



# Lisle Library District

## Facility Condition Assessment Report

July 10, 2019



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## Section 1 - Introduction

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This Facility Condition Assessment Report has been prepared in response to the approved proposal dated March 22, 2019. The main purpose of the Assessment is to evaluate building systems and their condition in order to develop a master schedule for planned capital improvements and substantial maintenance expenditures. The scope of the assessment is focused on main facility components (e.g., site, building envelope, building interiors and building systems) and the report is organized in this manner. The assessment provides an analysis of each system, a priority ranking for corrective action (if any) and financial projections for costs of recommended corrective action items.

Based on the care and attention the library has given to maintain the overall appearance and condition of the facility, the emphasis of this assessment is largely biased to major building systems (e.g., mechanical, electrical, etc.). However, we have also provided an assessment of interior finishes and the building envelope for planning purposes.

The Assessment was initiated by obtaining record documents from the library and interviews with staff. The library maintains an impressive collection of maintenance records, building construction documents, as well as updated documents from the addition and various renovations and studies. The review of record documents included the following:

- Drawings
- Specifications
- Maintenance Records
- Miscellaneous reports/proposals of corrective work

These documents were all reviewed in order to determine the design, extent and status of the original building, as well as the addition, and various improvements made over time. This information was used to establish a baseline understanding of the maintenance scope and projected schedule for major building systems upgrades or replacements. Following a review of the documents, walkthroughs were performed to familiarize our team with the configuration of the facility and to identify systems that required more in-depth analysis. The first site visit was conducted to obtain general observations and documentation on the overall condition of the facility. A second site visit focused on mechanical systems and included a team of engineers and a construction professional. A third site visit, conducted by a civil engineer and construction professional, focused entirely on the site issues related to stormwater. Finally, in developing the draft report, various miscellaneous site visits were conducted to verify information and develop order of magnitude cost estimates.

This report has been prepared to provide Lisle Library District in Lisle, Illinois, an understanding of the condition of existing building systems, the ability to identify projected capital project priorities and maintenance upgrades, and to provide cost estimates for these items.

The Facility Condition Assessment is a look at the physical condition of the building and grounds. The survey was performed by a team of building professionals, including designers, builders and engineers experienced in library design and construction. The report is prepared as an objective analysis of various building assemblies and major systems, such as mechanical and electrical systems. Independent of any desires to modify the building to better service staff or patron needs, this report projects remaining life cycle on the systems evaluated and provides an understanding of current and projected future replacement or upgrades anticipated. A financial cost analysis is provided to assist in quantifying the financial impact of future physical plant needs.

**Limitations:** This report is not to be interpreted or construed to be an analysis of the space needs, utilization, operation, design, layout or flow of the library with respect to the existing facility or in comparison to modern library facilities. These characteristics are more consistent with an architectural space study or space needs analysis and are not a function of this report. Please note that no portion of this report is intended or should be interpreted as a code compliance, ADA review or life safety compliance review. This report is strictly an assessment of existing conditions for the purpose of establishing a capital expenditure projection for projected short- and long-term expenditures on the existing physical plant.

**Definitions:** In establishing a condition assessment of the various systems the report establishes a straightforward rating. Each rating is assigned based on system age, existing condition, serviceability of the item being rated, and finally a judgement based on inspection, research and experience with expected useful life of each item. The following definitions are used:

- Urgent: Defined to indicate the building system being assessed required attention within the next year. Priority should be given to planning upgrade/replacement/repair of the item as soon as possible. **Priority - Critical**
- Marginal: Defined to establish the item performs adequately but shows signs of wear and tear that are more advanced than expected for the projected useful life of the item, or the system is nearing the end of its' projected useful life. Should be expected to continue to perform with required maintenance and would be recommended for replacement/upgrade within the next 2-5 years. **Priority A**
- Fair: Defined to establish the item continues to perform well for its apparent useful life, but is of the age that replacement or upgrades should be projected in the next 5-10 years. Continues to perform for its intended purpose with expected required maintenance. **Priority B**
- Good: The item is performing well for the projected useful life to date and should continue to do so for at least 10 years. **Priority C**

**Facility Description:**

The Library facility was originally constructed in 1980 at the southeast corner of Front Street and Kingston Avenue in Lisle, IL. The original building was constructed as a one-story steel frame/joist, wood sided and stone-faced building, with some areas of metal panel siding. The building underwent a major addition project in 1987, with a three-level expansion to the east, of similar construction type and exterior finishes. The addition is similar to a split-level arrangement, whereby entry is at grade to an Intermediate Level, with the balance of the addition comprised of two floors; one upstairs level (Second Floor) and a lower level (First Floor) that was built to match the same grade as the original one-story 1980 building. There was a storage addition built on the west end of the building that is accessed from the receiving area. The orientation of the building is long in the east-west direction and fairly narrow in the north-south direction. The topography of the site being higher to the south and lower to the north was most likely the main contributor to this orientation. The building remains in this configuration today with the main public entry on the Intermediate Level located at the east side of the building.

The main public entry to the facility is currently on the east side, with patron parking consisting of two main lots. One lot is located to the south of the building and the second one is located along the east-southeast side of the building. There is a staff parking lot and entry on the north side of the building.

All three levels (First Floor, Intermediate Level and Second Floor) are used as library patron spaces. Portions of the First and Second Floors are also used for office area, staff work space and storage. The main mechanical/electrical equipment is located on the first floor with a second mechanical room located on the Intermediate Level. The first floor has main circulation and adult collections, staff spaces, mechanical space and storage. The intermediate level is entry/lobby space, meeting/multi-purpose rooms, public restrooms and storage/mechanical. The second floor is dedicated to the children’s department and consists of a small program room, collections and staff offices. There are public restrooms on the intermediate and first floor and staff bathrooms on the first floor and second floor. The first floor and intermediate level also have mechanical courtyards adjacent to interior mechanical rooms.

There is an open monumental stair that provides access between the Intermediate Level and the other two floors. This stair is located within the addition to the east. There is also an emergency stair from the second floor to the outside. There is one, double-sided elevator that services all three levels.

Beyond the construction of the original 1980 building and 1987 addition, the library has undergone several renovations and interior improvements. Site inspection confirms that the facility has undergone various cosmetic updates that ranged from simple paint upgrades, to carpeting, millwork and furniture replacement over the years.

It should be noted that in buildings of this vintage, the presence of asbestos or other environmental issues may present restrictions or challenges for future work. Any future work should consider the potential presence of environmental issues prior to being implemented.





## Section 2 - Summary

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The detailed assessment report that follows, outlines the existing conditions and recommendations for upgrades, replacements or revisions moving forward. The purpose of this summary is to highlight a few specific areas that we believe should be established as priority capital improvement items for the library. We have identified these critical priority items both here, in narrative form, and in Section 6 – Financial Projections, at the conclusion of the report. The items identified as critical priority were done so based on the current age or condition of the system, the costs associated with replacement, the potential impact on library operations during replacement and the potential impact on library operations in the event of a catastrophic failure of one of these systems. Catastrophic failure is defined as one of these systems going down or failing, resulting in the system not being able to be repaired, short of total replacement, within a one-week timeframe, potentially causing the library to have to close.

### **Civil/Site:**

There are a variety of curb conditions around the site that are cracked or deteriorated. The existing conditions present a safety issue, are tripping hazards and are categorized as a Critical Priority item. Correction of these various areas is recommended within the next year.

