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Report of Findings

SHARON PUBLIC LIBRARY

PROPERTY CONDITION ASSESSMENT

ENERGY AUDIT

FUTURE USE STUDY

RBC File No: 100027408

Prepared For:

SHARON PUBLIC LIBRARY
11 NORTH MAIN STREET
SHARON, MA 02067

Attention:

MR. PETER O'CAIN

July 27, 2020


06/17/2020

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EXECUTIVE SUMMARY

The subject building located at 11 North Main Street in Sharon, Massachusetts ("the Property"), featured a two-story masonry construction with wood floor framing system (type IIIA construction, A-3 assembly). The original library building was built in 1914. A two-story addition was added to the rear in 1960, and second two-story addition was added to the rear and sides in 1979. The building was built to serve as the town's library and has functioned as such ever since 1914. The lower level of the original building houses offices, public and private bathrooms, a break room for staff, a maintenance manager's room as well as the mechanical/electrical room. The lower level of the two additions house the children's book stacks, a computer area, an archive room, and a multipurpose room with a projector screen. The upper floor of the original building includes the reception desk, reading areas, and book stacks. The upper level of the two additions houses mostly book stacks, reading areas, and two small offices one of those was used by the Library Director. The Property is owned by the Town of Sharon.

Site conditions reviewed indicated that the building contains a gross floor area of approximately 12,000 square feet, which consists of assembly areas for the library and offices for staff. The Property was located on approximately 13,000 square-foot (0.3 acres) site bounded by North Main Street to the northwest, High Street to the northeast, the Verizon building to the southeast, and a mixed commercial building to the southwest.

Condition Assessment

On June 17, 2020, Mr. Peter Lukacs and Mr. Nickolas Foy of Rimkus Building Consultants visited the site to observe and document the condition of the building and site components. During our site visit, Rimkus Building Consultants met with Mr. Peter O'Cain, Town Engineer; Ms. Lee Ann Amend, Library Director; Mr. Matthew Baldassari, Facilities Manager; Mr. Matthew Grosshandler, VP of Operations at Bald Hill Builders (who is also on the Library Reuse Committee); and Mr. Gary Kamp, Building Maintenance Manager, who provided background information on the building maintenance and history.

Existing Conditions

Site Features and Drainage

Site systems contained at the Property consisted of sidewalks, curbs and gutters, a library sign, bronze statue, light poles, landscaping, an asphalt-paved roadway at rear of the building, an on-site septic system, and stormwater management features. Concrete pavement, sidewalks, and curb and gutter sections were in good condition; however, we noticed localized areas of cracked and chipped edges in the concrete. The rear asphalt driveway and chain-link fence were in poor condition and should be repaired/replaced. The railing at the front entry stairs were rusting and some connections were loose. There was no on-site parking on the Property. There was limited parking on the street and an adjacent parking lot next to the First Congregational Church, across High Street. According to available information, this parking lot was under the Town's ownership.

Structural Systems

Consistent with our observations and the review of existing documents, the building has a combination of concrete and masonry foundation walls, and a combination of bearing walls constructed of multi-wythe brick masonry and concrete masonry unit (CMU) walls faced with brick veneer. The building structure appeared to be in overall good condition and suitable for a variety of future uses; however, we observed a deflection due to long-term creep of the wood beam supporting the upper floor in the original 1914 portion of the building. Currently, this area of the floor is cleared of any bookstacks. There were two temporary columns at the lower level supporting the deflected beam. Further structural evaluation is required to determine appropriate load capacities for future use of this portion of the building and to determine a permanent structural solution for the deflected wood beam.

Roof System

The building footprint was covered by a combination of a three-level, low-sloped roof system and skylights. No existing emergency overflow drains or scuppers were observed

for the roof system. A secondary stormwater drainage system and regular cleaning and inspection of the roof drains is recommended to avoid potential ponding of water on the roof. The observed roof membrane appeared to be in good condition. According to maintenance reports, even though multiple repairs have been done over the years, the skylights have repeatedly leaked; especially at times of heavy rain. We recommend replacing the skylight glazing panels with new energy efficient glazing panels. We also recommend having an operable shading system installed on the inside to control heat gain and glare, especially on the northeast side of the building. Alternatively, glazing panels with low solar heat gain coefficients in combination with low-e coatings can be further evaluated to reduce the heat gain from the skylights.

Building Exterior Elements

The exterior elements of the original 1914 portion of the library consisted of brick veneer walls, a painted wood cornice under the parapet, painted decorative columns, a painted portico at the main front entry, and wood framed windows and doors which include a primary front entrance and a lower level secondary entrance. The exterior elements on the later additions consisted of aluminum framed windows and a metal service door at the back of the building. The building exterior was in overall good condition. Spalling brick and missing mortar at certain areas will need to be repaired to avoid further damage. The painted wood window frames on the 1914 portion of the library were peeling and need to be cleaned and repainted.

Mechanical/HVAC, Electrical, Plumbing (MEP) Systems

The heating and cooling systems were in fair condition. They were operational, and have received service as needed; however, both rooftop units were at the end of their life cycle and will need to be replaced. The commercial boiler with controls for the radiant system and the other 30-gallon boiler in the mechanical/electrical room appeared to be new equipment and were in good condition. In the 1979 rear and side additions, the heating and air-conditioning system was inadequate. The interior conditions under the large skylight windows were reportedly uncomfortable (either too hot in the summer or too cold

in the winter). The window air-conditioning (A/C) units in the upper floor offices of the 1979 addition were subsequently added due to shortcomings in the rooftop A/C system. Suggestions of replacing the existing heating ventilation and air-conditioning (HVAC) system is further discussed under the Level 2 Energy Audit section of the report.

The electrical systems included the incoming electrical service, electrical distribution equipment, lighting and power outlet systems, communications systems, audio and visual systems and security systems. The electrical systems appeared to be in good condition and developed in accordance with industry standard practice. Per our conversations with Mr. Matthew Baldassari, Facilities Manager, it was mentioned that all lighting will be replaced by energy saving LED lighting. Assuming continued maintenance, we do not anticipate a requirement to complete significant repair, replacement, or supplementation of the electrical systems for the continued use as a library. Further evaluation of the electrical systems would be required depending on alternative future uses for the building.

The plumbing systems include the domestic cold-water system, natural gas piping, domestic hot-water system, sanitary waste and vent system, and stormwater collection system. The plumbing systems appeared to be in good condition. The domestic water service, piping, and the domestic water heaters appeared to be in good condition. There was no evidence of significant leaks or other areas of deterioration noted or reported to us. The existing septic tank is currently undersized and there have been considerations to upgrade to a larger capacity system; however, the property has limited space. Per our review of existing documents, an initial investigation has been completed and was in order to move forward with proposing a new septic system; Title V variances will need to be pursued. Further evaluation is recommended depending on alternative future uses for the buildings and how this may affect the required size of the septic system.

Fire and Life Safety Systems

Means of egress was provided via four exterior doors that led to grade-level paved areas. Emergency lights and exit signs marked the paths of egress and designated emergency exits. The paths of egress appeared to be generally compliant with the fire code in effect

at the time of construction and presently enforced. Egress capacity appeared sufficient to meet expected occupant loads based on the current occupancy and use of the building.

Interior Finishes

The interior finishes were in overall good condition. On the lower level, the wall between the children's library and multipurpose room showed signs of previous repair and the paint color was different from the rest of the wall. There was some visible water damage around one of the drainage pipes at the ceiling in the multipurpose room. We also observed cracking of the gypsum board panel joints at the ceiling in multiple areas. On the upper level, we noticed previous signs of repair at the entry room ceiling. Patchwork at the ceiling appeared to be concentrated above the suspended light fixtures. Inside the main library space, there was visible repair work at the ceiling near the elevator.

Accessibility

The building was required to comply with the Americans with Disability Act (ADA) Accessibility Guidelines. With regards to ADA compliance, the building was in fair condition and was generally in compliance with the requirements of the ADA, but there were components that need correction to ensure they are located at the proper heights or clearances and that all rooms have proper ADA signage.

Level 2 Energy Audit

As stated above, the main portion of the HVAC system, the rooftop unit, is at the end of its useful life. The window A/C units and the split system for the basement were added due to shortcomings in the rooftop A/C system. The hot water system is much newer and more efficient. The best approach to reducing energy costs would be to replace the existing rooftop A/C unit with a new, more efficient one. Rimkus' recommendation for the new rooftop A/C unit would be a variable air volume (VAV) unit with hot water reheat. This system would provide virtually unlimited controllability and reduce the load in areas where there is little or no demand.

Everscource Energy has a CORE Energy Efficiency Program. The local utility company representative should be contacted prior to ordering any new equipment. The rebates and incentives change on an annual basis and often are based on a first-come-first-serve basis.

The lighting is already being changed from fluorescent to LED. This should be completed, and any new lighting should be high efficiency. As any HVAC motors, such as pump motors, fail they should be replaced with high efficiency E plus motors.

The utility bills were reviewed and there were no glaring areas for energy savings. The electrical consumption for the library was consistent with the type of system installed.

Future Use Study

Based on information gathered about the Town of Sharon and its vicinity, Rimkus identified three main possibilities of future use for the building: rental apartments, shared offices or “co-op” working spaces, and mixed-use. Each of these are discussed in detail in the latter portions of the document.

The HVAC system proposed under the energy audit section of the report would maximize the future use possibilities. The proposed VAV system is flexible and would allow for independent zone control. By using hot water reheat in the VAV boxes, the system could accommodate different occupancy types at different times.

Terminology and Limitations

This report has been presented based upon our on-site observations, information provided to us, discussion with building management and maintenance staff, our review of available documentation (see **Scope of Services and Document Review** section), and our experience with similar systems. If any information becomes available that is not consistent with the observations or conclusions expressed within this report, we request that this information be immediately forwarded to us.

The evaluation of existing structures requires that certain assumptions be made regarding existing conditions. This evaluation was based upon our visual non-destructive evaluation

of accessible conditions of the Property. Furthermore, this evaluation was limited in time on-site, fee, and scope and was not based upon a comprehensive engineering evaluation. As such, our report is not intended to represent a complete review of all systems or system components or a check or validation of design professionals' computations. Therefore, Rimkus Building Consultants' evaluation and this report do not represent, warranty, or guarantee any system or system component or the future performance of any site improvement.

SCOPE OF SERVICES AND DOCUMENT REVIEW

The primary purpose of the Property Condition Assessment was to identify visually apparent deficiencies in the building and site. The evaluation included site visits to observe the building and site systems, interviewing building management and maintenance personnel, and reviewing available maintenance systems, design, and construction documents and plans, and public records.

This Property Condition Assessment has been conducted in general accordance with industry standards and the American Society for Testing and Materials (ASTM) Standard E 2018-08 Standard Guide for Property Condition Assessment: Baseline Property Condition Assessment Process.

We performed a visual non-destructive assessment of the interior, exterior, and site components of the Property, including the following major components and systems:

- **Site Features and Drainage.** We visually observed the site systems for the removal of stormwater and evidence of poor drainage and/or erosion potential. We also reviewed (where applicable) the condition of pavements, site concrete, retaining walls, fencing, landscaping, site grading, and stormwater drainage features.

- **Structural Systems.** We observed the structures for visible signs of distress and have reported our findings. We also reviewed available structural reports for information regarding the design load criteria of the existing structures and the building codes to which the structures were designed. Structural drawings were not available to review. We did not complete a seismic evaluation of the Property.

- **Roof System.** We visually evaluated the condition of accessible roof systems, accessories, and details.

- **Building Exterior Elements.** We visually observed the exterior wall system, window, and door systems for visible evidence of deficiencies, continuity of seals, and other types of distress and have reported our findings. We reviewed available flashing and connection details for water management design and observed the condition and placement of expansion joints. Our visual observations were based on those conditions that can be observed from ground level.

- **Mechanical/HVAC, Electrical, Plumbing (MEP) Systems.** We observed the age and condition of the MEP and related building systems and have commented on their condition and visible deficiencies.

- **Fire and Life Safety Systems.** We observed the age and condition of the fire and life safety elements and have commented on their condition and any visible deficiencies. The elements surveyed included structural fire protection, means of egress, and fire detection and alarm systems.

- **Interior Finishes.** We visually observed the interior areas of the Property and have reported their general condition. We did not include replacement of tenant finishes.

- **Accessibility.** We reviewed the Property for conformance with applicable accessibility requirements and have reported our findings.

The scope of services under which the Property Condition Assessment was completed was visual in nature and not intended to be destructive to the Property to gain access to hidden conditions. We did not perform any destructive testing or uncover or expose any system members. We have documented the type and extent of visually apparent defects in the systems in order to perform the condition assessment.

The scope of services under which the Property Condition Assessment was completed includes only those items specifically indicated. The evaluation does not include any environmental services such as (without limitation) sampling, testing, or evaluation of asbestos, lead-based paint, lead-in-water, indoor air quality, PCBs, radon, mold, or any other potentially hazardous materials, air-borne toxins, or issues not outlined in the

previous scope of services. In addition, the assessment does not include identification of underground soils or quantification of underground contaminants.

Level 2 Energy Audit

As part of the site visit, Rimkus has also performed an ASHRAE (American Society of Heating, Refrigeration, and Airconditioning Engineers) Level 2 Energy Audit. This audit included the following items:

- Assessment of building energy systems.
- Breakdown of energy source and end use.
- Identification of energy-efficiency measures (EEMs) for each energy system.
- Range of costs and savings for the EEMs.
- Spotlight on operational discrepancies.
- Outline of priorities for limited resources, next steps, and identification of EEMs.
- Outline of applicable incentive programs.

Document Review

In addition to the completion of our visual evaluation, Rimkus Building Consultants reviewed available documentation on the building. Reviewed files are listed under the **Basis of Report** section of the document.

SITE FEATURES

CHAPTER 1 – SITE SYSTEMS AND DRAINAGE

Site systems contained at the Property consisted of asphalt-paved roadway at rear of the building, sidewalks, curbs and gutters, library sign, bronze statue, light poles, landscaping, and stormwater management features. A septic tank and leaching chambers were located underground on the northwest side (front) of the property that served the Library building.

Description

The Property was located at the intersection of the major traffic arterial road of North Main Street and High Street. Sidewalk access was available to the Property from both streets. There was no parking located on the Property; however, limited on-street parking was available; this included 7 parking stalls and 2 designated ADA stalls. There was an existing parking lot across High Street under the ownership of the Town of Sharon and was typically used by the adjacent church on Sundays. There were 50 parking stalls and 3 ADA designated stalls in this parking lot. Adjacent to the south side of the Property, there was a fire lane access way. The Google Earth aerial map **(Figure 1)** provides an overview of the site layout and boundaries. The red lines indicate the approximate property line and the arrows indicate the location of public entrances to the building.

