ST. CHARLES PUBLIC LIBRARY DISTRICT

FACILITY CONDITION ASSESSMENT

OCTOBER 17, 2018
FACILITY CONDITION ASSESSMENT

October 17, 2018

Prepared for:
St. Charles Public Library District
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St. Charles, Illinois 60174
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Assessment Process

Sheehan Nagle Hartray and our consultants, the Assessment Team, met with the staff of the St. Charles Public Library District Staff at the Library on August 13, 2018. The meeting included a review of recent repair histories and a discussion of known concerns with the Library Staff. After meeting, the Assessment Team conducted a visual review of the existing conditions to assess the overall conditions and identify circumstances requiring repair or maintenance. In general, the Assessment Team found the library buildings to be well maintained and in better condition than most facilities of similar age and type. The significant issues discovered are primarily attributable to maintenance/replacement work intentionally deferred pending possible inclusion in future expansion projects.

Subsequent to the site visit, the Assessment Team developed a first draft of the report outlining the scope of issues identified. This draft was reviewed with the Library Staff and amended or clarified as required. With the scope of the issues confirmed, the Assessment Team then developed a draft Opinion of Probable Cost. This too was reviewed with the Library Staff and amended or clarified accordingly.

Background and Scope

The St. Charles Public Library, located at One South Sixth Ave., St. Charles, Illinois, is a 56,600 square foot library comprised of two additions to the original Carnegie Library. The Carnegie Library designed by Phillips, Rogers and Woodyat was constructed in 1908. The two additions to the Carnegie Library include the following:

- The 1964 addition was designed by the Frazier, Raftery, Orr and Fairbank.
- The 1989 addition was designed by Wendt Cedarholm Tippens Architects and Planners

In addition to the assessment of the library buildings, this report also includes the assessment of the various library parking lots including those adjacent the library and north of Walnut Avenue, the lot south of Walnut Avenue and the lot shared with the adjacent Church.

The purpose of the Facility Condition Assessment is to develop a report of projected maintenance and repairs for the existing library buildings over the next twenty years including an estimation of probable costs. In accordance with our agreement dated July 13, 2018, Sheehan Nagle Hartray Architects, Ltd. (SNHA) and our subconsultants have reviewed relevant documents provided to us, reviewed known conditions with the Library Staff, performed an on-site visual inspection of the site and select building components, and reviewed public spaces for compliance with the American with Disabilities Act (ADA). Our observations are included in the report.

The following narratives are organized by discipline and separately address site improvements, exterior building envelope, building systems (mechanical, plumbing and electrical), interior finishes and the elevators. The recommendations included in each section of this report are based on a best practice approach by using standard and customary metrics of evaluation. An opinion of probable costs is included in each section and aggregated and summarized at the end of the report. Cost estimates are based on the visual inspections of the building systems, review with the Library Staff and review of the historical documents provided to us by the Library. This evaluation is not meant to predict the point in time when system failure would require system replacement but rather serves as a tool for the planning of reserve funds. Systems nearing the end of their useful life may continue to function longer than predicted, however, the risk of higher maintenance costs or sudden failure with associated damages will likely rise each year the recommended work is deferred.
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SITE ASSESSMENT

Eriksson Engineering Associates

Summary

Eriksson Engineering Associates (EEA) has completed a Site Assessment for civil engineering-related items on the St. Charles Public Library (SCPL) campus, located at 1 S. 6th Avenue in St. Charles, Illinois. The request was made to complete the Assessment to understand the prevailing site conditions, identify potential issues on the property, provide solutions for repairs, and develop a plan for future maintenance.

EEA visited the site on August 13, 2018 and had access to the entire property. The weather conditions were 85 degrees, sunny, and no precipitation. Prior to the site observation, EEA joined the Sheehan Nagle Hartray Architects team in meeting with SPCL’s Director, Edith Craig, and Facilities & Security Manager, Chris Holstein, for background information as well as a brief question-and-answer session.

The observations, recommendations, and future considerations presented in this report are based upon visual on-site observations of the existing conditions and typical accepted standards of practice. The enclosed does not imply a comprehensive inspection of completed work, testing of materials, or survey of all conditions. No direct testing was performed on the site facilities. Also, no televising or similar types of practice were performed on any of the site utilities including water piping, sanitary sewer, and storm sewers within the property limits. Topographic survey of the property (completed in 2015) was provided to EEA prior to the assessment; however, unforeseen conditions may exist below the surface, which may affect the observations and recommendations. The information provided is for use in creating an opinion of probable costs for repair work recommended and future maintenance needs. Site conditions should be constantly monitored and re-evaluated by SCPL as conditions require.

Site Assessment:

I. Information Provided by Staff

1. The existing library building has been expanded and remodeled numerous times since its initial construction in 1908. The most recent addition, consisting of the easternmost portion of the building, was completed in 1988.

2. Numerous parking expansions have been completed over the years to complement the continued growth of the building: the west parking lot (jointly owned by SCPL and St.
Mark’s Lutheran Church) was completed in 1977, the northeast parking lot (adjacent to 7th Avenue on the north side of Walnut Avenue) was completed in 1991, and the southeast parking lot (south of Walnut Avenue) was completed in 2012.

3. SCPL staff indicated that pavement maintenance efforts, consisting of sealcoating and restriping the parking lots and patching pavement adjacent to storm drainage structures to remediate settlement of the structures, was completed in 2017.

4. Staff noted numerous concerns regarding the existing traffic circulation on-site, citing multiple vehicular collisions per year due to insufficient driveway/parking space geometrics, poor pedestrian accommodations, and greatly-restricted maneuverability for larger vehicles attempting to access the rear loading area on the north side of the building. The existing one-way driveways in the north parking lots were described by staff as not ideal.

5. EEA asked if there were any known drainage/flooding issues. SCPL staff replied:
   i. No known instances/locations of frequent standing water on-site.
   ii. The existing building foundation was previously patched to eliminate infiltration of water into the building, but no problems have been identified since its repair.
   iii. The existing detention basin, located south of the southeast parking lot, has not been known to overflow during high-intensity rainfall events.
   iv. No sewer surcharges are known to have been observed by staff.

6. EEA asked if there were any access issues mentioned by the extended community that uses the building. SCPL staff responded:
   i. Concerns regarding traffic/pedestrian circulations, as detailed previously.
   ii. During winter conditions, pavements and walkways experience icing. Staff indicated that salting measures are employed and that there are no specific “problem areas” on-site that are demonstrably worse than other locations.

7. EEA asked if there were any utility issues/sewer backups or lower water pressure issues. SCPL staff answered that water pressure is sufficient.

II. Site Visit Observations

1. Entrance Plaza
   i. Slopes along apparent accessible routes appear to exceed ADA-compliant slope thresholds (i.e. 5% longitudinally, 2% laterally, etc.).
   ii. At locations where a curb depression exists, no ADA detectable warning tiles are installed.
iii. Concrete sidewalk panels appear to have settled/heaved and separated from one another, resulting in potential tripping hazards at multiple locations in the plaza area.

iv. Existing concrete sidewalk surface has been ground down in multiple locations, presumably to eliminate trip hazards caused by heaving.

2. Northwest Parking Lot & Rear Loading Area

i. Numerous instances of substantial fatigue/alligator cracking observed in parking lot pavement.
ii. ADA parking space signage is installed in concrete blocks placed on top of pavement, and not embedded into pavement.

iii. Portions of the asphalt and concrete sidewalk pavement at the eastern entry drive appear to have been recently patched/replaced.

iv. Concrete sidewalk crossings at driveways do not include ADA detectable warning tiles.

Figure 4 - Items 2.iii and 2.iv.

v. Alligator/fatigue cracking observed at portions of asphalt pavement in rear loading area.

Figure 5a - Item 2.v. Figure 5b - Item 2.v.

vi. Two downspouts from building discharge onto asphalt pavement. Downspouts have been extended approximately 6’ and drain onto plastic splash pads on top of concrete curb prior to spilling onto pavement.

vii. Portions of concrete sidewalk at southwest corner of loading area “hammerhead” turnaround near stairs are damaged/broken.

3. Northeast Parking Lot

i. Pavement appears to have been resurfaced (i.e., milled/overlaid, or replaced full-depth) recently and demonstrates minimal observable cracking or damage to surface.
ii. Concrete sidewalk crossings at driveways do not include ADA detectable warning tiles.

iii. Along west edge (nearest to adjacent northwest parking lot), pavement is generally 9” to 12” lower than northwest parking lot pavement across landscaped median. Sidewalk connection between two parking lots is sloped steeply and does not appear to be compliant with ADA standards.

![Figure 6a - Item 3.iii.](image1) ![Figure 6b - Item 3.iii.](image2)

4. West Parking Lot

i. At east edge of parking lot, depressed curb ramp locations do not include ADA detectable warning tiles, and do not appear to be compliant with ADA standards. Depressed curbs appear to have been installed as full-height curbs and sawcut post-installation as needed to create depression. Crosswalk striping does not lead to receiving walkway/pedestrian path at either location.

![Figure 7a - Item 4.i.](image3) ![Figure 7b - Item 4. i.](image4)

ii. Similar to northeast parking lot, pavement appears to have been resurfaced recently and demonstrates little to no observable cracking or surface damage.

5. Southeast Parking Lot and Detention Basin

i. Asphalt parking lot pavement demonstrates sizable amount of surface cracking. Cracks appear to have been partially addressed with crack-filling operations during previous pavement maintenance projects.
ii. ADA-compliant accessible route does not appear to be provided from accessible parking spaces to public way; only sidewalk connecting public sidewalk to parking lot includes two steps each with riser heights of approximately 6”.

iii. As noted by staff, there is no crosswalk provided between the southeast parking lot and north parking lots across Walnut Avenue directly connecting the Library parking lots. However, public crosswalk is provided at intersection of Walnut Avenue and 7th Avenue, northeast of south parking lot.

iv. Portions of grass areas in detention basin side slopes were not adequately established or appear to have been damaged by ongoing erosion.

v. Southwest of parking lot/detention basin, public sidewalk ends abruptly, apparently at lot line from previous re-subdivision of now-Library property.

6. Northwest Site Corner (near intersection of Fifth Avenue and Main Street)

i. Apparent divot/depressed area found in landscaped area west of Library building. The area appears to have formed from being improperly graded initially, and then continued to settle/erode over time due to poor drainage.
ii. Cracking and settlement/heaving of pavers observed at numerous locations in northwest brick path area and at bottom of concrete stairs near building entry.

iii. Settlement in brick pavers observed at connection to Main Street public sidewalk, resulting in poor drainage.

iv. Poor establishment of turfgrass observed near north side of building, immediately west of loading area.
III. Recommended Maintenance

1. The parking lot and other asphalt areas typically have a service life of 15-20 years if installed correctly with good materials in this climate. This includes the asphalt and stone with a good subgrade beneath. Sub-grade and sub-base issues become apparent through different types of cracking. Replacement of the section is different from site-to-site. Based on the site observations, the pavement surface at each of the northwest and southeast parking lots, including the loading area, will most likely need to be replaced in the short term via cold mill and hot mix asphalt surface overlay; however, further investigation should be completed to verify the condition of the entire pavement section prior to any resurfacing.

2. Re-striping the parking lot as well as the drop-off area on a regular basis will be required as part of item 1. Re-striping shall be performed when striping looks worn and not effective at providing information to users of paved areas.

3. Concrete pavement replacement includes all the walks, ramps, drives and other concrete that is not curbing and plazas. Based on the observations, there are more than a few areas that appear to have settlement or cracks that may be a tripping hazard, as well as potential accessibility concerns. Hence, it is expected that full replacement will occur in the next 10 to 15 years, likely in association with the next major phase of development on the property.

4. Address the ADA tile/warning items to provide indication of moving from a pedestrian area to a vehicular area. Installation of detectable warning tiles is recommended as well as adjusting slope and providing signage/striping in order to clearly define ADA-compliant accessible routes.

5. Full utility replacements are based on expected service life per industry standards of practice. The service life is based on data provided by piping manufacturers. No testing was completed as part of the facility assessment.

6. Utility televising is used to review the condition of sanitary sewers and storm sewers. A condition assessment utilizing televising is recommended every 10 years or if conditions warrant. This is a recommended maintenance feature that should be addressed in the near future to assess the condition of the underground sewer piping.

7. Sewer cleaning is recommended once every five years for sanitary sewers and storm sewers. Cleaning removes blockages, reduces friction/increases capacity, and provides a back check on any potential breaks, jointing issues, or leaks. Based on information provided, it does not appear this has been completed, but does not appear to be warranted at this time.

IV. Recommended Upgrades

1. Reseed as necessary to re-establish areas in detention basin and northwest of library building where turfgrass is in poor condition. Due to potential of erosion, inclusion of a permanent turf reinforcing mat (or similar erosion control practice) may be warranted in side slopes of basin.

2. Regrade the area west of the existing building to eliminate the divot and provide positive drainage towards the Fifth Avenue right-of-way.
3. Replace the concrete sidewalk panels in the plaza area that have settled/heaved, thereby eliminating the trip hazards.

4. Replace the extensions for the two downspouts draining onto the loading area pavement in order to prevent future vehicular damage, which is likely under the current configuration. An underground solution would be ideal and eliminate these maintenance concerns, as well as minimize icing issues from the additional stormwater being directed onto the pavement during the winter months.

