McKenney Library Adaptive Reuse Study

Petersburg African American History, Cultural Center, and Archives

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Introduction

History of the Buidling

The William R. McKenney Building stands as a testament to Petersburg's rich heritage, evolving from a distinguished residence to becoming the city's primary public library for nearly a century. Constructed circa 1859 by John Dodson, Petersburg's first directly elected mayor, the building served as a residence of prominence. Notably, Major General "Billy" Mahone, along with hosting General Robert E. Lee, contributed to its historical significance.

Subsequently, the property was acquired by William McKenney, who later bequeathed it to the city in 1923. His daughter, Clara McKenney, facilitated its transformation into the city's new public library, which opened its doors in April 1925. Notably, the deed specified a segregated arrangement, with the first floor designated for whites and the basement allocated for "colored persons".
In the 1950s, the McKenney Building underwent a significant expansion with the addition of a new wing. This architectural enhancement reflected the growing needs of the community and underscored the building's continued relevance as a civic institution.

The McKenney Building, however, etched its place in history not just through its architectural significance, but also through its role in the Civil Rights Movement. In 1960, Petersburg became a focal point of activism, spurred by the courageous actions of African American students who challenged segregation at various establishments, including the public library.

Under the leadership of Reverend Wyatt Tee Walker, African American students staged sit-ins at the library, demanding equal access to its facilities. These protests ignited a citywide movement that ultimately led to the integration of lunch counters, the public library, and numerous other establishments, marking a milestone in Petersburg's quest for equality and justice.

Despite the library moving to a new builidng in 2014 the McKenney Building's legacy endures, serving as a tangible reminder of Petersburg's past struggles and triumphs, and a symbol of resilience and progress.

In recent development, a coalition of business and civic leaders has established the McKenney Foundation, a non-profit organization dedicated to exploring the potential repurposing of the McKenney Building. Their vision involves transforming the former library into an African American museum and City archive, preserving its historical significance, and revitalizing it as a cultural and educational hub for the community.

Architectural Report

Existing Conditions

Exterior Building Assessment

The McKenney Library, while currently in fair condition, exhibits signs of wear and deterioration as a result of deferred maintenance including water damage, rotten wood, peeling paint, deteriorated windows, masonry degradation, and minor structural cracks. Preliminary investigation into these issues was conducted as part of this study, highlighting the urgency of repair work that must be undertaken soon to preserve the historic building. While these conditions will be elaborated upon in subsequent sections, it is evident that significant repair and rehabilitation efforts are essential to facilitate the building's adaptive reuse.

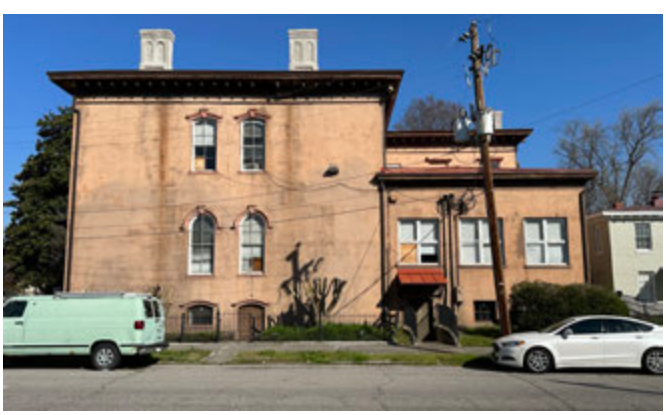
Addressing these issues will entail a comprehensive approach, encompassing tasks such as masonry repairs, window restoration, plaster refurbishment, ADA accessibility upgrades, building code enhancements, new restroom installations, fire sprinkler system integration, and the overhaul of mechanical, electrical, and plumbing systems to accommodate the changes of the end use of the building. These measures are critical not only to preserve the building's structural integrity, but also to allow continued use of the building. All work must be completed in compliance with the Secretary of the Interior's Standards for Rehabilitation to maintain eligibility for historic rehabilitation tax credits.

A more precise cost estimation is provided in the appendix of this report. However, preliminary rehabilitation and adaptive reuse budgets may range between $6,5000,000 and $7,400,000. These figures underscore the substantial financial investment required to revitalize the McKenney building, transforming it into a thriving community asset that honors its historical significance while meeting the evolving needs of the present day.

Site Features and Conditions

The McKenney Building, situated at 137 South Sycamore Street within the Poplar Lawn Historic District of Petersburg, occupies a relatively flat site. Surrounding the building are a few trees, two of which flank the sides. The few trees, positioned prominently at the front, are notably larger and some may require attention to preserve their integrity and to prevent damge to the existinng building. Regular maintenance for all trees is essential to ensure the site's upkeep and its continued integration within the historic district.

The existing site is approximately one quarter of an acre, and the existing building occupies most of the site. There is no existing, or space for future, onsite parking. The north and east side of the building are located within a few feet of the property line. The site does not allow room for parking, building expansion, or any significant ground mounted mechanical equipment.



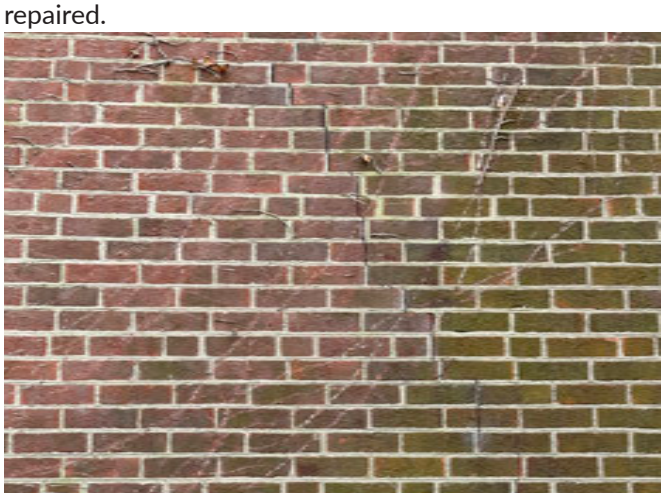
The site is relatively flat with little slope for drainage. The relatively flat site and lack of slope away from the building may contribute to moisture in the basement. Renovation plans should include incorporating positive drainage of water away from the building.

Exterior Features and Conditions

Exterior Walls

The building, both original and the expansion, is made of brick with the original house having stucco covering the brick. On the 1958 expansion, the walls are CMU bearing walls with brick on the exterior. The exterior walls on the original building were measured to be approximately 20-24" including interior furring, while the expansion walls were measured to be roughly around 13" thick.

All the walls are in fair condition; however, repointing may be needed in limited areas on the 1950s expansion. There are some cracks forming on both the original building and the expansion. On the North wall of the 1950's expansion, a vertical crack runs up the center of the wall. That crack appears to be caused by normal thermal expansion and contraction of the building. A masonry control joint should be cut in the existing brick wall near the crack running vertically at the jambs of the existing windows. The existing masonry crack should be repaired.



The stucco on the original home is in fair condition; however, there is extensive micro cracking in the surface. The stucco still appears to be bonded to the brick, and there are no apparent signs of spalling. Scaffolding should be installed around the outside of the building when repairs begin. The exterior stucco should be tested by lightly tapping on the surface with a plastic mallet. If the stucco has separated from the brick below, the tapping will sound hollow. Loose or delaminated sections of stucco should be replaced. The extent of replacement is unknown, but it is recommended to allow for approximately 500 square feet of stucco patching. The small micro cracks should be sealed by applying a creamy paste of lime putty consisting of fine sand, lime, and water. The existing stucco has been painted, and when repairs are complete the walls should be repainted.

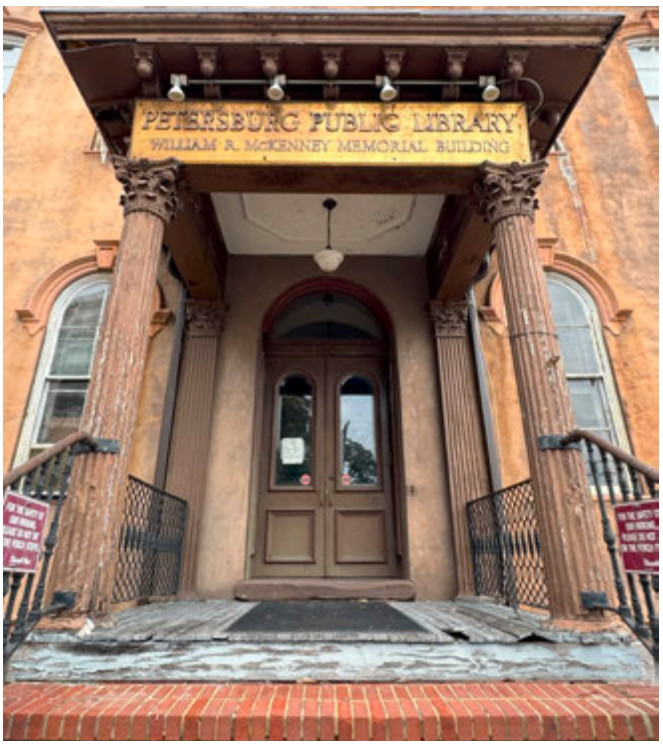
Windows and Doors

The existing windows are mostly intact, but the paint and glazing putty is in poor condition. Extensive restoration of the windows will be required, and it is recommended that the repairs occur in a shop. The window sashes should be removed, and the existing window openings should be infilled with painted plywood during the repairs. The existing paint may contain lead, and the paint should be stripped following all environmental regulations.

Some of the sashes will need to be repaired by reconnecting or replacing the check rail member. The existing glass and glazing putty should be removed to allow repairs. After the paint is removed and the wood is repaired, the sash should be primed with an oil-based primer. After priming, the glass should be reinstalled by back bedding the glass with glazing putty, then tooling glazing putty on top the glass along the muntins. Some missing glass will need to be replaced with new panes. After the glazing putty is cured to thumb print hard, the putting should be primed and then the sash should be painted with two coats of finish paint.

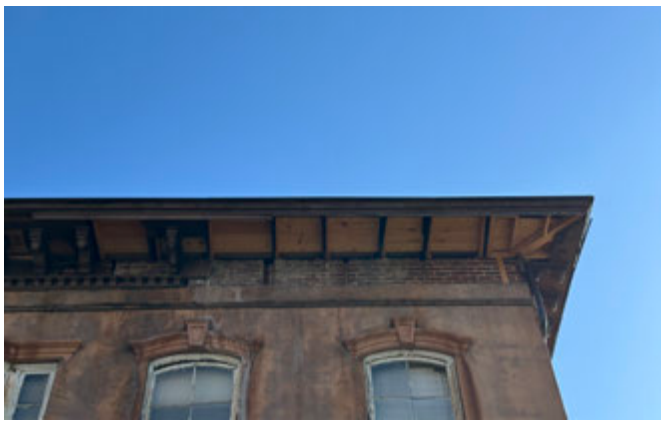
The windows in the 1958 addition are non-historic single pane aluminum windows that are not energy efficient. The windows on the North and East facades of this addition are within a few feet of the property line and adjacent structures. This proximity represents a significant fire hazard. Since the addition is proposed to store archives and rare materials, the existing windows should be removed, and the openings should be filled in with masonry and fire rated construction. Windows on the West elevation could be replaced with new insulated aluminum windows.

The doors on the exterior are in fair condition, but potential lead paint should be stripped, and the doors should be primed and painted. At the lower portions of the doors, cracks and damaged sections of the doors should be repaired with epoxy wood consolidator solution and epoxy wood patches.



Entry Porch

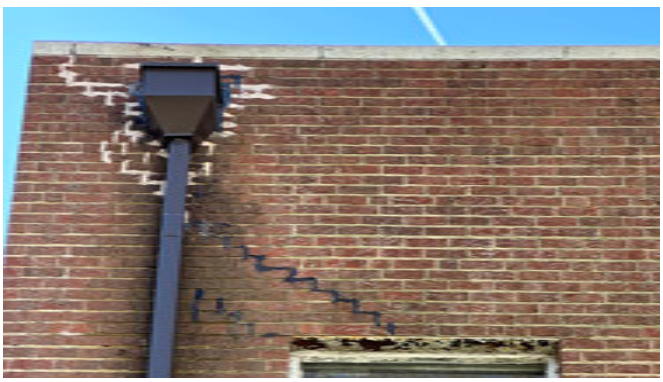
The entrance porch is in poor condition, and it will need extensive repairs. The brick steps are not original, and they are in poor condition. The steps should be removed, and new granite steps should be installed to create long lasting durable construction. The granite steps can be installed on concrete masonry with brick along the sides of the steps. The brick walls supporting the porch are covered in stucco, but sections of the brick are loose and deteriorated. The loose sections should be rebuilt, and the stucco should be repaired. The porch floor needs to be removed and reconstructed. The porch floor is over an occupied basement, and the floor will need to be waterproofed. The floor should have new framing with waterproofing over plywood. New wood sleepers over the waterproofing should support a new 5/4 tongue and groove rot resistant wood floor. The roof of the porch will need to be temporarily supported while the porch columns are removed and repaired. The columns should be taken to a shop and the wood segments of the column shafts should be rejoined. Some epoxy wood consolidation and pathing may be required. Any larger sections of deterioration should be replaced with new materials to match existing. The wood beams and molding around the porch roof will also require extensive repair and replacement of missing or deteriorated pieces.



Roof, Soffit, and Cornice

The built-in gutters at the roof were leaking for many years. The roof and built-in gutters have been replaced recently. The soffits, decorative corbels, frieze, and dentil moldings are severely damaged or missing. New custom wood pieces need to be milled to match the original historic construction. All exterior wood construction should be primed and painted with two coats of finish paint.

The roof of the 1958 addition was not accessible during out study; however, it has severe leaks in several areas. The roof appears to be a single ply EPDM membrane, and it slopes toward the north. The roof drains through scuppers in the north parapet wall to exterior down spouts. The roof leaks have caused damage to the steel construction and masonry walls which are addressed in the structural section of this report. The roofing over the 1958 addition should be patched and repaired as soon as possible. It is anticipated that new mechanical equipment will be placed on the roof of the 1958 addition. Entire replacement of the existing roofing should be part of the full renovation project so that the mechanical equipment installation can be incorporated into the roof replacement.



Handicapped Accessiblity

The existing building does not meet current accessibility guidelines. The nature of the historic building and the limitations of the small site prevent the building from meeting all handicapped accessibility requirements; however, some improvements should be implemented as part of the project. Parking is not provided on the site, but on street parking can provide handicapped accessible spaces. Improvements should be made to the street, pavement markings, curb ramps, and signage to create handicapped accessible parking spaces. A handicapped accessible ramp exists on the Marshall Street side of the building. This ramp can provide accessibility to the building, but code compliant directional signage should be provided. An elevator from the 1950s exists in the building, but it does not meet current standards for safety or accessibility, and it should be replaced. The rear wall of the elevator shaft will need to be demolished, and the shaft enlarged to provide adequate space for a handicapped accessible elevator. New handicapped accessible restrooms will be required throughout the building.

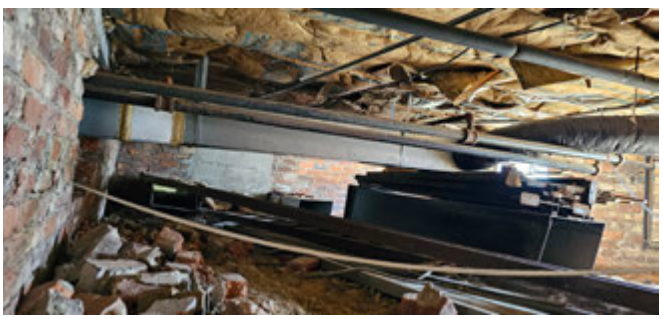
Interior Features and Conditions

Basement

The basement was used as the segregated "colored" portion of the library. The lower portion of the walls in the basement have mold growth. The walls have been covered in drywall, but the original plaster probably exists behind the drywall. Excessive moisture in the basement and ground water below the basement slab is causing moisture to wick up into the basement walls. To address this problem, the exterior perimeter of the building should be excavated and waterproofed. The waterproofing should extend down below the basement slab, and a drainage system should be installed at the base of the wall. After waterproofing, the grade around the building should be sloped away from the building, the drainage from down spouts should be piped away from the building. Moisture wicking up into the interior of the basement needs to be addressed by installing a moisture barrier and drainage below the basement slab. The existing basement slab should be removed, and new gravel, a vapor barrier, and a drainage leading to a sump pump should be installed. A new basement slab will be required. The existing drywall and plaster on the basement walls should be removed, and the existing brick should be sealed with a penetrating sealer. The walls should furred out and insulated before installation of new drywall.

Crawlspaces

The east side of the original historic structure and the 1958 addition are constructed over crawlspaces. The crawlspace have dirt floors with materials and rubble scattered throughout. The crawlspaces should be cleared of debris, and a heavy weight reinforced vapor barrier should be installed. The perimeter walls of the crawlspace should be insulated with 2" rigid insulation, and the vapor barrier should be turned up the walls to encapsulate the crawlspace. The crawlspace should be conditioned as indicated in the mechanical section of the report.



Ceilings

The original home has high plaster ceilings with ornamental plaster medallions and moldings. Those ceilings are damaged in several areas. The ceilings should be repaired to match the original historic construction.

A fire sprinkler system will be required for the project, and the sprinkler heads and piping need to be concealed. Channels will need to be cut in the existing plaster ceilings to install the sprinkler piping. After installation of the sprinkler piping and heads, the plaster should be repaired to match the original historic condition.

Ceiling in the 1958 addition consist of acoustic ceiling tiles below original plaster ceilings. All existing ceilings should be removed in the addition, and new 2x2 acoustic ceiling tiles should be installed.

Multipurpose Room

The room on the southeast corner of the building will be used as a multi-purpose room after the project renovation. This room appears to have been signnificantly modifed as part of the 1958 construction. Foundation walls below this room do not align with construction above, and steel beams and framing modifications are apparent in the roof framing. The room will remain as part of the renovation, and new 2x2 acoustic ceiling tiles and carpeting will be installed. The large opening between the multi-purpose room and the front rooms of the library will have a recessed ceiling acoustic screen that can be lowered to provide privacy for the room.

Archives Room

The walls, floors, and ceilings surrounding the archives rooms need to be carefully insulated and sealed. All voids or holes that could allow air infiltration should be sealed. The rooms should be encapsulated with spray foam insulation around the perimeter. The perimeter walls should be furred out with 3 5/8" metal studs spaced approximately 1 ½" from the exterior concrete masonry to maintain a thermal separation between the metal studs and the CMU. The exterior CMU should be covered with approximately 4" of spray foam insulation. The surfaces below the floors and roof around the archives should also be covered with approximately 4" of spray foam. Gypsum board should be installed on the walls and ceilings to act as a fire barrier between the room and the spray foam insulation. A detailed thermal envelop calculation should be conducted as design continues on the project, and the insulation values around the archive's rooms should be updated as needed.

Finishes

In the original home, the historic finishes will be retained. Carpet will be removed from the floor and the wood flooring will be refinished. Plaster walls and woodwork will be repaired and painted.

The archive rooms in the 1958 addition will have LVT flooring, painted drywall partitions, and acoustic ceiling tiles. New restrooms will have porcelain tile on the floors and walls up to approximately 4'. The walls above the tile and the ceilings will be covered with painted drywall.

Millwork

Staff workrooms and kitchenettes will have new plastic laminate millwork. Any historic wood millwork will be retained and restored as part of the project.

Stairs

The existing home has a grand staircase that curves up to the second floor. The stairs and railings will be preserved and restored. As indicated in the code section of this report, a fire rating is not required around the stairs because of the new fire sprinkler system. A second stair is provided in the 1958 addition. New rubber tread covers and new handrails will be installed in this stair.

Fireplaces

The original home has many historic fireplaces with ornate and simple mantles and surrounds. Most of the fireboxes have been covered. The historic mantels should be preserved and restored. Some repairs will be required as indicated on the photo pages of this report.

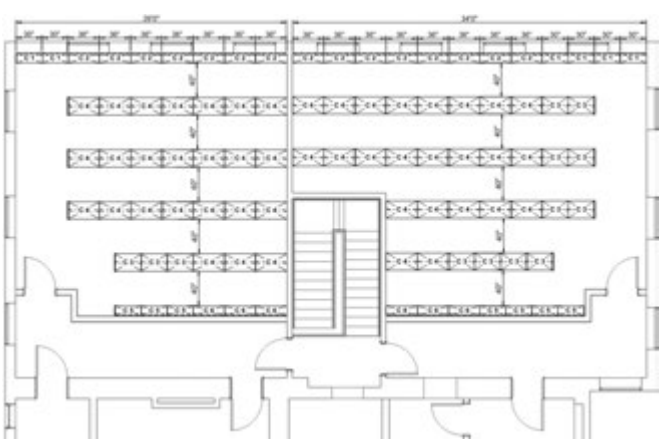
Architectural Storage Report

Summary

The 1958 addition of the McKenney Building is being considered for repurposing as an archives facility. In order to optimize the space for this purpose, Spacesaver Storage Solutions evaluated the space and proposed storage options to accommodate the archives materials. The aim is to create a functional and efficient environment for storing and accessing archival materials while preserving the historical integrity of the building. Both designs will incorporate archival climate control systems and security measures to safeguard all items.

Option 1: Stationary Storage Solution

This layout option focuses on utilizing stationary storage units placed in the two room created in the 1958 addition on both floors. The design emphasizes accessibility and ease of navigation for archivists and researcher since the spacing will be 40" wide for walkways. Preservation of the building's architectural features is a key consideration, with minimal alterations to the original structure. Using the stationary storage it will lower the amount of sturctural support neccessary for the building. This option prioritizes traditional archival practices and allows for easy browsing of materials. However the stationary storage limits the total amount of available storage. The stationary storage utilized in option one will have a total Linear Feet inches of 61,440in. The total cost for the stationary shelving is 96 thousand per floor. Totaling 192 thousand dollars.



Option 2: Compact High Denisty Storage Solution

The second layout option proposes a compact high density storage solution to maximize the use of available space. High-density mobile shelving systems are employed to significantly increase storage capacity while maintaining accessibility. With this option, the emphasis is on efficiency and space optimization, allowing for a larger volume of objects to be stored within the same footprint. The layout ensures that archival materials remain easily retrievable while also accommodating future growth and expansion. This option will provide the same layout on both floors. However the height of the shelving will vary between the floors due to the difference in floor heights.On the first floor the shelving will consist of units approximately 116 inches tall vs approximatly 92 inches tall on the second floor. The compact shelving in this option will provide a total of 100,864in of LFI. The total cost of this option is 361 thousand dollars.

Option 3: Alternate High Denisty Storage Solution

This last option proposes using the same compact high density storage but to reduce the total cost it will use the shorter shelving of approximately 92 inches on both floors despite the extra ceiling height the first floor provides. This option would result in less overall storage but would result in a lower total cost to help reduce the estimated budget. The total LFF per floor would result in 44198in. For a total LFF for the whole building 88,396in. The cost breakdown for this option would result in 237 thousand dollars.

The structural engineer's analysis shows that the existing steel bar joist structure does not provide the code required support for any of the storage solutions. Structural reinforcing of the existing floors will be required as indicated in the structural section of this report.

Ultimately, the chosen layout will depend on factors such as budget, preservation requirements, and the specific needs of the archives facility. Both options offer distinct advantages, and a careful evaluation will be necessary to determine the most suitable solution for the McKenney Building.

Historic Tax Credits

A potential funding source for the project involves Historic Rehabilitation Tax Credits. The McKenney building is a contributing structure to the Poplar Lawn Historic District. Based on his contributing status, it is eligible for historic tax credits. If the building is owned and operating as income producing property by a taxable entity, it could qualify for 20% Federal tax credits, and 25% State tax credits on the qualified rehabilitation expenditures. Through a process of "syndication", the tax credits can be transferred to investors in exchange for cash investment in the project. Typically approximately 75% of the value of the tax credits can be obtained in exchange for the tax credits. The process requires involvement from legal experts and accountants, but it is anticipated that the project could benefit from this approach.

The Department of Historic Resources and the National Park Service will review work on the project to determine if it meets the requirements for historic tax credits. All work must comply with the Secretary of the Interior's Standards for Rehabilitation. Applications for historic tax credits are submitted to DHR in three parts before the tax credits are approved. Part 1 determines eligibility. Part 2 determines if the work meets the requirements. The work discussed in this report should be submitted as part of the Part 2 application before any plans for the project are completed. The Part 3 application is submitted after the construction work is complete to certify that the work was completed in accordance with the requirements.

According to the National parks service website. "The Standards for the Treatment of Historic Properties address four treatments: preservation, rehabilitation, restoration, and reconstruction. As stated in the regulations (36 CFR Part 68) promulgating the Standards, "one set of standards ...will apply to a property undergoing treatment, depending upon the property's significance, existing physical condition, the extent of documentation available, and interpretive goals, when applicable. The Standards will be applied taking into consideration the economic and technical feasibility of each project." These Standards apply not only to historic buildings but also to a wide variety of historic resource types eligible to be listed in the National Register of Historic Places. This includes buildings, sites, structures, objects, and districts."

The Guidelines are intended as an aid to assist in applying the Standards to all types of historic buildings. They are not meant to give case-specific advice or address exceptions or unusual conditions. They address both exterior and interior work on historic buildings.There are four sections, each focusing on one of the four treatment Standards: Preservation, Rehabilitation, Restoration, and Reconstruction. Each section includes one set of Standards with accompanying Guidelines that are to be used throughout the course of a project.

Code Review

Architectural Code Review

Building Code Summary

This building code summary highlights the major code requirements that have significant impact on the project design. There are other codes sections that will need to be addressed as the project design develops further. This summary defines the basic approach for general code compliance for the building.

Current Codes

2021 Virginia Construction Code
2021 Virginia Existing Building Code
2021 Virginia Statewide Fire Prevention Code
2021 Virginia Mechanical Code
2021 Virginia Plumbing Code
2020 National Electrical Code
2021 Virginia Energy Conservation Code
2017 ANSI A117.1 Accessibility Code
2010 ADA Standards for Accessible Design

Building Use Groups

A3	Exhibit halls, lecture halls
B	Business
S1	Storage
A3	Is the most restrictive use, building is designed as A3, non-separated mixed use

Construction Type:

Type IIIB, non-combustible, load bearing masonry walls, wood and steel joists, wood framing.

Fully Sprinkled:

Yes, add sprinkler system as part of renovation

Height and Area Limitations

Existing basement area:	3,581 GSF
Existing first floor area:	5,292 GSF
Existing second floor area:	4,349 GSF
Existing height:	43 feet
Allowable Height:	Table 504.3, sprinkled, 75 feet
Existing number of stories:	2 stories
Allowable number of stories:	Table 504.4, A-3, sprinkled, 3 stories
Allowable area per floor:	Table 506.2, A-3, 28,500 SF
Actual area (first floor)	5,292 GSF

Fire Rating on Building Elements, Table 601

Primary structural frame	0
Bearing walls exterior	2 hour
Bearing walls interior	0
Nonbearing walls	0
Floor construction	0
Roof construction	0

Fire Separation Distance Table 705.5

<5’	1 hour
5’ to 10’	1 hour
10’ to 30’	1 hour
>30’	0 hour

Wall Openings Table 705.8, sprinkled, unprotected

Distance to property line:	Window openning percentage
0 to 3’	Not permitted
3’ to 5’	15% of wall area
5’-10’	25% of wall area
15’ to 20’	75% of wall area
Over 25’	no limit

The east and north walls of the building are very close to the property line. The existing windows in these walls may not meet code based on the fire separation distance requirements. Closing these window openings with fire rated construction would achieve code compliance on this issue and better protect the archive collection from fire risk.

Shaft Enclosures

Section 713.4
Vertical shaft enclosures connecting less than 4 stories shall be one hour rated.

The proposed elevator shaft should be protected with 1 hour rated construction including the top and bottom of the shaft.

See Section 1019 below for rating requirements at stairs.

Chapter 9 Fire Protection and Life Safety

The building will be fully protected with a fire sprinkler system. A gas fire suppression system will be provided in the archives storage rooms.

The fire area of the building is over 12,000 square feet, so a sprinkler system is required.

The open unrated stairs will require a sprinkler system.

A fire alarm system with smoke detection will be provided in the building.

Chapter 10 Means of Egress

Each floor is provided with 2 means of egress.

Occupant load, Table 1004.5

A3	Assembly occupants Exhibit 1/30 Concentrated chairs 1/7 Tables and chairs 1/15	167.59 = 168
B	Business occupants 1/150	17.92 = 18
S1	Storage occupants 1/300	10.93 = 11

Based on the use of each room in the building, the total calculated occupant load is 197 people. Refer to the floor plans for the anticipated occupant load of each room.

1006.2.2.1 Boiler, incinerator and furnace rooms.

Two exit access doorways are required in boiler, incinerator and furnace rooms where the area is over 500 square feet (46 m2) and any fuel-fired equipment exceeds 400,000 British thermal units (Btu) (422 000 KJ) input capacity. Where two exit access doorways are required, one is permitted to be a fixed ladder or an alternating tread device. Exit access doorways shall be separated by a horizontal distance equal to one-half the length of the maximum overall diagonal dimension of the room.

1009.1 Accessible means of egress required.

Accessible means of egress shall comply with this section. Accessible spaces shall be provided with not less than one accessible means of egress. Where more than one means of egress is required by Section 1006.2 or 1006.3 from any accessible space, each accessible portion of the space shall be served by not less than two accessible means of egress.

Buildings are required to have at least 60% of there entrances handicapped accessible.

The existing building only has one handicapped accessible means of egress on the first floor. As an existing building, this condition may be grandfathered. The proposed use of the building is A-3 use group and the existing building is A-3 use group, so there is no change of use requiring code upgrades. This issue should be reviewed with the building official as the project moves forward.

The existing elevator does not meet accessibility standards and it should be replaced. The width of the elevator shaft is sufficient for a new accessible elevator; however, the depth is not. The rear wall of the elevator shaft will need to be demolished and rebuilt to provide adequate space for a new elevator.

Section 1014 and 1016 Stair Railing

The existing railing at stairs does not meet code. Modifying the railing of the railing in the historic home would significantly alter the historic character, which would likely be rejected by the Department of Historic Resources. As an existing condition in a historic building with no “change of use” as discussed previously, the code official would likely not require alterations to the historic railings. However, the handrails in the 1958 addition should be upgraded to meet current code.

1019.3 Occupancies other than Groups I-2 and I-3. Open Stairways

In other than Group I-2 and I-3 occupancies, floor openings containing exit access stairways or ramps shall be enclosed with a shaft enclosure constructed in accordance with Section 713.

Exceptions:

1.Exit access stairways and ramps that serve or atmospherically communicate between only two adjacent stories. Such interconnected stories shall not be open to other stories.

4.Exit access stairways and ramps in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, where the area of the vertical opening between stories does not exceed twice the horizontal projected area of the stairway or ramp and the opening is protected by a draft curtain and closely spaced sprinklers in accordance with NFPA 13. In other than Group B and M occupancies, this provision is limited to openings that do not connect more than four stories.

2021 Virginia Plumbing Code Fixture Requirements

Required Per Table

	Water Closets Unisex	Lavatories	Drinking Fountains	Service Sink
Exhibit areas and meeting rooms	1/85.6 2(1.96)	1/200 1	1/500 1	1
Business	1/25,1/50 1	1/40,1/80 1	1/100 1	1
Storage	1/100 1	1/100 1	1/1,000 1	1
Total Required	4	3	3	1
Total Provided	6	6	6	1

Structural Report

Structural Report

Introduction

This report represents the results of our structural investigation of McKenney Public Library located in Petersburg, Virginia. The library was built in 1859 with an addition constructed in 1958.

Our scope of work included visual inspections of the accessible structural components to identify areas of damage or deterioration that should be repaired or replaced to maintain its structural integrity. We performed minor scraping to determine the extent of steel corrosion.

We evaluated the existing first and second floor joists in the 1958 addition to determine their allowable load capacity for library loads and support of the proposed storage systems by Spacesaver Storage Solutions dated March 15, 2024.

Our scope of work does not include repair drawings for the observed findings.

General Structural Description

The structural systems for the buildings are as follow:

1859 Building

Foundation:
We could not determine the foundation during our site visit. However, based on the area and type of structure we assume corbeled brick footings were used.

Slabs-on-Grade:
4”+/- thick concrete slab cast and supported on grade.

Typical Floor Structure:
2x12 +/- wood floor joists spaced at sixteen (16) +/- inches on-center supporting 1”+/- inch wood planking.

Typical Roof Structure:
2x8 +/- wood roof rafters spaced at twenty-four (24) +/- inches on-center supporting 1”+/- wood plank flooring.

1958 Addition

Foundation:
We could not determine the foundation during our site visit. However, based on the area and type of structure we assume shallow reinforced concrete spread footings were used.

Slabs-on-Grade:
4”+/- thick concrete slab cast and supported on grade.

First Floor Construction:
12”+/- deep open web steel bar joists spaced at twenty-four (24) +/- inches on-center supporting a 3”+/- concrete slab cast on a metal lath. The joists are supported by 12”+/- wide flange girders.

Second Floor Construction:
20”+/- deep open web steel bar joists spaced at twenty-four (24) +/- inches on-center supporting a 3”+/- concrete slab cast on a metal lath. The joists are supported on an 8”+/- concrete masonry unit (CMU) wall.

Roof Construction:
Open web steel bar joists spaced at twenty-four (24) +/- inches on-center. We could not determine the type of roof decking during our investigation due to finishes. The joists are supported on an 8”+/- concrete masonry unit (CMU) wall.

Findings

The four (4) first-floor and second-floor open web steel joists in the Northeast corner of building must be repaired to ensure continued structural integrity to minimize the potential for further corrosion. Because the successful completion of these repairs is very sensitive to the proper preparation of the surfaces and application of the specialty coating, we recommend a Contractor trained and experienced in the use of these materials be considered to perform this work.

In the original building in the east-wing we observed a wood rafter split. We recommend reinforcing the existing rafter by adding A 2x8 rafter along the existing rafter and fastening the added rafter to the existing rafter.

In the original building in the east-wing we observed wood floor joists split. We recommend reinforcing the existing joists by adding a 2x12 floor joists along the existing floor joists and fastening the added floor joists to the existing floor joists.

In the original building in the east-wing a wood post supporting the roof ridge beam is supported by a 2x6 wood member laid flat across the ceiling joists with no positive attachment. We recommend reinforcing the existing ceiling joists by adding two (2) 2x8 ceiling joists along the existing ceiling joists and fastening the added ceiling joists to the existing ceiling joists.

In the 1958 addition we observed areas of the first-floor in the Northeast corner significant corrosion of the joists. This is a safety hazard, we recommend installing W12x14 beams adjacent to four (4) damaged existing joists immediately.

The face shell of the concrete masonry unit (CMU) was damaged and requires replacement. Square off damaged face shell by cutting and mortar in a replacement face shell.

