Condition Assessment Report

Final Submittal

Manchester-by-the-Sea Public Library

15 Union Street - Manchester-by-the-Sea - MA 01944

May 25 2024

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Tetra Tech
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Chapter One: Executive Summary

Project Background

The Manchester-by-the-Sea Public Library (the Library), located at 15 Union Street, is listed as a contributing building in the Local Historic District and the National Register District. The Memorial Library and Grand Army Hall, completed in 1887, was designed by Charles Follen McKim, of the renowned architectural firm of McKim, Mead & White.[1] It was the firm's first library design, and one of the few completed prior to McKim's death in 1909. The Romanesque Revival structure, with rough-faced granite ashlar stone facades and slate roof, was to serve as a public library, Civil War Memorial, and meeting hall for the local chapter of the Grand Army of the Republic.

The Town of Manchester-by-the-Sea (the Town) is developing a phased capital improvements program in support of the stewardship of this significant historic structure and key community resource.

The Town retained Tetra Tech to complete a Condition Assessment Report, including multidisciplinary condition assessment, development of treatment recommendations, and an order of magnitude conceptual cost estimate for the proposed treatments.

FIGURE 1.01 - Aerial view from northeast looking southwest.

[1] Massachusetts Cultural Resource Information System - Inventory No: MAN 29, accessed on April 25, 2024.

Project Team

Town of Manchester-by-the-Sea

Nate Desrosiers, PE, Town Engineer and Facilities Manager

Manchester-by-the-Sea Public Library

Cynthia Gemmell, Library Director

Tetra Tech

Leila Hamroun, AIA, NCARB, GPCP, Senior Preservation Architect

Robert Parsons, PE

Doug Antholz, PE, Senior Structural Engineer.

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Robert Hansley, Electrical Designer

Stephen Moore, Cost Estimating

Robotics Imaging Inc - 3D Existing Conditions Documentation

Joe Chawaga, Principal

Weston Fahey, VP of Operations

One Way Painting & Roofing GC

Christos Moschopoulos

FIGURE 1.02 - Tower flat roof under cupola - View from west looking east.

Process

Task 1. Kick-off Meeting and Fieldwork

Representatives of the Town, the Public Library, and Tetra Tech, met for a virtual kick-off meeting on 27 March 2024, to discuss project parameters, coordination protocol, regulatory requirements, and deliverables. This meeting was followed by status update meetings on 26 April, 09 May, 17 May, and 21 May, 2024.

Representatives of Robotics Imaging visited the site on 29 March 2024 to conduct 3D Laser scan-to-point cloud scanning and tripod based photogrammetric imaging. On 09 April 2024, representatives of Tetra Tech and One Way Painting and Roofing visited the site to conduct fieldwork to document the building and assess current conditions. Tetra Tech continued the condition assessment on 10 April 2024.

Exterior field conditions were observed from the ground and from a ladder provided by One Way Roofing & Painting. Interior field investigations were conducted from the ground.

Task 2. Comprehensive Condition Assessment Report

The scope of work includes a Comprehensive Condition Assessment Report laying out the parameters for the proposed remediation treatments. The report includes:

- Existing conditions measured base drawings
- Structural assessment
- Architectural assessment, including building code compliance
- Mechanical, electrical and plumbing systems assessment
- Barrier-free accessibility assessment.

The purpose of the Comprehensive Conditions Assessment is to provide the basis for treatment recommendations for the maintenance and preservation of this historic building, and support expansion and renovation efforts. The ultimate goal is to retain, to the greatest extent possible, the Library's historic appearance and fabric while providing code compliant amenities and an enhanced user experience.

Task 3. Order of Magnitude Cost Estimate

The Condition Assessment treatment recommendations served as the basis for an order of magnitude cost estimate addressing the proposed scope of work, with pricing incorporating factors such as construction sequencing, local labor agreements, productivity factors, current bidding climates, material availability, indirect costs, anticipated escalation, and necessary contingencies.

The cost estimate include allowances for concealed conditions beyond the standard percentages, based on the findings of the condition assessment.

FIGURE 1.03 - Library main entrance.

FIGURE 1. 04 - Reference Room - view from east looking west.

Introduction to Facility

The following is an excerpt from the February 2014 Massachusetts Historical Commission Survey Inventory Form B for the *Memorial Library and Grand Army Hall*, prepared by the Community Opportunities Group.[1]

> *Designed in an L-shape plan, the Manchester Memorial Library building rises from a granite foundation and is capped by a cross-gabled slate roof pierced by two massive chimneys. The building is modest in scale in keeping with the scale of adjoining buildings on Union Street. The building's three original uses – library, memorial, and gathering hall - are reflected in the building's exterior form with a projecting one and one-half story end-gabled section (library), central two-story tower (memorial), and single-story side gabled section (GAR hall).*
>
> *The Library's asymmetrically designed façade (north) is simply detailed with the irregular pattern and rough finish of the granite ashlar providing most of the wall ornamentation. The end gable library wing (west) features three rectangular windows with square transoms above. This block is physically connected to the adjoining tower section by a Richardsonian arched entrance, which leads to two large paneled oak doors. The two-story square tower features a circular clock face on the second story and two narrow, asymmetrically-placed windows on the first and second stories. The tower is capped by a slate-covered domed cupola supported by arched openings. The cupola is finished with an original weather vane, which local newspapers in the 1880s reported as a replica of the Mayflower. The Library's façade is completed by the side-gabled wing (east), which features three symmetrically-spaced double-hung six-over-six windows and a dormer on the roof slope.*
>
> *The west elevation of the Library features a single Palladian window. In addition to its Classical reference, this design feature echoed a Palladian window that existed on the east elevation of the adjoining Congregational Church elevation in 1886, which has since been removed. The Library's east elevation features a series of five narrow windows designed to illuminate interior book stacks and a tri-part window located at the rear northeast corner that provides light to the reading area.*
>
> *The Library is surrounded by a low granite block wall, which is original to the property. Plantings on the property are later additions.*

The building is a contributing resource in the Manchester-by-the-Sea Local Historic District established in 1975, and the National Register Historic District designated in 1990.

Building Location

The Library is located at 15 Union Street, in Manchester-by-the-Sea, MA. The property is bound by Union Street to the north, Chapel Lane to the east, Church Street to the west, and a private alley and adjacent residential properties to the south.

Primary access to the Library is off Union Street, with barrier-free access provided by a ramp to the Children's Room addition entrance along Church Street. Secondary access to the Library and addition is also provided through a service entrance on the south elevation, next to the addition's west egress door.

Purpose and Scope of Project

The goal of this project is to assess the current condition of the Library, provide prioritized recommendations for treatments and prepare an order of magnitude conceptual cost estimate for capital improvement planning purposes. All work must comply with the Secretary of the Interior Standards for the Treatment of Historic Properties, and the Secretary of the Interior Standards for Archeology and Historic Preservation.

[1] Massachusetts Cultural Resource Information System - Inventory No: MAN 29, accessed on April 25, 2024.

FIGURE 1.05 - Historic Postcard - c. 1910.

FIGURE 1.06 - Historic Postcard - c. 1908"

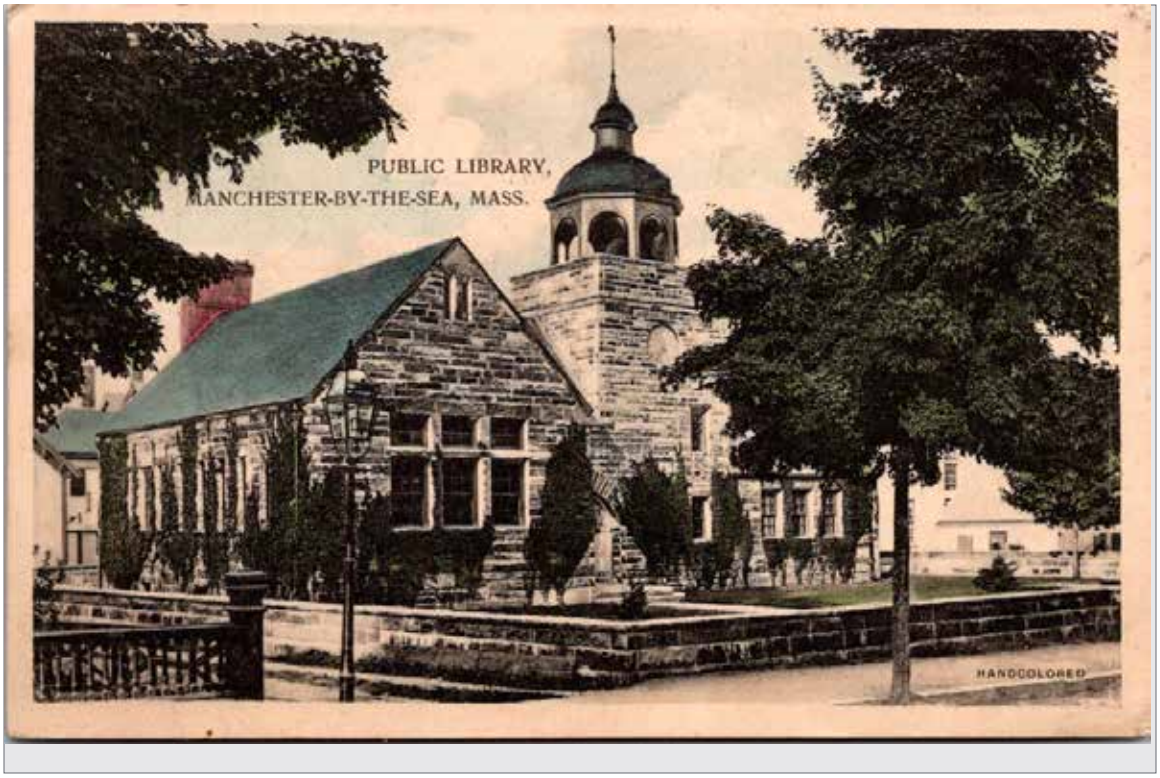


FIGURE 1.07 - Historic Postcard - c. 1917.

FIGURE 1.08 - Manchester-by-the-Sea Historic District Map with Library pin - https://maps.mhc-macris.net/- accessed 04/25/2024

Current Use

The stated mission of the Manchester-by-the-Sea Public Library is to be (...) *inclusive; an engaging and evolving civic hub for all. Sustaining community connections and innovative opportunities, the welcoming environment is a place of discovery and enrichment for all on the continuum of learning.*[2]

The Library provides access to books, audio-books, music CDs, magazines, and videos. It also allows in-library use of computers, printers, scanners and fax, and access to laptops and tablets.

[2] https://www.manchesterpl.org/about/mission/- accessed May 14, 2024.

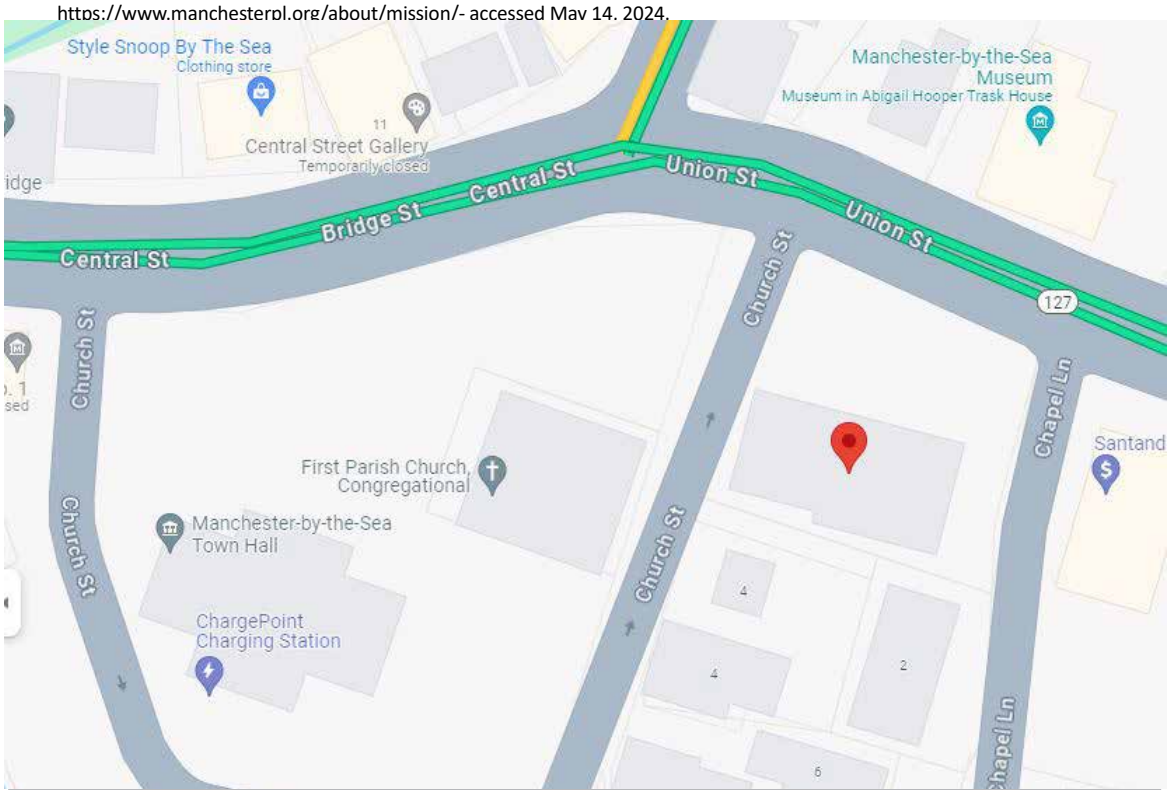


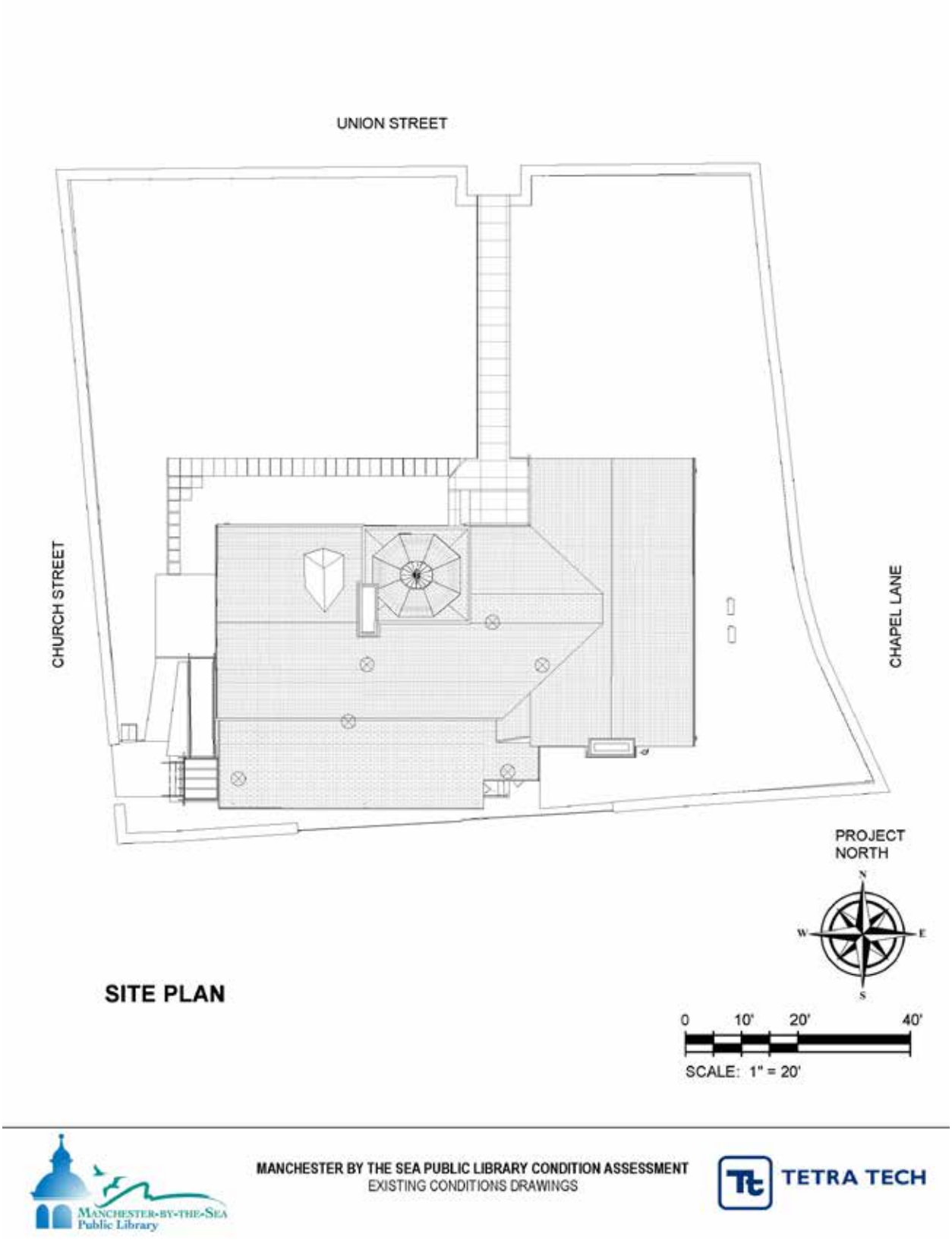
FIGURE 1.09 - Street map (above) and aerial view (lower right)

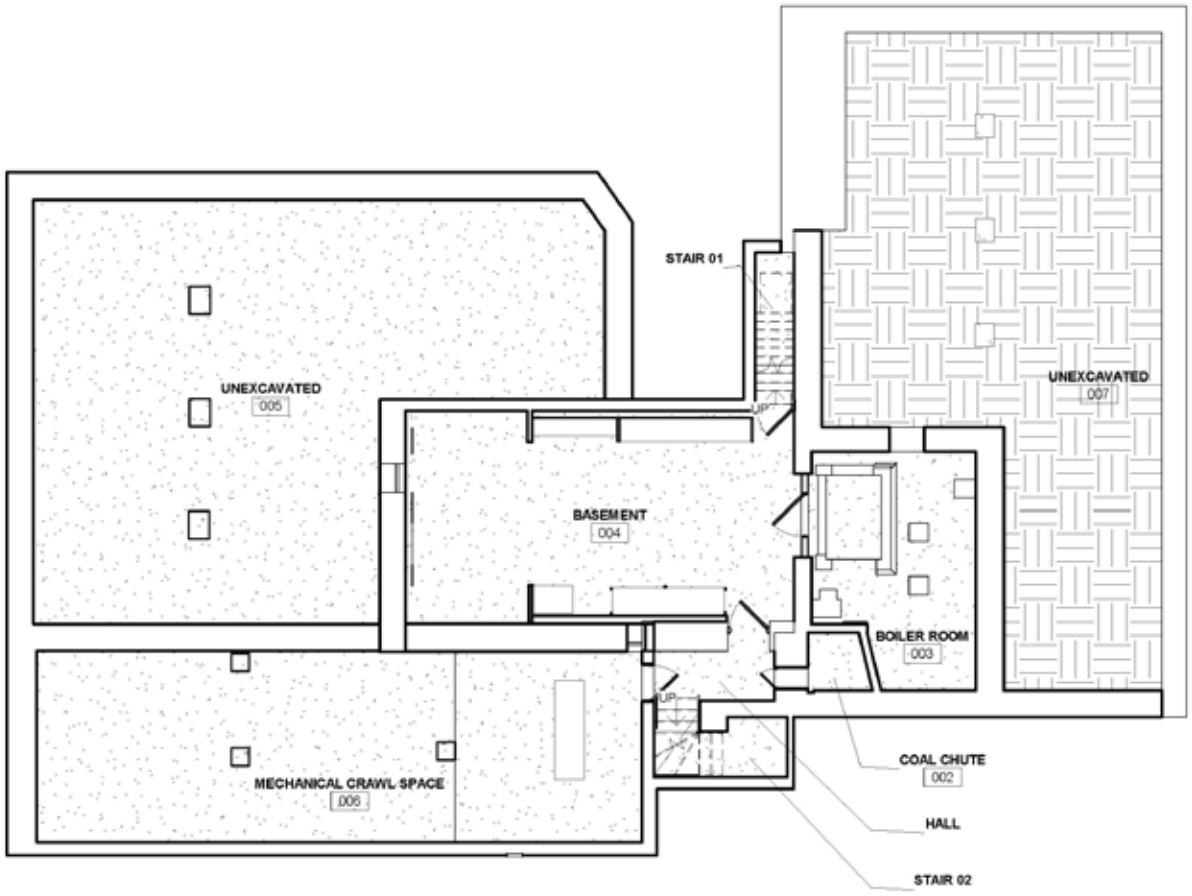
Acknowledgments

The authors wish to thank Town and Library personnel for providing all available background information, supporting the logistics of field assessments, accommodating schedule constraints, and graciously accepting the Tetra Tech team's intrusions during documentation and condition assessment activities.

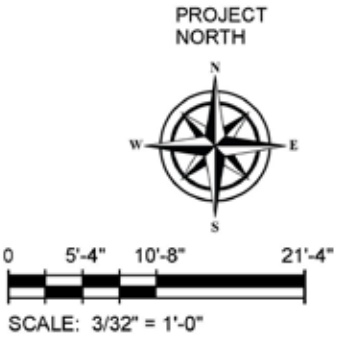
FIGURE 1.10A - Existing conditions drawing - 3D model - Union Street and Church Street elevations, view from northwest looking southeast.

FIGURE 1.10B - Existing conditions drawing - 3D model - Chapel Lane and rear (south) elevations, view from southeast looking northwest

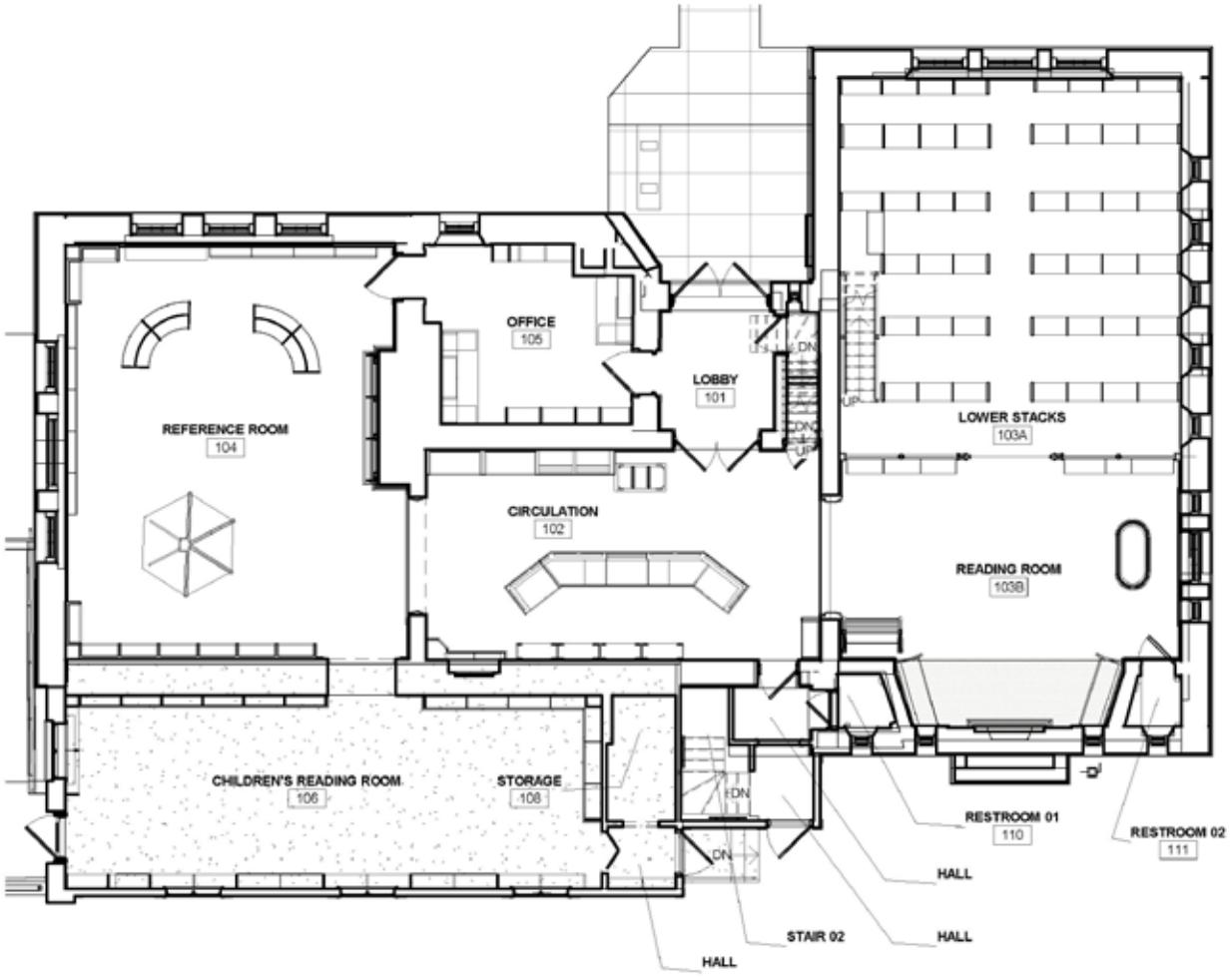

UNION STREET
CHURCH STREET
CHAPEL LANE
PROJECT NORTH
N
W
E
S
0
10'
20'
40'
SCALE: 1" = 20'
SITE PLAN
MANCHESTER BY THE SEA PUBLIC LIBRARY CONDITION ASSESSMENT
EXISTING CONDITIONS DRAWINGS
MANCHESTER-BY-THE-SEA Public Library
TETRA TECH



BASEMENT LEVEL PLAN



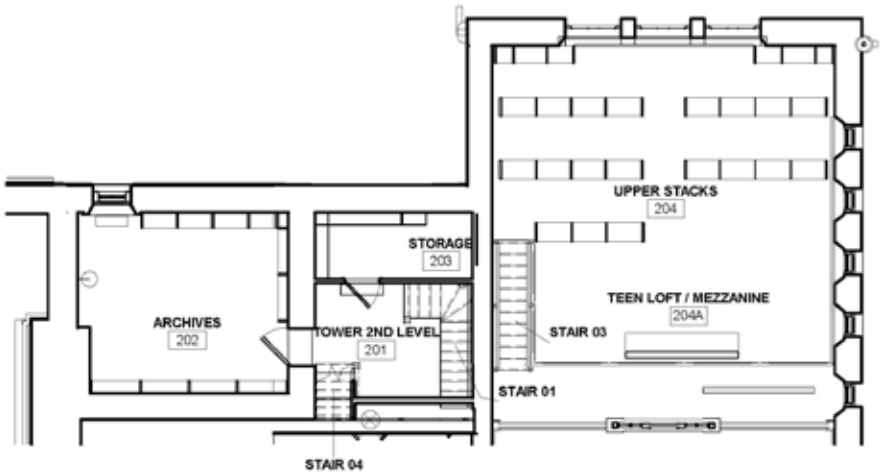
MANCHESTER BY THE SEA PUBLIC LIBRARY CONDITION ASSESSMENT
EXISTING CONDITIONS DRAWINGS



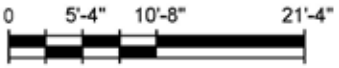
LEVEL 1 PLAN

MANCHESTER BY THE SEA PUBLIC LIBRARY CONDITION ASSESSMENT
EXISTING CONDITIONS DRAWINGS

TETRA TECH



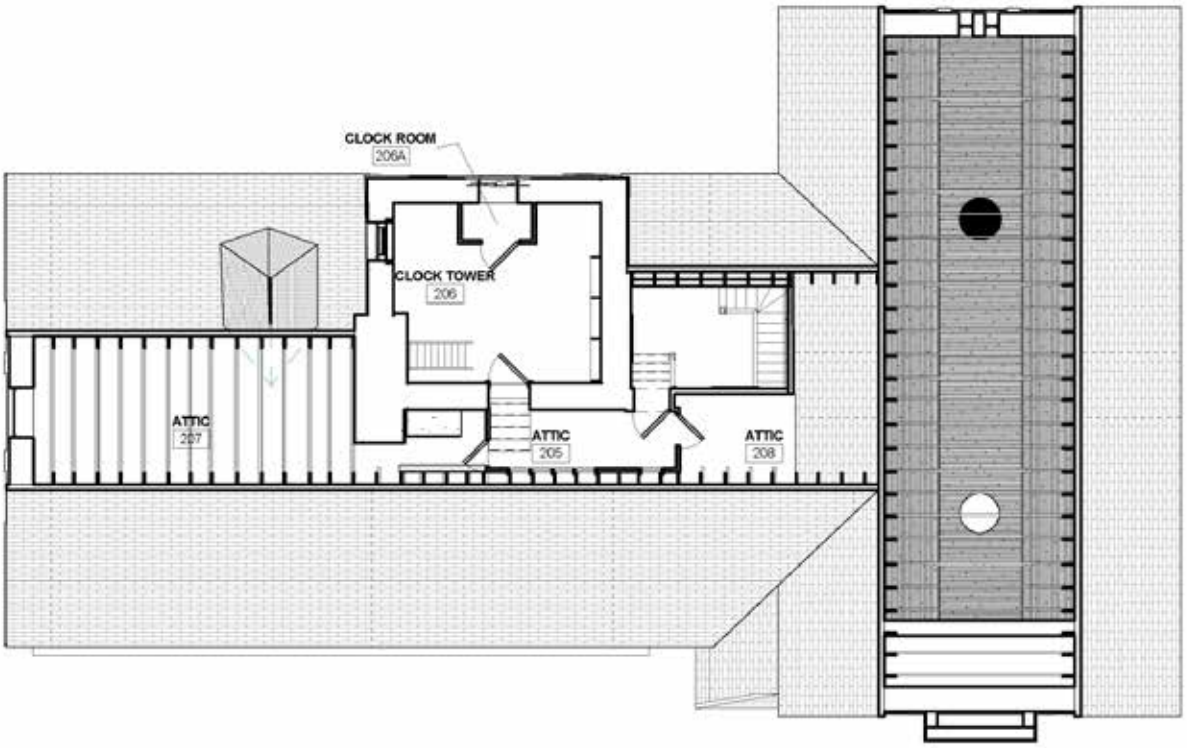
LIBRARY STACKS / TOWER 2ND LEVEL PLAN



SCALE: 3/32" = 1'-0"

MANCHESTER BY THE SEA PUBLIC LIBRARY CONDITION ASSESSMENT
EXISTING CONDITIONS DRAWINGS

TETRA TECH



PROJECT NORTH

N
W
E
S

0 5'-4" 10'-8" 21'-4"

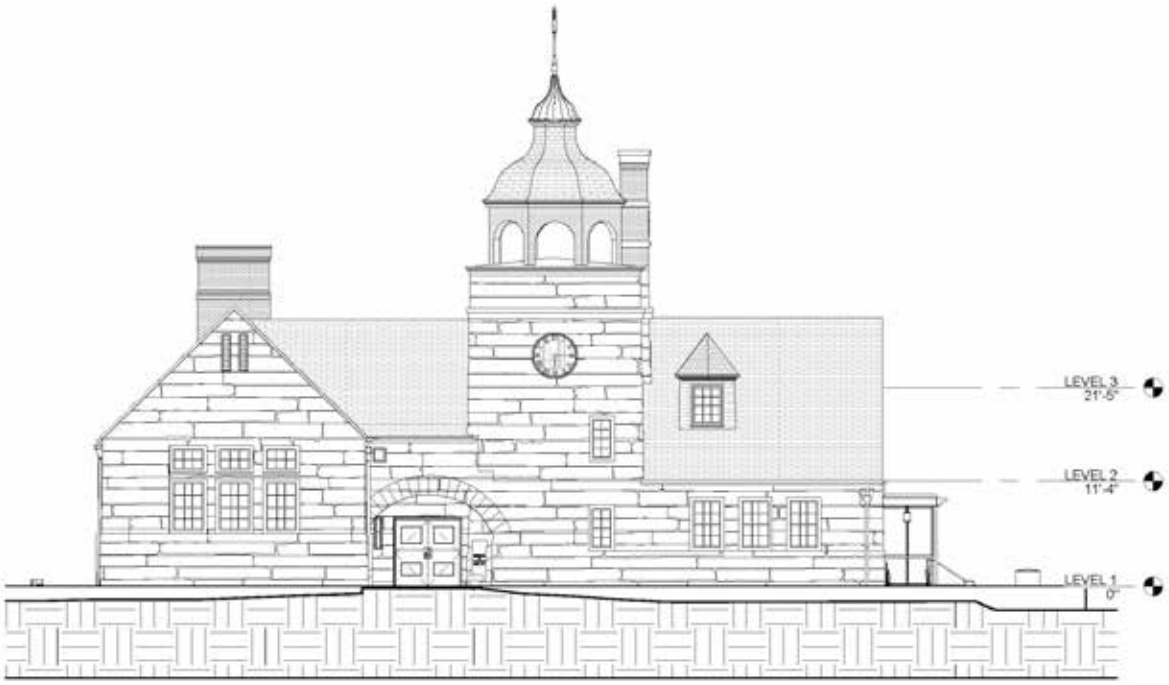
SCALE: 3/32" = 1'-0"

ATTIC LEVEL PLAN

MANCHESTER BY THE SEA PUBLIC LIBRARY CONDITION ASSESSMENT
EXISTING CONDITIONS DRAWINGS

Manchester-by-the-Sea Public Library

TETRA TECH



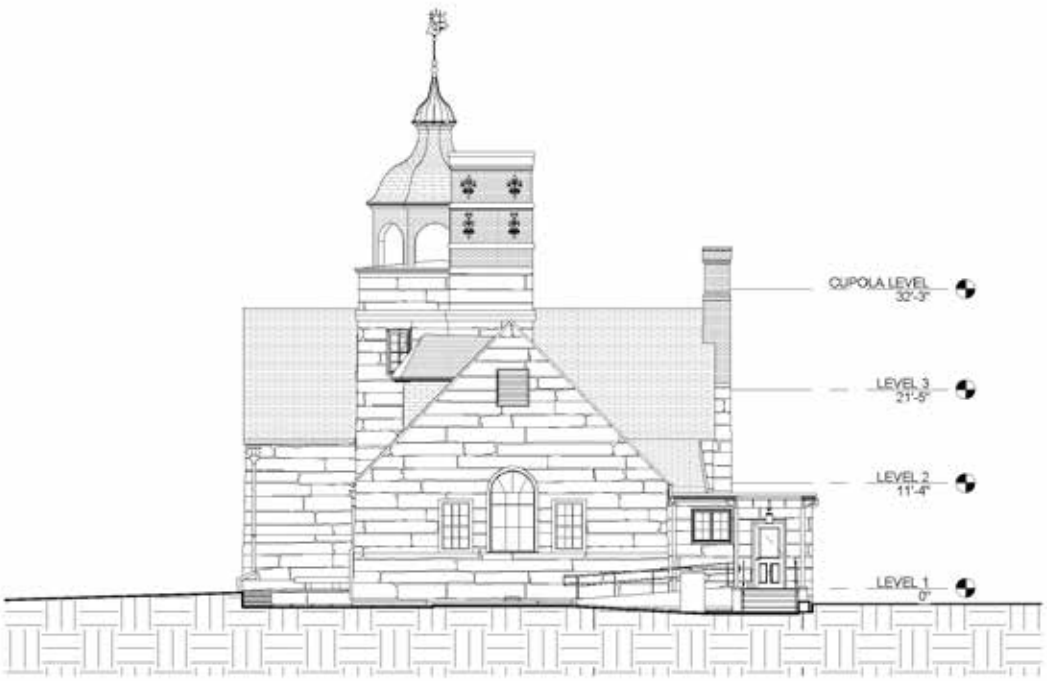
NORTH ELEVATION

0 8' 16' 32'

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

MANCHESTER BY THE SEA PUBLIC LIBRARY CONDITION ASSESSMENT
EXISTING CONDITIONS DRAWINGS

TETRA TECH



WEST ELEVATION

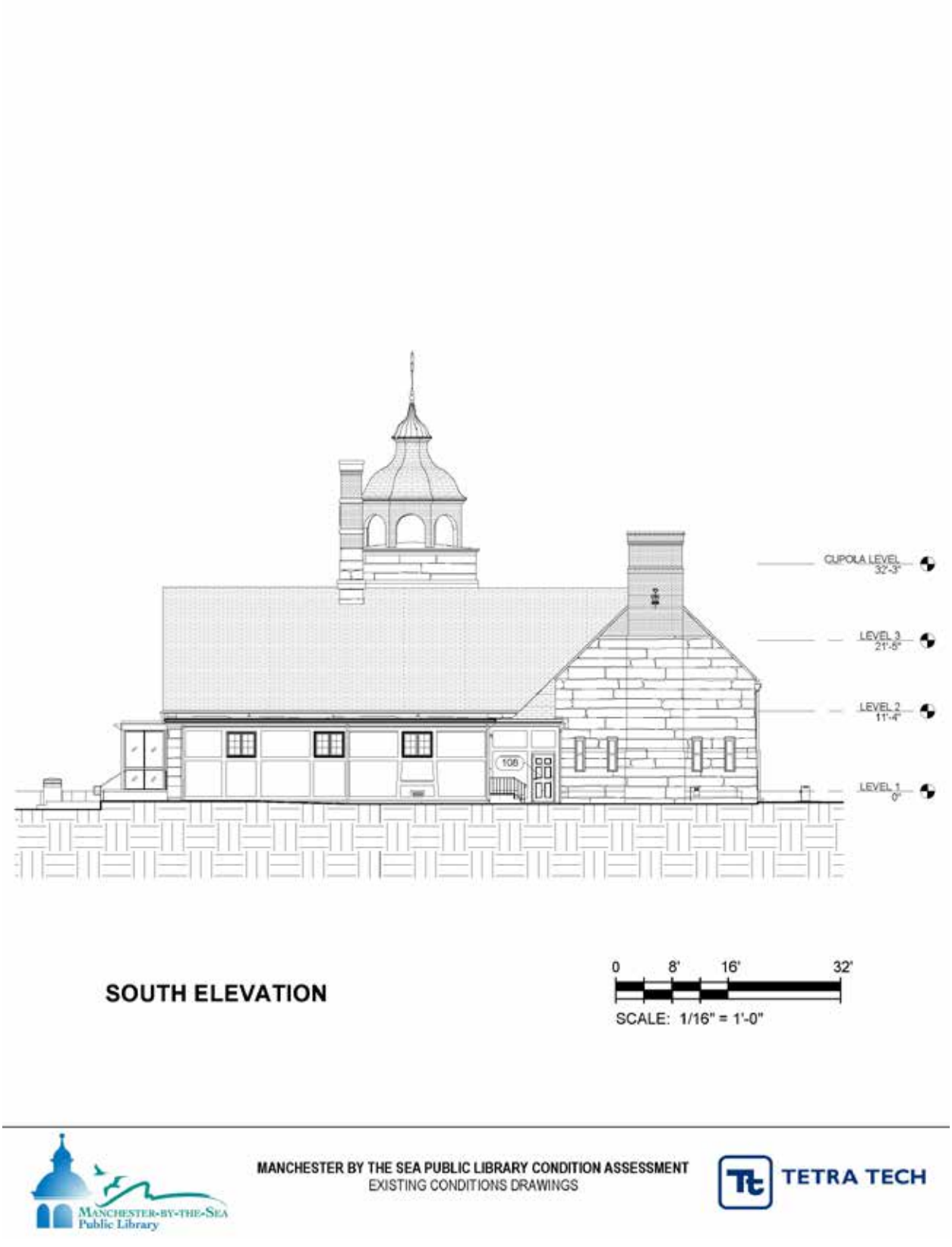
0 8' 16' 32'

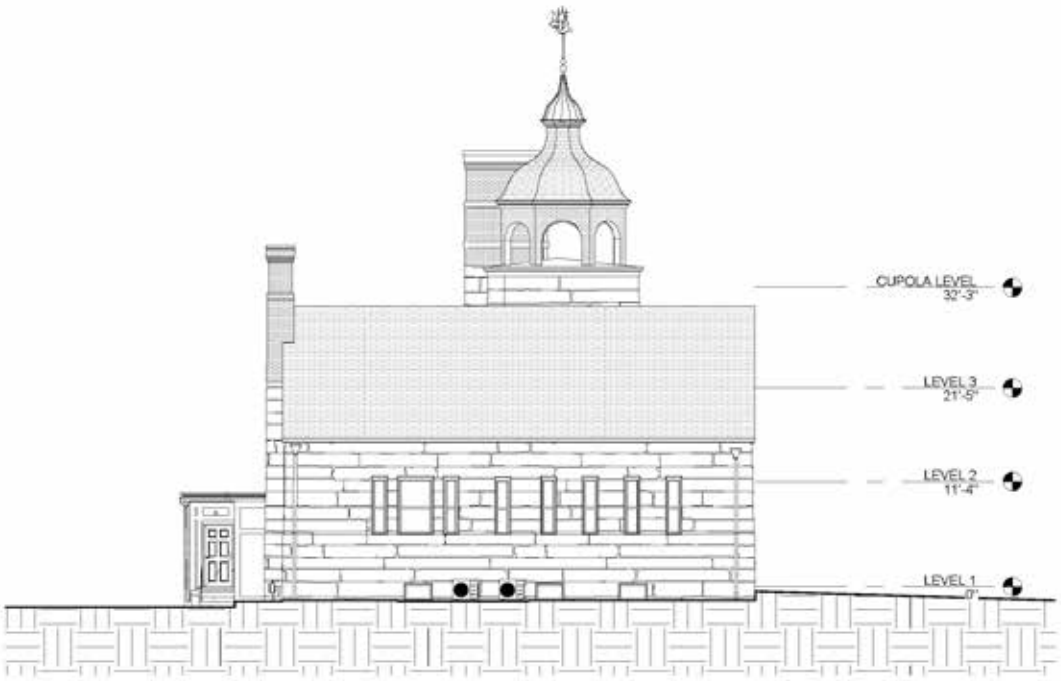
SCALE: 1/16" = 1'-0"

MANCHESTER BY THE SEA PUBLIC LIBRARY CONDITION ASSESSMENT
EXISTING CONDITIONS DRAWINGS

MANCHESTER-BY-THE-SEA Public Library

TETRA TECH


CUPOLA LEVEL
32'-3"
LEVEL 3
21'-5"
LEVEL 2
11'-4"
LEVEL 1
0"
105
SOUTH ELEVATION
0
8'
16'
32'
SCALE: 1/16" = 1'-0"
MANCHESTER BY THE SEA PUBLIC LIBRARY CONDITION ASSESSMENT
EXISTING CONDITIONS DRAWINGS
Manchester-by-the-Sea Public Library
TETRA TECH



EAST ELEVATION

0 8' 16' 32'

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

MANCHESTER BY THE SEA PUBLIC LIBRARY CONDITION ASSESSMENT
EXISTING CONDITIONS DRAWINGS

MANCHESTER-BY-THE-SEA Public Library

TETRA TECH

Chapter Two: Methodology and Chronology

Organization of Report

This report is a planning document for eventual capital improvements of the Manchester-by-the-Sea Public Library building, to provide appropriate stewardship of this historic resource.