V. Future Planning Consideration (not included in Opinion of Probable Costs)

1. Reevaluate the desired traffic circulation patterns on-site to eliminate the vehicular/pedestrian safety concerns currently experienced. A comprehensive traffic and parking study should be completed in order to confirm existing deficiencies in practicality/safety and identify the functional demands a proposed solution must be able to accommodate. Due to the grading discrepancy between the northeast and northwest parking lot, the accessibility concerns between the parking lot and the entry plaza, limited existing driveway widths, and the relatively poor condition of the northwest parking lot, a full demolition and reconstruction of the entire parking area north of Walnut Avenue may be warranted in order to implement a solution that adequately serves the Library's needs.

2. Although topographic survey has been completed for the entire property, a more detailed analysis is warranted in order to check slopes for ponding/pooling, ADA slope requirements, placement of the building on the property, and if/where utility lines are. The survey review, in conjunction with the development of potential future site improvements (i.e., building additions or parking lot redesigns), may trigger more improvement recommendations.
### asphalt Pavement Replacement (Full-Depth - Northwest Lot)
- **Estimated Age:** 15 to 20 years
- **Assumed Lifespan:** 20+ years
- **Replacement Cost:** $60.00
- **SY 5 YEARS:** $1,970
- **SY 10 YEARS:** $48,300
- **Assumptions:** Assumed to be necessary within 5 years, based on existing pavement condition.

### asphalt Pavement Replacement (Mill & Overlay - Southeast Lot)
- **Estimated Age:** 5 to 10 years
- **Assumed Lifespan:** 6 years
- **Replacement Cost:** $30.00
- **SY 5 YEARS:** $1,485
- **SY 10 YEARS:** $40,500
- **Assumptions:** Assumed to be necessary within 5 years, based on existing pavement condition.

### asphalt Pavement Replacement (Mill & Overlay - Northeast Lot)
- **Estimated Age:** 5 to 10 years
- **Assumed Lifespan:** 5+ years
- **Replacement Cost:** $30.00
- **SY 5 YEARS:** $1,610
- **SY 10 YEARS:** $37,000
- **Assumptions:** Assumed to be necessary within 10-15 years, based on existing pavement condition.

### asphalt Pavement Replacement (Mill & Overlay - West Lot)
- **Estimated Age:** 5 to 10 years
- **Assumed Lifespan:** 5+ years
- **Replacement Cost:** $30.00
- **SY 5 YEARS:** $1,900
- **SY 10 YEARS:** $37,000
- **Assumptions:** Assumed to be necessary within 10-15 years, based on existing pavement condition.

### asphalt Pavement Crackfilling, Sealcoating & Restriping (Entire Site)
- **Estimated Age:** 2 to 3 years
- **Assumed Lifespan:** (varies)
- **Replacement Cost:** $5.00
- **SY 5 YEARS:** $6,965
- **SY 10 YEARS:** $69,650
- **Assumptions:** Assumed to occur twice over each 5-year period for each of 4 parking lots on site.

### Concrete Sidewalk Replacement (Eliminate Tripping Hazards)
- **Estimated Age:** 50+ years
- **Assumed Lifespan:** 30 years
- **Replacement Cost:** $75.00
- **SY 5 YEARS:** $2,000
- **SY 10 YEARS:** $40,500
- **Assumptions:** Assumed to be minor adjustments as needed to eliminate existing tripping hazards.

### Concrete Sidewalk Replacement (Front Plaza)
- **Estimated Age:** 50+ years
- **Assumed Lifespan:** 30 years
- **Replacement Cost:** $75.00
- **SY 5 YEARS:** $270
- **SY 10 YEARS:** $40,500
- **Assumptions:** Assumed to be required within 5-10 years to ensure ADA compliance.

### Paver Maintenance/Replacement (Northwest Plaza)
- **Estimated Age:** 50+ years
- **Assumed Lifespan:** N/A
- **Replacement Cost:** $5.00
- **SY 5 YEARS:** $1,400
- **SY 10 YEARS:** $40,500
- **Assumptions:** Assumed to be necessary within 5 years to replace existing damaged pavers and eliminate settlement.

### Re-Seed Grass Areas to Establish Turf
- **Estimated Age:** 50+ years
- **Assumed Lifespan:** N/A
- **Replacement Cost:** $0.50
- **SY 5 YEARS:** $1,000
- **SY 10 YEARS:** $40,500
- **Assumptions:** Assumed to be minor adjustments as needed to eliminate existing tripping hazards.

### ADA Detectable Warning Tile Installation
- **Estimated Age:** N/A
- **Assumed Lifespan:** N/A
- **Replacement Cost:** $300.00
- **SY 5 YEARS:** $15
- **SY 10 YEARS:** $300
- **Assumptions:** Assumed to be required at each driveway crossing and curb ramp location on site.

### Re-Grade Lawn Area to Remove Existing Divot
- **Estimated Age:** N/A
- **Assumed Lifespan:** N/A
- **Replacement Cost:** $1,500
- **SY 5 YEARS:** $1,500
- **SY 10 YEARS:** $40,500
- **Assumptions:** Assumed to be necessary within 5 years to replace existing damaged pavers and eliminate settlement.

### North Downspout Underground Connection
- **Estimated Age:** N/A
- **Assumed Lifespan:** N/A
- **Replacement Cost:** $150.00
- **SY 5 YEARS:** $150
- **SY 10 YEARS:** $4,500
- **Assumptions:** Assumed to be minor adjustments as needed to eliminate existing tripping hazards.

### Sewer Cleaning
- **Estimated Age:** 5 to 10 years
- **Assumed Lifespan:** (varies)
- **Replacement Cost:** $10.00
- **SY 5 YEARS:** $600
- **SY 10 YEARS:** $11,615
- **Assumptions:** Assumes existing storm sewers to be cleaned/jetted approximately every 10 years.

### Cumulative Total: SITE

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<th>Description</th>
<th>5 YEARS</th>
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**Cumulative Total:** $1,365,254
02 EXTERIOR ASSESSMENT
EXTERIOR BUILDING ENVELOPE ASSESSMENT

Klein and Hoffman

Klein and Hoffman, Inc. (K&H) has performed a Building Envelope Condition Assessment for the St. Charles Public Library in St. Charles, Illinois. The purpose of the assessment was to inspect existing building envelope systems and identify deficiencies, recommended maintenance repair scope items and timeframe of repairs, and provide an opinion of probable cost.

On August 13 & 14, 2018, K&H performed a limited visual assessment of the exterior walls and roofs of the building to observe conditions and document observed distress and deterioration. The inspection was conducted from the ground and roof levels. No invasive observation openings were made within the exterior walls or roofs as part of this review.

The Library consists of three (3) separate sections constructed at different times: the original Carnegie Library building; the 1964 Addition, and the 1989 Addition.

The information gathered during the inspection was used to prepare an itemized list of deficiencies and recommended work scope for future repair items, as well as an Engineer’s Opinion of Probable Cost. The findings and work scope repair items are categorized by building area and enclosure element and are outlined in detail below.

ORIGINAL CARNEGIE BUILDING:

The original Carnegie library building was constructed in 1908 and is located at the northwest quadrant of the overall library plan. The building is two stories high with the floor level raised several feet above grade. The building is cruciform in plan and measures approximately 55 ft. by 60 ft. The exterior walls of the building are comprised of solid, multi-wythe masonry with the exterior wythe of dark brown, textured face brick above a base course of limestone. The mortar joints between the bricks are much wider than a standard 3/8-inch mortar joint and they are deeply raked back to create strong shadow lines around individual bricks. A wide limestone stairway on the west façade leads to the original library entrance under a projecting covered portico supported on round wood columns with Doric capitals. The projecting portico and a decorative frieze that accentuates the top of all facades are comprised of painted wood. Original wood windows exist within punched openings through the wall. The sloped roof is covered with asphalt shingle tiles. Photos 1 & 2 show overall views of the building.

Observed Findings and Recommended Work Scope Repair Items:

**Brick and Stone Masonry:**

I. Observations:

a. **General** - The existing brick and stone cladding is generally in good condition. Minor cracking was visible in some of the limestone panels, particularly near the basement door lintel and the building corners. There has also been minor shifting and erosion of the limestone steps and entry paving. (Photo 3 for limestone condition).

b. **Brick Mortar Joints** – The brick mortar joints are generally in good condition with some minor erosion. Visible evidence of previous repointing repairs was observed. The color match of the repair mortar to the original mortar was generally good. (Photo 4)

c. **Stone Mortar Joints** – The limestone mortar joints are in fair to poor condition. Many of the
joints are cracked and open, particularly at vertical joints and horizontal “wash” joints. Some of the wash joints were previously sealed with caulk, but that is also deteriorated. The caulk joints at the old entry paving and stairs are in poor condition with many open joints. (Photos 5 & 6).

d. **Chimney** – Brick and mortar at the chimney is in fair condition with visible signs of previous repointing. Not all the joints were repointed and there are several cracked and open joints. In addition, the mortar joints between the limestone cap units also exhibit minor cracking. (Photos 7 & 8).

e. **Concrete Foundation** – Below the limestone panel at the northeast corner the concrete is deteriorated with localized spalling and should be patched (Photo 9).

2. **Recommendations:**
   a. Grind and caulk miscellaneous cracks in limestone to mitigate water penetration.
   b. Monitor the brick mortar joints and continue repointing maintenance repairs as needed.
   c. Repoint the limestone wall mortar joints 100%. Install new caulking at all horizontal wash joints.
   d. Recaulk joints at limestone entry pavers and steps 100%
   e. Repoint the chimney mortar joints 100%.
   f. Patch repair the exposed portion of concrete foundation at the northeast corner.

**Wood Trim:**

1. **Observations:**
   a. Exposed wood trim at the frieze atop all walls and at the front portico are in fair to good condition. Paint is in fair to poor condition with flaking and peeling paint throughout. (Photo 10).

2. **Recommendations:**
   a. Reseal all joints between wood cladding members prior to painting.
   b. Remove loose and debonded existing paint and apply new paint at all exposed wood elements.
   c. Replace or repair any damaged wood identified during paint repairs.

**Windows:**

1. **Observations:**
   a. **General** – Windows on this building appear to be the original wood-framed windows and are in fair condition. All windows on this building have single pane glass.
   b. The main floor windows are typically double-hung while the windows at the frieze level are single-sash windows, such as casement or awning windows. (Photos 11 & 12).
   c. Most of the main floor windows are covered with single pane storm windows, the windows at the frieze level that were visible from the adjacent roof have storm windows with insulated glass (IG) units.
   d. Paint at the exposed portions of the window frames is in fair to poor condition, exhibiting flaking and peeling. Paint visible inside the storm windows is generally in good condition. (Photo 13).
   e. Window perimeter sealant is in fair condition with visible aging and general deterioration. (Photo 14).
   f. A basement window on the west façade has a severely deteriorated wood sill with embedded steel security bars that are corroding. (Photo 15).

2. **Recommendations:**
   a. Replace perimeter window sealant and scrape and paint exposed wood.
   b. Replace damaged sill at basement window and clean and paint security bars.
Doors:
1. Observations:
   a. **Decorative Entry Doors** – Two wood doors exist at the original main entry on the west façade. These doors are clear-coated solid wood. The finish is faded and deteriorated. The presence or condition of weather stripping is unknown. (Photo 16)
   b. **Steel Basement Door** – The north façade basement steel door is in fair condition with weathered paint and minor surface corrosion.

2. Recommendations:
   a. **Decorative Wood Doors** - Refinish decorative wood.
   b. **Steel Door** – Repaint and reseal existing door and replace weather stripping as necessary.

Roofing:
1. Observations:
   a. **General** – The sloped roof is covered with asphalt shingles that were reportedly installed in 2005. The visible condition of the shingles is good for their age. Single-ply EPDM roofing is used at the wide transition ‘valley’ between the asphalt shingle and the adjacent addition building. The EPDM roofing is in good condition, but with some lifting at the base of the metal valley flashing. (Photos 17 - 19).
   b. **Flashing at Chimney** – The existing sheet steel flashing is in fair to poor condition, with faded protective paint coating, surface corrosion and failed termination sealant. A portion of the flashing is unattached and lifted at the corner (Photos 20 & 21).

2. Recommendations:
   a. **Shingle Roofing** – Continue to maintain the existing roofing on an annual basis until such time that replacement is recommended, which will likely be within 10 years. At that time, consider changing the EPDM transition roofing to a more durable roofing system, such as a 2 or 3-ply modified bitumen system. See additional comments regarding this recommendation later in the report.
   b. **Flashing Repair at Chimney** – Immediately repair the flashing to a serviceable condition until the shingle roofing is replaced. At that time new stainless steel flashing should be installed. Immediate repairs should include reattachment of loose flashing, cleaning and painting of exposed sheet steel, and replacement of all termination caulking.

1964 ADDITION BUILDING:
The 1964 library addition exists at the southwest quadrant of the overall library plan. The building is a tall one-story in height and rectangular in plan with overall dimension of approximately 55 ft. by 140 ft. The exterior walls consist of exterior brick over concrete masonry back-up. The brown-colored face brick sits atop a continuous base course of exposed-aggregate precast concrete panels. Precast concrete also exists at the window sills. A projecting rectangular bay near the center of the south façade was reclad at the time of the 1989 Addition and consists of wood cladding topped with Exterior Insulation Finish System (EIFS) cladding. Windows are aluminum-framed with insulated Glass (IG) units in punched openings through the walls, which were also installed at the time of the 1989 Addition. The flat roof is covered with a low-sloped white single-ply membrane. Photos 22 & 23 show overall views of the building.
Observed Findings and Recommended Work Scope Repair Items:

**Brick Masonry:**
1. Observations:
   a. The existing brick cladding is generally in fair condition. Mortar joints are generally intact, but with visible minor erosion throughout and localized areas of more severe weathering and erosion. (Photos 24 & 25).
   b. Vertical cracks were observed at the northwest and southwest corners (Photos 26 & 27).
   c. Cracking and minor displacement of brick masonry was observed above window lintels at most of the windows due to corrosion of embedded steel lintel angles and rust jacking. If unaddressed this condition will worsen and could lead to loss of brick (Photos 28 & 29).
   d. Localized areas of spalled brick and brick exhibiting freeze/thaw damage and efflorescence were observed (Photo 30).

