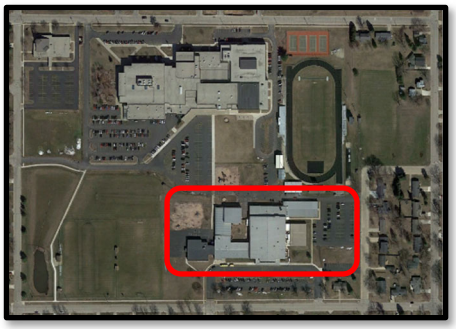
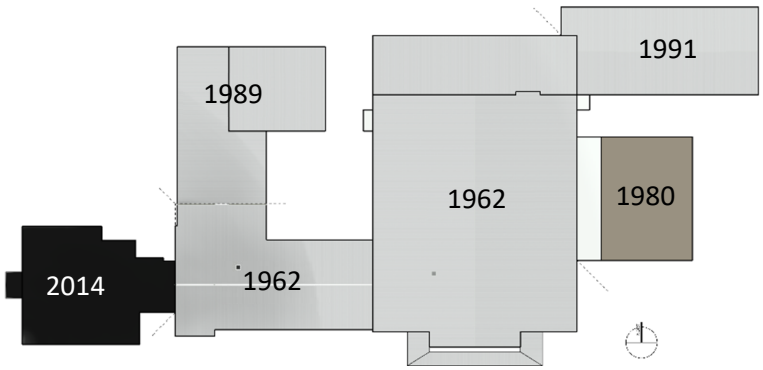
Clay Lamberton Elementary School

Building Overview:



Clay Lamberton Elementary School is a 4K through 5th-grade facility located on a contiguous property with the Berlin area school district's middle school and high school. The original building was built in 1962 and housed the elementary school and two-story junior high school. In 1980 the natatorium was constructed east of the two-story junior high portion of the building. The first-grade wing was added to the north of the grade school in 1989, followed by the fifth-grade wing north of the natatorium in 1991. In 2014, the junior high school was moved to a new building, and a kindergarten wing was added to the west end of the facility.



Building Evolution Diagram

The building's location is surrounded by residential neighborhoods to the west, south, and east. Having a closely grouped campus allows for maximum efficiency for the Facilities and Grounds staff to effectively manage the district's buildings and grounds. The district's business office is also located just south and east of the paved parking lots servicing the elementary school. The Facilities and Grounds team practices diligence in maintaining the building's assemblies and HVAC equipment. In general, the Elementary School HVAC equipment and assemblies are mostly in good condition.

The district continues to perform regimented annual maintenance on systems, equipment, exterior facades, and interiors but also has a unique opportunity to replace existing systems with newer, more efficient technology and improve the learning environment by addressing some architectural features as well.

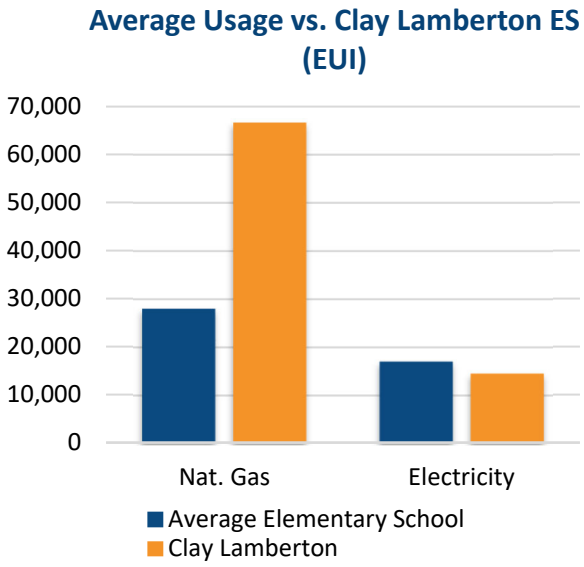
Building's Highest Priorities

1) Site Paving
2) Sealant on Metal Roofing
3) Interior Finishes
4) Administration reconfiguration
5) Cooling
6) AHU/HRV Replacements

This summary of facility energy consumption and trends is for 2019 only. Due to COVID-19, electric and gas costs are assumed to be skewed for 2020 and 2021.The building performs with a total energy intensity usage of 81,147 BTU/SF. This is about what is anticipated for a high-performing Elementary School in the area.

Building Performance:

Building Area (approx.):	143,793 SF	
Annual Electric Cost:	$60,725	$0.42/SF
Annual Gas Cost:	$11,041	$0.08/SF
Total Utility Cost:	$71,766	$0.50/SF
Electric Usage Intensity:	14,488 BTU/SF	
Gas Usage Intensity:	66,659 BTU/SF	
Total Energy Intensity:	81,147 BTU/SF	



Site Features & Improvements

Existing Condition Assessment:

- Concrete walks: There are several locations where the concrete curb is deteriorated significantly (Figure Ext.1a & Ext. 1b). The curb has cracked and crumbled to a condition exposing the subgrade. This will eventually erode and begin to undermine the adjacent concrete walk causing pockets of instability.

Figure Ext. 1a

This condition occurs in several locations on the south side of the building, which is the facility's main façade.

Figure Ext. 1b

Some sections of the concrete sidewalk are significantly cracked (Figure Ext.2). These sections, if done properly, can be replaced separately, but full contiguous replacement provides a better solution with a longer life cycle.

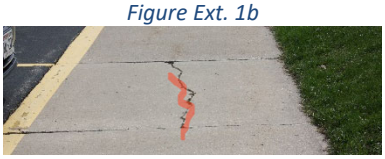


Figure Ext. 2

Some of these deficiencies are being repaired in the summer of 2022, as seen in Figure Ext. 3.

Figure Ext. 2

- Asphalt Paving: The asphalt paving is in poor to fair condition. The heavily traveled portions of the paving have significant cracking (Figures Ext.4 – Ext.7).

Figure Ext. 3

The main drive aisle in front of the building has some locations that are cracked beyond filling and sealing the cracks. When the cracking in asphalt reaches the point where the cracks form pavement sections with small pieces resembling spiderwebs (Figures Ext.4 & Ext.5), the pieces will eventually dislodge and create potholes.

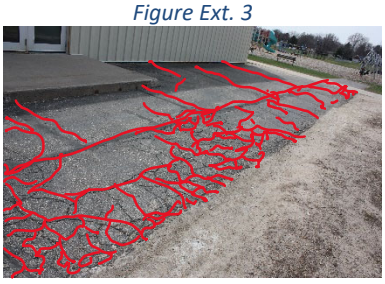


Figure Ext. 4

Note the curb deterioration at the north exit stoop in Figure Ext.6 is an additional concern contributing to the deterioration of the asphalt.

The Service drive on the north side of the building is in poor condition in several locations (Figure Ext.5 & Ext. 6). The cracks allow water to infiltrate the substrate. In this climate, the water freezes and heaves the asphalt making more cracks. The cold seams between section installations usually are the first cracks to form. One of the concerns with the extent of the north drive isle condition is that the asphalt will begin to dislodge, and the students running out to the playground surfaces will trip on potholes or loose pieces of asphalt.

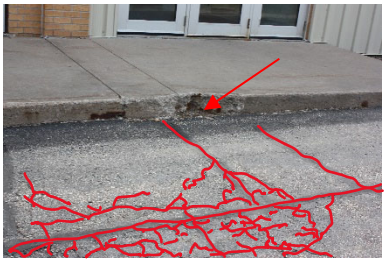


Figure Ext. 5

Sealing the cracks after they first form can slow the deterioration. Eventually, the sections of paving move through freeze-thaw cycles, and the crack gets wider making it more difficult to fill and maintain (Figure Ext.7).

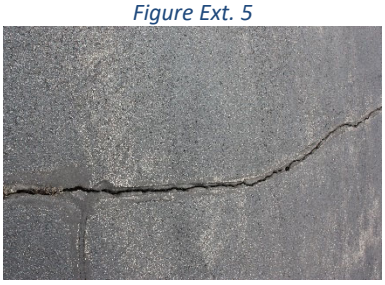


Figure Ext. 6

- Play Areas and Structures: The play structures are in fair condition but are showing significant wear (Figure Ext.8 – Ext.10). These structures are dated, and many of the features are not particularly utilized by most of the students.

Figure Ext. 7

The hanging chain bridges are not usually included in today's playground systems. Static bridges are more common safety concerns.

Modern playground systems also integrate more vibrant colors with UV stable materials to prevent fading, as well as more interactive learning stations for Play & Learn functions. Additionally, it is becoming more popular to also create outdoor classroom environments to allow for open-air instruction.

Figure Ext. 8

Paint is faded, chipped, or worn on the older, outdated equipment (Figure Ext.10).

The wood chips implemented for the playing surface, although they may be certified, still provide difficulty in allowing wheelchair-bound individuals to navigate to the playground equipment (Figure Ext.10). Poured surfaces are becoming more popular; providing safer navigable surfaces that don't allow the surface pieces to spread away from the play area.

Figure Ext. 9

The outdoor basketball hoops at Clay Lamberton have some rusted and faded backboards; the goal posts are chipped, and the paint is fading. Most of the backboards do not have the shooter's square. There is also no striping at these hoop locations, which may be desirable for the older students interested in pursuing the sport in the future.

Figure Ext. 10

- Perimeter Foundation & Drainage conditions: In some places, particularly at the natatorium, the foundation insulation is exposed (Figure Ext.12). Ultraviolet light from the sun as well as lawn care equipment damage the insulation. This could potentially contribute to compromising the below-grade waterproofing.

Figure Ext. 11

Where the grade changes at the natatorium following a correctly constructed with a stepped brick ledge foundation (Figure Ext.13). The top of the waterproofing and insulation is exposed here as well.

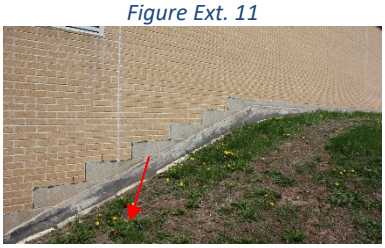


Figure Ext. 12

On the north side of the building where the service drive is located, the asphalt runs right up to the face of the building. It is preferable to have a soft scape or landscape buffer at the perimeter of the building, but in this case, the edge of pavement is being used as part of the stormwater control system. The stormwater flow at the edge of the building has infiltrated below the asphalt and is undermining asphalt and deteriorating the grade at the edge of the wall (Figure Ext.14).

Figure Ext. 13

This condition occurs extensively along the edge of the building, as seen in Figure Ext.15, where the asphalt is sinking (Figure Ext.15).

Figure Ext. 14

On the south side of the building, at a location where the lamb's tongue stormwater discharge leaves the building, landscape material is being pushed by the volume of water coming out of the outlet. A better discharge system may be desirable to prevent the displacement of landscape material.

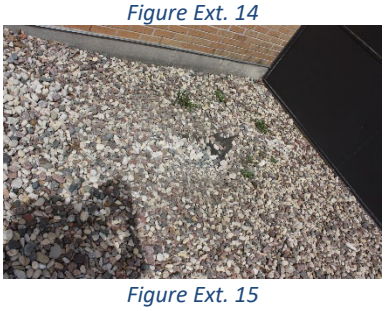


Figure Ext. 15

Building Envelope Conditions

Existing Condition Assessment:

- Exterior Openings:

- Exit 1: This door is a double-leaf with sidelights on each side of the door. The opening is in good condition and well protected by the canopy. The perimeter sealant is in good condition, and the continuous hinges will provide longevity to the door leaves and frame. Card reader access is available at this door.

Figure Ext. 16

A little rust is forming at the base of the metal frame at the door's hinges (Figure Ext.18). The rust will need to be mitigated before it progresses to keep the rust from spreading and to increase the lifespan of the door assembly.

Figure Ext. 17

- Main Exit/Entrance 2: This storefront type of assembly is the main controlled entrance for public access to the facility. The vestibule at the entrance is protected by the canopy (Figure Ext.19). Card reader access is also available at this door

Figure Ext. 18

Some gaps in the assembly may cause air infiltration. Sealing these with a calk matching the frame color will prevent air leakage. The gaskets are in, and the existing sealants are in good condition.