On the north wall of the 1958 addition, we observed cracks in the masonry veneer above the second and first floor windows. These are likely a result of corrosion of the steel lintels abovethe windows. The lintel corrosion is caused by a build-up of moisture that cannot escape due to the lack of wall flashing and weep holes. The trapped moisture causes the steel to corrode. As the steel corrodes, it grows significantly (up to four (4) to six (6) times its original size), and exerts pressure on anything it is in contact with. The brick cannot withstand the tensile forces and can ultimately crack, spall and can eventually fall off the building. We recommend removing the damaged lintels and replace the lintels with galvanized lintels incorporating weep holes and flashing into the construction.

In addition to the cracks above the windows, we observed a vertical crack located at the middle of the wall. This crack is likely due to a lack of masonry control joints. Vertical control joints are incorporated into brick masonry construction to handle the expansion characteristics of clay masonry products. Bricks made of clay expand due to temperature and moisture changes. Clay products have an affinity for water and grow significantly (horizontally and vertically) over a period of time. Control joints filled with sealant allow for movement of brick without causing damage. We recommend cutting in vertical control joints and repair veneer damage.

Based on the loads we received from Spacesaver for the rails, the existing floor joists and girders will require reinforcing.

We also evaluated the existing first-floor joist for the proposed library loading and the existing first-floor joists will support a Live Load of 150 PSF and Dead Load of 43 PSF without reinforcing.

Nature of Professional Services Performed

The professional services for this evaluation and report have been performed, the findings obtained, and the conclusions drawn in accordance with generally accepted principles and practices. Speight, Marshall and Francis is not responsible for the conclusions, opinions or recommendations made by others based on the data presented in this report. The conclusions contained herein are based solely on the information obtained during our investigation and represent a professional opinion based on past experiences and our judgment. Speight, Marshall & Francis only performed minor destructive demolition to aide in our investigation, thus our investigation is limited to what can be seen.

Conclusions

The present structural condition of the building can be described as fair to poor. The significant items observed in this report are a result of a lack of maintenance of the roof, allowing moisture to enter the building envelope. If the items listed in this report are not addressed in a timely manner, the building issues noted in this report will worsen exponentially over time and likely result in closure of the 1958 addition, due to the potential structural members could fail and/or collapse.

We recommend reinforcing the existing rafter by adding 2x8 rafters along the existing rafter and fastening the added rafter to the existing rafter. We recommend reinforcing the existing joists by adding 2x12 floor joists along the existing floor joists and fastening the added floor joists to the existing floor joists.

We recommend reinforcing the existing ceiling joists by adding 2x8 ceiling joists along the existing ceiling joists and fastening the added ceiling joists to the existing ceiling joists.

We recommend the four (4) existing first-floor joists with corrosion damage be corrected by adding W12x14 steel wide flange beams adjacent to the damaged joists. Prior to the addition of the W12x14 beams we recommend prior to the renovation shoring the existing floor joists to protect the safety of the public.

We recommend the steel lintels be removed and replaced with galvanized steel lintels incorporating weep holes and flashing.

Archives Floor Reinforcing

Based on the existing joist sizes verified with the Steel Joist Institute, the first-floor joists, girders and columns will support the Code required 150 pounds per square foot live and dead loads (150 PSF Live Load and 43 PSF `Dead Load) for future library use without further reinforcement.

Based on the existing joist sizes verified with the Steel Joist Institute, the second-floor joists, will support the Code required 60 pounds per square foot live and dead loads (60 PSF Live Load and 43 PSF Dead Load) for future reading room use without further reinforcement but it will not support standard library shelvinng or high density storage

The standard stack weighs approximately 131 PSF (based on the 48" wide x24" deep unit) and is greater than the allowable load for the 20"+/- deep open web steel joist. Therefore, we have two options for reinforcement and they are the following:

1. Install W14x22 wide flange beams adjacent to the existing 20"+/- deep open web steel joist full length.

2. Weld 2 – 5/8" diameter rods to the top chord and weld a ¼"x3" plate along the bottom chord of each joist. The required reinforcement would be required in the middle third of the joist span. The webs would require 2 – L1.25x1.25x0.25 each side of the existing web member. This would be required for 6ft from each end.

Option 2 would be the most cost-effective option as working the W14x22 beams for Option 1 in the floor system would be labor intensive. In addition, the steel tonnage is greater.

We evaluated the high stack storage with the rail support and based on the load of this equipment we recommend installing W18x35 wide flange beams to support the rails.

We recommend the following reinforcement of the existing first-floor system to support the Spacesaver Storage Systems:

Install steel wide flange beams at locations where Spacesaver rails are required.

- Reinforce the existing steel girders with a continuous WT shapes welded to the bottom flange full length.

- Install HSS columns at the exterior walls below the beams for the Spacesaver rail system.

- Install reinforced concrete footings below the HSS columns adjacent to the existing foundations.

We recommend the following reinforcement of the existing second-floor system to support the Spacesaver Storage Systems:

- Install steel wide flange beams at locations where Spacesaver rails are required.

- Install HSS columns at the exterior walls below the beams for the Spacesaver rail system.

- Install reinforced concrete footings below the HSS columns adjacent to the existing foundations.

Photograph 1: Front (West) Elevation

Photograph 2: Rear (East) Elevation

Photograph 3: Open web joists with significant corrosion. Source of damage is a roof leak. Install W12x14 beams adjacent to affected joist. We recommend shoring the floor prior to the renovation work to protect the public.

Photograph 4: A close-up of open web joists with significant corrosion. Install W12x14 beams to adjacent affected joist. We recommend shoring the floor prior to the renovation work to protect the public.

Photograph 5: A close-up of open web joist with significant corrosion. CMU is also damaged. Square off area of damage and mortar in a new face shell.

Photograph 6: A close-up of open web joists with significant corrosion. Install W12x14 beams adjacent to affected joist. We recommend shoring the floor prior to the renovation work to protect the public.

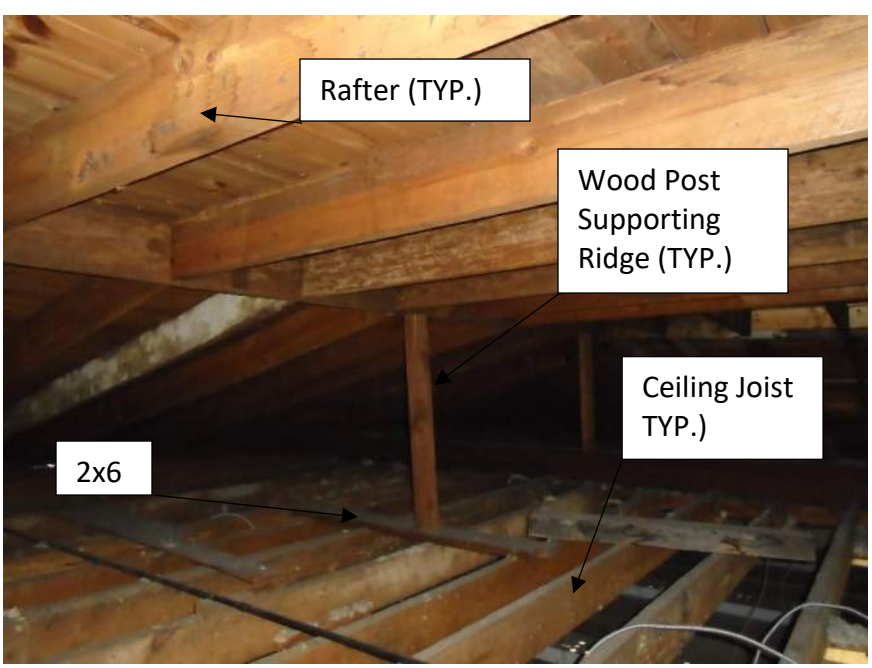
Photograph 7: A close-up of open web joists with moderate corrosion.

Photograph 8: A close-up of open web joist top chord with significant corrosion. Top chord is 75% deteriorated. This is a safety hazard and requires reinforcement. Install W12x14 beams adjacent to affected joist. We recommend shoring the floor prior to the renovation work to protect the public.

Photograph 9: Overall view of first floor with moisture damage along exterior walls.

Photograph 10: A close-up of second floor open web joist with corrosion.

Photograph 11: Overall view of second floor with moisture damage along exterior wall.



Photograph 12: A close-up of wood posts supporting ridge beam bearing on 2x6 supported on ceiling joists. Reinforce ceiling joists for loads by adding 2x8 ceiling joist along the existing ceiling joist fastened to existing ceiling joist.

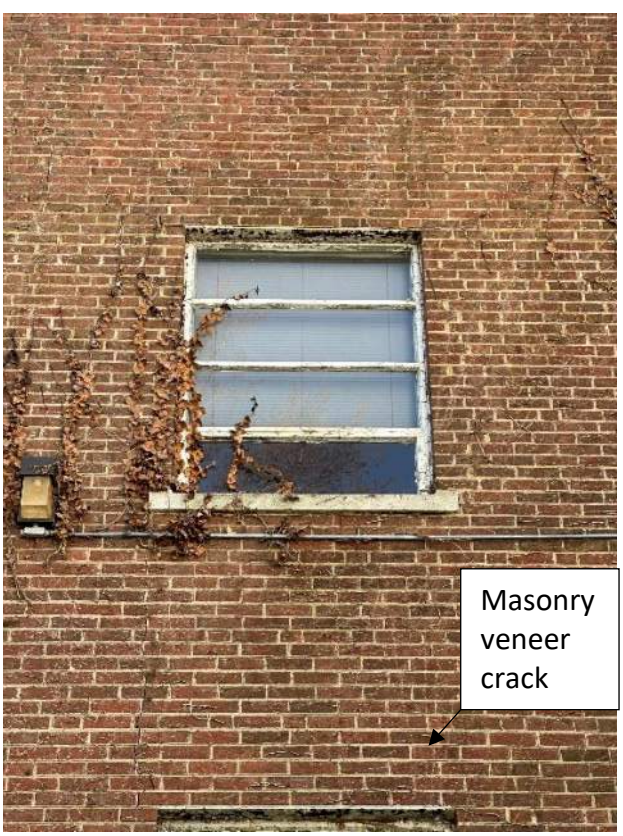
Photograph 13: A close-up of damaged roof rafter. Sister by adding 2x8 rafter along the damaged rafter fastened to the existing damaged rafter.

Photograph 14: A close-up of reinforced floor joists where joists is split. Sister by adding 2x12 floor joist along the damaged joist fastened to existing damaged joist.

Photograph 15: Overall view of left (North) elevation. No control joints observed. Cut in masonry control joints.

Photograph 16: A close-up of masonry veneer cracks. The cracks are a result of corrosion of the steel lintel above window. Remove and replace the steel lintel.

Photograph 17: A close-up of masonry veneer cracks. Cracks are the result of non-existent masonry control joints. Install masonry control joints.



Photograph 18: A close-up of masonry veneer cracks. Cracks are the result of non-existent masonry control joints. Install masonry control joints.

Mechanical, Electrical, and Plumbing

MEP Report

Summary

INVERSITY was contracted to provide an assessment of the plumbing, mechanical, and electrical systems at the old McKenney Library

This assessment report includes an evaluation of the existing conditions, deficiencies noted and recommendations to remedy deficiencies. Also included are alterations required to accommodate the new proposed architectural floor plan.

General building information, deficiencies, and recommendations are provided in regard to the general construction of the plumbing, mechanical, and plumbing systems.

Mechanical Systems – Existing Systems

Existing HVAC Systems:

The existing HVAC system consists of four (4) split systems, one (1) natural gas fired boiler, a decommissioned floor radiant heating system, various window mounted air conditioners, and numerous hydronic radiators. The split systems consist of commercial convertible style cooling only air handlers, heating water coils on the unit discharge, and condensing units located on grade. The radiant floor system is limited to the first and second floor of the 1958 addition. An add alternate (Add. Alternate #4) from the 1986 renovation was not accepted that would have added an additional split system to serve the second floor. The second floor is currently without HVAC equipment except for four (4) window mounted air conditioners and various hydronic radiators. All of the HVAC systems are antiquated, believed to be inoperable and well past their expected service life. The latest maintenance records observed on site indicated that the system may not have been maintained for over 15 years, or at least the maintenance routine was abandoned around that timeframe.

Summary of the existing HVAC system:

- AHU-1/ACC-1 (Historic Building Basement): The air cooled condensing unit (ACC-1) is a Trane 3 ton cooling only condenser located on grade on the Marshall St side of the building. The connected air handling unit (AHU-1) serving the basement portions of the historic building is a Trane commercial convertible style cooling only air handling unit installed in upflow orientation. The unit is located in the basement mechanical room. The unit cooling capacity when new was 32.4 MBH (approx 2.75 tons). The unit discharge has a hydronic heating water coil (HC-1), sized to provide 31.5 MBH of reheat capacity. The indicated date of manufacture for the system is May/July 1987. The system utilizes R-22 refrigerant. Connected ductwork serves the historical basement via concealed above ceiling ductwork. This ductwork was added as part of Add. Alternate #2 of the 1986 renovation. This unit and its connected systems have exceeded their useful service life and will be demolished and discarded.

- AHU-2/ACC-2 (First Floor): The air cooled condensing unit (ACC-2) is a Nordyne 10-ton cooling only condenser located on grade on the Sycamore St side of the building. The connected air handling unit (AHU-2) serving the first floor is a Rheem commercial convertible style cooling only air handling unit installed in upflow orientation. The unit is located in the basement mechanical room. The unit cooling capacity when new was a nominal 100 MBH (approx 8.5 tons). The unit discharge has a hydronic heating water coil (HC-2), sized to provide 152.7 MBH of reheat capacity. The indicated date of manufacture for the system is Feb 1991. The system utilizes R-22 refrigerant. Connected ductwork serves the historical first floor using floor registers supplied from the basement ceiling and crawlspace area. The first floor addition is served via concealed

above ceiling ductwork. Ductwork is routed to the first floor using the former dumbwaiter space which has been converted into a duct chase. This ductwork was added as part of Add. Alternate #2 of the 1986 renovation. This unit and its connected systems have exceeded their useful service life and will be demolished and discarded.

- AHU-3/ACC-3 (Addition Basement): The air cooled condensing unit (ACC-3) is a Trane 4-ton cooling only condenser located on grade on the back side of the building. The connected air handling unit (AHU-3) serving the first floor is a Trane commercial convertible style cooling only air handling unit installed in upflow orientation. The unit is located in the basement mechanical room. The unit cooling capacity when new was 46.4 MBH (approx 4 tons). The unit discharge has a hydronic heating water coil (HC-3), sized to provide 35.3 MBH of reheat capacity. The indicated date of manufacture for the system is Sept/Nov 1990. The system utilizes R-22 refrigerant. Connected ductwork serves the basement addition using concealed above ceiling ductwork and ceiling diffusers. This ductwork was added as part of Add. Alternate #3 of the 1986 renovation. This unit and its connected systems have exceeded their useful service life and will be demolished and discarded.

- AHU-4/ACC-4 (Basement Supplemental Cooling): An air cooled condensing unit is located on grade beside ACC-2 that does not match any units on the existing drawings. The condensing unit has a 1.5-ton capacity and uses R-22 refrigerant. The unit indicates a manufacture date of 2001. A matching air handling unit is located in the basement in Room 007, located in the corner of the room. It is believed based on the unit capacity and date of manufacture that this unit was added for supplemental capacity in this room long after the 1986 renovation, most likely in 2001. This unit has reached the end of its useful service life and will be demolished and discarded.
- B-1 (Boiler): The existing boiler is a natural gas fired Weil-Mclain Series 76 cast iron firetube boiler. Boiler capacity is 794 MBH input, 542.6 net output for heating water. The boiler uses one of the chimneys from the historic house as its flue which is a 10" outlet. Combustion air was initially provided through a wall louver facing Sycamore St, however this louver has since been fully obstructed at some point to block airflow. This boiler supplies heating water at 180°F for the heating water system. The boiler is controlled to disable whenever outside air is above 60°F, regardless of whether heating is required anywhere within the building.

The boiler and its connected pumps and related systems are antiquated technology and has reached the end of its useful service life and will be demolished and discarded.

- Hydronic Heating System: An existing hydronic heating system is connected to boiler B-1 in order to provide heat for both the historic house and addition. This system consists of the three (3) heating water coils mounted to the AHU discharges, a zoned radiant floor system, and a heating water loop serving the existing hydronic radiators. This system is old and past its service life. It is not believed that any part of this system is still operational. This system will be removed and discarded.
- An existing in-line pump P-1 is a 1/2 HP Taco pump which circulates heating water for the duct mounted heating coils and radiators. This pump was added as part of the 1986 renovation. The pump is controlled from the AHU controllers upon calls for heating. According to Add. Alternate #2, piping and radiators were supposed to be removed in 1986. The extent of piping demolition could not be verified, but radiators were observed to still be present in front of each window throughout the entire historic building, which is the original installation location for these radiators. The pump and related components of this system will be removed and discarded.
- Three (3) existing in-line pumps circulate heating water for the below floor radiant heating in the addition. The pumps are zoned so that each pump supplies heating for an individual floor of the addition. Heating is controlled from a space mounted thermostat. These pumps were existing during the 1986 renovation. As part of Add. Alternate #3, the radiant floor system for the basement was supposed to be disconnected and abandoned. Visual evidence of the second floor radiant floor being disconnected and abandoned was also observed. The pumps and related components of this system will be removed and discarded.
- Window Air Conditioners: Seven (7) window mounted air conditioning units were observed throughout the

building. It is believed that these units were added for supplemental cooling where HVAC systems were not installed (second floor) or where the HVAC system was insufficient for the occupants at some point. These units will not be retained as part of the new HVAC system.

Existing Exhaust Systems:

Building exhaust systems are limited to what is required for ventilation of the existing restrooms. As part of the 1986 renovation, an inline centrifugal ventilation fan was installed to serve the basement restroom and janitor closet. The fan is located above the restroom ceiling and discharges to a sidewall exhaust louver located in the base of the wheelchair ramp on the backside of the building. It is believed that the fans serving the first floor restrooms and second floor restroom are ceiling mounted type, but the location of the fan discharges could not be determined from field investigation. It is believed that these fans discharge to either the attic space or a louver somewhere near the restrooms served. Ages and performances for these fans could not be determined. It is anticipated that existing exhaust fans will be removed and discarded as part of the proposed renovation.

Mechanical Systems – Recommendations For Proposed Renovation

Design Basis:

The mechanical system is aged with the newest components being added just after the 1986 renovation. Many mechanical system components are no longer functional and appear to have been abandoned. All mechanical systems are proposed to be demolished due to age and are proposed to be replaced with new systems to serve the proposed archive spaces, exhibit spaces, offices, meeting/multipurpose rooms, and staff workspaces. New mechanical systems will be designed based on the criteria set forth in the 2021 Virginia Construction Code, 2021 Virginia Energy Conservation Code, 2021 Virginia Mechanical Code, and ASHRAE Standard 90.1-2019.

For the proposed archive spaces, the HVAC system will focus on climate and indoor air quality (IAQ) parameters. Design standards for the HVAC system in this application draw attention to a few key aspects. These HVAC concepts were derived from a review of Chapter 24 of the 2019 ASHRAE Applications Handbook that is specific to HVAC used in Museums, Galleries, Archives and Libraries. Each design standard below is subject to approval by the owner and/or curator should a more specific requirement be know.

- Temperature: Maintain temperature between 65°F and 75°F throughout the year, allowing seasonal fluctuations between the two extremes, but holding daily fluctuations to ± 5°F.
- Humidity: Maintain relative humidity between 40% and 55% throughout the year, allowing seasonal fluctuations between the two extremes, but holding daily fluctuations to ± 3%. Non archive space shall be limited to maximum 55% RH throughout the cooling season.
- Filtration: Designing filtration to remove at least 50% of particulates using the ASHRAE Dust Spot Efficiency Test.
- Air Distribution: Avoid air stratification through properly located supply and return registers along with ensuring air movement across entire archive.

For the remaining non-archive spaces, mechanical spaces shall operate to maintain space setpoints of 68°F in winter and 75°F in summer with 55% maximum relative humidity. The outdoor design conditions will be 10°F winter; 94.7°F DB, 78.6°F WB summer.

HVAC Challenges:

Building Envelope:

Winter humidification is a high priority in a heated archive space in cold climates, but the humidity tolerance of the building must be considered. Architectural design should include heavy insulation, and consider possible vapor barriers. Control of openings, window materials, and floor slab insulation are critical in the design. Often, the building envelope has problem condensation (on single-glazed windows, on window frames, or in the exterior wall or roof) in winter at interior humidities as low as 25%. This condensation can cause cosmetic or substantive damage to the building. In such cases there are three alternatives: (1) keeping winter humidity stable and below the point where problem condensation occurs, (2) retrofitting the building envelope to tolerate higher humidity, or (3) reducing the space temperature. The building envelope for archives should be upgraded and sealed in order to maintain the higher winter humidity levels required.

This project includes a crawlspace and an attic. In order to control air leakage and moisture vapor flow, it is our recommendation to eliminate natural ventilation of the crawlspace and attic. We recommend that each be encapsulated, insulation for the roof should be placed against the roof and both the attic and crawlspace should be mechanical ventilated and conditioned. An encapsulated attic and crawlspace will benefit the HVAC system while also reducing overall energy usage.

System Reliability:

Due to damage that may occur to archives should the HVAC system fail, equipment failure scenarios should be reviewed to determine appropriate system safeguards that may be required in order to minimize equipment downtimes. This may result in providing primary/ secondary or redundant systems or spare parts on site in order to maintain system reliability. In addition, the HVAC system should be expected to operate 24 hours a day as the archives climate conditions remain constant as occupancy, lighting and ventilation loads may vary.

HVAC Loads:

HVAC systems shall take into account all regular and unexpected load scenarios. Typical HVAC systems design only for all regular loads and may underperform during higher than expected occupancies or higher/ lower than design outside air temperatures. Prior to final system design, the design team along with the client shall fully discuss the sensitivity of the archives to determine how much of the unexpected loads needs to be accounted for (ie., the rare 0°F or 105°F outside air temperature day).

Humidification:

Humidification should be provided by steam or deionized water introduced in the air system. Humidification methods include electronic steam humidifiers, clean steam humidifiers, evaporative pan humidifiers, spray-coil wetted-element systems, and ultrasonic humidification. All materials in humidification equipment should be selected to minimize microbial growth and degradation of system components. Unlike most other applications, HVAC design for this building type shall be more concerned with humidity control than temperature control. The averaging effect of a common mixed return air and common humidifier on a central system shall be carefully reviewed. Maintaining widely different conditions in zones using the same air handler can be difficult to achieve and wastes energy, so this project should aim to maintain common conditions throughout. If possible, different zone conditions should have the same absolute moisture content, using zone reheat to modify space relative humidity if there are different relative humidity requirements.

Dehumidification:

Dehumidification and the overall management of relative humidity can be the single most critical mechanical process in archive collections. Inadequate or ineffective dehumidification may result in wide ranges of relative humidity. Modest dehumidification can be achieved with most cooling systems, limited by the apparatus dew point at the cooling coil, and requiring adequate reheat. Most problems derive from compromises in the cooling medium temperature or lack of reheat. It is recommended that this project include chilled water as the cooling medium while utilizing variable speed compressors to enable a consistent supply of dependable constant temperature chilled water that will allow for consistent management of the dehumidification system and archive space relative humidity and dewpoint. While DX refrigeration may have lower capital costs, it is less reliable, requires more energy, and may require a defrost cycle. For further control , zone reheat is essential to maintaining setpoint temperatures while operating dehumidification equipment. As such, zone reheat has been included in the proposed HVAC design of this project.

Outdoor Air (Ventilation):

Controlling the outside air is a must. Petersburg, VA has a subtropical climate with January lows averaging 28°F and July highs averaging around 90°F. To manage the amount of outside air entering the facility, a dedicated outside air unit (DOAS) should be installed to pretreat, measure and control the outside airflow and dew point of the outside air. The unit should be set to maintain the building at a slightly positive pressure. During unoccupied hours, the airflow shall be reduced to account for the reduction in exhaust air from the building, but it will not be shutoff during unoccupied hours as it will still need to maintain building pressurization and humidity setpoints.

Filtration:

Particulate filtration is essential for removal of contaminants that could foul the HVAC system, as well as particles that might degrade or deface archive collections being preserved. Particulate filtration should be addressed in two steps, prefiltration and final filtration. Prefiltration is required to prevent fouling in cooling coils and build-up of dust in the fan, ductwork, or other HVAC components. It is also required to protect and prolong the functional service life of fine-particulate filters. These fouling-sized particles are generally in the 3 to 10 µm size range. Achieving at least 50% removal requires MERV 7 filtration. Final filtration shall protect archive collections in the facility. MERV 15 filters are minimum 90% in the 3 to 10 µm size range and shall be provided in the DOAS unit.

Air Distribution:

Supply air should not blow directly onto archive collections. Diffusing supply air along a wall can be a major problem in this application as well. Floor supply should also be avoided because particles at foot level become entrained. Supply air within archives shall ideally be from ceiling to floor and should avoid high velocity airflows.

Controls:

Control system design is critical for maintaining precise temperature and humidity control. Consideration should be given to industrial-grade controls for proper temperature and humidity. Control systems should be able to monitor and control humidity, temperatures, airflow, filter pressure drops, water alarms, capacity alarms, and failure scenarios. Sensors, thermostats, and humidistats must be located in the archives collection space, not in the return airstream. Temperature variation is usually preferable to prolonged humidity swings. This strongly affects controls design, because conventional control treats temperature as the primary goal and humidity as supplementary. Where comfort conditions are not required, humidity-controlled heating, which modulates heating within a very broad temperature dead band to seek stable or moderated humidity conditions, might be used. By tracking system performance using the temperature control system, operators can adjust zones based on actual operating history. Operating at lower system volume at night when lights are off, but maintaining minimum air changes can save energy.

Proposed HVAC Systems:

The proposed HVAC system will consist of a central heating system with associated pumps, central chilled water system with associated pumps, four pipe hydronic fan coil units, air distribution systems, steam humidifier system, and HVAC controls.

Central Heating System

The proposed central heating source will be two (2) high efficiency, natural gas-fired, condensing water boilers. Conceptually sizing of the boilers is estimated at 500 input MBH each. The boilers will be piped in a parallel arrangement. Heating water will be distributed to coils throughout the building via secondary duty/standby heating water distribution pumps with variable speed drives. All piping shall be routed concealed except within mechanical spaces. Repairs will be required for all instances where hydronic piping is concealed behind historic finishes.

The condensing boilers shall be complete with boiler fittings and automatic controls and designed for use with natural gas. The boilers and all wiring shall be completely factory assembled as a self-contained unit. Boiler design and construction shall be in accordance with Section IV of the ASME Code for hot water heating boilers with maximum water working pressure of 30 psi. Each boiler shall be equipped for modulating gas input. Fuel flow shall be controlled by a valve in the fuel train. Turn down for each boiler shall be minimum 5:1. The boiler shall be supplied with a combination intake/exhaust concentric vent for roof or sidewall applications. The heating water pumps will be inline, non-overloading, centrifugal type. Each pump will be furnished with variable frequency drive with manual bypass, strainer, and associated valves.

Central Cooling System

•The proposed central cooling source shall be a high efficiency air cooled chiller located on the addition roof at a location coordinated with the structural engineer and proposed roof mounted generator. Access shall be required for the roof mounted equipment. Conceptual sizing of the chiller estimates 50 tons of cooling. The chiller shall be provided with remote mounted duty/standby chilled water distribution pumps with variable speed drives, along with the expansion tank and air separator. Pumps, expansion tank, and air separator shall be located in the basement mechanical room.

Piping shall traverse between the rooftop chiller and pumps using a pipe chase in the addition. All piping shall be routed concealed except within mechanical spaces. Repairs will be required for all instances where hydronic piping is concealed behind historic finishes.

Four-pipe Hydronic Fan Coil Units

Fan coil units shall be provided to maintain individual space heating/cooling setpoints. The fan coils shall be located in mechanical spaces, attic spaces, or concealed above ceilings. Care shall be utilized to coordinate installation locations of fan coils and piping systems with occupied spaces. Fan coil units serving the archive spaces shall be located in mechanical closets adjacent to those rooms. Each fan coil shall come complete with hot water reheat coil, chilled water cooling coil, return air filter, and supply fan. Each fan coil shall be controlled to provide for a constant volume of supply air at variable temperature to maintain space setpoint.

Partial unit redundancy shall be required for fan coil units serving the archive spaces to prevent complete loss of temperature and humidity control during an equipment failure. Supply ductwork for fan coil units serving adjacent archive rooms shall be manifolded together to allow for supply air to both rooms from either fan coil. Duct mounted control dampers shall isolate the units from the rooms served as required based on unit status. Each fan coil shall be capable of supplying air to its dedicated archive room or both archive rooms simultaneously.

In-Duct Humidifiers

In-duct steam humidifiers shall be provided to provide low-limit humidity control/ prevent daily humidity fluctuations outside design constraints. Humidifiers shall be electric steam humidifiers using reverse osmosis filtered water to minimize airstream contamination and protect the life of the humidification system. Humidifiers shall be provided for each fan coil unit serving the archive spaces and shall feature independent control of each archive room. If possible, different zone conditions should have the same absolute moisture content, using zone reheat to modify space relative humidity if there are different relative humidity values across spaces.

Energy Recovery Ventilators

Ventilation shall be mechanical ventilation for all spaces and ventilation air quantities shall conform to the requirements of the Virginia Mechanical Code. A suspended ducted energy recovery ventilator (ERV) shall be provided for energy recovery between the incoming outside ventilation air and the required exhaust air serving the restrooms. Preconditioned air will then be routed to the return of each fan coil as required. ERVs shall be located in mechanical spaces, attic spaces, or concealed above ceilings.

Proposed HVAC Zones:

Fan Coil Units zones for the proposed renovation includes ten (10) HVAC zones. At the basement level, it is prosed to include one zone for the historic building and one zone for the addition. At the first floor, four (4) zones are proposed which includes a zone for each of the two (2) archive rooms and one zone for the historic building with a final zone to the first floor western portion of the floor. The second floor is also proposed with four (4) zones, one each for the two (2) archive rooms with the remaining two (2) serving the north and south portions of the existing building. Please see images below depicting proposed HVAC zones for each floor

Exhaust Systems:

Mechanical exhaust will be provided for the restrooms and janitor closet. This required exhaust will be routed to the energy recovery ventilator unit where possible to allow for pretreatment of required ventilation air.

Air Distribution Systems:

Ductwork will be galvanized steel (G90, ASTM A 525 and A 527) fabricated and sealed in accordance with SMACNA Standards, latest edition. Concealed low-pressure supply ductwork will be insulated with 2" thick fiberglass duct wrap and will be completely vapor sealed. Concealed return air and transfer air ductwork will be lined with 1" thick duct liner for acoustic purposes. It is anticipated that all ductwork will be concealed except where routed in mechanical spaces. Low loss fittings and galvanized steel opposed blade dampers will be provided at all supply, return, and exhaust branch connection. Diffusers, registers, and grilles will be commercial type constructed of aluminum and coordinated with the architect

HVAC Controls:

Controls will provide safe, automatic operation of all systems through a stand-alone direct digital control (DDC)/energy management system. This system will allow control of such items as space temperature, space humidity, exhaust fan interlocks, time of day functions and safety devices. This system shall also have the ability to monitor non HVAC critical systems and have additional control points available for those systems where required.

HVAC Components:

- Hot water and chilled water piping will be Type L hard drawn copper tubing or standard weight black steel. The piping will be insulated with fine heavy density fibrous glass, rigid phenolic foam or calcium silicate insulation with general purpose jacket. An aluminum jacket will be used on all piping exposed to the weather. An electric temperature maintenance system will be provided on all piping subject to freezing.
- Thermometers and pressure gauges will be installed on the supply and return water connections for each boiler and chiller. Pressure gauges will be installed on the suction and discharge water connections for each pump. P/T ports will be provided at hot water and chilled water coil connections.
- The water and air systems will be cleaned and pressure tested then adjusted and balanced.
- Vibration isolators will be provided for all base mounted equipment above grade and suspended piping and ductwork within 10 feet of major equipment connections. Flexible pipe connectors will be stainless steel bellows and braided jacket.
- Hot water unit heaters with integral line voltage thermostats will serve mechanical rooms or other non-finished utility spaces subject to freezing.

Plumbing Systems – Existing Systems

Existing Plumbing Systems:

The plumbing systems consist of four single-user restrooms; one located in the basement, a pair located on the first floor, and one located on the second floor. There is also a janitor closet adjacent to the basement restroom with a utility sink, a single bay kitchen sink located in the basement break room, various floor drains throughout the mechanical and electrical spaces, and two locations of demolished drinking fountains.

Existing Plumbing Fixtures:

Plumbing fixtures in the basement restroom and janitor closet appear to be original to the 1986 renovation. Ages for other plumbing fixtures could not be verified, though existing drawings suggest that the first and second floor plumbing fixtures predate the 1986 renovation, while the break room sink was added sometime after that renovation. Water closets are base mounted, tank style with manual flush valves and lavatories are a mix of wall mounted and cabinet mounted fixtures with manual faucets. During the course of the site visit, we noted that some fixtures were found to be inoperable. Emergency floor drains were not observed in the restrooms.

Existing Domestic Water Service and Heating Systems:

The existing water service entrance enters the building on the Marshall St side of the building at the basement level. The service entrance is a 1" pipe with a shutoff valve. The water meter is believed to be located at the street. Domestic water is distributed to fixtures as required via concealed copper piping above ceilings.

The existing domestic water heating is served by a nominal 30 gallon electric domestic water heater located in the basement mechanical room. The water heater is manufactured by State and believed to be from 2003. The water heater has a single 4.5 kW heating element on a 240V service. The domestic water system was not observed to have a hot water recirculation pump or master tempering valve.

Existing Sanitary Waste and Vent System:

The existing sanitary waste and vent system is presumed original to the buildings except where connections have been made as required for renovations and additions throughout the years. Drawings from the 1986 Renovation indicate a 4" sanitary waste pipe exits the building near the water service entrance, though we were not able to locate a cleanout or manhole along the route of the sanitary pipe. It is believed that this pipe predates the 1986 renovation.

Existing Natural Gas Piping System:

The incoming natural gas service enters the building at the basement level on the Sycamore St side of the building. The gas service entrance is a 1-1/4" pipe with a regulator and meter at the building exterior. The meter and piping were added in the 1986 renovation to accommodate the new boiler. Piping is routed from the meter to the basement mechanical room where it serves the existing boiler.

Existing Storm Drainage System:

The existing storm drainage system is a gutter and downspout system for both the historic building and the addition. Downspouts are metal, painted brown to match the historic building exterior color. All downspouts terminate at grade with some downspouts discharging to splash blocks, others discharging to concrete walking paths, and the remaining downspouts discharging to grade.