2. Recommendations:
   a. Rebuild 100% of window lintels, which will include removal and replacement of about 4 courses of brick above each window. Clean and paint, or replace, steel lintel angles and install new flashing and weeps.
   b. Repoint the brick areas 100%. Localized replacement of brick may be required at the areas with spalling and freeze/thaw damage.
   c. Rebuild brick at northwest and southwest corners. Consider installation of new vertical expansion joints at each corner to mitigate future cracking at these locations.

**Wood Trim and EIFS:**
1. Observations:
   a. Wood Trim at Projecting Bay - Isolated locations of moderately deteriorated and rotted wood at trim of south façade projecting bay were observed. Also, some of the wood to wood joints are open due to failed sealant (Photo 31).
   b. EIFS – The EIFS cladding appears in fair condition with no visible cracks. The surface finish is weathered and failing.
   c. Sealant – Sealant joints between EIFS/Wood and brick masonry is in fair to good condition.

2. Recommendations:
   a. Replace damaged wood trim pieces.
   b. Reseal all joints and repaint all wood.
   c. Recoat EIFS 100% with a compatible, vapor permeable acrylic coating.

**Precast Concrete and Cast-in-Place Concrete:**
1. Observations:
   a. Existing sealant joints between precast panels along the base of the walls are typically weathered and require replacement (Photo 32).
   b. Displacement of two precast panels and a cracked portion of the concrete foundation was observed at northwest corner below cracked brick noted above (Photo 33).
   c. Sealant joints at the ends of precast window sills were previously resealed but in some locations were poorly tooled. Also, the mortar joint below the sills is typically eroded (Photo 34).

2. Recommendations:
   a. Remove and reset two precast panels at the northwest corner.
   b. Patch repair the concrete foundation at the northwest corner.
   c. Reseal 100% of the joints between precast panels and at the precast sills.
Windows:
1. Observations:
   a. Aluminum-framed windows are in fair to good condition with no reported leaks or fogging of IG units.
   b. Window perimeter sealant is in fair condition showing aging and isolated failure. Localized areas have been previously resealed.
   c. Window metal-to-metal sealant is in poor condition and typically failed.

2. Recommendations:
   a. Replace window perimeter sealant
   b. Replace metal-to-metal sealant.

Doors:
1. Observations:
   a. Steel Exit Door – The north façade exit steel door is in fair condition with weathered paint and minor surface corrosion.

2. Recommendations:
   a. Steel Exit Door – Repaint and reseal existing door and replace weather stripping as necessary.

Roofing:
1. Observations:
   a. Single Ply – The single-ply roofing appears to be approximately 15 years old and is in generally fair to good condition for its age. There are several previous small patches and localized areas of minor ponding. A large area of ponding occurs along the north edge, but it appears that a supplemental drain was previously added to help mitigate the ponding at this location, although it appears to be still occurring (Photos 35 & 36).
   b. Sheet Metal Flashing – Sheet metal exists at the termination of the roofing, at the wall copings and base of wall where the roof meets the 1989 Addition Building. The sheet metal and sealant are generally in good condition at the wall copings. Sealant at the base of wall metal flashing is in fair to poor condition and some of the metal flashing is displaced (Photos 37 & 38).

2. Recommendations:
   a. Single Ply – Continue maintenance repairs until full roofing replacement. Full roof replacement anticipated in approximately 5 to 10 years, although it would be prudent to consider replacement at the same time as the roofing at the 1989 Addition (see below) for efficiency and potential cost savings. We recommend consideration of a 2 or 3-ply modified bitumen roof system for consistency with other areas (refer to comments for 1989 Addition below).

   Note: Full roof replacement will likely trigger compliance with the Illinois Energy Conservation Code and thereby require an additional 5 to 6 inches of insulation into the low-slope roof areas. This would also require raising equipment curbs and will affect wall flashings, coping heights, etc. Although this additional insulation is recommended, it may pose problems where existing conditions do not allow for the increased insulation height. Local code officials typically allow lesser thickness for existing buildings to avoid the additional costs associated with incorporating the thicker insulation.

   b. Sheet Metal Flashing – Replacement of 100% of flashing termination sealant at base of wall condition within 1 year. Replacement of wall coping sealant within 5 years.
1989 ADDITION BUILDING:

The 1989 Addition Building is comprised of a two-story tall central area with a one-story tall L-shaped area at the southeast corner of the library. And a small one-story area above the loading dock on the north. The 1989 Addition Building is irregular in plan with overall dimension of approximately 148 ft. by 148 ft. and it comprises roughly the east half of the overall library plan. The exterior walls consist of exterior brick over concrete masonry back-up and are primarily clad in brown-colored face brick above a finished concrete foundation. Precast concrete sills exist below the windows. There are clerestory windows around the tops of the two-story exterior walls and the clerestory portion is clad with EIFS piers and soffits above projecting precast concrete sills. EIFS cladding also exists at the projecting octagonal main entry canopy. There are two below-grade lightwell areas, one at the south and one at the east. The below-grade exterior walls of the lightwells are primarily finished concrete. Windows are aluminum-framed with IG units in punched openings through the walls. Photos 39 & 40 show overall views of the building.

The roof of the two-story portion of the building is comprised primarily of a low-sloped roof covered with a white single-ply membrane, but this area is also outlined with a sloped roof covered with asphalt tile shingles. The roof of the L-shaped one-story portion near the west side main entry is covered with a ballasted EPDM roofing, while the one-story roof above the loading dock is covered with an adhered EPDM roofing.

Observed Findings and Recommended Work Scope Repair Items:

**Brick Masonry:**
1. Observations:
   a. **Brick** - Existing brick cladding is generally in good condition with no visible cracks observed.
   b. **Brick Mortar Joints** – Mortar joints are generally in good condition with no visible cracks observed.
   c. **Masonry Sealant Joints** – There are few vertical expansion joints in the brick walls, and where they exist the sealant is in fair to good condition.
   d. **Elevator Extension** – The brick cladding at the extension of the elevator above the roof exhibits cracked and eroded mortar joints. (Photo 41).
2. Recommendations:
   a. Repoint eroded and cracked mortar joints as necessary as part of an ongoing maintenance program.
   b. Reseal masonry expansion joints within 5 years.
   c. Repoint the mortar joints at the elevator extension structure 100%.

**EIFS:**
1. Observations:
   a. **General** – The EIFS cladding at the clerestory level is generally in fair condition with no visible cracks. However, the surface finish is weathered and visibly failing. Also, perimeter sealant joints are typically weathered (Photos 42 & 43).
   b. **Basement Level at South Lightwell** – A portion of the exposed foundation wall at the south lightwell appears to be covered with a synthetic stucco finish, although likely without the layer of insulation behind it. This wall has extensive surface cracking (Photos 44 & 45).
2. Recommendations:
   a. Seal all joints between EIFS and other elements.
   b. Recoat all EIFS areas with a compatible, vapor permeable coating.
   c. Investigate the construction and condition of the basement wall with synthetic stucco. Repair may include replacement of the cracked finish system or potentially simply coating it with an elastomeric membrane that can accommodate and bridge the cracks.
Concrete and Precast Concrete:

1. Observations:
   a. **Concrete Foundations** – Exposed concrete is typically limited to the exposed portion of foundation walls below the brick cladding and in the two lightwell areas, including the concrete retaining walls that form the lightwells. The original design drawings specify the exposed concrete to be coated with a synthetic plaster finish. The exposed concrete foundation walls are in fair condition with some cracking and localized deterioration of the synthetic plaster finish (Photos 46 & 47). There are several long cracks in the concrete retaining walls of the lightwells, particularly at the south lightwell. One of these cracks has active water penetration and is staining the wall (Photos 64 & 65).
   
   b. **Precast Concrete Sills** – exist below main floor windows and continuously under the clerestory windows on the north and south facades. The precast sills are in good condition, but the sealant joints between sill units and at the end of single sill units are typically deteriorated and open in some locations and mortar joints below the sill units are generally cracked (Photos 48 & 49).
   
   c. **Water Leak at Basement Windows** – There is visible water staining in the soffit drywall finish above two windows at the south lightwell. Observation of the concrete foundation wall above these windows did not reveal obvious open cracks, although there are cracks above a window directly to the east that does not exhibit water stains. As noted above, the joints between precast concrete sills at the first-floor windows above do have failed sealant (Photos 48, 50 & 51).

2. Recommendations:
   a. **Concrete Foundations** – Grind and seal cracks in concrete foundation. Remove delaminated and failed synthetic stucco coating and install new compatible, finish system throughout exposed concrete areas.
   
   b. **Concrete Retaining Walls** – Grind and seal the majority of the cracks in the concrete retaining walls and recoat with new breathable concrete coating system. For the crack at the south lightwell that is actively leaking water, epoxy injection of the crack should be performed in attempt to mitigate water penetration through the wall.
   
   c. **Precast Concrete Sills** – Replace sealant joints 100%.
   
   d. **Water Leak** – Investigate leaks above south lightwell windows to identify immediate repairs.

Windows:

1. Observations:
   a. Aluminum-framed windows are in fair to good condition with no reported leaks or fogging of IG units.
   
   b. Window perimeter sealant is in fair condition and showing aging and deterioration. Localized areas have been previously resealed.
   
   c. Window metal-to-metal sealant is in poor condition and typically failed (Photo 52).

2. Recommendations:
   a. Replace window perimeter sealant within 5 years
   
   b. Replace metal-to-metal sealant immediately

Doors:

1. Observations:
   a. **Entry Doors** – exist at the entry on the north façade. These doors consist of aluminum-framed entry doors with two automatic sliding doors flanked by two fixed doors. The doors appear in good condition and were functioning during our site visits. Perimeter sealant is in
fair to good condition.

b. **Steel Access Doors:**
   1. Steel Access Door to the one-story roof above loading dock/mechanical equipment area is in fair condition with faded paint (Photo 53).
   2. Steel doors at loading dock consist of two (2) sets of double doors and one single door. These doors are in fair condition with weathering paint and surface corrosion at the base of the frames and doors (Photo 54).
   3. Steel exit door at east façade is in fair condition with weathering paint and surface corrosion at the base of the frame and door.

2. **Recommendations:**
   a. **Entry Doors** – Replace weather stripping and maintain operating hardware as part of ongoing maintenance program. Replace perimeter sealant as necessary.
   b. **Steel Doors** – Repaint and reseal existing steel doors. Replace weather stripping as necessary.

**Roofing:**

1. **Observations:**
   a. **EPDM Roof Over Loading Dock** – The fully adhered EPDM above the loading dock is in poor condition and is beyond its useful life expectancy. There is a large open split at the steep-sloped area along the north and the plywood substrate is severely damaged. We were informed by Ownership that this condition is scheduled for repair soon. The flat roof area is subject to poor slope and ponding. (Photos 55 & 56)
   b. **EPDM Roof Over Front Offices** – The ballasted EPDM roofing above the loading dock is in poor condition and is beyond its useful life expectancy. The perimeter flashing is stretched due to membrane shrinkage and two punctures were observed at the northeast corner. (Photos 57 & 58). This condition was immediately reported to Ownership.
   c. **Single Ply at Main Roof** – The single-ply roofing appears to be approximately 15 years old and in generally fair condition, with several previous patches and localized areas of ponding. A large area of ponding occurs along the west edge near the roof hatch (Photos 59 & 60)
   d. **Asphalt Shingles** – The asphalt shingles are in poor condition and are beyond their useful life expectancy, although the ridge shingles are newer and appear to be adhered directly to the single-ply membrane. Some of these newer shingles have lifted (Photos 61 & 62).
   e. **Skylights** – There are two sets of skylights at the one-story ballasted roof. A group of four single-dome skylights above the entry canopy and a group of three double-dome skylights over the south open stairwell. The plastic skylights are nearing the end of their useful life expectancy and the existing skylight curbs are not tall enough for proper roof flashing termination (Photo 63).

2. **Recommendations:**
   a. **EPDM Roof Areas** - We recommend immediate replacement with a fully-adhered roofing system to eliminate the need for rock ballast and to provide improved durability, such as a 2 or 3-ply modified bitumen roof system. Modified bitumen would allow for easy transitions with the steep-slope areas.
   b. **Asphalt Shingles** – Replacement of 100% of shingles is recommended immediately. The new system should include a self-adhered membrane underlayment for transition areas. The transition detail at the ridge between the sloped shingles and the low-sloped membrane should be redesigned to include a metal flange designed to allow repairs or replacement of either system without damage to the other.
   c. **Single Ply Membrane Roof** – Continue maintenance repairs until full roofing replacement. Full roof replacement anticipated in approximately 5 to 10 years, although it may be prudent to consider replacement at the same time as the shingle roofing areas to allow for proper
transcending between these two systems. This would also allow for a single roofing project for this building for potential cost savings.

d. **Energy Code** – As noted above, full roof replacement will likely trigger compliance with the Illinois Energy Conservation Code and thereby require additional insulation unless local code officials allow a variance where appropriate.

e. **Skylights** – Replace with new skylights with extended curbs for proper roof flashing height termination.
## Opinion of Probable Costs

### St. Charles Public Library - Facility Assessment

#### Opinion of Probable Costs

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Standard of Repair</th>
<th>Life Expectancy</th>
<th>Quarter</th>
<th>1 YEAR</th>
<th>5 YEAR</th>
<th>10 YEAR</th>
<th>15 YEAR</th>
<th>20 YEAR</th>
<th>25 YEAR</th>
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<td>ROOFING</td>
<td>Replace asphalt shingle roofing</td>
<td>Repair within 1 year</td>
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<td>Replace Office Area EPDM roofing with modified bitumen</td>
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<td>Repaint/reseal steel doors and replace weather stripping</td>
<td>Repair in 5 years and 20 years</td>
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<td>Replace entry door perimeter sealant</td>
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<td>Maintain operating hardware/weatherstripping at entry doors</td>
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### Summary

- **Opinion of Probable Costs**: The estimated costs are based on the condition of each building component and the necessary repairs. The costs are provided for different repair scenarios, including repair within 1 year, repair within 3 years, and repair in 5 years and 20 years. The repairs are categorized under various headings such as roof, doors, concrete, and windows.