Chapter 1 - Executive Summary

Contains background information on the project as well as the project team and process. This includes an overview of the building's history and significance.

Chapter 2 - Methodology and Chronology

Provides a summary outline of the report and the methodology for its development, and includes a brief chronology of the building's construction, the history of its modifications, historic documentation, and as-built drawings.

Chapter 3 – Assessment

Includes a description of the building and a condition assessment of the structure. The assessments are organized in the following categories: site; foundation and exterior walls; roof; structural systems; openings, interior finishes; mechanical systems; electrical systems; plumbing systems, and building code compliance.

Chapter 4 - Design Philosophy & Treatment Recommendations

Provides the preservation philosophy that will guide the design based on the Library's historic significance and integrity, and the proposed prioritized recommendations for rehabilitation informed by the consultant team site visit. These proposed treatments informed the opinion of probable cost included in the appendices.

Appendices

A. Structural Assessment Report
B. Barrier-Free Restrooms Study
C. Cost Estimate Report
D. Glossary

Report Methodology

The information presented in this section is intended to educate and inform the reader about the process and methodology that was used to evaluate and assess the conditions and materials documented within this report. The scope of work included the following tasks: field research and documentation, inspection and condition assessment and architectural documentation. These tasks are briefly described below:

Field Research and Documentation

The consulting team researched and gathered existing available background documents and drawings to inform the condition assessment and support the preparation of as-built drawings to be used for the depiction of the recommended rehabilitation design treatments.

Inspection and Condition Assessment

Field inspections and condition assessments were conducted. Maintenance deficiencies were determined, and rehabilitation and treatment recommendations were developed.

Architectural Documentation

The team utilized 3D scanning and virtual imaging to create existing condition drawings in 3D BIM via Revit software.

On Site Research

Scanning and virtual imaging were conducted over the course of one day on 29 March 2024. Conditions at the Library were field investigated over the course of two days on 9 and 10 April 2024. The environmental conditions were typical for spring weather in Manchester-by-the-Sea, MA. The temperatures ranged from mid-40s to mid-50s-degrees Fahrenheit with clear skies on April 9, and cloudy skies on April 10.

The condition assessment examinations were visual and exploratory in nature, primarily focusing on the architectural, structural and mechanical, electrical and plumbing (MEP) systems of the building. Limited site components were also reviewed (barrier-free access, vegetation at building perimeter, paved walkway). The goal of the examination was to determine the condition of the existing building components and historic fabric and to establish the current needs for stabilization and repair, as well as potential code compliance remediation treatment recommendations. The examinations were made from the ground as well as a ladder lift provided by One Way Roofing & Painting, a roofing contractor who had worked on the building recently, and various other tools and measuring devices.

Note:

- *The structure was NOT evaluated for the presence, locations, and quantity of suspected asbestos-containing materials (ACM) that would require abatement in accordance with the National Emissions Standards for Hazardous Air Pollutants (NESHAP) as adopted by the U.S. Environmental Protection Agency (EPA) prior to any renovation or demolition activities.*
- *The structure was NOT evaluated for presence, quantity, and locations of suspected lead-based paint (LBP) exceeding lead hazard levels.*
- *The structure was NOT evaluated for the presence of any other hazardous waste and hazardous materials within the structure.*

Chronology of Construction

Overview

The Chronology of Construction provides an overview of the sequence of changes to significant architectural features of the Library. The following chronology is based on findings from the Communities Opportunities Group *Massachusetts Historical Commission Inventory Form B*, supplemented by a review of field conditions.

Campaigns of Work

Major alterations to the Library have been limited to two campaigns impacting the appearance and integrity of the structure (bolded below). Other campaigns included providing barrier-free access and systems upgrades.

- **1887 First Build, or original construction.**
- **1965 Second Build, addition of the Children's Room to the rear of the building.**
- Rebuilding of stacks as double-level stacks with mezzanine (date unknown)
- 2003 Third Build, building systems upgrades.

- 2012 Fourth Build, Children's Room renovations and accessibility improvements.
- 2018 Fifth Build, mezzanine Teen Loft modifications.
- 2021 Fifth Build, air handling units replacement.

Historic Significance and Integrity

Significance

The Library is listed as a contributing resource to the Local Historic District and the National Register Historic District. The Massachusetts Historical Commission *Cultural Resource Inventory Form*[1] notes its prominent location at the entrance to the commercial district of Manchester Village, in a cluster of historic civic and institutional buildings including Congregational Church, the Historical Society Museum and Town Hall.

The Inventory Form (MAN 29) notes that

> *The Manchester Memorial Library and GAR Hall was completed in 1887 to serve as a public library, Civil War Memorial, and meeting hall for the local chapter of the Grand Army of the Republic (GAR). (...) This building represents the first library designed by Charles Follen McKim (1847-1909), a member of the renowned architectural firm of McKim, Mead & White, and reflects both McKim's early training in the office of H. H. Richardson beginning in 1871 and the modern library ideals promoted by librarian William Frederick Poole during the mid-1880s.*
>
> *The Romanesque Revival style structure, built of rough-faced granite ashlar stone, displays a quiet but prominent presence in the center of Manchester. When constructed, the stone exterior, slate roof, and Romanesque features were unique in a streetscape of wood clapboard Federal and Second Empire style churches, residences, and commercial buildings in the center of the town. In 1929, after Manchester's last Civil War veteran passed away, the GAR portion of the building was converted to library purposes. By the 1960s, the Memorial Hall portion of the building was retrofitted to house the library's main reference desk. A new Children's Room was added to the rear of the building in 1965. Despite these changes, the Library retains most of its original design features and is a well-preserved example of the style and type of public libraries constructed during the last quarter of the 19th century.*
>
> *(...) The interior of the Library is well-preserved, retaining many of the design elements from the building's original inception as a library, memorial, and hall. The three distinct interior spaces are visually connected by the use of red Roman brick for all interior walls, a popular design element used by McKim, Mead & White in many later designs.*

The Inventory Form notes the Library is significant in the areas of architecture, community planning, government and military, combining cultural and patriotic purpose:

> *The Manchester Memorial Library and GAR Hall was McKim, Mead & White's first library design. Although the firm went on to design another 16 libraries, most were completed after McKim's death in 1909. Of all the firm's commissions, Manchester's library is arguably the most Richardsonian in design and demonstrates the firm's experimentation with massing and the use of abstract geometric forms. McKim completed the Manchester Memorial Library at the same time that the firm began working on one of its greatest Neoclassical designs, the Boston Public Library in 1887.*
>
> *(...) The decision by Manchester to construct a combined public library and Civil War memorial reflected a nationwide interest in memorializing the Civil War. The benefactor, T. J. Coolidge, had his own personal, if somewhat conflicted, connection with the war - his brother had served as a Union soldier and was killed in battle, while his uncle had served as a Confederate General in Virginia. (Coolidge's mother, the granddaughter of Thomas Jefferson, grew up at Monticello and his maternal family had deep ties to the South.) Manchester's Memorial Hall was designed as a solemn monument to honor*

[1] Ibid Note 1, page 01

the memory of the town's 23 Union soldiers who died in the war. Manchester's decision to construct a public library also reflected a growing interest in the creation of public library buildings after the Civil War, spurred in part by the passage of public library laws during the 1870s. In 1885, librarian William Frederick Poole published a recommended floor plan for small public libraries to ensure easily accessible and well-ventilated stacks, a plan that McKim adapted for Manchester's library design.

Integrity

The National Register of Historic Places Bulletin 15 "How to Apply the National Register Criteria for Evaluation" was used to evaluate the integrity of the West Pavilion. Bulletin 15 defines "integrity as the ability of a property to convey its significance. Integrity is the authenticity of a historic resource's physical identity evidenced by the survival of characteristics existing during the resource's period of significance". Integrity involves seven aspects including location, design, setting, materials, workmanship, feeling and association. To retain historic integrity, a property will always possess several, and usually most, of the original aspects.

The Library retains a high level of integrity in all seven aspects:

Location

Location is the place where the historic property was constructed or the place where the historic event occurred. The Library remains in its original location and has not been moved.

Design

Design is the combination of elements that create the form, plan, space, structure, and style of a property. The overall design of the Library is essentially intact; modifications made over time, including changes in use of the GAR Hall to library space in 1927, do not adversely affect the original design.

Setting

Setting is the physical environment of a historic property, constituting topographic features, vegetation, man-made features, and relationships between buildings or open space. The Library remains in its original location and its relationship with adjacent buildings remains largely unchanged.

Materials

Materials are the physical elements combined or deposited during a particular period and in a particular pattern or configuration to form a historic property. The integrity of the Library is intact because of the presence of a large amount of the original historic fabric, including roofing, exterior masonry walls, windows and doors, and interior finishes.

Workmanship

Workmanship is the physical evidence of the crafts of a particular culture, people, or artisan during any given period in history or pre-history. The overall workmanship at the Library is intact with the retention of the exterior building envelope, doors and windows, and interior finishes.

Feeling

Feeling is a property's expression of the aesthetic or historic sense of a particular period. Exterior and interior feeling of the Library remains unchanged.

Association

Association is the direct link between an important historic event or person and a historic property. The Library retains its direct link and association as a community resource and civic building.

Chapter Three: Condition Assessment

Standard Conditions Assessment Definitions

The Condition Assessment uses a hybrid of three different rating scales used by Tetra Tech in previous Historic Structure Reports: qualitative condition rating (the National Park Service standards good/fair/poor), maintenance deficiency rating (critical/serious/minor), and facility condition assessment grading (a Department of Veterans Affairs standard from A to F).

The NPS Qualitative Condition Rating System (good/fair/poor) meshes well with the VA Facility Condition Assessments (A-F) as the definitions for each grade fall within a spectrum of good/fair/poor. The maintenance deficiency rating evaluates conditions on a prioritized scale. Rather than provide separate evaluations, this report merges the three systems for a more nuanced assessment.

NPS Qualitative Condition Rating System

Good
This rating indicates that:
• Routine maintenance should be sufficient to maintain the current condition; and/or
• A cyclic maintenance or repair/rehabilitation project is not specifically required to maintain the current condition or correct deficiencies.
Fair
This rating indicates that:
• The feature generally provides an adequate level of service to operations; but
• The feature requires more than routine maintenance attention.
• This rating also indicates that cyclic maintenance or repair/rehabilitation work may be required in the future.
Poor
This rating indicates that the feature is in need of immediate attention. This rating also indicates that:
• Routine maintenance is needed at a much higher level of effort to meet significant safety and legal requirements;
• Cyclic maintenance should be scheduled for the current year and/or
• A special repair/rehabilitation project should be requested consistent with the facilities requirements, priorities, and long term management objectives.

Hybrid Evaluation Matrix

NPS QRS	VAFCA		Maintenance Deficiency	
Condition	**Grade**	**Definition**	**Priority**	**Definitions**
Excellent	A	Like New condition. Majority of useful life span remains. "Excellent."	None	No Maintenance Required.
Good	B+	Very Good condition. Over half of useful lifespan remains.	Minor	This rating indicates standard preventative maintenance practices and preservation methods have not been followed; or There is reduced life expectancy of affected adjacent or related materials and/or systems within 5 to 10 years and beyond; or There is a condition with a long-term impact within 5 to 10 years and beyond."
	B	Good condition. Over half of useful lifespan remains.		
Fair	C+	Above average condition.		
	C	Average condition. Less than half of the useful life span remains. "Fair."		
Poor	C-	Below Average. Workable condition. May be past half the assigned useful life span, but still working. "Keep an eye on it."	Serious	This rating defines a deteriorated condition that if not corrected within 1 to 5 years will result in the failure of the feature; or A threat to the health and/or safety of the user may occur within 1 to 5 years if the ongoing deterioration is not corrected; or There is ongoing deterioration of adjacent or related materials and/or features as a result of the feature's deficiency.
	D	Poor Condition. Past assigned useful life. Failure of the element is not critical. "Poor" or "Problematic."		
Critical	F	Critical Condition. Needs immediate attention. “Failing” or “Critical.”	Critical	This rating defines an advanced state of deterioration which has resulted in the failure of a feature or will result in the failure of a feature if not corrected within 1 year; or There is accelerated deterioration of adjacent or related materials or systems as a result of the feature’s deficiencies if not corrected within 1 year; or There is an immediate threat to the health and/or safety of the user; or There is a failure to meet a legislated requirement."

Department of Veterans Affairs Facility Condition Assessments

Grade	Definition
A	Like New Condition. Majority of useful life span remains. "Excellent."
B+	Very Good condition. Over half of useful lifespan remains.
B	Good condition. Over half of useful lifespan remains.
C+	Above Average condition.
C	Average condition. Less than half of the useful life span remains. "Fair."
C-	Below Average. Workable condition. May be past the assigned useful life span, but still working. "Keeping an eye on it".
D	Poor condition. Past assigned useful life. Failure of the element is not critical. "Poor" or "Problematic."
F	Critical Condition. Needs immediate attention. "Failing" or Critical."

Summary Assessment Charts

At the end of every assessment section, a quick reference chart is provided to summarize the assessment ratings of the major components of the various building systems. Refer to the sample chart below:

Name of Building System

XXX - Quick Assessment Chart

	Excellent	Good		Fair		Poor		Critical
	A	B+	B	C+	C	C-	D	F
	None	Minor				Serious		Critical
Component within system		✓						
Component within system			✓					
Component within system								
Component within system				✓				
Component within system						✓		

Various components within system

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Site

Overview

The Library is located at 15 Union Street, parcel number 45 0 30, outside of the flood plain. The building sits on the southern half of the 0.3411 acre parcel, which is bordered by Union Street to the north, Chapel Lane to the east, parcels number 45 0 6 and 45 0 8 to the south, and Church Street to the west. The parcel is surrounded by a low granite block wall on the north, east, south and west elevations (portions of the east and south walls have been replaced with wrought iron railing).

Primary access to the building is from Union Street, via a concrete walkway that leads to the front entrance; secondary barrier-free access is provided along Church Street, at the southwest corner entrance to the Children's Room. The Main entrance is connected to the west side entrance by a bluestone-paved walkway that follows the north elevation to the west, rounds the corner and connects with the ADA ramp and stairs leading to the Children's Room. Both stair and ramps have 1 ½" painted galvanized steel handrail and 1" square painted galvanized posts. The ramp and stair cheek walls are painted concrete capped with granite coping matching the main elevation. There is a short two-course retaining wall along the south end of the entrance landing.

Historic photographs[1] show a site with minimal plantings, and two steps at the main entrance. Modifications over time include the addition of trees and landscaping, and adjustments of grades to eliminate the two steps at the entrance.

Assessment

The assessment of the overall site was not part of the scope of this project. However site conditions adjacent to and affecting the Library were documented, including perimeter wall and walkways. Assessment findings are summarized in the table below, with more detail provided in the exterior envelope walls section.

Site Summary Assessment

	Excellent	Good		Fair		Poor		Critical
	A	B+	B	C+	C	C-	D	F
	None	Minor				Serious		Critical
Site Walls (typical)				✓	✓			
Site Wall (South elevation)				✓		✓		
South Wall Metal Railing			✓					
Concrete Walkway		✓	✓					
Bluestone Walkway			✓	✓		✓		
Stair/Ramp Cheek Walls					✓	✓		
Stair/Ramp Railing			✓	✓				
Vegetation		✓	✓					

[1] *Behind the Wall - One Hundred Years of the Manchester Public Library*, Friends of the Manchester Public Library, 1987, page 4

FIGURE 3.1 - Aerial site view from north looking south..

FIGURE 3.2 - North perimeter wall - view from Union Street looking south.

FIGURE 3.3 - Perimeter wall - typical conditions (north elevation)"

Figure 3.4 - South perimeter wall

Figure 3.05 Perimeter wall - vegetation growth

Figure 3.06 Perimeter wall - biological growth.

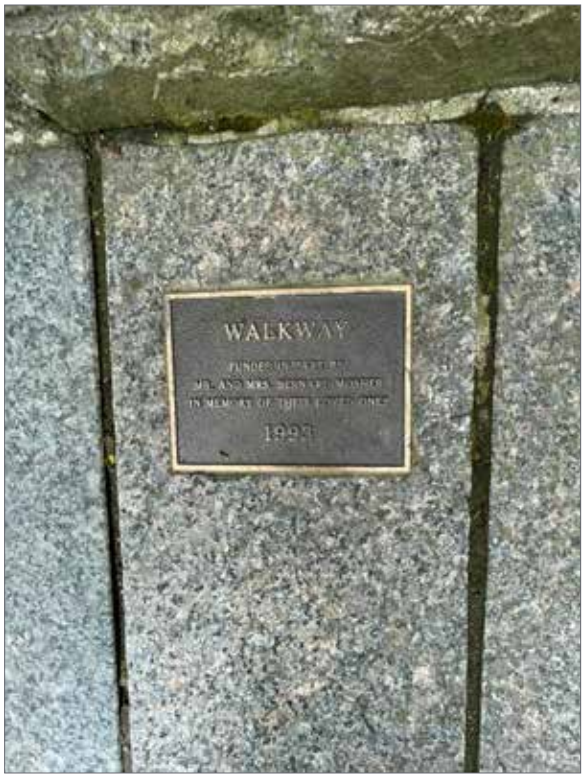

Figure 3.07 New concrete entrance walkway commemorative plaque - c. 1990s

Figure 3.08 Bluestone paving and concrete paving beyond - north elevation.

Figure 3.09 Bluestone paving and displaced retaining wall at west entrance

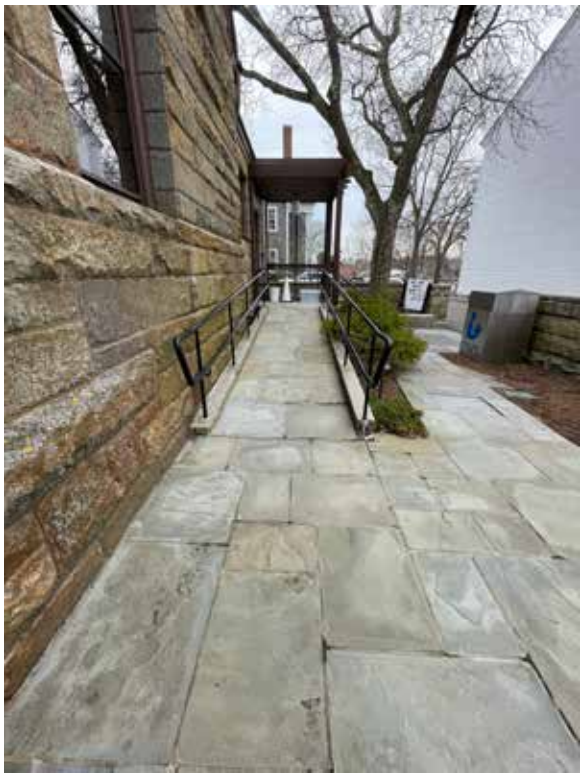

Figure 3.10 Bluestone paving and pipe railing at west ramp.

Figure 3.11 Condition at west ramp stone coping.

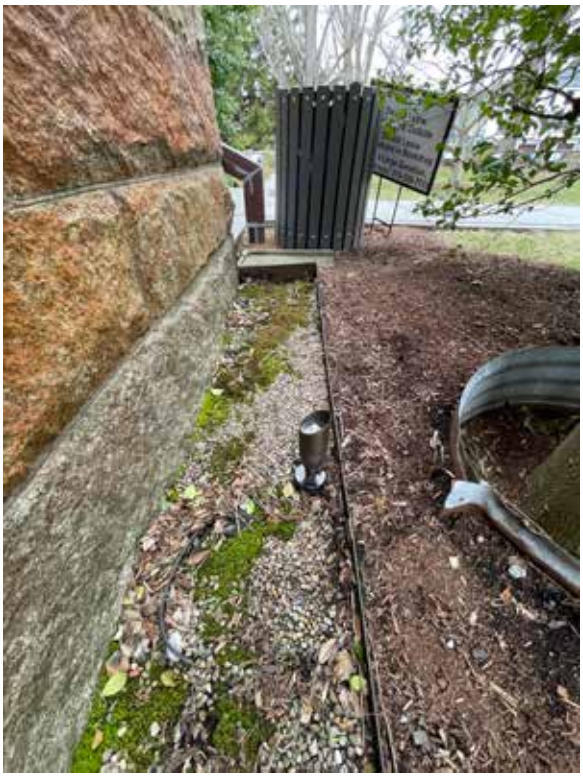

Figure 3.12 Peripheral French drain and uplighting at building perimeter.

Figure 3.13 Plantings and furnishings - view towards Church Street.

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Exterior Envelope Walls Assessment

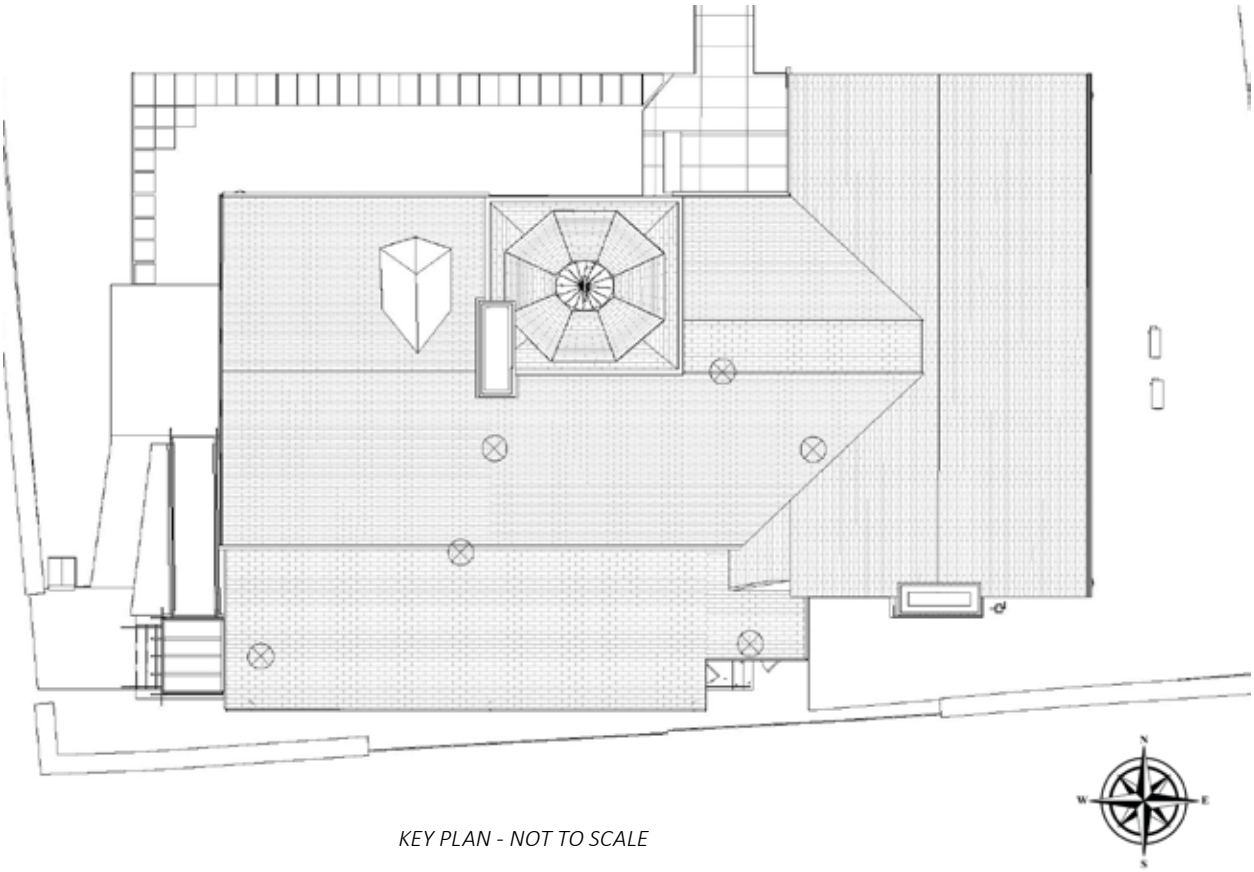
General Description

Building

The L-shaped original Library building is built of rough-faced granite ashlar load bearing masonry, atop a rubble stone granite foundation, with a full basement under the original footprint, and a central two-story square tower. The masonry ornamentation is sober, limited to irregular patterns, minimally protruding courses, arched entrance, and select arched windows. There is no watertable, however, horizontality is expressed through stone courses that align with the window sills across the full width of the elevation, and an accent course at the upper level of the tower, coinciding with the base of the parapet wall.

The foundation walls extend approximately three stone courses above grade; basement windows previously exposed are now partially below grade, which is consistent with historic photographs showing a finished grade at least two steps lower than the current level.

The Children's Room Addition's west elevation is clad in granite stone matching that of the main building. The south and east elevations are clad in rectangular stuccoed panels between vertical and horizontal flat wood trim. The ramp and stair concrete cheek walls are topped with granite coping stones.



KEY PLAN - NOT TO SCALE

Chimneys

The Library has two chimneys constructed of masonry that extend full height within the structure. The central chimney is to the west of the cupola and the east chimney is at south gable end of the T section, in the southeast corner of the building. The south chimney fireplace remains a prominent feature of the Library Reading Room, the central chimney fireplace in the GAR Hall/Reference Room has been blocked up, with bookshelves in front of it.

The central chimney extends above the ridge with approximately eight courses of granite ashlar masonry, followed with multi-wythe brick masonry in a common bond pattern. The brick masonry is adorned with two accent courses of granite ashlar, the first thirteen courses above the granite base, the second seventeen brick courses above the first. The top four courses of brick masonry rest atop three courses of brick that corbel out. The chimney masonry is capped with granite coping; two flue openings appear to have been closed with mortar or concrete. There are two levels of decorative anchor plates on the west elevation of the chimney.

The south chimney is similar in design, with a granite ashlar base that extends up to approximately two granite courses below the cross gable ridge, with brick masonry above. The masonry design is simpler, consistent with the hierarchy of this secondary chimney stack; the brick follows a running bond pattern, with a single accent three course high accent row. Similarly to the west chimney, the top four courses of brick masonry rest atop three courses of brick that corbel out. The chimney masonry is capped with granite coping; one flue is covered with a sheet metal vent cap, another with mortar or concrete. A decorative anchor plate on the south elevation aligns approximately with the cross gable ridge line.

Perimeter Wall

The perimeter wall consist of rough-faced granite ashlar masonry with granite coping, matching that of the building. The wall extends three courses above grade; the condition of the foundation is unknown.

Condition Assessment

Building

The overall condition of the granite ashlar masonry walls is good. There are very localized areas of thin cracks in the masonry joints, but overall the mortar joints are in good to fair condition. Images from the drone survey seem to indicate areas of masonry repointing at the upper reaches of the two-story square tower.

It is our understanding that a two-part restoration of the building's masonry was accomplished in 2005-2006, with additional repointing in 2013 due to the wall's original mortar crumbling, and the stones shifting.

The granite cladding at the Children's Room Addition is in good condition; the stucco panels are in fair to poor condition, with signs of displacement and moisture entry. The wood trim is in good to fair condition, with some elements exhibiting cracking.

The west ramp and stair painted cheek walls are in good to fair condition, with some rust jacking, soiling and cracking. The granite coping at the cheek walls is in fair to poor condition, with some spalling. The two-course granite retaining wall along the south edge of the Church Street entrance is in poor condition, exhibiting significant displacement.

Chimneys

The overall condition of the ashlar granite chimney masonry is good. The overall condition of the chimney brick masonry is good to fair.

West Chimney:

- Mortar joints in the granite masonry are in fair condition; mortar joints in the brick masonry are in fair to poor condition.
- There are open and cracked mortar joints in the upper ten courses of brick masonry.
- Granite capstones are in good to fair condition.
- Through wall flashing at cap stones is in poor condition
- Flue infill (mortar or concrete) is in poor condition.
- There is significant biological growth at the granite cap stones.
- There is localized efflorescence at the upper ten brick courses
- There is rust soiling below the anchor plates on the west elevation.

South Chimney

- Mortar joints in the granite masonry are in fair condition; mortar joints in the brick masonry are in fair to poor condition.
- There is evidence of a repointing campaign on the east, south and west faces of the chimney, from the granite base to the approximate level of the anchor plate.
- There are open and cracked mortar joints in the upper courses of brick masonry.
- Granite capstones are in good to fair condition.
- Through wall flashing at cap stones is in poor condition
- Flue infill (mortar or concrete) is in poor condition.
- There is significant biological growth at the granite cap stones.
- There is significant soiling at the upper brick courses of the south elevation.
- There is rust soiling below the anchor plate on the south elevation.

Perimeter Wall

The overall condition of the perimeter wall is good to fair.

- There are localized areas of cracked and open mortar joints, and vegetation growth along the mortar joints.
- Coping stone header joints are in fair to poor condition, with vegetation growth in open joints.
- Conditions below grade are unknown; there could be some deterioration due to the lack of expansion joint between the wall and the concrete sidewalk, and the effect of snow melt ice runoff.
- There are areas of biological growth at many coping stones.

Building Envelope Summary Assessment

	Excellent	Good		Fair		Poor		Critical
	A	B+	B	C+	C	C-	D	F
	None	Minor				Serious		Critical
Granite Masonry Walls - Building (typical)		✓						
West Chimney Granite Masonry			✓	✓				
West Chimney Brick Masonry				✓	✓	✓		
West Chimney Cap					✓	✓		
South Chimney Granite Masonry			✓					
South Chimney Brick Masonry					✓	✓		
South Chimney Cap					✓	✓		
Children's Room Addition Granite Cladding			✓					
Children's Room Addition Stucco & Wood Trim					✓	✓		
Children's Room Addition Ramp and Stair Cheek Walls					✓		✓	
West Entrance Retaining Wall								✓
Perimeter Walls			✓	✓		✓		

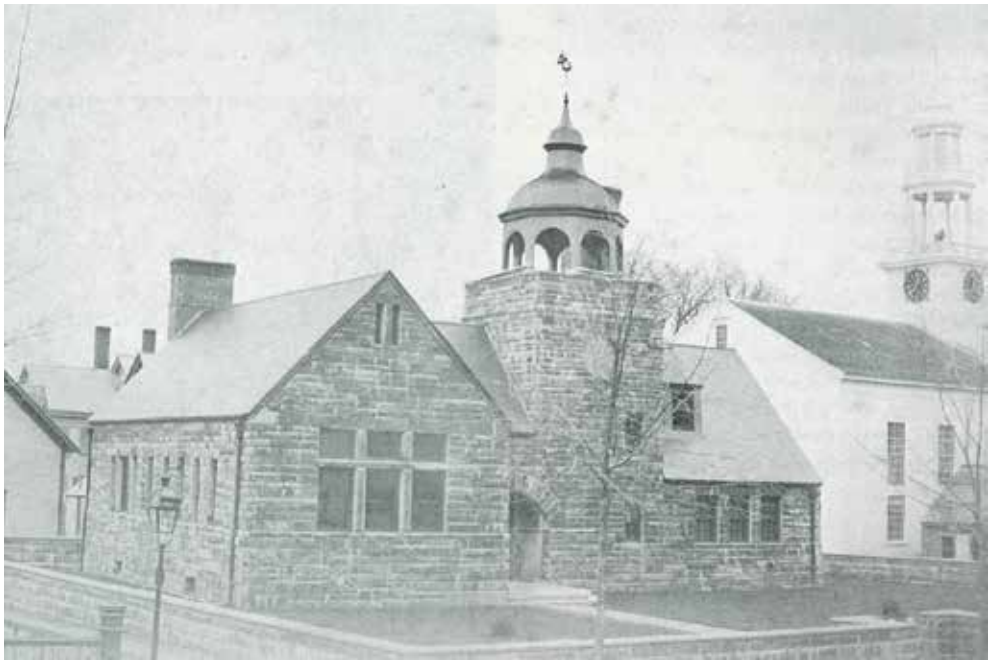


Figure 3.14 - North and west elevations

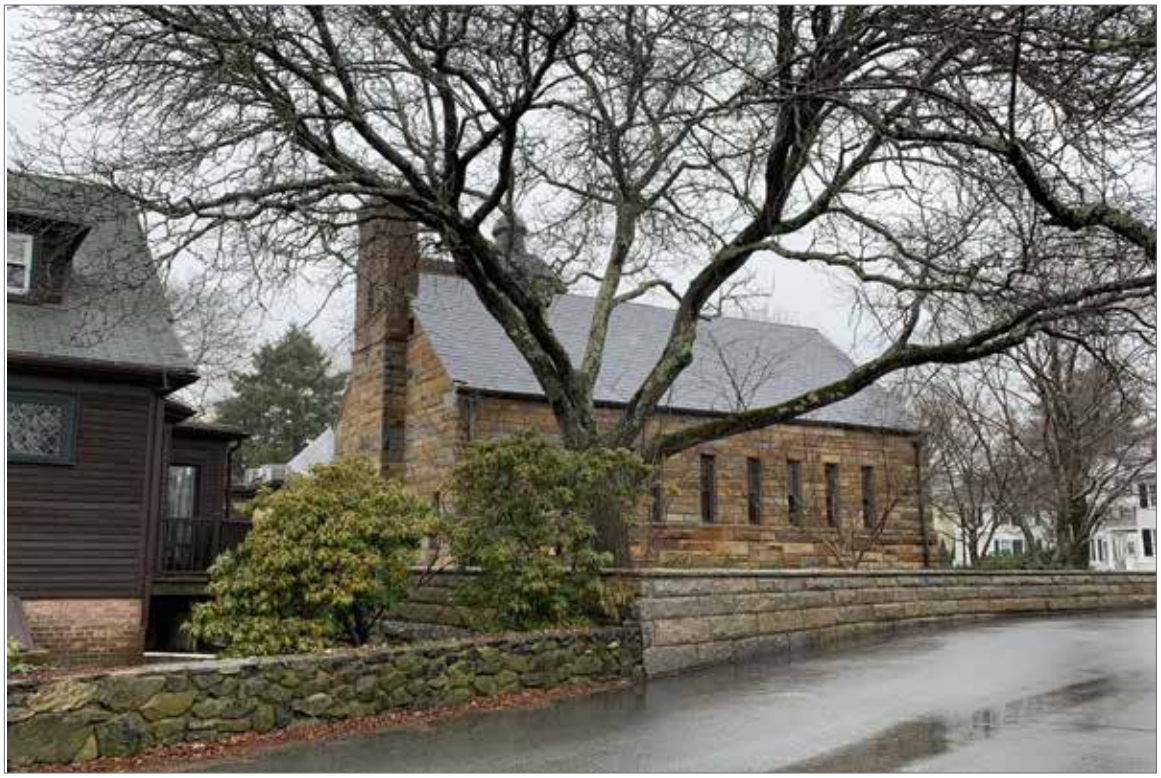


Figure 3.15 - East and south elevations. View from Chapel Lane looking northwest.

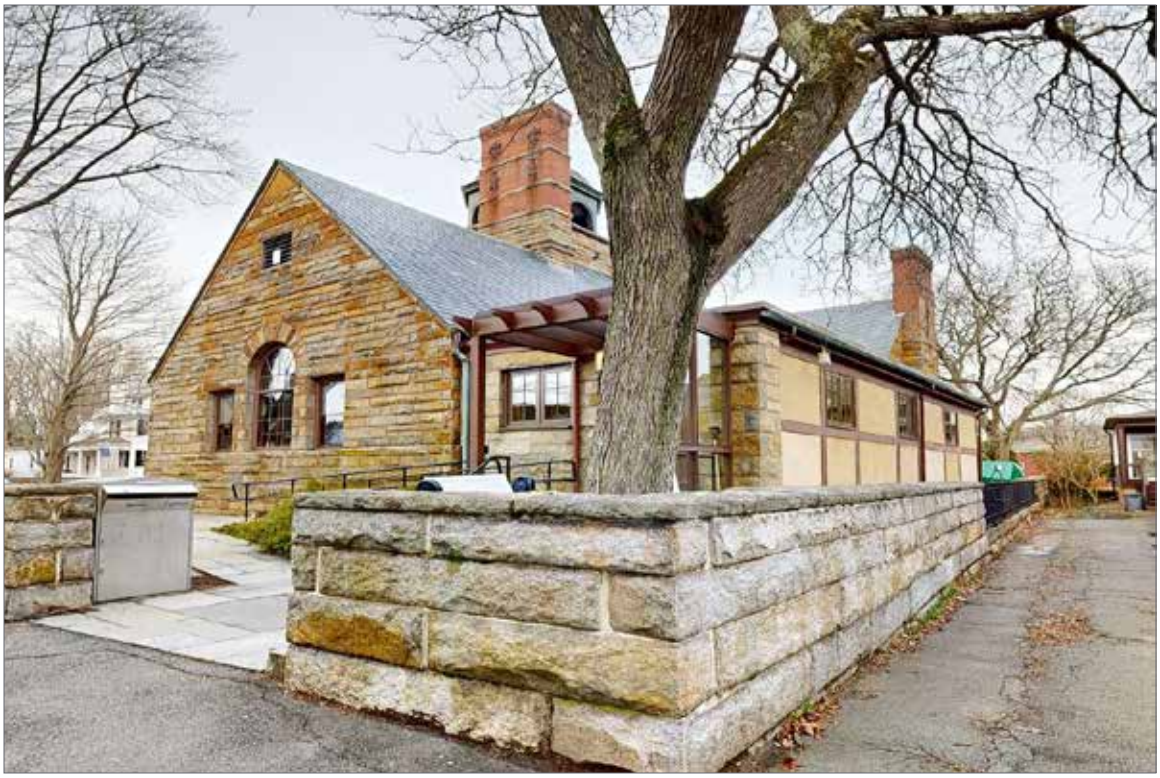


Figure 3.16 - West and south elevations - view from Church Street Looking northeast.

Figure 3.17 - Children's Room Addition Elevation - view from southwest looking northeast.

Figure 3.18 Field masonry at gable end."

Figure 3.19 - Granite masonry mortar joints."

Figure 3.20 Lighting slot at arched main entrance.

Figure 3.21 Masonry opening - Staff Restroom.

Figure 3.22 West chimney - aerial view from southwest looking northeast.

Figure 3.23 West chimney view from southwest looking northeast.

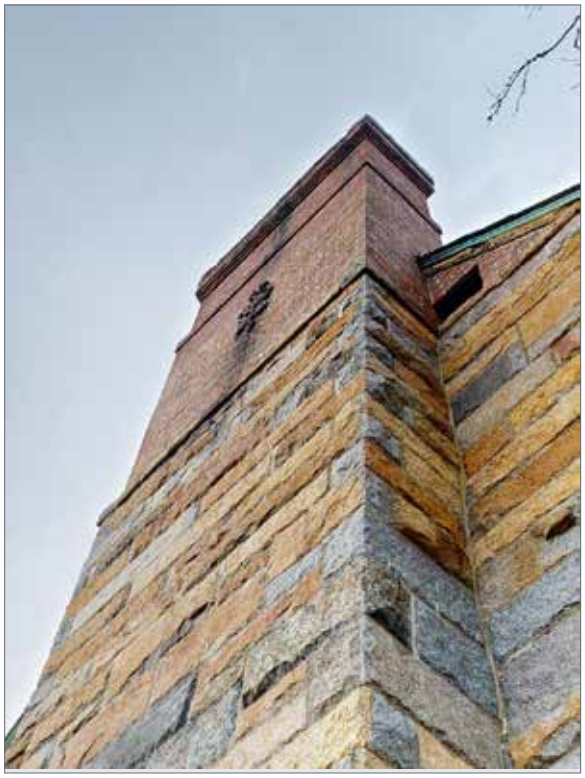


Figure 3.24 South chimney - view from southeast looking northwest.

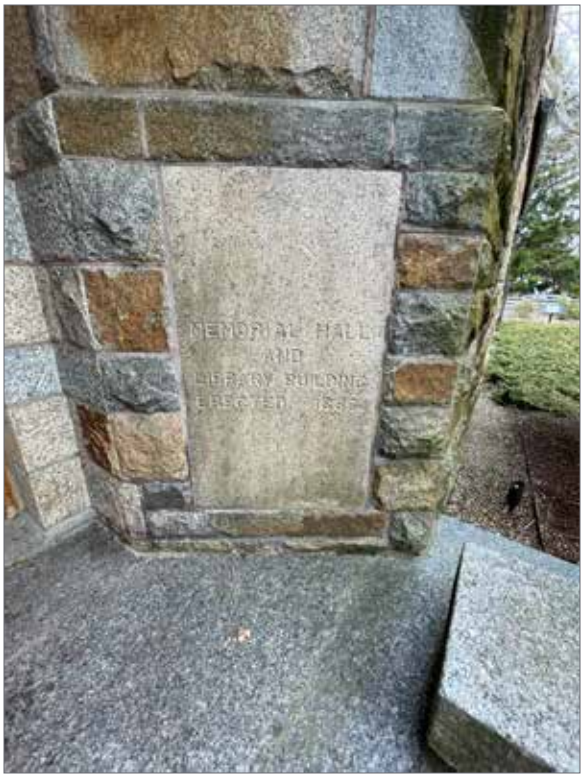


Figure 3.25 Building commemorative stone - Main entrance - 1886

Figure 3.26 South elevation.

