



To: Dr. Susan Kustka- Superintendent of Schools

Cc: Select Board, Travis Ahern, Keith Buday

From: James Keast - Facilities Manager

Date: Aug 18, 2023

Re: **Facility Condition Assessment - Holliston High School 370 Hollis Street**

.....



Holliston High School Aerial View

A facility review of the Holliston High School located at 370 Hollis Street, Holliston, MA was conducted in July and August 2023 by James Keast – Facility Manager.

Please note that this was an examination of the grounds, inner and outer building envelopes and mechanical systems only. This was not a formal safety or code compliance evaluation of the facility. Please note that a formal occupancy inspection is performed by the Town's Building Inspector annually and this is where safety or code compliance concerns are raised.

For the purpose of this review, the following standard building rating scale was used.

- **New:** New or like new conditions; no issues, no expected failures, 10 years or more of reliable service.
- **Good:** Good condition; no reported issues or concerns, consider replacing in 6 to 8 years.
- **Fair:** Average wear for building age, not new but no issues to report, replace in 4 to 6 years
- **Poor:** Worn from use, end of life cycle replace in 2 to 4 years when funds available
- **Critical:** Extremely worn or damaged; replace when funds are available.

The 32 acre site has one baseball field, one softball field, two large open fields for various activities and a turf football field with a running track around the perimeter. There is a 200,000 parking lot on site. The 220,000 sq ft school building comprises four sections including a 900 seat auditorium and athletic field house. The primary building construction is concrete block with a steel girder roof structure. The exterior is primarily covered with a solid brick veneer. The fascia/soffit is a masonite material that encompasses the perimeter of the building. Most of the windows are incorporated in "store-front" style floor to ceiling panels. All exterior doors are steel and glass. The various roof sections are flat EPDM membrane construction. The school was built in 1968 and was renovated in 2001. The septic system was not evaluated during this assessment. However, it should be noted that the septic system is in a failed condition and currently has a waiver from the Massachusetts DEP.

Summary:

The Facility Condition Assessment of the Exterior of the High School scored a 40% (out of 100%) due to several areas in a failed condition like the sidewalks, paved surfaces and windows. Some structural concerns were noted in foundation corners and support columns. The roof is rated in fair condition but is in need of some immediate repair to prevent future water infiltration.