- **Estimated Costs**: The total estimated costs are summarized at the bottom of the table. The costs are presented in dollars, and the table includes columns for repair within 1 year, repair within 3 years, repair in 5 years and 20 years, and 25 years.

- **Total Cost**: The total cost is calculated based on the assumption that repairs will be completed within the specified time frames. The total cost includes estimated repair costs for all categories.

- **Average Cost**: The average cost is calculated by averaging the costs across different repair scenarios. The average cost helps in understanding the overall financial impact of the repairs.
03 SYSTEMS ASSESSMENT
A. Introduction

1. IMEG has reviewed the relevant documents provided to us and performed an on-site visual inspection of building systems equipment. We have provided recommendations to correct issues identified based on our reviews. These recommendations are described below.

B. Building Systems

1. Fire Protection

a. The Building is fully sprinkled. A combined water service enters Mechanical Room 027, which is on the north side of the Lower Level. It then splits to serve both building fire protection water and fire protection water. The fire services consist of a backflow device, zone risers, supervisory and flow switches, and distribution piping. Fire protection water leaves Mechanical Room 027 and is distributed throughout the Building. The system was installed in 1988 and is in good working condition.

b. Minor modifications to the existing fire protection system may be needed to accommodate any HVAC changes.

2. Plumbing:

a. Distribution Piping: The plumbing piping is original to the Building. Per discussion with the Owner, much of the original domestic water piping is likely galvanized steel piping. Only recent upgrades in a few local areas have been converted to copper. IMEG recommends that all galvanized plumbing distribution piping be replaced. Further investigation above the ceilings and in toilet chases will need to occur to confirm what extent of the piping is galvanized.

b. Domestic Water Service: The domestic water service (potable water service) does not have a Reduced Pressure zone (RPZ) backflow preventive device as required by plumbing code. This is a different device from the currently installed backflow preventer on the fire service. IMEG recommends that this be installed as soon as possible.

![Missing domestic water backflow device](image-url)
c. Water Heater: There are two 50-gallon water heaters located in the Building. One is located in Mechanical Room 027. This is a 4,500-watt Bradford White electric water heater that was recently installed in 2017. The other water heater is located in Mechanical Room 002. This is a 4,500-Watt A.O. Smith electric water heater that was installed in 2013. The water heater located in Mechanical Room M027 is in good operating condition. The water heater in Mechanical Room M002 has watermarks on and around the tank. Further investigation is needed to determine if it is leaking. Per discussion with Owner, the tank is five years old and may still be under warranty. IMEG recommends, if the tank is leaking, to pursue warranty. If the water heater is not under warranty, then it should be replaced.

d. General Plumbing Comments:

1) During our meeting with the Owner the following items were discussed.
IMEG recommends that these items be addressed as soon as possible:

a) Lavatory water temperatures have been too high on occasion. Master mixing valve temperature and piping configuration should be reviewed.

b) The plumbing system lacks shut-off valves for individual toilet groups that would assist in working on these local fixtures without shutting off water to other portions of the Building that should remain in operation. It is not recommended to use fixture supply stops as the only source of shutoff as this fails more often than a full-size ball valve.

c) There have been times in the past where the toilets had been receiving domestic hot water. The Owner believes there is a cross connect between the domestic cold water and domestic hot water. We recommend that a Plumbing Contractor is hired to review the domestic water distribution piping where the incident occurred to confirm if/where there is any cross connection between cold, hot, and how water recirculation piping systems.

C. Heating, Ventilation & Cooling (HVAC):

1. Heating:

a. The Building is heated via one Bryan flex-tube hot water boiler located in Mechanical Room 027. The boiler has an approximate output capacity of 2,400 MBH. Water is piped from the boilers throughout the Building to air handling units and terminal heating equipment (e.g., reheat coils, and cabinet heaters). Two hot water pumps located next to the boiler circulate the hot water throughout the Building. The boiler and distribution piping appear to be in good working order. The two heating water pumps were recently replaced.

b. The following is an assessment of the existing heating system:

1) Boiler Plant:
a) ASHRAE estimates the service life of a boiler to be approximately 35 years. The boiler was built in 1988 and has 5 more years of service life. However, it appears to be in good working condition. Therefore, IMEG believes that the boilers will continue to operate beyond the ASHRAE estimated service life.

b) Most of the piping is concealed/inaccessible, but IMEG could observe the piping in the Mechanical Room and around some of the air handling equipment and terminal heating equipment. The piping was installed in 1988 and does not have any significant leaking issues per discussion with the Owner. The interior of the piping and amount of scale built up is unknown. If regular chemical treatment was maintained throughout the years, the piping may be in decent condition. The piping is nearing the end of its expected useful life. IMEG recommends that a small section of piping is opened up to confirm the level of corrosion within the piping.

c) The pumps have been recently replaced within the last 5 years or so and appear to be in good working order. With routine maintenance, these should be capable of lasting an additional 5 to 10 years.
d) The terminal heating equipment was installed in 1988. The equipment has exceeded its useful life and we recommended that this be replaced or put on maintenance program. A scheduled maintenance program would be initiated to fund maintenance costs to keep the equipment continually operating into the future beyond the equipment’s expected useful life. This program would allocate a certain dollar amount per year to assume replacement of motors, fans, dampers, controls, casing repairs, etc. anticipated to fail, as well as general cleaning and confirmation of proper operation.

c. Ventilation and Cooling:

1) The Building is served by several different ventilation and cooling systems. This is due to many variables including when the system was installed, location limitations of the system, and zoning requirements. There are two Variable Air Volume (VAV) Air Handling Units (AHUs), one single zone AHU, one Constant Volume (CV) multizone AHU, and one CV Rooftop Unit (RTU).

2) VAV AHUs: The VAV AHUs have hydronic heat and DX cooling. DX is provided from outdoor condensing units and piped to expansion coils within the AHUs. Ductwork is routed from each AHU to Terminal Air Boxes (TABs). Each TAB modulates the flow and temperature of air delivered to the space that it serves. This modulation of air and temperature provides the temperature control of each space.

a) AHU-1 is located in Lower Level Mechanical Room 027. The associated condensing unit (CU-1) that serves the DX cooling coil in the AHU is located on the roof of the Second Level above the Mechanical Room. Exhaust Fan (EF-1) serves as the relief fan for the system. The AHU serves the Main Library, Mezzanine, and Youth Services. The AHU was installed in 1988 and had a supply fan replaced in 2002. The condensing unit was replaced in 2007. The AHU and associated TABs appear to be well maintained but has exceeded its useful life. The condensing unit has approximately 4 more years of remaning useful life.
b) AHU-2 is located in Lower Level Mechanical Room 002. The associated condensing unit (CU-2) that serves the DX cooling coil in the AHU is located on grade just north of Mechanical Room. Exhaust Fan (EF-2) serves as the relief fan for the system. The AHU serves the Circulation Work Room, Business Office Area, Front Entry, Meeting Room, and part of Youth Services. The AHU was installed in 1988 and had the DX coil and condensing unit was replaced in 2013. The AHU and associated TABs appear to be well maintained but have exceeded their useful life. The condensing unit has approximately 10 more years of remaining useful life.

3) CV Single Zone AHU: The CV single zone AHU uses hydronic heat and DX cooling. DX is provided from an outdoor condensing unit and piped to an expansion coil within the AHU. Ductwork is routed from the AHU to serve the zone.

a) AHU-A is located in the Lower Level Storage Room adjacent to Technology Services 012. The associated condensing unit (CU-A) that serves the DX cooling coil in the AHU is located on the grade just south of the Storage Room. The AHU serves the Technology Services Work Room, and Office Space. The AHU was installed in 1997 and the associated condensing unit was replaced in 2006, and had the compressor recently replaced in 2016. The AHU appears to be well maintained but has 5 more years of remaining useful life. The condensing unit has approximately 13 more years of remaining useful life.

4) CV Multi-Zone AHU: The CV multi zone AHU use hydronic heat and DX cooling. DX is provided from an outdoor condensing unit and piped to an expansion coil within the AHU. Internal dampers modulate between hot and cold decks internally to satisfy individual zone conditions. Ductwork is routed from each integral zone dampers at the AHU to serve the zone.
a) AHU-O is located in the Lower Maintenance Shop. The associated Condensing Unit (CU-O) that serves the DX cooling coil in the AHU is located on the roof of the First Floor above the Maintenance Shop. The AHU serves the Lower Level Carnegie Community Area, Reference Room, Maintenance Shop, and Staff Break Room. The AHU was installed in 1964 and the associated condensing unit was replaced in 1999. The AHU is in poor operating condition and has exceeded its useful life. The condensing unit has also exceeded its useful life.

5) CV Single Zone RTU: The CV single zone RTU uses an integral gas fired heat exchanger and DX cooling coil with integral condensing unit to provide conditioning to the zone. Ductwork is routed from the RTU to serve the zone.

a) RTU-1 (AS-3) is located on the second level roof just east of the Original Building. The RTU serves the Theater Portion of Carnegie Building. The RTU was installed in 1988 and appears to be well maintained but has exceeded its remaining useful life.

b) All the air handling equipment in this Building has either exceeded or have minimal remaining useful life. IMEG recommends that this equipment either be replaced in full, or that a scheduled maintenance program is initiated that would fund maintenance costs to keep the equipment continually operating into the future past the equipment’s expected useful life. This program would allocate a certain dollar amount per year to assume replacement of motors, fans, dampers, controls, casing repairs, etc. anticipated to fail.

We do not recommend putting the AHU-0 on the maintenance program mentioned above due to the extreme age of this system, current AHU location within the Building, and limited access and service ability to the unit in the current space. We recommend removing the indoor AHU completely and providing a new roof mounted RTU that can adapt to the current multizone ductwork distribution system. This will be the least cost system approach. Alternative systems are possible and can be discussed in further detail with the owner.

6) Building Controls:

a) The existing DDC system is a Trane-Tracer Controls system. All controls are digital/electric but utilize pneumatic actuation. The system is very basic and has very limited monitoring and adjustment through the front end. The Facility no longer carries a service agreement with Trane. The control system was installed in 1994. Per discussion with Owner control air leaks are assumed but not confirmed throughout the Building, due to failing pneumatic controllers or zone modifications that may have not been properly capped or from extended pneumatic tubing. The control air compressor cycles on and off much more than normal due to the loss of pressure in the system.

IMEG recommends that the entire control system gets replaced to allow for electric actuators as well as more controllability of the equipment, zones temperatures, and
general building scheduling. This will ensure the Building is operating as intended and efficient.

![DDC controls](image1)
![Compressor for pneumatically operated actuators](image2)

7) General HVAC Comments:

a) The Owner indicated that there are several zones that have heating/cooling issues. Some of these have been corrected, but others still exist. It may be beneficial for the Library to have the building's larger equipment (e.g., air handling units, condensing unit, boiler, pumps, etc.) that is intended to remain be commissioned as well as test and balanced to ensure that it is operating as intended to maximize the system's efficiency. This process may also identify any potential concerns with the system that is cannot be detected from just visual observation.

b) The inability to appropriately monitor/trend and troubleshoot these zone temperature issues through the current building automation system is reinforcement to having the building controls replaced.

c) The Owner indicated that there have been instances of internal ductwork insulation failing and obstructing the movement of air within the duct. The ductwork has exceeded its useful life in many areas and should also be considered for replacement or included into the mentioned maintenance program.

2. Electrical

a. Power Systems:

1) The Building is served by an outdoor, pad-mounted transformer provided by the City of St. Charles electric utility. It is located at grade on the south side of the Building. Staff noted no issues with the electrical service. Outages are infrequent and typically of short duration if they do occur. No reoccurring power anomalies (sags, swells, single phasing, etc.) have been
2) The transformer supplies underground power to a switchboard with main bolted pressure switch rated at 2000 amps, 208/120-volt, 3-phase, 4-wire located in the Basement Level Main Electrical Room. The switchboard has fusible switches that supply three distribution panels, fifteen branch panels, and two mechanical condensing units.

3) The switchboard was installed in 1988. The equipment is in good condition and has 10-20 years of service life remaining. The switchboard has space for additional switches. Based on drawings from the 1988 Addition, the switchboard has spare electrical capacity for additional loads. Space above the switchboard is limited due to the structure height in the room. This will complicate getting new conduit and wiring out of the equipment; however, fixing the problem requires either the switchboard to be replaced or the structure to be reworked. These solutions are very expensive and should not be pursued at this time.

   a) A surge protection device is connected to the switchboard, but it is in alarm mode and currently not operational. A new surge protection device is recommended to replace the existing.