Figure 3.27 South elevation - stucco panel displacement.

Figure 3.28 Children's Room Addition east entrance and main building south service entrance/egress.

Figure 3.29 Children's Room Addition - Southeast corner of connector to main building - typical finishes

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Structural Assessment

The following is a summary of the structural condition assessment report included in Appendix A.

General Description

The main building was constructed in the 1880s and dedicated in October of 1887. The original building consisted of three parts: the east room as the library, the west room as the headquarters for the Grand Army of the Republic, and the central hall as a war memorial; forming a T-shape. Eventually all 3 rooms were converted to the library. In 1965 a children's room was added to the southwest corner giving it a more square appearance in plan. Along the north elevation a stone masonry tower supports the cupola above and continues down to the main entrance at the ground level.

The construction of the building consists of stone masonry laid in an ashlar pattern with foundation walls that are rubble stone masonry. The inside of the exterior walls could not be viewed due to architectural finish but the walls are assumed to be a combination of full thickness stone and brick masonry backup. The original interior walls are load bearing and constructed of multi-wythe brick masonry. Several sections of the interior masonry walls are visible and they are constructed of non-common bricks laid in a running bond.

The roof structure of the original building consists of slate stone shingles over wood sheathing supported by wood rafters. The roof appears to be pitched at about a 12:12 slope with a cupola on the center of the T stem and a dormer on the north side west of the cupola. All ends of the roof are gable end profiles with masonry up to the roofing. The flat roof area of the addition is a low slope roof, approximately ¼-inch per foot, with a rubber membrane.

The sloped roof framing is constructed with wood sheathing supported by wood rafters spaced approximately 16-inches on center.

The Library has two chimneys constructed of masonry that extend full height within the structure. The central chimney is to the west of the cupola and the east chimney is at south gable end of the T section, in the southeast corner of the building.

The center roof cupola is a wood framed structure, open on the sides with a wood floor that connects to the existing roof. The walls of the cupola tie into concrete walls at the roof level of the building. The walls of the cupola are covered in slate inside & outside to match the roof of the building.

The Memorial Hall/Circulation Room floor is constructed with brick arches, typically topped with unreinforced concrete, spanning between steel purlins spaced at approximately 40-inches on center. The rise of the brick arch was measured as approximately 5-inches, the steel purlins were measured at 5 3/4-inch-wide flanges and approximately 10-inches deep. The framing is supported by foundation walls. Central hall basement floor has a concrete slab on grade.

The Library/Reading Room and stacks area floor is constructed with 2.75” x 11.75” rough-sawn wood joists at approximately 16-inches on center. Floor joists are supported by a mix of steel and timber beams. Steel beams are supported by concrete footings and timber beams bear on structural piers made of CMU pedestals and concrete footings. Steel beams appear to have been constructed later to provide additional support for the interior portion of the wood framing to accommodate load from the library stacks. The crawl space has a dirt floor..

The GAR Hall/Reference Room has nearly identical framing layout with 2.75” x 11.75” floor joists spaced approximately 16-inches on center supported by timber beams. The framing does not have the newer steel beams. The main timber beam is notched at its bottom.

The new Children's Room addition is a conventional wood framed structure with cast-in-place concrete foundation walls and CMU piers. The floor of the addition is wood framed with dimension lumber and

plywood sheathing over a crawl space. The crawl space under the addition is used as a mechanical room. The roof is low slope, it consists of asphalt-based materials modified with rubber or plastic polymers to enhance performance.

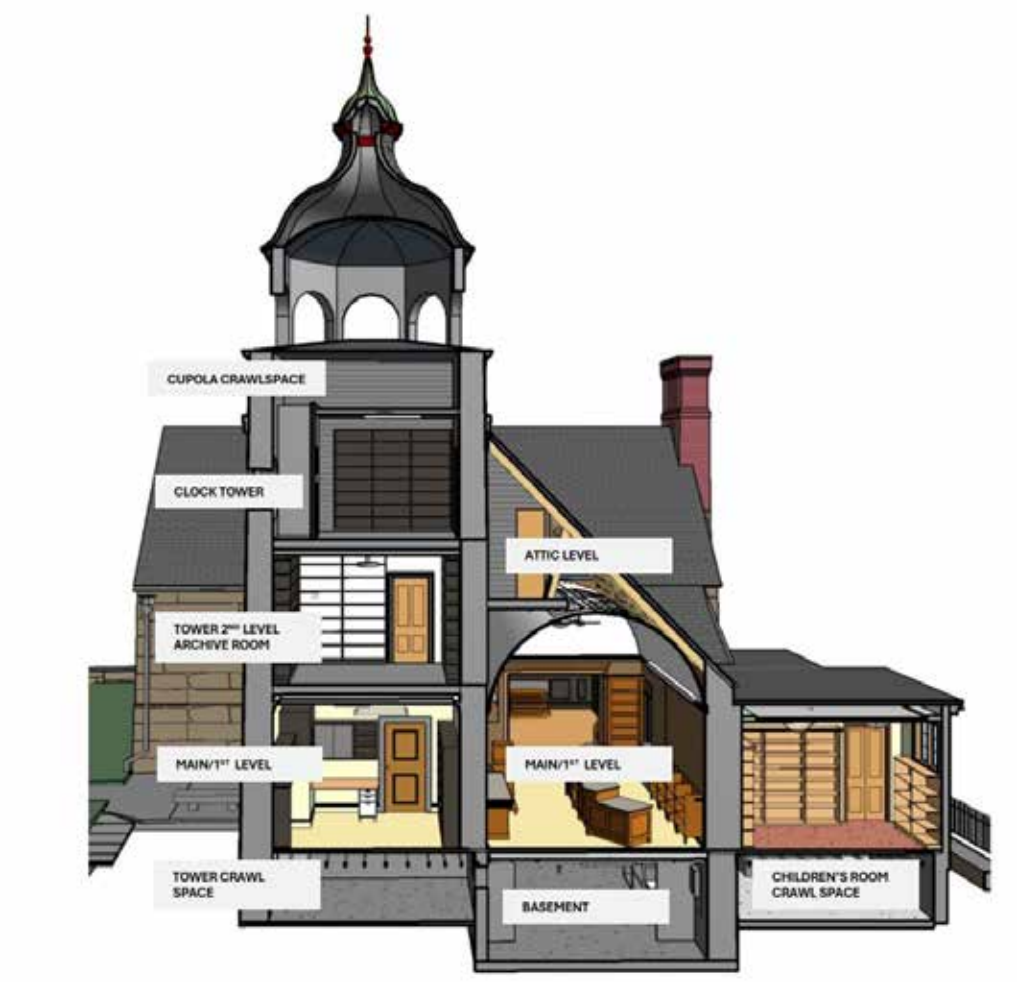
The interior un-reinforced masonry (URM) walls on the main (1st Floor) level of the original building provide gravity support and lateral load resistance and stability . The interior walls are constructed with non-standard, ultra long format multi-wythe brick, where the bricks are not common brick sized. Basement exterior walls are constructed with stone. Tower 2nd Level and attic level interior walls are constructed with conventional multi-wythe brick using common bricks. Exterior walls are ashlar masonry.

The original openings in the exterior stone walls appear to all be original and made using a combination of steel and stone lintels. Interior original openings appear to be constructed with steel lintels comprised of multiple layers to support one or two wythes of the masonry. The exterior walls of the structure have numerous openings for windows.

Condition Assessment

Summary

The overall structure appears to be in good condition. Most damage observed during this visual evaluation was cosmetic in nature. Items mentioned below and in the Recommended Treatment section will require ongoing monitoring, but at this time there are not any structural issues of immediate concern.



Main Level (1st Floor)

Overall, the 1st floor of the structure does not show obvious signs of structural deterioration and appears to be in generally good condition. The original timber beams and newer steel beams supporting the wood framing are in good condition. There was some concern on the existing floor loading at the 2-level stacks . We evaluated the structural capacity of the wood framing. Based on our calculations it appears that the original wood floor supplemented by the newer steel beams has sufficient capacity to the support the load.

The walls above the first floor have some visible cracks in the ceiling and at the interior masonry wall between GAR Hall/Reference Room and the Memorial Hall/Circulation Room. There are several locations where the finish paint has fallen off or are cracked and about to fall off. This can be a sign of structural movement but mostly appears to be normal wear and tear. Some cracks in the brick wall were found, parallel to rafters.

Walls and ceilings in the Memorial Hall/Circulation Room and the Library/Reading Room and stacks area appears to be in good condition, especially for their age, and do not show signs of significant deterioration. There are minor cracks in the ceiling in the Memorial Hall/Circulation Room.

Tower 2nd Level

Overall, this level appears to be in good condition, and does not show signs of structural instability or deterioration. There are minor horizontal and vertical cracks along the walls in the stair opening area, and instances of cracked and deteriorated ceiling paint in the Archive Room.

Attic Level

The investigation of the roof framing at attic level notes that in general, the masonry walls are intact and appear stable. Visible areas of the wood rafters have been checked. The following observations were noted:

- Evidence of moisture getting into the framing members were found. Based on a limited sample, there are rafters that have damaged sections due to wood rot. The rotted members appear to have approximately 3/8” to 1/2” of section loss due to rot.
- Poor-quality connections of the members.

Cupola Level

Cupola level appears to be in generally good condition. The roof structure, floor framing, walls, and columns of the cupola are in relatively fair condition, maintaining their structural integrity. A summary of general observations made during our site visit is provided below:

- There were a few cracks indicated in concrete piers.
- Chimney cap is missing, allowing water infiltration into the wall and building.

Structural Systems Summary Assessment

	Excellent	Good		Fair		Poor		Critical
	A	B+	B	C+	C	C-	D	F
	None	Minor				Serious		Critical
First Floor Level		✓	✓	✓				
Mezzanine Level			✓	✓				
Attic Level			✓	✓		✓		
Cupola Level				✓				

Figure 3.30 Basement under Memorial Hall/Circulation Room - Brick arches and steel purlins

Figure 3.31 Brick piers and first floor wood framing under Library/Reading Room crawlspace - typical conditions

Figure 3.32 Steel structural reinforcement in GAR Hall/ Reference Room crawlspace.

Figure 3.33 Basement - Stone foundation walls in boiler room.

Figure 3.34 - View of Children's Room Addition crawlspace, looking west.

Figure 3.35B - Brick piers and first floor wood framing under GAR Hall/Reference Room crawlspace - typical conditions

Figure 3.35A - Attic - Roof framing - Looking west towards GAR Hall/ Reference Room."

Figure 3.35C - Tower parapet and flat roof framing - view from clock tower access panel.

Figure 3.35D Basement - Stone foundation walls in boiler room.

Figure 3.35E cracks in GAR hall/reference3 room ceiling - southwest corner.

Figure 3.35EF Cracks in ARchives ceiling - above north wall..

Figure 3.35G Rot damaged rafters in attic.

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Roof Assessment

General Description

The L-shaped Library roof has four distinct sections: the original library space end gabled roof, a side gabled roof extending from the library to the GAR Hall/Reference Room, interrupted by a previously existing skylight above the Memorial Hall /Circulation Room (removed in 1973)[1] , the square tower cupola dome roof, and the Children's Room addition flat roof.

The gable roof over the library space extends north to south, with a tall exterior chimney at the south gable. The cross gable roof extends east to west, with the square tower mid-length, a tall chimney at the southwest corner of the tower, and a single dormer on the north slope, west of the tower.

Main Roof

The gable roof and the side gable roof are clad in clipped rectangular slate, with a sheet copper ridge cap, valley flashing, eave and rake flashing, and step flashing at the chimneys. Most of the slate appears to be original but some slate units have been replaced during various maintenance campaigns, including this past year. The monochromatic banded patterning of the grey slate is a distinctive and character defining feature. Pipe snow-guards are located at the north and east eaves at the Union Street entrance. The north elevation dormer roof is clad in clipped rectangular slate, with a copper ridge cap. The flat skylight area is clad in membrane roofing.

The lower roof of the cupola is clad in smaller clipped rectangular slate, and topped with a copper standing seam cupola roof and weather vane. Interior walls of the cupola and the underside of the cupola's arched openings are also clad in rectangular slate. There is a flat roof area in the cupola, with a finish elevation aligned with the top of the cupola parapet wall, which is clad in a membrane roofing.

Rainwater discharges into half-round copper gutters attached by straps under the eave starter courses. The gutters on the west elevation of the gable roof and north elevations of the side gable roof appear to be the original high-back gutters. The gutter along the east elevation of the gable roof is a replacement half round gutter; the cut edge of the previous high-back gutter upper flashing is visible under the eave starter slate. The gutter along the south elevation of the side gable is also a high-back half round copper gutter, but with twisted straps that differ from the straps on the north side. It is unclear if this is a replacement gutter installed in the 1960s, when the Children's Room addition was constructed.

Children's Room

The Children's Room roof is covered with EPDM membrane roofing; the wood framed entrance canopy consists of 3/8" laminated tempered glass on copper flashing with condensation gutters.[2] Rainwater discharges into a hanging copper half round gutter.

Downspout Discharge

The main roof gutters discharge into round copper downspouts with decorative copper rainwater conductor heads on the north and east elevations. Rainwater conductor head design differs along the east elevation along Chapel Lane, indicative of a hierarchy of finishes. The south slope of the side gable roof discharges into a round copper downspout directly connected to the gutter. All downspouts discharge directly into underground drains; boots vary from metal to flexible PVC.

The Children's Room Addition flat roof discharges to round downspouts on the south and east elevations. The canopy discharges to a round downspout north of the entranced to the wing, which discharges to grade.. Video inspection of underground drainage was not conducted.

[1] Massachusetts Cultural Resource Information System - Inventory No: MAN 29, accessed on April 25, 2024.
[2] Adams & Smith LLC, Drawing A-6 - Children's Room Renovations, issued 30 May 2012.

Condition Assessment

Main Roof

Overall the main roof is in good to fair condition:

- The main roof slate roofing is in fair condition for its age. Cracked slates, slipped slates, and slates continue to fall off the roof.
- The pipe snow-guards are in good to fair condition.
- The half-round high-back gutter and half round gutters are in fair condition.
- The copper ridge cap and valley flashing are in fair condition.
- The copper step flashing is in fair to poor condition, with areas of temporary sealant repairs which are failing, and water entry at the chimney bases, and at intersections between shingle roofing and adjacent masonry wall.
- Eave and rake copper flashing are in poor condition.
- The dormer and cupola slate roofing is in good to fair condition.
- The cupola standing seam sheet copper roofing is in fair condition.
- The cupola membrane roofing is in good condition.
- The EPDM membrane roofing at the closed skylight appears to be in fair condition; it can be assumed it has reached its life performance expectancy limit.

Children's Room Addition Roof

Overall the Children's Room Addition roof is in fair condition

- The Children's Room Addition EPDM roofing is in fair condition; however, there have been pinhole leaks in recent years. The roofing has reached its life performance expectancy.
- Gutters are in fair to poor conditions.
- The canopy roof is in good to fair condition; the glazing is soiled and has lost transparency.

Downspout Discharge

- Downspouts are in good to fair condition; some attachments to the masonry are failing. Boots to underground drainage vary and are in fair to poor condition.
- In the summer of 2023, underground drainage was revised in the south alley behind the Children's Room Addition. Downspouts were tied into the new piping and discharge directed to a leaching catch basin installed in the south east corner of the lot adjacent to Chapel Lane.
- The condition of the underground piping to sewer discharge is unknown.

Roof Summary Assessment

	Excellent	Good		Fair		Poor		Critical
	A	B+	B	C+	C	C-	D	F
	None	Minor				Serious		Critical
Main Roof - Slate					✓	✓		
Dormer - Slate				✓	✓			
Cupola - Slate				✓	✓			
Cupola - Sheet Metal					✓			
Cupola - Weather vane					✓			
Skylight - EPDM					✓			
Main Roof - Copper flashing					✓	✓		
Main Roof - Step Flashing						✓	✓	
Main Roof Gutters				✓	✓			
Main Roof Downspouts					✓			
Children's Room Addition Roofing					✓			
Children's Room Addition - Flashing					✓			
Children's Room Addition Gutters					✓			
Children's Room Addition - Downspouts					✓			
Children's Room Addition - Canopy				✓				

Figure 3.36 - Roof overview - aerial view - Note flat rectangular area to the right of side gable roof, between tower and intersection of end gable roof; this was the location of the skylight which was removed in the 1970s.

Figure 3.37 - Tower, cupola, west chimney, reference room side-gabled roof at GAR Hall/Reference Room and Children's Room Addition flat roof. Aerial view from east looking west.

Figure 3.38 - West chimney (forefront), cupola, intersection of end gable and side gable roof, and membrane roofing at flat area where skylight used to be located. Aerial view from west looking east.."

Figure 3.39 - Tower flat roof and slate clad cupola roof - aerial view from north looking south.

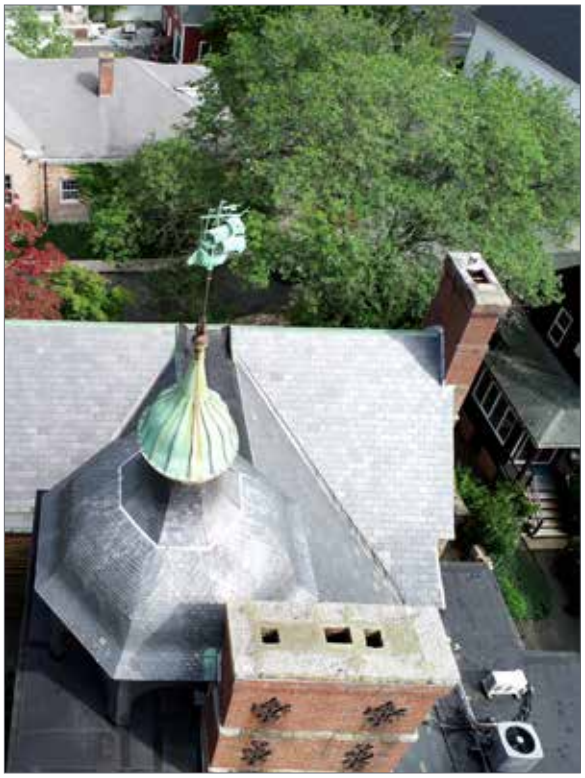


Figure 3.40 Chimney caps and weather vane.

Figure 3.41 Membrane roofing at tower flat roof, sheet copper clad cap at access panel beyond.

Figure 3.42 Slate roofing - field at end gable roof.

Figure 3.43 Original copper high-back gutter and pipe snow-guard at main entrance.

Figure 3.44 Original pipe snow-guard - detail.

Figure 3.45 Edge of cut original high-back gutter under starter slate - eat elevation of library roof.

Figure 3.46 Damaged wall copper flashing repair. Note multiple layers of sealant repairs.

Figure 3.47 Replacement gutter at side gable roof - south elevation.

Figure 3.48 End gable rake flashing gaps.

Figure 3.49 Flashing repair at south end of gable wall.

Figure 3.50 Step flashing - typical conditions.

Figure 3.51 Dormer roof - north elevation - side gable roof.

Figure 3.52 Original decorative rainwater conductor head, west elevation of end gable (library) roof.

Figure 3.53 Rainwater conductor head and downspout, southeast corner of end gable (library) roof.

Figure 3.54 Downspout to grade

Figure 3.55 Downspout to grade.

Figure 3.56 Children's Room Addition flat roof membrane roofing, view from west looking east.

Figure 3.56 Children's Room Addition flat roof membrane roofing, view from east looking west.

Figure 3.57 Children's Room Addition flat roof downspout - west elevation.

Figure 3.58 Children's Room Addition - west entry canopy.

Windows & Doors Assessment

General

An inventory and condition assessment of the existing building openings (doors and windows) was completed. The doors and windows were inventoried as to type, configuration, condition, hardware, and finish. They were graded on condition per industry standards and a treatment recommendation is provided. The information was organized in a spreadsheet and is contained in the tables on the following pages. The numbering of the openings corresponds to the as-built floor plans in *Chapter 2 - Methodology and Chronology.*

Doors and windows are significant components in the function and aesthetic of a building -- especially a historic building. Doors and window are great examples of hand craftsmanship and were often made from native, old-growth wood (forests that are at least 150 years old) which is far superior to new growth wood.

Mortise and tenon construction has been used for centuries from furniture to wooden bridges. Not only is it a strong way to join multiple pieces of wood together, it also allows the assembly to be taken apart for maintenance or part replacement. Since wood is a natural material, it is subject to expansion and contraction from the weather throughout the year. The mechanics of the mortise and tenon joints (and panels in doors) allow for the expansion and contraction of the wood.

Generally window repairs fall into three broad categories/classes (refer to National Park Service Preservation Brief #9 - *The Repair of Historic Wooden Windows)*:

1. Routine Maintenance Procedures
2. Structural Stabilization
3. Parts Replacement.

Each successive repair class represents an increasing level of difficulty, expense, and work time. Note that most of the points mentioned in Repair Class 1 are routine maintenance items and should be provided as part of a regular maintenance program for any building. The neglect of these routine items can contribute to many common window problems.

Repair Class 1: Routine Maintenance

The routine maintenance required to upgrade a window to “like new” condition normally includes the following steps:

1. Some Degree of Exterior Paint Removal
2. Removal and Repair of Sash (Including Re-Glazing Where Necessary)
3. Repairs to the Frame
4. Weatherstripping and Re-Installation of the Sash, and
5. Repainting

Repair Class 2: Stabilization

Many windows will show some additional degree of physical deterioration, especially in the vulnerable areas mentioned earlier, but even badly damaged windows can be repaired using simple processes. Partially decayed wood can be waterproofed, patched, built-up, or consolidated and then painted to achieve a sound condition, good appearance, and greatly extended life.

Repair Class 3: Splices and Parts Replacement

When parts of the frame or sash are so badly deteriorated that they cannot be stabilized there are methods which permit the retention of some of the existing or original fabric, which involve replacing the deteriorated parts with new matching pieces, or splicing new wood into existing members.

Note: The following is a summary assessment of the doors and windows by floor. Doors and windows have their own proprietary rating system because of their complexity of joinery, design, and materials. Conditions are defined as Good, Fair, or Poor based on the criteria developed by the National Historic Landmark Evaluation Program.[7]

An element is evaluated as **Good** when one or more of the following conditions applies:

- The element is intact, structurally sound and performing its intended purpose,
- There are few or no cosmetic imperfections,
- The element needs no repair and only minor or routine maintenance.

An element is evaluated as **Fair** when one or more of the following conditions applies:

- There are early signs of wear, failure, or deterioration, though the element is generally structurally sound and performing its intended purpose,
- There is failure of a sub-component of the element,
- Replacement of up to twenty-five percent of the element or replacement of a defective sub-component is required.

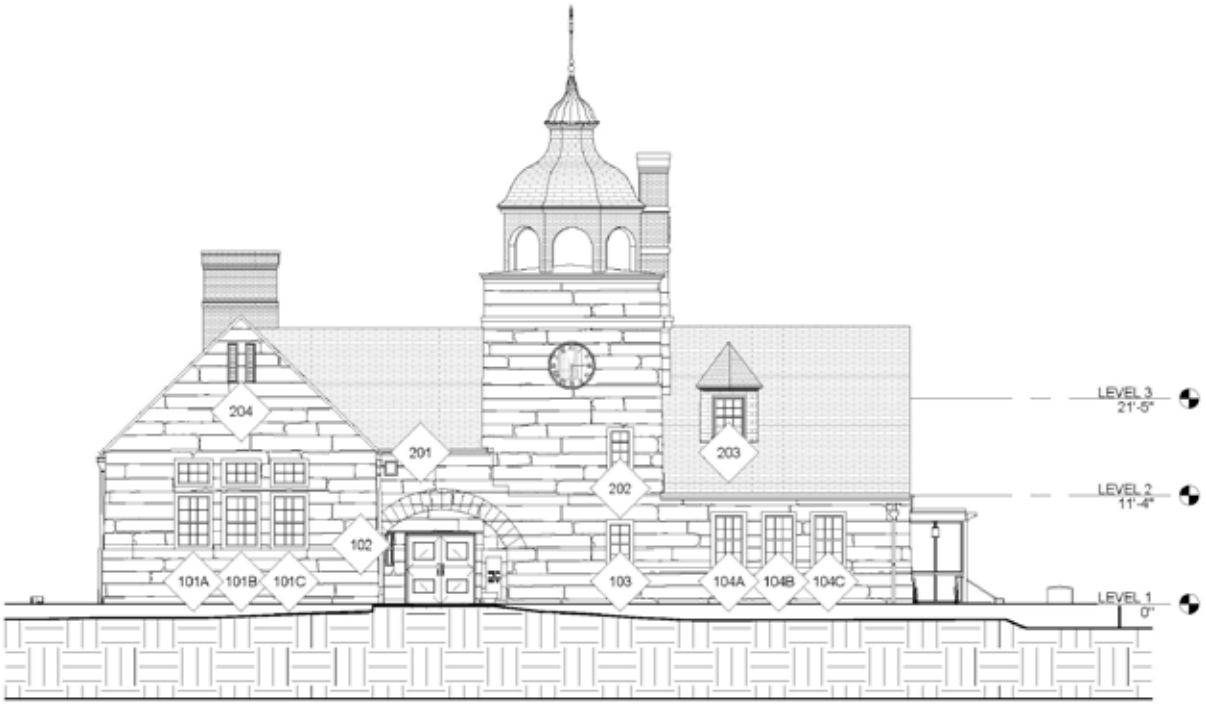
An element is evaluated as **Poor** when one or more of the following conditions applies:

- The element is no longer performing its intended purpose,
- The element is missing,
- Deterioration or damage affects more than twenty-five percent of the element and cannot be adjusted or repaired,
- The element shows signs of imminent failure or breakdown;
- The element requires major repair or replacement .

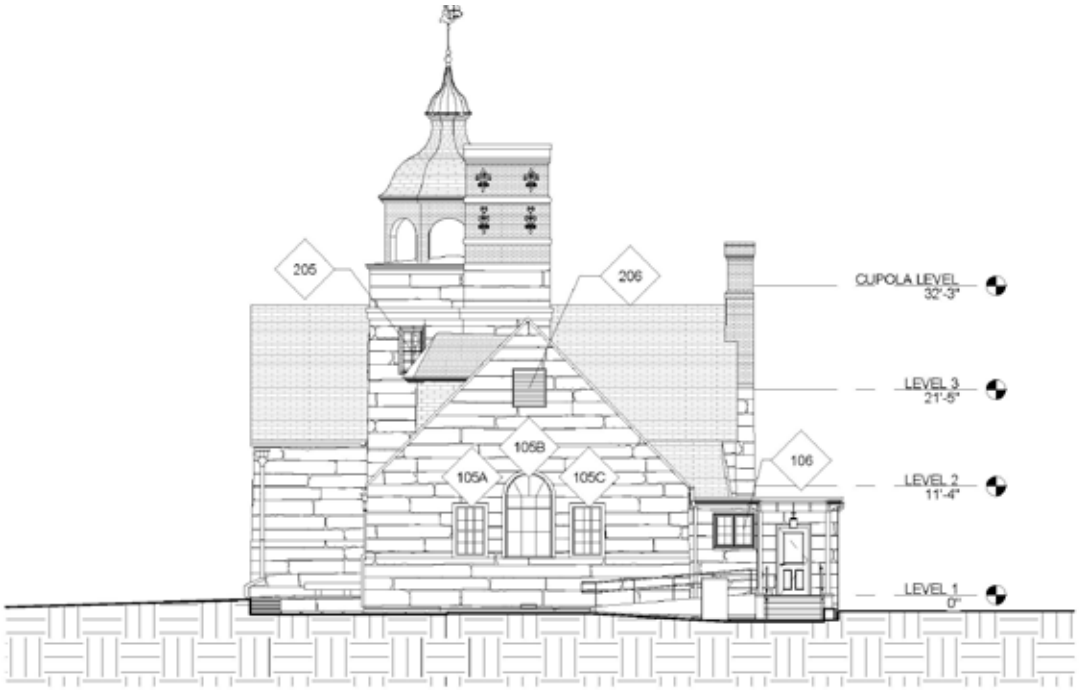
Windows & Door Summary Assessment

	Excellent	Good		Fair		Poor		Critical
	A	B+	B	C+	C	C-	D	F
	None	Minor				Serious		Critical
Main Building Exterior Doors		✓	✓					
Main Building Interior Doors		✓	✓					
Basement Windows					✓	✓		
First Level Windows		✓						
Second Level Windows (Mezzanine and Dormer)		✓						
Children's Room Addition Exterior Doors		✓						
Children's Room Addition Interior Doors		✓						
Children's Room Addition Windows	✓							

Table 3.XX Door and Window Assessment

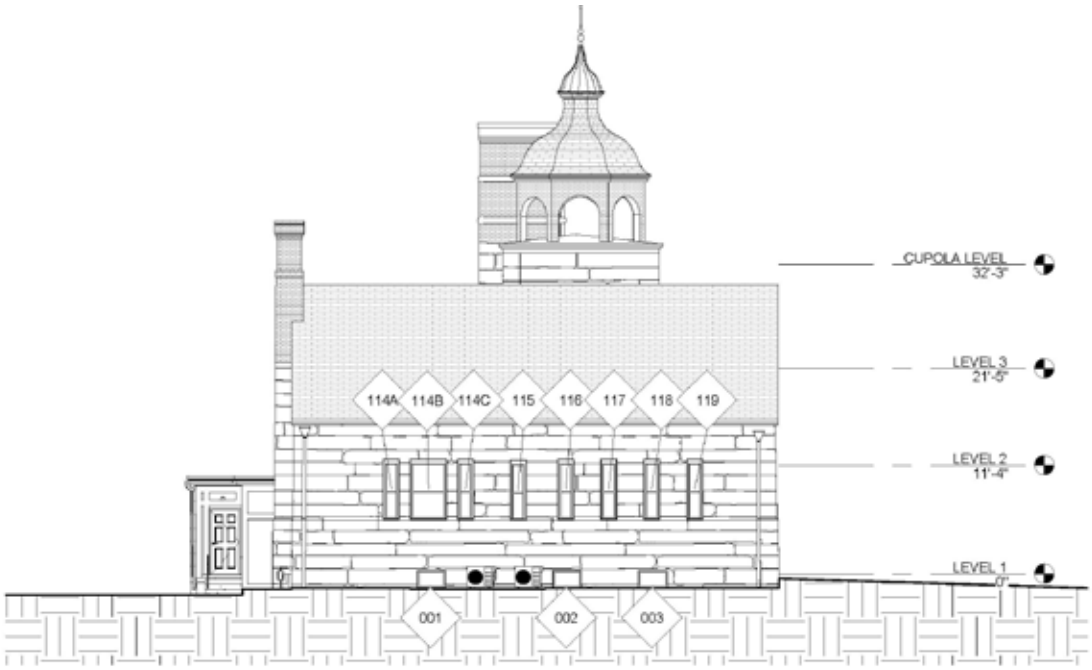


WINDOW KEY ELEVATION - NORTH ELEVATION



WINDOW KEY ELEVATION - WEST ELEVATION

WINDOW KEY ELEVATION - SOUTH ELEVATION



WINDOW KEY ELEVATION - EAST ELEVATION

Window Assessment Table

ID No.	Overall Condition	Window Description	Sash Paint Finish Int/Ext	Trim Paint Finish Int/Ext	Sash/Glazing	Hardware	Repair Class
BASEMENT							
001	N/A	Closed opening - plywood	Unknown/Fair	Unknown/ Fair	Unknown	N/A	3
002	POOR	Wood sash (3), operation unknown	Unknown/Fair	Unknown/ Fair	Fair/Poor	N/A	3
003	POOR	Wood sash (3), operation unknown	Unknown/Fair	Unknown/ Fair	Fair/Poor	N/A	3
FIRST FLOOR							
101A	"GOOD FAIR"	"Wood single hung (6/6) Fixed wood transom (6 lites)"	Good/Good-Fair	Good/Good-Fair	Fair/Good	Sash lock (fair)	2
101B	"GOOD FAIR"	"Wood single hung (6/6) Fixed wood transom (6 lites)"	Good/Good-Fair	Good/Good-Fair	Fair/Good	Sash lock (fair)	2
101C	"GOOD FAIR"	"Wood single hung (6/6) Fixed wood transom (6 lites)"	Good/Good-Fair	Good/Good-Fair	Fair/Good	Sash lock (fair)	2
102	"GOOD FAIR"	Wood double hung (1/1) "	Good/Good-Fair	Good/Good-Fair	Fair/Good	Sash lock (fair)	2
103	"GOOD FAIR"	Wood double hung (4/4) "	Good/Good-Fair	Good/Good-Fair	Fair/Good	Sash lock (fair)	2
104A	"GOOD FAIR"	Wood single hung (6/6)	Good/Good-Fair	Good/Good-Fair	Fair/Good	Sash lock (fair)	2
104B	"GOOD FAIR"	Wood single hung (6/6)	Good/Good-Fair	Good/Good-Fair	Fair/Good	Sash lock (fair)	2
104C	"GOOD FAIR"	Wood single hung (6/6)	Good/Good-Fair	Good/Good-Fair	Fair/Good	Sash lock (fair)	2
105A	"GOOD FAIR"	Wood single hung (6/6)	Good/Good-Fair	Good/Good-Fair	Fair/Good	Sash lock (fair)	2
105B	"GOOD FAIR"	Wood single hung lower sash (5/20) Fixed arched transom	Good/Good-Fair	Good/Good-Fair	Fair/Good	Sash lock (fair)	2

ID No.	Overall Condition	Window Description	Sash Paint Finish Int/Ext	Trim Paint Finish Int/Ext	Sash/Glazing	Hardware	Repair Class
105C	"GOOD FAIR"	Wood single hung (6/6)	Good/Good-Fair	Good/Good-Fair	Fair/Good	Sash lock (fair)	2
106	GOOD	Wood casement window pair (6/6)	Good/Good	Good/Good	Good/Good	Crank handle, sash hook, & lock lever (good)	1
107	GOOD	Wood casement window pair (6/6)	Good/Good	Good/Good	Good/Good	Crank handle, sash hook, & lock lever (good)	1
108	GOOD	Wood casement window pair (6/6)	Good/Good	Good/Good	Good/Good	Crank handle, sash hook, & lock lever (good)	1
109	GOOD	Wood casement window pair (6/6)	Good/Good	Good/Good	Good/Good	Crank handle, sash hook, & lock lever (good)	1
110	"GOOD FAIR"	Wood single hung (2/2)	Good/Good-Fair	Good/Good-Fair	Good/Good	Sash lock (fair)	3
111	"GOOD FAIR"	Wood single hung (2/2)	Good/Good-Fair	Good/Good-Fair	Fair/Good	Sash lock (fair)	2
112	"GOOD FAIR"	Wood single hung (2/2)	Good/Good-Fair	Good/Good-Fair	Fair/Good	Sash lock (fair)	2
113	"GOOD FAIR"	Wood single hung (2/2)	Good/Good-Fair	Good/Good-Fair	Fair/Good	Sash lock (fair)	2
114A	"GOOD FAIR"	Wood single hung (2/2)	Good/Good-Fair	Good/Good-Fair	Fair/Good	Sash lock (fair)	2
114B	"GOOD FAIR"	Wood single hung (6/6)	Good/Good-Fair	Good/Good-Fair	Fair/Good	Sash lock (fair)	2
114C	"GOOD FAIR"	Wood single hung (2/2)	Good/Good-Fair	Good/Good-Fair	Fair/Good	Sash lock (fair)	2
115	"GOOD FAIR"	Wood single hung (2/2)	Good/Good-Fair	Good/Good-Fair	Fair/Good	Sash lock (fair)	2
116	"GOOD FAIR"	Wood single hung (2/2)	Good/Good-Fair	Good/Good-Fair	Fair/Good	Sash lock (fair)	2

ID No.	Overall Condition	Window Description	Sash Paint Finish Int/Ext	Trim Paint Finish Int/Ext	Sash/Glazing	Hardware	Repair Class
117	"GOOD FAIR"	Wood single hung (2/2)	Good/Good-Fair	Good/Good-Fair	Fair/Good	Sash lock (fair)	2
118	"GOOD FAIR"	Wood single hung (2/2)	Good/Good-Fair	Good/Good-Fair	Fair/Good	Sash lock (fair)	2
119	"GOOD FAIR"	Wood single hung (2/2)	Good/Good-Fair	Good/Good-Fair	Fair/Good	Sash lock (fair)	2
SECOND FLOOR							
201	"FAIR POOR "	Wood, fixed (1)	Unknown/ Good-Fair	Unknown/ Good-Fair	Poor/Fair	N/A	2
202	"GOOD FAIR"	Wood single hung (4/4)	Good/Good-Fair	Good/Good-Fair	Fair/Good	Sash lock (fair)	2
203	"FAIR POOR "	Wood single hung (6/6)	Poor/Fair	Poor/Fair	Poor/Fair	Sash lock (fair)	2
204	GOOD	Paired fixed metal louvers	N/A	N/A	N/A	N/A	N/A
205	"FAIR POOR "	Wood single hung (4/4)	Good/Good-Fair	Good/Good-Fair	Poor/Fair	Sash lock (fair)	2
206	GOOD	Fixed metal louver	N/A	N/A	N/A	N/A	N/A

Figure 3.59 Triple single hung operable window, with central arched .fixed transom - typical interior finishes

Figure 3.60 Triple single-hung operable windows with fixed rectangular transoms - typical exterior window finishes.

Figure 3.61 Detail at single-hung window with arched fixed transom above - interior.

Figure 3.62 Detail at single-hung window with fixed rectangular transom above - interior.

Figure 3.63 Detail - Rectangular fixed transom trim - 1exterior

Figure 3.64-Typical single-hung window - interior

Figure 3.65 Typical single-hung window closing hardware and sash conditions..

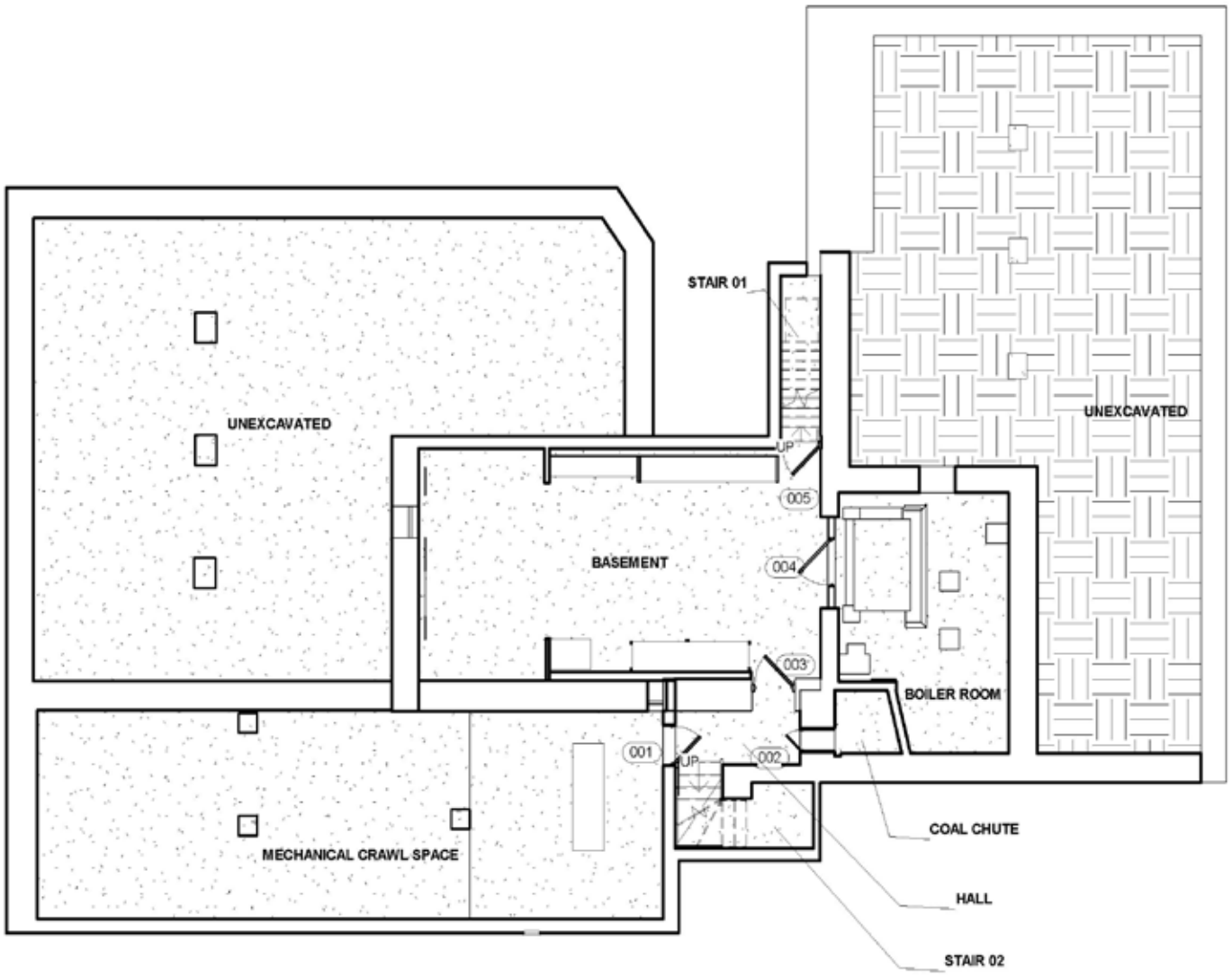
Figure 3.66 Typical single-hung window cable and pulley operating hardware.

