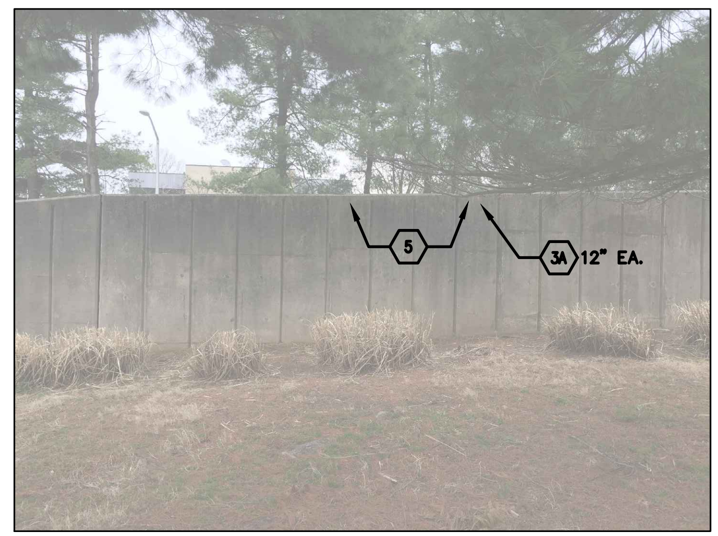
Sheet #
**A126**

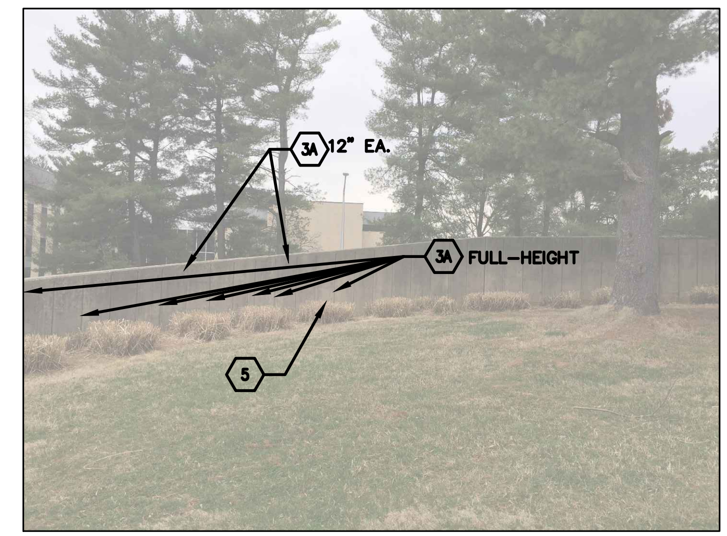
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# NIST
## Building 101

**100 Bureau Drive**
**Gaithersburg, MD 20899**

Job # 18035

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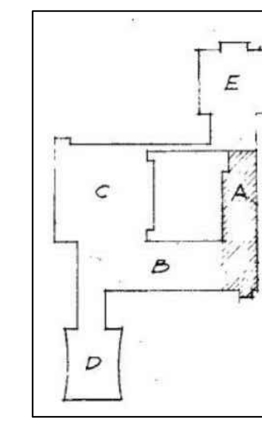
Key Plan

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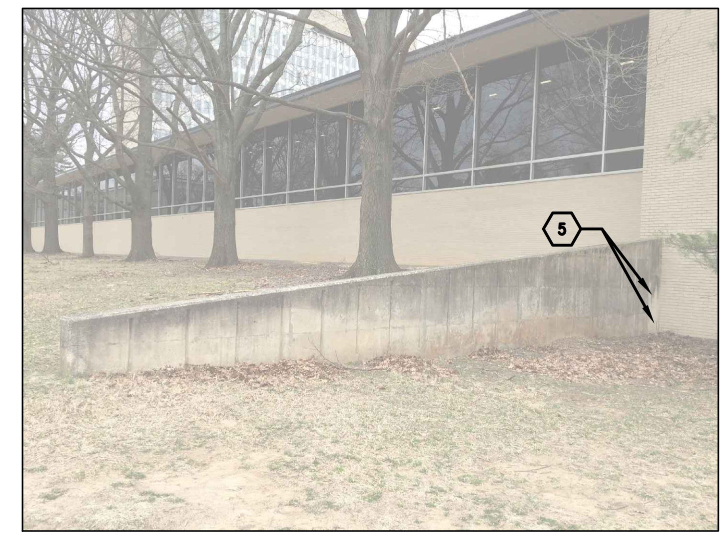
Checked: XXX
Scale: NTS

Sheet Title:
**South Retaining Wall**



Sheet #
# A127

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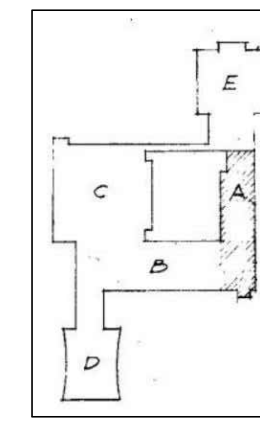


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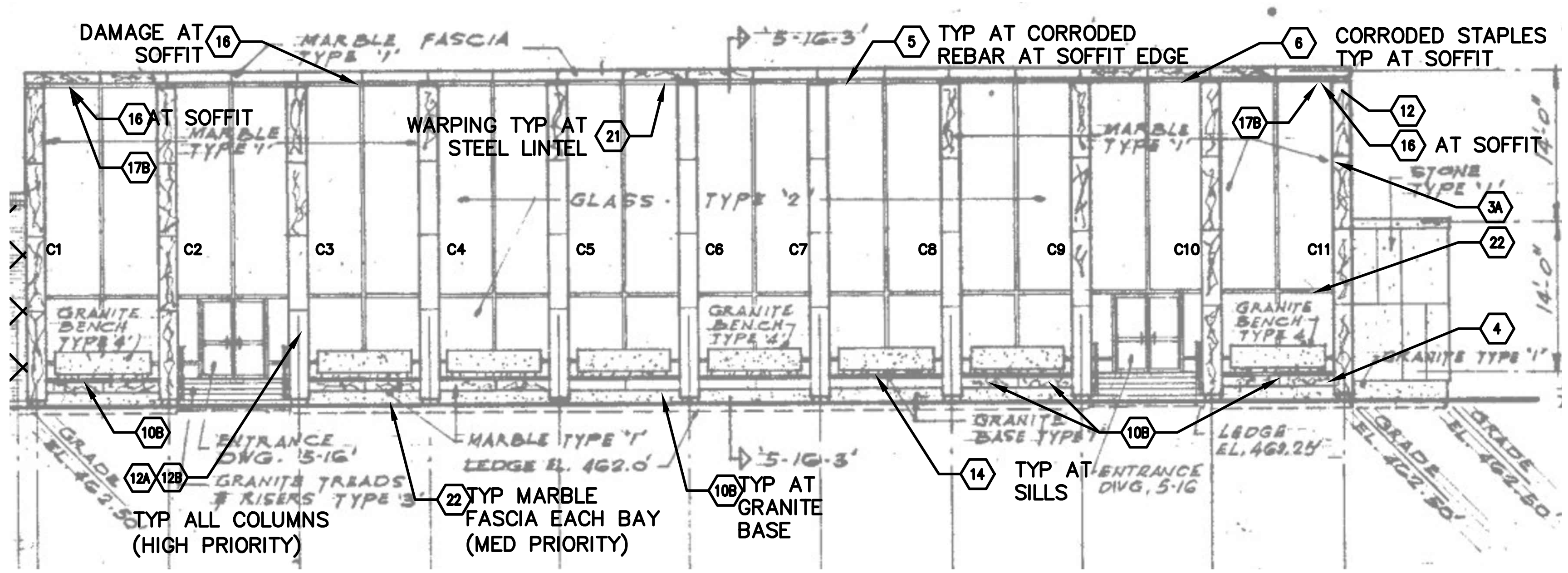
Drawn: Meredith Wilson
Checked: XXX
Scale: NTS

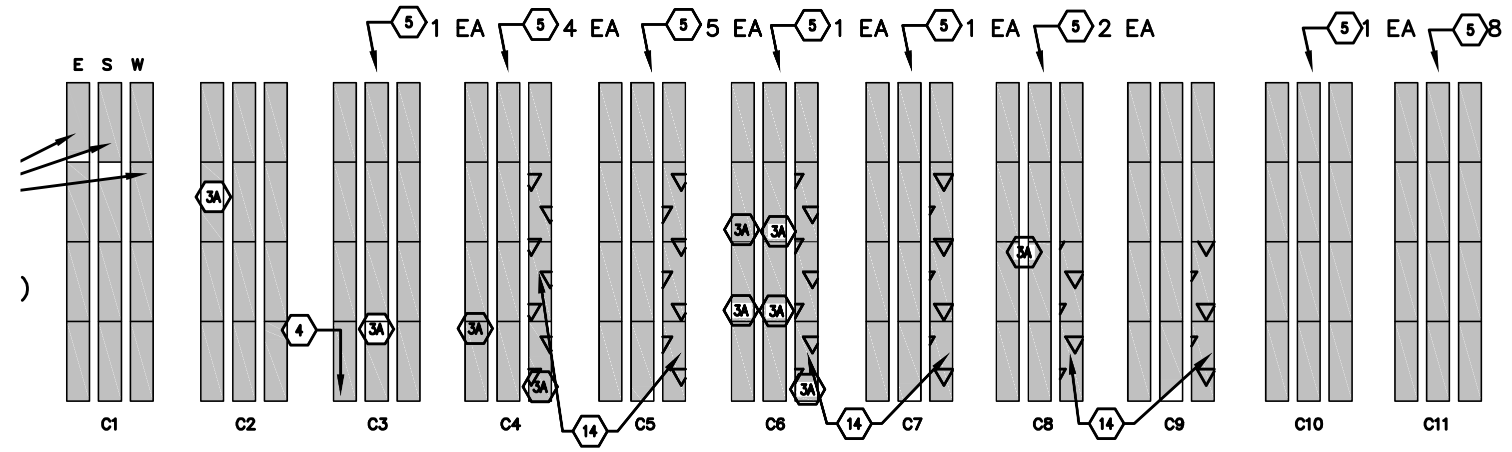
Sheet Title:
**West Retaining Wall**



Sheet #
**A128**




NORTH ELEVATION – WING E




SOUTH, EAST, AND WEST FACES OF COLUMNS

0 4 8 16
1/16"=1'-0"

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C. REPLACE EXTERIOR SEALANT JOINTS 100%.

D. REPLACE WEATHER STRIPPING AND GASKETS AT WINDOWS AND CURTAIN WALLS 100%.

E. REPLACE MORTAR JOINTS BETWEEN MARBLE PANELS AND CONCRETE SOFFIT WITH SOFT JOINT AT EACH COLUMN.

F. REPLACE SOFT JOINTS IN CONCRETE RETAINING WALLS 100%.

G. REMOVE DEBRIS FROM RETAINING WALL DRAINS 100%.

H. TRIM/REMOVE VEGETATION WITHIN 2 FEET OF THE BUILDING.

I. REMOVE GROUNDHOGS FROM WEST LAWN AND BACKFILL TUNNELS.

J. REMOVE RUST STAINS FROM GRANITE PAVING 100%.

JOHN MILNER ASSOCIATES
preservation
a division of MTFA Architecture

2311 Wilson Blvd. Arlington, VA 22201
703-524-6616 Fax: 524-6618 mtfa.net

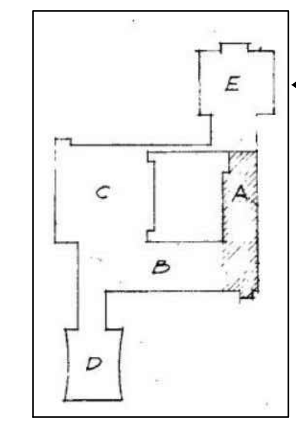
**NIST**
**Building 101**

**100 Bureau Drive**
**Gaithersburg, MD 20899**

Job # 18035

Date: Issue:
NOT FOR CONSTRUCTION

Key Plan




N

-

Drawn: Meredith Wilson
Checked: XXX
Scale: 1/16" = 1'-0"

Sheet Title:
**East Elevation - Wings A and B**



Sheet #
**A109**

# SECTION I:
# COST ESTIMATE

## COST ESTIMATE SUMMARY

The cost estimate is divided into three phases to reflect high-, medium-, and low-priority work. High-priority work should be completed within 1-3 years, 3-5 years for medium-priority work, and 5-10 years for low-priority work. Each phase includes temporary facilities, contractor's overhead and profit, design contingencies and escalation in addition to the identified scope of work. If the phases are combined, NIST will realize budget efficiencies in the categories listed above.

The project team defined scope priorities based on the existing conditions survey and the probe investigations into the marble panel construction and terrace construction. The high-priority work is focused on maintaining safety and preventing water infiltration. This includes replacing the anchoring system of the marble panels in public walkways with stainless steel, creating weep holes at the panels to allow the wall system to drain, and repointing/resealing joints. The high-priority areas for marble panel replacement include the courtyard columns, the east entrance columns, and the library portico columns. Repointing of limestone and marble panels on all elevations is a high priority.

Medium-priority work is focused on maintenance items that require cyclical attention. This includes concrete repairs, retaining wall drainage repairs, maintenance of vegetation, and window maintenance. Restoration of interior finishes are also a medium priority as the longer they are unmaintained, the harder it will be to return them to their intended appearance and condition. The structural probe of the brickwork is considered a medium-priority as the brickwork is generally in good condition. The steel supports will likely need intervention within 10 years and the probe will allow adequate time for planning. Medium-priority marble panel replacement is concentrated at the east entrance walls, the library fascia, and the rest of the courtyard.

Low-priority work includes general repointing of the brickwork. Current estimates from the survey indicate that brickwork has between 10% to 30% open joints. To prevent water infiltration, this condition cannot be ignored but is safe to carry out within a 10-year plan. Other low-priority items include cleaning of stains and other imperfections that are mostly aesthetic in nature. Low-priority marble panel replacement includes the south and east elevation pilasters and remaining walls that are not adjacent to walkways.

The description of the prioritized scope of work can be found in the narrative of Section D: Preservation Challenges. Section D highlights conditions found during the survey and the recommendations for addressing those conditions are listed by high, medium, and low priorities. This section includes a chart of typical condition photos and ends with matrix to provide a snapshot view of the priorities. All the conditions are noted on the drawings in Section H. Work associated with the marble panels and granite terraces is noted with a priority level on the drawings. Additionally, the priority chart is cross-referenced with general notes and key notes from the drawings. Finally, recommendations from the investigation probes is found in Section J of the report. This cost estimate has incorporated recommendations from Section D: Preservation Challenges, Section H: Condition Drawings, and Section J: Investigations to create the phased pricing.

100% Submission Cost Estimate

# NIST - Building 101
# Condition Survey & HSR
# Gaithersburg, Maryland

Prepared for:

**MTFA Architecture, Inc.**
3200 Lee Highway
Arlington, VA 22207
703-524-6616

February 19, 2020


Prepared by:

**R.W. Brown & Associates**
364 Brandon Lane
Heathsville, Virginia 22473
804-580-3535
email: rwbrownestr@juno.com

| | |
|---|---|
| Project: NIST - Building 101 - Condition Survey & HSR, Gaithersburg, Maryland | Page 1 |
| Architect: MTFA Architecture, Inc. | RWB Job # 18-35-B |
| Estimated by: R.W. Brown & Associates | 2/19/20 |

# NOTES

1 Unit costs include subcontractors' overhead and profits.

2 Unit prices, provided by suppliers, subcontractors, and past experience, reflect standard construction methods and materials. Sales tax and labor burden are included in the unit prices of each item. Labor prices are based on wage scale conditions but do not reflect overtime. Total estimate considers a competitive bidding process and responsive bids from at least 3 qualified bidders.

3 This estimate is based on report with drawings dated February 2020.

4 The total cost is based on a construction start of Summer 2020.

5 Exclusions:

Architectural and Engineering Fees
Routine maintenance programs
Site Work or utilites
Hazardous material abatement (if required)
Furnishings or equipment not itemized in the estimate

100% Submission Cost Estimate

| | |
|---|---|
| Project: NIST - Building 101 - Condition Survey & HSR, Gaithersburg, Maryland | Page 2 |
| Architect: MTFA Architecture, Inc. | RWB Job # 18-35-B |
| Estimated by: R.W. Brown & Associates | 2/19/20 |

# Project Recapitulation

| *Page* | | Total Cost |
|---|---|---|
| *3* | **High Priority** | **$4,756,000** |
| *7* | **Medium Priority** | **$5,363,000** |
| *11* | **Low Priority** | **$3,072,315** |

**Total Cost (Nonconstant $)** **$13,191,315**

100% Submission Cost Estimate

| Project: NIST - Building 101 - Condition Survey & HSR, Gaithersburg, Maryland | | Page 3 |
|---|---|---|
| Architect: MTFA Architecture, Inc. | | RWB Job # 18-35-B |
| Estimated by: R.W. Brown & Associates | **High Priority** | 2/19/20 |

# Recapitulation

| Item | | Total Cost |
|---|---|---|
| DIV 1/GENERAL REQUIREMENTS | | 1,619,950 |
| DIV 2/EXISTING CONDITIONS | | 58,136 |
| DIV 3/CONCRETE | | 20,712 |
| DIV 4/MASONRY | | 1,519,553 |
| DIV 5/METALS | | 25,000 |
| DIV 6/WOOD & PLASTICS | | - |
| DIV 7/THERMAL & MOISTURE PROTECTION | | 192,738 |
| DIV 8/DOORS & WINDOWS | | - |
| DIV 9/FINISHES | | 26,239 |
| DIV 10/SPECIALTIES | | - |
| DIV 11/EQUIPMENT | | - |
| DIV 12/FURNISHINGS | | - |
| DIV 13/SPECIAL CONSTRUCTION | | - |
| DIV 14/CONVEYING | | - |
| DIV 21/FIRE SUPPRESSION | | - |
| DIV 22/PLUMBING | | - |
| DIV 23/HVAC | | - |
| DIV 26/ELECTRICAL | | - |
| SUBTOTAL | | 3,462,328 |
| GENERAL CONTRACTOR'S OH&P @ | 15% | 519,349 |
| SUBTOTAL | | 3,981,677 |
| BOND @ | 1.5% | 59,725 |
| SUBTOTAL | | 4,041,403 |
| DESIGN CONTINGENCY @ | 15% | 606,210 |
| SUBTOTAL | | 4,647,613 |
| ESCALATION @ | 2.33% | 108,289 |
| TOTAL | | **$4,755,902** |

SAY: **$4,756,000**

100% Submission Cost Estimate

| | |
|---|---|
| Project: NIST - Building 101 - Condition Survey & HSR, Gaithersburg, Maryland | Page 4 |
| Architect: MTFA Architecture, Inc. | RWB Job # 18-35-B |
| Estimated by: R.W. Brown & Associates **High Priority** | 2/19/20 |