4) Most of the existing distribution panels and branch panels appear to have been installed in 1988. Distribution panel ‘MDP’ and three additional panels (LPA, LPB, and Carnegie Attic) were originally installed before 1988, but have been retrofit with new panel interiors since 1988 (exact dates are unknown). Panel ‘LPC’ located in Basement Storage 022, was installed before 1988 and is in poor condition. It has a deteriorated enclosure and is missing portions of the front cover. It is currently installed over ductwork, which does not allow code-required working space in front of the panel. This condition may be “grandfathered” from a code perspective, but it means the panel cannot be replaced in the same location.

   a) Panel ‘LPC’ is recommended to be removed with all loads (thirteen circuits) transferred to other nearby panels, such as Panel ‘J’ or ‘LPB1’
5) Besides Panel ‘LPC’, all panels appear to be in serviceable physical condition with at least 10 years of service life remaining. All panels generally have spaces for additional circuit breakers. Based on drawings from the 1988 addition and current directories, the panels also generally appear to have electrical capacity for additional loads.

   a) Although some of the old panels have been replaced, wiring associated with these panels was not observed. Often panels are replaced, but existing wiring is retained. We recommend engaging an electrician to inspect and test the existing wiring associated with ‘MDP’, ‘LPA’, ‘LPB’, and ‘Carnegie Attic’ in order to identify the age and any deficiencies.

6) Convenience receptacles for device charging are lacking in patron areas. Many of these areas are not near walls, so power would need to be routed through the floor.
a) Additional receptacles are recommended to be installed in high demand patron areas.

b. Emergency Power Systems:

1) A 40kW, 208/120-volt generator is located in an area well south of the Building. It supplies a 150 amp panelboard in the Main Electrical Room via an automatic transfer switch. This panel serves the fire alarm system, emergency lights, exit signs, one boiler and pump, IT equipment, and the building automation system. Staff expressed a desire for additional capacity to connect additional loads to the generator.

2) The emergency power system equipment was installed in 1988. The generator operation was not observed, but the equipment appears to be heavily worn with corrosion on the enclosure. Staff noted that parts are difficult to source and the location makes service challenging. Load data was not available, but there does not seem to be spare capacity based on review of the loads served.

a) A new generator is recommended to replace the existing. A new generator size of approximately 80-100kW is assumed and will be determined based on the additional loads selected by the Library. As part of this work, the power distribution will need to be reworked to comply with current codes. The existing automatic transfer switch and panelboard will be repurposed to serve only emergency lighting and fire alarm loads and a new automatic transfer switch and panelboard will be provided for other loads.

c. Lighting Systems:

1) Interior lighting fixtures generally utilize T8 fluorescent lamps. Downlights and some other accent fixtures use compact fluorescent or screw-in LED lamps. A few lobby fixtures are LED. Most of the fixtures were retrofitted
with T8 in 2013. All fixtures are generally in good condition. Some of the fixtures in the older portions of the Building are dated, but do not appear to be in bad condition. Light levels appear to be appropriate. Staff noted no issues with lighting fixtures or lighting levels but did express an interest in upgrading fluorescent to LED.

a) The LED lighting will provide energy savings compared to fluorescent; however, the payback period does not always justify the initial capital expense for a lighting replacement project. Without grants or incentives, retrofitting the existing recessed 2x4 fixtures is a 15-20 year payback. If maintenance is required on fixtures, replacement with LED fixtures should be considered instead of repairing the existing. If areas are renovated, LED fixtures are recommended to be used.

![Typical interior lighting](image)

2) Exterior lighting fixtures use a mix of sources. Pole lights in the south and east lots, building mounted fixtures, and some flood lights are LED fixtures, mostly installed in 2013. Pole lights in the southeast lot and bollard lights are HID fixtures. Flood lights and building mounted fixtures at the northwest corner of the site have compact fluorescent or incandescent lamps. All fixtures are generally in good condition.

a) Pole lights in the southeast lot should be considered for replacement with LED.

b) Flood lights and building mounted fixtures at the northwest corner of the site should be replaced with LED retrofit bulbs when the fixtures are maintained or then bulbs need to be replaced.
3) Interior lighting controls generally consist of manual switches.
   a) Occupancy/vacancy sensors are recommended for energy savings in areas with transient usage (Toilets, Storage, Meeting Rooms, Offices, etc.). Sensors may not be appropriate for public areas where constant lighting is needed during hours of operation. A timeclock could be considered for convenience or for energy savings if public area lighting is often left on afterhours.

d. Fire Alarm System:

1) A Notifier System 500 conventional (non-addressable) fire alarm system serves the entire Facility. The system is believed to have been installed in 1988. The control panel is obsolete, so obtaining parts and service will be difficult into the future.

   a) A new addressable fire alarm control panel is recommended to replace the existing. The upgrade will also require voice alarm functionality to be added to the system per current Building Code for assembly occupancy. Therefore, a full fire alarm system replacement, including devices, is recommended. Voice announcements can be helpful in public buildings to aid in evacuation or to provide instructions for non-fire emergencies such as severe weather or security threats. They can also be used for non-emergency public address use at other times.
2) The Building has audible horn and visual notification appliances throughout. Initiation consists of manual pull stations, smoke detectors, heat detectors, and sprinkler waterflow monitors. Devices generally appear to be in good condition, but it appears some areas may not have total coverage per current NFPA 72 standards.

a) *If the control panel is replaced as noted above, all devices would also need to be replaced.* Existing horn devices would be removed, and speaker devices installed to allow voice announcements. Visual devices would be located per ADA and NFPA for full coverage. Initiating devices would be replaced with addressable devices compatible with the new control panel.
The wireless radio for alarm monitoring was recently replaced. This could be retained with a new system.

3. Technology
   a. Telecom:
      1) Structured Cable Systems:
         a) The existing data cable consists of a mix of Category 5e and Category 6 cable. Some of the premise cable system has not been installed to industry standards and as a result may not perform optimally. Cable was found adjacent to lights and other sources of electrical interference. Cable was found not properly supported including laying on top of ceiling grid.
         b) Cable for both Buildings terminates on rack-mounted modular patch panels in the basement.
         c) Information outlets in the Circulation Area and Tech Center Areas are inadequate. As a result, switches have been installed above the ceiling to provide additional data outlets.
         d) A formal RF evaluation is recommended to evaluate the performance of wireless connectivity. Wi-Fi was not mentioned by staff as an issue but was not evaluated by IMEG.
      
      2) Telecom Cable Rack (Located outside Main Electrical Room in Basement):
         a) The existing rack is full. As a result, active electronics is sitting on the floor.
b) Some equipment is not properly grounded.

c) Proper cable management is not supporting patch cables and cross connects resulting in many cables being improperly installed.

d) Some of the incoming service provider infrastructure is located in the Main Electrical Room. Pathways are not industry standard and grounding is incomplete.

e) There is no dedicated cooling for the room.

f) Consumer grade UPS units serves the rack. Runtime and more formal EM power capacity should be tested. Refer to the Emergency Power Section of this report for additional information.

3) Server rack (located in Open Office Area in Basement)

   a) Rack and equipment is not grounded.

   b) Cable management and pathways are inadequate. Fiber patch cables are not properly supported.

   c) There is no dedicated cooling for the room.

   d) Commercial grade UPS units serves the rack. Runtime and more formal EM power capacity should be tested. Refer to the Emergency Power Section of this report for additional information.
4) Active Electronics:
   a) A Toshiba VOIP telephone server was installed in 2014.
   b) UPS size and EM power should be tested to ensure adequate runtime for telephones in the event of a power outage. It is undermined how long the Facility would have telephone service in the event of a power outage based on the limited ability of the existing UPS to operate the VOIP telephone system. It is recommended a new larger UPS be installed and the power circuits for this equipment be connected to the generator. Refer to the Electrical Section of the Report for additional information about generator capacity.
   c) Some active electronics have been installed in ceiling space. This may be a code violation.

b. Security:
   1) A new IP based CCTV system was recently installed. Approximately 19 cameras have been strategically placed at locations inside and outside of the Facility.
      a) This CCTV system has new dedicated data cable for connection of cameras to the head end.
      b) The exterior CCTV locations do not appear to have surge suppression devices. This along with a code compliant grounding system should be reviewed.
      c) The server for recording of video images was not tested for run time in the event of a power outage nor is the length of storage time (days) known.
   2) SCPL Staff indicate the Facility has two battery powered defibrillators; one located in Circulation and one in Youth Services.
   3) IMEG was unable to confirm if “code blue”, area of rescue or emergency communication devices are in the Facility.
4) There is a 70V paging system used for public address messages and announcements.
   a) Staff report some areas lack coverage. This should be corrected as areas are renovated.

5) There is an alarm monitoring system for notification of afterhours forced entry of the perimeter.
   a) Staff indicate the two roof hatches are not alarmed.
   b) There is limited duress monitoring. Staff would like to add additional locations.
   c) Each authorized employee has a unique code so that there is an audit trail that provides a record of who accessed the Building.

c. Audio Visual:

1) Users indicate Meeting Rooms and Conferencing Spaces have adequate AV equipment. It is recommended that this equipment is modernized when finishes in spaces are updated.
## Mechanical, Electrical, Plumbing, Fire Protection & Technology

### Mechanical
- **Surge Protection and Grounding on Exterior CCTV**
  - **5 Years:** $2,000
  - **10 Years:** $5,000
  - **15 Years:** $10,000
  - **20 Years:** $15,000

- **Replace fire alarm system**
  - **5 Years:** $2,000
  - **10 Years:** $5,000
  - **15 Years:** $10,000
  - **20 Years:** $15,000

- **Mixing valve adjustment - LAV water temperatures**
  - **5 Years:** $5,000
  - **10 Years:** $10,000
  - **15 Years:** $20,000
  - **20 Years:** $30,000

- **Mechanical Room 002 - Water heater replacement**
  - **5 Years:** $5,000
  - **10 Years:** $10,000
  - **15 Years:** $20,000
  - **20 Years:** $30,000

- **Mechanical Room 027 - Water heater replacement**
  - **5 Years:** $5,000
  - **10 Years:** $10,000
  - **15 Years:** $20,000
  - **20 Years:** $30,000

### Electrical
- **Roof top unit RTU-1 (AS-3)**
  - **5 Years:** $25,000
  - **10 Years:** $50,000
  - **15 Years:** $75,000
  - **20 Years:** $100,000

### Flue/pipe Protection
- **New RPZ style Backflow preventor on Domestic water service**
  - **5 Years:** $5,000
  - **10 Years:** $10,000
  - **15 Years:** $20,000
  - **20 Years:** $30,000

### Plumbing
- **Replace galvanized domestic water distribution piping with copper**
  - **5 Years:** $5,000
  - **10 Years:** $10,000
  - **15 Years:** $20,000
  - **20 Years:** $30,000

### Technology
- **Institue surge protection and grounding on balanced CAT-VI Canvase**
  - **5 Years:** $5,000
  - **10 Years:** $10,000
  - **15 Years:** $20,000
  - **20 Years:** $30,000

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<th>System / Assembly</th>
<th>Items in RED represent High Priority Recommendations</th>
<th>Lifespan in years*</th>
<th>Approximate Age</th>
<th>Replacement</th>
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<th>Unit</th>
<th>Quantity</th>
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<th>10 YEAR</th>
<th>15 YEAR</th>
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### Opinion of Probable Costs
- **SubTotal: BUILDING SYSTEMS:**
  - **5 Years:** $1,384,800
  - **10 Years:** $2,317,281
  - **15 Years:** $3,193,857
  - **20 Years:** $4,014,808

### General Conditions O&M
- **15%**
  - **5 Years:** $205,220
  - **10 Years:** $410,433
  - **15 Years:** $615,646
  - **20 Years:** $820,859

### Construction Contingency
- **10%**
  - **5 Years:** $205,220
  - **10 Years:** $410,433
  - **15 Years:** $615,646
  - **20 Years:** $820,859

### Classification
- **400% /yr**

### Professional Fees Allowance
- **10%**
  - **5 Years:** $210,667
  - **10 Years:** $421,333
  - **15 Years:** $632,000
  - **20 Years:** $842,667

### Totals
- **5 Years:** $2,317,281
  - **10 Years:** $4,738,614
  - **15 Years:** $7,166,457
  - **20 Years:** $9,594,296

### Cumulative Total
- **$3,862,333**
04 INTERIORS ASSESSMENT
INTIOR SYSTES ASSESSMENT

Sheehan Nagle Hartray Architects

The St. Charles Public Library has approximately 57,000 square feet of occupiable space divided among three floors. The square footage ranges as follows:

1. Carnegie Library
   a. Lower Level: 2,150 SF (Currently being renovated and not included in the Facility Assessment)
   b. First Floor: 2,150 SF
   c. Second Floor: 2,150 SF

2. Additions to the Carnegie Library (1964 Addition + 1987 Addition)
   a. Lower Level: 20,700 SF
   b. First Floor: 23,000 SF
   c. Second Floor: 6,850 SF

The interior of the library includes public and private spaces as well as equipment, service, and storage areas. A summary of general uses by building addition and floor are as follows:

1. Carnegie Library
   a. Lower Level: Currently being renovated and not included in the Facility Assessment: Staff Lounge, restrooms and storage
   b. First Floor: Library quiet reading room, restrooms and original building entry
   c. Second Floor: Large multipurpose room, kitchenette and storage

2. Additions to the Carnegie Library (1964 Addition + 1987 Addition)
   a. Lower Level: Children’s Services, storytime room, lobby, large meeting room, staff workspace and offices, maintenance office, storage and restrooms
   b. First Floor: Lobby, Adult Services, stacks, reference, technology center, small conference room, staff workspace and offices, receiving and restrooms
   c. Second Floor: Teen space, gallery, stacks and study rooms

For the purposes of the interior assessment, the vertical circulation, mechanical penthouse, associated mechanical spaces, and unfinished storage rooms and closets have been excluded from this report.