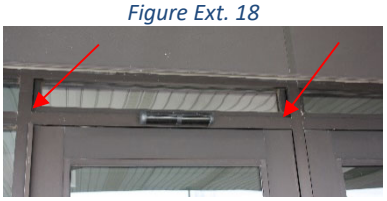


Figure Ext. 19

- Exit/Entrance 3: Similar to the interior doors at the main entrance, this metal-framed double door has large sidelights and transoms. The canopy protects the opening, which increases the longevity of the seals and weather stripping. There are impact dents at the base of the door leaves and some rust forming at the bottom of the frames at the hinges (Figure Ext. 21). Card reader access is also available at this door.

Figure Ext. 20

- Exit/ Convenience 3.5: This door is convenient access to the natatorium (Figure Ext. 22). A hollow metal frame and the insulated flush door panel is in good condition with little rust and intact sealants and door sweep. This door is in better condition since it sees less use than other openings on the building. This door is not intended to be for public use, and no card access is not provided or necessary.

Figure Ext. 21

- Exit/Entrance 4: This hollow metal door has double full-lite leaves and is in good condition. Electronic card reader access is installed on this door as it is adjacent to the staff parking lot and provides public access to the natatorium. The weather-stripping sweep termination bar has a portion missing at the center mullion on both leaves (Figure Ext.23). The sealant at the frame perimeter is intact and functioning. The canopy here helps protect the opening from the elements.

Figure Ext. 22

- Exit/Entrance 5: This hollow metal door has double full-lite leaves and is in good condition. Electronic card reader access is installed on this door as it is adjacent to the staff parking lot. There is rust at the bottom of the door frame that needs attention to arrest the progression of rust (Figure Ext.24). The sealant at the frame perimeter is intact and functioning. The canopy here helps protect the opening from the elements.

Figure Ext. 23

- Exit/Receiving 6: This door has direct access to the main ground level mechanical spaces and facility storage/laundry. With a double leaf with an astragal, the doors can open to a larger opening to move equipment in and out of the building. The sealant around the frame is in good condition; however, there is rust at the bottom of the frames, and the sweep termination bar is loose (Figure Ext.25). In lieu of a canopy, this door is set back in an alcove to provide protection from the elements. Card reader access is also available for this door.

Figure Ext. 24

- Exit/Entrance 7: This door accesses the school through a vestibule and is adjacent to the kitchen. Additionally, there is a direct exterior access door to the kitchen on an adjacent wall (Figure Ext.26).

Figure Ext. 25

The steel plate above the opening is sagging (Figure Ext.27). This is a structural steel lintel that may appear to be sagging, but it could be due to rust jacking. When steel is compromised and exposed to water, it rusts. Advanced rusting will cause the steel to separate into stratified layers, becoming thicker and weaker at the same time. If this is what is causing the issue, this will need to be investigated to verify the cause soon. The sealant applied here may be causing the condition to worsen.

Figure Ext. 26

- Exit/Entrance 8: This set of aluminum framed full-lite doors is exit and access to the first-grade wing of the building. These are set into a metal panel-clad façade. One of the three doors has card reader access for security. There is a crack at the building edge of the stoop and some spalled concrete at the threshold (Figure Ext.28). This location also has a curb at most of the perimeter. The concrete is spalled in a few locations. This curb should also be painted with contrasting paint as a step warning and for the visually impaired (Figure Ext.28).

Figure Ext. 27

- Exit/Entrance 9: This metal framed door accesses the kindergarten wing and has an insulated metal half-lite door with a transom. The bottom of the frame is rusting some (Figure Est.29); however, the sweeps and the perimeter sealants are in good condition. The steel plate at the opening lintel is also showing signs of rust. The door head also has the proper flashing and weeps installed even though the door is set back into an alcove and doesn't usually require weeps in this condition.

Figure Ext. 28

- Exit/Entrance 10: Accessing the west wing of the building, this exit not only has a canopy for weather protection but also provides ADA ramp compliance. The corner of one of the concrete steps is damaged (Figure Ext.30). The door opening assembly is newer and in all-around good condition. Sweeps gaskets and sealants are in good working order.

Figure Ext. 29

- Gym Exits: As exit access from the multipurpose room in the first-grade wing, these three openings are all double leaf doors with center mullions. These are exit-only doors; thus, there is no hardware on one of the sets of doors (Figure Ext.31). the sealants, seals, and sweeps are all in good condition as well.

Figure Ext. 30

The other two openings are identical and in good condition with cylinder locks and pulls on the exterior (Figures Ext.32 & Ext.33). Sealants, sweeps, and seals are in good condition. since these openings see little use and likely not much snow melt salt, they are in good all-around condition.

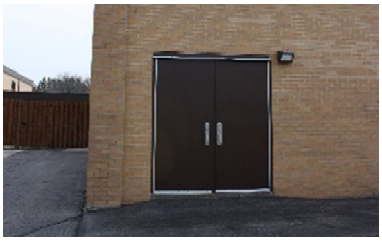


Figure Ext. 31

The concrete and asphalt at the door sill of all three openings are not flush. This is problematic as they likely can't qualify as an ADA exit from the multipurpose room. Making sure at least one, if not all, of these exits have accessible transitions to safety should be a priority.

Figure Ext. 32

- Windows General Conditions:

- Window Type 1: This window is aluminum framed and has an operable panel (Figure Ext.34). The enclosures above and below the window assembly are smooth face panels. The panel is held in place with a baton screwed through the panel to the substrate (Figure Ext.35). Not all the panels have this baton installed. There are several locations where the sealant has been applied to the head of the fasteners at the baton and edge trim. There may have been an issue in the past where the fasteners were leaking, requiring action.


Figure Ext. 33


Figure Ext. 34

At the base of the panels are a gap that appears to act as a weep gap. Typically, a piece of flashing is installed at this location for moisture control. The panel is indicated to be below the floor line, which prevents the opportunity for water infiltration.


Figure Ext. 35

Another location with similar windows in the original building has brick above and below the window assembly (Figure Ext.37).


Figure Ext. 36

- Window Type 2: Like window type 1, this is also aluminum framed and has an operable panel (Figure Ext.34), except there is only one band of glazing instead of fixed lites over the operable below. The enclosures above and below the window assembly are smooth-face panels. The panel is held in place with a baton screwed through the panel to the substrate. There are several locations where the sealant has been applied to the head of the fasteners at the baton and edge trim. There may have been an issue in the past where the fasteners were leaking, requiring action. Some panels have significant scratches on the surface and are mainly found by the north drive aisle.


Figure Ext. 37

At the head of some of the window's calk has been installed at the flashing (Figure Ext.39). This may have been intended to mitigate some water

infiltration; however, the flashing at this location usually is the weep relief for the panel assembly.

Figure Ext. 38

The sealant at the edge of the windows is showing signs of fatigue, and the sealant at the glazing gaskets is failing (Fatigues Ext.40 -Ext. 42).

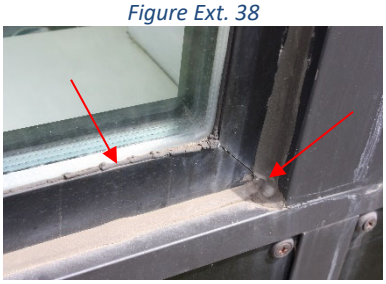


Figure Ext. 39

The failure of the seals will allow water to infiltrate the system (Figure Ext.41 & Ext.42).

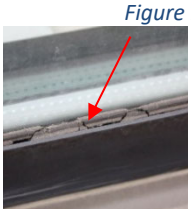


Figure Ext. 40

Figure Ext. 41

Some of the double pane glazing panels are failing (Figure Ext.43). When moisture gets between the panes of glass, it will condense and cause deposits on the inside faces of the panes. This is an indication that the insulating feature of the glazing is compromised. It is possible to replace the sash or replace the glazing unit within the sash in lieu of replacing the entire window assembly.

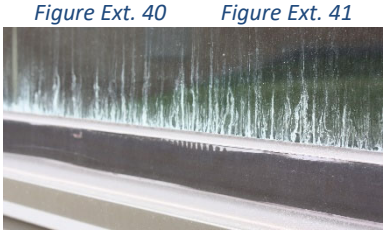


Figure Ext. 42

The sealant around the window frame perimeters is in good condition (Figure Ext.44). At the base of at least one opening, where the metal panels meet the foundation at grade, the concrete Is chipped and may prevent water from properly shedding away. Conditions like these could be patched.

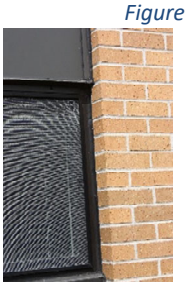


Figure Ext. 43

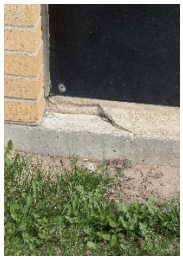


Figure Ext. 44

- Window Type 3: Similar configuration to window type 1. These windows are found in the newer portion of the building. They are aluminum framed and have an operable panel (Figure Ext.46) under both fixed glazing units. The enclosures above and below the window assembly are a similar smooth face panel.


Figure Ext. 45

The perimeter sealant around the windows is in good condition (Figure Ext.47).

Some of the insect screens have tears or holes in them.

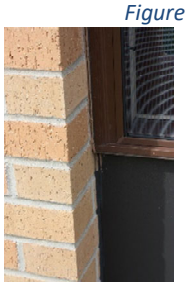


Figure Ext. 46

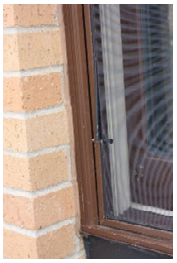


Figure Ext. 47

- Exterior wall conditions:

Most of the walls are similar in construction, having brick masonry and a cum back up. Only the original portion is a mass masonry type construction. The walls are accompanied by a panel at the top of the wall.


Figure Ext. 48

- Wall condition type 1: The brick walls are in good condition. No cracking, efflorescence, or spalling was observed during the survey visit. The mass masonry construction (Figure Ext.49) does not have weeps or vents installed, which is to be expected.

The metal panels are also in good condition (Figures Ext. 50 & Ext. 51), some of which were added when the roof was over-framed, and the pitched standing seam roofing was installed.


Figure Ext. 49


Figure Ext. 50

- Wall condition type 2: Masonry walls have been tuckpointed in various locations, repairing cracks in the mortar. Figure Ext. 52 shows another masonry assembly type which is a cavity wall. The wall has weeps installed at the base of the wall to allow any moisture that infiltrated the cavity to get out.

Figure Ext. 51

- Wall condition type 3: Other cavity wall assemblies that are also constructed as cavity masonry walls have tube weeps at the base of the wall (Figure Ext.53). These walls are in good condition and have been recently inspected.

Figure Ext. 52

- Wall condition type 4: This type of assembly is a metal panel. The metal panel is in good condition as well. No concerns were observed during the survey visit.

Figure Ext. 53

- Wall accessories:

- Masonry Weeps & Vents: Not all of the wall systems have weeps. The original portion of the building weeps below the bottom course of brick. Where weeps are installed and appear to be in working order as no major issues were observed with the wall systems. Inoperable weeps usually can cause efflorescence on the face of masonry as well as spalling brick faces when moisture is trapped in the brick.

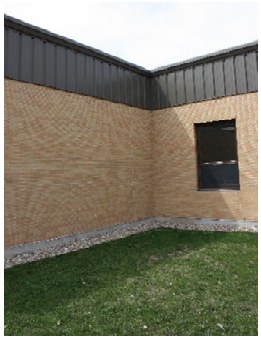


Figure Ext. 54

- Flashing: Through wall flashing is in place where it has been installed as part of the wall assembly (Figures Ext. 56 & Ext. 57).

Figure Ext. 55

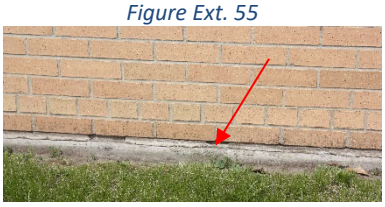


Figure Ext. 56

- Building Expansion Assemblies: The control joints in the masonry have been maintained, and they are functioning properly (Figures Ext. 58 & Ext. 59). There has been maintenance recently completed in the last few years on some of the joints.