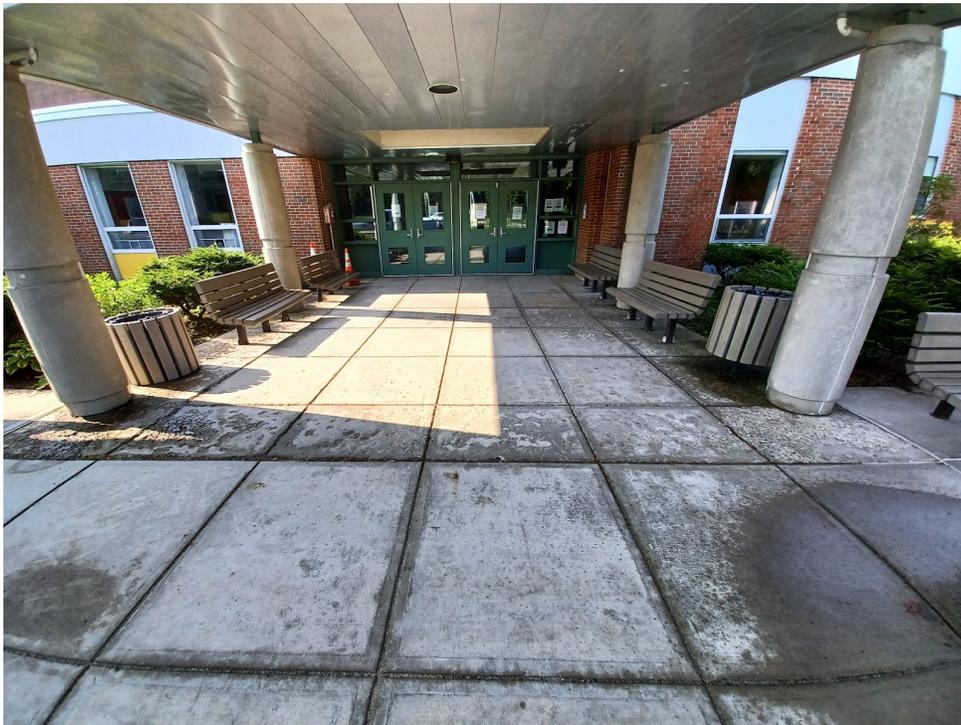
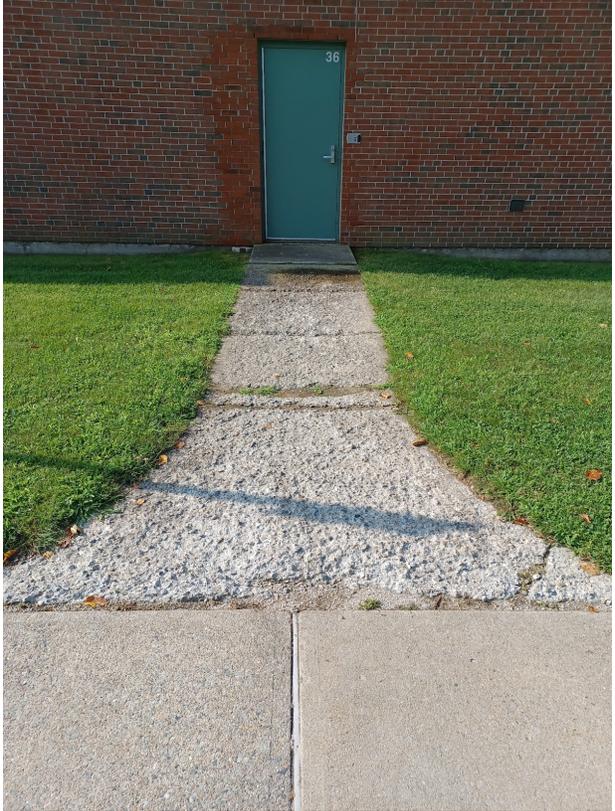
The Facility Condition Assessment of the Interior of the High School scored a 44% (out of 100%). Critical areas were identified with the Windows and Doors as well as the building plumbing. Many of the major systems like HVAC are past their useful life and to the point where replacement parts are unavailable. The building is very energy inefficient primarily due to overall design but also due to minimal insulation and worn weather seals around all the doors and windows. It should be noted that cosmetically the classrooms, corridors and offices are clean and the maintenance team does a good job of maintaining them.

EXTERIOR REVIEW:

Sidewalks and Pavement- Some sidewalks are in critical condition and are a safety hazard to users. Many sidewalks have shifted at the joints resulting in a raised edge which creates a tripping hazard. Some of the surfaces have deteriorated so much that the concrete has broken apart as shown below. Other sidewalks have a deteriorated surface which traps water, ice and debris further accelerating the deterioration process.