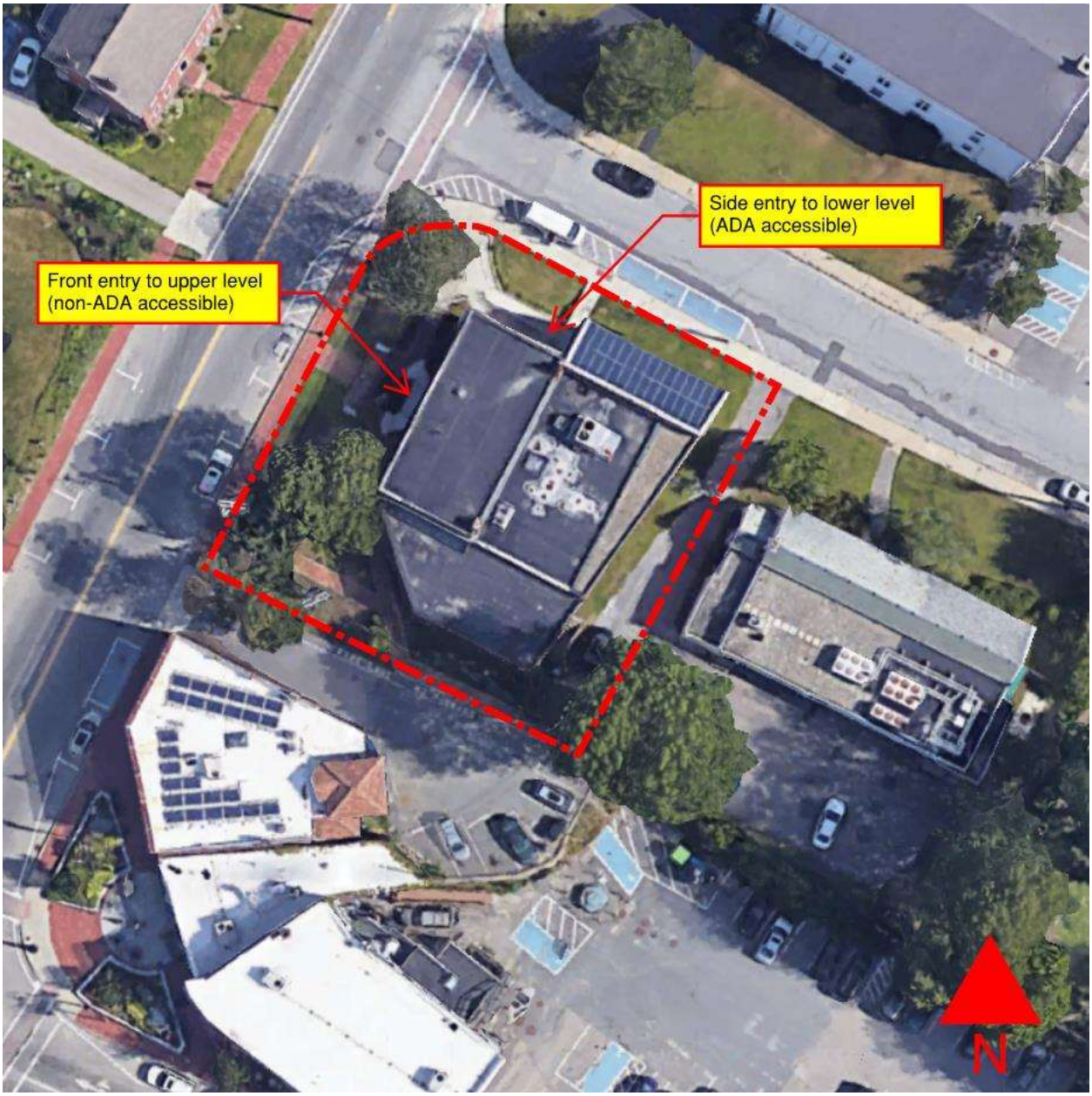


Figure 1 - Google Earth aerial map and indication of public entrances

Pedestrian access was provided to the building via entrances on the northwest and north sides of the building. The main entrance located on the northwest side (facing North Main Street) had stairs leading up to the upper level and was not an ADA compliant entrance **(Photograph 1).** The secondary entrance on the north side (facing High Street) had stairs and a ramp leading down to the lower level that was partially below ground; this entry appeared to be ADA complaint **(Photograph 2)**. Existing paved sidewalk ran along the

south portion of the building connecting to the network of sidewalks on the Property **(Photograph 3)**. There were two non-ADA compliant emergency exit doors, one on the north side from the exit stairway and another on the southeast side at the back of the building **(Photograph 4)**.

The Property contained a monument sign **(Photograph 5)** for the library at the north side of the Property and a bronze statue of Deborah Sampson **(Photograph 6)** in front of the main entry. The statue was fronted and flanked by paved sidewalks as well as two sit-down benches. There was landscaping behind the statue and in front of the curved entry stairs consisting of various mature bushes **(Photograph 7)**.

Site lighting was provided by two light poles along North Main Street and pathway lights along the paved sidewalks of the Property **(Photograph 8)**. There was additional wall mounted lighting on the building exterior at the entry doors that appeared to be in working condition.

Landscaping consisted of grassed lawn areas along all sides of the building perimeter and various mature bushes and trees. There was no in-ground irrigation system. Stormwater was collected in surface-recessed grated catch basins and conveyed to the underground stormwater management system **(Photograph 9).**

There was a chain-link fence, gate, and asphalt roadway at the rear of the building that was shared with the neighboring Verizon building and used mostly for loading purposes at the back door **(Photograph 10)**.

Condition

Concrete pavement, sidewalks, and curb and gutter sections were in fair condition. We noted localized areas of cracked and chipped edges in the concrete sidewalk and retaining wall (**Photographs 11 and 12**). There was no guardrail on the concrete retaining wall between the street level and lower level sidewalk **(Photograph 13)**. This was a fall hazard condition, and we recommend installing a code complying guardrail. Based on conversations with the Library staff, the concrete platform in front of the secondary entry

at lower level had recent flooding issues. It was mentioned that due to a clogged area drain, rainwater was unable to escape and flooded some portion of the lower level area, causing significant interior damages. The concrete stairs at the front entry were recently repaired, but the metal railing was rusting and loose at some areas. To ensure user safety, we recommend this railing be repaired and repainted. The rear asphalt drive and chain-link fence were in poor condition and will need repairs. The library entrance, bronze statue and sign appeared to be in good condition. The signage may need to be relocated and/or replaced depending on future use.

CHAPTER 2 – STRUCTURAL SYSTEMS

The description of the respective structural systems is based upon our review of previous structural reports and available structural plans and our observation of exposed portions of the building structure at various areas. Original construction drawings of the 1914 building and the 1960 addition were not available for review.

Description

The lower level of the entire building including the 1960 and 1979 additions had a combination of concrete and masonry foundation walls. The exterior bearing walls of the original structure were multi-wythe brick masonry and the exterior bearing walls of the 1979 addition were CMU walls faced with brick veneer. The floor structure of the original building consisted of conventional wood framed 2x10 joists supported on a central wood and steel beam. There were round steel columns throughout the lower level of the original 1914 building and the 1960 addition that supported the upper level floor structure. According to the reviewed structural drawings and structural report from Roome & Guarracino, LLC, the floor of the 1960 addition was a two-way cast-in-place concrete waffle slab system, while the 1979 floor was framed with steel beams, open web steel joists, and a concrete slab on deck. The roof framing for the original building is unknown. The roof of the subsequent 1960 and 1979 additions were steel beams with open web joists and steel roof deck. The exterior masonry walls for the original 1914 building and the 1960 addition acted as shear walls to provide lateral stability for the building under wind and seismic loadings. Steel lintels supported the brick veneer at the exterior openings.

Condition

Rimkus Building Consultants observed the exposed structural systems throughout the building. The building structure appeared to be in overall good condition and suitable for

a variety of future uses. However, we observed a deflection of the wood beam supporting the upper floor in the original 1914 building **(Photograph 14)**. There have been two temporary columns installed underneath at the lower level to stabilize the deflection **(Photograph 15)**. Currently, it was reported that this area of the floor is not suitable for live loads exceeding 60 pounds per square foot (PSF). Additional studies by a structural engineer would need to be performed to evaluate the loading requirements for any future use of the building. Once the additional structural support is designed and implemented appropriately, the live load requirements can be increased without further concern.

CHAPTER 3 – ROOFING SYSTEMS

Description

The building footprint was covered by a combination of a three-level, low-sloped roof system and skylights **(Figure 2)**. The highest level of the roof covered the original 1914 building footprint; the middle level covered the 1960 addition and the rear portion of the 1979 addition; and the lowest level of the roof included the two 1979 side additions. The roofing consisted of a fully adhered, ethylene propylene diene monomer (EPDM) single-ply membrane that covered all the roof areas except the roof covering on the rear 1979 addition consisted of a ballasted EPDM roof covering **(Photograph 16)**. All three levels of the roof drained toward the existing roof drains. There were no existing emergency overflow drains or scuppers. Based on our review of available documents, the roof membrane and portions of the decking had recently been repaired/replaced to stop reported ongoing leaks. According to our conversation with Matthew Baldassari, Facilities Manager, since the repairs, the roofs have not shown signs of leaking.

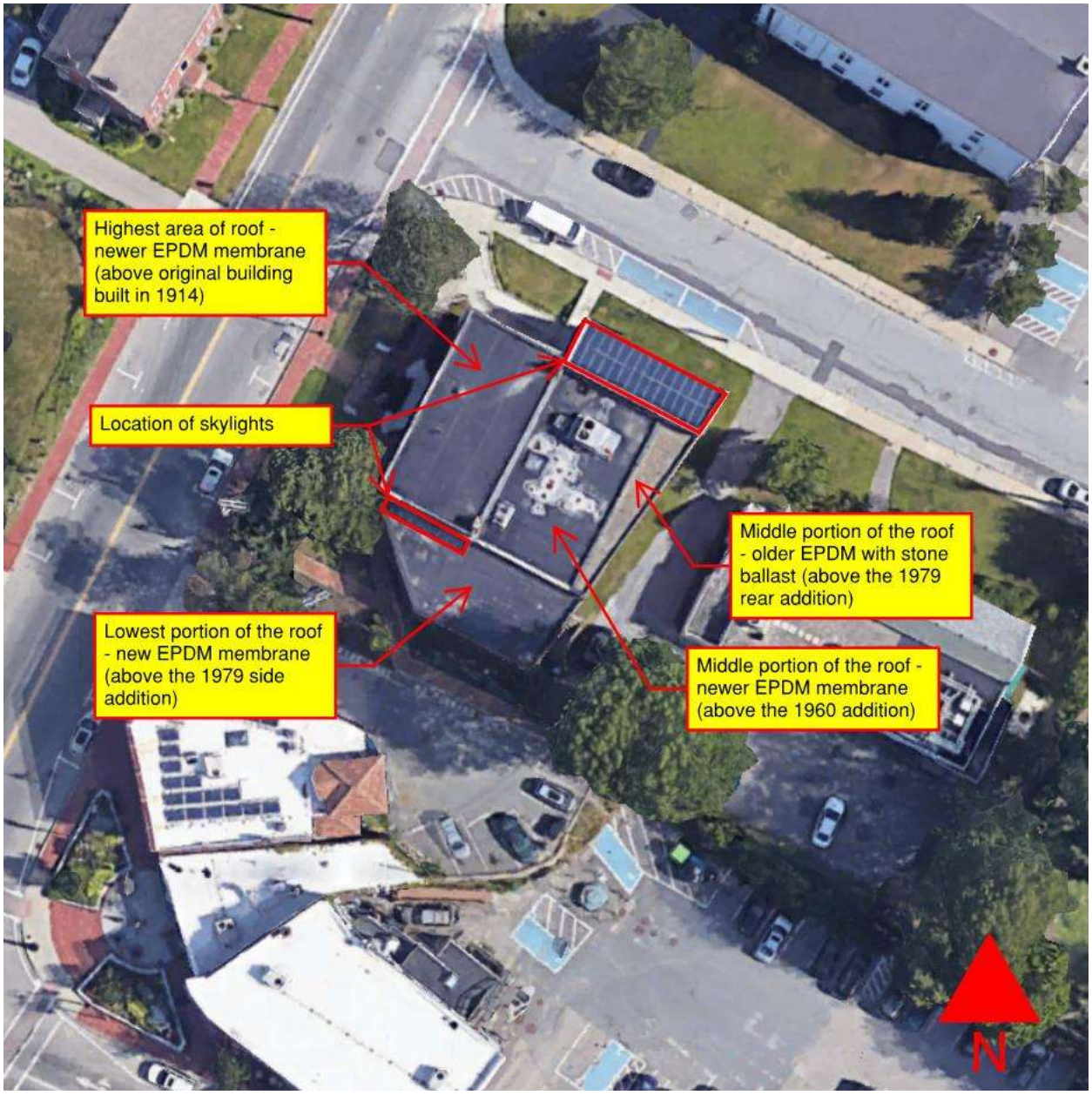


Figure 2 - Google Earth map 3-1: Building roof with notes (image taken prior to membrane replacement)

As part of the 1979 additions, new skylights were installed at the roof of the north and south side additions of the building. We observed heavy caulking around the skylight window panels as well as on the edges around the openings. According to review of available documents and our conversations with Lee Ann Amend, Library Director, even though multiple repairs have been done over the years, the skylights have repeatedly leaked, especially at times of heavy rain. We noticed a square cutout in the roof of the

1960 building addition that was roofed over. Per our discussions with Library staff, this used to be a skylight that had ongoing leak issues and was recently removed and roofed over to remedy the leaking condition.

Condition

The observed EPDM roof membrane (without ballast) appeared to be in good condition. The typical service life for a properly installed and maintained EPDM roof membrane is about 20 to 30 years. The stone ballasted EPDM roof on the rear 1979 addition appeared to be in fair condition.

There were some areas on the roof that had visible signs of ponding (**Photograph 17**). These areas will require periodic inspection and maintenance to ensure watertight conditions remain. Some debris was observed around the roof drains **(Photograph 18)**. Regular cleaning and inspection of the roof drains is recommended to avoid clogged drains and Rimkus recommends that a secondary drainage system be installed.