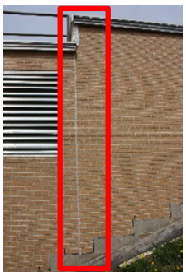


Figure Ext. 57

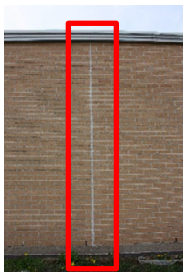


Figure Ext. 58

The control joints need to remain soft and pliable. It is recommended to inspect joint installations 5 years after installation to verify the adhesion to the substrate is intact and to see if ultraviolet light from the sun isn't breaking down the sealant. Figure Ext. 60 shows not only the proper installation of a control joint but also the contractor's attention to detail by applying fine aggregate to the uncured sealant to imitate the mortar joints.

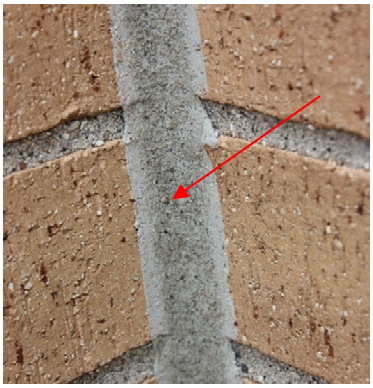


Figure Ext. 59

Control joint placement is also important. Figure Ext. 61 & Ext. 62 indicate proper placement of the joints at masonry openings and changes in masonry configuration.

Very few construction joints were observed to need additional attention, but it is recommended to verify that no installations were missed during the recent maintenance efforts.

Figure Ext. 60

Figure Ext. 61

- Metal Wall Panel:

- Metal Wall Panels: The ribbed metal wall panel at the first-grade wing addition (Figure Ext.63). The metal panel is in good condition despite the slight fading of the finish.

Figure Ext. 62

The other ribbed metal panels are installed as a fascia trim at the top of the masonry walls (Figure Ext.64) and color-coordinated with the smooth panels at the windows.

Figure Ext. 63

- Roofing:

- General Roofing condition: The original flat roof on the building was over-framed (Figure Ext.66) and roofed with a galvanized standing seam installation (Figure Ext.65) sometime after the first-grade wing was constructed in 1989.

The standing seam assemblies are in fair to good condition. Where the roof was over-framed, and the metal roof is fastened directly to the framing (Figure Ext.66). Navigating the roof takes a great deal of caution as there is no sheathing or substrate. There is a potential to cause leaks at the fasteners when maintenance is required on the rooftop equipment.

Figure Ext. 64

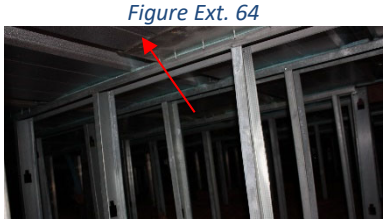


Figure Ext. 65

The kindergarten wing has a fully adhered EDPM Membrane roofing installation (Figure Ext.67). This is the newest roof covering and has no current issues.

Figure Ext. 66

The natatorium has a ballasted membrane roofing system (Figure Ext. 68). Ballasted systems use stone to hold the loose laid membrane. This roof covering appears to be in good condition as well.

Figure Ext. 67

The service and connecting portion of the natatorium has a replacement PVC roof covering, as well as the nearby entrance #4 that serves the public access to the natatorium. These are fully adhered systems, except for the vertical portion of the flashing does not appear to be adhered and relies solely on the termination bare for support (Figure Ext. 69A). There is also some ponding on the natatorium connector's roof (Figure Ext. 69B). This may not be alarming yet but should be something to keep an eye on to make sure a leak does not form.

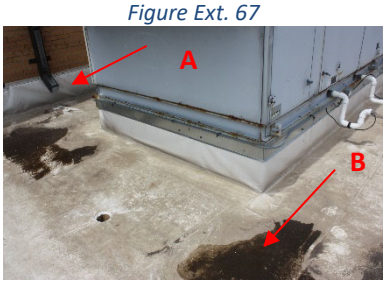


Figure Ext. 68

- Roof Section Types & Ages:

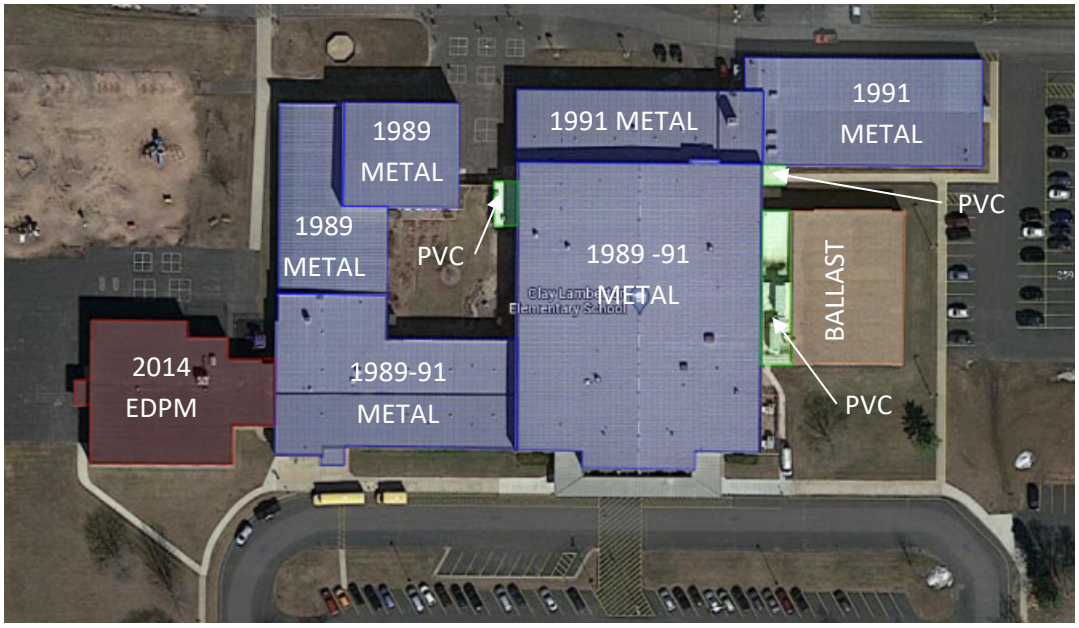


Figure Ext. 69

- Roof Penetrations: Roof Penetrations are generally flashed for openings such as roof hatches and mechanical, electrical, and plumbing equipment.

Figure Ext. 70

Figure Ext. 72 also identifies a mechanical penetration for a roof vent that has exposed fasteners. Some of the fasteners are showing signs of corrosion, and the gasketing washers may also be nearing serviceability. There are several locations where these types of fasteners have been covered with sealant. The sealant around the penetrations is crudely placed in many locations (Figure Ext.73). If the sealant stays watertight, the craftsmanship may not be important. However, shingle-sheading type installations hold up better than deploying copious amounts of sealant to prevent water infiltration.

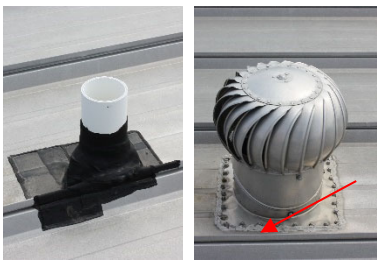


Figure Ext. 71

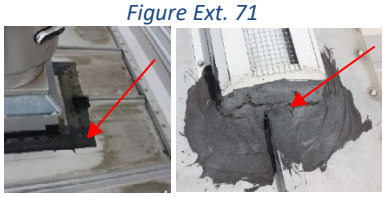


Figure Ext. 72

- Roof Over-Framing: As mentioned previously, the original school roofs were over-framed to deploy a standing seam metal roof as installed on the 1989 and 1991 additions to the building. The roof over the main portion of the first floor has an inverted slope with a built-in gutter in the center. Whereas the two-story portion has a traditional gable slope to the framing. There is a degree of ventilation required for this installation. The other apparent concern is the installed batt insulation above the original roof. If the insulation gets wet from a roof leak, there is a potential for mold cultivation if the moisture does not get removed by the installed ventilation. Further evaluation is recommended to verify the installed ventilation is adequate.

Figure Ext. 73

- Flashings: At several locations, the sealant installed in conjunction with the flashing has begun to deteriorate and crack (Figure Ext. 75). This condition will eventually leak, but mostly where wind-driven rain hits the building.

Figure Ext. 74

There are locations where the flashing and coping connections have several different types of sealants installed (Figure Ext.76). This indicates there have been issues with leaking at these locations. The exposed fasteners can also be a potential leak hazard in the future.

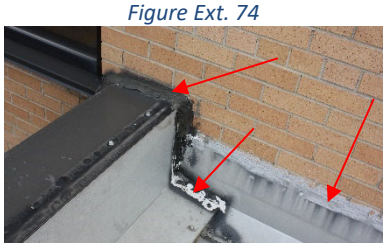


Figure Ext. 75

Most of the flashing on the metal roof cover on the over-framed portion has a termination bar condition with sealant at the top of the bar (Figure Ext.77).

Figure Ext. 76

- Parapet Copings: the largest concern with the coping installations on the metal roof conditions is the exposed fasteners on the top of the copings (Figures Ext. 78, Ext. 79, & Ext. 80). Several different preventative measures have been installed to combat leaking at these coping caps.

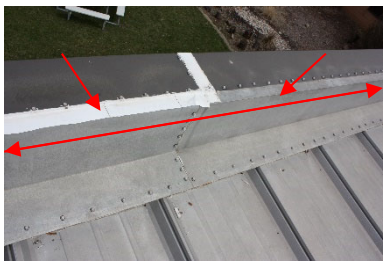


Figure Ext. 77

Coping caps are better served vertical fasteners if exposed fasteners are used (Figures Ext.78, Ext.79, & Ext.80). The top piece of flashing could have been installed with a cleat on the back sides of each installation and have a better chance of water tightness.

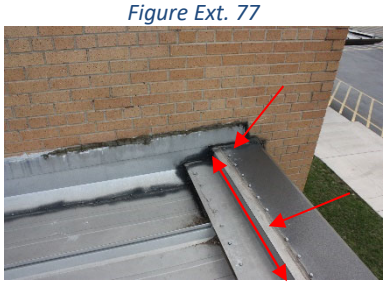


Figure Ext. 78

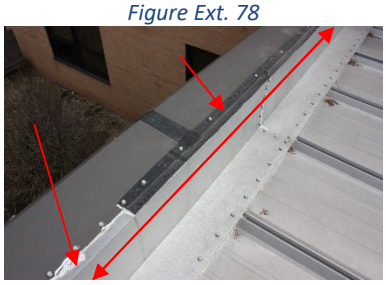


Figure Ext. 79

The vertical end flashings at the high ends of the sloped are coped over the seams and ribs (Figure Ext.81). Some of the sealant at these locations is a blind condition behind the flashing. It appears some of these are drying out. The sealant in other similar locations that have been applied after the original installation is also drying out and cracking (Figure ext. 82). This sealant is brittle. It will eventually fall out or off, creating an open gap. The high point portions of the roof have a smaller likelihood of leaking than the low points; however, wind-driven rain can penetrate these conditions.

Figure Ext. 80

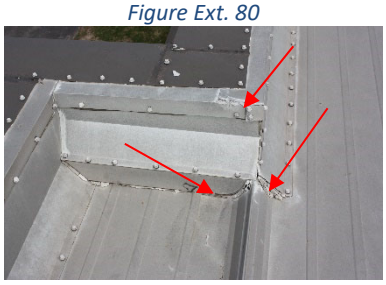


Figure Ext. 81

- Roof Drainage Components: As mentioned before, the lower roof on the original elementary building has an inverted slope that drains everything to a central building in a gutter (Figures Ext. 83, Ext.84, & Ext.85). This gutter system was connected to the vertical conductors at the original roof drains or overflow system.

At the lamb's tongue outlet (Figure Ext.86), located at the southwest corner of the original building, A steady volume of water is discharged

Figure Ext. 82

Figure Ext. 83

here during rain events. This indicates the integrated gutter is connected to this outlet, and the attributing area for this discharge is the first-floor section of the original building. As mentioned before in the site drainage portion of this report (Figure Ext.16), the force at which the stormwater exits this discharge point hits the river rock in the landscaping bed at a velocity great enough to displace the stones.