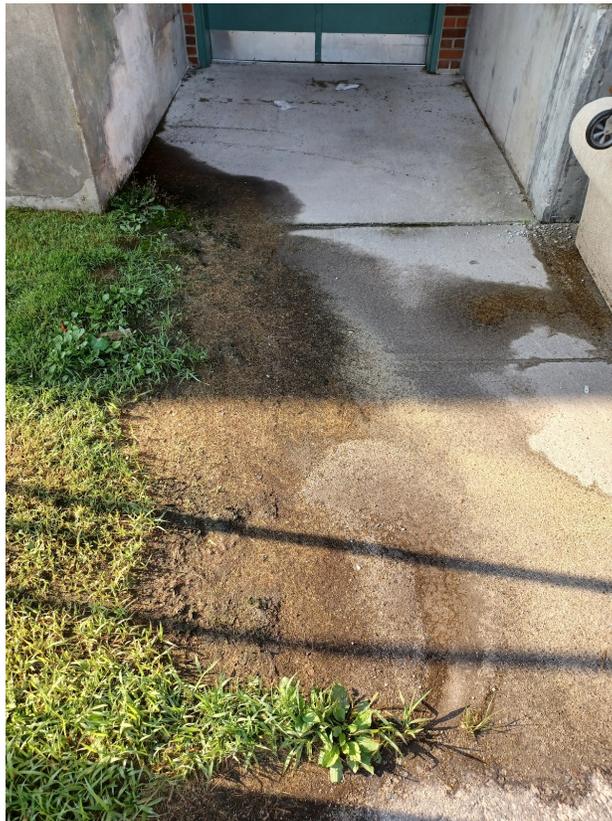
Critical Door Landing Area



Critical ADA Ramp, Sidewalk, Main Entrance



Critical Main Entrance

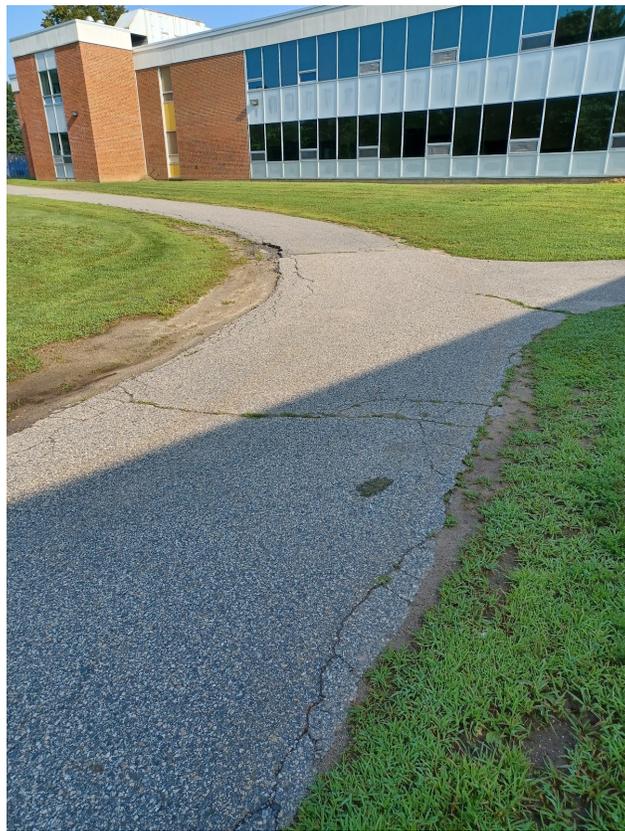
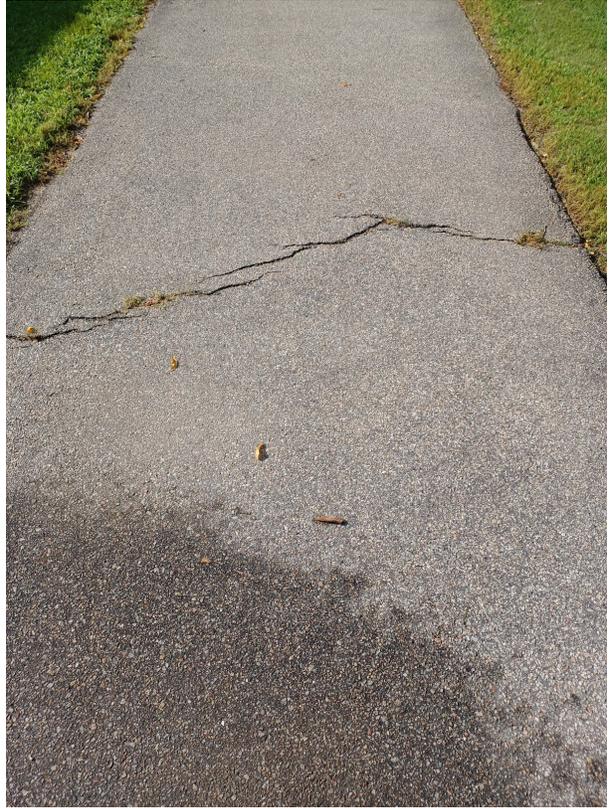


Critical Side Entrances

The driveways and paved asphalt surfaces are all in poor condition with various cracks, breaks and openings throughout the campus.



Poor Pavement Condition



Poor Pavement Condition



Poor Pavement Condition

Walls, Foundation, Soffits- The exterior brick walls are in Fair condition with only a few areas in critical condition. Many areas require repointing of the mortar joints. Keeping the joints sealed will significantly improve the longevity of the brick material.