**DIVISION 1/GENERAL REQUIREMENTS**

| Item | Quantity | Unit | Material & Equip Unit | Total Material & Equip | Labor Unit | Total Labor | Total Cost | Group Total |
|---|---|---|---|---|---|---|---|---|
| **PERSONNEL** | | | | | | | | |
| PROJECT MANAGER | 18 | MO | 1,000.00 | 18,000 | 16,230.00 | 292,140 | 310,140 | |
| GENERAL SUPERINTENDENT | 18 | MO | 500.00 | 9,000 | 12,250.00 | 220,500 | 229,500 | |
| GENERAL LABOR | 18 | MO | 100.00 | 1,800 | 6,670.00 | 120,060 | 121,860 | |
| TRUCKING | 18 | MO | 1,100.00 | 19,800 | 1,020.00 | 18,360 | 38,160 | |
| | | | | | | | | 699,660 |
| **TEMPORARY FACILITIES & EQUIPMENT** | | | | | | | | |
| TEMPORARY OFFICE | 18 | MO | 2,800.00 | 50,400 | By General Labor | | 50,400 | |
| TEMPORARY STORAGE | 18 | MO | 1,500.00 | 27,000 | By General Labor | | 27,000 | |
| TRAFFIC CONTROL/BARRICADES | 18 | MO | 2,000.00 | 36,000 | By General Labor | | 36,000 | |
| TELEPHONE/TELECOMMUNICATIONS | 18 | MO | 250.00 | 4,500 | - | - | 4,500 | |
| TEMPORARY HEAT | 3 | MO | 3,000.00 | 9,000 | By General Labor | | 9,000 | |
| TEMPORARY POWER & LIGHTING | 18 | MO | 250.00 | 4,500 | 760.00 | 13,680 | 18,180 | |
| SCAFFOLDING | 100,000 | SF | 3.50 | 350,000 | 4.00 | 400,000 | 750,000 | |
| DUMPSTER - PER PULL | 36 | EA | 360.00 | 12,960 | - | - | 12,960 | |
| DUMPSTER - RENTAL | 18 | MO | 125.00 | 2,250 | - | - | 2,250 | |
| SMALL TOOLS | 1 | LS | 5,000.00 | 5,000 | - | - | 5,000 | |
| SAFETY | 1 | LS | 5,000.00 | 5,000 | - | - | 5,000 | |
| | | | | | | | | 920,290 |
| TOTAL DIRECT COST | | | | 555,210 | | 1,064,740 | | **1,619,950** |

**DIVISION 2/EXISTING CONDITIONS**

| Item | Quantity | Unit | Material & Equip Unit | Total Material & Equipment | Labor Unit | Total Labor | Total Cost | Group Total |
|---|---|---|---|---|---|---|---|---|
| **EXTERIOR CLEANING** | | | | | | | | |
| REMOVE INSECT NEST | 27 | EA | - | - | 20.00 | 540 | 540 | |
| REMOVE BIRD NEST | 7 | EA | - | - | 20.00 | 140 | 140 | |
| REMOVE CONCRETE STAIR | 40 | LF | 10.00 | 400 | 16.00 | 640 | 1,040 | |
| REMOVE CONCRETE LANDING | 48 | SF | 6.00 | 288 | 11.00 | 528 | 816 | |
| MISCELLANEOUS DEMOLITION | 1 | LS | 2,500.00 | 2,500 | 7,500.00 | 7,500 | 10,000 | |
| TESTING | 1 | LS | 4,500.00 | 4,500 | 3,500.00 | 3,500 | 8,000 | |
| STRUCTURAL ANALYSES | 1 | LS | 2,500.00 | 2,500 | 7,500.00 | 7,500 | 10,000 | |
| EXTERMINATORS - GROUND HOGS | 1 | LS | 1,000.00 | 1,000 | 3,500.00 | 3,500 | 4,500 | |
| ESTABLISH FIXED MONITORS | 10 | EA | 500.00 | 5,000 | 250.00 | 2,500 | 7,500 | |
| MAINTAIN MONITOR READINGS & DATA | 240 | EA | 5.00 | 1,200 | 60.00 | 14,400 | 15,600 | |
| TOTAL DIVISION 2/EXISTING CONDITIONS | | | | | | | | **58,136** |

| | | |
|---|---|---|
| Project: NIST - Building 101 - Condition Survey & HSR, Gaithersburg, Maryland | | Page 5 |
| Architect: MTFA Architecture, Inc. | | RWB Job # 18-35-B |
| Estimated by: R.W. Brown & Associates | **High Priority** | 2/19/20 |

**DIVISION 3/CONCRETE**

| Item | Quantity | Unit | Material & Equip Unit | Total Material & Equipment | Labor Unit | Total Labor | Total Cost | Group Total |
|---|---|---|---|---|---|---|---|---|
| **CONCRETE** | | | | | | | | |
| REBUILD CONCRETE STAIR | 40 | LF | 35.00 | 1,400 | 55.00 | 2,200 | 3,600 | |
| REBUILD CONCRETE LANDING | 48 | SF | 14.00 | 672 | 30.00 | 1,440 | 2,112 | |
| MISCELLANEOUS CONCRETE REPAIRS | 1 | LS | 5,000.00 | 5,000 | 10,000.00 | 10,000 | 15,000 | |
| TOTAL | DIVISION 3/CONCRETE | | | | | | | **20,712** |

**DIVISION 4/MASONRY**

| Item | Quantity | Unit | Material & Equip Unit | Total Material & Equipment | Labor Unit | Total Labor | Total Cost | Group Total |
|---|---|---|---|---|---|---|---|---|
| **STONE & UNIT MASONRY** | | | | | | | | |
| POINT MORTAR JOINTS | 44,026 | SF | 7.00 | 308,182 | 16.00 | 704,416 | 1,012,598 | |
| REPLACE MASONRY LINTELS | 50 | LF | 40.00 | 2,000 | 100.00 | 5,000 | 7,000 | |
| REMOVE/RESET STONE PANELS | 3,598 | SF | 10.00 | 35,980 | 36.00 | 129,528 | 165,508 | |
| REMOVE/RESET COLUMN CLADDING | 2,464 | SF | 10.00 | 24,640 | 28.00 | 68,992 | 93,632 | |
| REPAIR COLUMN CLADDING | 40 | EA | 1,000.00 | 40,000 | 1,500.00 | 60,000 | 100,000 | |
| REPAIR/REPLACE STONE SILLS | 200 | LF | 35.00 | 7,000 | 40.00 | 8,000 | 15,000 | |
| REMOVE/REPLACE BRICKS TO MATCH | 25 | EA | 5.00 | 125 | 60.00 | 1,500 | 1,625 | |
| PIN STONE W/SS ROD | 9 | EA | 100.00 | 900 | 250.00 | 2,250 | 3,150 | |
| CLEAN DRAIN PORTS | 2 | EA | 4.00 | 8 | 16.00 | 32 | 40 | |
| REMOVE MASONRY & RESET | 121 | EA | 150.00 | 18,150 | 850.00 | 102,850 | 121,000 | |
| TOTAL | DIVISION 4/MASONRY | | | | | | | **1,519,553** |

**DIVISION 5/METALS**

| Item | Quantity | Unit | Material & Equip Unit | Total Material & Equipment | Labor Unit | Total Labor | Total Cost | Group Total |
|---|---|---|---|---|---|---|---|---|
| **STRUCTURAL METALS** | | | | | | | | |
| MISCELLANEOUS METALS | 1 | LS | 10,000.00 | 10,000 | 15,000.00 | 15,000 | 25,000 | |
| | | | | | | | | 25,000 |
| TOTAL | DIVISION 5/METALS | | | | | | | **25,000** |

**DIVISION 7/THERMAL & MOISTURE PROTECTION**

| Item | Quantity | Unit | Material & Equip Unit | Total Material & Equipment | Labor Unit | Total Labor | Total Cost | Group Total |
|---|---|---|---|---|---|---|---|---|
| **CAULKING** | | | | | | | | |
| RAKE/REPLACE CAULKING - BLDG | 58,300 | LF | 1.40 | 81,620 | 1.90 | 110,770 | 192,390 | |
| REPAIR FLASHING | 3 | EA | 36.00 | 108 | 80.00 | 240 | 348 | |
| TOTAL DIVISION 7/THERMAL & MOISTURE PROTECTION | | | | | | | | **192,738** |

**DIVISION 9/FINISHES**

| Item | Quantity | Unit | Material & Equip Unit | Total Material & Equipment | Labor Unit | Total Labor | Total Cost | Group Total |
|---|---|---|---|---|---|---|---|---|
| **DRYWALL & PLASTER** | | | | | | | | |
| REMOVE WATER DAMAGED PLASTER | 384 | SF | 1.80 | 691 | 7.00 | 2,688 | 3,379 | |
| PATCH PLASTER SOFFIT | 384 | SF | 7.50 | 2,880 | 40.00 | 15,360 | 18,240 | |
| | | | | | | | | 21,619 |
| **PAINTING** | | | | | | | | |
| PAINT DRYWALL/PLASTER | 1,200 | SF | 0.35 | 420 | 3.50 | 4,200 | 4,620 | |
| | | | | | | | | 4,620 |
| TOTAL DIVISION 9/FINISHES | | | | | | | | **26,239** |

| | | |
|---|---|---|
| Project: NIST - Building 101 - Condition Survey & HSR, Gaithersburg, Maryland | | Page 7 |
| Architect: MTFA Architecture, Inc. | | RWB Job # 18-35-B |
| Estimated by: R.W. Brown & Associates | **Medium Priority** | 2/19/20 |

# Recapitulation

| Item | | Total Cost |
|---|---|---|
| DIV 1/GENERAL REQUIREMENTS | | 1,394,950 |
| DIV 2/EXISTING CONDITIONS | | 10,000 |
| DIV 3/CONCRETE | | 25,000 |
| DIV 4/MASONRY | | 67,576 |
| DIV 5/METALS | | 198,700 |
| DIV 6/WOOD & PLASTICS | | - |
| DIV 7/THERMAL & MOISTURE PROTECTION | | 19,800 |
| DIV 8/DOORS & WINDOWS | | 2,048,600 |
| DIV 9/FINISHES | | 66,800 |
| DIV 10/SPECIALTIES | | - |
| DIV 11/EQUIPMENT | | - |
| DIV 12/FURNISHINGS | | - |
| DIV 13/SPECIAL CONSTRUCTION | | - |
| DIV 14/CONVEYING | | - |
| DIV 21/FIRE SUPPRESSION | | 15,000 |
| DIV 22/PLUMBING | | 22,500 |
| DIV 23/HVAC | | 12,500 |
| DIV 26/ELECTRICAL | | 22,500 |
| SUBTOTAL | | 3,903,926 |
| GENERAL CONTRACTOR'S OH&P @ | 15% | 585,589 |
| SUBTOTAL | | 4,489,515 |
| BOND @ | 1.5% | 67,343 |
| SUBTOTAL | | 4,556,858 |
| DESIGN CONTINGENCY @ | 15% | 683,529 |
| SUBTOTAL | | 5,240,386 |
| ESCALATION @ | 2.33% | 122,101 |
| TOTAL | | **$5,362,487** |
| | SAY: | **$5,363,000** |

**DIVISION 1/GENERAL REQUIREMENTS**

| Item | Quantity | Unit | Material & Equip Unit | Total Material & Equip | Labor Unit | Total Labor | Total Cost | Group Total |
|---|---|---|---|---|---|---|---|---|
| **PERSONNEL** | | | | | | | | |
| PROJECT MANAGER | 18 | MO | 1,000.00 | 18,000 | 16,230.00 | 292,140 | 310,140 | |
| GENERAL SUPERINTENDENT | 18 | MO | 500.00 | 9,000 | 12,250.00 | 220,500 | 229,500 | |
| GENERAL LABOR | 18 | MO | 100.00 | 1,800 | 6,670.00 | 120,060 | 121,860 | |
| TRUCKING | 18 | MO | 1,100.00 | 19,800 | 1,020.00 | 18,360 | 38,160 | |
| | | | | | | | | 699,660 |
| **TEMPORARY FACILITIES & EQUIPMENT** | | | | | | | | |
| TEMPORARY OFFICE | 18 | MO | 2,800.00 | 50,400 | By General Labor | | 50,400 | |
| TEMPORARY STORAGE | 18 | MO | 1,500.00 | 27,000 | By General Labor | | 27,000 | |
| TRAFFIC CONTROL/BARRICADES | 18 | MO | 2,000.00 | 36,000 | By General Labor | | 36,000 | |
| TELEPHONE/TELECOMMUNICATIONS | 18 | MO | 250.00 | 4,500 | - | - | 4,500 | |
| TEMPORARY HEAT | 3 | MO | 3,000.00 | 9,000 | By General Labor | | 9,000 | |
| TEMPORARY POWER & LIGHTING | 18 | MO | 250.00 | 4,500 | 760.00 | 13,680 | 18,180 | |
| SCAFFOLDING | 70,000 | SF | 3.50 | 245,000 | 4.00 | 280,000 | 525,000 | |
| DUMPSTER - PER PULL | 36 | EA | 360.00 | 12,960 | - | - | 12,960 | |
| DUMPSTER - RENTAL | 18 | MO | 125.00 | 2,250 | - | - | 2,250 | |
| SMALL TOOLS | 1 | LS | 5,000.00 | 5,000 | - | - | 5,000 | |
| SAFETY | 1 | LS | 5,000.00 | 5,000 | - | - | 5,000 | |
| | | | | | | | | 695,290 |
| TOTAL DIRECT COST | | | | 450,210 | | 944,740 | | **1,394,950** |

**DIVISION 2/EXISTING CONDITIONS**

| Item | Quantity | Unit | Material & Equip Unit | Total Material & Equipment | Labor Unit | Total Labor | Total Cost | Group Total |
|---|---|---|---|---|---|---|---|---|
| **EXTERIOR CLEANING** | | | | | | | | |
| MISCELLANEOUS DEMOLITION | 1 | LS | 2,500.00 | 2,500 | 7,500.00 | 7,500 | 10,000 | |
| TOTAL | DIVISION 2/EXISTING CONDITIONS | | | | | | | **10,000** |

**DIVISION 3/CONCRETE**

| Item | Quantity | Unit | Material & Equip Unit | Total Material & Equipment | Labor Unit | Total Labor | Total Cost | Group Total |
|---|---|---|---|---|---|---|---|---|
| **CONCRETE** | | | | | | | | |
| MISCELLANEOUS CONCRETE REPAIRS | 1 | LS | 10,000.00 | 10,000 | 15,000.00 | 15,000 | 25,000 | |
| TOTAL | DIVISION 3/CONCRETE | | | | | | | **25,000** |

**DIVISION 4/MASONRY**

| Item | Quantity | Unit | Material & Equip Unit | Total Material & Equipment | Labor Unit | Total Labor | Total Cost | Group Total |
|---|---|---|---|---|---|---|---|---|
| **STONE & UNIT MASONRY** | | | | | | | | |
| REMOVE/RESET STONE PANELS | 1,200 | SF | 10.00 | 12,000 | 36.00 | 43,200 | 55,200 | |
| REMOVE/RESET MARBLE FASCIA | 238 | LF | 10.00 | 2,380 | 42.00 | 9,996 | 12,376 | |
| TOTAL | DIVISION 4/MASONRY | | | | | | | **67,576** |

**DIVISION 5/METALS**

| Item | Quantity | Unit | Material & Equip Unit | Total Material & Equipment | Labor Unit | Total Labor | Total Cost | Group Total |
|---|---|---|---|---|---|---|---|---|
| **STRUCTURAL METALS** | | | | | | | | |
| INSTALL RELIEVING ANGLES - ALLOW | 1,100 | LF | - | - | 45.00 | 49,500 | 49,500 | |
| STAINLESS STEEL ANGLES - MAT'L | 8 | TON | 12,900.00 | 103,200 | - | - | 103,200 | |
| DRILL & SET ANCHORS | 500 | EA | 32.00 | 16,000 | 60.00 | 30,000 | 46,000 | |
| | | | | | | | | 198,700 |
| TOTAL DIVISION 5/METALS | | | | | | | | **198,700** |

**DIVISION 7/THERMAL & MOISTURE PROTECTION**

| Item | Quantity | Unit | Material & Equip Unit | Total Material & Equipment | Labor Unit | Total Labor | Total Cost | Group Total |
|---|---|---|---|---|---|---|---|---|
| **CAULKING** | | | | | | | | |
| RAKE/REPLACE CAULKING - SITE | 6,000 | LF | 1.40 | 8,400 | 1.90 | 11,400 | 19,800 | |
| TOTAL DIVISION 7/THERMAL & MOISTURE PROTECTION | | | | | | | | **19,800** |

**DIVISION 8/DOORS & WINDOWS**

| Item | Quantity | Unit | Material & Equip Unit | Total Material & Equipment | Labor Unit | Total Labor | Total Cost | Group Total |
|---|---|---|---|---|---|---|---|---|
| **DOORS & FRAMES** | | | | | | | | |
| REPAIR/MODIFY/UPGRADE EXTERIOR DOORS - ALLOW | 5 | EA | 2,500.00 | 12,500 | 1,500.00 | 7,500 | 20,000 | |
| | | | | | | | | 20,000 |
| **WINDOWS & GLASS** | | | | | | | | |
| REFURBISH GLAZED SYSTEMS | 21,000 | SF | 50.00 | 1,050,000 | 40.00 | 840,000 | 1,890,000 | |
| REMOVE/REPLACE UV FILM | 21,000 | SF | 3.60 | 75,600 | 3.00 | 63,000 | 138,600 | |
| | | | | | | | | 2,028,600 |
| TOTAL DIVISION 8/DOORS & WINDOWS | | | | | | | | **2,048,600** |

**DIVISION 9/FINISHES**

| Item | Quantity | Unit | Material & Equip Unit | Total Material & Equipment | Labor Unit | Total Labor | Total Cost | Group Total |
|---|---|---|---|---|---|---|---|---|
| **MISCELLANOUS** | | | | | | | | |
| SEAL REMAINING EXTERIOR ENVELOPE LEAKAGE & REPAIR INTERIOR FINISHES - ALLOW | 1 | LS | 25,000.00 | 25,000 | 40,000.00 | 40,000 | 65,000 | |
| | | | | | | | | 65,000 |
| **PAINTING** | | | | | | | | |
| PREP/PRIME/PAINT METAL | 50 | SF | 6.00 | 300 | 30.00 | 1,500 | 1,800 | |
| | | | | | | | | 1,800 |
| TOTAL DIVISION 9/FINISHES | | | | | | | | **66,800** |