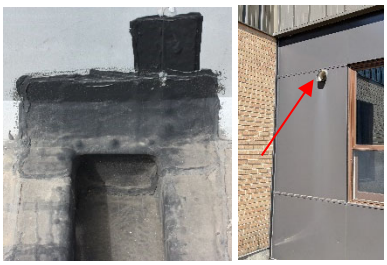


Figure Ext. 84

Gutters are deployed at the metal roofing installations (Figures Ext. 86 & Ext.87). Most of the conductor's discharge via downspouts is discussed later in this report.

Figure Ext. 85

Heat trace elements are installed in several of the gutters (Figure Ext.87). This indicates an issue with ice forming at the gutters. These are installed to melt any ice that forms in the gutter to prevent ice dams and dangerous snow and ice buildup from sliding off the roof.

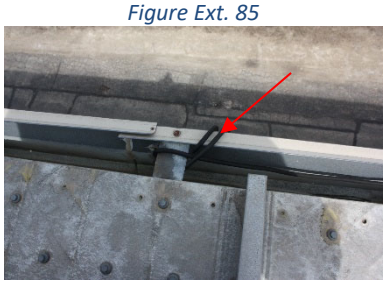


Figure Ext. 86

Figure Ext. 88 also shows a built-in gutter (Figure Ext.88). this one is placed inside the original parapet at the low point of the roof slope. This particular built-in gutter is harder to maintain from below the over-framed roof system as it is likely very tight quarters in the attic space. Maintenance may be difficult as leaks will be harder to determine.

Figure Ext. 87

There are a few locations where downspouts discharge onto the metal roof below (Figures Ext.89 & Ext.90). There are no logistical concerns with these discharge points as long as the final gutters and conductors can adequately handle the stormwater volumes. Further analysis may be recommended if verification is desirable.

Figure Ext. 88

At the location depicted in Figure Ext.90, the discharge piece of the downspout was split to lay flat. However, this splits over a seam and is not an ideal condition.

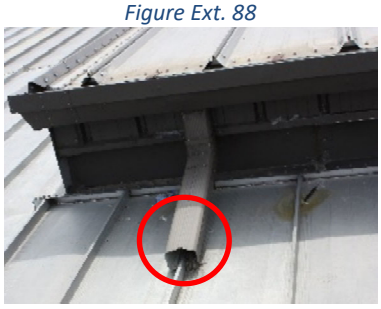


Figure Ext. 89

- Roof Access Components: The original building has a roof hatch both at the single-story and the two-story portions of the building. The hatches have been installed, penetrating the attic spaces created when the over-framed roof was installed (Figure Ext. 91 & Ext. 92). The attic spaces are directly accessible as navigation to the roof occurs.

Figure Ext. 90

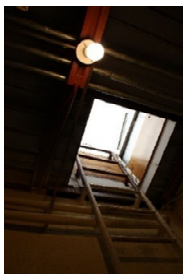


Figure Ext. 91

The roof hatches are located in Figure Ext. 94 by the circled areas. The hatches do not have safety navigation assistance integrated with the hatch making it difficult to transfer from the hatch to the roof surface (Figure Ext. 92).

Figure Ext. 92

There is at least one safety tie-off davit located on the roof (Figure Ext.93). These are important for maintenance or repair work to be done on roofs that have equipment close to the roof edge or if the roof has the potential of being slippery if the roof is wet.

Figure Ext. 93

The orange highlighted roofs in Figure Ext.94 are roofs that have no direct access. These roofs require an extension ladder from the ground or from another roof to gain access. The ground to natatorium connector roof is not as dangerous as needing the ladder to access the first-grade classroom wing multipurpose/Gym Roof.

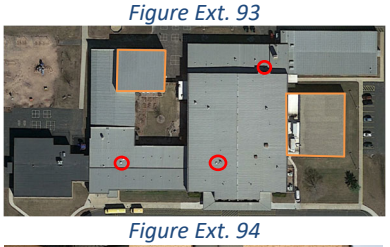


Figure Ext. 94

- Canopies: The main south canopies have steel supports (Figure Ext.95), and some of the other canopies have brick masonry piers (Figure Et.96).

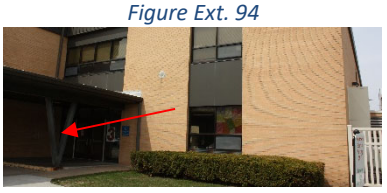


Figure Ext. 95

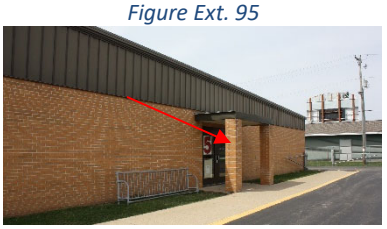


Figure Ext. 96

The soffit of the canopies is a metal panel to resemble a tongue and groove type appearance (Figure Ext.97).

The main canopy at the front of the building has slanted 'I' shaped steel posts. The posts have significant amounts of rust forming on the base

plate and bottom of the column (Figure Ext. 98). This is due to the years of applying salt to melt ice on the sidewalks.

Figure Ext. 97

Other canopies that have a square tube steel column (Figure Ext.99) have the base plate concealed below the sidewalk. The bottom of this column is also rusted.

Figure Ext. 98

There are horizontal supports that extend out from beneath the canopy. There is no rust observed on this, but they also do not see the salt that the columns to. There is, however, discoloration that is washing down the face of the brick from these beams.

Figure Ext. 99

Figure Ext. 100

Proposed Exterior Solutions & Benefits:

- Exit Doors: Where there is rust on the metal frames, consider removing the loose paint and rust, prime, and repaint. This is not an immediate concern but eventually needs to be taken care of. After winter has subsided, it is good practice to rinse down wall and door assemblies that may have come in contact with snow melting salt.

- Windows General Conditions: Consider repairing the glazing units that have panels that have or are failing to increase the integrity and thermal performance. Continue to inspect the window openings and maintain the perimeter sealants. It is recommended to eventually replace the non-thermally broken windows with completely thermally broken energy-efficient window systems.

- Roofing: The installed sealants on the standing seam metal roofs need to be fully inspected to verify their integrity. The exposed fasteners also should be inspected to verify the gasket or washers are still actively sealing around the fasteners. A future capital improvement project could be the replacement of the roof system to include a sheathing to provide more stability to the roof system.

- Canopy Assemblies: The rust should be mechanically removed with wire brushes and the steel primed and repainted to arrest the progression of the rusting. Consider lighting cleaning the brick masonry faces under the beam connection to the wall.

- Roofing Accessories:
  Flashings: The flashings also need to be inspected and resealed in some locations. Consider replacing the flashing against masonry walls with a reglet style counterflashing for added protection.
  Drainage Components: The external gutters and downspouts do not need immediate maintenance. Consider altering the downspout on the roof where the outfall is split around a roofing seam. The built-in gutter systems have a more critical concern. If this leaks, it can cause more issues and be harder to detect as they are in the attic spaces. These need to be inspected more often. If these reroofing systems are ever replaced, it is recommended to reconfigure these to not be built in.

- Control Joints: Continue to inspect the control joints on an annual to bi-annual basis on the older portions of the facility. The newest kindergarten wing can differ inspections until it reaches ten years old.

- Walls:
  Masonry Walls: Facade work has been completed over the last five years. Facade inspections are recommended every five years for masonry over 25 years old. For masonry construction that also has masonry backup walls, the interior walls also are inspected, especially where large cracks are discovered on the exterior.
  Metal Panel Assemblies: No immediate actions are expected currently. The metal panel wall assemblies could also be on the same inspection cycle as the adjacent masonry walls. The sealant at the fastener heads could be replaced by removing the fastener and replacing the washers with neoprene washers that remain soft for a better seal.

- Paving and lots:
  Asphalt: Portions of the asphalt need replacing. Replacing the worst sections can defer a full lot replacement for some time.
  Concrete: Repair the concrete installations that are very deteriorated, and the sections of the concrete walk are cracked. The crumbling stoop edges can be patched with concrete with epoxy additives. Another option would be to replace these portions of concrete. The stoops and sections that get exposed to snow-melting salts can use concrete with additives that are more chemical resistant.

- Perimeter drainage: At the drive isle the downspouts that are connected to the underground conductors, it is recommended to remove the pavement along the edge to inspect the underground drainage system. The paving is getting undermined by storm water leaking under the paving. Once the drainage conductors are repaired, a softscape or mulch bead will be more conducive along the building wall. This could be a narrow strip at 8" -12" wide. Consider adding landscaping where the foundation insulation is currently exposed to cover and protect it.

- Playgrounds: The playground equipment is recommended for replacement with more modern and vibrant installations. Replacing the outdated and faded equipment with newer, more interactive pieces will provide a more exciting environment for the students. The wood chip play surface could be replaced with pourable recycled rubber surfaces for a safer and more accessible playground. Replace the basketball backboards with new ones. Consider replacing one or two goal posts with adjustable goalposts to accommodate the younger students.

Interior Spaces & Finishes

Existing Condition Assessment:

- Ceilings General: The ceilings in corridors and common spaces are typically 2x4 acoustical tile ceilings.

Figure Int. 1

There are some locations observed to have staining on the ceiling tile surface, indicating it had been wet at some point in time (Figures Int. 2 & Int. 4). This could be from a roof leak or a leak in a piece of mechanical equipment. It does not necessarily mean there is an active leak, only that a leak had occurred and may have already been rectified. These conditions should be investigated to verify that there are no active leaks.

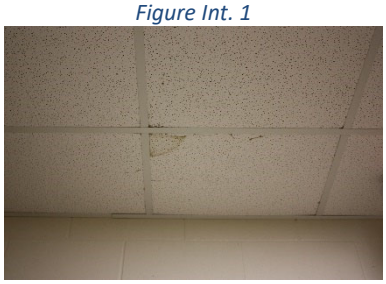


Figure Int. 2

There are a few isolated locations where the ceiling tiles are out of place and sagging down. These tiles will need to be replaced as the sagging will not straighten out by simply putting the tile back in place.

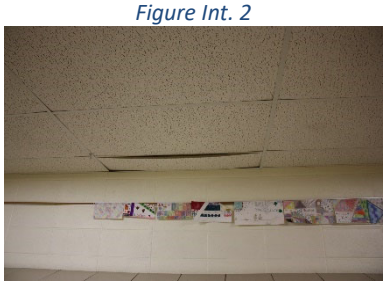


Figure Int. 3

Where darker stains are present near penetrations (Figure Int.4), it is a bigger concern to remove the tile and replace as well as verify that no active leak is present.

Figure Int. 4

There are ceiling tiles in locations where tiles that have been in place for some time and they are sagging in the center of the tile and curling upward at the corners. This is a prevalent condition where 2x4 tiles are in a building that does not have air conditioning that would remove humidity from the air. Humid air condenses in the ceiling tiles, and over time the center is weighted down, causing this condition.

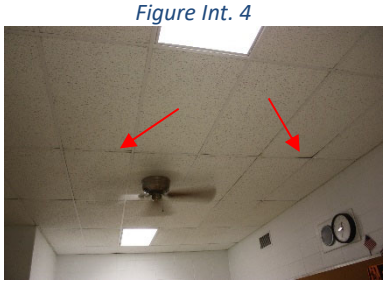


Figure Int. 5

- Floors General: The flooring in the corridors has isolated locations with movement cracks. Indicating some building movement over time. Many of the cracks are in straight lines, but others are not (Figure Int.9).

Figure Int. 6

The cracks are being telegraphed through floor coverings but originate in the concrete slab substrate. This typically happens where a building slab settles or movement through horizontal sliding occurs. Most building slabs need control joints placed when constructed.

Figure Int. 7

Good locations for control joints are between major building transitions or planned changes in the flooring. Figure Int. 8 the change in flooring.

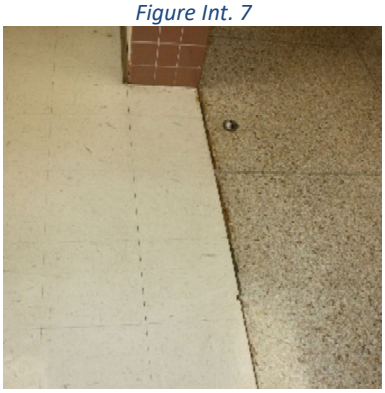


Figure Int. 8

Some cracks do not occur in a straight line, and these are much harder to repair, especially when the crack occurs in a homogenous floor installation (Figure Int.9).