### **HVAC Systems:**

Replacement of all four Air Handling Units, two in the west mechanical room and two in the east mechanical room, is recommend as a Critical Priority. These units provide thermal conditioning and ventilation throughout most areas of the building. They are beyond their expected useful life, present regular maintenance and repair challenges and are of an age where replacement parts are becoming obsolete. In the event of a unit failure that could not be repaired, substantial portions of the Library could be without conditioning, potentially causing a closure. While these units are currently functional and are being maintained by Monaco Mechanical, their age and existing condition put the Library at risk for an expensive emergency repair. A proactive, fully-engineered replacement upgrade, that could potentially help resolve a few other HVAC conditions, is recommend within the next year.

### **Electrical:**

There are a variety of electrical items that are identified as Priority A recommendations, meaning they require attention with in the next two years or so. One item, the Uninterruptible Power Source (UPS), which provides battery backup to the servers is recommend as a Critical Priority. This unit helps protect and supports the main Library computer server, which is a mission critical piece of equipment. The age of the UPS unit and the undetermined battery maintenance history lead to a recommendation for overall refurbishment or replacement. The Library is actively seeking quotes for this work and would be well advised to move forward with that work within the next year.

The other Critical Priority item is the paging system. This system is in marginal condition at best and is a mission critical system for staff and patron safety. Upgrade/replacement of this system is recommended in the next year.

### **Stormwater:**

The Library property experiences various stormwater related conditions that potentially affect use of the Library. There are three areas of concern; broken stormwater piping, stormwater restrictors that are subject to clogging, and landscape conditions that result in rain and snow melt contributing to unsafe conditions on sidewalks and parking lots. The report recommends addressing all three of these conditions as Critical Priority items. In conjunction with these items the report recommends an investment in civil/site engineering analysis to help identify the most effective approach to addressing these issues for the long term.

## Section 3 – Civil/Site Analysis

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### Existing Conditions:

The Lisle Library is located at 777 Front St. in Lisle, IL, on the southeast corner of Kingston Ave. and Front St. The existing building runs east and west on the site with the main building public entry located on the east side of the facility. The building is surrounded by parking lots to the north, south and east/southeast. The main public street access is from Kingston Ave. on the west side of the site to a parking lot/drive aisle on the south side of the building. This drive aisle serves the south parking lot, the east/southeast parking lot, the main entry and then extends around the north side of the building and exits to Front St. A second street access enters the north parking lot from Front St. This lot is primarily for staff parking but also serves the exterior, drive-up book drop-off bin, which is located on the north side of the north parking lot.



Pedestrian entry from the street or parking lots to the building are via sidewalks. Sidewalks are located around the site and parking lots and provide access to the building at grade. The main entry has a canopy structure that serves to keep patrons under cover of weather entering and exiting the building. The north staff parking lot has sidewalks to the staff entry and receiving door.



Stormwater detention basins are located along the south side of the south parking lot and also at the northeast corner of the existing property along Front St.

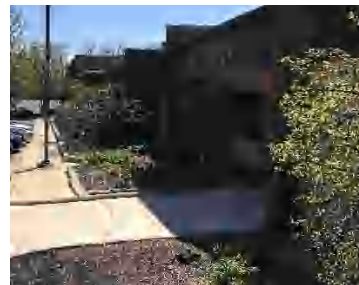
**Topography:**

The site has a significant natural downward slope from the south to the north. Over the various periods of development, the building and site have been constructed from the north along Front Street to the east and south. The north lot, which originally served the previous main library entry, is generally level with access to the staff/delivery door. The original building was essentially built into the hill going south, with the rear land elevation being higher than the north elevation. The south parking lot, and adjacent detention trench were eventually built at this higher elevation. The east parking lot construction more closely follows the natural topography of the site, running higher to the south and sloping down as it goes north. The drive aisle on the east side continues this downward slope, following the topography, as it turns around the north side of the building and exits to Front St. This drive aisle is supported by a large retaining wall of timbers and concrete masonry units.

The topography of the site, with a fairly severe slope from south to north, presents a series of issues that level building sites do not. For example, access to the building occurs on an intermediate level to provide access from the exterior grade at the main entry, however nearly all of the library services are located on upper or lower floors from the intermediate level entry point. On the exterior of the building, parking lots and sidewalks exist on multiple levels and provide access to the building via sidewalks, which in many locations are ramped. Another example is the flow of surface water across the site. Currently, water runs off of higher landscaped areas onto sidewalks and parking lots creating challenging conditions following rains and in winter snow melt conditions. Overall, the development of the site has adapted to and manipulated the existing topography reasonably well, but it does present ongoing challenges.

**Building Access:**

The main public entrance to the library is accessed via a concrete sidewalk on the east side of the building. The entry sidewalk is covered by a canopy. From the adjacent parking lots there are concrete sidewalks and ramps that provide for pedestrian access from the parking lots to the entry. The main entry door is automated, providing for handicapped access entry to the building. The sidewalk slopes and parking lots were not evaluated for compliance with ADA accessibility standards, as this was outside the scope of the assessment. However, the current configuration and ADA designated parking spots do provide for access to the main entry without having to traverse steps. The north door, which is designated as a staff entry, is accessed via a concrete plaza and also serves as a receiving door.



There is a door on the north side in the middle of the building which serves as an emergency exit from the second-floor emergency stairwell as well as an emergency door in the Atrium. Finally, there is a door on the east side of the building as a secondary exit from the program room located on the intermediate level. Other exterior doors serve mechanical courtyards.





**Landscaping:**

The grounds have extensive landscaping on all sides of the facility. Landscape beds are located between the building and sidewalks and are located around the parking lots. The landscaping consists of trees, bushes, perennial plantings and decorative plants. The landscape beds are mulched and are a feature of the site. On the north side of the facility, adjacent to the building, the landscape beds include a low stone retaining planter wall that elevates the planting bed from the adjacent sidewalk. At the southwest corner of the south and east parking lots there is a brick paver patio and retaining wall area that provides for exterior seating/program space. The landscaping is a feature of the library grounds and is well maintained.



In several locations, the landscape features are integrated into or contribute to the site stormwater management system. One location is at the extreme southeast corner of the site, which has a stone retention feature that leads to a stormwater structure. The detention areas, while functional elements of the stormwater system, enhance the landscape environment of the site.

There are three locations of concern related to the landscape:

Far southeast corner off parking lot – stone retention feature at storm structure: This improvement was added to the site within the last couple of years and was intended to improve the erosion of that area from surface water flowing from neighboring residential properties to the south onto Library property. The stone feature has improved the erosion condition on Library property but the flow of water from neighboring properties carries with it sediment, leaves and debris that collect in the Library storm structure. This condition requires regular maintenance.

Landscape mulch bed on west side of southeast parking lot: During winter snow melt times and heavy spring rains, this sloped mulch bed seeps water across the sidewalk and into the parking lot. This was noted as an erosion concern and a safety concern during freeze/thaw cycles.



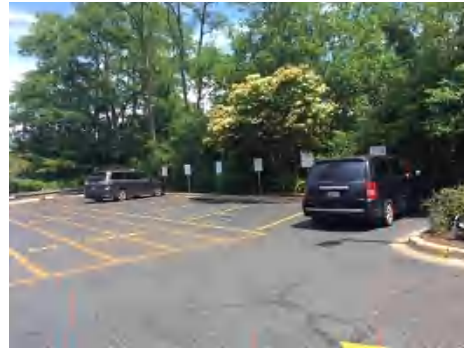
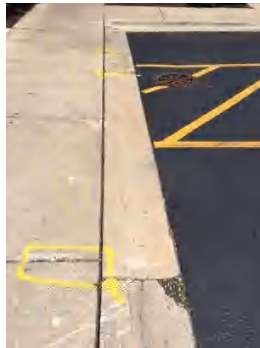
Landscape mulch bed on west side of north parking lot adjacent to Receiving Door: During winter snow melt times and heavy spring rains, this sloped mulch bed seeps water down the hill into the north parking lot and across the staff entry drive aisle. This was noted as an erosion concern and a safety concern during freeze/thaw cycles.