# 100% Submission Cost Estimate

| | | |
|---|---|---|
| Project: NIST - Building 101 - Condition Survey & HSR, Gaithersburg, Maryland | | Page 10 |
| Architect: MTFA Architecture, Inc. | | RWB Job # 18-35-B |
| Estimated by: R.W. Brown & Associates | **Medium Priority** | 2/19/20 |

**DIVISION 21/MECHANICAL - FIRE SUPPRESION**

| Item | Quantity | Unit | Material & Equip Unit | Total Material & Equipment | Labor Unit | Total Labor | Total Cost | Group Total |
|---|---|---|---|---|---|---|---|---|
| **FIRE SUPRESSION** | | | | | | | | |
| ALLOWANCE FOR UNSPECIFIED WORK | 1 | LS | 5,000.00 | 5,000 | 10,000.00 | 10,000 | 15,000 | |
| TOTAL DIVISION 21/MECHANICAL - FIRE SUPPRESION | | | | | | | | **15,000** |

**DIVISION 22/MECHANICAL - PLUMBING**

| Item | Quantity | Unit | Material & Equip Unit | Total Material & Equipment | Labor Unit | Total Labor | Total Cost | Group Total |
|---|---|---|---|---|---|---|---|---|
| **PLUMBING** | | | | | | | | |
| ALLOWANCE FOR UNSPECIFIED WORK | 1 | LS | 7,500.00 | 7,500 | 15,000.00 | 15,000 | 22,500 | |
| TOTAL DIVISION 22/MECHANICAL - PLUMBING | | | | | | | | **22,500** |

**DIVISION 23/MECHANICAL - HVAC**

| Item | Quantity | Unit | Material & Equip Unit | Total Material & Equipment | Labor Unit | Total Labor | Total Cost | Group Total |
|---|---|---|---|---|---|---|---|---|
| **HVAC** | | | | | | | | |
| ALLOWANCE FOR UNSPECIFIED WORK | 1 | LS | 5,000.00 | 5,000 | 7,500.00 | 7,500 | 12,500 | |
| TOTAL DIVISION 23/MECHANICAL - HVAC | | | | | | | | **12,500** |

**DIVISION 26/ELECTRICAL**

| Item | Quantity | Unit | Material & Equip Unit | Total Material & Equipment | Labor Unit | Total Labor | Total Cost | Group Total |
|---|---|---|---|---|---|---|---|---|
| **ELECTRICAL & FIRE ALARM** | | | | | | | | |
| ALLOWANCE FOR UNSPECIFIED WORK | 1 | LS | 10,000.00 | 10,000 | 12,500.00 | 12,500 | 22,500 | |
| TOTAL DIVISION 26/ELECTRICAL | | | | | | | | **22,500** |

100% Submission Cost Estimate

| | | |
|---|---|---|
| Project: NIST - Building 101 - Condition Survey & HSR, Gaithersburg, Maryland | | Page 11 |
| Architect: MTFA Architecture, Inc. | | RWB Job # 18-35-B |
| Estimated by: R.W. Brown & Associates | **Low Priority** | 2/19/20 |

# Recapitulation

| Item | | Total Cost |
|---|---|---|
| DIV 1/GENERAL REQUIREMENTS | | 1,147,200 |
| DIV 2/EXISTING CONDITIONS | | 26,212 |
| DIV 3/CONCRETE | | - |
| DIV 4/MASONRY | | 681,612 |
| DIV 5/METALS | | - |
| DIV 6/WOOD & PLASTICS | | - |
| DIV 7/THERMAL & MOISTURE PROTECTION | | - |
| DIV 8/DOORS & WINDOWS | | - |
| DIV 9/FINISHES | | 381,641 |
| DIV 10/SPECIALTIES | | - |
| DIV 11/EQUIPMENT | | - |
| DIV 12/FURNISHINGS | | - |
| DIV 13/SPECIAL CONSTRUCTION | | - |
| DIV 14/CONVEYING | | - |
| DIV 21/FIRE SUPPRESSION | | - |
| DIV 22/PLUMBING | | - |
| DIV 23/HVAC | | - |
| DIV 26/ELECTRICAL | | - |
| SUBTOTAL | | 2,236,665 |
| GENERAL CONTRACTOR'S OH&P @ | 15% | 335,500 |
| SUBTOTAL | | 2,572,165 |
| BOND @ | 1.5% | 38,582 |
| SUBTOTAL | | 2,610,748 |
| DESIGN CONTINGENCY @ | 15% | 391,612 |
| SUBTOTAL | | 3,002,360 |
| ESCALATION @ | 2.33% | 69,955 |
| TOTAL | | **$3,072,315** |

SAY: **$3,073,000**

100% Submission Cost Estimate

| | |
|---|---|
| Project: NIST - Building 101 - Condition Survey & HSR, Gaithersburg, Maryland | Page 12 |
| Architect: MTFA Architecture, Inc. | RWB Job # 18-35-B |
| Estimated by: R.W. Brown & Associates / **Low Priority** | 2/19/20 |

**DIVISION 1/GENERAL REQUIREMENTS**

| Item | Quantity | Unit | Material & Equip Unit | Total Material & Equip | Labor Unit | Total Labor | Total Cost | Group Total |
|---|---|---|---|---|---|---|---|---|
| **PERSONNEL** | | | | | | | | |
| PROJECT MANAGER | 8 | MO | 1,000.00 | 8,000 | 16,230.00 | 129,840 | 137,840 | |
| GENERAL SUPERINTENDENT | 8 | MO | 500.00 | 4,000 | 12,250.00 | 98,000 | 102,000 | |
| GENERAL LABOR | 8 | MO | 100.00 | 800 | 6,670.00 | 53,360 | 54,160 | |
| TRUCKING | 8 | MO | 1,100.00 | 8,800 | 1,020.00 | 8,160 | 16,960 | |
| | | | | | | | | 310,960 |
| **TEMPORARY FACILITIES & EQUIPMENT** | | | | | | | | |
| TEMPORARY OFFICE | 8 | MO | 2,800.00 | 22,400 | By General Labor | | 22,400 | |
| TEMPORARY STORAGE | 8 | MO | 1,500.00 | 12,000 | By General Labor | | 12,000 | |
| TRAFFIC CONTROL/BARRICADES | 8 | MO | 2,000.00 | 16,000 | By General Labor | | 16,000 | |
| TELEPHONE/TELECOMMUNICATIONS | 8 | MO | 250.00 | 2,000 | - | - | 2,000 | |
| TEMPORARY HEAT | 3 | MO | 3,000.00 | 9,000 | By General Labor | | 9,000 | |
| TEMPORARY POWER & LIGHTING | 8 | MO | 250.00 | 2,000 | 760.00 | 6,080 | 8,080 | |
| SCAFFOLDING | 100,000 | SF | 3.50 | 350,000 | 4.00 | 400,000 | 750,000 | |
| DUMPSTER - PER PULL | 16 | EA | 360.00 | 5,760 | - | - | 5,760 | |
| DUMPSTER - RENTAL | 8 | MO | 125.00 | 1,000 | - | - | 1,000 | |
| SMALL TOOLS | 1 | LS | 5,000.00 | 5,000 | - | - | 5,000 | |
| SAFETY | 1 | LS | 5,000.00 | 5,000 | - | - | 5,000 | |
| | | | | | | | | 836,240 |
| TOTAL DIRECT COST | | | | 451,760 | | 695,440 | | **1,147,200** |

**DIVISION 2/EXISTING CONDITIONS**

| Item | Quantity | Unit | Material & Equip Unit | Total Material & Equipment | Labor Unit | Total Labor | Total Cost | Group Total |
|---|---|---|---|---|---|---|---|---|
| **EXTERIOR CLEANING** | | | | | | | | |
| REMOVE GYPSUM CRUST | 10 | SF | 3.00 | 30 | 12.00 | 120 | 150 | |
| REMOVE RUST STAIN (2SF/EA) | 114 | SF | 2.50 | 285 | 15.00 | 1,710 | 1,995 | |
| REMOVE MASTIC/PAINT | 188 | SF | 2.00 | 376 | 12.00 | 2,256 | 2,632 | |
| REMOVE VEGETATION | 600 | SF | 0.25 | 150 | 3.00 | 1,800 | 1,950 | |
| REMOVE CALCIUM CRUST | 1,299 | SF | 5.00 | 6,495 | 10.00 | 12,990 | 19,485 | |
| TOTAL DIVISION 2/EXISTING CONDITIONS | | | | | | | | **26,212** |

# 100% Submission Cost Estimate

| | |
|---|---|
| Project: NIST - Building 101 - Condition Survey & HSR, Gaithersburg, Maryland | Page 13 |
| Architect: MTFA Architecture, Inc. | RWB Job # 18-35-B |
| Estimated by: R.W. Brown & Associates **Low Priority** | 2/19/20 |

**DIVISION 4/MASONRY**

| Item | Quantity | Unit | Material & Equip Unit | Total Material & Equipment | Labor Unit | Total Labor | Total Cost | Group Total |
|---|---|---|---|---|---|---|---|---|
| **STONE & UNIT MASONRY** | | | | | | | | |
| CLEAN STAINED MASONRY | 65,800 | SF | 1.30 | 85,540 | 2.80 | 184,240 | 269,780 | |
| REMOVE EFFLORESCENSE | 4,174 | SF | 3.00 | 12,522 | 5.00 | 20,870 | 33,392 | |
| CLEAN MASONRY W/BIOCIDE | 2,922 | SF | 2.00 | 5,844 | 4.00 | 11,688 | 17,532 | |
| REMOVE/RESET STONE PANELS | 384 | SF | 10.00 | 3,840 | 36.00 | 13,824 | 17,664 | |
| REPAIR CRACK W/GROUT | 1,782 | LF | 22.00 | 39,204 | 78.00 | 138,996 | 178,200 | |
| REPAIR SPALL W/STONE DUTCHMAN | 12 | EA | 250.00 | 3,000 | 550.00 | 6,600 | 9,600 | |
| REPAIR SPALL W/MORTAR | 145 | EA | 60.00 | 8,700 | 190.00 | 27,550 | 36,250 | |
| CLEAN COPPER STAIN W/POULTICE | 9 | EA | 4.00 | 36 | 16.00 | 144 | 180 | |
| STITCH BRICK W/SS ROD | 8 | SF | 20.00 | 160 | 100.00 | 800 | 960 | |
| REMOVE METAL FASTENER/PATCH | 31 | EA | 10.00 | 310 | 60.00 | 1,860 | 2,170 | |
| REMOVE PAVERS/GRADE/RESET | 288 | SF | 8.00 | 2,304 | 40.00 | 11,520 | 13,824 | |
| CLEAN DRAIN PORTS | 3 | EA | 4.00 | 12 | 16.00 | 48 | 60 | |
| MISCELLANEOUS PAVER REPAIRS | 3,000 | SF | 10.00 | 30,000 | 24.00 | 72,000 | 102,000 | |
| TOTAL DIVISION 4/MASONRY | | | | | | | | **681,612** |

**DIVISION 9/FINISHES**

| Item | Quantity | Unit | Material & Equip Unit | Total Material & Equipment | Labor Unit | Total Labor | Total Cost | Group Total |
|---|---|---|---|---|---|---|---|---|
| **MISCELLANOUS** | | | | | | | | |
| REGROUT INTERIOR MARBLE | 1,000 | SF | 4.00 | 4,000 | 8.00 | 8,000 | 12,000 | |
| RESTAIN & FINISH INTERIOR WOOD | 2,500 | SF | 3.50 | 8,750 | 12.00 | 30,000 | 38,750 | |
| PATCH TERRAZZO | 500 | SF | 8.00 | 4,000 | 30.00 | 15,000 | 19,000 | |
| REPLACE VAT - SELECTIVE | 2,000 | SF | 3.25 | 6,500 | 8.00 | 16,000 | 22,500 | |
| MISCELLANEOUS REPAIR & REFINISHING | | | | | | | | |
| - ALLOW | 1 | LS | 10,000.00 | 10,000 | 15,000.00 | 15,000 | 25,000 | |
| IINTERIOR REPAIRS & REFINISHING | | | | | | | | |
| - ALLOW | 1 | LS | 100,000.00 | 100,000 | 150,000.00 | 150,000 | 250,000 | |
| | | | | | | | | 367,250 |
| **PAINTING** | | | | | | | | |
| PAINT DRYWALL/PLASTER | 3,738 | SF | 0.35 | 1,308 | 3.50 | 13,083 | 14,391 | |
| | | | | | | | | 14,391 |
| TOTAL DIVISION 9/FINISHES | | | | | | | | **381,641** |

# SECTION J: INVESTIGATIONS

NIST Building 101 Marble Panels

Existing Conditions

**General**

The marble panels are stacked on each other and carrying the self-weight of the panels above. All the connections are designed to resist horizontal forces from wind or seismic.

**Entrance Columns**

Two opposite faces of the columns are clad in two-inch marble with the other two faces clad in stainless steel. (See Photo 1) There is a short panel of 1 ½ inch thick granite at the base on all four sides. (See Photo 2) The cavity between the granite and the concrete column is filled with mortar. The panels are bedded with ¼ inch white Portland cement mortar and appear to be installed tight to the concrete soffit above. (See Photo 3) The panels appear to have been set on small V-shaped lead shims prior to applying the mortar.

The bottom course of granite is attached to the concrete column with two 3/16-inch-thick masonry tee ties with one flange embedded in a kerf cut in top of the granite stone and the other protruding upwards to receive the first course of the marble. The flanges are mortared into the kerfs. The legs of the masonry ties are attached in a vertical dovetail insert cast into the concrete column.

The top of the first course of marble is attached with two 3/16-inch-thick masonry angle ties with the one leg turned down into a kerf at the top of the marble panel and the other in the same continuous dovetail slot cast in the concrete column. At the same location there are two more angle ties with one leg facing upwards to receive the next course of marble panels. (See Photo 4)

The panels are bowing outwards with the most bowing at the lowest panel. (See Photo 5)

The stainless-steel covers are attached with a welded steel plate attached in turn to a metal strap nailed into the concrete column. The metal strap appears to be galvanized but the metal connection plate is ferrous metal and corroded. (See Photos 6, 7) There is no flashing or weep holes to allow water to escape from the cavity.

**Entrance Wall Panels**

The exterior façade is clad in three courses of 37-inch wide x 55-inch-high panels stacked vertically. (See Photo 8) Above these three courses there is a band of smaller panels. (See Photo 9).

The three 3-inch-thick panels removed near the entrance on the perimeter wall were attached to a concrete column. (See Photo 10) This condition is likely to be the same at all other building perimeter columns but not on the walls between the columns. Between the back of the panel and the face of the concrete column there was a thin infill of concrete block loosely mortared in place.

Between the columns the panels are 2-inch-thick with a concrete masonry block backup. This block infill is likely to provide lateral support to the panels at these locations. In order to evaluate the panel to block connection system another panel would have to be removed. (See Photo 11)

The entrance wall panels were doweled with two pins each side to the short 3-inch-thick, 10-inch-wide return panels at the door (See Photos 12, 13) and to the adjacent 2-inch-thick panels.

The panels were also attached in the center of the panel top and bottom with a masonry anchor hooked and mortared into the kerf cut in the top and bottom of the panels and attached to a central embedded dovetail slot.

(See Photo 14) They were also attached at the four corners with split tail masonry anchors (See Photo 15), also hooked into kerfs cut in the top and bottom of the stones and fastened to the concrete column. (See Photo 16) The masonry ties at each of the four corners appear to have pulled away from the concrete column by 3/8 inch and, in at least one instance, the fastener had corroded to the extent that it was not connected to the concrete causing the anchor to become loose and ineffective. (See Photo 17) However, other fasteners appear to be in good condition and still attached to the concrete (See Photo 18). Several of the fasteners were corroded but still embedded in the concrete. The split tail anchor attached into the top of the base granite course was also loose and pulled away from the concrete. (See Photos 19, 20) The fasteners appear to be power activated nails shot through the 3/16-inch metal masonry ties and into the concrete. (See Photos 56, 64)

**Courtyard Columns**

These columns are rectangular with three courses of 55-inch-high panels and one smaller band of panels at the top. (See Photo 21) There are two-inch-thick marble panels on all four sides that are also bowing outwards. (See Photo 22) The bowing is also more pronounced at the lowest panels. (See Photo 23).

There is one continuous dovetail slot on each face of the column. This is used to attach a tee shaped 3/16-inch-thick masonry tie. One leg turned down into a kerf cut in the top of the panels and the other leg turned up to receive the upper course of panels. The top and bottom of the panels have long slots or kerfs cut in them to receive the masonry anchor legs. (See Photos 24, 25)

In addition to these masonry anchors, the panels are pinned together at all four corners with three-inch-long, 3/8-inch diameter stainless steel dowels. There are two, possibly three, dowels in the height of each panel. (See Photos 26, 27)

In addition, there is an inverted U-shaped pin at the top of each panel holding the two adjacent panels together. (See Photo 28)

Part of the cavity behind the marble panels is filled with mortar. (See Photo 29)

The cavity between the granite base and the concrete column is also filled with mortar. The granite base is attached with one masonry angle tie into a kerf in the top of the stone. (See Photo 30)

There is no flashing or weep holes to allow water to escape from the cavity.

**Library Columns**

These columns are rectangular with four courses of 7ft 3in high, 3-inch-thick panels. The panels removed were 20 inches wide. (See Photos 31, 32) The panels on the adjacent face are 22 inches wide. There was very little bowing of these panels.

The connection details were the same as the courtyard columns with a central split tail anchor attached to an embedded dovetail slot, two horizontal dowels on each side and the inverted U-shaped pins at each corner. The top and bottom of the panels reveal a central short kerf and the U pins at each end. (See Photo 33)

There were several diagonal cracks in the panels and numerous cases of edge chipping and spalling. (See Photos 34, 35, 36, 37, 38) The mortar was missing in numerous places.

The top of the panels is held down from the soffit and partially covered with a metal trim piece. (See Photos 39, 40) It appears that water could migrate under the trim piece and enter behind the marble stones.

**Findings**

The two-inch marble panels are bowing outwards approximately 1/4 to 3/8 of an inch with the bowing most pronounced at the lower panels. Bowing was much less on the three-inch panels.

The connections of the marble panels to the concrete columns are generally structurally sound except for the corroded, and in some cases broken and loose nails, attaching the split tie anchors to the face of the perimeter concrete columns. (See Photos 41, 42) The connections comply with and exceed the guidelines from ASTM and The Marble Institute of America, which recommend that there should be "…a minimum of four anchors per piece of stone up to 12 square feet of surface area, and two for each additional eight square feet."

We were unable to evaluate the attachments of the panels to the masonry backup between the perimeter columns since none of these panels had been removed.

There is chipping and cracking of the marble panels at some of the corners, and several of the panels at the Library have diagonal cracks.

There appears to be little flexibility in the panel to panel connections or in the panel to underside of soffit connections due to the hardness of the Portland cement. The lack of a soft joint at the top of the marble panels at the entrance will also prevent thermal expansion. There are no provisions for water to escape from the cavities between the panels and the concrete columns.