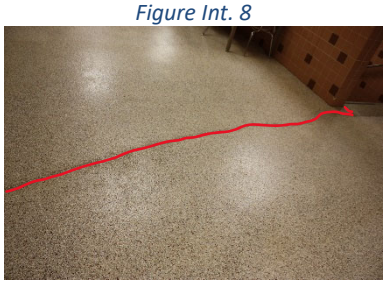


Figure Int. 9

- Walls General: In the corridors, the walls are CMU with a ceramic tile wainscot. The ceramic tile is from the original building construction. It is mostly in good condition but is outdated.

Figure Int. 10

Some tiles are chipped or cracked depending on location and conditions (Figure Int.11). At corners, wall coverings are susceptible to impacts, particularly from machinery.

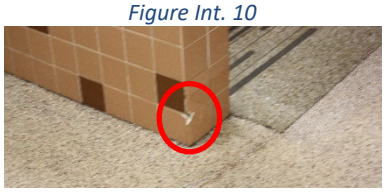


Figure Int. 11

At the stairwell, the half wall is a safety concern as it is open on two sides (Figure Int.12). A full enclosure would provide additional safety but require additional lighting to make sure the staircase is not too dark.

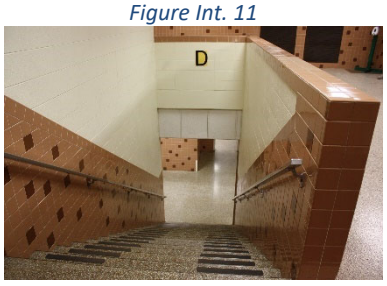


Figure Int. 12

The hard surfaces do not allow for easy installation of decor or educational material. Decorating on a ceramic tile surface is more permanent (Figure Int.13).

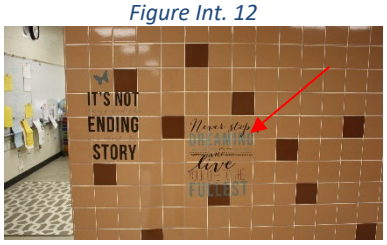


Figure Int. 13

There are locations there are cracks, at least in the grout lines of the ceramic tiles (Figure Int.14).

In Figure Int.15, shelves and coat hooks are installed in the corridor. These were not observed to be fully utilized.


Figure Int. 14

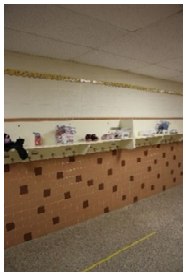


Figure Int. 15

There are locations with cracks in the CMU (Figures Int.16 Int.17). Some of these cracks are quite extensive and need to be evaluated to verify there is no compromise of structural integrity.

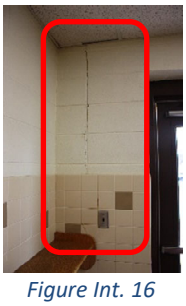


Figure Int. 16


Figure Int. 17

- Classroom General Condition:

- Classroom Doors: The classroom doors are in fair to good condition. Doors in the original school have some faded finishes making them appear dirty in spots. Typically, the veneer on these types of doors gets damaged, and some of the doors have damaged veneer. Some doors have kick plates that have protected the bottom of doors from getting more damage than they currently have.

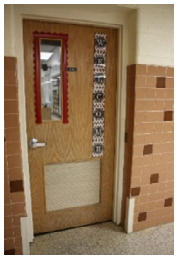


Figure Int. 18

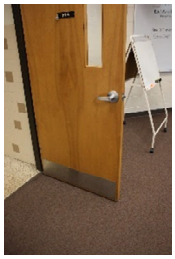


Figure Int. 19

- Classroom Ceilings: The ceilings in the classrooms are typically 2x4 ceiling tiles (Figure Int.20). Like the corridors, the oldest portions of the building have some tiles that are sagging in the middle, and there are tiles with damage and stains (Figure Int.20).


Figure Int. 20

In the newest addition to the building, ceiling tiles are 2x2 ceiling tiles. 2x2 tiles have a longer life cycle as the surface area is smaller than 2x4 tiles. This lengthens the time that the humidity and gravity affect the ceiling tile, making them sag at a much slower rate.

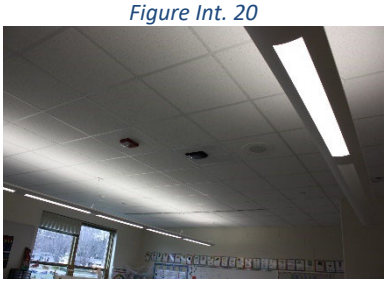


Figure Int. 21

- Classroom Floors: Some of the newer classroom flooring installations are large format Luxury vinyl tiles (Figure Int.22). these floors are in good condition and have no immediate concerns.

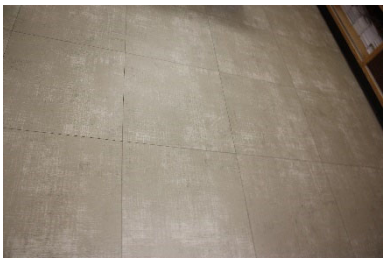


Figure Int. 22

There are classrooms with a homogenous resilient epoxy floor system installed (Figure Int.23). These are typically a good application for a classroom; however, the product or installation method has not lived up to the typical standards. The topcoat appears to be too thin, and the finish is wearing too quickly. These types of floor systems also need the control joints to be planned for. If done properly, an epoxy floor will reduce maintenance costs and be very durable.


Figure Int. 23

There are sheet carpet floor coverings in some classrooms as well (Figure Int.24). carpet is appropriate for elementary school environments as it offers a softer surface for the younger students.

Figure Int. 24

The carpet does have the potential of getting stained and damaged from extensive use (Figures Int.25 & Int.26). Once this happens, large sections or the entire installation will need to be replaced to mitigate damage.

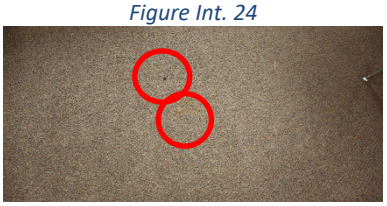


Figure Int. 25

Sheet carpet in the commercial industry has been replaced with carpet tiles with new technology, making them much more resistant to damage and staining. This also allows individual tiles to be replaced in lieu of the entire floor covering, dramatically reducing maintenance costs.

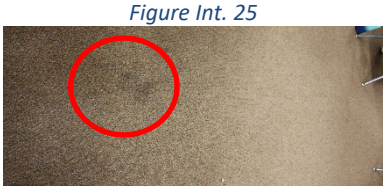


Figure Int. 26

- Classroom Walls: The majority of the classroom walls are painted CMU. This is a resilient wall type and typically only needs repainting occasionally. There are locations with cracks in the mortar joint that are not necessarily alarming but could but filled before the next painting cycle.

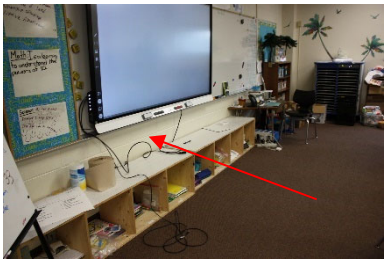


Figure Int. 27

There are also gypsum board walls in various locations (Figure Int. 28). They are in good condition but certainly need to be inspected for damage more often than CMU walls.

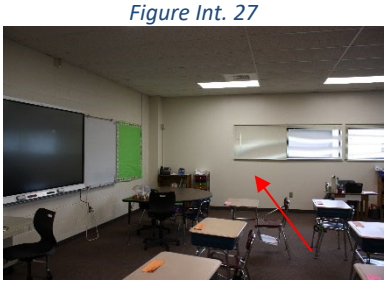


Figure Int. 28

- Casework: There are open shelves in some of the classrooms allowing for deployment of storage totes and book storage (Figure Int.29). These are plastic laminate and appear to be in relatively good condition. The caveat of open shelving is that the contents cannot be secured, limiting what can be stored on the shelves. Although the benefit is no moving parts to require maintenance.


Figure Int. 29

The older casework has laminated tops and peg board style sliding doors (Figure Int.30). These are in fair condition but are starting to show their ages. These pieces of casework are also not lockable, limiting the capacity of securing education items.


Figure Int. 30

In newer classrooms, plastic laminate wall-mounted casework is in good condition, and the cubby style lower tote storage. The use of the upper cabinets in this situation can allow the instructor to secure some materials from students' reach that may be sensitive for unsupervised access.


Figure Int. 31

The other casework configuration is plastic laminate upper cabinets and lower cabinets located in several rooms. The cabinets are in good condition; however, there are locations with chipped veneer. These are also not lockable, which may be desirable in the future to secure equipment and materials.

There did not seem to be any wardrobe casework in the classrooms. These are desirable to allow staff to secure their personal items in the room and not need to store items in a workroom or faculty lounge.


Figure Int. 32

- Classroom Furnishings: Most classrooms are equipped with individual desks for the students (Figure Int.33). The desks are in good condition and allow for student storage below the desktop.


Figure Int. 33

Some classroom spaces have larger tables for more collaborative interaction for the students (Figure Int. 34). This is limited to a few rooms but is generally available. The tables and chairs are in relatively good condition.

Figure Int. 34

- Technology: All the classrooms have been upgraded and fitted with multimedia touch screen smart panels.

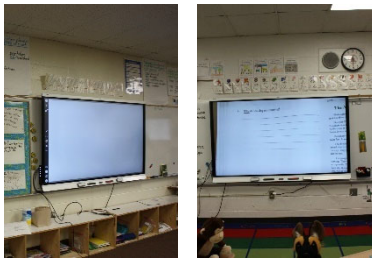


Figure Int. 35

- Restrooms: The restrooms are outdated with individual sinks and manual control faucets (Figure Int.36). Manual controls allow water waste if the students leave the faucet running after use. These types of controls also provide multiple surfaces that can potentially contribute to the spread of bacteria and viruses.

  The mosaic tile floor (Figure Int.36) can be problematic for maintenance as the grout can absorb and trap fluids and collect dirt easily, especially older grouts that do not contain epoxy additives. These conditions will, in turn, cause odors to persist in the spaces.

  There is old, abandoned equipment in some of the restrooms that could be removed.

  The urinals are floor mounted and, in some cases, have a gang flush function, likely on a timer (Figure Int.38). This is another example of where water waste can be improved upon.

  The floor around the urinals is a very stained terrazzo.

  The urinals do not have privacy screens as a modern restroom would have.

  The water closets also have manual flush valves. Automatic touch valves could reduce water usage, prevent unflushed conditions and limit surfaces to touch, reducing the spread of bacteria and viruses.

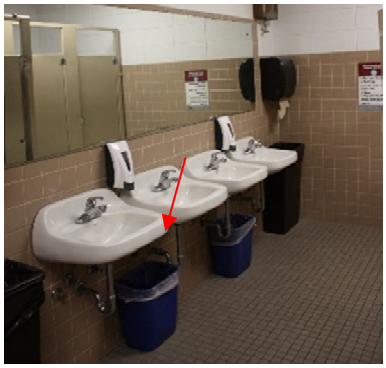


Figure Int. 36

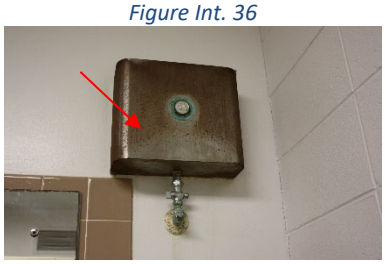


Figure Int. 37

Figure Int. 38

There are some Full ADA-compliant toilet stalls (Figure Int.40), but most of the facilities only have ambulatory stalls available (Figure Int.41). This is quite typical of older buildings.

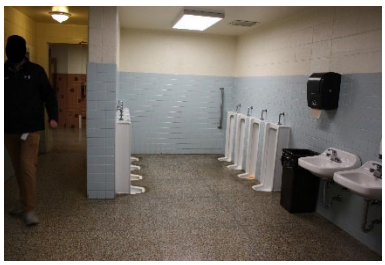


Figure Int. 39

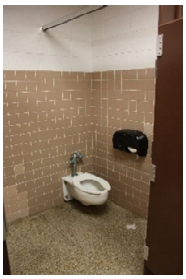


Figure Int. 40

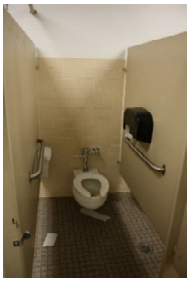


Figure Int. 41

- Kitchen: The kitchen functions well. The main cooking island has an exhaust hood (Figure Int.42).