Heavy caulking around the window panels and around the frame of the skylights indicated continuous attempts to address water leakage through these windows **(Photograph 19)**. It was also mentioned that the interior areas below the skylights are either uncomfortably cold in the winter or hot in the summer. We recommend replacing these glazing panels with new energy efficient glazing panels properly sealed and/or gasketed to the existing skylight frames. We also recommend having an operable shading system installed on the inside to control heat gain and glare when needed. Alternatively, glazing panels with low solar heat gain coefficients in combination with low-e coatings can be further evaluated to reduce the heat gain from the skylights.

CHAPTER 4 – BUILDING EXTERIORS

The building was generally a rectangular-shaped floor plan with the main entry located on a central axis of the front side of the building. The subsequent additions slightly altered the original form of the building to a more irregular shape **(Figure 3)**. The exterior elements of the original 1914 portion of the library consisted of brick veneer walls, a

painted wood cornice under the parapet, painted decorative columns, a painted portico at the main front entry, and wood framed windows and doors. The exterior elements on the later additions consisted of aluminum framed windows, glass storefront at the secondary public entrance, and a panelized metal service door at the back of the building. The building exterior was in overall good condition. Spalling brick and missing mortar at certain areas will need to be repaired to avoid further damage. The painted wood window frames on the 1914 portion of the library were peeling and need to be cleaned and repainted.

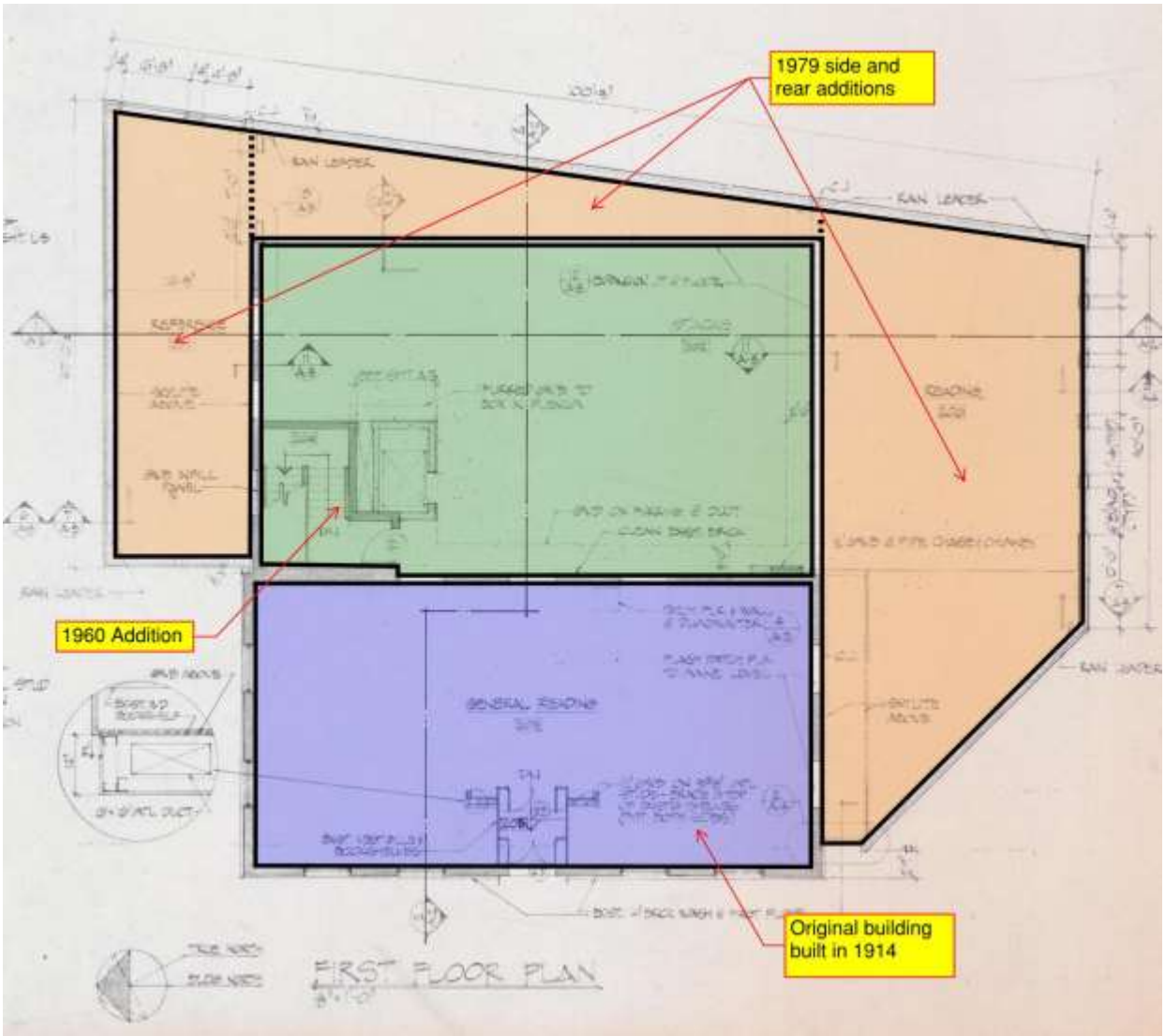


Figure 3 – Building shape development over subsequent additions

Description

Wall System

The exterior wall system of the original building and the 1960 addition consisted of load bearing multi-wythe brick masonry and the exterior walls of the 1979 addition were CMU walls faced with brick veneer. The front of the 1914 building with the original brick reportedly had been recently repaired; however, we did notice areas of spalling brick and missing mortar (**Photograph 20**).

Window Systems

The windows on the original 1914 built building façade were wood framed casement windows, and they were designed to open outward. On the inside, there were separate casement windows installed that were designed to open inward. There were also decorative metal safety screens on the interior at each window that would open inward. The exterior wood trims were reportedly recently repainted white; however, the paint appeared to be peeling off at some areas (**Photograph 21**). The 1979 southwest addition had newer windows. A portion of these windows were operable and the remaining portion fixed. The lower level entry area on the 1914 original building had a wood framed storefront system around double-glazed windows.

Door Systems

The main entry doors at the front of the 1914 building had small glass viewing panels in the middle of each leaf and a glass transom above. These doors were wood framed and painted white, matching the look of the front facing windows (**Photograph 22**). The paint appeared to be intact at and around the doors. Per our conversations with Peter O'Cain, Town Engineer, the main entry area had recently been refurbished.

The lower level glazed entry door in the original 1914 building was part of the wood framed storefront system, and it had an overhead closer and interior horizontal push bar. This door also had operable ADA push buttons. The lower parts of the wood frame had significant discolorations (**Photograph 23**).

Condition

Wall System

The exterior wall system was in overall good condition. The areas of spalling brick and missing mortar will need to be addressed to avoid further deterioration and/or damage. Separated portions of the wood cornice (**Photograph 24**) under the parapet of the 1914 building will need to be resealed to prevent moisture damage.

Window Systems

Window systems appeared to be in good condition. No fogged or cracked units were observed. The sealant between the window frames and surrounding materials was good. Typically, façade sealants have a useful service life of 7 to 10 years. The sealant will need to be cut out, the mating surfaces surface cleaned and primed, new backer rod installed, and new sealant installed in the coming years. The wood trims at the 1914 building windows will need to be sanded, cleaned, and repainted.

Door Systems

Pedestrian access doors appeared to be in good condition.

CHAPTER 5 – MECHANICAL SYSTEMS

The following information was obtained through our visual observations of the building systems, review of available mechanical drawings, discussions with building management personnel, and review of available documentation. The air conditioning and ventilation systems include one gas fired packaged heating and air-conditioning rooftop unit for the entire building and a hydronic baseboard/radiator heating system with a separate boiler in the mechanical/electrical room.

Heating and Cooling Systems

Description

Heating and cooling for the building were provided by a packaged rooftop unit with gas-fired heating and direct expansion (dx) cooling. There was also an air-cooled rooftop condensing unit with refrigerant lines dropping down to a vertical fan coil unit. In the mechanical/electrical room, we observed a Knight XL Commercial condensate gas fired boiler with Smart System controls **(Photograph 25)** that circulated hot water to the radiators and baseboard heaters on both levels of the building, and a Bradford White conventional cylinder boiler with 30 gallon capacity that supplied hot water to the break room and bathrooms in the lower level. Connected to the boilers, there was a Bell & Gossett pressured expansion tank. The baseboard heaters were located along the north and south exterior walls of the 1979 additions, and the radiators were wall mounted along the exterior walls (mostly under the windows) of the 1914 building. There were two wall mounted thermostats for the radiant system and one for the forced air system. There were also two cabinet unit heaters, one at the vestibule of the secondary entry at the lower level and another at the upper level reading room under the large skylights. In the two offices on the upper level addition, there were window AC units installed.

Condition

The heating and cooling systems were in fair condition. They were operational and have received service as needed; however, both rooftop units were at the end of their life cycle and will need to be replaced (**Photograph 26**). The Knight XL Commercial boiler with controls for the radiant system and the other 30-gallon boiler in the mechanical/electrical room appeared to be consistent with new equipment and were in good condition. Per our conversation with Lee Ann Amend, Library Director, the two side additions of the building did not receive adequate cooling or heating. It was mentioned that the area under the large skylight windows was either too hot in the summer or too cold in the winter (**Photograph 27**). If these skylights were kept for future use, we recommend installing better performing glazing panels as well as operable shades. Alternatively, glazing panels with low solar heat gain coefficients in combination with low-e coatings can be further evaluated to reduce the heat gain from the skylights. The refrigerant lines of the rooftop condensing unit had missing insulation wrap. The window AC units in the upper level offices were installed to provide additional cooling in those rooms since these rooms were not adequately served by the main rooftop AC unit (**Photograph 28**). The office wall that was built in the middle of the existing diffuser interfered with the air flow (**Photograph 29**).

CHAPTER 6 – ELECTRICAL SYSTEMS

The following information was obtained through our visual observations of the building systems, review of available electrical drawings, and discussion with building management personnel. The electrical systems include the incoming electrical service, service switchgear and electrical distribution equipment, emergency power generation and distribution systems, lighting and power outlet systems, communications systems, access control systems, audio and visual systems, and security systems.

Electrical Service and Distribution Equipment

Description

Main Electrical Service Equipment

The Property received electrical service at 120/208-volts, 3-phase, 4-wire service from the utility pole located on the side of North Main Street. There was no transformer for the service. The integrated main distribution panel, rated at 600 amps 120/208 volts, fed two other panelboards and other pieces of equipment.

Voltages

HVAC equipment, lighting, general purpose receptacles, and miscellaneous equipment were all supplied with 120/208volt panels.

Wire and Conduit

Typical power distribution for feeders and branch circuits was accomplished using various-sized conductors in conduit. Types of conduit observed were electrical metallic tubing (EMT). The observed wiring consisted of copper with thermoplastic insulation.

Panelboards

Panelboards were primarily rated at either 225-amps, 120/208-volts and 600-amps, 120/208-volts. There was one main panelboard in the electric room **(Photograph 30)** and two other panelboards in the public areas of the building, one on each floor.

Condition

The electrical systems appeared to be in good condition. The main panel inside the mechanical/electrical room and the two panels that were in the public areas of the building did not have the code required clear floor spaces in front of them.

Lighting Systems

Description

General area lighting consisted of suspended and ceiling mounted rectangular fluorescent fixtures and some recessed light fixtures (**Photograph 31**). According to Matt Baldassari, Facilities Manager, all fluorescent lights are being replaced in the near future for LED light fixtures. The replacement cost will be free of charge through Rexal Energy's energy saving program. Wall mounted emergency egress lighting was provided by fixtures without battery backups and exit lights at doors with battery backup. (**Photograph 32**).

Condition

Fixtures appeared to be in good operating condition. The wall mounted emergency egress lighting was not always located in the path of egress. Consideration should be given to relocate the emergency egress lights to indicate clear path of egress.

Communication and Data Systems

Description

Telephone service entered the building in the mechanical/electrical room and was distributed to the building via cables. Data ports were located throughout the office areas. A computer server and security rack were located in the mechanical/electrical room.

Condition

The telephone and data systems appeared to be in good condition.

Security Systems

Description

The Property was protected by electronic security systems consisting of security cameras with a digital video recorder (**Photograph 33**). There were security cameras mounted

throughout the building. The security cameras were connected to a digital video recorder and monitoring station. The monitoring station was inside the mechanical/electrical room.

Condition

The security system appeared to be in good condition and should not require significant repair or replacement. If the future use of the building requires the re-organization of the interior spaces, the cameras will have to be relocated.

CHAPTER 7 – PLUMBING SYSTEMS

The following information was obtained through our visual observations of the building systems, available plumbing drawings and discussions with building management personnel, and review of available drawings. The plumbing systems include the domestic cold-water system, natural gas piping, domestic hot-water system, sanitary waste and vent system, and stormwater collection system.

Domestic Water Systems

Description

Domestic Cold Water

The domestic cold-water main from the municipality service entered the Property on the southwest side at the mechanical/electrical room and consisted of a 1-1/4-inch water main. The building relied on the supplied pressure from the utility company. The mechanical/electrical room had various items stored, and it was not possible to observe if there was a pressure reducing valve. Water closets and urinal were all wall mounted. Lavatories were ceramic wall mounted sinks with lever type faucets. There were no water fountains inside the building.

Domestic Hot Water

Domestic hot water for the lavatories and kitchen sink were generated by gas-powered tank type water heater located in the mechanical/electrical room. The domestic hot-water

heater was manufactured by Bradford White (**Photograph 34**). From the mechanical/electrical room, hot water was fed to each fixture.

Domestic Water Piping

The incoming domestic water piping was 1-1/4-inch copper piping. Within the building, piping appeared to be copper for all sizes of pipe. Domestic hot- and cold-water piping was not insulated.

System Capacity

The capacity and configuration of the water service to and through the building appeared to be adequate based on existing occupancy and use; however, it may need to be upgraded depending on future use.

Condition

The domestic water service, piping, and the domestic water heaters appeared to be in good condition. There was no evidence of significant leaks or other areas of deterioration noted or reported to us.

Sanitary Waste and Storm Drainage Systems

Description

Sanitary Waste Systems

Per our review of existing documents, sanitary waste was collected from multiple lateral lines below the floor slab and routed by a 6-inch asbestos cement pipe to the 1000-gallon precast concrete septic tank with precast concrete leaching galleries that served the building. The septic system was buried underground and located at the front of the building facing North Main Street. Piping inside the building was typically 4-inch diameter with some 2-inch-diameter lines by lavatories. Sanitary risers vent through the roof.