**Analysis**

Marble is a rock resulting from metamorphism of sedimentary carbonate rocks, most commonly limestone or dolomite rock. Metamorphism causes variable recrystallization of the original carbonate mineral grains. The resulting marble rock is typically composed of an interlocking mosaic of carbonate crystals. These crystals behave in an anisotropic manner under stress, i.e., the thermal expansion of fine-grained marbles (exterior and interior faces expand at different rates) results in a permanent, generally convex, bowing.

Historically, bowing of marble panels has been known for over 100 years with some buildings exhibiting bowing in the order of ¾ inch to 1 3/16 inch after 15 to 20 years. Bowing of this magnitude usually requires complete removal and replacement of the marble facade. However, there have been many more buildings where the marble has performed well with only slight or no bowing. The bowing on this building is small and does not require removal of the panels. There are also no immediate life safety issues based on the information available from the limited test opening.

Thin marble panels, those two inches or less, are particularly susceptible to bowing due to thermal and moisture differential changes between the inside and external faces. Load bearing panels can also bow under their own self-weight with the greatest bowing at lower levels where the force is greater. The joints between the panels do not allow for the thermal expansion and contraction of the panels. As the panels expand and are restrained, the compression forces in the panels can cause bowing. Restrained thermal expansion will also cause the chipping and cracking of panel edges. The type of mortar in the joints should be resistant to moisture penetration and thermal breakdown, but also flexible, so that the marble panels will be able to move accordingly. It is also inevitable that water will penetrate the panels at some point, whether through joints or from interior condensation. Thus, collection and diversion of water through flashings and weep holes should have been included in the design.

Moisture trapped behind the panels could freeze and expand and exert horizontal forces on the panels causing bowing. This would be more likely at the lowest panels.

**Recommendations**

- Replace the Portland cement mortar with a softer, lime-based mortar.
- Install a soft joint between the top of the marble panels and the soffit above where necessary.
- Clean out the cavities and provide a positive drainage outlet.
- Remove chipped and cracked marble pieces and repair with matching material.
- Remove panels from the façade that are attached to the masonry backup to allow evaluation of these anchors
- Remove all panels attached to the perimeter concrete columns to evaluate the condition of the nailed split tail masonry anchors. Reattach the removed panels with an alternate connection detail.

*N:\3800\3894-01 Bldg 101 HSR\Design\Building Condition Report\Marble Panels_5-29-19.docx*

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# APPENDIX A

PHOTOS


Photo 1 – a. Entrance Column Test Opening. b. Entry Wall Panel Opening. c. Stainless Steel Panels.

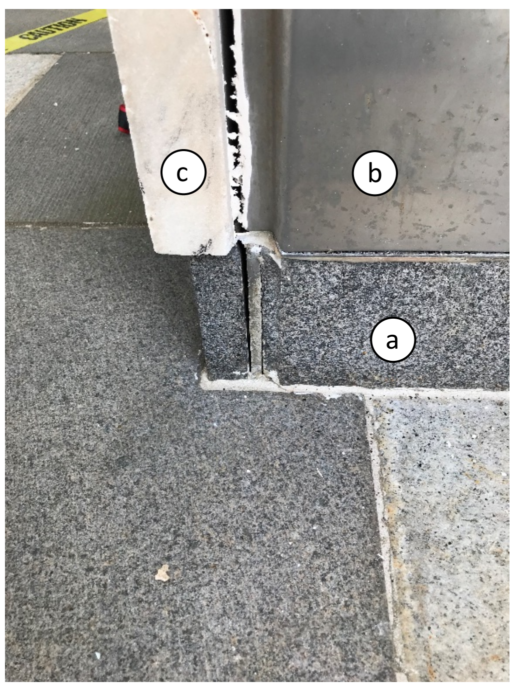



Photo 2 –a. Granite Base. b. Stainless Steel Cover. c. 2 inch Marble Panel.

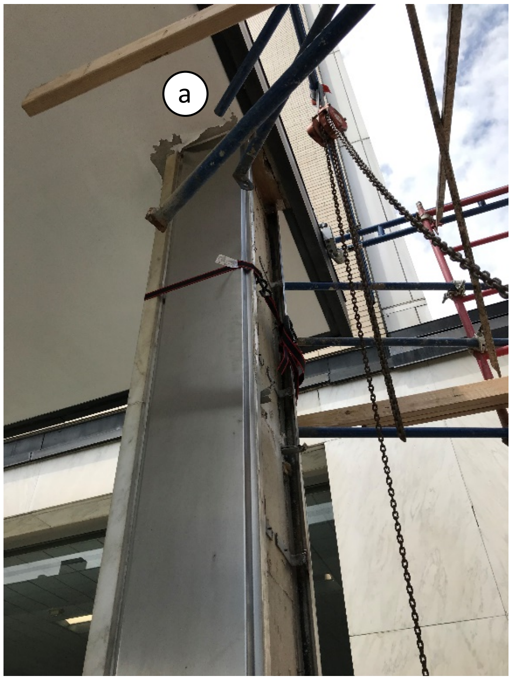



Photo 3 – a. Marble installed tight to underside of soffit.

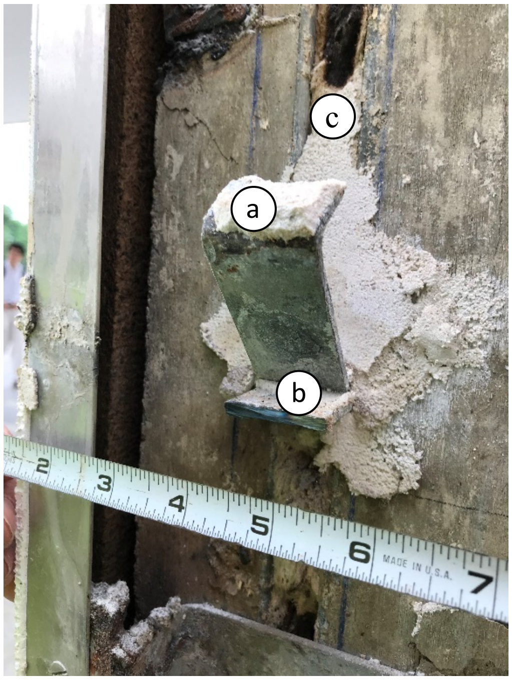



Photo 4 – a. Masonry Anchor bent up during removal of stone. b. Masonry Anchor cut during removal. c. Embedded dovetail slot.


Photo 5 – a. Bowing of Panel.


Photo 6 – a. Anchor for stainless steel cover. b. Fastener for anchor to concrete.


Photo 7 – a. Metal connection plate corroded.


Photo 8 – a. Top band of marble panels. b. Three courses of 2-inch marble panels.


Photo 9 – a. Typical Exterior Panels. b. Missing Mortar.

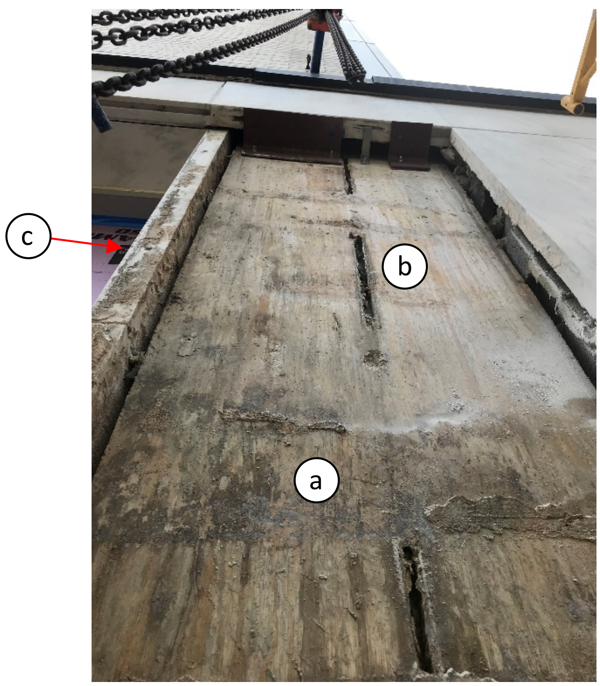



Photo 10 – a. Perimeter concrete column. b. Embedded dovetail slot. c. Marble return panel.


Photo 11 – a. 2 inch typical exterior wall panel. b. Masonry packing in front of column. c. Masonry back up to wall panels.

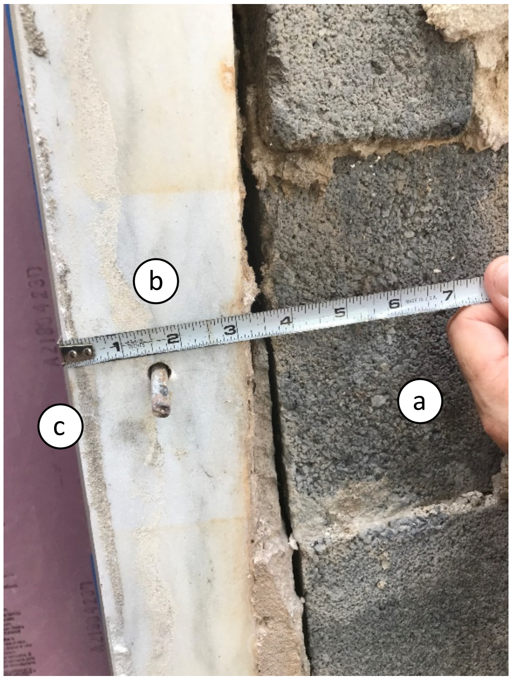



Photo 12 – a. Masonry fill in front of column. b. 3 inch return panel. c. S.S. dowel to panel on column face.


Photo 13 – a. 2 ¾ inch x 5/16 dia. Stainless Steel dowel.

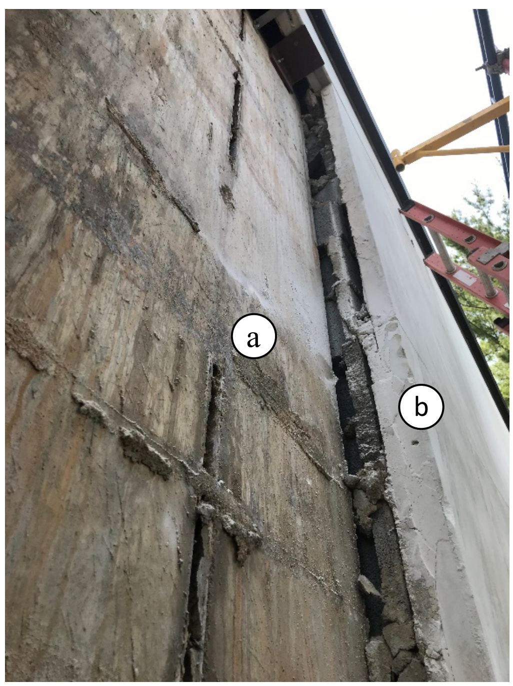



Photo 14 – a. Insert embedded dovetail in column. b. 2 inch wall panel.


Photo 15 – a. Typical split tail masonry anchor.

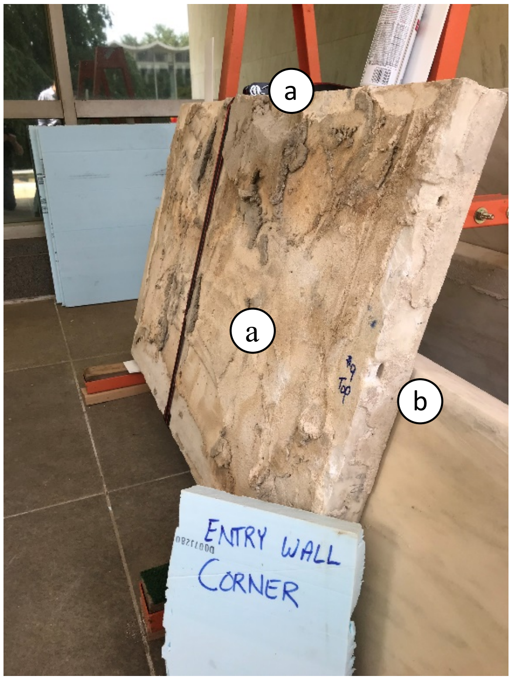



Photo 16 – a. 3 inch thick panel at perimeter column. b. 3 off-center kerfs cut in top and bottom of stone.

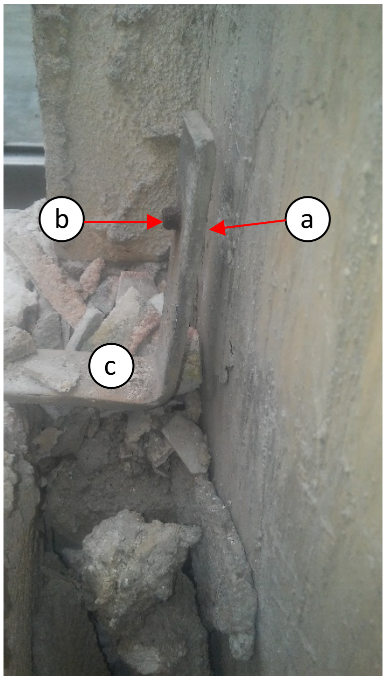



Photo 17 – a. Masonry anchor pulled 3/8" away from concrete. b. Head of fastener but missing piece to concrete. c. Masonry anchor.


Photo 18 – a. Masonry anchor with fastener in good condition.

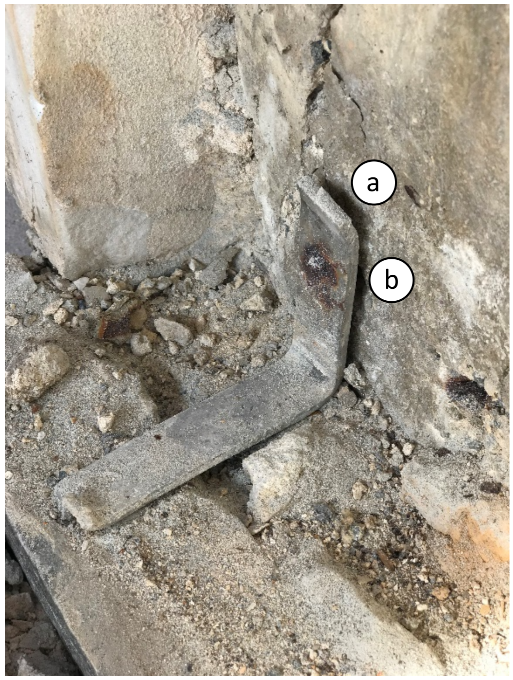



Photo 19 – a. Masonry anchor to Granite Base. b. Anchor pulled loose from concrete.


Photo 20 – a. Granite Base moved out.

## MORTAR ANALYSIS:

### INTRODUCTION

This report is an analysis of mortar sampled from Building 101 on the NIST campus in Gaithersburg, MD. JMA Preservation collected samples from the three principle masonry claddings: granite, limestone, and marble. JMA Preservation collected samples from granite cladding on the south elevation of Wing E; from limestone trim at the projecting bay on the west elevation of Wing E; and from the probe location at the marble pilaster in the inner court. All three samples were analyzed as representative of the original mortars used in the building. The purpose of this analysis is to determine the physical composition of the historic mortar for replication during the restoration of the building.

Mortar analysis is a visual and laboratory examination of cementitious building materials such as mortars, plasters, stuccos, and grouts for the purpose of determining composition and application techniques. The analysis is subjective, and primarily comparative in nature, and may be effectively used to assess the relationship between different parts of a structure or of a structure to similar sites elsewhere. The principal reason mortars are analyzed is to match historic mortars for repointing and reconstruction projects. It is critical that new mortars are physically compatible with adjacent materials and that the surface is aesthetically appropriate to the appearance of the significant historic period of the structure.

### METHODOLOGY

**Sampling**
The samples chosen for analysis include:

- MA01 – Granite Pointing Mortar (Wing E – South Elevation)
- MA02 – Limestone Pointing Mortar (Wing E – West Elevation)
- MA03 – Marble Pointing Mortar (Pilaster – Inner Court)

**Analysis**
A freshly broken surface of the mortar sample was examined with a stereo-binocular microscope. Binder color and characteristics, proportion and characteristics of voids, and relationship between aggregate and binder were evaluated. The binder was matched to a color standard of the Munsell Color Chart.[1] A portion of the sample was ground in a marble mortar to disaggregate the material. The remainder of the sample was set aside for later use in evaluation of potential replication mixes.

The sample was then separated into three components: the acid-soluble fraction, the ‘fines’ (e.g. pigment, acid-insoluble cement residue, or silt-to clay-sized mineral grains), and the aggregate or sand. Separation was accomplished by wet-chemical techniques. The acid-soluble fraction was first removed by digestion with diluted hydrochloric acid. The fines were separated from the aggregate by washing and filtration, then dried and weighed. The weight of acid soluble material was calculated by the difference in weight of the sample before processing and its weight after processing.

Weight percentages of acid-soluble material, fines, and aggregate in the sample were calculated as an aid for determining an appropriate replication mortar type. The aggregate was examined microscopically to

[1] The Munsell System of Color Notation identifies color in terms of three attributes: hue, value, and chroma. Color standards are opaque pigmented films on coated paper mounted on charts for each hue.

identify the component materials, as well as evaluate the color, opacity, and shape of the sand grains, and the presence and nature of impurities. The particle size distribution of the aggregate was determined by sieve analysis.

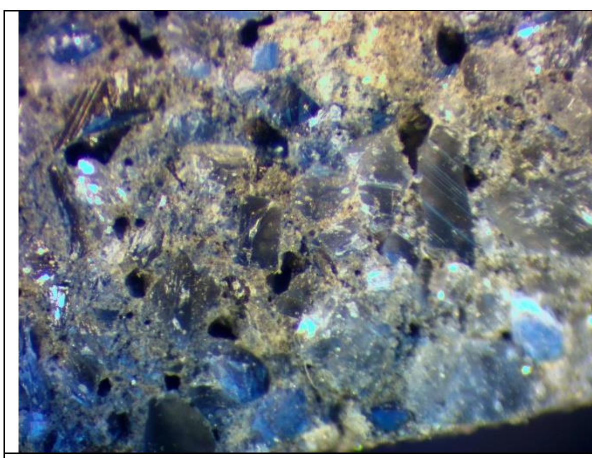
This mortar analysis benefits form the existence of specifications for the original mortar mixes in the historic construction documents. Construction documents specified the components of each mortar mix but not their relative proportions. Components included: non-shrink mortar and grout compound (a combination of finely divided and graded mixture of iron powders, accelerators, dispersing agents, and plasticizing agents); Portland cement; sand; pea gravel or stone; and water. This complicates the mortar analysis. Since the exact chemical makeup of the mortar and grout compound is unknown, it is impossible to determine the acid solubility of this mortar component. It is therefore difficult to determine with any precision the exact proportions of aggregate, binder, and additives in the original mortar mix. However, by extracting and analyzing the aggregate portion, it is possible to reach some conclusions about the original aggregate type, color, and texture.