**Recommendation:**

- Include all site drainage and stormwater issues as part of further investigation as presented in the Appendix. Improve drainage of landscape beds by updating or replacing drain tile system and installing a French drain assembly. **Priority - Critical**
- Perform maintenance to masonry planters and retaining walls that are in Fair condition and exhibiting signs of movement. **Priority - B**

**Parking Lots/Paving:**

There are 118 regular parking stalls, four ADA stalls and 8 short-term pick-up/drop-off stalls. Vehicular circulation is generally one-way circling the building from the Kingston Ave. entry heading east and then north past the main entry and then around the northeast corner of the building to Front St. There is two-way traffic in the southeast parking lot. The north staff parking lot is one-way from west to east. The lot has good signage and provides for clear communication for vehicular and pedestrian traffic through the lots. The entire parking lot is curbed. There are various isolated locations where the curb is cracked, or a piece is missing. These conditions present a potential tripping hazard. Further discussion of curbs and sidewalks is included in the Concrete Paving/Sidewalk portion of this section.



**Ingress/Egress:** There is one vehicular ingress on Kingston Ave. and one on Front St., which both lead through the parking lots to one egress on Front St.



The parking lot is generally in good to fair condition. There are signs of age, including cracking of the surface layer and settlement in some isolated areas around tire spots in stalls and adjacent to storm structures in the parking lot. It appears that sealcoating and striping maintenance occurs periodically, having recently been recoated. With continued treatment of cracks and annual sealcoating, the parking lot will provide up to ten years of service.

**Recommendation:**

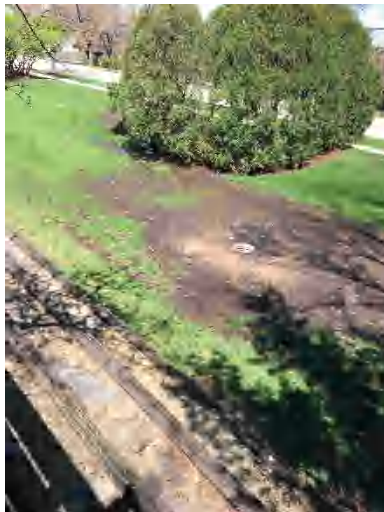
- Perform annual maintenance and sealcoating/striping of parking lot. **Priority - A**
- Repair cracked broken curbs. Budget for spot repairs of settled areas for short-term (0-2 year) repair. **Priority - Critical.**
- Budget for repaving entire lot in ten years. **Priority - C.**

**Drainage/Detention:**

The site stormwater drainage system consists of two detention basins; one that serves the south parking lot and one that serves the east and north parking lots. Both of these detention basins collect stormwater from the site and release it to the public stormwater system at a controlled rate. The north lot collects water and is connected to the north detention basin and then to public stormwater system piping. In some cases, building roof drains have been connected to these systems.

Over the last year or two the stormwater system has been experiencing backups during heavy rains. These backups result in the south detention area and south parking lot filling up with stormwater. This is a more recent condition to the site, within the last few years, and is occurring with increased frequency. In the fall of 2018 the Library hired Visu-Sewer to inspect and clean the on-site stormwater piping and structures. Visu-Sewer cleaned the system and provided various maintenance and repair recommendations.

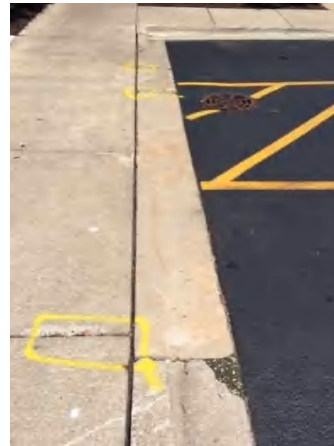
FQC was requested to review the report and to assist in providing recommendations for repair priorities associated with the stormwater system. This portion of the report can be found in its entirety in the Appendix.



**Concrete Paving/Sidewalks:**

There is an extensive network of sidewalks located on the site. Most sidewalks are located adjacent to parking spots, providing for sidewalk access to the building. In general, the sidewalk pads are in good condition, with isolated areas of cracking. In some locations it was noted that sections of sidewalk have been replaced. On the north sidewalk adjacent to the staff entry there is a light pole base in the middle of the sidewalk. This condition presents an obstacle to pedestrian access and creates a maintenance issue with the sidewalk due to its location and the presence of an electrical conduit to the pole base being within the sidewalk.

An area of concern with the sidewalk network is the type of original construction as it relates to the parking lot curbs. The concern is that the sidewalks and curbs are settling at different rates and separating from each other, in some instances by an inch or more. This condition creates a tripping hazard and the potential for a pedestrian's shoe to get stuck in the separation gap. The curbs and sidewalks were apparently poured as two separate pieces of concrete. When this occurs, rebar reinforcing is sometimes installed to connect the sidewalks and the curbs, although this type of installation is subject to cracking and other problems. No rebar was observed in the gaps. In more modern construction standards, sidewalk/curb installations are typically poured as an integral installation, with the curb and sidewalk as a monolithic unit. This installation type provides for a more integrated construction and was adopted as a direct result of the type of issues the Lisle Library sidewalk/curb installation is experiencing. Integral sidewalk curbs, due to their monolithic construction tend to settle more consistently and avoid the separation issue being experienced.



**Recommendation:**

- The Library has been diligent about replacing broken or deteriorated sidewalks. This maintenance practice, as it relates to areas of concern both for curbs and sidewalks, is recommended to continue. **Priority – A for sidewalks as needed, Critical for curb deterioration.**
- Long term (10+ years), the sidewalks could be replaced with integral curb and sidewalk installations as part of a wholesale parking lot replacement program. **Priority - C.**

## Section 4 – Building Analysis

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### Exterior Building Envelope - Stone:

The exterior stone facade is in good condition. There were a few areas noted on the building where a stone piece was missing or was loose. The top of the stone façade is topped with a limestone cap on short parapet walls. The stone façade is merely the exterior surface material of the wall assembly. It is not a structural component of the building. Some minor tuckpointing is necessary as part of ongoing normal building maintenance. Other than areas of minor maintenance, whole building tuckpointing should not be anticipated for at least ten years.



### **Recommendation:**

- Perform minor maintenance tuckpointing. **Priority - B**
- Budget for whole building tuckpointing. **Priority - C**

### Exterior Building Envelope – Wood Siding:

The exterior of the building is a combination of the stone façade mentioned above and wood siding. The wood siding is painted and in good condition. There were no obvious signs of deterioration. As a painted surface, the siding will need to be part of regular ongoing facility maintenance planning.



### **Recommendation:**

- Perform periodic building painting. **Priority - B.**



**Exterior Building Envelope – Doors and Windows:**

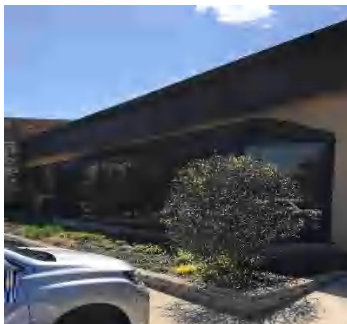
There are various service-type doors to the building, including staff entry/delivery, emergency exit from stairwell, exit door from program room and service doors to mechanical courtyards. The other main door assembly is the double door automatic main entry door, with corresponding vestibule automatic doors.