For the purposes of the interior assessment, the building complex has been separated into the original building and major additions consistent with the 2 categories noted above. Each portion of the complex’s existing conditions and recommendations for interior systems have been described below.

On site visual inspection was conducted by SNHA on August 13, 2018, additional observations were made on subsequent visits.

I. Carnegie Library - Description of Existing Conditions:

Flooring
Typical interior floor finishes on the First and Second Floors include terrazzo flooring (approximately 100 square feet), broadloom carpet flooring (approximately 1,500 square feet), carpet tile (approximately 1,300 square feet), wood flooring (approximately 600 square feet) and ceramic tile flooring (approximately 100 square feet).
A. Terrazzo Tile:
The terrazzo tile is located on the First Floor within the original building entry lobby at the bottom of the Main Stair (Stair E). The condition of the terrazzo flooring was found to be in fair condition typically. In general, the finish of all terrazzo flooring was dull and general dirt build up was noted. There is cracking along some tile joints.

![Terrazzo Tile Flooring](image)

B. Broadloom Carpet Flooring:
Carpet flooring is generally located in the First Floor Business Room 113 (currently being used as a temporary staff lounge) and the Second Floor Meeting Room 202. The condition of the carpet flooring is in fair condition with some staining and wear.

C. Carpet Tile Flooring:
2x2 Carpet tile flooring is generally located at the Second Floor Meeting Room 202. This flooring type is generally used in conjunction with a wood wall base. The condition of the carpet flooring is in fair condition with some staining and wear.

D. Wood Flooring:
Wood Flooring is generally located in Main Stair (Stair E) and the Second Floor storage/kitchenette Room 203. Wood Flooring is also located in the Second Floor Meeting Room 202 raised stage. The general condition of the wood flooring is good with some wear and scuffing.

E. Ceramic Tile Flooring:
Ceramic Tile Flooring is located in the single user restrooms on the First Floor. The 2x2 inch tile flooring is in good condition.

Wall Finishes
The predominant wall surface in the Carnegie Library is painted gypsum board with some painted plaster. Other wall finishes include wall tile inside the restroom. Applied finishes include stained wood trim on the First and Second Floors.

A. Gypsum Board:
The gypsum board walls throughout the facility are generally intact but showing signs of wear and tear. Isolated areas exhibit scuff marks requiring repainting. The gypsum wallboard surfaces are in fair condition; however, substantial maintenance is required to preserve the painted surfaces.

B. Painted Plaster:
There are painted plaster walls on the main level of the Carnegie library. These are intact but showing signs of wear and tear including damage to the paint finish from general use. In general, the plaster surfaces are in good condition; however, substantial maintenance is required to preserve the painted surfaces.
C. Ceramic Wall Tile
Ceramic Wall Tile is located in the single user restrooms on the First Floor. The 4x4 inch wall tile is in good condition with a few patched holes noted.

D. Stained Wood Trim:
Stained wood trim and paneling at columns and beams throughout the First and Second Floors of the Carnegie Library. The wood trim and paneling is in good condition. The wood base is generally in good condition and exhibits signs of damage due to maintenance equipment and general use. The wood chair rail and crown molding are generally in good condition. Substantial maintenance is required to preserve the stained surfaces.

Ceiling Finishes
Typical interior ceiling finishes on the First and Second Floors include lay-in acoustical panel ceiling tiles (approximately 1,150 square feet), painted plaster (approximately 575 square feet), and painted gypsum board ceilings (approximately 1,700 square feet).

A. Lay-in Type Acoustical Ceiling Systems:
2x4 Lay-in type acoustical ceiling panel systems are located at a portion of the First Floor Business Room 113 and First Floor restrooms. The acoustical panel ceiling and grid is generally in fair condition throughout with some stained or damaged tiles.

B. Painted Plaster Ceilings:
The painted plaster work is generally in fair condition and showing the expected signs of wear and tear for a system it’s age.

C. Painted Gypsum Board Ceiling:
The gypsum board ceiling is located at the Second Floor Meeting Room 202. These ceilings and painted finish are generally in good condition.
Openings
The predominating type of door in the Carnegie Library is solid core wood style and rail doors with wood frames, several doors include glass panels. Finishes on these doors are stained wood. The doors throughout are in fair condition showing the typical signs of wear for the age of the application.

A. Stained Wood Door Panels and Frames:
Stained stile and rail wood doors panels and wood frames are located throughout the First and Second Floor of the Carnegie Library. The wood doors and frames are in good condition exhibiting normal signs of wear and tear for their age.

Millwork:
The Carnegie Library millwork includes the following: wood bench with cushions (approximately 45 linear feet), kitchen base and upper cabinetry (approximately 6 linear feet), fireplace mantel and surround (approximately 12 square feet) and ancillary woodwork items (wood base, wood chair rail, ceiling trim, and wood sills)

A. Wood Bench:
Wood benches are in fair condition and showing the expected signs of wear and tear for construction of their age.

B. Kitchenette Base and Upper Cabinetry:
The exterior of the stained wood cabinets appear to be in fair condition.

C. Fireplace Mantel and Surround:
The fireplace mantel and surround appear to be good condition.

D. Ancillary millwork Items:
Wood sills are in good condition and showing the expected signs of wear and tear for construction of their age.

Stairs
The Carnegie Library has one open monumental stair connecting the First and Second Floors. The wood stair is in good condition (the square footage for the wood stair is included in wood flooring).

The stair was constructed in 1925 and as such does not conform to current accessibility standards such as handrail and guardrail requirements or minimum headroom clearances.

II. Carnegie Library Recommendations:

Flooring
- Reserve some funds to address restoration of terrazzo flooring at original building entry within the next five-year period.
- Reserve some funds to address partial incidental repair to the terrazzo flooring within the twenty-year time period.
- Replace broadloom carpet and carpet tile within the next five-year period.
- Budget bi-annual carpet cleaning for the following ten years. Replace carpet tile flooring every
ten years at the highest traffic areas.

- Strip and refinish wood flooring within the next five-year period.
- Reserve some funds to refinish wood flooring throughout within the twenty-year period. Wood Floors should be refinished every 10-15 years depending on nature and frequency of use.
- Replace tile flooring in restrooms within the next five-year period.
- Reserve some funds to address partial incidental repair to floor tile and grout replacement within the twenty-year time period.

Wall Surfaces

- Repair the facility within the next five to ten-year period and consider an on-going maintenance program to budget repainting on an as needed basis due to the extent of plaster and gypsum board wall surfaces adjacent to high traffic areas. Repaint every 10-15 years.
- Replace wall tile in restrooms within the next five-year period.
- Reserve some funds to address partial incidental repair to wall tile and grout replacement within the twenty-year time period.
- Reserve some funds to address partial incidental repair to the ancillary woodwork items within the twenty-year time period. This includes wood base, chair rail, ceiling trim, etc.

Ceiling Finishes

- Clean and realign all tiles, light fixtures, and diffusers in the acoustical panel ceiling system.
- Replace damaged ceiling tiles in all spaces in the next five-year period.
- Replace existing acoustical ceiling system within the fifteen-year time period.
- Reserve some funds to address partial incidental repair to the plaster and gypsum board ceilings and soffits within the twenty-year time period.
- Repaint the facility within the next five to ten-year period. Repaint every 10-15 years.

Openings

- Reserve some funds to address door refinishing and/or replacement on an as needed basis within the twenty-year time period. This includes stain or painted finishes. Budget on-going maintenance program for refinishing or repainting all door and frame types.

Millwork

- Reserve some funds to address partial incidental repair to the stained wood benches and all associated cushions within the five-year time period. Wood benches should be refinished every 15-20 years depending on nature and frequency of use.
- Replace kitchenette cabinetry and countertops within the five-year time period.
- Reserve some funds to address partial incidental repair to the fireplace mantel and surround within the ten-year time period.
- Reserve some funds to address partial incidental repair to the ancillary woodwork items within the twenty-year time period.

Stairs:

- Strip and refinish wood stair within the next five-year period.
- Reserve some funds to refinish wood stair throughout within the twenty-year period. Wood Stairs should be refinished every 10-15 years depending on nature and frequency of use.
- Replace stair carpet runner within the next five-year period.
III. Additions to the Carnegie Library (1964 Addition + 1987 Addition) - Description of Existing Conditions:

Flooring:
Typical interior floor finishes on the Lower Level, First and Second Floor Additions include broadloom carpet flooring (approximately 10,500 square feet), carpet tile floor (approximately 22,400 square feet), ceramic tile flooring (approximately 3,000 square feet), and VCT flooring (approximately 1,650 square feet).

A. Broadloom Carpet Flooring:
Broadloom carpet is generally located throughout the Lower Level, First and Second Floor public and staff areas. This flooring type is generally used in conjunction with a resilient wall base. The condition of the carpet flooring is in poor condition with many high traffic areas showing signs of wear and numerous stains noted. The two monument stairs from the Lower Level to the First Floor and from the First Floor to the Second Floor both have carpeted treads. The condition of the carpet on the stairs is poor with high traffic areas showing signs of wear and staining.

B. Carpet Tile Flooring:
2x2 Carpet tile flooring carpet is generally located throughout the Lower Level, First and Second Floor public and staff areas. This flooring type is generally used in conjunction with a resilient wall base. The condition of the carpet tile flooring is in poor condition with many high traffic areas showing signs of wear and numerous stains noted.

C. Ceramic Tile Flooring:
Ceramic Tile Flooring is located in the multi user restrooms on the Lower Level and First Floor. The 2x2 inch tile flooring is in good condition. Ceramic Tile Flooring is also located in the Family Restroom 152/153 at the Lower Level. This area was recently renovated and the tile flooring is excellent condition. Ceramic Tile Flooring is also located in the entry lobbies on the Lower Level and First Floor as well as in the high traffic areas at the main service desks. The 9x9 and 12x12 inch tile flooring is in good condition.
D. VCT Flooring:
VCT flooring is located at both fully enclosed egress stairs (Stair B and Stair D), Storage Room 014, the kitchenette area in Meeting Room 030, Service Corridor 116 and Receiving 118. The VCT flooring is in fair to poor condition with high traffic areas showing signs of wear and staining and isolated patches of damaged tile. In general, the finish of all VCT flooring was scuffed and general dirt build up was noted.

![Figure 1. Meeting Room 030 VCT Flooring](image)

Wall Finishes:
The predominant wall surface in the Lower Level, First and Second Floor Additions is painted gypsum board. Other wall finishes include exposed brick at the Lower Level and First Floor lobbies, wall tile inside the restroom. Applied finishes include wall coverings at the Lower Level and First Floor staff areas.

A. Painted Gypsum Board:
Gypsum board is the predominant wall finish throughout the Lower Level, First and Second Floors. The gyp board is generally in good condition but showing signs of wear and tear.

B. Exposed Brick:
Exposed brick finish is located in the Lower Level and First Floor Lobbies and the west end of the First Floor reference and technology area. The brick is generally in good condition.

![Figure 1. First Floor exposed brick](image)

C. Ceramic Wall Tile:
Ceramic Wall Tile is located in the multi user restrooms on the Lower Level and First Floor. The 4x4 inch wall tile is in good condition. Ceramic Wall Tile is also located in the Family Restroom 152/153 at the Lower Level. This area was recently renovated and the tile flooring is excellent condition.
D. Wall Coverings:
Wall coverings are the predominant wall finish throughout the Lower Level, First and Second Floors staff spaces. The wall covering is generally in fair condition but showing signs of age with wear and gaps/pealing at edges and seams.

![Pealing Wall Covering](Image)

Ceiling Finishes:
Typical ceiling finishes within the Lower Level, First and Second Floor Additions include lay-in acoustical ceiling panels (approximately 38,400 square feet), gypsum board ceiling and soffits (approximately 4,000 square feet) and some small areas of exposed painted structure.

A. Lay-in Acoustical Ceiling (ACP) Systems:
ACP systems are the typical ceiling finish in the Lower Level, First and Second Floors Additions. ACP systems are generally in poor to fair condition with signs of wear and tear, buildup of dust/dirt around diffusers and broken or damaged tiles.

![Stained Ceiling Tiles](Image)

B. Gypsum Board Ceiling and Soffits:
Gyp Board ceilings are located in the multi user restrooms as well as select locations in the Lower Level and monument stair (Stair A). Gypsum Board ceilings and soffits are generally in good condition. Visible water damage to the gyp board soffit panels is found in Lower Level Children’s Services 010 along the south windows.

![CS 010 – Soffit Water Damage](Image)
C. Exposed Painted Structure:
Exposed structure elements including floor slabs and beams above as well as MEP systems are painted within the Lower Level storage areas. The paint finish is in good condition.

Openings:
The type of doors in the Lower Level, First and Second Floor Additions is a mix between flush panel solid core wood doors with glass lites with hollow metal frames and hollow metal doors with hollow metal frames. The hollow metal and wood doors throughout are in good condition and showing typical signs of wear and tear primarily from damaged paint finishes to the hollow metal door panel surfaces. Substantial maintenance is required to preserve painted surfaces on hollow metal frames and door panels.

There are also a number of painted aluminum framed entrances and sidelights. The painted aluminum systems typically have a wood veneer infill panel at the lower half of the system. The aluminum entrances are sidelights throughout are in good condition and showing typical signs of wear and tear primarily from damaged paint finishes.

In Meeting Room 030, there is a room dividing operable partition. The panels appear to be in fair condition showing signs of wear and tear.