Plumbing Systems – Recommendations For Proposed Renovation

Design Basis:

The plumbing and domestic water system is aged with the newest components being added in the 1986 renovation. Many plumbing system components are no longer functional with considerable deficiencies throughout the system as a whole. All plumbing systems are proposed to be demolished due to age and will be replaced with new systems to serve the six (6) restrooms, break room, and mechanical and utility service entrance rooms. New plumbing systems will be designed based on the criteria set forth in the 2021 Virginia Construction Code, 2021 Virginia Energy Conservation Code, 2021 Virginia Plumbing Code, 2021 Virginia Fuel Gas Code, and the current version of the Americans with Disabilities Act Accessibility Guidelines.

Domestic Water Systems:

The existing water service entrance will be upgraded to include a reduced pressure zone backflow preventer, strainer, and service valves. The proposed main distribution pipe shall be 2" to accommodate the proposed flush valve plumbing fixtures. The water service entrance may be relocated to if needed to accommodate the proposed renovations to the floor plan. A replacement domestic water heater will be provided with an expansion tank and a hot water recirculation loop with circulator pump. Proposed sizing is 30 gallon storage and heating will be either electric source or natural gas source. Point of use thermostatic mixing valves will be used for domestic water tempering at fixtures where required. The domestic water piping will be routed concealed as required to all fixtures. Domestic water piping will be type L hard drawn copper.

Sanitary Waste and Vent System:

Sanitary, waste, and vent piping will be cast iron no-hub where above floor and PVC below grade, routed as required for new restrooms and waste piping needs. Sanitary and waste piping for the restrooms will collect at each level before connecting to a plumbing stack connecting the three floor levels. Waste piping serving other fixtures will be routed concealed below floor as required to connect to the sanitary/waste main. Sanitary vents shall be collected and routed for termination above the roof. A 4" sanitary pipe will connect the building sanitary and waste system to the municipal sewer system. During design, the existing sanitary sewer will be scoped to determine feasibility to retain and reuse for connection to new systems. If found faulty, the sanitary sewer main will be replaced.

Plumbing Fixtures:

New plumbing fixtures will be commercial grade vitreous china water closets and lavatories. All fixtures will be consistent with current industry and ADA standards.

Water closets will be floor mounted with flush valves, 1.6 gpf.

Lavatories in each restroom will be wall mounted, concealed arm carrier installation, 0.5 gpm, chrome faucet with ADA compliant mixing handle, and ADA compliant insulation on supplies and drains. Point of use temperature limiting device shall conform to ASSE 1070.

Emergency floor drains will be provided in each restroom

and standard floor drains will be provided in both the mechanical room and fire service entrance room. Floor drains shall be general purpose cast-iron body with adjustable stainless steel strainer heads and trap primer connections.

The service sink provided in the basement janitor closet shall be 10" deep, 24"x24" square floor mounted molded plastic mop sink.

The handwash sinks provided at the basement staff break room and second floor art counter shall be drop in cabinet mounted, single basin, 10" deep, stainless steel construction, single faucet with 2 gpm max flow. Installation shall conform to ADA requirements. Point of use tempering devise shall conform to ASSE 1070.

The building does not have drinking fountains, so new work will include the addition of ADA compliant bi-level drinking fountains with bottle fillers.

Natural Gas Piping System:

The existing meter, regulator, and distribution piping are sized for the 794 MBH input boiler. The renovation is planned to include a new boilers of slightly larger size and a generator. The increase in gas load is may be large enough to require an upgrade to the meter and service regulator. New gas distribution piping will be routed to the rooftop mounted generator and the new boilers. All new piping will be schedule 40 black iron pipe. Distribution pressure is expected to be less than 2 PSIG.

Storm Drainage System:

Changes to the roof, building footprint, and building site are not expected. As such, the existing storm drainage system is not anticipated to need modifications.

Fire Protection System

The existing facility is not provided with a fire protection system. A fire department entrance will be added in the basement mechanical room with a remote vault at the street for the fire department connection. The fire protection system will be hydraulically calculated per NFPA 13 to determine pipe sizes required for the renovation. All necessary permits and inspections will be the responsibility of the subcontractor undertaking the installation.

This renovation will add a wet pipe fire protection system throughout. Due to the historic nature of the building, fire protection piping will be routed concealed behind the existing finishes. Significant coordination will be required to repair all historic finishes after piping installation. Wet sprinkler piping for all rooms with ceilings shall use pendant style heads.

In addition to the wet system, the archives rooms shall have a non water based fire systems as the primary means for room protection. It is anticipated that the gas based fire suppression system will locate the storage tanks in an approved mechanical/utility space. The room will contain the fire suppression system and control panels. Each archives rooms will have its own dedicated fire suppression gas based system. The fire suppression system will integrate with the BAS system for monitoring of the archive critical systems. A backup dry-pipe sprinkler system will be provided for the archive spaces with zoned pre-action valves isolating the archive spaces.

Electrical Systems – Existing Systems

Electric Service:

The existing electric service to the McKenney Library is 120/208V, 3-phase and is supplied from transformers mounted on a Dominion Energy power pole located along Marshall Street on the south side of the building. The power company secondary service conductors run overhead from the pole to two (2) surface mounted service heads located on the south exterior wall of the library just above the first floor windows. Dominion current transformers (CTs) are actually mounted on the exterior wall just to the right of the surface heads and are exposed. The Dominion overhead secondary conductors are routed through the CTs before entering the service heads. The two (2) service heads are connected to two (2) exposed conduits that run down the side of the building and enter the facility just to the right of the existing basement entry door. There is a third service head and exposed conduit, smaller than the others, that carries the signal wiring from the CTs down to the power company meter that is also mounted on the exterior wall and accessible from grade level.

Elec Photo #1: Overhead Service Drop & Exposed CTs

The two (2) large secondary service conduits both enter the building just above grade level. One stabs straight into an electrical closet on the other side of the wall and immediately terminates at a 3-pole, 120/208V, 400 amp disconnect switch (Disc #1). The other secondary conduit goes into the crawl space behind the electrical closet, turns 90 degrees, and terminates in the back of a second 3-pole, 120/208V, 400 amp disconnect switch (Disc #2) mounted in the closet beside Disc #1. These 400 amp disconnect switches are the two (2) service disconnects for the building.

Main Electrical Closet:

The basement electrical closet where the two (2) 400 amp service disconnect switches are installed houses almost all of the existing power distribution equipment for the McKenney Library. The closet itself runs the entire length of the east side of the vestibule for the basement south building entrance. Inside the vestibule, there is actually a set of stairs on the west side of the vestibule that covers the height difference between the exterior entrance and basement floor level. Since the closet extends the entire length of the vestibule, part of the closet is accessible from the higher (exterior entry) side and part is accessible from the lower (basement) side. There are four (4) pairs offolding doors, two (2) on the upper side and two (2) on the lower side, that may have been installed to block view of the equipment from the public. But unfortunately, the two (2) middle pairs of doors are in the NEC required access/clearance space in front of some of the equipment. There is also a handrail that runs perpendicular from the front of the electrical closet along the floor elevation change between the high side and low side of the vestibule. The handrail appears to be in front of the outside edge of one of the panels although it doesn't appear to impede access to the panel. Because it is in front of the just the panel edge, the building official may consider it just outside of the panel clearance area, but it's not ideal.

On the low side of the vestibule, there is actually a short wall along the front of the closet. Top of this wall is at the same height as the high side of the vestibule. Someone accessing the electrical equipment on the low side has to reach over this short wall. While all existing equipment is installed above the level of the wall, the existence of the short wall itself is still an NEC violation, which requires clearance in front of electric equipment of this type to extend down to grade, floor, or platform level.

One more quick note on this existing electrical closet, on the far north side of the closet is the access door to the crawl space for the southeast corner of the building which will likely need to be retained in the plans for the renovation.

Elec Photo #2: Existing Main Electrical Closet

Electrical Power Distribution:

As alluded to above, most of the electrical power distribution equipment for the building is located in the basement main electrical closet. This equipment consists of two (2) panelboards and a load center. The first panelboard is Panel 36, which is a 120/208V, 3-phase, 400 amp G.E. board and is supplied from Service Disc #1. The second panelboard, Panel ME1, is a 120/208V, 3-phase, 400 amp Siemens board and is supplied from Service Disc #2. The load center, Panel LP1, is 120/208V, 3-phase, 225 amp and is supplied from a 225 amp subfeed breaker in Panel ME1. Panel ME1 was installed as part of a renovation based on drawings from 1986 from Glave Newman Anderson Architects & ECI Engineers. (Note that the two (2) 400 amp service disconnects were installed as part of that same project as well.) The other panels are even older; it is not clear when they were installed.

The only other existing panelboard that was found in the building was a small 16 circuit 1-phase, 120/240V, 125 amp Federal Pacific load center located recessed in the wall of the 1st floor elevator lobby. It appears older than any of the panels in the main electrical closet. It is unclear where it is supplied from, although most likely it is from Panel 36.

Elec Photo #3: Load Center Recessed in Elev Lobby Wall

Standby Power:

There is no existing generator or other centralized standby or emergency power system currently provided. The only existing backup power is the battery packs inside individual emergency light fixtures and illuminated exit signs.

General Wiring and Receptacles:

It appears that conduit and MC cable have been used for running pretty much all line voltage circuitry leaving the branch panelboards. However, there is a significant amount of low voltage wiring for communication and safety/security systems such as telephone, data, and fire alarm, that was run exposed and it cannot be ruled out that there isn't some exposed line voltage wiring mixed in with the low voltage wiring. Unsurprisingly considering the original building was constructed in 1859 and the addition was built in 1958, much of the circuitry was installed after construction and therefore, exposed surface mounted conduit, exposed MC cable, and surface raceway is installed in many areas. Many of the facility's general use receptacles were also installed in this manner. Particularly, surface mounted receptacles were added in numerous locations to power window mounted air conditioning units. We even noticed surface mounted receptacles installed on floors in certain spaces. It was also noted that some of the existing receptacles are not provided with terminals for ground pins

Elec Photo #4: Exposed cabling in Corridor

Elec Photo #5: Receptacle, No Ground

Elec Photo #6: Floor receptacles

Lighting and Lighting Controls:

There are numerous types of light fixtures installed in the facility including lay-in troffers in acoustic grid ceilings, linear and point pendant fixtures, surface mounted fixtures, etc. Most of the existing fixtures are linear fluorescent using T12 lamps, although there are a few incandescent fixtures still in use as well. In the original (1859) portion of the building, it is clear that at some point many of the original incandescent pendant lighting fixtures were replaced with linear fluorescents, most notably on the first floor. The existing pendant connection points and circuits were reused for the new fixtures. Unfortunately, the replacement fluorescent pendant fixtures do not appropriately mesh with the architecture of the space and in many cases, obscure the view of architectural elements on the ceiling. It should be noted that throughout the building, a fair number of lighting fixtures are not operable or only partially so due to burned out lamps, bad ballasts, etc.

Interior lighting controls are all manual, no interior automated controls were found. The lighting in most spaces, certainly in the basement and much of the second floor, is controlled via local manual line voltage toggle switches installed in the room or space where the fixtures are that they control. It appears the lighting in a number of areas of the first floor and perhaps some spaces on the second floor as well is controlled with centralized manual controls that consist of two (2) on/off pushbutton stations located at what is assumed was previously the library reception desk near the main entrance of the first floor. These pushbutton stations operate two (2) lighting contactors in the basement electrical closet. One pushbutton and contactor combination is labeled “Lights Old Bld.” and one is labeled “Lights New Bld.”. It is assumed the old building controls were for lights in the original part of the building and the new building refers to lights in the 1958 addition.

Elec Photo #7: Pushbuttons for Area Lighting Controls

There are multiple types of light fixtures installed on the exterior of the building as well. Exterior building mounted lights primarily consist of wallpacks, most of which appear to be H.I.D. Some of the wallpacks look newer than others, in particular those on the south side and back (east) side of the building look newer than those on the north side and front (west) side. There is an architectural pendant fixture over the stair landing at the main entrance and surface mounted directional spot lights for the "Peterburg Public Library" sign that is mounted over the entrance stairs. There is also a floodlight that is surface mounted with surface conduit installed over the entry door and stairway into the basement on the south side of the building. There are also numerous ground mounted floodlights and directional spotlights installed around the site. On the building south side it appears the ground mounted lights were installed to shine up on and highlight the building façade for viewing from Marshall Street. In other locations, the ground mounted lights appear to be for spotlighting particular site features, such as signage, landscaping, and the flagpole. As far as exterior lighting controls, it was noted that the floodlight surface mounted over the basement entry door is connected to a photocell mounted on a surface outlet on the building wall. It appears that photocell may also control the ground mounted lights in that area. It is unclear if the wallpacks and other exterior lights around the building are also controlled by that photocell or if they have different controls.

Existing emergency lighting appears to be provided exclusively through the use of dual-lamphead emergency light fixtures with self-contained batteries and illuminated exit signs with self-contained batteries. Some of the exit signs are combination units that include the emergency lampheads attached to the exit sign. It appears that the coverage of existing emergency lighting is pretty sparse.

Fire Alarm and Security System:

The facility is provided with an existing combination fire alarm and security system that is an Ademco VISTA-128FBP by Honeywell. The main control panel is located on the first floor in the area where the library reception desk would have been. Built into the door of the control panel is a keypad with LCD readout for local control and monitoring. Based on the message on the control panel LCD readout, it appears the system is monitored remotely by the Petersburg Alarm Co.

The system includes both initiation and alarm devices installed on each level of the building. Initiation devices include smoke detectors and manual pull stations for fire detection and motion sensors for burglar detection. The notification devices all appear to be alarm bells with one (1) bell located on each floor. There are also a couple of control boxes for the system located in the main electrical closet in the basement.

Elec Photo #8: Existing Combo Fire/Security Panel

There are also a couple of exterior doors that are provided with access control, the entry door at the basement and the back door at the top of the ADA accessible handicap ramp. The system installed for this is the Aiphone system with intercom at the door that allows a person to call and talk to a remote location inside the building, which is assumed to be the old library reception desk, where someone manning the desk can then hit a button to unlock the door.

Telecommunications Systems:

Similar to the secondary electric service, the incoming utility telecommunications lines originate at the Dominion power pole on Marshall Street and are run overhead and attach to the exterior wall of the building above the first floor windows. From there, the utility telecom cabling runs down the exterior wall, partially exposed and partially in conduit, and then enters the building just above grade level and terminates at a plywood backboard in the basement entry vestibule, on the upper landing to the immediate left upon walking

through the entry door from the exterior. Basically, the telecom backboard is right across from the main electrical closet. Mounted on the backboard is the Verizon demarcation equipment, numerous wiring blocks, and the library's Nortel Norstar telephone switch. Outlets for telecommunications, including both telephone and data outlets, are provided throughout the building. Not surprisingly, these outlets are pretty much all installed via surface raceway. It appears the data system headend equipment may have been located in a room in the basement on the northwest corner of the original 1859 building, as there is a large bundle of low voltage cabling hanging out of the ceiling in the corner of that room. In the floor plans for the proposed renovation, this is the space labeled Exhibit 015. It appears however, that any data equipment that may have been installed there at one point has been removed. Some similar type cables hanging loose from the ceiling were also found on the other end of the basement in Storage Room 027.

Elec Photo #9: Existing Telecom Backboard & Headend Equipment

Electrical Systems – Proposed Design

Existing Systems:

Unless specifically noted otherwise in the rest of this report, it is proposed that all existing electrical systems, raceways, wiring, and equipment be removed as part of the proposed renovation and completely new electrical systems be installed. The actual conditions of existing components of the electrical systems vary from system to system and component to component. But in general, almost all of it is pretty old, in the range of 30+ years old. For example, the newest electrical panelboard had an installation date on the nameplate of 08-30-90. It was installed as part of the work shown in drawings from Glave Newman Anderson Architects dated 11-10-86, which appears to be the last significant renovation project undertaken at the building. All other panelboards are even older than that. Additionally, much of theequipment is obsolete and the technology is outdated. Some of the systems/equipment doesn't meet current building code (such as installation of audio alarms only, no visual alarms, for the fire alarm system). Further, pretty much none of the existing systems or components would fit with the proposed architectural renovation or can provide the kind of performance required for a modern building of this type.

Electric Service:

The electric service for the renovated facility will continue to be 208V, 3-phase and supplied from the Dominion Energy pole line along Marshall Street. Based on the estimated load, it appears 800 amps is also the right size for the service for the renovated building, same as it is currently. As a result, it appears potentially, that it may be technically feasible to retain the existing overhead secondary service as an existing condition, since all Dominion Energy lines and equipment could remain as is and they would not need to be involved in the project at all. Dominion is only required to be involved when there is a change in voltage, service size, or overall building load. This would mean the overhead service drop, exposed service heads, exposed CTs, and exposed surface mounted service conduits would all be retained. This would also require retaining the two (2) existing 400 amp service disconnects in the existing main electrical closet just inside the basement entry door, since removal/replacement of these disconnects would require Dominion to be involved to disconnect incoming power. While the service disconnects would remain, the rest of the power distribution system on the load side of the two (2) service disconnects would be completely replaced and would need to be designed to work with having two (2) distinct 400 amp load side feeders.

The recommendation however, is to replace the entire electric service, including replacing the overhead secondary service drop from the Dominion power pole and the exposed wall-mounted CTs with an underground service drop from the pole and a CT cabinet. The CT cabinet would be mounted on the exterior south wall of the building just to the right of the stair into the basement. The main electrical closet will be directly behind the CT cabinet inside the building. The power company meter and meter signal wiring would also be replaced. This recommendation is based on the age of the existing service, the current aesthetics with the exposed service heads and service conduits, and Dominion requirements to replace exposed CTs whenever there is any significant service work undertaken that they need to be involved in. Also, even though all of the existing exposed incoming service wiring is insulated, it is also concerning from a safety standpoint how close the secondary service conductors and exposed CTs are to the top of the first floor windows and roof line.

The new underground service would supply a new 120/208V, 3-phase, 800 amp main panelboard located just inside the exterior wall in the electrical closet on the high side of the basement entry vestibule. Basis of design for the new main panelboard would be Square D I-Line series and the panel would be provided with an 800 amp main circuit breaker that would serve as the single service disconnect. The panel would be provided with branch circuit breakers needed to supply all branch panelboards installed throughout the building and any other individual large loads such as the elevator.

Electrical Power Distribution:

New branch panelboards will be installed to provide all circuitry needed for lighting, receptacles, and powered equipment throughout the building. It is anticipated that one (1) branch panelboard will be provided for each floor of the building. Both the basement and first floor branch panels will likely be installed in the basement level electrical closet. It is anticipated that the second floor panel will be located in the storage room on that floor.

Standby Power:

A standby power distribution system will be provided for the renovated facility consisting of standby generator, automatic transfer switch (ATS), and separate standby power system branch panelboards. The primary loads to be connected to the standby power system are the pieces of HVAC equipment necessary to maintain temperature and humidity control for the Archives rooms which will house valuable artifacts that must be kept in a climate controlled environment at all times. Specific equipment expected to be connected to the standby power system include the chiller, the boilers, the hot water and chilled water pumps, and the fan coil units serving the four (4) archive spaces. Other miscellaneous small loads that are needed by the Owner to protect and maintain the building during a prolonged normal power outage may also be connected to the standby system, such as designated lighting circuits in certain areas, the fire alarm control panel, telecom and security system headend equipment, and other loads so designated by the Owner.

Connection of the entire building to the standby power system such that the facility can remain open to the public and operate as normal during a power outage is not planned.

The generator will be natural gas fueled, 120/208V, 3-phase, and the required size is estimated to be 150 kW. The plan is to locate it on the roof. The ATS and one (1) standby power branch panelboard that will power the chiller and Archives fan coil units will be located either in the second floor mechanical room between the two Archives room if space is available there, or on the roof beside the generator. A second standby branch panel will be located in the basement electrical room and will power required HVAC equipment installed in the basement mechanical room such as the hot and chilled water pumps and the boilers. To avoid the additional costs and space requirements for another ATS and separate distribution system in order for the generator to be able to be used to supply life safety loads, this standby power system will be classified as non-life safety only. Life safety loads, such as emergency lights for building egress, will be provided with their own batteries which will serve as the code required life safety power source. It will be similar for the fire alarm system, the fire alarm system will have its own internal batteries that will qualify as its life safety power source. Connection of the fire alarm system to the generator is just to limit the discharge of the batteries to preserve their service life and to keep the system operational during a prolonged power outage in which the building will be unoccupied.

General Wiring and Receptacles:

All wiring methods shall conform to the National Electrical Code (NEC). The preferred wiring method for branch circuitry will be stranded conductors in EMT conduit. Use of MC cable is likely to be permitted as well if approved by the Owner, but NM cable will not be allowed. If MC cable is permitted, it will be limited to branch circuitry concealed in walls and in accessible ceiling spaces. Where exposed or inaccessible, circuitry will be required to be installed in conduit. All feeders will also be required to be installed in conduit. All conductors shall be copper and shall be NEC type "THWN" with type "THHN" being used in wiring space inside fixtures and for connections to recessed fixtures. Minimum size conduits will be 3/4", with larger sizes as required by the NEC. Schedule 40 PVC conduit will only be utilized for the underground secondary service conduits, underground telecom utility conduits, and underground branch circuits and feeders. PVC conduit will not be permitted to be used indoors or to be run exposed. Flexible metal conduit shall be used for all flexible connections, plus all short motor connections and all other equipment subject to movement or vibration. Liquidtight flexible metal conduit shall be used in exterior applications and any interior wet or damp locations. Flexible conduit will also be permitted for use as the connection to recessed lighting fixtures, maximum length of 6', and installed in accordance with all NEC requirements. Surface raceways may be used for installation of power wiring and communications cabling where concealing may not be possible in existing walls and similar inaccessible architectural elements. Use of surface raceway will require approval in advance by the Architect.

Power receptacles will be provided for general use throughout the facility, quantity and layout of outlets to coordinate with the architectural arrangement and function of each space. Designated receptacles will also be provided where necessary for specific cord-and-plug equipment. Receptacles will be heavy-duty industrial 3-wire grounding type, 20A at 125 volts, NEMA 5-20R, with other NEMA types, ground-fault circuit interrupter (GFCI) types, etc. provided where required by code or the application. Exterior receptacles will be provided with "While-in-Use" covers as required by code.

Grounding:

A new building grounding electrode system (BGES) will be provided for the new electric service and connected to the main panelboard. The BGES will connect to all grounding electrodes required by code including the building cold water pipe and separate ground rod grid. The standby generator will be grounded in accordance with NEC requirements for a separately derived system. Equipment grounding conductors will be provided for all circuits and all conduits, motor frames, metal casings, receptacles, switches, etc. shall be grounded.

Lighting and Lighting Controls:

All light fixtures installed as part of the project will be LED. A variety of fixture types will be used and fixture choices will be based on the space type, application, fixture performance, desired aesthetic, etc. Where acoustical grid ceiling (ACT) is installed, it is anticipated that most such locations will be provided with 2'x2' lay-in troffers. In the Archives spaces with high density movable storage, continuous rows of LED strip style fixtures are expected to be installed and mounted perpendicular to the rows of storage units to insure light is always available in the open spaces between storage rows regardless of how the movable storage units are arranged. Exhibit spaces will be provided with spotlights to highlight exhibits using LED track heads. Monopoint track heads are likely to be used for individual exhibits and light track will be provided where required for lighting longer runs of displays. Other types of fixtures such as architectural pendants, wall sconces, downlights, vanity lights, etc. will be employed where appropriate. Exterior lights will be provided for exit discharge lighting at egress doors and along the ADA accessible ramp, for security, and for highlighting site features where appropriate. All lighting fixture selections (interior and exterior) will be made in collaboration with the Architect and in light of the historical nature of the building and the requirements of the Virginia Department of Historic Resources who will review the project.

New exit signs and emergency lighting will be installed throughout the facility along all paths of egress (including exterior exit discharge lighting), in all public areas, and in other locations where required by code. As briefly mentioned above under "Standby Power", emergency lighting will generally be provided by installing individual battery packs on the normal lighting fixtures serving the space.

If there are any areas requiring emergency lighting where the type of normal fixture provided for the space does not have an option to include an individual battery pack as part of the fixture, small remote battery powered inverters may be used instead to supply emergency power to those normal fixtures designated as emergency. Exit signs will be LED type and will also include self-contained batteries.

Lighting controls will be provided in accordance with the Virginia Energy Conservation Code (VECC). A distributed control system is planned in order to meet the VECC requirements. Most functional areas of the facility (exhibit areas, multi-purpose room, meeting rooms, offices, etc.) will be provided with their own manual wallstation controls with dimming. Dimming will be 0-10V to the extent possible, but other dimming protocols will be used as necessary. Support spaces such as restrooms and storage areas that do not require multiple levels of light will have controls that are on/off only. Additionally, automated controls such as occupancy sensing, daylight sensing, time schedules, etc. shall be provided in all spaces where necessary to meet code and any specific operational requirements. The basis of design for the distributed control system is anticipated to be the Lutron Vive system. Communication is wireless to the manual control stations and sensors with this system. The system would also be used to control the exterior lighting via programmable time schedules.

Fire Alarm System:

A complete new building wide fire alarm system will be provided. The system shall be fully addressable with main control panel located in either the electrical closet or telecom closet in the basement. All required initiation devices including smoke detectors, heat detectors, duct detectors, manual pull stations, etc. will be provided where required. Notification devices including audio/visual alarms and visual only alarms will be provided in all public spaces and other areas required by code. A remote annunciator will be provided at the main entrance and any other entrance used by the fire department to answer a fire alarm call, as well as at the main reception area (or other designated staff monitoring location). The fire alarm control panel will also include means for making call outs to the Owner's remote monitoring company. The fire alarm system will be provided with all components necessary for elevator supervision and control including recall to the designated floor and/or elevator power disconnection as required during a fire condition. The fire alarm system will also monitor the fire suppression system via connection to sprinkler flow switches, pressure switches, tamper switches, etc.

Whereas fire alarm and security function currently is provided by one control panel in the existing building, we are anticipating separate fire alarm and security systems with their own control panels will be installed in the renovated building. They may be combined if the central monitoring company/service provider that the Owner wants to use for fire alarm and security (currently Petersburg Alarm Co.) offers a suitable modern system capable of both functions.

Security Systems:

The facility will be provided with multiple types of security systems including intrusion detection, access control, and video surveillance. The exact extent of these systems will be determined when the renovation moves into full design. However, we anticipate the Owner will contract directly with a system provider for installation of these systems (equipment and wiring) outside the normal construction contract for the renovation. Work for these systems in the general construction contract will be limited to installation of infrastructure, which consists of providing empty outlet boxes for system devices and providing empty raceways/conduits for installation of system wiring. Also, any 120V circuitry and receptacles required to power security systems' equipment would be part of the general contract. Exact requirements will be worked out with the Owner's systems installer during design.

Telecommunications Systems:

New telecommunications systems will be provided throughout the facility. This includes providing a new utility demarcation point with plywood backboard for mounting incoming utility equipment and system headend equipment in a dedicated telecom space/closet in the basement. Space for installation of a new main data network rack or cabinet will also be identified and reserved. From these two (2) points, cabling will be distributed to outlets for data and telephone connections throughout the building.

As with the security systems, installation of the wiring and equipment for telecom systems is expected to be provided by the owner directly and work for these systems in the general contract would be limited to providing infrastructure (empty outlet boxes, empty conduit, 120V circuitry and receptacles). Exact requirements for these systems shall be determined during design.

Audio/Video (AV) Distribution System:

The renovated building will be provided with a building wide central audio/video distribution system that will be used as a means to help articulate the vision of the center and to provide audio/video resources to staff in their facility operations. A closet is already planned on the first floor for housing the A/V system rack and headed equipment. It is assumed audio speakers will be provided throughout the building in spaces open to visitors including exhibit spaces, multi-purpose room, etc. Video sources such as flat panel TVs and projectors are expected to be employed as well where needed to enhance the visitor experience of particular exhibits or to support the desired functionality of particular spaces. The extent of the A/V system will be determined when the project goes into full architectural/engineering (A/E) design. Also, the delineation of responsibility for system design and installation between what will be part of the general contract and what the Owner will provide directly will be determined at that time.

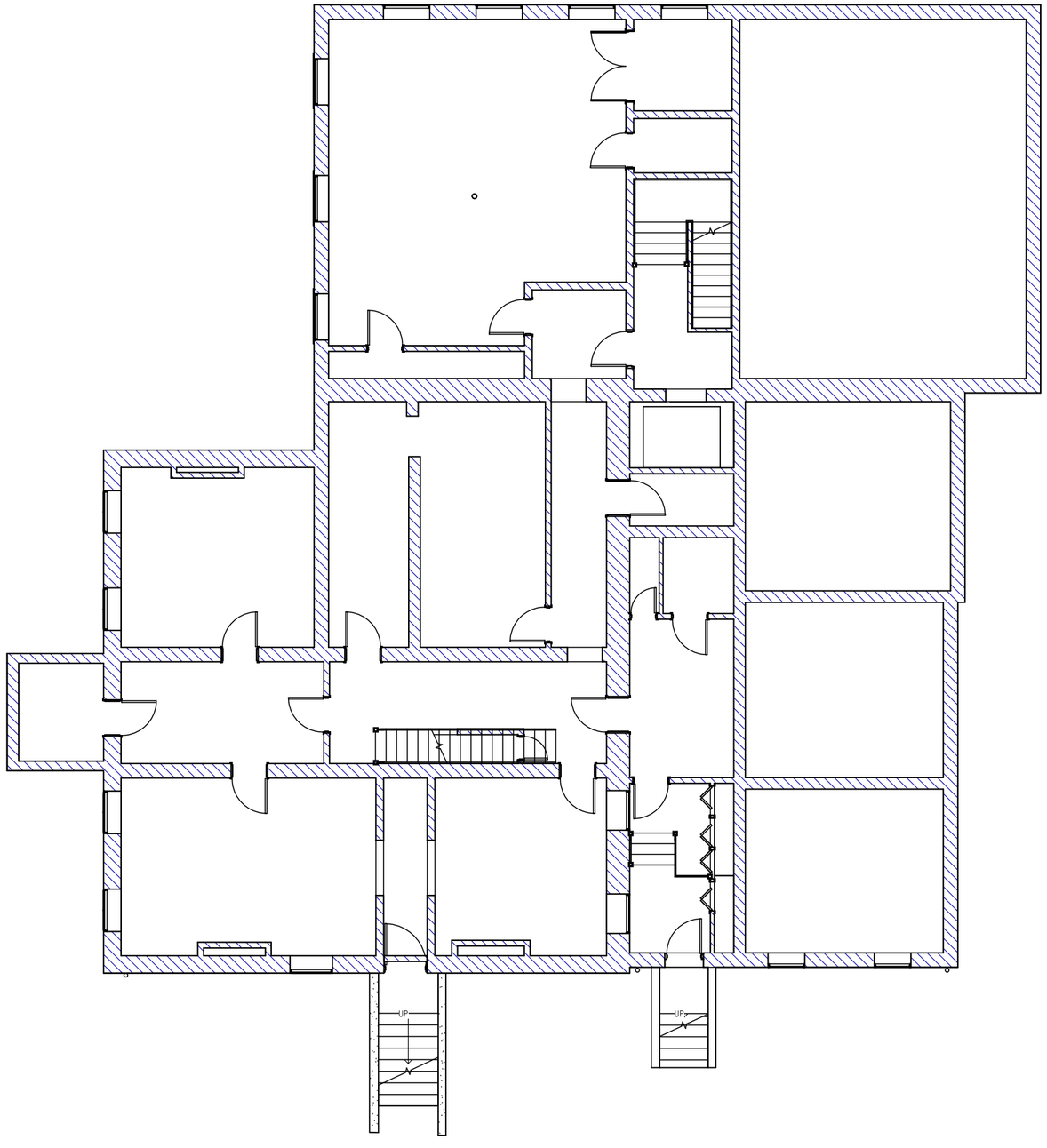
Estimated Budget

Petersburg African American History, Cultural Center, and Archive		Unit Area	Unit $	Budget $
Building Construction				
Downey and Scott Cost Estimate		13,222	$453	**$5,986,248**
Includes 10% contingency, and 6.38% escalation				
Alternate costs which should be included				
Foundation waterproofing, basement vapor barrier and underslab drainage, replace slab				$279,944
Reinforcing of existing structure for archives.				
Option 1 - steel beam and columns suppot at archives	$153,387			
Option 2 - steel plate reinforcing of existing joists				$109,171
Total Estimated Construction Cost				**$6,375,363**
Archive Storage Cost				
Option 1				
Stational storage units, 90" tall, level 1 and 2	$192,000			**$192,000**
Option 2				
Mobile high density, 92" tall, level 1 and 2	$314,000			
Option 3				
Mobile high density, 116" tall level 1, 92" tall level 2	$361,000			
Total Archive Storage Costs				**$192,000**
Other Typical Costs				
Funiture and Equipment		10,022	$25	$250,550
AV and Technology		10,022	$10	$100,220
Exhibits (limited, printing, fabrication, installation)		10,022	$18	$180,396
A&E and Design Consultant Fees				$567,882
Permits				$127,507
Utilities (Included in Downey and Scott estimate)				
Testing and Special Inspections				$25,000
Miscellaneous				$15,000
Total Other Costs				**$1,266,556**
Anticipated Budget				**$7,833,919**

Final project costs will vary depending on site considitions, market conditions, materials, finishes, and complexity of the final design. Estimates should be updated as the project develops further.

Other expenses for legal fees, financing costs, tax credit services, LEED, moving expenses, operating costs, or similar costs should be added separately to this proposal.