Figure Int. 42

The kitchen staff restroom is small and not ADA compliant. There is not adequate locker storage for the kitchen staff to keep belongings.

The work surfaces are all stainless steel, in good condition, and appear to be health code compliant.

Figure Int. 43

There is a separate dish return that allows for the kitchen and cleaning to operate simultaneously.

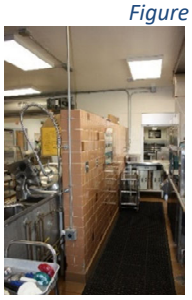


Figure Int. 44

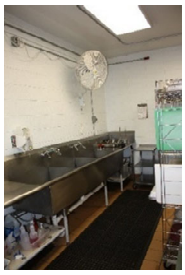


Figure Int. 45

The serving lines are positioned to allow food service without requiring students to enter the kitchen (Figure Int.46).

Figure Int. 46

The floor is a quarry tile floor that is very common in school kitchens of this vintage. There is a crack through the tile in one location on the floor (Figure Int.47).

The dry storage area has a window-style air conditioner to attempt to control humidity and temperature within the space. There also is a desire for additional cooler/freezer space for the kitchen.

Figure Int. 47

- Cafeteria: The dining area of the cafeteria is tight (Figure Int.48 & Int.49). This requires six lunch periods to get all the students through the lunch program.

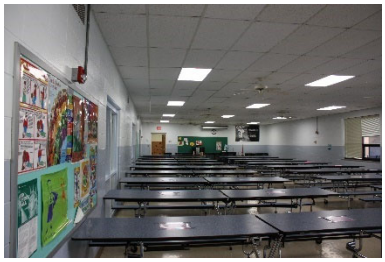


Figure Int. 48

Tape arrows are placed on the VCT flooring for traffic direction (Figure Int.50). This could potentially be a permanent strip added before refinishing.

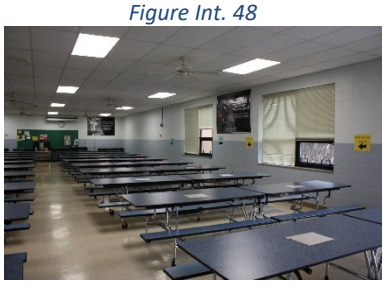


Figure Int. 49

The VCT (Vinyl Composite Tile) flooring itself is beginning to shrink and separate at the joints. In nonfood spaces, this is less of a concern except for aesthetics. In areas where food is served, you would want to have minimal opportunity for dirt and food particles to get ground into the gaps on the floor.

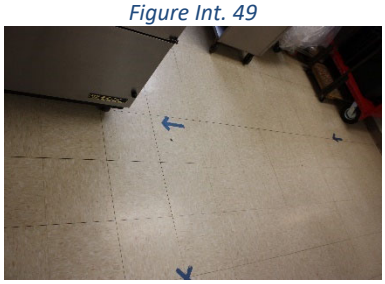


Figure Int. 50

There is a sliding patio door located in the cafeteria, which is the only access from inside the building that leads to the courtyard. The threshold is not ADA Compliant, so a wheelchair-bound individual would need to access the courtyard from the exterior fence gate. The sliding door is not used as the courtyard is reportedly not used very much. The door is opened to allow the natural venting of warm air from the space.

Figure Int. 51

- Multipurpose /Conference: This space is a long rectangular-shaped space and is used as a conference room and meeting space, often by the school district administration. It is not set up to function well for large meetings and does not have dividers for conducting smaller simultaneous meetings.

Figure Int. 52

The space has sheet carpeting in good condition; however, if a tear or stain should occur, the entire floor will need replacing. Carpet tile would prevent this requirement upon damage discovery.

Figure Int. 53

The walls are CMU with protruding block patterns to assist in acoustical quality. They help a little, but the room seems a little more live than it should be.

Figure Int. 54

The ceiling is a 2x4 acoustical ceiling (Figure Int.55), and there are some stains resulting from some sort of leak. There are also various scars from tile damage during some process of hanging objects.

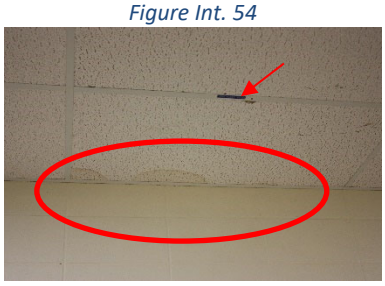


Figure Int. 55

- Drinking Fountains: There are several different kinds of drinking fountains in the facility, including modern chilled water electric coolers and, original to the building, porcelain un-cooled drinking fountains (Figure Int. 56)

Figure Int. 56

Some are flush mounted, and some are also recessed into the wall (Figure Int.57). the older drinking fountains do not have a touchless bottle filler associated with them.

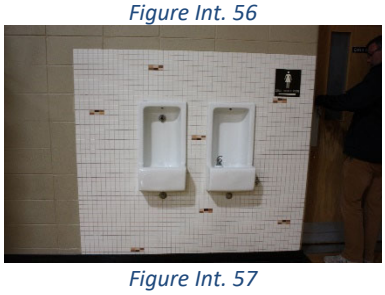


Figure Int. 57

The newer wing of the building does have drinking fountains with bottle filling stations. In other locations, the drinking fountain has been replaced

with bottle filling station/drinking fountain combination units (Figures Int.59 & Int.60).

Figure Int. 58

Figure Int. 59

Replacing the older uncooled drinking fountains with new bottle filling stations could assist in the reduction of spreading bacteria and viruses.

Figure Int. 60

- Gymnasium: The gymnasium flooring is natural wood in pretty good condition (Figure Int.61) with a few scratches and scuffs. The bleachers have been replaced with telescoping bleachers containing accessible spectator capabilities.

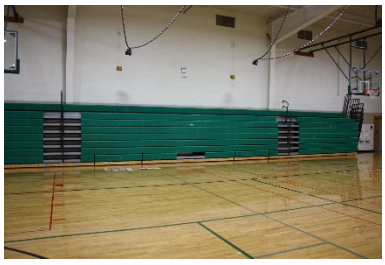


Figure Int. 61

The lighting in the gym read at 38 Foot Candles which is right at the center of the recommended range of 30-50FC

Figure Int. 62

The gym doubles as a performance space; however, the stage is not currently used and requires the deployment of portable risers for choral productions.

Figure Int. 63

- Locker rooms: There are newer lockers in the boy's locker room (Figure Int.64) but not in the girl's locker room (Figure Int.65). The original wood benches are still in both locker rooms, and the finish is very worn.

The floors are terrazzo in the main locker areas and showers.

Figure Int. 64

In the changing/locker rooms of the pool, there are two-tier units and much fewer of them (Figure Int.66). The floor covering in the pool changing area and the rinse-off station is an epoxy coating (Figure Int.67). The wood benched also need to be refinished.

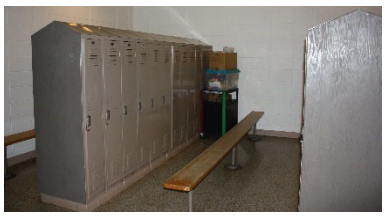


Figure Int. 65

The gang showers in the locker room are not utilized as they have gym equipment stored in them (Figure Int.67). It is becoming common that students do not shower after the gym class is concluded, even if they change clothing for class. This typically comes down to a privacy issue.

Figure Int. 66

The girl's locker room does have a few individual shower stalls located in the locker room; however, none of these are ADA-compatible.

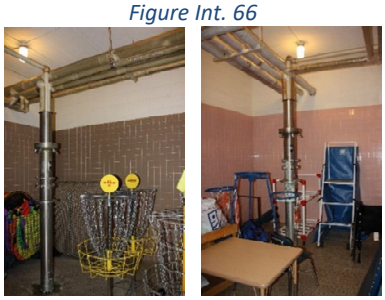


Figure Int. 67

At both locker room entries, a partition screen is installed to maintain visual privacy from the corridor. This is not an ideal solution as the partitions do not run down to the floor.

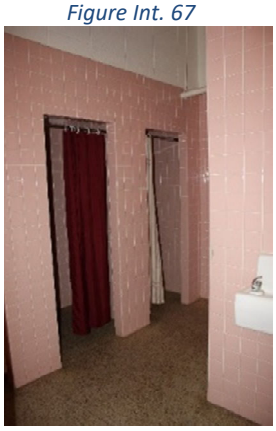


Figure Int. 68

The gym coach's office in the boy's locker room is very dim (Figure Int.70). With the ceiling light on the light meter only reading 2.52 FC (Figure Int.71). This is not adequate task lighting for an individual using this space. There is an observation window that would allow light from the locker room to filter into the office; however, the space should be able to be usable by itself.

Figure Int. 69

The gym coach's office in the girls' locker room is much better for its lighting conditions and appears to be utilized more.

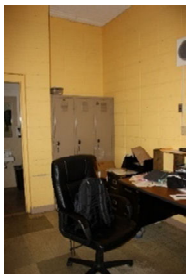


Figure Int. 70


Figure Int. 71

The office/observation room for the pool is adjacent to the pool itself. There are no concerns with the functionality or conditions of this space.


Figure Int. 72

Each of the main locker rooms has a restroom (Figure Int.74). Neither location is completely accessible, but the girl's restroom is pseudo-modified for ADA assistance. The boy's restroom has a water closet and a urinal but no privacy between them, so it can only be used as a single-occupant facility.


Figure Int. 73

The restrooms in the pool changing area are only equipped with ambulatory toilet stalls (Figure Int.75).


Figure Int. 74


Figure Int. 75

- Music Room: The music room is a large, uncooled space. There are nine ceiling fans installed to help provide comfort in the classroom (Figure Int.76). The ceiling is a 2x4 acoustical ceiling tile, and the walls are hard CMU. There are no significant acoustical treatments on the walls to assist with acoustical control. There is casework used for storage; however, there is loose storage at the back of the room. There is a horizontal crack at the lintel line of the windows (Figure Int.77). There may not be a structural concern; however, evaluation is recommended.


Figure Int. 76

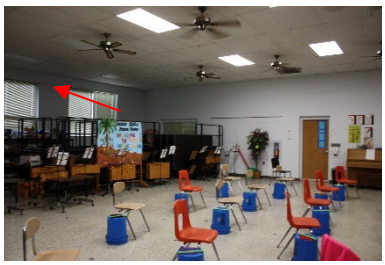


Figure Int. 77

- Art Room: The room is tall as it is adjacent to the music room, but the 2x4 acoustical tile ceiling is lower than in the music room (Figure Int.78). The ceiling tiles are in good condition in the main space with only a few tiles starting to sag in the middle. There is a section of the room along the north wall that has a lot of loosely stored equipment and material.

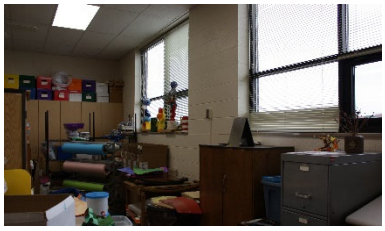


Figure Int. 78

The casework is in good condition (Figure Int.79 & Int.80). There is tall material storage for art supplies (Figure Int.79) and base cabinets with a sink for working space (Figure Int.80).

Figure Int. 79

The homogeneous flooring in the art room has portions of discoloration from where the casework of shelving used to be located.

Figure Int. 80

There are plaster traps located at some of the sinks to prevent material waste from getting into the plumbing system (Figure Int.81).

Figure Int. 81

The kiln is in a small room with additional storage (Figure Int.82). It may be necessary to minimize the amount and type of items located in this space.

Figure Int. 82

- Library: The Media Center is located on the second floor. There are several smaller rooms associated with this space, including an office, small conference rooms (Figure Int.83), and storage spaces.

Figure Int. 83

There are several bookshelves for collection storage as well as tables (Figure Int.84), soft seating (Figure Int.85), and open floor seating.

Figure Int. 84

The carpeting is a sheet carpet product and is showing some signs of its age. As previously mentioned, sheet carpeting can be maintenance intensive. Modern carpet installations in school spaces are typically carpet tiles that are designed for greater durability. Carpet tiles reduce maintenance costs because they allow for the replacement of individual tiles to mitigate damage.