Stormwater Systems

Stormwater drainage from the low-sloped roof drained to the roof drainpipes and was directed to the underground storm sewer.

Condition

The sanitary systems and storm drainage system appeared to be in good condition. The existing septic tank and leaching area is undersized for current use. Based on our understanding, a new septic system concept has been investigated; however, Title V variances are needed due to various site restrictions. Depending on the future use and occupancy of the building, a new adequately sized septic system will be required.

Natural Gas Service

Description

Natural gas service was provided and routed from a service main to the service meter on the southwest elevation near the mechanical/electrical room (**Photograph 35**). From the service meter, a steel pipe was routed through the exterior wall at the mechanical/electrical room and branched to the equipment.

Capacity

The capacity and configuration of the natural gas service appear to be appropriate for this type of building.

Condition

The natural gas service appeared to be in good condition.

CHAPTER 8 – FIRE PROTECTION AND LIFE SAFETY

The following information was obtained through our visual observations of the building systems and discussions with building maintenance personnel. Fire and life safety

elements observed included fire detection and alarm systems and handheld fire extinguishers.

Means of Egress

Description

Means of egress was via four exterior doors that lead to grade-level paved areas. Emergency lights and exit signs marked the paths of egress and designated emergency exits.

Condition

The paths of egress appeared to be generally compliant with the fire code in effect at the time of construction and presently enforced. Egress capacity appeared sufficient to meet expected occupant loads based on existing occupancy and use.

Fire Detection and Alarm Systems

Description

The building was monitored by a fire detection and alarm system. The system used a fire alarm control panel located in the mechanical/electrical room. The fire alarm system monitored manual pull stations, typically located next to building exits, and ceiling-mounted smoke detectors. Alarm notification was provided by audible and visual notification devices. It was mentioned by the Building Maintenance Manager that the system is tested periodically to ensure proper functioning.

Condition

Smoke detectors, strobes, pull stations, exit lights, and the fire alarm control panel appeared to be in good condition and adequate for the use and construction type of the building. We do recommend continuing the periodic maintenance and testing of the system to ensure proper function during an emergency.

CHAPTER 9 – BUILDING INTERIORS

Description

The lower level of the building consisted of a children's library, offices for staff, break room with private single-occupant bathrooms, archive room, maintenance manager's room, mechanical/electrical room, computer area, a multipurpose space with a projector and screen, and public bathrooms. Finishes in these areas varied slightly. The children's library had carpet floors and the exterior walls were exposed painted block. The interior wall partitions had painted gypsum finish (**Photograph 36**). The ceiling of the 1979 additions had painted gypsum finish, while the original building and the 1960 addition featured mostly plaster finish. The public bathrooms had tiled floors and painted gypsum finish (**Photograph 37**). The offices, break room, and private bathrooms included a vinyl floor tile finish and painted gypsum walls and ceilings **(Photograph 38)**. The multipurpose space had vinyl floor tiles, exposed brick wall of the 1960 addition and exposed painted block walls of the 1970 addition. The ceiling finish was painted gypsum board. There was a change in ceiling materials (plaster to gypsum board) between the 1960 addition and the 1979 additions (**Photograph 39**). The archive room included carpet flooring and, painted gypsum board walls and ceiling. The maintenance manager's room and mechanical/electrical room had coated concrete floors, painted brick and gypsum board walls and gypsum board ceiling.

The upper level of the building consisted of an entry vestibule, a reception desk area, main library with book stacks and reading spaces, a computer area, and two small offices. The main library and reception desk areas featured carpet floors, exposed brick and block walls, and painted gypsum interior partitions and ceiling (**Photograph 40**). The offices had carpet floors, exposed and painted exterior block walls, and painted interior gypsum walls and ceiling (**Photograph 41**).

The location of exterior walls and window openings of the original building and the 1960 addition were exposed throughout the building at both lower and upper levels.

Condition

Considering the age of the building and subsequent additions, the interior finishes were in overall good condition. On the lower level, the wall between the children's library and multipurpose room showed signs of previous repair and the paint color was different from the rest of the wall (**Photograph 42**). There was some visible water damage around one of the drainage pipes at the ceiling in the multipurpose room (**Photograph 43**). We also observed cracking of the gypsum board panel joints at the ceiling in some areas (**Photograph 44**). In the office area (part of the original building), some portion of the finished ceiling has been removed in order to install two temporary columns to support the deflecting floor structure (**Photograph 45**).

On the upper level, the interior finishes were in good condition. We noticed previous signs of repair at the entry room ceiling. Patchwork at the ceiling appeared to be concentrated above the suspended light fixtures (**Photograph 46**). Inside the main library space, there was visible repair work at the ceiling near the elevator (**Photograph 47**). Inside the 1979 addition at the northeast side of the building, we noted cracking of the exterior block wall near the window (**Photograph 48**).

According to the Hazardous Building Materials report by Smith & Wessel Associates, Inc., inspection results indicated the presence of asbestos containing building materials (or ACBMs) in the following items: floor tile and mastic adhesive, textured ceiling, soft plaster ceiling, expansion joint, door caulking, vapor barrier wall coating, moisture barrier foundation coating, carpet mastic, and roofing materials. Any removal and/or repair activities affecting these materials would require the supervision and containment provisions under the direction of an Environmental Hygienist.

CHAPTER 10 – ACCESSIBILITY

The Guidelines

As an assembly-use building, the non-compliant elements or new alternations in building should comply with the 2010 ADA. Existing elements in compliance with the 1991 ADA [including the 2004 Americans with Disabilities Act Accessibility Guidelines (ADAAG)] can be maintained, provided that they were installed prior to 2012. This report section compares the requirements of the ADA with as-built conditions, and, where applicable, recommends upgrades required to achieve compliance. As a current local government facility, Title I and Title II of ADA apply. Should the facility transfer to a non-government facility, then Title I and Title III apply.

Title I deals with employment discrimination and requires that employers not discriminate against a disabled person in hiring or employment. This can impact the configuration and features of buildings and those employers are expected to make “reasonable accommodation”, including making facilities readily accessible to disabled employees.

Title II requires public accommodation (for a government facility) provide goods and services to disabled patrons on an equal basis with the non-disabled patrons. This title is the part of the ADA with perhaps the greatest impact on buildings, which provide public accommodations, including office and manufacturing buildings.

Title III requires that public accommodation (for non-government buildings) provide goods and services to disabled patrons on an equal basis with the non-disabled patrons. This title is the part of the ADA that is similar to Title II with respect to its impact on buildings, which provide public accommodations, including office and manufacturing buildings.

The ADA has provided a benchmark for measuring accessibility, primarily orientated toward new construction. It also provides guidance for modification of existing facilities to eliminate barriers that effect the usability and accessibility of the building. The stated purpose of the guidelines is to ensure that newly constructed facilities and altered portions of existing facilities covered by the ADA are readily accessible to disabled persons.

Applicability

The Property was constructed in 1914 with subsequent additions in 1960 and 1979. Any change of use or renovation to the building will require complying with current ADA standards. Buildings in the historic registry are not exempt from ADA requirements.

Accessible Entrances

The first consideration relates to measures that will enable individuals with disabilities to physically approach and enter a place of public accommodation. The priority of “getting through the door” recognizes that providing actual physical access to a facility from public sidewalks, public transportation, or parking is generally preferable to any alternative arrangement in terms of both business efficiency and the dignity of individuals with disabilities.

The Property is not served by public transportation. As a result, persons arriving at the Property are likely to arrive by car and park in the designated disabled parking stalls on the side of the street or in the public parking lot on the other side of High Street. There are existing ADA accessible curb cuts and ramps to allow for movement from across the street parking lot to the ADA accessible entry door. The building had combined ADA access for visitors and employees. All parties entering the building will go through the secondary entry door into the lower level. Existing ramp, door width, and hardware appeared to be compliant with the applicable sections of the ADA. Access to the upper floor area is provided through an elevator. The main entrance and exterior stairs that lead to the upper level are not ADA accessible, and ADA upgrades would not be required to the original 1914 upper level entrance since a lower level accessible entrance was provided.

Route of Travel

Disabled persons wishing to access the Property are able to gain suitable means of entry via the secondary entrance. The route of travel is from the public street frontage utilizing the public sidewalks and ramp that lead to the previously detailed entrance. The route of travel, from the public street frontage to the entrance, is generally unrestricted and accessible in compliance with the ADA.

Horizontal and Vertical Circulation

The building is served with a single elevator for accessible vertical circulation.

Door Widths and Signage

Section 404 (Doors) of the ADA states that doorways and gates, including security entrance gates, shall have a minimum clear opening of 32 inches. The doorways met this requirement with a typical clear opening width of 33 inches or a nominal 36-inch-wide door.

This section of the ADA also states that the threshold at doorways shall not exceed 1/2 inch in height, and that door hardware (handles, pulls, latches, locks, etc.) on accessible doors shall have a shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist to operate. The doorways and doors at the Property had lever latch sets (that did not require twisting of the wrist to open) and were compliant with these requirements.

The ADA states that signs that identify permanent rooms and spaces such as those identifying restrooms and exits or providing room numbers must have braille and raised letters or numbers to allow them to be read visually or tactilely. The ADA also states that signs must also meet specific requirements for mounting location, color contrast, and non-glare surface. Signs that provide direction to, or information about, functional spaces must only comply with requirements for character proportion, character height, and finish and with contrast between the characters and background.

The letters and numbers on signs shall be raised 1/32-inch minimum and shall be sans serif. The characters or symbols on signs shall be at least 5/8-inch high, but no higher than 2 inches. Symbols or pictographs on signs shall be raised 1/32-inch minimum. Signs were used at bathrooms, but the other rooms such as the multi-purpose room and offices did not have signs. Also, there were no signs at potentially hazardous areas such as the mechanical/electrical room.

Space Allowance and Reach Ranges

ADA requires that a minimum clear width for single wheelchair passage shall be 32 inches, the minimum width for two wheelchairs to pass is 60 inches, the space required for a wheelchair to make a 180 degree turn is a clear space of 60 inches, and the minimum clear floor or ground space required to accommodate a single, stationary wheelchair occupant is 30 inches by 48 inches. ADA push and pull clearance requirements at each side of the bathroom doors were not compliant. The library copy room adjacent to lower level entry was also not compliant with ADA required space clearances.

Reach heights vary but 48 inches is typically the maximum. Controls appeared to comply with the maximum height requirements.

Ground and Floor Surfaces

Section 302 (Ground and Floor Surfaces) of the ADA requires that ground and floor surfaces along accessible routes and in accessible rooms and spaces, including floors, walks, ramps, stairs, and curb ramps, be stable, firm, and slip resistant. Flooring within the Property generally complied with this requirement.

This section also requires that changes in level between 1/4 inch to 1/2 inch be beveled with a slope no greater than 1:2, and that changes in level greater than 1/2 inch be accomplished by means of a ramp. The section also states that carpet or carpet tile used on a ground or floor surface be securely attached; have a firm cushion, pad, or backing or no cushion or pad; and have a level loop, textured loop, level cut pile, or level cut/uncut

pile texture. Where gratings are located on walking surfaces, they shall have spaces no greater than 1/2-inch-wide in one direction.

Ramps

Section 405 (Ramps) of the ADA requires that any part of an accessible route with a slope greater than 1:20 shall be considered a ramp.

The only ramp on the Property was at the side of the building adjacent to High Street and it appeared to be compliant.

Lavatories and Mirrors

The ADA requires that lavatories shall be mounted with the rim or counter surface no higher than 34 inches above the finish floor and provided with a clearance of at least 29 inches above the finish floor to the bottom of the apron. A knee clearance of 27 inches shall be provided underneath the lavatory. Hot water and drainpipes under lavatories shall be insulated or otherwise configured to protect against contact. Faucets are required to be operable with a closed fist. Lever-operated, push-type, and electronically controlled mechanisms are examples of acceptable designs. Mirrors shall be mounted with the bottom edge of the reflecting surface no higher than 40 inches above the finish floor.

Lavatories were compliant with the ADA. The bottom reflecting edge of the mirrors in the bathrooms was typically at 42 inches above the floor and need to be relocated lower.

Urinals

The ADA requires that urinals shall be stall-type or wall-hung with an elongated rim at a maximum of 17 inches above the finish floor. The ADA also requires that a clear floor space of 30 inches by 48 inches shall be provided in front of urinals to allow forward approach. Flush controls shall be hand operated or automatic and shall be mounted no more than 44 inches above the finish floor. The urinal in the men's bathroom appeared to be ADA compliant.

Toilet Stalls

The ADA requires that the minimum clear width of the standard accessible stall shall be 60 inches and the minimum clear depth of floor-mounted standard accessible stall shall be 59 inches. Although these clearances for the stall partitions were provided, there was a column inside the required floor clearance rendering the each “accessible” stall non-ADA compliant.

Water Closets

The ADA requires that the height of water closets shall be 17 inches to 19 inches, measured to the top of the toilet seat. A 36-inch minimum length grab bar is required behind the water closet and a 42-inch minimum length grab bar is required on the side wall. Grab bars shall be mounted at a height between 33 inches and 36 inches. A clearance of 18 inches from the side grab bar wall to the centerline of the water closet shall be provided.

Drinking Fountains

Section 602 (Spout Height) of the ADA requires that the spout height of drinking fountains not exceed 36 inches. No drinking fountains were provided throughout the building. If the future use of the building remains a public assembly, the installation of drinking fountains will be required per the building code.

Elevator

An ADA accessible elevator must have a minimum door width of 36 inches. The depth of the car must be at least 51 inches, and the width must be at least 68 inches, unless the elevator has center-opening doors, in which case at least 80 inches are required. The existing elevator complied with these ADA measurement requirements.

CHAPTER 11 – BUILDING ENERGY SYSTEMS

Heating and Cooling Systems

Description of Existing Systems

Heating and cooling for the building were provided by a packaged rooftop unit with gas-fired heating and direct expansion (DX) cooling. There was also an air-cooled rooftop condensing unit with refrigerant lines dropping down to a vertical fan coil unit. In the mechanical/electrical room, we observed a Knight XL Commercial condensate gas fired boiler with Smart System controls that circulated hot water to the radiators and baseboard heaters on both levels of the building, and a Bradford White conventional cylinder boiler with 30-gallon capacity that supplied hot water to the break room and bathrooms in the lower level. Connected to the boilers, there was a Bell & Gossett pressured expansion tank. The baseboard heaters were located along the north and south exterior walls of the 1979 additions, and the radiators were wall mounted along the exterior walls (mostly under the windows) of the 1914 building. There were two wall-mounted thermostats for the radiant system and one for the forced air system. There were also two cabinet unit heaters, one at the vestibule of the secondary entry at the lower level, and another at the upper level reading room under the large skylights. In the two offices on the upper level addition, there were window AC units installed.