Drawings



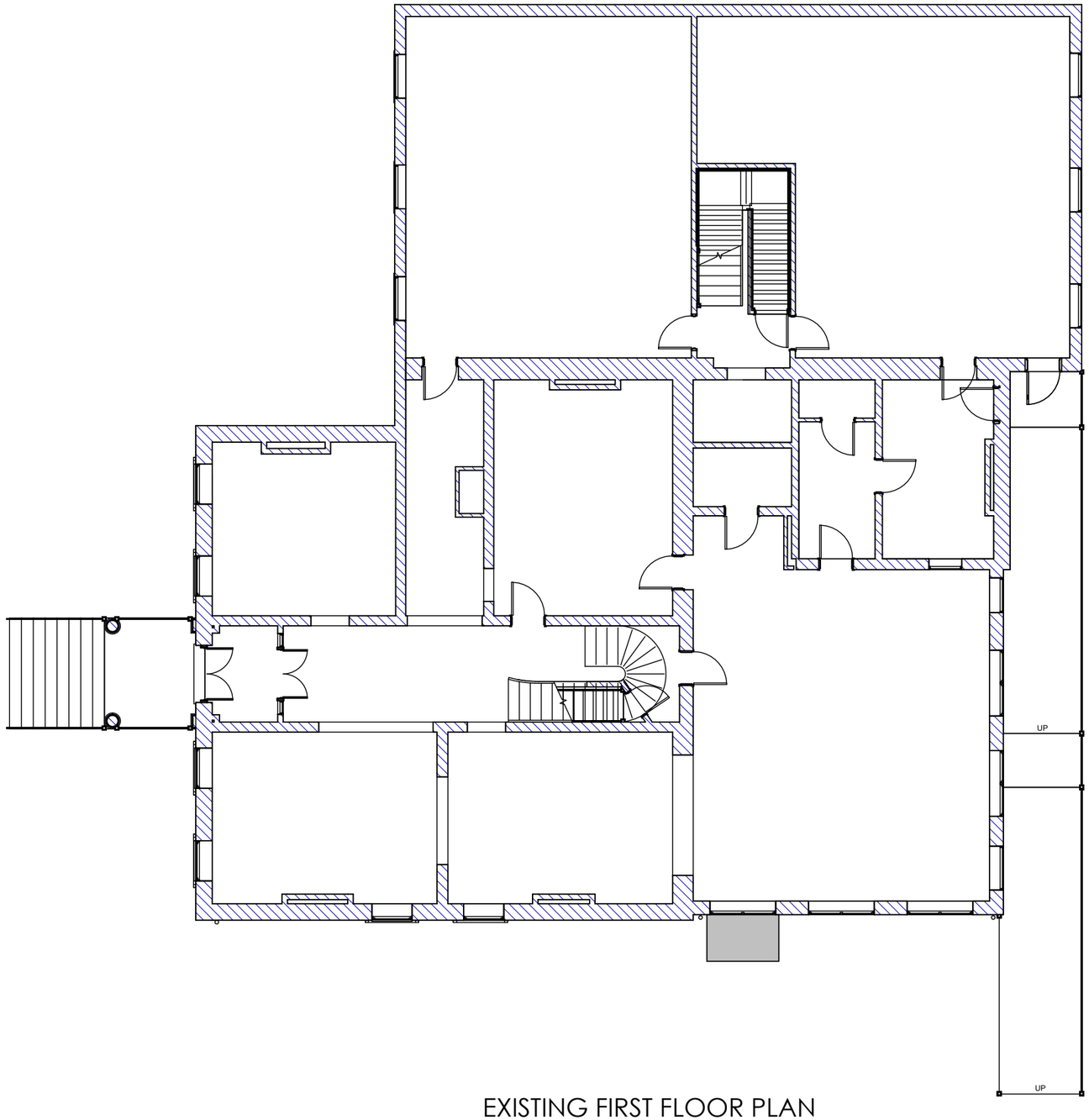
EXISTING BASEMENT FLOOR PLAN

ENTEROS DESIGN, PC

PETERSBURG AFRICAN AMERICAN
HISTORY, CULTUREAL CENTER AND ARCHIVES

05/01/2024

ENTEROS DESIGN



EXISTING FIRST FLOOR PLAN

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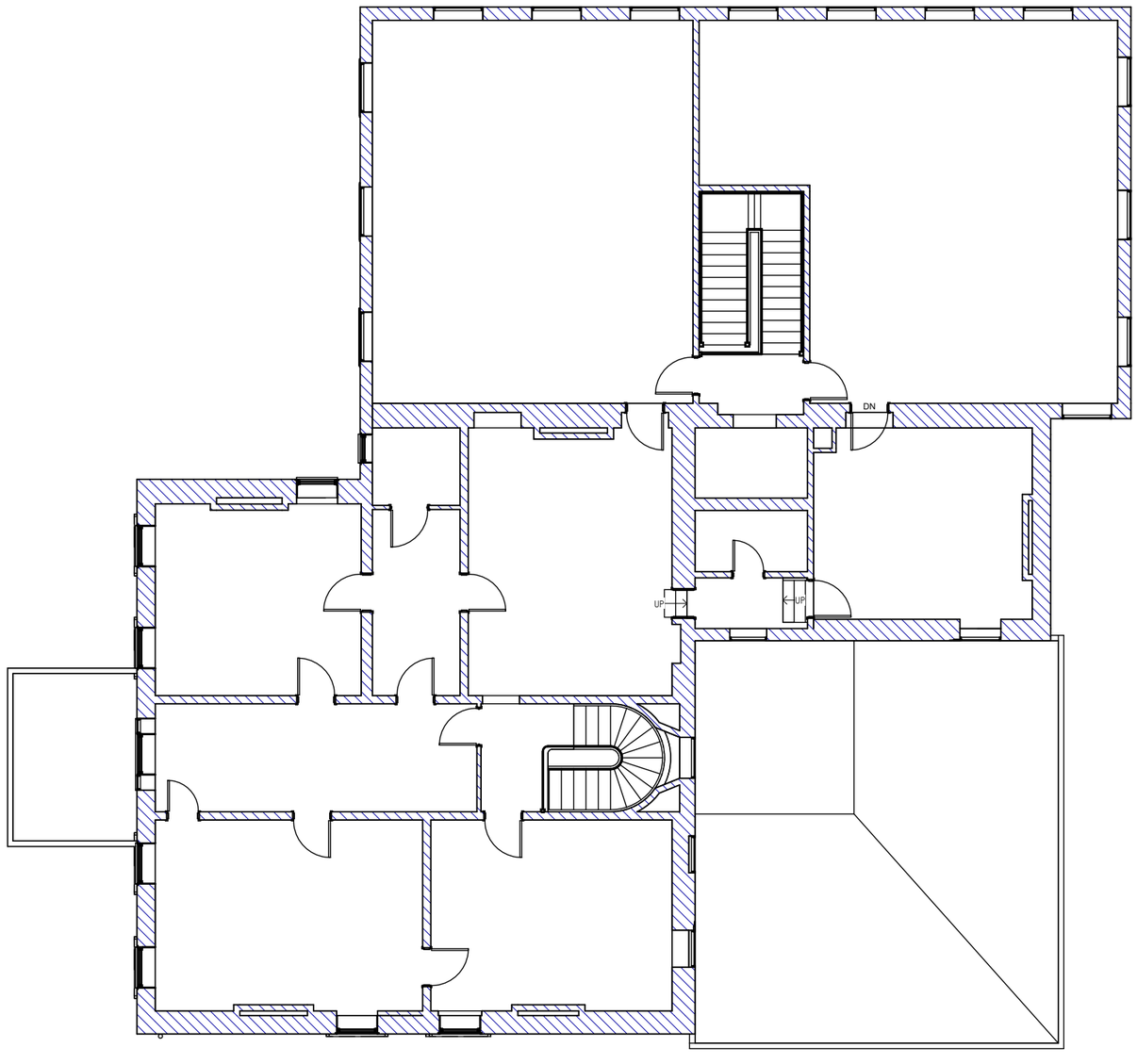

EXISTING SECOND FLOOR PLAN

ENTEROS DESIGN, PC

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HISTORY, CULTUREAL CENTER AND ARCHIVES

05/01/2024

ENTEROS
DESIGN

DEMOLITION GENERAL NOTES

A. THESE DRAWINGS ARE BASED ON HISTORICAL DRAWINGS AND LIMITED FIELD INVESTIGATIONS OF THE EXISTING BUILDING. CONTRACTOR SHALL VERITY ALL CONDITIONS PRIOR TO CONSTRUCTION OR FABRICATION. MODIFICATIONS SHALL BE MADE ONLY AFTER APPROVAL BY ARCHITECT.
B. ALL DIMENSIONS ARE NOMINAL. FIELD VERIFY ALL DIMENSIONS. NOTIFY THE ARCHITECT IF EXISTING CONDITIONS DEVIATE FROM THOSE SHOWN ON THE DRAWINGS, PRIOR TO EXECUTING THE WORK.
C. PROTECT ALL EXISTING CONSTRUCTION TO REMAIN. IF EXISTING CONSTRUCTION TO REMAIN IS DAMAGED DURING DEMOLITION THEN THE CONTRACTOR SHALL REPAIR OR REPLACE TO MATCH THE ORIGINAL CONDITIONS.
D. MAINTAIN EXISTING BUILDING IN A SECURE AND WEATHERTIGHT CONDITION AT ALL TIMES. BOARD UP AND PROVIDE TEMPORARY OPENING PROTECTION AS REQUIRED.
E. PRIOR TO REMOVAL OR MODIFICATION OF WALLS OR OTHER POTENTIALLY LOAD BEARING ELEMENTS, THE ACTUAL SIZE AND LOCATION OF STRUCTURAL COMPONENTS AND LOAD BEARING CONDITIONS SHALL BE VERIFIED BY THE CONTRACTOR BY MEANS OF SELECTIVE DEMOLITION. THE CONTRACTOR SHALL NOTIFY THE A/E OF ANY UNUSUAL OR HAZARDOUS CONCEALED CONDITIONS.
F. PROVIDE ALL TEMPORARY BRACING AND SHORING NECESSARY TO SAFELY SUPPORT ALL LOADS WHILE MAKING MODIFICATIONS REQUIRED BY THE WORK.
G. REMOVE EXISTING CONSTRUCTION WHERE SHOWN AS DASHED LINES.
H. MAINTAIN FIRE EXTINGUISHING EQUIPMENT AT ALL TIMES.
I. DO NOT USE TOOLS OR EQUIPMENT WHICH COULD IGNITE COMBUSTIBLE CONSTRUCTION.
J. REFER TO ALL DRAWING AND SPECIFICATIONS AS THEY REGARD TO DEMOLITION, INCLUDING BUT NOT LIMITED TO, STRUCTURAL, PLUMBING, MECHANICAL, ELECTRICAL, & ARCHITECTURAL.
K. REMOVE AND TERMINATE ABANDONED ELECTRICAL, PLUMBING, MECHANICAL, OR UTILITY SYSTEMS. TERMINATE CONCEALED INACCESIBLE SYSTEMS AS REQUIRED BY CODE.
L. REMOVE ALL FINISHES AND SUBSTRATES AS REQUIRED FOR THE INSTALLATION OF NEW FINISHES. PREPARE SUBSTRATES FOR NEW FINISHES AS RECOMMENDED BY THE FINISH MANUFACTURER. WHERE NEW MATERIAL OR FINISHES TIE INTO EXISTING, OR WHERE PATCHING IS REQUIRED, PATCH SURFACES AND REPAIR TO CREATE SEAMLESS, SMOOTH, AND UNNOTICIABLE TRANSITIONS BETWEEN EXISTING AND NEW MATERIALS.
M. REMOVE CONCRETE AS REQUIRED FOR INSTALLATION OF NEW PLUMBING AND TO PROVIDE DRAINAGE TO NEW FLOOR DRAINS WHERE INDICATED. PATCH AND REPAIR CONCRETE AFTER INSTALLATION AS REQUIRED.
N. REMOVE ALL LIGHT FIXTURES & DEVICES. REF. ELCTRICAL, PLUMBING, SPRINKLER, AND MECHANICAL FOR ADDITIONAL INFORMATION REGARDING MODIFICATIONS FOR NEW WORK.
O. MAINTAIN EXISTING UTILITIES INDICATED TO REMAIN IN SERVICE.
P. IF SUSPECTED HAZARDOUS MATERIALS ARE ENCOUNTERED, DO NOT DISTURB; NOTIFY THE OWNER & ARCHITECT IMMEDIATELY FOR REVIEW & ADDITIONAL DIRECTION. LEAD BASED PAINT IS ANTICIPATED THROUGHOUT THE BUILDING. CONTRACTORS SHALL REMEDIATE LEAD PAINT ON WORK SURFACES AND USE PROTECTIVE MEASURES.
Q. COMPLY WITH DISPOSAL REGULATIONS OF ALL AUTHORITIES HAVING JURISDICTION. THE OWNER HAS FIRST RIGHT OF REFUSAL FOR ALL DEMOLISHED MATERIALS.
R. IN AREAS OF WORK, REMOVE AND SALVAGE ALL INTERIOR AND EXTERIOR PLAQUES AND SIGNAGE, WALL MOUNTED TV'S, SECURITY CAMERAS, EXTERIOR LIGHTS, AND SPEAKERS. PROVIDE TO OWNER FOR STORAGE AND/OR REUSE. REINSTALL WHERE NOTED.
S. IN ALL AREAS THAT SHOW NEW WORK, AND NEW FLOOR FINISHES, DEMO EXISTING FLOOR TO CONCRETE SLAB AND PREP SLAB AS REQUIRED BY THE NEW FINISH MANUFACTURERS INSTALLATION INSTRUCTIONS AND WARRANTY REQUIREMENT.
T. CUT AND REMOVE PLASTER CIELINGS AS NEEDED TO PROVIDE ADEQUATE CHANNELING FOR NEW SPRINKLER SYSTEMS. PATCH CEILINGS TO MATCH ORIGINAL. RESTORE ALL DECORATIVE PLASTER MOLDINGS.

DEMOLITION KEY NOTES

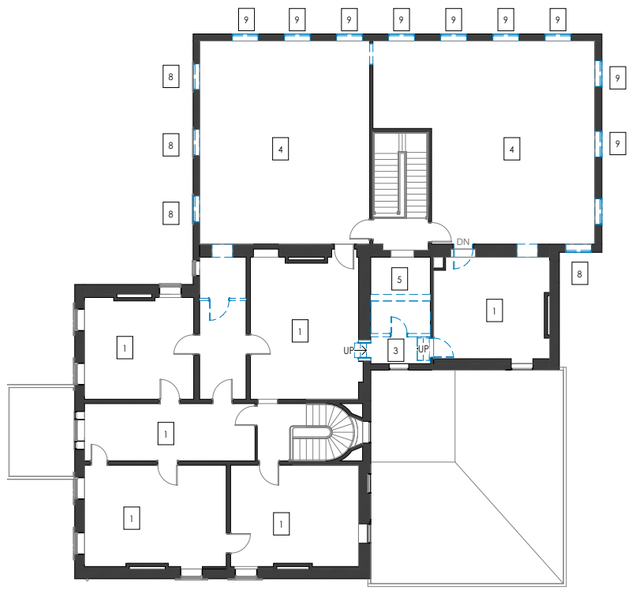
A. INTERIOR DEMOLITION KEY NOTES:
1. PATCH OR REPAIR CIELINGS AS REQUIRED TO MATCH THE ORIGINAL HISTORIC CONSTRUCTION. REPAIR ALL DECORATIVE PLASTER MOLDING
2. REMOVE ALL FIXTURES, AND DOORS PATCH AND REPAIR WALLS.
3. REMOVE EXISTING FLOOR AND STAIRS LEADING UP TO EXISTING BATHROOM. REMOVE EXISTING WALLS. BUILD NEW FLOOR TO ALIGN WITH FLOORS SURROUNDING. EXTEND WALLS DOWN TO MEET NEW FLOOR LEVEL
4. REMOVE ALL EXISTING CIELING INCLUDING PLASTER UP TO THE STRUCTURE. REMOVE ALL EXITING FLOOR AND WALL FINISHES.
5. REMOVE EXISTING ELEVATOR SHAFT WALL AND ELEVATOR EQUIPEMENT. REMOVE EXISTING CONCRETE FLOOR SLAB TO PREPARE EXISTING ELEVATOR PIT TO RECIEVE INSTALLATION OF A NEW 3000LBS ELEVATOR.
6. DEMOLISH WALLS AND DOORS. EXISTING FLOOR TO REMAIN. BUILD NEW FLOOR ON TOP OF EXISTING FLOOR TO MATCH EXISTING SURROUNDING FLOOR HEIGHTS.
7. REMOVE EXISTING MANTEL. REINSTALL AT NEW FLOOR HEIGHT.
8. REMOVE EXISTING WINDOWS REPLACE WITH NEW WINDOWS OR PREPARE AREA FOR INSTALLATION OF NEW CONSTRUCTION.
9. REMOVE EXISTING WINDOWS, INFILL OPENINGS WITH BRICK AND CMU TO CREATE FIRE RATED WALL CONSTRUCTION

DEMOLITION LEGEND

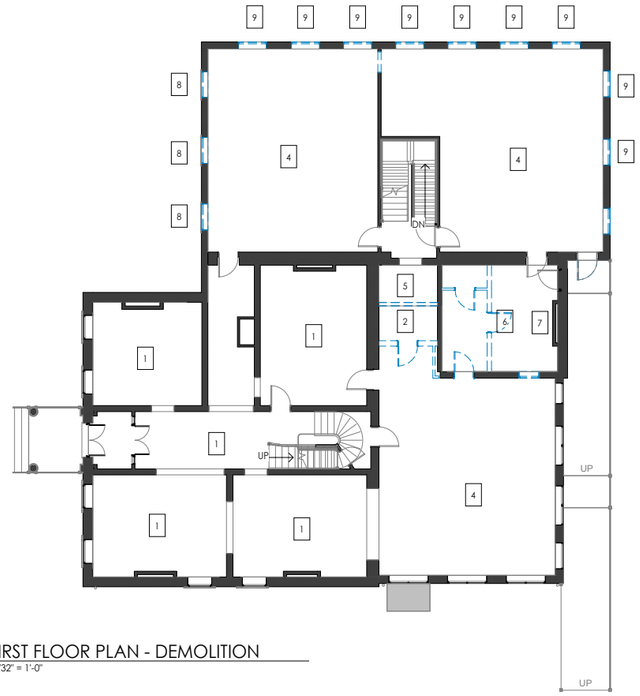
EXISTING WALLS TO REMAIN

BUILDING ELEMENTS TO BE DEMOLISHED

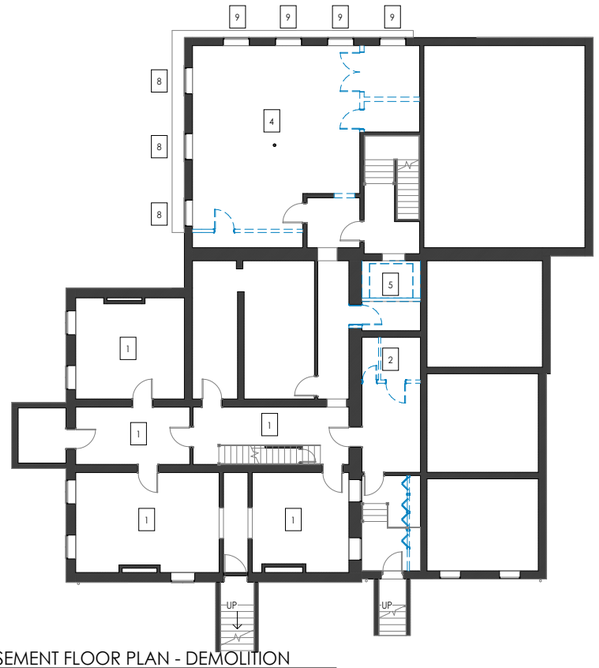
XX KEY NOTE



2 D1 SECOND FLOOR PLAN - DEMOLITION
3/32" = 1'-0"



1 D1 FIRST FLOOR PLAN - DEMOLITION
3/32" = 1'-0"



3 D1 BASEMENT FLOOR PLAN - DEMOLITION
3/32" = 1'-0"

DEMOLITION PLANS

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HISTORY, CULTUREAL CENTER AND ARCHIVES

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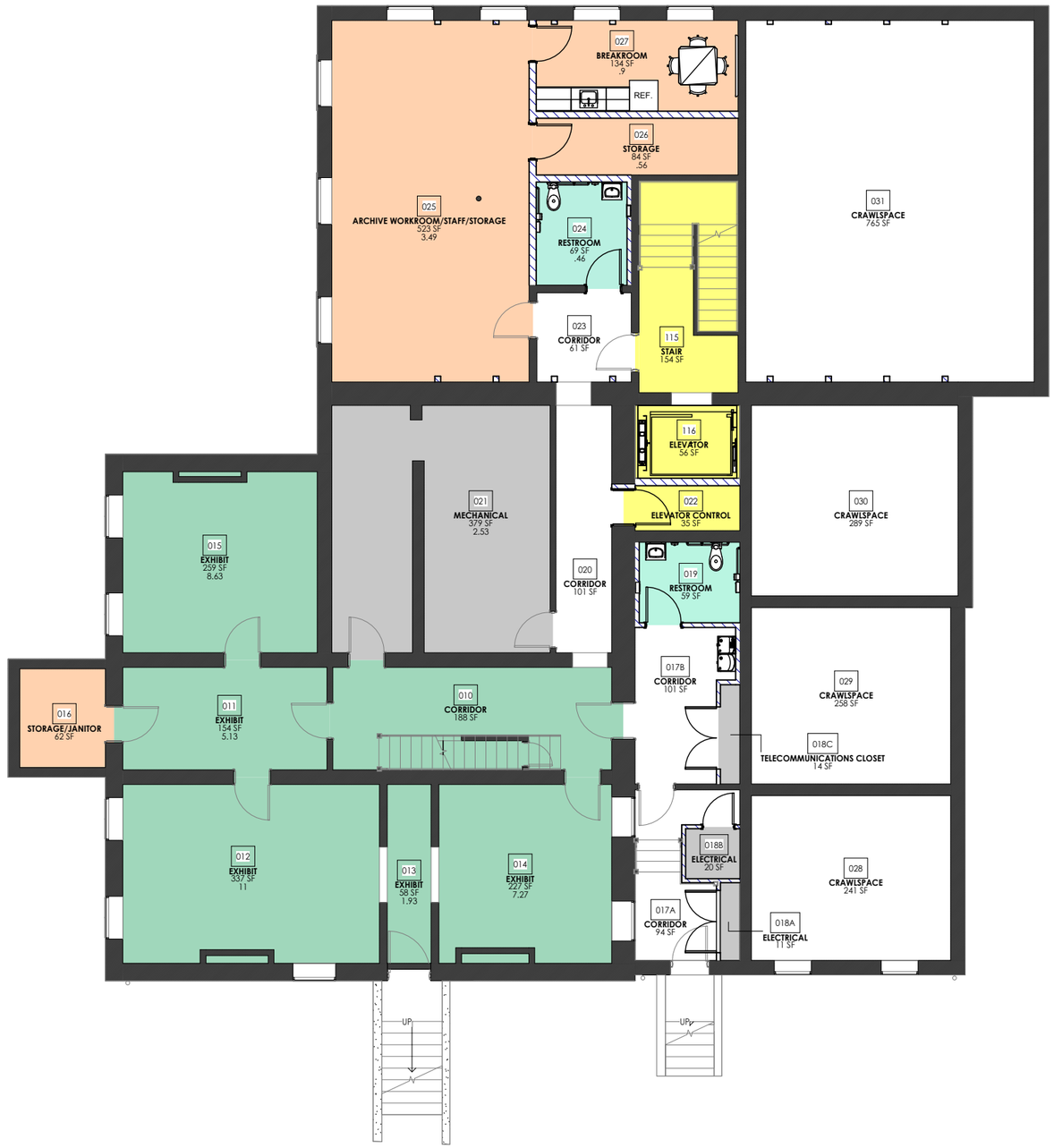
PLAN LEGEND

- NEW CONSTRUCTION
- EXISTING CONSTRUCTION TO REMAIN
- EXHIBITS
- OFFICES
- ARCHIVES
- RESTROOMS
- CIRCULATION
- MEETING SPACES
- MEP



BASEMENT FLOOR PLAN

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HISTORY, CULTUREAL CENTER AND ARCHIVES

05/01/2024

ENTEROS DESIGN

PLAN LEGEND

- NEW CONSTRUCTION
- EXISTING CONSTRUCTION TO REMAIN
- EXHIBITS
- OFFICES
- ARCHIVES
- RESTROOMS
- CIRCULATION
- MEETING SPACES
- MEP

FIRST FLOOR PLAN

ENTEROS DESIGN, PC

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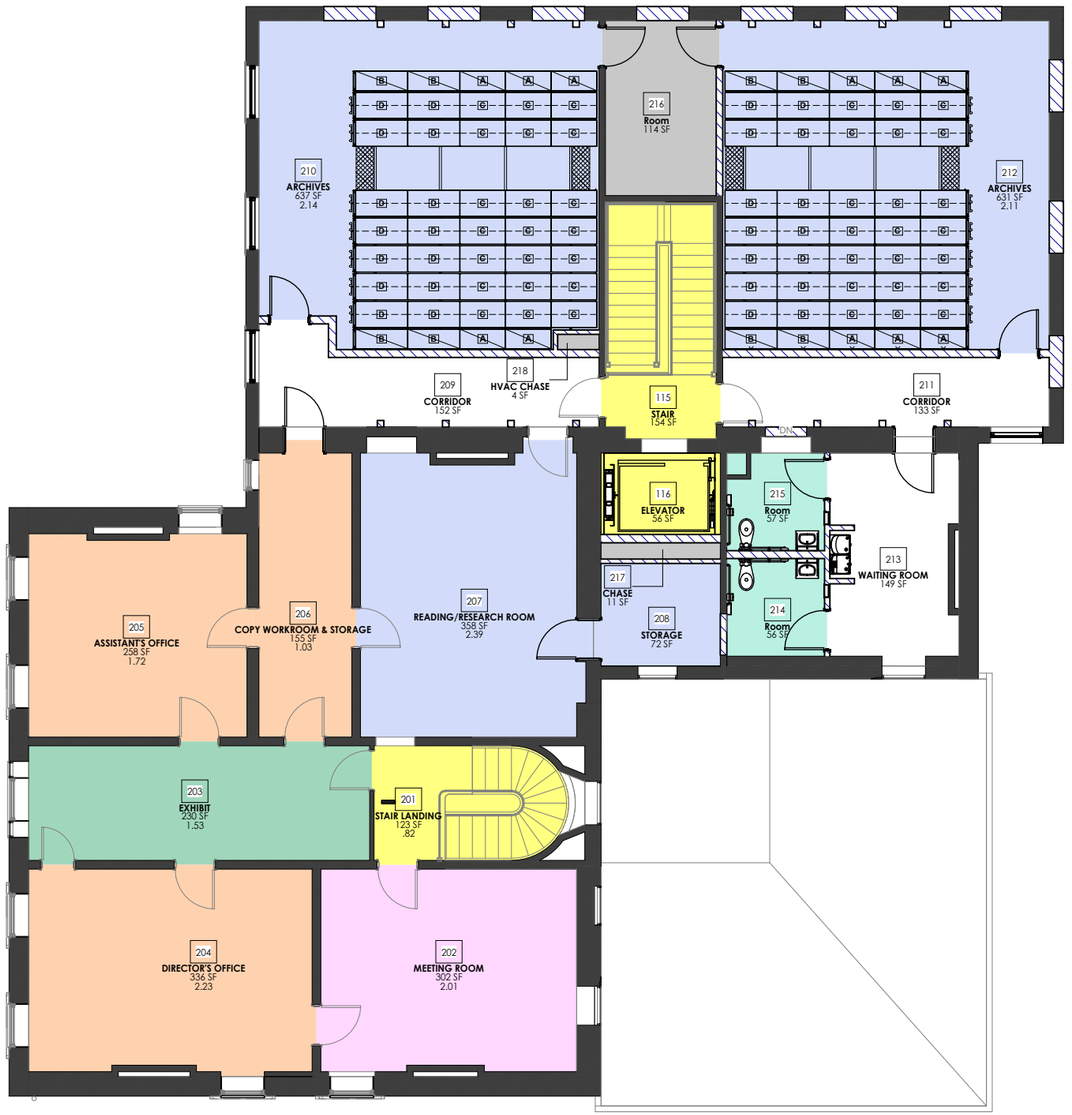
ENTEROS DESIGN



SECOND FLOOR PLAN

ENTEROS DESIGN, PC

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HISTORY, CULTUREAL CENTER AND ARCHIVES

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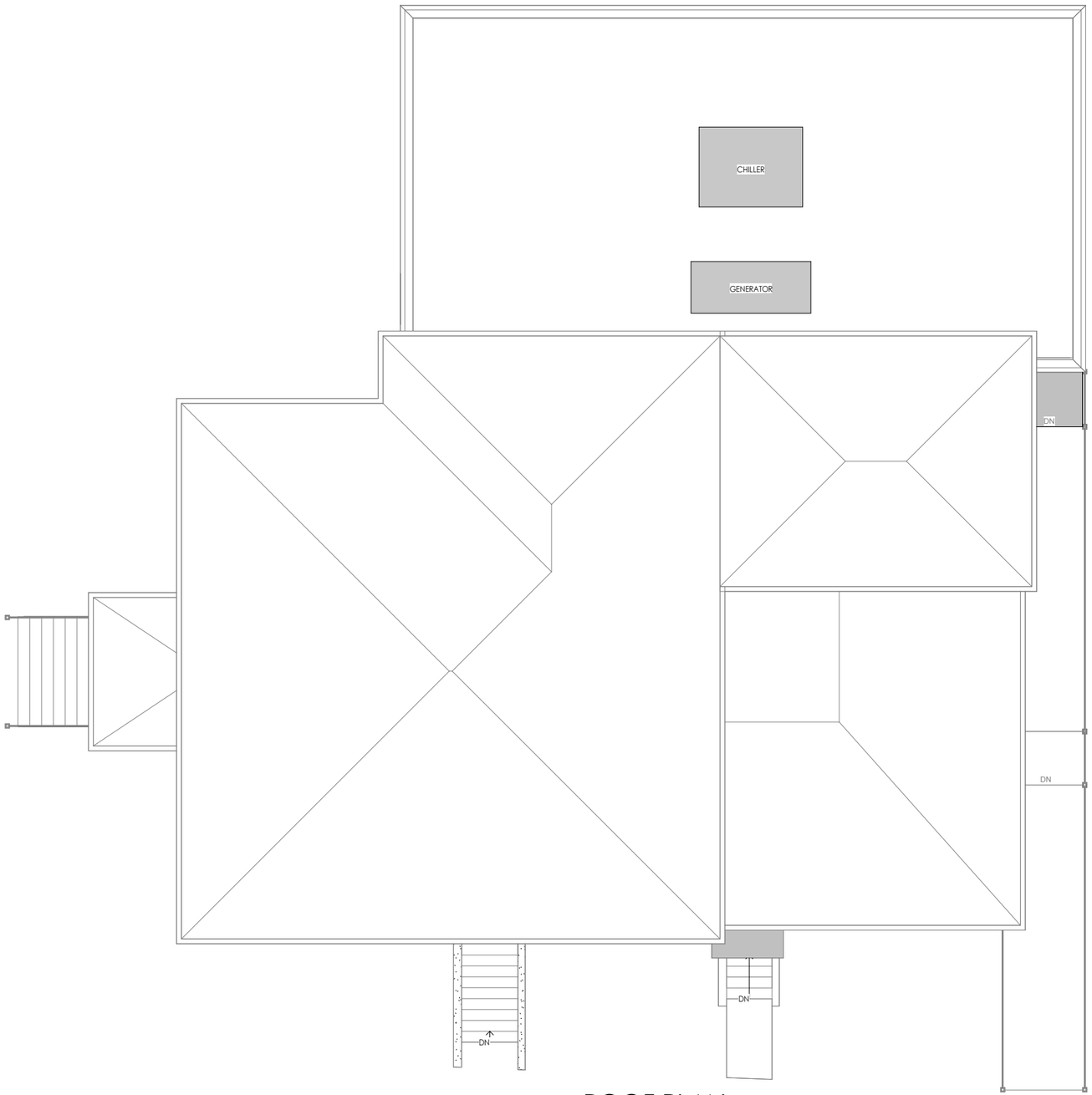
ENTEROS DESIGN



ROOF PLAN

ENTEROS DESIGN, PC

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HISTORY, CULTUREAL CENTER AND ARCHIVES

05/01/2024

ENTEROS
DESIGN

1 / A5 WEST ELEVATION
3/16" = 1'-0"

2 / A5 SOUTH ELEVATION
3/16" = 1'-0"

BUILDING ELEVATIONS

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HISTORY, CULTUREAL CENTER AND ARCHIVES

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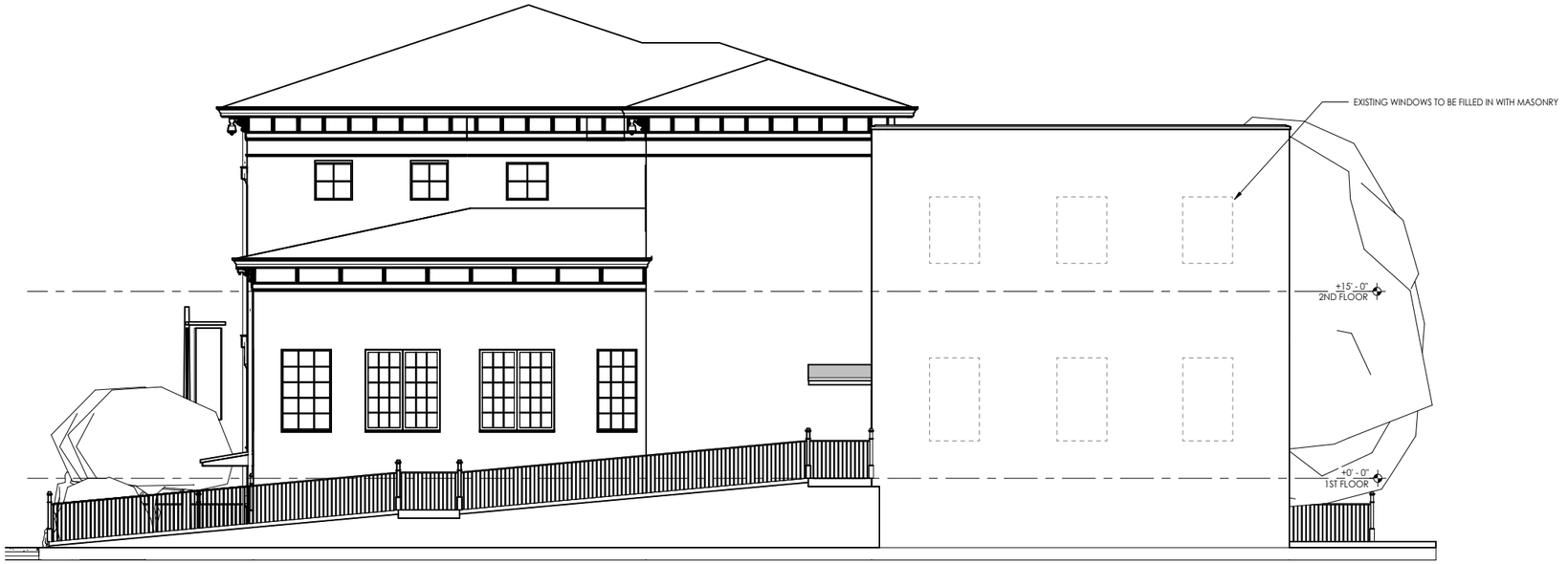
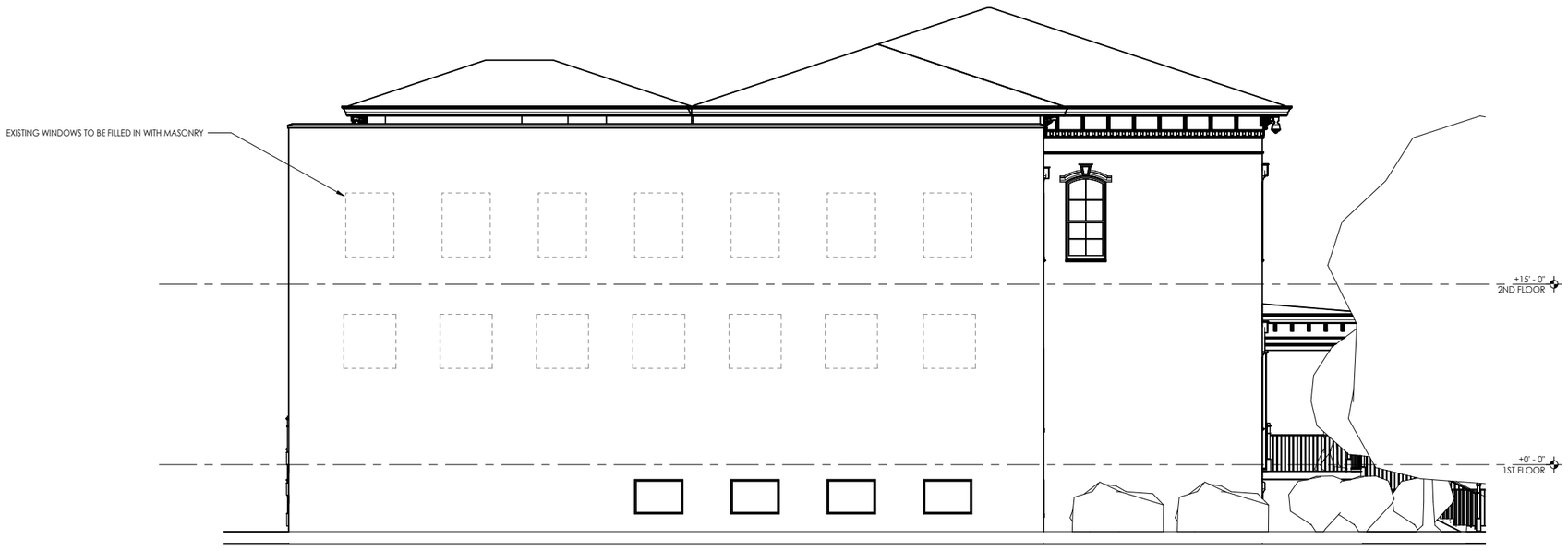
ENTEROS DESIGN