## FINDINGS

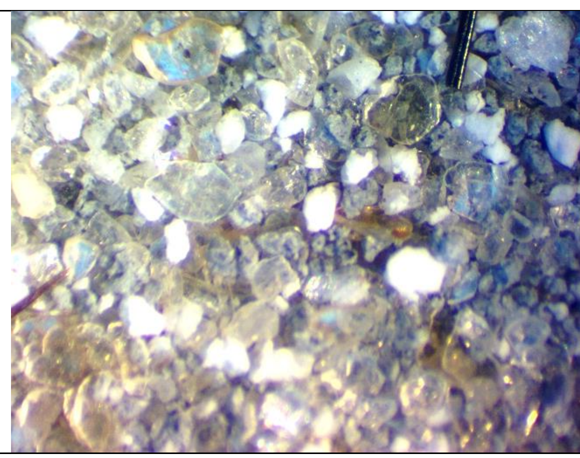
### Granite: Wing E – South Elevation

JMA Preservation took one sample of granite pointing mortar from the granite base at the south elevation of Wing E. There is evidence of multiple repointing campaigns at all exterior cladding, but visual inspection suggests this sample dates to original construction.

The pointing mortar is hard and brittle. It breaks by hand with some difficulty. This level of brittle hardness suggests the binder consists mostly or entirely of Portland cement with little or no lime present. Original construction specification data confirms this observation. The matte binder for mortar sample MA01 is a dark bluish gray (5PB 4/1). In cross section, the aggregate appears to be relatively fine and homogenous in size and shape. Grains are mostly gray or translucent and colorless, so that they pick up the gray color of the surrounding binder.



Granite pointing mortar (MA01)



Aggregate (MA01)

The aqueous solution of the powdered mortar sample effervesced violently with the addition of acid, which is typically a characteristic of lime mortars rather than entirely Portland cement mortars. However, visual inspection revealed no lime clumps and construction specifications do not list lime as a component. It is therefore possible that an unknown component of the original mortar and grout compound described in specifications reacts violently with acid.  After the initial effervescence, the reaction was relatively slow, taking several days for the binder to fully dissolve.

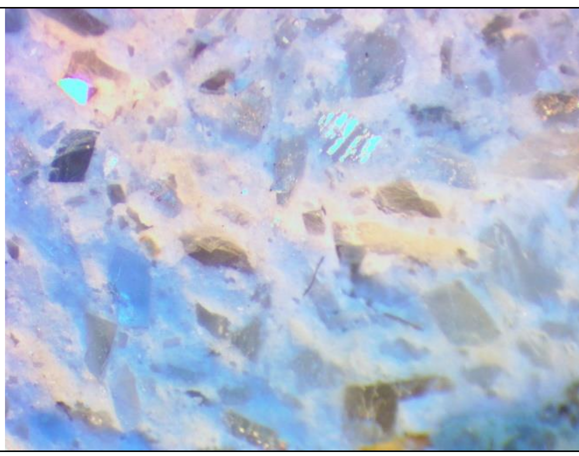
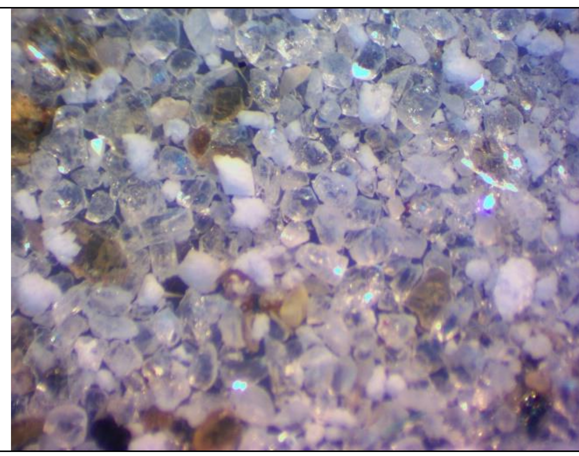
Analysis determined that overall the aggregate is well sorted and is not within ASTM C 144 ranges.  The ratio of acid-soluble components (typically binder and additives) to acid-insoluble components (typically aggregate) for sample MA01 is approximately 8:1. Such a high acid-soluble to acid-insoluble ration is unusual, suggesting a mortar that is significantly under-sanded.  It is also possible that some portion of the original aggregate was acid-soluble, for example a crushed calcareous stone.  Construction specifications do list "pea gravel or stone" as a mortar component but do not specify which stone, if any, was to be used.

JMA Preservation conducted a full sieve analysis of the aggregate.  Analysis determined that overall the aggregate is well sorted and is not within ASTM C 144 ranges.  The original aggregate was very fine, with 97% of grains categorized as fine and only 3% categorized as medium fineness.

**Limestone: Wing E – West Elevation**

JMA Preservation took one samples of limestone pointing mortar from the limestone trim on the projecting bay on the west elevation of Wing E.

The pointing mortar is hard and brittle.  It breaks by hand with some difficulty.  This level of brittle hardness suggests the binder consists mostly or entirely of Portland cement with little or no lime present.  Original construction specification data confirms this observation.  The creamy matte binder for mortar sample MA02 is a yellowish white (5Y 9/0.5), indicating white rather than gray Portland cement was the principal binder.  In cross section, the aggregate appears to be relatively fine and homogenous in size and shape. Grains are white, gray, and yellow in color.

| | |
|---|---|
|  |  |
| Limestone Pointing Mortar (MA02) | Aggregate (MA02) |

The aqueous solution of the powdered mortar sample effervesced violently with the addition of acid, which is typically a characteristic of lime mortars rather than entirely Portland cement mortars.  However, visual inspection revealed no lime clumps and construction specifications do not list lime as a component.  It is therefore possible that an unknown component of the original mortar and grout compound described in specifications reacts violently with acid.  After the initial effervescence, the reaction was relatively slow, taking several days for the binder to fully dissolve.

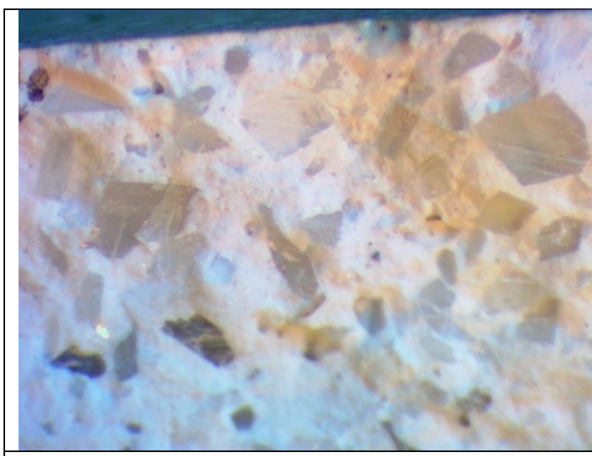
Analysis determined that overall the aggregate is well sorted and is not within ASTM C 144 ranges. The ratio of acid-soluble components (typically binder and additives) to acid-insoluble components (typically aggregate) for sample MA02 is approximately 9:1. Such a high acid-soluble to acid-insoluble ration is unusual, suggesting a mortar that is significantly under-sanded. It is also possible that some portion of the original aggregate was acid-soluble, for example a crushed calcareous stone. Construction specifications do list "pea gravel or stone" as a mortar component but do not specify which stone, if any, was to be used.

JMA Preservation conducted a full sieve analysis of the aggregate. Analysis determined that overall the aggregate is well sorted and is not within ASTM C 144 ranges. The original aggregate was very fine, with 95% of grains categorized as fine and only 5% categorized as medium fineness.

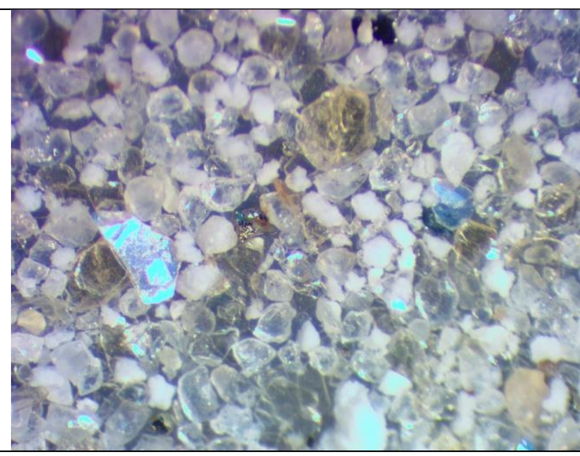
**Marble: Pilaster – Inner Court**

JMA Preservation took a single mortar sample from the structural probe location at the marble pilaster in the inner court.

The pointing mortar is hard and brittle. It breaks by hand with some difficulty. This level of brittle hardness suggests the binder consists mostly or entirely of Portland cement with little or no lime present. Original construction specification data confirms this observation. The matte binder for mortar sample MA01 is a dark bluish gray (5PB 4/1). In cross section, the aggregate appears to be relatively fine and homogenous in size and shape. Grains are mostly gray or translucent and colorless, so that they pick up the gray color of the surrounding binder.



Marble Pointing Mortar (MA03)



Aggregate (MA03)

The aqueous solution of the powdered mortar sample effervesced violently with the addition of acid, which is typically a characteristic of lime mortars rather than entirely Portland cement mortars. However, visual inspection revealed no lime clumps and construction specifications do not list lime as a component. It is therefore possible that an unknown component of the original mortar and grout compound described in specifications reacts violently with acid. After the initial effervescence, the reaction was relatively slow, taking several days for the binder to fully dissolve.

Analysis determined that overall the aggregate is well sorted and is not within ASTM C 144 ranges. The ratio of acid-soluble components (typically binder and additives) to acid-insoluble components (typically aggregate) for sample MA03 is approximately 9:1. Such a high acid-soluble to acid-insoluble ration is unusual, suggesting a mortar that is significantly under-sanded. It is also possible that some portion of the original aggregate was acid-soluble, for example a crushed calcareous stone. Construction specifications do list "pea gravel or stone" as a mortar component but do not specify which stone, if any, was to be used.

JMA Preservation conducted a full sieve analysis of the aggregate. Analysis determined that overall the aggregate is well sorted and is not within ASTM C 144 ranges. The original aggregate was very fine, with 90% of grains categorized as fine and only 10% categorized as medium fineness.

## RECOMMENDATIONS

The chemical analysis shows that all three mortars are remarkably similar in composition, indicating the three mortars date to the same period and most likely to original construction. The chemical analysis alone suggests an unusually high ratio of binder to aggregate (between 8:1 and 9:1) for each mortar. This binder to aggregate ratio would be highly unusual, as the recommended binder to aggregate ratio for mortars and grouts is 1 part binder to 2-3.5 parts aggregate.

JMA Preservation hypothesizes that the original mortars may have contained a crushed calcareous stone in the aggregate portion. JMA Preservation viewed crushed marble under a stereo-binocular microscope and determined that crushed marble is similar in appearance to a white, semi-translucent sand. It is therefore impossible to identify crushed marble in the original mortar through visual observations alone. A more in-depth petrographic analysis of the mortar samples would be necessary to positively identify the aggregate components. This level of analysis is not currently in the project scope.

Crushed Marble

JMA Preservation also treated a sample of crushed marble with muriatic acid to form an idea of what would happen to crushed marble within a mortar sample during acid digestion. The crushed marble effervesced violently when treated with the acid, and most of the sample quickly dissolved. This could explain the violent effervescence seen during the acid digestion of all three mortar samples. Violent effervescence is usually associated with lime binders rather than Portland cement binders. Original specifications indicate that the historic mortar contains only Portland cement as a binder with no lime present, and visual observations did not find evidence of lime clumps in the mortar sample. It is possible that crushed mortar in the mortar samples could account for this violent effervescence as well as the extremely small amount of aggregate extracted during analysis. However, this is not conclusive.

Chemical analysis was not able to identify the type (M, S, O, or N) of each mortar, as the binder to aggregate ratios determined through acid digestion were well outside the ranges for all types. Construction documents indicate that the fully cured mortar had a compressive strength of 10000 psi. Of the various mortar types, Type M has the highest compressive strength at a minimum of 2500 psi. The original mortar was specified at three times this strength, indicating the mortar is far too hard for all masonry applications.

JMA Preservation does not recommend full replication of the original mortar, which is under-sanded and far too hard. JMA Preservation does recommend replicating the original aggregate, within modern ASTM standards, and replicating the overall color, texture, and appearance of the original mortar.

**Replication**

In general, repointing mortars for historic building materials should not contain products labeled "masonry cements" as these products can contain unknown additives that could affect the performance of the mortar. The composition of the new mortar ensures proper strength, breathability, and appearance compatible with the existing mortar.

For the stone at Building 101, the replacement mortar must have good flexural strength, high permeability, and must exhibit a lower compressive strength than the existing masonry. According to ASTM C1713 Standard Specification for Mortars for the Repair of Historic Masonry, the mortar mix ratio should fall within a 1 part binder to 2-3.5 parts aggregate unless analysis determines a different mix was used historically and was successful. This mortar analysis has determined that the original binder: aggregate ratio for the pointing mortar was 8:1 of cement binder to aggregate for granite, 9.3:1 for brick, and 8.5:1 for limestone. None of these ratios fall within the prescribed range, and this mortar was not successful. It has failed nearly 100% in some areas has broken the surrounding stone.

Since the chemical analysis determined binder to aggregate ratios so far outside the accepted ranges, JMA Preservation recommends using the ASTM standard ratios for an appropriate mortar type when replicating the historic mortar. JMA Preservation also recommends introducing some lime into the replication mortar mixes, even though this was not included in the original mix, to achieve softer, more flexible mortars that will perform better than the original. In keeping with the original mortars, JMA Preservation recommends using gray Portland cement for the granite pointing mortar and white Portland cement for the limestone and marble pointing mortars. Aggregate in replication mortars will match the original aggregate in color, texture, and appearance, but will be in keeping with ASTM standards for grain size distribution. The aggregate will include crushed marble, as this was likely present in the original mortar mix. Visual observations suggest that limestone and marble mortars contain the same type of white masons' sand, while the granite mortar contained a grayer masons' sand.

MA01 is extremely hard and brittle. The low effervescence during the acid digestion as well as the unusually long time it took the sample to fully digest suggest a high ratio of Portland cement to aggregate. This information, combined with a binder: aggregate ratio of 8:1 suggests this mortar was harder than a Type M. A Type M mortar is rarely prescribed for use in pointing historic masonry, as such a hard mortar has the potential to damage historic brick and masonry, including granite. JMA Preservation recommends repointing with a Type S mortar that is 2 parts Portland to 1 part lime to 9 parts aggregate. The replacement mortar should match MA01 in color. This will be achieved by selecting a sand that matches the MA01 aggregate in color rather than using masonry dyes and pigments.

MA02 is extremely hard and brittle and is damaging the historic limestone cladding. This information, combined with known binder: aggregate ratio of 9.3:1, suggests this mortar was harder than a Type M. A

Type M mortar is far too hard for use with limestone cladding. The very light yellowish white color of the binder indicates the use of white rather than gray Portland in the original mix. The existing mortar is too hard and is damaging the limestone. JMA Preservation therefore recommends repointing with a Type N mortar, which is softer than both a Type S and Type M. This mix should be 1 part white Portland to 1 part lime to 6 parts sand. The replacement mortar should match MA05 in color. This will be achieved by selecting a sand that matches the MA05 aggregate in color and texture rather than using masonry dyes and pigments.

MA03 is extremely hard and brittle and is damaging the historic marble cladding. This information, combined with known binder: aggregate ratio of 8.5:1, suggests this mortar is a Type M. A Type M mortar is far too hard for use with marble cladding. JMA Preservation recommends repointing with a Type N mortar that is 1 part Portland cement to 1 part lime and 6 parts aggregate. The replacement mortar should match MA06 in color. This will be achieved by selecting a sand that matches the MA06 aggregate in color rather than using masonry dyes and pigments.

The binder should be mixed with a well-graded mason's sand that meets the ASTM Standard C144 for allowable particle size distribution in mortar aggregates as seen in the chart below.

| | Percent Passing | | |
|---|---|---|---|
| Sieve Size | Maximum Allowable | Minimum Allowable | Median |
| 10 | 100% | 95% | 98% |
| 16 | 100% | 70% | 85% |
| 35 | 75% | 40% | 58% |
| 50 | 40% | 10% | 25% |
| 100 | 25% | 2% | 14% |
| 200 | 10% | 0% | 5% |

**Type N Mortar Mix:**

| | |
|---|---|
| 1 Part Cement: | White Portland cement, ASTM C150 |
| 1 Part Lime: | Hydrated Lime, Type S, ASTM C207 |
| 6 Parts Sand: | Sand and crushed marble, ASTM C144 that matches the original in color and texture. |

**Type S Mortar Mix:**

| | |
|---|---|
| 2 Part Cement: | Gray Portland Commentate C150 |
| 1 Part Lime: | Hydrated Lime, Type S, ASTM C207 |
| 9 Parts Sand: | Sand and crushed marble, ASTM C144 that matches the original in color and texture. |

**Mortar Performance Characteristics**

- Replacement mortar should match the physical properties of the existing mortar. Ideally the composition of the new mortar should duplicate that of the original. Unfortunately, current analysis techniques such as the Cliver and Jedrzejewska methods cannot accurately determine the actual original mix; there are far too many variables.[2]

- Replacement mortar is intended to be sacrificial because it is easily replaced. Mortar should, therefore, be softer than the existing masonry, which is less durable than new stone because of weathering and other treatments.
- Replacement mortar must be more porous than the surrounding masonry it supports, thus allowing moisture that may enter a wall to pass through it to the exterior. Hard, dense mortars prevent this moisture movement, causing accelerated deterioration in the masonry unit rather than in the mortar joint.

**Mortar Sample Preparation**

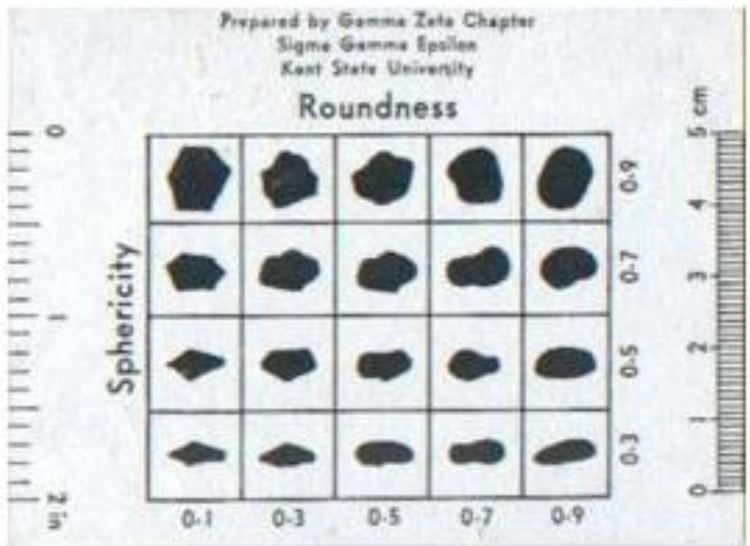
- Prepare a range of samples to determine the appropriate materials and proportions for the new mortar. Small batches of sample mortars can be prepared off-site until a preliminary mix is developed.
- Final samples should be prepared on site at actual repair locations to determine application method and final tooling, and to establish a performance standard.
- **Final selection of the replacement mortar mix to be used is the responsibility of the owner or architect of record, and should be based on evaluation of the cause of failure of the existing mortar, and the condition and type of the masonry.**
- Color selection shall be done at areas of stone and brick which have been cleaned as per the selected cleaning method.