Figure Int. 85

There is no cooling integrated into the building in this area. Small window air conditioning units are installed in the media center (Figure Int.86). These units likely struggle to keep the space comfortable. This is not a viable long-term solution to the need for cooling.

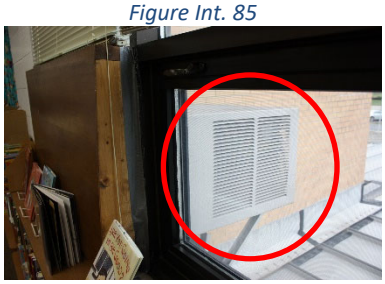


Figure Int. 86

There is discoloration between the glazing panes on some of the windows (Figure Int. 87). This indicates the gaskets and seals for the double pane glazing units have failed and are no longer preventing heat transfer as condensation is occurring between the glass.

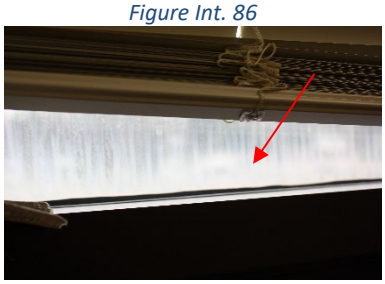


Figure Int. 87

- STEM Lab: the new STEM lab location also has failed glazing and evidence of leaking at the window frame (Figure Int.88). the plastic laminate sill in Figure Int. 88 is severely damaged and delaminating. The cause of the water intrusion may have been rectified with the recent envelope repairs, but the damage to the interior will need to be addressed next.

Figure Int. 88

The ceiling in this area is a newer 2x2 ceiling replaced during the renovation. This ceiling system will have a greater life span than the 2x4 systems as there is less surface area for humidity to collect in unconditioned spaces.

The technology in the classroom has been upgraded with the rest of the school. Figure Int.89 shows the smart touch panel recently installed.

The casework is newer and in good condition (Figure Int.90). The flexible seating style is great for adjusting from collaborative to individual instruction and is also in good condition.

Figure Int. 89

The pendant-style lighting is not very bright and is not preferred for an instruction space (Figure Int.90). The upward portion of the lighting does not effectively reflect downward off the ceiling tiles diminishing its efficacy.

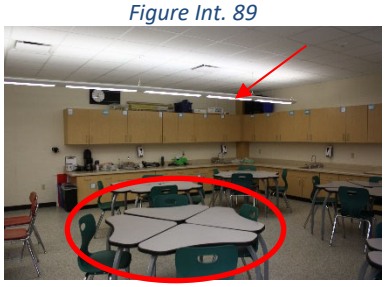


Figure Int. 90

There is plenty of work counter space (Figure Int.91). The new use as a STEM lab space may require access to more power outlets. In a stem space, it is common to install overhead pull-down power reals to get power located to the workstations in the middle of the instruction space. Depending on the type of activities planned for this lab, this might be a consideration.

Figure Int. 91

This room has epoxy flooring installed. The top finish is worn quite a bit, exposing some to the anti-slip material, and the floor has lost its sheen. This may have been installed incorrectly or not completely.

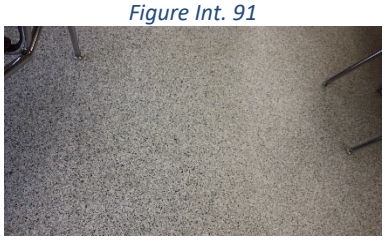


Figure Int. 92

The STEM lab is also inheriting a prep area with direct access to the lab (Figure Int. 93). This will be helpful for the instructor to secure more sensitive materials to control use for safety.

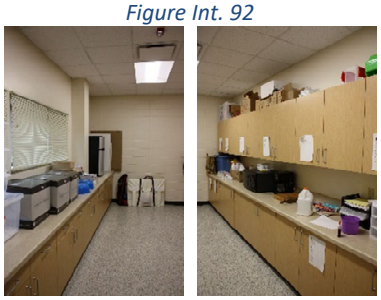


Figure Int. 93

- Administration: The offices and resource area in the administration portion of the main office are in working order.

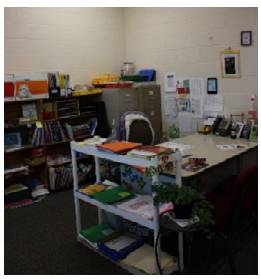


Figure Int. 94

The staff restrooms are outdated and do not meet the current accessibility code. The faucet and flush controls are manual; however, since adults typically utilize these fixtures, there is less of a concern for having them left on or unflushed. There would still be an advantage to using touchless controls for reducing water usage and control of bacterial and viral spread.

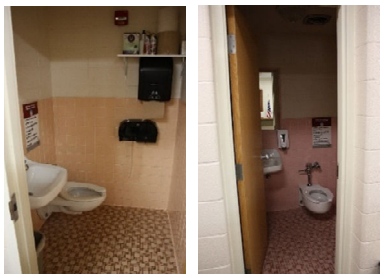


Figure Int. 95

The workroom for the main office is located at the east end of the suite. It has newer casework installed during a renovation (Figure Int.96). The workroom has an adjacent restroom and an additional storage room.

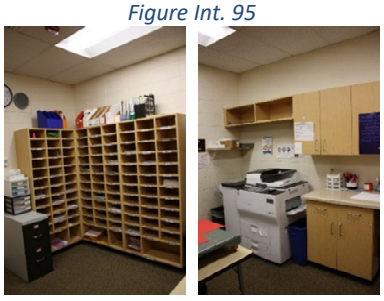


Figure Int. 96

The Nurse's area is not enclosed or segregated from the main reception area (Figure Int.97). This causes issues with noise control being a distraction from staff in the reception area. This also creates a privacy issue for a student that needs to see the Nurse. There is no segregated room to be utilized as a sick room as the cot is in the open. The casework is older and does not appear to have access to a sink except for in the adjacent restroom. The workroom at the east end of the suite and the Nurse's station at the west end of the suite would be better served if the trade places.

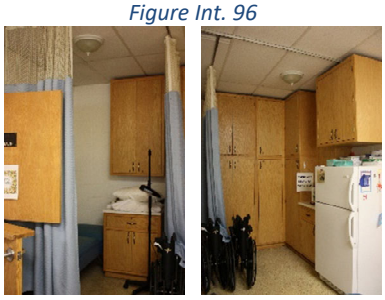


Figure Int. 97

The reception area also serves as a secure check-in (Figure Int.98). The staff checks-in visitors in the entry vestibule. Visitors can walk into the school first into the vestibule without the staff first buzzing them in as the first point of challenge. The exterior outside the vestibule is protected from the weather with a canopy. A better condition would be to have a video phone system outside the locked vestibule for the first point of challenge and keep the additional locked door to the school as a second challenge door for post-check-in. Additionally, seating can be deployed in the vestibule if a visitor needs to wait for an escort.

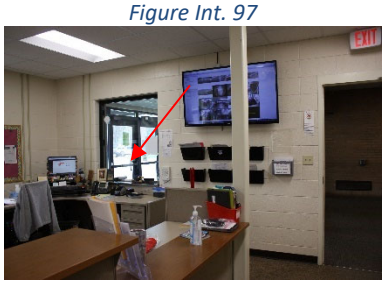


Figure Int. 98

The main office reception area has workstations not adjacent to the security window (Figure Int.99). It is also reported that only one staff workstation has the ability to buzz-in visitors.

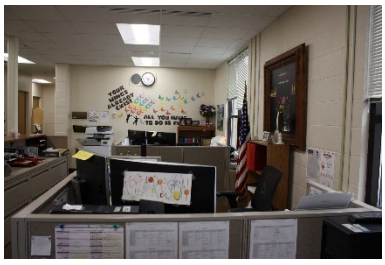


Figure Int. 99

The security window has ballistic safety glazing, but there is some concern that the windows adjacent to the public approach to the school are not protected by a ballistic film (Figure Int.100). The staff workstations are orientated to the side or in front of the windows as they need visual control of the office putting their backs uncomfortably facing the windows.

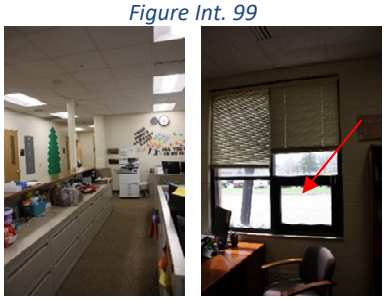


Figure Int. 100


Figure Int. 101

The faculty break area is outdated with original cabinets, range, and dishwasher (Figures Int.101 & Int.102). The flooring is older Vinyl composite tile and appears to be original. The tile or the mastic for this flooring may be an ACM (Asbestos Containing Material). This is only an issue if planned renovations are to occur.

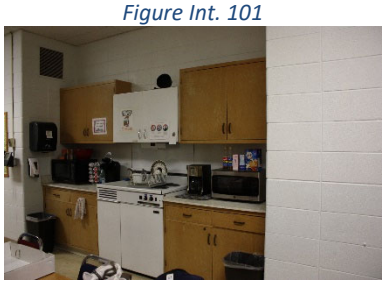
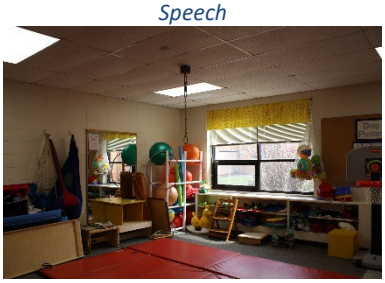


Figure Int. 102

- Resources: The speech suite was part of the administration renovation. The casework is in good condition. No major deficiencies were observed during the survey visit.

Speech

The PT/OT room could benefit from additional deep shelving for storage organization.



- Acoustical readings and analysis: When evaluating educational spaces, it is important to keep in mind how rooms perform acoustically. Two distinct criteria can be evaluated for a sample set of rooms. These evaluations are best conducted in empty rooms with the normal operation of the HVAC systems.

1. First is the ambient or background noise that persists in a classroom (noise from lighting, mechanical systems, exterior environment). It is important to keep these noises in check because instructors must be distinctively louder than the background noise at all locations where students are seated and listening for the student to adequately hear. Ideal Classroom Noise Criteria (NC) should be between 25-30. Alternatively, background noise, in general, should not exceed 35 dBA. We conclude that several learning spaces should be evaluated further to reduce noise from the mechanical systems.

2. The second factor that should be evaluated is the reverb timing in the 500 Hz octave band, a band that is closely related to human speech. Reverb is the persistent echo of noise within a space, so the longer a space echoes (more live), the muddier the speech will sound and become less intelligible. Conversely, humans are naturally used to some reverberance, so too little reverb results in a space sounding too dead. The Acoustical Society of America has published a range of acceptable reverb times for different types of spaces within a school setting.

Proposed Interior Solutions & Benefits:

- Ceilings General: Continue general maintenance on ceilings. During large replacement efforts, consider adding cross bars and converting the ceiling grid and tile system to a 2x2 ceiling system.

- Floors General: Consider repairing the cracks in the floor. This may require removing portions of the flooring to repair the crack and installing a proper floor control joint. If a new floor covering is desirable for a uniform look throughout the school, a luxury vinyl tile flooring (LVT) or VCT with a diamond 10 finish is recommended to greatly reduce maintenance costs. These flooring types typically do not require stripping and rewaxing, and the initial finish needs very little attention for the first three years.

- Walls General: Where cracks are located in the masonry walls, evaluate the cracks for structural integrity. The cracks should be filled and repainted to match the wall finish. Consider updating the ceramic tile wainscot to a more modern finish. The tile could be left in place and a new finish applied over the top; however, removal and installing a new finish is more viable.

- Drinking fountains: Consider replacing the rest of the porcelain drinking fountains with electric cooler-style fountains with bottle filling stations.

- Classroom Doors: Inspect the oldest doors, repair the chipped veneer, and refinish the doors, bringing them closer to the finish level of the new kindergarten wing.

- Classroom Ceilings: Continue general maintenance on ceilings. During large replacement efforts, consider adding cross bars and converting the ceiling grid and tile system to a 2x2 ceiling system where it doesn't already exist.