1 A6 EAST ELEVATION
3/16" = 1'-0"



2 A6 NORTH ELEVATION
3/16" = 1'-0"

BUILDING ELEVATIONS

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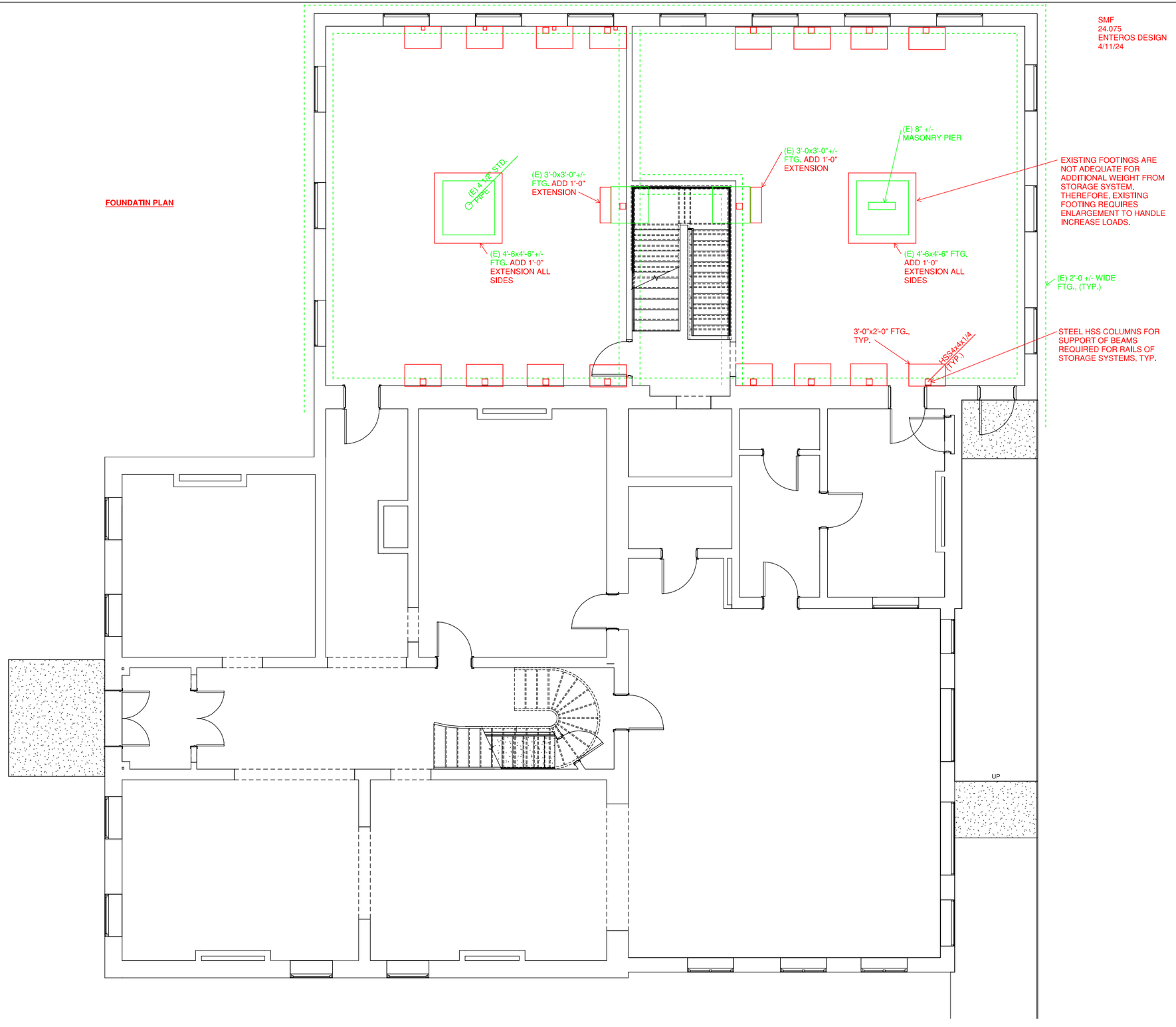
05/01/2024

ENTEROS DESIGN

SMF
24.075
ENTEROS DESIGN
4/11/24

FOUNDATIN PLAN



1 A0.31 EXISTING CONDITIONS - FIRST FLOOR
1/4" = 1'-0"

ENTEROS DESIGN
7 NORTH 25TH STREET
RICHMOND, VA 23223
804.861.1200 P

CONSULTANT LOGO

PETERSBURG AFRICAN AMERICAN CULTURAL CENTER
137 S SYCAMORE ST, PETERSBURG, VA 23803

CONCEPT

REVISIONS

#	DATE	DESCRIPTION

EXISTING CONDITIONS

PROJ. NO.: 234011
DATE: 12/14/22
DRAWN BY: Author

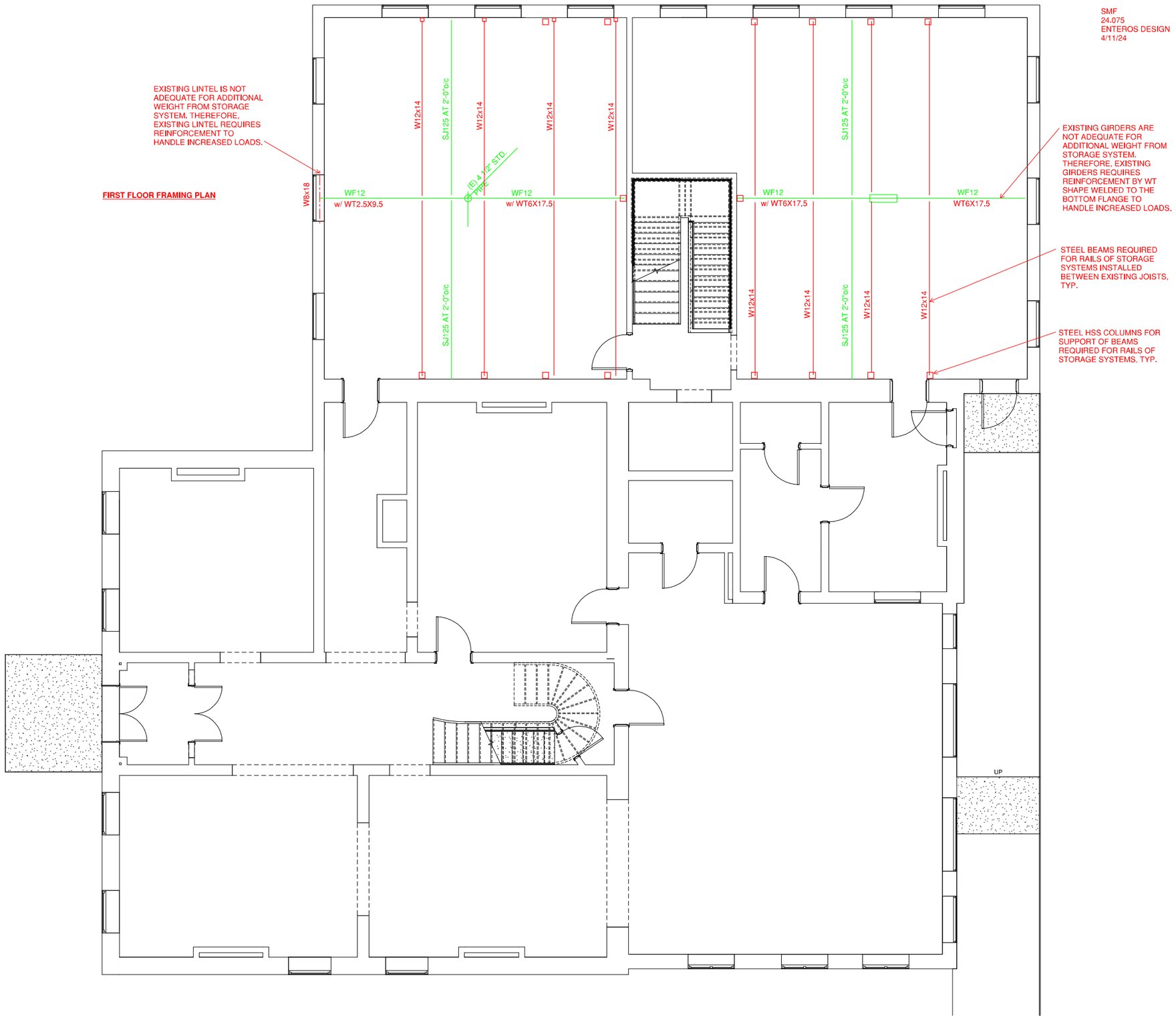
PROFESSIONAL SEAL

A0.31

SMF
24.075
ENTEROS DESIGN
4/11/24

EXISTING LINTEL IS NOT ADEQUATE FOR ADDITIONAL WEIGHT FROM STORAGE SYSTEM. THEREFORE, EXISTING LINTEL REQUIRES REINFORCEMENT TO HANDLE INCREASED LOADS.

FIRST FLOOR FRAMING PLAN



EXISTING GIRDERS ARE NOT ADEQUATE FOR ADDITIONAL WEIGHT FROM STORAGE SYSTEM. THEREFORE, EXISTING GIRDERS REQUIRES REINFORCEMENT BY WT SHAPE WELDED TO THE BOTTOM FLANGE TO HANDLE INCREASED LOADS.

STEEL BEAMS REQUIRED FOR RAILS OF STORAGE SYSTEMS INSTALLED BETWEEN EXISTING JOISTS, TYP.

STEEL HSS COLUMNS FOR SUPPORT OF BEAMS REQUIRED FOR RAILS OF STORAGE SYSTEMS, TYP.

1 A0.31 EXISTING CONDITIONS - FIRST FLOOR
1/4" = 1'-0"

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7 NORTH 25TH STREET
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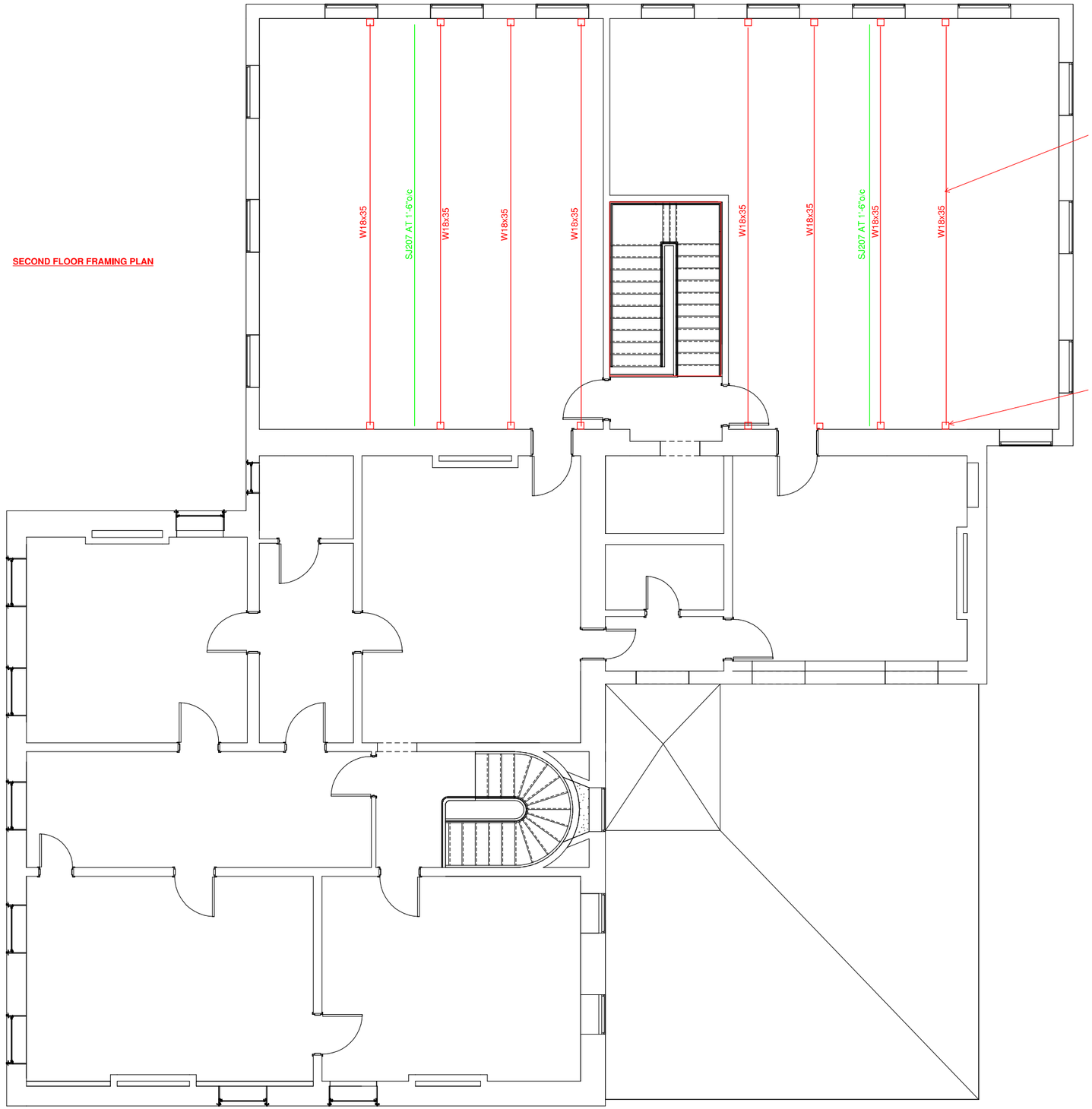
DATE: 12/14/22
DRAWN BY: Author

PROFESSIONAL SEAL

A0.31

SMF
24.075
ENTEROS DESIGN
4/11/24

SECOND FLOOR FRAMING PLAN



1 A0.32 EXISTING CONDITIONS - SECOND FLOOR
1/4" = 1'-0"

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7 NORTH 25TH STREET
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CONSULTANT LOGO

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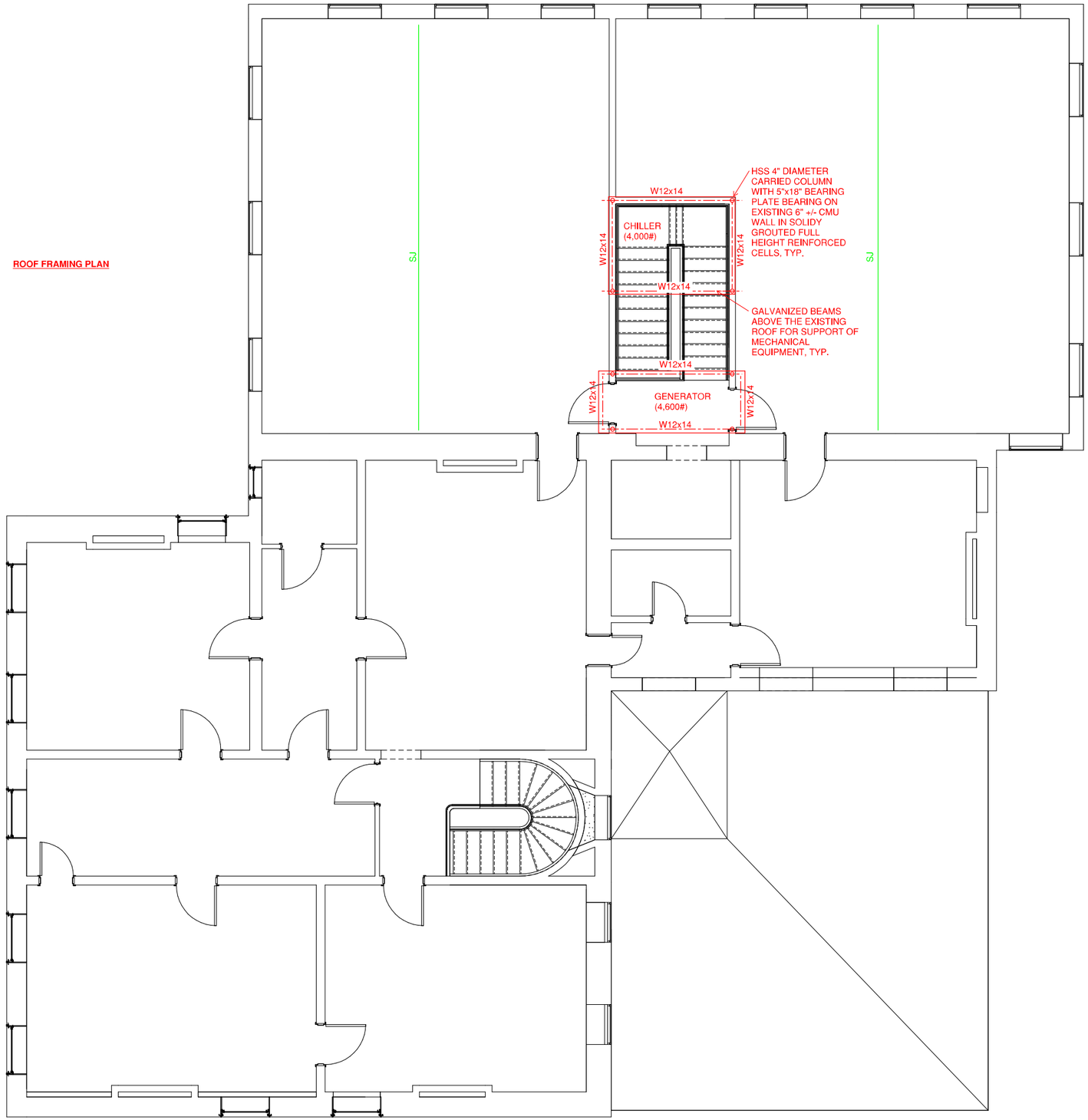
PROFESSIONAL SEAL

A0.32

SMF
24.075
ENTEROS DESIGN
4/11/24

ROOF FRAMING PLAN



1 A0.32 EXISTING CONDITIONS - SECOND FLOOR
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CONCEPT

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EXISTING CONDITIONS

PROJ. NO.: 236011
DATE: 12/14/22
DRAWN BY: Author

PROFESSIONAL SEAL

A0.32

Appendix

SPACESAVER
STORAGE SOLUTIONS

10040 Whitesel Road • Ashland, VA 23005
Telephone: 804.616.3462 • Fax: 804.798.3718

March 15, 2024
Prepared by Art Bykonen

Wt. Load info for the McKenney African American Museum project

**Assumed Media Weight is 150 lbs. for the 4-post shelving based on our Museum experience

**Assumed Media Weight is 2 lbs./inch for the Library/Cantilever shelving

Basement Option 1 (7 levels of shelving)

Estimated Weights:

Spacesaver Equipment Weights: 6,694 lbs.

Media Weights.....:25,200 lbs.

Total Est. Weight: 28,547 lbs.

Line Load: 28,547 lbs./57.92 ft of rail= 492.87 lbs./ft

Basement Option 2 (9 levels of shelving)

Estimated Weights:

Spacesaver Equipment Weights: 9,282 lbs.
Media Weights.....: 32,400 lbs.

Total Est. Weight: 41682 lbs.

Line Load: 41682 lbs./57.92 ft of rail= 719.65 lbs./ft

First Floor Area 1, Option 1, ALT 3 (left room) @ 7 levels of shelving

Estimated Weights:

Spacesaver Equipment Weights: 14,121 lbs.
Media Weights.....: 52,500 lbs.

Total Est. Weight: 66,621 lbs.

Line Load: 66,621 lbs./101 ft of rail= 659.6 lbs./ft

First Floor Area 2, Option 1, ALT 1 (right room) @7 levels of shelving

Estimated Weights:

Spacesaver Equipment Weights: 11,634 lbs.
Media Weights.....:47,250 lbs.

Total Est. Weight: 58,884 lbs.

Line Load: 58,884 lbs./87.5 ft of rail= 672.96 lbs./ft

First Floor Area 1, Option 2, ALT 5(Left room) @9 levels of shelving

Estimated Weights:

Spacesaver Equipment Weights: 19,585 lbs.
Media Weights:..... 67,500 lbs.

Total Est. Weight: 87,085 lbs.

Line Load: 87,085 lbs./101 ft of rail= 862.23 lbs./ft

First Floor, Area 2, Option 2, ALT 6(right room) @ 9 levels of shelving

Estimated Weights:

Spacesaver Equipment Weights: 16,226 lbs.
Media Weightsy:..... 60,750 lbs.

Total Est. Weight: 60,750 lbs.

Line Load: 60,750 lbs./87.5 ft of rail= 694.28 lbs./ft

Second Floor, Area 1, ALT 7 (Left side)- Cantilever static library shelving

Estimated Weights:

Spacesaver Equipment Weights: 6,843.6 lbs.
Media @2lbs per inch: 31,356 lbs.

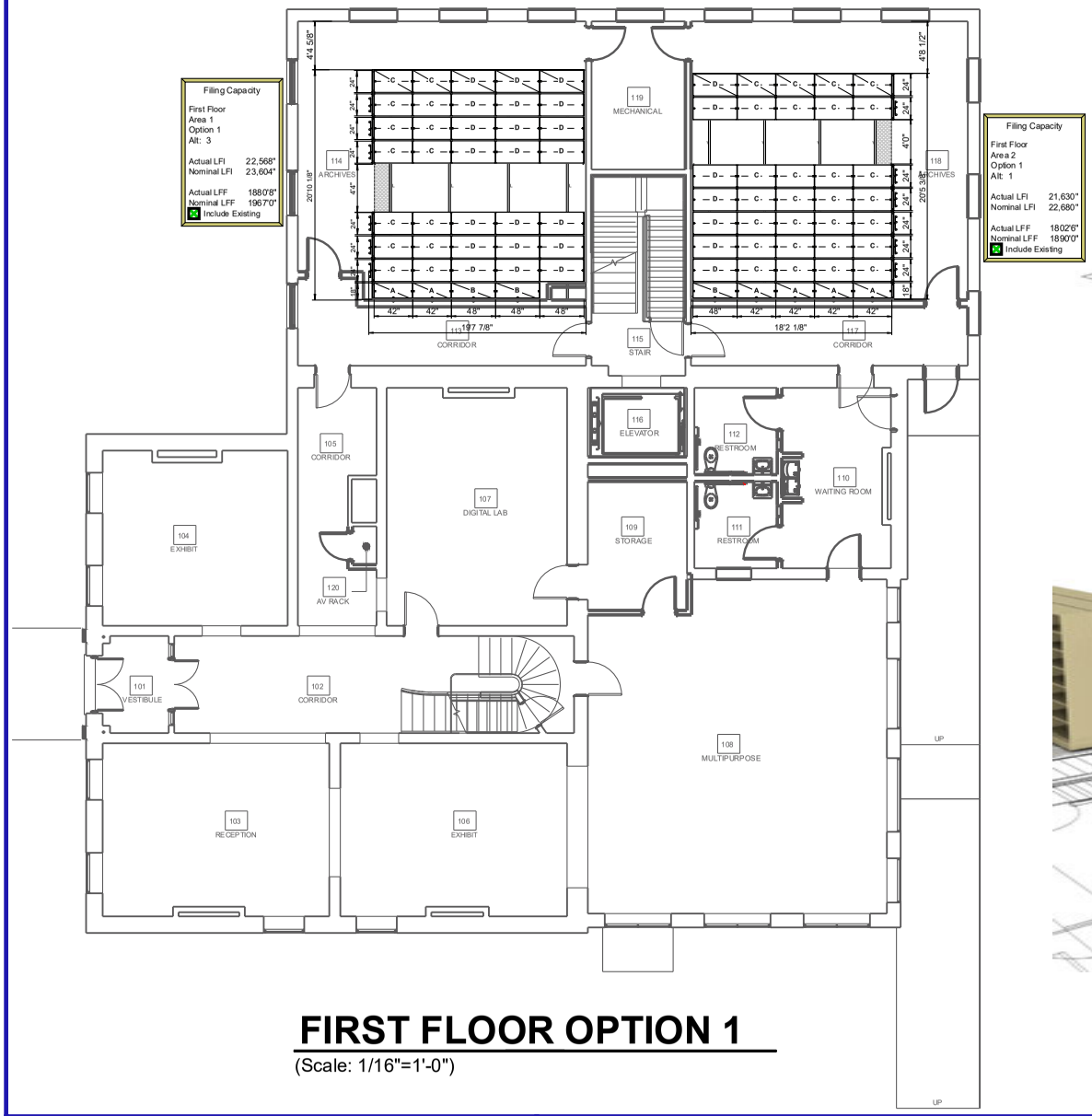
Total Est. Weight: 38,199.6 lbs.

Second Floor, Area 2, ALT 8(right side)-Cantilever static library shelving

Estimated Weights:

Spacesaver Equipment Weights: 8,274.6 lbs.
Media@ 2 lbs per inch: 37,224 lbs.

Total Est. Weight: 45,498.6 lbs.



FIRST FLOOR OPTION 1

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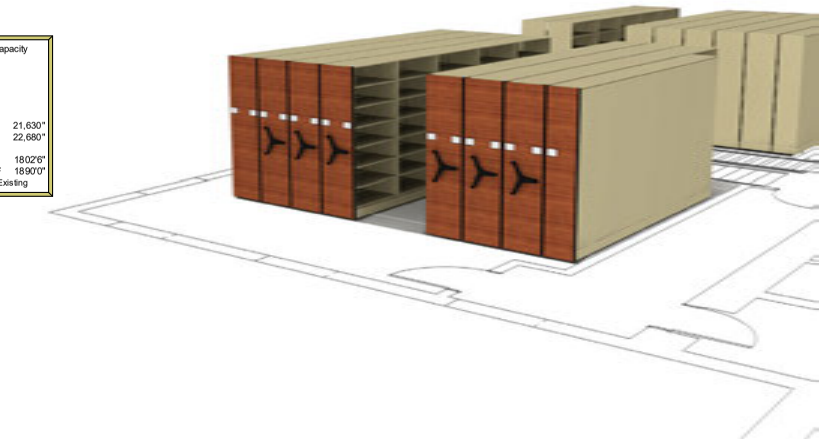

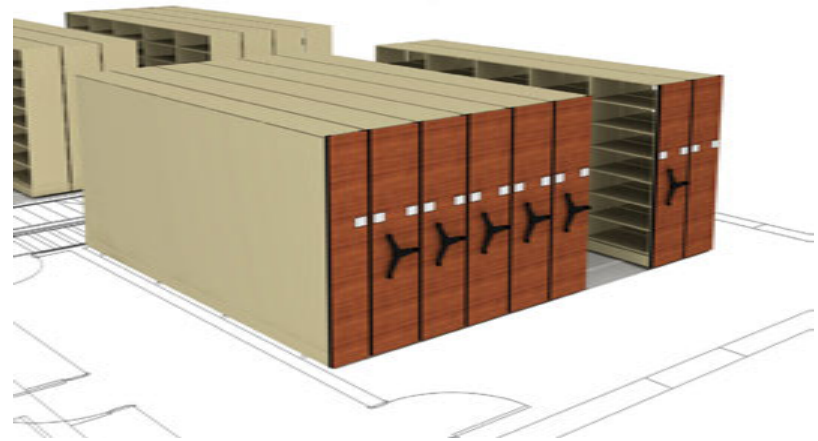

3D RENDERINGS

(Scale: None)

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Ashland, VA 23005 USA
BYKONEN,ART
PH: 804.798.3701

Project Name:

Petersburg African American Center

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Scale: 1/16" = 1'	Total Actual LFI: 164608 LFI
Rep: BYKONEN,ART	Drwn by: RGC
Sheet No: 5 of 13	

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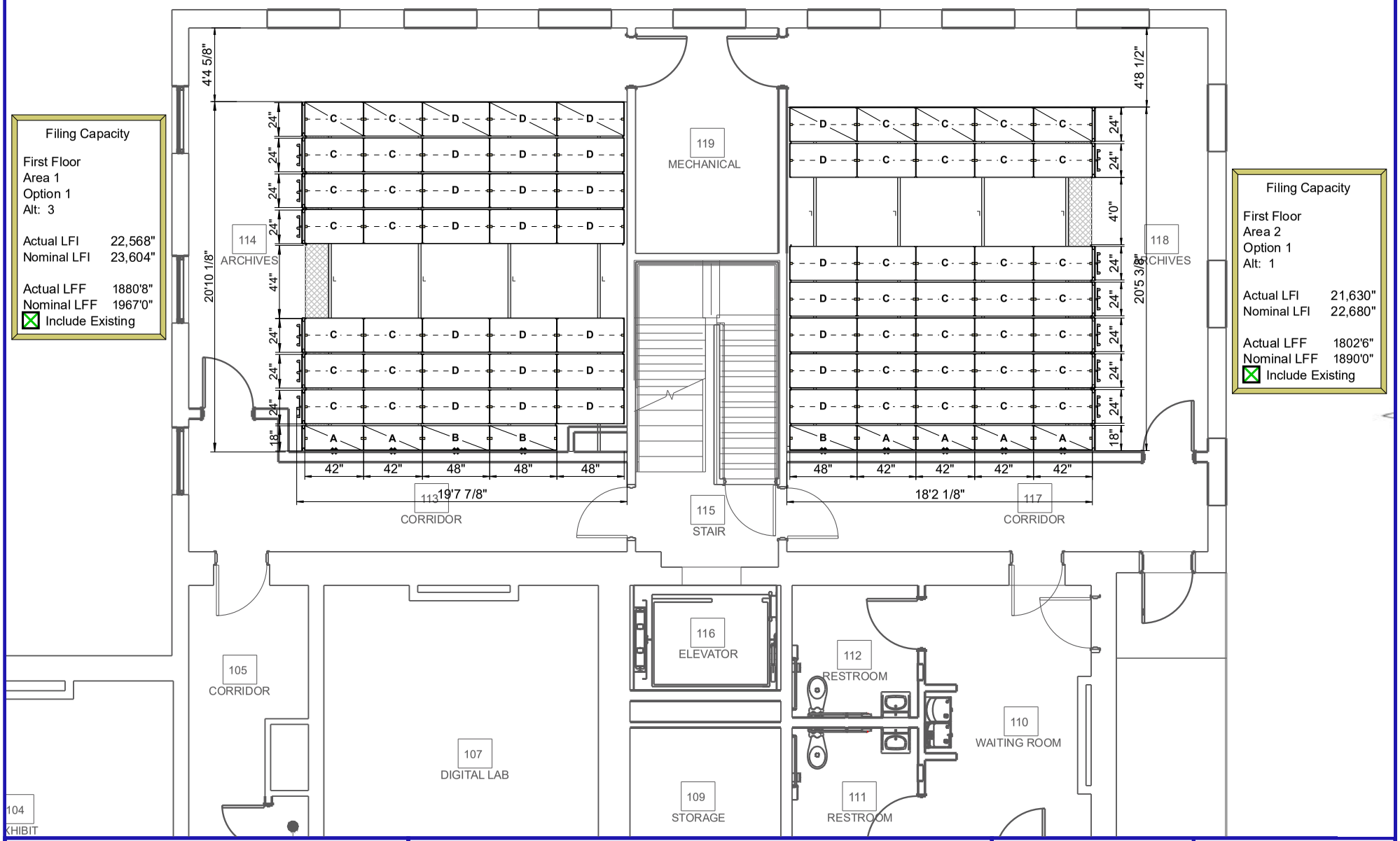