Millwork:
The Lower Level, First and Second Floor Additions include the following: wood veneer circulation, reference and service desks with associated countertops (3 total), base and upper cabinetry with associated countertops (approximately 250 linear feet), wood bench (approximately 65 linear feet), open wood cubbies and coat hooks (approximately 12 linear feet) and wood display cases and shelving (approximately 28 linear feet).

A. Circulation/Reference/Service Desks and Counters:
These desks are located in the Lower Level Children’s Services and First Floor Adult Services. The cabinetry is generally in fair condition but showing signs of wear and abuse at high traffic and/or unprotected outside corners.
B. Base and Upper Cabinets and Counters:
Wood Veneer and Plastic Laminate base and upper cabinets and countertops are located throughout
the Lower Level and First Floor.
1. First and Second Floor Staff Areas: This cabinetry is generally in poor to good condition and
showing the expected signs of wear and tear for construction of their age.
2. First Floor Helen Gale Story Room: This cabinetry was installed in 2014 and is in excellent
condition.
3. First Floor Meeting Room 030: The kitchenette cabinetry is in poor condition and showing high
amounts of wear and tear.

C. Wood Benches:
Octagonal wood bench is located in the Lower Level Lobby. The wood bench is in fair condition and
showing the expected signs of wear and tear for construction of its age.

D. Open Wood Cubbies and Coat Hooks:
Open wood cubbies and coat hooks are located in the Lower Level Lobby. These cubbies and hooks
are in fair condition and showing the expected signs of wear and tear for construction of their age.

E. Wood Display Cases and Shelving:
Wood Display Cases and Shelving are located in the Lower Level and First Floor Lobbies. These
display cases and shelving are in good condition and showing some signs of wear.

Stairs
The Library Additions have two open monumental stairs (Stair A and Stair C) connecting the Lower Level and
the First Floor and the First and Second Floors. The monumental stairs have carpeted treads with open risers
and wood handrails on a metal picket guardrail. The condition of the stairs is fair (the square footage for the
carpet is included in carpet flooring).
There is noticeable movement in the First Floor structure adjacent to the monumental stair from the First Floor to the Second (Stair C) as people move up and down the stair.

The Library Additions have two enclosed egress stairs (Stair B and Stair D) connecting the Lower Level, First and Second Floors. The egress stairs have VCT flooring, painted metal handrails on a painted metal picket guardrail. The condition of the stairs is poor (the square footage for the VCT is included in VCT flooring).

The stairs were constructed in the earlier additions and meet the codes that were in place at those times. They do not conform to current accessibility standards such as handrail and guardrail requirements, areas of rescue or call stations.

IV. Additions to the Carnegie Library (1964 Addition + 1987 Addition) - Recommendations:

**Flooring**
- Replace broadloom carpet and carpet tile within the next five-year period.
- Budget bi-annual carpet cleaning for the following ten years. Replace carpet tile flooring every ten years at the highest traffic areas.
- Replace tile flooring in restrooms within the next five-year period.
- Reserve some funds to address partial incidental repair to floor tile and grout replacement within the twenty-year time period.
- Replace VCT flooring within the next five-year period.
- Reserve some funds to address partial incidental repair to VCT flooring within the twenty-year time period.
- Review issues of material transitions at the First Floor building entrance and reserve some funds to provide corrective measures within the five year time period.

**Wall Finishes**
- Repaint the facility within the next five to ten-year period and consider an on-going maintenance program to budget repainting on an as needed basis due to the extent of gypsum board wall surfaces adjacent to high traffic areas. Repaint every 10-15 years.
- Reserve some funds to address cleaning of exposed brick within the next ten year period.
- Replace wall tile in restrooms within the next five-year period.
- Reserve some funds to address partial incidental repair to wall tile and grout replacement within the twenty-year time period.
- Replace wallcoverings within the next five-year period.
- Reserve some funds to address partial incidental repair to wallcoverings and replacement within the twenty-year time period.

**Ceiling Finishes**
- Clean and realign all tiles, light fixtures, and diffusers in the acoustical panel ceiling system.
- Replace damaged ceiling tiles in all spaces in the next five-year period.
- Replace existing acoustical ceiling system within the fifteen-year time period.
- Replace damaged gypsum board soffits at Lower Level Children’s Services 010.
- Reserve some funds to address partial incidental repair to the gypsum board ceilings and soffits within the twenty-year time period.
- Repaint the facility within the next five to ten-year period. Repaint every 10-15 years.

**Openings**
• Reserve some funds to address door refinishing and/or replacement on an as needed basis within the twenty-year time period. This includes stain or painted finishes. Budget on-going maintenance program for refinishing or repainting all door and frame types.
• Reserve some funds to address sliding entrance door refinishing and/or replacement on an as needed basis within the ten-year time period.
• Replace room dividing operable partition in Meeting Room 030 within the next five-year period.
• Reserve some funds to maintain operable partition within the twenty-year period.

Millwork:
• Replace circulation/reference/service desks within the next five-year period.
• Reserve some funds to address partial incidental repair to the desks, base and upper cabinets, counters, benches, open wood cubbies, coat hooks, wood display cases and shelving within the next five-year, ten-year and twenty-year time periods.
• Complete full assessment of the kitchenette appliances in Meeting Room 030 within the next five-year period & budget replacement costs every 10 years.

Stairs:
• Reserve some funds to structurally assess movement of First Floor structure adjacent to monument stair from First Floor to Second Floor (Stair C).
• Strip and refinish monumental wood stairs within the next five-year period.
• Reserve some funds to refinish monumental wood stairs within the twenty-year period.
• Repair and update finishes at enclosed stairs within the next five-year period.
• Reserve some funds to maintain enclosed stairs within the twenty-year period.
• Address stair accessibility issues (handrail and guardrail requirements, area of rescue and call stations) the next time the library is renovated.
Replace within 5 year period. Regrout and seal existing tile within 20 year period.

Within 5 years, replace damaged tiles within 5 year period, consider full replacement.

Assumes standard commercial accessories and excludes wall mounted baby changing stations.

Coordinate cabinet repair/replacement with appliance and fixture replacement.

Assesses standard commercial accessories including new wall mounted baby changing stations.

Vinyl flooring over 20 years; major ADA issues to be addressed in future reno.

Flooring and repairs over 20 years

Ongoing maintenance and updates to hardware over 20 years

Assumes standard commercial accessories and excludes wall mounted baby changing stations.

SubTotal Interior Building Systems: Original Carnegie Library

$6,750 (VIF) 250 SF

15 years

300 SF (VIF)

25+ years

Assumes standard commercial accessories and excludes wall mounted baby changing stations.

Repairs within 5 years and again in 20 years.

Coordinate cabinets repair/replacement with appliance and fixture replacement.

Assumes standard commercial accessories and excludes wall mounted baby changing stations.

Assumes standard commercial accessories and excludes wall mounted baby changing stations.

Repair and replace

Assesses standard commercial accessories including new wall mounted baby changing stations.

Assesses standard commercial accessories and excludes wall mounted baby changing stations.

Assumes standard commercial accessories including new wall mounted baby changing stations.

Assesses standard commercial accessories and excludes wall mounted baby changing stations.

Assumes standard commercial accessories and excludes wall mounted baby changing stations.

Assumes standard commercial accessories and excludes wall mounted baby changing stations.

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Assumes standard commercial accessories and excludes wall mounted baby changing stations.
05 ELEVATOR ASSESSMENT
ELEVATOR ASSESSMENT

Jenkins & Huntington

General: An elevator inspection and equipment evaluation was performed on the elevators at the St Charles Public Library in St Charles IL by Mike Corson of Jenkins & Huntington on August 13, 2018. The site visit was conducted to evaluate existing condition of the elevator equipment, identify any issues with the equipment and the cost associated with them.

Equipment: The St Charles Library has two hydraulic passenger type elevators. Elevator #1 is referred as the lobby elevator and elevator #2 is referred to as passenger west. These elevators were installed in 1987 by Automatic Elevator. Automatic Elevator was an independent elevator company that specialized in hydraulic elevator installations until the company was purchased by United Technologies in the late 1990s. Both elevators have a relay-based controller manufactured by Virginia Controls, Inc. and Submersible power unit with Magnetek Center Electric pump motor. These are nonproprietary products that any qualified elevator contractor can service. The elevators serve different floors. The lobby elevator (unit #1) is two stops and serves floors LL and M. The passenger west elevator (unit #2) is four stops, with three front openings and one rear. This elevator serves floors LL, M, & MR in the front and UL at the rear door. Passenger west elevator doubles as a service elevator to move furniture and book carts.

Maintenance: The current maintenance supplier is Suburban Elevator, a local independent elevator company. Both elevators are up to date on annual testing and have current Village certificates. The current level of service is good. Maintenance pricing tends to escalate between 3% and 7% and is based on the Metals index and the union labor rates.

Condition: The equipment at St. Charles Library is 31 years old. The equipment is in good condition but is showing signs of wear which is normal for the age of the equipment.

The cab finishes on the elevators are basic laminate wall panels with #4 brushed stainless steel handrails.

The car operating panel is a standard applied car panel in #4 brushed stainless steel finish with standard plastic buttons.

The elevator phones are working but is located behind a closed door. The elevator phones being located behind a closed door does not meet the intent of hands’ free operation.
The door equipment is all GAL equipment and is maintainable. The door operators are starting to have control issues; slower and shaky operation. Parts other than the operators will be available for this equipment for many years. GAL has been a staple to the elevator industry for over 90 years. Most of the door equipment could be refurbished and the door operator would be replaced in a future modernization.

The controllers are Virginia Controls, Inc. relay-based system, without fire service. This is a simple and easy to maintain unit.

The power units are submersible type units with a Maxton valve and Magetek pump motor. This is a good power unit and valve. The Lobby elevator has a slight oil leak on the valve fitting. The passenger west elevator has some oil leaks at the fitting of the oil line and signs of rust on the oil line.

The jack assembly is an in-ground borehole type. Being installed in 1987 this assembly is a double bottom design and code compliant. Both jack packings are in good condition. The pit floors are stained from past oil leaks from the packings or pit can overflow.

**Recommendation:**

We would recommend getting a quote from Suburban Elevator for the following repairs:

- Both elevators: Remove the phone cabinet door and replace it with a new applied emergency phone to provide hands free operation.
- Both elevators: Remove existing starters and install soft starts.
- Passenger west elevator: Remove the mechanical safety door edges on both the front and rear doors and install new infrared safety edges.

Have Suburban Elevator repair the following under the terms of their full-service agreement:

- Passenger west elevator: Correct the oil leaks at the fittings on the oil line in the machine room.
- Passenger west elevator: readjust the speed and torque so the door lock makes proper contact.
- Lobby elevator: repair the leak on the control valve.

**Summary:**

The life cycle for hydraulic elevators in this type of environment is 20-25 years. Based on these time frames, modernization of equipment on these elevators should be budgeted over the next three to six years. With continued maintenance and the minor repairs listed above, these elevators should provide adequate service until the elevator modernization.
### Equipment Audit Data - Hydraulic Elevators

**Project:** St. Charles Library  
**JHI Job #:** 2002461

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<thead>
<tr>
<th>Unite #1 / Lobby</th>
<th>Unit #2 / West</th>
</tr>
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<tr>
<td><strong>Manufacturer</strong></td>
<td>Virginia Controls, Inc.</td>
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<td><strong>Capacity</strong></td>
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#### MACHINE ROOM

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#### General Comments

- Submersible power unit with Virginia controls installed in 1987. The elevator is 31 years old, a modernization will need to be budgeted in the next 3 to 6 years.

### CABS

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<td>36&quot;x84&quot;</td>
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#### General Comments

- Cab interior is a basic design with a #4 Brushed stainless fixtures and a plastic laminate interior. There are handrails and it meets ADAAG

- Cab interior is a basic design with a #4 Brushed stainless fixtures and a plastic laminate interior. There are handrails and it meets ADAAG
# Equipment Audit Data - Hydraulic Elevators

## Project
St. Charles Library

## JHI Job #
2002461

## Unit # 1

<table>
<thead>
<tr>
<th>Floor Levels</th>
<th>Dn / UP</th>
<th>HOISTWAY</th>
<th>Dn / UP</th>
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<td>UL (REAR)</td>
<td>N/A</td>
<td>Hall Button Height</td>
<td>42&quot;</td>
</tr>
<tr>
<td>MR</td>
<td>N/A</td>
<td>Direction Lanterns</td>
<td>Ok</td>
</tr>
<tr>
<td>M</td>
<td>Ok</td>
<td>Door Restrictor</td>
<td>Ok</td>
</tr>
<tr>
<td>LL</td>
<td>Ok</td>
<td>Door Operator Type</td>
<td>GAL MOD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Door Operator Cond.</td>
<td>Ok</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Door Closing Pressure</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Car Top Inspection</td>
<td>Ok</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Car Top Light / Outlet</td>
<td>Ok</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Car Top Housekeeping</td>
<td>Ok</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Guide Type</td>
<td>Solid Guides</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Guide Condition</td>
<td>Ok</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pit Depth</td>
<td>4&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pit Ladder</td>
<td>Ok</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stop Switch</td>
<td>Ok</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pit Light / Outlet</td>
<td>Ok</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pit Housekeeping</td>
<td>Ok</td>
</tr>
</tbody>
</table>

**General Comments:** The door equipment is all GAL equipment. This equipment is 31 years old and showing its age. The unit has a newer infrared safety edge on it.