**Good Repointing Practice**

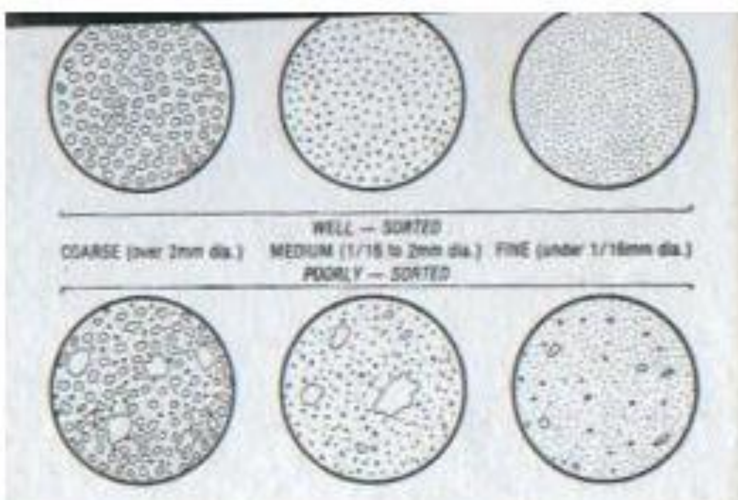
- Repoint all open mortar joints in masonry walls. Leaving joints open will lead to moisture penetration and may, in turn, lead to material degradation of internal structural components.
- Friable, cracked, disintegrated joints must be cut back to sound mortar before repointing.
- Rake out existing deteriorated mortar to a depth of ¾-inch to 1-inch beyond the face of the joint.
- Install new mortar tooled to match the profile of the original mortar joints.
- Pack all voids in bedding mortar with new mortar, and then repointed to prevent face loading of the masonry and consequent spalling (face loading also occurs when pointing mortar is much harder than the bedding mortar).
- Do not install mortar during temperatures below 45°F or above 85°F.
- Properly cure new mortar to ensure that it does not dry out too quickly using a combination of protection and water misting as required. Failure to properly cure the mortar may lead to premature failure of the new work.

[2] See Hanna Jedrzejewska, "Old mortars in Poland: a new method of investigation" in *Studies in Conservation* 5, no. 4 (1960): 132-138.

**Roundness Scale**




**Grain Size and Sorting**



MORTAR ANALYSIS SUMMARY SHEET

Project Name: NIST Building 101

Locations: Granite Base at south elevation of Wing E

Sample No.: MA01

Date: 06-17-19

**Chemical Analysis**

A. CALCULATIONS (weight in g.)

| | |
|---|---|
| 1. Container Weight: | 133.63 |
| 2. Sample Weight | 30.86 |
| 3. Filter Paper Weight | 2.46 |
| 4. Container + Sand Weight: | 134.25 |
| 5. Sand Weight: | 0.62 |
| 6. Paper + Fines Weight: | 5.28 |
| 7. Fines Weight: | 2.81 |
| 8. Sand + Fines Weight: | 3.43 |
| 9. Acid Soluble Weight | 27.43 |
| 10. Weight Percent Sand | 2.01% |
| 11. Weight Percent Acid Soluble | 88.87% |
| 12. Weight Percent Fines | 9.12% |

B. PRE-TEST - Sample
Description: The sample is taken from a 3/16" granite joint from at the basement level. The sample breaks by hand with some difficulty. Cleavage is through the aggregate and not the binder. The gray binder is matte and textured. The binder to aggregate ratio is extremely high. Void volume is approximately 10% primarily in the form of rounded, regular voids from entrapped air. Voids tend to be smaller than the medium aggregate.

Color Munsell Value: 5PB 4/1 Color Name: Bluish purplish gray

| | soft | | | | | | | | hard |
|---|---|---|---|---|---|---|---|---|---|
| Relative Hardness: | 1 2 3 4 5 6 7 8 | | | | | | | **9** | 10 |

C. POST-TEST - Sands

Color Munsell Value: 10YR 6/1 Color Name: Light grayish yellow

Opacity: Opaque: 30% Translucent: 40% Transparent: 30%

Angularity: The particles are mostly sub-angular measuring R0.5/S0.9.

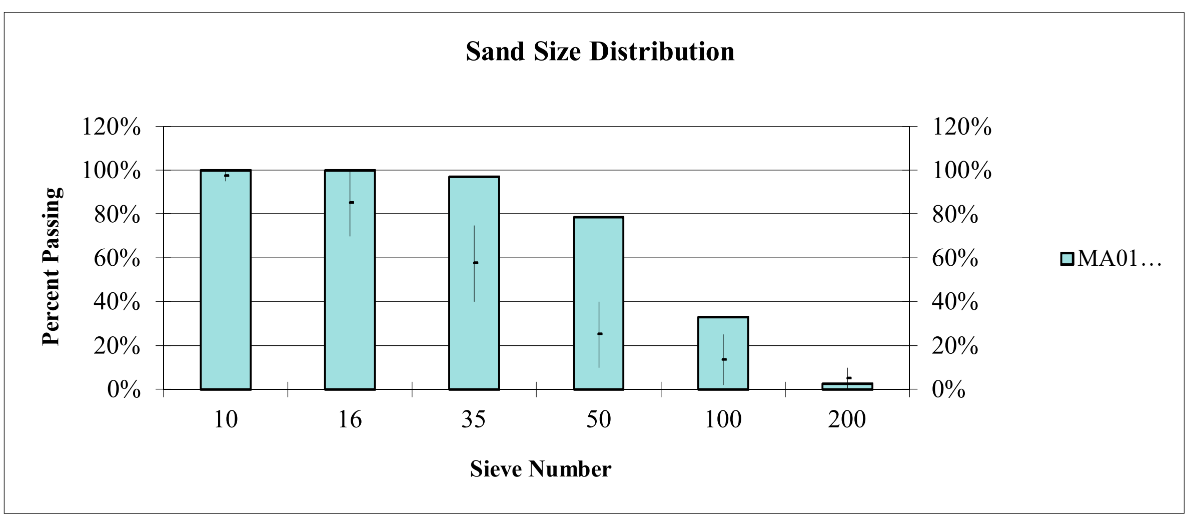
Composition: The main portion of the sands are fairly uniform in composition. Grains are an even mix of opaque, translucent, and transparent. Color varies among white, gray, and yellow.

| Size: | Sieve No. | Weight | Percent Passing |
|---|---|---|---|
| | 10 | 0.00 grams | 100% |
| | 16 | 0.00 grams | 100% |
| | 35 | 0.02 grams | 97% |
| | 50 | 0.14 grams | 79% |
| | 100 | 0.34 grams | 33% |
| | 200 | 0.23 grams | 3% |
| | <200 | 0.02 grams | 0% |

D. POST-TEST - Fines

Color Munsell Value: 5PB 5/1 Color Name: Light Gray

E. NOTES: There was high effervescence during acid digestion. The sample took several days to digest.




Note: Each vertical line represents the range allowable in a mortar sand for a given particle size as specified by ASTM C 144 Standard Specification for Aggregate for Masonry Mortar. Allowable percentages are different for natural and manufactured sands; this chart represents the absolute maximum and minimum of both aggregate types considered together. The bars represent the particle size distribution of the sample.

MORTAR ANALYSIS SUMMARY SHEET

Project Name: NIST Building 101

Location: Limestone trim at west elevation of Wing E

Sample No.: MA02

Date: 06-17-19

**Chemical Analysis**

A. CALCULATIONS (weight in g.)

| | |
|---|---|
| 1. Container Weight: | 163.20 |
| 2. Sample Weight | 31.84 |
| 3. Filter Paper Weight | 2.45 |
| 4. Container + Sand Weight: | 163.96 |
| 5. Sand Weight: | 0.76 |
| 6. Paper + Fines Weight: | 4.65 |
| 7. Fines Weight: | 2.20 |
| 8. Sand + Fines Weight: | 2.96 |
| 9. Acid Soluble Weight | 28.88 |
| 10. Weight Percent Sand | 2.39% |
| 11. Weight Percent Acid Soluble | 90.69% |
| 12. Weight Percent Fines | 6.92% |

B. PRE-TEST - Sample
Description: The sample is taken from a 5/16" limestone trip at the projecting central bay. The sample breaks by hand with some difficulty. Cleavage is through the aggregate and not the binder. The white binder is matte and textured. The binder to aggregate ratio is extremely high. Void volume is approximately 1% primarily in the form of rounded, regular voids from entrapped air. Voids tend to be smaller than the medium aggregate.

Color Munsell Value: 5Y 9/0.5 Color Name: White

Relative Hardness: soft 1 2 3 4 5 6 7 8 **9** 10 hard

C. POST-TEST - Sands

Color Munsell Value: 10YR 8/1 Color Name: Yellowish White

Opacity: Opaque: 5% Translucent: 70% Transparent: 25%

Angularity: The particles are mostly rounded measuring R0.7/S0.9.

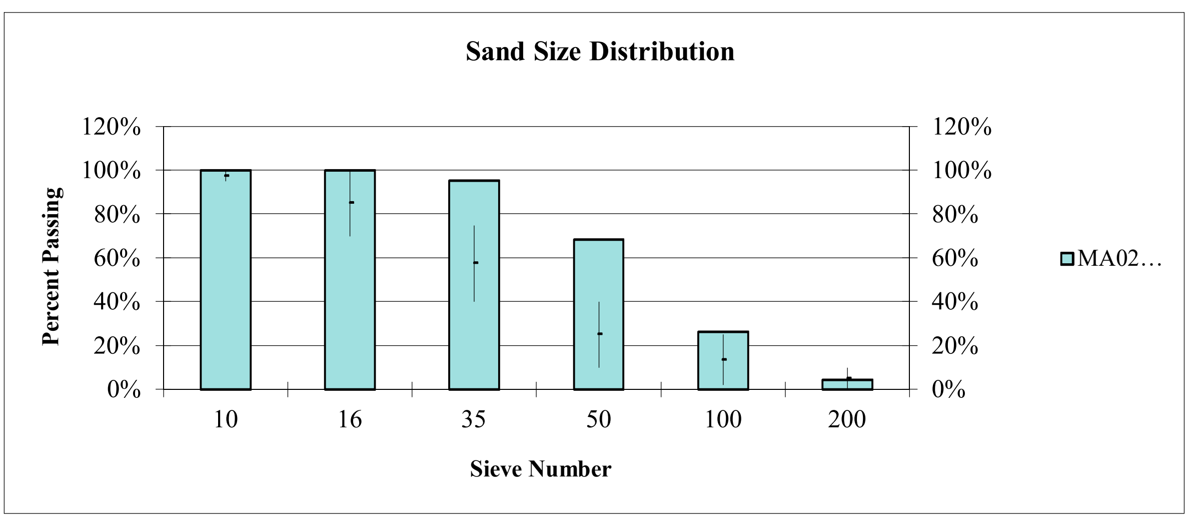
Composition: The main portion of the sands are fairly uniform in composition. Most of the grains are translucent and colorless. Some particles are translucent. Opaque particles are white in color.

| Size: | Sieve No. | Weight | Percent Passing |
|---|---|---|---|
| | 10 | 0.00 grams | 100% |
| | 16 | 0.00 grams | 100% |
| | 35 | 0.04 grams | 95% |
| | 50 | 0.20 grams | 68% |
| | 100 | 0.32 grams | 26% |
| | 200 | 0.17 grams | 4% |
| | <200 | 0.03 grams | 0% |

D. POST-TEST - Fines

Color Munsell Value: 5Y 9/0.5 Color Name: Yellowish White

E. NOTES: There was high effervescence during acid digestion. The sample took several days to digest.




Note: Each vertical line represents the range allowable in a mortar sand for a given particle size as specified by ASTM C 144 Standard Specification for Aggregate for Masonry Mortar. Allowable percentages are different for natural and manufactured sands; this chart represents the absolute maximum and minimum of both aggregate types considered together. The bars represent the particle size distribution of the sample.

MORTAR ANALYSIS SUMMARY SHEET

Project Name: NIST Building 101

Location: Marble pilaster in inner court

Sample No.: MA03

Date: 06-17-19

**Chemical Analysis**

A. CALCULATIONS (weight in g.)

| | |
|---|---|
| 1. Container Weight: | 106.64 |
| 2. Sample Weight | 28.06 |
| 3. Filter Paper Weight | 4.18 |
| 4. Container + Sand Weight: | 106.87 |
| 5. Sand Weight: | 0.23 |
| 6. Paper + Fines Weight: | 6.92 |
| 7. Fines Weight: | 2.73 |
| 8. Sand + Fines Weight: | 2.96 |
| 9. Acid Soluble Weight | 25.10 |
| 10. Weight Percent Sand | 0.82% |
| 11. Weight Percent Acid Soluble | 89.44% |
| 12. Weight Percent Fines | 9.74% |

B. PRE-TEST - Sample
Description: The sample is taken from a 3/16" marble joint at a pilaster. The sample breaks by hand with some difficulty. Cleavage is through the aggregate and not the binder. The white binder is matte and textured. The binder to aggregate ratio is extremely high. Void volume is approximately 5% primarily in the form of rounded, regular voids from entrapped air. Voids vary in size, with some larger and some smaller than the medium aggregate.

Color Munsell Value: 5Y 9/0.5 Color Name: Yellowish white

soft hard
Relative Hardness: 1 2 3 4 5 6 7 **8** 9 10

C. POST-TEST - Sands

Color Munsell Value: 10YR 7/1 Color Name: Yellowish white

Opacity: Opaque: 25% Translucent: 50% Transparent: 25%

Angularity: The particles are mostly rounded measuring R0.7/S0.9.

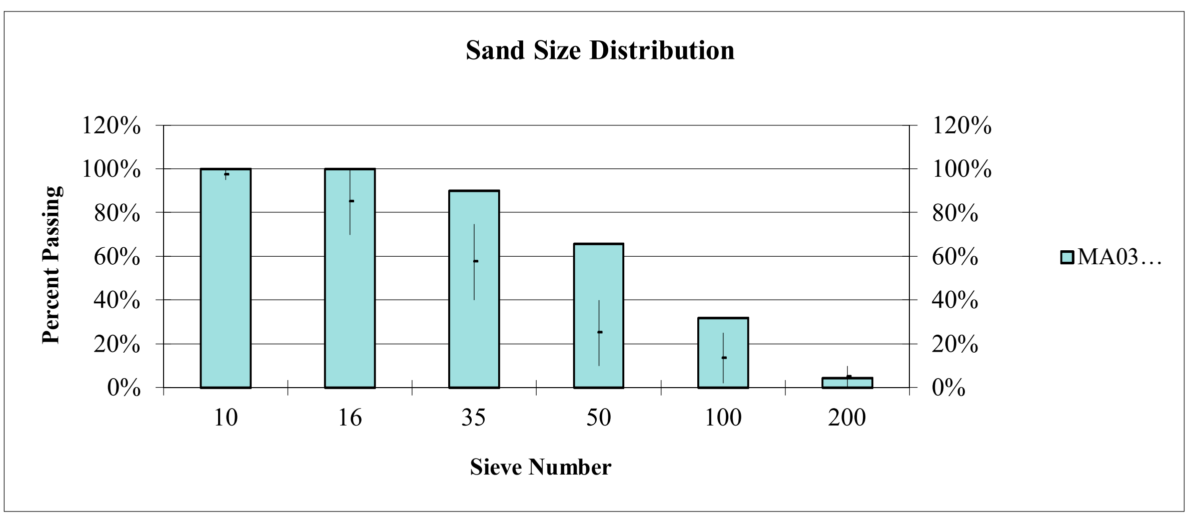
Composition: The main portion of the sands are fairly uniform in composition. Most of the grains are translucent and colorless. Some particles are translucent. Opaque particles are white in color.

| Size: | Sieve No. | Weight | Percent Passing |
|---|---|---|---|
| | 10 | 0.00 grams | 100% |
| | 16 | 0.00 grams | 100% |
| | 35 | 0.03 grams | 90% |
| | 50 | 0.07 grams | 66% |
| | 100 | 0.10 grams | 32% |
| | 200 | 0.08 grams | 4% |
| | <200 | 0.01 grams | 0% |

D. POST-TEST - Fines

Color Munsell Value: 5Y 9/0.5 Color Name: Yellowish white

E. NOTES: There was high effervescence during acid digestion. The sample took several days to digest.




Note: Each vertical line represents the range allowable in a mortar sand for a given particle size as specified by ASTM C 144 Standard Specification for Aggregate for Masonry Mortar. Allowable percentages are different for natural and manufactured sands; this chart represents the absolute maximum and minimum of both aggregate types considered together. The bars represent the particle size distribution of the sample.

## STRUCTURAL SURVEY AND RECOMMENDATIONS

The structural team conducted a visual survey of Building 101 at the NIST campus on May 23, 2019. Findings and recommendations from that survey have been submitted with the 50% report submission on June 17, 2019. This report contains findings from additional probes performed by the contractor after submission of the 50% report.

The additional probes surveyed areas listed below:

- Exterior Marble Panels on East Perimeter CMU Wall.
- Marble Panel Supports at Library Patio Fascia
- Granite Pavers at North Entrance Plaza
- Granite Panels at North Entrance Cheek Wall
- Concrete Soffit at Loading Dock

**Materials Conditions and Repairs**

<u>Exterior Marble Panels on East Perimeter CMU Wall</u>

The marble panels that were attached to the perimeter CMU wall are supported by gravity to the bottom panel, which rests on the concrete slab. A plain steel angle was present at the joint between the first (lowest) and second panels. The angle is badly pitted and scaled. Checking with a metal detector, the angle continued for the whole width of the next stone over and partly into the next one. The stone below the steel angle is the one with the date carving, and we theorize that the rest of the stones were installed while waiting for the carving to be made, so the stone above it needed support. The cracking in the joint directly above the "1962" stone is the widest crack present due to the rust jacking of this angle. The metal detector also recorded intermittent readings at the quarter points of the stone, which corresponds to the tie hardware seen elsewhere.