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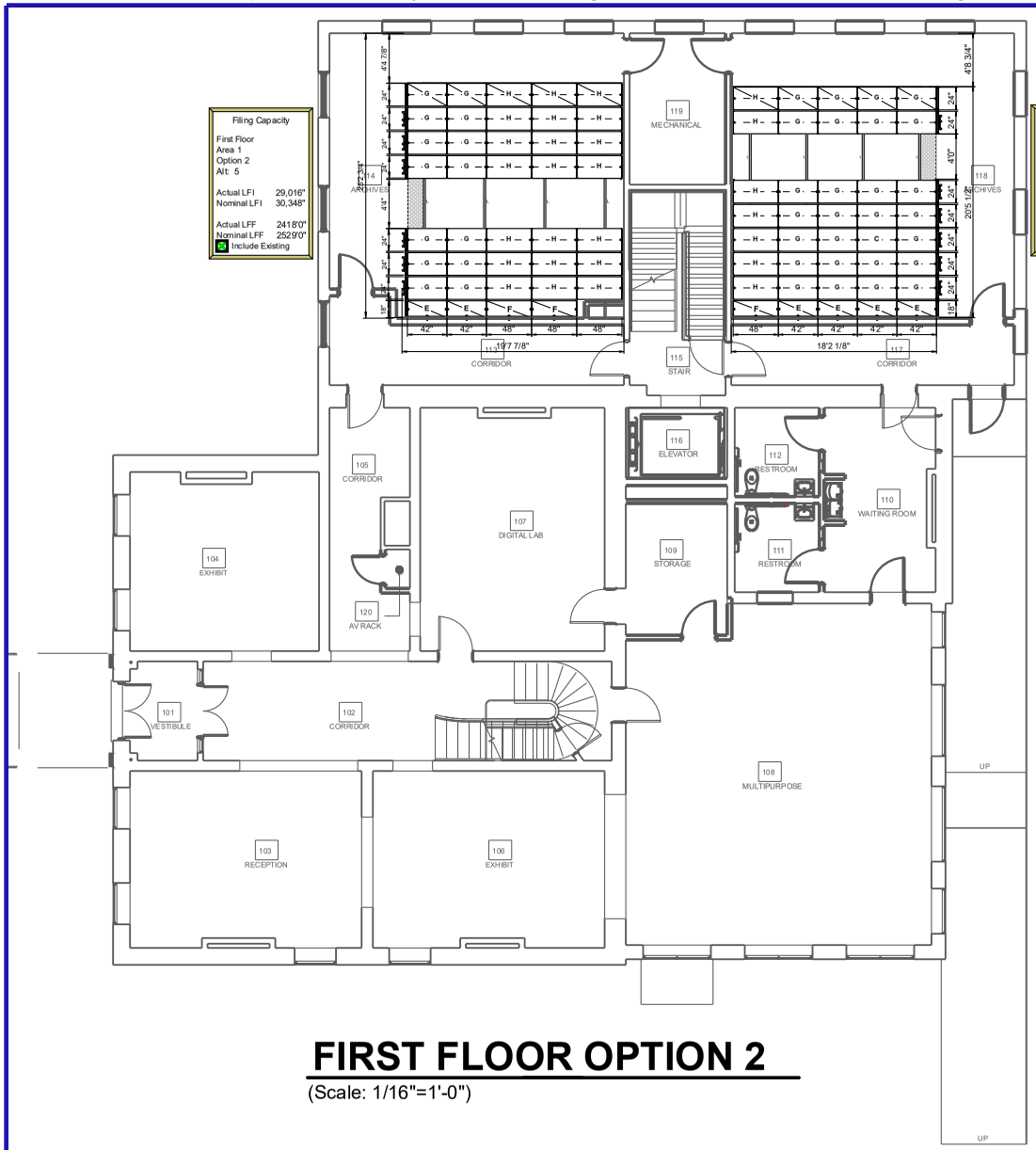

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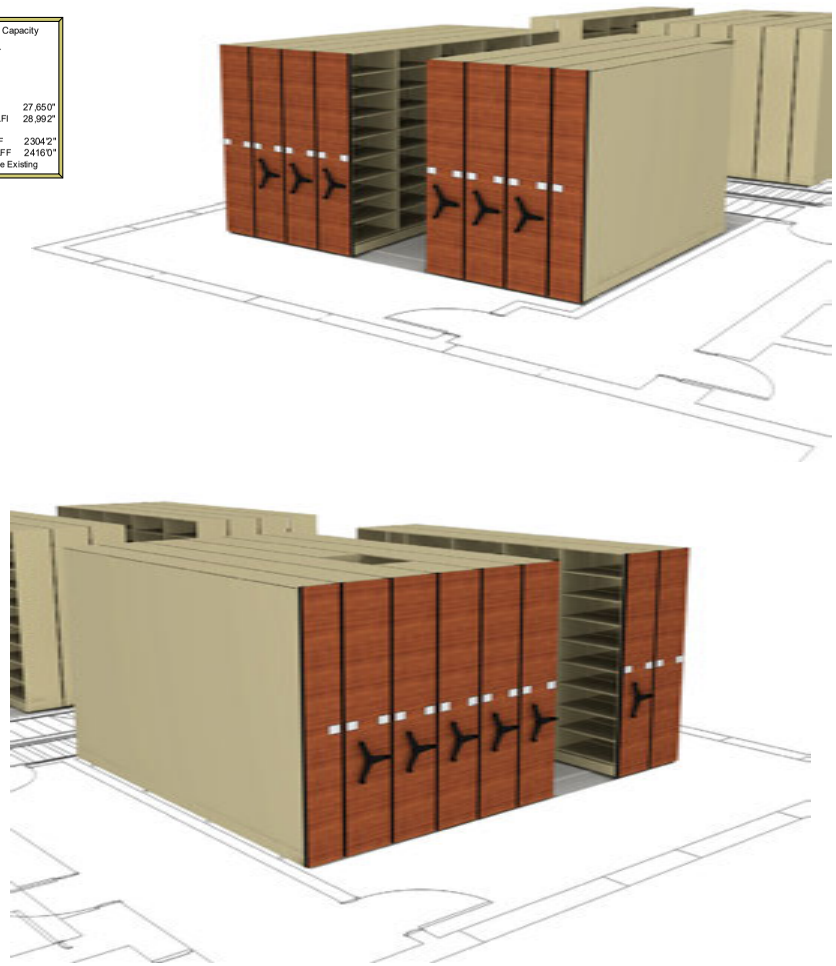

3D RENDERINGS

(Scale: None)

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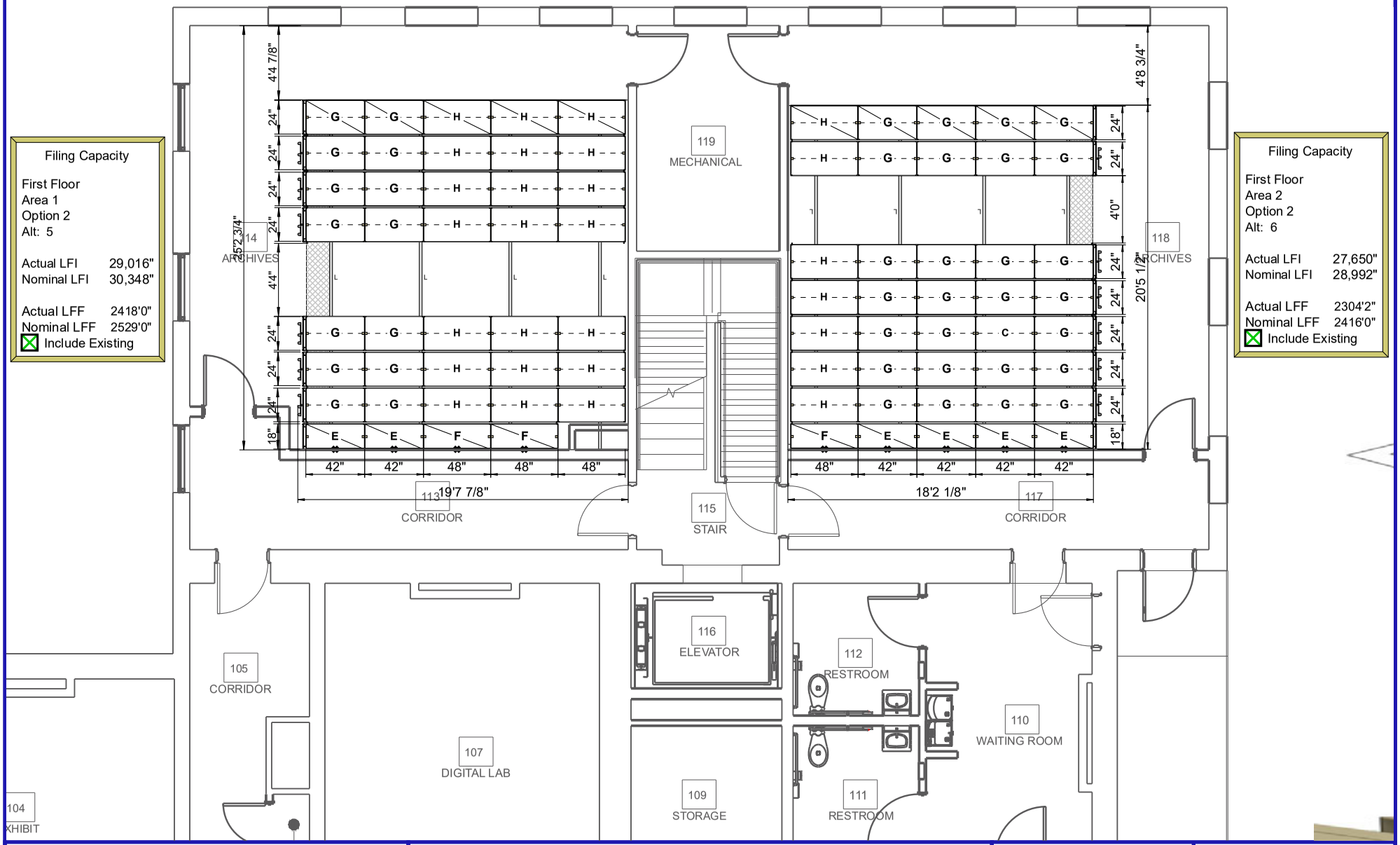
Filing Capacity

First Floor
Area 1
Option 2
Alt: 5

Actual LFI	29,016"
Nominal LFI	30,348"
Actual LFF	2418'0"
Nominal LFF	2529'0"

☒ Include Existing



Filing Capacity

First Floor
Area 2
Option 2
Alt: 6

Actual LFI	27,650"
Nominal LFI	28,992"
Actual LFF	2304'2"
Nominal LFF	2416'0"

☒ Include Existing

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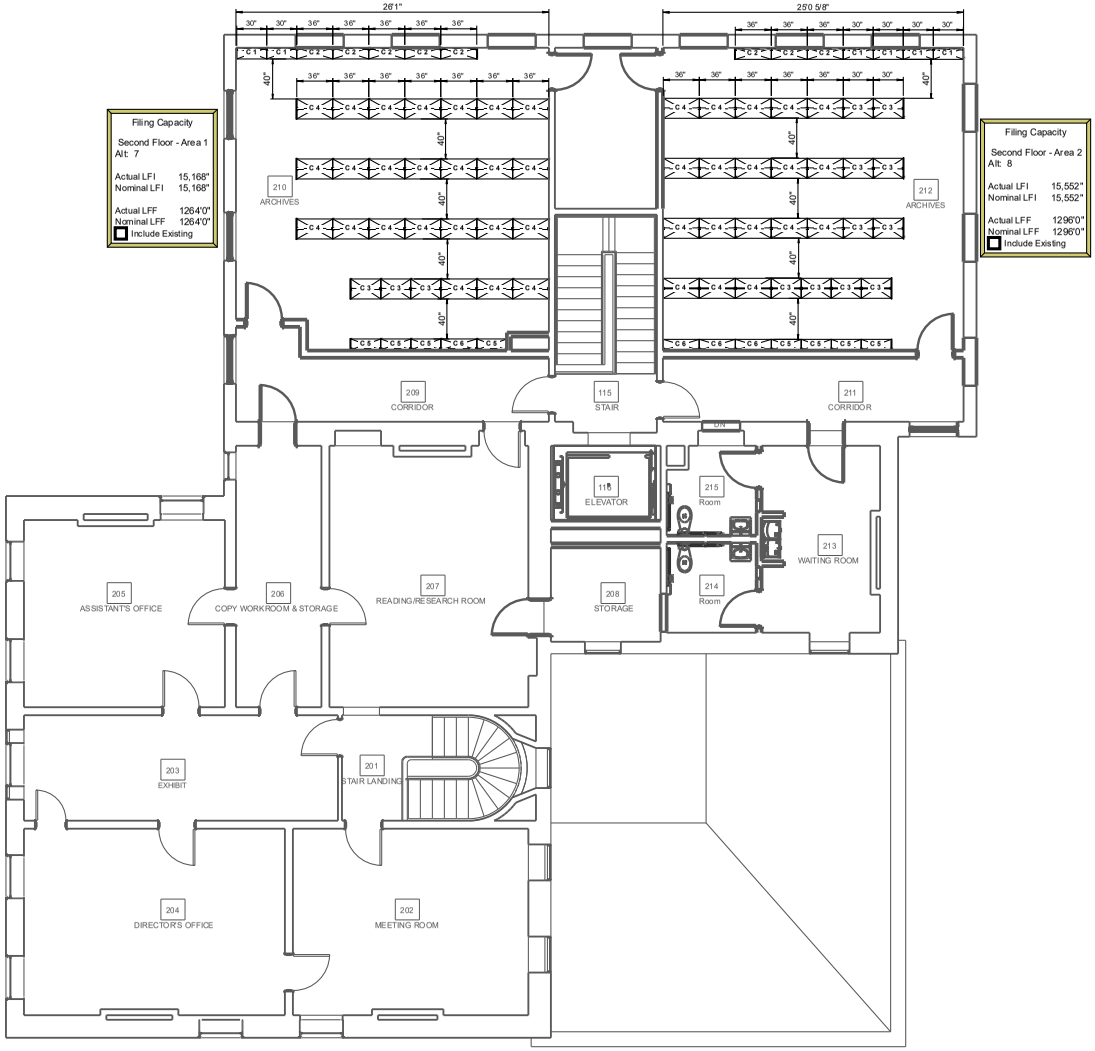

SECOND FLOOR PLAN

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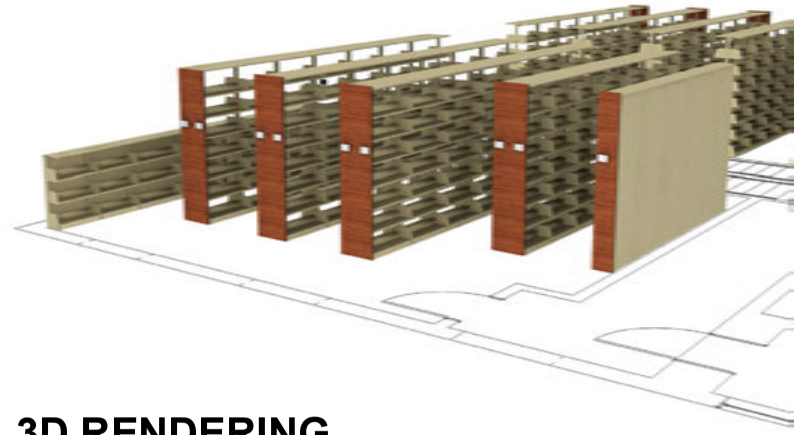

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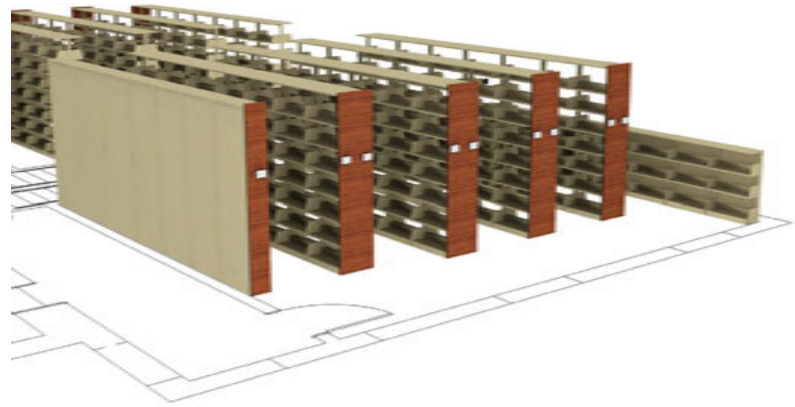

3D RENDERING

(Scale: None)

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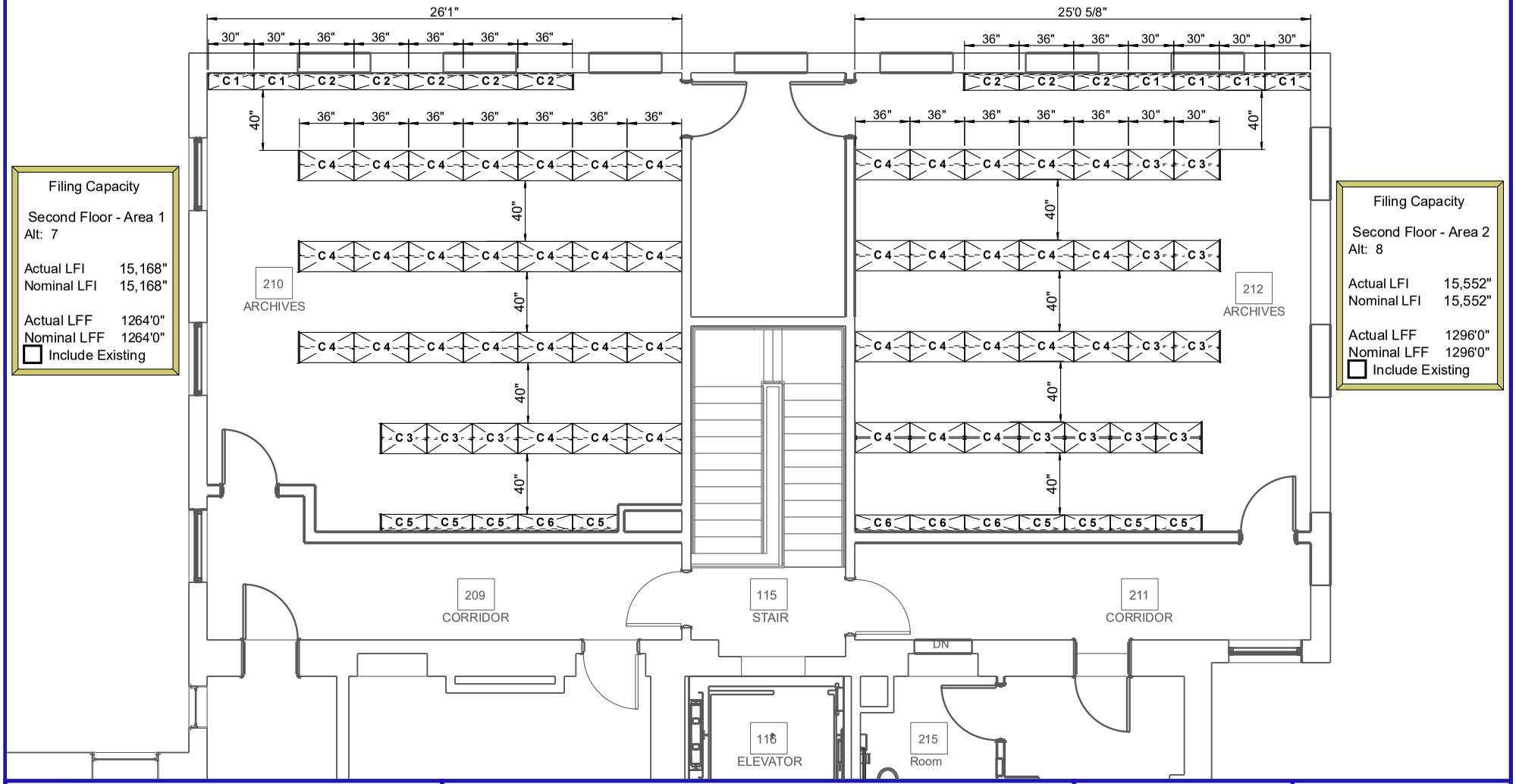

Filing Capacity

Second Floor - Area 1
Alt: 7

Actual LFI	15,168"
Nominal LFI	15,168"
Actual LFF	1264'0"
Nominal LFF	1264'0"

☐ Include Existing

Filing Capacity

Second Floor - Area 2
Alt: 8

Actual LFI	15,552"
Nominal LFI	15,552"
Actual LFF	1296'0"
Nominal LFF	1296'0"

☐ Include Existing

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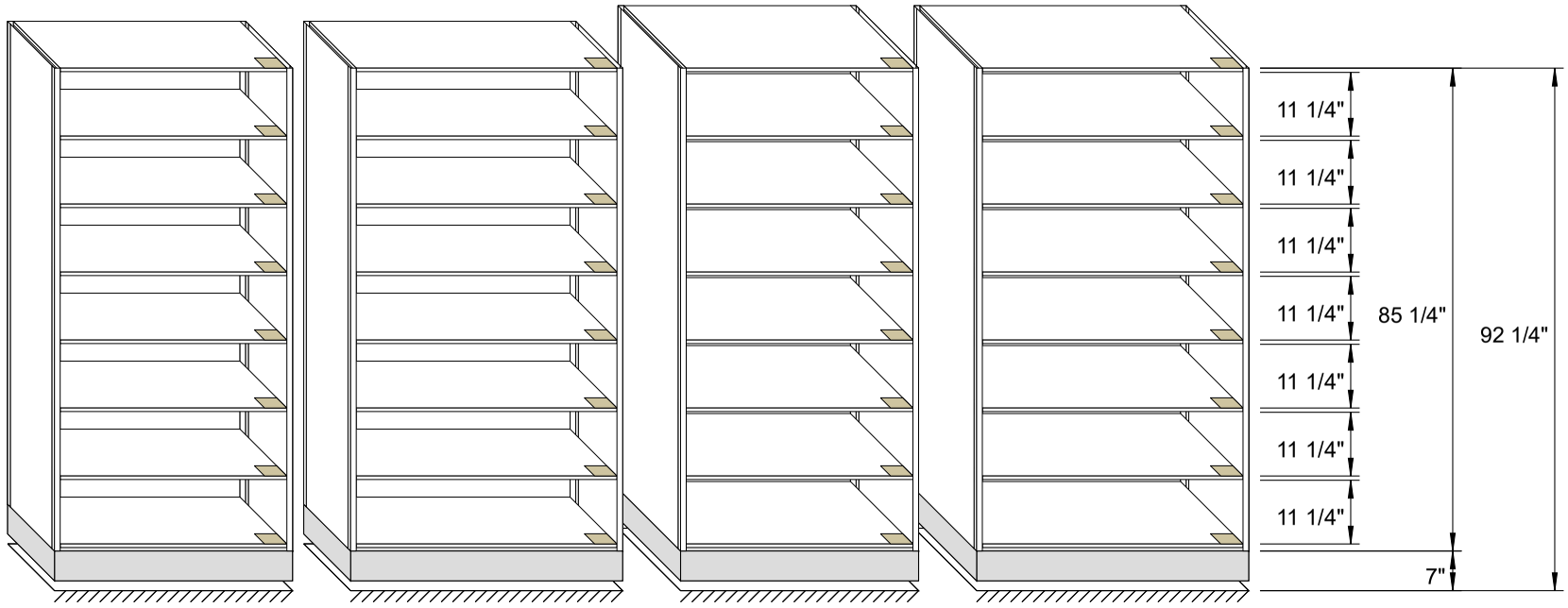
Rep: BYKONEN,ART	Drwn by: RGC	Sheet No: 10 of 13	

H92 1/4"
85 1/4" x 42" x 18"

H92 1/4"
85 1/4" x 48" x 18"

H92 1/4"
85 1/4" x 42" x 24"

H92 1/4"
85 1/4" x 48" x 24"



SHELVING ELEVATIONS

(Scale: 3/8"=1'-0")

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Scale: 3/8" = 1'	Total Actual LFI: 164608 LFI

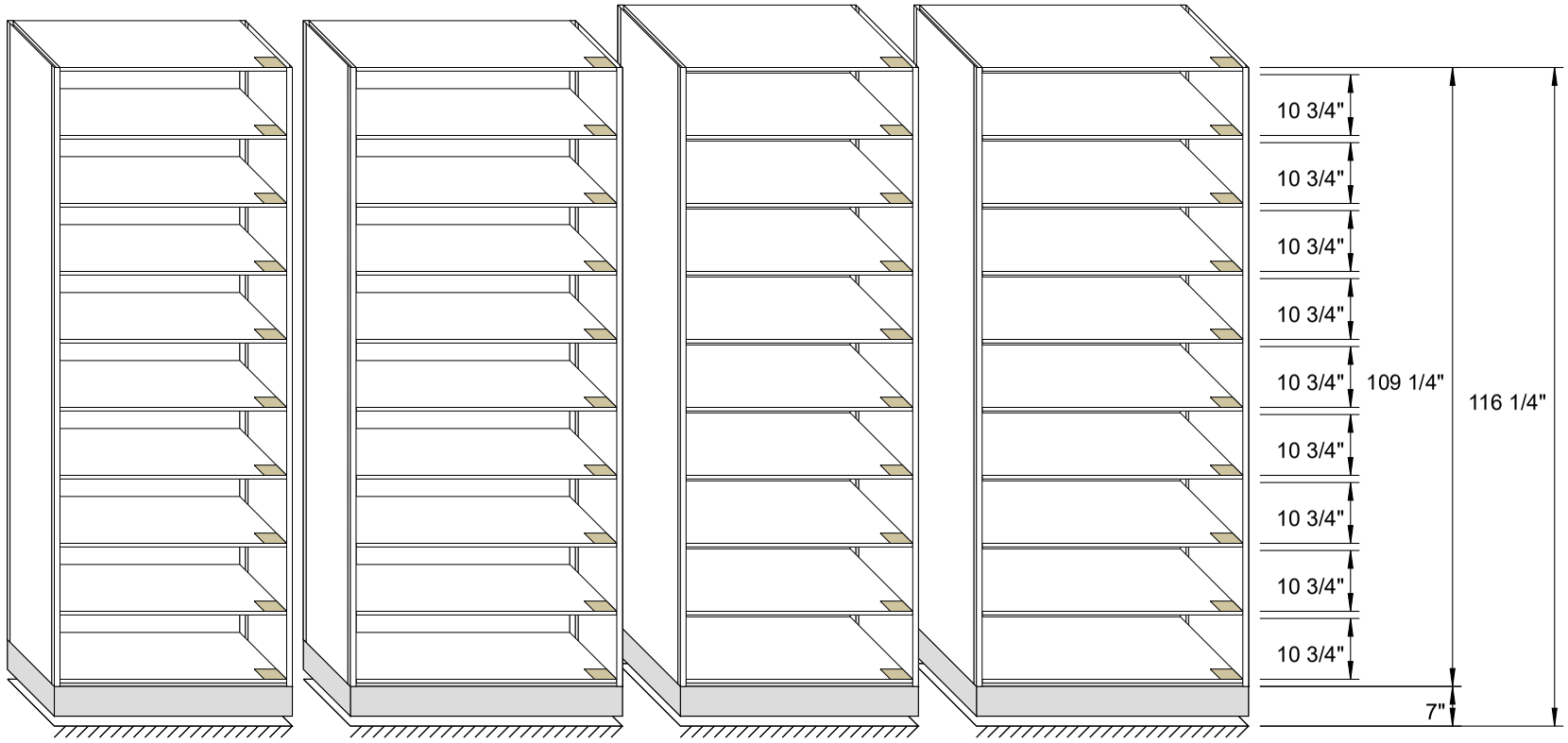
Rep:	Drwn by:	Sheet No:
BYKONEN,ART	RGC	11 of 13

H116 1/4"
109 1/4" x 42" x 18"

H116 1/4"
109 1/4" x 48" x 18"

H116 1/4"
109 1/4" x 42" x 24"

H116 1/4"
109 1/4" x 48" x 24"



SHELVING ELEVATIONS

(Scale: 3/8"=1'-0")

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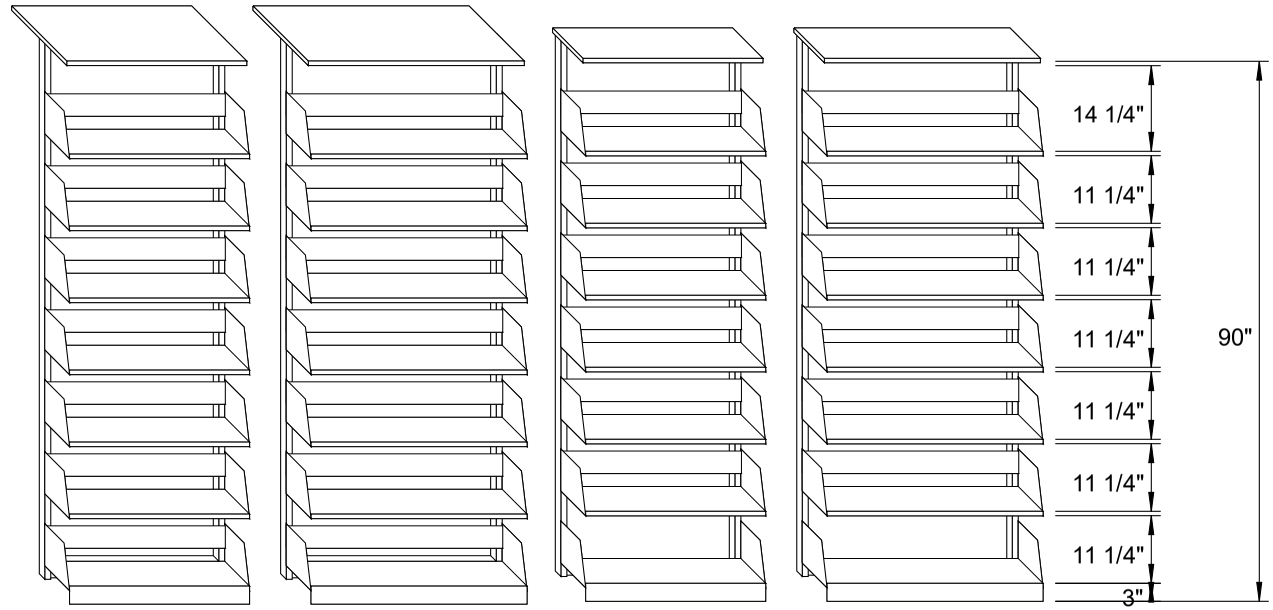
H90"
90"x30" d20"

H90"
90"x36" d20"

H90"
90"x30" d11"

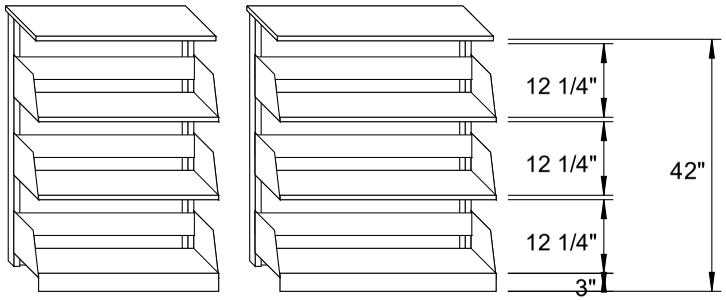
H90"
90"x36" d11"



C 3 C 4 C 5 C 6

H42"
42"x30" d11"

H42"
42"x36" d11"



C 1 C 2

SHELVING ELEVATIONS

(Scale: 3/8"=1'-0")

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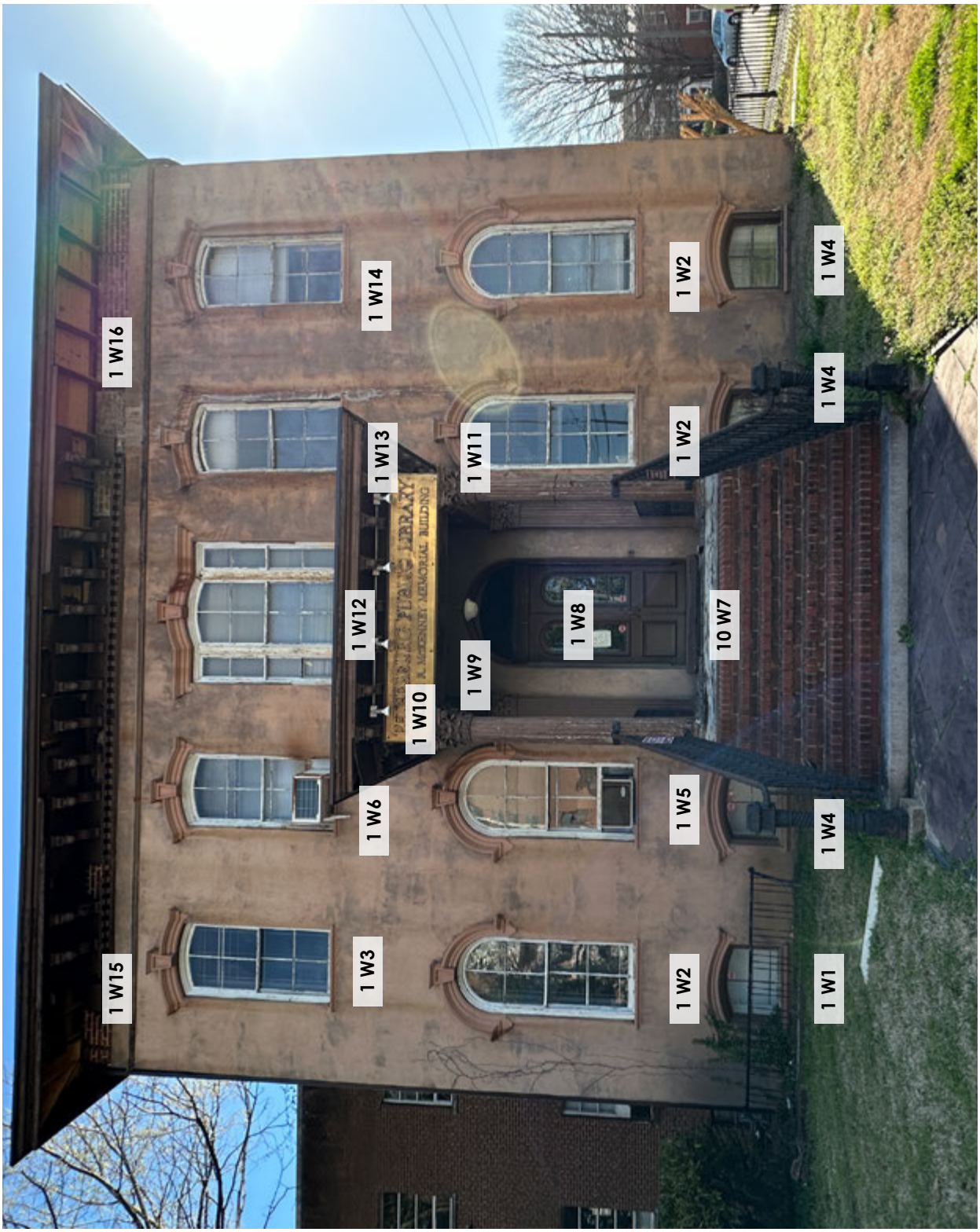


1 WEST ELEVATION
N.T.S.

2 WEST ELEVATION
N.T.S.

PHOTO: 1 W1 — West Elevation

REMARKS:
Typical basement wood window

NOTES

Typical Window Restoration Notes

- Carefully remove window sash from frame and salvage all parts.

- Install temporary painted plywood in sash opening for protection of interior.

- Remove glass and all glazing putty.

- Strip paint.

- Prime all wood with oil primer before reglazing windows.

- Back bed glass with glazing putty and reinstall glass.

- Install new glazing putty.

- After curing, prime glazing putty.

- Apply two coats of finish paint on sash.

- Strip paint from frames.

- Prime frames and apply two finish coats of paint.

- Install new sealant around window frames.

- Reinstall window sash.

1 W1

- Remove vines encroching on the window

PHOTO: 1 W2 — West Elevation

NOTES

Typical
- See Typical notes from 1 W1

1 W2
- Remove vines approaching window

REMARKS:
Typical first floor wood window.