There was minimal control for the comfort cooling and heating. There was one thermostat for each floor for the heating and one thermostat for the rooftop A/C unit. The split system had its own control and the window units provided supplemental cooling. This type of control does not provide for good comfort and would not be energy efficient.

An analysis of the utility bills provided (one year) does not indicate any obvious areas for energy savings. The increased energy consumption over the summer is consistent with the type of system currently installed. For the non-air conditioning months, the average

electric bill was about $1,100. For the air conditioning months, the average electric bill was about $3,800. The proposed system, VAV with hot water reheat, will save about $3,500 per year. Everscource Energy has a CORE Energy Efficiency Program. The local utility company representative should be contacted prior to ordering any new equipment. The rebates and incentives change on an annual basis and often are based on a first-come-first-serve basis. The proposed VAV system with hot water reheat will cost about $75,000. The major advantage will not be energy saving but comfort and control, especially if the building were to be repurposed.

There were no other energy conservation projects identified during the walk through or in discussions with the maintenance staff. The lighting system is already being replaced.

Domestic Hot Water Heating System

Description of Existing System

A Bradford White conventional cylinder boiler with 30-gallon capacity supplied hot water to the break room and bathrooms in the lower level.

Proposed New HVAC System

Description of New System

In order to minimize energy consumption and maximize control, the existing HVAC system needs to be replaced with a new central system.

Proposed New Domestic Hot Water Heating System

Description of New System

The existing system does not need to be replaced based on energy usage. Should the building be repurposed and the need for domestic hot water increase, then the hot water heating system should be upgraded to a high efficiency, condensing type hot water heater.

CHAPTER 12 – LOCAL DATA

For our study of the current library's future use, we initially gathered available data about the Town of Sharon and its vicinity to understand demographics, transportation, commute times, interests, and proximities. The compiled information began to lead us into certain directions in terms of new opportunities for the building. Chapter 12 is a summary of the data that was gathered through our research.

Demographics

The Town of Sharon Massachusetts is home to a population of 5,690 people, from which 93.2% are US citizens. As of 2017, 20% of Sharon, MA residents were born outside of the country. In 2017, the median age of all people in Sharon, MA was 40.7. Most common birthplace for the foreign-born residents of Massachusetts was China, followed by the Dominican Republic and Brazil. The three largest ethnic groups in Sharon, MA are White, Asian or Two or More Races. Sharon, MA has a large population of military personnel who served in Vietnam.

Housing Data

The median property value in the Town of Sharon was $448,000 in 2017, which is 1.95 times larger than the national average of $229,700. The homeownership rate in Sharon, MA is 85.7%, which is higher than the national average of 63.9%. In 2017, the median household income was $128,275. Property taxes averaged over $3,000 per household. In 2017, 85.7% of the housing units in Sharon, MA were occupied by their owner. This percentage grew from the previous year's rate of 83.5%. This percentage of owner-occupation is higher than the national average of 63.9%. This data was gathered and referenced from Data USA.

Transportation and commute

People in Sharon have an average commute time of 34.7 minutes. Additionally, 2.55% of the workforce in the town have "super commutes" in excess of 90 minutes. In 2017, the

most common method of travel for workers was “drove alone” (61.2%), followed by those who use public transit (21.5%) and those who worked at home (8.74%). The largest share of households has two cars, followed by one car.

Proximities

The Property is located in the center of the Town and is surrounded by a mix of residential and business areas. North to the Property is mostly zoned residential with several churches and synagogues in the area as well. There is a music academy within walking distance to the current library along North Main Street. South to the Property is mostly zoned for business including several law offices, real estate offices, an eye care doctor’s office, banks, a café, restaurants, a nail salon, and some retail stores. The commuter train that goes between Providence and Boston has a station in Sharon; it is approximately an 8-minute walk from the current library building. The ride from the Sharon train station to downtown Boston is approximately 30 minutes.

Information obtained through interviews

Per our interview with Gary Kamp, Maintenance Manager, who is a lifetime resident of Sharon, MA, many young families move in the area due to the excellent school system. According to data gathered from Niche.com, the Sharon Public School District is ranked #20 best school districts in Massachusetts, and each elementary, middle and high schools individually have an A+ rating. The area also offers great opportunities for outdoor activities such as boating on Lake Massapoag and hiking in Mass Audubon’s Moose Hill Wildlife Sanctuary. It was highlighted by Gary that there are no industries in the town that can offset the high property taxes and most workers commute and work in Boston by either driving or taking public transportation. However, when the residents are home (on the weekends or weekdays) they walk the streets to get to their destinations, resulting in busy sidewalks, especially around the Town’s central area.

Per our further conversations with Gary and Lee Ann, we understand that the library is used frequently for workshops and various programs for children and adults. The multipurpose space of the lower level is frequently rented out and used for dance classes and town meetings. There are plans for a new library building just north to the Property;

however, it has some approval challenges due to proposed zoning change that require local resident approval.

Other improvements and construction happenings in Sharon include the Wilber School Apartments, located about 8 minutes south to the Property. This is a recent renovation and conversion of an existing school building into an apartment complex with affordable housing units. Also, a new town hall and police and fire station were constructed. There are also plans to build a new high school. The new projects and growth of the town indicate a thriving community looking for new advancements and opportunities in the area.

Code, Zoning and Historic District

The Property is currently zoned in the residential, historic district with ground water protection. The historic district limitations do not allow changes or alterations to the front façade of the building (which is part of the original 1914 construction), unless it is accepted by the Sharon Historical Commission. Alterations to the rest of the building exterior and interior may trigger updating the building to comply with current building codes. There are three levels of alterations per the Massachusetts Building Code, which is based on the 2015 International Existing Building Codes:

- Level 1 – Removal and replacement of the covering of existing materials, elements, equipment, or fixtures using new materials, elements, equipment, or fixtures that serve the same purpose.
- Level 2 – The reconfiguration of space, the addition or elimination of any door or window, the reconfiguration or extension of any system, or the installation of any additional equipment.
- Level 3 – Alteration where the work area exceeds 50 percent of the building area.

The different alteration levels will require complying with current codes to a certain degree; level 1 being the lowest number of requirements, while level 3 would require complying with significantly more requirements and typically requires most elements to comply with the code requirements for new construction. Based on our research and

conversations with the local building official, Joe Kent, it is evident that the re-use of the building will require either a Level 2 or Level 3 alteration. A change in use and/or occupancy would require a more detailed code analysis to determine the code requirements, depending on the new use and occupancy for the building.

Since the building is in the local historic district, section 1204 of the 2015 International Existing Building Code applies: “historic buildings that undergo alterations are required to comply with accessibility requirements unless technically infeasible. Where compliance would threaten the historic significance of the building, as determined by the code official, the alternative requirements of Sections 1204.1 through 1204.4 for that element shall be permitted”. The building code official will need to confirm this; however, since the front façade of the building cannot be altered to be accessible, the only accessible entryway will need to remain on the north side of the building at the lower level. The existing elevator must also be fully accessible and provide access for handicapped people to the upper level.

A zoning approval will be required if the building use is changed. The process typically involves the review of the proposed use by the zoning committee and local residents to discuss and make a decision if the proposed zoning change will be acceptable.

Next steps

Based on our initial research and study of local data, we began to identify potential options of future use for the building. After careful consideration of the building and information gathered from interviews and initial demographic information, Rimkus proposed three uses for the building: rental apartments, shared offices or “co-op” working spaces, and mixed-use spaces. The following chapters will discuss these options in more detail.

CHAPTER 13 – RENTAL APARTMENTS

As mentioned under Chapter 12, most residents in the area (85.7%) own their place of living rather than pay for rent. Due to the shortage of available rental properties, location of the town being a relatively short commute away from Boston and located within a high-ranking school district, we believe that rental apartments may be a great future use for the Library building. The Wilber School Apartments is a good example of recent rental

property development in the area. We were able to speak with one of their leasing representatives and they explained that their apartments are rented out on a regular basis and their retention rate is high; which indicates that a lot of tenants stay to renew their lease contracts.

During our further research, we also looked at various rental units in the local area (**Table 1**) and found that the average rental price per square foot is approximately $31 for a year. Based on our preliminary calculations, if 10,000sf of the current Library building is converted and rented out as apartment units, it would generate approximately $310,000/year. Based on the square footage, approximately 8 to 10 apartment units (2 bed/2 bath) would fit in the building.

Address	Price/month	Square footage	Number of beds & bathrooms
1100 Cricket Lane Sharon, MA	$2,340	700	2 bed/1 bath
Wilber School Apartments	$2,680	900	2 bed/2 bath
100 Hilltop Drive Walpole, MA	$1,795	815	1 bed/1 bath
Billings St. Guest House	$1,975	750	1 bed/1 bath
166 S. Main Street	$2,475	1,400	2 bed/1.5 bath

Table 1 – rental units in the area and their cost

Designated parking spaces are required for the apartment units. In this case, since there is no on-site parking currently available, we suggest the Town of Sharon propose designating a section of the parking lot (owned by the Town) across High Street that would be reserved for the future tenants (**Figure 4**). This proposal would have to be reviewed and approved by the zoning department as an acceptable alternative for not having directly on-site parking. For ten apartment units, ten parking spaces would be required including one ADA accessible space. It is our understanding that the First Congregational Church uses the adjacent parking lot on Sundays only. Currently, it is

unknown how much of the parking lot is being used by the church on a typical Sunday. In addition, a loading/unloading or drop-off space is recommended.

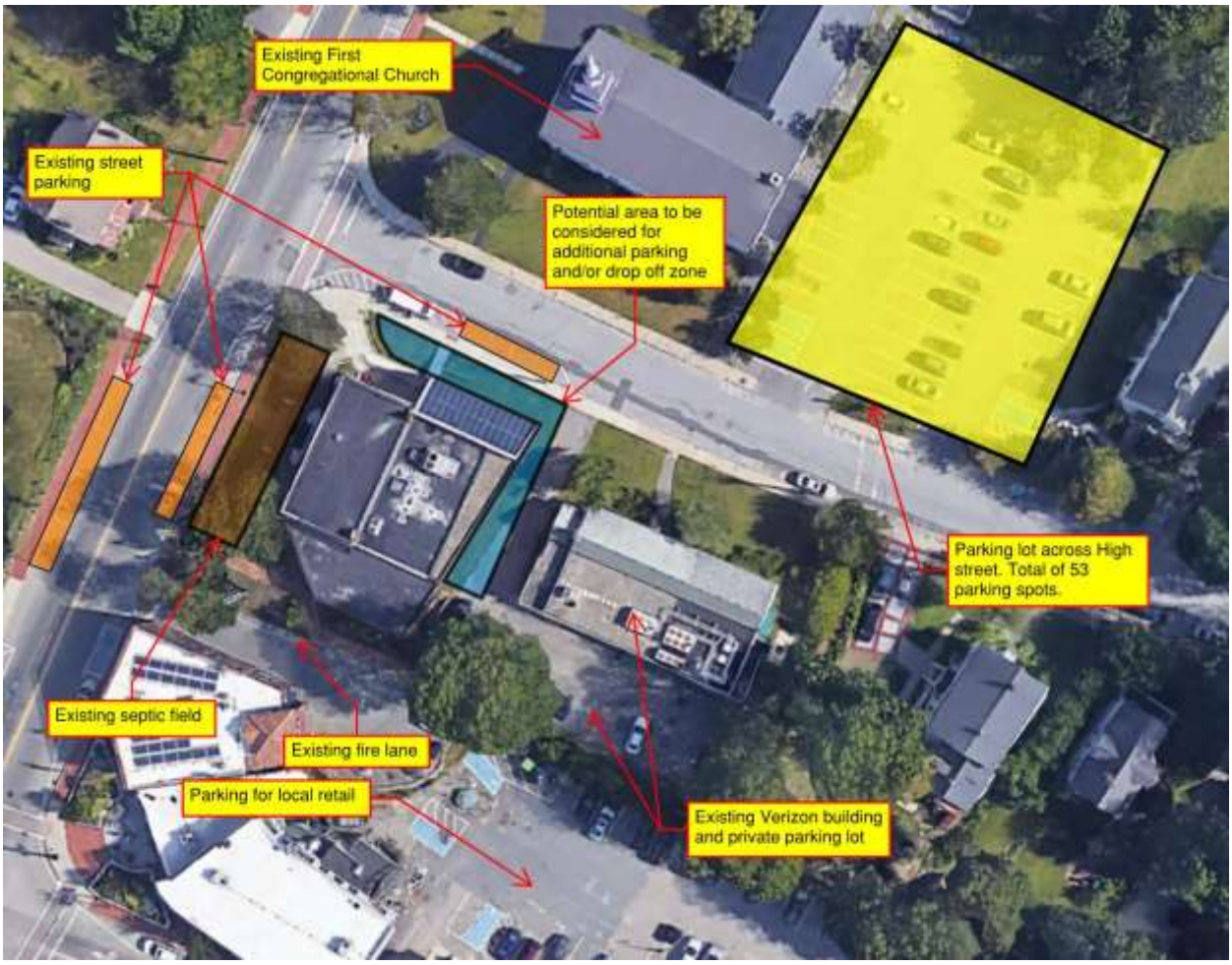


Figure 4 – Existing and potential new parking

Limited on-site parking can be created by converting open areas of the property. The open area along High Street and the rear portion of the property may allow some parking and/or drop-off areas. If this option is to be explored, further in-depth studies will be required to fully understand circulation paths and site limitations. Changes to the outside of the building and surrounding area, as seen from the public way, must be brought before the Sharon Historical Commission for approval.

The existing septic system will have to be replaced by a new septic system that will be able to handle the sanitary waste requirements for a ten-unit apartment building. This will

most likely be required for all other future use proposals as well since as mentioned earlier in the report, the current septic system is significantly undersized.