Fair Exterior Brick Condition



Critical Exterior Brick Condition



Poor Exterior Brick Condition

It should be noted that the brick wall area along the upper section of the auditorium had the brick drainage holes covered over with the EPDM roofing membrane during the 2001 renovation. This has resulted in an ongoing water leak issue. This area will be repaired soon. It was observed that the brick wall is bowing out in some areas. A section of this wall collapsed several years ago and was repaired by applying epoxy sealant between the brick wall and interior concrete block wall.



Area Where Brick Drainage Holes Are Covered

The foundation areas are generally in fair condition, however some poor to critical areas were observed and require immediate attention to prevent further deterioration. The structural columns at the main entrance have cracked and have exposed the metal reinforcement which is rusting. These columns should be reviewed by a structural engineer.



Cracked Column Main Entrance



Cracked Columns Main Entrance

The concrete foundation on a few corners of the building have cracked. These areas should also be reviewed by a structural engineer.



Cracked Foundation Corner



Cracked Foundation Corner

During the assessment it was noticed that several large rodent burrowing holes were around the foundation of the building.



Large Rodent Burrow Holes

The exterior walls of the field house are galvanized metal interlocking panels with fiberglass Kalwall window inserts. It was noted that many of the panels have separated at the end joints and are flashed poorly. The areas above the window inserts are wide open allowing birds to nest above.



Field House Wall and Bird Nesting Areas

Several open conditions/gaps were noted in the exterior walls. These gaps allow pest, water and air infiltration into the building.





Open Wall Gap Areas

The facias are masonite panels approximately two feet tall and wrap around the perimeter of the building. These panels are generally in Fair to Good condition. It was noted that several panels were cracked. The panels in the shaded areas were also covered with organic materials like mold and algae.



Masonite Panels



Cracked Masonite Panels

Some of the wall areas have a soffit. All of the soffit areas are in Critical condition and are in need of repair.



Damaged Soffits

Windows and Doors- Almost all of the windows are integrated into “store-front” style wall panel systems. The windows are all single pane glass. Some of the panel sections have windows that open to allow for ventilation. Room HVAC unit ventilators also vent through the wall panel system.



Typical Window Wall Panel System

In general the panel wall system is in Fair condition with some repairs that have taken place over the years. Glass that required replacement was done with more energy efficient double pane units. However, the window glazing used to hold the window into the frames has failed and in critical condition. The glazing has deteriorated to the point where moss and other organic growth has filled the gaps allowing for water and air infiltration.



Critical - Failed Window Glazing



Critical - Failed Window Glazing

The doors are in Fair condition with only some minor rust forming on the frames. All exterior doors operate well and the main entrances have remote access control allowing for all doors to be locked during school hours.



Typical Door System

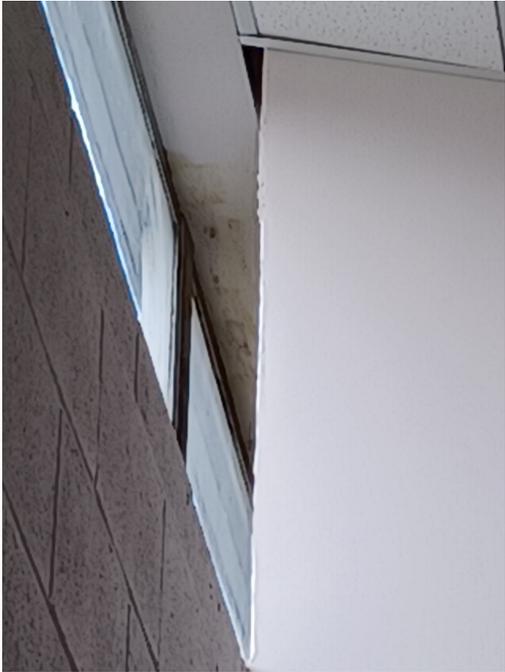
Roof - The flat EDPM roof was replaced in the 2001 building renovation and is in Fair condition. With the exception of the area of the covered over brick wall drain holes, as mentioned previously, there are minimal leaks. (Confirm with Keith). The roof is approximately 22 years old and should last another 10 years. This roof is a good candidate for restoration whereby a new liquid layer, along with a fabric reinforcing mesh, can be applied over the existing roof to extend its life for another 20 years. It should be noted that there are approximately 100 roof penetrations for various HVAC and plumbing systems. The flashing around these areas typically only lasts 20 years. It is highly recommended that a roofing expert come out and survey the roof to identify areas of concern and outline a plan for replacement of the flashing around the roof penetrations. It was also noted that water is running off the roof and along the exterior wall due to blocked or poorly channeled water drainage.