The service doors are hollow metal doors and frames. These doors are in fair to good condition and are consistent with their age and wear and tear cycle. Maintenance of exterior doors should include periodic painting every 3-5 years. The door leading from the Program Room was difficult to operate and does not seat well into the opening. This door is rated as Marginal and is recommended for replacement within two years.



The main entry automatic door assemblies are aluminum with glazing. The doors are in good condition and serviceable. Due to the repetitive movement of the automatic doors, these units should be kept on a regular maintenance cycle to avoid future issues.

There are two main types of windows throughout the building. One main type is the atrium window in the adult reading area. This atrium window is an aluminum window unit with sloped glazing at the top that creates the atrium affect. The assembly is in good condition. The second main type are the wood casement windows with integral blinds. These units comprise the balance of the windows on the first and second floors. Many of these windows are original to their respective building wing age, although several windows on the first-floor north face of the building in the computer area and Technical Services were replaced in 2013. The remaining original windows are in fair to good condition. The integral blinds are in various stages of operation and a handful of windows have deteriorated seals and interior finishes. These deteriorated windows are in need of repair/replacement.



**Recommendation:**

- It is recommended that the exterior doors be serviced to ensure proper fit and operation, with the exterior door to the Program Room being recommended for replacement in two years. **Priority - A.**
- It is recommended that windows that are in disrepair be planned for replacement. There are approximately six windows that need replacement on the second floor. **Priority - A.**
- The remaining windows can be maintained in place and should be serviceable for 10+ years. Note that replacement of original windows with more energy efficient modern units will result in improved energy efficiency. **Priority - C.**

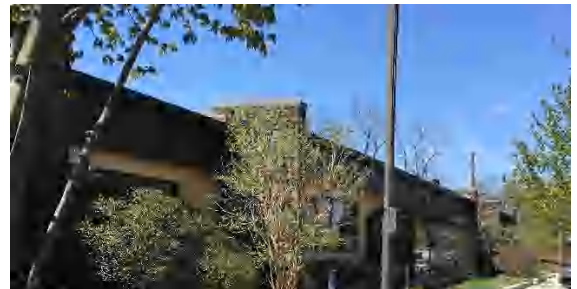
**Exterior Building Envelope – Roof/Metal Panels:**

The roof membrane is a single-ply TPO (Thermoplastic Polyofelin) roof over insulation on the structural roof deck. The roof is approximately 10 years old and was installed with a 20-year warranty. This type of roof is common and is routinely installed today. With proper maintenance (cleaning gutters, debris, etc.), this roof will generally last longer than 20 years. The Library is fortunate that there is not a significant amount of roof mounted equipment, which greatly reduces people being on the roof for equipment repairs, etc., and causing damage.

This TPO roof likely replaced the original ballasted roof. A ballasted roof is a membrane or tar roof topped with small aggregate (stones). The previous roof had issues with stones eroding off the roof into the gutters and sewers. However, the newer TPO roof, which is smooth, had issues with snow melt sliding off the roof and damaging gutters. In 2014 the Library contracted with the original roofer (MetalMaster) and had Sno-guards and stronger gutters/supports installed on the roof of the single-story building. This work was completed to reduce the incidence of damage from snow melt.

The roof of the west storage room addition was replaced in 2017. This roof had been leaking and was in need of replacement. It was noted during the assessment that the metal roof deck of the storage room is corroded and rusting. Future roof replacement may require replacement of sections of the metal deck.

As part of the design of the building, the roofing sheet metal creates a vertical standing seam metal panel detail at the top of the exterior walls. These metal panels are in good condition.



**Recommendation:** Plan for replacement of roof system in 10-15 years. Note – Replacement of the roof will provide the opportunity to increase insulation value and increase energy efficiency of the building envelope. **Priority - C.**

**Building Interior:**

- **First Floor:** The First Floor is comprised of several functional areas and houses adult collections, A/V, staff offices, Technical Services, Storage and mechanical space. The First Floor also includes the circulation desk and offices, adult services office, small group study rooms, public computers, public restrooms and various seating areas, including the atrium area. In addition to the window replacement project previously mentioned, this floor has also received various cosmetic updates over the years, and most recently in 2014. The recent updates included some carpeting, added millwork and some new furniture items. More recently lighting in approximately half of the building has been upgraded to LED lamps within existing fixtures.

The first floor previously went through a renovation in 2007 and, other than typical wear and tear (especially to carpet) is in good condition. The carpet is showing signs of wear and will need to be replaced as part of a normal maintenance/upgrade cycle (typically every 8-10 years). Much of the carpet is broadloom versus carpet squares, which is a factor in maintenance and replacement. No recommendation is provided for the public spaces except for normal maintenance. Comprehensive updates to staff areas and offices appear to have been deferred in favor of public spaces. Staff areas are in Fair condition.

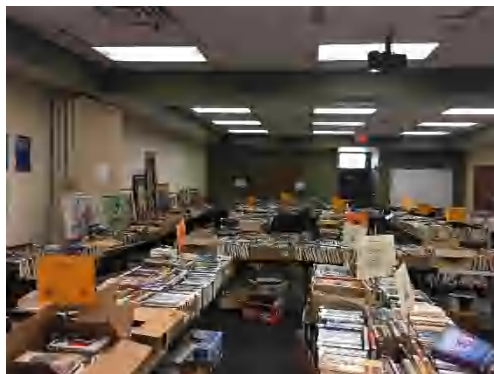


- Intermediate Level: The Intermediate Level is comprised of the main public entry and vestibule, the Program Room, public restrooms and east mechanical space. For purposes of this report, we include the main stair and elevator, which provide access to the second and first floors, as part of the Intermediate Level.

The finishes (flooring, wall paint, lighting) in the main lobby, vestibule, stair and elevator were updated in 2016 and appear to be consistent with the more recent updates on the First Floor. The public restrooms, other than possibly the flooring, appear to be original construction. While there may have been some updates such as automatic faucets, the finishes and general appearance of the restrooms are dated and would benefit from being updated.

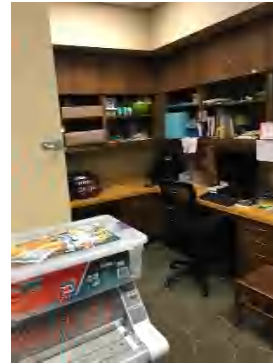


The Program Room consists of a large room, which can be subdivided into two rooms with an operable partition wall, storage closets and a small kitchenette. Other than the carpet, which was replaced in 2016, the finishes and general appearance of the Program Room is dated and would benefit from being updated.



The east mechanical room and adjacent outdoor mechanical courtyard house electrical panels, air handling units, associated condensers and controls. The spaces are well utilized and proper for their intended function.

- **Second Floor:** The Second Floor is dedicated for kids and teens. The floor includes youth circulation, collections, a small story hour program room, staff offices, staff work room, storage and a staff restroom. Facility updates to public areas from 2007 on this level appear to be limited to carpet, paint and millwork. In general, the space is in good condition, with staff areas again having been deferred for updates.