- Classroom Floors: Consider repairing the cracks in the floor. This may require removing portions of the flooring to repair the crack and installing a proper floor control joint. Consider replacing sheet carpeting that is stained and damaged with newer stain-resistant carpet tiles. We recommend adding two coats of clear topping to the installed epoxy flooring that does not have discoloration or cracks through it. If salvaging the epoxy flooring is not desirable, an LVT could be installed over the top.

- Classroom Walls: Where cracks are located in the masonry walls, evaluate the cracks for structural integrity. The cracks should be filled and repainted to match the wall finish. Fill any of the holes left from equipment removal and repaint to match the existing walls.

- Casework: Consider replacing the older, outdated casework with casework to match the newer installations.

- Furnishings: No actions are required currently. When there is an opportunity to cycle out the oldest furniture to bring the facility furnishings to a level of matching the newer furnishings is desirable.

- Technology: No actions are recommended currently.

- Boy's / Girl's Restrooms: Consider renovating the older, outdated and non-compliant restrooms to modernize the functionality. This would also include replacing the flush and faucet controls to be touchless controls.

- Gymnasium: No immediate concerns are recommended currently.

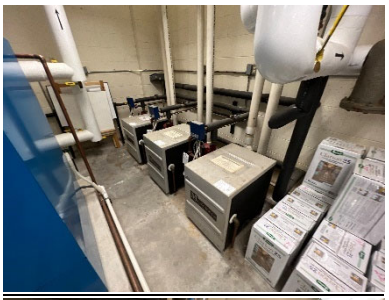
- Media Center: Consider replacing the carpet with a carpet tile for a more resilient and lower maintenance installation. Refer to the mechanical analysis portion of this report for recommendations on cooling.

- Administration: Consider swapping the locations of the Nurse's station with the workroom to give better access for the main office staff to the workroom and to better isolate the Nurse's station for privacy and control. Consider adding ballistic film to the windows in the administration area adjacent to the pedestrian traffic in front of the building for safety. Consider adding an air phone buzzed at the exterior of the main entrance to add a level of security.

Heating System

Existing Conditions:

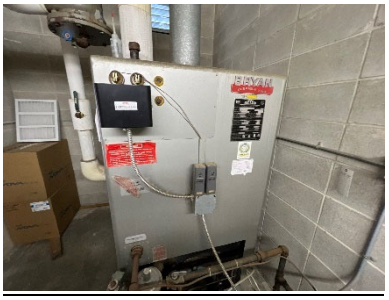
- These boiler plants provide hot water heating to the building through unit HW heating coils located in air handling units (AHUs), unit heaters, and cabinet unit heaters.



- The NE equipment room boiler plant serving the building consists of two (3) HW boilers from HTP. The boilers are 500 MBH input each and up to 94% efficient. The boilers were installed in 2003 and are in fair condition.

- The north equipment room boiler plant serving the building consists of one (1) HW boiler from Bryan. The boiler is 750 MBH input each and up to 80% efficient. The boilers were installed in 1991 and are in fair condition.
- The pool equipment room boiler plant serving the building consists of two (2) HW boilers from Lochinvar. The boiler is 750 MBH input each and up to 80% efficient. The boilers were installed in 1991 and are in fair condition.

- The school has a series of HW cabinet unit heaters which are located at the building perimeters and at entryways. These units are in good condition but, in almost every case, serve transitionary spaces.



- The rooftop units (RTU) are equipped with indirect-fired gas heat exchangers. These heat exchangers provide all the space heating for multi-zone systems serving the office or preheating mixed air for variable air volume systems.

Proposed Solutions:

- Review boiler supply water reset curve to determine if additional energy savings can be achieved.
- Replace the Bryan Flextube boiler with new condensing boiler technology capable of increased efficiency during shoulder heating months. Replace the HW pumps and provide new pumps with VFDs to vary system flow.

Cooling System

Existing Conditions:

- The office, gym, west wing, and cafeteria within the school are provided with air conditioning from (2) packaged DX rooftop units and (2) split DX condensing units. All other portions of the building do not have air conditioning.
    - RTU: 7.5 Tons
    - RTU: 4 Tons
    - AHU-6: (assumed 5-12) Tons
    - AHU: 30 Tons

- The rooftop units are in fair to good condition, and AHU-6 should be targeted for replacement.

- Other AHUs should be replaced with new AHUs and split DX cooling to provide cooling throughout the entirety of the building. When doing this, ductwork will need to be insulated to prevent condensation.

Proposed Solutions:

- Replace AHU-6 and the condensing unit.
- Add split DX cooling throughout the rest of the building.

Classroom Air Distribution

Existing Conditions:

- All areas of the school are served with overhead air distribution from the packaged RTUs, AHUs, and fan coil units. The RTUs and AHUs typically serve multiple spaces. Some units may have variable air volume (VAV) boxes, but most are multi-zone type units that should be replaced. The VAV boxes vary airflow and air temperature supplied to the space(s) to maintain temperature setpoints.

Proposed Solution:

- Replace the multi-zone AHUs with new AHUs that utilize VAV terminal units (VAVs) and new distribution air ductwork to increase thermal comfort and energy efficiency.
- Replace/refurbish the kitchen hood and/or exhaust fan serving the kitchen hood.

Temperature Control System

Existing Conditions:

- The building controls systems are a mix of pneumatic controls with/and without DDC transducers, DDC Siemens (BAS) interface, and what appears to be standalone controls. This system is not comprehensive over all major HVAC equipment with zone/space controllers. The BAS appears to have some ability to fully control, trend, alarm, and notify the Customer of needs and inconsistencies in the system, and existing and new systems should be fully integrated into the BAS.

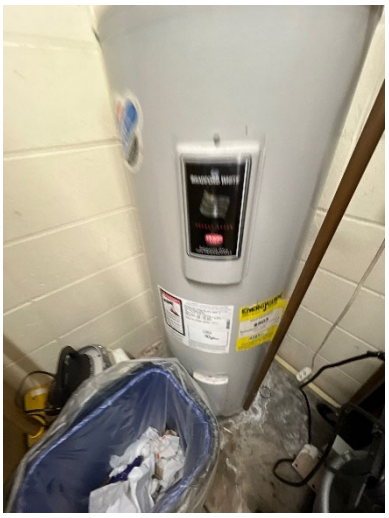
Proposed Solution:

- Upgrade needed HVAC systems and integrate new controls into the BAS.

Domestic Hot Water System

Existing Conditions:

- The building is served by two standard-efficiency gas-fired water heaters and recirculation pumps. These units are in good condition.



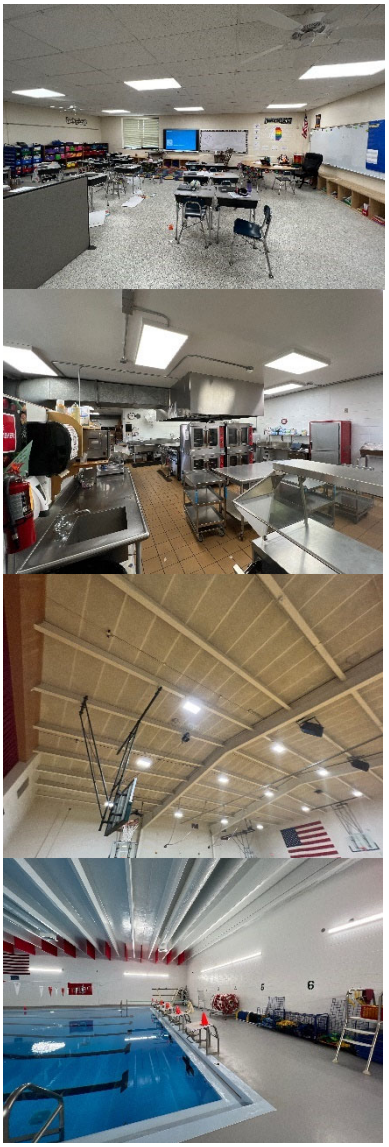
Proposed Solution:

- No recommendations currently.

Lighting System

Existing Conditions:

- All of the interior lighting appears to be LED fixtures that illuminate the space learning environment. Most of the spaces were observed to have adequate light levels.



Proposed Solution:

- No recommendations currently.

Clay Lamberton Elementary School

Building HVAC Equipment Inventory

Equipment	Make	Model	Location	Quantity	Age	Expected Useful Life	Condition	Targeted Replacement Date				Outstanding Issues and/or Notes
								1-2 Years	2-5 Years	5-10 Years	10+ Years	
Boilers	HTP	Munchkin HW	NE Equipt Room	3	19	24	Fair			✓		Boilers have a maximum efficiency of 94% and has an input capacity of 500 max MBH each.
HW Pumps	Taco	Fractional hp	NE Equipt Room	3	10+	10	Poor/Fair		✓	✓		Inline pumps for boiler circulation.
Boiler	Patterson-Kelly	Mach	NW Equipment Room	1	8	24	Good				✓	Boilers have a maximum efficiency of 94% and has an input capacity of 1050 max MBH each.
HW Pumps	Armstrong	380	NW Equipment Room	2	8	10	Poor/Fair		✓	✓		Constant speed Inline pumps for distribution HW.
Rooftop Unit	Trane	YSC-090	Ground - South	1	8	15	Fair/Good			✓		7.5ton DX Cooling, Gas heating,
Rooftop Unit	Trane	YSC-048	Ground - South	1	8	15	Fair/Good			✓		4ton DX Cooling, Gas heating,
HRV	Venmar	9215-1G0400	Pool Roof	1	20	15	Poor/Fair	✓	✓			Singlezone, HRV
HRV	Venmar	9218-1G0400	Pool Roof	1	20	15	Poor/Fair	✓	✓			Singlezone, HRV
Air Handling Unit (AHU)	JuneAire	841-GRB	East Equipt. Room	2	59	25	Poor	✓	✓			Built-in, Heating only, 25hp CV, 2500MBH
Air Handling Unit (AHU)	JuneAire	841-GRB	West Equipt. Room	1	59	25	Poor	✓	✓			Heating only, 15hp CV, 1580MBH
Air Handling Unit (AHU)	JuneAire	-	Upstairs - Gym	1	59	25	Poor	✓	✓			Heating only, 5hp CV, gas-fired
Air Handling Unit (AHU)	JuneAire	-	Upstairs - SE Area	1	59	25	Poor	✓	✓			Heating only, 5hp CV, gas-fired
Air Handling Unit (AHU)	Carrier	39LF1152AA	NW Equipment Room	1	33	25	Poor	✓	✓			Heating, DX Cooling, 7.5hp CV
Air Handling Unit (AHU)	Carrier	39LF1152AA	NW Equipment Room	1	33	25	Poor	✓	✓			Heating, DX Cooling, 7.5hp CV
Air Handling Unit (AHU)	Trane	Performance Climate Changer	New Mech Room	1	8	25	Good				✓	(2) 5hp VFDs, DX Cooling
Air-cooled Condenser	Trane	RAUJC30	Roof	1	8	18	Good				✓	DX Cooling
Air Handling Unit (AHU)	Carrier	40RR-028	North Equipt Room	1	31	25	Poor		✓	✓		5hp fan
Air-cooled Condenser	Carrier	38AK-028-501	Roof	1	31	18	Poor	✓	✓			DX Cooling - 25ton
Boiler	Bryan	Flextube	North Equipt Room	1	31	24	Poor	✓	✓			Boilers have a maximum efficiency of 80% and has an input capacity of 750 max MBH each.
Primary Pumps	B&G	-	Ground - South	1	8	10	Fair		✓	✓		3/4 hp
Boilers	Lochinvar	Knight	Pool Mech	2	1	24	Good				✓	Boilers have a maximum efficiency of 92.3% and has an input capacity of 285max MBH each.
HW Pumps	Grundfos	Fractional hp	Pool Mech	2	1	10	Good				✓	Inline pumps for boiler circulation.
Exhaust Fans	Various	Various	Roof	7	10+	25	Poor/Fair	✓	✓			Exhaust fans for lockers, restrooms, and/or kitchens.

Clay Lamberton Elementary School												
Building HVAC Equipment Inventory												
Equipment	Make	Model	Location	Quantity	Age	Expected Useful Life	Condition	Targeted Replacement Date				
								1-2 Years	2-5 Years	5-10 Years	10+ Years	Outstanding Issues and/or Notes
Lighting	LED	-	-	Various	2-15+	20	Good				✓	
Building Automation Systems	Various			Various	10+	15	Fair		✓	✓		DDC and Pnuematics