Figure 3.67 Single-hung windows -= typical sash conditions.

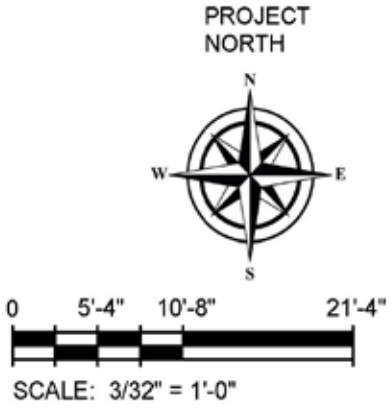
Figure 3.68 Typical exterior storm window frame.

Figure 3.69 Children's Room Addition casement window - typical - interior.

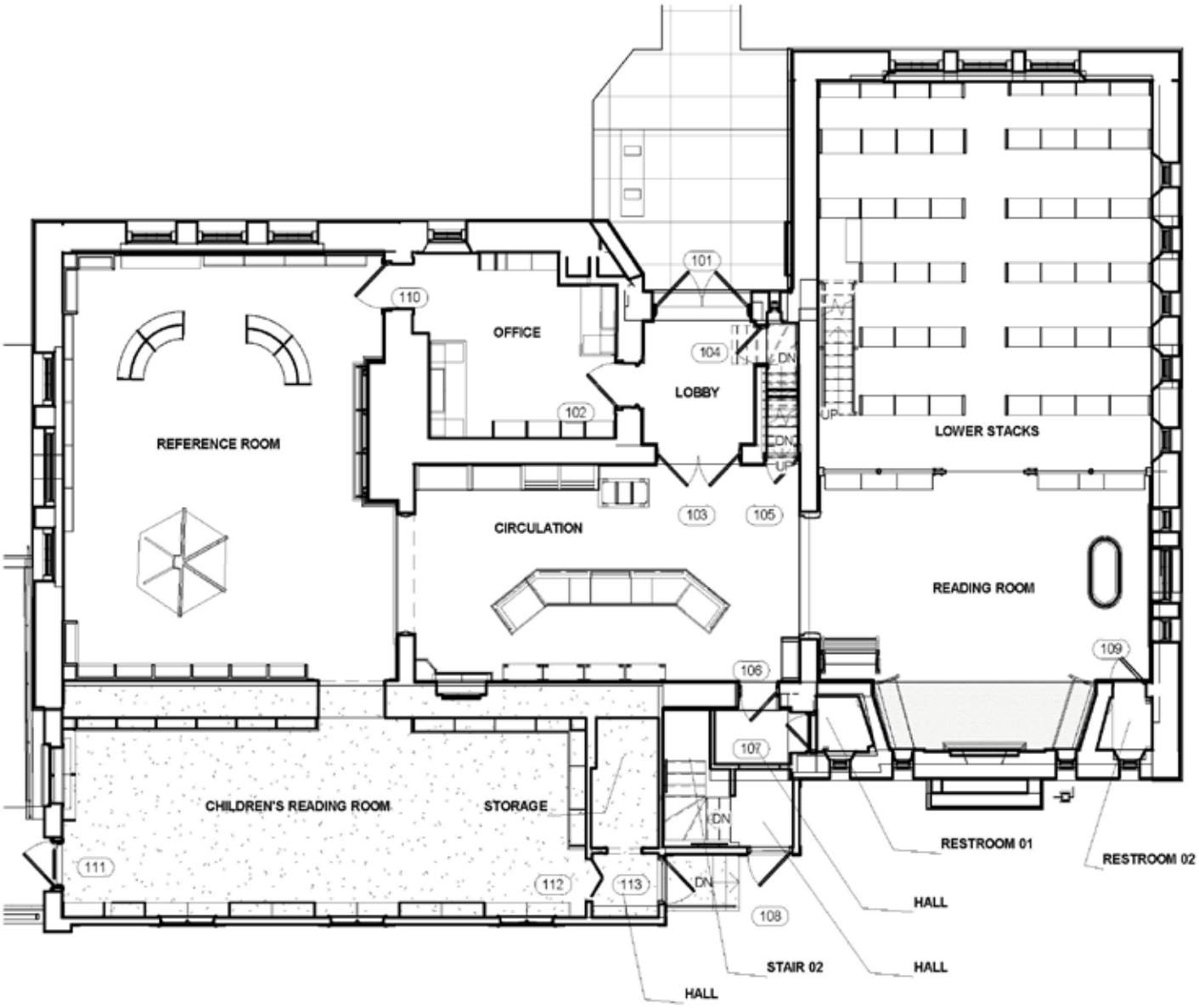
Figure 3.70 Children's Room Addition casement window - typical - exterior.



BASEMENT LEVEL PLAN



DOOR KEY PLAN - BASEMENT



PROJECT NORTH

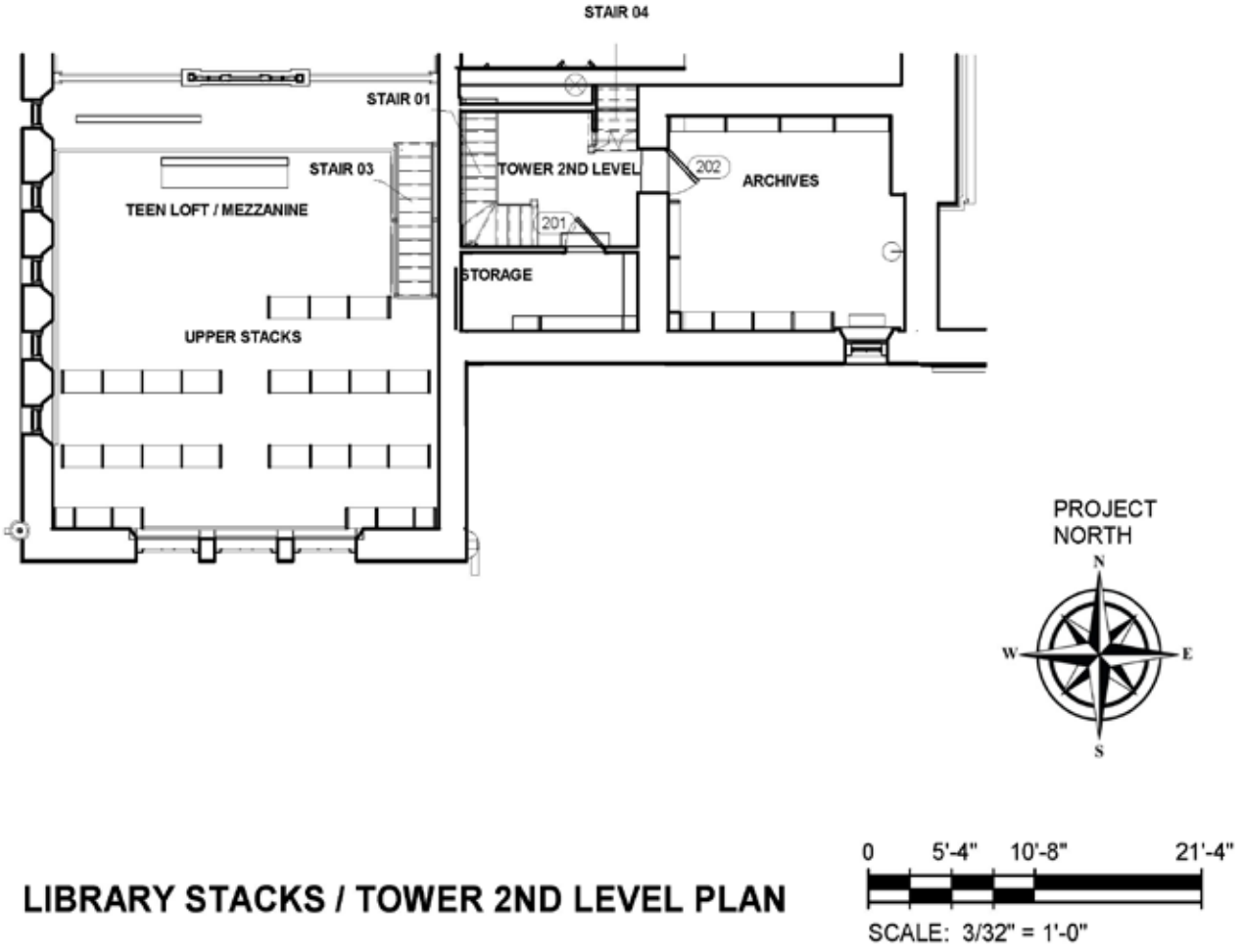
N
W
E
S

0 5'-4" 10'-8" 21'-4"

SCALE: 3/32" = 1'-0"

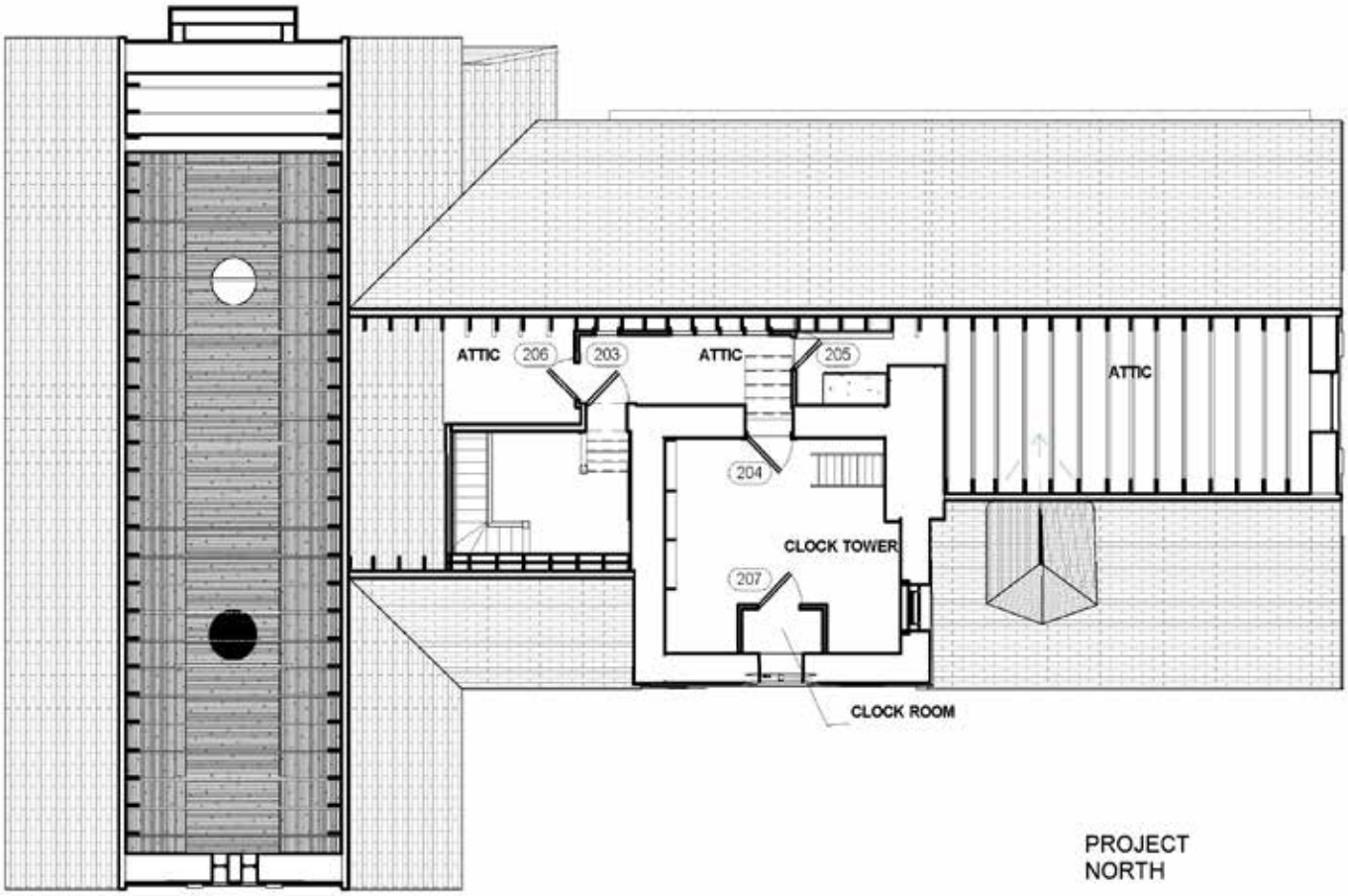
LEVEL 1 PLAN

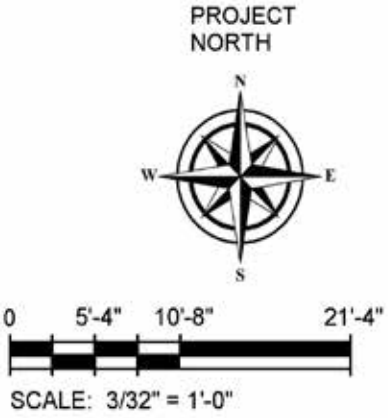
DOOR KEY PLAN - FIRST FLOOR



LIBRARY STACKS / TOWER 2ND LEVEL PLAN

DOOR KEY PLAN - TOWER 2ND LEVEL





ATTIC LEVEL PLAN

DOOR KEY PLAN - ATTIC

Door Assessment Table

Door No.	Overall Condition	Description	Finish	Hardware	Repair Class
BASEMENT					
001	FAIR	Metal access panel	door & trim = fair	knob lockset, 2 butt hinges,	2
002	FAIR	Metal access panel	door & trim = fair	knob lockset, 3 butt hinges,	2
003	FAIR	Flat panel hollow metal door	door & trim = fair	3 butt hinges, emergency push bar, automatic closer, two interior sliding latches	2
004	FAIR	Flat panel metal door	door & trim = fair	knob lockset, 3 butt hinges,	2
005	FAIR	Flat panel hollow metal door	door & trim = fair	knob lockset, 3 butt hinges,	2
FIRST FLOOR					
101	GOOD	Original 2-panel leaf wood double door, frame and trim, with book return insert in left leaf.	door & trim = good	4 butt hinges, panic hardware and push bar	1
102	GOOD	Original 2-panel wood door, with thin middle panel, frame & trim.	door & trim = fair	2 butt hinges, knob lockset and deadbolt	1
103	GOOD	Original 2-lite leaf wood double door, frame and trim	door & trim = fair	3 butt hinges, push plate (note: door swings in both directions with no closer hardware, resulting in patrons being struck by swing back).	1
104	GOOD	Original 2-panel wood door, with thin middle panel, frame & trim.	door & trim = fair	3 butt hinges, lever lockset	1
105	GOOD/ FAIR	Original 2-panel wood door, frame & trim.	door & trim = fair	2 butt hinges, knob lockset	1/2
106	GOOD	Original 2-panel wood door, frame & trim.	door & trim = fair	3 butt hinges, knob lockset	1
107	FAIR	Original 2-panel wood door, frame & trim.	door & trim = fair	2 butt hinges, knob lockset and deadbolt	2
108	FAIR	6-panel hollow metal door w/original wood frame & trim	door & trim = fair	3 ball bearing hinges, panic hardware and push bar	1
109	GOOD	Original 2-panel wood door w/original wood frame & trim	door & trim = fair	2 butt hinges, knob lockset and latch.	1
110	GOOD	Original 2-panel wood door, frame & trim.	door & trim = fair	2 butt hinges, knob lockset	1

Door No.	Overall Condition	Description	Finish	Hardware	Repair Class
111	GOOD	2-panel, half-lite wood door w/ wood frame & trim.	door & trim = fair	3 ball bearing hinges, lever lockset, panic hardware and push bar	1
112	GOOD	6-panel wood bi-fold door w/ wood frame & trim.	door & trim = fair	3 ball bearing hinges,	1
113	FAIR	6-panel hollow metal door w/ wood frame & trim	door & trim = fair	3 ball bearing hinges, lever lockset, panic hardware and push bar	2
SECOND FLOOR					
201	GOOD	6-panel wood door w/ wood frame & trim.	door & trim = fair	2 ball bearing hinges, knob lockset	1
202	GOOD	Original 4-panel wood door, frame & trim.	door & trim = fair	2 butt hinges, knob lockset and deadbolt	1
203	GOOD	Original 4-panel wood door, frame & trim.	door & trim = fair	3 butt hinges, knob lockset	1
204	GOOD	Original bead board wood door, frame & trim	door & trim = fair	2 butt hinges, knob unseen	1
205	GOOD	Original bead board wood door, frame & trim	door & trim = fair	3 butt hinges, knob unseen	1
206	GOOD	Original bead board wood door, frame & trim	door & trim = fair	4 butt hinges, knob unseen	1
207	GOOD	Replacement louvered wood door w/ original wood frame & trim	door & trim = fair	2 butt hinges, latch, padlock	1

Figure 3.71 Front door - exterior..

Figure 3.72 Front door - panel detail and hardware - interior.

Figure 3.73 Main entrance hallway - interior two-lite double doors.

Figure 3.74 Interior paneled door - typical original paneling.

Figure 3.75 Door to staff restroom, view from hall. Typical original paneling detail and finish.

Figure 3.76 Original door hinges and trim

Figure 3.77 Original interior door - typical paneling and hardware.

Figure 3.78 Original door to restroom off library/reading room - Hardware.

Figure 3.79 West entrance door to Children's Room Addition

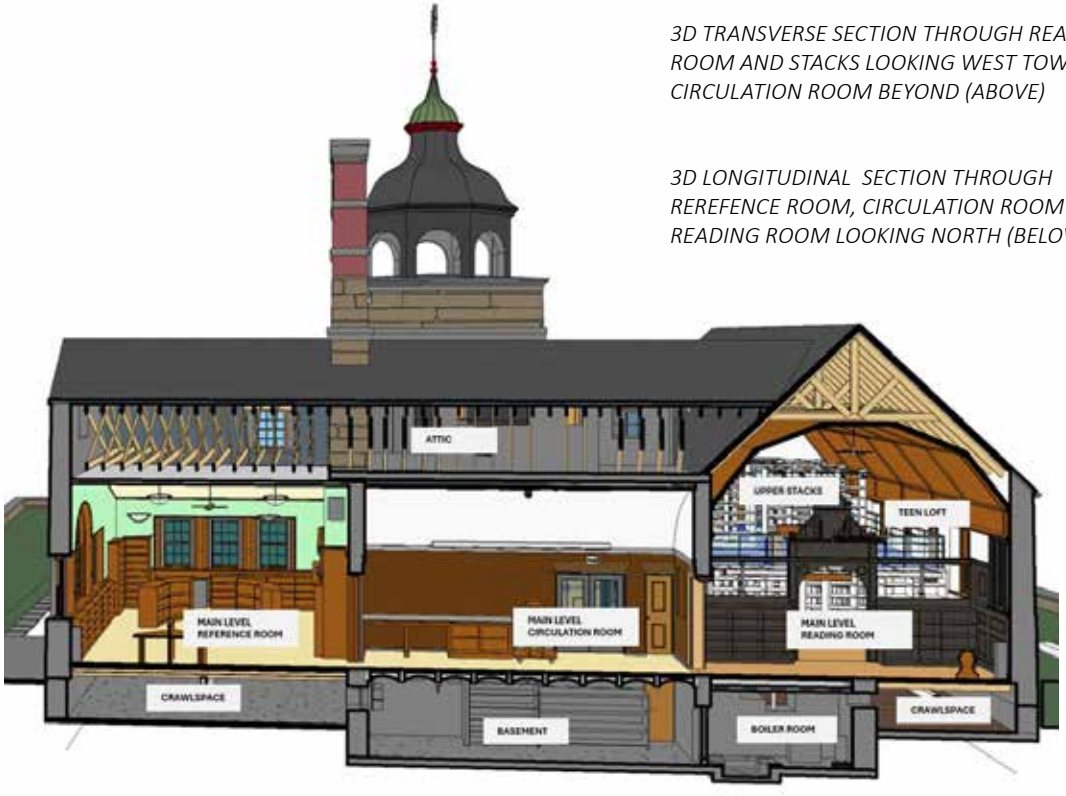
Figure 3.80 West entrance to Children's Room Addition - interior. Panic bar and barrier free access hardware..

Figure 3.81 Egress door at southeast corner of Children's Room Addition

Figure 3.82 Children's Room Addition east exit door with panic bar - interior.

3D TRANSVERSE SECTION THROUGH READING ROOM AND STACKS LOOKING WEST TOWARDS CIRCULATION ROOM BEYOND (ABOVE)

3D LONGITUDINAL SECTION THROUGH REREFENCE ROOM, CIRCULATION ROOM AND READING ROOM LOOKING NORTH (BELOW)



Interior Finishes

Walls

Most of the interior walls are original to the building, with the exception of the Children's Room Addition which was added in the mid-1960s.

Basement: The exterior walls in the basement are original rubble stone covered with white paint. Interior partition walls are original brick, also painted white. Coatings are in fair to poor condition. The north and south walls are partially covered with wood beadboard, also in fair condition. A gypsum wall partition was built into the arch to the boiler room to accommodate a new door; the drywall is unfinished.

Main level wall finishes, including stacks second level and Teen Loft, include:

- Cementitious parging in the North stair to the basement, in good to fair condition.
- Narrow red brick veneer in running bond, with contrasting light tan brick corbeled cornice (main entrance hallway, and Circulation Room).
- Dark oak wood paneling in the original library , in good condition.
- Built-in wood shelving and ornate wood paneling in the GAR Hall/Reading Room, in good condition.
- Painted plaster, smooth or textured, overall in good condition.
- Wood trim and baseboard, in good condition.
- Wood trim at doors and windows, in good condition.
- Ceramic tile in staff restroom.
- Built-in wood shelving in the Children's Room Addition, in good condition.
- Horizontal bead board paneling in the attic access to the tower, the clock tower and clock rooms, in good condition.

Tower 2nd Level wall finishes include plaster walls, and wood trim and baseboard, all in good to fair condition.

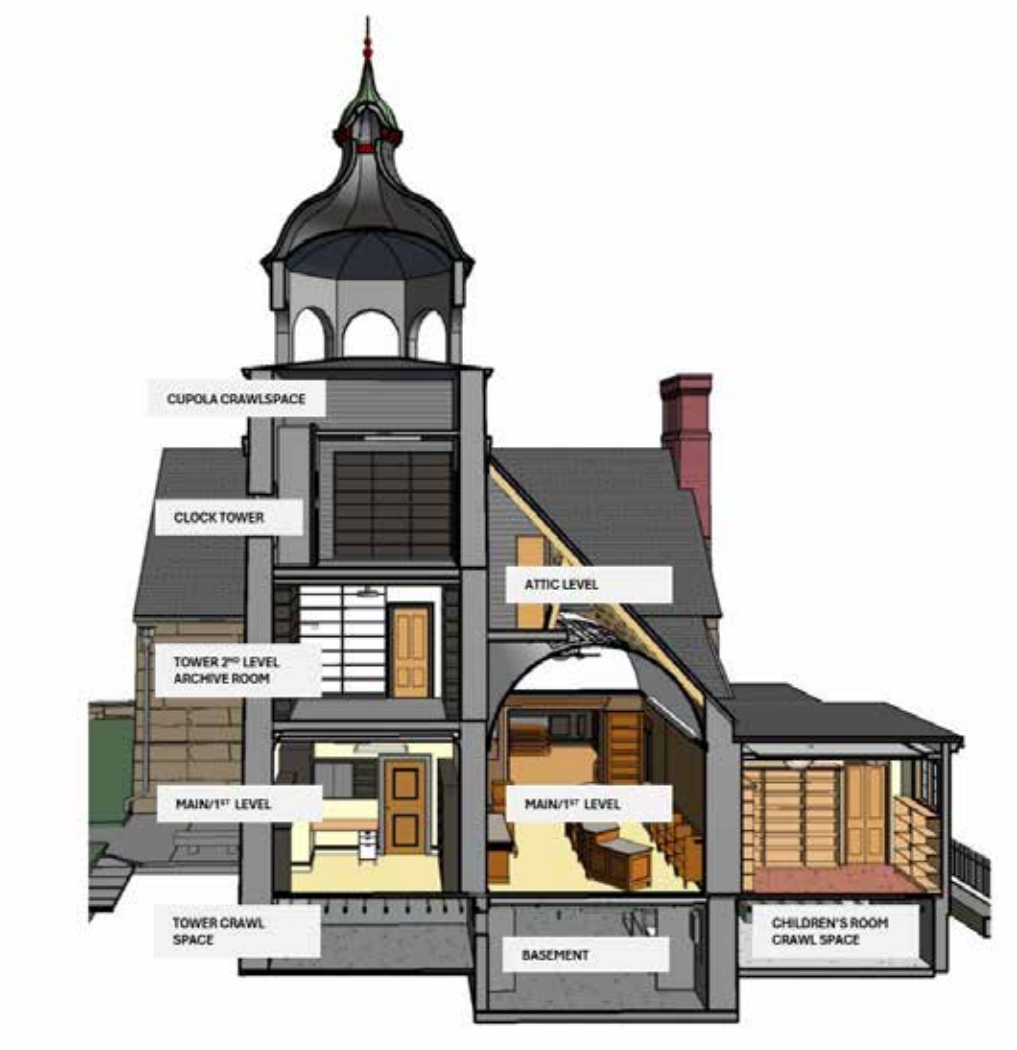
Ceilings

Most of the ceilings are original to the building, with the exception of the Children's Room which was added in the mid-1960s.

Basement ceiling finishes include coated steel framing and cementitious finish at brick arches. Coatings are in poor condition. Boiler room ceiling is coated in a textured, painted cementitious parge. The parge and coating are in good to fair condition.

Main level (including two-level stacks) ceiling finishes include:

- Oak paneled vaulted ceiling (original Library), in good condition.
- Painted plaster, in overall good condition except for water damaged area, and localized cracks along the south wall in the GAR Hall/Reading Room.
- Wood trim, in good condition.
- Beadboard in the clock tower and clock room, in good condition.
- Acoustical tile ceiling in the Children's Room Addition, in good condition.
- Metal panels in stacks lower level.



3D TRANSVERSE SECTION THROUGH OFFICE, CIRCULATION ROOM, AND CHILDREN'S ROOM (MAIN LEVEL), ARCHIVE ROOM (TOWER 2ND LEVEL) ATTIC, CLOCK TOWER ROOM, AND CUPOLA ABOVE.. VIEW FROM WEST LOOKING EAST

Flooring

Basement floor finish consists of concrete slab. Slab exhibits cracks and areas of previous repair. Basement concrete flooring is considered to be in fair condition; flooring in boiler room is considered to be in poor condition. There have been two recent instances of significant flooding (approximately 4"). The source has yet to be determined (rising damp through small cracks in the concrete flooring was noted, but is not the primary cause of the extensive flooding).

Main level floor finishes consist primarily of carpet, with the exception of vinyl sheet flooring (linoleum) in the restrooms. The carpet is in good condition; the vinyl flooring is in fair condition. It is assumed that most of the original flooring remains extent under the carpet and sheet vinyl; the condition of the original flooring is unknown. Carpet flooring at the second level stacks is in good condition.

The tower second level is similarly carpeted. The carpet is in good condition; condition of original floor beneath it is unknown.

Flooring in the attic level and at the clock tower consists of unfinished wood planks.

Stairs

An original straight run, wood stair provides access from the north entrance lobby to the basement. The stair treads and closed risers of this original stair are in fair condition; wood railing is non-code compliant, and in fair condition.

A new winder metal stair was constructed in the 1960s, providing access to the crawl space under the new Children's Room Addition and the basement beyond from the south service entrance. Stair treads, closed risers and railing are in fair condition; railing is non-code compliant and coating are in fair condition.

An original winder wood stair provides access from the circulation area to the tower second floor level. The stair treads , closed risers and round wood handrail on metal brackets are in good condition. Stair treads, closed risers and wall stringers are stained, with the edge of the treads painted white. The top landing wood railing consists of a square landing newel post, square wood balusters, and handrail, stair and railing are in good condition; stain and paint are in fair condition.

A short, steep straight wood stair leads from the tower second floor to the attic. Stair treads are stained, with a painted edge, closed risers are painted, wall stringer and cut stringer stained. The wood railing consists of a square starting newel post, square wood balusters, and handrail, matching that at the landing of the stair from the first floor. Stair and railing are in good condition; stain and paint are in fair condition.

Five steps lead from the attic to the clock tower. Stair treads and cut stringer are unfinished; risers are stained. Stair is in fair condition; there is no railing. A wood ladder leads up to a crawl space under the cupola and cupola access panel above. The ladder is in fair condition.

Straight run metal stairs are part of the two-story stack and mezzanine assembly. The open riser metal stairs are in good condition, coating is in fair condition. Glass and metal mezzanine railing is in good condition.

Original Furnishings

The carved wood screen separating the stacks from the reading room in the original Library is in good condition.

The large fireplace and ornate wood paneling surround in the Reading Room are in good condition.

The small stained glass window in the southwest corner of the Circulation Room is in good condition.

Rectangular memorial tablets and two bronze plaques in the Circulation Room are in good condition.

The original Circulation Room ceiling skylight is no longer extant, although the metal framing remains apparent in the ceiling.

Interiors Summary Assessment

	Excellent	Good		Fair		Poor		Critical
	A	B+	B	C+	C	C-	D	F
	None	Minor				Serious		Critical
Interior Wall Finishes								
Basement					✓	✓		
Main Floor			✓					
Tower 2nd Level			✓					
Interior Ceiling Finishes								
Basement					✓	✓		
First Floor			✓					✓
Tower 2nd Level			✓					
Interior Floor Finishes								
Basement					✓	✓		
Main Floor			✓	✓				
Tower 2nd Level			✓					
Interior Stairs								
South Stair to basement				✓				
North Stair to Basement				✓				
Tower Stair			✓	✓				
Stacks Loft Stair		✓						
Interior Trim								
First Floor		✓						
Main Floor		✓						
Tower 2nd Level								
Historic Finishes								
Partition Screen and wood paneling		✓						
Carved Wood Paneling		✓						
Stained Glass and Memorial Plaques		✓						
Vaulted Ceiling Paneling		✓						

Figure 3.83 - Basement finishes, typical.

Figure 3.84 - Library entrance lobby finishes.

Figure 3.85 - Circulation Room (Memorial Hall) finishes.

Figure 3.86 - Library/Reading Room finishes - looking north towards stacks.

Figure 3.87 - Library/Reading Room - view looking south..

Figure 3.88 - .Library Stacks - view from reading room looking north..

Figure 3.89 - GAR Hall/Reference Room - view from northwest looking southeast.

Figure 3.90 - GAR Hall/Reference Room - view from southeast looking northwest

Figure 3.91 - GAR Hall/Reference Room - view from west looking east.

Figure 3.92 - GAR Hall/Reference Room - view from northeast looking southwest.

Figure 3.93 - Children's Room - view from east looking west..

Figure 3.94 - Children's Room - view from west looking east.

Figure 3.95 Plaster ceiling, brick trim, brick wall finish, and carpet flooring - main entrance lobby

Figure 3.96 - Plaster ceiling and wall finishes, wood trim, carpet flooring - office space.

Figure 3.97 Plaster ceiling, ceramic tile wall finish, vinyl sheet flooring, wood trim. Staff restroom.,

Figure 3.98 Metal ceiling panels, carpet flooring - Stack slower level..

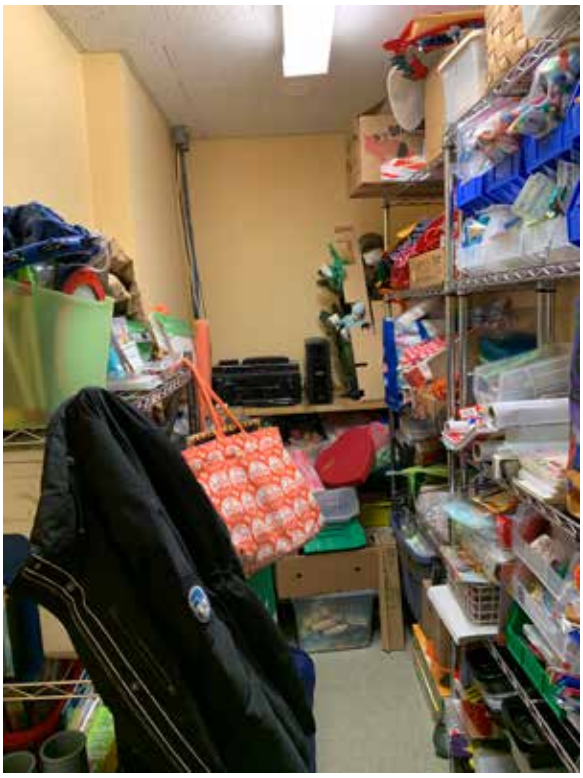


Figure 3.99 Acoustical tile ceiling, painted drywall wall finishes, carpet flooring. Children's Room storage.

Figure 3.100 Wood plank flooring at attic clock tower..

Figure 3.101 Original oak paneled vaulted ceiling. Library/ Reading Room, view from upper stacks Teen Loft.

Figure 3.102 Original framing of closed skylight at Memorial Hall/Circulation Room.

Figure 3.103 Teen Loft metal railing and ornamental screen beyond. View from Teen Loft looking southeast.

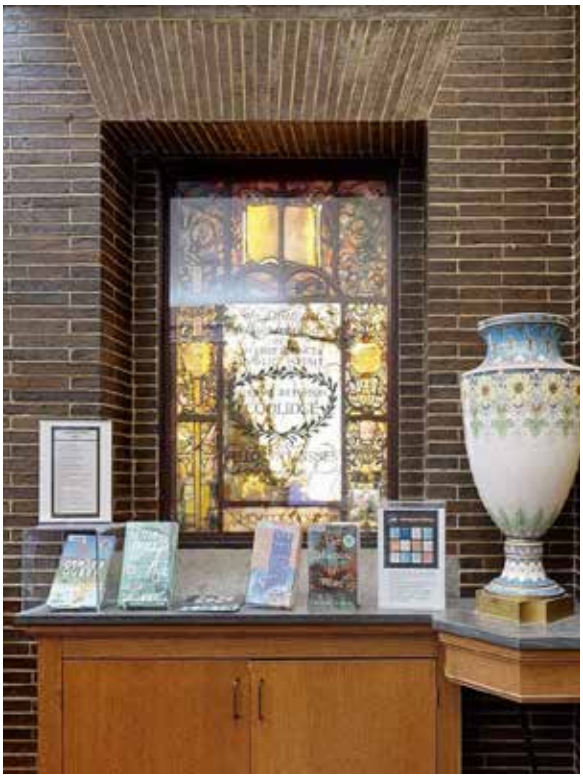


Figure 3.104 Stained glass window in southwest corner of Memorial Hall/Circulation Room..

Figure 3.105 Decorative marble commemorative tablets - Memorial Hall/Circulation Room south wall.

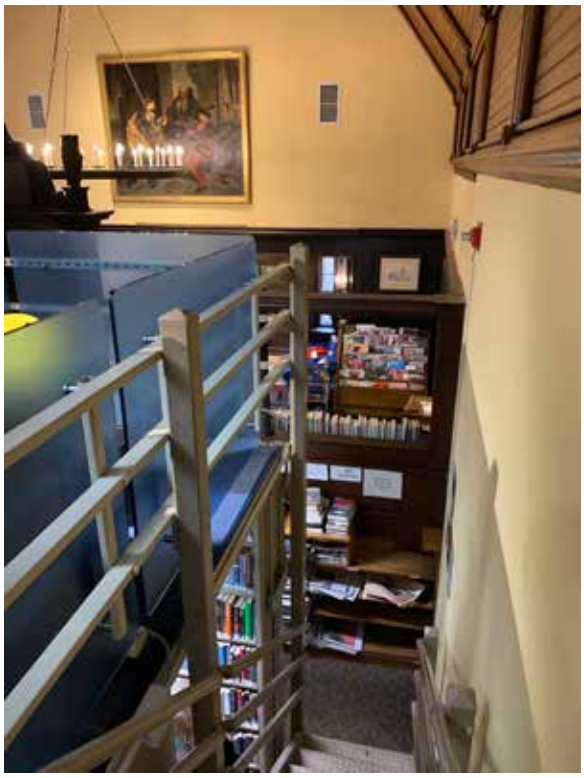


Figure 3.106 Metal and glass railing at Teen Loft, screen wall beyond. View from upper stack level looking south.

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Mechanical Systems

System Description

The heating system in the original library spaces consists of two 264 MBH boilers - Lochinvar model KHN285, serial number 1651104282511 - supplying hot water to cast-iron radiators located throughout the building. The cooling system serving the main level primary spaces (Reading Room, Reference Room, and Circulation Room) includes a 5-ton air handling unit located in the attic, with AprilAire MERV 13 16x25x5 filter, and a Solaris SLX1024 UV ION filtration system. The air handling unit is equiped with hydroninc coils from the boilers to proide supplemental heat in the winter. Cooling is provided by a 5-ton 410A condenser installed on the roof of the Children's Room addition. An exhaust vents the attic. Units in attic and on rooftop were installed in 2020/2021 and are considered to be in good condition.

Mini-splits provide conditioning to the Director's office and the back of the stacks on the main level, and the Archives Room on the tower 2nd level. Two heat pump units are located at ground level along the east elevation; a third heat pump unit is located on the Children's Room addition roof. Neither heat pumps nor mini-splits are operational.

The Children's Room Addition has a rooftop 3.5 ton Armstrong Air heat pump – R410a, an Armstrong Pro 3.5 ton variable speed air handler equipped with a Solaris SLX1024 UV ION filtration system (located in the addition crawl space) and hydronic heating coil for second stage heating/backup. The boilers provides supplemental heat when the heat pump cannot keep up. The crawl space air handling unit and the rooftop heat pump were installed in 2021 and are considered to be in good condition.

All systems are tied together through a Johnson Controls Building Automations Energy Management System (BAS). The system was installed in 2023 and is considered to be in very good condition.

The ductwork consists of sheet metal supply and return main ducts and flexible branch ducts to the diffuser or register. The supply ductwork is insulated throughout the basement. The condition of the insulated ductwork is unknown.

There do not appear to be any exhaust fans in the restrooms.

Mechanical Systems Summary Assessment

	Excellent	Good		Fair		Poor		Critical
	A	B+	B	C+	C	C-	D	F
	None	Minor				Serious		Critical
Boilers - Basement							✓	✓
Main Building Air Handling Unit and Condenser			✓					
Children's Room Addition Heat Pump and Air Handling Unit.			✓					
BAS Controls System		✓						
Mini Split Systems and Assocaietd Heat Pumps								✓
Cast Iron Radiators			✓	✓				
Ductwork			✓	✓				
Exhaust Fans								N/A

FIGURE 3.107 - Basement boiler room.

Figure 3.108 Basement - Boilers and piping

Figure 3.109 Basement - Boilers and piping l..

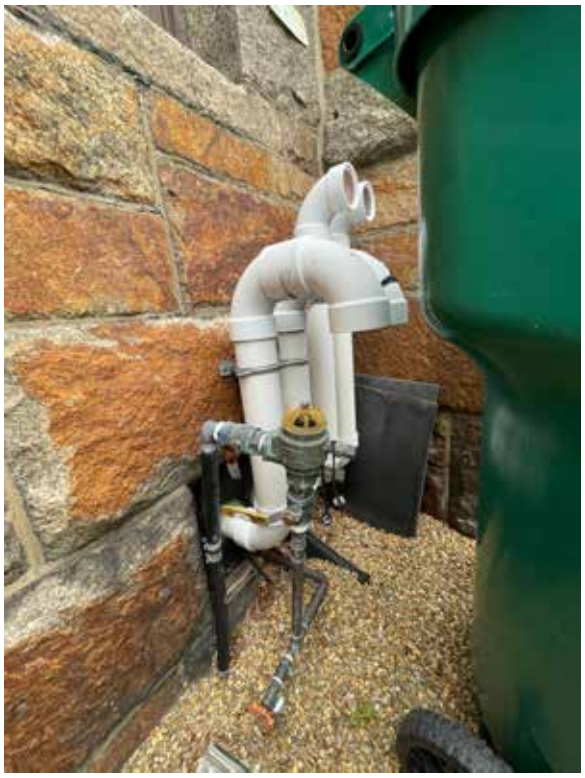

Figure 3.110 Boiler exhausts

Figure 3.111 - Ductwork and vent - attic above side gable wing, near dormer.

Figure 3.112 Ductwork in attic.

Figure 3.113Decommissioned exterior units.

FIGURE 3.114 - Children's Room Addition - unit in crawlspace.

Figure 3.115 Children's Room Addition - rooftop units.

Figure 3.116 First floor radiator.

Plumbing Systems

System Description

The existing plumbing system consists of fixtures, potable cold, and hot water heating equipment, irrigation system, and sanitary waste and vent systems.

The gas water heater is located in the basement boiler room. It is a Lochinvar model SIT030, serial number 1637103414052, 91-105 MBH and is in good condition

The restroom fixtures consist of a flush tank water closet and manual handle lavatory. Fixtures are in fair condition but do not meet efficiency requirements. The utility sink located in the basement is in fair condition.

There is a sump pump in a pit in the boiler room in the basement that discharges outside the building. There is no sump pump in the main basement floor to evacuate potential flooding waters.

Sanitary piping consists of cast iron piping visible from an access hatch under the staff restroom. Video inspection of sanitary piping was not included in the scope of this assessment, however staff has noted occasional issues with clogging or slow flow. It can be assumed that the old cast iron pipe is tuburculated and should be replaced.

The beehive manhole in the Children's Room addition for sewer service was piped through to eliminate an access point.

The condition of the irrigation system is unknown.

Plumbing Systems Summary Assessment

	Excellent	Good		Fair		Poor		Critical
	A	B+	B	C+	C	C-	D	F
	None	Minor				Serious		Critical
Hot Water Heater		✓						
Restroom Fixtures						✓		
Radiators			✓	✓				
Piping (unknown)					✓	✓		
Irrigation system (Unknown)								

Figure 3.117 Basement boiler room - hot water heater.