Lateral ties consist of stainless-steel straps and split tail anchors in the horizontal joints embedded into the CMU backup wall. In general, there are two ties at the top and bottom of each stone, although at one joint, one of the ties was missing. Given the overall redundancy and connections between panels, an occasional missing tie is not cause for alarm by itself. There are also 3/8" diameter stainless steel rods run in between holes drilled in the sides of the panels at quarter points, connecting adjacent panels for alignment. These pins can also help to distribute loads between adjacent panels, but since they are not connected to the backup, do not restrain bowing.

This support configuration is structurally sound, but as was the case with panels at concrete columns, the existing mortar joints have failed at several locations. Perimeter CMU wall construction was rough but adequate.

*Recommendations (all marble panels combined):*

*High Priority (2 years or less)*

- *Complete repointing, replacing the Portland cement with a softer, lime-based mortar for all marble panel joints. This is given a high priority in order to stop water infiltration and continuing associated deterioration.*
- *Areas of marble panels are experiencing visible displacement <u>and</u> where plain steel hardware has been found at similar construction <u>and</u> where there is a high exposure to the public should be removed and reset according to the specific recommendations below. These include:*
  - *Courtyard columns*
  - *East Entrance columns*
  - *Library North Portico columns*
- *Install a soft joint between the top of the marble panels and the soffit above.*
- *Clean out the cavities and provide a positive drainage outlets (weeps).*
- *Remove chipped and cracked marble pieces and repair with matching material.*
- *Reattach the removed panels with alternate connection details using all stainless steel supports and hardware.*

*Medium Priority (5 years or less)*

- *Areas of marble panels that are currently experiencing displacement, cracked joints, or other visible signs of distress such as corroded support angles but have a lower exposure to the public OR areas that have a high exposure to the public should plan to be removed and reset within the next five (5) years. These include:*
  - *Stones above the "1962" stone adjacent to the East entrance.*
  - *Stones at the Library fascias on the north and south elevations.*
  - *Stones at walls and pilasters in Courtyard not included in High Priority*

*Low Priority (10 years or less)*

- *Areas of marble panels are not currently experiencing visible displacement and also a low exposure to the public should plan to be removed and reset within the next ten (10) years. These include:*
  - *Wall panels not directly adjacent to walkways.*
  - *Any remaining marble stone panels*

Marble Panel Supports – Library Patio Fascia

The marble panels at the library patio fascia are supported by gravity on steel angles that are bolted to the patio concrete slab edge. Laterally, they are supported by 3/8" diameter stainless steel rods run in between holes drilled in the sides of adjacent panels and through stainless steel O-rings that embedded into the concrete slab edge. This support configuration is structurally sound; however, the existing steel angles are badly corroded.

From our survey, it appears that water from the patio above is penetrating the granite pavers through joints/cracks and running down the concrete slab below towards the edge of slab and behind the steel angles, causing them to corrode over time. Based on our analysis, we recommend keeping the existing support configuration and but replacing the existing steel angle supports with new stainless-steel ones. This will require removal of these panels.

The south elevation of the library has a similar fascia assembly. Though not investigated with a probe, we recommend the same treatment for this fascia with replacement stainless steel angle supports.

*Recommendations:*

- *Remove marble panels, steel angle supports, and attachment hardware along the edge of the slab.*
- *Install new stainless steel angles (same size & length as original) with stainless steel bolts spaced at 30" O.C., offset 6" from original bolt locations. Weld 3/8" diameter (10" long) rods to the horizontal lip of the angle supports to provide lateral restraint, similar to the existing.*
- *Provide stainless steel lateral ties and alignment pins between panels, similar to the existing.*
- *Reinstall marble panels*

*Priority: Medium (see consolidated marble panel recommendations above)*

Granite Pavers – North Entrance Plaza

An area of granite pavers was removed at the North Entrance Plaza, along with the setting bed down to the concrete slab on grade. The exposed top surface of the concrete slab is heavily scaled, creating a rough surface and exposing the large aggregate. There is no waterproofing or drainage layer present on top of the slab. The setting bed has two layers, the bottom layer containing pea gravel, and the thinner top layer appears to be sand and cement. It is plausible that the pavers were reset at some time, perhaps by removing top loose material from the original setting bed and then resetting the stones in a thin leveling bed on top of the original one. It is not known if either or both of these are original. The joints between the stones are filled with sealant which is in very poor condition and generally open. The pavers appear to be displaced both vertically and horizontally.

Water infiltration appears to be the major problem here due to the open joints and heavy salting in the wintertime. The vertical displacement has two possible causes, both related to water infiltration: scaling of the concrete slab or frost heaving. The open joints allow water to saturate the setting bed and pond on top of the slab. Due to the lack of air entrainment in the concrete, this leads to freeze thaw damage to the concrete, visible as scaling which also has a volume change associated with it, displacing the pavers above. Frost heaving is a more direct result of water accumulating within the setting bed and expanding when it freezes. Either or both of these mechanisms are possible.

It is unclear if the pavers are actually displacing horizontally, or if they simply appear to be due to the widespread sealant failure. Other than the cheek wall on the west side and the building to the south, the edges of the plaza are unrestrained, so it is possible that the pavers could creep horizontally over time. It is likely that the paver joints were originally mortared, which should be a more maintenance free construction.

*Recommendations:*

- *Remove and temporarily replace sealants in all joints with a traffic grade, non-staining sealant.*

*Priority: High*

- *Demolish the plaza, salvaging the pavers for re-installation*
- *Replace the underlying slab on grade and setting bed with more appropriate and modern materials. Including:*
  - *Air entrained concrete slab on grade.*
  - *Damp proofing or other surface sealant on the slab.*
  - *Drain board layer*
  - *Setting bed*
  - *Stainless steel clips to restrain lateral movement at unrestrained edges*
  - *Isolation joint at cheek walls*
- *Reinstall granite pavers with mortared joints to provide more maintenance free surface.*

*Other plazas with similar construction should have the same treatment (South Entrance, East Entrance walkway within traffic loop, etc)*

*Priority: Medium*

Note: also see discussion and recommendations for cheek wall below

Granite Panels – North Entrance Cheek Wall

Granite cheek wall panels and cap stones were removed, exposing the concrete backup wall beneath. The concrete substrate had a crumbling surface consistent with a high degree of freeze-thaw damage. Freeze-thaw damage is typically caused by lack of air entrainment in concrete exposed to wet conditions during freezing temperatures. Petrographic analysis of the concrete was not included in this study, which would provide conclusive evidence of the lack of air entrainment, however given the era in which this building was constructed, air entrainment admixtures would not have been typically included. Wet conditions are likely due to failed joints in the cap stones allowing water penetration. There was no corrosion of steel reinforcing visible, and unlike some of the site walls, the cheek wall did not appear to be rotated.

The deterioration of the concrete backup has allowed the anchors holding the granite to move.

The cavity behind the cheek wall panels were also fully grouted, so in the right conditions, water behind the panels can freeze and expand, pushing the panels outward.

The granite pavers and setting bed were grouted tight to the face of the cheek wall stones, although there is a sealant joint at the very surface. On the opposite side of the wall, the joint between the granite cheek stones and the concrete pavement appears to be tight. Both of these conditions will cause expansion or other movement in the slabs to press against the cheek wall at the bottom. This can cause the cheek wall stones to rotate and move outward at the top.

*Recommendations:*

- *Remove granite and salvage for reinstallation.*
- *Demolish and replace top 6 to 8 inches of the concrete backup wall to remove damaged concrete and provide sufficient lap of the replacement patch onto existing reinforcing. Protect new concrete with damp-proofing.*
- *Remove horizontal concrete and granite elements and reinstall with isolation joint abutting the granite to allow thermal expansion.*
- *Granite reinstallation can be similar to the existing construction except the vertical cavities should remain open above grade to allow water drainage. Weeps should be installed.*

*Priority: Medium*

Concrete Soffit – Loading Dock

A section of the plaster soffit was removed at the loading dock near previously observed areas of concrete deterioration to determine if that condition continued into the hidden soffit space. We did not observe any additional concrete deterioration at the slab underside or beams. The soffit construction itself is plaster on metal lath supported on small steel channels and hung by wires from the concrete slab above. The plaster has a few cracked areas, but overall it is in fair condition.

*Recommendations:*

- *Repair visible areas of concrete damage to prevent them from getting worse and to remove hazard of falling concrete spall as previously recommended.*

*Priority: Hight*

- *Replace plaster soffit within 10 years*

*Priority: Low*

Photo 1 – Overview, Exterior Marble Panels on East Perimeter CMU Wall

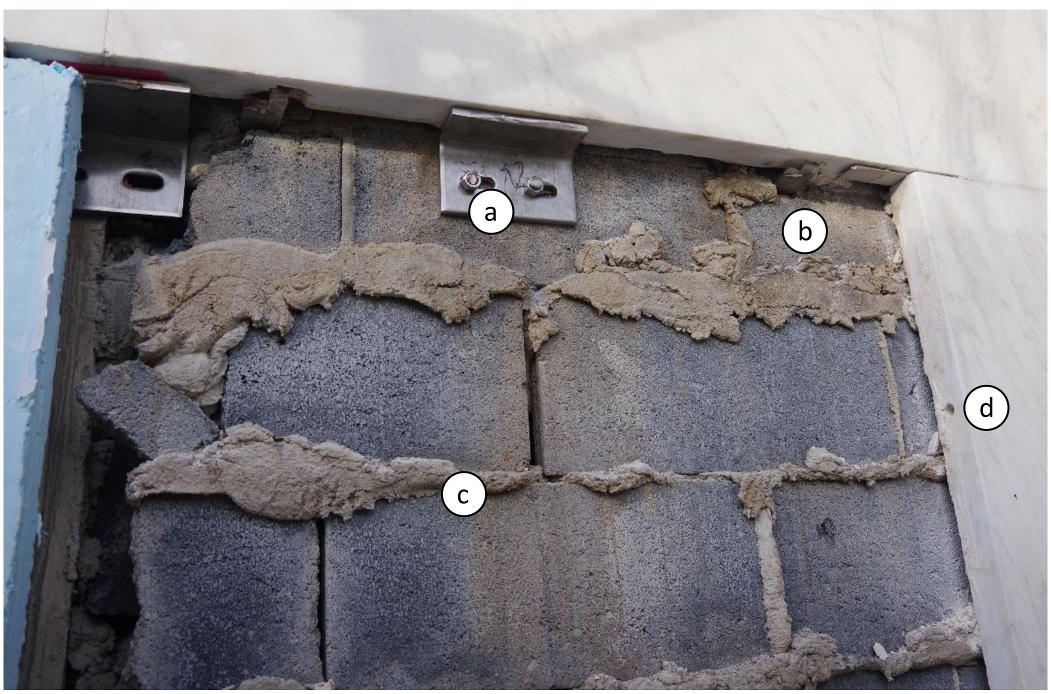



Photo 2 – Top of removal area - a. Stainless steel support angle (new). b. Stainless split tail tie (exist). c. CMU backup wall. d. hole for alignment pin in adjacent panel


Photo 3 – Bottom of removal area - a. Corroded support angle. b. Base of cavity full of debris. c. CMU backup wall. d. Adjacent concrete column


Photo 4 – a. Corroded support angle continuing into joint at adjacent stones. b. Rust jacking visible under adjacent stone.

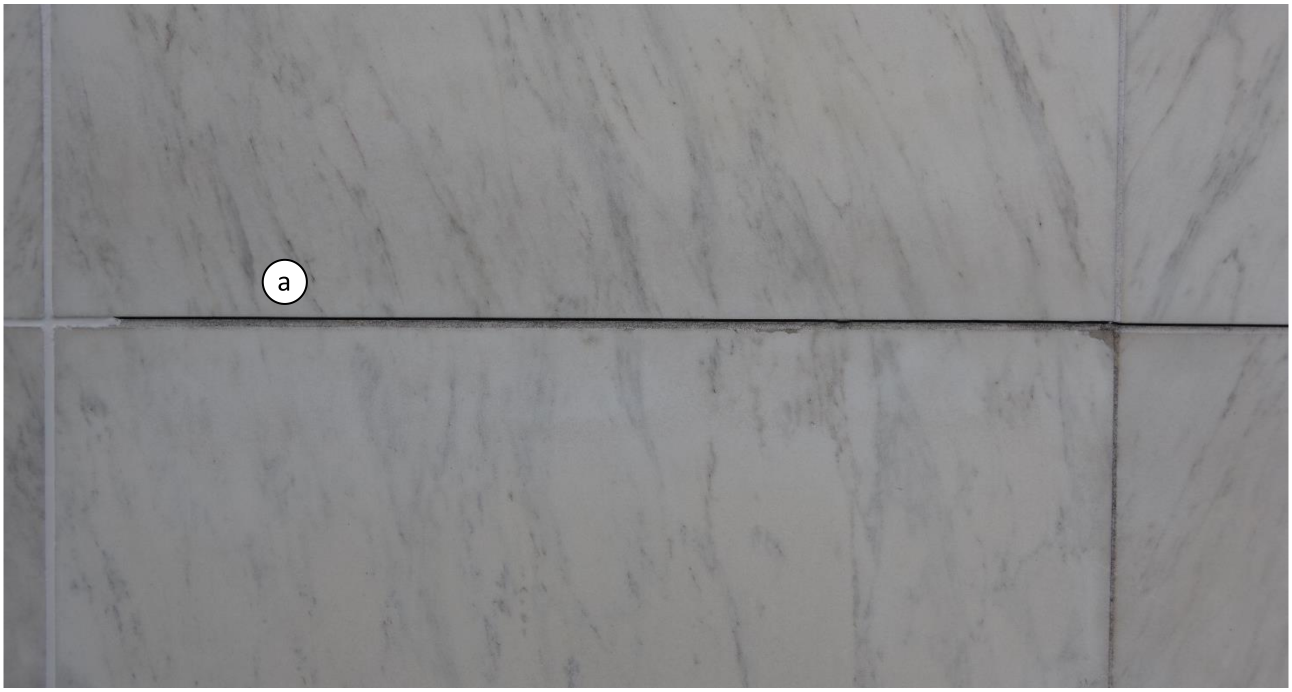



Photo 5 – a. Joint at continuation of corroded steel support over “1962” stone.


Photo 6 – a. Base of wall cavity full of old debris.

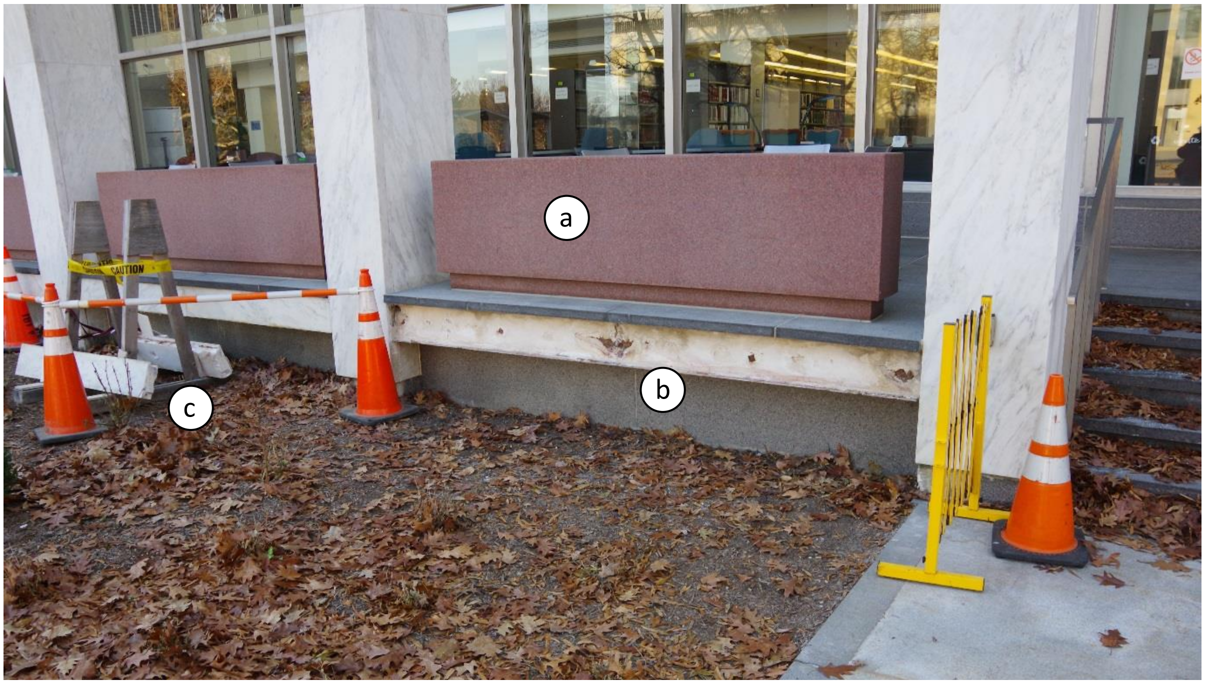



Photo 7 – a. Overview, Marble Panel Supports at Library Patio Fascia. b. Steel angle. c. Removed marble fascia panels.


Photo 8 – a. Closeup of steel angle. Note general moderate corrosion on top and vertical face. b. Welded rod for stone lateral restraint.


Photo 9 – a. Underside of steel support angle. Note more severe corrosion. b. Underside of concrete lip with water staining.

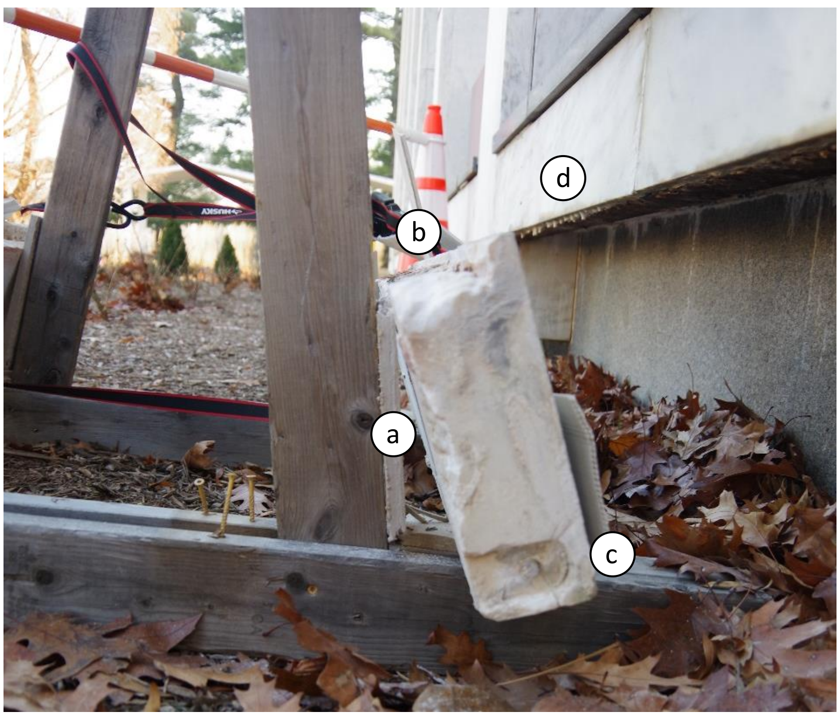



Photo 10 – a. Removed stone (stored upside down from in-place orientation). b. Bottom of stone carved to receive steel rod restraint. c. Side of stone carved to receive metal tie (remnant of pin still in stone). d. Note stalactites on stone in place beyond indicating water flow.