High School Roof Sections



Water Draining Off The Roof



Interior Roof Leak

The chart below summarizes the overall condition rating of the exterior of the High School. Out of a possible 25 points the High School Exterior scored a 10 or a 40% FCA Rating

Exterior – Building, Parking Lot, Grounds

| Item | New: | Good: | Fair: | Poor: | Critical: | Comments |
|-------------------------------|------|-------|-------|-------|-----------|--|
| Sidewalk/Pavement/ Grounds | | | | | 1 | Several sidewalks are in critical condition creating a hazardous situation. The asphalt surface around the campus is cracked and worn. |
| Walls | | | | 2 | | Some damage to the brick walls and foundation. |
| Soffit/Fascia | | | | 2 | | Soffit and Fascia are damaged in several areas |
| Windows/Doors | | | | 2 | | Windows are single pane with failed glazing. Doors are in fair condition |
| Roof | | | 3 | | | Roof is Fair but needs attention to prevent water infiltration, |

INTERIOR REVIEW:

Walls- The interior walls are in Fair condition and primarily constructed out of concrete block. Most walls are freshly painted. However some cracks were observed. Although the cracks are present there does not appear to be any serious structural concerns.



Crack Observed in Concrete Block Wall



Additional Wall Cracks

Ceilings- The ceilings are primarily a suspended grid tile system. Most of the ceilings are in Fair condition with few tiles damaged, stained, cracked or missing. The ceiling tiles around the perimeter of the auditorium where the persistent roof leaks are present have been replaced with plastic egg-crate panels to allow the water to flow through and be captured in barrels during heavy rain storms.



Ceiling Tiles Missing; Egg Crate Panels with Barrels Catching Rainwater. (Note Water Damaged Door)



Water Damaged Ceiling Tiles

Floors - The primary flooring surface is 12" x 12" VCT (Vinyl Composite Tile) glued to a concrete slab. The administrative areas, library and auditorium are low pile looped carpet. The field house is a combination of a rubberized surface with a Maple Hardwood section in the center. The bathroom floors are primarily ceramic tile.

At the time of this review the carpet in the library was removed exposing the concrete slab. It was noted that a large (greater than ¼") crack was running through the center of the library. This is a large breakage of the slab indicating some significant settling of the base material has occurred.



Large Crack in The Library Concrete Floor Slab

The VCT Floor is in Fair to Poor condition with some cracking and buckling observed. All of the tile surfaces have been recently waxed in preparation for the beginning of the school year.



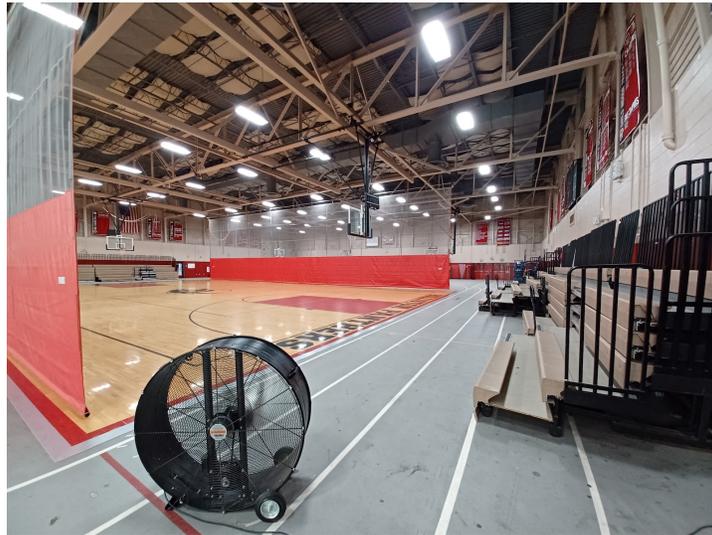
Worn, Cracked, Buckled VCT and Ceramic Floor

The carpeting is in Fair condition with remaining useful life. The library floor will be new. The entryway carpeting is in a failed condition and poses a trip hazard.