**Recommendations:**

- The interior finishes of the building are more closely tied to programmatic and functional needs and desires than facility assessment characteristics. Carpet is an ongoing maintenance item in modern libraries and is due for replacement in many areas. **Priority A.**
- In terms of investment dollars, it is recommended that higher cost areas, such as the restrooms, receive planned updates to avoid deterioration to a point where replacement or upgrades are required out of dire necessity rather than as part of an intentional planned approach. **Priority B.**
- Forward looking capital planning for replacement of finishes such as flooring, painting, ceiling tiles, etc. are recommended. **Priority B.**



**Casework/Interior Doors:** Much of the building appears to still retain original casework, countertops and interior doors. These components are in fair condition and appear serviceable. At the same time these components are aging to the point where replacement parts, hardware and repair may prove costly. Additionally, some door hardware would benefit from being updated. In the event the Library would undergo future renovation, replacement and upgrade of these items in conjunction with a larger project would be recommended.



**Recommendation:**

- Establish a door hardware replacement program. **Priority B.**

## Section 5 - Building Systems

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### HVAC

#### HVAC – Existing Conditions:

The original 1980 building and the 1987 addition have separate heating and cooling plants. Both areas of the building are serviced for radiant heating by hot water boilers and ventilated heating and cooling by air handling units with corresponding condensing units. Each system is accompanied by associated pumps and humidifier units. The server room is supplemented with cooling by a dedicated Mini Split system. A single RTU (Roof Top Unit) serves the adult services office on the first floor. All HVAC equipment is serviced by Monaco Mechanical, Lisle, IL. A copy of the equipment list they maintain is included in this section.

#### **Original 1980 Building Heating & Cooling Plant:**

This area of the building is serviced by a Bryan hot water boiler HWB-1, located in the west mechanical room. This boiler provides hot water to various heating elements including cabinet unit heaters, convectors, etc. The age of the boiler could not be verified but is in the 5-8-year-old range based on model number. Distributed ventilated heating is provided by two Trane Air Handling Units (AHU-1W and AHU-2W), located in the west mechanical room. These units are approximately 37 years old. Cooling to the AHU's are supported via two Carrier condensing units, located in the west mechanical courtyard. These units are approximately 5 years old. There are also two Nortec humidifier units that are associated with each AHU. The system is controlled via a Precision Controls building automation system.



The system as it exists today provides sufficient heating, cooling and ventilation capacity. Due to changes in room usage in occupancy there are areas that are imbalanced and require adjustments or modifications to provide thermal comfort. The age of the Air Handling Units is the main concern as they are beyond their rated useful life of 30-35 years. They are of an age where parts are difficult to source, and the existing system is being maintained through the experience and familiarity of the system by Monaco. In the event of a complete failure of a system component, the main portion of the library could be without service for an extended period of time (4-8 weeks).

RTU-1: This unit apparently only serves the adult services office on the first floor and is approximately nine years old. It is not known why this unit was added to the Library, but it may have had something to do with the office being closed in and not being provided enough volume and capacity for thermal comfort and ventilation. RTU-1 has a useful life of 20 years, so other than operating costs, it should be able to be maintained with normal maintenance. As part of the replacement of the AHU's mentioned above, it may make sense to have this area re-engineered to determine if RTU-1 is still necessary.

### **1987 Addition Heating & Cooling Plant:**

This area of the building is serviced by a Weil McLain hot water boiler HWB-E, located in the east mechanical room. This boiler provides hot water to various heating elements including cabinet unit heaters, convectors, etc. The boiler age is undetermined but is thought to be original from when the addition was constructed (30+ years). Distributed ventilated heating is provided by two Trane Air Handling Units (AHU-1E and AHU-2E), located in the west mechanical room. These units are approximately 30 years old. Cooling to the AHU's are supported via two condensing units (one Carrier – 5 years old and one Trane – 9 years old), located in the east mechanical courtyard. There is also one Carnes humidifier unit that serves these units. The system is controlled via a building automation system (Precision).



The system as it exists today provides sufficient heating, cooling and ventilation to the east addition portion of the building. The age of the Air Handling Units is the main concern as they are at their rated useful life of 30-35 years and experience frequent service calls. They are of an age where parts are difficult to source, and the existing system is being maintained through the experience and familiarity of the system by Monaco. In the event of a complete failure of a system component, the east portion of the library could be without service for an extended period of time (4-8 weeks). Additionally, the age and efficiency of the boiler indicate that a plan to replace the boiler would be consistent with good capital planning.

**Miscellaneous Systems:**

The server room is cooled by a Carrier Split System that has a fan coil unit inside the room and an air-cooled condensing unit located outside the south wall of the building adjacent to the server room.



Inline exhaust fans provide toilet, kitchenette and general building exhaust and appear to be original to the area of the building area they serve.

The book drop room adjacent to the main entry is served by a dedicated fire control system. This is consistent with good practices for this room type.



The building is served by a Precision Controls building automation system.

It was noted by staff that the storage room has a residential size plug-in dehumidifier unit running. This was introduced to improve overall air quality of the storage room for the storage of books and paper products.

**Recommendations:**

- Original 1980 Building Heating & Cooling Plant

The Trane Air Handling Units (AHU-1W and AHU-2W) are beyond their useful life and should be replaced. The Library has been served well by Monaco to keep them going. However, due to their age and the potential challenge of sourcing parts, the units are at risk of going down and not being able to be made operational without a wholesale replacement. This puts the Library at risk for not having HVAC in a substantial portion of the building for an extended period of time. **Priority – Critical.**

The associated Carrier condensing units are only 5 years old and will serve the Library for at least 20 more years. **No Rating required.**

The Bryan Boiler is estimated to be 5-8 years old. These units have a 25-30-year useful life and should serve the library for 20 years. **No Rating required.**

- 1987 Addition Heating & Cooling Plant

The Weil-McClain boiler appears original to the addition and is nearing the end of its useful life. That said, it is the style of boiler that can be repaired and has been kept in good condition. It is not as efficient as modern boilers and the Library would benefit from higher efficiency boilers. As part of capital planning this boiler should be scheduled for replacement in the 7-10-year range. **Priority B.**

The circulation pumps and humidifier are all in good condition and can remain.

The Trane Air Handling Units (AHU-1E and AHU-2E) are at the end of their useful life and should be scheduled for replacement. The Library has been served well by Monaco to keep them going, however the maintenance reports on these units indicate a recurring series of problems. Due to their age, their maintenance record and the potential challenge of sourcing parts, the units are at risk of going down and not being able to be made operational without a wholesale replacement. This puts the Library at risk for not having HVAC in a substantial portion of the building for an extended period of time. **Priority – Critical.**

The associated Carrier and Trane condensing units are 5 and 9 years old, respectively and will serve the Library for at least 15 to 20 more years. **Priority C.**

- Miscellaneous Systems

The duct free split system serving the server room is in good condition, is 6 years old and can remain unless equipment addition within the room requires more cooling capacity. The useful life of these smaller units tends to be in the 10-15-year range. **Priority C.**

Inline toilet and general exhaust fans are original to the areas they serve and should be considered for replacement. Staff reported that during the course of the assessment the fan motor that serves the main public restrooms was rebuilt, as it was not able to be replaced due to its current configuration. **Priority – N/A.**

The residential dehumidifier currently being used in the west storage room provides some limited benefit. The storage room itself was built as a simple concrete box with a roof. It has sprinkler piping and the most basic radiant hot water piping for heat. There is no ventilation or cooling. Adding proper dehumidification to this space would require further engineering analysis to properly determine options. **Priority – A (analysis only).**





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Lisle Public Library Equipment List