Figure 3.118 Basement boiler room - sump pump pit and pump.

Figure 3.119 Cast-iron piping at original public restroom.

Figure 3.120 Cast-iron and new PVC piping at basement utility sink.

Figure 3.121 Fixtures in public restroom (accessed from reading room.

Figure 3.121 Fixtures in staff restroom, accessed from Circulation Room.

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Electrical Systems

Electrical System

Power and Wiring

Electricity is supplied from a utility transformer and routed underground through conduit penetrating the building at the basement west wall. Here, it terminates into two (2) branch circuit distribution panels, which in turn sub-feed an additional panel.

Within the building, the power line connects to the Main Building Enclosed Circuit Breaker, passing through a meter and into Panel 'A' (240/120 V, 3 Wire, 100 A MCB). Panel 'A' sub-feeds Panel 'C' (240/120 V, 3 Wire) from a 60A breaker, and Panel 'B' (240/120 V, 3 Wire, 150 A MCB).

While the panels are currently functional, they are nearing their capacity. Notably, there is no provision for emergency power from a generator.

Wiring throughout the building comprises 14/2 and 12/2 Romex, as well as MC Cable. Given the age and past renovations, the lifespan of the existing wiring should be taken into consideration.

Outlets and switches

Outlets ad switches are considered to be in overall good condition, although some have been added or replaced over time as needed.

Lighting

Exterior Lighting

Exterior lighting is limited to entryways, utilizing incandescent fixtures and floodlighting. Additional lighting is necessary for safety, with typical walkway and entry lighting set at 1 foot-candle (FC).

Interior Lighting

- Interior lighting in the basement consists of 1'x8' strip light fixtures on hard ceilings, which have been retrofitted from Fluorescent to LED. The lighting is deemed sufficient and operational.
- First floor lighting is an array of residential fixtures, including chandeliers, sconces, and wall-mounted linear fixtures. Notable features include 1'x4' pendant Fluorescent direct/indirect fixtures in the office, decorative chandeliers adorning the Librarian/checkout desk, four decorative chandeliers, and two sconces in the main library space. While the main library area benefits from ample daylighting through its windows and fixtures, it's recommended to install new fixtures for enhanced artificial lighting.
- The children's room boasts recently renovated round surface-mounted fixtures in a residential style. Incandescent lamps are being replaced with LKED lamps as they reach their life expectancy.
- Library stacks mezzanine level lighting includes updated 1'x4' linear direct/indirect fixtures and book stack spotlighting, providing sufficient and operational lighting..
- Tower mezzanine level comprises a break area with two(2) 1'x4' linear fluorescent fixtures and an office with a single residential pendant fixture.
- Emergency exit lighting is present but it is unclear if the is egress path is coordinated with lighting levels.

IT/Telecom

The existing IT/Telecom systems are in fair condition, lacking an Uninterruptible Power Supply (UPS) and a dedicated IT room. All equipment is currently housed in the basement.

Fire Alarm System

The building is equipped with an addressable fire alarm system, with the fire alarm panel located in the Vestibule. This system is in good condition and appears to meet current adopted codes.

Lightning Protection

Lightning protection is non-existent. Based on analysis below, lightning protection is required per NFPA 780.

Project	
Building	
Date	

Average strikes per year	N_D	$= N^G * A^D * C^D * 10^{-6}$	
Lightning ground flash density	N_G	4.00	Flashes/km^2/year
Collection Area (See Figure 1)	A_D	164,235.00	ft^2
		15,257.93	m^2
Location Factor	C_D	0.50	

Average strikes per year (Range)	N_D	0.03	0.03

Events Per Year	N_C	$(1.5 * 10^{-3}) / C$	
Coefficient	C	$C_2 * C_3 * C_4 * C_5$	
Construction Coefficient	C_2	3.00	Table L.5.1.2(a)
Structure Contents	C_3	1.00	Table L.5.1.2(b)
Structure Occupancy	C_4	1.00	Table L.5.1.2(c)
Lightning Consequence	C_5	1.00	Table L.5.1.2(d)
	C	3	

Events Per Year	N_C	0.00050

$N_D > N_C$ Lightning Protection is recommended per NFPA 780

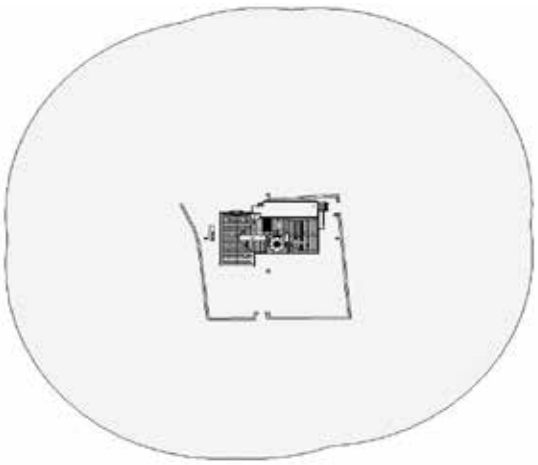

Figure 1.
Graphical Calculation of Equivalent Collection Area

Electrical Systems Summary Assessment

	Excellent	Good		Fair		Poor		Critical
	A	B+	B	C+	C	C-	D	F
	None	Minor				Serious		Critical
Panels		✓						
Wiring Overall			✓	✓		✓		
Receptacles			✓	✓				
Switches				✓				
First Floor Light Fixtures			✓	✓				
Second Floor Light Fixtures			✓	✓				
Basement Light Fixtures				✓		✓		
IT/Telecom					✓	✓		
Fire Alarm System - Not Tested			✓					
Exit Lights				✓				
Exterior Lighting			✓		✓			
Lightning Protection System (N/A)								✓

Figure 3.122 Main building enclosed circuit breaker.

Figure 3.123 Meter and distribution panels - basement, west wall.

Figure 3.124 Distribution panel, basement, south wall.

Figure 3.125 Labeled cables from distribution panel.

Figure 3.126 Panel at boiler room

Figure 3.127 - Wiring and outlets in attic..

Figure 3.128 Conduit and outlet at first floor (Reference Room).

Figure 3.129 Conduit and switch - first floor office..

Figure 3.130 Basement - strip light fixtures

Figure 3.131 Chandelier at Library Reading Room

Figure 3.132 Spotlights at Library Teen Loft stacks.

Figure 3.133 Linear fixture at lower level stacks (similar at upper level).

Figure 3.134 Under-cabinet lighting strip at underside of bookshelves in Library screen.

Figure 3.135 -Chandeliers in GAR Hall/Reference Room…

Figure 3.136 Chandelier and wall sconce - Reference Room.

Figure 3.137 - Circulation Room - indirect lighting at south wall and chandeliers. ..

Figure 3.138 linear fixture - office space

Figure 3.139 Sconces in Archives Room (second level of tower).

Figure 3.140 IT equipment - basement..

Figure 3.141 IT distribution cabling..

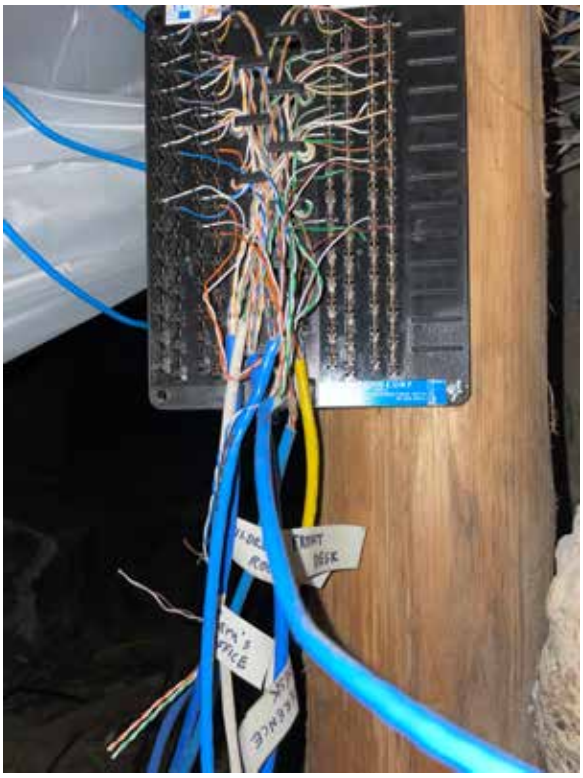

Figure 3.142 IT distribution labeling

Figure 3.143 -IT distribution at desk in Children's Room Addition..

Figure 3.144 Retractable projection screen, south wall of Reference Room..

Figure 3.145 - Addressable fire alarm system panel. West wall of entrance lobby.. ..

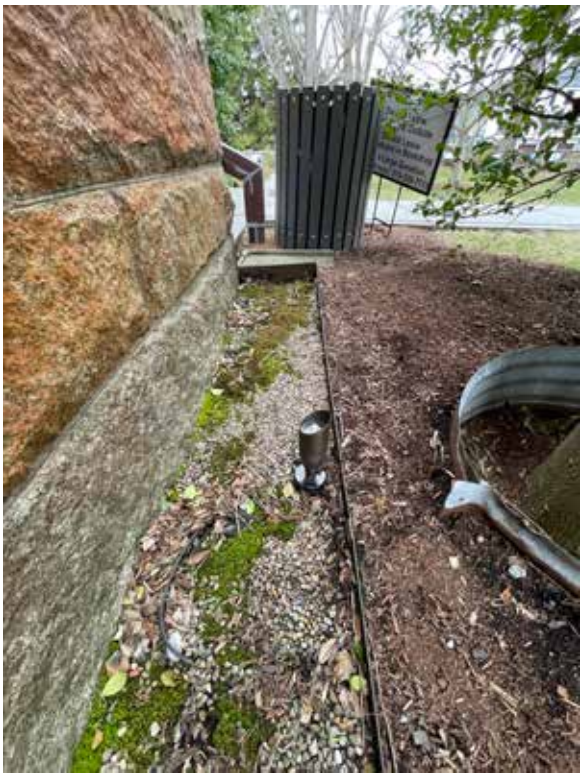

Figure 3.146 Exterior uplighting fixture - north elevation.

Figure 3.147 -Exterior uplighting fixture

Figure 3.148 Exterior - Indirect lighting at main entrance.

Figure 3.149 - Exterior - Pendant light at west entrance... ..

Building Code Compliance

Building codes represent the minimum requirements for life safety of the occupants; each building, historic or non-historic, must be evaluated to address its specific risks, based on factors such as the characteristics of the building, its occupancy and its use.

Although it will not be necessary to bring the entirety of the Library into compliance with the building code for new construction, any new or replacement work must conform to code. When compliance with specific requirements of the Code places undue duress and/or is not possible, it will be necessary to develop code conformance strategies which satisfy the life safety intent of the code through alternative means. As an existing building, the proposed work will have to comply with the stipulations of IBC 2015 and IEBC 2015.

Basis of Analysis

The following analysis is based on a classification as a Building Type III-B – unprotected (no sprinkler systems), non-combustible exterior walls code compliant interior walls materials (IBC 2015 - §602.3), and a building use of Assembly Group A-3 (IBC 2015 - §304.1).

Usable Space

Usable Space: Occupiable spaces, habitable spaces, and corridors must have a ceiling height of not less than 7 feet 6 inches (IBC 2015 - §1208.2).

Bathrooms, toilet rooms, kitchens, storage rooms and laundry rooms shall be permitted to have a ceiling height of not less than 7 feet (IBC 2015 - §1208.2).

Mezzanine: The clear height above and below the mezzanine floor construction shall be not less than 7 feet (IBC 2015 - §505.2).

Based on the above basement, main floor, library stacks mezzanine and tower second floor are considered usable space.

Occupancy

The maximum allowed floor area allowed per occupant for use Library is 50 square feet net for reading rooms and 100 square feet gross for stack areas (IBC 2015 - Table 1004.5). The maximum allowed floor area allowed per occupant for use Business Area (offices) 100 square feet gross (IBC 2015 - Table 1004.5).

Although the occupancy has been listed as 75 historically, based on existing space calculations from existing conditions measured drawings, and the IBC code restrictions, maximum allowable occupancy is 54, broken downs as follows:

- Business/Office areas: 7 occupants.
- Reading Room areas: 30 occupants
- Stacks areas: 17 occupants

Egress

Doors

There are three exterior doors allowing egress to the first (ground) floor level that would satisfy the means of egress requirements (IBC 2015 - Table 1006.3.1.1). The hallway door from the circulation desk room to the entrance lobby swings in both directions of travel. The path to Children's Room addition east exit door is obstructed with miscellaneous stored items.

With occupancy on the tower second floor limited to less than 29, one exit at the second floor is code compliant (IBC 2015 Table 1006.3.3(2)).

The main egress doors on the east and north elevations comply with the required minimum 32" width (IBC 2015 - §1010.1.1).

> *IEBC Chapter 12 Historic Buildings of the International notes that existing door openings less than those specified elsewhere by code may be approved, provided that, in the opinion of the code official, there is sufficient width and height for a person to pass through the opening or traverse the means of egress. When approved by the code official, the front or main exit doors need not swing in the direction of the path of exit travel, provided that other approved means of egress having sufficient capacity to serve the total occupant load are provided (IEBC 2015 - §1203.3.2).*

Stairways

Stairways serving an occupant load of less than 50 will have a width of not less than 36 inches (IBC 2015 - §1011.2). The use of the basement and first-floor stairs is restricted to Library staff, an occupant load of less than 50, however, they are not code compliant egress stairway.

> *IEBC Chapter 12 Historic Buildings notes that existing stairway widths less than those specified elsewhere by code may be approved, provided that, in the opinion of the code official, there is sufficient width and height for a person to pass through the opening or traverse the means of egress (IEBC 2015 - §1203.3.2).*

Common path of egress

The Common Path of Egress in a Group A occupancy space with an occupant load of less than 49 with no sprinkler system is limited to 75 feet (IBC 2015 – Table 1006.2.1). The Common Path of Egress in a Group B occupancy space with an occupant load of less than 30 with no sprinkler system is limited to 100 feet (IBC 2015 – Table 1006.2.1). The common path of egress for A occupancy spaces does not exceed 75 feet. The common path of egress for B occupancy spaces does not exceed 100 feet.

Exit

Table 1006.3.2 notes that for an occupant load of 1-500 per story, two (2) exits are required, (IBC 2015 - §1006.3.1). The building complies with these requirements

Corridor width

The exit passageways (front and back lobbies) comply with the minimum 44" width required (IBC 2015 - 1024.2).

Plumbing Fixtures

Based on occupancy of 54, the code requires one male toilet and one lavatory and one female toilet and one lavatory (IBC 2018 - Table 2902.1). The code also requires one drinking fountain and one service sink. The building complies with the minimum plumbing fixtures requirement; however there is no hard connected water fountain.

Barrier-Free Accessibility

IBC 2015 - Chapter 11 Accessibility, requires that:

> *In accordance with M.G.L. c. 22, § 13A all public buildings shall be designed to be accessible to, and functional and safe for the use by, physically disabled persons, and conform to the requirements of 521 CMR: The Architectural Access Board. In accordance with M.G.L. c. 143, § 3, 521 CMR shall be enforced by the building official or the state inspector, as applicable.*

521 CMR 3.00 - § 3.3 stipulates that All additions to, reconstruction, remodeling, and alterations or repairs of existing public buildings or facilities will be governed by all applicable subsections in 521 CMR 3.00: JURISDICTION.

521 CMR 3.00 - § 3.9 - Historic Buildings notes that a historic building or facility that is listed or is eligible for listing in the National or State Register of Historic Places or is designated as historic under appropriate state or local laws may be granted a variance by the Board to allow alternate accessibility. Consultation with the Massachusetts Historical Commission (MAHC)is required.

The Library meets the following barrier-free accessibility requirements:

- Wheelchair width passage clear minimum of 36", wheelchair turning space, and wheel chair forward and side reach (521 CMR 6.00).
- Number of accessible seats and accessible space(521 CMR 14.00).
- Accessible route (521 CMR 20.00), ramps (521 CMR 24.00), entrances (521 CRM 25.00) And Doors And Doorways Along Accessible Routes (521 CMR 26.00).

The Library does not meets the following barrier-free accessibility requirements:

- Existing stairs (521 CRM 27.00).
- Access to the Teen Loft (521 CRM 27.00).
- Public toilet rooms (521 CRM 30.00)
- Signage (521 CRM 41.00).

Beyond the requirements of 521 CMR, which does not identify the stacks as an area specifically requiring barrier-free accessibility, the American Library Association references the ADA Accessibility Guidelines (ADAAG)[1] , which stipulate in paragraph 8.5 that

> *Minimum clear aisle width between stacks shall comply with 4.3, with a minimum clear aisle width of 42 in (1065 mm) preferred where possible. Shelf height in stack areas is unrestricted.*

Per these guidelines, the hallway between stacks meets standards, however access to the stacks other than the front stack does not meet requirements.

Note:

The above guidelines exclude vertical accessibility from required compliance, as shelf height in stack areas is unrestricted. This however, contradicts current best practices in the planning of library spaces. These include the following:

- A secure and manageable environment means positioning stacks so that library staff can ideally see nearly every space from their station or during the course of their routine activities. This also means avoiding dead-end stack aisles.
- Low stacks provide good sight-lines throughout, and allow for vertical universal accessibility.
- No dead-end stack aisles.

Furthermore, in the Association of Research Libraries (ARL)'s *SPEC Kit 358: Accessibility and Universal Design (May 2018)*[2] presenting the results of a survey of sixty-seven of the 125 ARL libraries, notes that libraries stack accessibility appeared in frequent comments from respondents, with 96% of responding noting that assistance for books and other material retrieval from stacks had to be provided by library staff.[3]

In their existing configuration, the stacks do not provide universal access to patron, either by width of aisle, or by forward reach limit, with maximum reach height for barrier-free access being 48".

[1] https://www.access-board.gov/ada/guides - accessed 3 May 2024.
[2] https://publications.arl.org/Accessibility-Universal-Design-SPEC-Kit-358/ - accessed 23 May 2024
[3] Ibid - Page 8.

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Chapter Four: Recommendations

Preservation Philosophy

The design philosophy is to be respectful of the original 1887 building while optimizing the use of the Library space. The proposed interventions will respect the historic character of the Library, while providing enhanced occupant and visitor experience. Accommodations for barrier-free access must be integrated in a discreet fashion and not adversely impact the overall perception of the historic character of the building.

Proposed treatments must meet a 50-year life cycle performance goal, under regular routine maintenance conditions. Proposed building systems should meet energy efficiency standards.

Character Defining Features

Location and Setting

- Library is bounded by a low perimeter stone walls, with physical and visual connection to its surroundings.
- Library is located at the south end of the lot, with an open landscaped area fronting Union Street. Landscape surrounding the Library is mature trees, plantings, and walkways.

Exterior

- Cupola, with slate roofing and wall cladding, standing seam sheet metal and weather vane.
- End gable and side gable slate roof, and chimneys.
- Granite exterior envelope.
- Original penetrations which remain intact, and original windows and doors.

Interior

- Basement, first floor and tower second original floor layouts.
- Original wood screen, carved ornamentation, wall paneling, vaulted ceiling and trim.
- Interior Roman brick wall finishes, stained glass window and memorial plaques in Memorial Hall.

Scope of Work Overview

The scope of work at the Library will focus primarily on the exterior envelope, interior finishes, building systems upgrades, and remodeling an area of the interior to provide barrier-free restrooms currently missing from the facility. Limited site-work at the bluestone walkway and Children's Room Addition ramp and stair cheek walls will also be required.

The intent is to apply the Secretary of the Interior Standards for Preservation and/or Restoration as appropriate for the exterior envelope and interior finishes, and the Standards for Rehabilitation to provide accessible restroom facilities, and accommodations for modern amenities such as energy efficient bathrooms fixtures and mechanical system upgrades.

Hierarchy of Treatments

Functional hierarchy has always divided the building into primary spaces (Original Library/Reading Room, Memorial Hall/Circulation Room, GAR Hall/Reference Room), secondary spaces (first floor offices, tower 2nd level Archive Room and landing, clock tower and clock room) and tertiary spaces (restrooms, basement, attic).

The Children's Room Addition is a modern addition, and thus, for the purposes of preservation treatments, is also considered a tertiary space.

Many areas retain a high level of integrity and much original historic fabric; however, various build campaigns, shifts in use and updates over the years have also resulted in some loss of material:.

- The original building envelope, its massing, finishes, and fenestration retain a high level of integrity. This includes the roofing, the exterior masonry envelope, doors and windows, exterior and interior wood trim, and interior finishes and furnishings, such as the original partition screen in the library.
- The layout and scale of the primary spaces remains mostly intact, except for the inclusion of a circulation desk in the central Memorial Hall/Circulation Room, and the replacement of the original stacks with two-story stacks.
- For the purposes of this report, the replacement stacks are considered an area of tertiary significance, without the overall intact volume of the original Library wing.
- The 1960s Children Room's addition is consistent with similar modernization build campaigns at other buildings.
- Building systems upgrades have been overall discreetly integrated, and have limited impact on interior spaces in general.

Levels of Preservation Treatments

Based on architectural and historical significance, and historic fabric integrity, we propose the following levels of preservation treatment in accordance with the Secretary of the Interior’s Standards for the Treatment of Historic Properties.

- Application of the Secretary of the Interior Standards for Restoration and the Standards for Rehabilitation for the building envelope, primary first floor interior spaces, and tower 2nd level spaces.
- Application of the Secretary of the Interior Standards for Rehabilitation for the secondary first floor spaces, stack area, basement, and Children's Room Addition.

Standards for Restoration

1. A property will be used as it was historically or be given a new use that interprets the property and its restoration period.
2. Materials and features from the restoration period will be retained and preserved. The removal of materials or alteration of features, spaces and spatial relationships that characterize the period will not be undertaken.
3. Each property will be recognized as a physical record of its time, place and use. Work needed to stabilize, consolidate, and conserve materials and features from the restoration period will be physically and visually compatible, identifiable upon close inspection and properly documented for future research.
4. Materials, features, spaces and finishes that characterize other historical periods will be documented prior to their alteration or removal.
5. Distinctive materials, features, finishes and construction techniques or examples of craftsmanship that characterize the restoration period will be preserved.
6. Deteriorated features from the restoration period will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture and, where possible, materials.
7. Replacement of missing features from the restoration period will be substantiated by documentary and physical evidence. A false sense of history will not be created by adding conjectural features, features from other properties, or by combining features that never existed together historically.
8. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
9. Archeological resources affected by a project will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
10. Designs that were never executed historically will not be constructed.

Standards for Rehabilitation

1. A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces and spatial relationships.
2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.
9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.
10. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

Proposed Treatments

The recommended treatments aim to achieve the following goals:

- A successful, sensible, and sustainable project.
- Comply with the Secretary of the Interior's Standards.
- Conserve and preserve historic fabric to the greatest extent possible and provide accurate interpretation to the public.
- Accommodate the Library's functional and programmatic needs.
- Deliver a successful, cost effective, and sustainable project.

The proposed scope of work addresses building fabric and systems, and architectural improvements to optimize operations for Library staff and visitors alike. The scope of work is summarized below.

The Secretary of the Interior Standards for Restoration and the Standards for Rehabilitation will be applied to the building envelope and primary interior spaces as follows:

- Restoration of exterior perimeter wall.
- Exterior brick and stone masonry.
- New slate roofing and associated copper sheet metal flashing, and copper gutter.
- New membrane roofing at skylight location and associated copper sheet metal flashing and gutters.
- Copper downspout and rainwater conductor head repairs, with new boots to underground drainage piping system.
- Repair/restoration of existing wood windows, with new replacement storm windows.
- Exterior and interior wood door surface preparation and coating.
- Interior plaster finishes repairs at areas of water damage.
- Repair/restoration of exterior wood trim at doors and windows.
- Interior lighting upgrades.

The Secretary of the Interior Standards for Rehabilitation will be applied to secondary and tertiary spaces, as follows:

- New membrane roofing at Children's Room Addition, and associated sheet metal flashing and gutters.
- New downspouts and downspout boots at Children's Room Addition to underground drainage piping system.
- New barrier-free access restrooms on the first floor.
- New stacks meeting best practices in universally accessible library design.
- New building system equipment and interior finishes repairs at the basement level.
- New telecom cabinet in the basement.
- New efficient plumbing fixtures in existing restrooms.
- Upgraded high performance HVAC equipment, meeting energy performance, and providing high indoor air quality while protecting public health. .
- Upgraded electrical, and IT systems.
- New lightning protection system.

Contractor Qualifications

All work will be performed by contractors and craftsmen with demonstrated successful experience in working with historic buildings and construction materials. Work will require careful engineered access, rigging and temporary shoring to maintain the structural integrity of the structure for project duration.

Only contractors with demonstrated, verifiable, and successful experience in Project Supervision and Administration of Projects of a similar scale and scope will be allowed to bid for the project. Minimum experience of general contractor, project supervisor and key personnel will include at least two projects within the past ten years involving separate significant historic buildings or sites, or buildings comparable to the Library in size and complexity, with similar scope of work as noted above (site supervision and coordination, masonry restoration, copper sheet metal roofing and flashing, interior finishes restoration, historic windows repair, etc.).

Architectural

Site

- Trees: Per the National Park Service, non-groundcover plantings should be a minimum of 4-foot clearance from building, and tree canopies should be trimmed back a minimum of 4-foot clearance from building. Canopy of trees overhanging the Library roof along its four elevations should be trimmed back a minimum of 4-foot clearance from building.
- Grading: re-slope all areas adjacent to the building foundation walls away from the building

Perimeter Wall

- Repoint all coping joints with mortar topped with a flexible sealant - typical all.
- Repoint damaged/cracked mortar joints - typical 20%.
- Remove biological and vegetation growth - typical all.
- Complete general cleaning.

Building Envelope

Granite Masonry

- Repoint damaged/cracked mortar joints - typical 10%.
- Complete general cleaning.

Stucco and wood panels at Children's Room Addition

- Remove existing stucco panels and flat wood trim.
- Construct new stucco panels and wood trim assembly.

Brick Chimneys

- Disassemble chimney caps to brick substrate at both chimneys. Clean granite coping. Construct new flashing, reinstall granite coping and new sheet metal caps.
- Disassemble and reconstruct upper 10 courses of brick masonry at south chimney.
- Replace deteriorated brick at select locations, typical 5%.
- Repoint damaged/inappropriately repairs mortar joints - typical 25%.
- Spot clean areas of heavy soiling.
- Complete general cleaning.

- Construct new copper step flashing.

Roofs

- Construct new slate roofing at gable roof and dormers.
- Construct new half round high-back gutters, with copper downspouts and cast-iron boot connections at gable roofs.
- Construct new copper sheet metal flashing at gable roofs and dormer.
- Construct new membrane roofing and flashing at previous location of skylight (flat roof).
- Construct new membrane roofing and flashing at the Children's Room Addition, including new coated aluminum half-round gutters, downspouts, and boot.

Doors:

- Exterior wood doors - weatherstripping completed in 2023 - no work.
- Exterior metal doors - weatherstripping completed in 2023 - no work.
- Interior wood doors: prepare surface and re-coat existing doors and install new hardware.
- Construct new metal access panel at Children's Room Addition crawl space.

Windows:

- Disassemble all window sashes at original building, including dormer, move to specialty shop, and construct temporary closure at opening.
- Complete wood restoration, including energy efficient upgrades where possible, wood component repairs at 10% of sash frame, refurbished or new chains and pulleys at double hung windows, and refurbishing closing hardware. Prep surface and shop prime window for final finish in field.
- Reinstall windows and hardware; construct new weatherstripping.
- Construct new coated aluminum storm windows and screens.
- Children's Room Addition - no work at windows.

Interior Wall Finishes:

- Basement: prepare surface and paint all walls.
- First floor - original building: prepare surface and paint all walls.
- Tower second level: prepare surface and paint all walls.
- Children's Room Addition - no work.

Interior Floor Finishes:

- Basement walls: patch/repair existing concrete flooring. Construct new epoxy finish.
- First floor, original building and Children's Room Addition: install new carpet throughout; install new vinyl tile flooring at restrooms.
- Tower 2nd level: install new carpet.

Interior Ceiling Finishes:

- Basement: Concrete arches and steel framing: prepare surface and paint.
- GAR Hall/Reading Room: construct new plaster at area of water damage (approximately 50 square feet.
- All original building plaster ceilings at first and tower second level: prepare surfaces and paint.
- Children's Room Addition - no work.

Barrier-Free Access

- Construct new barrier-free accessible restroom - see concepts in Appendix A.

Structural

- GAR Hall/Reference Room: Based on observations, the cracks in the wall and ceiling of the east room were most likely caused by the construction of the children's room. The soil holding up the south wall of the east room was removed to build foundation for the addition. Passive pressure created balancing resistance of the lateral pressure on the south wall from the cathedral ceiling of the structure. Now that the balancing force has been removed there are no stabilizing forces, and the original wall appears to have moved out of plane, which created tension force cracks in the ceiling and the perimeter masonry walls. This movement appears to have been arrested. This should be monitored and if more cracking appears then strengthening of the wall to roof connection and something to resist the outward forces should be added.
- Remove all loose/failing plaster for repair.
- Interior brick walls should be monitored for loose material and movement. Any loose material should be taken down and mortared back in place. Any bricks that fall should be put back in or the void filled with mortar.
- Sister existing rotted attic rafters with additional lumber, typical 10 %.
- Miscellaneous repairs are required for cracks and spalls in existing concrete surfaces in the basement. Repairs will involve injecting cracks with epoxy, removing deteriorated concrete by chipping, and applying bonding agent before patching with new concrete.

Plumbing

Existing equipment is in good condition, however, the intention is to complete a long-term renovation and addition, whose target life cycle performance exceeds that of the useful life of the system in place.

Provide new gas hot water heater with new piping. Hot water will be stored at 140°F for domestic plumbing applications. Thermostatic mixing valves will provide 110°F to general use fixtures. Domestic hot water systems will be circulated to minimize hot water delivery time to the most remote fixtures.

Construct new, low-flow, residential-type fixtures at first floor restrooms. The floor-mount flush tank type, and the lavatory sink should be limited to one half gallon per minute.

Construct new, ADA-compliant, low-flow, residential-type fixtures at new first floor accessible restrooms. The floor-mount flush tank type, and the lavatory sink should be limited to one half gallon per minute.

Replace all sanitary piping with new PVC piping. Replace all domestic water piping running in basement and up to fixtures on the main floor. Reconnect piping to new fixtures; all water piping will be insulated.

Mechanical

The renovated building and expansion will require that the HVAC system be designed to provide comfortable cooling and heating for the building. Most of the existing interior and exterior units are in good to fair condition; however, the intention is to complete a long-term renovation and addition, whose target life cycle performance exceeds that of the useful life of the system in place.

Design Conditions (Pulled from ASHRAE 2021 Fundamentals)

Note: the calculations show the minimal internal loads assumed. Due to the scale of the building, and occupancy type, the calculations assume that there are no large equipment loads to be taken into consideration.

Location: Manchester-by-the-Sea, MA

Latitude: 42.584 N

Longitude: 70.918 W

Elevation: 108 ft.

Cooling Conditions

- 86.2°F dry bulb ASHRAE 1% DB
- 72.1°F wet bulb ASHRAE 1% MCWB
- 596 Cooling Degree Days (CDD/65)

Heating Conditions:

- 12.2° F ASHRAE 99% DB
- 6,149 Heating Degree Days (HDD/65)

The indoor design conditions are as follows:

- Administration Areas and Equipment Storage:
  - Summer 78□F dry bulb (Occupied)
    55□F dew point (maximum)
  - Winter 68□F dry bulb (Occupied)
- Mechanical and Electrical Rooms
  - Summer 80°F dry bulb ambient ventilation
  - Winter 55°F dry bulb

HVAC System:

Provide two new boilers to replace existing. Provide three new high-efficiency mini-split systems for the Director's Office, the Archive Room and the back area of the stacks..

Ventilation:

The outside air requirements for the facility will be determined by ASHRAE Standard 62.1, “Ventilation for Acceptable Indoor Air Quality”. All outside air intakes will be located a minimum of 10’-0” above grade and ducted to the mechanical unit. The outside air will be conditioned by the heating and cooling unit.

Exhaust Systems:

Toilet rooms will be exhausted at a rate of 70 CFM per water closet. Individual exhaust fans will be ceiling mounted and the exhausted air will be discharged to the exterior of the building. These fans will be operated upon activation of the light switch.

Materials:

Refrigerant lines will be Type L hard copper. Cooling coil condensate drain piping will be Type L copper or PVC. Ductwork will be galvanized steel, sized, and installed by ASHRAE and SMACNA standards. Outdoor Air, Supply Air, Exhaust, and Return Air ducts will be insulated following ASHRAE 90.1. Flexible ductwork will be a maximum of 5 feet in length and used to connect branch ductwork to supply diffusers.

Electrical

Power: The building service will remain unchanged and meets the requirements for the new building loads.

Panels: Branch circuit panels are in good working condition, increasing panel capacity from 100A/150A to 200A is recommended..

Exterior Lighting

Add additional lighting for safety and to achieve recommended foot-candles (FC).

Interior Lighting

Review lighting foot-candles for each area and replace existing non-LED lighting with Architectural LED fixtures. See chart below for recommended lighting Foot-candles (FC) levels. Light fixtures will generally consist of LED fixtures, architectural lighting in significant areas will be Chandelier Type and Wall Sconces with period appropriate fixtures.

Level	Area	Room Type	Recommend Foot Candles	Estimated Fixture Count	Estimated Fixture Wattage	Fixture Hgt.
BASEMENT LEVEL	1205	ALL	20	8	32	7'-0"
LEVEL 1	70	LOBBY	10	1	32	9'-0"
LEVEL 1	430	RECEPTION	20	7	32	9'-0"
LEVEL 1	673	LOWER STACKS	30	10	32	7'-0"
LEVEL 1	442	READING ROOM	30	7	32	12'-0"
LEVEL 1	20	HALL	10	0	32	-
LEVEL 1	710	READING ROOM	30	10	32	12'-0"
LEVEL 1	177	OFFICE	30	3	32	9'-0"
LEVEL 1	541	CHILDREN'S READING ROOM	30	8	32	9'-0"
LEVEL 1	22	HALL	10	1	32	-
LEVEL 1	44	STORAGE	5	1	32	8'-0"
LEVEL 1	24	HALL	5	1	32	-
LEVEL 1	42	STAIR 02	10	1	32	7'-0"
LEVEL 1	14	RESTROOM 01	15	1	32	9'-0"
LEVEL 1	15	RESTROOM 02	15	1	32	9'-0"
MEZZANINE LEVEL	60	MEZZANINE	20	1	32	10'-0"
MEZZANINE LEVEL	187	ARCHIVES	20	3	32	10'-0"
MEZZANINE LEVEL	14	STORAGE	5	1	32	9'-0"
MEZZANINE LEVEL	1009	UPPER STACKS	30	16	32	9'-0"
MEZZANINE LEVEL	22	STAIR 03	10	1	32	-
MEZZANINE LEVEL	28	STAIR 01	10	1	32	-
MEZZANINE LEVEL	8	STAIR 04	10	1	32	-
ATTIC LEVEL	59	ATTIC	5	1	32	-
ATTIC LEVEL	176	CLOCK TOWER	20	3	32	-
ATTIC LEVEL	16	CLOCK ROOM	20	2	32	-
ATTIC LEVEL	46	ATTIC	5	1	32	-
ATTIC LEVEL	54	ATTIC	5	1	32	-

Battery packs will be used inside select fixtures for required life safety emergency egress lighting.

Dual Technology occupancy sensors will be used in office spaces to control lighting. Additional switching will be standard on/off lighting switches in restrooms, and corridors.

Conduits

All conductors and cables will be installed in conduit. All conductors will be copper, 600 volts, with type THHN/THWN insulation, except service entrance conductors which will have type USE insulation. MC cable will not be used. Minimum conductor for power and lighting circuits shall be No.12 AWG. Control circuits shall use No.14 AWG minimum. Rigid steel conduit or IMC conduit shall be used in all exposed locations. EMT shall be utilized where installed above ceilings and areas not exposed to physical damage. PVC shall be used underground. Minimum conduit size shall be ¾".

Generator

The installation of a generator is recommended.

Communications/Data

Recommended treatments relocating the data equipment to a suitable cabinet and adding Uninterruptible Power Supply (UPS) and dedicated circuit breaker.

Fire Alarm System

Existing addressable system is in good condition and appears to meet all current codes. It does not require replacement.

Note: IBC 2015 Paragraph 903.2.1.3 stipulates that an automatic sprinkler system is required in new buildings and structures where one of the following conditions exists:

- The fire area exceeds 12,000 square feet;
- The fire area has an occupant load of 300 or more; or
- The fire area is located on a floor other than a level of exit discharge serving such occupancies.

The Library does not meet these conditions; a sprinkler system is not required, but should be considered not only for life safety, but as an added layer of security and to protect valuable resources in an important community center.

Lightning Protection System

New system shall be installed on building roof per NFPA 780 and AFI 32-1065 conforming to UL 96A class A. The system shall be composed of a ground rod, grounding cable, air terminals, and connecting conductors. A 3/4 inch, 10 foot long, copper clad ground rod shall be installed a minimum of 12 inches below the finished grade or pavement. The ground rod shall be placed a minimum of 3 feet from the concrete footing of the structure. A #4/0 bare stranded annealed copper ground cable shall be exothermically welded to the ground rod such that the ground cable is a minimum of 30 inches below the finished grade.

The down conductor shall be comprised of exposed type Class I aluminum. Schedule 40 PVC shall be used from 12 inches below grade level to at least 6 feet above grade. A bi-metal connector shall be fixed to the building a minimum of 18 inches above grade level. The down conductor shall be connected to the air terminals using a typical cable connector.

Air terminals shall be aluminum rods, ½ inch in diameter and 18 inches tall. All terminals shall be connected by 7/16 inch diameter class 1 aluminum conductors.

Hazardous Materials

No hazardous materials assessment was conducted as part of this study. A full assessment should be conducted prior to any work being initiated.

The disturbance of lead-based paint surfaces should be performed in accordance with federal OSHA Lead in Construction Standard (29 CFR 1910.1025), and EPA Lead Renovation, Repair and Painting Program (40CFR 745.80, Subpart E).

Hazardous building components such as fluorescent light fixtures with mercury-containing light tubes and light ballasts possibly containing PCBs, mercury-containing thermostat, hazardous and household chemicals, transformers, air conditioners and refrigeration units, and emergency exit lighting housing batteries may be present and should be removed and disposed of following all applicable standards.

Cost Estimate

Summary

The cost estimates assembled the individual line items of work, assessing general condition costs, accounting for markups for overhead and profit while factoring market conditions. In addition, costs were developed based on escalation rates for material, labor, and equipment costs. Project contingencies and risk assessments were also evaluated and implemented where applicable.

Tetra Tech has assembled as accurate and detailed an order of magnitude cost estimate as possible for all the activities, components and subcomponents. The estimate is built based on an acceptable cost estimation methodology. T

General Assumptions

The following general assumptions were the basis of the estimate. Full detailed assumptions and parameters are included in the cost assessment report included in Appendix B.

Assembly of Costs

The project consists of a building and site renovation. The total estimated amount applies 10% for Owner Contingency. Site Inspection Overhead (SIOH) is not applied to this estimate. The cost estimate follows a Uniformat II work break down structure.

Estimating Software

Our Cost Team developed the Cost Estimate using MCACES Second Generation (MII) Cost Estimating Software, Version 4.4.3. On-Screen Takeoff (OST) was used for the material takeoff report.

Contract Assumptions

The acquisition strategy for this work assumes Design-bid-build, and that a single contract will be awarded for construction with additional agency oversight. Therefore, a prime contractor is assumed to oversee all the work, but subcontractors are assumed to perform many subcontractor elements of the work.

Design Scope Contingency

At the Condition Assessment Submittal, the level of design is considered to be conceptual. As such, a 20% design contingency is included.

Direct Escalation

We estimated the project construction schedule to approximate the midpoint of construction. An average 3.5% per year direct escalation was applied for the duration from the time of this report to the midpoint of construction, which is approximated as March 15, 2026.

Owner Mark-ups

Project cost has Owner Project costs applied after all other construction costs have been accounted for. The estimate includes Owner Contingency of 10%.

Order of Magnitude Estimate

Based on a ***Construction mid-point of March 2026***, the Order of Magnitude Cost Estimate total cost including all overhead and markups, i***s $1.5M - $2M***

* An average 3.5% per year direct escalation was applied for the duration from the time of this report to the midpoint of construction. Any extension of the project initiation and/or duration would result in additional escalation, based on contemporary market conditions.

Appendices

Barrier-Free Restrooms Concept Study

Cost Estimate Report

Glossary

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Appendix A: Barrier-Free Restrooms Concept Study

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TETRA TECH

240 Continental Dr., Ste. 200
Newark, DE 19713

Memorandum

To: Nate Desrosiers, P.E., Town Engineer and Facilities Manager
Manchester-by-the-Sea

Date: 10 June 2022

Tt Project No.: 213-295257-22001

Subject: Manchester-by-the-Sea Public Library - Barrier-Free Access and ADA Compliance Improvements Feasibility Study
Conceptual Design Options

Design Philosophy

The Manchester-by-the-Sea Public Library (the Library) is part of a cluster of significant historic civic and institutional buildings in the Manchester Village Historic District and occupies a prominent location entering the commercial district of Manchester Village.

The Library retains a high level of integrity of all seven aspects noted in the National Register of Historic Places Bulletin 15 "How to Apply the National Register Criteria for Evaluation.":

- Location- the Library remains where it was originally constructed.
- Design **-** The overall form and plan of the original building remain essentially intact, with some interior modifications over time and the addition of the Children's Room. The interior of the Library retains many of the design elements from the building's original inception as a library, memorial, and hall.[1]
- Setting **–** the Library remains in its original setting.
- Materials **-** The integrity of the Library is intact because of the presence of a large amount of the original historic fabric.
- Workmanship - The overall workmanship of the Library remains intact, particularly the exterior envelope and the interior finishes, including the red Roman brick at interior walls, and the use of stained oak for window and door trim and other decorative features.[2]
- Feeling – The Library retains the original expression of the aesthetic and historic sense of its c. 1887 period of construction.
- Association – The Library retains its strong association with the Manchester Village Historic District, and the local community at large.