In terms of building code updates, the Property will have to comply with current building codes, which includes the installation of a new sprinkler system. The building will also have to comply with current energy codes, which may require the addition of insulation on the exterior walls and most likely the removal or replacement of the skylight glazing. Demising walls and floor assemblies separating the units will have to be fire rated. All interior non-load bearing walls, finishes, fixtures, and MEP lines of the current building will need to be removed and services upgraded in order to provide new mechanical, electrical and plumbing systems, metered separately per individual units. According to the Asbestos report by Smith & Wessel Associates, several the interior finish materials have tested positive for asbestos; therefore, during removal of these materials, mitigation would be required. Any removal and/or repair activities affecting these materials would require the supervision and containment provisions under the direction of an Environmental Hygienist. Per the 2015 Massachusetts Building Code, which is based on the 2015 International Building Codes, this type of alteration would fall under “Level 3” alteration and the change of use and occupancy requirements. Based on general construction costs in the local area for converting an existing building to apartment condos, the construction cost is estimated to be in the range of $140 to $160/sf.

CHAPTER 14 – SHARED OFFICES OR “CO-OP” WORKING SPACES

Our second proposal for future use is shared office or “co-op” working spaces. Close proximity to the local city train station and the fact that only 9% of the Town’s population works from home could make the building a prime real estate for office lease. The entire building could be converted to a single office; however, to allow more flexibility, we recommend converting to shared office spaces or “co-op” working spaces (to be explained in more detail further down). **Table 2** illustrates local office rentals and their cost. Based on this research, the average lease in the area will be approximately $15/sf/year. If 10,000sf of the current library building is converted and rented out as office space, it would generate approximately $150,000/year.

Address	Price/sf/year	Square feet	Cost per year
61-75 Pond Street Sharon, MA	$17.22	836	$14,400
545 South Street Walpole, MA	$14.00	4,896	$68,544
1600 Providence Highway Walpole, MA	$19.00	1,700	$32,300
6 Merchant Street Sharon, MA	$11.00	4,000	$44,000

Table 2 – office rentals in the area and their cost

"Co-op" working spaces are an exciting new way of office rental that allows the users to choose from various memberships that give access to either continuous or periodic use of certain parts or rooms of the building. It is similar to shared office spaces but with more flexibility. The different levels of memberships would have varying price points and limits that would accommodate a variety of user groups. Less expensive memberships would only allow access to particular rooms or certain areas of the building while premium memberships would allow more access, for example to conference rooms with tech accessories or print rooms, etc. Spaces would range from single office space (or focus rooms) to multi-desk rooms and more collaborative spaces such as conference rooms. There may be open collaboration or public areas for all users to come together and share ideas about their work. The larger multipurpose rooms could be reserved for dance classes, workshops, or other various activities for all ages.

The building would need some full-time and/or part-time staff for scheduling and upkeep of the Property. Based on our research and the centralized location of the building, we believe there would be demand for this type of use. It may not generate as much revenue as the rental apartment option; however, the remodeling process would be notably less expensive, and the building could earn more significance and be a local hub for the community. There are several examples of "co-op" or shared office spaces in the Boston area that could be further studied (e.g., NGIN Workplace, The Yard, Workbar).

Certain existing parts of the Library building (such as the reading area below the skylight on the upper level, or the multipurpose area on the lower level) can remain with relatively

minor modifications and be used for the above-mentioned programs. Majority of the current floor plan is open and can easily be subdivided to fit the different types of workspaces. The current MEP systems can be re-used with slight modifications without separating utilities, which would also save remodeling costs. Per the 2015 Massachusetts Building Code, which is based on the 2015 International Building Codes, this type of alteration would most likely fall under “Level 2” alteration and would require a moderate level of code-related updates to the building. Based on general construction costs in the local area, converting an existing building to offices, the construction cost of this type of remodel is estimated to be in the range of $120 to $140/sf.

If this option is pursued, a zoning change for the Property will be required. Parking would need to be resolved similarly to the rental apartment option; however, offices would most likely be used Monday through Saturday, and the First Congregational Church would be able to use the entire parking on Sunday. Such proposal will have to be approved and accepted by the local zoning and building departments. As explained in the previous chapter, limited on-site parking can be created by converting open areas of the property. Changes to the outside of the building and surrounding area, as seen from the public way, must be brought before the Sharon Historical Commission for approval.

CHAPTER 15 – MIXED USE

Our third suggestion is mixed use, which would be a combination of apartments, office spaces and/or community spaces. Providing a mixed-use function of the building could be beneficial to examine two or more different use groups and compare how well they are received in the community. At the time, when it is evident which use has higher demand, the other portion of the building can be converted. The upper level of the building with the most windows is most suitable for apartments or office spaces whereas the lower level is more suitable for community spaces or multi-purpose and meeting rooms. Per our conversations with the Library staff, it appears that some groups already rent out the lower level multi-purpose room for dance lessons, meetings, or other workshop activities. If there is already a demand for such uses, it may be a great opportunity to convert the entire lower level into a variety of multi-purpose rooms that are available for use to the community.

One of the potential areas of concern for the mixed-use option is privacy. Tenants of the apartment portion of the building may feel that the building is not private enough. Depending on who uses the community spaces below, there may be unwanted sound transmission issues to the apartments. Special attention would be needed for proper sound isolation and private access to certain parts of the building to ensure safety of the occupants.

The expected renovation costs for mixed use would be a blend between the first two options and the renovation cost would depend on how the building is subdivided for mixed use.

CHAPTER 16 – HISTORIC BUILDING TAX CREDITS

There is a possibility for applying for a historic building tax credit. For the building to be eligible, it will need to change from a public building to a non-public owner or lessee (which could be a non-profit using syndication to get value from the tax credits). There are two tax credits that can be applied for; one is federal and the other is a state tax credit. Based on our research, the federal credit shall be equal to or less than 20% of the qualified rehabilitation expenditures made by the taxpayer with respect to a qualified historic structure that has received final certification and has been placed in service as provided. The credit is applied over a minimum of five years, with any leftover funds allowed to roll over to future years. The local historic district that the Sharon Public Library is in currently has it listed on the National Register of Historic Places. The application required to be submitted must document the historic matter of the building. Once approved, then a second round of approval of the construction documents must be obtained. Part three of the process is a review of the completed project and an award of the tax credits. The state historic tax credits have their own rules separate from federal and will require additional paperwork. There are three rolling application dates. State funding is limited and is based on first come, first served, if approved. Resubmissions will need to occur regularly for funding. The historic tax credit process may be complicated and requires consultation with a tax attorney well-versed in tax credit work. We suggest further exploring this opportunity as it may provide significant benefits in the renovation and repurpose of the building.

CHAPTER 17 – LIBRARY USE TO REMAIN

Per our discussion with Peter O'Cain, Town Engineer, there is a possibility that the Property will remain the Town's Library. In this case, we would suggest the following updates to the building in order to better function as a library:

- Replace the skylight glazing panels with new energy efficient glazing panels, sealed properly at the opening. We also recommend having an operable shading system installed on the inside to control heat gain and glare, especially on the northeast side reading room. Alternatively, glazing panels with low solar heat gain coefficients in combination with low-e coatings can be further evaluated to reduce the heat gain from the skylights.
- In order to minimize energy consumption and maximize control, the existing HVAC system needs to be replaced with a new central system. The proposed VAV system with hot water reheat will cost about $75,000. The major advantage will be comfort and control. With the current system, temperature in certain areas of the building (such as upper level offices, reading room under skylight) cannot be properly controlled.
- A structural engineer to review the deflection in existing floor structure, evaluate the loading requirements and design permanent supports. Once the additional structural support is designed and implemented appropriately, the live load requirements can be increased in this area of the building without further concern.
- Replace all fluorescent lighting to energy efficient LED lights. Based on our conversations with Matthew Baldassari, Facilities Manager, this work is already being scheduled.
- Provide ADA signage and controls throughout the building as required by ADA.
- Re-locate copier machine (currently next to lower level entry) to be ADA accessible.
- Repair chipped areas of concrete sidewalks and curbs. Repair rear asphalt driveway. Remove and replace rear chain link fence and gate.
- Repair exterior areas of spalling brick and peeling paint on window frames and wood cornice of the 1914 portion of the building. Repair metal railings at the front

public entry stairs. Install code compliant guardrail at the retaining wall by the lower level public entry.

- Repair/replace interior finishes as required where damaged.

BASIS OF REPORT

1. The site survey was conducted by Rimkus Building Consultants personnel on June 17 and 18, 2020.

2. Interviews conducted with Building management, Library Director and Town Engineer.

3. Ms. Mimi Giguere, of Atelier Giguere, an architect with specialty in the historic tax credit application process, was interviewed on July 8, 2020.

4. A limited review of the 1979 addition construction documents was performed.

    - Included Architectural, Civil, Structural, and MEP drawings.

5. Data about the Town of Sharon:

    - https://datausa.io/profile/geo/sharon-ma#demographics

6. Available documents:

    - The photographs and field notes were reviewed in preparation of this report.
    - Mehta Structural Report of Carnegie Floor
    - Roome & Guarracino Structural Engineers Report
    - Isaac Blair Temporary Shoring at Library
    - Library Quote Soffit Repair
    - Trident Insurance Letter for Roof
    - Water Intrusion Property Loss and Moisture Log Sharon Library
    - Grassley Chimney Repair

- Sharon Library Nuclear Roof Moisture Survey Report
- Sharon Library Septic System Concept Notes
- Sharon Library Percolation Test
- Timeline of Sharon Library building problems (written by Library Director)
- Smith & Wessel Inspection Report for Hazardous Materials
- Various repair invoices and summaries of repair work

ATTACHMENTS

A. Photographs

B. Curriculum Vitae of Assessment Team

ATTACHMENT A

Photographs

Photographs taken during our inspection, which were not included in this report, were retained in our files and are available to you upon request.

Photograph 1
View of the front entrance on the northwest side at the upper floor of the original 1914 building.

Photograph 2
View of the secondary entrance on the north side at the lower level of the original 1914 building.

Photograph 3
Partial view of the southwest side of the 1979 addition and the fire access drive from North Main Street.

Photograph 4
View of the southeast side of the 1979 addition and rear access drive.

Photograph 5
Monument sign of the Sharon Public Library.

Photograph 6
Bronze statue of Deborah Sampson at front of the main entry.

Photograph 7
Existing staircase to the main entry surrounded by mature landscaping.

Photograph 8
Site lighting was provided by streetlight poles and light bollards along the paved walkways.

Photograph 9
Stormwater was collected in surface-recessed grated catch basins and conveyed to the underground stormwater management system.

Photograph 10
The chain-link fence, gate, and asphalt roadway at the rear of the building observed.

Photograph 11
Deteriorated parts of the concrete sidewalk observed.

Photograph 12
Cracks in the concrete retaining wall observed.

Photograph 13
No guardrail was present on top of the retaining wall between the street level and lower level platforms.

Photograph 14
Deflection in the floor observed on the upper level in front of the front entry (inside the 1914 portion of the building).

Photograph 15
Two temporary columns supporting the deflected beam

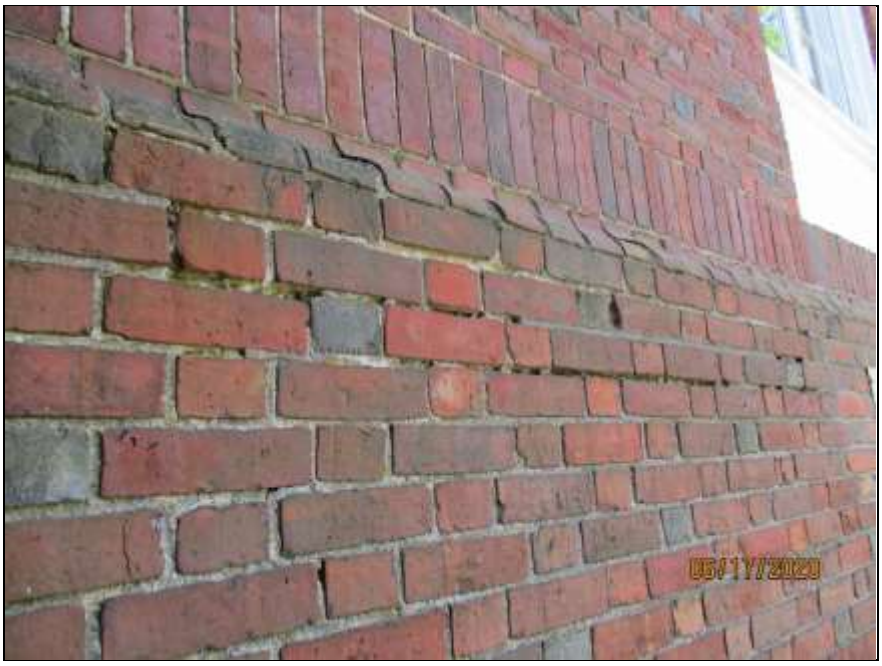
Photograph 16
Recently installed EPDM roof membrane and older EPDM membrane with stone ballast over the rear portion of the 1979 addition.

Photograph 17
Areas of ponding were observed throughout the roof.

Photograph 18
Some debris and potential clogging observed around the existing roof drains.

Photograph 19
Multiple layers of caulking observed around the skylights.

Photograph 20
Missing mortar and spalling brick observed on the exterior portions of the 1914 building.



Photograph 21
The white paint was peeling at the wood framed windows.

Photograph 22
Front portico and entry doors.

Photograph 23
There were discolorations on the wood frame of the lower level entry door and storefront.

Photograph 24
Paint peeling and corners separating of the existing wood cornice.

Photograph 25
Recently installed Knight XL Commercial condensate gas fired boiler with Smart System controls.

Photograph 26
Older Bryant rooftop packaged unit.

Photograph 27
Interior area under large skylight.

Photograph 28
Window AC unit observed inside the upper level office room.

Photograph 29
The upper level office room partition wall was built over the mechanical diffuser.

Photograph 30
Main electrical panel inside mechanical/electrical room.

Photograph 31
There were fluorescent lighting either flush mount or suspended from ceiling throughout entire building.

Photograph 32
Location of wall mounted emergency egress light in lower level.

Photograph 33
Security cameras monitored from mechanical/electrical room.

Photograph 34
Domestic hot water heater in mechanical/electrical room used to heat water for bathroom and break room fixtures.

Photograph 35
Gas service entering on the southwest side of the building

Photograph 36
Interior load bearing walls of the original construction had exposed brick finish and non-load bearing wall partitions were mostly finished with painted gypsum board.

Photograph 37
Public bathrooms in the lower level had tile floors and painted gypsum board walls.

Photograph 38
Lower level offices, break rooms, and private bathrooms had vinyl floor finish.

Photograph 39
There was a change in ceiling materials (plaster to gypsum board) between the 1960 addition and the 1979 rear addition.