PHOTO: 1 W3 — West Elevation

NOTES

Typical
- See typical notes from 1 W1

REMARKS:
Typical second floor wood window.

PHOTO: 1 W4 — West Elevation

NOTES

Typical
- See typical notes from 1 W1

1W4
- Replace down spouts with historically correct round painted down spouts

- Waterproof outside of foundation wall see report for additional information

- Connect down spouts below grade and pipe from foundation

- Provide positve slope of grade away from building

REMARKS:
Typical basement wood window and drainage notes.

PHOTO: 1 W5 — West Elevation

NOTES

Typical
- See typical notes from 1 W1

1W5
- Remove window air unit

- Ensure bottom sash is not damaged by window unit

- Clean all stone surrounds around windows to remove stains

- Remove window air conditioning unit and enclosure, repair window frame.

REMARKS:
Window Notes.

PHOTO: 1 W6 — West Elevation

NOTES

Typical
- See typical notes from 1W1

1 W6
- Clean stucco to remove any organic materials, dirt, and dust before painting.

- Remove window air conditioning unit and enclosure, repair window frame.

- Patch and repair stucco after air conditioner is removed

REMARKS:
Window notes.

PHOTO: 1 W7 — West Elevation

NOTES

- Strip existing door of paint

- Repair cracking wood with expoxy consolidator and expoxy patch

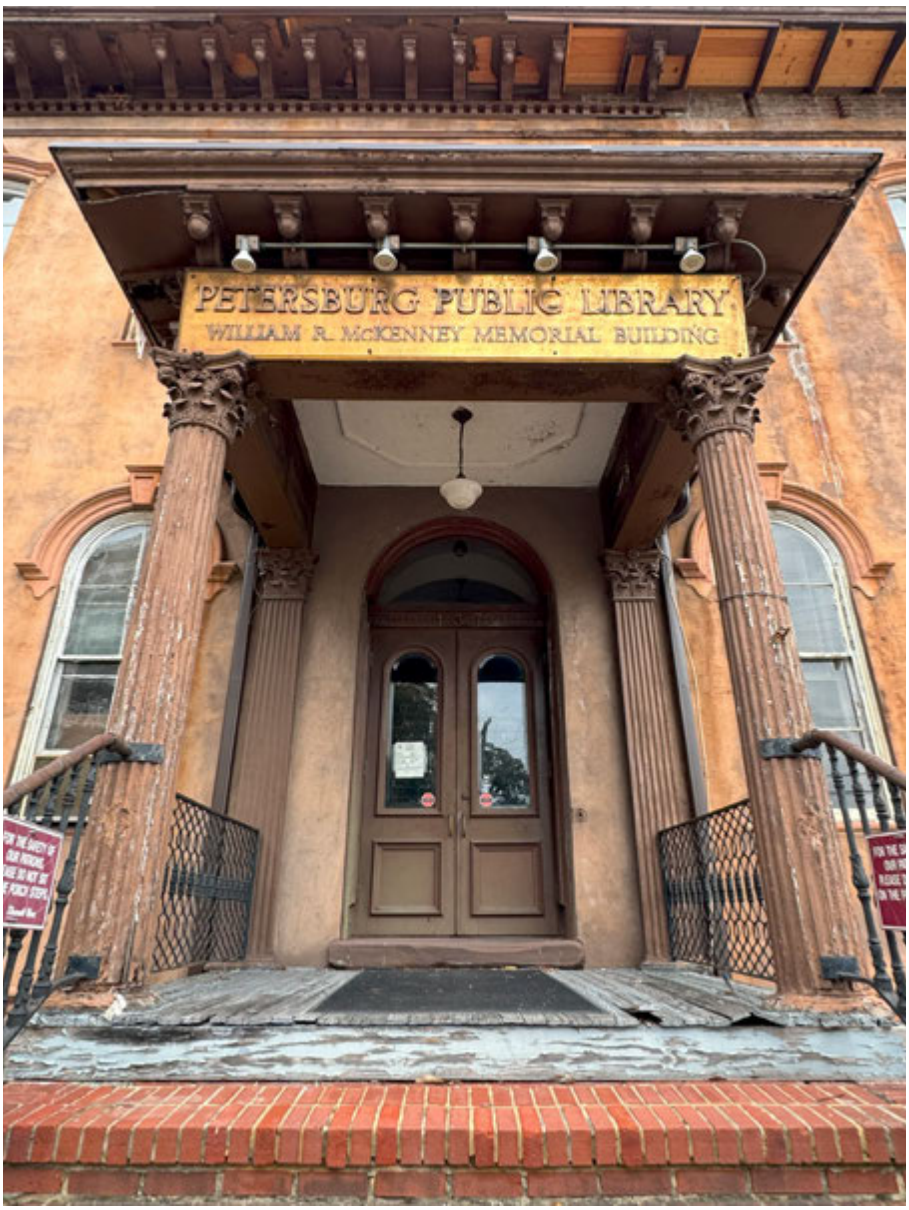
- Remove and replace sealant around door

- Patch missing stucco on right side of door.

- Prime door with an oil based primer and install two finsih coats of paint

REMARKS:

PHOTO: 1 W8 — West Elevation



REMARKS:
Front entrance door.

NOTES

- Temporarily support porch roof.

- Remove railings and refinish at paint shop. Remove paint, prime and paint with high performance epoxy paint system

- Remove porch columns and take to shop for repairs.

- Repair small deteriorated wood areas and decorated pieces with epoxy wood consolidator solution and epoxy wood patches.

- Remove and replace larger sections of rotten wood with new rot resistant wood to match original.

- Repair and replace all rotten soffit materials and deteriorated decorative corbels with new rot resistant wood to match the original historic construction.

- Remove all loose and peeling paint.

- Prime surfaces with an oil base primer and two finish coats of paint.

- Remove floor construction and non original brick steps.

- Repair and rebuild brick walls below porch and install new stucco coating.

- Reframe wood porch floor structure and install waterproof membrane above new plywood decking.

- Install new sleepers above waterproofing and install floating 5/4 tongue and groove wood flooring

PHOTO: 1 W9 — West Elevation

NOTES

Typical
- See 1 W8 for typical notes

REMARKS:
Front poch beam and column capital

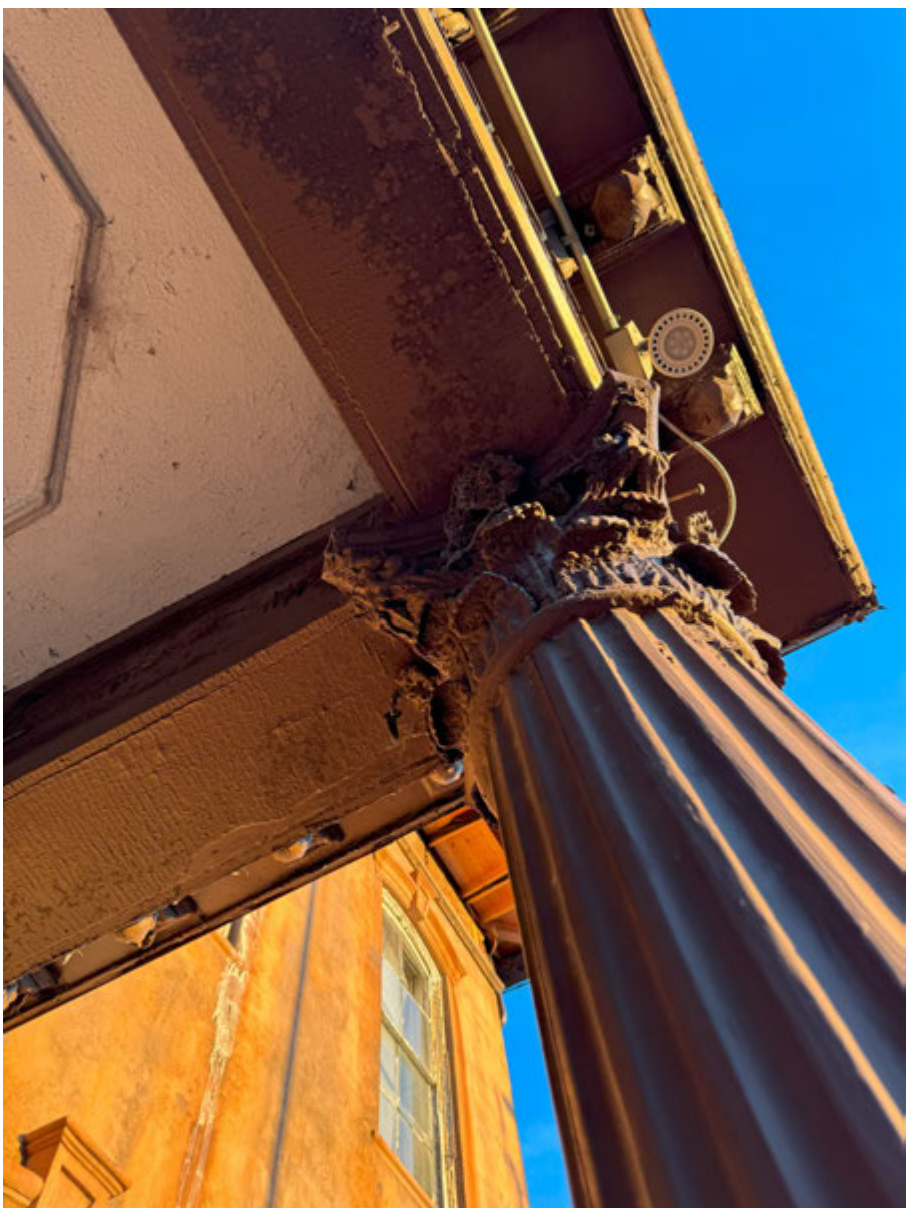
PHOTO: 1 W10 — West Elevation

NOTES

Typical
- See 1 W8 for typical notes

REMARKS:
Front porch beam and column captial.

PHOTO: 1 W11 — West Elevation



NOTES

Typical
- See 1 W8 for typical notes

REMARKS:
Front porch beam and column capital.

PHOTO: South Stair Elevation

NOTES

Typical See 1 W8 for typical porch notes.

3

SOUTH STAIR ELEVATION

N.T.S.

REMARKS:
Front porch repairs.

PHOTO: North Stair Elevation

NOTES

See 1 W8 for typical porch notes

4

NORTH STAIR ELEVATION

N.T.S.

REMARKS:
Front porch repairs.

PHOTO: 1 W12 — West Elevation

NOTES

Typical
- See typical notes for 1 W1

1 W11
- Clean stains from stone window surround and wall.

- Remove rotten wood at mullion and replace with rot resistant wood.

- Prime and paint with two finish coats.

REMARKS:
Front Windows.

PHOTO: 1 W13 — West Elevation

NOTES

Typical
- See typical notes for 1W1

1W13
- Check rail joint has failed and sash is racked and sagging.

- Remove sash and repair and re-build check rail to straighten and secure sash.

- Replace any rotten sash pieces with rot resistant wood.

- Verify condition of stucco adjacent to window. Remove any deteriorated and loose stucco and patch to match original condition.

- Clean stains from wall and window surround.

REMARKS:
Window repair.

PHOTO: 1 W14 — West Elevation

NOTES

Typical
- See typical notes from 1 W1

1 W14
- Replace broken window panes

REMARKS:
Window repair.

PHOTO: 1 W15 — West Elevation

NOTES

- Remove and replace rotten fascia board and crown.

- Replace missing soffit to match original construction

- Replace missing corbel brackets

- Replace missing frieze

- Replace missing dentil molding

REMARKS:
Soffit Repair

PHOTO: 1 W16 — West Elevation

NOTES

Typical
- See 1 W15 for typical notes

REMARKS:
Soffit repair.

PHOTO: 2 W1 — West Elevation

NOTES

Typical
- Remove existing window

- Replace window with aluminum storefront window.

- Remove paint and rust from lintel

- Prime and paint lintel

- Install window shade on interior of window.

- Clean brick facade and cast stone sills to remove stains.

REMARKS:
Basement window replacement.

PHOTO: 2 W2 — West Elevation

NOTES

Typical
- See typical notes for 2 W1

2 W2
- Add UV blocking material to glass to reduce sunlight.

- Install window shade on interior of window.

- Clean brick facade and cast stone sills to remove stains.

REMARKS:
Repairs and window replacement.

PHOTO: 2 W3 — West Elevation

NOTES

Typical
- See typical notes for 2 W1

2 W3
- Add UV blocking material to glass to reduce sunlight.

REMARKS:
Repairs and window replacement.

PHOTO: 2 W4 — West Elevation

NOTES

Typical
- See typical notes for 2 W1

2 W4
- Remove Window units

REMARKS:
Repairs and window replacement.

PHOTO: 2 W5 — West Elevation

NOTES

- Remove plywood

- Replace louver for any new mechanical euipement.

REMARKS:
Louver repairs.

PHOTO: 2 W6 — West Elevation

NOTES

Typical
- See typial notes from 1 W1

REMARKS:
Window repairs.

PHOTO: 2 W7 — West Elevation

NOTES

- Remove and replace rotten fascia board and crown.

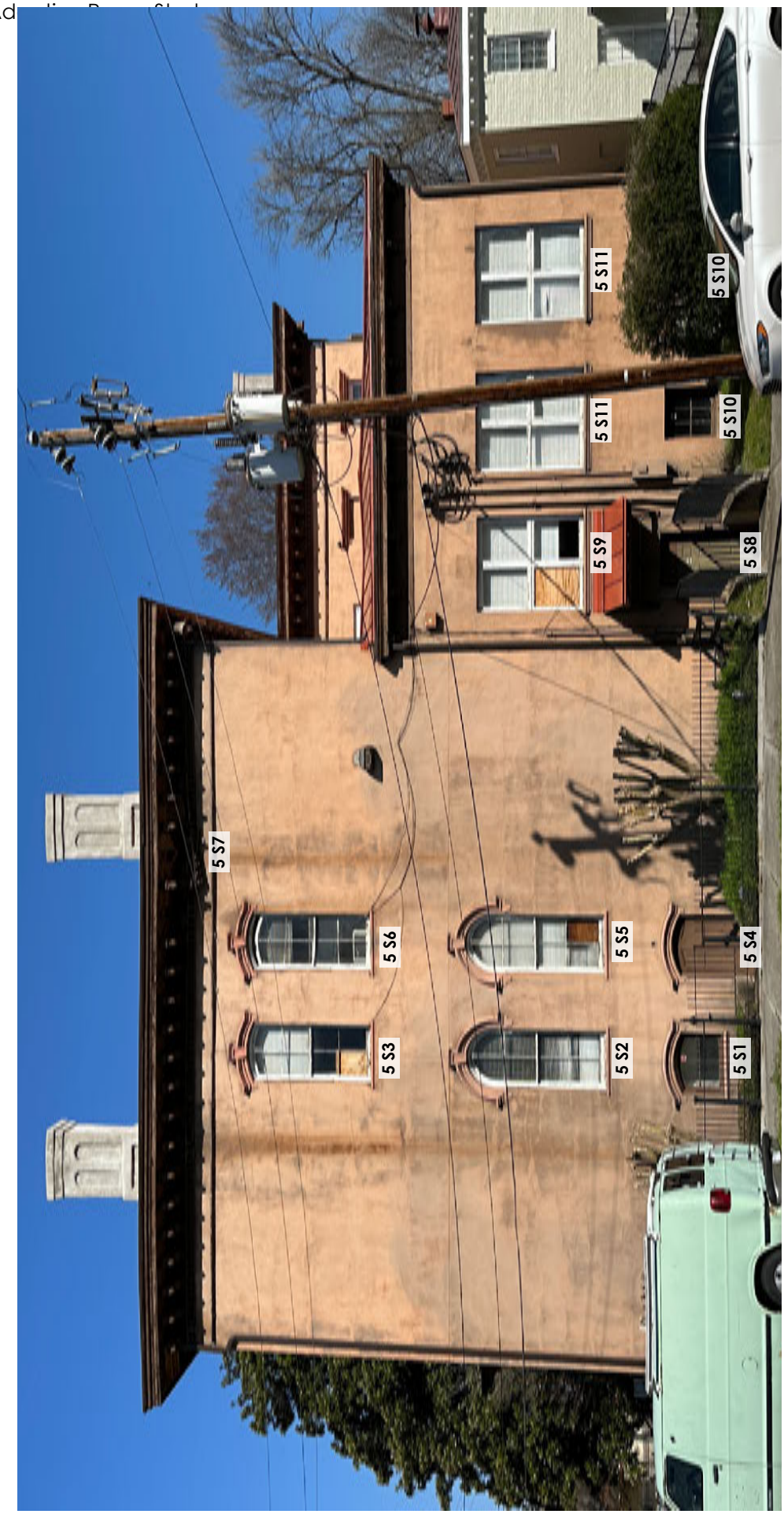
- Replace missing soffit to match original construction

- Replace missing corbel brackets

- Replace missing frieze

- Replace missing dentil molding

REMARKS:
Soffit repair.



5 SOUTH ELEVATION
N.T.S.

6

SOUTH ELEVATION

N.T.S.

PHOTO: 5 S1 — South Elevation

NOTES

Typical
- See Typical notes for 1 W1

REMARKS:
Window repairs.

PHOTO: 5 S2 — South Elevation

NOTES

Typical
- See typical notes for 1 W1

REMARKS:
Window Repairs.

PHOTO: 5 S3 — South Elevation

NOTES

Typical
- See typical notes 1 W1

5 S3
- Replace window pane in bottom sash

REMARKS:
Window repairs.

PHOTO: 5 S4 — South Elevation

NOTES

- Strip existing door of paint

- Prime and repaint

- Replace any rotting wood with rot resistant wood

- Repair cracking wood with expoxy consolidator and expoxy patch

- Remove and replace sealant around door

- Remove trash and other debris around opening.

REMARKS:
Door repairs.

PHOTO: 5 S5 — South Elevation

NOTES

Typical
- See typical notes 1 W1

5 S5
- Replace window pane in bottom sash

REMARKS:
Window repairs.

PHOTO: 5 S6 — South Elevation

NOTES

Typical
- See typical notes 1 W1

5 S6
- Check rail joint has failed and sash is racked and sagging.

- Remove sash and repair and re-build check rail to straighten and secure sash.

- Replace any rotten sash pieces with rot resistant wood.

REMARKS:
Window repairs.

PHOTO: 5 S7 — South Elevation

NOTES

Typical
See notes 1 W15

REMARKS:
Soffit repairs.

PHOTO: 5 S8 — South Elevation

NOTES

- Prime and repaint

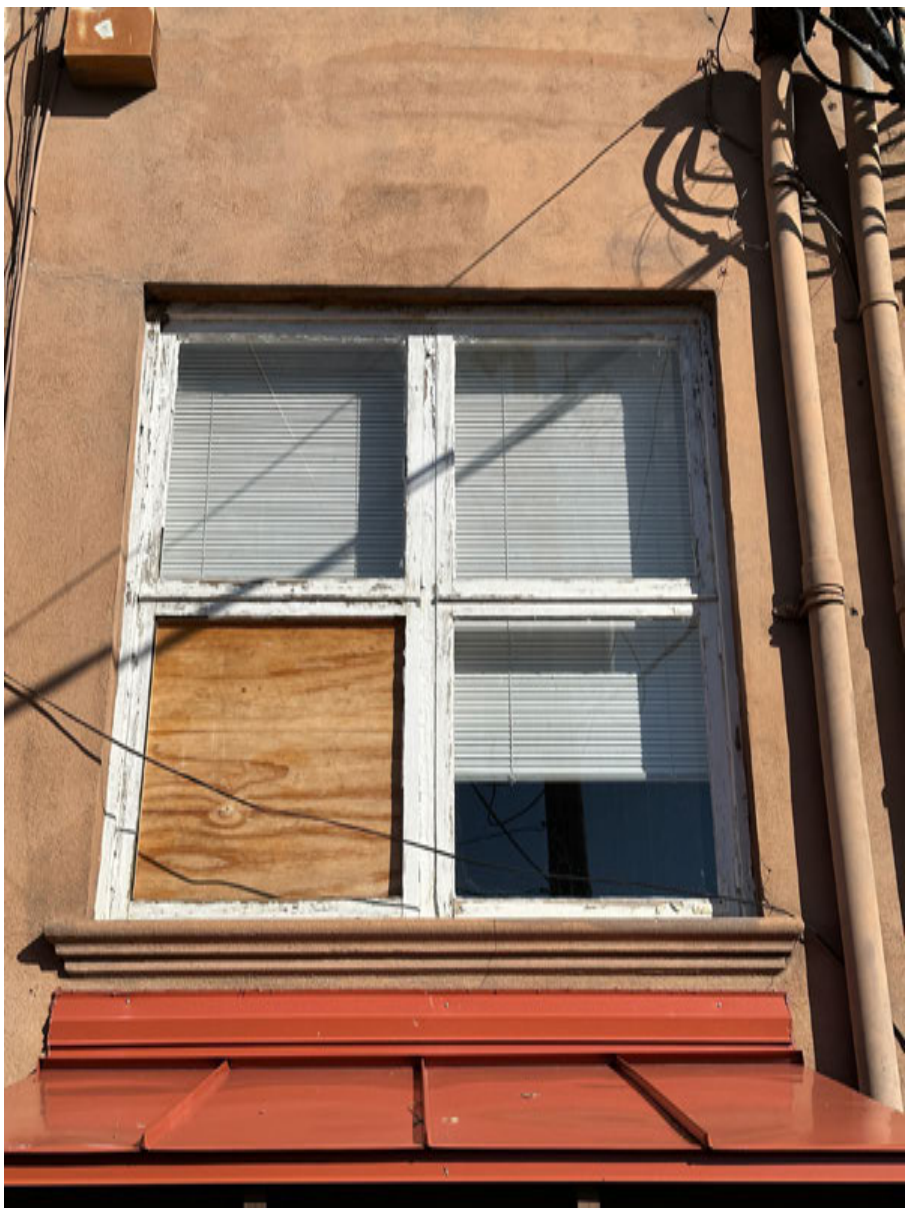
- Remove and replace sealant around door

- Remove trash and other debris around oppening.

- Remove loose and peeling paint from railing prime and paint with two coats of epoxy paint.

REMARKS:
Door and railing repairs.

PHOTO: 5 S9 — South Elevation



NOTES

Typical
- See typical notes 1 W1

5 S9
- Replace missing window pane

REMARKS:
Window repairs.

PHOTO: 5 S10 — South Elevation

NOTES

Typical
- See typical notes 1 W1

REMARKS:
Window repairs.

PHOTO: 5 S11 — South Elevation

NOTES

Typical
- See typical notes 1 W1

REMARKS:
Window repairs.

PHOTO: 6 S1 — South Elevation

NOTES

- Strip existing door of paint

- Prime and repaint

- Replace any rotting wood with rot resistant wood

- Repair cracking wood with expoxy consolidator and expoxy patch

- Remove and replace sealant around door

- Remove loose and peeling paint from railing. Prime and paint with two coats of epoxy paint.

REMARKS:
Door and railing repairs.

PHOTO: 6 S2 — South Elevation

NOTES

Typical
- See typical notes for 2W1

6 S2
- Add UV blocking material to glass to reduce sunlight.

REMARKS:
Window replacement.

PHOTOS: South Facade Cracks

NOTES

- Test stucco for damage and detachment from underlayers

- Remove any unstable stucco

- Remove and patch existing stucco with new stucco to match existing. Allow approximately 500 square feet of stucco patching

- Test existing stucco to determine composition. Custom mix new stucco to match the composition of existing stucco.

- Apply lime putty wash over existing stucco to fill in small cracks.

- Paint stucco after repairs.

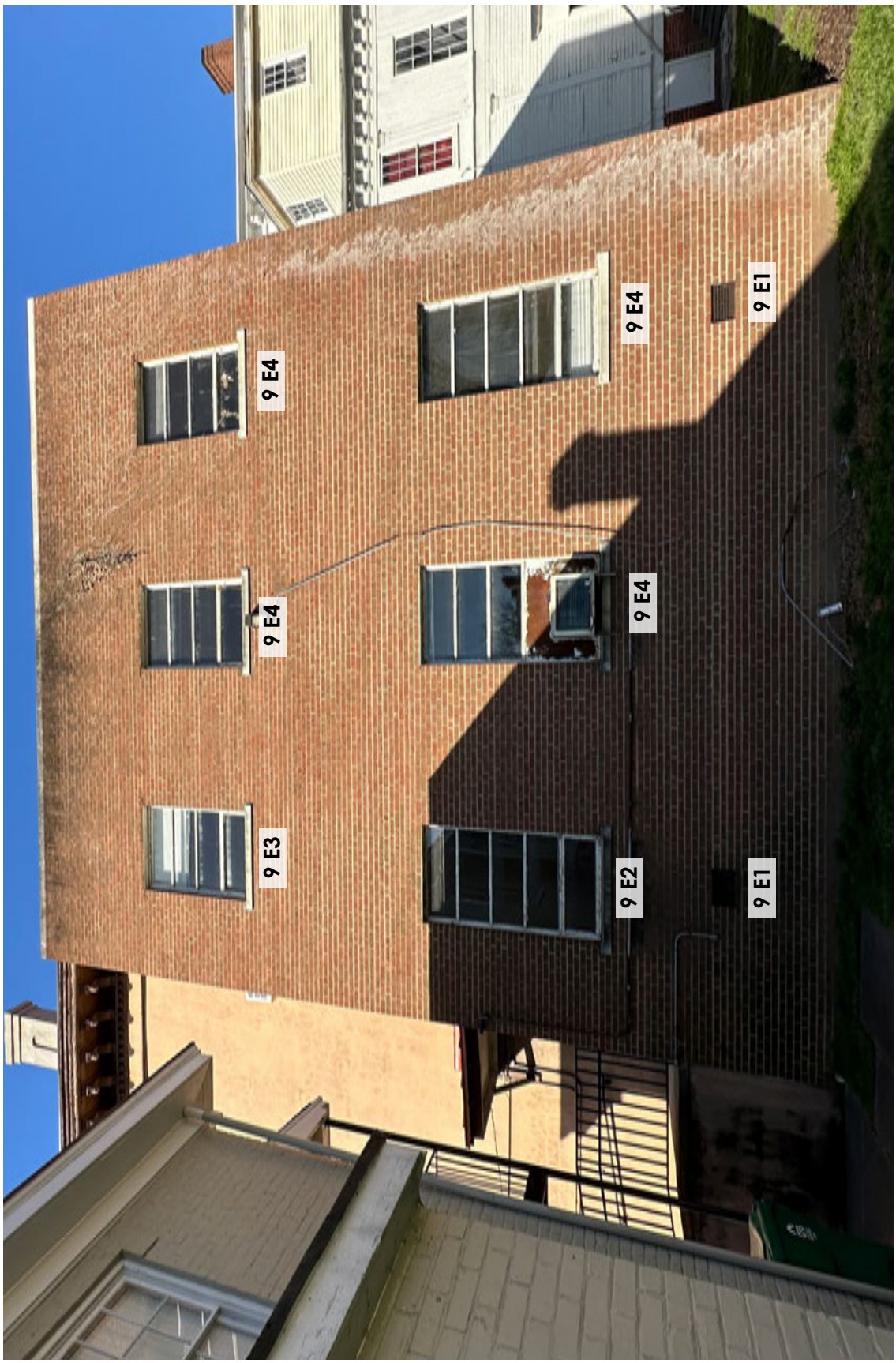
REMARKS:
Stucco repairs.

7 EAST ELEVATION
N.T.S.

8

EAST ELEVATION

N.T.S.



9 EAST ELEVATION
N.T.S.

PHOTO: 7 E1 — East Elevation

NOTES

Typical
- See typical notes for 1 W1

7 E1
Ensure window is sqaure in frame

REMARKS:
Window repairs.

PHOTO: 7 E2 — East Elevation

NOTES

- Remove louver

- Provide new louver for any necessary mechanical equipement

REMARKS:
Existing mechanical louver.

PHOTO: 7 E3 — East Elevation

NOTES

Typical
- See typical notes for 1 W1

7 E3
- Rebuild left window to fit frame

REMARKS:
Window repairs.

PHOTO: 7 E4 — East Elevation

NOTES

Typical
- See typical notes for 1 W1

REMARKS:

PHOTO: 7 E5 — East Elevation

NOTES

- Remove louver

- Provide new louver for any necessary mechanical equipement

REMARKS:
Existing louver

PHOTO: 7 E6 — East Elevation

NOTES

- Strip existing areas of paint

- Repair roof sofit if needed

- Replace rotting wood with rot resistant wood

- Replace or repair any missing moulding or damaged ornamental brackets

- Prime and paint brackets and moulding.

REMARKS:
Soffit repairs.

PHOTO: 7 E7 — East Elevation

NOTES

Typical
- See typical notes for 1 W1

7 E7
- Replace down spouts with historically accurate round painted metal down spouts.

REMARKS:
Window repairs.

PHOTO: 8 E1 — East Elevation

NOTES

- Remove any unstable stucco

- Remove and patch existing stucco with new stucco to match existing. Allow approximately 500 square feet of stucco patching.

- Test existing stucco to determine composition.

- Custom mix new stucco to match the composition of existing stucco.

- Apply lime putty wash over existing stucco to fill in small cracks.

- Paint stucco after repairs.

REMARKS:
Stucco repairs.

PHOTO: 8 E2 — East Elevation

NOTES

Typical
- See notes 1 W15

REMARKS:
Soffit Repairs.

PHOTO: 9 E1 — East Elevation

NOTES

- Remove grate

- Fill foundation vent with brick.

- Insulate interior face of crawl-space walls with rigid insulation. Install new vapor barrier on crawlspace floor and walls.

- Condition crawlspace.

REMARKS:
Foundation vent.

PHOTO: 9 E2 — East Elevation

NOTES

Typical
See typical bites for 2W1

REMARKS:
Windows infill.

PHOTO: 9 E4 — East Elevation

NOTES

Typical
- Remove existing windows.

- Infill window opening with brick to create fire rated wall for protection from adjacent property.

REMARKS:
Window infill.

10 NORTH ELEVATION

N.T.S.

11

NORTH ELEVATION

N.T.S.

12

NORTH ELEVATION

N.T.S.

PHOTO: 10 N1 — North Elevation

NOTES

- See 9 E4 for typical notes.

REMARKS:
Window infill.

PHOTO: 10 N2 — North Elevation

NOTES

Typical
- See 9 E4 for Typical notes.

10 N2
- Remove sealant from brick.

- Remove deteriorated steel lintel angle and infill window opening with new brick.

- Rebuild loose brick areas.

- Repoint all joints.

REMARKS:
Window infill and masonry repairs.

PHOTO: 10 N3 — North Elevation

NOTES

Typical
See typcial notes for 9 E1

10 N3
- Ensure any screens are removed and replaced

- Replace louver for any new mechanical euipement.

- Remove shrubbary to ensure it does not damage brick or foundation.

- Remove abandoned HVAC equipment

REMARKS:
Crawlspace repairs.

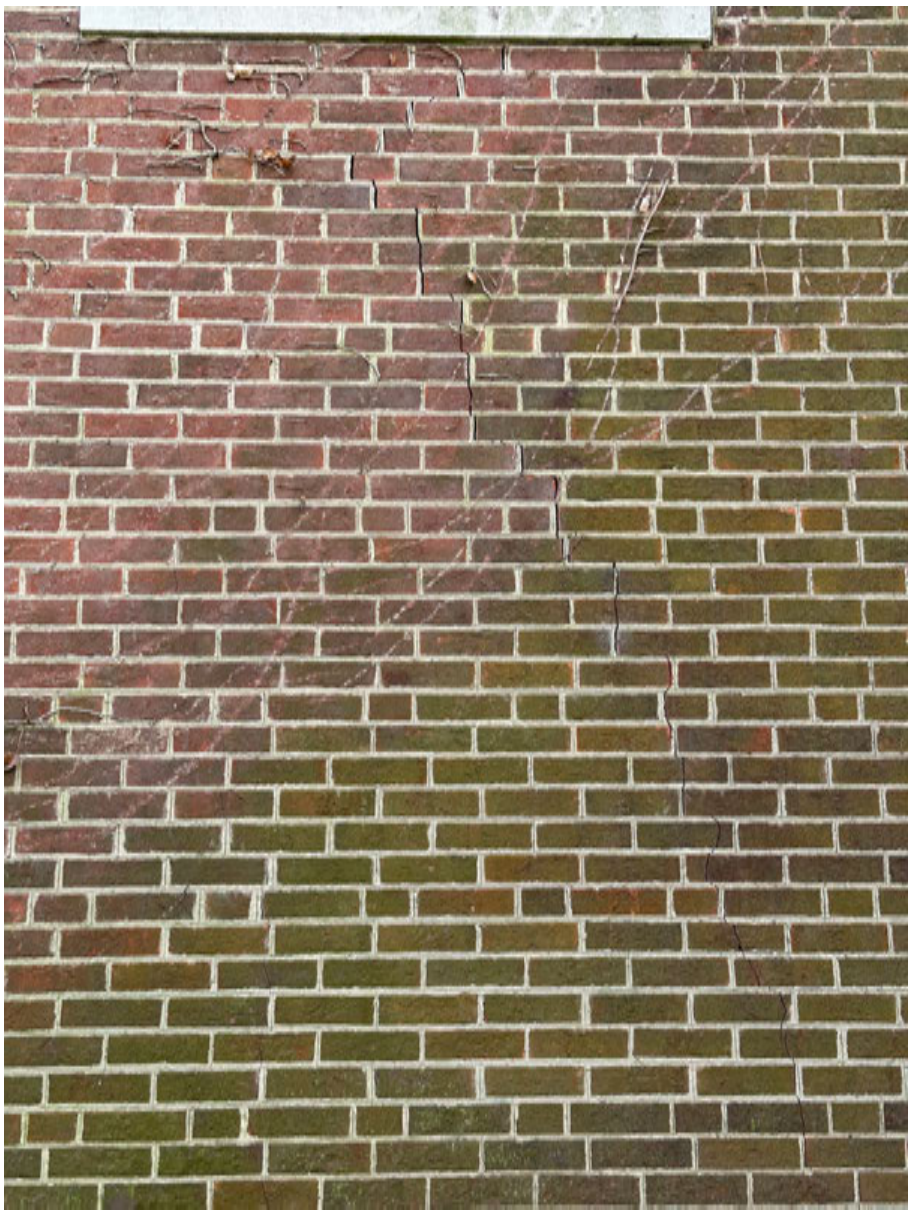
PHOTO: 10 N4 — North Elevation

NOTES

Typical
- See typical note for 9 E4

REMARKS:
Window infill.

PHOTO: 10 N5 — North Elevation



NOTES

- Repair cracking in wall

- Add expansion joint near cracking area

REMARKS:
Expansion wall crack.

PHOTO: 10 N6 — North Elevation

NOTES

Typical
- See typical note for 9 E4

REMARKS:
Window infill

PHOTO: 11 N1 — North Elevation

NOTES

Typical
- See typical note for 9 E4

REMARKS:
Window infill.