Failed Entryway Carpeting

The fieldhouse floor is in Fair condition with the Maple Hardwood floor being in Good condition. It was observed however that rainwater has entered through the doorways in the fieldhouse and collected on the rubberized flooring surface.



Fieldhouse Floor (Note Water by Doors)

Windows and Doors - The windows are original to the 1968 building. Most of the exterior doors were replaced in 2001. The exterior doors and frames set in masonry walls, are steel with many having glass inserts. Most of the windows are integrated into “store-front” style wall panel systems. Some of these panel systems incorporate aluminum doors that are original to the 1968 construction. The windows are all single pane glass. Some of the panel sections have windows that open to allow for ventilation. Some of the classroom HVAC unit ventilators also vent through the wall panel system.

Most of the doors and windows are past their useful life. All of the exterior metal doors have various levels of rust, with some completely rusted through. The weather stripping around all of the exterior doors has failed significantly, impacting energy efficiency. The weather stripping around the windows has also failed allowing for air leaks and vegetation to enter the building.



Air Gaps Around Exterior Doors



Rusted Steel Door and Deteriorated Aluminum Door



Leaking Windows



Vegetation Growing Through Gap In Window Frame

HVAC (Unit Ventilators, Rooftop Package Units, Rooftop Exhaust Fans, Make-up Air Units, Boilers, Radiators, Hot Water Heaters, Local Zone Split and Mini Split AC units) - The HVAC systems were updated in the 2001 Renovation and have reached the end of their useful life with all being over 20 years old. Some systems have been replaced over the years but most of the major components are original to 2001 renovation. Most of the building is not air conditioned. However, some select classrooms, computer rooms, administration offices and the auditorium do have air conditioning. It should be noted that due to Covid 19 concerns many of these systems operate 24 hours a day to exchange and condition air. These systems were not designed to operate in this manner creating additional wear and tear and need for replacement.

All classrooms have unit ventilators that exchange circulated air with the outside. During the heating season hot water from the boilers circulates through the units to provide heat. There are over 100 of these units in the building requiring individual maintenance on the blower

motors, zone valves and air filters. Many of the blower motors have already been replaced. Due to the age of these units it is getting more difficult to obtain parts for repairs.



Examples of Classroom Unit Ventilators and Radiator

There are 11 roof-top make-up air units, 7 that use hot water from the boiler to heat the air in the winter and four that use natural gas. All of these units are original from the 2001 renovation and have reached the end of their useful life. Many components have been replaced, but due to the age many parts are getting difficult to obtain.



Make up Air Units



Package Units

There are four roof-top package units with natural gas heat and air conditioning. Again, all of these units are original from the 2001 renovation and have reached the end of their useful life. Many components have been replaced, but due to the age many parts are getting difficult to obtain.

There are five traditional split system air conditioning units that are various ages and conditions. In general these units are in fair condition with replacement parts readily available. There are also two mini split systems that are in good condition.



Large Auditorium Unit

There is one large multi-stage heating and cooling unit for the auditorium that is also at the end of its useful life. This unit currently has funding for replacement.

To manage the air quality in the building there are over 100 roof top exhaust fans. All of these fans were replaced during the 2001 renovation. All have had internal components (motors, belts, bearings) replaced over the past 20 years. The condition of these units are fair due to continual replacement of worn parts. It should be noted that using this type of ventilation system is very inefficient in the winter months since the air being removed needs to be heated (via the make-up units). There are more efficient ways to exchange the air in the building.



Exhaust Fans

The majority of the heat for the building is generated by four Weil-McLain oil fired boilers. These boilers are 80% efficient with a 2.5 Million BTU/Hr output. All boilers have a Power Flame Burner that is capable of running on Oil or Natural Gas. The hot boiler water is circulated throughout the building with four 30 HP electric motor driven circulator pumps. All of these components were installed in 2001. The boilers and burners are past their useful life. The manufacturer rated serviceable life is 15 years. These units are over 20 years old. Two of the four pumps are original with two others having replacement motors and pumps. These circulator pumps are past their useful life as well. Replacement parts for the motors and pumps are still available, however parts for the Weil-McLain boilers are getting more difficult to find.