The guiding philosophy underpinning the proposed restroom addition is to be respectful of the original vision for the Library while meeting current operational needs.

The proposed intervention scenarios seek to minimize changes to architectural features and original materials. Accommodations for modern building systems and amenities must be

[1] Massachusetts Historical Commission (2014). *Massachusetts Historical Commission Inventory Form B*, Continuation Sheet 1.
[2] ibid

integrated in a discreet fashion and not adversely impact the overall perception of the historic character of the Library interior. The goal is to respect the historic character of this historic structure, while providing enhanced occupant and occupant visitor experience.

Our approach has been informed by the architectural significance, and historic fabric integrity, of various library components. For the purposes of this study, interior spaces of the Library were broken down into the following categories:

- Areas of primary significance: Main entrance, Memorial Hall, the original library (East Hall) and the West Room, previously former headquarters for the fraternal order Allen Post 67, Grand Army of the Republic (GAR).
- Areas of secondary significance: support spaces such as Library director first floor office, vertical circulation, second floor offices, and tower. Although not original, the Children's Room is a valued community resource; the main reading room is considered a second-tier significant space for the purposes of this capital improvements project.
- Areas of tertiary significance: existing restroom interiors, support spaces beyond the children's reading room, basement. The replacement stacking system is also considered an element of tertiary significance in terms of application of the Secretary of the Interior Standards.

Based on this hierarchy of significance there will be different levels of proposed treatments in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties. These will include:

- Standards for Restoration for areas of primary significance.
- Standards for Rehabilitation for areas of secondary significance.

Proposed Design Options

The above criteria were discussed with stakeholders during the March 2022 site visit. The consensus was that the three following areas met the above criteria for preferred locations with minimum impact on the historic fabric, although some would have more impact on operations and storage capacity.

An initial draft of the options outlined below was issued on May 2nd, 2022 and discussed in a meeting with the Town Engineer and Facilities Manager and the Library Director on May 11, 2022. During the meeting the Library Director expanded upon the operational impact of the various options; this additional information was incorporated in the updated analysis below.

Notes:

a) The following outlines the pros-and-cons for each option.
b) Photographs of each proposed location are included at the end of this section.
c) Appendix A shows preliminary sketch plans for the demolition and new construction at each location.

Option 1:

- Location: East Hall (original Library) – Stack Room (Photographs Page 4)
- Hierarchy Area of Secondary Significance – Original stacks have been replaced.
- Pros:
    - Area to the rear of the stacks minimally impacts the visual experience of the highly significant East Hall.
    - Easily accessible from a public area.
    - Discreet location

  - Loss of stacks can be impetus for rethinking of collection and a more focused and compelling patron experience from a shifted collection.
- Cons:
  - Loss of stacks/storage, in a library where book storage/display space is at a premium
  - Invasive intervention requiring stabilization of mezzanine above and modification of stacking system.
  - Barrier-free accessibility may require more extensive intervention to accommodate code-compliant turn radius and clearances

Option 2:

- Location: Director's Office accessed from West Room (Photographs Page 5)
- Hierarchy Area of Secondary Significance retaining a high level of original finishes
  Accessible through an area of primary significance
- Pros:
  - Easily accessible from a public area.
  - Minimal impact on areas of primary significance.
  - Minimal architectural intervention -no need for extensive demolition or structural repairs.
  - Width of existing door is ADA-compliant for barrier-free access.
- Cons
  - The remaining useable space would only be accessible from the main entrance to support operations.
  - Remaining square footage for administrative and support activities would be much reduced.
- Operational concerns are significant. The reduced square footage and the limited access would impact a range of operational activities, and significantly affect operations efficiencies. To illustrate this impact, a listing of current activities occurring in this area are listed below:
  - Administrative duties.
  - Shipping and receiving.
  - Processing and inputting (three processing carts typical – thousands of books).
  - Printing and filing – central printer location for all staff.
  - Downstairs break zone – coffee station and snacks.
  - Cataloguing and withdrawing.
  - Activities above typically occur in one-to-two hours blocks, one or two staff and/or volunteers at various times during the day.
  - Casual book input in 15–20-minute increments up to 8 times a day
  - Staff breaks up to 2 to 3 times a day.
  - Relocation of radiator
  - Preferred access point to office depends on function
    - Staff break function is in proximity to West Room
    - Shipping, receiving, and printing is towards the opposite wall entrance.

Option 3:

- Location: Children's Room (Photographs Page 6)
- Hierarchy Area of Secondary Significance retaining a high-level of 1960s finishes

- Pros:
  - Easily accessible from a public area.

  - Minimal impact on areas of primary significance.
  - New mechanical, electrical and plumbing systems easily connected to existing systems.
- Cons:
  - Loss of storage space.
  - Remodeling of rear wall of Children's Room to allow for access through the primary space.
  - Loss of book display
  - More intrusive architectural and structural interventions

Order of Magnitude Cost Estimates

Order of magnitude cost estimates were prepared for each of the options above. The order of magnitude estimates has been developed using data and knowledge of previous or similar projects as the basis for estimating these options.

The budgets include the following contingencies:

1. Construction contingency that reflects the impact of current market conditions and trends on construction costs
2. Design contingency that reflects the fact that there has been no design developed for the options, which impacts the construction costs due to a high level of unknowns and unforeseen conditions.

Note: These numbers are to be used as criteria to determine the preferred design options, NOT for capital budgeting purposes.

The order of magnitude construction estimates (following this section) are summarized below:

	Option 01 Stack Room	Option 02 Director Office	Option 03 Children's Room
Order of Magnitude Cost Estimate	$115,050.00	$97,790.00	$92,240.00
Construction Contingency 30%	$34,515.00	$29,337.00	$27,672.00
Subtotal	$149,565.00	$127,127.00	$119,912.00
Design Contingency 15%	$22,434.75	$19,069.05	$17,986.80
Subtotal	$171,999.75	$146,196.05	$137,898.80
Total	**$171,999.75**	**$146,196.05**	**$137,898.80**

Attachments

Photographs of Proposed Areas of Intervention

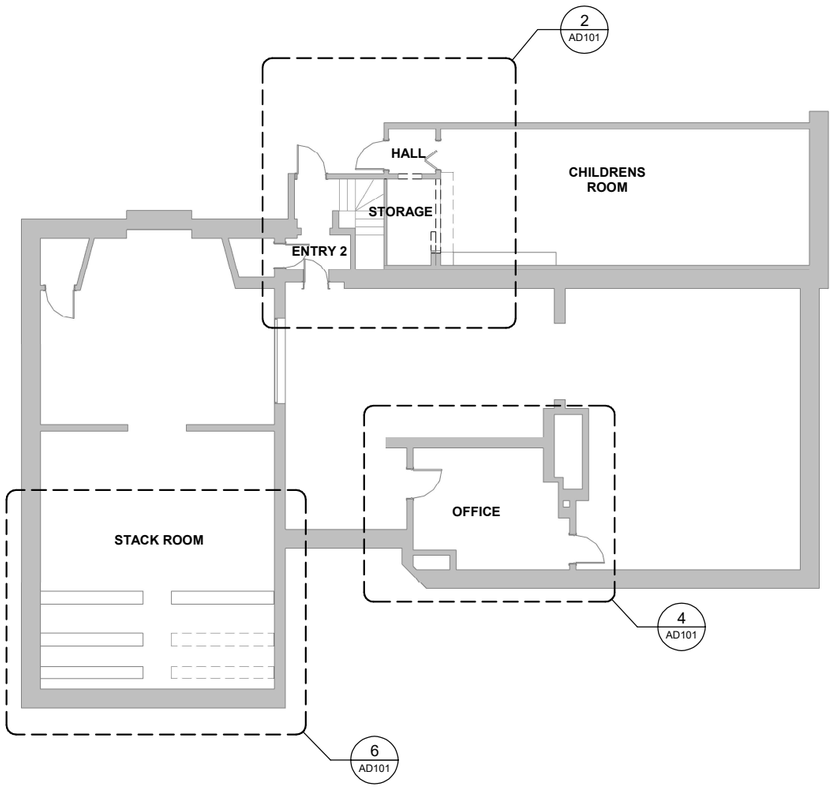
Concept Design Sketches Options 1,2, and 3

Order of Magnitude estimates

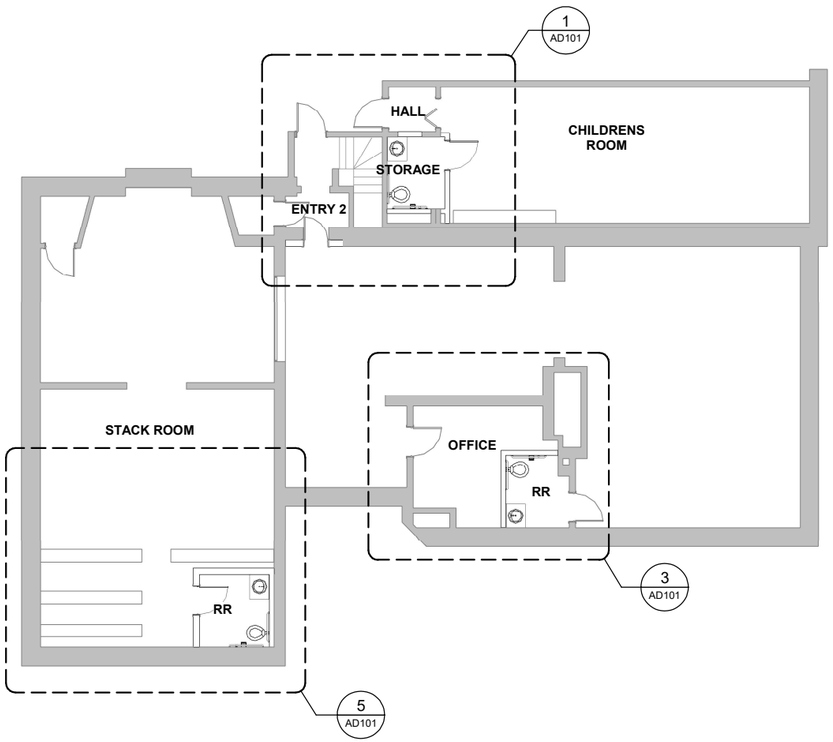
Option 1 – East Hall (Original Library) – Stack Room - Rear

Option 2 – Director Office

Option 3 – Children's Room Rear Storage Area



2 A-101 FIRST FLOOR - DEMO
SCALE: 1/8" = 1'-0"



1 A-101 FIRST FLOOR - NEW WORK
SCALE: 1/8" = 1'-0"

TETRA TECH

ARCHITECTURAL FLOOR PLANS

8' 0' 8' 16'
SCALE: 1/8" = 1'-0"

Bar measures 1 inch, otherwise drawing is not to scale

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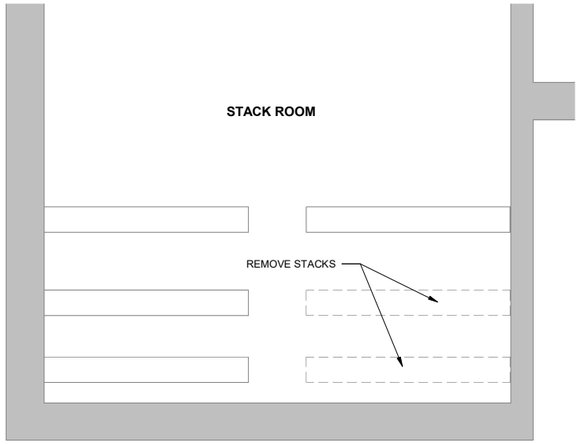
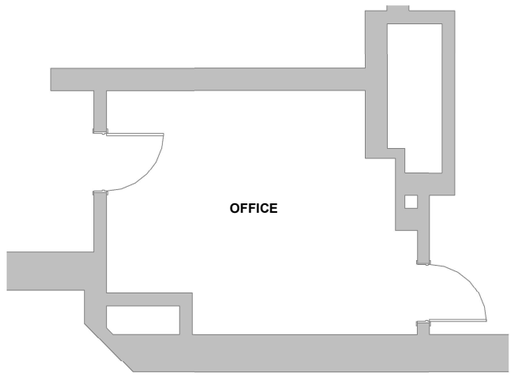


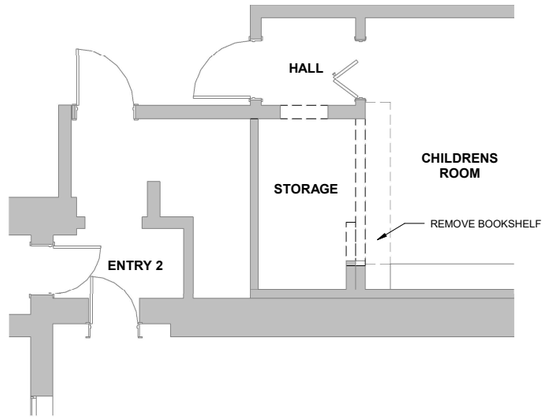
PARTIAL DEMO FLOOR PLAN - OPTION 1

6 AD101 SCALE: 1/4" = 1'-0"



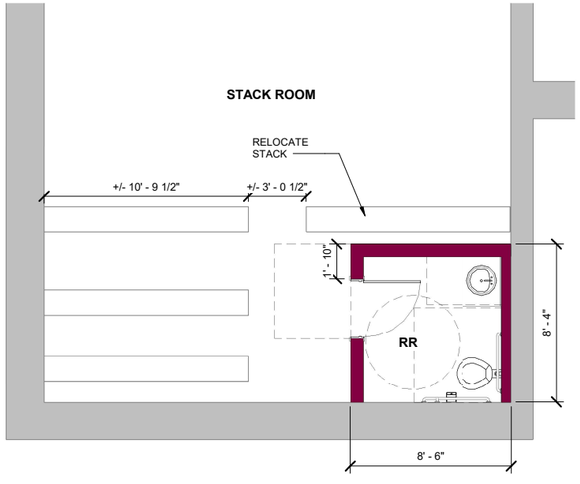
PARTIAL DEMO FLOOR PLAN - OPTION 2

4 AD101 SCALE: 1/4" = 1'-0"



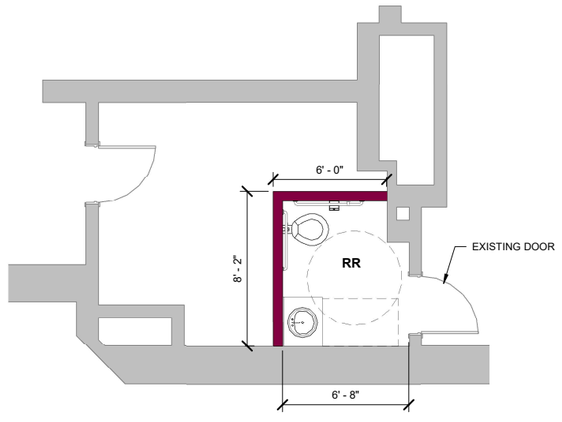
PARTIAL DEMO FLOOR PLAN - OPTION 3

2 AD101 SCALE: 1/4" = 1'-0"



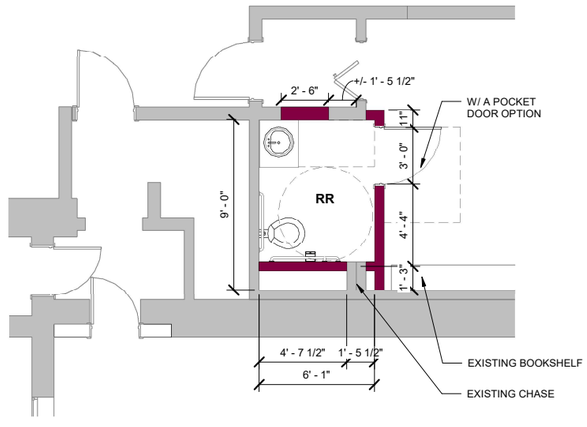
PARTIAL NEW FLOOR PLAN - OPTION 1

5 AD101 SCALE: 1/4" = 1'-0"



PARTIAL NEW FLOOR PLAN - OPTION 3

3 AD101 SCALE: 1/4" = 1'-0"



PARTIAL NEW FLOOR PLAN - OPTION 3

1 AD101 SCALE: 1/4" = 1'-0"

PLAN LEGEND

- EXISTING WALLS
- NEW WALLS
- DEMO SCOPE

TETRA TECH

MANCHESTER BY THE SEA - PROPOSED DESIGN LAYOUTS

N

4' 0' 4' 8'

SCALE: 1/4" = 1'-0"

Bar measures 1 inch, otherwise drawing is not to scale

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Manchester-by the Sea Public Library
Barrier-Free Restroom Improvements
Option 01 - Stack Room

Item	Unit	Quantity	Unit Price	Cost
Bathroom	SF	74	$ 450.00	$ 33,300.00
Incidental Architectural	SF	0	$ 200.00	$ -
Incidental Casework	LF	0	$ 250.00	$ -
Incidental Structural (Stacks)	SF	74	$ 200.00	$ 14,800.00
Rerouting radiator	Lump Sum	1	$ 10,000.00	$ 10,000.00
Crawl space/basement sanitary	Lump Sum	1	$ 20,000.00	$ 20,000.00
Domestic water (Hot & Cold)	Lump Sum	1	$ 20,000.00	$ 20,000.00
Sewer line connection	LF	70	$ 115	$ 8,050.00
Grass/aphalt repairs	LF	70	$ 20	$ 1,400.00
Manhole	Lump Sum	1	$ 7,500	$ 7,500.00
			Subtotal 1	$ 115,050.00
	Construction Contingency		30%	$ 34,515.00
			Subtotal 2	$ 149,565.00
	Design Contingency		15%	$ 22,434.75
			Subtotal 2	$ 171,999.75
			Total	**$ 171,999.75**

Order of magnitude cost estimates were prepared for each of the options above. The order of magnitude estimates has been developed using data and knowledge of previous or similar projects as the basis for estimating these options.

The budgets include the following contingencies:

1. Construction contingency that reflects the impact of current market conditions and trends on construction costs

2. Design contingency that reflects the fact that there has been no design developed for the options, which impacts the construction costs due to a high level of unknowns and unforeseen conditions.

Note: These numbers are to be used as criteria to determine the preferred design options, NOT for capital budgeting purposes.

Manchester-by the Sea Public Library
Barrier-Free Restroom Improvements
Option 02 - Director's Office

Item	Unit	Quantity	Unit Price	Cost
Bathroom	SF	58	$ 450.00	$ 26,100.00
Incidental Architectural	SF	21	$ 200.00	$ 4,200.00
Incidental Casework	LF	0	$ 250.00	$ -
Incidental Structural (Stacks)	SF	0	$ 200.00	$ -
Rerouting radiator	Lump Sum	1	$ 10,000.00	$ 10,000.00
Crawl space/basement sanitary	Lump Sum	1	$ 20,000.00	$ 20,000.00
Domestic water (Hot & Cold)	Lump Sum	1	$ 20,000.00	$ 20,000.00
Sewer line connection	LF	74	$ 115	$ 8,510.00
Grass/aphalt repairs	LF	74	$ 20	$ 1,480.00
Manhole	Lump Sum	1	$ 7,500	$ 7,500.00
			Subtotal 1	$ 97,790.00
	Construction Contingency		30%	$ 29,337.00
			Subtotal 2	$ 127,127.00
	Design Contingency		15%	$ 19,069.05
			Subtotal 2	$ 146,196.05
			Total	**$ 146,196.05**

Order of magnitude cost estimates were prepared for each of the options above. The order of magnitude estimates has been developed using data and knowledge of previous or similar projects as the basis for estimating these options.

The budgets include the following contingencies:

1. Construction contingency that reflects the impact of current market conditions and trends on construction costs

2. Design contingency that reflects the fact that there has been no design developed for the options, which impacts the construction costs due to a high level of unknowns and unforeseen conditions.

Note: These numbers are to be used as criteria to determine the preferred design options, NOT for capital budgeting purposes.

Manchester-by the Sea Public Library
Barrier-Free Restroom Improvements
Option 03 - Children's Room

Item	Unit	Quantity	Unit Price	Cost
Bathroom	SF	65	$ 450.00	$ 29,250.00
Incidental Architectural	SF	15	$ 200.00	$ 3,000.00
Incidental Casework	LF	10	$ 250.00	$ 2,500.00
Incidental Structural (Stacks)	SF	0	$ 200.00	$ -
Rerouting radiator	Lump Sum	0	$ 10,000.00	$ -
Crawl space/basement sanitary	Lump Sum	1	$ 20,000.00	$ 20,000.00
Domestic water (Hot & Cold)	Lump Sum	1	$ 20,000.00	$ 20,000.00
Sewer line connection	LF	74	$ 115	$ 8,510.00
Grass/aphalt repairs	LF	74	$ 20	$ 1,480.00
Manhole	Lump Sum	1	$ 7,500	$ 7,500.00
			Subtotal 1	$ 92,240.00
	Construction Contingency		30%	$ 27,672.00
			Subtotal 2	$ 119,912.00
	Design Contingency		15%	$ 17,986.80
			Subtotal 2	$ 137,898.80
			Total	**$ 137,898.80**

Order of magnitude cost estimates were prepared for each of the options above. The order of magnitude estimates has been developed using data and knowledge of previous or similar projects as the basis for estimating these options.

The budgets include the following contingencies:

1. Construction contingency that reflects the impact of current market conditions and trends on construction costs

2. Design contingency that reflects the fact that there has been no design developed for the options, which impacts the construction costs due to a high level of unknowns and unforeseen conditions.

Note: These numbers are to be used as criteria to determine the preferred design options, NOT for capital budgeting purposes.

Appendix B: Cost Estimate Report

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LIBRARY RENOVATION
MANCHESTER-BY-THE-SEA, MA

ORDER OF MAGNITUDE COST REPORT

SUBMITTED TO:
Manchester-by-the-Sea Public Library

PREPARED BY:
Tetra Tech
100 Nickerson Road
Marlborough, MA 01752

CONDITION ASSESSMENT SUBMITTAL
22 May 2024

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Appendices

Appendix A: Order of Magnitude Cost Estimate Summary
Appendix B: Detailed Cost Estimate

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1.0 Basis of Cost

The purpose of this project is to provide treatments for the maintenance and preservation of the historic library. The ultimate goal is to retain, to the greatest extent possible, the Library's historic appearance and fabric while providing code compliant amenities and an enhanced user experience.

The cost estimates assembled the individual line items of work, assessing general condition costs, accounting for markups for overhead and profit while factoring market conditions. In addition, costs were developed based on escalation rates for material, labor, and equipment costs. Project contingencies and risk assessments were also evaluated and implemented where applicable.

Tetra Tech has assembled as accurate and detailed an order of magnitude cost estimate as possible for all the activities, components and subcomponents. The estimate is built based on an acceptable cost estimation methodology. The Condition Assessment Order of Magnitude Cost Estimate included in this report is based on the Condition Assessment Report issued 15 May 2024.

The Order of Magnitude Cost Estimate total cost including all overhead and markups, is $1.5M - $2M at date of this report.

As an order of magnitude cost estimate with no piping diagrams of detailed drawings, this should not be used as a basis to procure funding.

Three options for a Barrier-Free Restroom addition were included. The basis for order of magnitude costs are detailed in the memorandum regarding Barrier-Free Access and ADA Compliance dated 10 June 2022. The order of magnitude costs for the three options are as follows:

- Option 1 – Stack Room: $175K
- Option 2 – Director Office: $150K
- Option 3 – Children's Room: $140K

1.1 Assembly of Costs

The project consists of a building and site renovation. The total estimated amount applies 10% for Owner Contingency. Site Inspection Overhead (SIOH) is not applied to this estimate. The cost estimate follows a Uniformat II work break down structure.

1.2 Estimating Software

Our Cost Team developed the Cost Estimate using MCACES Second Generation (MII) Cost Estimating Software, Version 4.4.3. On-Screen Takeoff (OST) was used for the material takeoff report.

1.2.1 English Database

The projects, facilities, and site work are presented in English units of measure. The cost estimate uses the 2023 English Cost Book provided by the MII software as the main resource for construction cost and the 2023 Equipment Library for any equipment costs. Resources include current pricing and historical data from previous and local projects.

1.3 Contract Assumptions

The acquisition strategy for this work assumes Design-bid-build, and that a single contract will be awarded for construction with additional agency oversight. Therefore, a prime contractor is assumed to oversee all the work, but subcontractors are assumed to perform many subcontractor elements of the work.

1.4 Funding

This requirement is being procured under Town of Manchester-by-the-Sea Capital Funds.

1.5 Contractor Markups

During the development of the estimate, mark-ups were established and agreed to for estimating purposes within our own team. Involvement by the Prime Contractor will be required and therefore, will have only two tiers of markups. Further, the location of the Prime Contractor will determine the amount of work performed by the general versus local subcontractors.

Indirect Costs

1.5.1.1 Mobilization and De-mobilization

The mobilization costs are included in the Job Overhead expenses.

1.5.1.2 Construction Labor Facilities

This project site does not meet the criteria to be considered a “remote” construction site. Majority of crafts will be from the local work force. No labor camp type facilities are considered for this project.

1.5.1.3 Construction Water Usage

It is anticipated that there will be a limited need for construction water during the construction period at the construction site. The water will mainly be used for cleaning and mixing small amounts of masonry mortar.

1.5.1.4 Job Office Overhead

There is Job Office Overhead (JOOH) which includes incidental Indirect costs such as small tools, staff, materials, temporary office space, etc. The majority of the Indirects are provided by the Prime Contractor, and some contractor specific items shall be provided by the subcontractors. The Prime’s 14.00% markup includes mobilization, demobilization, and all contractor on site expenses. The estimate includes 10.0% JOOH markup for subcontractors.

1.5.2 Home Office Overhead

Contract administration requires Home Office Overhead (HOOH) participation. The Prime, General and subcontractors are jointly and severally responsible for all payroll tax collection and reporting. Project contract administration costs, project management time, legal, accounting, documentation, and reproduction are costs intended to be covered within HOOH.

1.5.3 Contractors’ Profit

Fees are calculated based on the perceived and accessed risks, competitive markets, and availability of experienced labor and functional equipment to complete the work. The prime contractor profit is 10.00% as a running percentage and subcontractor profit is a running markup of 10.0%.

1.5.4 Design Scope Contingency

At the Condition Assessment Submittal, the level of design is considered to be conceptual. As such, a 20% design contingency is included.

1.6 Direct Mark-ups

Direct mark-ups are values applied to labor other than payroll taxes and insurance deemed necessary to complete the work on time. The mark-ups are affected by “productivity” and “overtime requirements.” Incentive pay is sometimes required to acquire the labor pool necessary to do the work in the required time frame. The Cost Estimate assumes five 8-hour shifts. Overtime pay may be necessary but a direct mark-up for overtime was not applied to this estimate. The estimate has set the labor productivity at 90 percent for this project. This will require further review during design phase and may require adjustment.

1.6.1 Cost Book Escalation

Due to current market conditions Engineering News-Record (ENR) Material Cost data was used instead of DoD Standard Index System. The material price escalation goes from the Cost Book publication date (Jan 2023) to the date of the report (May 2024), resulting in a Cost Book Escalation of 6.16%.

1.6.2 Equipment Library Escalation

The equipment library has been escalated by updating the cost of gas and diesel in the MII cost model to reflect current prices.

1.6.3 Direct Escalation

We estimated the project construction schedule to approximate the midpoint of construction. An average 3.5% per year direct escalation was applied for the duration from the time of this report to the midpoint of construction, which is approximated as March 15, 2026.

1.7 Owner Mark-ups

Project cost has Owner Project costs applied after all other construction costs have been accounted for. The estimate includes Owner Contingency of 10%. Site Inspection Overhead (SIOH) is not applied to this estimate.

1.8 Area Cost Factor

A Local Area Cost Factor Index is not used by for this cost estimate. The cost estimating team believes the use of the indirect costs, labor libraries, equipment libraries, local material pricing, and productivities included in the estimate produces an accurate estimate required by the estimating guidelines.

1.9 Summary of Markups

Cost Estimate Markups

The following markups are applied to the cost estimate as follows:

Category	Markup	Type
Direct Cost		
Labor Productivity	90.00%	Productivity
Direct Cost Markups		
Overtime	0.00%	Overtime not applied
Direct Escalation	6.40%	Running on selected costs
Date of Report: May 2024		
Construction Mid: Mar 2026		
Sales Tax	6.25%	Running on selected costs
Cost Book Escalation	6.16%	Running on selected costs
Equipment Library Escalation	0.00%	Markup not applied
Contractor		
Prime - Job Overhead (JOOH) Small tool use	0.00%	Markup not applied
Prime – JOOH	14.00%	Running %
Subcontractor JOOH	10.00%	Running %
Prime - Home Office Overhead (HOOH)	15.00%	Running %
Subcontractor HOOH	5.00%	Running %
Prime Contractor Profit	10.00%	Running %
Subcontractor Profit	10.00%	Running %
Prime Contractor Construction Bond	1.50%	Running %
Prime Contractor Insurance	0.50%	Running %
Design/Estimating Contingency	20.00%	Running %
Owner Markups		
Owner Contingency	10.00%	Contingency – Running %
Site Inspection and Overhead (SIOH)	0.00%	Markup not applied

APPENDIX A

ORDER OF MAGNITUDE COST ESTIMATE SUMMARY

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LIBRARY RENOVATION, MANCHESTER-BY-THE-SEA, MA
ORDER OF MAGNITUDE COST ESTIMATE SUMMARY

Description	Units	Qty	Unit Cost	Condition Assessment
Primary Facility	**SF**	*8,146*	*$144.83*	**$1,179,820**
Sister Existing Rotted Attic Rafters	BF	500	17	8,715
Exterior Walls	LS	1		76,827
Exterior Windows	EA	36	5,663	203,866
Roofing	SF	5,347	40	212,444
Interior Doors	EA	29	2,967	86,045
Wall Finishes	SF	7,961	7	53,396
Floor Finishes	SF	5,872	19	111,511
Ceiling Finishes	SF	2,196	4	8,064
Plumbing	LS	1		30,919
HVAC	LS	1		80,139
Electrical Service & Distribution	LS	1		11,544
Interior Lighting Fixtures	EA	92	1,350	124,203
Lightning Protection	LS	1		11,774
Generator Set	EA	1	131,381	131,381
Other Electrical	LS	1		28,992
Supporting Facilities				**$327,983**
TEMPORARY SCAFFOLDING	MO	8	28,223	225,781
EXTERIOR LIGHTING FIXTURES	EA	6	10,403	62,417
SITE CLEARING	LS	1		5,064
SITE MASONRY	LF	427	81	34,721
			Total Construction Cost	**$1,507,803**
			Owner Contingency (10%)	*150,780*
			Total Project Cost	**$1,658,583**

Estimate Notes:

1. Order of magnitude cost estimate should not be used as a basis to procure funding.

Prepared by: ***Tetra Tech, Inc.***

Report Date: *23-May-24*

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APPENDIX B

DETAILED COST ESTIMATE

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Project: Public Library Renovation, Manchester-by-the-Sea, MA

Report Date: 22 May 2024

Conditional Assessment Submittal

Order of Magnitude Estimate: $1.5M - $2M
OPTION 1: $175K
OPTION 2: $150K
OPTION 3: $140K

Estimated by	Tetra Tech, Inc.
Designed by	Tetra Tech, Inc.
Prepared by	Tetra Tech Cost Engineering Team
Preparation Date	5/22/2024
Effective Date of Pricing	3/8/2026
Estimated Construction Time	730 Days

FOR OFFICIAL USE ONLY

Currency in US dollars

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RESTROOM IMPROVEMENTS - OPTION 02 26

RESTROOM IMPROVEMENTS - OPTION 03 26

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Designed by
Tetra Tech, Inc.

Estimated by
Tetra Tech, Inc.

Prepared by
Tetra Tech Cost Engineering Team

Design Document	Preliminary Cost Estimate
Document Date	5/22/2024
District	
Contact	
Budget Year	2024
UOM System	Original

Direct Costs
LaborCost
EQCost
MatlCost
SubBidCost

Timeline/Currency

Preparation Date	5/22/2024
Escalation Date	1/1/2023
Eff. Pricing Date	3/8/2026
Estimated Duration	730 Day(s)
Currency	US dollars
Exchange Rate	1.000000

Costbook CB23EN: 2023 MII English Cost Book

Labor MA20240001: General Decision Number MA20240001 03/22/2024
Note: https://sam.gov is the website for current Davis Bacon & Service Labor Rates

Labor Rates
LaborCost1
LaborCost2
LaborCost3
LaborCost4

Equipment EP22R01: MII Equipment 2022 Region 01

Region 01 - NORTHEAST, (2022)

Sales Tax	6.25
Working Hours per Year	1,330
Labor Adjustment Factor	1.13
Cost of Money	4.88
Cost of Money Discount	25.00
Tire Recap Cost Factor	1.50
Tire Recap Wear Factor	1.80
Tire Repair Factor	0.15
Equipment Cost Factor	1.00
Standby Depreciation Factor	0.50

Fuel

Electricity	0.207
Gas	3.340
Diesel Off-Road	3.890
Diesel On-Road	3.890

Shipping Rates

Over 0 CWT	50.57
Over 240 CWT	37.47
Over 300 CWT	31.22
Over 400 CWT	27.26
Over 500 CWT	30.12
Over 700 CWT	27.38
Over 800 CWT	17.12

Currency in US dollars

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Description	Quantity	UOM	DirectLabor	DirectMatl	DirectEQ	DirectSubBid	ContractCost	ProjectCost
Total Project Costs - Summary			**270,623**	**390,489**	**2,060**	**527,776**	**1,972,803**	**2,123,583**
LIBRARY RENOVATION	**1.00**	**LS**	**270,623**	**390,489**	**2,060**	**62,776**	**1,507,803**	**1,658,583**
B SHELL	**1.00**	**EA**	**134,616**	**162,518**	**1,056**	**52,136**	**727,633**	**800,396**
C INTERIORS	**1.00**	**EA**	**62,803**	**61,653**	**250**	**0**	**259,017**	**284,918**
D SERVICES	**1.00**	**EA**	**55,849**	**164,775**	**496**	**10,640**	**481,369**	**529,506**
G BUILDING SITEWORK	**1.00**	**EA**	**17,355**	**1,542**	**258**	**0**	**39,785**	**43,763**
RESTROOM IMPROVEMENTS - OPTION 01	**1.00**	**LS**	**0**	**0**	**0**	**175,000**	**175,000**	**175,000**
RESTROOM IMPROVEMENTS - OPTION 02	**1.00**	**LS**	**0**	**0**	**0**	**150,000**	**150,000**	**150,000**
RESTROOM IMPROVEMENTS - OPTION 03	**1.00**	**LS**	**0**	**0**	**0**	**140,000**	**140,000**	**140,000**

Currency in US dollars

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Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	SubCMU	ContractCost	ProjectCost
Total Project Costs - Detailed Estimate			**270,623**	**2,060**	**390,489**	**205,153**	**1,972,803**	**2,123,583**
LIBRARY RENOVATION	**1.00**	**LS**	**270,623**	**2,060**	**390,489**	**205,153**	**1,507,803**	**1,658,583**
			134,615.70	*1,056.27*	*162,518.24*		*727,632.76*	*800,396.04*
B SHELL	**1.00**	**EA**	**134,616**	**1,056**	**162,518**	**99,002**	**727,633**	**800,396**
			895.47	*0.00*	*3,300.38*		*8,714.85*	*9,586.34*
B10 Superstructure	**1.00**	**EA**	**895**	**0**	**3,300**	**1,186**	**8,715**	**9,586**
			895.47	*0.00*	*3,300.38*		*8,714.85*	*9,586.34*
B1020 Roof Construction	**1.00**	**EA**	**895**	**0**	**3,300**	**1,186**	**8,715**	**9,586**
			179.09	*0.00*	*660.08*		*1,742.97*	*1,917.27*
B1022 Pitched Roof Construction	**5.00**	**MBF**	**895**	**0**	**3,300**	**1,186**	**8,715**	**9,586**
			1,790.95	*0.00*	*6,600.76*		*17,429.70*	*19,172.67*
Sister Existing Rotted Attic Rafters	**0.50**	**MBF**	**895**	**0**	**3,300**	**1,186**	**8,715**	**9,586**
			1,790.95	*0.00*	*6,600.76*		*17,429.70*	*19,172.67*
RSM 061323100240 Wood framing, heavy mill timber, beams, built from 3" lumber, multiple 3" x 12"	0.50	MBF	895	0	3,300	1,186	8,715	9,586
			59,411.67	*380.15*	*23,214.95*		*280,693.55*	*308,762.90*
B20 Exterior Enclosure	**1.00**	**EA**	**59,412**	**380**	**23,215**	**38,191**	**280,694**	**308,763**
			28,559.19	*380.15*	*8,049.99*		*76,827.41*	*84,510.15*
B2010 Exterior Walls	**1.00**	**EA**	**28,559**	**380**	**8,050**	**10,453**	**76,827**	**84,510**
			20,076.61	*345.32*	*6,552.30*		*56,025.88*	*61,628.47*
B2011 Exterior Wall Construction	**1.00**	**EA**	**20,077**	**345**	**6,552**	**7,623**	**56,026**	**61,628**
			2.97	*0.07*	*0.37*		*7.09*	*7.80*
Exterior Granite Masonry	**4,481.00**	**SF**	**13,323**	**324**	**1,656**	**4,325**	**31,785**	**34,963**
			2.40	*0.07*	*0.32*		*5.81*	*6.39*
Complete General Cleaning	**4,481.00**	**EA**	**10,766**	**324**	**1,452**	**3,544**	**26,049**	**28,654**
			2.40	*0.07*	*0.32*		*5.81*	*6.39*
RSM 040120520820 Cleaning masonry, high pressure wash, average soil, biological staining, water and chemical, excludes scaffolding	4,481.00	SF	10,766	324	1,452	3,544	26,049	28,654
			0.57	*0.00*	*0.05*		*1.28*	*1.41*
Repoint damaged/cracked mortar joints (10%)	**4,481.00**	**LF**	**2,557**	**0**	**204**	**780**	**5,735**	**6,309**
			5.71	*0.00*	*0.46*		*12.80*	*14.08*
RSM 040120300300 Pointing masonry, cut and re-point block, hard mortar, running bond	448.10	SF	2,557	0	204	780	5,735	6,309
			13.17	*0.04*	*9.54*		*47.25*	*51.98*
Stucco and Wood panels at Children's Wing	**513.00**	**SF**	**6,754**	**22**	**4,896**	**3,298**	**24,241**	**26,665**
			13.80	*0.06*	*1.29*		*31.47*	*34.62*
Remove and replace stucco panels	**361.00**	**SF**	**4,982**	**22**	**467**	**1,546**	**11,361**	**12,497**

Currency in US dollars

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	SubCMU	ContractCost	ProjectCost
			106.42	*0.54*	*11.64*		*246.33*	*270.97*
RSM 092423400015 Stucco, 3 coats, float finish, with mesh, on wood frame, 7/8" thick	40.10	SY	4,268	22	467	1,344	9,878	10,866
			1.98	*0.00*	*0.00*		*4.11*	*4.52*
RSM 070505105620 Selective demolition, thermal and moisture protection, siding, stucco siding	361.00	SF	714	0	0	202	1,483	1,631
			5.81	*0.00*	*14.52*		*42.23*	*46.45*
Remove and replace wood trim assembly	**305.00**	**LF**	**1,772**	**0**	**4,429**	**1,752**	**12,880**	**14,168**
			4.92	*0.00*	*14.52*		*40.38*	*44.42*
RSM 062213407490 Exterior trim and moldings, rake/verge, redwood, clear all heart, 2' x 6"	305.00	LF	1,501	0	4,429	1,676	12,316	13,548
			0.89	*0.00*	*0.00*		*1.85*	*2.03*
RSM 060505106640 Selective demolition, wood framing, studs, 2" x 6"	305.00	LF	271	0	0	77	564	620
			4,241.29	*17.41*	*748.85*		*10,400.77*	*11,440.84*
Chimneys	**2.00**	**EA**	**8,483**	**35**	**1,498**	**2,830**	**20,802**	**22,882**
North Chimney Repairs	**1.00**	**LS**	**2,899**	**16**	**533**	**974**	**7,161**	**7,878**
			46.16	*0.03*	*1.77*		*99.61*	*109.57*
Chimney Cap Repairs	**23.00**	**LF**	**1,062**	**1**	**41**	**312**	**2,291**	**2,520**
			4.19	*0.00*	*0.00*		*8.70*	*9.57*
RSM 040505105120 Selective demolition, masonry, veneers, granite and marble, 4" thick	8.00	SF	34	0	0	9	70	77
			2.40	*0.07*	*0.32*		*5.81*	*6.39*
RSM 040120520820 Cleaning masonry, high pressure wash, average soil, biological staining, water and chemical, excludes scaffolding	8.00	SF	19	1	3	6	47	51
			7.81	*0.00*	*1.42*		*19.17*	*21.09*
HNC 076211000008 Aluminum flashing, flexible, mill finish, .013" thick, 12" wide coping	23.00	LF	180	0	33	60	441	485
			36.06	*0.00*	*0.24*		*75.39*	*82.93*
RSM 047210100050.01 Reinstall coping, includes mortar, excludes scaffolding	23.00	LF	829	0	6	236	1,734	1,907
			8.15	*0.07*	*1.04*		*19.23*	*21.15*
Brickwork	**213.00**	**SF**	**1,735**	**15**	**221**	**557**	**4,096**	**4,505**
			58.50	*0.00*	*10.85*		*144.04*	*158.44*
Replace deteriorated brick (5%)	**11.00**	**SF**	**643**	**0**	**119**	**216**	**1,584**	**1,743**
			5.70	*0.00*	*0.00*		*11.83*	*13.01*
RSM 040505105020 Selective demolition, masonry, veneers, brick, hard mortar, remove	11.00	SF	63	0	0	18	130	143
			38.72	*0.00*	*9.30*		*99.74*	*109.72*
RSM 042113132100 Brick veneer masonry, red brick, english, full header every 2nd course, truckload lots, 10.13/SF, 4" x 2-2/3" x 8",	11.00	SF	426	0	102	149	1,097	1,207