Photo 11 – North entrance plaza overview. a. Granite Pavers. b. Granite Steps. c. Cheek Wall. d. Concrete slabs and steps

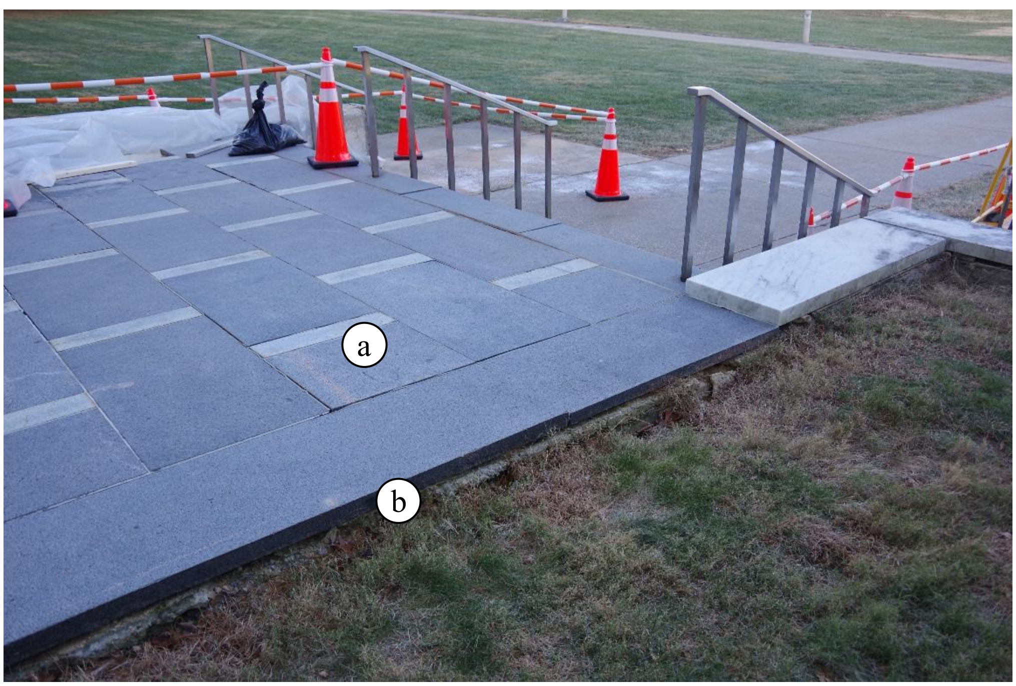



Photo 12 – North entrance plaza. a. Granite Pavers with open joints. b. Edge of paving.

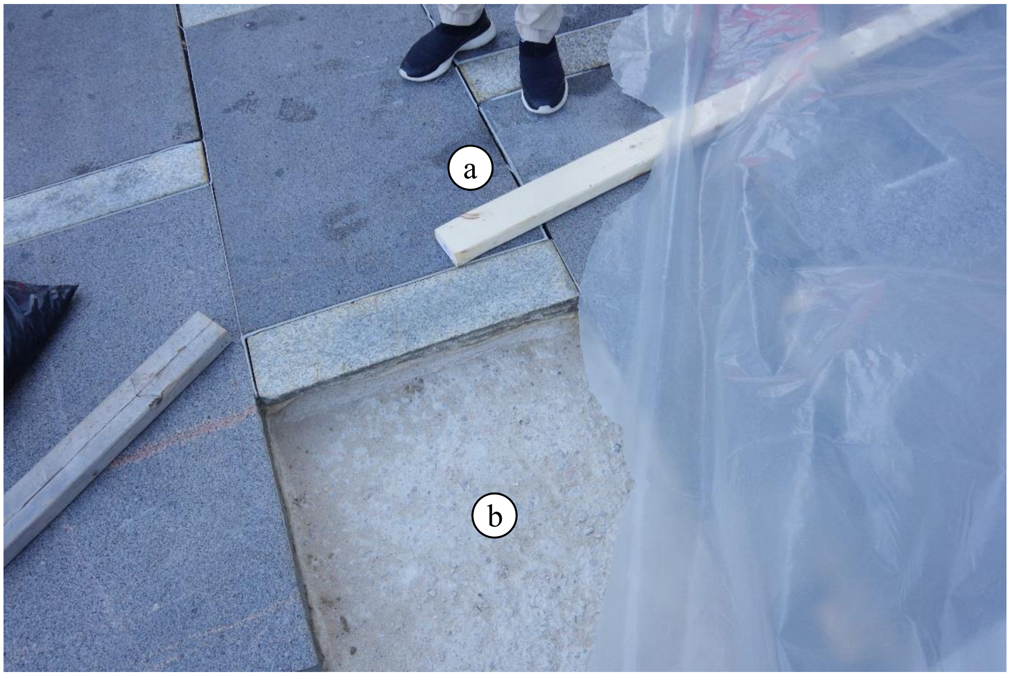



Photo 13 – Removed pavers. a. Note open joints at failed sealant. b. Concrete base slab.


Photo 14 – North entrance plaza overview. a. Granite Paver. b. Top layer of setting bed. c. Bottom layer of setting bed d. Concrete slab, note deteriorated finish on slab.


Photo 15 – Cheek wall. a. End stone. b. Side wall stone. c. Adjacent concrete slabs tight to stones.


Photo 16 – a. End stone with fully grouted cavity. b. Concrete slab on grade tight to stone. c. Stainless steel strap anchor.


Photo 17 – Top of cheek wall. a. Top of concrete wall deteriorated, but no exposed or corroded reinforcing steel. b. Cavity at side walls fully grouted. c. Stainless steel straps in top of wall not well anchored due to deteriorated concrete.

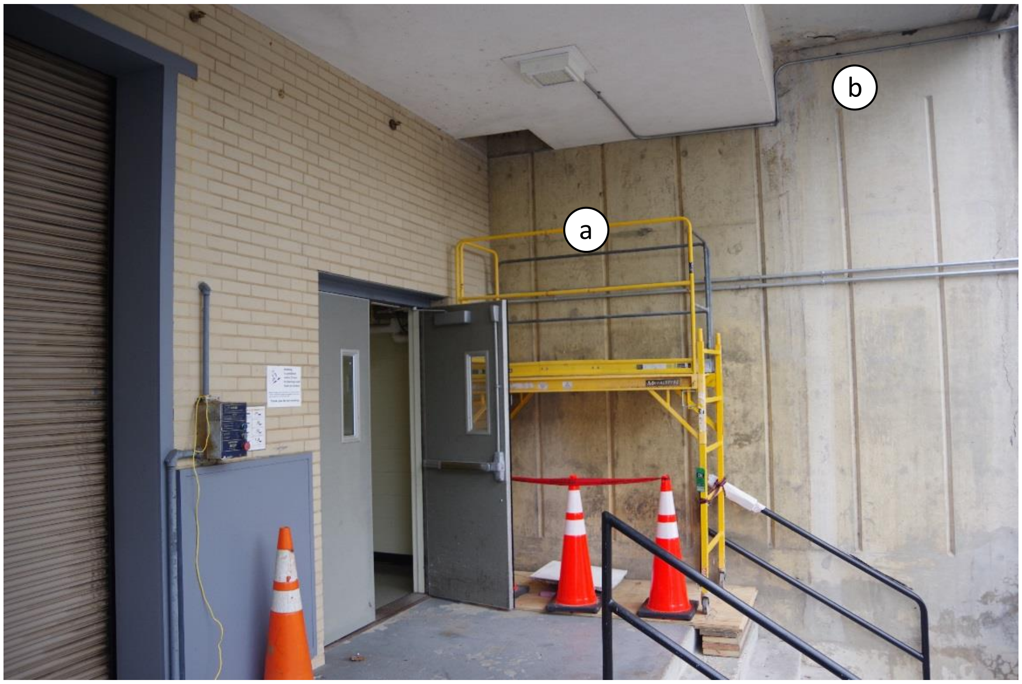



Photo 18 – a. Loading dock investigation area. b. Visible spall adjacent to area covered by soffit.

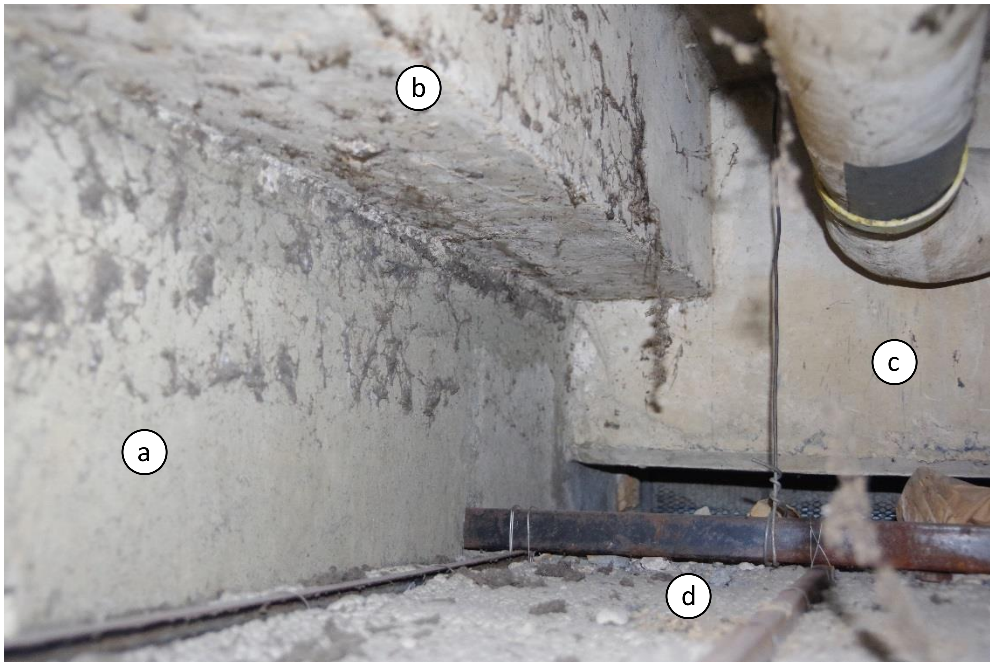



Photo 19 – a. Retaining wall. b. Concrete beam. c. Concrete spandrel beam at front of soffit. d. Plaster soffit with steel channels and wire hangers.

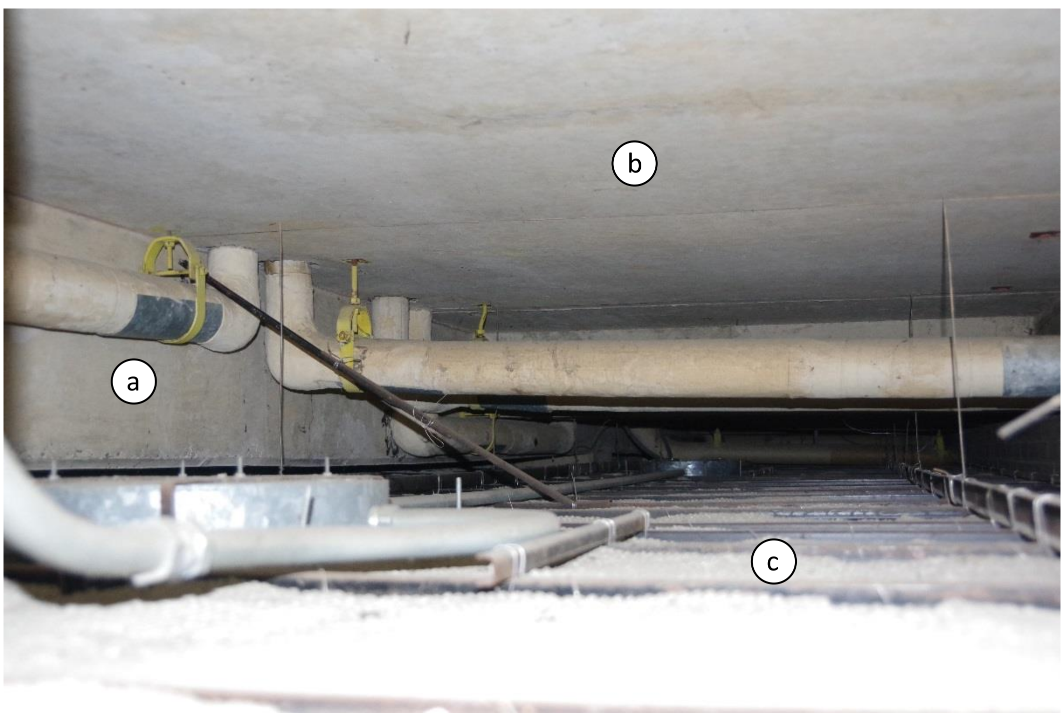



Photo 20 – a. Concrete spandrel beam at front of soffit. b. Concrete slab above. c. Plaster soffit.

# SECTION K:
# APPENDIX

## INDEX FOR DIGITAL FILES

### NIST Archives

NIST Archives located within the NIST Library contain original material boards and furniture layouts. Materials boards have samples of original wood veneer, ceramic tile, textiles, and carpet attached. Terrazzo and marble are typically illustrated in lieu of samples. Furniture layouts include clippings from contemporary furniture catalogs as well as some furnishing plans.

### NIST Digital Archives

NIST Digital Archives contain original NIST publications including histories of the Gaithersburg campus. Publications range in date from 1966 to 2000. NIST Digital Archives also include historic photos of the building, including architect renderings dating to original design and construction.

### NIST Vertical Files

NIST Vertical Files located within the NIST Library is a significant repository of original documents and photographs dating to the design and construction of the new campus in the 1960s. This includes records from the NIST Relocation Committee collected within the Iris Loyd File dating to 1956. Vertical Files also contain original construction photographs; 1960s newspaper and magazine articles about the new campus; and facilities planning reports dating to the 1990s.

### NIST Archival Documents by Repository and Subject:

- NIST Building 101 Document Archive
  - JMAP Photos
  - NIST Archives
    - Original Finishes and Furnishings
      - Original Furniture Layouts
      - Original Material Boards
        - Wing A
        - Wing B
        - Wing C
        - Wing D
        - Wing E
  - NIST Digital Archives
    - Historic Photographs and Renderings
      - Exterior
      - Interior
    - NIST Histories (1966-2000)
    - NIST Publications

- NIST Vertical Files
  - Construction Documents (1962-1964)
    - 1962 Construction Photos
  - Dedication Publications and News Articles (1966)
  - Designing the New Campus (1956-1960)
  - Facilities (1991-1993)
  - Histories (1964-1996)
  - Miscellaneous Files (1973-1975)
  - Photographs
    - Exterior
    - Interior
- Original Construction Documents
  - Drawings
  - Specifications

## Current Photographs Organized by Space and Room Number

- NIST Building 101 Document Archive
  - JMAP Photos
    - Exterior
      - East
        - Flagpole
      - Inner Court
        - Court
        - East Elevation (Looking East)
        - North Elevation (Looking North)
        - South Elevation (Looking South)
        - West Elevation (Looking West)
      - North
      - Retaining Walls
      - Roof
        - Penthouse
      - South
      - West
    - Floor 1
      - Vestibules
      - Wing A
        - A100 East Lobby
        - A103 Janitor
        - A104
        - A105 Women's Restroom
        - CO-A-01 Hall of Standards
        - East Vestibule
        - Elevator Lobby
        - HR Office Area
        - LO-A-01 North Lobby

- Wing B
  - B Corridors
  - B100 Exhibit Hall
  - B103 Projection Room
  - B108 Electrical Closet
  - B112
  - B120 Janitor Closet
  - B121 Green Auditorium
    - NW Stair at Green Auditorium
  - B122
  - Conference Rooms
    - Conference Room B111
    - Conference Room B113
  - Lecture Rooms
    - Lecture Room A B101
    - Lecture Room B B107
    - Lecture Room D B102
  - Offices
    - Office B104-Lecture Room C B106
    - Office B110
    - Office B114-B116
    - Office B118
    - Public Affairs Office B131
  - Restrooms
    - Women's Restroom B1--
    - Women's Restroom B133

- Wing C
  - C100 Portrait Room
  - C101 Cafeteria
  - C106-108 Private Dining
  - C109 Storage
  - C110 Exec Conference Room
  - C115 Kitchen
  - C120 West Square
  - C122 Heritage Room
  - Corridors
  - Restrooms
    - Men's Restroom C102
    - Women's Restroom C105
- Wing D
  - D107 Red Auditorium
  - D108 Backstage
  - LO-D-01 Lobby
  - NE Vestibule
  - SE Vestibule
- Wing E
  - E100 Women's Restroom
  - E114 Library
    - Library Offices E108
    - Library Offices E119
    - Library Offices E125-1
    - Library Offices E212
  - E116 Janitor Closet
  - Museum
    - E107
    - E109
    - E115
- Floor 5
- Floor 6
  - A611 Conference Room
  - A616 Janitor
  - A622 Copier Room
  - A624 Team Room
  - A628 Archives Room
  - A634 Distribution Room
  - Corridor
  - Offices
    - A600
    - A609
    - A615
    - A618
    - A621
    - A623
    - A626
    - A630
    - A632
    - A635
    - A637

- Floor 7
  - A714 Women's Restroom
  - A716 Kitchen
  - A720 Admin Storage
  - A722 Copier Room
  - Corridor
  - Offices
    - A701
    - A702
    - A705
    - A709
    - A711
    - A713
    - A715
    - A717
    - A718
    - A719
    - A721
    - A723
    - A724
    - A725
    - A727
    - A728
    - A729
    - A730
    - A731
    - A732
    - A733
    - A734
    - A736
    - A738

- Floor 8
  - A814 Women's Restroom
  - A816 Janitor
  - A820 Copier Break Room
  - A830 Service Closet
  - Corridor
  - Offices
    - A800
    - A808
    - A813
    - A815
    - A818
    - A819
    - A821
    - A822-A824
    - A823
    - A828
    - A832
    - A834
    - A836

- Floor 11
  - A1122 Copier Room
  - Corridor
  - Director's Office Suite
    - A1131
    - A1134
    - A1137
    - A1138
    - A1140
    - Vestibule (Corridor)
  - Mechanical Closet
  - Offices
    - A1100
    - A1105
    - A1113
    - A1117
    - A1123
    - A1126
    - A1128
    - A1130
  - Restrooms
    - Men's Restroom
    - Women's Restroom A1114
- Stairs
  - ST-3
  - ST-4