Qty	Item	Brand	Model	Serial	Age	Useful Life	Tag #	Location
1	AHU	Trane	CCBA083BEAO	U80F15038	37		AHU-1W	W Mech. Room
1	AHU	Trane	CCDA143TDA	U80F15037	37		AHU-2W	W Mech. Room
1	Condensing Unit	Carrier	38AUZA25A0A5	4122U46962	5		CU-2W	Outside W Mech Rm
1	Condensing Unit	Carrier	38AUDB12A0M5A0A0A0	4612C93966	5			Outside W Mech Rm
1	Mini Split	Carrier	38MVC024---301	0111V03819	6			Outside S Wall
1	Exhaust Fan	Cook					EF1	West Roof
1	Exhaust Fan	Centri Master	PV135E4	0006D2047004			EF2	
1	RTU	York	D2NP030N05606A	NON8505683	9		RTU #1	Roof
1	AHU	Trane	CCDB17BBNG	K87A00459	30		AHU-2E	E Mech Room
1	AHU	Trane			30		AHU-1E	E Mech Room
1	Condensing Unit	Trane	RAUCC25FBZ03A0DF00010	C08E04990	9		CU-2E	Outside E Mech Rm
1	Condensing Unit	Carrier	38AUDB14AoM5-OAOAO	4612C93971	5		CU-1E	Outside E Mech Rm
1	Humidifier	Carnes	HCDGCU030	784241.001			AHU-2E	E Mech Room
1	Humidifier	Nortec	NHRS-030	2039403			AHU-2W	W Mech Room
1	Humidifier	Nortec	NHRS-015	2039402			AHU-1W	W Mech Room
1	DHW Tank	State	GS640YBRT	9211681016	25		DHW Tank	Boiler Room
1	Pump	B&G	Series 100 BNF G30				DHW Circ Pump	Boiler Room
1	Pump	B&G					Storage Room Radiation	Boiler Room
1	Pump	Taco	L64LCLN3 6.4 5/80				West Zone Pump	Boiler Room
1	Pump	Amtrol					East Zone Pump	Boiler Room
1	Boiler	Bryan	HE-CLM90-W-FD-(BO)	99454			HWB-1	Boiler Room
1	Boiler	Weil-McLain	80				HWB-E	Boiler Room
1	Air Compressor	ACP					East Air Compressor	E Mech Room
1	Mini Split-Evaporator	Carrier	40MVC024-301	1011V09041	6		Ductless Split	Sever Room

## **PLUMBING**

### **Existing Conditions:**

The 2-1/2" cold water service that enters the south side of the building is original to the 1980 building and is constructed of galvanized piping. The water service is equipped with a Village of Lisle water meter. Domestic water is distributed from the service with copper domestic water piping and also provides service to the sprinkler main.



The main domestic water heater is located in the west mechanical. The domestic water heater is a 50-gallon State 40,000 BTU gas fired tank type water heater. The domestic water heater was replaced on 2011 and is in good condition.

A small domestic water heater serves the main public restrooms on the intermediate level. This unit was apparently installed in 1996. This unit is beyond its useful life and should be scheduled for replacement within the next fiscal year.



Toilet room plumbing fixtures are a variety of standard fixtures. Domestic water supply piping to these fixtures are copper. Water closets and urinals are wall hung and floor mounted china fixtures with sensor-activated battery-powered flush valves. Lavatories are individual china bowls integral with laminate counter and have sensor activated battery-powered faucets. The battery-operated function is subject to outages due to battery life. The fixtures are all in good condition.



Sanitary drainage is mainly cast-iron piping. Piping is in good condition and waste flows well under normal conditions. Piping clogs have been noted in the original building and were serviced via rodding. Occasional blockages do occur when library patrons' flush improper items.

**Revision Recommendations:**

Replace the domestic water heater in the janitor's closet serving the public restrooms on the Intermediate Level.  
**Priority – A.**

## **ELECTRICAL**

### **Existing Conditions**

#### **Electrical Service:**

The building is served by a 208Y/120V 3-Phase 4-wire utility service feeding two separately metered switchboards. Each switchboard is rated at 600-amps and is protected with a main fused switch. The age of the equipment is unknown but appears to be original to the building. The second service appears to have been added with the building addition.

Based on the demand history of the building, only 37% of the total electrical capacity is used. Since the service is split between two entrance locations, the balance of the demand between the two services cannot be determined without additional metering. Therefore, each switchboard can be assumed to have a minimum spare capacity of 25%. Unless significant changes are expected, such as HVAC additions, the capacity is sufficient. The majority of the issues within the building relate to aging equipment and location/access to power where desired.

Staff reported times of power surges. Identifying the source of power surges is complicated at best. The issue could range from ComEd power entering the building, to imbalanced loads within the two switchboards, to aging circuit breakers, to a surge condition related to equipment within the building. There are ways to mitigate surges, both on power entering the building and within the building itself. Given that the building is supplied with more than adequate power, metering the two services on the distribution side of the panel may provide further feedback on the magnitude of this issue.

Dedicated electrical space within mechanical rooms is being used for storage, which is not a desired condition.

#### **Electrical Power Distribution:**

Lighting/receptacle panels contain circuit breakers and distribute power throughout the facility. Panels do contain some spaces for additional loads. Receptacles are provided throughout the building but with the increase in portable devices and the demand for additional power outlets, the location and quantity of receptacles is not ideal.

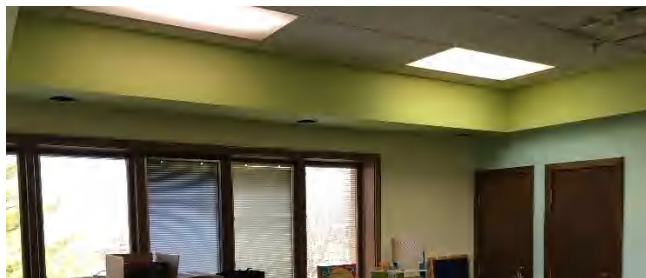
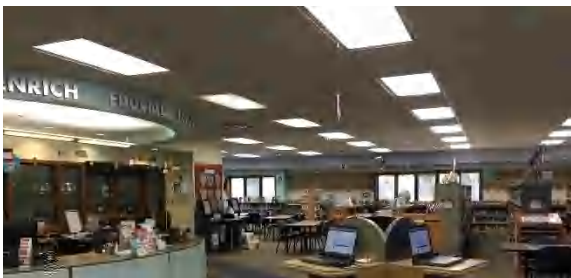


**Lighting:**

There are various types of fixtures inside the facility including pendant lights, 2'x2' lay-in, 2'x4' lay-in, troffers, round downlights, strip lights and decorative pendant lights. The Library has been on a program of updating fluorescent lamps with LED lamps within existing fixtures. We understand this program is continuing as some fixtures still contain fluorescent source with either T12 or pin-based compact fluorescent lamps. There are lights with incandescent lamps and some strip lights do still contain T12 lamps but they are isolated in the electrical/mechanical spaces.



It was reported that the LED lamp replacement is being met with limited success. The pendant style light fixtures on the first floor are able to accept the LED lamps and function well. The older lay-in fixtures apparently do not contain the componentry to accommodate the newer LED lamps.



There are no lighting controls beyond manual switches, for large areas of the building. It appears the original lighting control system was disabled and is no longer in use.

Lights are installed on the underside of the exterior canopy, around the perimeter of the building and in the parking lot. The exterior pole lights were being serviced during our inspection as they were partially not operational.

**Emergency Lighting & Exit Signs:**

Battery packs are installed to provide emergency lighting. Exit signs contain battery back-up and appear to be adequately located. Both device types appear to be in fair condition. Maintenance service is recommended to test all the batteries to ensure they are properly charged, and bulbs are fully functional. Emergency lighting is recommended for the electrical equipment spaces.