## Unit # 2

<table>
<thead>
<tr>
<th>Floor Levels</th>
<th>Dn / UP</th>
<th>HOISTWAY</th>
<th>Dn / UP</th>
</tr>
</thead>
<tbody>
<tr>
<td>UL (REAR)</td>
<td>Ok</td>
<td>Hall Button Height</td>
<td>46&quot; (At M) / 42&quot;</td>
</tr>
<tr>
<td>MR</td>
<td>Ok</td>
<td>Direction Lanterns</td>
<td>Ok</td>
</tr>
<tr>
<td>M</td>
<td>Ok</td>
<td>Door Restrictor</td>
<td>Ok</td>
</tr>
<tr>
<td>LL</td>
<td>Ok</td>
<td>Door Operator Type</td>
<td>GAL MOD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Door Operator Cond.</td>
<td>Ok</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Door Closing Pressure</td>
<td>19 lbs / 16lbs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Car Top Inspection</td>
<td>Ok</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Car Top Light / Outlet</td>
<td>Ok</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Car Top Housekeeping</td>
<td>Ok</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Guide Type</td>
<td>Solid Guides</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Guide Condition</td>
<td>Ok</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pit Depth</td>
<td>4&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pit Ladder</td>
<td>OK</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stop Switch</td>
<td>Ok</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pit Light / Outlet</td>
<td>Ok</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pit Housekeeping</td>
<td>Ok</td>
</tr>
</tbody>
</table>

**General Comments:** The door equipment is all GAL equipment. This equipment is 31 years old and showing its age (especially the rear operator). Both the front and rear openings have mechanical safety edge.

Testing Documentation for all elevators is present in the equipment rooms and all of the inspections are current with certificates posted in the elevators. The elevators are currently being maintained by Suburban Elevator. Both elevators are 31 years old. This equipment with proper maintenance will provide adequate service for the next 3-6 years until a modernization of controls, fixtures and door equipment will be required.
Passenger 2 (West): The elevator equipment is fenced off in the lower mechanical room.

Passenger 2 (West): The submersible hydraulic pumping unit was installed in 1987 by Automatic Elevator.

Passenger 2 (West): The original starter (mechanic contracts) is in good condition; however a soft start (fused starter) would protect the motor against power issues.

Passenger 2: The oil line and muffler installed in 1987 are showing rust and slight leaks at the fittings (covered by rags).

Passenger 2: The original Maxton control valve is still providing level performance.

Passenger 2: The pressure relief test (Annual Test) was done on 5/18/18 and tagged per code.
Passenger 2: Manufactured by Virginia Controls, the controller was installed by Automatic Elevator in 1987. The controller was designed to meet 1984 code; it does not have fire service capabilities.

Passenger 2: The power disconnect is a lockage and fused which meets current code.

Passenger 2: Suburban Elevator is the current maintenance provider, the controller has a maintenance check chart posted on its door.

Passenger 2: The complete original elevator controller wiring diagrams are in the machine room.

Passenger 2: All the hoistway entrances (front and rear) are 36 inches wide, and the doors are two speed side opening.

Top Button is at 46 inches from the floor. ADAAG requires the center point of the hall buttons to be at 42 inches.
Passenger 2: Car operating panel installed at 1987 is mounted at the proper ADA height.

Passenger 2: The emergency hands free phone is behind a door, it can cause an issue for someone without proper use of their hands.

Passenger 2: The state certificate is current and there are no outstanding violations.

Passenger 2: The elevator has both car directional and floor indicators above the front door.

Passenger 2: Both the front and rear elevator doors have mechanical safety edges with infrared safety rays. We recommend upgrading to electronic door edges.

Passenger 2: The pit equipment is in good shape and there are no signs of pit flooding. The pit floor is stained from hydraulic oil from a leaking packing or the pit can overflowing.
Passenger 2: The hoistway is in very good condition. There are no signs of leaks or water seepage.

Passenger 2: Down view of the elevator car top and equipment. The car top is clean and no signs of water.

Passenger 2: The door operators (front and rear) are manufactured by GAL (model MOD) installed in 1987. They are older technology and combined with the mechanical safety edges, the doors are closing slow and not always making up the locks.

Passenger 2: The elevator has solid guides shoes with a rail lubrication system (see arrow) mounted on top. To insure a smoother ride the rail lubrication system needs to be filled.

Both Elevators are registered with the State Fire Marshall. The letter has a copy of the unit tag numbers.

Passenger 1 (Lobby): The elevator equipment is fenced off in the lower level mechanical room.
Passenger 1: The submersible hydraulic pumping unit was installed in 1987 by Automatic Elevator.

Passenger 1: The original Maxton control valve is still providing leveling performance. However, this is a leak at the pressure gauge fitting (see arrow).

Passenger 1: The pressure relief test (Annual Test) was done on 5/18/18 and tagged per code.

Passenger 1: The original starter (mechanic contracts) is in good condition; however, a soft start (fused starter) would protect the motor against power issues.

Passenger 1: Manufactured by Virginia Controls, the controller was installed by Automatic Elevator in 1987. The controller was designed to meet 1984 code; it does not have fire service capabilities.

Passenger 1: The complete original elevator controller wiring diagrams are in the machine room.
Passenger 1: Suburban Elevator is the current maintenance provider, the controller has a maintenance check chart posted on its door.

Passenger 1: The hoistway entrances are 36 inches wide with two speed side openings.

Passenger 1: Code requires the hall button to no higher than 42 inches from the floor to the centerline, the button meets ADA standards.

Passenger 1: Car operating panel installed at 1987 is mounted at the proper ADA height. However the emergency hands free phone is behind a door.

Passenger 1: The state certificate is current and there are no outstanding violations.

Passenger 1: The elevator has both car directional and floor indicators above the door.
Passenger 1: The pit equipment is in good shape and there are no signs of pit flooding. The pit floor is stained from hydraulic oil from a leaking packing or the pit can overflowing.

Passenger 1: View of the bottom of the elevator cab. There is no sign of water (rust) being in the hoistway and the traveling cable is properly secured.

Passenger 1: Down view of the elevator car-top and equipment. The car-top is clean and no signs of water.

Passenger 1: The door operator, model MOD, was manufactured by GAL. Installed in 1987, the operator is an older technology. The elevator does have an infrared safety edge which helps reduce door issues.

Passenger 1: The car-top inspection station is currently operating as required by code.

Passenger 1: The hoistway is in very good condition. There are no signs of leaks or water seepage.
### ELEVATORS

<table>
<thead>
<tr>
<th>System / Assembly</th>
<th>Unit Cost in Today $'s</th>
<th>Life Span in Years</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Emergency Phone</td>
<td>1,500</td>
<td>25</td>
<td>The Current phone behind the cabinet door is grandfathered by Code but does not meet the intent of &quot;hands-free.&quot;</td>
</tr>
<tr>
<td>Soft Starter (Solid State Starter)</td>
<td>3,500</td>
<td>25</td>
<td>Upgrading the starter to a Soft Starter (fused) will protect the motor and controls from power issues.</td>
</tr>
<tr>
<td>Car &amp; Hoistway Fixtures (Buttons)</td>
<td>15,000</td>
<td>25</td>
<td>Replacement is recommended within the next 3-6 years due to the age of the existing equipment.</td>
</tr>
<tr>
<td>Elevator Door Operator System</td>
<td>13,500</td>
<td>25</td>
<td>Replacement is recommended within the next 3-6 years due to the age of the existing equipment.</td>
</tr>
<tr>
<td>Car &amp; Hoistway Fixtures (Buttons)</td>
<td>12,500</td>
<td>25</td>
<td>Replacement is recommended within the next 3-6 years due to the age of the existing equipment.</td>
</tr>
<tr>
<td>Elevator Cab Finishes - Passenger Elevator</td>
<td>15,000</td>
<td>25</td>
<td>Life Safety (Smoke System), electrical disconnect, &amp; machine room enclosure.</td>
</tr>
<tr>
<td>Elevator Cab Finishes - Passenger Elevator</td>
<td>35,000</td>
<td>25</td>
<td>Infrared safety edges reduce door related issues by eliminating door contact with objects before recentering.</td>
</tr>
</tbody>
</table>

### SubTotal: ELEVATORS

<table>
<thead>
<tr>
<th>System / Assembly</th>
<th>Unit Cost in Today $'s</th>
<th>Life Span in Years</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elevator Work</td>
<td>184,800</td>
<td>25</td>
<td>Life Safety (Smoke System), electrical disconnect, &amp; machine room enclosure.</td>
</tr>
</tbody>
</table>

### TOTALS

<table>
<thead>
<tr>
<th>System / Assembly</th>
<th>Unit Cost in Today $'s</th>
<th>Life Span in Years</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Conditions OH&amp;P</td>
<td>27,519</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Construction Contingency</td>
<td>27,357</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Escalation 4.0% /yr</td>
<td>30,497</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Professional Fees Allowance</td>
<td>28,442</td>
<td>5</td>
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</tbody>
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<table>
<thead>
<tr>
<th>TOTALS</th>
<th>Unit Cost in Today $'s</th>
<th>Life Span in Years</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>272,881</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>
Summary of Probable Costs for Facilities Maintenance for all Disciplines

See previous Sections of Facility Condition Assessment for detailed line item estimates for each discipline.

<table>
<thead>
<tr>
<th>SubTotal: SITE</th>
<th>5 YEAR</th>
<th>10 YEAR</th>
<th>15 YEAR</th>
<th>20 YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$269,900</td>
<td>$116,150</td>
<td>$174,950</td>
<td>$75,650</td>
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</table>

<table>
<thead>
<tr>
<th>SubTotal: EXTERIOR BUILDING ENVELOPE: TOTAL COMPLEX</th>
<th>5 YEAR</th>
<th>10 YEAR</th>
<th>15 YEAR</th>
<th>20 YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$348,930</td>
<td>$523,975</td>
<td>$30,550</td>
<td>$93,180</td>
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<table>
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<th>SubTotal: BUILDING SYSTEMS:</th>
<th>5 YEAR</th>
<th>10 YEAR</th>
<th>15 YEAR</th>
<th>20 YEAR</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>$1,368,800</td>
<td>$133,460</td>
<td>$15,000</td>
<td>$404,240</td>
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<table>
<thead>
<tr>
<th>SubTotal: INTERIOR BUILDING SYSTEMS: TOTAL COMPLEX</th>
<th>5 YEAR</th>
<th>10 YEAR</th>
<th>15 YEAR</th>
<th>20 YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$668,116</td>
<td>$211,729</td>
<td>$456,454</td>
<td>$223,517</td>
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<table>
<thead>
<tr>
<th>SubTotal: ELEVATORS</th>
<th>5 YEAR</th>
<th>10 YEAR</th>
<th>15 YEAR</th>
<th>20 YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$184,800</td>
<td>$ -</td>
<td>$ -</td>
<td>$ -</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SubTotal: ALL DISCIPLINES</th>
<th>5 YEAR</th>
<th>10 YEAR</th>
<th>15 YEAR</th>
<th>20 YEAR</th>
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<tbody>
<tr>
<td></td>
<td>$2,840,546</td>
<td>$985,314</td>
<td>$676,954</td>
<td>$796,587</td>
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<table>
<thead>
<tr>
<th>General Conditions OH&amp;P 15%</th>
<th>5 YEARS</th>
<th>10 YEARS</th>
<th>15 YEARS</th>
<th>20 YEARS</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>$426,082</td>
<td>$147,797</td>
<td>$101,543</td>
<td>$119,488</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Construction Contingency 10%</th>
<th>5 YEARS</th>
<th>10 YEARS</th>
<th>15 YEARS</th>
<th>20 YEARS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$326,663</td>
<td>$113,311</td>
<td>$77,850</td>
<td>$91,607</td>
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</table>

<table>
<thead>
<tr>
<th>Escalation 4.00% /yr</th>
<th>5 YEARS</th>
<th>10 YEARS</th>
<th>15 YEARS</th>
<th>20 YEARS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$778,497</td>
<td>$598,387</td>
<td>$685,885</td>
<td>$1,200,271</td>
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</table>

<table>
<thead>
<tr>
<th>Professional Fees Allowance 10%</th>
<th>5 YEARS</th>
<th>10 YEARS</th>
<th>15 YEARS</th>
<th>20 YEARS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$437,179</td>
<td>$184,501</td>
<td>$154,223</td>
<td>$220,796</td>
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<table>
<thead>
<tr>
<th>Totals</th>
<th>5 YEARS</th>
<th>10 YEARS</th>
<th>15 YEARS</th>
<th>20 YEARS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$4,808,966</td>
<td>$2,029,510</td>
<td>$1,696,455</td>
<td>$2,428,751</td>
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<table>
<thead>
<tr>
<th>CUMULATIVE TOTAL</th>
<th>5 YEARS</th>
<th>10 YEARS</th>
<th>15 YEARS</th>
<th>20 YEARS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$10,963,683</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. The Estimate of Probable Cost reflects projected maintenance and repair work only. Major additions, alterations and upgrades are excluded.

2. Individual line item costs and subtotals are estimated at current value and must be escalated annually to account for inflation.

3. The Escalation factor is based on a construction industry average of 4% inflation over a twenty-year period and does not reflect shorter term variances.

4. Totals include a full five-year of escalation value. Maintenance and repairs completed earlier in the five-year cycle will incur lower rates of escalation. Correspondingly, work deferred until a later date will incur higher rates of escalation.

5. Life expectancies are estimated based on industry standards and are not intended as hard deadlines. The lifespan of building systems that are well-maintained may be extended beyond industry standards, however, this often requires an expenditure of time and expense beyond normal maintenance projections. This approach also creates an increased risk of sudden failures which may include associated damages and/or impact the ability to operate the facility (depending on the building system in question).
CONTACT US

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