Currency in US dollars

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	SubCMU	ContractCost	ProjectCost
includes 3% brick and 25% mortar waste, excludes scaffolding, grout and reinforcing								
			14.08	*0.00*	*1.55*		*32.46*	*35.71*
RSM 040120201060 Pointing masonry, re-point, mask and grout method, english bond	11.00	SF	155	0	17	49	357	393
			5.71	*0.00*	*0.46*		*12.80*	*14.08*
Repoint damaged mortar joints (25%)	**53.00**	**SF**	**302**	**0**	**24**	**92**	**678**	**746**
			5.71	*0.00*	*0.46*		*12.80*	*14.08*
RSM 040120300300 Pointing masonry, cut and re-point block, hard mortar, running bond	53.00	SF	302	0	24	92	678	746
			8.67	*0.00*	*0.28*		*18.59*	*20.45*
Heavy Cleaning (15%)	**32.00**	**SF**	**278**	**0**	**9**	**81**	**595**	**654**
			8.67	*0.00*	*0.28*		*18.59*	*20.45*
RSM 040120520320 Cleaning masonry, heavy restoration, heavy soil, biological and mineral staining, paint, by chemical, high pressure wash, brush and rinse, excludes scaffolding	32.00	SF	278	0	9	81	595	654
			2.40	*0.07*	*0.32*		*5.81*	*6.39*
General Cleaning	**213.00**	**EA**	**512**	**15**	**69**	**168**	**1,238**	**1,362**
			2.40	*0.07*	*0.32*		*5.81*	*6.39*
RSM 040120520820 Cleaning masonry, high pressure wash, average soil, biological staining, water and chemical, excludes scaffolding	213.00	SF	512	15	69	168	1,238	1,362
			4.65	*0.00*	*12.30*		*35.21*	*38.73*
Step Flashing	**22.00**	**LF**	**102**	**0**	**271**	**105**	**775**	**852**
			9.30	*0.00*	*24.60*		*70.42*	*77.47*
RSM 076510102200 Sheet metal flashing, copper, flexible, under 1,000 lbs, 24 ounce sheets, including up to 4 bends	11.00	SF	102	0	271	105	775	852
South Chimney Repairs	**1.00**	**LS**	**5,583**	**19**	**965**	**1,856**	**13,640**	**15,004**
			46.07	*0.02*	*1.76*		*99.40*	*109.34*
Chimney Cap Repairs	**18.00**	**LF**	**829**	**0**	**32**	**243**	**1,789**	**1,968**
			4.19	*0.00*	*0.00*		*8.70*	*9.57*
RSM 040505105120 Selective demolition, masonry, veneers, granite and marble, 4" thick	6.00	SF	25	0	0	7	52	57
			2.40	*0.07*	*0.32*		*5.81*	*6.39*
RSM 040120520820 Cleaning masonry, high pressure wash, average soil, biological staining, water and chemical, excludes scaffolding	6.00	SF	14	0	2	5	35	38
			7.81	*0.00*	*1.42*		*19.17*	*21.09*
HNC 076211000008 Aluminum flashing, flexible, mill finish, .013" thick, 12" wide coping	18.00	LF	141	0	25	47	345	380
			36.06	*0.00*	*0.24*		*75.39*	*82.93*
RSM 047210100050.01 Reinstall coping, includes mortar, excludes	18.00	LF	649	0	4	185	1,357	1,493

Currency in US dollars

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	SubCMU	ContractCost	ProjectCost
scaffolding								
			18.37	*0.07*	*2.94*		*44.40*	*48.84*
Brickwork	**255.00**	**SF**	**4,684**	**18**	**749**	**1,541**	**11,323**	**12,455**
			58.50	*0.00*	*10.85*		*144.04*	*158.44*
Replace deteriorated brick (5%)	**12.75**	**SF**	**746**	**0**	**138**	**250**	**1,836**	**2,020**
			5.70	*0.00*	*0.00*		*11.83*	*13.01*
RSM 040505105020 Selective demolition, masonry, veneers, brick, hard mortar, remove	12.75	SF	73	0	0	21	151	166
			38.72	*0.00*	*9.30*		*99.74*	*109.72*
RSM 042113132100 Brick veneer masonry, red brick, english, full header every 2nd course, truckload lots, 10.13/SF, 4" x 2-2/3" x 8", includes 3% brick and 25% mortar waste, excludes scaffolding, grout and reinforcing	12.75	SF	494	0	119	173	1,272	1,399
			14.08	*0.00*	*1.55*		*32.46*	*35.71*
RSM 040120201060 Pointing masonry, re-point, mask and grout method, english bond	12.75	SF	180	0	20	56	414	455
			5.71	*0.00*	*0.46*		*12.80*	*14.08*
Repoint damaged mortar joints (25%)	**63.75**	**SF**	**364**	**0**	**29**	**111**	**816**	**898**
			5.71	*0.00*	*0.46*		*12.80*	*14.08*
RSM 040120300300 Pointing masonry, cut and re-point block, hard mortar, running bond	63.75	SF	364	0	29	111	816	898
			8.62	*0.00*	*0.27*		*18.47*	*20.31*
Heavy Cleaning (15%)	**38.25**	**SF**	**330**	**0**	**10**	**96**	**706**	**777**
			8.67	*0.00*	*0.28*		*18.59*	*20.45*
RSM 040120520320 Cleaning masonry, heavy restoration, heavy soil, biological and mineral staining, paint, by chemical, high pressure wash, brush and rinse, excludes scaffolding	38.00	SF	330	0	10	96	706	777
			2.40	*0.07*	*0.32*		*5.81*	*6.39*
General Cleaning	**255.00**	**EA**	**613**	**18**	**83**	**202**	**1,482**	**1,631**
			2.40	*0.07*	*0.32*		*5.81*	*6.39*
RSM 040120520820 Cleaning masonry, high pressure wash, average soil, biological staining, water and chemical, excludes scaffolding	255.00	SF	613	18	83	202	1,482	1,631
			58.50	*0.00*	*10.85*		*144.04*	*158.44*
Disassemble & Reconstruct upper 10 courses brick	**45.00**	**SF**	**2,632**	**0**	**488**	**882**	**6,482**	**7,130**
			5.70	*0.00*	*0.00*		*11.83*	*13.01*
RSM 040505105020 Selective demolition, masonry, veneers, brick, hard mortar, remove	45.00	SF	256	0	0	72	532	586
			38.72	*0.00*	*9.30*		*99.74*	*109.72*
RSM 042113132100 Brick veneer masonry, red brick, english, full header every 2nd course, truckload lots, 10.13/SF, 4" x 2-2/3" x 8",	45.00	SF	1,742	0	419	611	4,489	4,937

Currency in US dollars

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	SubCMU	ContractCost	ProjectCost
includes 3% brick and 25% mortar waste, excludes scaffolding, grout and reinforcing								
			14.08	*0.00*	*1.55*		*32.46*	*35.71*
RSM 040120201060 Pointing masonry, re-point, mask and grout method, english bond	45.00	SF	634	0	70	199	1,461	1,607
			4.65	*0.00*	*12.30*		*35.21*	*38.73*
Step Flashing	**15.00**	**LF**	**70**	**0**	**185**	**72**	**528**	**581**
			9.30	*0.00*	*24.60*		*70.42*	*77.47*
RSM 076510102200 Sheet metal flashing, copper, flexible, under 1,000 lbs, 24 ounce sheets, including up to 4 bends	7.50	SF	70	0	185	72	528	581
			857.01	*0.00*	*421.25*		*5,662.95*	*6,229.24*
B2020 Exterior Windows	**36.00**	**EA**	**30,852**	**0**	**15,165**	**27,738**	**203,866**	**224,253**
			857.01	*0.00*	*421.25*		*5,662.95*	*6,229.24*
B2021 Windows	**36.00**	**EA**	**30,852**	**0**	**15,165**	**27,738**	**203,866**	**224,253**
(Note: Average window size: 2'-7" x 4'-7" high (31" x 55"))								
			0.22	*0.00*	*0.18*		*0.84*	*0.92*
RSM 072510103000 Weather barriers, building paper, spun bonded polyethylene	432.00	SF	96	0	78	49	362	398
			0.00	*0.00*	*0.00*		*33.15*	*36.46*
HTW 028133290002.01 Subcontracted shipping of fragile material, transport bulk, 20 C.Y.	200.00	MI	0	0	0	902	6,630	7,293
(Note: Assume20 windows max per load, to specialty shop 50 mile round trip, sub bid cost to include packaging, loading, and unloading upon return. Recommend obtaining quote on further stages of design cost estimates.)								
			162.14	*0.00*	*0.00*		*336.78*	*370.45*
RSM 085216350267.01 Windows, wood, double-hung, custom, 2'-7" x 4'-7" high, installation labor only	36.00	EA	5,837	0	0	1,650	12,124	13,336
			107.46	*0.00*	*0.00*		*223.20*	*245.52*
RSM 085216350267.02 Windows, wood, double-hung, custom, 2'-7" x 4'-7" high, removal labor only	36.00	EA	3,869	0	0	1,093	8,035	8,839
			123.86	*0.00*	*9.00*		*275.95*	*303.55*
RSM 087530100020 Weatherstripping, window, double-hung, zinc, for 3' x 5' window	36.00	OPN	4,459	0	324	1,352	9,934	10,928
			63.70	*0.00*	*200.42*		*548.59*	*603.45*
RSM 085269102620 Windows, storm, aluminum, residential, double-hung, combination, storm and screen, average quality, mill finish, 2'-6" x 5'-0" high	36.00	EA	2,293	0	7,215	2,687	19,749	21,724
			30.75	*0.00*	*162.02*		*400.39*	*440.43*
RSM 122113331020 Blinds, interior, horizontal, 2" vinyl faux wood, 48" wide x 72" high	36.00	EA	1,107	0	5,833	1,961	14,414	15,855
USR SKM.02 Allowance for miscellaneous window components and labor.	1.00	LS	0	0	0	3,007	22,099	24,309

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Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	SubCMU	ContractCost	ProjectCost
			68.70	*0.00*	*6.24*		*155.66*	*171.23*
RSM 099123338900 Paints & coatings, interior, alkyd (oil base), windows, w/frame & trim, per side, standard, single lite, oil, paint 2 coats, brushwork, 3' x 5'	36.00	EA	2,473	0	225	762	5,604	6,164
			297.72	*0.00*	*41.40*		*704.36*	*774.79*
RSM 028319266220 Removal of lead-based paint, by chemicals, per application, windows, 1 side only, double-hung, 1/1 lite, 30" x 60" high, include frame & trim	36.00	EA	10,718	0	1,491	3,450	25,357	27,893
			0.00	*0.00*	*0.00*		*2,209.94*	*2,430.94*
USR SKM.03 Allowance for Window Restoration	36.00	EA	0	0	0	10,825	79,558	87,514
(Note: Includes wood restoration, energy efficient upgrades where possible, wood component repairs at 10% of sash frame, refurbished or new chains and pulleys at double hung windows, refurbishing closing hardware, and shop priming window for final finish in field.)								
			48,738.71	*63.12*	*53,481.37*		*212,443.73*	*233,688.10*
B30 Roofing	**1.00**	**EA**	**48,739**	**63**	**53,481**	**28,905**	**212,444**	**233,688**
			48,738.71	*63.12*	*53,481.37*		*212,443.73*	*233,688.10*
B3010 Roof Coverings	**1.00**	**EA**	**48,739**	**63**	**53,481**	**28,905**	**212,444**	**233,688**
			45,386.98	*63.12*	*45,957.52*		*189,854.99*	*208,840.49*
B3011 Roof Finishes	**1.00**	**EA**	**45,387**	**63**	**45,958**	**25,832**	**189,855**	**208,840**
			10.05	*0.00*	*10.55*		*42.79*	*47.07*
New Slate Roofing (Note: At gable roof and dormers.)	**4,147.00**	**SF**	**41,673**	**0**	**43,768**	**24,146**	**177,464**	**195,210**
			767.35	*0.00*	*972.11*		*3,612.89*	*3,974.18*
RSM 073126102500 Slate shingles, roof repair, extensive replacement	41.00	SQ	31,461	0	39,857	20,154	148,128	162,941
			2.07	*0.00*	*0.00*		*4.31*	*4.74*
RSM 070505104120 Selective demolition, thermal and moisture protection, roofing, slate shingles, remove	4,147.00	SF	8,598	0	0	2,430	17,858	19,644
			10.15	*0.00*	*24.60*		*72.18*	*79.40*
RSM 076510102200 Sheet metal flashing, copper, flexible, under 1,000 lbs, 24 ounce sheets, including up to 4 bends	159.00	SF	1,614	0	3,912	1,562	11,477	12,625
			3.09	*0.05*	*1.82*		*10.33*	*11.36*
New Membrane Roofing	**1,200.00**	**SF**	**3,714**	**63**	**2,189**	**1,686**	**12,391**	**13,631**
			101.01	*0.00*	*0.00*		*209.79*	*230.77*
RSM 070505104420 Selective demolition, thermal and moisture protection, roofing, single ply membrane, fully adhered	12.00	SQ	1,212	0	0	343	2,517	2,769
			208.48	*5.26*	*182.42*		*822.83*	*905.12*
RSM 075323204800 Ethylene-propylene-diene-monomer roofing, (EPDM), 0.40 psf, fully adhered with adhesive, 60 mils	12.00	SQ	2,502	63	2,189	1,343	9,874	10,861
			9.83	*0.00*	*22.06*		*66.24*	*72.87*
B3016 Gutters & Downspouts	**341.00**	**LF**	**3,352**	**0**	**7,524**	**3,073**	**22,589**	**24,848**
			10.89	*0.00*	*14.53*		*52.81*	*58.09*

Currency in US dollars

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	SubCMU	ContractCost	ProjectCost
Gutters	**217.00**	**LF**	**2,364**	**0**	**3,154**	**1,559**	**11,460**	**12,606**
			11.05	*0.00*	*17.45*		*59.21*	*65.14*
Slate Roof Gutters	**151.00**	**LF**	**1,669**	**0**	**2,636**	**1,217**	**8,941**	**9,835**
			10.95	*0.00*	*16.98*		*58.02*	*63.82*
RSM 077123301000 Copper gutters, half round, 16 ounce, stock units, 6" wide	151.00	LF	1,654	0	2,564	1,192	8,761	9,637
			3.08	*0.00*	*14.28*		*36.05*	*39.66*
RSM 077123305250 Gutter outlets, copper, 3" x 4"	5.00	EA	15	0	71	25	180	198
			10.53	*0.00*	*7.85*		*38.16*	*41.97*
Flat Roof Gutters	**66.00**	**LF**	**695**	**0**	**518**	**343**	**2,518**	**2,770**
			10.34	*0.00*	*7.14*		*36.31*	*39.94*
RSM 077123302800 Galvanized steel gutters, half round or box, stock, 6" wide, 26 gauge	66.00	LF	682	0	471	326	2,396	2,636
			3.08	*0.00*	*11.64*		*30.57*	*33.63*
RSM 077123305340 Gutter outlets, galvanized steel, 3" x 4"	4.00	EA	12	0	47	17	122	135
			7.97	*0.00*	*35.24*		*89.75*	*98.72*
Downspouts	**124.00**	**LF**	**988**	**0**	**4,370**	**1,514**	**11,129**	**12,242**
			6.80	*0.00*	*51.61*		*121.31*	*133.45*
Slate Roof Downspouts	**78.00**	**LF**	**531**	**0**	**4,025**	**1,287**	**9,463**	**10,409**
			6.80	*0.00*	*51.61*		*121.31*	*133.45*
RSM 077123103700 Lead coated copper downspouts, round, stock, 3" diameter	78.00	LF	531	0	4,025	1,287	9,463	10,409
			9.94	*0.00*	*7.50*		*36.23*	*39.85*
Flat Roof Downspouts	**46.00**	**LF**	**457**	**0**	**345**	**227**	**1,666**	**1,833**
			9.94	*0.00*	*7.50*		*36.23*	*39.85*
RSM 077123105100 Steel downspouts, galvanized, round, corrugated, 5" diameter, 26 gauge	46.00	LF	457	0	345	227	1,666	1,833
			3,196.23	*76.62*	*10,315.19*		*28,222.58*	*31,044.84*
Scaffolding Support	**8.00**	**MO**	**25,570**	**613**	**82,522**	**30,720**	**225,781**	**248,359**
			177.57	*3.41*	*0.00*		*375.89*	*413.47*
Installation	**90.00**	**CSF**	**15,981**	**306**	**0**	**4,603**	**33,830**	**37,213**
			90.12	*0.00*	*0.00*		*187.18*	*205.89*
MIL B-LABORER Laborers, (Semi-Skilled)	45.00	HR	4,055	0	0	1,146	8,423	9,265
(Note: Davis Bacon Laborers: Group 4: General Laborer. LABO0242-004. General Decision Number: WA20220070 08/05/2022)								
			89.01	*0.00*	*0.00*		*184.87*	*203.36*
MIL B-LABORERG Laborers, General (Lowest paid)	112.50	HR	10,014	0	0	2,830	20,798	22,878
(Note: Davis Bacon Laborers: Group 2A. LABO0242-004. General Decision Number: WA20220070 08/05/2022)								
			84.99	*0.00*	*0.00*		*176.53*	*194.18*
MIL B-POWDERMN Laborers, Skilled / Powdermen	22.50	HR	1,912	0	0	540	3,972	4,369

Currency in US dollars

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	SubCMU	ContractCost	ProjectCost
(Note: Davis Bacon Laborers: Group 5: Powderman. LABO0242-003. General Decision Number: WA20220001 9/9/2022)								
			0.00	*34.06*	*0.00*		*70.73*	*77.81*
GEN F10Z3000 FORK LIFT, ROUGH TERRAIN, 6,000 LBS (2.7MG) @ 22' (6.7M) HIGH STRAIGHT MAST, 4X4	9.00	HR	0	306	0	87	637	700
			106.54	*3.41*	*0.00*		*228.36*	*251.20*
Removal	**90.00**	**CSF**	**9,589**	**306**	**0**	**2,796**	**20,552**	**22,608**
			90.12	*0.00*	*0.00*		*187.18*	*205.89*
MIL B-LABORER Laborers, (Semi-Skilled)	27.00	HR	2,433	0	0	688	5,054	5,559
(Note: Davis Bacon Laborers: Group 4: General Laborer. LABO0242-004. General Decision Number: WA20220070 08/05/2022)								
			89.01	*0.00*	*0.00*		*184.87*	*203.36*
MIL B-LABORERG Laborers, General (Lowest paid)	67.50	HR	6,008	0	0	1,698	12,479	13,727
(Note: Davis Bacon Laborers: Group 2A. LABO0242-004. General Decision Number: WA20220070 08/05/2022)								
			84.99	*0.00*	*0.00*		*176.53*	*194.18*
MIL B-POWDERMN Laborers, Skilled / Powdermen	13.50	HR	1,147	0	0	324	2,383	2,621
(Note: Davis Bacon Laborers: Group 5: Powderman. LABO0242-003. General Decision Number: WA20220001 9/9/2022)								
			0.00	*34.06*	*0.00*		*70.73*	*77.81*
GEN F10Z3000 FORK LIFT, ROUGH TERRAIN, 6,000 LBS (2.7MG) @ 22' (6.7M) HIGH STRAIGHT MAST, 4X4	9.00	HR	0	306	0	87	637	700
			0.00	*0.00*	*10,315.19*		*21,424.81*	*23,567.29*
Scaffolding Rental	**8.00**	**MO**	**0**	**0**	**82,522**	**23,321**	**171,398**	**188,538**
			0.00	*0.00*	*114.61*		*238.05*	*261.86*
RSM 015423700906 Scaffolding, steel tubular, regular, rent/month only for complete system for face of walls, 6' -4" x 5' frames, excludes planks	720.00	CSF	0	0	82,522	23,321	171,398	188,538
(Note: Assumed 9,000 SF scaffolding system (whole building) rented for 8 months (Mar - Oct))								
			62,803.32	*249.54*	*61,653.29*		*259,016.53*	*284,918.18*
C INTERIORS	**1.00**	**EA**	**62,803**	**250**	**61,653**	**35,242**	**259,017**	**284,918**
			15,907.19	*0.00*	*25,520.05*		*86,045.00*	*94,649.50*
C10 Interior Construction	**1.00**	**EA**	**15,907**	**0**	**25,520**	**11,707**	**86,045**	**94,649**
			548.52	*0.00*	*880.00*		*2,967.07*	*3,263.78*
C1020 Interior Doors	**29.00**	**EA**	**15,907**	**0**	**25,520**	**11,707**	**86,045**	**94,649**
			548.52	*0.00*	*880.00*		*2,967.07*	*3,263.78*
C1021 Interior Doors	**29.00**	**EA**	**15,907**	**0**	**25,520**	**11,707**	**86,045**	**94,649**
			548.52	*0.00*	*880.00*		*2,967.07*	*3,263.78*
G4010 Renovate Spray Booth Doors	**29.00**	**EA**	**15,907**	**0**	**25,520**	**11,707**	**86,045**	**94,649**
			22.25	*0.00*	*0.00*		*46.22*	*50.84*
G401010 Remove Door Hardware	**29.00**	**EA**	**645**	**0**	**0**	**182**	**1,340**	**1,474**
			89.01	*0.00*	*0.00*		*184.87*	*203.36*
MIL B-LABORERG Laborers, General (Lowest paid)	7.25	HR	645	0	0	182	1,340	1,474
(Note: Davis Bacon Laborers: Group 2A. LABO0242-004. General Decision Number: WA20200070 10/02/2020)								

Currency in US dollars

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	SubCMU	ContractCost	ProjectCost
			55.73	*0.00*	*0.00*		*115.74*	*127.32*
G401020 Prepare Surfaces for Painting	**29.00**	**EA**	**1,616**	**0**	**0**	**457**	**3,357**	**3,692**
			1.81	*0.00*	*0.00*		*3.75*	*4.13*
RSM 090190940050 Surface preparation, interior, doors, scrape & sand, wood, detail	894.07	SF	1,616	0	0	457	3,357	3,692
			358.61	*0.00*	*15.90*		*777.87*	*855.66*
G401030 Paint Doors	**29.00**	**EA**	**10,400**	**0**	**461**	**3,069**	**22,558**	**24,814**
			358.61	*0.00*	*15.90*		*777.87*	*855.66*
RSM 099123350400 Paints & coatings, interior latex, doors, panel, both sides, roll & brush, primer + 2 coats, incl. frame & trim	29.00	EA	10,400	0	461	3,069	22,558	24,814
			111.93	*0.00*	*864.10*		*2,027.24*	*2,229.96*
G401040 Install New Hardware	**29.00**	**EA**	**3,246**	**0**	**25,059**	**7,999**	**58,790**	**64,669**
			111.93	*0.00*	*864.10*		*2,027.24*	*2,229.96*
RSM 087120440750 Door hardware, anti-ligature mortise lockset, knob handle institutional privacy set, US32D	29.00	EA	3,246	0	25,059	7,999	58,790	64,669
			46,896.13	*249.54*	*36,133.24*		*172,971.53*	*190,268.68*
C30 Interior Finishes	**1.00**	**EA**	**46,896**	**250**	**36,133**	**23,535**	**172,972**	**190,269**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
C3010 Wall Finishes	**7,961.00**	**SF**	**21,504**	**0**	**4,204**	**7,265**	**53,396**	**58,736**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
C3012 Wall Finishes to Interior Walls	**7,961.00**	**SF**	**21,504**	**0**	**4,204**	**7,265**	**53,396**	**58,736**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Basement Level	**1,878.00**	**SF**	**5,073**	**0**	**992**	**1,714**	**12,596**	**13,856**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Stair 02	**200.00**	**SF**	**540**	**0**	**106**	**183**	**1,341**	**1,476**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
RSM 099123721670 Painting walls, complete, on drywall or plaster, primer and 2 finish coats, with roller, including surface preparation	200.00	SF	540	0	106	183	1,341	1,476
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Hall	**165.00**	**SF**	**446**	**0**	**87**	**151**	**1,107**	**1,217**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
RSM 099123721670 Painting walls, complete, on drywall or plaster, primer and 2 finish coats, with roller, including surface preparation	165.00	SF	446	0	87	151	1,107	1,217
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Coal Chute	**67.00**	**SF**	**181**	**0**	**35**	**61**	**449**	**494**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
RSM 099123721670 Painting walls, complete, on drywall or plaster, primer and 2 finish coats, with roller, including surface preparation	67.00	SF	181	0	35	61	449	494
			2.70	*0.00*	*0.53*		*6.71*	*7.38*

Currency in US dollars

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	SubCMU	ContractCost	ProjectCost
Boiler Room	**328.00**	**EA**	**886**	**0**	**173**	**299**	**2,200**	**2,420**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
RSM 099123721670 Painting walls, complete, on drywall or plaster, primer and 2 finish coats, with roller, including surface preparation	328.00	SF	886	0	173	299	2,200	2,420
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Basement	**546.00**	**SF**	**1,475**	**0**	**288**	**498**	**3,662**	**4,028**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
RSM 099123721670 Painting walls, complete, on drywall or plaster, primer and 2 finish coats, with roller, including surface preparation	546.00	SF	1,475	0	288	498	3,662	4,028
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Stair 01	**171.00**	**SF**	**462**	**0**	**90**	**156**	**1,147**	**1,262**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
RSM 099123721670 Painting walls, complete, on drywall or plaster, primer and 2 finish coats, with roller, including surface preparation	171.00	SF	462	0	90	156	1,147	1,262
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Mechanical Crawl Space	**401.00**	**SF**	**1,083**	**0**	**212**	**366**	**2,690**	**2,959**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
RSM 099123721670 Painting walls, complete, on drywall or plaster, primer and 2 finish coats, with roller, including surface preparation	401.00	SF	1,083	0	212	366	2,690	2,959
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Level 1	**4,416.00**	**SF**	**11,928**	**0**	**2,332**	**4,030**	**29,619**	**32,581**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Lobby	**244.00**	**SF**	**659**	**0**	**129**	**223**	**1,637**	**1,800**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
RSM 099123721670 Painting walls, complete, on drywall or plaster, primer and 2 finish coats, with roller, including surface preparation	244.00	SF	659	0	129	223	1,637	1,800
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Reception	**653.00**	**SF**	**1,764**	**0**	**345**	**596**	**4,380**	**4,818**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
RSM 099123721670 Painting walls, complete, on drywall or plaster, primer and 2 finish coats, with roller, including surface preparation	653.00	SF	1,764	0	345	596	4,380	4,818
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Lower Stacks	**512.00**	**SF**	**1,383**	**0**	**270**	**467**	**3,434**	**3,778**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
RSM 099123721670 Painting walls, complete, on drywall or plaster, primer and 2 finish coats, with roller, including surface preparation	512.00	SF	1,383	0	270	467	3,434	3,778
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Reading Room_103B	**553.00**	**SF**	**1,494**	**0**	**292**	**505**	**3,709**	**4,080**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*

Currency in US dollars

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	SubCMU	ContractCost	ProjectCost
RSM 099123721670 Painting walls, complete, on drywall or plaster, primer and 2 finish coats, with roller, including surface preparation	553.00	SF	1,494	0	292	505	3,709	4,080
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Hall_103C	**131.00**	**SF**	**354**	**0**	**69**	**120**	**879**	**967**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
RSM 099123721670 Painting walls, complete, on drywall or plaster, primer and 2 finish coats, with roller, including surface preparation	131.00	SF	354	0	69	120	879	967
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Reading Room_104	**1,017.00**	**SF**	**2,747**	**0**	**537**	**928**	**6,821**	**7,503**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
RSM 099123721670 Painting walls, complete, on drywall or plaster, primer and 2 finish coats, with roller, including surface preparation	1,017.00	SF	2,747	0	537	928	6,821	7,503
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Office	**392.00**	**SF**	**1,059**	**0**	**207**	**358**	**2,629**	**2,892**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
RSM 099123721670 Painting walls, complete, on drywall or plaster, primer and 2 finish coats, with roller, including surface preparation	392.00	SF	1,059	0	207	358	2,629	2,892
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Hall_107	**160.00**	**SF**	**432**	**0**	**84**	**146**	**1,073**	**1,180**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
RSM 099123721670 Painting walls, complete, on drywall or plaster, primer and 2 finish coats, with roller, including surface preparation	160.00	SF	432	0	84	146	1,073	1,180
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Storage	**195.00**	**SF**	**527**	**0**	**103**	**178**	**1,308**	**1,439**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
RSM 099123721670 Painting walls, complete, on drywall or plaster, primer and 2 finish coats, with roller, including surface preparation	195.00	SF	527	0	103	178	1,308	1,439
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Hall_109A	**114.00**	**SF**	**308**	**0**	**60**	**104**	**765**	**841**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
RSM 099123721670 Painting walls, complete, on drywall or plaster, primer and 2 finish coats, with roller, including surface preparation	114.00	SF	308	0	60	104	765	841
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Stair 02	**193.00**	**SF**	**521**	**0**	**102**	**176**	**1,294**	**1,424**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
RSM 099123721670 Painting walls, complete, on drywall or plaster, primer and 2 finish coats, with roller, including surface preparation	193.00	SF	521	0	102	176	1,294	1,424
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Restroom 01	**127.00**	**SF**	**343**	**0**	**67**	**116**	**852**	**937**

Currency in US dollars

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	SubCMU	ContractCost	ProjectCost
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
RSM 099123721670 Painting walls, complete, on drywall or plaster, primer and 2 finish coats, with roller, including surface preparation	127.00	SF	343	0	67	116	852	937
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Restroom 02	**125.00**	**SF**	**338**	**0**	**66**	**114**	**838**	**922**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
RSM 099123721670 Painting walls, complete, on drywall or plaster, primer and 2 finish coats, with roller, including surface preparation	125.00	SF	338	0	66	114	838	922
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Mezzanine Level	**1,667.00**	**SF**	**4,503**	**0**	**880**	**1,521**	**11,181**	**12,299**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Mezzanine	**270.00**	**SF**	**729**	**0**	**143**	**246**	**1,811**	**1,992**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
RSM 099123721670 Painting walls, complete, on drywall or plaster, primer and 2 finish coats, with roller, including surface preparation	270.00	SF	729	0	143	246	1,811	1,992
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Archives	**396.00**	**SF**	**1,070**	**0**	**209**	**361**	**2,656**	**2,922**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
RSM 099123721670 Painting walls, complete, on drywall or plaster, primer and 2 finish coats, with roller, including surface preparation	396.00	SF	1,070	0	209	361	2,656	2,922
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Storage	**223.00**	**SF**	**602**	**0**	**118**	**204**	**1,496**	**1,645**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
RSM 099123721670 Painting walls, complete, on drywall or plaster, primer and 2 finish coats, with roller, including surface preparation	223.00	SF	602	0	118	204	1,496	1,645
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Upper Stacks	**430.00**	**SF**	**1,162**	**0**	**227**	**392**	**2,884**	**3,173**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
RSM 099123721670 Painting walls, complete, on drywall or plaster, primer and 2 finish coats, with roller, including surface preparation	430.00	SF	1,162	0	227	392	2,884	3,173
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Stair 03	**130.00**	**SF**	**351**	**0**	**69**	**119**	**872**	**959**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
RSM 099123721670 Painting walls, complete, on drywall or plaster, primer and 2 finish coats, with roller, including surface preparation	130.00	SF	351	0	69	119	872	959
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Stair 01	**162.00**	**SF**	**438**	**0**	**86**	**148**	**1,087**	**1,195**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
RSM 099123721670 Painting walls, complete, on drywall or plaster,	162.00	SF	438	0	86	148	1,087	1,195

Currency in US dollars

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	SubCMU	ContractCost	ProjectCost
primer and 2 finish coats, with roller, including surface preparation								
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
Stair 04	**56.00**	**EA**	**151**	**0**	**30**	**51**	**376**	**413**
			2.70	*0.00*	*0.53*		*6.71*	*7.38*
RSM 099123721670 Painting walls, complete, on drywall or plaster, primer and 2 finish coats, with roller, including surface preparation	56.00	SF	151	0	30	51	376	413
			3.75	*0.04*	*5.35*		*18.99*	*20.89*
C3020 Floor Finishes	**5,872.00**	**SF**	**22,043**	**247**	**31,398**	**15,172**	**111,511**	**122,662**
			3.75	*0.04*	*5.35*		*18.99*	*20.89*
C3024 Flooring	**5,872.00**	**SF**	**22,043**	**247**	**31,398**	**15,172**	**111,511**	**122,662**
			9.32	*0.19*	*6.00*		*32.22*	*35.44*
Basement Level	**1,280.00**	**SF**	**11,924**	**247**	**7,685**	**5,611**	**41,240**	**45,365**
			9.32	*0.19*	*6.00*		*32.23*	*35.45*
Stair 02	**43.00**	**SF**	**401**	**8**	**258**	**189**	**1,386**	**1,524**
			3.93	*0.00*	*0.16*		*8.49*	*9.34*
RSM 030130712510 Concrete crack repair, non-structural by gravity-fed epoxy resin (ACI RAP-2), suitable for individual cracks in stable horizontal surfaces only, up to 5/16" (0.3125") wide x 1" deep, manual filling with squeeze bottle of 2-part epoxy resin, excludes prep (Note: Assume 1 LF of concrete crack repair per 50 SF of concrete floor area.)	0.90	LF	4	0	0	1	8	8
			9.24	*0.19*	*6.00*		*32.05*	*35.25*
RSM 096726260700 Composition flooring, epoxy, with colored quartz chips, broadcast, 1/2" thick	43.00	SF	397	8	258	188	1,378	1,516
			9.31	*0.19*	*6.00*		*32.21*	*35.43*
Hall	**32.00**	**SF**	**298**	**6**	**192**	**140**	**1,031**	**1,134**
			3.93	*0.00*	*0.16*		*8.49*	*9.34*
RSM 030130712510 Concrete crack repair, non-structural by gravity-fed epoxy resin (ACI RAP-2), suitable for individual cracks in stable horizontal surfaces only, up to 5/16" (0.3125") wide x 1" deep, manual filling with squeeze bottle of 2-part epoxy resin, excludes prep (Note: Assume 1 LF of concrete crack repair per 50 SF of concrete floor area.)	0.60	LF	2	0	0	1	5	6
			9.24	*0.19*	*6.00*		*32.05*	*35.25*
RSM 096726260700 Composition flooring, epoxy, with colored quartz chips, broadcast, 1/2" thick	32.00	SF	296	6	192	140	1,026	1,128
			9.32	*0.19*	*6.00*		*32.22*	*35.44*
Boiler Room	**185.00**	**EA**	**1,723**	**36**	**1,111**	**811**	**5,961**	**6,557**
			3.93	*0.00*	*0.16*		*8.49*	*9.34*
RSM 030130712510 Concrete crack repair, non-structural by gravity-fed epoxy resin (ACI RAP-2), suitable for individual cracks in stable horizontal surfaces only, up to 5/16" (0.3125") wide x 1" deep, manual filling with squeeze bottle of 2-part epoxy resin, excludes prep	3.70	LF	15	0	1	4	31	35

Currency in US dollars

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	SubCMU	ContractCost	ProjectCost
(Note: Assume 1 LF of concrete crack repair per 50 SF of concrete floor area.)								
			9.24	*0.19*	*6.00*		*32.05*	*35.25*
RSM 096726260700 Composition flooring, epoxy, with colored quartz chips, broadcast, 1/2" thick	185.00	SF	1,709	36	1,110	807	5,929	6,522
			9.32	*0.19*	*6.00*		*32.22*	*35.44*
Basement	**421.00**	**SF**	**3,922**	**81**	**2,528**	**1,846**	**13,564**	**14,920**
			3.93	*0.00*	*0.16*		*8.49*	*9.34*
RSM 030130712510 Concrete crack repair, non-structural by gravity-fed epoxy resin (ACI RAP-2), suitable for individual cracks in stable horizontal surfaces only, up to 5/16" (0.3125") wide x 1" deep, manual filling with squeeze bottle of 2-part epoxy resin, excludes prep (Note: Assume 1 LF of concrete crack repair per 50 SF of concrete floor area.)	8.40	LF	33	0	1	10	71	78
			9.24	*0.19*	*6.00*		*32.05*	*35.25*
RSM 096726260700 Composition flooring, epoxy, with colored quartz chips, broadcast, 1/2" thick	421.00	SF	3,889	81	2,526	1,836	13,493	14,842
			9.32	*0.19*	*6.00*		*32.22*	*35.44*
Mechanical Crawl Space	**599.00**	**SF**	**5,580**	**116**	**3,596**	**2,626**	**19,299**	**21,229**
			3.93	*0.00*	*0.16*		*8.49*	*9.34*
RSM 030130712510 Concrete crack repair, non-structural by gravity-fed epoxy resin (ACI RAP-2), suitable for individual cracks in stable horizontal surfaces only, up to 5/16" (0.3125") wide x 1" deep, manual filling with squeeze bottle of 2-part epoxy resin, excludes prep (Note: Assume 1 LF of concrete crack repair per 50 SF of concrete floor area.)	12.00	LF	47	0	2	14	102	112
			9.24	*0.19*	*6.00*		*32.05*	*35.25*
RSM 096726260700 Composition flooring, epoxy, with colored quartz chips, broadcast, 1/2" thick	599.00	SF	5,533	116	3,594	2,612	19,197	21,117
			2.25	*0.00*	*5.24*		*15.56*	*17.11*
Level 1	**3,224.00**	**SF**	**7,249**	**0**	**16,899**	**6,824**	**50,155**	**55,171**
			2.22	*0.00*	*5.22*		*15.45*	*17.00*
Lobby	**70.00**	**SF**	**156**	**0**	**365**	**147**	**1,082**	**1,190**
			0.70	*0.00*	*0.00*		*1.45*	*1.59*
RSM 090505200400 Flooring demolition, carpet, bonded, includes surface scraping	70.00	SF	49	0	0	14	101	112
			13.69	*0.00*	*46.81*		*125.66*	*138.23*
RSM 096813101180 Carpet tile, tufted nylon, 35 oz., 18" x 18" or 24" x 24"	7.80	SY	107	0	365	133	980	1,078
			2.22	*0.00*	*5.20*		*15.42*	*16.96*
Reception	**430.00**	**SF**	**955**	**0**	**2,237**	**902**	**6,629**	**7,292**
			0.70	*0.00*	*0.00*		*1.45*	*1.59*
RSM 090505200400 Flooring demolition, carpet, bonded, includes surface scraping	430.00	SF	300	0	0	85	623	685

Currency in US dollars

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	SubCMU	ContractCost	ProjectCost
			13.69	*0.00*	*46.81*		*125.66*	*138.23*
RSM 096813101180 Carpet tile, tufted nylon, 35 oz., 18" x 18" or 24" x 24"	47.80	SY	655	0	2,237	817	6,007	6,607
			2.22	*0.00*	*5.20*		*15.41*	*16.96*
Lower Stacks	**673.00**	**SF**	**1,494**	**0**	**3,501**	**1,412**	**10,374**	**11,412**
			0.70	*0.00*	*0.00*		*1.45*	*1.59*
RSM 090505200400 Flooring demolition, carpet, bonded, includes surface scraping	673.00	SF	469	0	0	133	975	1,072
			13.69	*0.00*	*46.81*		*125.66*	*138.23*
RSM 096813101180 Carpet tile, tufted nylon, 35 oz., 18" x 18" or 24" x 24"	74.80	SY	1,024	0	3,501	1,279	9,399	10,339
			2.22	*0.00*	*5.20*		*15.41*	*16.95*
Reading Room_103B	**442.00**	**SF**	**981**	**0**	**2,298**	**927**	**6,810**	**7,491**
			0.70	*0.00*	*0.00*		*1.45*	*1.59*
RSM 090505200400 Flooring demolition, carpet, bonded, includes surface scraping	442.00	SF	308	0	0	87	640	704
			13.69	*0.00*	*46.81*		*125.66*	*138.23*
RSM 096813101180 Carpet tile, tufted nylon, 35 oz., 18" x 18" or 24" x 24"	49.10	SY	672	0	2,298	839	6,170	6,787
			1.51	*0.00*	*5.15*		*13.82*	*15.20*
Hall_103C	**20.00**	**SF**	**30**	**0**	**103**	**38**	**276**	**304**
			13.69	*0.00*	*46.81*		*125.66*	*138.23*
RSM 096813101180 Carpet tile, tufted nylon, 35 oz., 18" x 18" or 24" x 24"	2.20	SY	30	0	103	38	276	304
			2.22	*0.00*	*5.20*		*15.41*	*16.95*
Reading Room_104	**710.00**	**SF**	**1,576**	**0**	**3,693**	**1,489**	**10,943**	**12,037**
			0.70	*0.00*	*0.00*		*1.45*	*1.59*
RSM 090505200400 Flooring demolition, carpet, bonded, includes surface scraping	710.00	SF	495	0	0	140	1,029	1,131
			13.69	*0.00*	*46.81*		*125.66*	*138.23*
RSM 096813101180 Carpet tile, tufted nylon, 35 oz., 18" x 18" or 24" x 24"	78.90	SY	1,081	0	3,693	1,349	9,915	10,906
			2.22	*0.00*	*5.21*		*15.43*	*16.98*
Office	**177.00**	**SF**	**393**	**0**	**922**	**372**	**2,732**	**3,005**
			0.70	*0.00*	*0.00*		*1.45*	*1.59*
RSM 090505200400 Flooring demolition, carpet, bonded, includes surface scraping	177.00	SF	123	0	0	35	256	282
			13.69	*0.00*	*46.81*		*125.66*	*138.23*
RSM 096813101180 Carpet tile, tufted nylon, 35 oz., 18" x 18" or 24" x 24"	19.70	SY	270	0	922	337	2,475	2,723