**Fire Alarm System:**

The building is protected throughout with smoke/heat detectors and audio/visual notification devices that are tied to a control panel located in the First-Floor mechanical room. The fire alarm control panel was manufactured by Simplex (4007ES) and it is an addressable system. The system was recently updated (January, 2019) is in good condition and the devices appear to be adequately installed throughout the building.



**Sprinkler System:**

The building is served throughout with a wet sprinkler system. The system was recently inspected as part of the above referenced Fire Alarm upgrade.

**UPS System:**

There is an Uninterruptable Power Source (UPS) battery back-up system in the west mechanical room that supports the servers. These systems require proper maintenance, testing and periodic battery replacement to verify the adequacy and availability of back-up power for the intended use, in the event of a power outage. The system is over ten years old. Staff reported they are evaluating quotes for preventive maintenance or replacement.

**Sound System:**

There is a paging system in the building with speakers located in limited areas, that is reported to be marginally effective, if at all. The paging system provides a mission critical function to staff for announcements and in the event of emergencies. The staff has expressed concerns over the quality of the system and the ability of the system to provide coverage in the building. The system was manufactured by Bogen and is near the end of its serviceable life.



**Recommendations:**

Some emergency lighting may not be operational. All units should be tested and verified. Batteries may need to be replaced. **Priority – A.**

Electrical equipment spaces should have emergency lighting added. **Priority – A.**

Lighting switching, and controls should be updated. In the event of future replacement of the existing lighting, energy saving controls, such as occupancy sensors, would be desired in some cases, required to meet the updated energy codes. **Priority – A.**

Panelboards contain original circuit breakers that are at or beyond their expected useful life and may begin to trip prematurely. These units should be updated. **Priority – A.**

T12 fluorescent lighting still exists throughout various areas of the building, while some has been replaced with LED lamps. The LED replacement program should continue but will likely need to incorporate replacement of older fixtures (Note: There are grant programs that help offset some costs associated with lighting replacement projects). **Priority - A.**

Verify proper operation of the UPS. Test, clean and replace batteries as necessary or recommended. **Priority – Critical.**

The paging sound system is not functional. This system should be evaluated for upgrade or replacement. **Priority – Critical.**

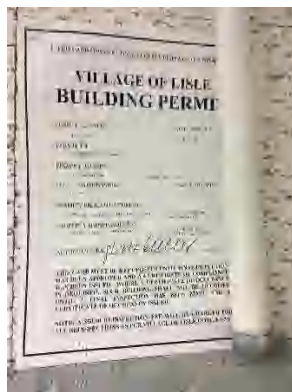
Eliminate storage in dedicated electrical spaces. **Priority – A.**

Access to power is not ideal. Floor boxes are not located next to current furniture configurations, or wall boxes are not conveniently located. The Library has resorted to installing power poles to provide staff and patron access to power where needed. Due to the need for lighting controls, updated light fixtures, concerns about power quality (surges), access to power, an inadequate paging system and replacing the UPS device, it would be recommended to work with an electrical engineer familiar with library operation and to perform an analysis of your electrical system needs going forward. Each of these items could be handled on a one-off basis as currently being attempted. However, the combination of lighting replacement, lighting controls and power needs would benefit the Library by taking a more comprehensive look at these issues together. **Priority – A (analysis only).**

## **ELEVATOR**

### **ELEVATOR – Existing Conditions:**

The building is served by a double-sided three stop elevator. The elevator was recently modernized in 2018 by Colley Elevator and is current with all inspections. Due to the recent modernization work this elevator will continue to serve the intended purpose for 10-20 years with proper maintenance and inspections. **Priority – No Rating Required.**



## Section 6 – Financial Projections

The following items were identified as part of the assessment for recommended corrective action. The table below summarizes the projected costs associated with the recommended actions, by priority (High, Medium or Low). There were no items identified as Immediate Priority, meaning that corrective action is required as soon as possible to prevent a catastrophic failure that could impact the ability of the Library to operate. The High Priority items are recommended for attention within the next year, or to at least have a plan for action prioritized for action within that year. The remaining items that fall within Medium or Low Priority can be further prioritized based on available financial resources and the preferences of the Library Board, Administration and Staff. As lesser priority items, these corrective actions can be grouped to be accomplished by system, by functional area of the library or in conjunction with any planned renovations/upgrades to the library spaces.

Lisle Public Library  
 Lisle, IL

Frederick Quinn Corporation  
 07/10/19

### Assessment of Existing Conditions and Recommended Actions

Category	Item No.	Status	Recommendations	Priority			
				Critical	A: 2-5 yrs.	B: 5-10 yrs.	C: 10+ yrs.
<b>CIVIL/SITE</b>							
- Landscape drainage	CS-1	Impacting safety and sidewalks	Install drain tile and French drain system	\$ 10,000			
- Masonry Planters and detention retaining Walls	CS-2	Fair Condition	Plan for repair maintenance			\$ 25,000	
- Annual Sealcoating	CS-3	Good Condition	Budget for periodic maintenance		\$ 20,000		
- Broken Curbs	CS-4	Fair Condition	Repair as needed	\$ 15,000			
- Repaving Parking Lot	CS-5	Good – Fair Condition	Repairs as needed		\$ 15,000		
	CS-5a		Budget for Replacement				\$ 250,000
- Sidewalk Repair	CS-6	Good - Fair Conditions	Repairs as needed		\$ 10,000		
	CS-6a		Budget for Replacement with Parking Lot				\$ 100,000
<b>BUILDING ENVELOPE</b>							
- Stone	BE-1	Good Condition	Minor repair as needed			\$ 5,000	
			Whole building tuckpointing				\$ 25,000
- Wood Siding	BE-2	Good Condition	Budget for repainting			\$20,000	
- Exterior HM Doors	BE-3	Fair Condition	Replace Program Room exterior door		\$ 3,500		
- Windows	BE-4	Fair Condition	Replace approximately 6 window units		\$ 15,000		
	BE-4a	Good Condition	Budget for replacement of original windows				\$ 45,000
- Roof and Metal Panels	BE-5	Good Condition	Budget for replacement				\$ 550,000

**Lisle Public Library**  
**Lisle, IL**  
**Assessment of Existing Conditions and Recommended Actions**

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Category	Item No.	Status	Recommendations	Priority			
				Critical	A: 2-5 yrs.	B: 5-10 yrs.	C: 10+ yrs.
<b>BUILDING INTERIOR</b>							
- Carpet	BI-1	Fair Condition	Replace older (8+) carpet		\$ 100,000		
- Upgrade Restroom Interiors	BI-2	Fair Condition	Upgrade finishes and devices as needed		\$ 125,000		
- Painting	BI-3	Good Condition	Budget for periodic maintenance and repainting			\$ 20,000	
- Ceiling Tiles	BI-4	Good-Fair Condition	Budget for replacing tile pads as needed			\$ 90,000	
- Door Hardware	BI-5	Good – Fair Condition	Budget for upgrading hardware			\$ 20,000	
<b>HVAC Systems</b>							
- West AHU's	HVAC-1	Critical	Replace within next fiscal year	\$ 200,000			
- East Boiler	HVAC-2	Good Condition	Replace as needed			\$ 35,000	
- East AHU's	HVAC-3	Good Condition	Replace as needed	\$ 200,000			
- East Condensing Units	HVAC-4	Good Condition	Replace as needed				\$ 50,000
- Server Room split system	HVAC -5	Good Condition	Replace as needed			\$ 10,000	
- Storage Room Dehumidifier	HVAC-6	Residential Unit in place	Engineering analysis to improve humidity conditions <b>(analysis only)</b>		\$ 3,000		
<b>PLUMBING</b>							
- Public restroom water heater	P-1	Fair Condition	Replace water heater		\$ 1,000		
-							