Domestic hot water is primarily provided by gas fired tank style water heaters. These heaters are in fair condition and still have useful life remaining.



Boilers and Circulator Pumps



Gas Fired Hot Water Heater

Lighting, Electric, Fire Systems - In 2018 most of the lighting was converted to energy efficient LED fixtures and bulbs with motion sensors.



Example of LED Light Fixtures

Overall the electrical systems throughout the building are in good to fair condition with no significant signs of degradation. There are some minor issues associated with exposed junction box wiring and broken outlets. Back power for critical building operations and safety is provided by an onsite diesel generator that is in fair condition with useful life remaining.



Backup Generator and Major Electrical Breaker Panel



Exposed Wires

The fire systems (Panels, Horns, Pull Stations, Repeaters, etc) are all in fair condition and have useful life remaining. Many of these components have been replaced over time.

Restrooms - The student restrooms are dated with older fixtures and worn partitions all of which are in fair to poor condition. The lockers rooms for the field house are in poor condition with many damaged items.



Student Bathrooms

Bathrooms for the staff are in overall better condition.

Kitchen - The kitchen is in fair condition and clean. Most of the equipment was installed in 1968 and is technically beyond its useful life but is still functional. When equipment does break it is difficult to find replacement parts. It should be noted that minimal food preparation is done on site which puts less wear and tear on the equipment.



Kitchen

Plumbing - Overall the building plumbing is in poor condition with many components dating back to the original installation in 1968. Many of the drain lines are cast iron and have rotted through. Unfortunately, many of these lines are embedded in the floor which requires chipping out the concrete in order to replace them. The potable water pipes as well as the piping for the hot water heat are also beginning to corrode.

Insulation - Overall the building insulation is minimal due to the style of construction. The flat roof sections have insulated panels that do provide a moderate level of insulation. The concrete block walls have no insulation and the store-front style panel systems have no insulation. The window glass is single pane and also provides very little insulating value. In fact some of the upper class rooms that have windows above an adjacent lower flat roof section become unusable due heat radiating off the roof through the windows and into the classroom.



Roof Insulation Panels



Flat Roof Below Upper Classroom Windows

As noted previously, the seals around the doors and windows have failed and therefore contributes to the poor insulating value of the building. It should be noted that the window glazing contains Asbestos.

The chart below summarizes the overall condition rating of the interior of the High School. Out of a possible 50 points the High School Exterior scored a 22 or a 44% FCA Rating.

Interior – Class Rooms, Corridors, Open Spaces, Kitchen, HVAC, Plumbing

| Item | New: | Good: | Fair: | Poor: | Critical: | Comments |
|----------------------------------|------|-------|-------|-------|-----------|---|
| Walls | | | 3 | | | Walls are freshly painted. Some cracks in the masonry were noted. |
| Ceiling | | | 3 | | | The suspended ceiling tiles are generally in fair condition with some damage and staining noted. |
| Floors | | | | 2 | | The floors are clean and recently waxed. However, there are some areas where the tiles are missing, cracked or buckled. |
| Windows and Doors | | | | | 1 | The windows and doors need attention. The metal doors have various levels of rust. The door and window seals have failed. Window glazing contains Asbestos. |
| HVAC | | | | 2 | | The HVAC is operational due to a high level of maintenance and component replacement. This is not sustainable |
| Lighting, Electric, Fire Systems | | | 3 | | | Lighting and electrical systems are operational with useful life remaining. |
| Restrooms | | | | 2 | | Restrooms are functional with the exception of ongoing plumbing issues. Student restrooms and locker rooms need attention |
| Kitchen | | | 3 | | | Food preparation is significantly reduced due to COVID changes. This puts less wear and tear on equipment. |
| Plumbing | | | | | 1 | Plumbing, primarily piping, is beginning to fail due to age deterioration. |
| Insultation | | | | 2 | | Building design is the main contributing factor to minimal insulation in the building. |