Currency in US dollars

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	SubCMU	ContractCost	ProjectCost
			2.22	*0.00*	*5.20*		*15.41*	*16.95*
Children's Reading Room	**541.00**	**SF**	**1,200**	**0**	**2,813**	**1,134**	**8,336**	**9,169**
			0.70	*0.00*	*0.00*		*1.45*	*1.59*
RSM 090505200400 Flooring demolition, carpet, bonded, includes surface scraping	541.00	SF	377	0	0	107	784	862
			13.69	*0.00*	*46.81*		*125.66*	*138.23*
RSM 096813101180 Carpet tile, tufted nylon, 35 oz., 18" x 18" or 24" x 24"	60.10	SY	823	0	2,813	1,028	7,552	8,307
			2.19	*0.00*	*5.11*		*15.16*	*16.67*
Hall_107	**22.00**	**SF**	**48**	**0**	**112**	**45**	**333**	**367**
			0.70	*0.00*	*0.00*		*1.45*	*1.59*
RSM 090505200400 Flooring demolition, carpet, bonded, includes surface scraping	22.00	SF	15	0	0	4	32	35
			13.69	*0.00*	*46.81*		*125.66*	*138.23*
RSM 096813101180 Carpet tile, tufted nylon, 35 oz., 18" x 18" or 24" x 24"	2.40	SY	33	0	112	41	302	332
			3.59	*0.00*	*5.21*		*18.29*	*20.11*
Storage	**44.00**	**SF**	**158**	**0**	**229**	**109**	**805**	**885**
			2.07	*0.00*	*0.00*		*4.29*	*4.72*
RSM 090505202000 Flooring demolition, tile, ceramic, thin set	44.00	SF	91	0	0	26	189	208
			13.69	*0.00*	*46.81*		*125.66*	*138.23*
RSM 096813101180 Carpet tile, tufted nylon, 35 oz., 18" x 18" or 24" x 24"	4.90	SY	67	0	229	84	616	677
			1.54	*0.00*	*5.27*		*14.14*	*15.55*
Hall_109A	**24.00**	**SF**	**37**	**0**	**126**	**46**	**339**	**373**
			13.69	*0.00*	*46.81*		*125.66*	*138.23*
RSM 096813101180 Carpet tile, tufted nylon, 35 oz., 18" x 18" or 24" x 24"	2.70	SY	37	0	126	46	339	373
			3.03	*0.00*	*10.36*		*27.82*	*30.61*
Stair 02	**42.00**	**SF**	**127**	**0**	**435**	**159**	**1,169**	**1,285**
			13.69	*0.00*	*46.81*		*125.66*	*138.23*
RSM 096813101180 Carpet tile, tufted nylon, 35 oz., 18" x 18" or 24" x 24"	9.30	SY	127	0	435	159	1,169	1,285
			2.19	*0.00*	*2.16*		*9.04*	*9.94*
Restroom 01	**14.00**	**SF**	**31**	**0**	**30**	**17**	**127**	**139**
			2.19	*0.00*	*2.16*		*9.04*	*9.94*
RSM 096519197150 Flooring, vinyl composition tile, solid, 12" x 12" x 1/16"	14.00	SF	31	0	30	17	127	139
			4.26	*0.00*	*2.16*		*13.33*	*14.66*
Restroom 02	**15.00**	**SF**	**64**	**0**	**32**	**27**	**200**	**220**

Currency in US dollars

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	SubCMU	ContractCost	ProjectCost
			2.07	*0.00*	*0.00*		*4.29*	*4.72*
RSM 090505202000 Flooring demolition, tile, ceramic, thin set	15.00	SF	31	0	0	9	64	71
			2.19	*0.00*	*2.16*		*9.04*	*9.94*
RSM 096519197150 Flooring, vinyl composition tile, solid, 12" x 12" x 1/16"	15.00	SF	33	0	32	18	136	149
			2.10	*0.00*	*4.98*		*14.70*	*16.17*
Mezzanine Level	**1,368.00**	**SF**	**2,870**	**0**	**6,815**	**2,737**	**20,116**	**22,127**
			2.23	*0.00*	*5.23*		*15.48*	*17.03*
Mezzanine	**60.00**	**SF**	**134**	**0**	**314**	**126**	**929**	**1,022**
			0.70	*0.00*	*0.00*		*1.45*	*1.59*
RSM 090505200400 Flooring demolition, carpet, bonded, includes surface scraping	60.00	SF	42	0	0	12	87	96
			13.69	*0.00*	*46.81*		*125.66*	*138.23*
RSM 096813101180 Carpet tile, tufted nylon, 35 oz., 18" x 18" or 24" x 24"	6.70	SY	92	0	314	115	842	926
			2.22	*0.00*	*5.21*		*15.43*	*16.97*
Archives	**187.00**	**SF**	**415**	**0**	**974**	**392**	**2,885**	**3,173**
			0.70	*0.00*	*0.00*		*1.45*	*1.59*
RSM 090505200400 Flooring demolition, carpet, bonded, includes surface scraping	187.00	SF	130	0	0	37	271	298
			13.69	*0.00*	*46.81*		*125.66*	*138.23*
RSM 096813101180 Carpet tile, tufted nylon, 35 oz., 18" x 18" or 24" x 24"	20.80	SY	285	0	974	356	2,614	2,875
			1.52	*0.00*	*5.20*		*13.96*	*15.36*
Storage	**54.00**	**SF**	**82**	**0**	**281**	**103**	**754**	**829**
			13.69	*0.00*	*46.81*		*125.66*	*138.23*
RSM 096813101180 Carpet tile, tufted nylon, 35 oz., 18" x 18" or 24" x 24"	6.00	SY	82	0	281	103	754	829
			2.22	*0.00*	*5.20*		*15.41*	*16.95*
Upper Stacks	**1,009.00**	**SF**	**2,239**	**0**	**5,247**	**2,115**	**15,548**	**17,103**
			0.70	*0.00*	*0.00*		*1.45*	*1.59*
RSM 090505200400 Flooring demolition, carpet, bonded, includes surface scraping	1,009.00	SF	704	0	0	199	1,462	1,608
			13.69	*0.00*	*46.81*		*125.66*	*138.23*
RSM 096813101180 Carpet tile, tufted nylon, 35 oz., 18" x 18" or 24" x 24"	112.10	SY	1,535	0	5,247	1,917	14,086	15,495
			1.53	*0.00*	*0.24*		*3.67*	*4.04*
C3030 Ceiling Finishes	**2,196.00**	**SF**	**3,349**	**2**	**531**	**1,097**	**8,064**	**8,871**
			1.53	*0.00*	*0.24*		*3.67*	*4.04*
C3031 Ceiling Finishes	**2,196.00**	**SF**	**3,349**	**2**	**531**	**1,097**	**8,064**	**8,871**

Currency in US dollars

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	SubCMU	ContractCost	ProjectCost
			1.26	*0.00*	*0.20*		*3.04*	*3.35*
Basement Level	**451.00**	**SF**	**569**	**0**	**92**	**187**	**1,372**	**1,509**
			1.26	*0.00*	*0.20*		*3.04*	*3.35*
Basement	**421.00**	**SF**	**531**	**0**	**86**	**174**	**1,281**	**1,409**
			0.68	*0.00*	*0.20*		*1.83*	*2.01*
RSM 099123750560 Dry fall painting, ceilings, concrete or textured plaster, two coat, spray	421.00	SF	284	0	86	105	769	846
			0.59	*0.00*	*0.00*		*1.22*	*1.34*
RSM 090190940770 Surface preparation, interior, ceiling, wash, light	421.00	SF	246	0	0	70	512	563
			1.26	*0.00*	*0.20*		*3.04*	*3.35*
Stair 01	**30.00**	**SF**	**38**	**0**	**6**	**12**	**91**	**100**
			0.59	*0.00*	*0.00*		*1.22*	*1.34*
RSM 090190940770 Surface preparation, interior, ceiling, wash, light	30.00	SF	18	0	0	5	36	40
			0.68	*0.00*	*0.20*		*1.83*	*2.01*
RSM 099123750560 Dry fall painting, ceilings, concrete or textured plaster, two coat, spray	30.00	SF	20	0	6	7	55	60
			1.67	*0.00*	*0.26*		*4.02*	*4.42*
Level 1	**1,416.00**	**SF**	**2,366**	**2**	**372**	**774**	**5,691**	**6,261**
			5.41	*0.02*	*0.80*		*12.93*	*14.22*
Lobby	**70.00**	**SF**	**379**	**1**	**56**	**123**	**905**	**995**
			1.99	*0.00*	*0.00*		*4.14*	*4.55*
RSM 090505101000 Ceiling demolition, plaster, lime and horsehair, on wood lath, remove	25.00	SF	50	0	0	14	103	114
			85.93	*0.44*	*14.82*		*210.19*	*231.21*
RSM 092320101300 Gypsum plaster, 3 coats on and incl. painted metal lath, on wood studs, on ceilings	2.80	SY	241	1	42	80	589	647
			0.59	*0.00*	*0.00*		*1.22*	*1.34*
RSM 090190940770 Surface preparation, interior, ceiling, wash, light	70.00	SF	41	0	0	12	85	94
			0.68	*0.00*	*0.20*		*1.83*	*2.01*
RSM 099123750560 Dry fall painting, ceilings, concrete or textured plaster, two coat, spray	70.00	SF	47	0	14	17	128	141
			1.26	*0.00*	*0.20*		*3.04*	*3.35*
Reception	**430.00**	**SF**	**542**	**0**	**88**	**178**	**1,308**	**1,439**
			0.59	*0.00*	*0.00*		*1.22*	*1.34*
RSM 090190940770 Surface preparation, interior, ceiling, wash, light	430.00	SF	252	0	0	71	523	575
			0.68	*0.00*	*0.20*		*1.83*	*2.01*
RSM 099123750560 Dry fall painting, ceilings, concrete or textured plaster, two coat, spray	430.00	SF	290	0	88	107	785	864
			1.67	*0.00*	*0.26*		*4.02*	*4.42*

Currency in US dollars

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	SubCMU	ContractCost	ProjectCost
Reading Room_104	**710.00**	**SF**	**1,185**	**1**	**186**	**388**	**2,852**	**3,137**
			1.99	*0.00*	*0.00*		*4.14*	*4.55*
RSM 090505101000 Ceiling demolition, plaster, lime and horsehair, on wood lath, remove	25.00	SF	50	0	0	14	103	114
			85.93	*0.44*	*14.82*		*210.19*	*231.21*
RSM 092320101300 Gypsum plaster, 3 coats on and incl. painted metal lath, on wood studs, on ceilings	2.80	SY	241	1	42	80	589	647
			0.59	*0.00*	*0.00*		*1.22*	*1.34*
RSM 090190940770 Surface preparation, interior, ceiling, wash, light	710.00	SF	416	0	0	117	863	949
			0.68	*0.00*	*0.20*		*1.83*	*2.01*
RSM 099123750560 Dry fall painting, ceilings, concrete or textured plaster, two coat, spray	710.00	SF	479	0	145	176	1,297	1,426
			1.26	*0.00*	*0.20*		*3.04*	*3.35*
Office	**177.00**	**SF**	**223**	**0**	**36**	**73**	**538**	**592**
			0.59	*0.00*	*0.00*		*1.22*	*1.34*
RSM 090190940770 Surface preparation, interior, ceiling, wash, light	177.00	SF	104	0	0	29	215	237
			0.68	*0.00*	*0.20*		*1.83*	*2.01*
RSM 099123750560 Dry fall painting, ceilings, concrete or textured plaster, two coat, spray	177.00	SF	120	0	36	44	323	356
			1.26	*0.00*	*0.20*		*3.04*	*3.35*
Restroom 01	**14.00**	**SF**	**18**	**0**	**3**	**6**	**43**	**47**
			0.59	*0.00*	*0.00*		*1.22*	*1.34*
RSM 090190940770 Surface preparation, interior, ceiling, wash, light	14.00	SF	8	0	0	2	17	19
			0.68	*0.00*	*0.20*		*1.83*	*2.01*
RSM 099123750560 Dry fall painting, ceilings, concrete or textured plaster, two coat, spray	14.00	SF	9	0	3	3	26	28
			1.26	*0.00*	*0.20*		*3.04*	*3.35*
Restroom 02	**15.00**	**SF**	**19**	**0**	**3**	**6**	**46**	**50**
			0.59	*0.00*	*0.00*		*1.22*	*1.34*
RSM 090190940770 Surface preparation, interior, ceiling, wash, light	15.00	SF	9	0	0	2	18	20
			0.68	*0.00*	*0.20*		*1.83*	*2.01*
RSM 099123750560 Dry fall painting, ceilings, concrete or textured plaster, two coat, spray	15.00	SF	10	0	3	4	27	30
			1.26	*0.00*	*0.20*		*3.04*	*3.35*
Mezzanine Level	**329.00**	**SF**	**415**	**0**	**67**	**136**	**1,001**	**1,101**
			1.26	*0.00*	*0.20*		*3.04*	*3.35*
Mezzanine	**60.00**	**SF**	**76**	**0**	**12**	**25**	**183**	**201**
			0.59	*0.00*	*0.00*		*1.22*	*1.34*
RSM 090190940770 Surface preparation, interior, ceiling, wash, light	60.00	SF	35	0	0	10	73	80

Currency in US dollars

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	SubCMU	ContractCost	ProjectCost
			0.68	*0.00*	*0.20*		*1.83*	*2.01*
RSM 099123750560 Dry fall painting, ceilings, concrete or textured plaster, two coat, spray	60.00	SF	41	0	12	15	110	121
			1.26	*0.00*	*0.20*		*3.04*	*3.35*
Archives	**187.00**	**SF**	**236**	**0**	**38**	**77**	**569**	**626**
			0.59	*0.00*	*0.00*		*1.22*	*1.34*
RSM 090190940770 Surface preparation, interior, ceiling, wash, light	187.00	SF	109	0	0	31	227	250
			0.68	*0.00*	*0.20*		*1.83*	*2.01*
RSM 099123750560 Dry fall painting, ceilings, concrete or textured plaster, two coat, spray	187.00	SF	126	0	38	46	342	376
			1.26	*0.00*	*0.20*		*3.04*	*3.35*
Storage	**54.00**	**SF**	**68**	**0**	**11**	**22**	**164**	**181**
			0.59	*0.00*	*0.00*		*1.22*	*1.34*
RSM 090190940770 Surface preparation, interior, ceiling, wash, light	54.00	SF	32	0	0	9	66	72
			0.68	*0.00*	*0.20*		*1.83*	*2.01*
RSM 099123750560 Dry fall painting, ceilings, concrete or textured plaster, two coat, spray	54.00	SF	36	0	11	13	99	108
			1.26	*0.00*	*0.20*		*3.04*	*3.35*
Stair 01	**28.00**	**SF**	**35**	**0**	**6**	**12**	**85**	**94**
			0.59	*0.00*	*0.00*		*1.22*	*1.34*
RSM 090190940770 Surface preparation, interior, ceiling, wash, light	28.00	SF	16	0	0	5	34	37
			0.68	*0.00*	*0.20*		*1.83*	*2.01*
RSM 099123750560 Dry fall painting, ceilings, concrete or textured plaster, two coat, spray	28.00	SF	19	0	6	7	51	56
			55,848.87	*495.86*	*164,775.34*		*481,369.11*	*529,506.03*
D SERVICES	**1.00**	**EA**	**55,849**	**496**	**164,775**	**65,495**	**481,369**	**529,506**
			2,127.48	*0.00*	*12,758.80*		*30,919.03*	*34,010.93*
D20 Plumbing	**1.00**	**EA**	**2,127**	**0**	**12,759**	**4,207**	**30,919**	**34,011**
			950.06	*0.00*	*4,536.52*		*11,395.71*	*12,535.28*
D2010 Plumbing Fixtures	**1.00**	**EA**	**950**	**0**	**4,537**	**1,551**	**11,396**	**12,535**
			287.82	*0.00*	*1,500.17*		*3,713.70*	*4,085.07*
D2011 Water closets	**2.00**	**EA**	**576**	**0**	**3,000**	**1,011**	**7,427**	**8,170**
			287.82	*0.00*	*1,500.17*		*3,713.70*	*4,085.07*
RSM 224239308460.01 Water closet, residential, dual flush with high-performance gravity, one-piece porcelain (Note: Price based on Swiss Madison low flow one piece residential toilet)	2.00	EA	576	0	3,000	1,011	7,427	8,170
			187.20	*0.00*	*768.09*		*1,984.16*	*2,182.57*
D2013 Lavatories	**2.00**	**EA**	**374**	**0**	**1,536**	**540**	**3,968**	**4,365**
			187.20	*0.00*	*768.09*		*1,984.16*	*2,182.57*

Currency in US dollars

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	SubCMU	ContractCost	ProjectCost
RSM 224139102810 Faucets/fittings, lavatory faucet, automatic sensor and operator, with faucet head, residential	2.00	EA	374	0	1,536	540	3,968	4,365
			1,177.43	*0.00*	*8,222.27*		*19,523.32*	*21,475.65*
D2020 Domestic Water Distribution	**1.00**	**EA**	**1,177**	**0**	**8,222**	**2,656**	**19,523**	**21,476**
			218.01	*0.00*	*61.33*		*580.19*	*638.21*
D2021 Pipes & Fittings	**1.00**	**EA**	**218**	**0**	**61**	**79**	**580**	**638**
			2.99	*0.00*	*0.84*		*7.95*	*8.74*
D202110 Domestic Water Piping	**73.00**	**LF**	**218**	**0**	**61**	**79**	**580**	**638**
			2.99	*0.00*	*0.84*		*7.95*	*8.74*
RSM 331413201120 Water supply distribution piping, polyethylene pipe, 160 psi, 1" diameter, C901, excludes excavation or backfill	73.00	LF	218	0	61	79	580	638
			959.42	*0.00*	*8,160.94*		*18,943.12*	*20,837.44*
D2025 Domestic Water Equipment	**1.00**	**EA**	**959**	**0**	**8,161**	**2,577**	**18,943**	**20,837**
G50202060 Domestic Water Equipment	**1.00**	**LS**	**959**	**0**	**8,161**	**2,577**	**18,943**	**20,837**
			959.42	*0.00*	*8,160.94*		*18,943.12*	*20,837.44*
RSM 223436136080 Water heater, gas fired, 120 MBH input, 110 GPH, includes standard controls, excludes vent	1.00	EA	959	0	8,161	2,577	18,943	20,837
			15,516.28	*0.00*	*23,067.27*		*80,138.60*	*88,152.46*
D30 HVAC	**1.00**	**EA**	**15,516**	**0**	**23,067**	**10,904**	**80,139**	**88,152**
D3020 Heating Generating Systems	**1.00**	**LS**	**11,374**	**0**	**20,606**	**9,038**	**66,425**	**73,067**
			3,791.46	*0.00*	*6,868.79*		*22,141.51*	*24,355.66*
Heat Pump	**3.00**	**EA**	**11,374**	**0**	**20,606**	**9,038**	**66,425**	**73,067**
			3,046.21	*0.00*	*6,420.74*		*19,663.00*	*21,629.30*
RSM 238143101620 Heat pump, air to air single package, 5 ton cooling, 27 MBH heat @ 0Deg.F, excludes interconnecting tubing, curbs, pads and ductwork	3.00	EA	9,139	0	19,262	8,026	58,989	64,888
			22.36	*0.00*	*13.44*		*74.36*	*81.79*
RSM 221113290246 Pipe, type L, copper, tubing, 1-1/2" diameter, press-joint, includes coupling & clevis hanger assembly 10' OC	100.00	LF	2,236	0	1,344	1,012	7,436	8,179
			4,141.90	*0.00*	*2,460.88*		*13,714.08*	*15,085.49*
D3040 Distribution Systems	**1.00**	**EA**	**4,142**	**0**	**2,461**	**1,866**	**13,714**	**15,085**
			4,141.90	*0.00*	*2,460.88*		*13,714.08*	*15,085.49*
D3042 Exhaust Ventilation Systems	**1.00**	**EA**	**4,142**	**0**	**2,461**	**1,866**	**13,714**	**15,085**
D304210 Equipment	**1.00**	**LS**	**220**	**0**	**454**	**190**	**1,400**	**1,540**
			110.22	*0.00*	*226.83*		*700.04*	*770.05*
RSM 233423106710 Fans, residential, bath exhaust, grille, back draft damper, light/heater combination, ceiling mounted, 1,450 watt, 70 CFM	2.00	EA	220	0	454	190	1,400	1,540
D304220 Ductwork	**1.00**	**LS**	**3,921**	**0**	**2,007**	**1,675**	**12,314**	**13,545**
			26.14	*0.00*	*13.38*		*82.09*	*90.30*
RSM 233113165460 Metal ductwork, spiral preformed, steel, galvanized,	150.00	LF	3,921	0	2,007	1,675	12,314	13,545

Labor ID: MA20240001 EQ ID: EP22R01 | Currency in US dollars | TRACES MII Version 4.4

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	SubCMU	ContractCost	ProjectCost
straight lengths, max. 10" SPWG, 14" diameter, 26 ga.								
			38,205.10	*495.86*	*128,949.27*		*370,311.49*	*407,342.63*
D50 Electrical	**1.00**	**EA**	**38,205**	**496**	**128,949**	**50,385**	**370,311**	**407,343**
			2,677.63	*0.00*	*2,880.33*		*11,543.96*	*12,698.36*
D5010 Electrical Service & Distribution	**1.00**	**EA**	**2,678**	**0**	**2,880**	**1,571**	**11,544**	**12,698**
			2,677.63	*0.00*	*2,880.33*		*11,543.96*	*12,698.36*
D5015 Panels	**1.00**	**EA**	**2,678**	**0**	**2,880**	**1,571**	**11,544**	**12,698**
			1,765.47	*0.00*	*2,880.33*		*9,649.40*	*10,614.34*
RSM 260590101230 Service & panel, residential, w/18 branch breakers, w/RGS conduit & wire, 200 amp, incl 24' SE-AL cable, service eye, meter socket	1.00	EA	1,765	0	2,880	1,313	9,649	10,614
			912.16	*0.00*	*0.00*		*1,894.57*	*2,084.02*
RSM 260505101270 Panelboards, 4 wire, 120/208 V, 200 amp, to 42 circuits, electrical demolition, remove, including removal of all breakers, conduit terminations & wire connections	1.00	EA	912	0	0	258	1,895	2,084
			20,080.20	*0.00*	*69,770.07*		*186,620.35*	*205,282.39*
D5020 Lighting and Branch Wiring	**1.00**	**EA**	**20,080**	**0**	**69,770**	**25,392**	**186,620**	**205,282**
D5022 Lighting Equipment	**1.00**	**LS**	**20,080**	**0**	**69,770**	**25,392**	**186,620**	**205,282**
Exterior	**1.00**	**LS**	**5,929**	**0**	**24,123**	**8,493**	**62,417**	**68,659**
			988.12	*0.00*	*4,020.46*		*10,402.91*	*11,443.20*
Exterior Fixtures	**6.00**	**EA**	**5,929**	**0**	**24,123**	**8,493**	**62,417**	**68,659**
			475.91	*0.00*	*2,340.27*		*5,849.25*	*6,434.17*
RSM 265613100100 Exterior, light poles, concrete, 30' above 5' below, 13.5" Base, 5.5" Tip	6.00	EA	2,855	0	14,042	4,775	35,095	38,605
			91.22	*0.00*	*0.00*		*189.46*	*208.40*
RSM 260505503010 Metal light pole, 10' high, electrical demolition, remove, excludes concrete bases	6.00	EA	547	0	0	155	1,137	1,250
			421.00	*0.00*	*1,680.19*		*4,364.20*	*4,800.62*
RSM 265619553230 LED Street lighting, Solar powered, Commercial grade, pole mounting, 30 Watt, 6000 Lumens, 10 Hrs Operation	6.00	EA	2,526	0	10,081	3,563	26,185	28,804
Interior	**1.00**	**LS**	**14,151**	**0**	**45,647**	**16,899**	**124,203**	**136,623**
			156.37	*0.00*	*82.21*		*495.53*	*545.09*
Occupancy Sensors	**10.00**	**EA**	**1,564**	**0**	**822**	**674**	**4,955**	**5,451**
			156.37	*0.00*	*82.21*		*495.53*	*545.09*
RSM 260923100100 Lighting devices, occupancy sensors, passive infrared, ceiling mounted	10.00	EA	1,564	0	822	674	4,955	5,451
			136.82	*0.00*	*487.23*		*1,296.17*	*1,425.79*
LED Fixtures, 32W	**92.00**	**EA**	**12,588**	**0**	**44,825**	**16,225**	**119,248**	**131,172**
			136.82	*0.00*	*390.05*		*1,094.31*	*1,203.75*
LED Fixture, 32W, 5FC	**6.00**	**EA**	**821**	**0**	**2,340**	**893**	**6,566**	**7,222**

Currency in US dollars

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	SubCMU	ContractCost	ProjectCost
			136.82	*0.00*	*390.05*		*1,094.31*	*1,203.75*
RSM 265113550120.01 Interior LED fixtures, 5 foot-candle, 36 watt, incl lamps, mounting hardware and connections	6.00	EA	821	0	2,340	893	6,566	7,222
			136.82	*0.00*	*420.05*		*1,156.63*	*1,272.30*
LED Fixture, 32W, 10FC	**6.00**	**EA**	**821**	**0**	**2,520**	**944**	**6,940**	**7,634**
			136.82	*0.00*	*420.05*		*1,156.63*	*1,272.30*
RSM 265113550120.02 Interior LED fixtures, 10 foot-candle, 36 watt, incl lamps, mounting hardware and connections	6.00	EA	821	0	2,520	944	6,940	7,634
			136.82	*0.00*	*450.05*		*1,218.95*	*1,340.84*
LED Fixture, 32W, 15FC	**2.00**	**EA**	**274**	**0**	**900**	**332**	**2,438**	**2,682**
			136.82	*0.00*	*450.05*		*1,218.95*	*1,340.84*
RSM 265113550120.03 Interior LED fixtures, 15 foot-candle, 36 watt, incl lamps, mounting hardware and connections	2.00	EA	274	0	900	332	2,438	2,682
			136.82	*0.00*	*480.06*		*1,281.27*	*1,409.39*
LED Fixture, 32W, 20FC	**24.00**	**EA**	**3,284**	**0**	**11,521**	**4,184**	**30,750**	**33,825**
			136.82	*0.00*	*480.06*		*1,281.27*	*1,409.39*
RSM 265113550120.04 Interior LED fixtures, 20 foot-candle, 36 watt, incl lamps, mounting hardware and connections	24.00	EA	3,284	0	11,521	4,184	30,750	33,825
			136.82	*0.00*	*510.06*		*1,343.58*	*1,477.94*
LED Fixture, 32W, 30FC	**54.00**	**EA**	**7,388**	**0**	**27,543**	**9,872**	**72,554**	**79,809**
			136.82	*0.00*	*510.06*		*1,343.58*	*1,477.94*
RSM 265113550120.05 Interior LED fixtures, 30 foot-candle, 36 watt, incl lamps, mounting hardware and connections	54.00	EA	7,388	0	27,543	9,872	72,554	79,809
			15,447.28	*495.86*	*56,298.87*		*172,147.17*	*189,361.89*
D5090 Other Electrical Systems	**1.00**	**EA**	**15,447**	**496**	**56,299**	**23,422**	**172,147**	**189,362**
			2,318.24	*0.00*	*3,350.55*		*11,774.16*	*12,951.57*
D5091 Grounding Systems	**1.00**	**EA**	**2,318**	**0**	**3,351**	**1,602**	**11,774**	**12,952**
Lightning Protection	**1.00**	**LS**	**2,318**	**0**	**3,351**	**1,602**	**11,774**	**12,952**
			3.42	*0.00*	*7.68*		*23.06*	*25.36*
RSM 264113132000 Lightning protection cable, copper, 220 lb per thousand feet, to 75' high	317.00	LF	1,084	0	2,435	995	7,309	8,040
			248.77	*0.00*	*73.21*		*668.75*	*735.63*
RSM 260526800100 Grounding rod, copper clad, 10' long, 3/4" diameter	1.00	EA	249	0	73	91	669	736
			36.49	*0.00*	*31.20*		*140.59*	*154.65*
HNC 264113130015 Lightning Protection, air terminal, copper, 1/2" x 24"	27.00	EA	985	0	842	516	3,796	4,176
			11,760.80	*495.86*	*50,998.10*		*131,381.08*	*144,519.18*
D5092 Emergency Light & Power Systems	**1.00**	**EA**	**11,761**	**496**	**50,998**	**17,876**	**131,381**	**144,519**
			11,760.80	*495.86*	*50,998.10*		*131,381.08*	*144,519.18*
G9020101010 Generator Set	**1.00**	**EA**	**11,761**	**496**	**50,998**	**17,876**	**131,381**	**144,519**

Currency in US dollars

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	SubCMU	ContractCost	ProjectCost
			10,989.21	*493.24*	*50,525.84*		*128,792.13*	*141,671.35*
RSM 263213132600 Generator set, diesel, 3 phase 4 wire, 277/480 V, 175 kW, incl battery, charger, muffler, & day tank, excl conduit, wiring, & concrete	1.00	EA	10,989	493	50,526	17,524	128,792	141,671
			294.64	*2.63*	*259.23*		*1,155.85*	*1,271.43*
RSM 033053403560 Structural concrete, in place, equipment pad (3000 psi), 5' x 5' x 8", includes forms(4 uses), Grade 60 rebar, concrete (Portland cement Type I), placing and finishing	1.00	EA	295	3	259	157	1,156	1,271
			99.51	*0.00*	*65.41*		*342.53*	*376.79*
RSM 260519901200 Wire, copper, stranded, 600 volt, #12, type THWN-THHN, normal installation conditions in wireway, conduit, cable tray	1.00	CLF	100	0	65	47	343	377
			3.77	*0.00*	*1.48*		*10.91*	*12.00*
RSM 337119151020 Electrical underground ducts and manholes, PVC, conduit with coupling, 3/4" diameter, schedule 40, installed by direct burial in slab or duct bank, excludes excavation, backfill and cast in place concrete	100.00	LF	377	0	148	148	1,091	1,200
			1,368.24	*0.00*	*1,950.23*		*6,892.50*	*7,581.75*
D5094 Other Special Systems & Devices	**1.00**	**EA**	**1,368**	**0**	**1,950**	**938**	**6,892**	**7,582**
			1,368.24	*0.00*	*1,950.23*		*6,892.50*	*7,581.75*
RSM 263353100150 Uninterruptible power supply, charger, inverter, and alarm 1 phase, 120 V, 0.75 kVA, incl 10 minutes battery	1.00	EA	1,368	0	1,950	938	6,892	7,582
D5095 General Construction Items (Electrical)	**1.00**	**LS**	**0**	**0**	**0**	**3,007**	**22,099**	**24,309**
USR SKM.01 Allowance for miscellaneous electrical fittings, cables, and appurtenances.	1.00	LS	0	0	0	3,007	22,099	24,309
			17,355.02	*257.96*	*1,541.78*		*39,784.73*	*43,763.20*
G BUILDING SITEWORK	**1.00**	**EA**	**17,355**	**258**	**1,542**	**5,413**	**39,785**	**43,763**
			2,380.63	*57.45*	*0.00*		*5,063.93*	*5,570.32*
G10 Site Preparation	**1.00**	**EA**	**2,381**	**57**	**0**	**689**	**5,064**	**5,570**
			2,380.63	*57.45*	*0.00*		*5,063.93*	*5,570.32*
G1010 Site Clearing	**1.00**	**EA**	**2,381**	**57**	**0**	**689**	**5,064**	**5,570**
			1.99	*0.00*	*0.00*		*4.14*	*4.55*
G1011 Clearing & Grubbing	**1,067.00**	**SF**	**2,127**	**0**	**0**	**601**	**4,417**	**4,859**
			2,126.81	*0.00*	*0.00*		*4,417.42*	*4,859.16*
RSM 312213200120 Rough grading sites, 410-1,000 S.F., hand labor	1.00	EA	2,127	0	0	601	4,417	4,859
			2.73	*0.62*	*0.00*		*6.95*	*7.65*
G1012 Tree Removal &Thinning	**93.00**	**LF**	**254**	**57**	**0**	**88**	**647**	**711**
			2.73	*0.62*	*0.00*		*6.95*	*7.65*
NLU 311313202300 Selective clearing, medium cutting, tree trimming, pole line construction (Note: Material Cost last updated 1 Jan 2010.)	93.00	LF	254	57	0	88	647	711

Currency in US dollars

Description	Quantity	UOM	DirectLabor	DirectEQ	DirectMatl	SubCMU	ContractCost	ProjectCost
			14,974.39	*200.51*	*1,541.78*		*34,720.79*	*38,192.87*
G20 Site Improvements	**1.00**	**EA**	**14,974**	**201**	**1,542**	**4,724**	**34,721**	**38,193**
			35.07	*0.47*	*3.61*		*81.31*	*89.44*
Site Masonry, Perimeter Wall	**427.00**	**LF**	**14,974**	**201**	**1,542**	**4,724**	**34,721**	**38,193**
			14.26	*0.00*	*1.14*		*31.98*	*35.18*
Repoint all coping joints with mortar	**427.00**	**LF**	**6,089**	**0**	**487**	**1,858**	**13,657**	**15,023**
			5.71	*0.00*	*0.46*		*12.80*	*14.08*
RSM 040120300300 Pointing masonry, cut and re-point block, hard mortar, running bond	1,067.00	SF	6,089	0	487	1,858	13,657	15,023
			4.57	*0.00*	*0.37*		*10.25*	*11.28*
Repoint damaged/cracked mortar joints (20%)	**427.00**	**LF**	**1,952**	**0**	**156**	**596**	**4,377**	**4,815**
			5.71	*0.00*	*0.46*		*12.80*	*14.08*
RSM 040120300300 Pointing masonry, cut and re-point block, hard mortar, running bond	342.00	SF	1,952	0	156	596	4,377	4,815
			0.31	*0.00*	*0.00*		*0.65*	*0.71*
Remove biological and vegetation growth along perimeter wall	**854.00**	**LF**	**267**	**0**	**0**	**75**	**554**	**610**
			88.99	*0.00*	*0.00*		*184.83*	*203.31*
MIL B-LABORERG Laborers, General (Lowest paid)	3.00	HR	267	0	0	75	554	610
(Note: Davis Bacon Laborers: Group 2A. LABO0242-004. General Decision Number: WA20220070 08/05/2022)								
			15.61	*0.47*	*2.11*		*37.78*	*41.56*
Complete General Cleaning	**427.00**	**LF**	**6,667**	**201**	**899**	**2,195**	**16,132**	**17,745**
			2.40	*0.07*	*0.32*		*5.81*	*6.39*
RSM 040120520820 Cleaning masonry, high pressure wash, average soil, biological staining, water and chemical, excludes scaffolding	2,775.00	SF	6,667	201	899	2,195	16,132	17,745
RESTROOM IMPROVEMENTS - OPTION 01	**1.00**	**LS**	**0**	**0**	**0**	**0**	**175,000**	**175,000**
USR SKM.04 Option 01 - Stack Room, Barrier-Free Restroom Improvements	1.00	LS	0	0	0	0	175,000	175,000
(Note: Basis detailed in Memorandum regarding Barrier-Free Access and ADA Compliance dated 10 June 2022.)								
RESTROOM IMPROVEMENTS - OPTION 02	**1.00**	**LS**	**0**	**0**	**0**	**0**	**150,000**	**150,000**
USR SKM.05 Option 02 - Director Office, Barrier-Free Restroom Improvements	1.00	LS	0	0	0	0	150,000	150,000
(Note: Basis detailed in Memorandum regarding Barrier-Free Access and ADA Compliance dated 10 June 2022.)								
RESTROOM IMPROVEMENTS - OPTION 03	**1.00**	**LS**	**0**	**0**	**0**	**0**	**140,000**	**140,000**
USR SKM.06 Option 03 - Children's Room, Barrier-Free Restroom Improvements	1.00	LS	0	0	0	0	140,000	140,000
(Note: Basis detailed in Memorandum regarding Barrier-Free Access and ADA Compliance dated 10 June 2022.)								

Currency in US dollars

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Appendix C : Glossary

+/- – Zero tolerance in construction is not feasible so the +/- indicates that there is a permissible range of tolerance

1x – Dimensional lumber designation for a 1-inch nominal piece of wood. After drying and surfaced, the board is actually 3/4-inch thick. The width of the board is usually cut in 2-inch increments and 2'-0" lengths.

2x – Dimensional lumber designation for a 2-inch nominal piece of wood typically used for framing. After drying and surfaced, the board is actually 1-1/2-inch thick. The width of the board is usually cut in 2-inch increments and 2'-0" lengths.

Band Course – A continuous horizontal course with one gauged or reasonably consistent rise.

Bed Face – Installing a stone in a vertical wall with the natural bed exposed.

Bed Joint – A horizontal joint between stones, usually filled with mortar or caulk sealant.

Belt Course – A continuous horizontal course, making a division in the wall plane.

Bush Hammer – Finish applied to cut stone by a bush hammer tool to create a decorative dimpled appearance.

Capillary Action – Wicking up from the ground.

Cementitious – Having the properties of cement.

Checks – A crack in the wood structure of a piece, usually running lengthwise. Checks are usually restricted to the end of a board and do not penetrate as far as the opposite side of a piece of sawn timber.

Cladding – A protective cover, referring to the exposed surface of an exterior wall on a building.

Conservation – Action taken to prevent decay and preserve the historic significance of a building.

Consolidation – The physical addition or application of adhesive or supportive materials into the actual fabric, in order to ensure continued durability of the surfaces or structural integrity.

Coping – A protective cap, top, or cover of wall, parapet, pilaster, or chimney. Commonly sloped or curved to shed water.

Corbel – In masonry, a projection or one of a series of projections, each stepped progressively farther forward with height; anchored in a wall, story used to support an overhanging member above.

Corrosion – The gradual deterioration of metal by chemical action, as when exposed to weather, moisture, or other corroding agents.

Course – A layer of masonry units running horizontally in a wall; A continuous row or layer of material, as shingles, tiles, etc.

Cupping – To bend as a result of shrinkage, specifically across the width of a piece of wood.

Deteriorated – To grow worse in quality or state.

Dressed – The trimming and shaping of rough pieces of stone, done by hand chiseling to create a square, rectangular, or finished desired shape.

Dutchman – A piece of material spliced into an element comprised of the same material where a section has deteriorated or has been removed.

Eave – The lower edge of a sloping roof; that part of a roof of a building which projects beyond the wall.

Efflorescence – A white haze of soluble salts on masonry general cause by excessive "pulling" of soluble salts into the masonry and out through the surface. Efflorescence is more unsightly than harmful but the majority of the time it is an indicator of water intrusion.

Envelope – The exterior surface of a building's construction, the walls, windows, floors, and roof. Also called building shell.

Epoxy – A flexible usually thermosetting resin made by copolymerization of an epoxy with another compound having two hydroxyl groups and used chiefly in coatings and adhesives.

Fabric – Referring to the building materials and finishes.

Fascia – The exposed vertical face of an eave.

Ferrous – Metals that contain an iron compound in their composition. Ferrous metals are magnetic and have a high strength and hardness due to the iron content. Because of their iron content, ferrous metals rust and expand when exposed to moisture.

Fenestration – The arrangement and design of windows in a building.

Fixed Window – A window that cannot be opened, whose function is limited to allowing light to enter.

Flashing – A thin, continuous sheet of metal, plastic, rubber, or waterproof paper used to prevent the passage of water through a joint in a wall, roof, or chimney.

Galvanic Corrosion – Corrosion damage that occurs when two dissimilar metals are in electrical contact in an electrolyte, one metal (the cathode) is protected, while the other (the anode) undergoes accelerated corrosion.

Glazing – Is a transparent part of a wall usually made of glass that are set into windows, doors and other openings. Also can refer to the putty compound used to seal the glass.

Header Course – A masonry unit, laid so that it's ends are exposed, overlapping two or more adjacent wythes of masonry and tying them together with mortar.

Jamb – The vertical support on either side of a door, window or other opening.

Joint – The space between stone units usually filled with mortar, sealant, or epoxy.

Laminated – An assembly made by bonding layers of veneer or lumber with an adhesive

Maintenance – The upkeep of property or equipment.

Mortise – A groove or slot into which or through which a tenon is inserted.

Mullion – A slender vertical member that forms a division between units of a window, door or screen or is used decoratively.

Natural Bed – The horizontal stratification of stone as it was formed in the natural stone deposit.

Patch – To mend, cover, or fill up an opening, a hole or weak spot according to recognized preservation methods.

Patina – A thin oxide film (often greenish) which forms on certain metals like bronze and copper.

Parge – Cementitious or plaster covering on a wall.

Ponding – In a building, referring to a standing body of water, usually due to poor drainage.

Preservation – Focuses on the maintenance and repair of existing historic materials and retention of a property's form as it has evolved over time.

(According to the National Park Service, Protection and Stabilization have now been consolidated under this treatment.)

Rail – A horizontal bar of wood that connects the vertical bars, called stiles, in a door or window frame.

Rake – The sloping edge of a steep roof.
Rehabilitation – acknowledges the need to alter or add to a historic property to meet continuing or changing uses while retaining the property's historic character.

Renovation – To restore to a former better state (as by cleaning, repairing, or rebuilding).

Repair – When referring to historic materials, the least degree of intervention possible such as patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading according to recognized preservation methods to maintain architectural character and historic fabric.

Repointing – To place wet mortar into cut or raked joints to repair weathered or missing joints in old masonry.

Restoration – In a building, returning to its appearance at a particular time in history. Usually the original appearance when construction was completed.