PHOTO: 11 N2 — North Elevation

NOTES

Typical
- See typical note for 9 E4

REMARKS:
Window infill.

PHOTO: 11 N3 — North Elevation

NOTES

Typical
- See typical note for 9 E4

11 N3
- Remove air conditioning unit, do not replace.

REMARKS:
Window infill.

PHOTO: 11 N4 — North Elevation

NOTES

Typical
- See typical note for 9 E4

REMARKS:
Window infill.

PHOTO: 12 N1 — North Elevation

NOTES

Typical
- See Typical 1 W1

12 N1
- Remove screen on lower sash

REMARKS:
Window repair.

BASEMENT

REMARKS:

- Remove existing drywall and plaster from basement walls
- Seal existing brick with penetrating sealer
- Furr out walls, insulate, and install new drywall

BASEMENT

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- Remove existing drywall and plaster from basement walls
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BASEMENT

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- Remove existing drywall and plaster from basement walls
- Seal existing brick with penetrating sealer
- Furr out walls, insulate, and install new drywall

CRAWLSPACE

REMARKS:

- Clear crawlspaces of debris
- Install heavy weight reinforced vapor barrier
- Insulate perimeter walls with 2" rigid insulation
- Turn vapor barrier up the walls to encapsulate the crawlspace
- Condition the crawlspace as indicated in the mechanical section of the report

HISTORIC CEILING

REMARKS:

- Repair ceilings to match original historic construction
- Install required fire sprinkler system for the project
- Conceal sprinkler heads and piping
- Cut channels in existing plaster ceilings for sprinkler piping installation
- Repair plaster to match original historic condition after installation of sprinkler piping and heads

HISTORIC CEILING

REMARKS:

- Repair ceilings to match original historic construction
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HISTORIC CEILING: MULTIPURPOSE ROOM

REMARKS:

- All existing ceilings should be removed
- Install new 2x2 acoustic ceilings

1958 ADDITION CEILING

REMARKS:

- All existing ceilings should be removed
- Repair and reinforce steel memebers according to the structural section of the report
- Install new 2x2 acoustic ceilings

1958 ADDITION CEILING

REMARKS:

- All existing ceilings should be removed
- Install new 2x2 acoustic ceilings

MULTIPURPOSE ROOM

REMARKS:

- All existing ceilings should be removed
- Install new 2x2 acoustic ceilings
- Install a recessed ceiling acoustic screen in the above the large opening to provide privacy for the room

ARCHIVES ROOM

REMARKS:

- Carefully insulate and seal walls, floors, and ceilings surrounding archives rooms
- Seal all voids or holes to prevent air infiltration
- Encapsulate rooms with spray foam insulation around the perimeter
- Furr out perimeter walls with 3 5/8" metal studs, spaced approximately 1 ½" from exterior concrete masonry for thermal separation
- Cover exterior CMU with approximately 4" of spray foam insulation
- Apply approximately 4" of spray foam insulation below floors and roof around archives
- Install gypsum board on walls and ceilings as fire barrier between room and spray foam insulation
- Conduct detailed thermal envelop calculation during project design and update insulation values around archive's rooms as needed

FINISHES

REMARKS:

- Install LVT flooring in archive rooms
- Construct painted drywall partitions
- Install acoustic ceiling tiles in archive rooms

FINISHES

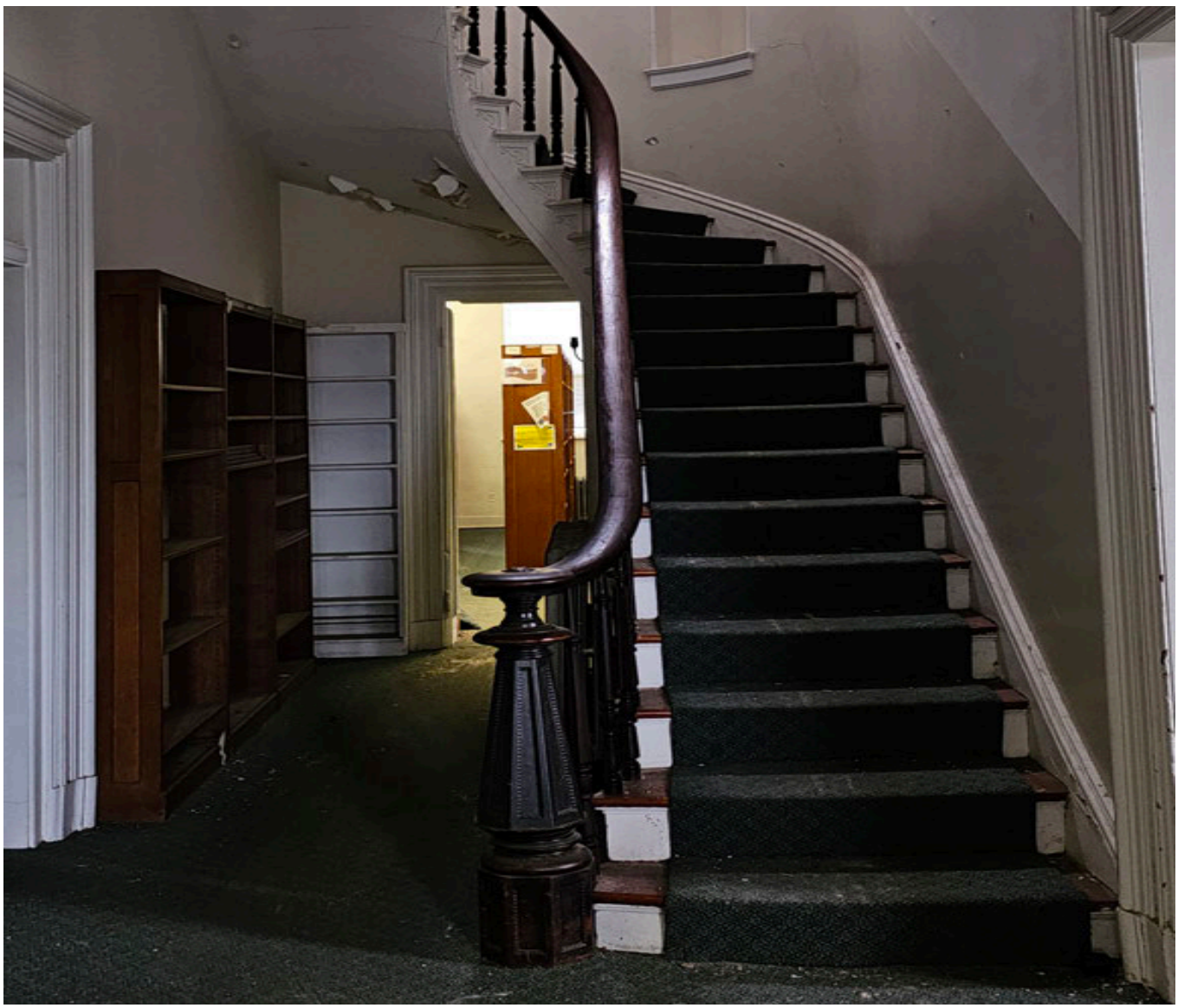
REMARKS:

- Remove existing plaster
- Patch and repair exterior CMU wall
- Fur out wall with painted drywall according to Archives Room.

FLOOR

REMARKS:

- Remove carpet and padding.
- Sand and level wood flooring.
- Fill in any cracks, gaps, or holes in the wood with wood filler.
- Apply stain and finish.



STAIRS

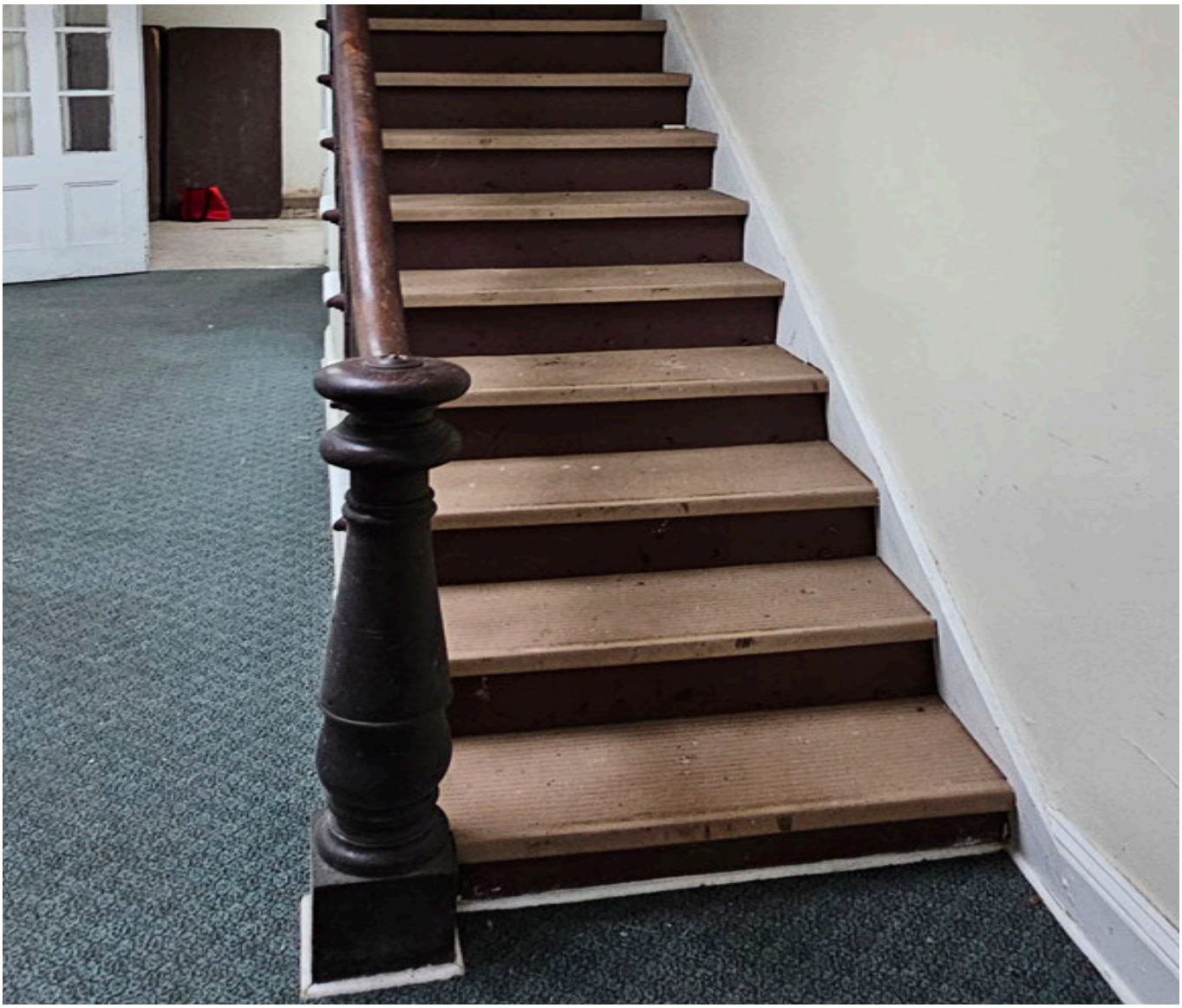
REMARKS:

- Preserve and restore the existing grand staircase, including stairs and railings
- Fire rating not required around stairs due to new fire sprinkler system, as per code section of report
- Remove carpet from the floor and refinish wood flooring
- Clean and ensure no damage has been done to wooden handrail

STAIRS

REMARKS:

- Remove existing rubber tread covers and handrails
- Install new rubber treads and handrails



STAIRS

REMARKS:

- Remove existing rubber tread covers
- Install new rubber treads
- Clean and ensure no damage has been done to wooden handrail

MILLWORK

REMARKS:

- Retain any historic wood millwork
- Restore historic wood millwork as necessary
- Ensure preservation of original wood features throughout the project

FIREPLACE

REMARKS:

- Clean the marble surfaces thoroughly to remove dirt, grime, and any existing coatings
- Repair any cracks, chips, or other damage to the marble using appropriate filler materials and techniques
- Polish the marble to restore its original luster and shine
- Seal the marble to protect it

FIREPLACE

REMARKS:

- Remove existing ornate surround and mantle
- Locate any large pieces remaining.
- Clean the marble surfaces thoroughly to remove dirt, grime, and any existing coatings of adhesive
- Create replacement pieces using matching marble
- Reattach surround and mantle
- Polish the marble to restore its original luster and shine
- Seal the marble to protect it

DOWNEY & SCOTT, LLC
Construction Management Services

Main Office: 6799 Kennedy Road Unit F Warrenton, Virginia 20187 Phone: 540.347.5001 Fax: 540.347.5021
1388 NW 2nd Ave., Unit 4B, Boca Raton, FL. 33432 Phone: 561.416.1240 Fax: 561.416.1248 www.downeyscott.com

Concept
Cost Estimate Report

Report Date April 26, 2024
Revision Date May 1, 2024
Prepared for:

Enteros Design

ENTEROS DESIGN

McKenney Library
Petersburg, Virginia

DOWNEY & SCOTT, LLC
Construction Management Services

COST ESTIMATE CLARIFYING NOTES & EXCLUSIONS

- We have incorporated construction costs for a single Contractor procurement via lump sum General Contract.
- Without exception, we have included hard construction costs only and all soft construction costs are excluded. Please refer to list of Owner Budget Items.
- The Limits of Construction are those indicated on the documents provided.
- We have not included HAZMAT abatement costs. Asbestos, PCB's, or Mold remediation costs are not included in our analysis. We have included an allowance for Lead Paint abatement.
- Design Contingency accounts for the costs of yet unidentified scope requirements and has been included as shown in the Summary.
- Construction Contingency accounts for the costs of change orders. A Construction Contingency has not been included. We recommend that the owner carry an additional 3-5% Construction Contingency for unforeseen conditions.
- Escalation accounts for the inflationary effects of elapsed time and costs have been included in the amount indicated in the project summary.
- Our costs do not include any Owner Furniture storage or moving costs with the exception of the specific kitchen equipment items to removed and reinstalled.
- All cost data is based on Open Shop wage and burden rates.

OWNER COSTS NOT INCLUDED IN OUR COSTS ANALYSIS

We have found during the budgeting phase, Owners sometimes do not fully consider all the costs they will incur when implementing capital improvements. For convenience, we provide below a list of common non-construction Owner costs.

FURNITURE, FIXTURE & EQUIPMENT [FF&E]

- Loose, unattached system furniture, traditional furniture, etc.
- Special fixtures relevant to subject facility operations and uses
- Communications equipment, such as servers, telephone sets, communications cables, instruments, & accessories
- Vending equipment purchases and/or leases, etc.
- Exterior equipment, such as exercise equipment, pay telephones.

MOVING & STORAGE COSTS

- Contract and/or internal staff implemented moving costs.
- Temporary storage and insurance.
- Removal and disposal of furnishings of no salvage value.

TEMPORARY FACILITIES

- Non-contractor temporary storage trailers.
- Non-contractor temporary utilities.

REAL ESTATE

- Land acquisitions, leases, easements, and rights of way.
- Real estate taxes.
- Transfer taxes.
- Recordation fees & taxes.
- Brokerage commissions.
- Settlement charges.
- Legal fees.

MANAGEMENT *Indirect* Owner Mgt Expenses

- Real estate necessary to house management & staff.
- Utilities.
- Insurance.
- Furniture, fixture & equipment.
- Project management salaries.
- Communications, telephone, facsimile expenses, e-mail, etc.
- Travel, parking, courier services, etc.

- Security.
- Office equipment & supplies.

COMMON OWNER COSTS (continued)

PROMOTION / RESPONDING TO PUBLIC & MEDIA INQUIRIES

- Artwork and reproduction of advertising, brochures, hand-outs.
- Advertising fees.
- Postage.
- Signage.
- Photography.
- Renderings.
- Public and/or promotional events, such as hearings, fund raisers, etc.

FINANCIAL

- Accounting [in-house].
- Accounting [CPA].
- Interim financing [loan, bond, other] origination fees, expenses & interest.
- Permanent financing [loan, bond, other] origination fees, expenses & interest.
- Appraisal fees.
- Working capital / start-up.
- Performance [Owner, not to be confused with contractor] bonds

INSURANCE PREMIUMS

- Builder's risk
- Liability
- Title
- Other

LEGAL FEES

- Real estate, land, zoning, proffers
- Partnerships
- Financing
- Contracts
- Leasing

JURISDICTIONAL FEES

- Zoning, site, and general building permit fees & expenses. Note: jurisdictional trade permit fees are included in our computations.
- Primary water utility availability and connection fees
- Primary sewer utility availability and connection fees
- Gas Company fees

- Power company fees
- Telephone company fees

COMMON OWNER COSTS (continued)

- Cable TV company fees
- State & local highway fees
- Mandatory completion bonds
- Adjoining owner demands
- Mandated off-site storm water management contributions.

DESIGN FEES

- Architect / Engineer / Cost Management / Construction Management Consultant Fees
- Surveys, Civil Engineering, Testing and Third Party Inspection Fees
- Traffic Consultant Fees

RECOMMENDED COST CONTROL PROCESS

Controlling construction costs is a continuous process that spans from the initial programmatic level through to final completion.

MARKET CONDITIONS & OPINIONS OF PROBABLE COST

Downey and Scott, LLC has no control over market conditions or acts of God that can create rapid fluctuations in material prices. We have extensive experience in similar projects and have employed our best judgment in analyzing the subject project. We cannot, however, guarantee that actual construction costs will not vary from the opinions of probable construction costs herein provided.

Please contact David Repass or Joe Adams regarding this project should you have any questions or concerns.

Revision 1							
Report: Progress Cost Report			*Prepared by: Downey & Scott, LLC*	Status: Concept			PM: dr/st/mv
Project: McKenney Library			*6799 Kennedy Road, Suite F*	Client: Enteros Design			Checked by: ja
Location: Petersburg, VA			*Warrenton, Virginia 20187*	Submission: May 1, 2024			Job no: 2024061
Documents Dated: April 9, 2024			*Ph 540.347.5001 Fax 540.347.5021*				
			www.downeyscott.com				
LOC REF	SYS #	UNIFORMAT SYSTEM	SPECIFICATION	QUANTITY	U/M	UNIT COST	EXTENSION

PROJECT CONSTRUCTION COST SUMMARY

McKenney Library

Basement level	**3,581.00 GSF**
1st Floor	**5,292.00 GSF**
2nd Floor	**4,349.00 GSF**
	13,222.00 GSF

CONSTRUCTION COSTS UNIFORMAT SUMMARY

		Building	**Sitework**
Demolition		194,002	0
Foundations		3,869	0
Substructure		0	0
Superstructure		51,221	0
Exterior Enclosure		398,231	0
Roofing		49,094	0
Interior Construction		367,271	0
Stairs		37,500	0
Interior Finishes		180,341	0
Conveying		126,000	0
HVAC		942,046	0
Plumbing		364,444	0
Fire Sprinkler		471,401	0
Electrical		1,076,458	0
Equipment		9,419	0
Furnishings		0	0
Special Construction		0	0
Site Preparations			0
Site Improvements			0
Utilities			50,000
Subtotal		4,271,296	50,000
General Conditions	10.00%	427,130	5,000
Subtotal		4,698,425	55,000
GC OH & Profit	5.65%	265,461	3,108
Subtotal		4,963,886	58,108
Bonds & insurance	1.87%	92,825	1,087
Subtotal		5,056,711	59,194
Design Contingency	10.00%	505,671	5,919
Subtotal		5,562,382	65,114
Escalation	6.38%	354,602	4,151
Subtotal		5,916,984	69,265
Total Project Hard Construction Costs			**$5,986,248**

Revision 1 Report: Progress Cost Report Project: McKenney Library Location: Petersburg, VA Documents Dated: April 9, 2024	*Prepared by: Downey & Scott, LLC* *6799 Kennedy Road, Suite F* *Warrenton, Virginia 20187* *Ph 540.347.5001 Fax 540.347.5021* *www.downeyscott.com*	Status: Concept Client: Enteros Design Submission: May 1, 2024	PM: dr/st/mv Checked by: ja Job no: 2024061

LOC REF	SYS #	UNIFORMAT SYSTEM	SPECIFICATION	QUANTITY	U/M	UNIT COST	EXTENSION
			Alternates				
			Alternate 1 - Excavate exterior walls to footing, waterproof walls, replace basement concrete floor, vapor barrier and below slab drainage including sump pump encapsulate crawl space			**ADD**	**$279,944**
			Alternate 2 - Option 1 Install column footings, HSS steel columns and steel framing between existing bar joist on 1st and 2nd floors for added support for archives			**ADD**	**$153,387**
			Alternate 2 - Option 2 Add top chord, web and bottom chord support to the existing bar joist on 1st and 2nd floors for added support for archives			**ADD**	**$109,171**
			Alternate cost include general conditions, GC OH&P, insurance, design contingency and escalation				

Revision 1
Report: Progress Cost Report
Project: McKenney Library
Location: Petersburg, VA
Documents Dated: April 9, 2024

Prepared by: Downey & Scott, LLC
6799 Kennedy Road, Suite F
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Ph 540.347.5001 Fax 540.347.5021
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Status: Concept
Client: Enteros Design
Submission: May 1, 2024

PM: dr/st/mv
Checked by: ja
Job no: 2024061

LOC REF	SYS #	UNIFORMAT SYSTEM	SPECIFICATION	QUANTITY	U/M	UNIT COST	EXTENSION
Building		FOUNDATIONS	Elevator pit foundation	57.75	EA	67.00	3,869.25
Building			**Foundations Div. Subtotal**				**3,869.25**
Building							
Building		SUBSTRUCTURE	Section not used	0.00	SF	12.60	0.00
Building			**Substructure Div. Subtotal**				**0.00**
Building							
Building		SUPERSTRUCTURE	Repair existing joist	0.95	TONS	9,840.00	9,348.00
Building			Structural steel to support mechanical equipment	0.48	TONS	9,840.00	4,683.84
Building			Misc. metals	0.18	TONS	9,840.00	1,753.98
Building			Misc. wood blocking and repairs	13,222.00	GSF	2.68	35,434.96
Building			**Superstructure Div. Subtotal**				**51,220.78**
Building							
Building		EXTERIOR CLOSURE	Infill exterior CMU walls with masonry veneer	614.40	SF	58.25	35,788.80
Building			Basement & elevator wall waterproofing	178.80	SF	6.50	1,162.20
Building			Repoint exposed brick veneer	419.20	SF	14.52	6,086.78
Building			Refurbish windows in original structure including temporary enclosing space (19)	396.00	SF	178.85	70,824.60
Building			Replace with replica windows (15)	333.00	SF	98.83	32,910.39
Building			Replace with aluminum windows (13)	210.00	SF	68.72	14,431.20
Building			Refurbish front doors	1.00	PR	9,860.00	9,860.00
Building			Refurbish columns	2.00	EA	7,430.00	14,860.00
Building			Single Doors, frames, hardware	3.00	EA	2,878.00	8,634.00
Building			Refurbish / replace soffit, corbels, frieze and dentil moldings	13,222.00	GSF	9.47	125,212.34
Building			Rebuild porch floor and granite steps	144.00	SF	255.00	36,720.00
Building			Refurbish front porch railings	26.00	SF	212.00	5,512.00
Building			Stucco repair	13,222.00	GSF	2.74	36,228.28
Building			**Exterior Closure Div. Subtotal**				**398,230.59**

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LOC REF	SYS #	UNIFORMAT SYSTEM	SPECIFICATION	QUANTITY	U/M	UNIT COST	EXTENSION
Building							
Building		ROOFING	Standing Seam Metal w/ insulation, flashings, gutters etc. Existing to remain				0.00
Building			PVC membrane roofing w/ insulation, cover board, flashing, coping	1,607.00	SF	30.55	49,093.85
Building			**Roofing Div. Subtotal**				**49,093.85**
Building							
Building		INTERIOR CONST	CMU partition walls	2,235.00	SF	19.35	43,247.25
Building			Mtl stud & 1 layer GWB on 1 side partitions, interior walls	7,830.00	SF	8.35	65,380.50
Building			Mtl stud & 1 layer GWB on 2 sides partitions, interior walls	3,045.00	SF	11.35	34,560.75
Building			Sound transmission control insulation	7,830.00	SF	1.53	11,979.90
Building			Spray foam insulation on all ceilings and walls encapsulating archives	12,070.00	SF	4.15	50,090.50
Building			Interior insulation crawl space and attic	6,350.00	GSF	3.20	20,320.00
Building			Interior doors single	17.00	EA	2,370.00	40,290.00
Building			Interior doors double	2.00	EA	3,460.00	6,920.00
Building			Toilet accessories	1.00	LS	7,062.00	7,062.00
Building			Base and wall cabinets including solid surface countertop	7.40	LF	950.00	7,030.00
Building			Repair plaster walls, ceiling and trim	1.00	LS	43,840.00	43,840.00
Building			General millwork	1.00	LS	36,550.00	36,550.00
Building			**Interior Construction Div. Subtotal**				**367,270.90**
Building							
Building		STAIRS	Refurbish grand entrance stairs	1.00	FL	37,500.00	37,500.00
Building			**Interior Construction Div. Subtotal**				**37,500.00**
Building							
Building		INTERIOR FINISHES	Acoustic ceiling, 2x2	5,708.00	SF	6.85	39,099.80
Building			Wall ceramic tile (4' high)	684.00	SF	14.75	10,089.00
Building			Floor ceramic tile	301.00	SF	14.50	4,364.50
Building			Tile floor preparation	301.00	SF	5.40	1,625.40
Building			Remove carpet and refinish wood floors	4,739.00	SF	6.33	29,997.87
Building			LVT floors	5,323.00	SF	8.25	43,914.75
Building			Painting - sealed concrete	363.00	SF	0.95	344.85
Building			Painting - ceilings, walls and trim	13,222.00	GSF	3.85	50,904.70
Building			**Interior Finishes Div. Subtotal**				**180,340.87**
Building							
Building		CONVEYING	3 Stop Elevators, Public	1.00	EA	126,000.00	126,000.00
Building			**Conveying Div. Subtotal**				**126,000.00**
Building							

Revision 1 Report: Progress Cost Report Project: McKenney Library Location: Petersburg, VA Documents Dated: April 9, 2024			*Prepared by: Downey & Scott, LLC* *6799 Kennedy Road, Suite F* *Warrenton, Virginia 20187* *Ph 540.347.5001 Fax 540.347.5021* *www.downeyscott.com*	Status: Concept Client: Enteros Design Submission: May 1, 2024			PM: dr/st/mv Checked by: ja Job no: 2024061
LOC REF	SYS #	UNIFORMAT SYSTEM	SPECIFICATION	QUANTITY	U/M	UNIT COST	EXTENSION
Building							
Building		PLUMBING	Demolition	13,222		1.53	20,230
Building			Plumbing Fixtures				
Building			Water Closet	6.00	EA	855.52	5,133.12
Building			Lavatory Bowl, countertop mounted	6.00	EA	560.37	3,362.22
Building			Automatic flush sensor and operator add premium	12.00	EA	276.59	3,319.08
Building			Electric Water Cooler, bi-level, bottle filler	3.00	EA	1804.86	5,414.58
Building			Mop Receptor	1.00	EA	1,037.16	1,037.16
Building			Sink	1.00	EA	871.03	871.03
Building			Refrig/Ice Maker/Dishwasher/Coffee Maker connection	3.00	EA	93.44	280.32
Building			Elevator Sump Pump	1.00	EA	8,373.15	8,373.15
Building			Trap Primer w/Soft Copper Runouts to Drains	8.00	EA	487.75	3,902.00
Building			Hydro Shock Absorbers	3.00	EA	189.30	567.90
Building			Floor Drain	8.00	EA	255.14	2,041.12
Building			Clean-out	3.00	EA	90.36	271.08
Building			Tempering Valve 1/2"	6.00	EA	189.30	1,135.80
Building			Backflow Preventer, 2" Incoming Service	1.00	EA	2,938.64	2,938.64
Building							
Building			***Domestic Water Heater***				
Building			Water Heater, gas fired	1.00	EA	9423.83	9,423.83
Building			Circulation Pump w/ Valves	1.00	EA	1216.00	1,216.00
Building							
Building			Gas Piping	13,222	GSF	6.50	85,943
Building			Domestic Water Piping	13,222	GSF	5.18	68,490
Building			DWV Piping	13,222	GSF	4.15	54,871
Building			Storm Piping (None Included)	0	GSF	0.00	0
Building			Plumbing Insulation	13,222	GSF	2.70	35,699
Building			Coordination Drawings	13,222	GSF	0.64	8,462
Building			Systems Operation & Testing/Cleaning	13,222	GSF	1.45	19,218
Building			General Requirements	1	LS	22,243.04	22,243
Building			**Plumbing Div. Subtotal**				**364,443.65**

Revision 1

Report: Progress Cost Report
Project: McKenney Library
Location: Petersburg, VA
Documents Dated: April 9, 2024

Prepared by: Downey & Scott, LLC
6799 Kennedy Road, Suite F
Warrenton, Virginia 20187
Ph 540.347.5001 Fax 540.347.5021
www.downeyscott.com

Status: Concept
Client: Enteros Design
Submission: May 1, 2024

PM: dr/st/mv
Checked by: ja
Job no: 2024061

LOC REF	SYS #	UNIFORMAT SYSTEM	SPECIFICATION	QUANTITY	U/M	UNIT COST	EXTENSION
Building							
Building		MECHANICAL HVAC	Demolition	13,222		1.28	16,858
Building		4-pipe system	HVAC Equipment	13,222	GSF	26.35	348,400
Building			Piping & Valves	13,222	GSF	10.14	134,071
Building			Ductwork	13,222	GSF	12.09	159,900
Building			Air Outlets	13,222	GSF	1.08	14,280
Building			Ductwork Accessories	13,222	GSF	0.99	13,090
Building			Insulation	13,222	GSF	4.24	56,061
Building			Temperature Controls	13,222	GSF	7.23	95,595
Building			Air & Water Balance	13,222	GSF	0.75	9,917
Building			Coordination Drawings	13,222	GSF	0.64	8,462
Building			Systems Operation & Testing/Cleaning	13,222	GSF	2.75	36,301
Building			General Requirements	1	LS	49,111.40	49,111
Building			**Mechanical Div. Subtotal**				**942,045.95**
Building							
Building		FIRE SPRINKLER	Sprinkler	13,222.00	GSF	6.09	80,522
Building			Fire Pump	1	LS	57,046.23	57,046
Building			Pre Action System	1	LS	79,000.00	79,000
Building			FM 200 System	1	LS	177,826.00	177,826
Building			Coordination Drawings	13,222	GSF	0.68	8,991
Building			General Requirements	1	LS	30,253.89	30,254
Building			Coordination Drawings	13,222.00	GSF	0.68	8,991
Building			General Requirements	1	LS	28,770.95	28,771
Building			**Fire Sprinkler Div. Subtotal**				**471,400.97**

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LOC REF	SYS #	UNIFORMAT SYSTEM	SPECIFICATION	QUANTITY	U/M	UNIT COST	EXTENSION
Building							
Building		ELECTRICAL	Demolition	13,222	GSF	1.76	23,271
Building			Switchboards				
Building			Panelboards				
Building			CT section 277/480 3p	2.00		21,353.18	42,706
Building			Main switch 277/480 3p	1.00		21,589.23	21,589
Building			Distribution section	2.00		10,585.86	21,172
Building			Breakers for distribution section	8.00		2,973.82	23,791
Building			Overcurrent protection study	1.00		15181.47	15,181
Building			Generator/Automatic Transfer Switches	1	LS	154,939.42	154,939
Building			Power Outlets	13,222	GSF	1.24	16,395
Building			Safety Cabinets & Disconnects	13,222	GSF	1.21	15,999
Building			Power Feeders	13,222	GSF	5.84	77,216
Building			Power Home Runs	13,222	GSF	4.76	62,937
Building			Power Branches	13,222	GSF	2.89	38,212
Building			Grounding/Lightning Protection	13,222	GSF	0.70	9,255
Building			Light Fixtures	13,222	GSF	12.50	165,275
Building			Light Switches	13,222	GSF	4.08	53,946
Building			Lighting Home Runs	13,222	GSF	3.91	51,698
Building			Lighting Branches	13,222	GSF	2.47	32,658
Building			Phone/Data System	13,222	GSF	5.24	69,283
Building			Security System	13,222	GSF	3.52	46,541
Building			Fire Alarm	13,222	GSF	2.75	36,361
Building			Coordination Drawings	13,222	GSF	0.64	8,462
Building			Systems Operation & Testing/Temp Power, Lighting	13,222	GSF	2.53	33,452
Building			General Requirements	1	LS	56,118.68	56,119
Building			**Electrical Div. Subtotal**				**1,076,458.32**
Building							
Building		EQUIPMENT	Kitchen appliances	1	LS	3,300.00	3,300.00
Building			Fire extinguishers	9	EA	72.00	648.00
Building			Projector screen electric 10x12	1	EA	5,471.00	5,471.00
Building			Office furnishings, sofas and chairs			*Refer to FF&E*	
Building			**Equipment Div. Subtotal**				**9,419.00**

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LOC REF	SYS #	UNIFORMAT SYSTEM	SPECIFICATION	QUANTITY	U/M	UNIT COST	EXTENSION
Building							
Building		FURNISHINGS	Archive movable storage units NIC				
Building			**Furnishings Div. Subtotal**				**0.00**
Building							
Building		SPECIAL CONSTRUCTION	Section not used				
Building			**Special Construction Div. Subtotal**				**0.00**
Building							
Building							
Building		DEMO	Select demo of interior finishes	13,222.00	GSF	6.32	83,563.04
Building			Demo elevator and elevator concrete pit floor	1.00	EA	18,400.00	18,400.00
Building			Remove windows, columns and select trim on exterior facade	13,222.00	GSF	2.79	36,889.38
Building			Demo front steps and porch flooring	144.00	SF	6.52	938.88
Building			Lead paint abatement	13,222.00	GSF	4.10	54,210.20
Building			**Demolition Div. Subtotal**				**194,001.50**
Site Work							
Site Work							
Site Work		SITE UTILITIES	Move overhead electrical to underground, includes Va Power fees	1	LS	50,000.00	50,000.00
Site Work			**Site Utilities Div. Subtotal**				**50,000.00**
Mark ups		MARK-UPS	Subtotal				4,321,295.63
Mark ups			General Conditions	10.00%			432,129.56
Mark ups			Subtotal				4,753,425.19
Mark ups			GC OH & Profit	5.65%			268,568.52
Mark ups			Subtotal				5,021,993.71
Mark ups			Bonds & insurance	1.87%			93,911.28
Mark ups			Subtotal				5,115,905.00
Mark ups			Design Contingency	10.00%			511,590.50
Mark ups			Subtotal				5,627,495.50
Mark ups			Escalation	6.38%			358,752.84
Mark ups			**Subtotal**	13,222.00	**GSF**	**$452.75**	**5,986,248.33**