**Lisle Public Library**  
**Lisle, IL**  
**Assessment of Existing Conditions and Recommended Actions**

**Frederick Quinn Corporation**  
**07/10/19**

Category	Item No.	Status	Recommendations	Priority			
				Critical	A: 2-5 yrs.	B: 5-10 yrs.	C: 10+ yrs.
<b>ELECTRICAL</b>							
Emergency Lighting	E-1	Fair Condition	Test and replace batteries, replace as necessary.		\$ 6,000		
Emergency Lighting in electrical equipment spaces	E-2	N/A	Install to improve safety		\$ 5,000		
Lighting Controls	E-3	Fair Condition	Upgrade as needed		\$10,000-25,000		
Circuit Breakers	E-4	Fair Condition	Upgrade as needed		\$ 15,000		
LED Lamp Replacement	E-5	Fair Condition	Upgrade Lamps as fixtures allow		\$ 4,000		
	E-5a		Replace outdated light fixtures as needed		\$ 60,000		
Uninterruptible Power Source (UPS) Serve back-up	E-6	Critical	Implement replacement/upgrade program currently being reviewed	\$ 30,000			
Paging System	E-7	Marginal	Replace system	\$ 30,000			
Correct storage issue in electrical spaces	E-8	Operational Issue	Remove items from areas of electrical panels		N/A		
Analyze Power issues	E-9	Existing Loads need to be metered and analyzed and access to power for patrons and staff needs to be investigated	Retain engineer to investigate issues related to power ( <b>analysis only</b> )		\$ 15,000		
<b>SITE STORMWATER</b>							
- Repairs noted in Visu-Sewer report	SS-1	Critical		\$ 15,000			
- Retain Professional Engineer for Analysis	SS-2	Recommended		\$ 10,000			

	Critical 0-2 Years	2 – 5 years	5-10 years	10+ years
<b>Summary of Costs</b>	<b>\$510,000</b>	<b>\$417,500</b>	<b>\$225,000</b>	<b>\$1,020,000</b>

The costs indicated are construction costs only. Total project costs need to include “soft” costs: A/E/fees, testing, contingencies etc. These additional costs may range from 15% to 30% of the project cost and depend on the complexity of the work, the total volume of the work and other factors. In addition, it is recommended that an amount equaling 3% be added for each year beyond 2020, to accommodate potential for inflation.

It should also be noted that the costs provided are specific to the systems or item being assessed. The costs do NOT include factors that may be necessary or warranted with regard to the architectural considerations when implementing the corrective action. For example: When implementing an upgraded mechanical system, the library may choose to coordinate that work with new ceilings or lighting. These aggregated costs are not reflected in the financial projections.

## **APPENDIX –**

### **STORMWATER REVIEW:**

As part of the assessment FQC was also asked to review a report of the stormwater system that was previously conducted. The stormwater system report was prepared by Visu-Sewer, dated October 6, 2018 and includes descriptions of the different storm piping sections and structures. The report includes videotape survey of the various system segments and recommendations for corrective actions. FQC provided an initial review of the report and forwarded that to the Library on April 17, 2019. That initial review is included in this section, and still provides appropriate recommendations for steps moving forward. Subsequent to that time further rain events resulted in additional backups in the system. Consequently, FQC arranged for a site visit and meeting with a civil engineer to review the situation. That meeting, which included Mr. Mike Renner, PE, a Principal with Eriksson Engineering, took place on Tuesday, May 21, 2019.

The initial review by FQC indicated the importance of keeping the restrictors intact, cleaned and maintained, and to implement the repair noted between manhole 2HT49 to 2HT42 by Visu-Sewer. Since the date of the initial review the additional rain events led to the detention basin south of the upper parking lot filling with water, and the parking lot itself experiencing backups. The backups appear to be the result of erosion from within the drain tile system leaching mud into the system causing a buildup at the restrictor(s) and causing further backups. These conditions were all reviewed with Mr. Renner in our May 21<sup>st</sup> meeting.

Based on the information provided in the Visu-Sewer report, a further review of existing site conditions and the meeting with Mr. Renner, FQC provides the following:

- The stormwater flow into the pipe and structure system has eroded to the point that it is carrying sediment, mud and debris that is clogging the restrictors. This condition is exacerbated by the repair items noted in the Visu-Sewer report.
- The storm structure on the far southeast portion of the Library site collects rainwater from adjacent properties. This condition could also be a source of debris and mud being introduced into your system and contributing to the backups.
- The stormwater system of piping and structures in place on the Library property has been designed, permitted and installed per codes in place at the time of the respective installation(s). One of the design properties of the system is that it controls (or restricts) the flow rate of water off your property into the public stormwater system. Eliminating these restrictors or changing their intended performance would be in violation of the permit the system was installed according to.
- In addition to the piping and structure stormwater system, the site is experiencing various other stormwater-related issues mentioned in the assessment report. These are primarily related to infiltration of water through landscape beds onto adjacent sidewalks and parking lots. These conditions create safety issues, especially in the winter months, and are eroding some areas around sidewalks and curbs.

The repair items recommended by Visu-Sewer and confirmed by FQC are still valid and are summarized in the April 17<sup>th</sup> FQC memo, copied below. The increased frequency of backups indicates that more immediate attention is required of the restrictors, which would appear to be the main source of clogging and subsequent backups. This issue requires a detailed engineering review, to assure compliance with codes, and to identify the best recommendation moving forward. Mr. Renner indicated that the restrictors in place currently are no longer used in systems and there are alternate devices that may be implemented that satisfy the permitting requirements. These options should be explored as part of a design engineering study of the system.

### **Recommendation:**

FQC recommends retaining a civil engineer to provide a fully engineered solution, that complies with local and County ordinances, that will properly address the causes of and recommended solutions for the various stormwater issues present on site. As part of this approach, FQC recommends moving forward with repairs based on the Visu-Sewer report. Summary follows:

**Visu – Sewer Summary:**

1. ***The initial recommendations to maintain the system and keep the restrictors cleaned out is the most important part of this report.*** It would appear from the report and videos provided that the age of the storm sewer system has led to the conditions you experienced with water backing up into the detention areas and parking lot. The primary cause of these events would appear to be the accumulation over many years of debris into the storm sewer systems, especially at the restrictors. Developing a routine maintenance program and cleaning/televising will result in improved performance of the system and a reduction in the system backing up. The system as designed and installed should not be changed. The restrictors should remain in place as they are a critical part of how the system works in terms of collection, drainage and flow rates. They must, however, be maintained given the age of the installation.
2. The recommendation to install catch basin filters in the lids of the basins is something I would hold off on for now. Clearly the idea of collecting debris at the lid would reduce the infiltration of debris into the sewer system. However, these filters tend to get clogged themselves and would potentially result in other challenges. Now that the system has been cleaned of years of debris, I would think this could be monitored for future consideration. Of course, routine site maintenance including reducing opportunities for landscape rock, or rock ballast from roofs (previously) and regular landscape debris should continue to be a priority.
3. The recommendation for a repair between manhole 2HT49 to 2HT42 is important. The large offset could result in deterioration of the earth around the pipe and also significantly impact the performance of the sewer system in that area. I would recommend doing this work this summer.
4. The balance of the recommendations for CIPP lining were provided due to age of the concrete pipes. The areas identified in the summary show evidence of cracking in areas, mineral deposit collection and a couple of areas where the pipes were slightly separated. While these occurrences should be monitored for further deterioration, they do not pose an immediate concern. These corrective measures could be budgeted and planned for over the course of 2-5 years.