Photograph 40
The main library and reception desk areas featured carpet floors, exposed brick and block walls, and painted gypsum board interior partitions and ceiling.

Photograph 41
The offices had carpet floors, exposed and painted exterior block walls, and painted interior gypsum board walls and ceiling.

Photograph 42
Portion of the lower level paint color at the multipurpose room was different from the rest of the wall.

Photograph 43
There was some visible water damage around one of the drainage pipes at the ceiling in the multipurpose room of the lower level.

Photograph 44
We observed cracking of the gypsum board at the ceiling in some areas.

Photograph 45
Portion of ceiling finishes removed for installation of temporary columns in lower level.

Photograph 46
Some patchwork at the upper level ceiling appeared to be concentrated above the suspended light fixtures.

Photograph 47
Inside the main library space on the upper level, there was visible repair work at the ceiling near the elevator.

Photograph 48
Inside the 1979 rear addition at the northeast side of the building, we noted cracking of the exterior block wall near the window.

ATTACHMENT B

Curriculum Vitae of Assessment Team

RIMKUS
BUILDING CONSULTANTS

Daniel L. Isackson, AIA, RRC, LEED AP BD+C, CXLT

Practice Area Leader
Architectural Division

Background

Mr. Isackson holds a Bachelor of Architecture Degree and Bachelor of Environmental Design Degree and is a registered professional Architect with extensive experience in all phases of architecture, including design, construction documents, specifications, and contract/construction administration. His experience incorporates a broad range of skills including design, code analysis, project management, programming, site development, and cost estimating.

Contact Information

(410) 872-9000
dlisacks@rimkus.com

9125 Guilford Road,
Suite 108
Columbia, MD 21046

Mr. Isackson's past projects include commercial, multi-family residential, retail, educational, airport terminals, military facilities, mixed-use urban development, historic renovation, and adaptive reuse. He has experience with building code compliance and life safety analysis, accessibility standards, and property condition assessments.

As a forensic investigator, Mr. Isackson is responsible for inspections and analysis of construction defects, storm damage, failures in building envelopes, building code and ADA accessibility code compliance, and premises liability evaluations in relation to falls, means of egress, slip-and-fall, and trip-and-fall claims. Mr. Isackson is experienced with the Brungraber Mk 1 Articulated Strut and the English XL Variable Incident slip resistance tribometers. These inspections encompass commercial, residential, civic, religious, hospitality, and multi-residential building types for construction claims and property claims and include moisture intrusions, building envelope failures, brick veneer, stone veneer, stucco, residential and commercial plumbing failures, pipe freeze investigations, and window wall system and component deficiencies and failures. He has also provided expert witness testimony in arbitration, deposition, and trial.

RIMKUS
BUILDING CONSULTANTS

Professional Engagements

- Commercial
  - Natatorium – Capitol Heights, MD (2010-2012), Responsible for design and production of construction documents.
  - Five-Story Renovation – Baltimore, MD (2008-2010), Responsible for the design, development, and construction administration to convert the first floor into retail use.
  - Multi-Family Building – Baltimore, MD (1999-2006), Responsible for design, production of construction documents, and construction administration of an 18-story concrete-framed structure.
  - Six-Story Parking Facility – Baltimore, MD (1999-2006), Concrete post-tension-framed structured parking facility. Responsible for the design, construction documents, and construction administration.

- Educational Institutions
  - K-12 Schools – Baltimore, MD (2006-2012), Responsible for development, production of documents, and construction administration for multiphase development of two charter schools within existing buildings.

- Historic Preservation
  - Historic Renovation – Cumberland, MD (2006-2012), Responsible for design, development, production of documents, and construction administration.

- Transportation
  - Terminal Modification – New York, NY (2004-2006), Responsible for design and construction documents for modification of terminal to handle A380 jets.
  - New Terminal – Anne Arundel County, MD (2004-2006), Responsible for construction document support for new Southwest Terminal.

- Military
  - Security Gates – Hampton, VA (2004-2006), Responsible for design and construction documents for security entry gates, munitions administrative building, and precision-guided missile building on military base.
  - Security Gates – Hampton, VA (2004-2006), Responsible for security gates design and construction documents.

Forensic Engagements

- Premises Liability
  - Philadelphia, PA (2018), Investigated the architectural life safety systems for a five-story building concerning fire-related injuries and subsequent fatality of a residence.
  - Newport News, VA (2018), Investigated applicable codes and regulations concerning a fatality where a vehicle accidentally drove onto a sidewalk.
  - Arlington, VA (2017-2018), Investigated a trip and fall over a door stop at a golf course facility.
  - Ocean City, MD, (2016), Investigated a bathtub slip and fall incident.
  - Rockville, MD (2014), Investigated the applicable codes and regulations concerning a fatality after a resident

was locked outside a stairwell on an adjacent roof.
- McLean, VA (2013), Investigated a trip and fall on steps within a corporate lobby.
- Gaithersburg, MD (2013), Investigated the non-fatal fall of a child from a third-story hotel window.
- Washington, D.C. (2013), Investigated a slip and fall and trip and fall on a stairway within two site-seeing tour buses.
- Washington, D.C. (2013), Investigated a trip and fall at a single step-down within a coffee shop.

- Property Assessments
  - Washington, D.C. (2017-2018), Investigated an injury from overhead protrusions at a newly constructed ramp.
  - Phoenix, AZ, and Dallas, TX (2005), Architectural and accessibility assessment for multiple warehouse and manufacturing properties.
  - Annapolis, MD (2005), Architectural and accessibility assessments for a multi-building office and research facility.

- Moisture Intrusion and Storm-Related Damage
  - Largo, MD (2018), Evaluated reported hail damage to four-story hotel building with asphalt composition shingles.
  - Prince Georges County, MD (2018), Evaluated reported wind damage to approximately 40 two- and three-story apartment buildings with asphalt composition shingles.
  - Lanham, MD (2018), Evaluated reported wind damage to a church with roll-type asphalt roofing.
  - Baltimore, MD (2018), Evaluated reported wind damage to three churches with slate and clay tile roofs.
  - Ocean City, MD (2017), Evaluated reported hail and wind damage to three churches with asphalt composition shingles.
  - Bethany Beach, DE (2017), Evaluated reported moisture intrusion and deteriorated wood framing to a three-story residence.
  - Ocean City, MD (2016), Evaluated reported moisture intrusion and wind damage to multiple roofs on a shopping center with asphalt composition shingles.
  - Radnor, PA (2015), Evaluated reported moisture intrusion to stucco-finished exterior walls on a residence.
  - Philadelphia, PA (2015), Evaluated reported moisture intrusion to a rubber roof on a commercial building.
  - Washington, D.C. (2015), Investigated alleged pipe freeze to a four-story condominium building.

- Construction/Design Deficiencies
  - Philadelphia, PA (2017-2019), Evaluated alleged construction and design deficiencies for two four-story residential dwellings within a six-dwelling urban residential development.
  - York, PA (2012-2019), Evaluated reported construction deficiencies to stucco-finished exterior walls to 10 residential dwellings.
  - Rockville, MD (2016-2017), Evaluated reported design and construction deficiencies to an 11-story condominium building.
  - Washington, DC (2016), Evaluated alleged architectural standard of care errors and omissions.
  - Lititz, PA (2014-2015), Evaluated alleged architectural standard of care errors and omissions.

- Baltimore, MD (2014), Evaluated reported lack of maintenance to a multi-building, low-income housing complex.
- Owings Mills, MD (2014), Evaluated reported construction deficiencies to a six-story condominium building.

Professional Experience

- Rimkus Building Consultants, LLC — 2020 – Present
  - Practice Area Leader – Architectural Division

    Responsible for being the designer of record, providing third-party design reviews, developing quality control procedures for contractors to implement, performing quality assurance observations, and performing field performance tests to verify installed systems. Additional responsibilities include restoration/rehabilitation design services for existing buildings, performing property condition assessments throughout the country, and forensic investigations to determine the source of water intrusion at numerous properties.

- Rimkus Consulting Group, Inc. — 2012 – 2020
  - Principal Consultant – Property and Premises Liability Divisions

    Responsible for investigating and evaluating commercial and residential structures to determine the cause and origin of design and construction defects. Verify construction compliance with contract documents, industry standards, building codes, and ADA accessibility standards.

- Kann Partners — 2006 – 2012
  - Associate Principal, Senior Project Manager

    Responsible for design, development, production of documents, and construction administration of commercial, retail, educational, historic renovation, and multi-family residential projects. Reviewed all projects for code compliance and assisted with project budgets and feasibility studies.

- URS Corp. — 2004 – 2006
  - Senior Project Architect

    Responsible for design, development, and production of documents of airport and military projects. Reviewed all projects for code compliance and quality control. Reviewed military projects for compliance with Anti-terrorist Force Protection Standards and Unified Facility Criteria. Key projects included redesign of an airport terminal for the A380 Airbus, military administration building, military security entry gates, and property condition assessments.

- Kann and Associates, Inc. — 1989 – 2004
  - Associate Principal, Project Manager

    Responsible for design, development, production of documents, and construction administration of commercial, historic renovation, structured parking, and multi-family residential projects. Reviewed all projects for code compliance and assisted with project budgets.

- Design International, Inc. — 1988
  - Intern Architect

Responsible for drafting, model making, and presentation preparation for retail projects. Key projects included retail shopping centers.

- Rust Architects 1988
  - Intern Architect
    Responsible for drafting and model making for residential projects.

Education and Certifications

- Architecture, B.A.: University of Minnesota (1990)
- Environmental Design, B.E.D.: University of Minnesota (1988)
- Registered Professional Architect: Maryland, District of Columbia, Virginia, Pennsylvania, Delaware, New York, New Jersey, West Virginia, North Carolina, South Carolina, Ohio, Georgia, Massachusetts, Texas, and Maine
- LEED Accredited Professional with specialty in Building Design and Construction (LEED AP BD+C): U.S. Green Building Council
- Memberships: American Institute of Architects (AIA); National Council of Architectural Registration Boards (NCARB)
- English XL Variable Incidence Tribometer Certified (CXLT)
- Registered Roof Consultant (RRC); International Institute of Building Envelope Consultants (IIBEC)

Continuing Education

- Stucco & Exterior Finish Cladding Systems; IIBEC, Orlando, FL (2019);
- Building Envelopes: Roofing Technology and Science I and II, RCI, Houston, TX (2018); Innovations in Exterior Facades, Facades +, Dallas, TX (2016); Exterior Walls Technology and Science, Houston, TX RCI (2015); Building Envelope Symposium, Multiple courses in building envelope technology and science, RCI, Tampa, FL (2014)

RIMKUS CONSULTING GROUP, INC.
FORENSIC ENGINEERS AND CONSULTANTS

Richard A. Rambacher, P.E.

Principal Consultant
MEP Division

Background

Contact Information

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Suite 400
Westlake, OH 44145

Along with a B.S. in Mechanical Engineering and an M.B.A. in Finance and Marketing, Mr. Rambacher is a registered professional engineer in Ohio, Kentucky, Nebraska, Illinois, Indiana, Michigan, West Virginia, Texas, Pennsylvania, New York, and Florida.

He has over 40 years of experience in design, engineering, procurement, engineering management, project and construction management, mechanical systems design and evaluation, scheduling, cost estimating, budget control, implementing quality and control procedures, contract management, and financing of capital projects. He has managed over 100 new construction and renovated capital projects.

Mr. Rambacher has been responsible for managing a $60 million manufacturing operation, as well as having hands-on experience with the design, procurement, and inspection of over 50 construction projects ranging from heavy industrial to light commercial facilities. He has tested heating, ventilating, and air conditioning (HVAC) systems for airflow and system performance and the testing of industrial environments for noise and airborne contaminant exposure. He has also provided expert witness reports for a variety of Occupational Safety and Health Administration (OSHA) related cases. Electrical Testing Labs (ETL) and Underwriters Laboratory (UL), as well as code officials when disputes or questions arose, was something Mr. Rambacher has done on many occasions. Mr. Rambacher managed a team that prepared submittal packages for ETL testing. He had settled over a dozen insurance claims and legal disputes through mediation or arbitration. Mr. Rambacher has inspected boilers, furnaces, refractory linings, pumps, fireplace inserts, shredding machinery, hot water heaters, HVAC systems, plumbing and piping system failures, and PEX piping systems. He also has experience investigating gas explosions, scalding injuries, damage from faulty piping, and losses as a result of code violations.

RIMKUS CONSULTING GROUP, INC.
FORENSIC ENGINEERS AND CONSULTANTS

Professional Engagements

- Mechanical Systems – Odor Control
  - Sewer Design Projects – Pinellas County, FL (2010-2016), Designed mechanical systems for four major sewer projects for the Pinellas County Utilities Dept.
  - Jackson County Medical Examiner – Jackson County, FL (2010-2016), Designed mechanical systems for existing morgue.

- Mechanical Systems – Water/Wastewater
  - Northeast Ohio Regional Sewer District – Cleveland, OH (2000-2016), Completed five mechanical system projects to support sewer systems. All of these systems required design of explosion-proof systems.
  - Virginia Beach Public Utilities – Virginia Beach, VA (2000-2016), Design mechanical equipment systems for utility facilities.
  - Lift Stations (over 20) – Florida and Texas (2010-2016), Designed lift station systems for a number of municipalities in Florida and Texas.
  - Casino Design – Joliet, IL (2006), Provided design for casino odor and smoke removal system.

- Mechanical Systems – Food Processing
  - Packaged Meal Food Preparation Project – Nationwide (2000-2016), Designed 10 air handling systems for large airline catering company food preparation facilities located around the country.
  - Slaughterhouse Project – Kansas (2000), Designed ventilation system for slaughterhouse for major meatpacking company.

- Mechanical Systems – Institutional/Commercial
  - Manufacturing Projects – U.S., Canada, Mexico (1980-1985), Designed over 100 manufacturing facilities ranging in size from 30,000 square feet to 150,000 square feet. Plants incorporated a range of mechanical manufacturing systems from screw machines to CNC systems.
  - Grocery Store Project – St. Louis, MO (1985-1991), Designed custom air conditioning units for large Midwest grocery store chain, including heat recovery and hot-gas reheat coils and refrigeration units.
  - Heat Pumps – various locations (2004-2016), Designed large tonnage water source heat pumps for colleges, municipal facilities, and industrial users.
  - Data Centers – various locations (2006-2015) Designed systems using chilled water and direct expansion cooling for data centers in Chicago, California, and Oregon.
  - Clean Rooms – various locations (2008-2015) Designed interstitial air handlers, fan filter units, and make-up air units for Class 1 through Class 100 rooms.

- Mechanical Systems – Zoos
  - Zoo Exhibit Project – Kansas City, MO (2003-2003), Provided design and manufacturing expertise for the design of refrigeration system for polar bears and penguins at the Kansas City Zoo.
  - Dallas Zoo – Dallas, TX (2005-2006), Designed the mechanical systems to support a tropical environment for butterflies.

- Cleveland Metroparks Zoo – Cleveland, OH (2007-2008), Designed temperature control system for species of toads from South America.

- Mechanical Systems – Aviation
  - Aircraft Manufacturing Project – Wichita, KS (2002-2003), Handled cost estimates for construction of ventilation system for major aircraft manufacturer's airplane part paint facility.
  - Aircraft Facility Project – Wichita, KS (2005-2013), Designed ventilation systems for a general aviation aircraft manufacturing company.

- Commercial
  - Real-Estate Development – Shawnee, KS (2010-2016), Acted as owner's representative for 80-acre real estate development that involved the construction of two 170,000-square-foot buildings, as well as site development for five more 170,000-square-foot buildings. Negotiated contracts, purchased the land, and hired the contractors.

- Other
  - $20 Million Manufacturing Facility – Responsibilities included capital equipment budgeting, design, and costing of each unit manufactured and the training of the sales staff and settling all insurance claims and legal disputes.

Forensic Engagements

- Mechanical System – Commercial
  - Newark, OH (2018), After major freeze weather event, evaluated three-story cause and origin of frozen plumbing and sprinkler systems in the historic Basket Building.
  - Grand Rapids, MI (2018), Evaluated cooling tower failure of a 5-star hotel to determine origin and cause of malfunction.
  - Delphos, Ohio (2018), Evaluated origin and cause of tile floor separation from concrete at major hotel to determine if water intrusion facilitated event.
  - Columbus, OH (2017), Assessed damages to mechanical systems in elevator shaft from flooding of high-rise structure.
  - West Mifflin, PA (2017), Investigated mechanical system failure.

- Mechanical Systems – Manufacturing/Chemical
  - Detroit, MI (2018), Evaluated thermal oxidizer system for cause and origin of coking in the heat exchanger tubes of a 200,000-square-foot graphics manufacturing facility.
  - West Virginia (2018), Evaluated mechanical system failure of large foundry.
  - Michigan (2017), Analyzed ammonia refrigeration system failure at food processing plant.
  - Pennsylvania (2017), Evaluated cause of shopping cart welds failing while in use by customer at a grocery store.

- Mechanical Systems – Water/Wastewater Treatment
  - Kilauea, HI (2018), Performed site inspections for deficiencies in ventilation system.
  - Mililani, HI (2018), Performed site inspections to assess vibrations on deep well pumps at water treatment plant.

- Product Testing – Destructive and Nondestructive Assessments
  - Various locations (2017-2018), Evaluated stand-alone ice makers to determine if leaks cause by mechanical system or operator error.
  - Various Locations (2017-2018), Evaluated plumbing fitting failures of all kinds to determine if scald incidents were because of an issue related to mechanical system malfunction or operator error.

Professional Experience

- Rimkus Consulting Group, Inc. 2017 – Present
  - Principal Consultant – MEP Division

    Responsible for investigating and evaluating industrial, commercial, and residential buildings for failures and performance issues associated with mechanical, electrical, and plumbing (MEP) systems. Provides fact-finding, analysis, and design review for HVAC, mechanical, and plumbing defect and failure investigations in single-family residences, commercial, hospital, educational, manufacturing, and industrial facilities. Performs cause and origin analyses for system and equipment failures including boilers and boiler explosions, valve failures, and piping failures associated with fittings and defective installations.

- Engineered Air 1991 – 2016 (retired)
  - President – De Soto Manufacturing Facility

    Executive providing leadership and direction that doubled sales and profitability. Had complete profit and loss responsibility, as well as direct involvement with engineering, sales, accounting, human resources, and costing. During this time, there were several new products developed and three major acquisitions. During this time, the company was restructured from a corporation to a limited liability limited partnership, resulting in significant tax savings. A captive insurance company was also set-up that resulted in additional tax benefits. Restructured health care benefits to a self-insured system and reduced costs by 20%. Worked on several acquisitions and part of team responsible for reviewing financial statements, inventory valuation, and determining if there was a fit with the corporate culture.
  - National Sales Manager – De Soto Manufacturing Facility

    Responsible for technical training, hiring, and development of salesforce. Introduced new acquisitions to sales team and customers while adding 12 new offices, 30 new employees, and $15 million in revenue. Joined the County Economic Research Institute as a board member. Presented at ASHRAE as a guest speaker and supported new product development.

  - Kansas Sales Manager – Lenexa Sales Office

    Provided system design expertise to consultants and owners as to what type of system would be most efficient and cost-effective. Worked on large design-build systems for Boeing, Northeast Ohio Regional

Sewer District and PPG in Michigan. Handled cost estimates for each project and negotiated final contract with purchaser. Designed the tropical environment for butterflies in the Dallas Zoo, as well as the humidity and temperature control for toads from South America. Handled cost estimates for each project and negotiated final contract with purchaser.

- Senior Salesman – Lenexa Sales Office

  Consulted with mechanical designers to layout, price and specify mechanical systems for schools, hospitals, and all types of industrial facilities. Called on professional engineers to determine scope of project and completion time and completed additional training in system acoustics and methods of energy usage evaluation.

- Mestek, Inc. 1985 – 1991
  - Vice President Operations – Applied Air Division, Dallas, TX

    Senior executive responsible for all aspects of the operation of a $20 million manufacturing facility. Responsibilities included capital equipment budgeting, design and costing of each unit manufactured and the training of the sales staff and settling all insurance claims and legal disputes including union grievances. Worked on acquisitions and product development.
  - Product Manager – Applied Air Division, Dallas, TX

    Responsible for all aspects of product development including ETL testing, design, patent infringement analysis, marketing, and pricing. Developed and provided training sessions for outside vendors and outside salesmen. Spoke at several ASHRAE functions and an American Society of Plumbing Engineers seminar on condensate drain systems for high-efficiency units. Developed a service department and trained field service technicians. Introduced new products, including indirect-fired heating units using prop fans and cooling coils. Some systems were chilled water and some were direct expansion (DX).

- Parker-Hannifin 1980 – 1985
  - Corporate Construction Manager

    In-house consultant responsible for executing new construction projects in the U.S., Canada, and Mexico. Completed over 50 construction projects of various sizes and handled all contracts, scheduling, and procurement. Performed site inspections and approved all payments to contractors and vendors. Assisted in the analysis of all new construction projects, determined schedule and provided for equipment layout and installation. Developed new systems for heating and cooling large industrial facilities, including the first use of high-volume ductless air turnover systems for cooling and dehumidification. Designed facilities for screw machines, furnaces, milling machines, forges, presses, and refrigeration components. Analyzed the cost of capital projects for the automotive division, aerospace manufacturing, and international manufacturing operations.
  - Corporate Energy Manager

    In-house consultant responsible for utility usage and rate analysis at over 150 facilities in North America and renegotiated rates structures with local utilities and local municipalities. Handled contracts for the direct purchase of natural gas and electricity. Approved all energy-saving projects for the corporation and designed a cogeneration system and emergency stand-by system. Redesigned the corporation's standards for lighting and space heating and cooling. Did budget reviews and assessed correctness of all change orders and site questions.

- R&F Associates, Inc. 1977 – 1980
  - Owner

    Consultant for a wide variety of HVAC design projects, including several foundries in cases involving OSHA citations and fines. Worked with legal counsel in preparing reports and documentation to reduce or eliminate fines. Primary area of expertise was sound control in heavy manufacturing facilities. Designed systems for schools, churches, apartment buildings, hotels, malls, and office buildings. Did a substantial amount of working in dust collection systems and process ventilation systems in steel mills and foundries. Did expert work for American Spun Steel, Forest City Foundry, Crucible Steel Casting and others by doing field dust exposure testing and designing systems to reduce exposure.

- Schmidt and Associates, Inc. 1975 – 1977
  - Lead Mechanical Engineer

    Consultant responsible for design and field testing of dust collection systems and various ventilation systems in heavy industrial applications. Worked for Ford Motor Company in the engine plant and casting plant. Designed the boiler room system for the facility and the control system. Worked on boiler and dust collection systems for facilities in Ohio, Michigan, and Kentucky. Traveled to construction sites to evaluate the acceptability of the contractor's installation. Developed piping schematics and control diagrams for boiler feed systems and central station air handlers.

- Osborn Engineering, Inc. 1972 – 1975
  - Lead Mechanical Engineer

    Consultant responsible for the design of rubber manufacturing facilities in North and South America for B.F. Goodrich, Goodyear, and General Tire. Handled all the process piping and ventilation plant-wide on over 20 projects. Checked shop drawings and then made sure through field inspection that equipment was installed as specified. Besides rubber manufacturing, was involved with HVAC, plumbing, and fire protection design on university classrooms, central boiler plants, and water treatment facilities. Responsible for teaching and training new hires in the department.

- Kretch and Associates, Inc. 1969 – 1972
  - Mechanical Engineer

    Consultant involved with the design of plumbing, fire protection, and HVAC systems for all types of facilities. This included high-rise apartments and condominiums, office buildings, dormitories, light industrial manufacturing plants, and municipal buildings. Responsible for meeting schedules and reviewing specifications.

Education and Certifications

- Mechanical Engineering, B.S.: Cleveland State University (1977)
- Finance & Marketing, M.B.A.: Cleveland State University (1982)
- Registered Professional Engineer: Ohio, Kentucky, Nebraska, Illinois, Indiana, Michigan, West Virginia, Texas, Pennsylvania, New York, and Florida

- Certified Energy Manager
- EPA 608 Universal License
- ESCO Certified for Basic Refrigeration

Continuing Education

- P.E.: Annual coursework associated maintaining professional engineering licenses

Publications

- "How To Do HVAC Commissioning in Healthcare Facilities." Building Operating Management, Sept. 2018
- "HVAC Basics." (Instructor) 16-Week CEU Course, Johnson County Community College, 2016
- "What Makes a Contract?" (Instructor) CEU Class, 2010
- "Air Conditioning Unit Considerations in High Humidity Locations." (Presentation) ASHRAE Technical Sessions, 2005-2012
- "Acoustics in Rooftop Air Handlers." (Presentation) ASHRAE Technical Sessions, 2001-2011
- "Dedicated Outdoor Air Systems Unit Design Considerations." (Presentation) ASHRAE Meeting Guest Speaker, 1998-2010
- "Odor Control Using Ionized Oxygen" ASHRAE, 2003
- Subrogation Opportunities with Sump Pump Installations." National Association of Subrogation Professionals (Presentation), Nov. 2018

RIMKUS
BUILDING CONSULTANTS

Peter Lukacs, AIA, NCARB

Architect
Architectural Division

Background

Contact Information

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Mr. Lukacs is a Registered Architect with more than 8 years of experience spanning a wide variety of commercial and residential projects. He is a LEED-accredited and NCARB-certified professional whose work on building projects in numerous states has provided extensive knowledge of building codes and accessibility standards.

His professional experience includes field condition reviews, site investigation reports, architectural design, the creation of construction documents, permitting, project administration, and management. Representative design projects include single- and multi-family residential buildings, restaurants, and retail stores for national clients, pharmaceutical buildings with offices, labs, amenity spaces, warehouses, and storage facilities.

Mr. Lukacs holds a Master of Architecture degree with a concentration in sustainable design from Judson University. He earned a Bachelor of Science in Architecture degree from the University of Illinois at Chicago. Mr. Lukacs is currently licensed in the State of Illinois and Tennessee.

Professional Experience

- Rimkus Building Consultants — 2020 – Present
  - Architect – Architectural Division
    Reconstruction design projects. Professional property inspections.

- Wright Heerema Architects — 2018 – 2020
  - Architect
    Managed various office/lab/warehouse remodel projects for major pharmaceutical clients such as Abbott, AbbVie, and Pfizer. Completed comprehensive code compliance evaluations. Verified construction documentation confirmed to quality assurance and best practice standards. Prepared construction documents and coordinated permitting process.

- Chipman Design Architecture 2013 – 2018
  - Project Manager/Project Associate

    Performed site condition studies, site measurements for as-built drawings and produced site investigation reports to assist client real estate team with decisions and contract negotiations for potential lease spaces. Supervised restaurant and retail projects for national clients from initial stages through construction turnover. Managed and led a multi-disciplinary team through design development and construction document phases. Ensured projects to stay on schedule and within budget while serving as project leader. Periodically attended rough-in and punch list visits; performed construction admin services.

- NV Designer Inc. 2011 – 2013
  - Architectural Intern

    Regularly attended site visits, reviewed existing field conditions. Prepared architectural and MEP drawings for single- and multi-family residential buildings.

Education and Certifications

- Master of Architecture: Judson University
- Bachelor of Science in Architecture: University of Illinois at Chicago
- Registered Architect: Illinois, Tennessee
- Memberships: American Institute of Architects, National Council of Architectural Registration Boards, U.S. Green Building Council

RIMKUS
BUILDING CONSULTANTS

Nickolas Foy

Associate Architect
Architectural Division

Background

Contact Information

(512) 541-6212
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8200 Cameron Road,
Suite C-140
Austin, TX 78754

Nickolas is a 2017 Architecture graduate from the University of Arizona with a Bachelor of Architecture. While building a foundation of architectural knowledge, many of his undergraduate projects focused on designing buildings for the future. This involved looking at current trends in building uses and how technological advances could change or eliminate the need for certain building typologies.

Since graduating, Nickolas has worked in an architecture firm producing construction documents for wood frame buildings. Through this, he has gained experience with construction details and the process of taking a design from conception through implementation. After leaving the firm, he pursued independent work. Some of these projects include designing and building furniture and light fixtures.

Professional Experience

- Rimkus Building Consultants — 2019 – Present
  - Associate Architect – Architectural Division

    Responsible for site visits and inspections of damaged buildings, along with building documentation and creating construction documents for repairing damage.

- Douglas Cutler Architects — 2017 – 2018
  - Drafter

    Responsible for drafting of plans and construction documents. Mainly worked on a property of apartment units aimed at students. Also worked on several addition and renovation projects. The focus of the firm is on wood-framed prefabricated modular buildings.

Education and Certifications

- Architecture, B.A.: University of Arizona (2017)